

Process Catalog

Benchtop to Kilo Scale **2020**





In the 80 years of our service to the world's research community, we've learned that the collaborative effort to design and manufacture a product to meet the customer's particular need builds a strong bond that fosters the trust that Ace Glass currently enjoys with so many of you.

To continue building that trust, we've redoubled our efforts to provide the very best Technical, Engineering and On-Site Support in the Industry. Our perpetual focus on improving our support capabilities and custom glassware quotation turnaround time has continued to separate us from the pack of glassware providers who will sell you less quality and provide less support to go with it.

Our glassware, being manufactured entirely in our Vineland, New Jersey facility, has for 80 years been a staple tool for not only the domestic researcher, but also for those around the world that won't compromise on quality, safety or utility.

If you are a current customer, I thank you for allowing us the pleasure of working with you. If you are not yet our customer, I urge you to give us an opportunity to build your trust in us.

Thank you,

Jeff Kramme
President
Ace Glass, Inc.



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Office/Shipping Location

Ace Glass Incorporated

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Vineland, NJ 08362-0688

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sales@aceglass.com • export@aceglass.com

Toll-Free 1-800-223-4524
Toll-Free Fax 1-800-543-6752

www.aceglass.com



Specifications

The products in this catalog represent what we believe to be the most advanced design and construction. However, design improvements are constantly being made, and we reserve the right to modify specifications where we feel that a change is warranted.

Apparatus fabricated in accordance with ASTM, API, AOAC and other technical organization specifications such as USP, NIST, and NIOSH, are subject to modification by these organizations.

All precision-grade ware is warranted to be within the tolerance prescribed in ASTM Specifications. All laboratory-grade ware is twice precision-grade tolerances.

Special Apparatus

Orders or inquiries for special apparatus should be accompanied by prints or drawings, if possible. To prevent delay, and to enable us to more intelligently quote on your specials, all necessary dimensions and tolerances should be noted. **For technical information, design assistance and help please visit www.aceglass.com.**

The following information should also be furnished where applicable: joint sizes, Ace-Thred sizes, capacity, whether "to contain" or "to deliver," porosity of filter, and any abnormal operating conditions, such as extremely high pressure or temperature, to which the apparatus may be subjected.

We reserve the right to overrun or under run by 10% on orders for special items and to ship and invoice for amounts within this variation.

NOTE: Special items are not returnable.

Our research and drafting departments are always available to assist you in designing special apparatus. Your special will be assigned a permanent drawing number for future reference, duplication or change. You will be sent a drawing of your special for your approval/sign-off before manufacturing begins.

Types of Glass

All ACE-manufactured glassware items listed in this catalog are, unless otherwise noted, fabricated from 33 expansion borosilicate glass, such as Pyrex® Brand Glass, a product of Corning Incorporated; KG-33 Glass, a product of Kimble Glass Company; Duran Glass, a product of DWK Life Sciences; Simax, a product of Kavalier Glaswork.

Breakage or Loss

In case of **Breakage**:

1. Notify ACE immediately.
2. Please retain all inner and outer cartons and packing material.
3. ACE will advise you whether the carrier will report to your location for inspection or if item(s) are to be returned for inspection.

In case of **Shortage**:

1. Notify ACE immediately.
2. A replacement will be issued upon confirming inventory discrepancy.

In case of **Loss**:

1. First, please verify with all your receiving departments that delivery was not made.
2. Notify ACE immediately.
3. ACE will contact the carrier for tracking information as applicable.
4. A replacement will be issued upon verification that the shipment was not delivered and upon confirmation that the carrier cannot locate shipment.

PLEASE NOTE:

All breakages and shortages must be reported within two weeks of receipt.

Returns and Repairs

Ace Glass reserves the right to deny requests to return products 90 days from their original purchase date.

Incoming material (returns or repairs) must be pre-approved by our Product Return Specialist. Please follow these steps to ensure our Receiving Department does not refuse your shipment.

1

Contact ACE for an **RA# (Return Authorization Number)**.
1-800-223-4524 (Vineland, NJ, USA)
E-mail: returns@aceglass.com

2. Once an RA# is given, properly pack the item(s) in an inner and outer box/carton and write the RA# on the outside of the box. All used items are to be thoroughly cleaned and defined in the assignment of an RA#.
3. A 20% restocking fee will be assessed for authorized returns. ACE cannot accept responsibility for damage or destruction of glassware that occurs in your shipment to us. We strongly advise you to purchase additional insurance with your carrier.
4. For *Returns* that are the result of your receiving the item(s) broken, ACE cannot accept responsibility for **further** damage or destruction of glassware that occurs in the return shipment due to improper packing.
5. *Repairs* will be evaluated by our technicians. You will be advised if any pieces are beyond repair or cannot be salvaged economically. ACE cannot accept responsibility for further damage or destruction of any glassware that is damaged during return shipment.

PLEASE NOTE:

ACE cannot accept responsibility for material returned without proper authorization.

Specifications are subject to change without prior notice. Although they are represented to be accurate, it is best to verify product specifications with ACE prior to purchase in the event they have been changed since publication of this catalog.

Order by Code

Each item in this catalog has a two or three-digit code in addition to the four or five-digit number. No other ordering information is needed since each individual size, capacity, etc. has its own code. **Example:** 5000 \$10/30 top \$14/35 bottom would be ordered as 5000-05.

The majority of items listed in this catalog are normally available from stock at our plant in Vineland, NJ.

In the event your entire order cannot be filled immediately, a partial shipment will be sent, with the back-ordered items following shortly. If you should desire the entire order to be sent in one shipment, please specify on your purchase order.

Unless otherwise specified on the order, we will ship material by what we consider the "best way."

Ways to Order

Ace Glass products are also available from our many lab distribution partners, particularly VWR International and Sigma Aldrich.

PHONE	856-692-3333 800-223-4524
FAX	856-692-8919 800-543-6752
CREDIT CARD	VISA MasterCard American Express
MAIL	P.O. Box 688 Vineland, NJ 08362
WEB SITE	www.aceglass.com
E-MAIL	sales@aceglass.com
CANADA	canada@aceglass.com
INTERNATIONAL	export@aceglass.com

Shipments are F.O.B. from our factory
in Vineland, NJ, USA.

ACE Glassware Discounts

All ACE-manufactured glassware, identified with a spade (♠), listed in this catalog is subject to the following dollar value discounts. Items marked by a star (★) or that have no designation whatsoever are not subject to this discount.

- 10% on purchases of \$500.00 and over
- 12% on purchases of \$1000.00 and over
- 15% on purchases of \$1500.00 and over

Terms: Net 30 days (Domestic only)
Minimum Order: \$25.00

All quantities in this catalog are "each" unless otherwise noted.

Contact us for current pricing or visit www.aceglass.com



Contract Holder
Contract GS-07F-119CA

GSA pricing for Ace Glass products is available through our partner, the VWR Corporation.

www.us.vwr.com

INTERNATIONAL SALES

Ways to Order

Mail: Ace Glass Incorporated
Export Sales
1430 North West Blvd.
P.O. Box 688
Vineland, NJ 08362-0688 USA

Phone: 856-692-3333

Fax: 856-692-8919

E-mail: export@aceglass.com

Methods of Payment

1. Payment in advance by check or money order, in US Funds only, drawn on US Bank
2. Credit Card: Amex, Visa, MasterCard
3. Wire Transfer

100mL to 200L Reactor Systems

The essential tool for research, scale-up, or production across a wide range of scientific disciplines. Designed for maximum diversity and ease of use, we have developed a simple base system building platform which allows any reactor system to be customized using catalog or custom designed parts. Each base system comes with the basic starting components required. From there, simply select the motor and accessories needed to complete the design. For customized components or application design, contact our technical department for further assistance.

1. Select the base system dependent on desired working volume.
2. Select the motor that best suits the application.
3. Select the components and accessories which best fit your application.

Using the Universal Stand allows for upward scalability. Notice that a wide range of reactor sizes may be used per stand by simply changing the motor mounting or swing latch clamps dependent on reactor size. Start with a 10L and gradually scale all the way up to a 50L, or start with a 50L and scale all the way up to a 150L, using only one stand. For bench scale you have the flexibility of securing from 100ml reaction vessels and work up to 6L, by adjusting the mounting brackets of the very same stand. Also, notice that the selected components are sized to easily cross over a wide range of vessel sizes to make an economical and ultimately universal scaling platform.

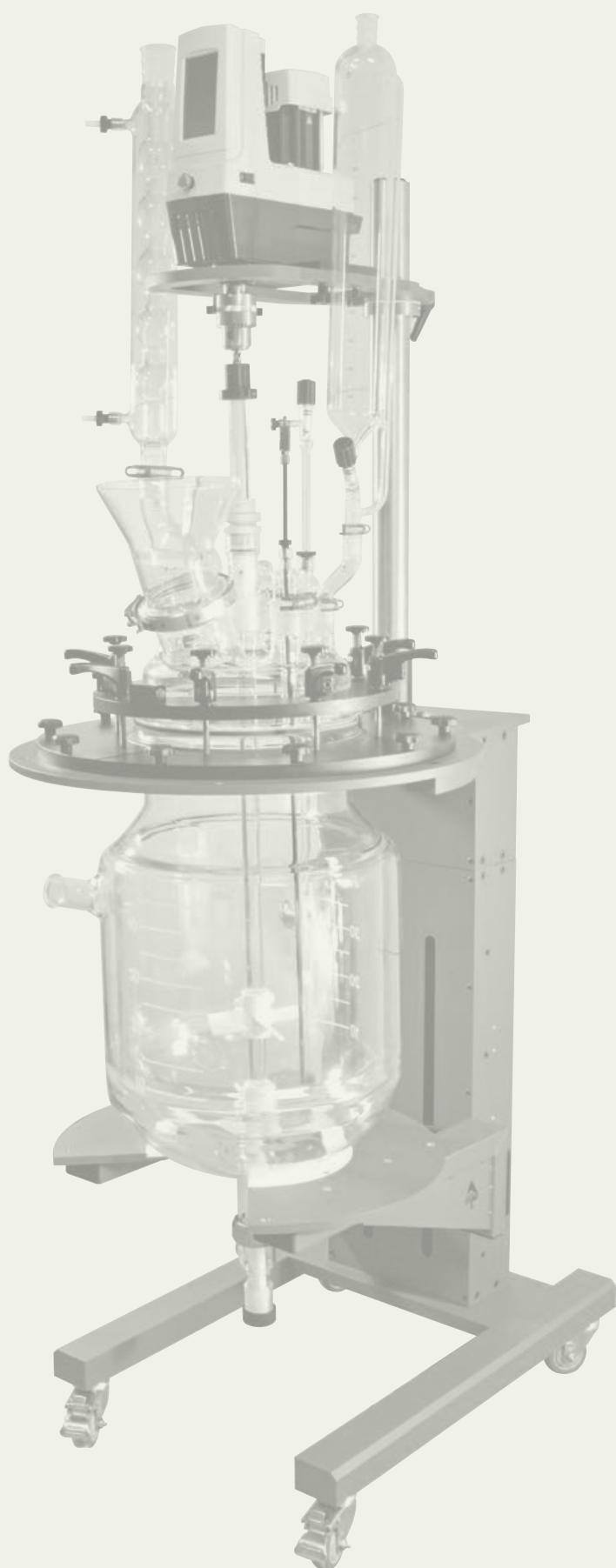
General Technical Specifications:

- **Maximum Allowable Temperature Range* (Scale-Up™ and Kilo Scale): -60 to 200°C**
- **Maximum Allowable Temperature Range* (Filter reactors): -20 to 200°C**
- **Maximum Allowable Temperature Differential (ΔT) (all reactors): 80°C**
- **Maximum Jacket Pressure (jacketed reactors): 8psig (.55 bar)**
- **Maximum Working Pressure Range (non pressure rated vessels): 5psig to 0 Torr**
- **Maximum Working Pressure Range (1-Piece pressure vessels): 45psig @100°C to 0 Torr**
- **Maximum Working Pressure Range (2-Piece pressure vessels): 35psig @100°C to 0 Torr**
- **Wetted Surfaces: Borosilicate Glass & PTFE**

** Temperature limits specified according to temperature limitations of supplied CAPFE O-Ring, PTFE valve stems on bottom drain valves, and inlet and outlet clamp materials on jacketed vessels. Higher and lower ranges are obtainable using alternative stem and O-Ring materials. Contact technical services for temperature ranges outside of the specified range.*

Limitations And Precautions

The strength of glass is primarily determined by its surface condition, thickness, and uniformity. Mechanical stress applied to glass contributes to strain, which results in breakage when the total strain exceeds its allowable limit (i.e. tensile strength). Thus, careful handling and use of glassware are important to avoid scratching and mechanical shock to outside and inside surfaces. Thermal stress may produce the same result — catastrophic breakage. It is important to avoid rapid or uneven temperature changes across any glass wall. This refers to temperature increases from externally applied heat (mantles) or internally generated heat (exothermic reactions), as well as temperature decreases, such as rapidly introducing large quantities of cold liquids to hot reactants, etc. Remember: Mechanical and Thermal Stresses are additive.



Reactor Systems

Scale-Up Series™

Kilo Scale

Spherical

Filter

Photochemical

Pressure

PTFE

Ultrasonics

Automation

A Guide to Ordering Custom Pilot Plants

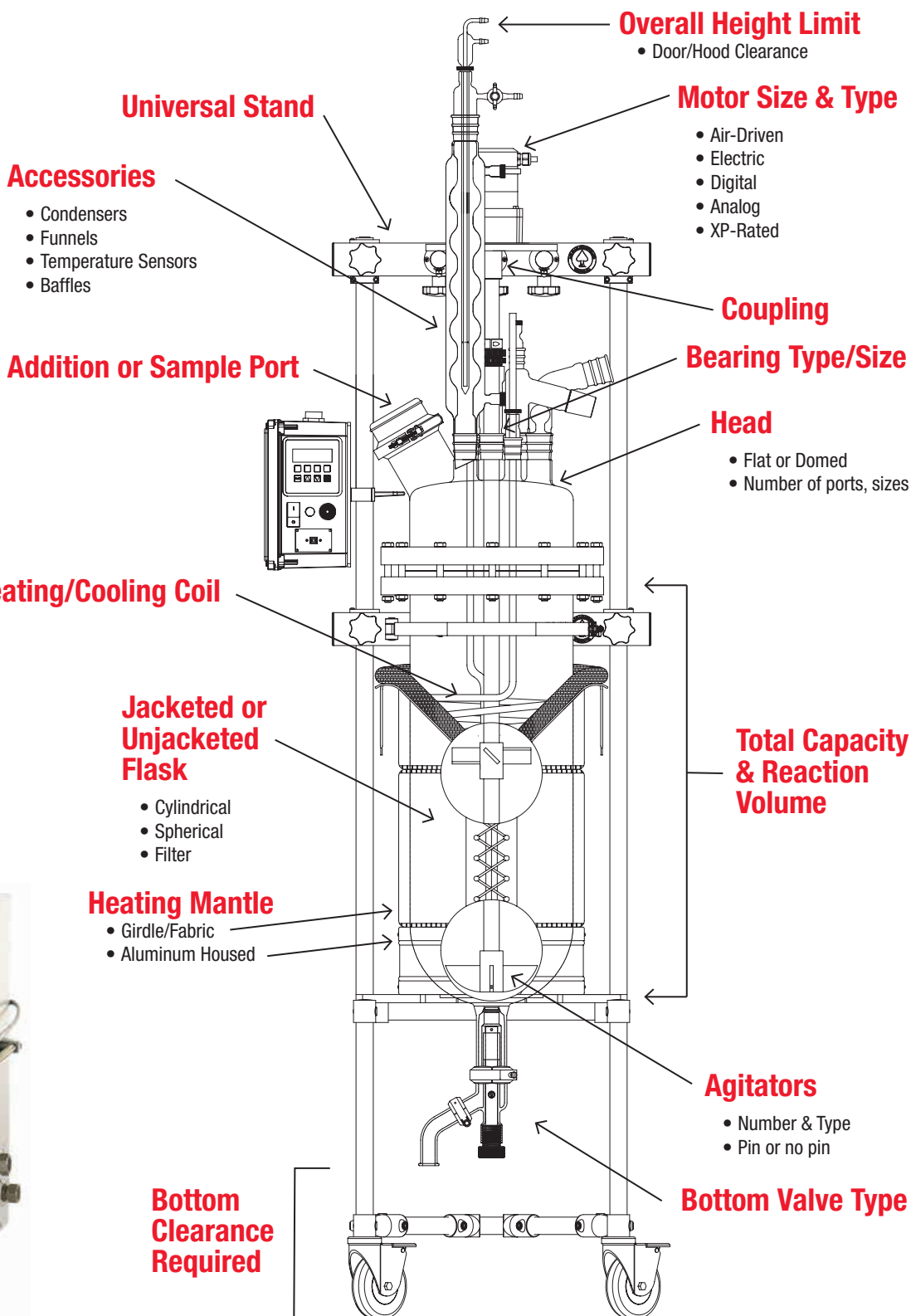
It's easy to customize one of our standard listings with a Pilot Plant Reactor design that will meet your specific application needs. Here are some key points to consider when specifying a Pilot Plant that will work for you:



**Temperature
Controller
Needed?**

**Heating/Cooling
Circulator needed?**

Capacity?
Temperature range?
Time to Temperature?
Exothermic?
Aqueous/Inorganic?



Impresario I

Reactor Automation Controller



Capabilities:

- pH monitoring and dosing control with the addition of a syringe pump available from Ace.
- Temperature monitor/control via type J thermocouple accessories in conjunction with heating accessories such as mantles or circulators, from such manufacturers as Glas-Col, Lauda, Julabo and Polyscience. Utilize the Ace Glass Technical Staff to size the appropriate solution.
- Vacuum/pressure monitoring and control with the addition of vacuum/pressure source and the appropriate proportioning valve available from Ace.
- Overhead stirring speed and torque monitoring and control using a variety of stirring systems available from Ace. Explosion proof stirring options available.
- CFR 21 part 11 compliant software organizes the reaction parameters in a single tabbed document in table or graphical form and can report in encrypted, read only Microsoft® Excel format.
- Fully customizable multi-step ramps for reaction control and safety alarm response definition, including emergency shutdown.

Base Unit Specifications:

- 120vac 50/60Hz input
- (2) type J thermocouple connections
- (1) pH probe BNC connection
- Internal pressure transducer, full vacuum to 15psia (29.7psig) monitoring
- Pressure/vacuum proportioning valve connections for control
- (3) RS-232 serial ports
- (1) USB port and cable
- (4) Digital 0-5Vdc pin jack inputs
- (4) Open collector pin jack outputs for interfacing with many different families of devices with different operating voltage levels, 0-24Vdc
- (1) 120vac socket, 15amp max

System requirements:

- PC running Windows XP, 7, 8 or 10
- 250 MB of disk space
- Minimum of 1GB ram
- USB port

Accessories: (Not Included)

- Lab notebook/Laptop
- Cables for peripheral connections
- Vacuum proportioning control valve or vacuum controller
- Peripheral equipment or probes
- Device drivers for additional peripherals

Any analog or digital control capable peripheral is a candidate for Impresario control, including:

- Balances
 - Circulators/Water baths
 - Liquid pumps (*peristaltic and syringe*)
 - Solids pumps
 - Vacuum pumps, sensors, and controllers
 - Pressure sensors and controllers
 - Flow meters
 - Turbidity sensors
 - Ultrasonic equipment
 - Temperature controllers and sensors
 - pH controllers and sensors
 - Dissolved oxygen sensors
 - Heating mantles, tapes, and Instatherm
 - Hot plate stirrers
 - Valves
 - Dosing or powder additions systems
 - Overhead stirrers or mixing equipment
 - Level measurement and control
- (communication ports required on peripheral devices)

Order
Code

Impresario Automation Control

6458-10

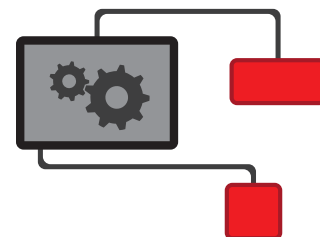
REACTOR AUTOMATION Software Option

Reaction automation control software by j_Kem for use with hardware capable of serial communications protocol control. Software is compatible with Windows 7, 8 & 10. Supported equipment includes chillers from Lauda, Julabo, Huber and Polyscience; stirrers from IKA and Heidolph; mantle temperature controls from J-Kem and Ace Glass; syringe pumps from J-Kem. Custom driver programming for equipment from alternative manufactures available. Contact Ace Technical Support for matching the software to your equipment and application. Some additional cabling may be required at additional cost.

Order
Code

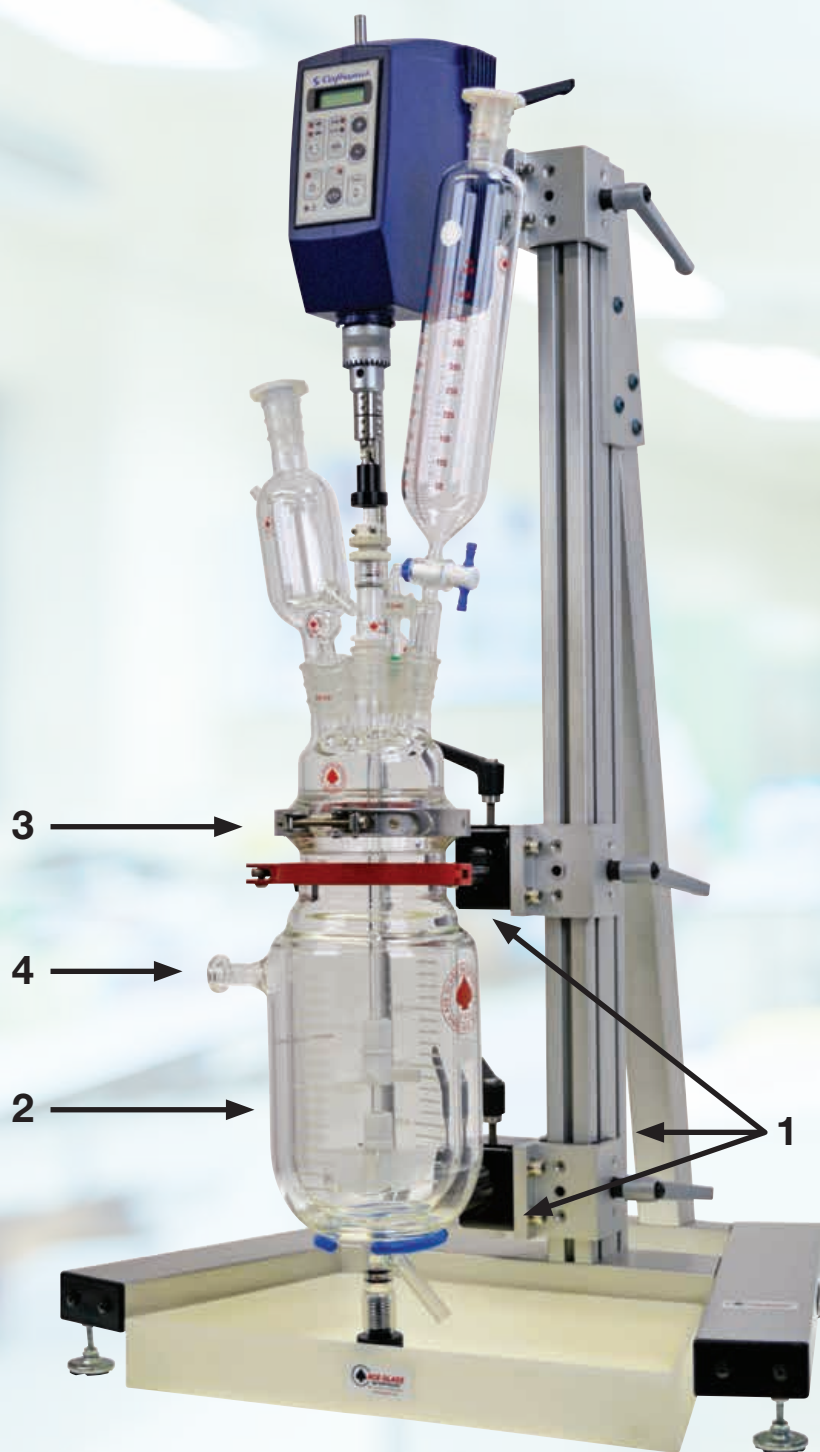
Software only option

14110-20



Jacketed Bench Scale Reactor System

100mL to 6000mL



Ace Glass Scale-Up Series™ reactor systems enable the researcher to scale-up from 100mL to 6000mL on the bench and enjoy the same geometry when replicating those results in our Kilo Scale reactors. Simply select the capacity you desire in the base system seen below. Complete your system with any of the many optional components we offer.

Scale-Up Systems include:

- Single Reactor Stand
- Bolt Latch Clamp
- Support Ring
- Jacketed Flask with O-Ring and Clamp
- Flange Clamp and Gasket

Working Temp Range (°C):

-60 to 200

Working Pressure Range (Torr):

Atm to 0

Max Jacket Pressure (PSIG):

8

Stand Dimensions (DxWxH):

(100mL-2000mL) 19.5" x 24.75" x 38"

(3000mL-6000mL) 19.5" x 24.75" x 48"

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Rod



Note: Product is shown with optional accessories.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

100mL to 500mL

Capacity (mL)	Stand Height in	Order Code
100	38	6440-02 ★
250	38	6440-03 ★
500	38	6440-04 ★

1000mL to 2000mL

Capacity (mL)	Stand Height in	Order Code
1000	38	6440-05 ★
2000	38	6440-06 ★

3000mL to 6000mL

Capacity (mL)	Stand Height in	Order Code
3000	48	6440-07 ★
4000	48	6440-08 ★
5000	48	6440-09 ★
6000	48	6440-10 ★

No.	Description	Qty	Order Code
Included Components			
	Reactor Stand	1	12841-02
1	60mm Bolt Latch Clamp	1	6442-02 ★
	Small Support Ring	1	11177-13 ★
	100mL Jacketed Flask		6441-02 ♠
2	250mL Jacketed Flask	1	6441-04 ♠
	500mL Jacketed Flask		6441-06 ♠
3	60mm CAPFE O-Ring	1	7855-878 ♠
	60mm Quick-release Clamp	1	6517-22 ★
4	NW10 Flange Clamp	2	12189-02 ★
	NW10 Flange Gasket, Viton	2	12192-02 ★

Optional Components

	Dual Reactor Stand	1	12843-38
	60mm, 5 Neck Head	1	6443-02 ♠
	10 x 440mm Stirring Shaft	1	8075-32 ♠
	38mm 45° Agitator	1	8097-02 ★
	50mm Anchor Style Agitator	1	8091-02 ♠
	Debris Free, PTFE Bearing	1	13445-30 ★
	10mm Shaft Coupling Assembly	1	8126-24 ★
	Replacement Glass Plug, 10mm	1	6441-33 ★

No.	Description	Qty	Order Code
Included Components			
	Reactor Stand	1	12841-02
1	100mm Bolt Latch Clamp	1	6442-04 ★
	Medium Support Ring	1	11177-17 ★
	1000mL Jacketed Flask		6441-08 ♠
2	2000mL Jacketed Flask	1	6441-10 ♠
	100mm CAPFE O-Ring	1	7855-880 ♠
3	100mm Quick-release Clamp	1	6517-25 ★
	NW16 Flange Clamp	2	12189-02 ★
4	NW16 Flange Gasket, Viton	2	12192-02 ★

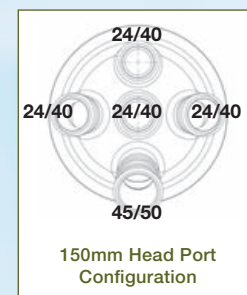
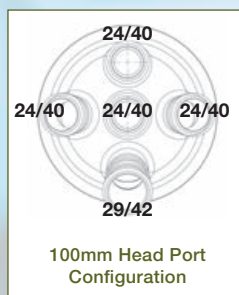
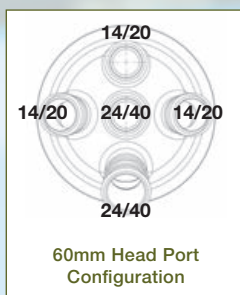
Optional Components

	Dual Reactor Stand	1	12843-38
	100mm, 5 Neck Head	1	6443-06 ♠
	10x440mm Stirring Shaft (1000mL)	1	8075-32 ♠
	10x500mm Stirring Shaft (2000mL)	1	8075-33 ♠
	64mm 45° Agitator	1	8097-04 ★
	90mm Anchor Style Agitator	1	8091-04 ♠
	Debris Free, PTFE Bearing	1	13445-30 ★
	10mm Shaft Coupling Assembly	1	8126-24 ★
	Replacement Glass Plug, 10mm	1	6441-33 ★
	pH Probe	1	5277-10
	pH Probe Holder (2000mL only)	1	5277-02 ★

No.	Description	Qty	Order Code
Included Components			
	Reactor Stand	1	12841-01
	150mm Bolt Latch Clamp	1	6442-06 ★
1	Large Support Ring (3000-4000mL)		11177-19 ★
	XL Support Ring (5000-6000mL)	1	11177-21 ★
	3000mL Jacketed Flask		6441-12 ♠
	4000mL Jacketed Flask		6441-14 ★
2	5000mL Jacketed Flask	1	6441-16 ★
	6000mL Jacketed Flask		6441-18 ★
	150mm CAPFE O-Ring	1	7855-881 ♠
3	150mm Quick-release Clamp	1	6517-27 ★
	NW25 Flange Clamp	2	12189-04 ★
4	NW25 Flange Gasket, Viton	2	12192-04 ★

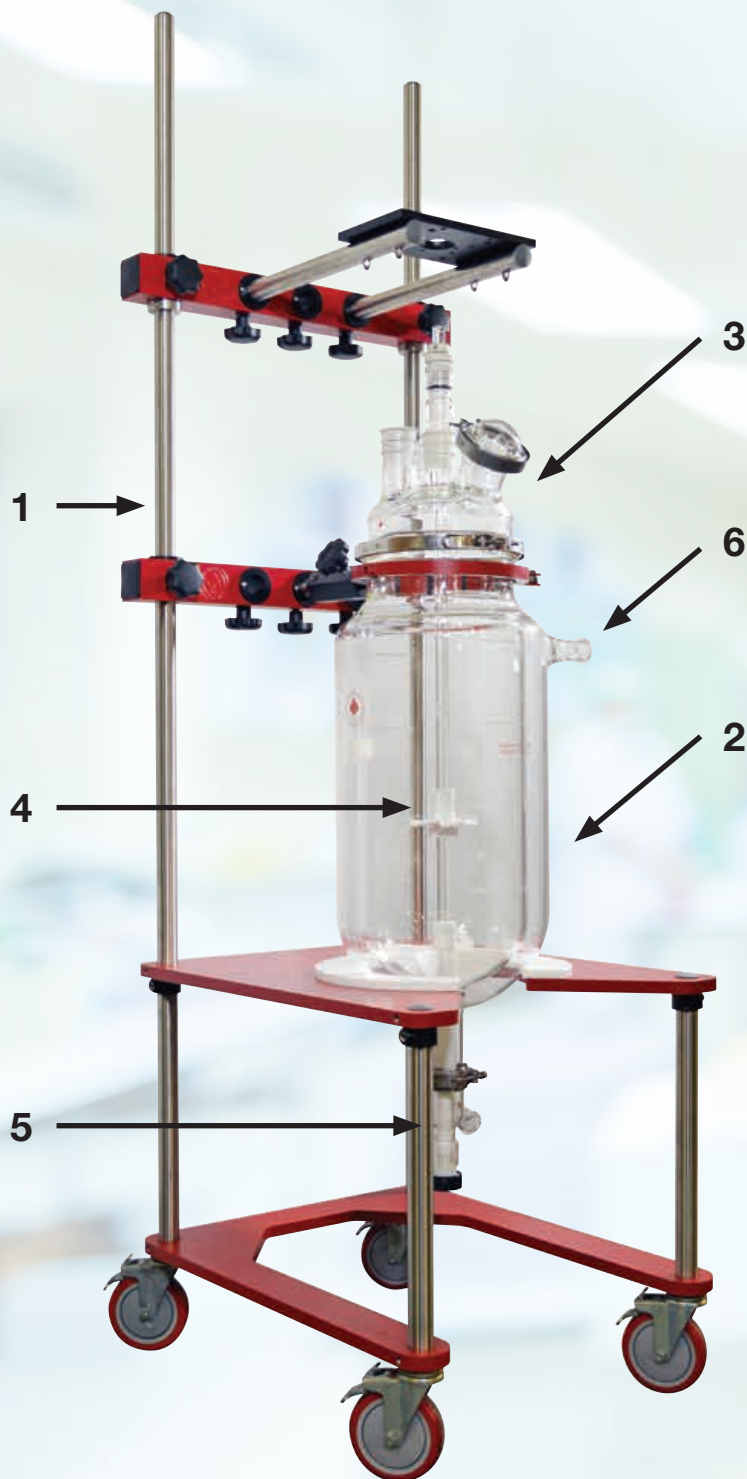
Optional Components

	Dual Reactor Stand	1	12843-48
	150mm, 5 Neck Head	1	6443-12 ♠
	10 x 560mm Stirring Shaft	1	8075-38 ♠
	76mm 45° Agitator	1	8097-06 ★
	90mm Anchor Style Agitator	1	8091-04 ♠
	Debris Free, PTFE Bearing	1	13445-30 ★
	10mm Shaft Coupling Assembly	1	8126-24 ★
	Replacement Glass Plug, 10mm	1	6441-33 ★
	pH Probe	1	5277-10
	pH Probe Holder	1	5277-02 ★



Jacketed Kilo Scale Reactor System

10L to 50L



Designed for maximum diversity and ease of use. A simple base system building platform which allows any reactor system to be customized using catalog or custom designed parts. Each system comes with the basic starting components required. Then, simply select the motor and accessories needed to complete the setup to meet your needs. Complete your system with any of the many optional components we offer.

Jacketed Kilo Systems include:

- Universal Reactor Stand
- Jacketed Flask
- Head with Clamps and O-Rings
- Agitator, Shaft, Bearing & Collar
- Drain Valve
- Couplings

Working Temp Range (°C):

-60 to 200

Working Pressure Range (Torr):

(10L, 15L & 20L) Atm to 0

(30L & 50L) Atm to 50

Max Jacket Pressure (PSIG):

8

Stand Dimensions (DxWxH):

27.5" x 24.25" x 82.25"

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Rod or Flange



For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

10L to 20L

Capacity (L)	for Rod Mounted Motors		for Flange Mount Motors	
10	12845-02	★	12845-03	★
15	12845-04	★	12845-05	★
20	12845-06	★	12845-07	★

Ethanol Extraction/Winterization System*

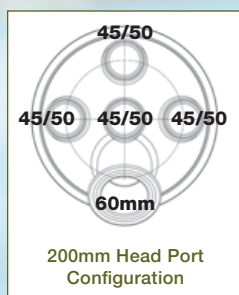
20	–		12855-07	★
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*12855-07 adds Bracing Set for XP Motor and EPDM O-Rings for winterization

No.	Description	Qty	Order Code
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Included Components

	10-20L Universal Stand w/Mount for Rod Mount Motors	1	12842-02	
1	10-20L Universal Stand w/Mount for Flange Mount Motors		12842-04	
	*Flange Mount Bracing Set (included w/12855-07 only)	1	12842-41	
	10L Jacketed Flask		12850-02	★
2	15L Jacketed Flask	1	12850-04	★
	20L Jacketed Flask		12850-06	★
	200mm, 5 Neck Head	1	6530-28	★
	200mm CAPFE O-Ring	1	7855-884	◆
	200mm Quick-release Clamp	1	6517-31	★
	60mm Glass Cap	1	15312-30	★
3	60mm CAPFE O-Ring	1	7855-878	◆
	60mm Quick-release Clamp	1	6517-22	★
	19mm Stir Shaft Swivel Coupling, 3/8" Stir Motor Shaft	1	8126-19	★
	19mm Shaft Collar	1	8127-20	◆
	19mm PTFE Ace-Thred Bearing	1	8067-30	◆
	19mm Glass Stirring Shaft, 36" Length	1	8076-40	◆
4	5-1/2" O.D. Anchor Style Agitator	1	8091-20	◆
	5" O.D. 45° Agitator	1	8097-12	★
	Flush Seal Drain Valve w/CAPFE O-Ring	1	6472-245	★
5	*Flush Seal Drain Valve w/EPDM O-Ring (included w/12855-07 only)	1	6472-246	★
	2" Beaded Pipe Coupling	1	8856-11	★
6	1" Beaded Pipe Coupling	2	8856-07	★



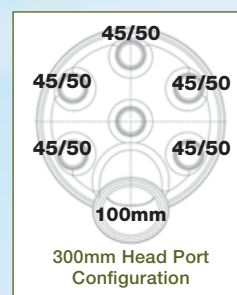
30L to 50L

Capacity (L)	for Flange Mount Motors	
30	12845-09	★
50	12845-11	★

No.	Description	Qty	Order Code
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Included Components

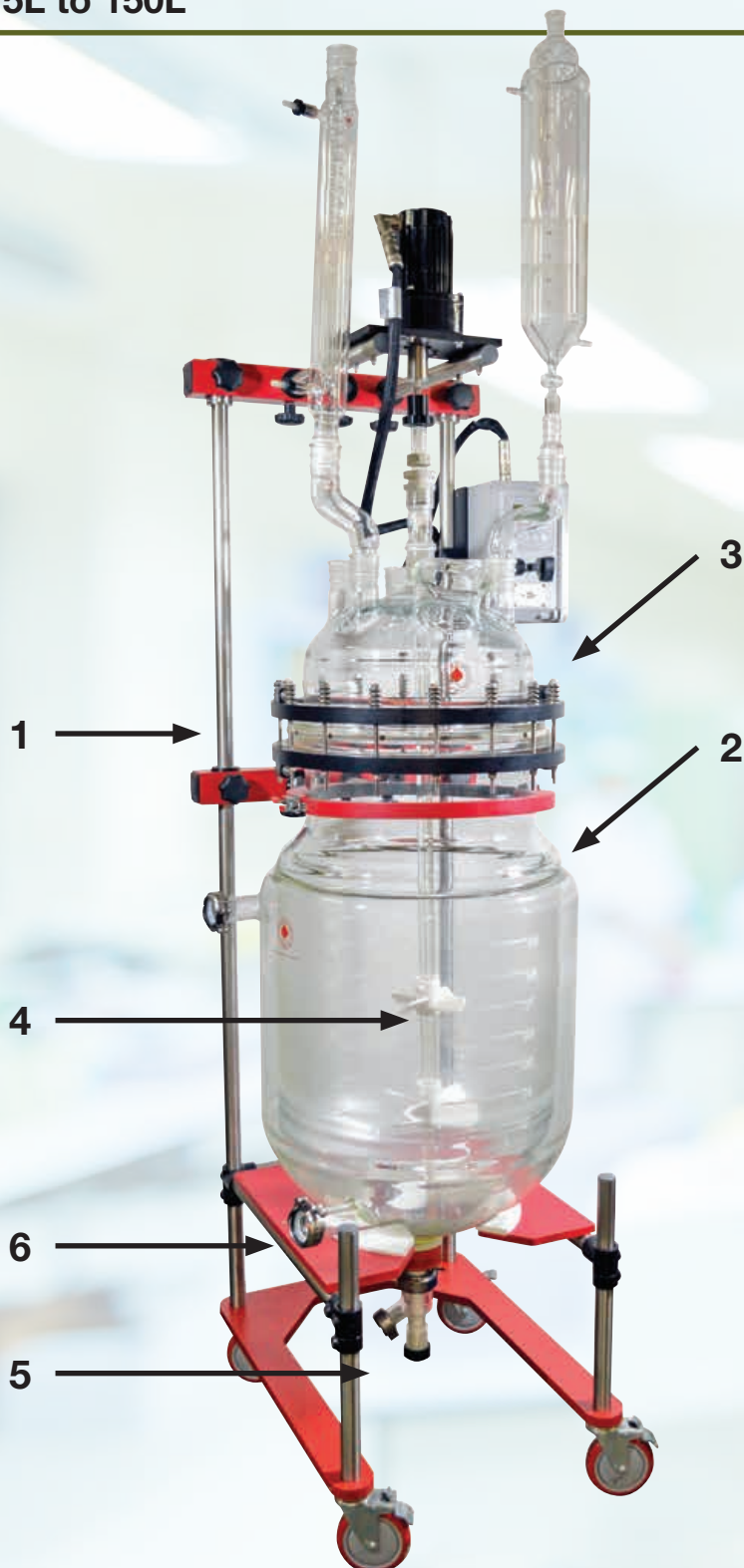
1	30-50L Universal Stand w/Mount for Flange Mount Motors	1	12842-06	
2	30L Jacketed Flask	1	12850-08	★
	50L Jacketed Flask		12850-10	★
	300mm, 7 Neck Head	1	6530-46	★
	300mm PTFE Flat Gasket	1	6525-51	★
	300mm KF Flat Flange Clamp	1	6525-30	★
3	100mm Glass Cap	1	15312-33	★
	100mm CAPFE O-Ring	1	7855-880	◆
	100mm Quick-release Clamp	1	6517-25	★
	28mm Shaft Collar	1	8127-28	◆
	28mm PTFE Ace-Thred Bearing	1	8067-105	★
	28mm Glass Stirring Shaft, 45" Length	1	8080-14	★
4	28mm Stir Shaft Swivel Coupling, 3/8" Stir Motor Shaft	1	8126-28	★
	8" O.D. Anchor Style Agitator	1	8101-38	★
	6" O.D. 45° Agitator	1	8093-35	★
5	Flush Seal Drain Valve w/CAPFE O-Ring and Pin	1	6482-20	★
	2" Beaded Pipe Coupling	1	8856-11	★
6	1-1/2" Beaded Pipe Coupling	2	8856-09	★



Note: only one size flask supplied per system

Jacketed Kilo Scale Reactor System

75L to 150L



Designed for maximum diversity and ease of use. A simple base system building platform which allows any reactor system to be customized using catalog or custom designed parts. Each system comes with the basic starting components required. Then simply select the motor and accessories needed to complete the setup to meet your needs. Complete your system with any of the many optional components we offer.

Jacketed Kilo Systems include:

- Universal Reactor Stand
- Jacketed Flask
- Head with Clamps and O-Rings
- Agitator, Shaft, Bearing & Collar
- Drain Valve
- Couplings

Working Temp Range (°C):

-60 to 200

Working Pressure Range (Torr):

Atm to 200

Max Jacket Pressure (PSIG):

8

Stand Dimensions (DxWxH):

27.5" x 24.25" x 96.25"

27.5" x 24.25" x 82.25" (Low-Profile)

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Flange



Note: Product is shown with optional accessories.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

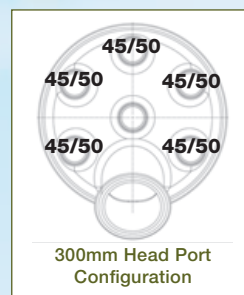
75L to 150L

Capacity (L)	for Flange Mount Motors	
75	12845-13	★
100	12845-15	★
100 (Low Profile)	12845-17	★
150	12845-19	★

No.	Description	Qty	Order Code
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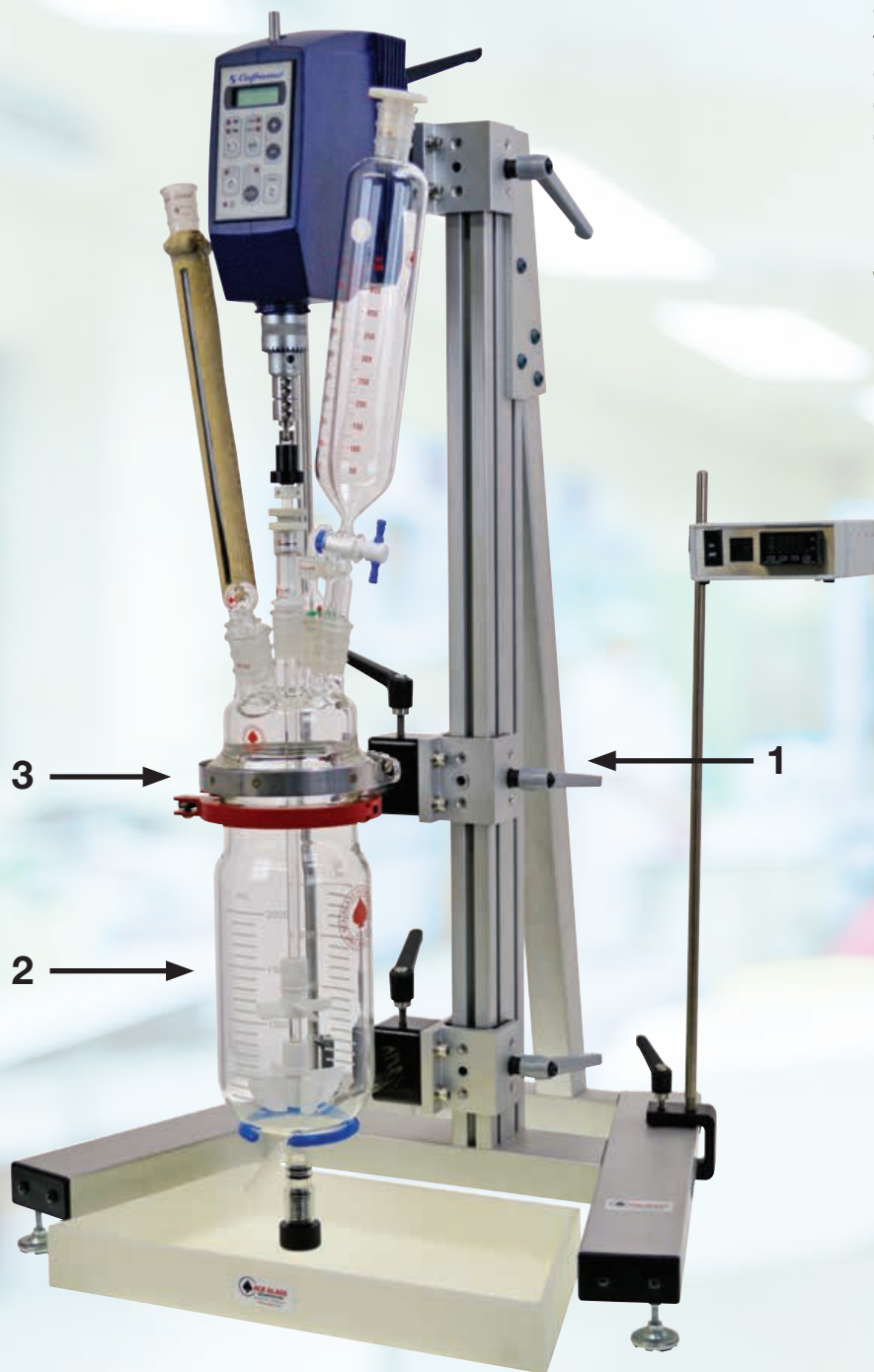
Included Components

	50-150L Stand w/Mount for 300mm Flange Mount Motors		12842-08	
1	100L Stand w/Mount for 400mm Flange Mount Motors	1	12842-10	
	50-150L Stand w/Mount for 400mm Flange Mount Motors		12842-12	
	75L Jacketed Flask		12850-12	★
2	100L Jacketed Flask	1	12850-14	★
	100L Jacketed Flask (Low Profile)		12850-15	★
	150L Jacketed Flask		12850-16	★
	300mm, 7 Neck Head	1	6530-46	★
	400mm, 7 Neck Head		6530-75	★
	300mm PTFE Flat Gasket	1	6525-51	★
	400mm PTFE Flat Gasket		6525-53	★
3	300mm KF Flat Flange Clamp	1	6525-30	★
	400mm KF Flat Flange Clamp		6525-33	
	100mm Glass Cap	1	15312-33	★
	100mm CAPFE O-Ring	1	7855-880	◆
	100mm Quick-release Clamp	1	6517-25	★
	28mm PTFE Ace-Thred Bearing	1	8067-105	★
	28mm Glass Stirring Shaft, 51" Length (100L Low-Profile)		8080-16	★
	28mm Glass Stirring Shaft, 65" Length (150L)	1	8080-27	★
	28mm Glass Stirring Shaft, 63" Length (75L, 100L)		8080-30	★
4	28mm Shaft Collar	1	8127-28	◆
	28mm Stir Shaft Swivel Coupling, 3/8" Stir Motor Shaft	1	8126-28	★
	8" O.D. Anchor Style Agitator w/Receptacle	1	8101-38	★
	6" O.D. 45° Agitator	2	8093-35	★
	Flush Seal Drain Valve w/CAPFE O-Ring and Pin	1	6482-20	★
5	2" Beaded Pipe Coupling	1	8856-11	★
6	1-1/2" Beaded Pipe Coupling	2	8856-09	★



UnJacketed Bench Scale Reactor System

100mL to 6000mL Base Systems w/Support Stand



Ace Glass Scale-Up Series™ reactor systems enable the researcher to scale-up from 100mL to 6000mL on the bench and enjoy the same geometry when replicating those results in our Kilo Scale reactors. Simply select the capacity you desire in the base system seen below. Complete your system with any of the many optional components we offer.

Scale-Up Systems include:

- Single Reactor Stand
- Bolt Latch Clamp
- Support Ring
- Unjacketed Flask with O-Ring and Clamp

Working Temp Range (°C):

ambient to 200

Working Pressure Range (Torr):

Atm to 0

Stand Dimensions (DxWxH):

(100mL-2000mL) 19.5" x 24.75" x 38"

(3000mL-6000mL) 19.5" x 24.75" x 48"

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Rod

Note: Product is shown with optional accessories.

100mL to 500mL

Capacity (mL)	Stand Height in	Order Code
100	38	6449-02 ★
250	38	6449-03 ★
500	38	6449-04 ★

1000mL to 2000mL

Capacity (mL)	Stand Height in	Order Code
1000	38	6449-05 ★
2000	38	6449-06 ★

3000mL to 6000mL

Capacity (mL)	Stand Height in	Order Code
3000	48	6449-07 ★
4000	48	6449-08 ★
5000	48	6449-09 ★
6000	48	6449-10 ★

No.	Description	Qty	Order Code
Included Components			
	Reactor Stand	1	12841-02
1	60mm Bolt Latch Clamp	1	6442-02 ★
	Small Support Ring	1	11177-13 ★
	100mL Unjacketed Flask		6447-02 ♠
2	250mL Unjacketed Flask	1	6447-04 ♠
	500mL Unjacketed Flask		6447-06 ♠
3	60mm CAPFE O-Ring	1	7855-878 ♠
	60mm Quick-release Clamp	1	6517-22 ★

Optional Components

	Dual Reactor Stand	1	12843-38
	60mm, 5 Neck Head	1	6443-02 ♠
	10 x 440mm Stirring Shaft	1	8075-32 ♠
	38mm 45° Agitator	1	8097-02 ★
	50mm Anchor Style Agitator	1	8091-02 ♠
	Debris Free, PTFE Bearing	1	13445-30 ★
	10mm Shaft Coupling Assembly	1	8126-24 ★
	Replacement Glass Plug, 10mm	1	6441-33 ★

No.	Description	Qty	Order Code
Included Components			
	Reactor Stand	1	12841-02
1	100mm Bolt Latch Clamp	1	6442-04 ★
	Medium Support Ring	1	11177-17 ★
	1000mL Unjacketed Flask		6447-08 ♠
2	2000mL Unjacketed Flask	1	6447-10 ♠
	100mm CAPFE O-Ring	1	7855-880 ♠
3	100mm Quick-release Clamp	1	6517-25 ★

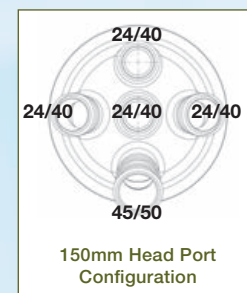
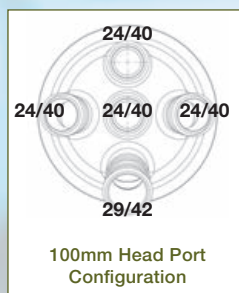
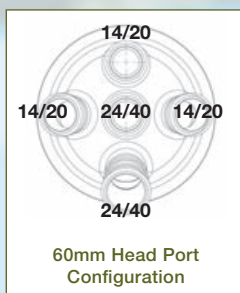
Optional Components

	Dual Reactor Stand	1	12843-38
	100mm, 5 Neck Head	1	6443-06 ♠
	10 x 440mm Stirring Shaft	1	8075-32 ♠
	64mm 45° Agitator	1	8097-04 ★
	90mm Anchor Style Agitator	1	8091-04 ♠
	Debris Free, PTFE Bearing	1	13445-30 ★
	10mm Shaft Coupling Assembly	1	8126-24 ★
	Replacement Glass Plug, 10mm	1	6441-33 ★
	pH Probe	1	5277-10
	pH Probe Holder (2000mL only)	1	5277-02 ★

No.	Description	Qty	Order Code
Included Components			
	Reactor Stand	1	12841-01
1	150mm Bolt Latch Clamp	1	6442-06 ★
	Large Support Ring (3000-4000mL)		11177-19 ★
	XL Support Ring (5000-6000mL)	1	11177-21 ★
	3000mL Unjacketed Flask		6447-12 ♠
2	4000mL Unjacketed Flask	1	6447-14 ★
	5000mL Unjacketed Flask		6447-16 ★
	6000mL Unjacketed Flask		6447-18 ★
3	150mm CAPFE O-Ring	1	7855-881 ♠
	150mm Quick-release Clamp		6517-27 ★

Optional Components

	Dual Reactor Stand	1	12843-38
	150mm, 5 Neck Head	1	6443-12 ♠
	10 x 560mm Stirring Shaft	1	8075-38 ♠
	76mm 45° Agitator	1	8097-06 ★
	90mm Anchor Style Agitator	1	8091-04 ♠
	Debris Free, PTFE Bearing	1	13445-30 ★
	10mm Shaft Coupling Assembly	1	8126-24 ★
	Replacement Glass Plug, 10mm	1	6441-33 ★
	pH Probe	1	5277-10
	pH Probe Holder	1	5277-02 ★



1L Unjacketed Bench Scale Reactor



Note: This reactor is available with bottom outlet on flask; call or e-mail for price.

- 4" diameter flange on flask and head with CAPFE (PTFE encapsulated silicone rubber) O-Ring and Quick-Release clamp facilitate assembly/disassembly and removal of contents.
- All glass and PTFE wetted components.
- PTFE joint sleeves and valves, and FETFE O-Rings for high-purity, grease-free system with high chemical resistance.
- Suitable for high-vacuum situations.
- Overhead mechanical stirring with 10 mm diameter glass stirring shaft, PTFE multi-paddle agitator, flexible shaft, and variable speed motor with controller.
- Electric heating mantle with digital temperature controller and Type "J" PTFE-covered thermoprobe for operation from room temperature to 200°C
- 125mL pressure equalizing addition funnel
- Reflux condenser
- Support stand, clamps, clamp holders, and joint clips

1 Liter System components:

	Order Code	
FLASK, 1-liter, Cylindrical, 4" (100mm) Grooved Flange with CAPFE O-Ring	6521-10	♣
HEAD, 4" (100mm) 3/4" Center Neck, (3) 3/4" Side Necks	6528-31	♣
CLAMP, Quick Release, 4"	6517-25	★
CONDENSER, 3/4", 300mm Jacket Length with Ace-Safe Connectors	5946-118	♣
FUNNEL, Addition, 125mL, Pressure Equalizing, 3/4" Joints	7298-05	♣
STIRRING SHAFT, 10mm, Polished with Ring, 44cm	8075-32	♣
AGITATOR, PTFE, 4-Blade Multi-paddle, 64mm dia.	8089-06	♣
BEARING, 10mm, PTFE, 3/4", Complete	8066-43	♣
Swivel Coupling, 10mm stir shaft, 1/4" stir motor shaft	8126-10	
STIRRING MOTOR & CONTROLLER, Reversible, Variable Speed, Complete	13649-19	
FLEXIBLE SHAFT, 91.4cm (36")	8081-30	★
HEATING MANTLE, Aluminum Housed, 335w, 115v	12058-12	
TEMP. CONTROLLER, Digital, Type "J," 120 volts	12125-14	★
THERMOPROBE, Type "J," 1/4" O.D. x 12" long, PTFE covered	12141-25	★
THERMOPROBE, Lead Only, Detachable, Type "J"	12141-80	★
ADAPTER, Offset, 3/4"-#7, Complete	5032-22	♣
ADAPTER, 3/4", 2mm Bore PTFE Stopcock	5202-12	♣
ADAPTER, Offset, 3/4"-3/4"	5268-10	♣
STOPPER, Glass 3/4" (3)	8250-12	♣
SLEEVES, PTFE 3/4", Pkg/3 (2)	7642-11	★
JOINT CLIPS, Plastic 3/4", Pkg/10	7598-24	★
SUPPORT STAND, 29" High x 5/8" Dia. Rod, "U" Base	13586-10	★
CLAMP, Three-jaw, Medium	11067-14	★
CLAMP HOLDER, Regular (3)	11080-19	★
COMPLETE	6542-12	★

2L Unjacketed Bench Scale Reactor

- 4" diameter flange on flask and head with CAPFE (PTFE encapsulated silicone rubber) O-Ring and Quick-Release clamp facilitate assembly/disassembly and removal of contents.
- All glass and PTFE wetted components.
- PTFE joint sleeves and valves, and FETFE O-Rings for high-purity, grease-free system with high chemical resistance.
- Suitable for high-vacuum situations.
- Overhead mechanical stirring with 10mm diameter glass stirring shaft, PTFE multi-paddle agitator, flexible shaft, and variable speed motor with controller.
- Electric heating mantle with digital temperature controller and Type "J" PTFE-covered thermoprobe for operation from room temperature to 200°C
- 125mL pressure equalizing addition funnel
- Reflux condenser
- Support stand, clamps, clamp holders, and joint clips

2 Liter System components:

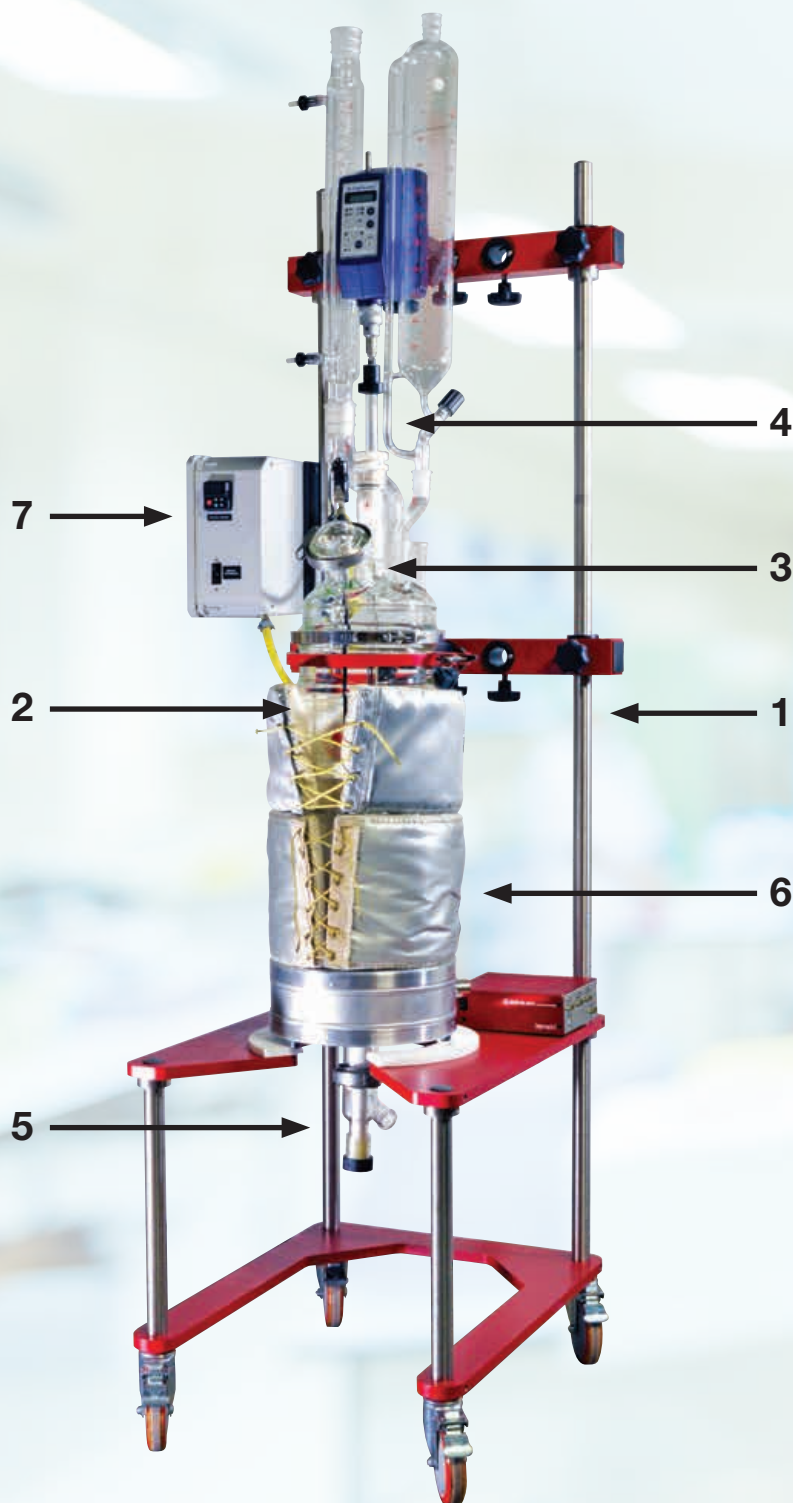
	Order Code	
FLASK, 2-liter, Cylindrical, 4" (100mm) Grooved Flange with CAPFE O-Ring	6521-12	♣
HEAD, 4" (100mm) 3/4" Center Neck, (3) 3/4" Side Necks	6528-31	♣
CLAMP, Quick Release, 4"	6517-25	★
CONDENSER, 3/4"/40, 300mm Jacket Length with Ace-Safe Connectors	5946-118	♣
FUNNEL, Addition, 125mL, Pressure Equalizing, 3/4"/40 Joints	7298-05	♣
STIRRING SHAFT, 10mm, Polished with Ring, 58cm	8075-34	♣
AGITATOR, PTFE, 4-Blade Multi-paddle, 64mm dia.	8089-06	♣
BEARING, 10mm, PTFE, 3/4"/40, Complete	8066-43	♣
Swivel Coupling, 10mm stir shaft, 1/4" stir motor shaft	8126-10	
STIRRING MOTOR & CONTROLLER, Reversible, Variable Speed, Complete	13649-19	
FLEXIBLE SHAFT, 91.4cm (36")	8081-30	★
HEATING MANTLE, Aluminum Housed, 450w, 115v	6478-51	
TEMP. CONTROLLER, Digital, Type "J," 120 volts	12125-14	★
THERMOPROBE, Type "J," 1/4" O.D. x 12" long, PTFE covered	12141-25	★
THERMOPROBE, Lead Only, Detachable, Type "J"	12141-80	★
ADAPTER, Offset, 3/4"/40-#7, Complete	5032-22	♣
ADAPTER, 3/4"/40, 2mm Bore PTFE Stopcock	5202-12	♣
ADAPTER, Offset, 3/4"/40-3/4"/40	5268-10	♣
STOPPER, Glass 3/4"/40 (3)	8250-12	♣
SLEEVES, PTFE 3/4"/40, Pkg/3 (2)	7642-11	★
JOINT CLIPS, Plastic 3/4"/40, Pkg/10	7598-24	★
SUPPORT STAND, 36" High x 5/8" Dia. Rod, "U" Base	13586-13	★
CLAMP, Three-jaw, Medium	11067-14	★
CLAMP HOLDER, Regular (3)	11080-19	★
COMPLETE	6542-25	★



Note: This reactor is available with bottom outlet on flask; call or e-mail for price.

Unjacketed Kilo Scale Reactor Systems

10L & 20L Reactors w/Support Stand



Universal open frame stand design allows for maximum clearance and access to the ports on the head. To allow for scale up, the frame has been designed to be fitted with vessels from 10L to 200L in size. For versatility, our systems have been designed with a working temperature range of ambient through 200°C, and wetted surfaces of borosilicate glass and PTFE.

Unjacketed Kilo Systems include:

- Universal Reactor Stand
- Unjacketed Flask
- Head, Coupling and O-Rings
- Agitator, Stir Shaft, Bearing & Collar
- Lid and Clamp
- Bottom Drain Valve
- Heating Mantle
- Temperature Controller with Probe
- Cooling/Heating Coil (*not pictured*)

Working Temp Range (°C):

ambient to 200

Working Pressure Range (Torr):

Atm to 0

Stand Dimensions (DxWxH):

27.5" x 24.25" x 82.25"

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Rod or Flange

12846-13



12846-15



Note: Product is shown with optional accessories.

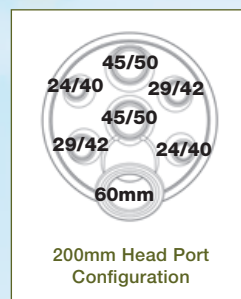
Supplied with PTFE-Clad copper tubing (not shown); available in Hastelloy® C-276 or 316 stainless steel.

10L to 20L

Capacity (L)	Base Systems for Rod Mounted Motors		Base Systems for Flange Mount Motors	
10	12846-12	★	12846-13	★
20	12846-14	★	12846-15	★

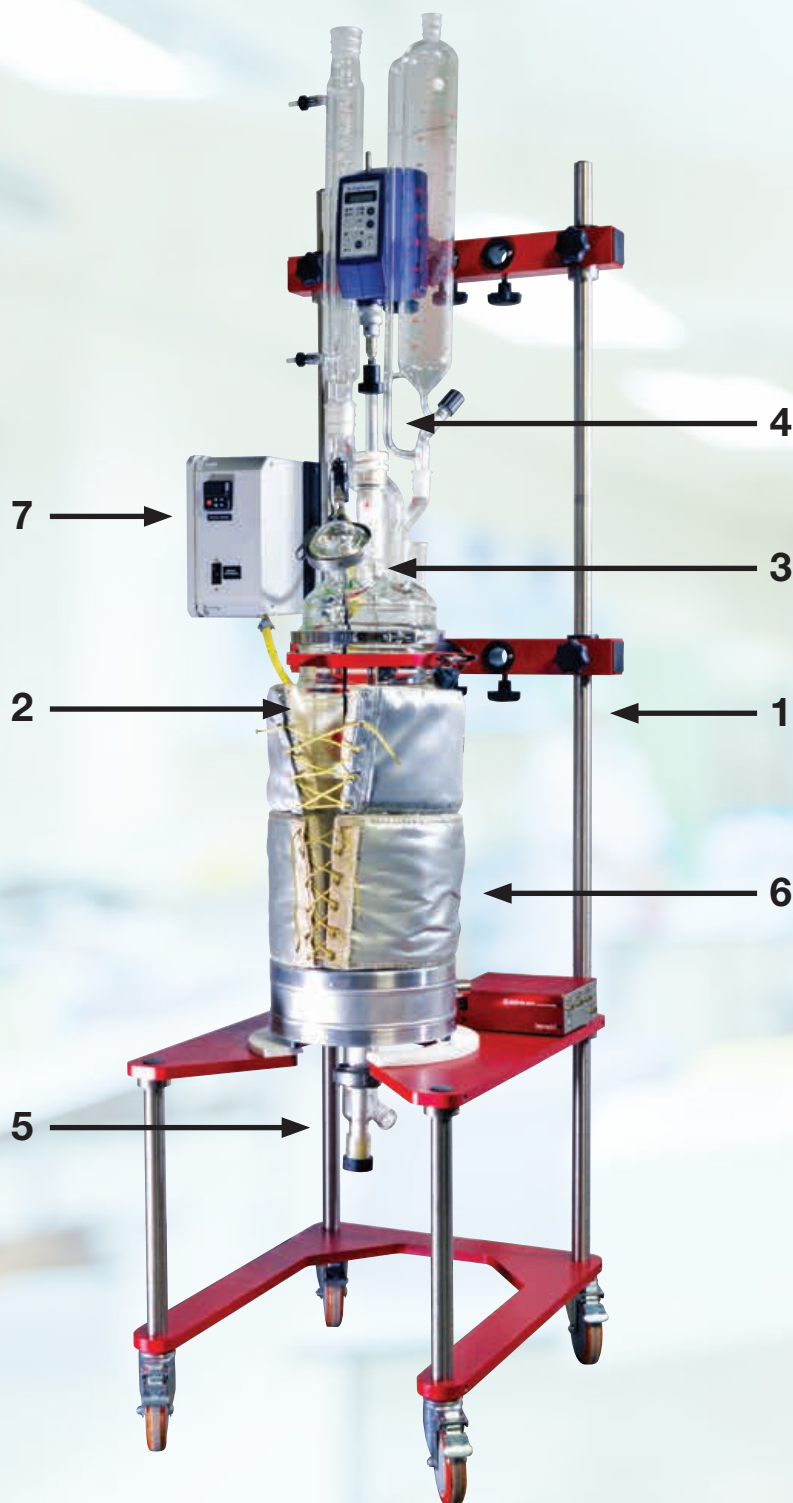
Included Components

No.	Description	Qty	Order Code
1	10-20L Universal Stand w/Mount for Rod Mount Motors	1	12842-02
	10-20L Universal Stand w/Mount for Flange Mount Motors		12842-04
2	10L Unjacketed Flask w/Flush Seal Valve	1	6522-81 ★
	20L Unjacketed Flask w/Flush Seal Valve		6472-02 ★
3	200mm, 7 Neck Head	1	6530-37 ★
	200mm CAPFE O-Ring	1	7855-884 ♠
	200mm Quick-release Clamp	1	6517-31 ★
	60mm Glass Cap	1	15312-30 ★
	60mm CAPFE O-Ring	1	7855-878 ♠
	60mm Quick-release Clamp	1	6517-22 ★
	19mm Glass Stirring Shaft, 36" Length	1	8076-40 ♠
	19mm Shaft Collar	1	8127-20 ♠
4	19mm PTFE Ace-Thred Bearing	1	8067-30 ♠
	4" O.D. Multi-paddle Style Lower Agitator	1	8091-10 ♠
	4" O.D. Upper Turbine	1	8093-12 ♠
	19mm Shaft Coupling	1	8126-19 ★
5	Flush Seal Drain Valve w/CAPFE O-Ring	1	6472-245 ★
	2" Beaded Pipe Coupling	1	8856-11 ★
6	180 Watt Aluminum Heating Mantle w/Hole, 115VAC (10L Only)	1	12053-50
	495 Watt Girdle Mantle, 115VAC (10L Only)	2	12041-10
	250 Watt Aluminum Heating Mantle w/Hole, 115VAC (20L Only)	1	12053-64
	770 Watt Girdle Mantle, 115VAC (20L Only)	2	12041-12
7	Pilot Plant Temperature Controller, 120VAC, 4 Circuit	1	13552-02
	1/4 x 24" PFA Coated Type "J" Thermocouple	1	12141-26 ★
	Type "J" Coiled Thermocouple Extension Cord	1	12141-80 ★
	#25 to 45/50 Probe Adapter	1	5279-10 ★
8	Heat Exchange Cooling Coil, PTFE-Clad Copper (10L Only)	1	12067-39 ★
	Heat Exchange Cooling Coil, PTFE-Clad Copper (20L Only)	1	12067-48 ★
	24/40 to #7 Ace-Thred Adapter	2	5028-30 ♠



Unjacketed Kilo Scale Reactor Systems

30L & 50L Reactors w/Support Stand



Universal open frame stand design allows for maximum clearance and access to the ports on the head. To allow for scale up, the frame has been designed to be fitted with vessels from 10L to 200L in size. For versatility, our systems have been designed with a working temperature range of ambient through 200°C, and wetted surfaces of borosilicate glass and PTFE.

Unjacketed Kilo Systems include:

- Universal Reactor Stand
- Unjacketed Flask
- Head, Coupling and O-Rings
- Agitator, Stir Shaft, Bearing & Collar
- Lid and Clamp
- Bottom Drain Valve
- Heating Mantle
- Temperature Controller with Probe
- Cooling/Heating Coil (*not pictured*)

Working Temp Range (°C):

ambient to 200

Working Pressure Range (Torr):

Atm to 50

Stand Dimensions (DxWxH):

27.5" x 24.25" x 82.25"

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Flange

12846-17



12846-19



Note: Product is shown with optional accessories.

Supplied with PTFE-Clad copper tubing (not shown); available in Hastelloy® C-276 or 316 stainless steel.

30L to 50L

Capacity (L)	Base Systems for Flange Mount Motors	
30	12846-17	★
50	12846-19	★

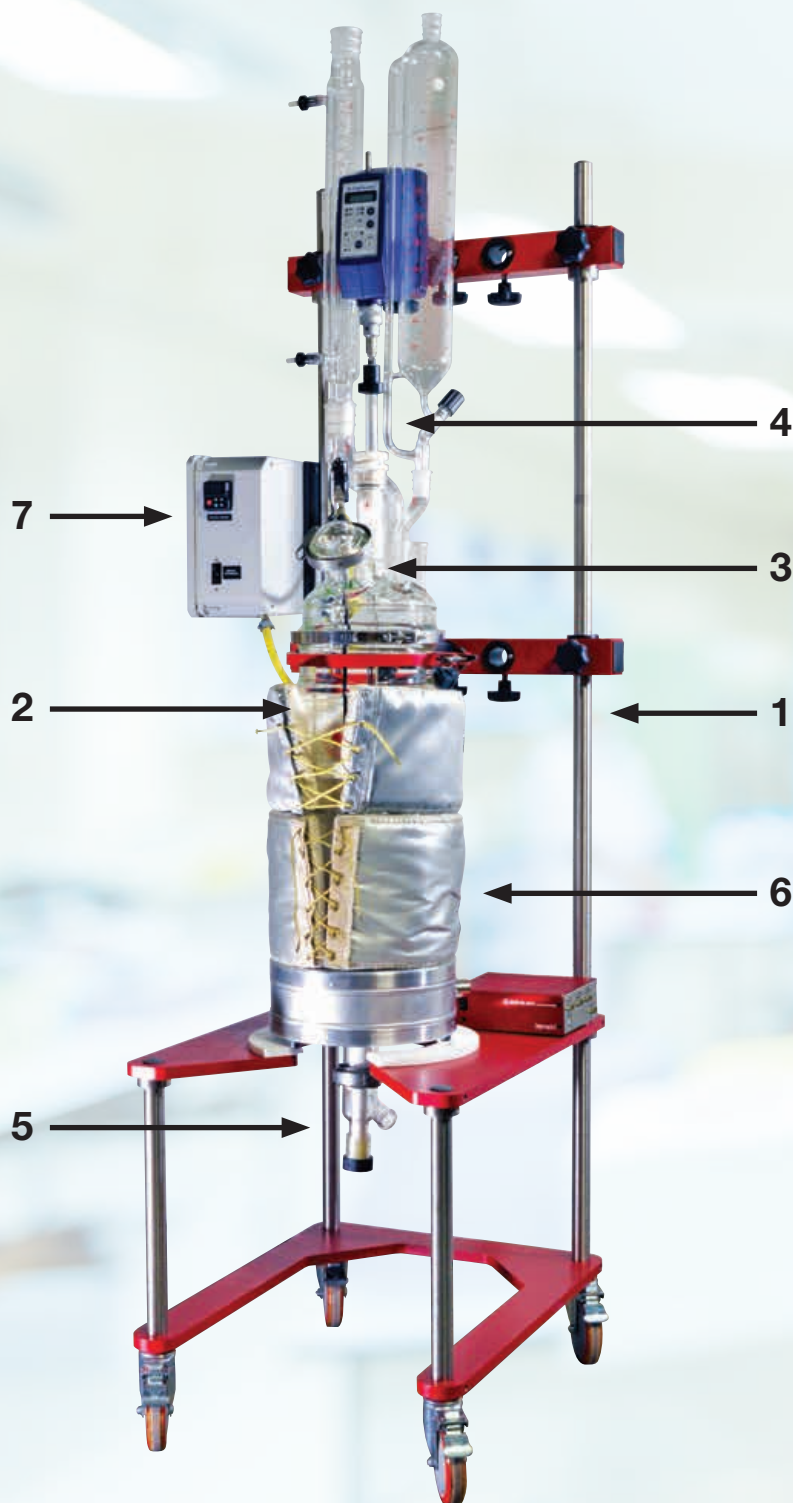
Included Components

No.	Description	Qty	Order Code
1	30-50L Universal Stand w/Mount for Flange Mount Motors		12842-06
2	30L Unjacketed Flask w/Flush Seal Valve	1	6472-241 ★
	50L Unjacketed Flask w/Flush Seal Valve		6472-242 ★
	300mm, 7 Neck Head	1	6530-45 ★
	300mm PTFE Gasket	1	6525-51 ★
	300mm Flange Clamp	1	6525-30 ★
3	Torque Wrench, 30 in-lbs.	1	6525-60 ★
	1/4" Socket	1	6525-61 ★
	100mm Glass Cap	1	15312-33 ★
	100mm CAPFE O-Ring	1	7855-880 ♦
	100mm Quick-release Clamp	1	6517-25 ★
	28mm Glass Stirring Shaft, 52in Length	1	8080-18 ★
	28mm Shaft Collar	1	8127-28 ♦
4	28mm PTFE Ace-Thred Bearing	1	8067-105 ★
	8" O.D. Multi-paddle Style Lower Agitator w/Receptacle	1	8101-38 ★
	6" O.D. Upper Turbine, 45 Degree	1	8093-35 ★
	28mm Shaft Coupling	1	8126-28 ★
5	Flush Seal Drain Valve w/CAPFE O-Ring and Top Pin	1	6482-20 ★
	2" Beaded Pipe Coupling	1	8856-11 ★
6	Aluminum Heating Mantle w/Hole (120V - 30L & 240V - 50L)	1	12053
	Fabric Girdle Mantle ((1) 120V - 30L & (2) 240V - 50L)		12041
	Pilot Plant Temperature Controller (120V - 30L & 240V - 50L)	1	13552
7	1/4 x 48" PFA Coated Type "J" Thermocouple	1	12141-29 ★
	Type "J" Coiled Thermocouple Extension Cord	1	12141-80 ★
	#25 to 45/50 Probe Adapter	1	5279-10 ★
	Heat Exchange Cooling Coil, PTFE-Clad Copper (30L Only)	1	12067-40 ★
8	Heat Exchange Cooling Coil, PTFE-Clad Copper (50L Only)	1	12067-44 ★
	29/42 to #15 Ace-Thred Adapter	2	5030-42 ♦



Unjacketed Kilo Scale Reactor Systems

100L Reactors w/Support Stand



Universal open frame stand design allows for maximum clearance and access to the ports on the head. To allow for scale up, the frame has been designed to be fitted with vessels from 10L to 200L in size. For versatility, our systems have been designed with a working temperature range of ambient through 200°C, and wetted surfaces of borosilicate glass and PTFE.

Unjacketed Kilo Systems include:

- Universal Reactor Stand
- Unjacketed Flask
- Head, Coupling and O-Rings
- Agitator, Stir Shaft, Bearing & Collar
- Lid and Clamp
- Bottom Drain Valve
- Heating Mantle
- Temperature Controller with Probe
- Cooling/Heating Coil (*not pictured*)

Working Temp Range (°C):

ambient to 200

Working Pressure Range (Torr):

Atm to 200

Stand Dimensions (DxWxH):

27.5" x 24.25" x 96.25"

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Flange

12846-21



Note: Product is shown with optional accessories.

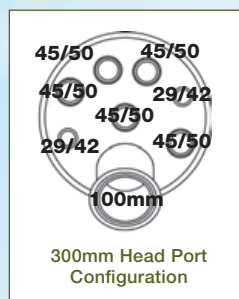
Supplied with PTFE-Clad copper tubing (not shown); available in Hastelloy® C-276 or 316 stainless steel.

100L only

Capacity (L)	Base Systems for Flange Mount Motors	
100	12846-21	★

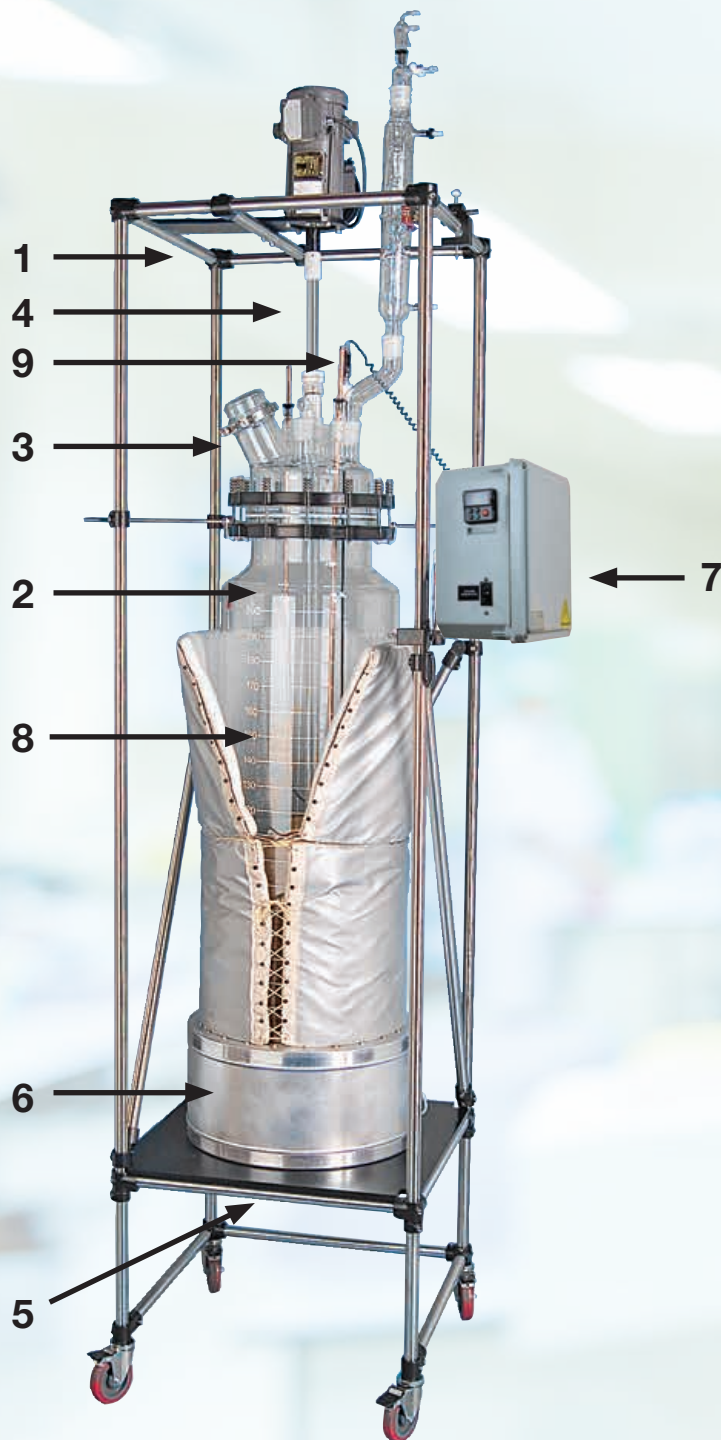
Included Components

No.	Description	Qty	Order Code
1	50-150L Universal Stand w/Mount for Flange Mount Motors	1	12842-08
2	100L Unjacketed Flask w/Flush Seal Valve	1	6473-05 ★
	300mm, 7 Neck Head	1	6530-45 ★
	300mm PTFE Gasket	1	6525-51 ★
	300mm Flange Clamp	1	6525-30 ★
3	Torque Wrench, 30 in-lbs.	1	6525-60 ★
	1/4" Socket	1	6525-61 ★
	100mm Glass Cap	1	15312-33 ★
	100mm CAPFE O-Ring	1	7855-880 ♦
	100mm Quick-release Clamp	1	6517-25 ★
	28mm Glass Stirring Shaft, 58in Length	1	8080-22 ★
	28mm Shaft Collar	1	8127-28 ♦
4	28mm PTFE Ace-Thred Bearing	1	8067-105 ★
	8" O.D. Multi-paddle Style Lower Agitator w/Receptacle	1	8101-38 ★
	6" O.D. Upper Turbine, 45 Degree	1	8093-35 ★
	28mm Shaft Coupling	1	8126-28 ★
5	Flush Seal Drain Valve w/CAPFE O-Ring and Top Pin	1	6482-20 ★
	2" Beaded Pipe Coupling	1	8856-11 ★
6	775 Watt Aluminum Heating Mantle w/Hole, 230VAC	1	12053-75
	1100 Watt Girdle Mantle, 4 Circuit, 230VAC	1	12041-53
	Pilot Plant Temperature Controller, 240VAC, 5 Circuit	1	13552-08
7	1/4 x 48" PFA Coated Type "J" Thermocouple	1	12141-29 ★
	Type "J" Coiled Thermocouple Extension Cord	1	12141-80 ★
8	Heat Exchange Cooling Coil, PTFE-Clad Copper	1	12067-79 ★
	29/42 to #15 Ace-Thred Adapter	2	5030-42 ♦
9	#25 to 45/50 Probe Adapter	1	5279-10 ★



Unjacketed Kilo Scale Reactor Systems

200L Reactors w/Support Stand



Black epoxy-coated aluminum flask support plate is adjustable vertically, to allow room under flask for various outlet receptacles. Plate is supplied with three adjustable braces to hold mantle in place. Upper support brackets supplied to stabilize flask.

Unjacketed Kilo Systems include:

- 4 Post Reactor Stand
- Unjacketed Flask
- Head, Coupling and O-Rings
- Agitator, Stir Shaft, Bearing & Collar
- Lid and Clamp
- Bottom Drain Valve
- Heating Mantle
- Temperature Controller with Probe
- Cooling/Heating Coil (*not pictured*)

Working Temp Range (°C):

ambient to 200

Working Pressure Range (Torr):

Atm to 200

Stand Dimensions (DxWxH):

32" x 32" x 118"

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Flange

12846-23



Note: Product is shown with optional accessories.

Supplied with PTFE-Clad copper tubing (not shown); available in Hastelloy® C-276 or 316 stainless steel.

200L only

Capacity (L)	Base Systems for Flange Mount Motors	
200	12846-23	★

Included Components

No.	Description	Qty	Order Code
1	200L Support Frame	1	6473-37 ★
2	200L Unjacketed Flask w/Flush Seal Valve	1	6473-11 ★
	300mm, 7 Neck Head	1	6530-45 ★
	300mm PTFE Gasket	1	6525-51 ★
	300mm Flange Clamp	1	6525-30 ★
3	Torque Wrench, 30 in-lbs.	1	6525-60 ★
	1/4" Socket	1	6525-61 ★
	100mm Glass Cap	1	15312-33 ★
	100mm CAPFE O-Ring	1	7855-880 ♠
	100mm Quick-release Clamp	1	6517-25 ★
	28mm Glass Stirring Shaft, 82in Length	1	8080-25 ★
	28mm Shaft Collar	1	8127-28 ♠
4	28mm PTFE Ace-Thred Bearing	1	8067-105 ★
	8" O.D. Multi-paddle Style Lower Agitator w/Receptacle	1	8101-38 ★
	6" O.D. Upper Turbine, 45 Degree	2	8093-35 ★
	28mm Shaft Coupling	1	8126-28 ★
5	Flush Seal Drain Valve w/CAPFE O-Ring and Top Pin	1	6482-20 ★
	2" Beaded Pipe Coupling	1	8856-11 ★
6	775 Watt Aluminum Heating Mantle w/Hole, 230VAC	1	12053-75
	2200 Total Watt Girdle Mantle, 2 Circuit, 230VAC	2	12041-53
	Pilot Plant Temperature Controller, 240VAC, 5 Circuit	1	13552-08
7	1/4 x 72" PFA Coated Type "J" Thermocouple	1	12141-30 ★
	Type "J" Coiled Thermocouple Extension Cord	1	12141-80 ★
8	Heat Exchange Cooling Coil, PTFE-Clad Copper	1	12067-80 ★
	29/42 to #15 Ace-Thred Adapter	2	5030-42 ♠
9	#25 to 45/50 Probe Adapter	1	5279-10 ★



Unjacketed Spherical Reactor Systems

12L & 22L Reactors w/Support Stand

- ♦ *Elevated mantle support*
- ♦ *Temperature controlled heating mantle*
- ♦ *Bottom outlet*

Complete self-supporting pilot plant assembly. Needs only to be located near electrical outlet. When not in use, entire assembly can be moved intact, without breakdown.

Features

- Flask with 4" (10.2cm) center opening, two 45/50 side necks, one #7 Ace-Thred thermometer opening, and one 28/15 ball joint take-off at bottom.
- Electric stirring motor, Cat. No. 13649-07, is self-standing on flask-mounted motor mount (air motor also available).
- With PID Digital readout temperature controller, and PFA coated "J" thermoprobe for better temperature control.
- Bottom heating mantle
- Flat-sided powder funnel offers easier additions.
- Rugged, steel-reinforced PTFE stirring rod needs no lubrication. Turns in a precision Trubore® economy bearing. The PTFE paddle agitator is removable for cleaning.
- Mantle supports raise the mantle about 36" (91.4cm) to allow easy access to bottom of flask.
- Approximate overall height: 71"; Base width: 28"



	12 Liter		22 Liter	
	Order Code		Order Code	
FLASK, Center Neck 10.2cm Flange, Two 45/50 Side Necks, One #7 Ace-Thred and One 28/15 Ball Outlet At Bottom	6469-16	♣	6469-18	♣
HEAD, 45/50	6469-26	♣	6469-26	♣
GASKET, PTFE	6495-10	♣	6495-10	♣
CHUCK, Flex-Grip	8124-10	♣	8124-15	♣
ROD, PTFE w/Stainless Steel Core	8071-07	♣	8079-03	★
AGITATOR, PTFE Paddle	8089-08	♣	8091-10	♣
MOTOR, only	13649-07		13649-07	
MOTOR MOUNT	6469-30	★	6469-32	★
MOTOR CONTROLLER, only	13530-10	★	13530-10	★
BEARING, Economy, 45/50	8042-121	♣	8065-64	♣
CLAMP, Head, Aluminum	6468-13	★	6468-13	★
ADAPTER, Stopcock, 28/15, PTFE, 6mm Bore	6469-40	♣	6469-40	♣
TEMPERATURE CONTROLLER	12126-24	★	12126-24	★
SENSOR, PFA Coated, 12" x 1/4"	12141-25	★	12141-25	★
SENSOR LEAD, only, Type "J"	12141-80	★	12141-80	★
FUNNEL, Powder, 45/50	6469-52	♣	6469-52	♣
STOPPER, 45/50	8250-20	♣	8250-20	♣
CLAMP, 28/15	7666-15	♣	7666-15	♣
CLAMP Holder, Regular	11080-19	★	11080-19	★
MANTLE, Heating, w/Hole	12044-28		12044-30	
MANTLE, Support	12097-45		12097-47	
Complete	6469-62	★	6469-67	★

Temperature range:
Ambient +5° to 200°C

**Flask with Sink Valve
or Zero Dead Space Valve
available upon request.**

ACE Reaction Assemblies are available as listed. If you require a design change, or just a modification, we'll fabricate to order.

E-mail, phone, or fax for a quotation.

Unjacketed Spherical Reactor Systems

12L, 22L, 50L & 72L Reactors w/Support Stand

- ♦ *Rugged, steel-reinforced PTFE stirring rod*
- ♦ *Heavy duty mechanical lab stirrer*
- ♦ *Temperature controlled heating mantle*

Complete reaction assembly using standard ACE reaction equipment. The 12L through 72L flasks have three $\$65/40$ in-line spherical joints and two $\$29/42$ standard taper joints.

Features

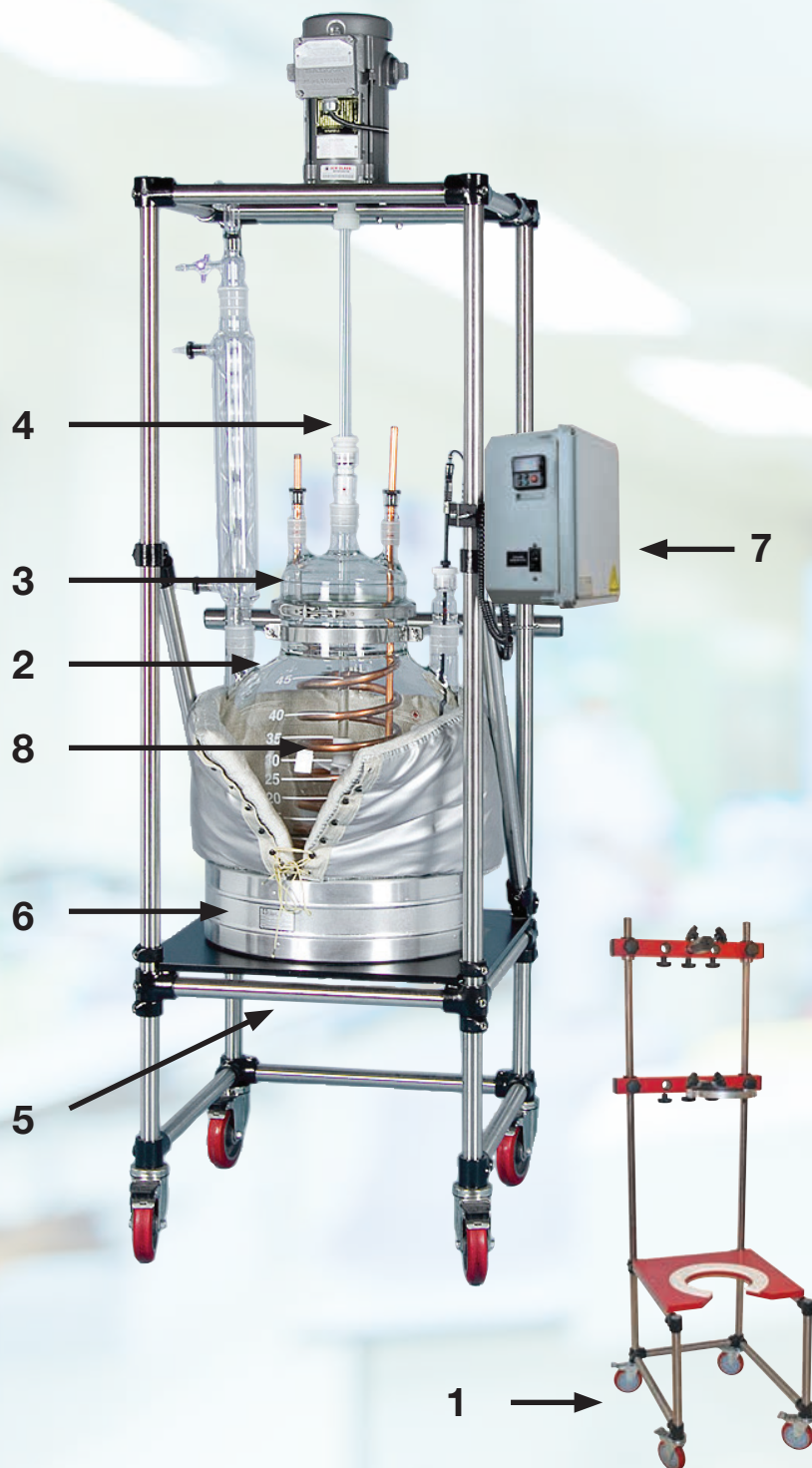
- Full range of pilot-size flasks from 12L to 72L with spherical and standard taper joints.
- Rugged 19mm diameter, steel-reinforced PTFE stirring rod needs no lubrication. Runs in a precision Trubore™ bearing. The PTFE paddle is removable, and other interchangeable agitators available from ACE may be substituted.
- The 12L assembly has a 10mm diameter steel-reinforced PTFE rod, as well as a 10mm bearing, chuck, and paddle.
- Highly efficient 6016 condenser is attached directly to $\$65/40$ side joint.
- Thermowell depth is completely adjustable via an Ace-Thred adapter.
- Unit as supplied has a heavy-duty mechanical lab stirrer; for situations that call for non-electric motors, ACE can supply a compact air-driven motor and support. Call or e-mail for a quotation.
- Heavy-duty bottom heating mantle.
- Approximate overall height: 12L and 22L – 59"; 50L and 72L – 63"



	12 Liter			22 Liter			50 Liter			72 Liter		
	Order Code			Order Code			Order Code			Order Code		
FLASK, Center and Two Side $\$65/40$, Two $\$29/42$	6470-20	♦		6470-24	♦		6470-26	★		6470-28	★	
CONDENSER, Pilot Plant	6016-75	★		6016-77	★		6016-79	★		6016-79	★	
BEARING, $\$65/40$, Water-Cooled	8040-55	♦		8060-10	♦		8060-10	♦		8060-10	♦	
ROD, PTFE w/Stainless Steel Core	8071-10	♦		8079-05	★		8079-10	★		8079-10	★	
AGITATOR, PTFE, Single Blade	8088-10	♦		8092-10	♦		8092-10	♦		8092-10	♦	
CHUCK	8126-10	★		8126-22	★		8126-22	★		8126-22	★	
FUNNEL, Pressure Equalizing, $\$24/40$, 1000mL	7297-37	♦		7297-37	♦		7297-37	♦		7297-37	♦	
STOPPER, $\$24/40$	8250-12	♦		8250-12	♦		8250-12	♦		8250-12	♦	
ADAPTER, $\$24/40$ - $\$65/40$	5025-24	♦		5025-24	♦		5025-24	♦		5025-24	♦	
ADAPTER, Maxi $\$29/42$	5030-42	♦		5030-42	♦		5030-42	♦		5030-42	♦	
ADAPTER, Midi $\$29/42$	5030-24	♦		5030-24	♦		5030-24	♦		5030-24	♦	
THERMOWELL, 10mm O.D.	6470-42	♦		6470-44	♦		6470-46	♦		6470-46	♦	
OVERHEAD STIRRER	13565-10	★		13565-10	★		13565-10	★		13565-10	★	
CLAMPS, $\$65/40$ Union Type (3)	7666-30	♦		7666-30	♦		7666-30	♦		7666-30	♦	
HEATING MANTLE, Alum. Housing	12043-27			12043-29			12043-31			12043-33		
MANTLE SUPPORT	12097-08			12097-10			12097-12			12097-14		
TEMPERATURE CONTROLLER	12126-45	★		12126-45	★		13552-04			13552-06	★	
Complete	6470-60	★		6470-64	★		6470-68	★		6470-72	★	

Unjacketed Spherical Reactor Systems

50L, 72L & 100L Reactors w/Support Stand



Universal open frame stand design allows for maximum clearance and access to the ports on the head. To allow for scale up, the frame has been designed to be fitted with vessels from 10L to 200L in size. For versatility, our systems have been designed with a working temperature range of ambient through 200°C, and wetted surfaces of borosilicate glass and PTFE.

Unjacketed Kilo Systems include:

- 4 Post Reactor Stand
- Unjacketed Spherical Flask
- Head, Coupling and O-Rings
- Agitator, Stir Shaft, Bearing & Collar
- Lid and Clamp
- Bottom Drain Valve
- Heating Mantle
- Temperature Controller with Probe
- Cooling/Heating Coil (*not pictured*)

Working Temp Range (°C):

ambient to 200

Working Pressure Range (Torr):

Atm to 0

Stand Dimensions (DxWxH):

27.5" x 24.25" x 96.25"

Wetted Surfaces:

Borosilicate glass, PTFE

Motor Mounts:

Flange

Note: Product is shown with optional accessories.

Supplied with PTFE-Clad copper tubing (not shown); available in Hastelloy® C-276 or 316 stainless steel.

50L, 72L & 100L

Capacity (L)	Base Systems for Flange Mount Motors	
50	12847-02	★
72	12847-04	★
100	12847-06	★

Included Components

No.	Description	Qty	Order Code
1	Universal Support Stand	1	12842-04
	50L Unjacketed Spherical Flask w/Flush Seal Valve		6530-14 ★
2	72L Unjacketed Spherical Flask w/Flush Seal Valve	1	6530-21 ★
	100L Unjacketed Spherical Flask w/Flush Seal Valve		6530-27 ★
3	200mm, 3 Neck Head	1	6530-33 ★
	200mm Quick-release Clamp	1	6517-31 ★
	28mm Glass Stirring Shaft, 45" Length	1	8080-14 ★
	28mm Shaft Collar	1	8127-28 ♠
4	28mm PTFE Ace-Thred Bearing	1	8067-105 ★
	7" O.D. Multi-paddle Style Lower Agitator w/Receptacle	1	8101-28 ★
	5-1/2" O.D. Upper Turbine, 45 Degree	1	8093-25 ★
	28mm Shaft Coupling	1	8126-28 ★
5	Flush Seal Drain Valve w/CAPFE O-Ring and Top Pin	1	6482-20 ★
	2" Beaded Pipe Coupling	1	8856-11 ★
	1000Watt Aluminum Heating Mantle w/Hole, 230VAC (50L Only)	1	12050-41
	1200 Watt Girdle Mantle, 230VAC (50L Only)		12041-40
6	1300 Watt Aluminum Heating Mantle w/Hole, 230VAC (72L Only)	1	12050-43
	1800 Watt Girdle Mantle, 2 Circuit, 230VAC (72L Only)		12041-42
	1600 Watt Aluminum Heating Mantle w/Hole, 230VAC (100L Only)	1	12050-45
	1400 Watt Girdle Mantle, 3 Circuit, 230VAC (100L Only)		12041-44
	Pilot Plant Temperature Controller, 230VAC, 4 Circuit	1	13552-04
	1/4 x 36" PFA Coated Type "J" Thermocouple	1	12141-28 ★
7	Type "J" Coiled Thermocouple Extension Cord	1	12141-80 ★
	29/42 to #7 Ace-Thred Adapter	1	5028-32 ♠
	29/42 to 45/50 Reducing Adapter	1	5021-94 ♠
	Heat Exchange Cooling Coil, PTFE-Clad Copper (50L Only)		12067-61 ★
8	Heat Exchange Cooling Coil, PTFE-Clad Copper (72L Only)	1	12067-63 ★
	Heat Exchange Cooling Coil, PTFE-Clad Copper (100L Only)		12067-65 ★
	29/42 to #11 Ace-Thred Adapter	2	5030-24 ♠

12847-02



12847-04



12847-06



Unjacketed Spherical Reactor Systems

200L Reactors w/Support Stand



Note: Product is shown with optional accessories.

Supplied with PTFE-Clad copper tubing (not shown); available in Hastelloy® C-276 or 316 stainless steel.

Complete spherical pilot plant reactor on self-supporting, mobile support frame with one-inch stainless steel pipe. Measures 90" high, 42" wide, 42" deep. Note: Frame shipped assembled.

Flask opening is 300mm (12") flat-ground flange. Bottom outlet is a flush seal drain valve with one-inch beaded drain discharge. O-Rings supplied on valve are CAPFE (silicone encapsulated with PTFE) and Kalrez® for excellent chemical resistance. Flask has 100mm I.D. side port, angled 45 degrees.

Black epoxy-coated aluminum flask support plate is adjustable vertically, to allow room under

flask for various outlet configurations. Upper support brackets supplied to stabilize flask.

Head is traditional domed style, with seven openings; (5) 45/50, (2) 29/42.

Motor is secured on black epoxy-coated mounting plate over center 45/50 opening on head; other openings are for condenser, thermoprobe, cooling coil, etc. Head is secured to flask with PTFE gasket and plastic coupling. Maximum bolt tightening torque for coupling (cold state) is 30 in-lbs.

Stirring motor is heavy duty, 3/8HP DC motor for non-hazardous area duty. Motor shaft is 5/8" O.D. Controller operates on 120 volts 50/60 Hz.

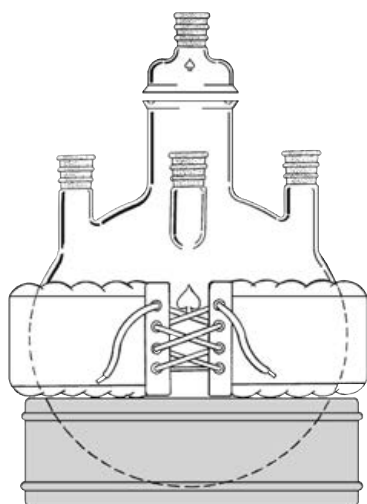
(Air motor available, call for details.)

Features a 28mm (1-1/8") O.D. precision ground and polished glass stirring shaft with a multi-paddle PTFE agitator at bottom, and a turbine blade PTFE agitator higher on shaft for grease-free operation with 8067 PTFE bearing.

Cooling coil is 1/2" O.D. copper tubing encapsulated with PTFE; also available in 316 stainless steel or Hastelloy® C-276.

A digital temperature control system is supplied to control heating mantles. This prevents over-heating and overshoot, and gives an instant readout of temperature.

Description	200 Liter	
	Order Code	
FLASK, w/Side Necks and 2" Beaded Pipe Bottom Opening	6474-29	★
HEAD, Domed, w/Seven Openings	6472-23	★
GASKET, PTFE	6525-51	★
COUPLING, w/inserts and hardware	6525-30	★
WRENCH, Torque, 30 in-lbs	6525-60	★
SOCKET, 1/4"	6525-61	★
DRAIN VALVE, Flush Seal	6472-245	★
CLAMP, Drain Valve, 1"	8856-07	★
CLAMP, Drain Valve, 2"	8856-11	★
SWEEP ELBOW, 60°, 1" BP	8830-207	★
CAP, 4"	15312-33	★
O-Ring, CAPFE, for 4" Flange	7855-880	♣
CLAMP, Quick-release	6517-25	★
MANTLE, Bottom, Aluminum, w/hole, 4-2000w-230v, wired w/plugs	12053-78	
SUPPORT ASSEMBLY, Complete	6474-373	★
TEMPERATURE CONTROL SYSTEM, Complete	13552-06	
STIRRING MOTOR AND CONTROLLER, 3/8 HP	13553	★
AGITATOR, Lower, PTFE, Multi-paddle, 178mm	8091-36	★
AGITATOR, Upper, PTFE, w/4 Pitched Blades, 152mm	8093-35	★
STIRRING SHAFT, Polished Glass, 28mm	8080-24	★
BEARING, PTFE, 45/50	8067-105	★
CONNECTOR, Beam, Connects 5/8" Motor Shaft to Chuck	6472-156	★
CHUCK, 28mm, Connects Beam Connector to Stirring Shaft	6472-157	★
COLLAR, w/PTFE Gasket	8127-28	♣
COIL, Cooling/Heating, Copper/PTFE, 1/2"	12067-68	★
ADAPTER, #15 – 29/42 (2)	5030-42	♣
ADAPTER, #15 – 45/50	8042-21	♣
ADAPTER, #15 – 45/50, w/4mm PTFE Stopcock	5274-22	♣
ADAPTER, #11 and #15 – 45/50	5031-86	♣
ADAPTER, Side Arm, 45/50 – 45/50 – 24/40	5040-96	♣
ADAPTER, Angle, 45/50 – 45/50	5075-45	♣
ADAPTER, Offset, 45/50 – 45/50	5268-21	♣
BUSHING, Nylon, #11	7506-02	♣
BUSHING, Nylon, #15 (4)	7506-06	♣
CONDENSER, 500mm, 45/50	5945-76	★
CONDENSER, Cold Finger, 14mm O.D., 625mm	5958-99	★
STOPPER, 45/50 (3)	8250-20	c
CLAMP, Chain	11079-24	★
CLAMP HOLDER, Pilot Plant (2)	11081-21	★
SUPPORT ROD, 1/2" diameter, 18" long	11166-25	★
END-TO-END CONNECTOR	11175-23	★
GREASE, Krytox GPL	8115-08	♣
Complete	6474-75	★



REACTION ASSEMBLY *Spherical, 8" Duran Flange*

Spherical reaction flask with 200mm (8") Duran® style flange with O-Ring groove as center neck, and (3) 1/2" 45/50 side necks. Large center neck affords easy clean-out and allows insertion of a heat exchange coil, 12067. Use 6530 head on center neck, and secure head to flask with 6517 quick-release clamp. Flask is supplied with one 7855-884 CAPFE O-Ring. For replacement, use 7855-288 silicone O-Ring or CAPFE O-Ring. Also listed are a low-profile, aluminum-housed heating mantle for bottom, and a removable fabric (girdle) mantle for the sides, along with the recommended temperature controllers

	50 Liter		72 Liter		100 Liter	
Description	Order Code		Order Code		Order Code	
Flask, 200mm Flange, 8” Center Neck and (3) \$45/50 Side Necks	6530-08	★	6530-15	★	6530-20	★
Head, only, \$45/50	6530-32	★	6530-32	★	6530-32	★
Clamp, only	6517-31	★	6517-31	★	6517-31	★
Coil, Cooling, Copper/PTFE, 1/2”	12067-71	★	12067-71	★	12067-84	★
Mantle, Bottom, Low-Profile	12050-34		12050-36		12050-38	
(Wattage)	(1000w-115v)		(1300w-230v)		(1600w-230v)	
Mantle, Girdle	12041-40		12041-42		12041-44	
(Wattage)	(2-1200w-115v)		(2-1800 230v)		(2-2200w-230v)	
Temperature Controller	call		13552-04		13552-06	

Laboratory Glassware Safety Tips

...Safe Handling of Glassware



Inspection

- Always inspect glass for scratches, abrasions, cracks or chips before using or cleaning.
- Safely dispose of any damaged glass.
- Inspect glass routinely for strain with a polariscope.

Washing/Cleaning

- Always inspect glass for chips and fractures prior to cleaning, especially any solvent or acid cleaning.
- Use Alconox or similar type detergents.
- Avoid HF, strong alkalis or abrasive cleaners.
- Distilled water rinse.

Storage

- Store glass in a manner to avoid vessels bumping each other.

Temperature, Borosilicate Glass

- Standard use limit — 240°C.
- Maximum very short-term use — 400°C.
- Avoid rapid temperature changes or rapid thermal shock.

Heating Glass

- Heat with mantles, Instatherm®, heat tapes, guns or immersion heaters.
- Avoid direct flame as much as possible.
- Standard temperature limit for borosilicate glass is 240°C.

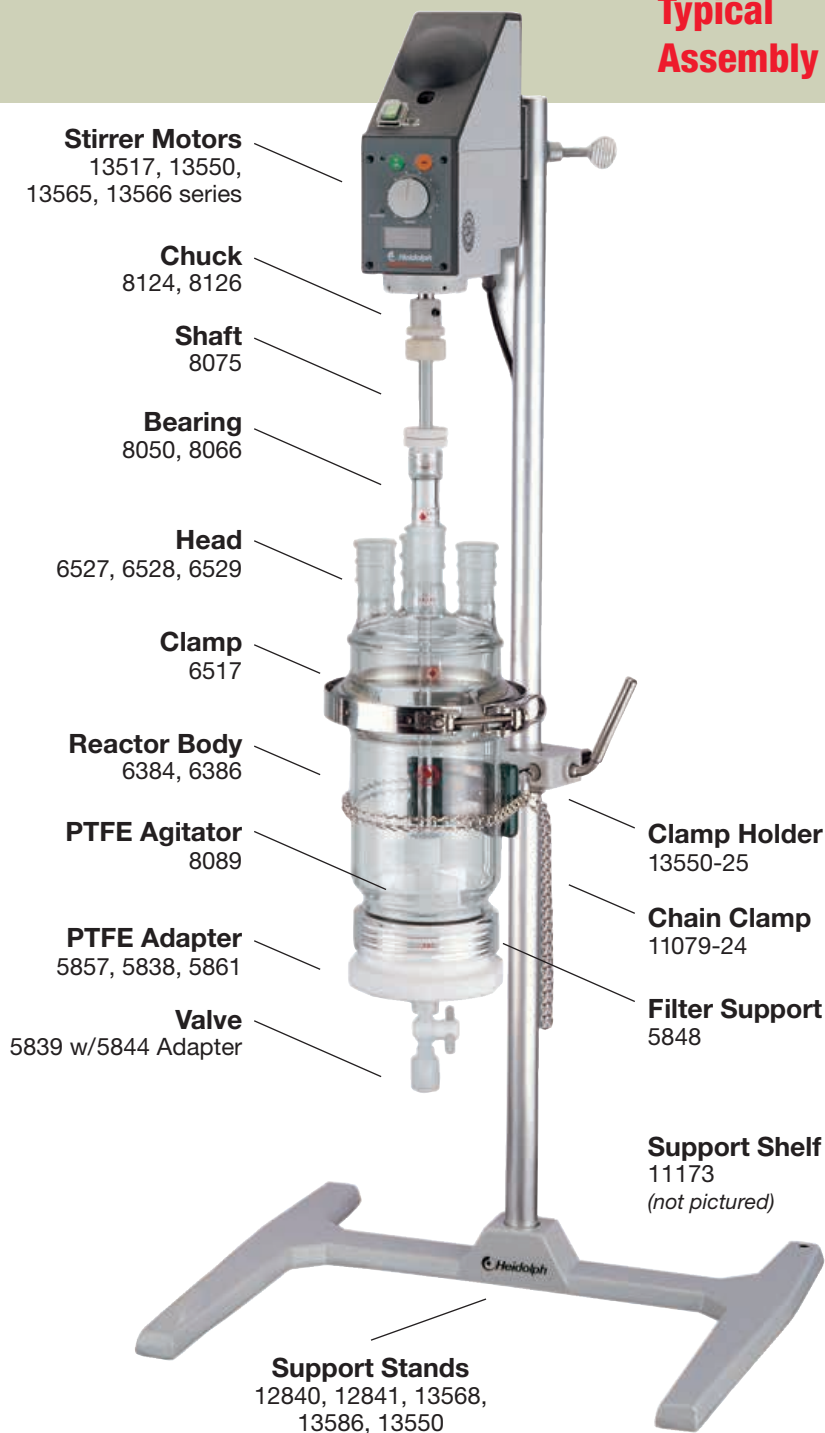
ACE Filter Reactors

allow single or multi-step reactions and filtrations in the same vessel.

Typical Assembly

Major Design Features

- 100 mL to 6000 mL standard
- Unjacketed or Jacketed
- All inert materials
- Reactions at ambient or pressure conditions
- Filtering by vacuum and/or pressure
- Removable/changeable filters, poly screen or glass, wide choice of porosities
- Mechanical agitation
- Inert bottom drain valve
- Easy assembly/disassembly for cleaning

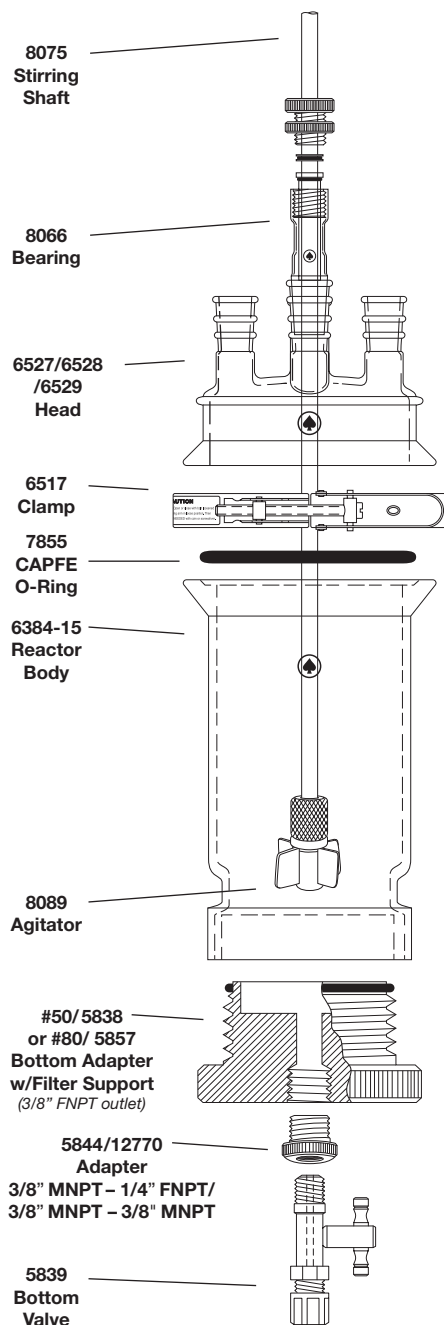


UNJACKETED FILTER REACTOR ★

Rugged, heavy wall reactor with 60mm, 100mm, or 150mm Duran® style top flange with O-Ring groove at top, for connection to 6527, 6528, or 6529 heads, with 6517 quick-release clamp. Bottom has an Ace-Thred (internal glass thread) for installing 5838-83 (#50) or 5857-86 (#80) bottom adapter with filter support and drain valve. Head has three $\frac{1}{4}$ " joints on 60mm size; four $\frac{1}{4}$ " joints on 100mm and 150mm sizes.

Replacement glass fritted support, polyethylene support, or polypropylene screen, see 5848 or 5814. For condenser and funnel, see 6029 and 7298; stoppers with $\frac{1}{4}$ " joints, see 8250. For stirring motor, see 13517, 13565 or 13566 motor; for chuck, see 8124 or 8126. Use 7855-829 CAPFE O-Ring for #50 adapter, 7855-864 for #80 bottom adapter.

Note: Complete item consists of: reactor body with CAPFE O-Ring, head with $\frac{1}{4}$ " joints, 6517 clamp, PTFE bottom adapter with CAPFE O-Ring (with perforated plate—#80 thread only), retainer ring, 350 micron polypropylene screen support and 100 micron polyethylene support, 5844 adapter, 5839 shutoff valve (optional larger valve is available), 8066 bearing, 8075 stirring rod, and 8089 multi-paddle agitator.



Capacity, mL	Flange I.D., mm (in)	Bottom Ace-Thred, #	Body I.D., mm	Approx. Height*, mm	Top CAPFE O-Ring	Order Code
150**	60 (2.4)	50	60	100	7855-878	6384-115
600**	60 (2.4)	50	79	205	7855-878	6384-121
1000	100 (4)	80	100	180	7855-880	6384-125
2000	100 (4)	80	126	210	7855-880	6384-129
3000	150 (6)	80	150	205	7855-881	6384-133
6000	150 (6)	80	150	395	7855-881	6384-137

* Height measurements are measured from top of flask flange to seal on top thread.

** 150mL and 600mL heads have angled side necks.

- Stand (12840, 12841, 13568 or 13586) and Support Shelf (11173) not included.
- 150mL size requires 11079-24 chain clamp rather than a shelf.
- For #80, bottom also available with 1/2" MNPT.



UNJACKETED FILTER REACTOR, PRESSURE VERSION ★

Heavy wall glass reactor available with 60mm, 100mm, or 150mm diameter Duran® style flange with O-Ring groove at top. Connects to 6433 head with a 6517 quick-release clamp. Reactor bottom has an Ace-Thred for installing a 5838-83 (#80) or 5857-86 (#50) adapter with a filter support and bottom drain valve. The 60mm reactor head has a #15 Ace-Thred center neck, (2) #15 and (1) #7 Ace-Thred side necks. The 100mm head has a #15 Ace-Thred center neck, (3) #15, and (1) #7 Ace-Thred side necks. The 150mm head has a #15 Ace-Thred center neck, (4) #15, and (1) #7 Ace-Thred side necks. The Ace-Threds allow for vacuum or pressure applications, and for easy draining of material out of the reactor. The main bearing, funnel and condenser are designed to connect to the threads on the head via compression bushing connections. The #7 Ace-Thred is used for connecting a 1/4" O.D. tubing fitting to allow for a direct connection to a pressure source or a 6448 pressure relief manifold.

Replacement glass fritted discs and supports see 5848 or 5814. See 13511, 13517 or 13566 motor; for chuck, see 8124 or 8126. Use 7855-829 CAPFE O-Ring for #50 adapter, 7855-864 for #80 bottom adapter.

Note: Complete item consists of: reactor body with 60mm CAPFE O-Ring, head with Ace-Threds, 6517 clamp, PTFE bottom threaded adapter and valve with CAPFE O-Ring, retainer ring, 350 micron polypropylene screen support, 100 micron polyethylene support, 5844 adapter, 8044 bearing, 8075 stir rod, 8089 multi-paddle agitator, 6024 condenser, 7299 addition funnel and #7 Ace-Thred bushing. #80 bottom adapter also comes with a perforated glass plate support. Pressure manifold, stand and support clamps are optional.

Capacity, mL	Flange I.D., mm (in)	Bottom Ace-Thred, #	Body I.D., mm	Approx. Height*, mm	Top CAPFE O-Ring	Order Code
150**	60 (2.4)	50	60	100	7855-878	6384-225
600**	60 (2.4)	50	99	205	7855-878	6384-231
1000	100 (4)	80	100	180	7855-880	6384-235
2000	100 (4)	80	126	210	7855-880	6384-239
3000	150 (6)	80	150	205	7855-881	6384-243
6000	150 (6)	80	150	395	7855-881	6384-247

* Height measurements are measured from top of flask flange to seal on top thread.

** 150mL and 600mL heads have angled side necks.

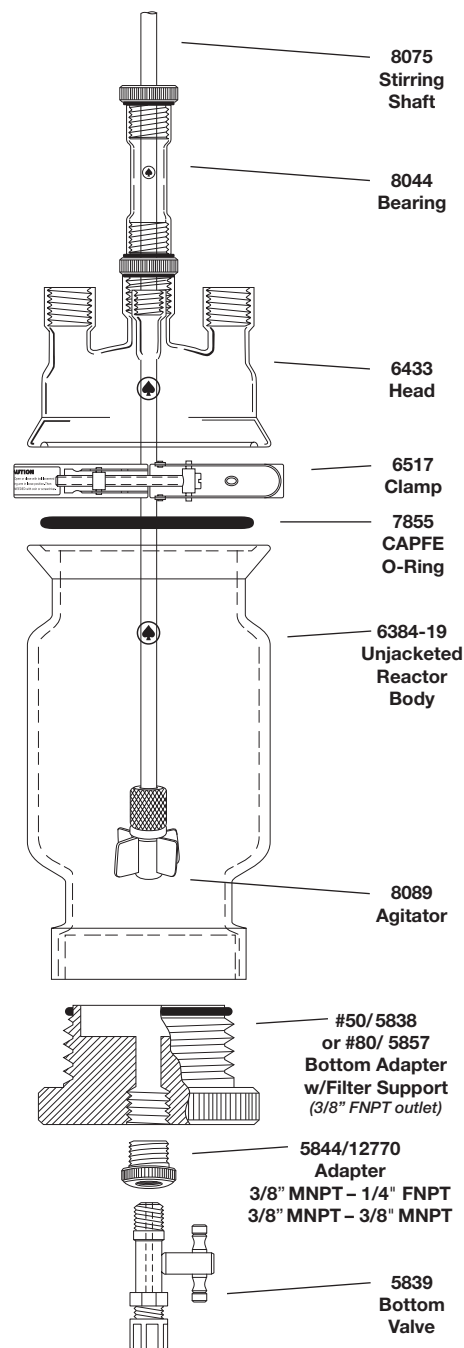
- Stand (12840, 12841, 13568 or 13586) and Support Shelf (11173) not included.
- 150mL size requires 11079-24 chain clamp rather than a shelf.
- For #80, bottom also available with 1/2" MNPT.



Glass Filter Discs



**35psig
@100°C**



JACKETED FILTER REACTOR ★

Rugged, heavy wall reactor, jacketed for cooling and/or heating of reaction material. With 60mm, 100mm, or 150mm Duran® style flange with O-Ring groove at top, for connection to 6527, 6528 or 6529 heads, with 6517 quick-release clamp. Bottom has an Ace-Thred (internal glass thread) for installing 5838-83 (#50) or 5857-86 (#80) bottom adapter with filter support and drain valve. Body is jacketed with your choice of 28/15 O-Ring ball joint, or Ace-Thred connections, sealed tangentially for more efficient circulation. Head has three $\frac{1}{4}$ " joints on 60mm size; four $\frac{1}{4}$ " joints on 100mm and 150mm sizes.

Replacement glass fritted support, polyethylene support, or polypropylene screen, see 5848 or 5814. For condenser and funnel, see 6029 and 7298; stoppers with $\frac{1}{4}$ " joints, see 8250. For stirring motor, see 13517, 13565 or 13566 motor; for chuck, see 8124 or 8126. Use 7855-829 CAPFE O-Ring for #50 adapter, 7855-864 for #80 bottom adapter.

Note: Complete item consists of: reactor body with CAPFE O-Ring, head with joints, 6517 clamp, PTFE bottom adapter with CAPFE O-Ring (with perforated plate — #80 thread only), retainer ring, 350 micron polypropylene screen support, and 100 micron polyethylene support, 5844 adapter, 5839 shutoff valve (optional larger valve is available), non-flaking 8066 bearing, 8075 stirring rod, 8089 multi-paddle agitator. Pressure manifold, stand, and support clamps are optional.

Capacity, mL	Flange I.D., mm (in)	Bottom Ace-Thred, #	Body I.D., mm	Approx. Height*, mm	Top CAPFE O-Ring	Jacket Inlet/Outlet	Order Code
Ball Joint Inlet/Outlet							
150**	60 (2.4)	50	60	100	7855-878	28/15	6386-40
600**	60 (2.4)	50	79	205	7855-878	28/15	6386-45
1000	100 (4)	80	100	180	7855-880	28/15	6386-50
2000	100 (4)	80	126	210	7855-880	28/15	6386-55
3000	150 (6)	80	150	205	7855-881	28/15	6386-60
6000	150 (6)	80	150	395	7855-881	28/15	6386-65

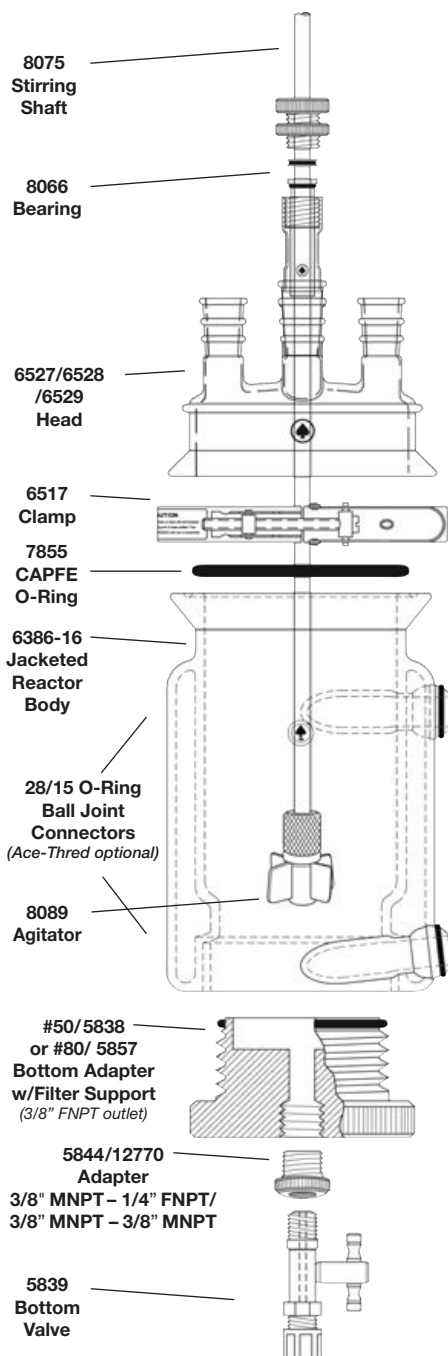
Ace-Thred Inlet/Outlet

150**	60 (2.4)	50	60	100	7855-878	#11	6386-440
600**	60 (2.4)	50	79	205	7855-878	#11	6386-445
1000	100 (4)	80	100	180	7855-880	#11	6386-450
2000	100 (4)	80	126	210	7855-880	#11	6386-455
3000	150 (6)	80	150	205	7855-881	#15	6386-460
6000	150 (6)	80	150	395	7855-881	#15	6386-465

* Height measurements are measured from top of flask flange to seal on top thread.

** 150mL and 600mL heads have angled side necks.

- Stand (12840, 12841, 13568 or 13586) and Support Shelf (11173) and Chain Clamp (11079-40) not included.
- 150mL size requires 11079-24 chain clamp rather than a shelf.
- For #80, bottom also available with 1/2" MNPT.



For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

JACKETED FILTER REACTOR, PRESSURE VERSION ★

Heavy wall glass reactor, jacketed version for cooling or heating of reactor. Available with 60mm, 100mm, or 150mm diameter Duran® flange with O-Ring groove at top. Connects to 6433 head with a 6517 quick-release clamp. Reactor bottom has an Ace-Thred for installing a 5838-83 (#50) or 5857-86 (#80) adapter with a filter support and bottom drain valve. Jacket inlet/outlet are your choice of 28/15 O-Ring ball joint, or Ace-Thred connections, sealed tangentially for more efficient circulation. The 60mm reactor head has a #15 Ace-Thred center neck, (2) #15 and (1) #7 Ace-Thred side necks. The 100mm head has a #15 Ace-Thred center neck, (3) #15 and (1) #7 Ace-Thred side necks. The 150mm head has a #15 Ace-Thred center neck, (4) #15 and (1) #7 Ace-Thred side necks. The Ace-Threds allow for vacuum or pressure applications, and for draining material out of the reactor. The main bearing, funnel, and condenser are designed to connect to the threads on the head via compression bushing connections. The #7 Ace-Thred is used for connecting a 1/4" O.D. tubing fitting to allow for a direct connection to a pressure source or a 6448 pressure manifold.

Replacement glass fritted discs and supports, see 5848 or 5814. For motor, see 13517, 13565 or 13566; for chucks, see 8124 or 8126. Use 7855-829 CAPFE O-Ring for #50 adapter, 7855-864 for #80 bottom adapter.

Note: Complete item consists of: reactor body with 60mm CAPFE O-Ring, head with Ace-Threds, 6517 clamp, PTFE bottom threaded adapter and valve with CAPFE O-Ring, retainer ring, 350 micron polypropylene screen support, 100 micron polyethylene support, 5844 adapter, 8044 bearing, 8075 stir rod, 8089 multi-paddle agitator, 6024 condenser, 7299 addition funnel and #7 Ace-Thred bushing. #80 bottom adapter also comes with a perforated glass plate support. Pressure manifold, stand, and clamps are optional.

Capacity, mL	Flange I.D., mm (in)	Bottom Ace-Thred, #	Body I.D., mm	Approx. Height*, mm	Top CAPFE O-Ring	Jacket Inlet/Outlet	Order Code
150**	60 (2.4)	50	60	100	7855-878	28/15	6386-107
600**	60 (2.4)	50	79	205	7855-878	28/15	6386-110
1000	100 (4)	80	100	180	7855-880	28/15	6386-115
2000	100 (4)	80	126	210	7855-880	28/15	6386-120
3000	150 (6)	80	150	205	7855-881	28/15	6386-124
6000	150 (6)	80	150	395	7855-881	28/15	6386-128

Ace-Thred Inlet/Outlet

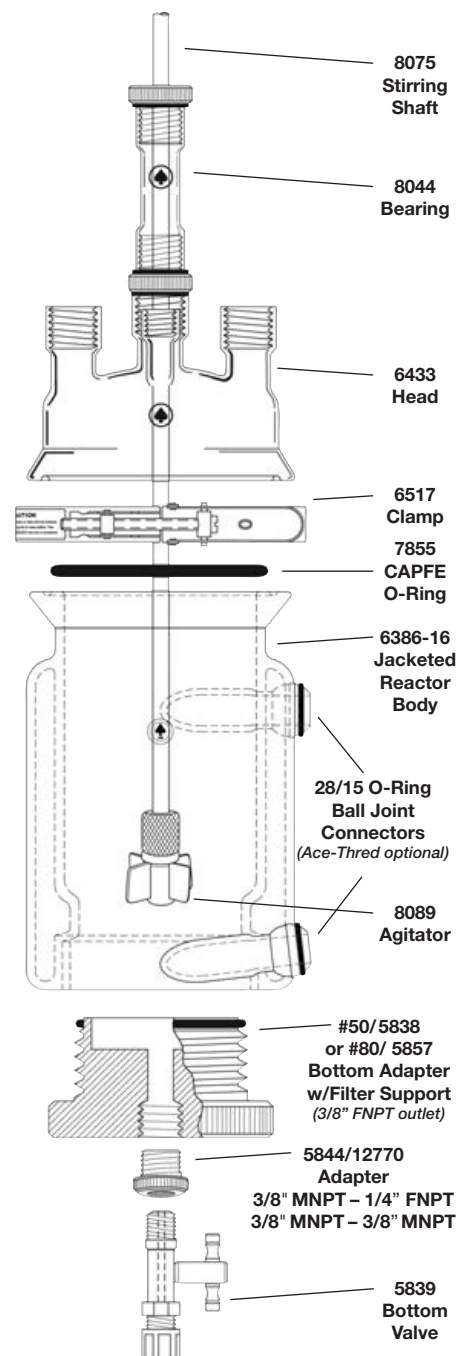
150**	60 (2.4)	50	60	100	7855-878	#11	6386-507
600**	60 (2.4)	50	79	205	7855-878	#11	6386-510
1000	100 (4)	80	100	180	7855-880	#11	6386-515
2000	100 (4)	80	126	210	7855-880	#11	6386-520
3000	150 (6)	80	150	205	7855-881	#15	6386-524
6000	150 (6)	80	150	395	7855-881	#15	6386-528

* Height measurements are measured from top of flask flange to seal on top thread.

** 150mL and 600mL heads have angled side necks.

- Stand (12840, 12841, 13568 or 13586) and Support Shelf (11173) and Chain Clamp (11079-40) not included.
- 150mL size requires 11079-24 chain clamp rather than a shelf.
- For #80, bottom also available with 1/2" MNPT.

**35psig
@100°C**



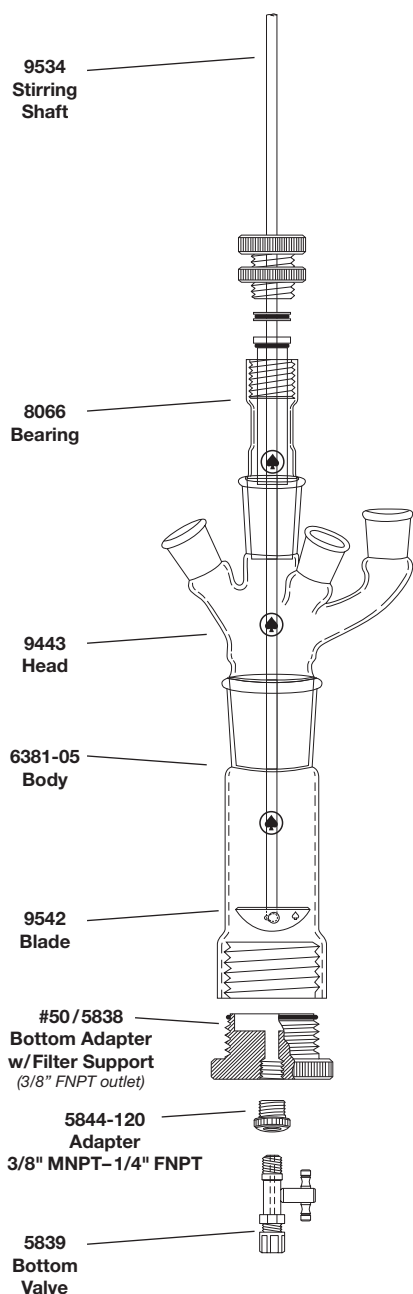
For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

Small Volume

UNJACKETED FILTER REACTOR

Small-volume filter reactor with $\text{\text{F}}$ 45/50 joint at top, and #50 Ace-Thred (internal glass thread) at bottom that accepts a 5838-83 (#50) PTFE bottom adapter with filter support and drain valve. Head has a $\text{\text{F}}$ 19/38 center neck and three $\text{\text{F}}$ 14/20 side necks. Complete item consists of: reactor body, head with $\text{\text{F}}$ joints, clamp, #50 PTFE bottom adapter with size -136 CAPFE O-Ring, 350 micron polypropylene screen support, 100 micron polyethylene support, 5844 adapter, 5839-42 shutoff valve, 8066-120 non-flaking bearing, 9534-40 stirring rod, 9542-20 blade.

Replacement glass fritted supports for polypropylene screen and polyethylene support, see 5848 or 5814; for condensers, see 6024; for addition funnel, see 7299. For stirring motor, see 13523; for chuck, see 8124 or 8126.



					Complete		Head, only		Body, only
	Top Joint	Bottom Ace-Thred, #	Body I.D., mm	Approx. Height, mm	Order Code		Order Code		Order Code
100mL Capacity									
	$\text{\text{F}}$ 45/50	50	51	65	6381-25	★	9443-10	♣	6381-05 ★
150mL Capacity									
	$\text{\text{F}}$ 45/50	50	51	125	6381-30	★	9443-10	♣	6381-10 ★

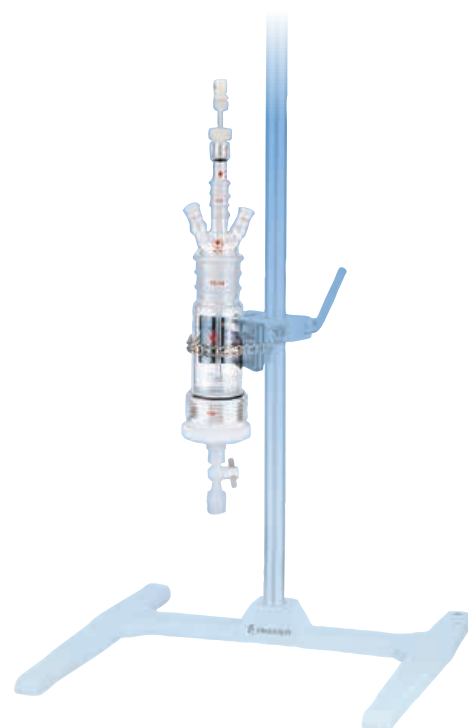
Replacement Parts

Adapter, PTFE, 3/8" MPT-1/4" FNPT, only	5844-120	♣
Bottom Adapter, #50-3/8" FNPT, only	5838-83	♣
Bottom Shutoff Valve, 1/4" MNPT-1/4" Tube, PTFE	5839-42	★
Clamp, Plastic, $\text{\text{F}}$ 45/50	7598-45	★
Bearing, $\text{\text{F}}$ 19/22, 6mm	8066-120	♣
Stopper, $\text{\text{F}}$ 14/20	9543-04	♣

Optional Accessories:

PTFE Sleeves $\text{\text{F}}$ 14/20/Pkg. 3	7642-07	★
PTFE Sleeves $\text{\text{F}}$ 19/38/Pkg. 3	7643-06	★
PTFE Sleeves $\text{\text{F}}$ 45/50/Pkg. 3	7642-23	★
Thermometer Adapter, $\text{\text{F}}$ 14/20	5028-26	♣
CAPFE O-Ring	7855-829	♣

- Stand (12841 or 13568) and Clamp (11079) and Clamp Holder (13568-16) not included.



Filter Reactor Accessories and Replacement Parts

Instatherm Heated Filter Reactor

Use with either regular or pressure version head and accessories.

FILTER REACTOR, UNJACKETED *Instatherm, Body only* ★

Same rugged, heavy wall reactor flask as 6384, except Instatherm® coated for safer, rapid heating. Instatherm is an integral noble metal alloy fused permanently to the glass, and covered with a tough silicone rubber-treated glass cloth insulation which serves as a thermal barrier, as well as protection against physical shock. Heat response is rapid and thermal lag low — typical heating rates are approximately 5° per minute. Instatherm can be operated at 120v or 40v with ACE or J-Kem® temperature controllers. Flange at top is Duran® style 60mm, 100mm, or 150mm with shallow O-Ring groove, for connection to 6527, 6528, 6529 or 6533 head, with 6517 quick-release clamp. Bottom has a #50 or #80 Ace-Thred (internal glass thread) for installing 5838, 5857, or 5861 bottom adapter with filter support and drain valve. For head, bottom adapter, and other accessory items, order separately. Supplied with cord and CAPFE O-Ring. **Maximum temperature (with no vacuum or pressure) is 200°C.**



Capacity, mL	Flange I.D., mm (in)	Bottom Ace-Thred, #	Body I.D., mm	Approx. Height, mm	Top CAPFE O-Ring	Volts	Amps	Watts	Order Code
150	60 (2.4)	50	50	100	7855-878	40	6	240	6388-15
600	60 (2.4)	50	50	205	7855-878	40	8	320	6388-20
1000	100 (4)	80	96	180	7855-880	120	5	600	6388-25
2000	100 (4)	80	126	210	7855-880	120	8	960	6388-30
3000	150 (6)	80	150	205	7855-881	120	9	1080	6388-35
6000	150 (6)	80	150	395	7855-881	120	10	1200	6388-40

FILTER REACTOR *Unjacketed, Body only* ★

Reactor body only, with Duran® style flange with O-Ring groove at top, and ACE #50 or #80 internal thread at bottom. Pressure rating is 35psig.

Note: Supplied with CAPFE O-Ring.

Capacity, mL	Flange I.D., mm (in)	Bottom Ace-Thred, #	Body O.D., mm	Body I.D., mm	Approx. Height, mm	Top CAPFE O-Ring	Order Code
150	60 (2.4)	50	70	60	100	7855-878	6384-05
600	60 (2.4)	50	89	79	205	7855-878	6384-11
1000	100 (4)	80	110	100	180	7855-880	6384-15
2000	100 (4)	80	140	126	210	7855-880	6384-19
3000	150 (6)	80	165	150	205	7855-881	6384-23
6000	150 (6)	80	165	150	395	7855-881	6384-27

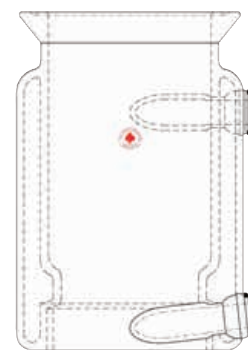


FILTER REACTOR *Jacketed, Body only*

Reactor body only, with Duran style flange with O-Ring groove at top, and ACE #50 or #80 internal thread at bottom. Body is jacketed for heating/cooling. Inlet/outlet of jacket are 28/15 O-Ring ball joints, sealed tangentially for more efficient circulation. Pressure rating is 35psig.

Note: Supplied with CAPFE O-Ring.

Capacity, mL	Flange I.D., mm (in)	Bottom Ace-Thred, #	Body O.D., mm	Body I.D., mm	Approx. Height, mm	Top CAPFE O-Ring	Order Code	
150	60 (2.4)	50	100	60	100	7855-878	6386-06	★
600	60 (2.4)	50	120	79	205	7855-878	6386-12	★
1000	100 (4)	80	140	100	180	7855-880	6386-16	★
2000	100 (4)	80	180	126	210	7855-880	6386-20	★
3000	150 (6)	80	190	150	205	7855-881	6386-24	★
6000	150 (6)	80	190	150	395	7855-881	6386-28	★



Replacement Parts

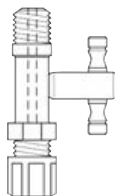
O-Ring for 28/15 Ball Joints, FETFE

7855-726 ♦

Filter Reactor Accessories and Replacement Parts



5839-47, -55

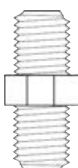
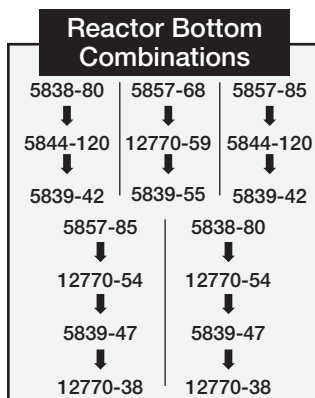


5839-42

VALVE PTFE, Bottom Shut Off ★

PTFE valve for bottom of 5838, 5857, or 5861 bottom adapter to control flow from reactor. Code -42 has a male NPT thread at one end for attaching to 5844 adapter, other end is a 1/4" O.D. tube compression fitting; codes -47 and -55 have female NPT threads on both ends, for connecting to 5844 adapter using 12770 nipple. Must use 5844-120 adapter (3/8" male NPT – 1/4" female NPT) when connecting 5839-42; 12770-54 adapter (3/8" male NPT – 3/8" male NPT) when connecting 5839-47.

For Bottom Ace-Thred, #	NPT Size	Order Code
50	1/4" Male NPT–1/4" Tube	5839-42
80	3/8" Female NPT–3/8" Female NPT	5839-47
80	1/2" Female NPT–1/2" Female NPT	5839-55
Barb (for use with 5839-47)	3/8" Male NPT–3/8" I.D. Tube	12770-38



12770



5844

ADAPTER PTFE ★

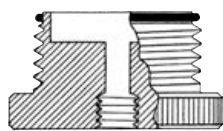
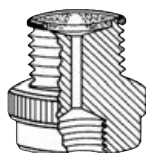
PTFE adapter used to connect 5839-47 or -55 valve to 5838 or 5857 bottom adapter.

NPT Size	Order Code	NPT Size	Order Code
3/8" MNPT–3/8" MNPT	12770-54	1/2" MNPT–1/2" MNPT	12770-59

ADAPTER PTFE ♠

Used to connect 5839 valve to 5838 or 5857 bottom adapter.

NPT Size	Order Code	NPT Size	Order Code
3/8" MNPT–1/4" FNPT	5844-120	1/2" MNPT–1/2" FNPT	5844-125

5857-86, -89
(Size 80)5838
(Size 50)

ADAPTER PTFE, Bottom Outlet ♠

Bottom adapter for use with 6384, 6386 or 6388 reactor bodies, and 6390 PTFE reactor. Fabricated from PTFE, #50 and #80 have a 3/8" female NPT for connecting bottom valve. Both have a CAPFE O-Ring to seal adapter in Ace-Thred. #50 size supplied with 100 micron polyethylene support disc (see 5848, above, for replacement or glass substitute). Can also be replaced with screen support using retainer ring. #80 size supplied with dual filter supports; a 100 micron polyethylene filter (see 5848, above) and/or perforated support plate with retainer ring for use with 350 micron polypropylene screen (for other screen sizes, see 5814).

For Ace-Thred, #	Bottom Opening	Order Code
#50	3/8" FNPT	5838-83
#80	3/8" FNPT	5857-86
(Optional) #80	1/2" FNPT	5857-89

Replacement Parts

CAPFE O-Ring, #50	—	7855-829
CAPFE O-Ring, #80	—	7855-864

PLATE Glass ★

Perforated glass plate for #80 thread size 5857 or 5861 adapters.



For Ace-Thred, #	O.D., mm	Order Code
80	73	5848-60 ★

Filter Reactor Accessories and Replacement Parts

RETAINER RING PTFE ♦

PTFE rings for size #50 and #80 adapters. Slide in to hold screens, filter paper, etc.

Dimensions

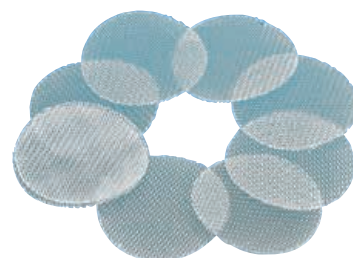
Ace-Thred, #	Thickness, mm	O.D., mm	I.D., mm	Order Code
50	0.125	1.955	1.750	5857-38
80	0.127	2.950	2.656	5857-52



SCREEN SUPPORT Polypropylene ♦

For use with 5838, 5857, or 5861 bottom adapters. It is necessary to use a PTFE retainer ring (above) to hold support in the adapter.

Ace-Thred, #	Micron	Pkg. Qty	Order Code
50	350	12	5814-348
80	350	12	5814-350
50	295	12	5814-358
80	295	6	5814-60
50	210	12	5814-368
80	210	6	5814-70
50	105	12	5814-88
80	105	6	5814-90



FILTER SUPPORT Perforated ★

Filter support designed to allow the customer to use their custom filter material in Ace-Thred #50 or #80 filter adapters found in product families 3702,3704,3708,5837,5838,5857 & 5861.

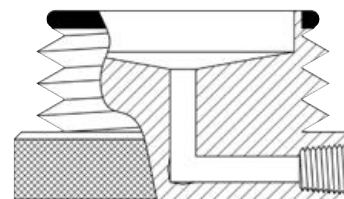
Ace-Thred, #	Hole Size, in	Number of Holes	Order Code
Nylon			
50	1/8	57	5814-332
80	1/8	137	5814-334
PTFE			
50	1/8	57	5814-336
80	1/8	137	5814-338



ADAPTER PTFE, w/Side Outlet ♦

Same adapter as 5838/5857 except with 3/8" NPT side discharge port. Fits 6384, 6386, 6388 reactor flask bodies. Comes with 7855-800 series CAPFE O-Rings. See 5814 screen support and 5857 retainer ring (above).

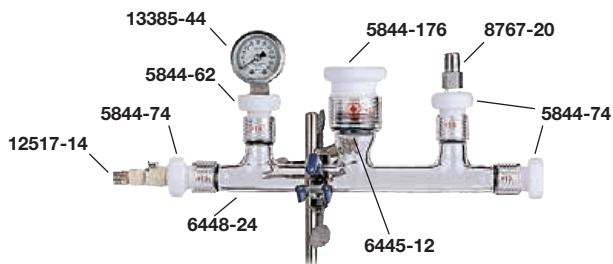
For Ace-Thred, #	Order Code
#50	5861-03
#80	5861-07



Replacement Parts

CAPFE O-Ring, #50	7855-829
CAPFE O-Ring, #80	7855-864

Filter Reactor Accessories and Replacement Parts



MANIFOLD Pressure, Epoxy Coated

Complete glass manifold, fitted with a pressure gauge, primary adjustable pressure relief valve, and secondary rupture disc to allow for safer operation of pressure and filter reactors.

13385 Pressure Gauge is a 0-60psig stainless steel internal, with 1-1/2" face and 1/8" NPT male connection for use with 5844-74 adapter in #15 Ace-Thred.

8767 Pressure Relief Valve is adjustable from 3-50psig by adjusting set screws to desired cracking pressure. Ends are 1/4" NPT for connecting to #15 Ace-Thred on manifold with 5844-74 adapter.

6445 Rupture Disc is a secondary safety device that, in the event of an overpressure (one that cannot be handled by the 8767 relief valve) will rupture at a predetermined burst rating; 55psig (± 3 psig) for -12 version, 65psig (± 3 psig) for -41 version. Disc is manufactured from high-purity carbon with a PTFE coating on the underside. No springs or moving parts, disc is secured directly in #25 Ace-Thred of manifold with 5844-176 adapter.

Manifold is connected to #7 Ace-Thred on 6433 head using 5844-58 adapter (must be ordered separately) and 12517 tubing connectors with 1/4" tubing.

Description	For Two-Piece Pressure Reactors (55psig) and Filter Reactors		For One-Piece Pressure Reactors (65psig)	
	Order Code		Order Code	
Adapter, PTFE, #15-1/8" NPT	5844-62	♠	5844-62	♠
Adapter, PTFE, #15-1/4" NPT (3)	5844-74	♠	5844-74	♠
Adapter, PTFE, #25-1/4" NPT, w/o O-ring	5844-176	♠	5844-176	♠
Rupture Disc, Graphite, 55psig	6445-12	★		
Rupture Disc, Graphite, 65psig (for pressure version only)			6445-41	★
Manifold, Glass, (4) #15, (1) #25, Epoxy Coated	6448-24	♠	6448-24	♠
Valve, Pressure Relief, 1/4" NPT, 3-50psig	8767-20	★	8767-20	★
Coupling Body, 1/8" MPT	12517-08	★	12517-08	★
Coupling Body, 1/4" MPT	12517-14	★	12517-14	★
Coupling Insert, for 1/4" O.D. tubing (2)	12517-40	★	12517-40	★
Tubing, PP, 1/4" O.D. x .170" I.D., 10'	12681-110	★	12681-110	★
Gauge, Pressure, 0-60psig, 1/8" MPT	13385-44	★	13385-44	★
Complete	6448-54*	★	6448-68**	★

Replacement O-Rings

Size -110 for #15 adapters (shelf-pack of 12)	7855-716	♠	7855-716	♠
Size -212 for #25 adapters (shelf-pack of 6)	7855-734	♠	7855-734	♠

Additional Items

Adapter, PTFE, #7-1/8" NPT	5844-58	♠	5844-58	♠
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*6448-54 is for use with two-piece pressure and filter style reactors.

**6448-68 is for use with one-piece pressure reactors only.

Process Scale Filtration Apparatus and Filter Reactors

Ace Glass fabricates bench scale filtration apparatus and reactors as standard products. ACE also fabricates kilo scale filter reactors such as the one pictured here.

ACE has typically produced 20L, 30L and 50L filter apparatus, but has also produced custom units from 150mL up to as large as 150L. All filter reactors are built on stands with locking, rolling casters for portability. All borosilicate heavy wall glass bodies have either glass or PTFE bottom units. Many bottom and side outlet valve styles are available, such as our flush seal. Various agitator styles exist in either stainless steel or PTFE, and custom fabrication is possible. Glass vessels can be standard single-wall or jacketed double-wall. Heads can be stainless steel, glass domed, or flat head style.

Filter apparatus stands can be fabricated from anodized aluminum or stainless steel with powder coated components. Various sizes and types of stir motors are available, including UL classified Hazardous duty motors that meet either Class I, Div 1, Group D or Class II, Div I, Group F&G atmospheres.



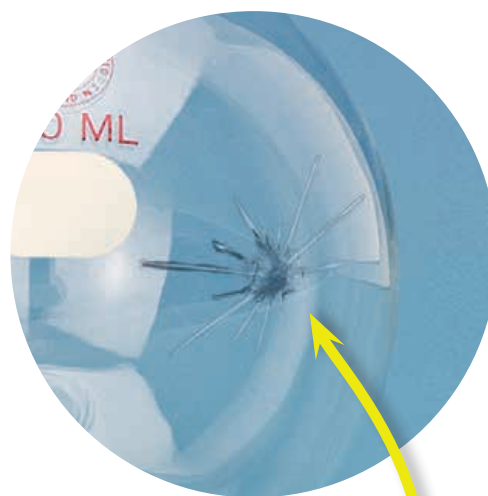
Quality Chemistry begins with Quality Glassware

Scientific Glass Repair Service

Yes, we fix it, too!

Often, broken laboratory glassware items are thrown out. Instead of spending unnecessary money to replace an item, why not have the item repaired. The majority of the time, these repairs are less expensive than the cost of replacing.

Whether it is a broken joint or a cracked flask, we can restore it!



Contact us today for more information at
1-800-223-4524 or visit us at www.aceglass.com

BIG COLUMNS

ADAPTER for Swagelok ♠

PTFE adapter for use at top of 5860 column head or at bottom of 5862 column to connect tubing via Swagelok® type connector to #50 Ace-Thred, other end has 1/4" NPT female thread.

Note: Supplied with one FETFE O-Ring. For extra O-Rings, see 7855-729.

Ace-Thred, #	NPT Size, in	Order Code
50	1/4	5844-78

COLUMN HEAD ♠

For use with 5862 chromatography column. With #50 Ace-Thred center neck and/or two #15 Ace-Thred side necks and 4 or 6" flange at bottom, ground flat. Use with 6517 clamp.

Flange Size, in	Center Neck Ace-Thred, #	Side Necks Ace-Thred, #	Order Code
4	50	None	5860-24
6	50	None	5860-28
6	50	15	5860-32

COLUMN (#50)

Large size chromatography columns with O-Ring grooved flat flange at top for easy access to column. Flange is supplied with silicone O-Ring to make seal when using 5860 head with 6517 clamp. 4" and 6" I.D. columns are tapered to #50 Ace-Thred at bottom that accepts 5844 adapter, or 5848 and 5835 adapters.

Flange Size/ Col. I.D., in	Length mm (in)	Order Code	
4	300 (12)	5862-43	♠
4	450 (18)	5862-45	♠
4	600 (24)	5862-47	♠
4	1200 (48)	5862-49	♠
6	450 (18)	5862-58	♠
6	600 (24)	5862-62	♠
6	1200 (48)	5862-65	♠
6	1800 (72)	5862-68	♠

Replacement Silicone O-Rings

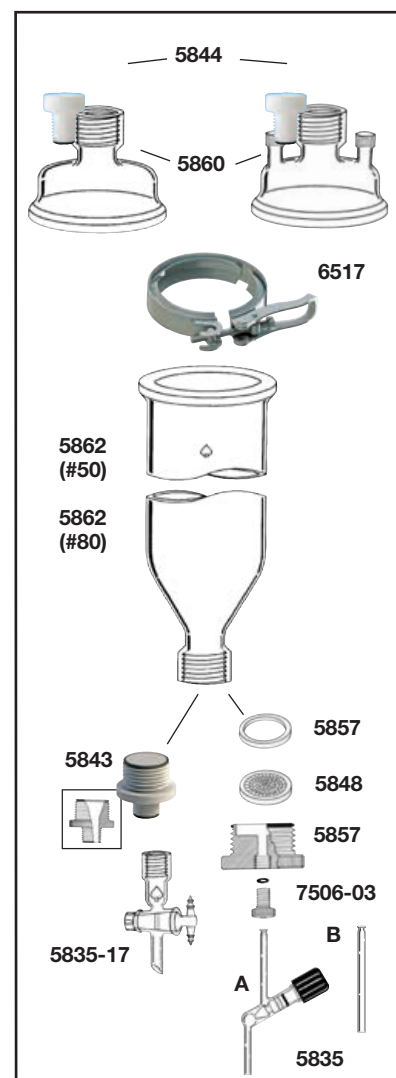
For 4" Flange	7855-254	★
For 6" Flange	7855-260	★

Replacement CAPFE O-Rings

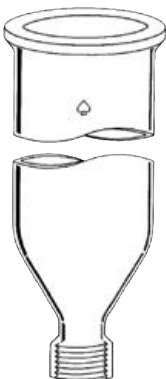
For 4" Flange	7855-880	♠
For 6" Flange	7855-881	♠

All types of special combinations made to order

- Heads can be supplied with additional threads or joints or combination of both
- Columns available in various lengths and diameters



BIG COLUMNS



COLUMN (#80) ♠

Large size columns with O-Ring grooved flat flange at top for easy access to column. Flange is supplied with silicone O-Ring to make seal when using 5860 head with 6517 clamp. Columns are tapered to #80 Ace-Thred at bottom that accepts 5857 adapter.

Length, in	Flange Size, in	Inner Diameter, in	Order Code
18	6	6	5862-10
18	6	8	5862-18
18	6	12	5862-26
24	6	6	5862-12
24	6	8	5862-20
24	6	12	5862-28
48	6	6	5862-14
48	6	8	5862-22
48	6	12	5862-30



CLAMP ★

Stainless Steel Quick Release clamp for use with two-piece Pressure Reaction Flasks and Heads with Duran flanges.

Note: Ensure proper support for your reactor, the clamp is only recommended for stabilization, not support.

For Flange Size, in	Order Code
4	6517-25
6	6517-27



PLATE Glass ★

Perforated glass plate for #80 thread size 5857 or 5861 adapters.

Ace-Thred, #	O.D., mm	Order Code
80	73	5848-60



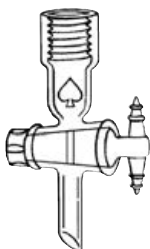
COUPLING PTFE, Reducing, w/Support ♠

For connecting 5835 bottom drip stopcock adapter to bottom of 5862 chromatography column with leak-tight O-Ring seals. One end is #50 Ace-Thred for connecting to column, the other #25 Ace-Thred is for connecting to 5835 adapter. #50 end of coupling is supplied with Porosity A glass packing support, press fitted, with taper below disc to #25 I.D. Supplied with (2) FETFE® O-Rings. For replacement O-Rings, see 7855-729 (for #50); or 7855-727 (for #25).

Ace-Thred, #	Order Code
50-25	5843-74

Replacement Glass Packing Supports

Porosity A (145-175 micron)	5848-49
Porosity B (70-100 micron)	5848-58



ADAPTER Bottom Drip, w/1:5 PTFE Stopcock ♠

Drip tip for bottom of 5862 column using 5843 coupling. One end has #25 Ace-Thred, other with drip tip and 4mm bore PTFE stopcock for controlling flow.

Ace-Thred, #	Bore Size	Order Code
25	4	5835-17

Replacement PTFE Stopcock

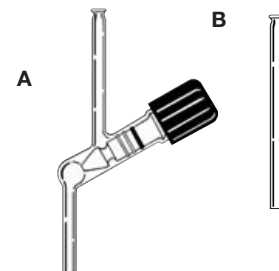
4	8224-12
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BIG COLUMNS

BOTTOM OUTLET VALVE *with or without Stopcock* ♠

Type A — With 0-8mm threaded stopcock for controlling flow.

Type B — Straight stem without stopcock. Both stems to take 3/8" Swagelok fittings. Secured to 5857 Bottom adapter with 7506-03 bushing.



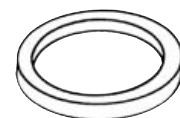
Type	Order Code
0-8mm Threaded Stopcock	5835-32
Straight Stem w/o Stopcock	5835-34

Replacement PTFE Plug

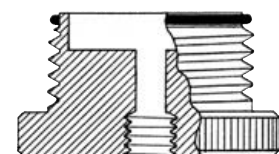
0-8mm	8192-263
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BOTTOM ADAPTER *UHMWPE* or PTFE*

Fits #80 Ace-Thred. Recessed for 5848 perforated support plate and 5857 retaining ring. Your choice of bottom threaded for #11 Ace-Thred bushing 7506-03 to secure 5835 outlet valve, or threaded to accept 3/8" NPT fitting.



	#11 Ace-Thred Hole		3/8" NPT Hole
UHMWPE*	Order Code		Order Code
Adapter, #80 Ace-Thred	5857-30 ♠		5857-35 ♠
Support Plate	5848-60 ★		5848-60 ★
Retaining Ring	5857-50 ♠		5857-50 ♠
Bushing	7506-03 ♠		—
Connector, 3/8"	—		12770-27 ★



Complete (UHMWPE)

5857-44 ♠	5857-46 ♠
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PTFE

Adapter, #80 Ace-Thred	5857-60 ♠	5857-64 ♠
Support Plate	5848-60 ★	5848-60 ★
Retaining Ring	5857-52 ♠	5857-52 ♠
Bushing	7506-03 ♠	—
Connector, 3/8"	—	12770-27 ★

Complete (PTFE)

5857-67 ♠	5857-69 ♠
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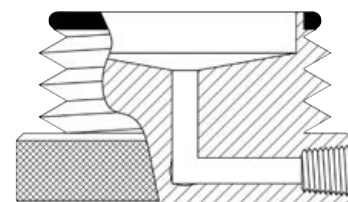
Replacement FETFE O-Rings

7855-764 ♠	7855-764 ♠
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*UHMWPE — Ultra High Molecular Weight Polypropylene

ADAPTER ♠

Bottom filter adapter for use with our 6384, 6386 & 6388 glass reactor bodies, and our 6390 all PTFE reactor bodies. Adapter differs from our codes 5838-83 & 5857-86 in that the 3/8" female NPT is located as a side discharge, rather than through the bottom. Adapters are PTFE and include a CAPFE O-Ring, PTFE retaining ring, 100 micron polyethylene filter disc, and 350 micron polypropylene filter screen. Code -07 includes a glass filter support from our 5848 product family. See also our 5814 family for filter support screen options.



For Ace-Thred, #	Order Code
50	5861-03
80	5861-07
CAPFE O-Ring, #50	7855-829
CAPFE O-Ring, #80	7855-864



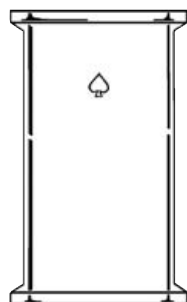
COLUMN Large Size, w/Ace-Threds ♠

Borosilicate glass columns for liquid chromatography, ion-exchange, or activated carbon work featuring Ace-Thred connections. Threaded ends are compatible with fittings shown with other chromatography systems listed. Fittings can be used with these columns and offer easy-to-change support screens with a variety of openings never before offered. **50psig maximum pressure.**

Note: Columns of larger I.D. and longer than listed above can be fabricated. Most sizes can be jacketed. Call or email for details.

Column I.D., mm	Minimum Effective Length, mm (in)	Approx. Capacity, mL	Ace-Thred, #	Order Code
75	300 (12)	1,320	50	5820-105
75	600 (24)	2,650	50	5820-107
75	1200 (48)	5,300	50	5820-109
100	1200 (48)	9,430	50	5820-116
100	1800 (72)	14,940	50	5820-119
150	600 (24)	10,600	50	5820-121
150	1200 (48)	21,200	50	5820-125
150	1800 (72)	31,800	50	5820-129
150	2400 (96)	42,200	50	5820-133

*Support stand NOT included.



COLUMN EXTENDER

Glass extenders that can be added to 5862 columns to increase column height. Extenders have an O-Ring grooved flat flange on one end to attach 5860 column head, and ground flat flange at other end to attach the 5862 column. Use 6517 quick-release clamp to secure sections.

Note: Supplied with one silicone O-Ring.

Flange Size, in	Column I.D., in	Length, in	Order Code	
4	4	12	5862-72	♠
4	4	18	5862-73	♠
4	4	24	5862-74	♠
6	6	12	5862-77	♠
6	6	18	5862-78	♠
6	6	24	5862-79	♠

Replacement Silicone O-Rings

4	7855-254	★
6	7855-260	★



SUPPORT STAND for Large Columns ★

Newly designed four-post stands for large scale chromatography columns feature all stainless steel construction. Each stand is designed to accept either 24", 48", or 72" length 5862 columns. With 150mm (6") flange and 6", 8", or 12" diameter body. Each stand is designed to accommodate the height of the column, and has a PTFE collar at the bottom that accepts and supports the tapered bottom of the column. Each stand has an adjustable stainless upper collar assembly that supports the top of the column. All stands have locking casters for mobility.

Note: Supplied with (2) column support rings with 140mm and 175mm openings.

Fits Column, (Height) in	Dimensions, (W x D x H) in	Order Code
24	15 x 15 x 40	5867-24
48	15 x 15 x 60	5867-48
72	15 x 15 x 85	5867-72

Custom sizes are available!

SUPPORT STAND for Bench-Scale Columns ★

Newly designed single-post stand for 12" and 18" height chromatography columns. "H" shaped base and a single 122cm high x 1" diameter stainless steel bar give great stability for the large-scale columns.

Note: Stand comes complete with base, rod, base plate, clamp holder and chain clamp.

Fits Column (Height) in	Overall Stand Height, in	Rod Thickness, in	Rod Height, in	Qty	Order Code
12 and 18	49	1	48	1	5868-122


FILTER DISC ♠

Filter disc for use with 5837 and 5838 adapters. Available in polyethylene (100 micron pore size), and borosilicate glass — Porosity A (145-174 microns), B (70-100 microns), C (25-50 microns), and D (10-20 microns). Sold in packages.

Note: These discs are intended to be removable. However, because of the tight fit, the glass disc may break when being removed.



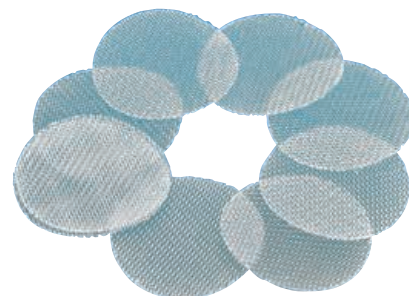
Polyethylene			Glass			
100 microns			Porosity A 145-174 microns	Porosity B 70-100 microns	Porosity C 25-50 microns	Porosity D 10-20 microns
For Ace-Thred #	Pkg Qty	Order Code	Order Code	Order Code	Order Code	Order Code
11	6	5848-07	5848-43	5848-52	5848-21	5848-31
15	6	5848-10	5848-44	5848-54	5848-23	5848-33
25	6	5848-14	5848-47	5848-56	5848-25	5848-35
50	6	5848-17	5848-49	5848-58	5848-28	5848-38
80	1	5848-19	5848-100	5848-120	5848-122	5848-124

SCREEN SUPPORT FILTER DISC Polypropylene ♠

Screen support filter pre-cut discs used with 5857 and 5861 end fitting adapters.

Note: Discs can also be supplied in polyethylene and fluorocarbon; however, since they are not stock items, a minimum quantity will be supplied. Phone for quotation.

		350 Micron	295 Micron	210 Micron	105 Micron
For Ace-Thred, #	Qty	Order Code	Order Code	Order Code	Order Code
11	12	5814-42	5814-52	5814-62	5814-82
15	12	5814-44	5814-54	5814-64	5814-84
25	12	5814-46	5814-56	5814-66	5814-86
50	12	5814-48	5814-58	5814-68	5814-88



**REACTION SYSTEM #50 Ace-Thred, 450W**

Complete reaction assembly with all parts needed for immediate operation. Utilizes an internally threaded connection in place of the ground glass joint. Bushing and FETFE O-Ring form a compression type seal with immersion well. Well has removable inner cooling tube. Reactor has (1) $\frac{1}{8}$ 14/20 angled joint for sparger tube, (1) $\frac{1}{8}$ 24/40 vertical joint for condenser, and (1) #7 Ace-Thred for thermometer. Volume indicated is total volume. Actual working volume is approximately 40-50% of total.

250mL Complete Systems

Capacity (mL)	Power Requirements, Volts, Hz	Order Code	
250	115, 60	7861-245	★
250	230, 50	7861-410	★

500mL Complete Systems

Capacity (mL)	Power Requirements, Volts, Hz	Order Code	
500	115, 60	7861-250	★
500	230, 50	7861-430	★

1000mL Complete Systems

Capacity (mL)	Power Requirements, Volts, Hz	Order Code	
1000	115, 60	7861-255	★
1000	230, 50	7861-450	★

Description	Qty	Order Code
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Complete System Components

Reactor Body, 250mL	1	7863-16	♠
Quartz Immersion Well	1	7874-38	★
Sparger Tube	1	7841-09	♠
Stir bar, PTFE	1	13654-14	★
#7 Nylon Bushing	1	5029-10	♠
#50 Ace-Thred Nylon Bushing	1	7506-14	♠
10' FEP Tubing	1	12687-12	★
Reactor Stand	1	7837-75	★
Stand Insert, PTFE, 250mL	1	7837-02	★
Immersion Lamp, 450W	1	7825-34	★
Power Supply, 120V, 60Hz	1	7830-60	★
Power Supply, 230V, 50Hz	1	7830-61	★

Description	Qty	Order Code
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Complete System Components

Reactor Body, 500mL	1	7863-18	♠
Quartz Immersion Well	1	7874-38	★
Sparger Tube	1	7841-09	♠
Stir bar, PTFE	1	13654-14	★
#7 Nylon Bushing	1	5029-10	♠
#50 Ace-Thred Nylon Bushing	1	7506-14	♠
10' FEP Tubing	1	12687-12	★
Reactor Stand	1	7837-75	★
Stand Insert, PTFE, 500mL	1	7837-05	★
Immersion Lamp, 450W	1	7825-34	★
Power Supply, 120V, 60Hz	1	7830-60	★
Power Supply, 230V, 50Hz	1	7830-61	★

Description	Qty	Order Code
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Complete System Components

Reactor Body, 1000mL	1	7863-20	♠
Quartz Immersion Well	1	7874-38	★
Sparger Tube	1	7841-09	♠
Stir bar, PTFE	1	13654-14	★
#7 Nylon Bushing	1	5029-10	♠
#50 Ace-Thred Nylon Bushing	1	7506-14	♠
10' FEP Tubing	1	12687-12	★
Reactor Stand	1	7837-75	★
Stand Insert, PTFE, 1000mL	1	7837-10	★
Immersion Lamp, 450W	1	7825-34	★
Power Supply, 120V, 60Hz	1	7830-60	★
Power Supply, 230V, 50Hz	1	7830-61	★

**IMMERSION WELL #50 Ace-Thred, Low Temperature**

Triple-walled, quartz, immersion well for use in temperatures as low as -78°C. Same as 7858 immersion well, except without standard taper joint. 415mm total jacket length. Will accommodate 7858-85 and -88 inner tubes. Wells are secured in reaction vessels (6962, 7863, 7864, 7865 & 7891) using a #50 Ace-Thred bushing.

Description	Order Code	
Outer Well	7876-10	★
Stopper	7858-84	★
O-Ring	7855-740	♠
Inlet Tube	7858-82	★
Inlet Holder	7858-81	★
#50 Nylon Bushing with FETFE O-Ring	7506-14	♠

Complete Well

	7876-50	★
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Replacement Inner Tubes (480mm x 30mm)

Quartz	7858-85	★
Borosilicate Glass	7858-88	★

REACTION VESSEL #50 Ace-Thred

#50 Ace-Thred reaction vessels fabricated of borosilicate glass with flat bottoms to allow for the use of magnetic stir bars. Reaction vessels will accommodate all #50 Ace-Thred reaction vessel immersion wells. Jacketed vessels are designed to enable cooling of reactant materials during photolysis and have hose barbs for use with 5/16" to 3/8" I.D. tubing. The jacketed vessel with valve is fabricated with a 2mm bore 1:5 PTFE stopcock which allows for draining of the inner vessel.

*Total volumes indicated are vessel total capacity; the actual exposed working volumes are approximately 40-50% of total volume.

- #50 Ace-Thred Immersion Well Joint
- 14/20 angled Sparger Tube Joint
- 24/40 Condenser Joint
- #7 Ace-Thred Thermometer Joint
- Hose barb for use with 5/16" to 3/8" I.D. tubing on Jacketed Vessels



Unjacketed



Jacketed



Jacketed w/Drain

Capacity*, mL	Order Code		Order Code		Order Code	
250	7863-16	♠	7864-08	♠	7865-06	♠
500	7863-18	♠	7864-10	♠	7865-08	♠
1000	7863-20	♠	7864-12	♠	7865-10	♠

Replacement Parts

Sparger Tube, 14/20	7841-09	♠
PTFE Stir Bar, 38mm x 8mm	13654-14	★
Nylon Bushing, #7	5029-10	♠
Nylon #50 Bushing	7506-14	♠
PTFE Tubing, 4.8mm I.D. x 3m (for sparger)	12687-12	★

IMMERSION WELL #50 Ace-Thred

Jacketed immersion wells are available in either quartz or borosilicate glass, and can be purchased with or without an Ace-Thred coolant inlet port. The immersion wells without Ace-Threds feature an inlet port which extends down into the jacket to insure proper coolant flow. Inlet and outlets are both 8mm O.D. glass tubing. The inlet port w/ #7 Ace-Thred features a 7mm O.D. glass tube with an attached PTFE tube which extends down into the jacket to insure proper coolant flow. The 7mm O.D. glass tube is secured in place using a #7 Ace-Thred bushing. The outlet port is 8mm O.D. glass tubing. Immersion wells are secured in the reaction vessels (6962, 7863, 7864, 7865 & 7891) using a #50 Ace-Thred bushing. *I.D. x O.D. x Length (mm): 31 x 48 x 450.*



w/o Ace-Thred



w/Ace-Thred

Material	Order Code		Order Code	
Borosilicate	7875-40	♠	7875-45	♠
Quartz	7874-35	★	7874-38	★

Replacement Bushing

Nylon Bushing, #7	5029-10	♠
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**REACTION SYSTEM** *Standard Taper, 450W*

Complete reaction assembly with all parts needed for immediate operation. Borosilicate glass reactor has a $\frac{1}{2}$ 60/40 center joint, (1) $\frac{1}{4}$ 14/20 angled joint for sparger tube, (1) $\frac{1}{2}$ 24/40 vertical joint for condenser, and (1) #7 Ace-Thred joint to accommodate thermometer. Volumes indicated are total volumes. Volume in reactive area of lamp is 40-50% of the total volume.

250mL Complete Systems

Capacity (mL)	Power Requirements, Volts, Hz	Order Code	
250	115, 60	7840-175	★
250	230, 50	7840-320	★

500mL Complete Systems

Capacity (mL)	Power Requirements, Volts, Hz	Order Code	
500	115, 60	7840-180	★
500	230, 50	7840-340	★

1000mL Complete Systems

Capacity (mL)	Power Requirements, Volts, Hz	Order Code	
1000	115, 60	7840-185	★
1000	230, 50	7840-360	★

Description	Qty	Order Code
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Complete System Components

Reactor Body, 250mL	1	7841-03	♣
Quartz Immersion Well	1	7854-25	★
Sparger Tube	1	7841-09	♣
Stir bar, PTFE	1	13654-14	★
#7 Nylon Bushing	1	5029-10	♣
10' FEP Tubing	1	12687-12	★
Reactor Stand	1	7837-75	★
Stand Insert, PTFE, 250mL	1	7837-02	★
Immersion Lamp, 450W	1	7825-34	★
Power Supply, 120V, 60Hz	1	7830-60	★
Power Supply, 230V, 50Hz	1	7830-61	★

Description	Qty	Order Code
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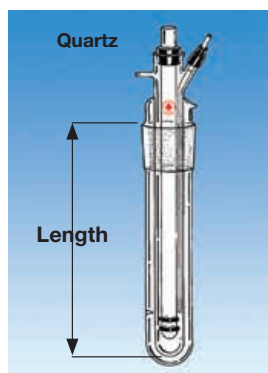
Complete System Components

Reactor Body, 500mL	1	7841-04	♣
Quartz Immersion Well	1	7854-25	★
Sparger Tube	1	7841-09	♣
Stir bar, PTFE	1	13654-14	★
#7 Nylon Bushing	1	5029-10	♣
10' FEP Tubing	1	12687-12	★
Reactor Stand	1	7837-75	★
Stand Insert, PTFE, 500mL	1	7837-05	★
Immersion Lamp, 450W	1	7825-34	★
Power Supply, 120V, 60Hz	1	7830-60	★
Power Supply, 230V, 50Hz	1	7830-61	★

Description	Qty	Order Code
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Complete System Components

Reactor Body, 1000mL	1	7841-06	♣
Quartz Immersion Well	1	7854-27	★
Sparger Tube	1	7841-09	♣
Stir bar, PTFE	1	13654-14	★
#7 Nylon Bushing	1	5029-10	♣
10' FEP Tubing	1	12687-12	★
Reactor Stand	1	7837-75	★
Stand Insert, PTFE, 1000mL	1	7837-10	★
Immersion Lamp, 450W	1	7825-34	★
Power Supply, 120V, 60Hz	1	7830-60	★
Power Supply, 230V, 50Hz	1	7830-61	★

**IMMERSION WELL** *Standard Taper, Low Temperature*

Triple-walled, quartz, immersion well for use at temperatures as low as -78°C. With $\frac{1}{2}$ 60/40 center inner joint. Outer two walls are permanently sealed together and the space between evacuated. This keeps lamp coolant water from warming the reactant and also prevents coolant water from freezing, thus lamp emits correct wavelengths and operates at optimum temperature for longer life. Innermost wall is held in place via a stopper and permits a carefully positioned, PTFE water inlet tube to extend below the lamp bottom. Inner tube is removable and may be interchanged with borosilicate glass tubes. One size tube fits both wells. Use with 60/40 reactors (7841, 7844).

Description	220mm Length		290mm Length	
	Order Code		Order Code	
Outer Well	7858-07	★	7858-13	★
Stopper, Neoprene	7858-84	★	7858-84	★
O-Ring	7855-740	♣	7855-740	♣
Inner Tube, Quartz	7858-85	★	7858-85	★
Inner Tube, Borosilicate	7858-88	★	7858-88	★
Inlet Tube	7858-82	★	7858-82	★
Inlet Holder	7858-81	★	7858-81	★
Complete				
	7858-42	★	7858-45	★

REACTION VESSEL *Standard Taper*

60/40 standard taper reaction vessels fabricated of borosilicate glass with flat bottoms to allow for the use of magnetic stir bars. Reaction vessels will accommodate all 60/40 standard taper reaction vessel immersion wells. Jacketed vessels are designed to enable cooling of reactant materials during photolysis and have hose barbs for use with 5/16" to 3/8" I.D. tubing. The jacketed vessel with valve is fabricated with a 2mm bore 1:5 PTFE stopcock which allows for draining of the inner vessel.

**Total volumes indicated are vessel total capacity; the actual exposed working volumes are approximately 40-50% of total volume.*

- 60/40 Standard Taper Immersion Well Joint
- 14/20 angled Sparger Tube Joint
- 24/40 Condenser Joint
- #7 Ace-Thred Thermometer Joint
- Hose barb for use with 5/16" to 3/8" I.D. tubing on Jacketed Vessels



Unjacketed

Jacketed

Jacketed w/Drain

Capacity*, mL	Order Code		Order Code		Order Code	
250	7841-03	♠	7841-05	♠	7844-03	♠
500	7841-04	♠	7841-10	♠	7844-06	♠
1000	7841-06	♠	7841-16	♠	7844-09	♠

Replacement Parts

Sparger Tube, 14/20	7841-09	♠
PTFE Stir Bar, 38mm x 8mm	13654-14	★
Nylon Bushing, #7	5029-10	♠
PTFE Tubing, 4.8mm I.D. x 3m (for sparger)	12687-12	★

IMMERSION WELL *Standard Taper*

Jacketed immersion wells are available in either quartz or borosilicate glass and can be purchased with or without an Ace-Thred coolant inlet port. The immersion wells without Ace-Threds feature an inlet port which extends down into the jacket to insure proper coolant flow. Inlet and outlets are both 8mm O.D. glass tubing. The inlet port w/ #7 Ace-Thred features a 7mm O.D. glass tube with an attached PTFE tube which extends down into the jacket to insure proper coolant flow. The 7mm O.D. glass tube is secured in place using a #7 Ace-Thred bushing. The outlet port is 8mm O.D. glass tubing. *I.D. x O.D. x Length (mm): 31 x 48 x 450.*

Note: Use with 60/40 reactors (7841, 7844).



w/PTFE-Clad Joint

w/o Ace-Thred

w/Ace-Thred

Material	Capacity, mL	Order Code		Order Code		Order Code	
Borosilicate	250, 500	—		7857-05	♠	7857-06	♠
Quartz	250, 500	7856-10	★	7854-25	★	7854-26	★
Borosilicate	1000	—		7857-10	♠	7857-11	♠
Quartz	1000	—		7854-27	★	7854-28	★

Replacement Bushing

Nylon Bushing, #7	5029-10	♠
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PHOTOBIOLOGICAL-OXIDATION APPARATUS

1200W, U.V. ★

Standard unit for liberation of inorganic phosphate from organically bound phosphorus compounds, oxidation of carbon inorganic matter and oxidation of organic nitrogen compounds. Oxidation of organic compounds in water and sediment samples is accomplished by exposure to ultraviolet radiation in the presence of excess oxygen. Organically bound phosphorus is liberated as the ortho-phosphate in as little as one hour. Organic matter is oxidized to CO_2 . Nitrogen compounds are oxidized to the nitrate and nitrite ions.

Additional applications include decomposition of organometallic compounds, providing organic-free samples for culture, nutrition and vitamin assay, destruction of algal suspensions, and oxidation of sediment or residue samples.

Apparatus consists of a cylindrical lamp housing with twelve-position sample tube chamber for twelve quartz tubes of approximately 100mL capacity that surround a 1200 watt medium pressure photochemical lamp. **Access door is provided for set-up, inspection and repairs only — for your safety, do not use this door while the unit is in operation.**

A cooling fan is located at bottom of housing for air movement. Lamp power supply includes a manual or automatic twelve-hour timer selector for programming exposure time. Available in 220v, 60Hz or 230v, 50Hz. Lamp housing measures 12" wide x 20" deep x 36" high, and weighs 75lbs. Power supply measures 11" wide x 18" deep x 11" high, and weighs approximately 75lbs.



- Liberation of inorganic phosphate from organically bound phosphorous compounds
- Oxidation of organic nitrogen compounds, and carbon in organic matter

Complete Apparatus

Frequency, Hz	Power, Volts	Order Code
60	220	7900-31
50	230	7900-30

Description	Qty	Order Code
-------------	-----	---------------

Components

Lamp Housing, only	1	7900-81
Power Supply w/Timer, 60Hz, 220V	1	7900-71
Power Supply w/Timer, 50Hz, 230V	1	7900-74
Lamp, 1200W	1	7825-40
Quartz Sample Tubes, 35 x 2.5cm, 100mL	12	7900-12
Pyrex Stopper	12	7900-13

PHOTOBIOLOGICAL-OXIDATION APPARATUS

1200W, U.V., Flow-Thru

Modified version of 7900 Apparatus. Sample tubes have been replaced with a flow-thru quartz or borosilicate coil for continuous radiation of small (as little as 175mL) or large samples. Coil is available with cooling jacket for slow flow rates or without jacket when heating of sample is not a concern because of the higher flow rate.

Apparatus consists of a cylindrical lamp housing, medium pressure 1200 watt photochemical lamp, quartz or borosilicate glass coil (with or without jacket), and power supply. **Access door is provided for set-up, inspection and repairs only – for your safety, do not use this door while the unit is in operation.**

A cooling fan is located at bottom of housing for air movement. Lamp power supply includes a manual or automatic twelve-hour timer selector for programming exposure time. Available in 220v, 60Hz or 230v, 50Hz. Lamp housing measures 12" wide x 20" deep x 36" high, and weighs 75 lbs. Power supply measures 11" wide x 18" deep x 11" high, and weighs approximately 75 lbs. Coil is 12.7mm O.D. x 8.0mm (5/16") I.D. with 1/2" Swagelok ends, 16 ± 1 turns with approximate capacity of 175mL, maximum flow rate of 10L/min.



- Coil available with cooling jacket for slow flow rate or without cooling jacket for high flow
- Flow-thru quartz or borosilicate glass coil for continuous radiation of small (as little as 175mL) or large volumes

Complete Apparatus

Frequency, Hz	Power, Volts	Order Code	
60	220	7901-55	★
50	230	7901-58	★

Description	Qty	Order Code	
-------------	-----	---------------	--

Components

Lamp Housing, only	1	7901-65	★
Power Supply w/Timer, 60Hz, 220V	1	7900-71	★
Power Supply w/Timer, 50Hz, 230V		7900-74	★
Lamp, 1200W	1	7825-40	★
Quartz Coil, 12.7mm O.D. x 8.0mm I.D., 175mL	12	7901-76	★

Optional Accessories

Borosilicate Coil, 12.7mm O.D. x 8.0mm I.D., 175mL		7901-80	♠
Quartz Coil, Jacketed, 12.7mm O.D. x 8.0mm I.D., 175mL		7901-88	
Borosilicate Coil, Jacketed, 12.7mm O.D. x 8.0mm I.D., 175mL		7901-89	♠



TURNTABLE REACTOR

ACE photochemical reactor with sample roundtable feature for the determination of relative and absolute quantum yields. Features adjustable height slots for up to 33 sample tubes in outer circle and 18 tubes in inner circle, 13mm O.D. Samples rotate equidistantly around lamp under variable rpm control. Chamber between lamp and samples holds four, 51mm square, removable flat filters. Unit is constructed of anodized aluminum, brass and PTFE. Measures 25.4cm diameter at base x 61cm high at top of motor stand. Except for motor and control, reactor is completely immersible and can be easily disassembled for cleaning. We recommend use with 7825-34 Lamp and 7874 (-23,-26) 7875 (-30,-35) immersion well. Available in 115v or 230v CE rated versions.

Complete unit includes motor and control.

NOT included: filters, immersion well, lamp, power supply (lamp) or sample tubes.

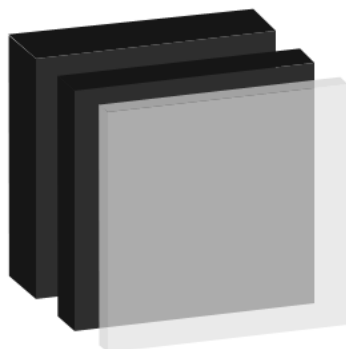
Note: Lamp & Power Supply are NOT safety rated.

Turntable Apparatus

Base O.D., mm	Height, mm	Voltage	Frequency	Order Code	
254	610	120	50/60	7891-30	★
254	610	230	50/60	7891-35	★

Accessories

Power Supply, 450W, 120V 60Hz	7830-60	★
Lamp, 450W	7825-34	★
Quartz Sample Tube, 13mm	8683-08	★
Pyrex Sample Tube, 13mm	8686-09	★
Immersion Well, Quartz Inlet	7874-23	★
Immersion Well, #7 PTFE Inlet	7874-26	★
Immersion Well, Borosilicate Inlet	7875-30	♠
Immersion Well, #7 PTFE Inlet	7875-35	♠
Clear Filter Glass, Absorbing, 1.9-2.1mm thick	7891-40	★
Black Filter Glass, Transmitting, 4.9-5.1mm thick	7891-42	★
Black Filter Glass, Transmitting, 4.4-4.6mm thick	7891-44	★
Black Filter Glass, Transmitting, 2.9-3.1mm thick	7891-46	★



FILTER GLASS UltraViolet, Polished ★

A combination of either 7891-40 and 7891-42, or 7891-40 and 7891-44 isolates 3650 line. 51 x 51mm. For use in four-sided filter chamber supplied with 7891 reactor.

Corning	Kopp	Nominal Thickness, mm	Thickness Variation, mm	Thermal Expansion, (* E ⁻⁷ °C ⁻¹)	Internal Transmittance, (nm)	Order Code
UV Absorbing / Visible Transmitting						
0-52	7380	2	+/- 0.10	85	< 0.0055 (334) > 0.65 (365)	7891-40
UV Transmitting / Visible Absorbing						
7-37	5860	4.5	+/- 0.10	92	> 0.60 (365)	7891-42
7-60	5840	5	+/- 0.10	92	> 0.225 (365)	7891-44
7-54	9863	3	+/- 0.10	97	> 0.425 (254)	7891-46

PLATFORM REACTOR *Photochemical/Photobiological*

Used by water chemists for radiating metals in water to obtain metal-free water. Also used to remove unbound chlorine from drinking water. This aluminum reactor consists of a top platform with eight 33mm I.D. sample tube holes encircling a 40mm lamp well hole; adjustable height, 0-20.5cm, middle platform with grooves to stabilize sample tubes; and a lower platform holding a fan for blowing air up the side of center lamp well. Lamp well is held in a basket pouch attached to the middle platform low enough so that the effective area of the U.V. lamp radiates the very bottom of the sample tubes. Fan is shielded top and bottom by a stainless steel screen and is supplied with 1.8m grounded line cord. Operates on 115v, 50/60 Hz. Overall height approximately 40cm. Lamp, power supply, lamp well and sample tubes NOT included. Available for 230v, 50 cycle operation; ask for quotation. Recommended for up to 450 watt rated lamp.



Turntable Apparatus

O.D., mm	Height, cm	Order Code	
177.8	400	7892-24	★

Accessories

Power Supply, 100W, 120V 60Hz	7830-52	★
Power Supply, 100W, 230V 50Hz	7830-53	★
Lamp, 100W	7825-30	★
Power Supply, 200W, 120V 60Hz	7830-56	★
Lamp, 200W	7825-32	★
Power Supply, 450W, 120V 60Hz	7830-60	★
Power Supply, 450W, 230V 50Hz	7830-61	★
Lamp, 450W	7825-34	★
Quartz Sample Tube, 130mL, Plain End	7892-30	★
Borosilicate Sample Tube, 130mL, Plain End	7892-35	♠
Quartz Sample Tube, 130mL, 24/40 Standard Taper Joint	7892-31	★
Borosilicate Sample Tube, 130mL, 24/40 Standard Taper Joint	7892-36	♠
Immersion Well, Quartz	7892-40	★
Immersion Well, Borosilicate	7892-45	♠
Absorption Sleeve, 280mm	7835-44	★

Need Something Special? Choose ACE

Whether you're simply changing a joint size or designing an entire custom unit, our technical staff is at your service!

Give us a call at 1-800-223-4524 or sales@aceglass.com

**LAMP** *Low Pressure, PenRay®*

Cold cathode, low pressure, mercury arc, gaseous discharge lamps made of double-bore quartz. Lamp power consumption is 5.5 or 15 watts, with principal output at 254 nanometers. Lamps are rated for 5000 hours of operation.

Note: Lamp comes with 90-day warranty. CE rated.

Power Supply						Lamp							
Input Voltage	Input Freq.	Starting Voltage, Vac	Max. Lamp Voltage, Vac	Dim., mm	Order Code	Lighted Length, mm	Overall Length, mm	Quartz O.D., mm	Handle O.D., mm	Cord Length, mm	Starting Voltage, Vac	Operating Voltage, Vac	Order Code
115 Volt Environments													
115	60	2300	300	160x94x53	12132-30	53.8	117.3	6.5	9.5	406	800	270	12132-08
						228.6	294.6	9.5	12.7		640	560	12132-15
230 Volt Environments													
230	50/60	2800	300	117x147x97	12132-35	228.6	294.6	9.5	12.7	406	640	560	12132-15
230	50/60	2300	300	160x94x53	12132-502	53.8	117.3	6.5	9.5	406	800	270	12132-08

LAMP *Medium Pressure ★*

Medium pressure, quartz, mercury-vapor lamp. For use in all listed immersion wells. 61cm PTFE covered lead wires, fitted with pin type connectors and 6' cord for connecting to power supply, permit lowering lamp into well for vertical operation. Of total energy radiated, approximately 40-48% is in the ultraviolet portion of the spectrum, 40-43% in the visible, the balance in the infrared. For replacement cord, see 9698-10. If used with our 7835 absorption sleeve product family, Ace recommends the metal-ended lamps.

Watts	Lamp Volts	Lamp Amps	Arc Length, mm	Distance from Lamp to Bottom, mm	Approx. Total Length, mm	Order Code	Replacement Cord Only		
Not Insulated, Metal-Ended									
100	90-110	1.2	69.85	42.86	155.58	7825-30	★	9698-10	★
200	110-130	1.9	121.92	64.52	250.95	7825-32	★	9698-10	★
450	125-145	3.6	131.50	56.50	244.35	7825-34	★	9698-10	★
450	125-145	3.6	279.40	57.15	400.05	7825-35	★	9698-10	★
550	140-150	4.5	109.54	57.15	236.54	7825-36	★	9698-10	★
1200	270-300	4.7	317.50	87.38	492.25	7825-40	★	9698-10	★
Ceramic Insulated									
100			69.85		155.58	7825-300	★	9698-10	★
200			121.92		250.95	7825-320	★	9698-10	★
450			121.92		244.35	7825-340	★	9698-10	★
450			279.40		400.05	7825-350	★	9698-10	★
550			109.54		236.54	7825-360	★	9698-10	★
1200			317.50		492.25	7825-400	★	9698-10	★

Warranty: One year from date of shipment (WHEN USED UNDER NORMAL CONDITIONS WITH ACE EQUIPMENT).
Typical lamp life 1000 hrs.

Spectral Characteristics (Watts)

Lamp No.	Far U.V 2200-2800A	Middle U.V 2800-3200A	Near U.V. 3200-4000A	Visible 4000-6000A	Infrared 10000-14000A	Total Radiated Energy
7825-30	1.14	1.97	1.53	4.73	2.12	11.49
7825-32	2.88	4.14	3.46	10.6	4.1	25.18
7825-34	27.0	28.7	28.0	75.7	16.4	175.8
7825-35	27.0	28.7	28.0	75.7	16.4	175.8
7825-36	29.2	32.8	32.9	87.2	20.6	202.7
7825-40	116.15	117.01	104.03	187.07	48.68	572.9

CAUTION:

Ultra-violet radiation is permanently damaging to the retina of the eye. Never operate lamp where it can be viewed directly.

FOR SAFETY:

We recommend use of Safety Reaction Cabinet (7836) plus Water-Flo Monitor (12168) when operating these lamps.

POWER SUPPLY Photochemical ★

Cased, open "core and coil" type transformers that supply the extra voltage and current required to initiate the lamp's arc and reduce operational power. Intended for use with our 7825 or 7883 series photochemical lamps. Carefully choose the correct power supply for your environment (voltage and Hz inputs, wattage outputs).

Note: Units are not CE, CSA or UL rated.

For Lamp Wattage	Voltage	Hz.	Weight	Case Dimensions, cm			Order Code
				L	W	H	
120V, 60Hz							
100	120	60	8 lbs.	17.8	12.7	11.4	7830-52
200	120	60	28 lbs.	30.5	21.6	22.9	7830-56
450	120	60	36 lbs.	30.5	21.6	22.9	7830-60
550	120	60	64 lbs.	45.7	28.3	27.9	7830-64

230V, 50Hz							
100	230	50	8 lbs.	17.8	12.7	11.4	7830-53
450	230	50	40 lbs.	30.5	21.6	22.9	7830-61
1200	230	50	65 lbs.	45.7	28.3	27.9	7830-89

230V, 60Hz							
1200	230	60	65 lbs.	45.7	28.3	27.9	7830-71

Warranty: One year from date of shipment. (When used under normal conditions with Ace Glass equipment.)

Typical lamp life 1000 hrs.


REFLECTOR Medium Pressure Lamp ★

Reflector, for use with Ace-Hanovia U.V. lamps. Reflects 85% of spectral rays. Made of aluminum with 44.5 x 10cm opening. Reflector supplied with clamps on rear brackets for mounting to 1/2" rod (not supplied) and 6ft power cord. Holes in reflector are drilled to accept 11.4cm lamp and are adjustable for 19.1cm and 30.5cm lamps, (Larger lamps available on special order). Lamp is the same as listed under 7825, except ends are adapted for reflector.

Note: Lamp and reflector must be ordered separately.

Lamp, Watts	Input	Arc Length, cm	Order Code
Reflector			
—	—	—	7883-02

Lamp			
450		11.4 (4.5")	7883-14

Power Supply			
450	120V, 60Hz		7830-60
450	230V, 50Hz		7830-61

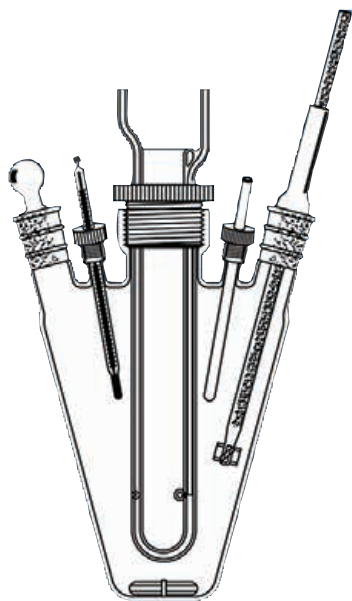

BUSHING #50 Ace-Thred ♠

Bushing connector for securing 7874, 7875, or 7876 Immersion Wells in 7863, 7864, or 7865 reaction vessels by forming a FETFE O-Ring compression seal. Fits all #50 Ace-Thred joints.

Note: Supplied with FETFE O-Ring.

Material	For Extra O-Rings use	Order Code
Nylon	7855-744	7506-14
PTFE	7855-744	7506-35





REACTION VESSEL *Kriel**

Tapered wall style reaction vessel for prep-scale photolysis. Tapered sides assure that the effective area of a 450w or 550w photochemical lamp can be entirely submersed into the liquid, contrary to traditional round bottom reaction flasks. Net result is approximately a 20% savings in reaction time. An additional advantage of this design is in the initial mixing of reactants. The flat bottom allows immediate stirring with a magnetic stirrer and after only one-third full, mechanical stirring can be implemented. Center neck is #50 Ace-Thred for use with 7874 or 7875, 450mm Immersion Wells. **Threaded design offers convenience of vertical depth positioning of well to suit your needs.** Two side joints are $\$29/42$, one for 10mm stirring shaft and bearing, the other for charging flask, condenser, etc. Two front ports are #7 Ace-Threds, one with 7mm I.D. bushing for a thermometer, the other with 8mm I.D. bushing for sparger tube, etc.

Complete unit consists of flask, immersion well (quartz), glass stopper, stirring shaft, bearing, (1) #7 nylon bushing with 7mm I.D. hole, (1) #7 bushing with 8mm I.D. hole and PTFE stir bar. For stirrer coupling, flexible shaft, see 8124-10 and 8081. For motor and controller, see 13649 and 13530.

Center Neck Ace-Thred, #	Capacity, mL	For Immersion Well Size, mm	Order Code	
50	3000	450	6962-62	♠
50	5000	450	6962-65	♠

Components

Flask Only, 3L, #50 CN, (2) $\$29/42$, (2) #7 threads w/bushings and O-Rings	6962-32	♠
Flask Only, 5L, #50 CN, (2) $\$29/42$, (2) #7 threads w/bushings and O-Rings	6962-35	♠
Immersion Well, Quartz, 450mm for #50 Ace-Thred	7874-35	★
Bushing, Nylon, with O-Ring, for -62 and -65	7506-14	♠
Stopper, $\$29/42$	8250-14	♠
Bearing, $\$29/42$	8038-20	♠
Stirring Shaft, 10mm	8068-303	★
PTFE Stir Bar, 7.9mm x 50.8mm long	13654-18	★

**Designed and evaluated by Dr. Dennis Kriel, The Dow Chemical Co., Central Research-Polymer Research Lab, Midland, MI 48640.*



STAND *Photochemical Reactor ★*

Sturdy aluminum, powder coated stand for use with cylindrical reactors such as those listed under 7840, 7841, 7844, 7861, 7863, 7864 or 7865. Design allows vessel to be operated in a cold bath in the event the reactant material needs cooling. Also can be used stand-alone. User must select the appropriate PTFE insert to accommodate desired vessel size.

Vessel Size, mL	Order Code
Stand, only	7837-75
PTFE Stand Inserts - Unjacketed Vessels	
250	7837-02
500	7837-05
1000	7837-10
PTFE Stand Inserts - Jacket Vessels	
250	7837-25
500	7837-60
1000	7837-100

SAFETY REACTION CABINET* ★

This steel cabinet allows for the safe operation of ACE photochemical reaction equipment. Eliminates the need for a hood, or to construct a special safe area to operate the U.V. lamp. The cabinet has welded seams and a fully hinged door with lip to prevent light from escaping. The door has a key lock for positive closure and it controls a safety switch that prevents U.V. lamp operation unless door is closed. The floor of cabinet is sealed to one-inch height to contain any possible spills.

Inside the cabinet is a plug-in light, auxiliary 120v socket and a 60 CFM exhaust fan, all controlled by an ON/OFF switch. Also inside are pin jack sockets for lamp connection and a removable 1/2" aluminum rod, mounted vertically, for clamping the reactor.

The cabinet is supplied with a six-foot grounded power cord with NEMA plug for connection to a 120v source, and a six-foot, two-wire cord with male pin jacks for connection to the lamp power supply. Handles are mounted on both sides for easier carrying, and there are rubber feet on the bottom of the cabinet for stability. Measures: 36" (H) x 21-1/4" (W) x 18-1/2" (D). Painted black inside, chemically resistant blue outside. Weight: 60 lbs.



Description

Order
Code

Meets Canadian CSA Requirements

7836-20
7836-120

**Designed by Dr. John Penn, West Virginia University Dept. of Chemistry, Morgantown, WV 26506
For international use, 230 volts, 50Hz, use with step-up/step-down transformer 7834-17.*

ABSORPTION SLEEVE ★

Filter sleeve for use with all ACE Immersion Wells to restrict portions of the radiated energy from reaching the reactant material. An invaluable aid in predetermining which portion of the spectrum creates the reaction. Sleeves are glass, open-end tubes which telescope into well assembly to surround the light source. For use with 100, 200, 450, and 1200 watt lamps, only.


Type Glass
Pyrex 7740

Length,
mm
280

O.D.,
mm
30

I.D.,
mm
26

Order
Code
7835-44

STIRRER Talboys Advanced Series ★

Talboys Advanced series magnetic stirrer with either a ceramic or aluminum top. Microprocessor controlled with analog speed knob. Speed range 60-1600 rpm. The new low-profile design makes it easier to place under reactors like our Ace photochemical reactor vessels. PTFE stir bar included. Accessory support rod kit available on request. 120v (230v available). CE, UL and CUL approved. Two-year manufacturer's limited warranty.


Top Size,
in
4x4

Capacity,
mL
600

Top

Ceramic

Order
Code

13470-10

7x7

2500

Ceramic

13470-16

7x7

2500

Aluminum

13470-18

CE UL CUL approved.

U.S. Government Buyer?

GSA pricing for **Ace Glass** products is available thru our partner, the VWR Corporation.

www.us.vwr.com


Schedule

Contract GS07F119CA

www.gsamart.com

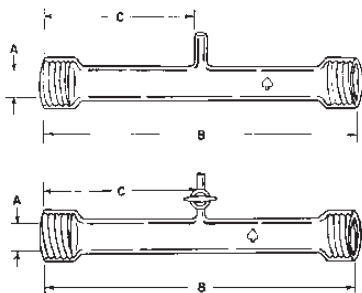


PHOTOCHEMICAL CELL w/Removable Window ♠

Straight, borosilicate glass, photochemical cell with threaded end fittings for use with 7896 cell window holder. The ease in removing these holders makes cleaning the cell easier. Available with single or plain port or with single, straight, 2mm bore, glass stopcock.

Note: Not supplied with windows or holders.

Please state dimension B, otherwise we will supply B = 12". Port will be centered between threaded ends unless requested otherwise. Sold per foot.



**Default Length of 12" w/Port Centered,
Unless User Specified**

Port Type	(A) I.D., mm	(B) Cell Length, mm/in	(C) Port Location, mm/in	Order Code
Plain	25	User Defined	User Defined	7894-10
Plain	50	User Defined	User Defined	7894-15
w/Stopcock	25	User Defined	User Defined	7894-30
w/Stopcock	50	User Defined	User Defined	7894-35



CELL WINDOW ★

Windows to be used with 7894 photochemical cells and 7896 cell window holder. The windows are ground and polished (optical grade).

Material	O.D., mm	Thickness, in	Order Code
For #25 Ace-Thred			
Quartz	30	1/8	7895-03 ★
For #50 Ace-Thred			
Quartz	62	1/8	7895-08 ★



CELL WINDOW HOLDER

Nylon cell window holder for use with 7894 photochemical cells and 7895 cell windows. The removable cell window is compressed between (2) FETFE O-Rings for a leak-tight fit. Holder is then threaded into end of a 7894 cell until O-Ring compression seal is formed between the holder and the cell.

Note: Supplied complete, consisting of threaded body, front seal O-Ring, (2) FETFE window support O-Rings, compression ring and four flat-head screws.

For Extra O-Rings use

Ace-Thred, #	Bushing Front Seal	Window Support	Order Code
25	7855-734	7855-727	7896-20 ♠
50	7855-744	7855-747	7896-30 ♠

WATER FLOW MONITOR *J-Kem Model WFM-120*

J-Kem monitor precisely measures the flow of water through a condenser, bath or a photochemical reactor. Upon interruption, or if the flow drops below an operator-set rate, power to the monitored equipment is cut off. Manual power reset. Inclusion of a 12168-10 shut-off valve, and either a 12169-01 audible alarm or a 12169-05 digital alarm, is recommended.

J-Kem Model	Description	Flow Rate, LPM	Order Code
WFM-01	Flow Sensor	0.1 to 2.5	12168-01
WFM-02	Flow Sensor	1 to 10	12168-02
WFM-03	Flow Sensor	2 to 30	12168-03
—	Shut-Off Valve	—	12168-10
WFM-120	Water Flow Monitor (120Vac)	—	12168-120
WFM-230	Water Flow Monitor (230Vac)	—	12168-230


LAB SAFETY CONTROLLER *J-Kem Model LS-120*

Lab safety controller by J-Kem combines all the features of the digital temperature monitor and the water-flow monitor into a single versatile instrument. Plug any piece of equipment into the monitor, then, if the water flow rate falls below the set level, or if the reaction temperature goes above or below the user set limits, the outlet power turns off automatically. The unit will also cut off power if the main power is interrupted. The controller then has to be reset.

J-Kem Model	Flow Rate, LPM	Thermocouple Type	Temperature Range (°C)	Order Code
LS-120-T		T	-200 to 250	12167-01
LS-120-J		J	0 to 800	12167-03
LS-120-K		K	-50 to 1200	12167-05

Flow Sensor

WFM-01	0.1 to 2.5	12168-01
WFM-02	1 to 10	12168-02
WFM-03	2 to 30	12168-03

Shut-off Valve

250WV	12168-10
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ALARM *J-Kem*

Digital alarm outlet and audible alarm accessories for J-Kem safety controller and water-flow monitors. Allows 12167 and 12168 units to be set up for alarm warnings when in unsafe conditions. The audible alarm sounds during low, or no water conditions, for the 12168 monitor; and the digital alarm activates on either the water flow monitor or the safety controller when conditions are out of set ranges.

J-Kem Model	Alarm Type	For Controllers	Order Code
WFM-AA	Digital	12167 & 12168	12169-01
WFM-OC	Audible	12168	12169-05

Pressure Reaction Systems



Typical Assemblies

IMPORTANT— General Warnings for Pressurized Glassware

Due to varying conditions, ACE cannot guarantee glass vessels from breakage under pressure.

ALL LABORATORY SAFETY PROCEDURES SHOULD BE OBSERVED. **ALWAYS WORK BEHIND A SHIELD.**

- Do not use with materials which solidify on standing and create excessive stress on glass.
- Before applying pressure, examine glassware carefully for surface scratches which may weaken its strength.
- Questions regarding the safe operating conditions of a particular glass vessel under pressure may be directed to ACE GLASS INCORPORATED.
- Safety coatings: epoxy and plastic coating help prevent scratching and shattering and reduce spills; however, they do not prevent breakage

The following ACE heavy wall borosilicate glass Pressure Reactors have been designed and tested to provide the chemist with a system to perform low to moderate positive pressure reactions, synthesis, and catalysis; or simply to run reactions under inert gas conditions. Reactor capacities range from 500mL to 5000mL, and use Ace-Threds to achieve a leak-tight system.

Two types of Pressure Reactors are available:

1 – Two-Piece System, with a maximum pressure limit of 35psig @ 100°C

2 – One-Piece System, with a maximum pressure limit of 45psig @ 100°C

The **Two-Piece System** consists of a flanged flask and head with a shallow O-Ring groove, O-Ring, and quick-release clamp. Flange sizes range from 60mm to 150mm inside diameter, allowing the use of large agitators and facilitating product removal and clean-out.

The **One-Piece System** provides a #25 center opening, with smaller openings as side necks, and has a higher allowable operating pressure.

Both systems offer jacketed and unjacketed vessels, with or without bottom outlet valves. These jackets are heat-sealed. Complete systems and their components are listed on the following pages. Systems are available with:

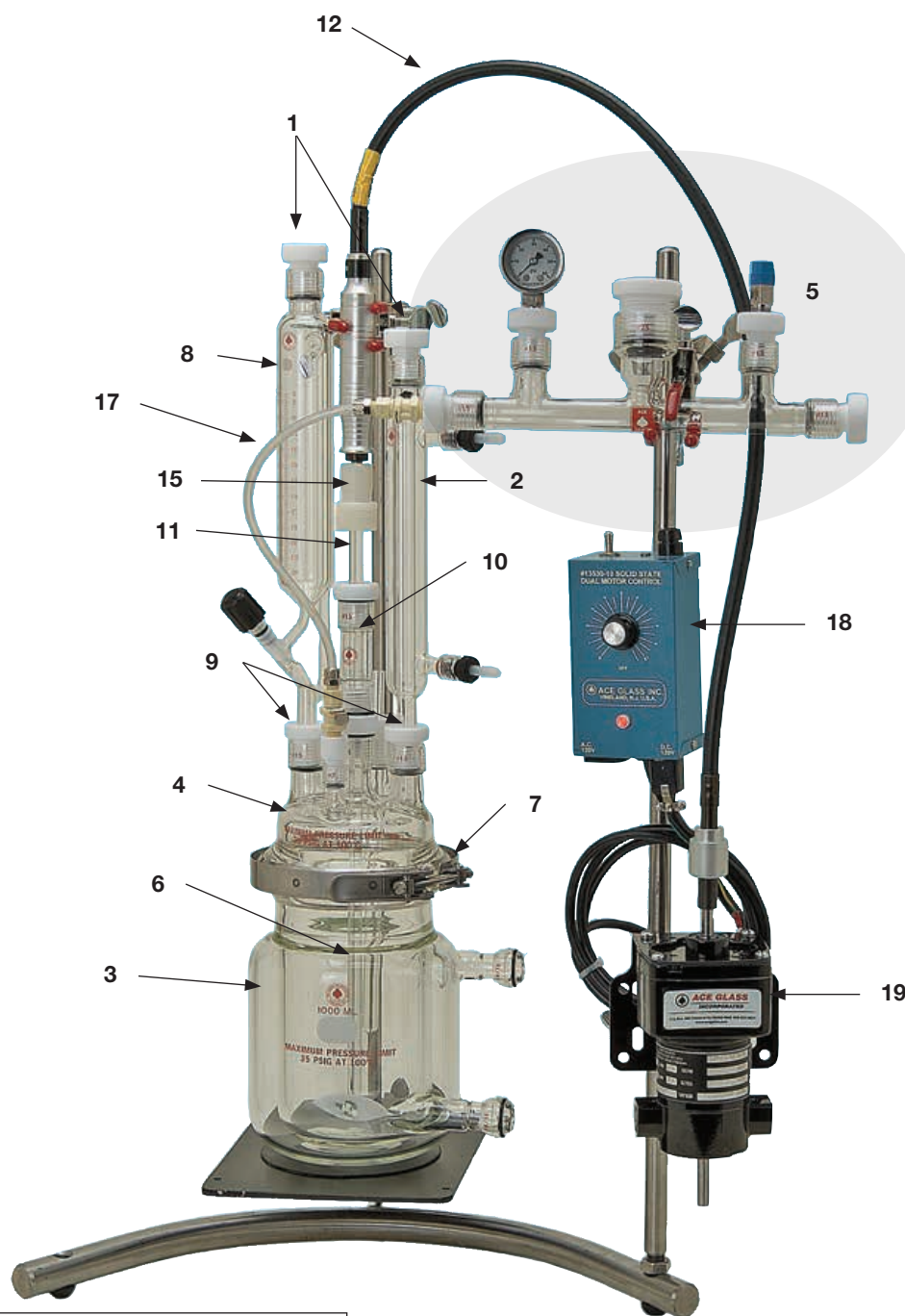
Due to varying conditions, ACE cannot guarantee glassware against breakage caused by pressure or vacuum.

- Liquid addition funnel
- Solid addition funnel
- Stirring motor, controller and flexible shaft
- Heating mantle and temperature control system
- Thermowell
- Moisture test receiver
- Temperature controller with thermocouple
- Pressure relief manifold
- Support

Safety is the foremost concern when operating pressurized glass reactors. With this in mind, ACE offers a separate manifold, 6448 (see photo), which MUST be used in conjunction with all pressure systems listed in this catalog. It consists of a glass manifold with Ace-Threds, PTFE adapters, a pressure gauge, a primary adjustable pressure release valve, and a secondary fixed pressure rupture disc. In addition, approved safety shields, eye and body protection should be used to avoid personal injury.

Jacketed Two-Piece Pressure Reactor

Two-piece systems with a maximum pressure limit of 35psig @ 100°C.



Stand (12841, 13568 or 13586), and Support Shelf (11173) not included. Shown without clamps for better visibility.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

No.	Complete System Components	Qty	Order Code	
500mL System (60mm Flange) ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL, 60mm flange top	1	6427-09	♣
4	Head, 60mm, #15 center neck, three side necks	1	6433-23	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-04	♣
7	Clamp, 60mm, Quick-release	1	6517-22	★
8	Addition Funnel, 60mL	1	7299-06	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-02	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

500mL System (100mm Flange) ★

1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL, 100mm flange top	1	6427-13	♣
4	Head, 100mm, #15 center neck, four side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-10	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 60mL	1	7299-06	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

1000mL System ★

1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 1000mL, 100mm flange top	1	6427-16	♣
4	Head, 100mm, #15 center neck, four side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-14	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 125mL	1	7299-12	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

No.	Complete System Components	Qty	Order Code	
2000mL System ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 2000mL, 100mm flange top	1	6427-18	♣
4	Head, 100mm, #15 center neck, four side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-14	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 150mL	1	7299-25	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

3000mL System ★

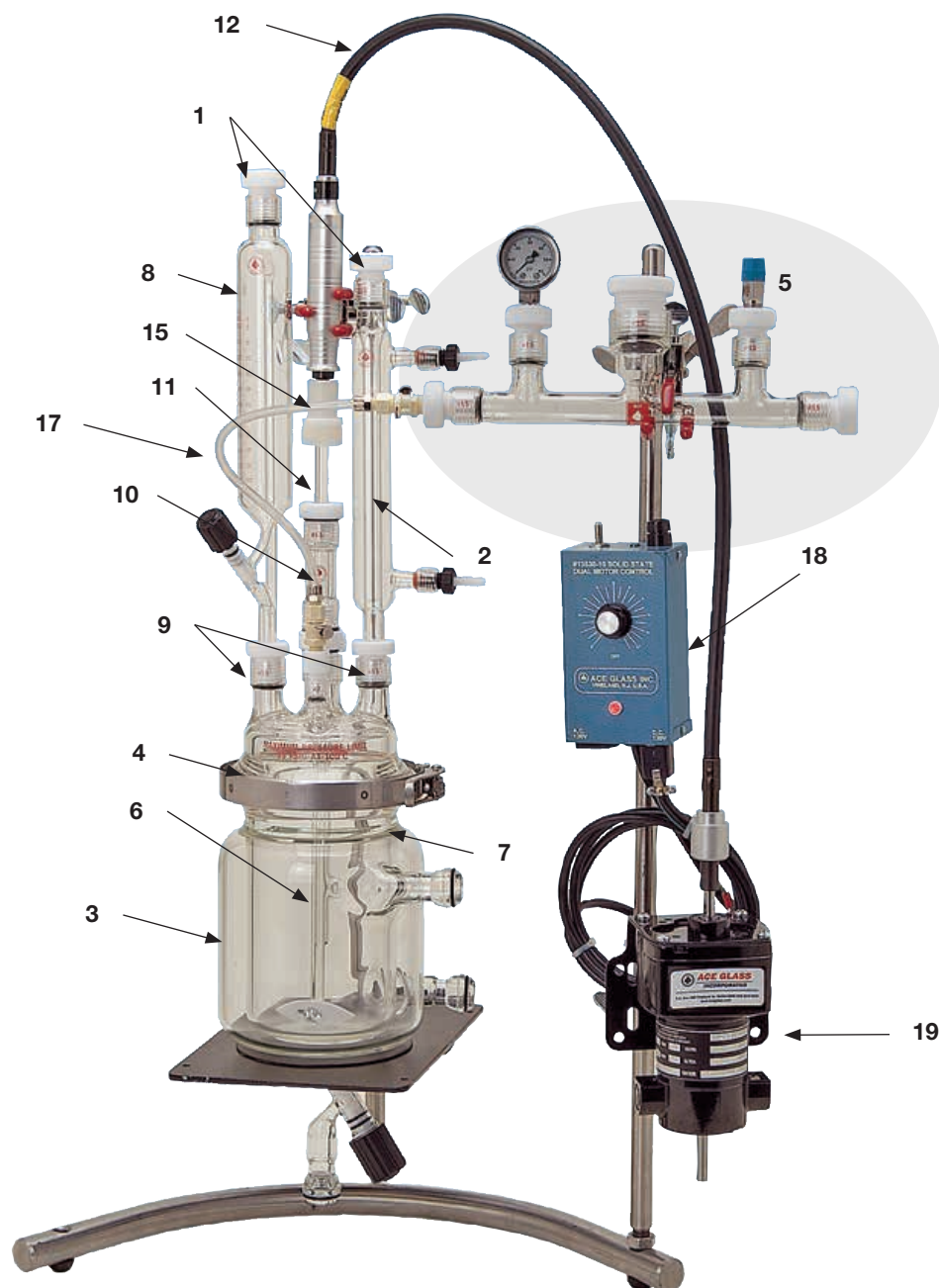
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 3000mL, 150mm flange top	1	6427-23	♣
4	Head, 150mm, #15 center neck, five side necks	1	6433-44	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-22	♣
7	Clamp, 150mm, Quick-release	1	6517-27	★
8	Addition Funnel, 150mL	1	7299-25	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 24mm wide	1	8082-06	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

5000mL System ★

1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 5000mL, 150mm flange top	1	6427-26	♣
4	Head, 150mm, #15 center neck, five side necks	1	6433-44	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-24	♣
7	Clamp, 150mm, Quick-release	1	6517-27	★
8	Addition Funnel, 500mL	1	7299-34	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-14	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 24mm wide	1	8082-06	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

Jacketed Two-Piece Pressure Reactor w/Bottom Outlet

Two-piece systems with a maximum pressure limit of 35psig @ 100°C.



Stand (12841, 13568 or 13586), and Support Shelf (11173) not included. Shown without clamps for better visibility.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

No.	Complete System Components	Qty	Order Code	
500mL System (60mm Flange) ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL, 60mm flange top, bottom outlet	1	6429-09	♣
4	Head, 60mm, #15 center neck, three side necks	1	6433-23	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-04	♣
7	Clamp, 60mm, Quick-release	1	6517-22	★
8	Addition Funnel, 60mL	1	7299-06	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-02	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

500mL System (100mm Flange) ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL, 100mm flange top, bottom outlet	1	6429-14	♣
4	Head, 100mm, #15 center neck, four side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-10	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 60mL	1	7299-06	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

1000mL System ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 1000mL, 100mm flange top, bottom outlet	1	6429-20	♣
4	Head, 100mm, #15 center neck, four side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-14	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 125mL	1	7299-12	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

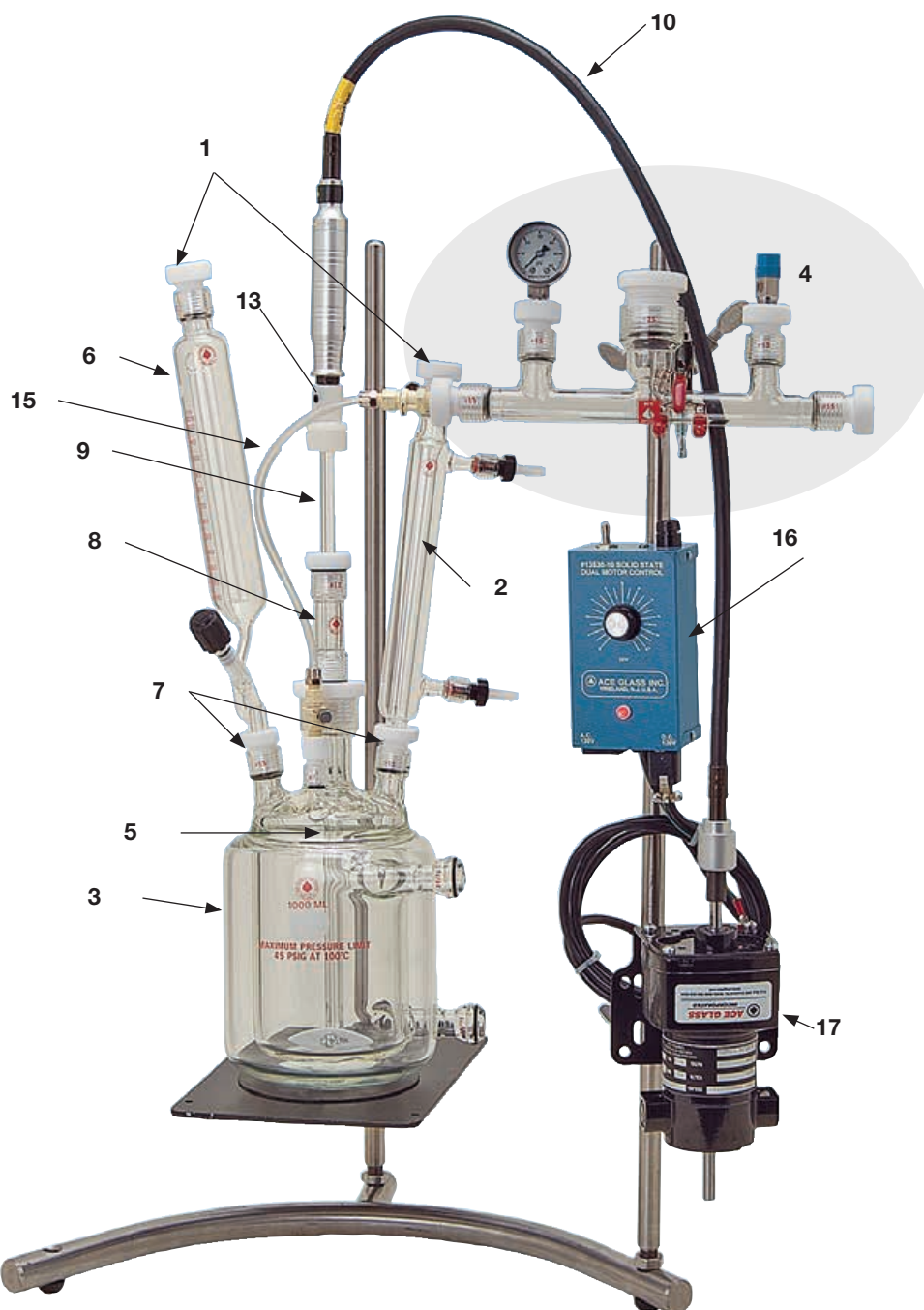
No.	Complete System Components	Qty	Order Code	
2000mL System ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 2000mL, 100mm flange top, bottom outlet	1	6429-24	♣
4	Head, 100mm, #15 center neck, four side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-14	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 150mL	1	7299-25	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

3000mL System ★				
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 3000mL, 150mm flange top, bottom outlet	1	6429-28	♣
4	Head, 150mm, #15 center neck, five side necks	1	6433-44	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-22	♣
7	Clamp, 150mm, Quick-release	1	6517-27	★
8	Addition Funnel, 150mL	1	7299-25	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 24mm wide	1	8082-06	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

5000mL System ★				
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 5000mL, 150mm flange top, bottom outlet	1	6429-33	♣
4	Head, 150mm, #15 center neck, five side necks	1	6433-44	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-24	♣
7	Clamp, 150mm, Quick-release	1	6517-27	★
8	Addition Funnel, 500mL	1	7299-34	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-14	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 24mm wide	1	8082-06	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
18	Stirrer Motor Controller, Solid State	1	13530-10	★
19	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
20	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

Jacketed One-Piece Pressure Reactor

One-piece systems with a maximum pressure limit of 45psig @ 100°C.



Stand (12841, 13568 or 13586), and Support Shelf (11173) not included. Shown without clamps for better visibility.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

No.	Complete System Components	Qty	Order Code	
500mL System ★				
1	#15 PTFE Plug	2	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 500mL	1	6438-14	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-41	♠
6	Addition Funnel, 60mL	1	7299-06	♠
7	#15 PTFE Bushing)	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-12	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

1000mL System ★				
1	#15 PTFE Plug	2	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 1000mL	1	6438-17	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-43	♠
6	Addition Funnel, 125mL	1	7299-12	♠
7	#15 PTFE Bushing	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-12	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

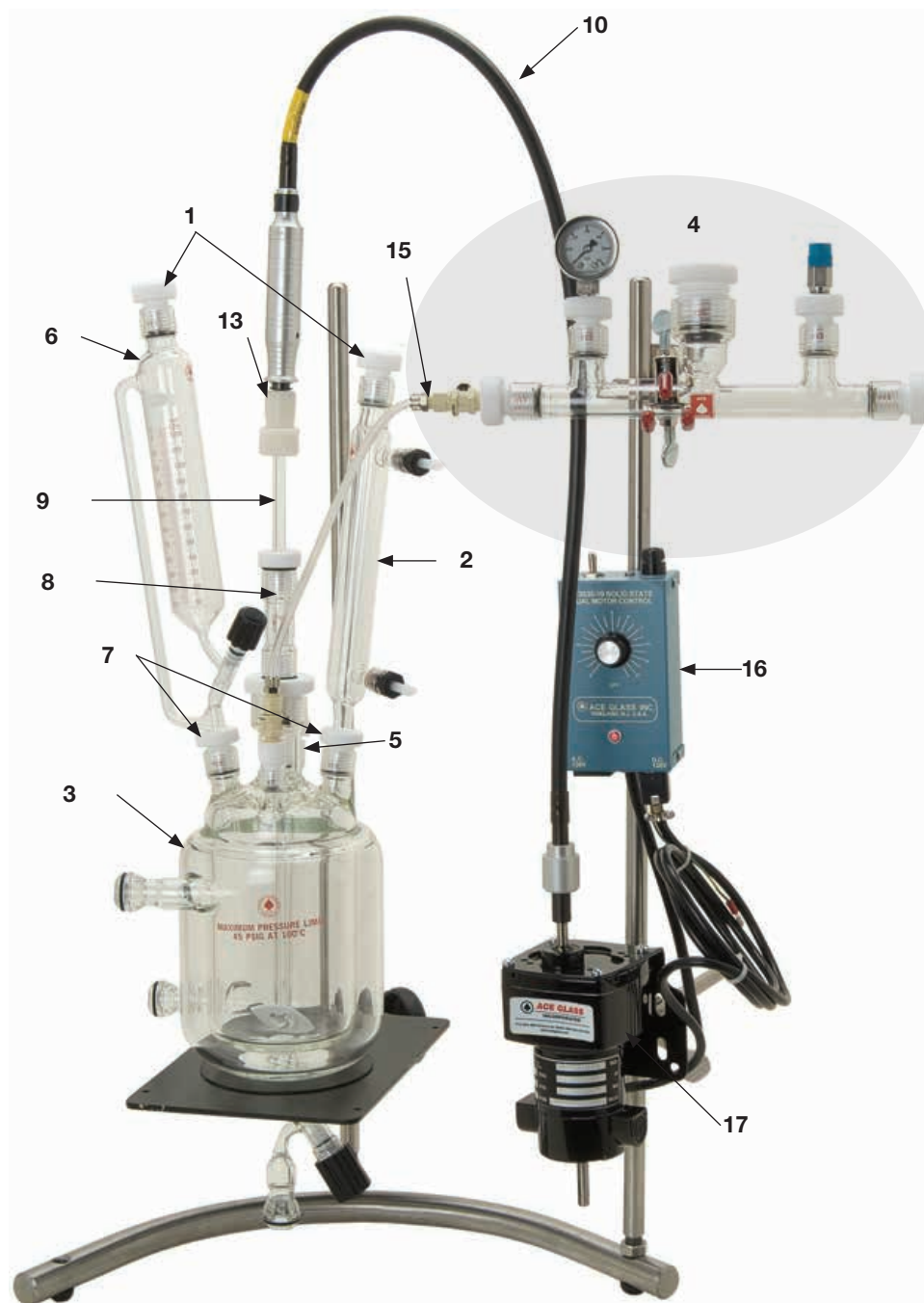
2000mL System ★				
1	#15 PTFE Plug	2	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 2000mL	1	6438-19	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-43	♠
6	Addition Funnel, 150mL	1	7299-25	♠
7	#15 PTFE Bushing	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-12	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

No.	Complete System Components	Qty	Order Code	
3000mL System ★				
1	#15 PTFE Plug	3	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 3000mL	1	6438-24	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-47	♠
6	Addition Funnel, 150mL	1	7299-25	♠
7	#15 PTFE Bushing	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-12	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

5000mL System ★				
1	#15 PTFE Plug	3	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 5000mL	1	6438-29	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-49	♠
6	Addition Funnel, 500mL	1	7299-34	♠
7	#15 PTFE Bushing	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-14	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

Jacketed One-Piece Pressure Reactor w/Bottom Outlet

One-piece systems with a maximum pressure limit of 45psig @ 100°C.



Stand (12841, 13568 or 13586), and Support Shelf (11173) not included. Shown without clamps for better visibility.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

No.	Complete System Components	Qty	Order Code	
500mL System ★				
1	#15 PTFE Plug	2	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 500mL w/bottom outlet	1	6439-15	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-41	♠
6	Addition Funnel, 60mL	1	7299-06	♠
7	#15 PTFE Bushing	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-12	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

1000mL System ★				
1	#15 PTFE Plug	2	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 1000mL w/bottom outlet	1	6439-21	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-43	♠
6	Addition Funnel, 125mL	1	7299-12	♠
7	#15 PTFE Bushing	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-12	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

2000mL System ★				
1	#15 PTFE Plug	2	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 2000mL w/bottom outlet	1	6439-25	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-43	♠
6	Addition Funnel, 150mL	1	7299-25	♠
7	#15 PTFE Bushing	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-12	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

No.	Complete System Components	Qty	Order Code	
3000mL System ★				
1	#15 PTFE Plug	3	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 3000mL w/bottom outlet	1	6439-29	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-47	♠
6	Addition Funnel, 150mL	1	7299-25	♠
7	#15 PTFE Bushing	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-12	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

5000mL System ★				
1	#15 PTFE Plug (Complete contains THREE)	3	5846-48	♠
2	West Condenser w/Ace-Threds	1	6024-20	♠
3	Flask, 5000mL w/bottom outlet	1	6439-34	♠
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-49	♠
6	Addition Funnel, 500mL	1	7299-34	♠
7	#15 PTFE Bushing (Complete contains TWO)	2	7506-27	♠
8	Bearing, complete, w/Ace-Threds	1	8044-55	♠
9	Stir Shaft, 10mm	1	8075-14	♠
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♠
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♠
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♠
15	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
16	Stirrer Motor Controller, Solid State	1	13530-10	★
17	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
18	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

Unjacketed Two-Piece Pressure Reactor

Two-piece systems with a maximum pressure limit of 35psig @ 100°C.



Stand (12841 or 13568), and
Support Shelf (11173) not included.
Shown without clamps for better visibility.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

No.	Complete System Components	Qty	Order Code	
500mL System (60mm Flange) ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL, 60mm flange top	1	6423-05	♣
4	Head, 60mm, #15 center neck, (3) side necks	1	6433-23	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-04	♣
7	Clamp, 60mm, Quick-release	1	6517-22	★
8	Addition Funnel, 60mL	1	7299-06	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm	1	8082-02	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-03	
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

500mL System (100mm Flange) ★				
6423-205				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL, 100mm flange top	1	6423-07	♣
4	Head, 100mm, #15 center neck, (4) side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-10	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 60mL	1	7299-06	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-07	
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

1000mL System ★				
6423-210				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 1000mL, 100mm flange top	1	6423-10	♣
4	Head, 100mm, #15 center neck, (4) side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-14	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 125mL	1	7299-12	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-12	
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

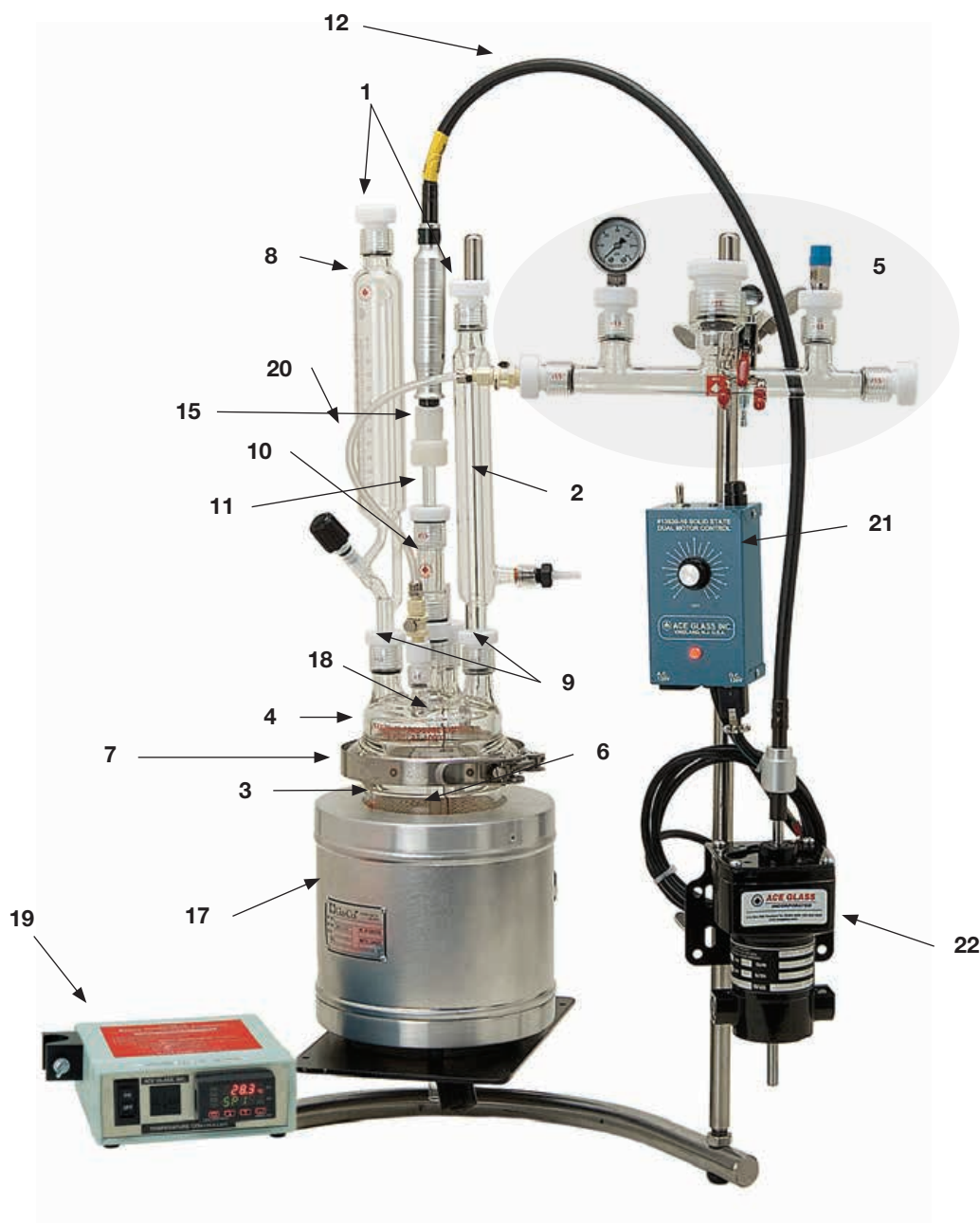
No.	Complete System Components	Qty	Order Code	
2000mL System ★				
6423-215				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 2000mL, 100mm flange top	1	6423-20	♣
4	Head, 100mm, #15 center neck, (4) side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-14	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 250mL	1	7299-25	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-16	
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

3000mL System ★				
6423-220				
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 3000mL, 150mm flange top	1	6423-30	♣
4	Head, 150mm, #15 center neck, (5) side necks	1	6433-44	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-22	♣
7	Clamp, 150mm, Quick-release	1	6517-27	★
8	Addition Funnel, 250mL	1	7299-25	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm	1	8082-06	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-30	
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

5000mL System ★				
6423-225				
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 5000mL, 100mm flange top	1	6423-35	♣
4	Head, 150mm, #15 center neck, (5) side necks	1	6433-44	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-24	♣
7	Clamp, 150mm, Quick-release	1	6517-27	★
8	Addition Funnel, 500mL	1	7299-34	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-14	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm	1	8082-06	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-33	
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

Unjacketed Two-Piece Pressure Reactor w/Bottom Outlet

Two-piece systems with a maximum pressure limit of 35psig @ 100°C.



Stand (12841, 13568 or 13586), and Support Shelf (11173) not included. Shown without clamps for better visibility.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

No.	Complete System Components	Qty	Order Code	
500mL System (60mm Flange) ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL, 60mm flange top w/bottom outlet	1	6425-04	♣
4	Head, 60mm, #15 center neck, (3) side necks	1	6433-23	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-04	♣
7	Clamp, 60mm, Quick-release	1	6517-22	★
8	Addition Funnel, 60mL	1	7299-06	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-02	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-44	♣
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

500mL System (100mm Flange) ★				
6425-206				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL, 100mm flange top w/bottom outlet	1	6425-06	♣
4	Head, 100mm, #15 center neck, (4) side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-10	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 60mL	1	7299-06	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-47	♣
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

1000mL System ★				
6425-211				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 1000mL, 100mm flange top w/bottom outlet	1	6425-12	♣
4	Head, 100mm, #15 center neck, (4) side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-14	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 125mL	1	7299-12	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-49	♣
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

No.	Complete System Components	Qty	Order Code	
2000mL System ★				
6425-214				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 2000mL, 100mm flange top w/bottom outlet	1	6425-15	♣
4	Head, 100mm, #15 center neck, (4) side necks	1	6433-35	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-14	♣
7	Clamp, 100mm, Quick-release	1	6517-25	★
8	Addition Funnel, 250mL	1	7299-25	♣
9	#15 PTFE Bushing (Complete contains TWO)	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 19mm wide	1	8082-04	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-51	♣
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

3000mL System ★				
6425-221				
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 3000mL, 150mm flange top w/bottom outlet	1	6425-19	♣
4	Head, 150mm, #15 center neck, (5) side necks	1	6433-44	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-22	♣
7	Clamp, 150mm, Quick-release	1	6517-27	★
8	Addition Funnel, 250mL	1	7299-25	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-12	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 24mm wide	1	8082-06	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-53	♣
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

5000mL System ★				
6425-226				
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 5000mL, 150mm flange top w/bottom outlet	1	6425-23	♣
4	Head, 150mm, #15 center neck, (5) side necks	1	6433-44	♣
5	Pressure Reactor Manifold, complete	1	6448-54	★
6	Thermowell	1	6471-24	♣
7	Clamp, 150mm, Quick-release	1	6517-27	★
8	Addition Funnel, 500mL	1	7299-34	♣
9	#15 PTFE Bushing	2	7506-27	♣
10	Bearing, complete, w/Ace-Threds	1	8044-24	♣
11	Stir Shaft, 10mm	1	8075-14	♣
12	Flexible Shaft, complete, 91.4cm	1	8081-30	★
13	Stirrer Blade, PTFE, 24mm wide	1	8082-06	♣
14	Krytox® High Vacuum Grease	1	8116-10	★
15	Swivel Coupling	1	8126-10	♣
16	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
17	Aluminum Heating Mantle	1	12058-55	♣
18	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
19	Digital Temperature Controller, "J" output	1	12125-14	★
20	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
21	Stirrer Motor Controller, Solid State	1	13530-10	★
22	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	★
23	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

Unjacketed One-Piece Pressure Reactor

One-piece systems with a maximum pressure limit of 45psig @ 100°C.



Stand (12841 or 13568), and
Support Shelf (11173) not included.
Shown without clamps for better visibility.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

No.	Complete System Components	Qty	Order Code	
500mL System ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL	1	6436-06	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-41	♣
6	Addition Funnel, 60mL	1	7299-06	♣
7	#15 PTFE Bushing	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-12	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-07	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

1000mL System ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 1000mL	1	6436-09	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-43	♣
6	Addition Funnel, 125mL	1	7299-12	♣
7	#15 PTFE Bushing	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-12	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-12	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

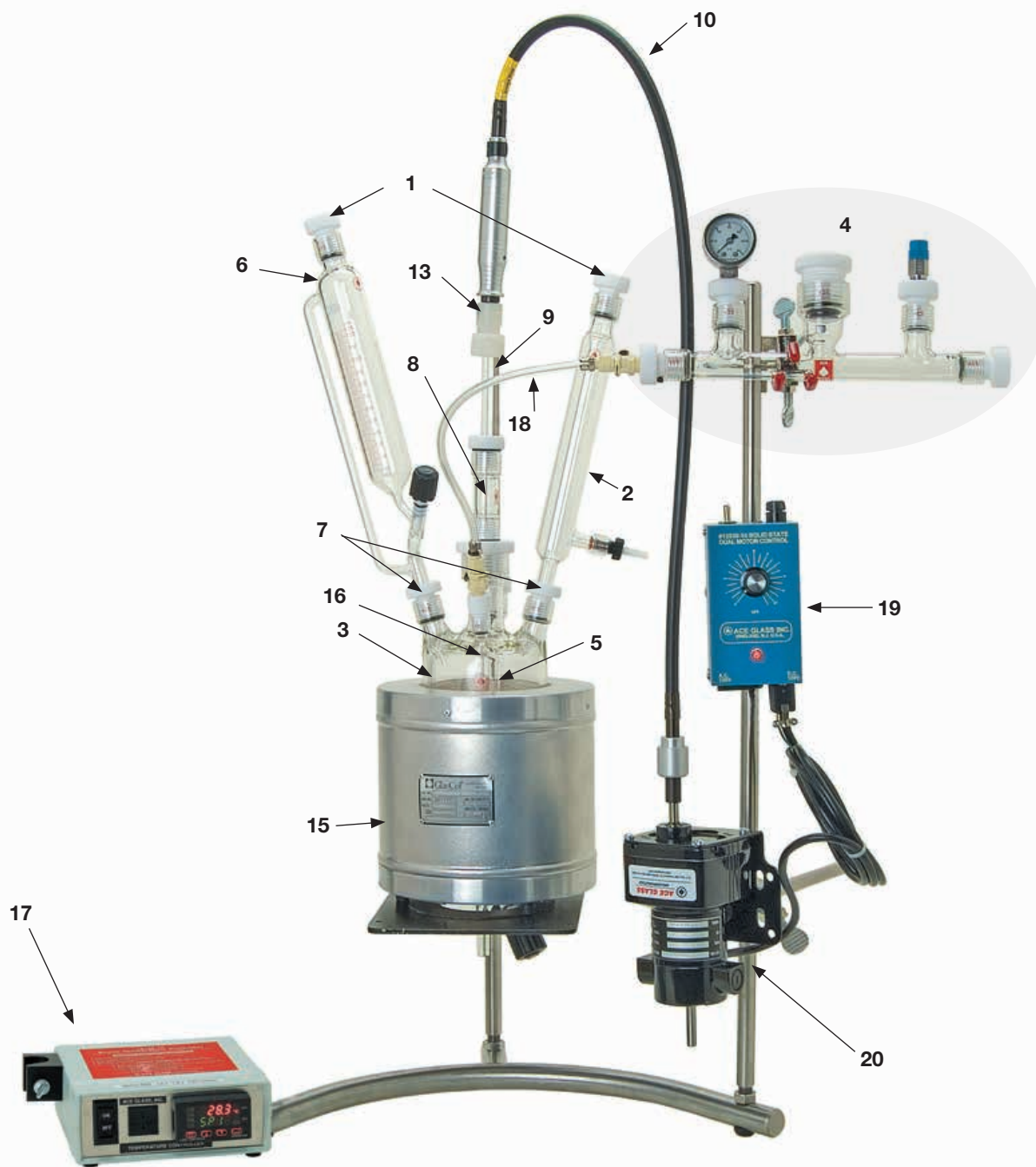
2000mL System ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 2000mL	1	6436-22	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-43	♣
6	Addition Funnel, 150mL	1	7299-25	♣
7	#15 PTFE Bushing	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-12	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-16	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

No.	Complete System Components	Qty	Order Code	
3000mL System ★				
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 3000mL	1	6436-31	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-47	♣
6	Addition Funnel, 150mL	1	7299-25	♣
7	#15 PTFE Bushing	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-12	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-30	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

5000mL System ★				
1	#15 PTFE Plug (Complete contains THREE)	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 5000mL	1	6436-37	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-49	♣
6	Addition Funnel, 500mL	1	7299-34	♣
7	#15 PTFE Bushing (Complete contains TWO)	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-14	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-33	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

Unjacketed One-Piece Pressure Reactor w/Bottom Outlet

One-piece systems with a maximum pressure limit of 45psig @ 100°C.



Stand (12841, 13568 or 13586), and Support Shelf (11173) not included. Shown without clamps for better visibility.

For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.

No.	Complete System Components	Qty	Order Code	
500mL System ★				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 500mL	1	6437-07	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-41	♣
6	Addition Funnel, 60mL	1	7299-06	♣
7	#15 PTFE Bushing	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-12	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-47	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

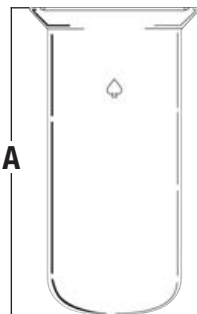
1000mL System ★				
6437-238				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 1000mL	1	6437-13	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-43	♣
6	Addition Funnel, 125mL	1	7299-12	♣
7	#15 PTFE Bushing	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-12	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-49	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

2000mL System ★				
6437-241				
1	#15 PTFE Plug	2	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 2000mL	1	6437-16	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-43	♣
6	Addition Funnel, 150mL	1	7299-25	♣
7	#15 PTFE Bushing	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-12	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-51	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

No.	Complete System Components	Qty	Order Code	
3000mL System ★				
6437-244				
1	#15 PTFE Plug	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 3000mL	1	6437-20	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-47	♣
6	Addition Funnel, 150mL	1	7299-25	♣
7	#15 PTFE Bushing	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-12	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-53	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

5000mL System ★				
6437-246				
1	#15 PTFE Plug (Complete contains THREE)	3	5846-48	♣
2	West Condenser w/Ace-Threds	1	6024-20	♣
3	Flask, 5000mL	1	6437-24	♣
4	Pressure Reactor Manifold, complete	1	6448-68	★
5	Thermowell	1	6471-49	♣
6	Addition Funnel, 500mL	1	7299-34	♣
7	#15 PTFE Bushing (Complete contains TWO)	2	7506-27	♣
8	Bearing, complete, w/Ace-Threds	1	8044-55	♣
9	Stir Shaft, 10mm	1	8075-14	♣
10	Flexible Shaft, complete, 91.4cm	1	8081-30	★
11	Stirrer Blade, PTFE, 19mm	1	8082-04	♣
12	Krytox® High Vacuum Grease	1	8116-10	★
13	Swivel Coupling	1	8126-10	♣
14	Bushing, PTFE, #15 w/O-ring	1	8648-19	♣
15	Aluminum Heating Mantle	1	12058-55	
16	Type "J" Thermocouple Sensor, PTFE-clad	1	12110-25	★
17	Digital Temperature Controller, "J" output	1	12125-14	★
18	Polypropylene Tubing, 1/4" OD x 0.170" ID	1	12681-110	★
19	Stirrer Motor Controller, Solid State	1	13530-10	★
20	Stirrer Motor w/Mounting Rod, Solid State	1	13649-09	
21	PTFE Sealing Tape, 1/2" Width	1	14120-18	★

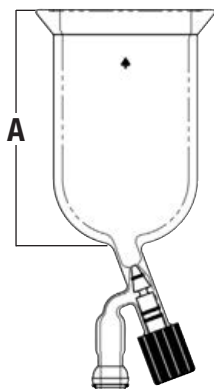
Pressure Reactor Accessories

**FLASK** Pressure Reaction, Unjacketed ♠

Heavy wall unjacketed reaction flask, part of the two-piece pressure reactor, for use at elevated pressures. Duran type top flange supplied with O-Ring groove for use with heads 6433, 6527, 6528 or 6529. For heating mantle, see 12058. Uses 6517 quick-release clamp.

Note: Supplied with CAPFE O-Ring (silicone optional).

Capacity, mL	O.D., mm	I.D., mm	(A) Height, mm	Flange Size, mm (in)	Top CAPFE O-Ring	Order Code
500	70	60	210	60 (2.4)	7855-878	6423-05
500	110	100	100	100 (4)	7855-880	6423-07
1000	110	100	180	100 (4)	7855-880	6423-10
2000	140	130	230	100 (4)	7855-880	6423-20
3000	165	155	210	150 (6)	7855-881	6423-30
5000	165	155	310	150 (6)	7855-881	6423-35

**FLASK** Pressure Reaction, Unjacketed, w/Bottom Outlet

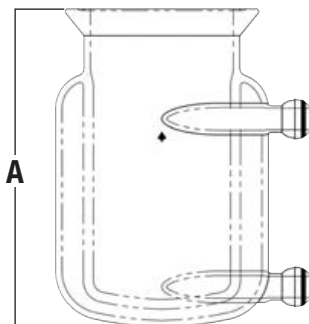
Heavy wall reaction flask with threaded bottom outlet, part of the two-piece pressure reactor, for use at elevated pressures. Duran® type top flange supplied with O-Ring groove for use with heads 6433, 6527, 6528 or 6529. For heating mantle, see 12058. Bottom outlet tube has 28/15 O-Ring ball joint connection with size -116 FETFE® O-Rings. Uses 6517 quick-release clamp.

Note: Supplied with CAPFE O-Ring (silicone optional).

Capacity, mL	O.D., mm	I.D., mm	(A) Height, mm	Flange Size, mm (in)	Bottom Outlet, mm	Top CAPFE O-Ring	Order Code
500	70	60	210	60 (2.4)	0-8	7855-878	6425-04 ♠
500	110	100	100	100 (4)	0-8	7855-880	6425-06 ♠
1000	110	100	180	100 (4)	0-8	7855-880	6425-12 ♠
2000	140	130	230	100 (4)	0-8	7855-880	6425-15 ♠
3000	165	155	210	150 (6)	0-10	7855-881	6425-19 ♠
5000	165	155	310	150 (6)	0-10	7855-881	6425-23 ♠

Replacement Parts

-116 FETFE O-Ring	7855-726 ♠
0-8mm PTFE Plug	8194-268
0-10mm PTFE Plug	8194-270

**FLASK** Pressure Reaction, Jacketed ♠

Heavy wall reaction flask with jacket, part of the two-piece pressure reactor, for use at elevated pressures. Duran type top flange supplied with O-Ring groove for use with heads 6433, 6527, 6528 or 6529. Cooling/heating jacket is heat sealed. Inlet/outlet on jacket has size 28/15 O-Ring ball joints with size -116 FETFE O-Rings. Uses 6517 quick-release clamp.

Note: Supplied with CAPFE O-Ring (silicone optional).

Capacity, mL	O.D., mm	I.D., mm	(A) Height, mm	Flange Size, mm (in)	Top CAPFE O-Ring	Order Code
500	110	60	210	60 (2.4)	7855-878	6427-09
500	130	96	100	100 (4)	7855-880	6427-13
1000	150	96	180	100 (4)	7855-880	6427-16
2000	180	126	230	100 (4)	7855-880	6427-18
3000	215	151	210	150 (6)	7855-881	6427-23
5000	215	151	310	150 (6)	7855-881	6427-26

Replacement Parts

-116 FETFE O-Ring	7855-726
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Pressure Reactor Accessories

FLASK *Pressure Reaction, Unjacketed, w/Bottom Outlet*

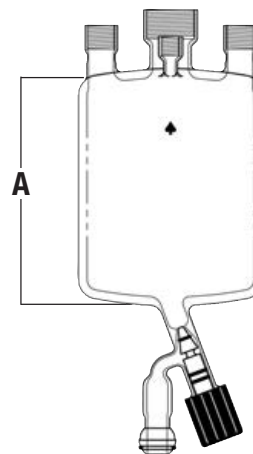
Heavy wall reaction flask with threaded bottom outlet valve. Part of the one-piece pressure reactor, for use at elevated pressures. With vertical[†] Ace-Thred necks for positive connection of stirrer, funnel, thermowell, condenser, etc. Bottom outlet is a 28/15 O-Ring ball joint (with size -116 FETFE O-Rings, 7855-726) and a threaded valve for retrieving contents of flask.

Capacity, mL	O.D., mm	I.D., mm	(A) Height, mm	Bottom Outlet, mm	Center Neck Ace-Thred, #	Side Necks Ace-Thred, #	Order Code	
500	110	96	100	0-8	25	(1) 7; (3) 15	6437-07	♠
1000	110	96	180	0-8	25	(1) 7; (3) 15	6437-13	♠
2000	140	126	180	0-8	25	(1) 7; (3) 15	6437-16	♠
3000	165	151	185	0-10	25	(1) 7; (4) 15	6437-20	♠
5000	165	151	310	0-10	25	(1) 7; (4) 15	6437-24	♠

Replacement Parts

0-8mm PTFE Plug	8194-268
0-10mm PTFE Plug	8194-270

[†]500mL and 1000mL sizes have necks angled at 5°.



FLASK *Pressure Reaction, Unjacketed ♠*

Heavy wall unjacketed reaction flask, part of the one-piece pressure reactor system, for use at elevated pressures. With vertical[†] Ace-Thred necks for positive connection of stirrer, funnel, thermowell, condenser, etc.

Capacity, mL	O.D., mm	I.D., mm	Height, mm	Center Neck Ace-Thred, #	Side Necks Ace-Thred, #	Order Code
500	110	96	100	25	(1) 7; (3) 15	6436-06
1000	110	96	180	25	(1) 7; (3) 15	6436-09
2000	140	126	180	25	(1) 7; (3) 15	6436-22
3000	165	151	195	25	(1) 7; (4) 15	6436-31
5000	165	151	310	25	(1) 7; (4) 15	6436-37

[†]500mL and 1000mL sizes have necks angled at 5°.



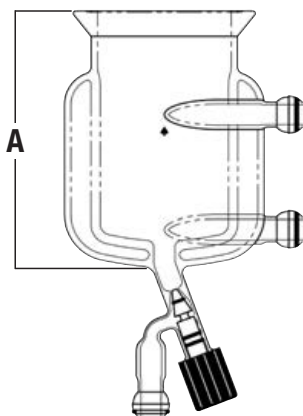
HEAD *Pressure Reaction, Ace-Threds ♠*

Reactor head only, with Duran style flange and Ace-Threds for use with 6384, 6386, 6388, or 6518 reactor bodies. Also fits 6423, 6425, 6427, and 6429 flasks. Pressure rating is 35psig. 6433-23 (only) has angled side joints. Uses 6517 quick-release clamp.

For Flask Capacity, mL	Flange I.D., mm (in)	Center Neck Ace-Thred, #	Side Necks Ace-Thred, #	Order Code
150-600	60 (2.4)	15	(2) 15; (1) 7	6433-23
1000-2000	100 (4)	15	(3) 15; (1) 7	6433-35
3000-6000	150 (6)	15	(4) 15; (1) 7	6433-44



Pressure Reactor Accessories

**FLASK** Pressure Reaction, Jacketed, w/Bottom Outlet

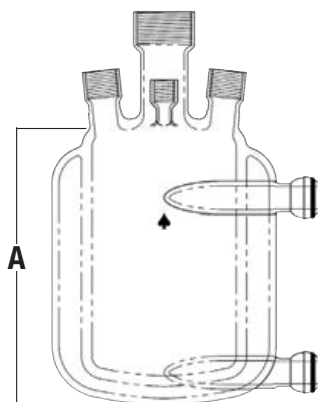
Heavy wall reaction flask with jacket and threaded bottom outlet, part of the two-piece pressure reactor, for use at elevated pressures. Duran® type top flange supplied with a shallow O-Ring groove for use with heads 6433, 6527, 6528 or 6529. Cooling/heating jacket is heat sealed. Inlet/outlet on jacket and bottom valve have size 28/15 O-Ring ball joint connections with size -116 FETFE® O-Rings. Uses 6517 quick-release clamp.

Note: Supplied with CAPFE O-Ring (silicone optional).

Capacity, mL	O.D., mm	I.D., mm	(A) Height, mm	Flange Size, mm (in)	Bottom Outlet, mm	Top O-Ring	Order Code	
500	110	60	210	60 (2.4)	0-8	7855-878	6429-09	♠
500	130	96	100	100 (4)	0-8	7855-880	6429-14	♠
1000	150	96	180	100 (4)	0-8	7855-880	6429-20	♠
2000	180	126	230	100 (4)	0-8	7855-880	6429-24	♠
3000	215	151	210	150 (6)	0-10	7855-881	6429-28	♠
5000	214	151	310	150 (6)	0-10	7855-881	6429-33	♠

Replacement Parts

-116 FETFE O-Ring	7855-726	♠
0-8mm PTFE Plug	8194-268	
0-10mm PTFE Plug	8194-270	

**FLASK** Pressure Reaction, Jacketed ♠

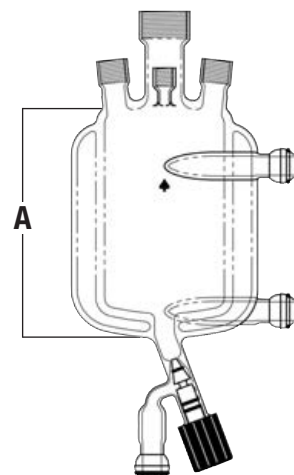
Heavy wall reaction flask with jacket. Part of the one-piece pressure reactor, for use at elevated pressures. With vertical† Ace-Thred necks for positive connection of stirrer, funnel, thermowell, condenser, etc. Cooling/heating jacket is heat sealed. Inlet/outlet on jacket has easy connect/disconnect size 28/15 O-Ring ball joints with size -116 FETFE O-Rings.

Capacity, mL	O.D., mm	I.D., mm	(A) Height, mm	Center Neck Ace-Thred, #	Side Necks Ace-Thred, #	Order Code
500	140	96	108	25	(1) 7; (3) 15	6438-14
1000	150	96	195	25	(1) 7; (3) 15	6438-17
2000	180	126	195	25	(1) 7; (3) 15	6438-19
3000	215	151	205	25	(1) 7; (4) 15	6438-24
5000	215	151	325	25	(1) 7; (4) 15	6438-29

Replacement Parts

-116 FETFE O-Ring	7855-726
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†500mL and 1000mL sizes have necks angled at 5°.

**FLASK** Pressure Reaction, Jacketed, w/Bottom Outlet

Heavy wall reaction flask with jacket, part of the one-piece pressure reactor, for use at elevated pressures. With vertical† Ace-Thred necks for positive connection of stirrer, funnel, thermowell, condenser, etc. Cooling/heating jacket is heat sealed. Inlet/outlet on jacket has easy connect/disconnect size 28/15 O-Ring ball joints. Bottom outlet is a 28/15 O-Ring ball joint with size -116 FETFE O-Ring, and a threaded valve for retrieving contents of flask.

Capacity, mL	O.D., mm	I.D., mm	(A) Height, mm	Bottom Outlet, mm	Center Neck Ace-Thred, #	Side Necks Ace-Thred, #	Order Code	
500	130	96	108	0-8	25	(1) 7; (3) 15	6439-15	♠
1000	150	96	195	0-8	25	(1) 7; (3) 15	6439-21	♠
2000	180	126	195	0-8	25	(1) 7; (3) 15	6439-25	♠
3000	215	151	205	0-10	25	(1) 7; (4) 15	6439-29	♠
5000	215	151	325	0-10	25	(1) 7; (4) 15	6439-34	♠

Replacement Parts

0-8mm PTFE Plug	8194-268	
0-10mm PTFE Plug	8194-270	
-116 FETFE O-Ring	7855-726	♠

†500mL and 1000mL sizes have necks angled at 5°.

Pressure Reactor Accessories

THERMOWELL ♠

For use with two-piece pressure reactors in #15 Ace-Thred. Well has a shoulder that rides against bottom of bushing to prevent "blowout." O-ring groove makes thermowell suitable for full vacuum, as well as pressure use. Inner diameter of well at top is approximately 5mm.

Note: Order thermowell and bushing separately.

For Reactor Capacity, mL	Length, mm	Order Code
500	205	6471-04
500	170	6471-10
1000-2000	220	6471-14
3000	235	6471-22
5000	360	6471-24
500	115	6471-41
1000-2000	180	6471-43
3000	210	6471-47
5000	290	6471-49

Accessories

Bushing w/FETFE O-Ring, only	8648-19
-013 FETFE O-Ring	7855-710



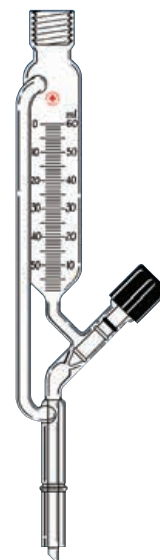
ADDITION FUNNEL Pressure Equalizing, Graduated ♠

For use with ACE Pressure Reactors. Heavy wall funnel has a #15 Ace-Thred at top that can be stoppered using 5846 Plug, not supplied. Bottom drip tip is long enough to be secured in the #15 Ace-Thred on 6433 Reactor Head or One-Piece Reactor, and has a bump and groove that restricts blowout when secured with 7506-06 Bushing and FETFE O-Ring (not supplied). Supplied with pressure equalizing arm and 0-3mm threaded PTFE stopcock plug.

Capacity, mL	Top Ace-Thred, #	Order Code
60	15	7299-06
125	15	7299-12
250	15	7299-25
500	15	7299-34

Replacement Parts

15mm Nylon Bushing, accepts 12.5-14mm tubing	7506-06
-110 FETFE O-Ring, for 7506-06 Nylon Bushing	7855-716
0-3mm PTFE Plug	8189-43
#15 Nylon Plug, solid	5846-12
#15 PTFE Plug, solid	5846-48



Pressure Reactor Accessories

**MOISTURE TEST RECEIVER** *Pressure*

Used to determine heavier-than-water, co-distilling solvent component content of reaction mixture. For use with ACE pressure reactors with #15 Ace-Thred. Side arm is connected to #15 Ace-Thred on pressure reactor head with 7506 bushing and size -110 FETFE® O-Ring, 7855-716. The 6024-20 pressure condenser, with #15 top plug, is attached to #15 thread at top of receiver with bushing and O-Ring. Receiver capacity is 60mL, graduated in 1mL subdivisions. Bottom outlet stopcock is a 0-3mm with FETFE O-Rings. Pressure rating is 45psig @100°C.

Note: Complete consists of receiver and bushing with O-Ring. Condenser and #15 Plug NOT supplied — order separately.

Description	Order Code	
Receiver, only, 60mL, #15	7701-04	★
Bushing, Nylon, #15, w/FETFE O-Ring (2)	7506-06	♠
Complete	7701-20	★

**BUSHING** *Nylon or PTFE* ♠

Used with O-Ring and Ace-Thred to make a compression seal between thread and glass like 6024 condenser or 7299 funnel.

Note: Supplied with (1) 7855-716 size -110 FETFE O-Ring.

Ace-Thred, #	I.D., mm	<i>Nylon</i> Order Code	<i>PTFE</i> Order Code
15	14	7506-06	7506-27

**ADAPTER** *Swagelok, PTFE* ♠

PTFE adapter with male Ace-Thred to NPT female for connecting pressure gauge, pressure relief valve, or connection from pressure tank to Ace-Thred on head of pressure reactor.

Note: Supplied with (1) FETFE O-Ring (see size and Order Code below) except -176.

Ace-Thred, #	NPT Thread, in	<i>O-Ring Size/ Order Code</i>	Order Code
7	1/8	-009/7855-707	5844-58
15	1/8	-110/7855-716	5844-62
15	1/4	-110/7855-716	5844-74
25 (w/o O-Ring)	1/4	—	5844-176

**PLUG** *Nylon or PTFE* ♠

Solid plug for sealing top of 6024 condenser or Ace-Threds on 6433 head.

Note: Supplied with (1) FETFE O-Ring (see size and Order Code below).

Ace-Thred, #	<i>O-Ring Size/ Order Code</i>	<i>Nylon</i> Order Code	<i>PTFE</i> Order Code
7	-009/7855-707	5846-04	5846-44
15	-110/7855-716	5846-12	5846-48
25	-212/7855-734	5846-16	5846-50

Pressure Reactor Accessories

TUBING Polypropylene ★

Polypropylene tubing used to make connection between pressure source and 12517 quick disconnect on side of pressure manifold, and between other side of manifold and the pressure reactor.

Size, in	Quantity	Order Code
1/4 O.D. x 0.170 I.D.	10-foot length	12861-110



VALVE Pressure Relief, Adjustable ★

The primary protection to personnel and equipment involved with static and dynamic pressurized systems. This one-piece pressure relief valve is adjustable from 3 to 50psig (for use with ACE pressure reactors) by simply adjusting set screws to desired cracking pressure. When pressure exceeds set cracking pressure, valve bleeds; when safe lower pressure is realized, valve will reseal. Fabricated from 316 stainless steel with a Viton® O-Ring. Ends are 1/4" MNPT for connecting to Ace-Thred with a 5844 adapter. Combining this valve with the 6445 rupture disc in the same pressure manifold offers fail-safe protection against runaway pressure situations.



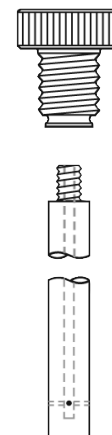
Order Code
8767-20

SPARGER TUBE for Pressure Reactor, PTFE ♠

Sparger tube for use in #15 Ace-Thred with either one- or two-piece reactors. Consists of a closed bottom, 1/2" O.D. tube with a 1/8" I.D. bore. Bottom of tube has two 3/64" holes, 90° apart; top has a 5/16" male thread for connecting to bottom of #15 adapter. Adapter has a female thread in handle for tubing connection. Simply thread tube into bottom of #15 adapter. Thread into #15 Ace-Thred on reactor. Attach appropriate size tubing to top of adapter. Adapter and tube are fabricated from PTFE. O-ring on adapter is FETFE®. For replacement FETFE O-Rings, order 7855-716.

Note: Order tube and adapter separately.

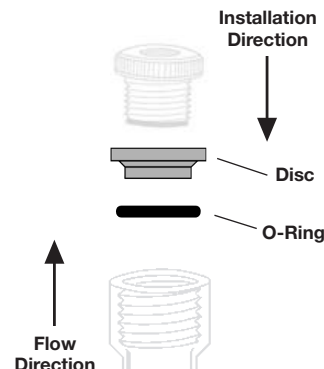
Tube Only		Adapter Only	
Tube Length, mm (in)	Order Code	Thread Size, Top of Adapter	Order Code
140 (5.5)	6444-04	1/4"-28 UNF	6444-30
190 (7.5)	6444-09	1/4" NPT	6444-38
343 (13.5)	6444-16		



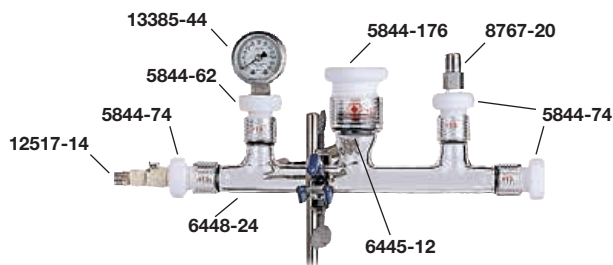
RUPTURE DISC Pressure, Graphite ★

For use in 6448 pressure manifold, these rupture discs provide extra protection to personnel and equipment involved with static and dynamic pressurized systems. In the event of an overpressure — one that cannot be handled by the 8767-20 pressure relief valve — this disc will rupture at a predetermined burst rating: 55psig (±3psig) for two-piece units, 65psig (±3psig) for one-piece units. Manufactured from a single piece of a high-purity carbon, these discs have a PTFE coating on underside, are tamper-proof, have no springs or moving parts and mount directly in a #25 Ace-Thred. Simply place the FETFE O-Ring (7855-734) supplied with disc, on the underside to make the seal, drop into the #25 Ace-Thred and hold in place using a 5844-176 adapter.

Disc Burst Pressure, psig	Use With	Order Code
55	TWO-PIECE Reactor	6445-12
65	ONE-PIECE Reactor	6445-41



Pressure Reactor Accessories



MANIFOLD Pressure, Epoxy Coated

Complete glass manifold, fitted with a pressure gauge, primary adjustable pressure relief valve, and secondary rupture disc to allow for safer operation of pressure and filter reactors.

13385 Pressure Gauge is a 0-60psig stainless steel internal, with 1-1/2" face and 1/8" NPT male connection for use with 5844-74 adapter in #15 Ace-Thred.

8767 Pressure Relief Valve is adjustable from 3-50psig by adjusting set screws to desired cracking pressure. Ends are 1/4" NPT for connecting to #15 Ace-Thred on manifold with 5844-74 adapter.

6445 Rupture Disc is a secondary safety device that, in the event of an overpressure (one that cannot be handled by the 8767 relief valve) will rupture at a predetermined burst rating; 55psig (± 3 psig) for -12 version, 65psig (± 3 psig) for -41 version. Disc is manufactured from high-purity carbon with a PTFE coating on the underside. No springs or moving parts, disc is secured directly in #25 Ace-Thred of manifold with 5844-176 adapter.

Manifold is connected to #7 Ace-Thred on 6433 head, using 5844-58 adapter and 12517 tubing connectors with 1/4" tubing.

	For Two-Piece Pressure Reactors (55psig) and Filter Reactors		For One-Piece Pressure Reactors (65psig)	
	Order Code		Order Code	
Adapter, PTFE, #7-1/8" NPT	5844-58	♣	5844-58	♣
Adapter, PTFE, #15-1/8" NPT	5844-62	♣	5844-62	♣
Adapter, PTFE, #15-1/4" NPT (3)	5844-74	♣	5844-74	♣
Adapter, PTFE, #25-1/4" NPT, w/ O-ring	5844-176	♣	5844-176	♣
Rupture Disc, Graphite, 55psig	6445-12	★		
Rupture Disc, Graphite, 65psig (for pressure version only)			6445-41	★
Manifold, Glass, (4) #15, (1) #25, Epoxy Coated	6448-24	♣	6448-24	♣
Valve, Pressure Relief, 1/4" NPT, 3-50psig	8767-20	★	8767-20	★
Coupling Body, 1/8" MPT	12517-08	★	12517-08	★
Coupling Body, 1/4" MPT	12517-14	★	12517-14	★
Coupling Insert, for 1/4" O.D. tubing (2)	12517-40	★	12517-40	★
Tubing, PP, 1/4" O.D. x .170" I.D., 10'	12681-110	★	12681-110	★
Gauge, Pressure, 0-60psig, 1/8" MPT	13385-44	★	13385-44	★
	6448-54*	★	6448-68**	★

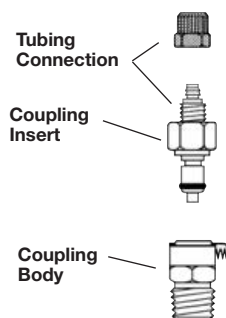
Complete

Replacement O-Rings

Size -110 for #15 adapters (shelf-pack of 12)	7855-716	♣	7855-716	♣
Size -212 for #25 adapters (shelf-pack of 6)	7855-734	♣	7855-734	♣

*6448-54 is for use with two-piece pressure and filter style reactors.

**6448-68 is for use with one-piece pressure reactors only.



TUBING CONNECTOR Quick Connect/Disconnect ★

Two-piece tubing connector, used to connect tubing from a pressure source to the manifold of the ACE pressure reactor. Offers the convenience of a quick connect/disconnect coupling. Body has MNPT thread for connecting to a 5844 adapter at end of ACE pressure manifold. Coupling insert is connected to tubing from pressure source. Push coupling insert into coupling body for leak-tight connection; press thumb latch to quick disconnect. Fabricated of polypropylene. Order body and insert separately.

	Order Code
Coupling Body, 1/8" MPT	12517-08
Coupling Body, 1/4" MPT	12517-14
Coupling Insert, for 1/4" OD x 0.170" ID Tubing	12517-40

Pressure Reactor Accessories

ADAPTER *Offset, w/Ace-Thred ♠*

Offset adapter with #15 Ace-Thred offset to a 14mm O.D. tube with O-Ring groove. For use with ACE pressure reactors to locate condenser, etc., away from stirrer.

Note: Not supplied with bushing or O-Ring.

Top Ace-Thred, #	Order Code
15	5269-12

Accessories

Nylon Bushing w/FETFE O-Ring	7506-06
PTFE Bushing w/FETFE O-Ring	7506-27
FETFE O-Ring	7855-716



CONDENSER *West ♠*

West style condenser for use with 6433 threaded heads.

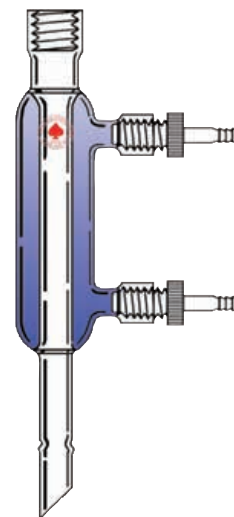
6024-20 supplied with #15 Ace-Thred at top for 5846 plug (*not supplied*) and drip stem with groove, and long enough to be secured in #15 Ace-Thred with 7506-06 bushing and FETFE O-Ring (*not supplied*) to restrict blowout. With #7 Ace-Thred on inlet/outlet for use with "Ace-Safe" 5853-06 tubing connectors.

Note: Supplied with bushing and connectors for 1/4" I.D. tubing.

Use w/Head No.	Jacket Length, mm	Order Code
6433	200	6024-20

Replacement Parts and Accessories

#7 to 1/4" Ace-Safe Connector	5853-06
#15 Nylon Plug, <i>solid</i>	5846-12
#15 PTFE Plug, <i>solid</i>	5846-48
Nylon Bushing w/FETFE O-Ring	7506-06
PTFE Bushing w/FETFE O-Ring	7506-27
FETFE O-Ring	7855-716



BEARING *Pressure, w/Ace-Threds, 10mm ♠*

Glass bearing with #15 Ace-Thred at the bottom, and glass tubing between, for use with 10mm O.D. 8075 stirring shafts. PTFE coupling, with internal FETFE O-Ring seal, connects bottom of bearing to either #15 or #25 Ace-Thred, on vessels such as 6433 pressure reactor head or one-piece pressure reactors. Top bushing also has an internal O-Ring seal for additional seal on shaft to allow pressure reactions. Maximum operating speed 600 rpm. Coupling and bushing supplied with O-Rings. For replacement O-Rings (the bearings take two O-Rings, one internal and one external): for #15-#15 coupling, 7855-730 external, 7855-716 internal; for #15-#25 coupling, 7855-730 and 7855-742 external, 7855-716 internal; for #15 bushing, 7855-730 external, 7855-716 internal.

For Coupling to #15 Ace-Thred

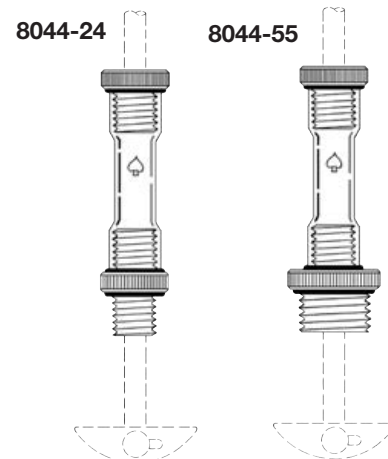
	Order Code
Glass Bearing, only, #15-#15	8044-07
Coupling, PTFE, #15-#15	5840-60
Bushing, PTFE, #15	8044-13

For Coupling to #25 Ace-Thred

	Order Code
Glass Bearing, only, #15-#15	8044-07
Coupling, PTFE, #15-#25	5843-62
Bushing, PTFE, #15	8044-13

Complete

8044-24	8044-55
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PTFE Filter Reactors

Extension Of Ace's Borosilicate Glass Filter Reactor Product Line



To meet the needs for Fluorine and other Organic Chemists, ACE has developed a new tool, and a new version of our popular bench-scale glass filter reactors: introducing the **ALL PTFE Reactor Assembly**. This reactor can be used in fluorinated compounds and works with strong alkaline compounds where glass can't be used.

The reactor comes in three standard sizes: 250mL, 500mL and 1000mL, (other sizes may be available by special request). The body is solid PTFE and has a separate, solid PTFE 60mm or 100mm O.D. head with standard taper joints, a CAPFE O-ring and a (outside) stainless steel "quick-release" clamp. It features either a #50 or #80 Ace-Thred, PTFE bottom valve/filter assembly that threads into the bottom of the reactor body. The PTFE/PEEK sealed stirrer bearing fits into the center standard taper joint, and the units have a PTFE coated stainless steel, 10mm stir shaft with a three-bladed PTFE agitator.

Optional items include PTFE condensers and addition funnels, bench stands, supports, and clamps. Overhead stir motor choices include Caframo®, Heidolph®, or IKA®.

The reactor is available as a complete assembly or as individual components.

Contact Ace Technical Services at 800-223-4524, or www.aceglass.com, for a custom quote on a PTFE reactor for your application.

The head, head joints, body, stirrer-bearing, bottom filter assembly with valve, and stir shaft with agitator are all PTFE. Even the O-Rings are PTFE encapsulated. The filter supports are polypropylene. The bottom filter assembly is either #50 or #80 Ace-Thred, and threads in/out for easy capture of filtrate, or for cleaning. Unit is excellent for fluorine chemistry work, as well as any work using strong alkalis where glass can't be used. Halar® coated stainless steel internal coil can be used for heating or cooling the contents.

Note: Support stand (13568 or 12841) and chain clamp (11079) NOT included. We recommend Caframo® BDC2010 stir-motor (13566-05), Lauda circulator (11505-15) for heating/cooling, and Ace/J-Kem® 260T temperature controller (12318-05) with a 12" PTFE coated "T" temperature sensor (12318-25).

Component	Order Code	
250mL Reactor		
Reactor Body (A = 5.8"; O.D. = 3.5")	6391-02	★
PTFE Head (60mm, 4 openings: (4) 1/2")	12858-15	★
PTFE Insert, 1/2" to 24/40	12866-14	★
CAPFE O-Ring (60mm)	7855-878	♣
Quick-release Clamp (60mm)	6517-22	★
Bottom Filter Assembly (#50)	5838-83	♣
Bottom Valve (1/4" / 3/8")	5839-42	★
Adapter	5844-120	♣
Polypropylene Filter Supports (#50) (Pkg. of 12)	5814-348	♣
Stirrer Bearing (10mm)	13443-12	★
PTFE Coated Stainless Steel Shaft w/Agitator (10mm)	13852-10	★
Complete	6390-02	★
500mL Reactor		
Reactor Body (A = 8.88"; O.D. = 3.5")	6391-05	★
PTFE Head (60mm, 4 openings: (4) 1/2")	12858-15	★
PTFE Insert, 1/2" to 24/40	12866-14	★
CAPFE O-Ring (60mm)	7855-878	♣
Quick-release Clamp (60mm)	6517-22	★
Bottom Filter Assembly (#50)	5838-83	♣
Bottom Valve (1/4" / 3/8")	5839-42	★
Adapter	5844-120	♣
Polypropylene Filter Supports (#50) (Pkg. of 12)	5814-348	♣
Stirrer Bearing (10mm)	13443-12	★
PTFE Coated Stainless Steel Shaft w/Agitator (10mm)	13852-10	★
Complete	6390-05	★
1000mL Reactor		
Reactor Body (A = 7.84"; O.D. = 4.33")	6391-10	★
PTFE Head (100mm, 7 openings: (5) 3/4", (2) 1/4")	12860-12	★
PTFE Insert, 3/4" to 24/40	12866-16	★
PTFE Insert, 1/4" to #7	12871-03	★
CAPFE O-Ring (100mm)	7855-880	♣
Quick-release Clamp (100mm)	6517-25	★
Bottom Filter Assembly (#80)	5857-86	♣
Bottom Valve (1/4" / 3/8")	5839-42	★
Adapter	5844-120	♣
Polypropylene Filter Supports (#80) (Pkg. of 12)	5814-350	♣
Stirrer Bearing (10mm)	13443-12	★
PTFE Coated Stainless Steel Shaft w/Agitator (10mm)	13852-15	★
Halar Coated Heating Coil	12069-06	★
Complete	6390-10	★

Ultrasonic Processing

Ace Glass offers a variety of Ultrasonic Processing products and systems that cover a wide range of applications, including: life sciences, nanotechnology, emulsions, soil testing, environmental sample processing, cell culture, cell disruption, sonochemistry, and drug development. They can also be used for general super-mixing applications in liquid processing where a very small sample is needed, or where the sample is hard to mix or insert into a solution or dispersion. Ace takes the application one step further, as we add our glass expertise and our Ace-Threds to make glass vessels to match the horn selection. Add a power supply for a complete system, or a reactor for sample ultra-mixing and liquid processing.

About Ultrasonics

The Ultrasonic power supply converts 50/60Hz voltage to high frequency electrical energy. This alternating current voltage is applied to disc-shaped, ceramic, piezoelectric crystals within the converter head, causing them to expand and contract with each change of polarity. These longitudinal vibrations are amplified by the horn and transmitted into the liquid mixture as alternating high and low pressure ultrasonic waves. The pressure fluctuations pull the liquid molecules apart, creating millions of micro-bubbles (cavities), which expand during the low pressure phases and implode violently during the high pressure phases. As the bubbles collapse, millions of shock waves, micro-streams, eddies, and extremes in pressure and temperature are generated at the implosion sites. This phenomenon, known as cavitation, lasts but a few microseconds, and while the amount of energy released by each bubble is minimal, the cumulative amount of energy generated is extremely high. This process is self-stimulating because the imploding bubbles create new sites for bubbles to form. The high shear energy delivered is maximized near the tip of the horn, and also decreases the farther the tip is from the solution.

Applications for Ultrasonic Processing:

- Cell Culture
- Soil Sample Prep
- Nanotechnology
- Drug Development
- Agriculture
- Sonochemistry
- Super Mixing
- Colloids, Dispersions
- Emulsions
- Homogenization
- Tissue or Cell Disruption
- Photochemistry

Helpful Hints for Ultrasonics

- As tip size decreases, intensity increases, at a given power setting.
- Almost all activity takes place immediately below the tip.
- Tips **MUST** be kept submerged during operation.
- Horns (probes) or extenders **MUST** be held **ONLY** at the node (nodal point).
- Tips 1/4" and smaller **CANNOT** be operated at full power output. Follow directions provided with power supply.
- Side of horn, extender or tip of probe should **NEVER** touch vessel walls.
- Most reactions work better when solution is kept cool.
- In many reactions the probe itself may provide enough turbulence and additional stirring usually is not necessary unless very viscous materials or heavy metal catalysts are used.
- For large-volume reactions, consider multi-neck vessels since mechanical stirring might be necessary.
- Removable tips have been sometimes problematic as liquid may seep into gaps between probe and tip. Many scientists have no problem with this and find the economy of the removable tip important. However, it is important to remove, clean and polish the tip regularly to avoid cross-contamination and excessive wear.

REACTION ASSEMBLY *Small Volume*

Complete reaction assembly with parts necessary to perform mixing and reactions from 6mL to 250mL. Includes three borosilicate glass vessels, power supply with converter, 1/2" horn, 1/2" extender, slide adapter, and clamp. For details of each item, see individual listings.

CE approved.

Complete

Capacity, mL	Order Code	
6 to 200	9830-25	★

Description	Qty	Order Code	
System Components			
Ultrasonic power supply, 750w	1	9810-24	★
Horn, 1/2", Threaded Tip	1	9814-25	★
Extender, 1/2" x 5"	1	9816-06	★
Clamp, Heavy Duty	1	9825-21	★
Slide Adapter, 25mm, Body only	1	9852-21	♣
25mm Ace-Thred Nylon Bushing	1	7506-10	♣
Vessel, Tapered, 250mL, #25 Center, (3) 14/20 sides	1	9833-05	♣
Vessel, 6-10mL, #25 Center, (2) 14/20 sides, Body only	1	9843-04	♣
Vessel, 10-50mL, #25 Center, (2) 14/20 sides, Body only	1	9844-07	♣
36mm Ace-Thred Nylon Bushing	4	7506-12	♣



REACTION ASSEMBLY *Large Volume*

Complete reaction assembly with parts necessary to perform ultrasonic reactions and mixing from 250mL to 1800mL. Includes (3) borosilicate reactors, power supply with converter, 3/4" horn, 3/4" extender, slide adapter and clamp. For details of each item, see individual listings.

CE approved.

Complete

Capacity, mL	Order Code	
250 to 1800	9831-40	★

Description	Qty	Order Code	
System Components			
Ultrasonic power supply, 750w	1	9810-24	★
Horn, 3/4", Threaded Tip	1	9814-27	★
Extender, 3/4" x 5"	1	9816-08	★
Clamp, Heavy Duty	1	9825-21	★
Vessel, Tapered, 500mL, #36 Center, (3) 24/40 sides	1	9833-12	♣
Vessel, Tapered, 1000mL, #36 Center, (3) 24/40 sides	1	9833-16	♣
Round Bottom Flask, 2000mL, #36 Center, (3) 24/40 sides	1	9837-20	♣
36mm Ace-Thred Nylon Bushing	3	7506-12	♣



CE approved.

**POWER SUPPLY** *Vibra-Cell, VCX 750* ★

- Volumes and continuous flow volumes up to 5 gallons/19 liters per hour
- ON/OFF, 1 to 59 seconds pulser, a one-second to 10-hour timer
- Integral temperature controller to prevent overheating of sample
- 15lbs. (6.8k.g.) & 7-1/2" x 13-1/2" x 8-1/2" (235 x 190 x 340mm)

Ultrasonic power supply for superior mixing with automatic amplitude and frequency control circuitry that eliminates the need for constant adjustments, assuring optimum cavitation at any power level. Auto tuning that matches the power supply to the converter/probe assembly and does not have to be manually tuned each time the probe is changed or the unit is turned on, exclusive energy (Joule) setpoint circuit, nonvolatile memory function for storing up to ten preset operating programs, tactile keypad with user friendly menu-driven LCD display, elapsed time/run time timer, and power (watts) readout, integral temperature controller. Three-year unconditional warranty on power supply and converter. Shipped complete and ready for operation with a 1/2" (13mm) probe with replaceable tip, tool kit, and instruction manual.

Note: Not supplied with horn, glass reactors or temperature probe (order separately).

Power Output, W	Output Frequency, kHz	Power Input, Volts	Input Frequency, Hz	Order Code
750	20	117	50/60	9810-24

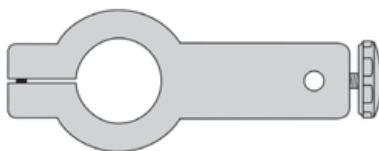
CE approved.

**ULTRASONIC PROCESSOR** *Low-Volume Applications, VCX 130* ★

- Process samples from 150 microliter to 150mL
- ON/OFF, 1 to 59 seconds pulser, a one-second to 10-hour timer
- Ideal for cell disruption, sample preparation, or homogenization
- 7 lbs. (3k.g.) & 4-1/2" x 9-3/4" x 12-1/2" (115 x 250 x 320mm)

This ultrasonic power supply is microprocessor controlled, and features automatic tuning to eliminate the need for constant adjustment, a digital wattmeter that displays the amount of power delivered to the probe, an elapsed-time indicator that displays the duration the ultrasonics have been on, and an energy monitor that displays the amount of Joules transmitted to the probe. The variable power output control allows the ultrasonic vibrations at the probe tip to be set to any desired amplitude. Shipped complete and ready for operation with a 1/4" (6mm) probe, tool kit, and instruction manual.

Power Output, W	Output Frequency, kHz	Power Input, Volts	Input Frequency, Hz	Order Code
130	20	117	50/60	9811-05

**CLAMP** *Heavy Duty* ★

For supporting 2-1/2" diameter converter securely in place. Fabricated from 3/4" thick aluminum, anodized black, this clamp fits 1/2" or 5/8" diameter rod and is secured by an Allen head screw to (750W) converter.

Fits Rod O.D.,
in
1/2 or 5/8

Order
Code
9825-21

**BOOSTER** ★

When connected between the converter and 9814 horn, the booster increases the amplitude of vibration at the horn tip by a factor of two. Use to process very difficult applications.

Order
Code
9822-20

HORN ★

Basic ultrasonic horns (probes) that focus the ultrasonic energy into the liquid. For use with 9810 power supplies. Fabricated from high grade titanium, these horns are autoclavable and have an O-Ring groove at nodal point that allows a tight fit in #36 Ace-Thred without affecting sonic output. Available with solid end (fixed-length) or threaded end to accept replaceable tips, microtips or extenders.

Note: Supplied with 1/2"-20 stud for connection to converter on power supply.

Tip O.D., in	Length Below Groove*, in	Intensity	Volume (Batch)	Amplitude (micro meter**)	Order Code
1/2	2-1/2	High	10-250mL	120	9814-06
3/4	2-3/8	Medium	25-500mL	60	9814-08
1	2	Low	50-1000mL	30	9814-11

Solid End Type

Threaded End Type

1/2	2-1/2	High	10-250mL	120	9814-25
3/4	2-3/8	Medium	25-500mL	60	9814-27
1	2	Low	50-1000mL	30	9814-30

*Length below groove for threaded horn is with removable tip.

**With output control set at 10.



EXTENDER ★

Titanium extender screws into threaded end of ultrasonic horn. This accessory lengthens the horn (probe) by 5" for more versatility. Extenders have solid ends. 1/2" extender for use with #15 Ace-Thred. Order extender diameter to match horn diameter.

Extender O.D., in	Length, in	Number of Grooves	Volume (Batch)	Amplitude (micro meter*)	Order Code
1/2	5	1	6-250mL	120	9816-06
3/4	5	0	25-500mL	60	9816-08
1	5	0	50-1000mL	30	9816-10

*With output control set at 10.



TIP Replaceable, Titanium ★

Tips showing signs of wear should be polished with fine emery cloth. This procedure can be repeated until difficulties are encountered when tuning the power supply, then tips should be replaced. For use with threaded horns only.

For Horn Size, in	Qty	Order Code
1/2	1	9820-12
3/4	1	9820-14
1	1	9820-18



Do not use probes with replaceable tips when processing samples containing solvents or low surface tension liquids.

**REACTION VESSEL** *Tapered, 4-Neck ♠*

Fabricated from borosilicate glass with walls tapered inward toward bottom to allow operation with smaller volumes. Use 7506-10 bushing and O-Ring in #25 Ace-Thred, 7506-12 bushing and O-Ring in #36 Ace-Thred to form a leak-tight compression seal with all 9814 Horns with groove and 9852-41 or 9852-45 slide adapter. Stated capacity is WITHOUT horn. See *Horn & Extenders Selection Guide* below, for proper horn size.

Note: Vessel NOT supplied with bushing or O-Ring, order separately.

Capacity, mL	Center Neck, Ace-Thred, #	Side Necks, Standard Taper	Order Code
250	25	(3) 14/20	9833-05
500	36	(3) 24/40	9833-12
1000	36	(3) 24/40	9833-16
2000	36	(3) 24/40	9833-21

Accessories

Description	
#25 Nylon Bushing w/FETFE O-Ring	7506-10
#36 Nylon Bushing w/FETFE O-Ring	7506-12

**REACTION VESSEL** *Round Bottom, 4-Neck ♠*

Borosilicate glass, round-bottom vessel. Use 7506-10 bushing and O-Ring in #25 Ace-Thred, 7506-12 bushing and O-Ring in #36 Ace-Thred to form a leak-tight compression seal with all 9814 Horns with groove and 9852-41 or 9852-45 slide adapter. Center neck can be used for mechanical stirring if needed. Stated capacity is WITHOUT horn. See *Horn & Extenders Selection Guide* below, for proper horn size.

Note: Vessel NOT supplied with bushing or O-Ring, order separately.

Capacity, mL	Center Neck, Standard Taper	Side Necks, Standard Taper	Side Neck, Ace-Thred, #	Order Code
500	24/40	(2) 24/40	25	9837-09
1000	24/40	(3) 24/40	36	9837-14
2000	24/40	(3) 24/40	36	9837-20

Accessories

#25 Nylon Bushing w/FETFE O-Ring	7506-10
#36 Nylon Bushing w/FETFE O-Ring	7506-12

Horns & Extenders Selection Guide

Horn O.D. (inches) / ACE Code	Vessel Family:	9833 Series				9837 Series		
	Vessel Order Code / Size (mL):	-05/ 250	-12/ 500	-16/ 1000	-21/ 2000	-09/ 500	-14/ 1000	-20/ 2000
	Extender size (inches / ACE code)							
1/2" / 9814-25	1/2" x 5" / 9816-06	A	F	F	F	A	F	F
3/4" / 9814-27	3/4" x 5" / 9816-08	N/A	F	F	F	N/A	F	F
1" / 9814-30	1" x 5" / 9816-10	N/A	F	F	F	N/A	F	F

F — Horn is used as-is "fixed" length only

A — Horn is adjustable and must be used w/9852 slide adapter

N/A — Either don't need or doesn't fit vessel

FLO-THRU REACTOR

Continuous-flow borosilicate glass vessel provides uniform treatment by forcing reactant to pass in front of horn tip. Reactants are pumped through side port, overflowing inner cup and out through bottom port. Treated material drains completely (no hang-up). Use of 9852-41 slide adapter at top allows probe position to be varied within the inlet cup area. Inlet and outlet tubes are 1/2" O.D. (13mm). #7 Ace-Thred located below top thread is for bleed or vacuum connection. Operated in vertical position only. *Slide adapter and horn must be ordered separately.*

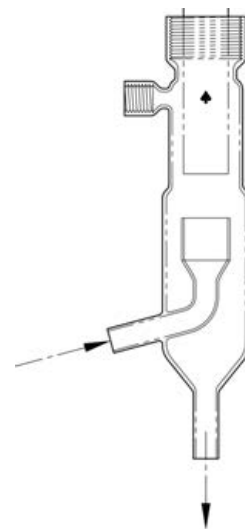
Description	Order Code	
Reactor Body, only	9841-18	♠
#7 PTFE Plug, only	5803-05	♠
#25 Nylon Bushing w/FETFE O-ring	7506-10	♠

Complete

	9841-30	♠
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Accessories

1/2" Horn	9814-25	★
1/2" Extender	9816-06	★
#25 Slide Adapter	9852-41	♠



REACTION VESSEL Small Volume, 6mL-10mL ♠

Tapered walls and proper size horn allow volumes as little as 6mL to be mixed. Fabricated of borosilicate glass with #25 Ace-Thred center neck and (2) 14/20 side necks. With 7506-10 bushing, center neck will accept 9852-41 slide adapter with 9814-25 horn and 9816-06 extender. Vessel measures 123mm (4-7/8") high.

Description	Order Code	
Reactor Body, only	9843-04	
#25 Nylon Bushing w/FETFE O-ring	7506-10	

Complete

	9843-25	
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Accessories

#25 Slide Adapter	9852-41	
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REACTION VESSEL Small Volume, 10mL-50mL ♠

For small-scale reactions and mixing, 10mL in bottom well and up to 50mL in main body. With #25 Ace-Thred center neck and (2) 14/20 side necks. With 7506-10 Bushing, center neck will accept 9852-41 Slide Adapter with 9814-25 horn and 9816-06 extender. Vessel measures 120mm (4-3/4") high (including thread).

Description	Order Code	
Reactor Body, only	9844-07	
#25 Nylon Bushing w/FETFE O-ring	7506-10	

Complete

	9844-19	
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Accessories

#25 Slide Adapter	9852-41	
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**REACTION VESSEL** *Jacketed, 250mL*

Similar to 9833-05 vessel, except jacketed, to provide active cooling from tap water or mechanical cooler. Jacket is cylindrical with flat bottom for greater stability. With #25 Ace-Thred center neck and (3) $\frac{1}{4}$ 14/20 side necks. Use 7506-10 bushing with O-Ring in center neck to secure 9852-41 slide adapter for connecting converter.

Description	Order Code	
Vessel, only	9848-07	★
#25 Nylon Bushing w/FETFE O-Ring	7506-10	♠

Complete

	9848-35	★
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Accessories

#25 Slide Adapter	9852-41	♠
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**REACTION VESSEL** *Jacketed, 10mL-50mL*

Similar to 9844-07 vessel, except jacketed, to provide active cooling from tap water or mechanical cooler. Jacket is cylindrical with flat bottom for greater stability. With #25 Ace-Thred center neck and (2) $\frac{1}{4}$ 14/20 side necks. Use 7506-10 bushing with O-Ring in center neck to secure 9852-41 slide adapter for connecting converter.

Description	Order Code	
Vessel, only	9850-12	★
#25 Nylon Bushing w/FETFE O-Ring	7506-10	♠

Complete

	9850-30	★
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Accessories

#25 Slide Adapter	9852-41	♠
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**REACTION VESSEL** *Jacketed, 3mL-10mL*

Similar to 9843-04 vessel, except jacketed, to provide active cooling from tap water or mechanical cooler. Jacket is cylindrical with flat bottom for greater stability. With #25 Ace-Thred center neck and (2) $\frac{1}{4}$ 14/20 side necks. Use 7506-10 bushing with O-Ring in center neck to secure 9852-41 slide adapter for connecting converter.

Description	Order Code	
Vessel, only	9851-05	★
#25 Nylon Bushing w/FETFE O-Ring	7506-10	♠

Complete

	9851-27	★
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Accessories

#25 Slide Adapter	9852-41	♠
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SLIDE ADAPTER ♦

For use with 1/2" ultrasonic horn, 9814-25, and 1/2" extenders. Slide adapters have either a 25 mm O.D. for insertion into a #25 Ace-Thred, or a 35 mm O.D. for use in a #36 Ace-Thred. Secure 1/2" horn in adapter with 7506 bushing and O-Ring, then slide adapter extension into thread on reaction vessel. Now you have a variable depth adjustment of horn to achieve greater efficiency.

Note: Complete item consists of adapter, nylon bushing and FETFE O-Ring.

Ace-Thred, #	Extender O.D., mm	Extension Length, in	Order Code
Glass Adapter			
36	25	6	9852-21
36	35	6	9852-25
Bushing w/O-Ring			
36			7506-12
Complete			
36	25	6	9852-41
36	35	6	9852-45



ULTRASONIC SOUND ABATEMENT CABINET ★

Although ultrasonic vibrations are above the human audible range, in ultrasonic processing, high-pitched noise is produced from harmonics emanating from the vessel walls and the fluid surface. The sound abatement cabinet permits extended processing without discomfort by greatly reducing that noise.

Cabinet is fabricated from steel, painted chemically resistant blue, with clear plastic door. Inside of cabinet is lined with sound-abating foam. Side handles for carrying and locking casters on bottom.

One hole supplied at top for lead from power supply and two holes at bottom for water inlet/outlet, etc. All holes are covered with slit rubber. 1/2" vertical mounting rod located toward rear to left is for mounting sonochemical reactor.

Height, in	Width, in	Depth, in	Order Code
46.5	24	19	9860-24




BENCH TOP MINI-CHILLER Polyscience, MM Series

Bench top mini-chiller by PolyScience. Compact size for bench applications such as photochemistry, chromatography, ultrasonics or jacketed bench reactors. Features include:

- Top-mounted fill port with spill protection cup
- Lighted fluid level indicator on front panel
- Easy access front panel and air filter
- Low flow rate and energy consumption
- High and low liquid level alarms
- Low flow alarm
- Temperature range -5 to 50°C at 0.1° stability
- Centrifugal Pump
- 240V, 50hz version is CE-approved

Capacity, L	Max Flow, LPM	Power Input		Cooling Capacity at -5°C	Order Code
		Volts	Hertz	Watts	
2.65	7.9	120	60	130	12450-07
2.65	6.8	240	50	115	12450-107





Adapting and connecting is made easier by having the components needed to make the appropriate transitions. Ace Glass has a wide range of adapters in a variety of materials, sizes, and types to fit almost any laboratory application.

Featuring the Following Adapters:

- **Standard Taper Joints**
- **Spherical Joints**
- **Ace-Threds**
- **Sanitary Fittings**
- **Beaded Pipe**
- **Thermocouples and Probes**
- **Distillation and Reflux**
- **Compression Tubes and Plastic Tubing**
- **Sampling**
- **Vacuum**
- **Circulator**

Adapters, Connectors and Fittings





STANDARD TAPER OUTER TO INNER REDUCING ADAPTER ♠

Transition adapter to convert a smaller standard taper inner joint to a larger standard taper inner joint. Made of borosilicate glass.

Top \$ Outer	Bottom \$ Inner	Order Code	Top \$ Outer	Bottom \$ Inner	Order Code
10/30	14/20	9092-08	24/40	29/42	5000-38
10/30	24/40	5000-09	24/40	24/40	5000-39
10/30	29/42	5000-10	24/40	34/45	5000-41
14/20	14/20	9092-12	24/40	40/50	5000-43
14/20	24/40	9092-24	24/40	45/50	5000-45
			29/42	34/45	5000-53
			29/42	45/50	5000-56



STANDARD TAPER OUTER TO INNER ENLARGING ADAPTER ♠

Transition adapter to convert a larger standard taper inner joint to a smaller standard taper inner joint. Made of borosilicate glass.

Top \$ Outer	Bottom \$ Inner	Order Code	Top \$ Outer	Bottom \$ Inner	Order Code
14/20	10/30	9092-10	34/45	24/40	5005-28
24/40	10/30	5005-08	34/45	29/42	5005-30
24/40	14/20	9092-26	45/50	24/40	5005-36
29/42	24/40	5005-24	45/50	29/42	5005-38



STANDARD TAPER OUTER TO INNER REDUCING ADAPTER ♠

Compact bushing style transition adapter to convert a smaller standard taper inner joint to a larger standard taper inner joint. Made of borosilicate glass.

Top \$ Outer	Bottom \$ Inner	Order Code	Top \$ Outer	Bottom \$ Inner	Order Code
10/30	14/20	9061-10	24/40	29/42	5021-28
10/30	24/40	5021-09	24/40	34/45	5021-30
10/30	29/42	5021-12	29/42	34/45	5021-35
14/20	24/40	5021-14	24/40	45/50	5021-36
14/20	29/42	5021-15	29/42	45/50	5021-94
			34/45	45/50	5021-39



PTFE STANDARD TAPER OUTER TO INNER REDUCING ADAPTER ★

Compact bushing style transition adapter to convert a smaller standard taper inner joint to a larger standard taper inner joint. Made of virgin PTFE.

Top \$ Inside	Bottom \$ Outside	Order Code	Top \$ Inside	Bottom \$ Outside	Order Code
10/30	14/35	13430-05	24/40	29/42	13430-25
10/30	19/38	13430-07	24/40	34/45	13430-28
14/35	19/38	13430-11	29/42	34/45	13430-32
14/35	24/40	13430-13	45/50	24/40	13430-40
19/38	24/40	13430-16	45/50	29/42	13430-42
19/38	29/42	13430-18	45/50	34/45	13430-44
19/38	34/45	13430-21			

SPHERICAL JOINT TO STANDARD TAPER INNER JOINT ADAPTER ♠

Transition adapter to convert a spherical ball or socket joint to a standard taper inner joint. Made of borosilicate glass.

Top \$ Socket	Bottom \$ Inner	Order Code	Top \$ Ball	Bottom \$ Inner	Order Code
18/9	24/40	5020-10	35/20	24/40	5020-25
28/15	24/40	5020-20	28/15	24/40	5020-21
28/15	29/42	5020-22	28/15	29/42	5020-23
28/15	45/50	5020-40	28/15	45/50	5020-41
35/25	24/40	5020-30	35/25	24/40	5020-31
35/25	29/42	5020-32	35/25	29/42	5020-33
35/25	45/50	5020-42	35/25	45/50	5020-43
DN25	24/40	5020-44	DN25	24/40	5020-45
DN25	29/42	5020-46	DN25	29/42	5020-47
DN25	45/50	5020-48	DN25	45/50	5020-49
DN40	24/40	5020-50	DN40	24/40	5020-51
DN40	29/42	5020-52	DN40	29/42	5020-53
DN40	45/50	5020-54	DN40	45/50	5020-55


SPHERICAL JOINT TO STANDARD TAPER OUTER JOINT ADAPTER ♠

Transition adapter to convert a standard taper outer joint to a spherical ball or socket joint. Made of borosilicate glass.

Bottom \$ Ball	Top \$ Outer	Order Code
28/15	24/40	5025-17
35/20	24/40	5025-19
35/25	24/40	5025-21
65/40	24/40	5025-24
35/25	29/42	5025-27


STANDARD TAPER INNER JOINT TO SANITARY ADAPTER, PTFE ★

Transition adapter to convert a sanitary flanged apparatus to a standard taper inner joint. Made of virgin PTFE.

Bottom \$ Inner	Top Sanitary, in	Order Code	Bottom \$ Inner	Top Sanitary, in	Order Code
24/40	1/2	5001-02	45/50	1/2	5001-22
24/40	3/4	5001-04	45/50	3/4	5001-24
24/40	1	5001-06	45/50	1	5001-26
24/40	1 1/2	5001-08	45/50	1 1/2	5001-28
24/40	2	5001-10	45/50	2	5001-30
29/42	1/2	5001-12			
29/42	3/4	5001-14			
29/42	1	5001-16			
29/42	1 1/2	5001-18			
29/42	2	5001-20			





PTFE BEADED PIPE TO SANITARY ADAPTER ★

Transition adapter to convert beaded pipe to sanitary. Made of Virgin PTFE.

Beaded Pipe, in	Sanitary, in	Order Code	Beaded Pipe, in	Sanitary, in	Order Code
3/4	3/4	8872-50	1	1-1/2	8872-56
1	3/4	8872-52			
1	1	8872-54			



PTFE ACE-THRED TO INNER STANDARD TAPER JOINT REDUCING ADAPTER ★

This PTFE adapter is used to connect Ace-Thred to inner F joint.

Note: Supplied with (1) FETFE® O-Ring.

Ace-Thred, #	Top F Outer	Order Code	Ace-Thred, #	Top F Outer	Order Code
15	14/20	5026-15	25	14/20	5026-24
15	24/40	5026-20	25	24/40	5026-26

ACE-THRED ADAPTER ♦

With ground joint at bottom, and threaded nylon bushing at top, which tightens into an Ace-Thred to form an O-Ring compression seal with thermometers, bleed tubes, etc. Nylon bushing comes complete with O-Ring. F 10/10 size will accommodate thermometers up to 6.4mm diameter. Suitable for vacuum work.

Note: Supplied complete with Nylon bushing and O-Ring.



Bottom F Joint	For Extra O-Rings use	Supplied O-Ring material	Order Code
#7 Ace-Thred (will accept tubes with diameters of 5.5 to 7mm)			
F 10/10	7855-704	FETFE	5028-24
F 14/10	7855-704	FETFE	5028-25
F 14/20	7855-704	FETFE	5028-26
F 19/22	7855-704	FETFE	5028-28
F 24/40	7855-704	FETFE	5028-30
F 29/42	7855-704	FETFE	5028-32
F 18/9	7855-704	FETFE	5028-38
F 35/25	7855-704	FETFE	5028-42
F 14/20	7855-704	FETFE	5028-117
F 24/40	7855-704	FETFE	5028-119
F 14/20	7855-204	Silicone	5028-226
F 24/40	7855-204	Silicone	5028-230
F 34/45	7855-204	Silicone	5028-234

#11 Ace-Thred (will accept tubes with diameters of 9 to 10.5mm)

F 19/22	7855-708	FETFE	5030-20
F 24/40	7855-708	FETFE	5030-22
F 29/42	7855-708	FETFE	5030-24
F 45/50	7855-708	FETFE	5030-19
F 35/25	7855-708	FETFE	5030-28

#15 Ace-Thred (will accept tubes with diameters of 12.5 to 14mm)

F 24/40	7855-716	FETFE	5030-40
F 29/42	7855-716	FETFE	5030-42
F 45/50	7855-716	FETFE	5030-45
F 35/25	7855-716	FETFE	5030-44

#7 ACE-THRED ADAPTER w/PTFE Ferrule

With inner joint at bottom, and #7 Ace-Thred at top. Suitable for most vacuum work.

Note: Supplied complete with Nylon bushing and PTFE ferrule in place of O-Ring.

Bottom Joint		Order Code	
14/20		5028-27	♠
24/40		5028-31	♠

Replacement Parts

PTFE Ferrule, 1/4" hole	11710-07	★
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PTFE ACE-THRED FERRULES ★

PTFE ferrules can substitute for the Ace-Thred O-Ring to avoid any possibility of sample contamination. Additionally, the use of our pre-drilled ferrules will allow the use of a slightly smaller O.D. tube. For example, our 5029-45 PTFE bushing with a ferrule will allow the use of a 1/4" O.D. tube rather than the usual 7mm O.D. tube. Ferrules are also available in solid versions ready for a customized size hole.

Ace-Thred, For Tubing #	O.D.	Qty	Order Code	Ace-Thred, For Tubing #	O.D.	Qty	Order Code
7	1/8"	12	11710-03	7	Solid	12	11710-104
7	3.75mm	12	11710-04	11	Solid	12	11710-106
7	3/16"	12	11710-05	15	Solid	12	11710-108
7	1/4"	12	11710-07	25	Solid	6	11710-112
11	3/8"	12	11710-11	50	Solid	6	11710-114
15	1/2"	12	11710-15				
25	1"	6	11710-25				
50	2"	6	11710-50				



BEADED PIPE TO STANDARD TAPER JOINT ♠

Borosilicate glass transition adapter to convert beaded pipe to standard taper joint.

Bottom Joint	Beaded Pipe, in	Order Code
Inner Joint		
24/40	1	5003-10
24/40	1.5	5003-12
24/40	2	5003-14
29/42	1	5003-20
29/42	1.5	5003-22
29/42	2	5003-24
45/50	1	5003-30
45/50	1.5	5003-32
45/50	2	5003-33

Outer Joint

24/40	1	5003-40
24/40	1.5	5003-42
24/40	2	5003-44
29/42	1	5003-50
29/42	1.5	5003-52
29/42	2	5003-54
45/50	1	5003-60
45/50	1.5	5003-62
45/50	2	5003-63





BUSHING STYLE PTFE ACE-THRED ADAPTERS ♠

Solid adapters supplied with FETFE® O-Ring (replacement O-Rings listed in chart below).

Ace-Thred, #	I.D., mm	O-Ring Size	FETFE O-Ring	Order Code
7	7.5	-008	7855-704	5029-35
11	10	-012	7855-708	7506-23
15	14	-110	7855-716	7506-27
18	17	-112	7855-720	7506-29
25	26	-212	7855-734	7506-31
36	36	-217	7855-740	7506-33
50	49	-225	7855-744	7506-35
80	80.7	-336	7855-782	7506-39



NPT FEMALE TAPPED PTFE ACE-THRED ADAPTERS ♠

Solid adapters supplied with FETFE O-Ring (replacement O-Rings listed in chart below).

NPT					NPT				
Ace-Thred, #	Size, in	O-Ring Size	FETFE O-Ring	Order Code	Ace-Thred, #	Size, in	O-Ring Size	FETFE O-Ring	Order Code
7	1/8	-008	7855-707	5844-58	36	1/8	-125	7855-772	5844-65
7	1/4	-008	7855-707	5844-72	36	1/4	-125	7855-772	5844-77
11	1/8	-012	7855-708	5844-60	36	1/2	-125	7855-772	5844-106
11	3/8	-012	7855-708	5844-81	36	3/4	-125	7855-772	5844-95
15	1/8	-110	7855-716	5844-62	50	1/4	-225	7855-744	5844-78
15	1/4	-110	7855-716	5844-74	50	3/8	-225	7855-744	5844-85
15	1/2	-110	7855-716	5844-103	50	1/2	-225	7855-744	5844-107
25	1/8	-212	7855-734	5844-64	50	3/4	-225	7855-744	5844-97
25	1/4	-212	7855-734	5844-76	80	1/4	-235	7855-764	5844-80
25	3/8	-212	7855-734	5844-105	80	3/8	-235	7855-764	5844-87
25	1/2	-212	7855-734	5844-104	80	1/2	-235	7855-764	5844-108
					80	3/4	-235	7855-764	5844-98



SOLID PTFE ACE-THRED ADAPTERS ♠

Solid adapters supplied with FETFE O-Ring (replacement O-Rings listed in chart below). Select either front or back seal configuration.

Ace-Thred, #	O-Ring Size	FETFE O-Ring	Order Code	Ace-Thred, #	O-Ring Size	FETFE O-Ring	Order Code
Front Seal				Back Seal			
7	-009	7855-707	5846-44	7	-014	7855-712	5845-43
11	-012	7855-708	5846-46	11	-114	7855-722	5845-45
15	-110	7855-716	5846-48	15	-210	7855-730	5845-47
18	-113	7855-721	5846-49	18	-212	7855-734	5845-48
25	-212	7855-734	5846-50	25	-220	7855-742	5845-49
36	-125	7855-772	5846-51	36	-223	7855-774	5845-50
50	-225	7855-744	5846-52	50	-229	7855-748	5845-51
80	-235	7855-764	5846-60	80	-343	7855-766	5845-56

#25 & #36 ACE-THRED ADAPTER ♠

With ground inner joint at bottom, and either a #25 or #36 Ace-Thred that accepts outside diameters of 24-25mm and 34-35mm, respectively (Note: Joint size limits size O.D. of inserted tube). This item can be used with ultrasonics equipment. 5030-70 will accept 9852-41 slide adapter; 5030-76 will accept 9852-45 slide adapter and/or 9814 ultrasonic horn with extenders. (Note: When using horn with extenders, depth distances must be determined for proper operation.)

Note: Supplied complete with Nylon bushing and FETFE® O-Ring.

Bottom § Joint	Ace-Thred, #	Order Code
24/25	25	5030-70
24/25	36	5030-76
45/50	36	5030-80
45/50	25	5030-84
50/55	25	5030-86
71/60	25	5030-88
55/50	36	5030-90



TWIN ACE-THRED ANGLED ADAPTER ♠

With § inner joint at bottom, and two off-set Ace-Thred ports at top. Two threaded openings enable you to insert two inner tubes, such as a thermometer and a bleed tube, through the same joint. The § 24/25 medium length joint is compatible with § 24/40 full length outer joints.

Note: Supplied complete with (2) Nylon bushing and FETFE® O-Ring.

Ace-Thred, #	Bottom § Joint	Qty	Order Code
7	24/25	1	5031-10
7	29/42	1	5031-12
11	45/50	1	5031-24
15	45/50	1	5031-33
11 & 15	45/50	1	5031-86

Replacement Parts and Accessories

#7 FETFE O-Ring	12	7855-704
#11 FETFE O-Ring	12	7855-708
#15 FETFE O-Ring	12	7855-716





#7 ACE-THRED 10° ANGLED ADAPTER ♠

Thermometer adapter with inner ⌘ joint at bottom, and top threaded piece offset and angled approximately 10° for use in multiple neck flasks. Threaded nylon bushing tightens into glass piece to form an O-Ring compression seal with thermometers, bleed tubes, etc. up to 7mm diameter. Thread at top allows for variable vertical positioning of thermometers, etc. Also, because of the 10° angle, by rotating joint you can position the thermometer in the bottom of the flask.

Note: Supplied complete with Nylon bushing and FETFE® O-Ring.

Bottom ⌘ Joint	Qty	Order Code
24/40	1	5032-22
29/42	1	5032-25

Replacement Parts and Accessories

#7 Nylon Bushing	1	5029-10
#7 FETFE O-Ring	12	7855-704



HOSE CONNECTION ADAPTER W/ ACE-THRED ♠

With ⌘ inner joint at bottom, Ace-Thred at top, and serrated hose connection. Will accommodate thermometers, bleed tubes, etc. 5.5mm to 7mm diameter. Suitable for most vacuum work.

Note: Supplied complete with Nylon bushing and FETFE® O-Ring.

Bottom ⌘ Joint	Hose Connection Size, in	Qty	Order Code
#7 Ace-Thred (will accept tubes with diameters of 5.5 to 7mm)			
14/10	5/16	1	5261-06
14/20	5/16	1	5261-08
19/22	5/16	1	5261-12
24/40	3/8	1	5261-16
29/42	3/8	1	5261-20

#11 Ace-Thred (will accept tubes with diameters of 9 to 10.5mm)

19/22	5/16	1	5261-36
24/40	3/8	1	5261-38
29/42	3/8	1	5261-40

#15 Ace-Thred (will accept tubes with diameters of 12.5 to 14mm)

24/40	3/8	1	5261-57
29/42	3/8	1	5261-59

Replacement Parts and Accessories

#7 Nylon Bushing	1	5029-10
#7 FETFE O-Ring	12	7855-704
#11 Nylon Bushing	1	7506-02
#11 FETFE O-Ring	12	7855-708
#15 Nylon Bushing	1	7506-06
#15 FETFE O-Ring	12	7855-716

HOSE CONNECTION STOPCOCK ADAPTER W/ ACE-THRED ♠

Standard Taper inner joint at bottom, an Ace-Thred at top, and a side 1:5 solid PTFE 2mm bore stopcock plug with hose connection. Nylon bushing and FETFE® O-Ring allow compression seal with thermometers, bleed tubes, etc. Hose connection for 5/16" or 3/8" I.D. tubing.

Note: Supplied complete with Nylon bushing and FETFE® O-Ring.

Bottom Taper Joint	Stopcock Plug Bore Size, mm	Replacement Stopcock Plug	Qty	Order Code
#7 Ace-Thred (will accept tubes with diameters of 5.5 to 7mm)				
24/40	2	8224-04	1	5272-15
24/29	2	8224-04	1	5272-17

#15 Ace-Thred (will accept tubes with diameters of 12.5 to 14mm)

45/50	4	8224-12	1	5274-43
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Replacement Parts and Accessories

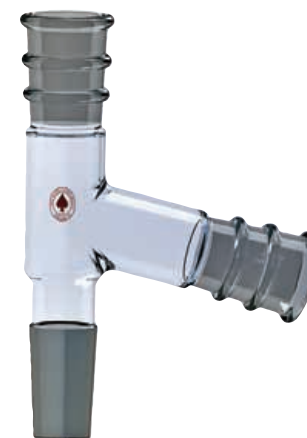
#7 Nylon Bushing	1	5029-10
#7 FETFE O-Ring	12	7855-704
#15 Nylon Bushing	1	7506-06
#15 FETFE O-Ring	12	7855-716



75° STANDARD TAPER OUTER JOINT SIDE ARM ADAPTER ♠

With reinforced outer joints at top and side, and an inner joint at the bottom.

Taper Joints	Order Code
24/40	5045-10



105° STANDARD TAPER OUTER JOINT SIDE ARM ADAPTER ♠

With reinforced outer joints at top and side, and an inner joint at the bottom.

Taper Joints	Order Code
24/40	5050-10
29/42	5050-12





105° STANDARD TAPER OUTER JOINT SIDE ARM, ACE-THRED ADAPTER ♠

With reinforced outer joint on side, inner joint at bottom, and Ace-Thred at top.

Note: Glass only. NOT supplied with Nylon bushing or FETFE® O-Ring.

⌘ Joints	Ace-Thred, #	Qty	Order Code
45/50	25	1	5050-86
45/50	15	1	5050-96

Replacement Parts and Accessories

#15 Nylon Bushing	15	1	7506-06
#25 Nylon Bushing	25	1	7506-10
#15 FETFE O-Ring	15	12	7855-716
#25 FETFE O-Ring	25	12	7855-734



CLAISEN ADAPTER ♠

With parallel side arm, outer joints at top, inner joint at bottom. Outer ⌘ joints are reinforced.

Joints	Order Code
⌘ 14/20	9067-02
⌘ 19/22	9067-04
⌘ 24/40	5055-10
⌘ 29/42	5055-15
⌘ 35/25	5055-35



CLAISEN ADAPTER Modified ♠

Claisen style adapter with an additional reinforced ⌘ outer joint at a 45° angle to the vertical outer joint.

⌘ Joint	Height x Width, mm	Order Code
14/20	117 x 105	4013-08
24/40	165 x 150	4013-10
29/42	170 x 155	4013-12



STANDARD TAPER OUTER JOINT "U" ADAPTER ♠

Connecting adapter, U-shaped, with reinforced ⌘ outer joints at both ends.

⌘ Joints	Order Code
24/40-24/40	5060-10

SPHERICAL BALL AND SOCKET JOINT “U” ADAPTER ♠

Connecting adapter, U-shaped, with spherical joints at both ends.

§ Joint Combination	A, mm	Order Code
12/5 Ball-12/5 Socket	31	5065-20
12/5 Socket-12/5 Socket	31	5065-22
18/11 Socket-18/11 Socket	75	5065-29
28/15 Ball-28/15 Socket	75	5065-31
28/15 Socket-28/15 Socket	75	5065-32



75° ANGLE ADAPTER ♠

Angle adapter with 75 degree angle inner standard taper joints.

§ Joint	Order Code
24/40	5070-10
29/42	5070-15



90° SPHERICAL ADAPTER ♠

Connecting adapter with spherical ball or socket joint at one end, and a straight tube at the opposite end.

§ Joint	Tube O.D., mm	Order Code
Ball Joint to Straight Tube		
12/5	9	5072-20
18/9	12.7	5072-22
28/15	19	5072-24
Socket Joint to Straight Tube		
12/5	9	5072-28
18/9	12.7	5072-30
28/15	19	5072-34



90° ANGLE SPHERICAL JOINT BALL TO SOCKET ADAPTER ♠

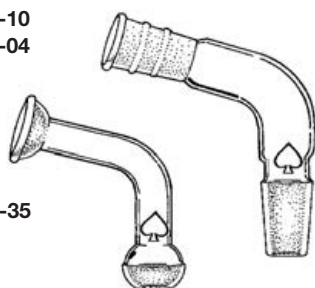
With spherical joints at both ends.

§ Joint Combination	Order Code
12/5 Ball-12/5 Socket	5072-37
12/5 Socket-12/5 Socket	5072-38
28/15 Ball-28/15 Socket	5072-43
28/15 Socket-28/15 Socket	5072-45



5075-10
9055-04

5075-35

**105° ANGLE ADAPTER** ♠

With ♂ or ♀ inner-to-outer joints at top and bottom.

Joints	Order Code	Joints	Order Code
♂ 14/20	9055-04	♂ 29/42	5075-15
♂ 24/40	5075-10	♂ 45/50	5075-45
♀ 35/25	5075-35		

**160° ANGLE ADAPTER** ♠

Designed to go from angled flask side joints to a vertical position. Inner-to-outer joints.

♂ Joints	Order Code
14/20	9056-08

**105° ANGLE DISTILLATE TAKE-OFF ADAPTER** ♠

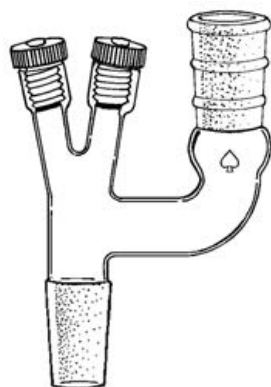
With reinforced ♂ joint, 105° angle. Straight tube bottom.

Top Outer ♂ Joint	Order Code
14/20	9083-08
24/40	5080-10

**75° ANGLE DISTILLING ADAPTER W/ PROBE PORT** ♠

For connecting distilling column with vertical condensers. Top outer joint ♂ 10/30 is for 76mm immersion thermometer. Side arm at 75°, vertical side arm is 17.8cm from center tube.

Bottom Inner ♂ Joints	Order Code
24/40	5085-10

**MULTI-NECK ADAPTER W/ TWIN #7 ACE-THRED PORTS** ♠

With ♂ inner joint at bottom, (2) #7 Ace-Threds, and (1) ♂ outer joint at top. Ace-Threds would commonly be used for thermometers or gas inlet tubes thus leaving joint for condenser, addition funnel, still head, etc. ♂ 24/25 medium length joint is compatible with ♂ 24/40 full length joint.

Note: Supplied complete with (2) Nylon bushings and FETFE® O-Rings.

Top Outer ♂ Joint	Bottom Inner ♂ Joints	Qty	Order Code
24/40	24/25	1	5263-17

Replacement Parts and Accessories

#7 Nylon Bushing	1	5029-10
#7 FETFE O-Ring	12	7855-704

75° ANGLE DISTILLING ADAPTER W/ ACE-THRED PROBE PORT ♠

For connecting distilling column with vertical condenser. Top has an Ace-Thred for use with 5029 bushing, and an adjustable length thermometer. Side arm at 75°, vertical side arm is 17.8cm from center tube.

Note: Supplied complete with Nylon bushings and FETFE® O-Rings.

Top Joint, Ace-Thred, #	Side Inner Joint	Bottom Inner Joint	Qty	Order Code
7	24/40	24/40	1	5086-54

Replacement Parts and Accessories

#7 Nylon Bushing	1	5029-10
#7 FETFE O-Ring	12	7855-704



75° ANGLE ADAPTER W/ PROBE PORT ♠

With 10/30 or 35/25 joint at bottom and side. The top is a thermometer joint.

Top Outer Joint	Immersion Depth, mm	Side Inner Joint	Bottom Inner Joint	Order Code
Standard Taper Joint Lowers				
10/18	25	14/20	14/20	9077-02
10/30	25	14/20	14/20	9077-06
10/30	25	19/22	19/22	9077-16
10/30	76	24/40	24/40	5090-10
10/30	76	29/42	29/42	5090-15

Ball Joint Lowers

10/30	76	35/25	35/25	5090-35
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75° ANGLE ADAPTER W/ ACE-THRED PROBE PORT ♠

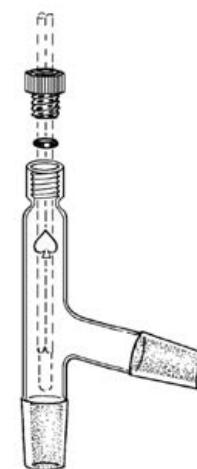
Top joint has an Ace-Thred for use with a nylon bushing and adjustable length thermometer.

Note: Supplied complete with Nylon bushing and FETFE® O-Ring.

Top Joint, Ace-Thred, #	Side Inner Joint	Bottom Inner Joint	Qty	Order Code
7	24/40	24/40	1	5092-54

Replacement Parts and Accessories

#7 Nylon Bushing	1	5029-10
#7 FETFE O-Ring	12	7855-704



75° ANGLE ADAPTER W/ OUTLET TUBE ♠

Top is a 15.8mm O.D. x 9.5mm I.D. outlet tube.

Side Inner Joint	Bottom Inner Joint	Order Code
24/40	24/40	5095-10





OFFSET ADAPTER W/ PROBE PORT ♠

Thermometer joint for 76mm immersion at top.

Thermometer Joint	Immersion Depth, mm	Side Inner Joint	Bottom Inner Joint	Order Code
10/30	76	24/40	24/40	5100-10



OFFSET ADAPTER W/ ACE-THRED PROBE PORT ♠

Similar to 5100 adapter, except with #7 Ace-Thred for use with 5029 nylon bushing, and adjustable length thermometer.

Note: Supplied with Nylon bushing and FETFE® O-Ring.

Joins	Qty	Order Code
24/40	1	5101-54

Replacement Parts and Accessories

#7 Nylon Bushing	1	5029-10
#7 FETFE O-Ring	12	7855-704



ACE-THRED OFFSET ADAPTER W/PROBE PORT

With #15 Ace-Thred at bottom, and (2) #7 Ace-Threds at top, one offset. Used with 8648 temperature measurement apparatus for 7482 hydrogenation/gas apparatus.

Note: Glass only. NOT supplied with Nylon bushings or FETFE® O-Rings.

Bottom, Ace-Thred, #	Top, Ace-Thred, #	Qty	Order Code	
15	7	1	5102-05	♠

Accessories

#7 Nylon Bushing	1	5029-200	★
#7 FETFE O-Ring	12	7855-704	♠



SEPTUM INLET PORT ADAPTER

Sampling adapter, with 1/2 inner joint at bottom and septum port at top, for handling air-sensitive materials.

Note: Supplied with septum.

Bottom 1/2 Joint	Qty	Order Code	
14/20	1	5110-13	♠
24/40	1	5110-11	♠

Replacement Parts and Accessories

8mm Septa, Red Rubber	12	9096-32	★
8mm Septa, White Rubber	12	9096-33	★

DUAL SEPTUM INLET PORT ADAPTER

Sampling adapter with F inner joint at bottom, and (2) septa for handling air-sensitive materials.

Note: Supplied with septum.

F Joint	Qty	Order Code	
14/20	1	9091-03	♠
24/40	1	5112-14	♠

Replacement Parts and Accessories

8mm Septa, Red Rubber	12	9096-32	★
8mm Septa, White Rubber	12	9096-33	★



SYRINGE PORT ADAPTER

Sampling adapter with F inner joint at bottom, and 8-425 GPI thread at top that accepts a 9590-44 cap with hole, and an 8787-40 PTFE-faced septum to allow insertion of a syringe needle.

Note: Supplied complete with cap and septum.

Bottom F Joint	Qty	Order Code	
14/20	1	5113-13	♠
24/40	1	5113-23	♠

Replacement Parts and Accessories

5mm Drilled Cap, no liner	48	9590-44	★
Septa, Silicone with PTFE face	48	8787-40	★



DUAL SEPTUM INLET PORT W/ STOPCOCK ADAPTER

Sampling adapter with F inner joint at bottom, 2mm bore PTFE or glass stopcock, and (2) septum ports at top. Used to handle air-sensitive materials.

Note: Supplied with (2) 8mm sleeve septa.

F Joint	Stopcock Type	Stopcock Bore, mm	Qty	Order Code	
14/20	PTFE	2	1	9094-04	♠
14/20	Glass	2	1	9094-14	♠
24/40	PTFE	2	1	5111-09	♠
24/40	Glass	2	1	5111-19	♠

Replacement Parts and Accessories

8mm Septa, Red Rubber	12	9096-32	★
8mm Septa, White Rubber	12	9096-33	★
Stopcock Plug, 2mm bore	1	8224-04	♠



SEPTA *Sleeve Type* ★

With hollow plug. Top is flanged with sleeve-like extension that folds down over the neck of vessel. The diaphragm can be punctured readily with a syringe needle. Puncture seals automatically after the needle is withdrawn.

For use with	Pkg Qty	Order Code	Pkg Qty	Order Code	Pkg Qty	Order Code
Red Rubber						
For 8mm O.D. Std. Wall Glass Tubing	12	9096-32	72	9096-132	144	9096-232
For F 14/20, F 14/35 Joints	12	9096-43	72	9096-143	144	9096-243
For F 19/38, F 19/22 Joints	12	9096-54	72	9096-154	144	9096-254
For F 24/40, F 24/25 Joints	12	9096-56	72	9096-156	144	9096-256
White Rubber						
For 5mm O.D. NMR Tubes & for small tubing	12	9096-26	72	9096-126	144	9096-226
For 7mm O.D. Std. Wall Glass Tubing	12	9096-31	72	9096-131	144	9096-231
For 8mm O.D. Std. Wall Glass Tubing	12	9096-33	72	9096-133	144	9096-233
For 9-12mm O.D. Std. Wall Glass Tubing	12	9096-39	72	9096-139	144	9096-239
For F 14/20, F 14/35 Joints	12	9096-44	72	9096-144	144	9096-244
For 13-18mm O.D. Test Tubes	12	9096-49	72	9096-149	144	9096-249
For F 24/40, F 24/25 Joints	12	9096-57	72	9096-157	144	9096-257





SYRINGE PORT W/ STOPCOCK ADAPTER

With $\text{\textcircled{S}}$ inner joint at bottom, an 8-425 GPI thread at top that accepts a cap with hole, and a PTFE-faced septum to allow insertion of a syringe needle. Stopcock is 2mm bore PTFE plug.

Note: Supplied complete with cap and septum.

Bottom $\text{\textcircled{S}}$ Joint	Qty	Order Code	
14/20	1	5114-14	♠
19/22	1	5114-19	♠
24/40	1	5114-24	♠
29/42	1	5114-29	♠

Replacement Parts and Accessories

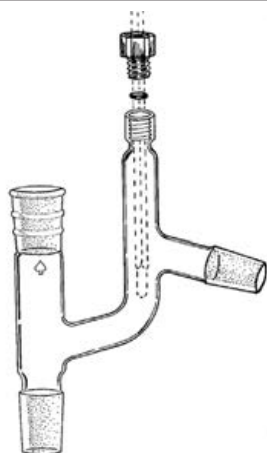
5mm Drilled Cap, no liner	48	9590-44	★
Septa, Silicone with PTFE face	48	8787-40	★
Stopcock Plug, 2 mm bore	1	8224-04	♠



CLAISEN ADAPTER ♠

Claisen distilling adapter features either a 10/30 joint for 76mm immersion thermometers, or a 10/18 joint for 25mm immersion thermometers. All other joints, outer at top of vertical tube, inner at the bottom, and sidearm inner drip tip, are uniform.

$\text{\textcircled{S}}$ Joints	Order Code
14/20	5135-06
19/22	5135-08
24/40	5135-10
29/26	5135-12
29/42	5135-14



CLAISEN ADAPTER W/ ACE-THRED PROBE PORT ♠

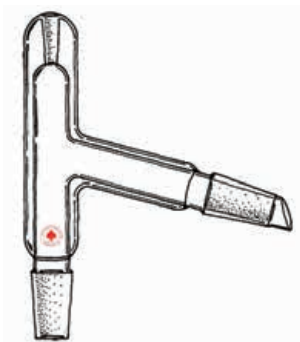
With 24/40 standard taper joints and top side arm with #7 Ace-Thred, for use with 5029 Nylon bushing and adjustable length thermometer.

Note: Supplied with Nylon bushing and FETFE® O-Ring.

$\text{\textcircled{S}}$ Joints	For Extra O-Rings use	Qty	Order Code
24/40	7855-704	1	5136-54

Replacement Parts and Accessories

#7 Nylon Bushing	1	5029-10
#7 FETFE O-Ring	12	7855-704



VACUUM JACKETED ADAPTER ♠

Used as distilling head for connecting top of column with side condenser. Top joint $\text{\textcircled{S}}$ 10/30 inner for 76mm immersion thermometer. Side and bottom joints are $\text{\textcircled{S}}$ 24/40 inner.

Bottom $\text{\textcircled{S}}$ Joint	Side $\text{\textcircled{S}}$ Joint	Order Code
24/40	24/40	5140-10

“U” SHAPED CONNECTING ADAPTER ♠

With ₣ or § joints.

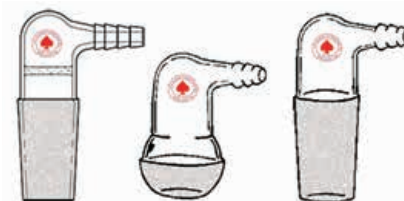
Distance Between Joints, mm	Joints	Order Code
100	₣14/20	9079-08
150	₣14/20	9079-12
170	₣24/40	5125-10
175	§35/25	5125-35
100i would def	₣24/40, §35/25	5125-50



HOSE CONNECTION ADAPTER ♠

With ₣ inner or § ball joint and 90° hose connection. 5205-110, 5205-112, and 5205-114 have an integral (145-174 micron) fritted disc.

Joint	Hose Connection Size, in	Order Code
₣ 14/20	5/16	9088-07
₣ 19/22	5/16	9088-09
₣ 19/38	3/8	5205-05
₣ 24/40	3/8	5205-10
₣ 29/42	3/8	5205-15
₣ 45/50	3/8	5205-16
§ 28/15	3/8	5205-25
§ 35/25	3/8	5205-35
₣ 19/22	5/16	5205-110
₣ 24/40	3/8	5205-112
₣ 29/42	3/8	5205-114



TWIN HOSE CONNECTION ADAPTER ♠

With ₣ inner joint and twin hose connections opposite each other. Normally used with 6620 reflux apparatus to allow inert gas flow over top of apparatus to maintain oxygen-free system.

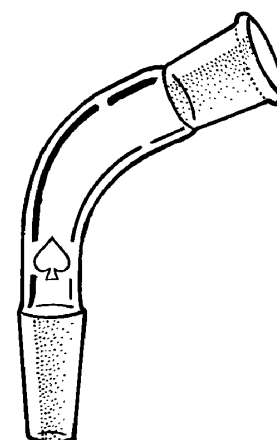
Bottom ₣ Joint	Hose Connection, in	Order Code
14/20	5/16 or 3/8	5206-04
24/40	5/16 or 3/8	5206-10
29/42	5/16 or 3/8	5206-12
45/50	5/16 or 3/8	5206-20

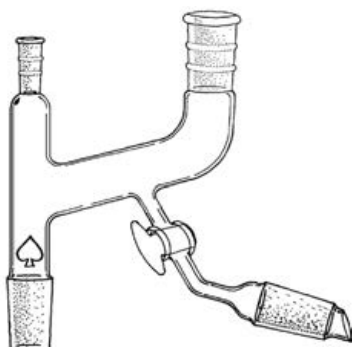


105° STANDARD TAPER INNER TO OUTER JOINT ADAPTER ♠

With ₣ joints, one 14/20 outer and one 14/35 inner, or one 24/25 outer and one 24/40 inner.

Inner ₣ Joint	Outer ₣ Joint	Order Code
14/35	14/20	7803-12
24/40	24/25	7803-25





CLAISEN ADAPTER W/ 75° ANGLE TAKE-OFF ♠

With glass or 1:5 solid PTFE stopcock plug on lower side arm. Top joint on center tube is ₧10/30 for 76mm immersion thermometer. All other joints are ₧14/20 or ₧24/40. Take-off arm is at 75° angle to the vertical. Plug is 2mm bore.

Plug Style	Thermometer	All Other	Order
Style	₧ Joint	₧ Joints	Code
Glass	10/30	14/20	9068-06
Glass	10/30	24/40	5150-10
PTFE	10/30	24/40	5150-29



105° ANGLE JACKETED ADAPTER ♠

Jacketed with water-cooled ₧ joints.

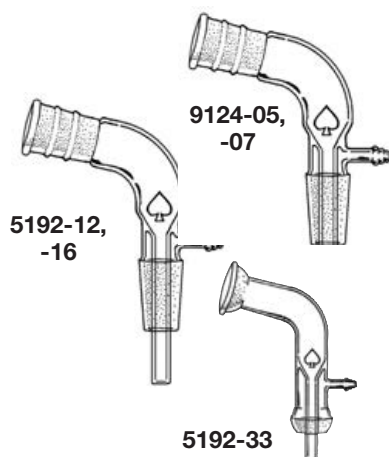
₧ Joints	Stem Length Below Bottom Joint, mm	Hose Connection, in	Order Code
24/40	50	3/8	5155-10



DUAL VACUUM TAKE-OFF ADAPTER ♠

With ₧ inner joint and two vacuum take-offs.

Bottom ₧ Joint	Hose Connection, in	Order Code
24/40	3/8	5175-10



105° ANGLE VACUUM TAKE-OFF ADAPTER W/ STEM ♠

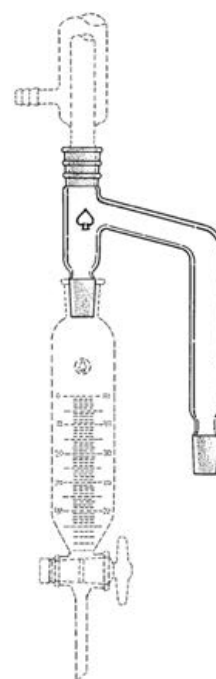
Outer joint at angle of 105°. Used with distillation set-ups. Hose connection on side faces opposite top joint.

Joints	Stem Length Below Bottom Joint, mm	Hose Connection, in	Order Code
₧ 14/20	0	5/16 or 3/8	9124-05
₧ 19/22	0	5/16	9124-07
₧ 24/40	30	5/16 or 3/8	5192-12
₧ 29/42	30	5/16 or 3/8	5192-16
₧ 35/25	30	5/16 or 3/8	5192-33
₧ 14/20	90	5/16 or 3/8	9124-06
₧ 24/40	175	5/16 or 3/8	5195-10
₧ 29/42	175	5/16 or 3/8	5195-15

MOISTURE TRAP ADAPTER ♠

Unique adapter used in place of a Dean-Stark moisture test receiver. Simply add a condenser to top ♂ outer joint, any graduated funnel from 125mL to 2000mL to bottom ♂ inner joint, attach sample flask to ♂ inner side arm joint, and you have a moisture test receiver.

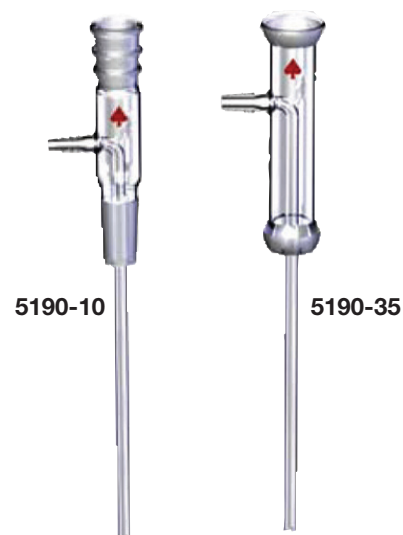
Top Outer ♂ Joint	Bottom Inner ♂ Joint	Inner Side Arm ♂ Joint	Order Code
14/20	14/20	14/20	9101-20
24/40	24/40	24/40	5179-07



GAS INLET ADAPTER ♠

Side tube with hose connection for purging out as a gas inlet tube.

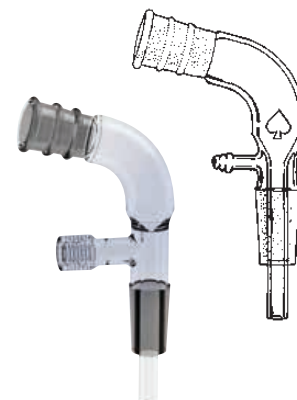
Joints	Stem Length Below Bottom Joint, mm	Hose Connection, in	Order Code
♂ 24/40	175	3/8	5190-10
♂ 29/42	175	3/8	5190-15
♂ 35/25	175	3/8	5190-35

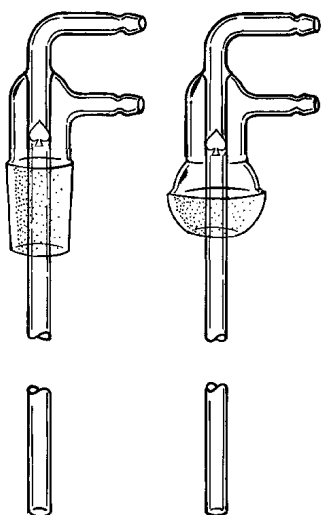


105° ANGLE VACUUM TAKE-OFF ADAPTER, SHORT STEM ♠

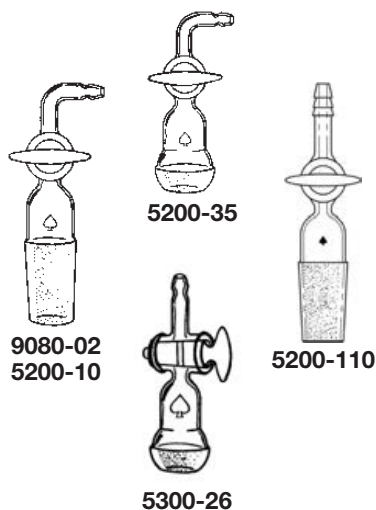
Outer joint at angle of 105°. Hose connection faces same direction as top joint. Available with Ace-Thred for a safer, more reliable hose connection.

♂ Joints	Stem Length Below Bottom Joint, mm	Hose Connection, in	Order Code
24/40	30	5/16 or 3/8	5192-45
24/40	30	#11 Ace-Thred	5192-49



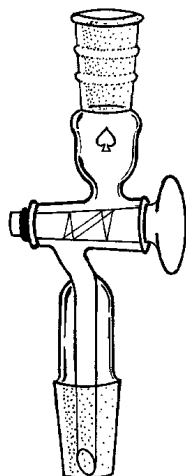

VACUUM TAKE-OFF ADAPTER W/ STEM ♠

Joint	Stem Length Below Bottom Joint, mm	Hose Connection, in	Order Code
24/40	30	5/16 or 3/8	5193-08
29/42	30	5/16 or 3/8	5193-14
24/40	250	5/16 or 3/8	5196-10
24/40	125	5/16 or 3/8	5196-12
29/42	250	5/16 or 3/8	5196-15
35/25	250	5/16 or 3/8	5196-35


GLASS STOPCOCK W/ HOSE CONNECTION ADAPTER ♠

With either angled or straight hose connections and 24/40 or 29/42 joint. For stopcock plugs, see 8223. 5200-110, 5200-115 and 5300-26 have a straight tube connection.

Joint	Hose Connection, in	Plug Bore Size, mm	Order Code
Standard Taper			
14/20	5/16	2	9080-02
19/22	5/16	2	9080-08
14/10	5/16	2	9080-10
19/38	5/16 or 3/8	2	5200-05
24/40	5/16 or 3/8	2	5200-10
29/42	5/16 or 3/8	3	5200-15
24/40	5/16 or 3/8	2	5200-110
29/42	5/16 or 3/8	2	5200-115
Spherical			
35/25	5/16 or 3/8	3	5200-35
35/25	5/16 or 3/8	2	5300-26


ADJUSTABLE FLOW STOPCOCK ADAPTER ♠

Adjustable flow stopcock with standard taper 24/40 joints.

Inner 24/40 Bottom Joint	Outer 24/40 Top Joint	Order Code
24/40	24/40	5250-10

1:5 PTFE STOPCOCK W/HOSE CONNECTION ADAPTER ♠

With either angled or straight hose connection, 1/8" inner joint and 1:5 solid PTFE stopcock plug.

1/8" Joint	Tube Orientation	Hose Connection, in	Plug Bore Size, mm	Order Code
14/20	angled	5/16	2	9080-12
19/22	angled	5/16	2	9080-18
24/40	angled	5/16 or 3/8	2	5202-12
29/42	angled	5/16 or 3/8	2	5202-92
14/20	straight	5/16	2	9080-112
19/22	straight	5/16	2	9080-118
24/40	straight	5/16 or 3/8	2	5202-110
29/26	straight	5/16 or 3/8	2	5202-112
29/42	straight	5/16 or 3/8	2	5202-114

Replacement Parts and Accessories

2mm PTFE Stopcock, Straight Bore	8224-04
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1:5 PTFE METERING VALVE STOPCOCK W/HOSE CONNECTION ADAPTER ♠

With angled hose connection, 1/8" inner joint, and 1:5 solid PTFE stopcock plug with metering valve.

1/8" Joint	Hose Connection, in	Plug Bore Size, mm	Order Code
14/20	5/16	2	9081-21
24/40	5/16 or 3/8	2	5203-20

Replacement Parts and Accessories

2mm PTFE Plug, Metering Valve	8232-14
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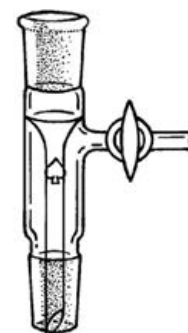
VACUUM ADAPTER W/STOPCOCK ♠

Vacuum adapter with glass stopcock on side arm (8223-02).

1/8" Joints	Plug Bore Size, mm	Order Code
14/20	2	9175-04

Replacement Parts and Accessories

2mm Glass Plug	8223-02
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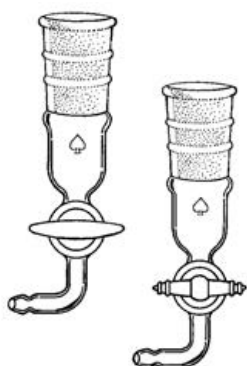


75° STANDARD TAPER INNER JOINT SIDE ARM ADAPTER ♠

With inner joints at bottom and side, and a reinforced outer joint at top.

Top Outer 1/8" Joint	Side Inner 1/8" Joint	Bottom Inner 1/8" Joint	Order Code
14/20	14/20	14/20	9074-02
19/22	19/22	19/22	9074-04
24/40	24/40	24/40	5040-10
29/42	29/42	29/42	5040-12
24/40	45/50	45/50	5040-96





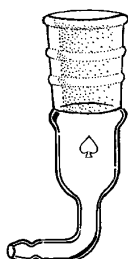
STANDARD TAPER OUTER JOINT W/ STOPCOCK ADAPTER ♠

Adapter with ♂ outer joint top, hose connection bottom, glass or PTFE plugged metering valve.

Top Outer ♂ Joint	Stopcock Type	Hose Connection, in	Plug Bore Size, mm	Order Code
24/40	Glass	5/16 or 3/8	2	5210-10
24/40	1:5 PTFE	5/16 or 3/8	2	5210-40

Replacement Parts and Accessories

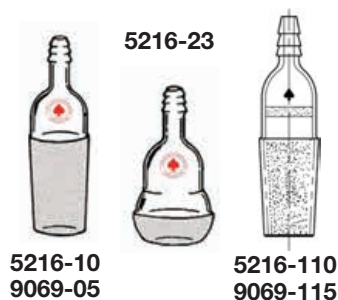
2mm Glass Plug	8223-02
2mm PTFE Plug, Metering Valve	8232-14



STANDARD TAPER OUTER JOINT W/ HOSE CONNECTION ADAPTER ♠

With ♂ outer joint.

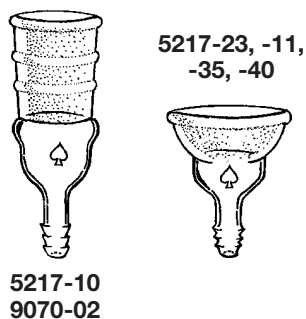
Top Outer ♂ Joint	Hose Connection, in	Order Code
24/40	3/8	5215-10



HOSE CONNECTION INNER ADAPTER ♠

With ♂ inner or ♀ ball joint at bottom, and straight hose connection at top.

Joint	Hose Connection, in	Integral Fritted Disc, 145-174 micron	Order Code
♂ 14/10	5/16	No	9069-04
♂ 14/20	5/16	No	9069-05
♂ 19/22	5/16	No	9069-06
♂ 14/20	5/16	Yes	9069-115
♂ 19/22	5/16	Yes	9069-116
♂ 24/40	5/16 or 3/8	No	5216-10
♂ 29/42	5/16 or 3/8	No	5216-15
♂ 45/50	5/16 or 3/8	No	5216-16
♀ 18/9	5/16 or 3/8	No	5216-23
♀ 35/25	5/16 or 3/8	No	5216-35
♂ 24/40	5/16 or 3/8	Yes	5216-110
♂ 29/26	5/16 or 3/8	Yes	5216-116
♂ 29/42	5/16 or 3/8	Yes	5216-118



HOSE CONNECTION OUTER ADAPTER ♠

With ♂ outer or ♀ socket joint at one end, and a hose connection at the other end.

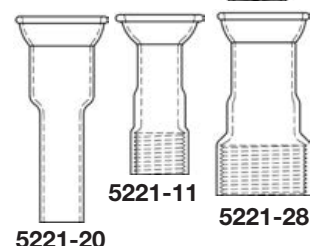
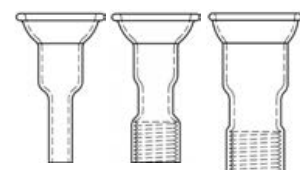
Joint	Hose Connection, in	Order Code
♂ 14/20	5/16	9070-02
♂ 24/40	5/16 or 3/8	5217-10
♀ 18/9	5/16 or 3/8	5217-23
♀ 28/15	5/16 or 3/8	5217-11
♀ 35/25	5/16 or 3/8	5217-35
♀ 35/20	7/16 or 1/2	5217-40

SPHERICAL SOCKET JOINT ADAPTER ♠

Adapters for joining jacketed reactor ball joint inlet/outlets to recirculator hoses. 28/15 and 35/25 sockets with various Ace-thred and tube ends.

Size	Joint Connects to	Order Code
28/15	10mm tube	5221-05
28/15	#11 Ace-Thred	5221-09
28/15	#15 Ace-Thred	5221-11
35/25	3/4" tube	5221-20
35/25	#15 Ace-Thred	5221-24
35/25	#25 Ace-Thred	5221-28

5221-05 5221-09 5221-24



DISTILLING TRAP ♠

Distilling trap adapter with the same outer joint top and inner joint bottom.

Joints	Order Code
14/20	9086-02
24/40	5225-10
29/42	5225-15

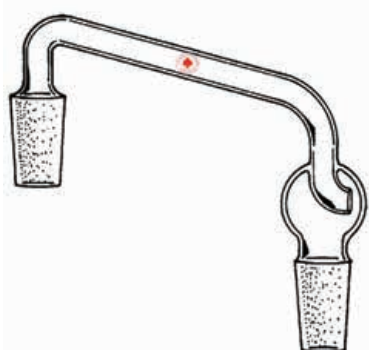


VACUUM FILTRATION ADAPTER ♠

Used for reduced pressure filtration with 7186 style, plain stem Buchner funnels. Top is tooled to accept a pluro stopper, bottom has a ⌘ inner joint. Inserting the recommended size pluro stopper and the next smaller size allows use of smaller capacity funnels; i.e. in ⌘ 24/25 size, insertion of 31mm x 16mm and 22mm x 11mm will allow use of 15 or 30mL capacity funnels.

Inner Bottom Joint	For Funnel Capacity, mL	Hose Connection, in	Uses Pluro Stopper, I.D., mm	Order Code
14/20	2	3/8	17 x 7	5267-06
19/22	2	3/8	17 x 7	5267-08
24/25	140	3/8	31 x 16	5267-11
24/40	140	3/8	31 x 16	5267-15
29/26	4000	3/8	60 x 36	5267-18
29/42	4000	3/8	60 x 36	5267-20



**KJELDAHL TRAP** ♠

This Kjeldahl Trap adapter has two 24/40 ground standard taper inner joints. The distance between the center of each joint is approximately 200mm.

Inner ♂ Joints
24/40

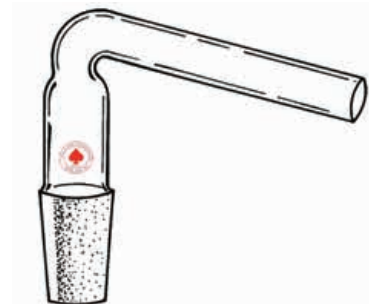
Order
Code
5226-10

**DISTILLING TRAP** ♠

This distilling trap adapter has an outlet tube bent at a 75° angle.

♂ Joint
24/40

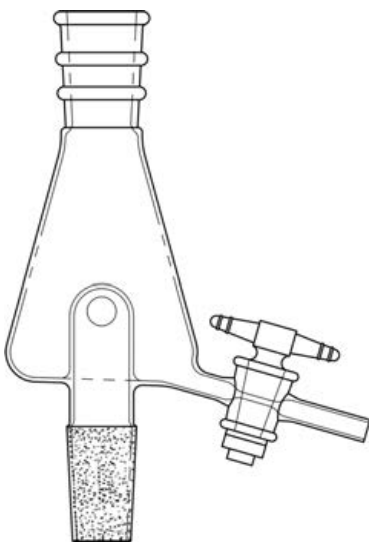
Order
Code
5230-10

**DISTILLING ADAPTER** ♠

This distilling adapter has a 8 mm O.D. outlet tube bent at a 75° angle.

♂ Joint
24/40

Order
Code
5235-10

**SAMPLING ADAPTER** ♠

With 1:5 solid PTFE stopcock plug connected to side of apron for removing distillate or sample. Approximate flask capacity is 125mL.

♂ Joints	Joint after Stopcock	Plug Bore Size, mm	Order Code
24/40	#7 Ace-Thred	2	5245-04
24/40	Plain Tubing	2	5245-29

Replacement Parts and Accessories

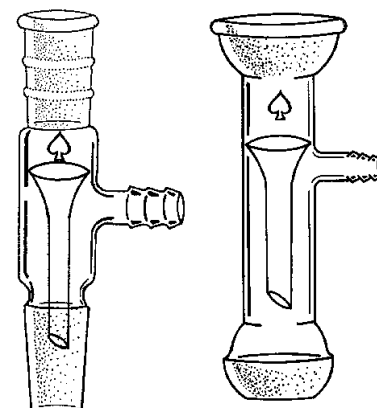
2mm PTFE Stopcock Straight Bore

8224-04

VACUUM ADAPTER W/SIDE HOSE CONNECTION & DRIP TIP ♠

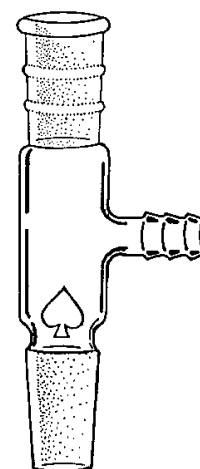
This vacuum adapter comes with side hose connections and a drip tip. Available with either standard taper or spherical joints.

Joints	Hose Connection, in	Order Code
14/20	5/16 or 3/8	9123-06
19/22	5/16 or 3/8	9123-08
24/25	3/8	5260-07
24/40	3/8	5260-10
29/42	3/8	5260-15
35/25	3/8	5260-35


GAS INLET ADAPTER W/HOSE CONNECTION ♠

This gas inlet adapter has a side hose connection, with standard taper outer joint at top, and standard taper inner joint at bottom. Full-sized outer joints are reinforced.

Outer Top Joint	Inner Bottom Joint	Hose Connection, in	Order Code
14/10	14/10	5/16 or 3/8 (B)	9119-22
14/20	19/38	5/16 (A)	9119-02
24/40	24/40	3/8 (D)	5265-10


DUAL END STANDARD TAPER INNER JOINT STRAIGHT ADAPTER ♠

This adapter has ground standard taper inner joints at both ends.

Joints	Length Between Joints, mm	Order Code
24/40-24/40	30	5039-03
24/40-24/40	70	5039-05
24/40-24/40	120	5039-07
29/42-29/42	30	5039-09
29/42-29/42	70	5039-11
29/42-29/42	120	5039-13





DUAL END STANDARD TAPER OUTER JOINT STRAIGHT ADAPTER ♠

This adapter comes with the same reinforced standard taper outer joints at both ends.

Outer Joints	Length Between Joints, mm	Order Code
14/35	30	9071-01
14/35	70	9071-03
14/35	120	9071-05
24/40	70	5036-04
24/40	120	5036-06
29/42	70	5036-07
29/42	120	5036-08
24/40	175	5036-10
29/42	175	5036-12



DUAL END INNER TO OUTER JOINT STRAIGHT ADAPTER ♠

With the same size outer and inner joints at both top and bottom. Length stated is approximate overall length. Outer joints are reinforced.

Joints	Length, mm	Order Code
19/38	150	5035-05
24/40	150	5035-10
29/42	150	5035-15
28/15	142	5035-25
35/20	142	5035-30
35/25	142	5035-35



10° ANGLED OFFSET ADAPTER ♠

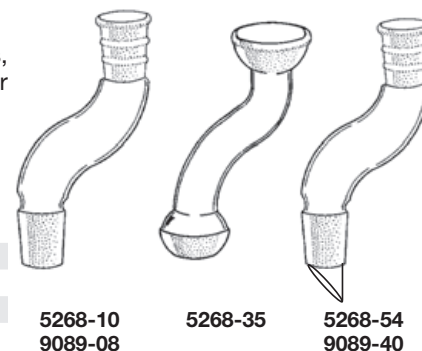
Offset adapters are used to gain better vertical clearance when using addition funnels, condensers, or other apparatus. Angled offset adapter with outer joint on top and inner joint on bottom. For use with heads having 10° side necks, transitioning to 90°.

Outer Top Joint	Inner Bottom Joint	Order Code
14/20	14/20	5273-02
24/40	24/40	5273-04

OFFSET ADAPTER ♠

Offset adapters are used to gain better vertical clearance when using addition funnels, condensers, or other apparatus. Both bottom inner joint and top outer joints are slightly offset and angled for reactor heads.

Without Drip Tip		With Drip Tip	
Joints	Order Code	Joints	Order Code
14/20	9089-08	14/20	9089-40
24/40	5268-10	24/40	5268-54
29/42	5268-15	29/42	5268-56
45/50	5268-21	45/50	5268-58
35/25	5268-35		



PRESSURE REACTOR OFFSET ADAPTER ♠

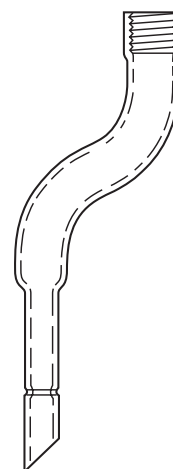
Offset adapters are used to gain better vertical clearance when using addition funnels, condensers, or other apparatus. Offset adapter with #15 Ace-Thred top offset to a 14mm O.D. tube with O-Ring groove. For use with ACE pressure reactors to locate condenser, liquid addition funnel, etc., away from stirrer.

Note: Glass only. NOT supplied with Nylon bushing or FETFE® O-Ring.

Inner Top, Ace-Thred, #	Qty	Order Code
15	1	5269-12

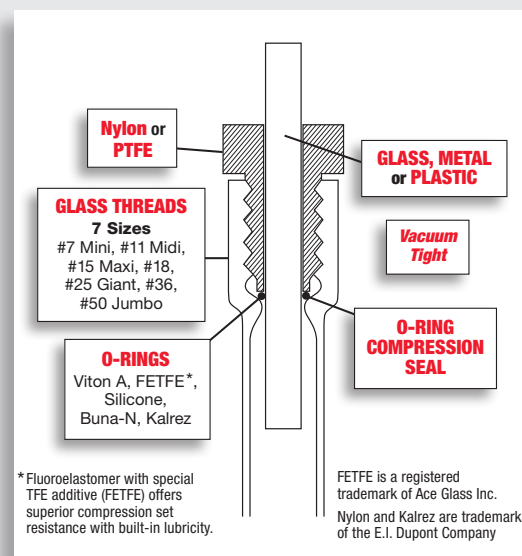
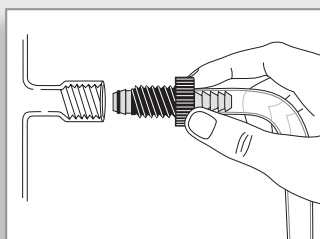
Accessories

#15 Nylon Bushing	1	7506-06
#15 FETFE O-Ring	12	7855-716



Ace-Threds

Grease Free | Clamp Free | More Convenient



**ADDITIVE ADAPTER ♠**

Graduated separatory funnel with 1:5 solid PTFE stopcock plug and dropping bulb. Capacity 50mL, in 1mL subdivisions.

Inner Bottom \$ Joint	Outer Top \$ Joint	Plug Bore Size, mm	Order Code
24/40	24/40	2	5270-29

Replacement Parts and Accessories

2mm PTFE Plug, Straight Bore	8224-04
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**STRAIGHT AND 10° ANGLED DISTILLATION/REFLUX SPLITTER ★**

The reflux/distillation splitter is used to allow easy switching of the distillate path by means of adjusting the valve position to either open or closed. This in-line adapter simplifies the vapor flow path, and its compact design and integrated Swagelok take-off side arm make vacuum-assisted distillate transfers streamlined. These splitters are available in both a straight or an angled configuration. Angled adapters are used with 10° angled side necks and transition to a vertical 90° position.

Inner Bottom \$ Joint	Outer Top \$ Joint	Order Code
Straight Configuration		
\$14/20	\$14/20	6089-02
\$24/40	\$24/40	6089-04
10° Angle Configuration		
\$14/20	\$14/20	6089-03
\$24/40	\$24/40	6089-07

DISTILLATION/REFLUX ADAPTER ★

Used to “take-off” liquid distillate, splitter is installed between boil-up pot or fractionating column, and condenser. Overall height is 350mm. Main body is approximately 4” in diameter with #7 Ace-Thred and bushing for 1/4” diameter thermoprobe to monitor vapor temperature. Upper alembic chamber has 2” diameter domed tube with (2) 1-1/4” diameter holes for vapor flow upwards to condenser while preventing condensate from returning to pot. Side PTFE stopcock allows take-off when closed, and reflux return when open. Take-off tube terminus is 3/8 35/25 O-Ring ball joint. All O-Rings are Kalrez® for maximum chemical resistance.

Inner Bottom § Joint	Outer Top § Joint	Valve Size, mm	Side Port	Order Code
45/50	45/50	0-20	3/8 35/25 O-Ring Ball Joint	6087-10



DISTILLATION ADAPTER ♠

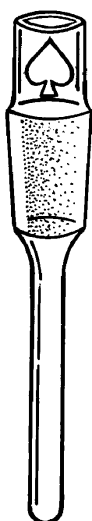
Distillation adapter for use with bench or pilot plant reactors. Moisture is collected in center vessel and drained off through the bottom stopcock which is ground to accept a compression-style fitting. Stopcock is PTFE plug. Available with either one or two top standard taper outer joints.

Inner Bottom § Joint	Outer Top § Joint	Stopcock Size, mm	Compression Fitting Joint Size, in	Order Code
One top/outer § joint				
24/40	24/40	6	1/2	5299-01
29/42	29/42	6	1/2	5299-03
45/50	45/50	10	3/4	5299-07
Two top/outer § joints				
24/40	24/40	6	1/2	5299-10
29/42	29/42	6	1/2	5299-12
45/50	45/50	10	3/4	5299-16

Replacement Parts and Accessories

6mm PTFE Plug, Straight Bore	8224-16
10mm PTFE Plug, Straight Bore	Call





THERMOWELL ADAPTER ♠

With inner ₤ joint for adapting thermocouples into jointed heads, etc. The well is fabricated from very thin wall borosilicate glass to allow for better temperature transfer. Well fabricated in two lengths for 25mm or 76mm immersion. Length is measured below the joint. 10/30 joint is for Micro/Mini-Lab® scale.

	25mm	76mm
Inner ₤ Joint	Order Code	Order Code
14/20	9099-06	9099-10
10/30	9099-08	9099-12



VACUUM ADAPTER, LONG STEM ♠

Useful as a vacuum adapter or addition tube.

Inner Bottom ₤ Joint	Outer Top ₤ Joint	Hose Connection, in	Stem Length Below Bottom Joint, mm	Order Code
14/20	14/20	5/16	130	9121-04
24/40	24/40	5/16	130	9121-06
29/42	29/42	5/16	130	9121-08



PTFE BELLOWS ★

PTFE bellows used for correct alignment of ₤ joints and relieves stress in reaction systems. Operates to 200°C.

Inner Bottom ₤ Joint	Outer Top ₤ Joint	Order Code
19/22	19/22	13441-19
19/38	19/38	13441-23
24/40	24/40	13441-28
29/42	29/42	13441-32
45/50	45/50	13441-36

IN-LINE STRAIGHT ADAPTER W/DRIP TUBE ♠

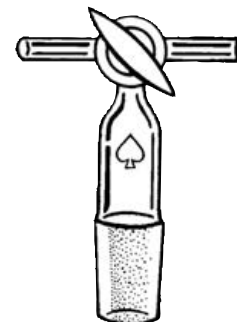
With two 14/20 outer joints, and one 7mm drip tube.

Outer Bottom Joint	Outer Top Joint	Order Code
14/20	14/20	7805-12


STANDARD TAPER INNER JOINT GAS ADAPTER W/STOPCOCK ♠

With 14/20 inner joint and T-Bore; 2mm stopcock.

Inner Bottom Joint	Plug Bore Size, mm	Order Code
14/20	2	7809-03
24/25	2	7809-07


STANDARD TAPER OUTER JOINT GAS ADAPTER W/STOPCOCK ♠

With 14/35 outer joint and T-Bore; 2mm stopcock.

Outer Bottom Joint	Plug Bore Size, mm	Order Code
14/35	2	7810-04
24/40	2	7810-08


BLEED CAPILLARY ADAPTER ♠

Length measured from top of joint to tip.

Inner Bottom Joint	For Flask Size, mL	Hose Connection, in	Length, mm	Order Code
Use with 9465 Flasks				
14/20	50	5/16	70	9328-18
14/20	50	5/16	80	9328-22
Use with 9443 Heads and 9448 Flasks				
14/20	50	5/16	184	9328-02
14/20	100	5/16	207	9328-04





“ACE-SAFE” CONNECTION Tubing, Polypropylene ♦

Tubing connector, used to connect flexible tubing (1/4", 3/8", 1/2", 3/4", 1" I.D.) to #7, #11, #15 or #25 Ace-Thred™ for easy, safe connect/disconnect. 5029/7506 Nylon bushing slides over serrated end and secures polypropylene connector in thread with silicone O-Ring in front groove to make vacuum-tight compression seal. Temperature range is -20 to 76°C. Always add or remove tubing from the hose barb while the connector is unthreaded from the glass.

Note: Maximum temperature is 76°C.

Description	Qty	#7 Ace-Thred to 1/4" I.D. Tubing	#11 Ace-Thred to 1/4" I.D. Tubing	#15 Ace-Thred to 1/4" I.D. Tubing	#11 Ace-Thred to 3/8" I.D. Tubing
		Order Code	Order Code	Order Code	Order Code
Hose Connection, only, w/O-Ring	1	5853-03	5853-09	5853-18	5853-10
Nylon Bushing, only	1	5029-05	7506-01	7506-05	7506-01

Complete Connection

	1	5853-06	5853-12	5853-20	5853-15
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Replacement O-Rings, Silicone

	12	7855-207	7855-206	7855-210	7855-206
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Description	Qty	#15 Ace-Thred to 3/8" ID Tubing	#15 Ace-Thred to 1/2" ID Tubing	#25 Ace-Thred to 3/4" ID Tubing	#25 Ace-Thred to 1" ID Tubing
		Order Code	Order Code	Order Code	Order Code
Hose Connection, only, w/O-Ring	1	5853-19	5853-21	5853-31	5853-33
Nylon Bushing, only	1	7506-05	7506-05	7506-09	7506-09

Complete Connection

	1	5853-23	5853-26	5853-35	5853-37
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Replacement O-Rings, Silicone

	12	7855-210	7855-210	7855-270	7855-270
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“ACE-SAFE” CONNECTION Tubing, PTFE

Same as 5853 (left), but manufactured from PTFE instead of polypropylene. Connectors are supplied with FETFE or Silicone O-Rings.

Note: Maximum temperature is 200°C.

Description	Qty	#7 Ace-Thred to 1/4" I.D. Tubing	#11 Ace-Thred to 1/4" I.D. Tubing	#15 Ace-Thred to 1/4" I.D. Tubing	#11 Ace-Thred to 3/8" I.D. Tubing
		Order Code	Order Code	Order Code	Order Code
FETFE O-Rings	1	5858-03 ★	5858-05 ★	5858-07 ★	5858-10 ★
Silicone O-Rings	1	—	—	—	5858-210 ★

Complete Connection

FETFE O-Rings	1	5858-03 ★	5858-05 ★	5858-07 ★	5858-10 ★
Silicone O-Rings	1	—	—	—	5858-210 ★

Replacement O-Rings

FETFE	12	7855-707 ♦	7855-706 ♦	7855-710 ♦	7855-706 ♦
Silicone		—	—	—	7855-206 ♦

Description	Qty	#15 Ace-Thred to 3/8" ID Tubing	#15 Ace-Thred to 1/2" ID Tubing
		Order Code	Order Code
FETFE O-Rings	1	5858-12 ★	5858-14 ★
Silicone O-Rings	1	5858-212 ★	5858-214 ★

Complete Connection

FETFE O-Rings	1	5858-12 ★	5858-14 ★
Silicone O-Rings	1	5858-212 ★	5858-214 ★

Replacement O-Rings

FETFE	12	7855-710 ♦	7855-710 ♦
Silicone		7855-210 ♦	7855-210 ♦

PH PROBE ADAPTER

Adapter tube, 25mm O.D. with a #15 Ace-Thred at one end, other end open. Insert 1/2" probe in open-end, down to and through the Ace-Thred, leaving enough exposed to secure with 7506 bushing and size -110 FETFE® O-Ring to make a compression seal. Adapter tube is held in flask joint with 5030 "maxi" adapter with nylon bushing and size -212 FETFE O-Ring, again with a compression seal, thus making the tube vertically adjustable. Complete item consists of glass adapter tube, 7506 PTFE bushing with size -110 FETFE or Chemraz® O-Ring, and 5030 "maxi" adapter. Takes any standard size pH probe.

Length, cm (in)	w/FETFE O-Ring Order Code	w/Chemraz O-Ring Order Code
61 (24)	5278-40 ♠	5278-141 ★
91 (36)	5278-44 ♠	5278-145 ★
122 (48)	5278-48 ♠	5278-149 ★

Replacement Items

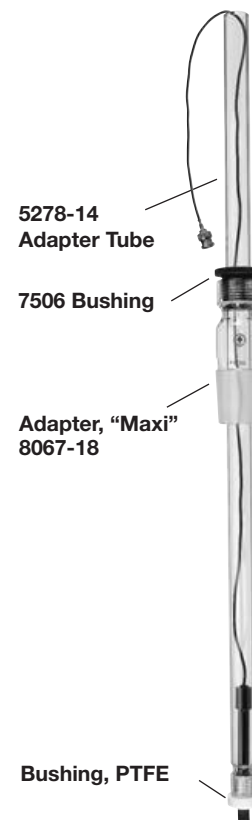
ADAPTER TUBE, Glass only			Bottom BUSHING, PTFE only, w/O-Ring		
Length, cm (in)	Order Code		For Thread #	O-Ring Type	Order Code
61 (24)	5278-14 ♠		15	FETFE	7506-27 ♠
91 (36)	5278-18 ♠		15	Chemraz	7506-127 ★
122 (48)	5278-23 ♠				

ADAPTER, "Maxi," #25 Ace-Thred to 45/50 Joint, only

Complete item includes glass member, nylon bushing and size -212 FETFE O-Ring.

	Glass Member	Nylon Bushing	Complete
Joint	Order Code	Order Code	Order Code
45/50	8067-18 ♠	7506-10 ♠	5030-84 ♠

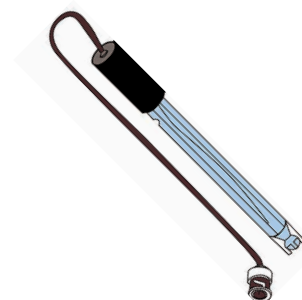
*pH probe not included.



PH PROBE ★

pH probe for process applications consists of three parts; a rugged standard combination pH probe, 3' lead, and a 3' extension cord. BNC connector end for connecting to ACE Impresario controller. Probe has Ag/AgCl internals and rugged epoxy body. 80°C max temperature. Fits easily into Ace 5278 probe adapter.

Probe Length, mm	Lead Length, ft	Order Code
127	6	12990-01 ★



PH PROBE HOLDER

Ace Glass Scale-Up Series™ benchtop reactor pH probe holder and probe for 2000mL to 6000mL systems. Adjustable in both wetted length and vertically within the flask via the use of bushings. Holder is designed specifically for our 5277-10 Cole-Parmer® general purpose probe.

If retrofitting to your probe, these are the critical dimensions:

- 1) BNC 15mm max diameter
- 2) Unwetted section 115mm max length, 16mm max diameter
- 3) Wetted section 12.3mm max diameter. Call for consultation on custom dimensions.

Description	Qty	Order Code
Probe Holder (2000mL to 6000mL Flasks)	1	5277-02 ★
Ph Probe (Cole-Parmer EW-05991-22)	1	5277-10 ★
PTFE ferrule (use with 5277-10 pH probe and 5277-02 probe holder)	pk/6	5277-12 ★



JACKETED REACTOR CIRCULATOR ADAPTER

304 Stainless Steel adapters for use with ACE jacketed glass pilot plant reactors and circulator hoses for popular circulating chillers. One style connects O-Ring ball joints on jacket inlet/outlet to hoses to/from circulator. The other style connects "M" style to NPT thread.



Connection Description	Order Code	
NW10 & NW16 to M16 x 1 Male	12188-02	
NW25 to M16 x 1 Male	12188-04	
NW25 to M24 x 1.5 Male	12188-06	
NW40 to M30 x 1.5 Male	12188-08	
NW10/16 to 3/8" Hose Barb	12188-09	
NW10/16 to 1/2" Hose Barb	12188-10	
NW25 to 3/8" Hose Barb	12188-11	
NW25 to 1/2" Hose Barb	12188-12	
NW10/16 to 3/4" Hose Barb	12188-20	
NW25 to 3/4" Hose Barb	12188-22	
NW40 to 3/4" Hose Barb	12188-24	
NW25 to 1" Hose Barb	12188-32	
NW10/16 to 3/8" Elbow Hose Barb	12188-39	
NW10/16 to 1/2" Elbow Hose Barb	12188-40	
NW25 to 3/8" Elbow Hose Barb	12188-41	
NW25 to 1/2" Elbow Hose Barb	12188-42	
NW10/16 to 3/4" Elbow Hose Barb	12188-50	
NW25 to 3/4" Elbow Hose Barb	12188-52	
NW40 to 3/4" Elbow Hose Barb	12188-54	
NW25 to 1" Elbow Hose Barb	12188-62	
NW10/16 to M30 x 1.5 Male Elbow	12188-72	
NW25 to M30 x 1.5 Male Elbow	12188-74	
NW10 & NW16 PTFE Gasket w/Viton O-Ring	12192-02	★
NW25 PTFE Gasket w/Viton O-Ring	12192-04	★
NW10 & NW16 PTFE Gasket w/Fluorosilicone O-Ring	12192-22	★
NW25 PTFE Gasket w/Fluorosilicone O-Ring	12192-24	★
NW10/16 PTFE Gasket w/CAPFE O-Ring	12192-32	★
NW25 PTFE Gasket w/CAPFE O-Ring	12192-34	★
NW40 PTFE Gasket w/CAPFE O-Ring	12192-36	★
NW10 & NW16 Clamp	12189-02	★
NW25 Clamp	12189-04	★
§ 28/15 Socket to M16 x 1 Male	12187-05	★
§ 35/25 Socket to M16 x 1 Male	12187-07	★
§ 35/25 Socket to M24 x 1.5 Male	12187-10	★
§ 35/25 Socket to M30 x 1.5 Male	12187-12	★
§ 35/25 Socket to M38 x 1.5 Male	12187-14	★
§ 28/15 Clamp	12187-28	★
§ 35/25 Clamp	12187-35	★



Ace Glass offers the complete line of... Lauda Integral XT Circulators

LAUDA Integral XT process thermostats allow extremely rapid temperature changes, resulting from the small, internal, thermally active heat transfer medium. The instruments work according to the highly efficient flow principle with a broad working temperature range. The process thermostats are used where rapid temperature changes or high refrigeration and heating performance are required.

JACKETED REACTOR CIRCULATOR ADAPTER

304 Stainless Steel adapters for use with ACE jacketed glass pilot plant reactors and circulator hoses for popular circulating chillers. One style connects O-Ring ball joints on jacket inlet/outlet to hoses to/from circulator. The other style connects "M" style to NPT thread.

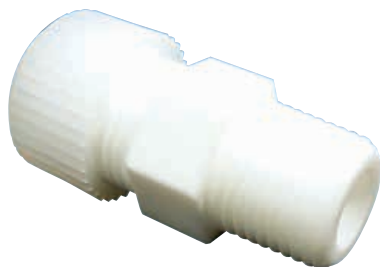
Connection Description	Qty	Order Code	
3/4" Beaded Pipe to M16 x 1 Male	1	12187-50	★
3/4" Beaded Pipe to M24x1.5 Male	1	12187-54	★
1" Beaded Pipe to M16 x 1 Male	1	12187-55	★
1" Beaded Pipe to M24 x 1.5 Male	1	12187-56	★
1" Beaded Pipe to M30 x 1.5 Male	1	12187-57	★
1" Beaded Pipe to 3/4" Hose Barb	1	12187-58	★
1 1/2" Beaded Pipe to M24 x 1.5 Male	1	12187-59	★
1 1/2" Beaded Pipe to M30 x 1.5 Male	1	12187-60	★
1 1/2" Beaded Pipe to 3/4" Hose Barb	1	12187-61	★
1" Beaded Pipe to 1" Hose Barb	1	12187-62	★
1 1/2" Beaded Pipe to 1" Hose Barb	1	12187-63	★
1" Beaded Pipe to M16 x 1 Male Elbow	1	12187-70	★
1" Beaded Pipe to M24 x 1.5 Male Elbow	1	12187-71	★
1" Beaded Pipe to M30 x 1.5 Male Elbow	1	12187-72	★
1" Beaded Pipe to 3/4" Hose Barb Elbow	1	12187-73	★
1" Beaded Pipe to 1" Hose Barb Elbow	1	12187-74	★
1 1/2" Beaded Pipe to M24 x 1.5 Male Elbow	1	12187-81	★
1 1/2" Beaded Pipe to M30 x 1.5 Male Elbow	1	12187-82	★
1 1/2" Beaded Pipe to 3/4" Hose Barb Elbow	1	12187-83	★
1 1/2" Beaded Pipe to 1" Hose Barb Elbow	1	12187-84	★
3/4" Beaded Pipe Coupling	1	8856-05	★
1" Beaded Pipe Coupling	1	8856-07	★
1 1/2" Beaded Pipe Coupling	1	8856-09	★
M16x1 Male to 3/4" NPT Male	1	12187-100	★
M30x1.5 Male to 3/4" NPT Male	1	12187-101	★
M24x1.5 Male to 3/4" NPT Male	1	12187-102	★
M16 x 1 Female Nuts & Plug	2	12299-16	
M16 x 1 Male to Female 90 Degree Elbow	2	12299-25	
M16 x 1 Male to M16 x 1 Male Adapter	1	12299-20	
M16 x 1 Female to 1/4" Male NPT	2	12299-28	
M16 x 1 Female to 3/8" Male NPT	2	12300-08	
M16 x 1 Female to 1/2" Male NPT	2	12300-12	
M16 x 1 Female to 1/4" Tube	2	12300-24	
M16 x 1 Female to 3/8" Tube	2	12300-28	
M16 x 1 Female to 1/2" Tube	2	12300-30	



Ace Glass offers the complete line of... J-Kem Temperature Controllers

- Monitors and controllers for pressure, vacuum and temperature that cover the entire spectrum of performance
- Data logging/control software included with most models
- USB ports and CE certification standard
- Two-year warranty
- NIST traceable
- Advanced PID algorithm





PTFE TUBE COMPRESSION FITTING TO MALE NPT ★

Wetted surfaces use chemically resistant PTFE. Great with vacuum or pressure.

Ambient temperature: 120psig for 1/16" fittings linear decreasing to 80psig for 3/4" fittings, and 60psig for fittings larger than 3/4".

Elevated temperatures up to 85°C/185°F: 90psig for 1/16" fittings linear decreasing to 60psig for 3/4" fittings, and 40psig for fittings larger than 3/4".

NPT Size, in	Tubing O.D.	Straight Order Code	Elbow Order Code
1/8	1/16"	12709-02	-
	1/8"	12709-04	12715-02
	3/16"	12709-06	12715-04
	1/4"	12709-08	12715-06
	5/16"	12709-10	-
	3/8"	-	12715-08
	4mm	12709-12	-
	6mm	12709-14	-
1/4	1/8"	12709-16	12715-10
	1/4"	12709-18	12715-12
	5/16"	12709-20	-
	3/8"	12709-22	12715-14
	1/2"	12709-24	-
	6mm	12709-26	-
	8mm	12709-28	-
	10mm	12709-30	-
3/8	1/4"	12709-32	12715-16
	5/16"	12709-34	-
	3/8"	12709-36	12715-18
	1/2"	12709-38	12715-20
	10mm	12709-40	-
1/2	12mm	12709-42	-
	1/4"	12709-44	-
	3/8"	12709-46	12715-22
	1/2"	12709-48	12715-24
	1"	-	12715-26
	12mm	12709-50	-
3/4	3/4"	12709-52	12715-28
	1"	12709-54	-
1	1"	12709-56	12715-30



FITTING Ace-Thred™ to Tubing Compression ★

All PTFE fitting joins Ace-Thred™ glassware to tubing via a compression fitting. Composed of two all PTFE adapters, Ace-Thred™ to female NPT and male NPT to tubing compression fitting.

Ace-Thred, #	Tubing O.D., in.	Qty	Order Code
7	1/8	1	5863-10
15	1/8	1	5863-12
25	1/8	1	5863-13
50	1/8	1	5863-15
7	1/4	1	5863-20
11	1/4	1	5863-21
15	1/4	1	5863-22
25	1/4	1	5863-23
50	1/4	1	5863-25
7	5/16	1	5863-30
15	5/16	1	5863-32
25	5/16	1	5863-33
50	5/16	1	5863-35
7	3/8	1	5863-40
11	3/8	1	5863-41
25	3/8	1	5863-43
50	3/8	1	5863-45

TUBE COMPRESSION UNION *Virgin PTFE ★*

Ambient temperature: 120psig for 1/16" fittings linear decreasing to 80psig for 3/4" fittings, and 60psig for fittings larger than 3/4".

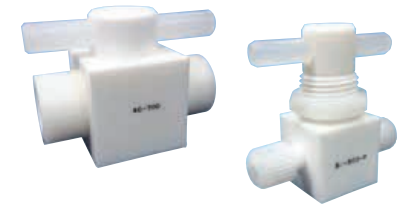
Elevated temperatures up to 85°C/185°F: 90psig for 1/16" fittings linear decreasing to 60psig for 3/4" fittings, and 40psig for fittings larger than 3/4".

Tubing O.D., in	Tubing O.D., in	Straight Order Code	Elbow Order Code
	1/8	—	12716-02
1/8	3/16	12711-02	—
	1/4	12711-04	—
	5/16	12711-06	—
3/16	3/16	—	12716-04
	1/4	12711-08	—
	1/4	—	12716-08
1/4	5/16	12711-10	—
	3/8	12711-12	—
	1/2	12711-14	—
3/8	3/8	—	12716-10
	1/2	—	12716-12
1/2	3/4	12711-16	—
	1	12711-18	—
3/4	3/4	—	12716-14
	1	12711-20	—
1	1	—	12716-16


PTFE 2-WAY STOPCOCK ★

Wetted surfaces use chemically-resistant PTFE. Compression-style PTFE fitting with PVDF gripping or female NPT. Great with vacuum or pressure (60psig max).

Description	Tubing O.D., in	Order Code
Female NPT	1/8	5839-60
	1/4	5839-64
	3/8	5839-68
	1/2	5839-72
	3/4	5839-76
Tube Compression	1/8	5839-62
	1/4	5839-66
	3/8	5839-70
	1/2	5839-74
	3/4	5839-78


Also available upon request:

- 3-way and 4-way stopcocks
 - Panel mounting
 - Metric tube ends
- Male NPT connections
- Sanitary Connections

FERRULE/GRIPPER *Replacement Sets ★*

Replacement ferrule/gripper sets for our PTFE tube compression fittings. Fits the following product families: 5839, 12709, 12710, 12711, 12715, 12716 & 12721

Note: Sold as a set. Each set consists of (1) PTFE ferrule and (1) PVDF gripper.

Tubing O.D.,	Order Code
1/8"	12729-01
3/16"	12729-02
1/4"	12729-03
5/16"	12729-04
3/8"	12729-05
1/2"	12729-06
5/8"	12729-07
3/4"	12729-08
1"	12729-09
4mm	12729-12
6mm	12729-13
8mm	12729-15
10mm	12729-17
12mm	12729-18





Right Angle



Vertical

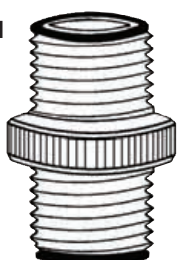
Twin
Right Angle

TUBE COMPRESSION STANDARD TAPER JOINT ADAPTER ♠

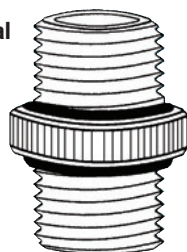
These adapters feature a ground glass tube sidearm which allows for the attachment of compression fittings. They offer a versatile connection for adapting flexible or rigid tubing. They may also be used for support of probes or other rigid-body equipment.

		Right Angle	Vertical	Twin Right Angle
Joint Size, "	Tube O.D., in	Order Code	Order Code	Order Code
w/o Drip Tip				
14/20	1/4	12719-02	12731-02	12737-02
	3/8	12719-04	12731-04	12737-04
24/40	1/4	12719-06	12731-06	12737-06
	3/8	12719-08	12731-08	12737-08
	1/2	12719-10	12731-10	12737-10
	3/4	12719-12	12731-12	12737-12
29/42	1/4	12719-14	12731-14	12737-14
	3/8	12719-16	12731-16	12737-16
	1/2	12719-18	12731-18	12737-18
	3/4	12719-20	12731-20	12737-20
45/50	3/8	12719-22	12731-22	12737-22
	1/2	12719-24	12731-24	12737-24
	3/4	12719-26	12731-26	12737-26
w/Drip Tip				
14/20	1/4	12722-01	12736-01	12739-01
	3/8	12722-03	12736-03	12739-03
24/40	1/4	12722-07	12736-07	12739-07
	3/8	12722-09	12736-09	12739-09
	1/2	12722-11	12736-11	12739-11
	3/4	12722-13	12736-13	12739-13
29/42	1/4	12722-15	12736-15	12739-15
	3/8	12722-17	12736-17	12739-17
	1/2	12722-19	12736-19	12739-19
	3/4	12722-21	12736-21	12739-21
45/50	3/8	12722-23	12736-23	12739-23
	1/2	12722-25	12736-25	12739-25
	3/4	12722-27	12736-27	12739-27

Front Seal



Back Seal



COUPLING Nylon or PTFE, Ace-Thred ♠

For coupling threaded columns together, or to end fittings with single O-Ring seal for leak-tight engagement with hand pressure and no significant size reduction in I.D. Size listed refers to inside diameter of threads. Use with 5820 and 5821 columns. Supplied with (2) O-Rings.

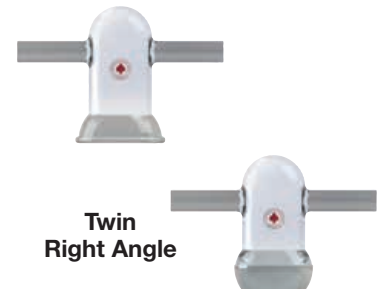
Ace-Thred, "	Front Seal		Back Seal	
	EPDM O-Rings	FETFE O-Rings	FETFE O-Rings	
	Qty	Order Code	Qty	Order Code
Nylon				
7	1	5841-05	1	5841-04
11	1	5841-07	1	5841-06
15	1	5841-13	1	5841-12
25	—	—	1	5841-16
50	—	—	1	5841-22
PTFE				
7	1	5841-45	1	5841-44
11	1	5841-47	1	5841-46
15	1	5841-49	1	5841-48
25	—	—	1	5841-50
50	—	—	1	5841-52

TUBE COMPRESSION SPHERICAL JOINT ADAPTERS ♦

These adapters feature a ground glass tube sidearm which allows for the attachment of compression fittings. They offer a versatile connection for adapting flexible or rigid tubing. They may also be used for support of probes or other rigid-body equipment.

Tubing O.D., in	Joint Type, \$	<i>Right Angle</i> Order Code	<i>Vertical</i> Order Code	<i>Twin Right Angle</i> Order Code
28/15 Joint				
3/8	Socket	12719-28	12731-28	12737-28
	Ball	12719-30	12731-30	12737-30
1/2	Socket	12719-32	12731-32	12737-32
	Ball	12719-34	12731-34	12737-34
3/4	Socket	12719-36	12731-36	12737-36
	Ball	12719-38	12731-38	12737-38
35/25 Joint				
3/8	Socket	12719-40	12731-40	12737-40
	Ball	12719-42	12731-42	12737-42
1/2	Socket	12719-44	12731-44	12737-44
	Ball	12719-46	12731-46	12737-46
3/4	Socket	12719-48	12731-48	12737-48
	Ball	12719-50	12731-50	12737-50
DN25 Joint				
3/8	Socket	12719-52	12731-52	12737-52
	Ball	12719-54	12731-54	12737-54
1/2	Socket	12719-56	12731-56	12737-56
	Ball	12719-58	12731-58	12737-58
3/4	Socket	12719-60	12731-60	12737-60
	Ball	12719-62	12731-62	12737-62
DN40 Joint				
3/8	Socket	12719-64	12731-64	12737-64
	Ball	12719-66	12731-66	12737-66
1/2	Socket	12719-68	12731-68	12737-68
	Ball	12719-70	12731-70	12737-70
3/4	Socket	12719-72	12731-72	12737-72
	Ball	12719-74	12731-74	12737-74


Right Angle

Vertical

**Twin
Right Angle**
TUBING ADAPTER *Ace-Thred™ to Precision Ground* ★

Ace-Thred™ adapters precision ground to accept Swagelok™ type tub compression fittings. See our 5841 product family of Ace-Thred couplings and our 12721 product family of tube compression fittings.

Ace-Thred, #	Tubing O.D., in.	Qty	Order Code
7	1/4	1	5042-10
11	5/16	1	5042-22
11	3/8	1	5042-23
11	1/2	1	5042-24
15	3/8	1	5042-33
15	1/2	1	5042-34
15	5/8	1	5042-35
25	3/4	1	5042-53
25	1	1	5042-54





JOINT CLIPS *Standard Taper Joint, PTFE, Keck® Type* ★

Keck® like, mechanical PTFE joint clips snap on and off with ease. Will not scratch the glass and can be used to 250°C. Can also be used for clamping stopcock plugs and barrels. For above 5psig, we recommend Ace-Thred™ connections over standard taper joints. Manufactured from 3M™ Dyneon™ TF1620, these clips conform with FDA 21 CFR 177.1550 and USP Class VI.

Note: Not for pressure work.

For Joint Size, "	Qty	Order Code
24/40	1	7596-24
29/42	1	7596-29
45/50	1	7596-45



JOINT CLIPS *Standard Taper Joint, Acetal Plastic, Keck® Type* ★

Keck type clips made from polymethylene acetal resin, snap on and off with ease. Will not scratch the glass, and are resistant to concentrated alkalis and dilute acids. Useful temperature range: -40°C to 140°C. Slight positive pressure only. For above 5psig, we recommend Ace-Thred™ connections over standard taper joints.

Joint Size, "	Color	Qty	Order Code
10/18	Light Green	10	7598-10
14/20	Yellow	10	7598-14
24/40	Green	10	7598-24
29/42	Red	10	7598-29
45/50	Brown	10	7598-45



GLASS PENNY HEAD STOPPER ♦

Joint Size	Order Code
Standard Taper	
10/30	8250-02
14/20	8255-10
24/40	8250-12
29/42	8250-14
34/45	8250-16
45/50	8250-20
Spherical Joint	
28/15	8251-08
35/25	8251-12



PTFE PENNY HEAD STOPPER ★

Wetted surfaces use chemically-resistant PTFE. Superior sealing with no need for joint grease. Penny head stopper-style handle.

Joint Size	Order Code
7/10	12631-02
7/25	12631-03
10/10	12631-04
14/10	12631-06
14/20	12631-07
19/22	12631-09
24/25	12631-15
29/26	12631-17
#8	12630-04
#9	12630-06
#13	12630-12
#16	12630-16
#19	12630-22
#22	12630-24
#27	12630-28
#32	12630-34
#38	12630-38

PTFE EASY-TO-GRIP HANDLE STOPPER ★

Wetted surfaces use chemically-resistant PTFE. Superior sealing with no need for joint grease. Easy-to-grip handle helps with removal.

Joint Size	Order Code
14/20	12633-05
19/22	12633-09
24/25	12633-12
24/40	12633-15
29/42	12633-17
45/50	12633-23
#13	12632-13
#16	12632-16
#22	12632-22
#27	12632-27
#38	12632-38


PTFE STOPPER w/Polypropylene Extraction Nut ★

Wetted surfaces use chemically-resistant PTFE. Superior sealing with no need for joint grease. Designed to prevent freezing in joint. Extraction nut for easy removal from joints.

Joint Size	Order Code
10/18	12636-02
10/30	12636-04
12/30	12636-06
14/20	12636-08
14/35	12636-10
19/22	12636-12
19/38	12636-14
24/25	12636-16
24/40	12636-18
29/42	12636-20
34/45	12636-22
45/50	12636-24
55/50	12636-26
#8	12636-28
#9	12636-30
#13	12636-32
#16	12636-34
#19	12636-36
#22	12636-38
#27	12636-40
#32	12636-42
#38	12636-44


PTFE JOINT SLEEVE w/Gripping Ring ★

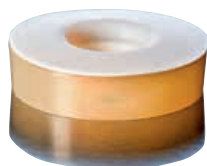
PTFE sleeves are for use with glass adapters to prevent the joint from freezing, as well as allow ease of removal for ground glass joints. These sleeves are sturdy and reusable. Knurled, reinforced gripping ring for easy and safe removal.

Joint Size, 1/8"	Qty	Order Code
0.4mm Wall Thickness		
14/20	3	7641-04
24/40	3	7641-08
29/42	3	7641-10
34/45	3	7641-12
45/50	3	7641-16



GL HOSE CONNECTIONS ★

Caps for use with hose connectors and seals. PBT temperature range is -45 to 180°C.



Thread	Style	Tubing O.D., mm	Order Code
Caps Polybutylene Terephthalate			
GL 14	Center Hole	—	7621-04
GL 18	Center Hole	—	7621-08
GL 25	Center Hole	—	7621-15
GL 32	Center Hole	—	7621-22
GL 45	Center Hole	—	7621-25
GL 14	Solid	—	7622-103
GL 18	Solid	—	7622-107
GL 25	Solid	—	7622-114
GL 32	Solid	—	7622-121
GL 45	Solid	—	7622-155

Hose Connections Polypropylene

GL 14	Bent	—	7623-20
GL 14	Straight	—	7623-22
GL 18	Bent	—	7623-24
GL 18	Straight	—	7623-26

Seal PTFE Faced Silicone Rubber

GL 14	—	5.5 - 6.5	7624-40
GL 18	—	5.5 - 6.5	7624-42
GL 18	—	9.0 - 11.0	7624-45
GL 25	—	7.5 - 9.0	7624-47
GL 25	—	11.0 - 13.0	7624-49
GL 32	—	11.0 - 13.0	7624-52
GL 45	—	25.0 - 27.0	7624-54



PTFE JOINT SLEEVES ★

Prevent glass joints from freezing, also allow ease of removal for ground glass joints. Precludes contamination from lubricant or leaks. Will withstand low to medium vacuum.

Joint Size, "	Temperature Range	Qty	Order Code
0.05mm Wall Thickness			
10/30	up to 280°C	3	7643-02
12/30	up to 280°C	3	7643-03
14/10	up to 280°C	3	7643-07
14/20	up to 280°C	3	7643-09
14/35	up to 280°C	3	7643-04
19/38	up to 280°C	3	7643-06
24/40	up to 280°C	3	7643-08
29/42	up to 280°C	3	7643-10
34/45	up to 280°C	3	7643-12
40/50	up to 280°C	3	7643-14
45/50	up to 280°C	3	7643-16
50/50	up to 280°C	3	7643-18
55/50	up to 280°C	3	7643-20
60/50	up to 280°C	3	7643-25
71/60	up to 280°C	3	7643-29

0.13mm Wall Thickness

7/10	up to 280°C	3	7642-02
10/10	up to 280°C	3	7642-04
10/18	up to 280°C	3	7642-03
14/10	up to 280°C	3	7642-06
14/20	up to 280°C	3	7642-07
24/40	up to 280°C	3	7642-11
29/42	up to 280°C	3	7642-15
34/45	up to 280°C	3	7642-19
45/50	up to 280°C	3	7642-23

**Don't see what you're looking for?
We can help.**

LET YOUR IDEAS COME TO LIFE

...with help from Ace Glass



• We can provide just one piece or as many as you need

• Reproduction of competitive products

• User designed specialized glassware

• Modification of existing stock products

The essential building blocks of any reaction system begin with the flask, head, and condensers. In this section you can find various sizes and configurations. When combined with the Ace Glass line of adapters, a solution for almost any application can be achieved.

Featuring the Following Components:

- **100mL to 200L Flasks, both Spherical and Cylindrical**
- **Indented Baffled Flasks**
- **Condensers**
- **Funnels**
- **Heads**

Components



Baffles

Beakers

Bottles

Condensers

Distillation Columns

Flasks

Funnels

Heads

Manifolds

Spargers

**BAFFLE PTFE ★**

Fabricated from virgin PTFE (meets USP Class 6 requirements), this fully encapsulated, seamless baffle with a stainless steel reinforcing core fits through standard taper joint of reaction flasks to increase agitation and promote mixing. Takes the place of indented or Morton vessels that can be a problem when using pressure or vacuum. Shaft of baffle is sized to be secured using 5030 Ace-Thred adapter with nylon bushing and FETFE® O-Ring. This connection allows vertical and rotational adjustment of the baffle inside the flask for optimum effect. In place of O-Ring, a PTFE ferrule (11710) can be used for maximum chemical resistance.

Shaft Diameter, mm	Shaft Length, mm	Fits Ace-Thred, #	Baffle W x L x D, mm	Overall Length, mm	Use Adapter (sold separately)	Order Code
6.4	175	7	18 x 152 x 10	327	5028-30	12177-145
10	180	11	18 x 150 x 10	330	5030-22	12177-148
13	220	15	30 x 150 x 12	380	5030-42/-45	12177-152
13	300	15	30 x 250 x 12	550	5030-42/-45	12177-154
25	250	25	32 x 360 x 14	610	5030-80	12177-157

**BAFFLE Glass ★**

Borosilicate glass baffle fits through standard taper joint of reaction flasks to increase agitation and promote mixing. Takes the place of indented or Morton vessels that can be a problem when using pressure or vacuum. Shaft of baffle is sized to be secured using 5030 Ace-Thred adapter with nylon bushing and FETFE O-Ring. This connection allows vertical and rotational adjustment of the baffle inside the flask for optimum effect. In place of O-Ring, a PTFE ferrule (11710) can be used for maximum chemical resistance. Custom sizes can be made to order.

Note: Order baffle, adapter, and optional ferrule separately.

Shaft Diameter, mm	Shaft Length, mm	Fits Ace-Thred, #	Baffle W x L x D, mm	Overall Length, mm	Use Adapter (sold separately)	Order Code
10	250	11	18 x 60 x 6.4	310	5030-22	12177-10
10	350	11	18 x 90 x 6.4	440	5030-22	12177-13
12.7	400	15	36 x 65 x 9.5	465	5030-42	12177-19
12.7	500	15	36 x 100 x 9.5	600	5030-42	12177-23

BAFFLE PTFE, for Temperature Probe

Similar to 12177 PTFE baffle, but with stainless steel inner reinforcing tube, and #7 Ace-Thred machined into PTFE at bottom that accepts 1/4" diameter thermocouple or tubing. The Ace-Thred makes a compression seal with bushing and Kalrez® O-Ring. Probe or tubing can be extended below baffle tip to any desired length. Can be used for subsurface liquid addition or withdraw, when used with tubing.

Note: Thermocouple not included.

Shaft Diameter, mm	Shaft Length, mm	Fits Ace-Thred, #	Baffle W x L x D, mm	Overall Length, mm	Use Adapter (sold separately)	Order Code
10	180	11	18 x 150 x 10	330	5030-22	12193-03 ★
13	220	15	30 x 250 x 12	380	5030-42/-45	12193-07 ★
25	250	25	32 x 360 x 14	610	5030-80	12193-09 ★

Accessories

#7 PTFE Bushing	5029-35	♠
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BEAKER Jacketed ♦

Jacketed beaker with one upper and one lower hose connection on opposite sides. Without pouring spout.

Ace-Thred in place of the serrated fittings for use with an “Ace-Safe” tubing connection barb. 100mL, 250mL and 400mL have #7 Ace-Thred for 1/4” tubing; all other capacities have #15 Ace-Thred for 3/8” or 1/2” tubing. For replacement connectors, see 5853.

Note: Supplied complete with hose connection with O-Ring and nylon bushing.

Capacity, mL	Approx. Inside Height, mm	Approx. Inside Diameter, mm	Ace-Thred, #	Hose Connection, in	Order Code
w/Glass Hose Connections					
100	61	48	–	3/8	5340-03
250	89	65	–	3/8	5340-05
400	112	75	–	3/8	5340-10
600	152	81	–	3/8	5340-15
1000	175	91	–	3/8	5340-18
2000	190	119	–	7/16 or 1/2	5340-20
3000	225	133	–	7/16 or 1/2	5340-25
4000	232	150	–	7/16 or 1/2	5340-30
5000	250	160	–	7/16 or 1/2	5340-35



w/Ace-Thred Connections

Capacity, mL	Approx. Inside Height, mm	Approx. Inside Diameter, mm	Ace-Thred, #	Hose Connection, in	Order Code
100	61	48	7	1/4	5340-103
250	89	65	7	1/4	5340-105
400	112	75	7	1/4	5340-110
600	152	81	15	3/8	5340-115
1000	175	91	15	3/8	5340-118
2000	190	119	15	3/8	5340-120
3000	225	133	15	1/2	5340-125
4000	232	150	15	1/2	5340-130
5000	250	160	15	1/2	5340-135



BEAKER Pilot Plant

Large sizes for batch operations and mixing large volumes of measured liquids. Graduated.

Capacity, L	Subdivisions, mL	Approx. Height, mm	O.D., mm	Order Code	
5	100	457	152	6228-05	♦
10	100	457	223	6228-10	♦
15	500	390	260	6231-21	★
20	500	430	285	6231-27	★



BEAKER Big Jars ★

Cylindrical jars with side indents for easier handling. Made of heavy wall glass, the jars are graduated and have pour spout. **Caution: Do not apply open flame or heat.** Also available with poly safety coating.

Capacity, L	Subdivisions, mL	Order Code
7.25	500	6233-07
9.25	500	6233-09
17	1000	6233-17
26.5	2000	6233-26
32	2000	6233-32



**BEAKER Heavy Wall ★**

Duran® heavy walled beakers with spout. All ungraduated except for 5L size.

Capacity, L	Approx. O.D., mm	Approx. Height, mm	Order Code
5	182	256	5332-28
10	225	340	5332-33
15	260	390	5332-36
20	285	430	5332-39

**BEAKER PTFE ★**

Molded, pure PTFE beaker with pour spout. Inert with smooth internal finish. Available with plain or Thermotech™ bottom. Plain bottom machined for flatness to facilitate heat transfer. Thermotech bottom surface has molded stabilized PTFE-Carbon outer surface for better heat transfer, and to handle higher temperatures up to 270°C.

Capacity, mL	Height, mm	O.D., mm	Order Code
Plain Bottom			
100	68	54	5500-05
250	97	66	5500-07
400	106	80	5500-09
600	125	90	5500-11
1000	155	100	5500-13

**Thermotech Bottom**

100	74	56	5500-22
250	94	75	5500-24
400	112	85	5500-26

**BEAKER Polypropylene, Low Form ★**

Griffin-style beakers for general laboratory use. Autoclavable. Combines “no-drip” pouring with unbreakability and maximum translucency. Approximate raised volume scales. Tapered walls for safe handling and convenient stacking.

Note: Lids not included.

Capacity, mL	Package Quantity	Case Quantity	Order Code
50	12	48	12420-06
100	12	48	12420-08
150	12	48	12420-10
250	6	36	12420-12
400	6	36	12420-14
600	4	24	12420-16
1000	3	12	12420-18
2000	1	6	12420-20
4000	1	6	12420-22

**BEAKER Stainless Steel ★**

Seamless, polished, sanitary, 304 stainless steel, with handy pouring spout.

Capacity, mL	Approx. I.D., mm	Approx. Height, mm	Order Code
125	55	65	10300-04
250	65	84	10300-08
600	83	117	10300-10
1200	101	154	10300-13
2000	122	182	10300-16
4000	153	229	10300-20

BOTTLE *Solution, Plastic Coated*

Solution bottles with glass serrated vacuum take-off fitting 7/16" to 1/2" ID tubing. All sizes have the sloping shoulders of the carboy style of bottle. Bottles are safety coated up to the vacuum take-off with a translucent plastic coating which will withstand -20 to 120°C. Do not expose to direct flame.

Ace-Safe bottles have the same stopper top and safety coating, replacing the glass hose connection with a #15 Ace-Thred with a polypropylene hose connection fitting 3/8" ID tubing.

Note: Supplied complete with the hose connection, nylon bushing and silicone O-Ring. Stopper not supplied.

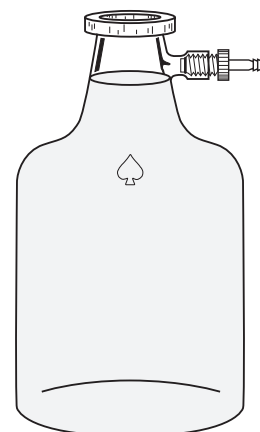
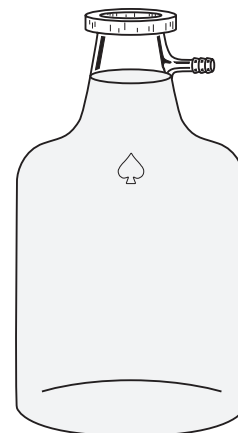
Capacity, L	Approx. Capacity, Gal.	Approx. Diameter, mm	Approx. Height, mm	Rubber Stopper No.	Order Code	
9.5	2.5	187	476	12	5395-02	♣
13.25	3.5	238	438	12	5395-04	♣
19.0	5	292	508	12	5395-06	♣

w/Glass Hose Connection
w/Ace-Thred Connection

9.5	2.5	187	476	12	5395-103	♣
13.25	3.5	238	438	12	5395-105	♣
19.0	5	292	508	12	5395-107	♣

Accessories

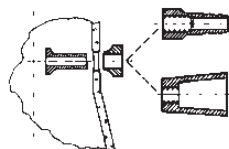
#15 Ace-Safe Connector for 3/8" Tubing	5853-19	♣
Silicone Pluro Stopper Set, 18-68mm	12014-14	★


BOTTLE *Aspirator, Duran ★*

Borosilicate glass, heavy wall bottle with bottom tubulature. Use with 7/16" or 1/2" I.D. tubing.

Capacity, mL	Approx. Dia., mm	Approx. Height, mm	Rubber Stopper No.	Qty	Order Code
250	73	131	2	10	5399-01
500	89	162	4	10	5399-05
1000	111	200	6	1	5399-09




BOTTLE Filtering, w/Removable PP Hose Connection, Duran ★

Heavy wall, bottle-shaped filtering flask with removable polypropylene hose connection. Offered clear or plastic coated.

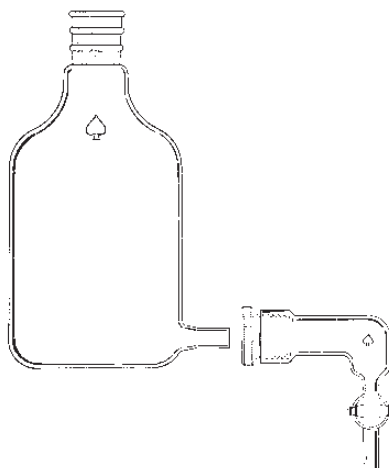
Capacity, L	Body O.D., mm	Height, mm	Neck I.D., mm	Order Code
Clear Glass				
3	170	295	60	6989-15
5	185	360	70	6989-18
10	240	420	70	6989-21
15	255	500	70	6989-24
20	290	535	70	6989-27

Plastic Coated

3	170	295	60	6989-115
5	185	360	70	6989-118
10	240	420	70	6989-121
15	255	500	70	6989-124
20	290	535	70	6989-127

Replacement Part

Polypropylene Hose Connection	6989-40
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BOTTLE Dispensing, w/Top ♂ Outer Joint ♠

With 24mm O.D. drain extension near bottom for attaching stopcock shutoff valve. Shutoff is an 8mm bore PTFE plug stopcock with a #25 Ace-Thred at a right angle. Ace-Thred attaches to drain extension via a nylon bushing and FETFE O-Ring. The 9.5L and 13.5L sizes are conventional bottle shape; 19L is similar in design to a carboy. Neck is ♂ 45/50 joint rather than a tooled neck for a rubber stopper.

Note: Order each part separately.

Capacity, L	Approx. Diameter, mm	Approx. Height, mm	Top Neck ♂ Joint	Order Code
9.5	187	476	45/50	5400-20
13.25	238	445	45/50	5400-27
19.0	292	508	45/50	5400-33

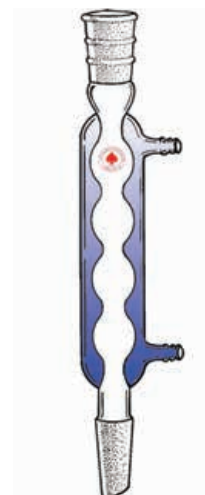
Accessories

Shutoff Valve, only	5400-40
Bushing, Nylon, w/O-Ring	7506-10
45/50 Glass Stopper	8250-20

CONDENSER *Allihn, Pilot Plant* ♠

Bulb type, approximately one bulb per every 50mm, with the same size ⌘ joint at bottom and top.

Jacket Length, mm	⌘ Joints	Hose Connection, in (mm)	Order Code
500	24/40	3/8 (9.5)	5945-16
600	24/40	3/8 (9.5)	5945-17
500	29/42	3/8 (9.5)	5945-26
600	29/42	3/8 (9.5)	5945-27


CONDENSER *Angled* ♠

Condenser similar to the 5945 series, except with a 45° angle on the bottom joint. When using with ACE reactor heads, this allows for height space savings vs. the standard vertical condensers in reactor systems.

Jacket Length, mm	⌘ Joint Size	Hose Connection, in	Order Code
300	24/40	3/8	6046-03
300	29/42	3/8	6046-05
400	24/40	3/8	6046-09
400	29/42	3/8	6046-11
400	34/45	3/8	6046-13
500	24/40	3/8	6046-17
500	29/42	3/8	6046-19
600	24/40	3/8	6046-23
600	29/42	3/8	6046-25
600	34/45	3/8	6046-27

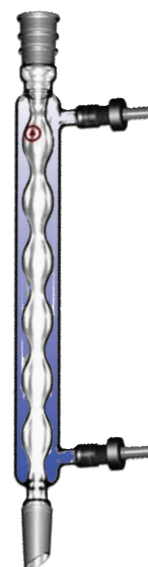

CONDENSER *Allihn, w/Ace-Thred Connectors*

Bulb type, approximately one bulb per 50mm, with ⌘ inner and outer joint at bottom and top, #7 Ace-Thred and "Ace-Safe" hose connections on inlet and outlet with barb.

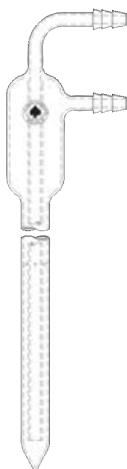
Jacket Length, mm	⌘ Joints	Hose Connection Size, in	Order Code
250	24/40	1/4	5946-116 ♠
300	24/40	1/4	5946-118 ♠
300	29/42	1/4	5946-122 ♠
500	45/50	1/4	5945-76 ★

Replacement Parts

Ace-Safe Connector, #7 to 1/4" tubing	5853-06 ♠
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Custom condensers with various joint or length sizes are available upon special request.

**CONDENSER** *Cold Finger, Pilot Plant Reactors* ★

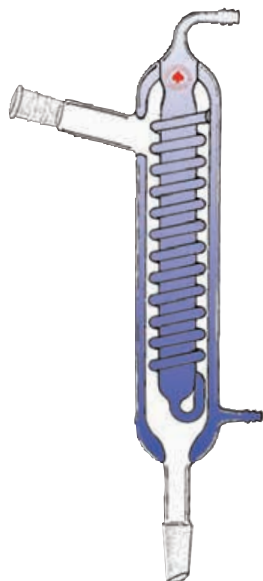
Jacket length is measured from the lower shoulder of the bulb to the bottom of the finger. Used in 6472 pilot plant reactors. Use with 5030-45, #15 Ace-Thred adapter, to fit top ♂ 45/50 joint in 5945-76 condenser. Can also be used with 6015, 6016, and 6020 condensers.

Jacket Length, mm	Tube Diameter, mm	Hose Connection, in	Order Code
625	14	3/8 or 5/16	5958-99

**CONDENSER** *Cold Finger* ♦

Cold Finger accessory for standard Allihn type condensers. Fabricated from borosilicate glass. This cold finger has a standard taper inner joint that fits inside the condenser's upper outer joint and tube, to provide added cooling ability and faster condensation. The 5960-12 condenser is used with our 6606, 6609, and 6613 distilling heads.

Length Below Joint, mm	♂ Joint	Tubing Size, in	Hose Connection, in	Order Code
110	24/40	3/8	3/8	5960-08
215	24/40	3/8	3/8	5960-12

**CONDENSER** *Pilot Plant, Long Path* ♦

This long path condenser creates a turbulent flow, making it very desirable for use under reduced pressure. Internal and external cooling surfaces result in high efficiency per unit length. Has angled standard taper reinforced outer joint at top and vertical standard taper inner joint at bottom.

Jacket Length, mm	♂ Joints	Hose Connection, in	Order Code
500	24/40	1/2 or 7/16	6012-16
600	24/40	1/2 or 7/16	6012-17

CONDENSER *Double Coil, High Capacity, Pilot Plant*

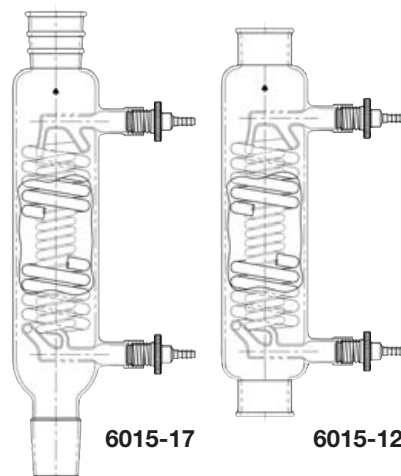
High throughput double coil condensers are made for larger systems and large-scale reactors, to handle larger scale reactions. These are also similar to rotary evaporator type condensers where a lot of material is being condensed at a higher temperature, and where large amounts of cooling water are needed to generate higher efficiency. The unit can be ordered with standard taper joints or beaded pipe end connections. The overall length is approximately 390mm, and O.D. is approximately 85-90mm. Both units have #15 Ace-Thred side connections for Ace-Safe hose connections.

Note: Supplied with full Ace-Safe connections.

Jacket Length, mm	Condensing Area, cm ²	Joint Finish	Order Code	
315	1480	1" bead pipe	6015-12	★
290	1400	3/4" bead pipe	6015-17	★

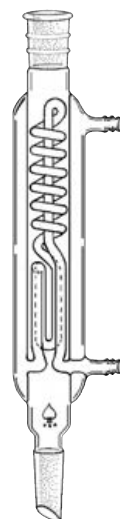
Replacement Parts

Ace-Safe Connector, #15 to 1/4" tubing	5853-20	♠
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CONDENSER *Pilot Plant* ★

Highly efficient. May be used either for thorough condensation or refluxing. Internal baffling acts as impinging surface for entrained particles and discourages diffusion loss. Use with 7/16" or 1/2" I.D. tubing, size F hose connection. Available with either spherical or standard taper joint.

	Joint Sizes 3/4" 45/50	Joint Sizes 1" 71/60	Joint Sizes 1 1/4" 35/25	Joint Sizes 1 1/2" 65/40
Jacket Length, mm	Order Code	Order Code	Order Code	Order Code
500	6016-36	—	6016-66	6016-75
750	6016-39	6016-52	—	6016-77
1000	6016-41	—	6016-69	6016-79

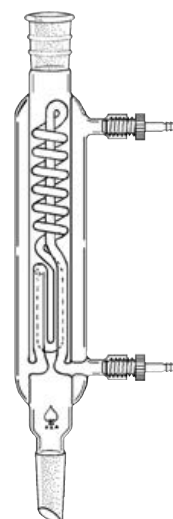

CONDENSER *Pilot Plant, w/Side Ace-Thred Connectors*

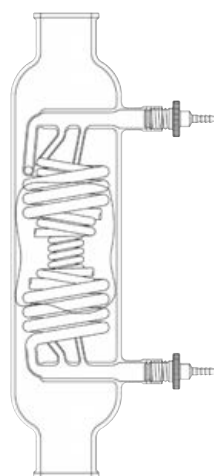
Highly efficient. May be used either for thorough condensation or refluxing. Internal baffling acts as impinging surface for entrained particles and discourages diffusion loss. With #11 side Ace-Thred and "Ace-Safe" hose connections on inlet and outlet with barb for 1/4" I.D. tubing. Available with either spherical or standard taper joints.

	Joint Sizes 3/4" 45/50	Joint Sizes 1" 35/25	Joint Sizes 1 1/2" 65/40
Jacket Length, mm	Order Code	Order Code	Order Code
500	6016-137 ★	6016-167 ★	6016-176 ★
750	6016-139 ★	—	6016-178 ★
1000	6016-141 ★	6016-170 ★	6016-180 ★

Replacement Parts

Ace-Safe Connector, #11 to 1/4" tubing	5853-12	♠
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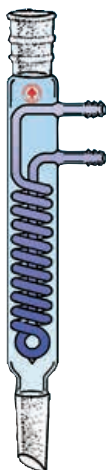
CONDENSER *Triple Coil, High Capacity*

With three internal cooling coils, this new design gives even higher throughput than the double coil or any rotary evaporator condenser. Designed for pilot plants and larger reactors where a lot of cooling area is needed for condensing, or for higher temperature reactions where more throughput is needed. Comes with #15 Ace-Thred ports with or without Ace-Safe connections. Overall length is approximately 460mm and O.D. is approximately 110mm.

			Glass only		Complete	
Joint Finish	Coil Length, mm	Condensing Area, cm ²	Order Code		Order Code	
2" bead pipe	220	1600	6017-210	★	6017-212	★

Replacement Parts

Ace-Safe Connector, #15 to 3/8" tubing	5853-23	♠
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CONDENSER *Spiral, Reflux* ♠

With spiral condensing tube having both inlet and outlet connections at top, on same side. With the same inner and outer joints at bottom and top. Length between joints is approximately 80-90mm longer than coil length.

§ Joints	Coil Length, mm	Tubing Size, in	Order Code
24/40	200	3/8	6020-02
24/40	250	3/8	6020-04
24/40	300	3/8	6020-06
24/40	400	3/8	6020-08
29/42	300	3/8	6020-10
45/50	400	3/8	6020-12



CONDENSER *Pilot Plant, Bulb Type* ♠

This apparatus comes complete with a bulb-type condenser and one flask. Cycling rates may be doubled over conventional style extractors. All joints are interchangeable.

Overall Length, mm	Condenser Length, mm	Bottom § Joint	Length, mm	Hose Connection, in	Order Code
Glass Hose Connections					
450	340	71/60	340	1/2 or 7/16	6810-04
525	375	103/60	460	1/2 or 7/16	6810-14
930	730	55/50	730	1/2 or 7/16	6810-24
Ace-Thred Connections					
450	340	71/60	340	#15 Ace-Thred	6810-05
525	375	103/60	460	#15 Ace-Thred	6810-15
930	730	55/50	730	#15 Ace-Thred	6810-25

CONDENSER *Reflux, Bulb ♠*

New style, compact, high-output reflux condenser, has an inner double wall, thimble-shape internal bulb. Unit has 1/2" outer top joint and the same size 1/2" drip-tip inner joint bottom.

Jacket Length, mm	1/2" Joints	Hose Connection, in	Order Code
85	14/20	3/8	6042-02
120	24/40	3/8	6042-04
120	29/42	3/8	6042-06
120	29/32	3/8	6042-08
120	45/50	3/8	6042-10


CONDENSER *West ♠*

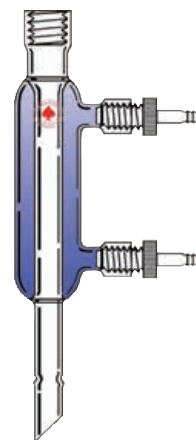
Used with Pressure Reactors, listed in Reaction Section. Heavy wall condenser has a #15 Ace-Thred at top that can be stoppered using 5846 Plug, (*not supplied*). Bottom drip tip is long enough to be secured in the #15 Ace-Thred on 6433 Reactor Head, One-Piece Pressure Reactor or any vessel with a #15 Ace-Thred. Drip tip has a bump and groove that restricts blowout when secured with 7506-06 Bushing and FETFE O-Ring. Inlet/outlet have #7 Ace-Threds for use with Ace-Safe 5853 easy connect/disconnect tubing connectors.

Note: Supplied with bushing and connectors for 1/4" I.D. tubing.

Jacket Length, mm	Use w/Head No.	Order Code
200	6433	6024-20

Replacement Parts and Accessories

#15 Ace-Thred Nylon Bushing	7506-06
#15 FETFE O-Ring	7855-716
Ace-Safe Connector, #7 to 1/4" tubing	5853-06


CONDENSER *West ♠*

No hold up west style condenser with a 1/2" 24/40 joint at top and bottom and size D barbed hose connection on inlet/outlet for 1/4" I.D. tubing.

Jacket Length, mm	Use w/Head No.	Order Code
250	6527, 6528, 6529	6029-13


MOISTURE TEST RECEIVER *Barrett Type, Pilot Plant ♠*

One liter Barrett type moisture test receiver. PTFE stopcock on bottom for draining contents. 60mm distance between side arm and body for clearance on spherical or cylindrical reactor bodies. Graduated in 10mL subdivisions.

Top Outer 1/2" Joint	Side Inner 1/2" Joint	Plug Bore, mm	Order Code
45/50	45/50	2	7744-50

Replacement PTFE Stopcock

Straight Bore	8224-04
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3965-10, -15



3965-19, -22



3965-26, -28



3965-05, -07



CONDENSER Triple Coil ★

The condensers are available in either poly-coated, or plain, non-coated versions. All condensers fit easily into the glass sets listed below. DN40 inner ball joints include CAPFE (PTFE-encapsulated silicone rubber) O-Rings. Black caps (included) are SVL-22 threads; red cap (included) is GL-14 thread.

Description	Fits Glassware Set	Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Ball/Socket DN Joint Sizes	Uses O-Ring Size / Code	Order Code
Triple-Coil Condenser	R, D2	Yes	41159	R220,	40	-225/7855-844	3965-05
Triple-Coil Condenser	R, D2	No	41399	R200EX, SE	40	-225/7855-844	3965-07
Triple-Coil Condenser	D, D2	Yes	27308	R220	40	-225/7855-844	3965-10
Triple-Coil Condenser	D, D2	No	41333	R200EX, SE	40	-225/7855-844	3965-15
Glass Condenser (Bullfrog)	DB, DB2	Yes	27825	R220	40	-225/7855-844	3965-19
Glass Condenser (Bullfrog)	DB, DB2	No	46516	R220EX, SE	40	-225/7855-844	3965-22
Glass Condenser (Bullfrog)	RB, DB2	Yes	27824	R220	40	-225/7855-844	3965-26
Glass Condenser (Bullfrog)	RB, DB2	No	41458	R220	40	-225/7855-844	3965-28

Also available with standard taper or process pipe joints

DISTILLATION COLUMN *Perforated Plate*

Perforated plate column, without jacket. Holes are 0.032" diameter.

No. of Plates	Plate Diameter, mm	Joint	Order Code	No. of Plates	Plate Diameter, mm	Joint	Order Code
5	28	29/42	6565-02	5	50	55/50	6565-32
10	28	29/42	6565-04	10	50	55/50	6565-34
15	28	29/42	6565-06	15	50	55/50	6565-36
20	28	29/42	6565-08	20	50	55/50	6565-38
30	28	29/42	6565-10	30	50	55/50	6565-40
5	33	34/45	6565-12	5	75	71/60	6565-42
10	33	34/45	6565-14	10	75	71/60	6565-44
15	33	34/45	6565-16	15	75	71/60	6565-46
20	33	34/45	6565-18	20	75	71/60	6565-48
30	33	34/45	6565-20				
5	40	45/50	6565-22	5	100	103/60	6565-52
10	40	45/50	6565-24	10	100	103/60	6565-54
15	40	45/50	6565-26	15	100	103/60	6565-56
20	40	45/50	6565-28	20	100	103/60	6565-58
30	40	45/50	6565-30				


DISTILLATION COLUMN *Perforated Plate, Internal Bellows, Silvered*

Similar to 6565, except with vacuum-jacketed internal bellows, and silvered internally.

No. of Plates	Plate Diameter, mm	Joint	Order Code	No. of Plates	Plate Diameter, mm	Joint	Order Code
5	28	29/42	6566-03	5	50	55/50	6566-33
10	28	29/42	6566-05	10	50	55/50	6566-35
15	28	29/42	6566-07	15	50	55/50	6566-37
20	28	29/42	6566-09	20	50	55/50	6566-39
30	28	29/42	6566-11	30	50	55/50	6566-41
5	33	34/45	6566-13	5	75	71/60	6566-43
10	33	34/45	6566-15	10	75	71/60	6566-45
15	33	34/45	6566-17	15	75	71/60	6566-47
20	33	34/45	6566-19	20	75	71/60	6566-49
30	33	34/45	6566-21				
5	40	45/50	6566-23	5	100	103/60	6566-53
10	40	45/50	6566-25	10	100	103/60	6566-55
15	40	45/50	6566-27	15	100	103/60	6566-57
20	40	45/50	6566-29	20	100	103/60	6566-59
30	40	45/50	6566-31				

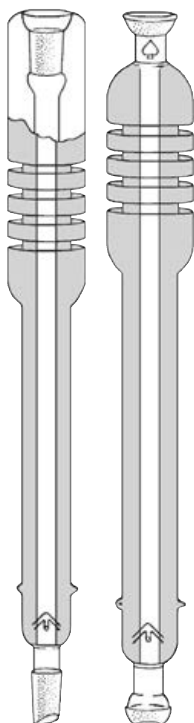


Various packing materials available, including...

Pro-Pak® Distillation Packing

An efficient protruded metal dump-packing for distillation columns of 1" to 12" dia. Self-wetting reduces equilibrium time. The dump feature eliminates interlocking, and makes filling and emptying as easy as pouring water. Suitable for both atmospheric and reduced pressures down to 10mm Hg condenser pressure. Packed heights up to 20' are possible without distorting packing. Offered in 316 Stainless Steel and Monel 400. Minimum column dia. for .16" packing is .75".





DISTILLATION COLUMN *Vacuum Jacketed*

With internal expansion bellows. Baked out and evacuated to 10^{-6} Torr. All $\$$ top joints are jacketed. Spherical joints are not jacketed in order to allow for clamping. All vacuum jacketed distilling columns are furnished with internal type expansion bellows to compensate for the unequal expansion between the inside tube and the outer jacket, and will withstand a temperature differential of 180°C . All columns, regardless of length, are supplied with the proper number of bellows to withstand the above temperature differential at all times. Standard silvered columns are supplied with an observation stripe running down the entire length of the jacket. The packing support is a conical tripod, in which the free area is at least 90% of the diametrical area.

In addition to the columns listed, we also have facilities for fabricating a complete line of special vacuum jacketed units to your specifications. This includes additional bellows to enable you to maintain temperature differentials greater than 180°C . When ordering a special column, please specify the highest temperatures which may be reached in the column, so that we can supply the unit with sufficient bellows to take care of the expansion which may take place during distillation.

Length, cm	I.D., mm	Joints	Order Code
61	12.7	$\$$ 24/40	6569-40
61	25.4	$\$$ 29/42	6569-50
61	25.4	$\$$ 35/25	6569-60
91	12.7	$\$$ 24/40	6569-42
91	25.4	$\$$ 29/42	6569-52
91	25.4	$\$$ 35/25	6569-62
122	12.7	$\$$ 24/40	6569-44
122	25.4	$\$$ 29/42	6569-54
122	25.4	$\$$ 35/25	6569-64



DISTILLATION COLUMN *Vigreux ♠*

Vigreux columns with standard taper joints, jacketed and unjacketed. Length in millimeters refers to the effective length of the column as measured from the lowest to the highest indent of the column.

Length, mm (in)	I.D., mm	Joints, $\$$	Order Code
Unjacketed			
100 (4)	16	14/20	9345-08
130 (5.2)	16	14/20	9345-09
100 (4)	19	19/22	9345-10
130 (5.2)	19	19/22	9345-11
170 (6.8)	19	19/22	9345-13
203 (8)	24	24/40	6578-04
254 (10)	24	24/40	6578-06
305 (12)	24	24/40	6578-08
381 (15)	24	24/40	6578-10
457 (18)	24	24/40	6578-12
508 (20)	24	24/40	6578-14
610 (24)	24	24/40	6578-16
305 (12)	44	45/50	6578-20
457 (18)	44	45/50	6578-22
610 (24)	44	45/50	6578-24
Jacketed			
305 (12)	44	45/50	6578-30
457 (18)	44	45/50	6578-32
610 (24)	44	45/50	6578-34

SPHERICAL FLASK *Duran® Flange, 5 Port*

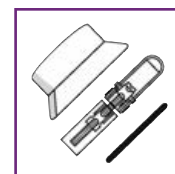
Rugged, spherical reaction flask with Duran style O-Ring grooved side port, angled 45° for ease in adding material to flask. In addition to the side port, flask has (3) ½ 45/50 side necks, all vertical. Center is a Duran style O-Ring grooved flange with a CAPFE (PTFE encapsulated silicone) O-Ring for use with 6517 quick-release clamp. Supplied with capacity reference graduations.

Note: Supplied with (1) CAPFE O-Ring. Order cap, clamps, and extra O-Rings (listed below) separately.

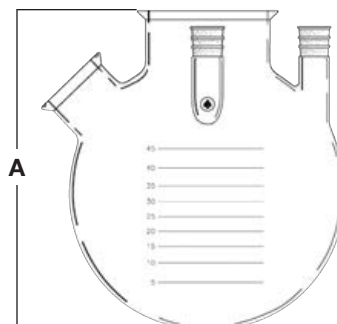
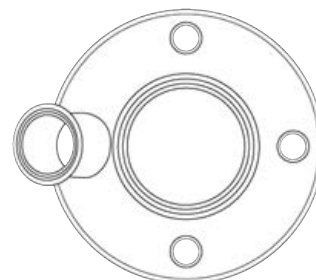
Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, (A) mm	Neck Height, mm	Center Neck, mm (in)	Side Port Size, mm	Order Code	
50	457	443	550	75	100 (4)	60	6530-42	★
50	457	443	550	75	150 (6)	60	6530-43	★
50	457	443	550	75	200 (8)	60	6530-44	★
50	457	443	550	75	100 (4)	100	6530-47	★
50	457	443	550	75	150 (6)	100	6530-48	★
50	457	443	550	75	200 (8)	100	6530-49	★
72	508	496	570	75	100 (4)	100	6530-52	★
72	508	496	570	75	150 (6)	100	6530-54	★
72	508	496	570	75	200 (8)	100	6530-56	★
100	610	596	680	75	100 (4)	100	6530-64	★
100	610	596	680	75	150 (6)	100	6530-65	★
100	610	596	680	75	200 (8)	100	6530-66	★

Replacement Parts and Accessories

Glass Cap, 60mm	15312-30	★
Glass Cap, 100mm	15312-33	★
CAPFE O-Ring, 60mm	7855-878	♣
CAPFE O-Ring, 100mm	7855-880	♣
CAPFE O-Ring, 150mm	7855-881	♣
CAPFE O-Ring, 200mm	7855-884	♣
Clamp, 60mm, quick-release	6517-22	★
Clamp, 100mm, quick-release	6517-25	★
Clamp, 150mm, quick-release	6517-27	★
Clamp, 200mm, quick-release	6517-31	★



Cap, clamp, and
O-Ring for Side Port
(not included)


SPHERICAL FLASK *Duran Flange, 4 Port*

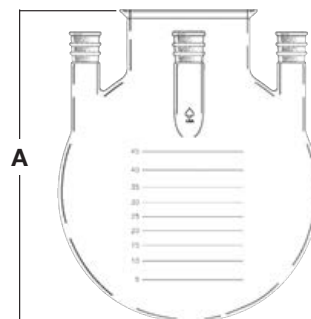
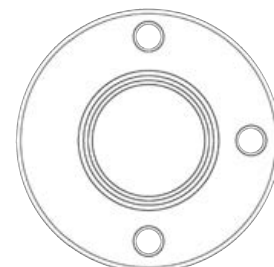
Rugged, spherical reaction flask with (3) ½ 45/50 side necks, all vertical. Center is a Duran style O-Ring grooved flange with a CAPFE (PTFE encapsulated silicone) O-Ring for use with 6517 quick-release clamp. Supplied with capacity reference graduations.

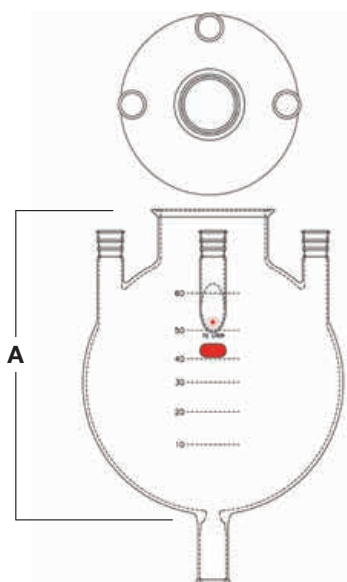
Note: Supplied with (1) CAPFE O-Ring. Order clamp and extra O-Rings (listed below) separately.

Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, (A) mm	Neck Height, mm	Center Neck, mm (in)	Order Code	
22	350	336	450	100	100 (4)	6530-06	★
50	457	443	550	75	200 (8)	6530-08	★
72	508	496	570	75	200 (8)	6530-15	★
100	610	596	680	75	200 (8)	6530-20	★

Replacement Parts and Accessories

CAPFE O-Ring, 100mm	7855-880	♣
CAPFE O-Ring, 200mm	7855-884	♣
Clamp, 100mm, quick-release	6517-25	★
Clamp, 200mm, quick-release	6517-31	★





SPHERICAL FLASK *Duran® Flange, 4 Port, w/Bottom Outlet*

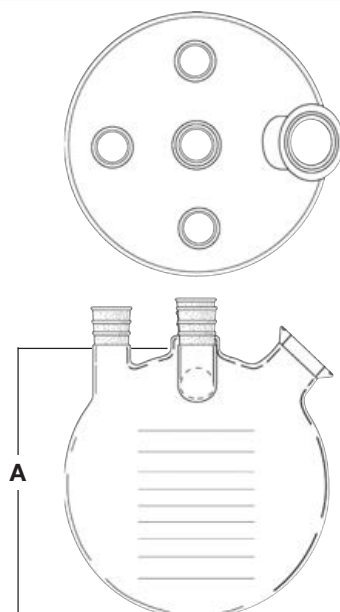
Spherical reaction flask with Duran style, ground flange and bottom valve assembly. Supplied with capacity reference graduations. Nominal flange I.D. is 200mm (8"). Flask has (3) 45/50 side joints. The bottom is configured for our Flush Seal Valve.

Note: Supplied with (1) CAPFE O-Ring.

Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, (A) mm	Neck Height, mm	Bottom Outlet Style	Order Code	
50	457	443	550	75	Flush	6530-14	★
72	508	496	570	75	Flush	6530-21	★
100	610	596	680	75	Flush	6530-27	★

Replacement Parts and Accessories

Clamp, 200mm, quick-release	6517-31	★
CAPFE O-Ring, 200mm	7855-884	♠
Flush Seal Valve	6472-245	★



SPHERICAL FLASK *5 Port, Standard Taper Joint*

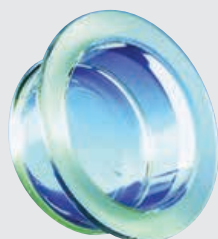
Rugged, spherical reaction flask with Duran® style 60mm I.D. O-Ring grooved side port, angled 45° for ease in adding material to flask. In addition to the 60mm side port, flask has a 45/50 center neck and (3) 45/50 side necks, all vertical. Supplied with capacity reference graduations.

Note: For 60mm side port, order cap, O-Ring and clamp separately.

Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, (A) mm	Neck Height, mm	Center Neck, 45/50	Side Necks, 45/50	Order Code	
22	350	336	450	100	45/50	45/50	6957-28	★
22	350	336	450	100	45/50	29/42	6957-26	★
22	350	336	450	100	45/50	24/40	6957-24	★
50	457	443	550	75	45/50	45/50	6957-65	★

Replacement Parts and Accessories

Glass Cap, 60mm	15312-30	★
CAPFE O-Ring, 60mm	7855-878	♠
Clamp, 60mm, quick-release	6517-22	★



LID BLANK *Duran Flange* ★

Flat flange lid blank for use with 15310 or 15311 flanges. Code-30 is unground; codes -33 and -36 are ground.

Flange O.D., mm	Joint Surface	Order Code
60	Unground	15312-30
100	Ground	15312-33
120	Ground	15312-34
150	Ground	15312-36
200	Ground	15312-40

Accessories

Quick-Release Flange Clamp, 60mm	6517-22
Quick-Release Flange Clamp, 100mm	6517-25
Quick-Release Flange Clamp, 120mm	6517-24
Quick-Release Flange Clamp, 150mm	6517-27
Quick-Release Flange Clamp, 200mm	6517-31

SPHERICAL FLASK *Duran® Flange, w/Bottom Outlet*

Rugged, spherical reaction flask with Duran style flange with O-Ring groove, for use with 6517 quick-release clamp. Flasks have capacity reference graduations, and can be configured with one of several different bottom outlets. For reaction heads, see 6529 or 6530. For cooling/heating coils, see 12067. For mantles, see 12044. Easy-Action and Piston bottom outlets have size 35/25 O-Ring ball joint connection.

Note: Supplied with (1) CAPFE O-Ring. Plain silicone O-Rings are also available.

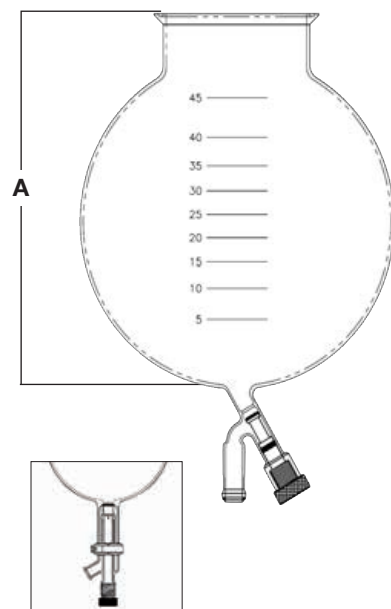
Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Flange I.D., mm (in)	Use Clamp	Top CAPFE O-Ring	Outlet Size, mm	Order Code	
Easy Action Bottom Outlet									
3	180	166	270	100 (4)	6517-25	7855-880	0-8	6534-04	♣
5	226	212	320	100 (4)	6517-25	7855-880	0-8	6534-06	♣
5	226	212	320	150 (6)	6517-27	7855-881	0-8	6534-09	♣

Flush Seal Bottom Outlet

12	285	270	380	150 (6)	6517-27	7855-881	—	6534-60	★
22	350	336	450	150 (6)	6517-27	7855-881	—	6534-62	★
50	457	443	550	200 (8)	6517-31	7855-884	—	6534-64	★
72	508	496	570	200 (8)	6517-31	7855-884	—	6534-66	★

Replacement Parts and Accessories

Flush Seal Bottom Drain Valve Assembly, Unpinned Valve	6472-245	★
CAPFE O-Ring, size 116	7855-826	♣


SPHERICAL FLASK *Duran Flange, Jacketed*

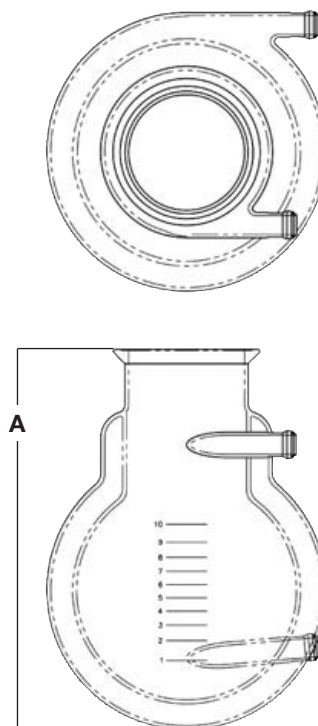
Rugged, spherical jacketed reaction flask with Duran style flange with O-Ring groove, for use with 6517 quick-release clamp. 12L size is supplied with capacity reference graduations. Inlet and outlet are size 28/15 O-Ring ball joints, sealed tangentially. For reaction heads, see 6529. For cooling/heating coils, see 12076.

Note: Supplied with (1) CAPFE O-Ring. Plain silicone O-Rings are also available.

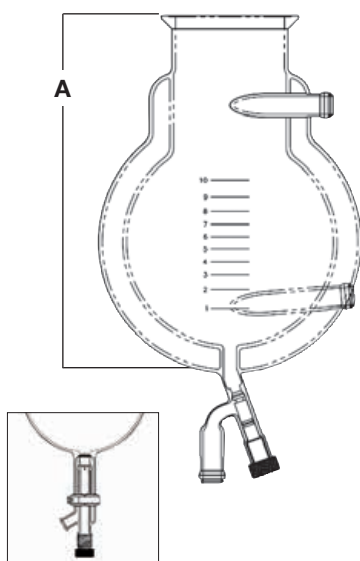
Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Flange I.D., mm (in)	Use Clamp	Top CAPFE O-Ring	Order Code	
3	225	170	370	100 (4)	6517-25	7855-880	6535-03	♣
5	285	212	435	100 (4)	6517-25	7855-880	6535-05	♣
5	285	121	450	150 (6)	6517-27	7855-881	6535-07	♣
12	360	270	505	150 (6)	6517-27	7855-881	6535-12	★

Replacement Parts

Ball Joint FETFE O-Ring	7855-726	♣
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For safety, it is recommended that a pressure relief manifold be used on jacketed reactors.



SPHERICAL FLASK Duran® Flange, Jacketed, w/Bottom Outlet

Rugged, spherical reaction flask with Duran style flange with O-Ring groove, for use with 6517 quick-release clamp. The 0-14 Easy-Action and Piston bottoms have a 28/15 ball joint bottom connector. 28/15 O-Ring ball joints on inlet and outlet, sealed tangentially. For reaction heads, see 6529. For cooling/heating coils, see 12067.

Note: Supplied with (1) CAPFE O-Ring. Plain silicone O-Rings are also available.

Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Flange I.D., mm (in)	Use Clamp	Top CAPFE O-Ring	Order Code	
Easy Action Bottom Outlet								
3	225	170	370	100 (4)	6517-25	7855-880	6536-06	♠
5	285	212	435	100 (4)	6517-25	7855-880	6536-09	♠
5	285	212	450	150 (6)	6517-27	7855-881	6536-11	♠

Flush Seal Bottom Outlet

12	360	270	505	150 (6)	6517-27	7855-881	6536-55	★
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Replacement Parts

Ball Joint FETFE O-Ring	7855-726	♠
Flush Seal Bottom Drain Valve Assembly, Unpinned Valve	6472-245	★
CAPFE O-Ring, size 116	7855-826	♠



SPHERICAL FLASK Duran® Flange, w/Indents ♠

Rugged, spherical reaction flask with Duran style flange with O-Ring groove, for use with 6517 quick-release clamp but with indents for greater agitation. For reaction heads, see 6529. For cooling/heating coils, see 12067. Use caution under vacuum/pressure.

Note: Supplied with (1) CAPFE O-Ring. Plain silicone O-Rings are also available.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Flange I.D., mm (in)	Use Clamp	CAPFE O-Ring	Order Code	
3	180	166	270	100 (4)	6517-25	7855-880	6537-07	
5	226	212	320	100 (4)	6517-25	7855-880	6537-12	
5	226	212	320	150 (6)	6517-27	7855-881	6537-17	
12	285	270	380	150 (6)	6517-27	7855-881	6537-24	



SPHERICAL FLASK Duran® Flange ♠

Rugged, spherical reaction flask with Duran style flange with O-Ring groove, for use with 6517 quick-release clamp. Flasks (12L and above) are supplied with capacity reference graduations. For reaction heads, see 6529 or 6530. For cooling/heating coils, see 12067. For mantles, see 12043.

Note: Supplied with (1) CAPFE O-Ring. Plain silicone O-Rings are also available.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Flange I.D., mm (in)	Neck Height, mm (in)	Use Clamp	CAPFE O-Ring	Order Code
3	180	166	270	100 (4)		6517-25	7855-880	6533-03
5	226	212	320	100 (4)		6517-25	7855-880	6533-05
5	226	212	320	150 (6)	75 (2.95)	6517-27	7855-881	6533-07
5	226	212	320	150 (6)	50 (1.96)	6517-27	7855-881	6533-08
12	285	270	380	150 (6)	75 (2.95)	6517-27	7855-881	6533-12
12	285	270	380	150 (6)	50 (1.96)	6517-27	7855-881	6533-13
22	350	336	450	150 (6)		6517-27	7855-881	6533-15
50	457	443	550	200 (8)		6517-31	7855-884	6533-25
72	508	496	570	200 (8)		6517-31	7855-884	6533-28



SPHERICAL FLASK Duran® Flange, 3 Neck ♠

Round bottom flask, three vertical necks, Duran flange center neck, standard taper sides. No bottom outlet.

Note: Supplied with (1) CAPFE flange O-Ring.

Capacity, L	O.D., mm	Flange I.D., mm (in)	Side Neck, mm (in)	Use Clamp	CAPFE O-Ring	Order Code
20	345	100 (4)	(2) 29/42	6517-25	7855-880	6946-32

SPHERICAL FLASK *Duran® Flange, w/ZDS™ Valve ♠*

Heavy wall spherical reaction flask with Duran® style grooved flange opening. Flask uses 6517 quick-release clamp. Takes all Duran® style heads. Bottom outlet is Zero Dead Space (ZDS) valve.

Note: Supplied with (1) CAPFE O-Ring.

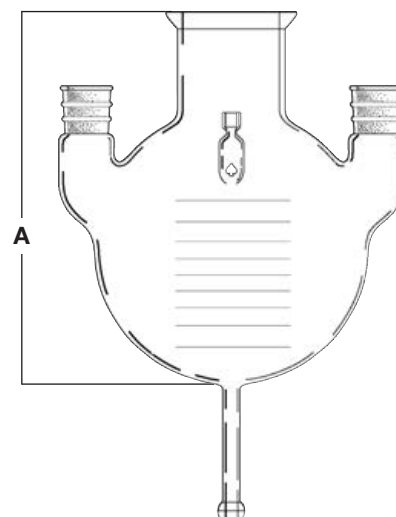
Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, (A) mm	Neck Height, mm	Flange I.D., mm (in)	Bottom Outlet, mm	Top CAPFE O-Ring	Order Code
2	160	150	250	100	100 (4)	0-10	7855-880	6540-104
3	180	166	270	100	100 (4)	0-20	7855-880	6540-106
5	226	212	320	100	100 (4)	0-20	7855-880	6540-108
5	226	212	320	100	150 (6)	0-20	7855-881	6540-110
12	285	270	380	100	150 (6)	0-20	7855-881	6540-115
22	350	336	450	100	150 (6)	0-20	7855-881	6540-120


SPHERICAL FLASK *Conical 4" Flange, 4 Port, w/Bottom Outlet ♠*

Spherical reaction flask with flat, ground conical style flange with O-Ring groove and bottom outlet. Supplied with capacity reference graduations. Nominal flange I.D. is 100mm (4"). With (3) side ports: (1) #7 Ace-Thred and (2) 3/4 45/50 outer joints. Bottom outlet is 3/8 28/15 spherical ball joint.

Note: Supplied with (1) CAPFE O-Ring.

Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, (A) mm	Neck Height, mm	Flange I.D., mm (in)	Top CAPFE O-Ring	Order Code
12	285	270	380	100	100 (4)	7855-880	6469-16
22	350	336	450	100	100 (4)	7855-880	6469-18


SPHERICAL FLASK *KF Plane Flange, 100mm Side Port, w/Bottom Outlet*

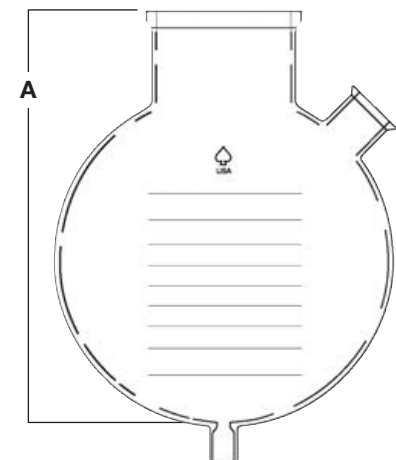
Spherical reaction flask with flat, ground KF flange and bottom outlet. Supplied with capacity reference graduations. Nominal flange I.D. is 300mm (12"). Side sample port is angled at 45° (Duran® style flange 4" in diameter).

Note: Supplied with (1) CAPFE O-Ring (side port).

Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, (A) mm	Neck Height, mm	Flange I.D., mm	Bottom Outlet Style	Order Code	
200	750	736	960	210	300	Flush	6474-29	★

Replacement Parts and Accessories

Glass Cap for Side Port, 100mm	15312-33	★
CAPFE O-Ring for Side Port, 100mm	7855-880	♠
Gasket for Main Flange, 300mm	6525-51	★
Clamp for Main Flange, 300mm	6525-30	★
Clamp for Side Port, 100mm, quick-release	6517-25	★
Flush Seal Bottom Drain Valve Assembly, Unpinned Valve	6472-245	★




SPHERICAL FLASK *Conical 4" Flange, Jacketed ♠*

Spherical flask with conical neck opening of 4" (100mm). Inlet and outlet connections are size 28/15 O-Ring ball joints, both sealed tangentially on jacketed section. Uses 6496 clamp for securing flask head to flask. See 6495 for gaskets.

Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, mm	Neck Height, mm	Order Code
3	220	170	370	95	6480-05
5	285	211	450	95	6480-10

Replacement Parts

Ball Joint FETFE O-Ring	7855-726
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SPHERICAL FLASK *Conical 4" Flange, w/Indents ♠*

Same as 6479, except with side indents for improved stirring characteristics. Uses 6496 clamp for securing conical flask head to flask. See 6495 for gaskets. Use caution under vacuum/pressure.

Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, mm	Neck Height, mm	Order Code
3	180	166	270	100	6481-05
5	226	212	320	100	6481-10
12	285	270	380	100	6481-15


SPHERICAL FLASK *Conical 4" Flange ♠*

Rugged, spherical flask with conical neck opening of 4" (100mm). Standard size flasks use regular Glas-Col heating mantles of equivalent capacity. Length of straight section including flange, approximately 95mm (3-3/4"). Uses 6496 clamp for securing flask head to flask. See 6495 for gaskets.

Capacity, L	Nominal O.D., mm	Nominal I.D., mm	Height, mm	Neck Height, mm	Order Code
3	180	166	270	100	6479-05
5	225	212	320	100	6479-10
12	285	270	380	100	6479-15
22	350	336	450	100	6479-20
50	457	461	550	100	6479-25
72	508	496	570	100	6479-30

CYLINDRICAL FLASK Duran® Flange, w/Bottom Outlet

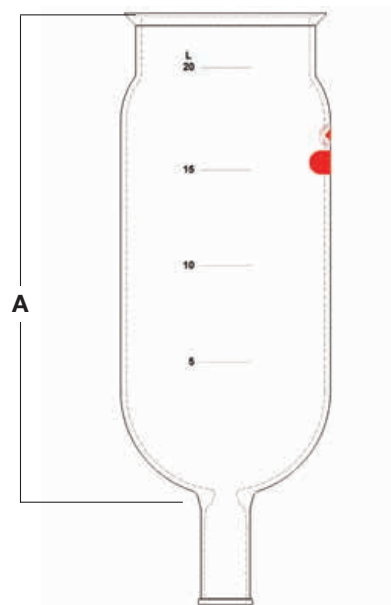
Similar to 6521 but with bottom outlet for draining contents. Bottom Outlet available in either Flush Valve Style (*valve not supplied*) or Easy Action Style (*valve supplied*). Flasks have capacity reference graduations.

Note: Supplied with (1) CAPFE O-Ring. Plain silicone O-Rings are also available.

Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Flange I.D. mm (in)	Use Clamp	Top CAPFE O-Ring	Valve Size mm	Valve Supplied	Order Code	
Easy Action Bottom Outlet Style (Valve Supplied)										
1	110	100	180	100 (4)	6517-25	7855-880	0-8	Yes	6522-11	♣
2	110	100	265	100 (4)	6517-25	7855-880	0-8	Yes	6522-13	♣
3	110	100	400	100 (4)	6517-25	7855-880	0-8	Yes	6522-15	♣
6	215	205	280	200 (8)	6517-31	7855-884	0-8	Yes	6522-17	♣

Flush Valve Bottom Outlet Style (Valve Not Supplied)

10	215	205	470	200 (8)	6517-31	7855-884	—	No	6522-81	★
15	215	205	470	200 (8)	6517-31	7855-884	—	No	6522-82	★
20	250	236	570	200 (8)	6517-31	7855-884	—	No	6472-02	★
30	315	301	540	200 (8)	6517-31	7855-884	—	No	6522-83	★
50	315	301	890	200 (8)	6517-31	7855-884	—	No	6522-84	★
100	457	443	940	200 (8)	6517-31	7855-884	—	No	6522-85	★
200	450	436	1575	200 (8)	6517-31	7855-884	—	No	6522-86	★



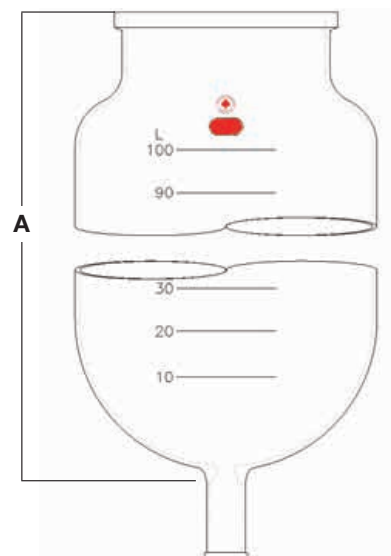
CYLINDRICAL FLASK KF Plane Flange, w/Bottom Outlet ★

Cylindrical reaction flask with top KF plane flange and bottom configured for our flush seal drain valve assembly (*valve not supplied*). Flasks have capacity reference graduations. Gasket and coupling must be purchased separately.

Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Flange I.D. mm (in)	Use Coupling	Top PTFE Gasket	Bottom Outlet Style	Order Code
30	315	301	590	300 (12)	6525-30	6525-51	Flush Valve	6472-241
50	315	301	840	300 (12)	6525-30	6525-51	Flush Valve	6472-242
100	465	451	940	300 (12)	6525-30	6525-51	Flush Valve	6473-05
200	465	451	1575	300 (12)	6525-30	6525-51	Flush Valve	6473-11

Accessories

Flush Seal Drain Valve Assembly	6472-245
Flush Seal Drain Valve w/Top Pin Assembly	6482-20



VALVE ASSEMBLY Flush Seal Drain, Unpinned ★

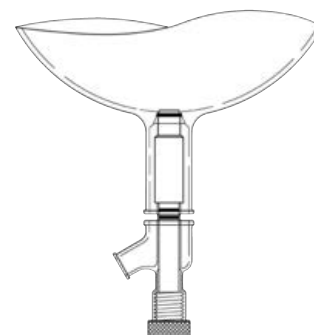
The plug with a CAPFE O-Ring is inserted into valve seat and secures within a coupling. By rotating the handle, plug rises into the flask and seals to afford zero dead space. Back thread out to drain through 1" beaded pipe angled side port. Kalrez® O-Rings for superior chemical resistance from -15 to 230°C. EPDM O-Rings for low temperature applications down to -60°C.

Note: Uses 8856-11 clamp.

Description	Order Code
Complete PTFE Valve Assembly, with Kalrez® O-Rings	6472-245
Complete PTFE Valve Assembly, with EPDM O-Rings	6472-246

Accessories

2" High Temperature Coupling	8856-11
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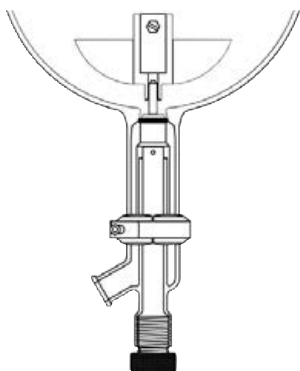
VALVE ASSEMBLY *Flush Seal Drain, 3" x 2" Large Opening*

Bottom drain valve featuring a flush seal seat. Fits 3" beaded pipe bottom vessels such as our 12850-3202 cylindrical reactor. The valve seat is double the size of our standard flush seal valve seat and opens with an easy turning large knob. The 2" beaded pipe outlet quickly flushes even large sediments from the generous volume of the glass body.

Available with your choice of O-Ring and pinned or plain configurations. Pinned versions are designed to reduce wobble when used with our 8100 or 8101 PTFE agitators.

Note: Comes complete with Glass Valve, (pinned or unpinned) PTFE Valve Stem, and O-Rings.

Pinned or Unpinned	O-Ring Material	Order Code
Unpinned	Kalrez	6372-10
Unpinned	EPDM	6372-15
Pinned	Kalrez	6372-20
Pinned	EPDM	6372-25



VALVE ASSEMBLY *Flush Seal Drain, w/Top Pin ★*

Flush-seal type valve similar to 6472-245, except that the top of the valve has a 1-1/2" x 3/8" O.D. pin that extends upward. The pin fits into the receptacle on the bottom of the 8100 and 8101 bottom agitators. This assembly is designed to reduce shaft wobble or "flexing" on the larger reactors. Top opening is 2" beaded pipe, and the side drain port is 1" beaded pipe. *Kalrez® O-Rings for superior chemical resistance from -15 to 230°C. EPDM O-Rings for low temperature applications down to -60°C.*

Note: Uses 8856-11 clamp.

Description	Order Code
Complete PTFE Valve Assembly, with Kalrez® O-Rings	6482-20
Complete PTFE Valve Assembly, with EPDM O-Rings	6482-25

Accessories

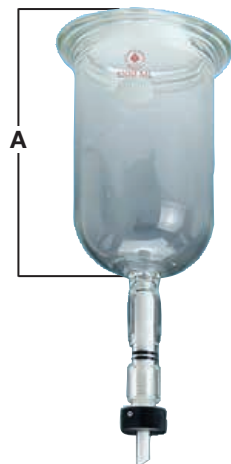
2" High Temperature Coupling	8856-11
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VALVE ASSEMBLY *Air-Actuated, Flush Drain, PTFE*

ACE all-PTFE reactor flush drain valve with control from your in-house air supply. Unique design weds our proven PTFE flush valve with a low profile air cylinder, control box, and hoses. All wetted surfaces are PTFE or Kalrez®. Valve will stay closed under heavy loads and temperature gradients due to its constant air supply. *Loss of air pressure will not cause the valve to open.* Order with your new reactor or replace an existing Ace flush drain valve.

For Reactor Size, L	Valve Type	Operating Pressure Range, psig	Order Code
10-20	unpinned	70-120	12854-20
30+	pinned	70-120	12854-10



CYLINDRICAL FLASK *Duran® Flange, w/ZDS™ Valve ♠*

Cylindrical, heavy wall flask with round bottom. Flask has Duran style top flange with O-Ring groove, for use with heads 6433, 6527, 6528 or 6529. Bottom outlet is ZDS (Zero Dead Space) PTFE valve with Chemraz O-Rings. Use with 6517 quick-release clamp.

Note: Supplied with (1) CAPFE O-Ring. Plain silicone O-Rings are also available.

Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Flange O.D., mm (in)	Bottom Outlet, mm	Top O-Ring	Order Code
1	110	100	180	100 (4)	0-10	7855-880	6518-10
2	110	100	265	100 (4)	0-10	7855-880	6518-12
2	155	145	200	150 (6)	0-20	7855-881	6518-14
3	110	100	400	100 (4)	0-10	7855-880	6518-16
3	150	140	250	150 (6)	0-20	7855-881	6518-18
4	155	145	300	150 (6)	0-20	7855-881	6518-20

CYLINDRICAL FLASK *Duran® Flange*

Rugged, cylindrical reaction flask with Duran style ground flange with O-Ring groove, for use with 6517 quick-release clamp. 10L and larger are supplied with capacity reference graduations. Plain silicone O-Rings are also available. For reaction heads, see 6528 or 6530. For cooling/heating coils, see 12067. 30L and above have reduced area to flange.

Note: Supplied with (1) CAPFE (PTFE encapsulated silicone) O-Ring.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Flange I.D., mm (in)	Use Clamp	Top CAPFE O-Ring	Order Code	
1	110	100	180	100 (4)	6517-25	7855-880	6521-10	♠
2	110	100	265	100 (4)	6517-25	7855-880	6521-12	♠
3	110	100	400	100 (4)	6517-25	7855-880	6521-14	♠
6	215	201	300	200 (8)	6517-31	7855-884	6521-16	♠
10	215	205	470	200 (8)	6517-31	7855-884	6521-20	♠
15	250	236	470	200 (8)	6517-31	7855-884	6521-25	★
20	250	236	570	200 (8)	6517-31	7855-884	6521-27	★
30	315	300	540	200 (8)	6517-31	7855-884	6521-30	★
50	315	300	890	200 (8)	6517-31	7855-884	6521-35	★
100	457	443	940	200 (8)	6517-31	7855-884	6521-40	
200	450	436	1575	200 (8)	6517-31	7855-884	6521-44	


CYLINDRICAL FLASK *Duran Flange, w/Indents*

Rugged, cylindrical reaction flask with Duran style flat flange with O-Ring groove, for use with 6517 quick-release clamp, but with indents for greater agitation. For reaction heads, see 6528. For cooling/heating coils, see 12067. Use caution under vacuum/pressure.

Note: Supplied with (1) CAPFE O-Ring. Plain silicone O-Rings are also available.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Flange Size, mm (in)	Order Code	
1	110	100	180	100 (4)	6526-10	♠
2	110	100	265	100 (4)	6526-12	♠

Accessories

Quick Release Flange Clamp, Stainless Steel	6517-25	★
CAPFE O-Ring, 100mm	7855-880	♠


CYLINDRICAL FLASK *Flat Flange* ♠

Cylindrical, heavy wall reaction flask, round bottom. Top has a flat ground flange for use with FETFE gasket or O-Ring groove for use with CAPFE (PTFE encapsulated silicone rubber) O-Ring instead of gasket. Without constriction at top to facilitate introduction/removal of material, and allow for ease of cleaning. For reaction heads, see 6512, 6513 and 6515. For clamp, see 6508 or 6510.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Flange O.D., mm	Top CAPFE O-Ring	Top FETFE Gasket	Order Code
1	110	100	165	137	—	6495-21	6511-06
2	140	130	185	168	—	6495-23	6511-08
3	140	130	260	168	—	6495-23	6511-10
4	140	130	335	168	—	6495-23	6511-12

Flat O-Ring Groove Flange

1	110	100	165	137	7855-887	—	6511-42
2	140	130	185	168	7855-889	—	6511-45
3	140	130	260	168	7855-889	—	6511-47
4	140	130	335	168	7855-889	—	6511-49





CYLINDRICAL FLASK *Flat Flange* ♠

Cylindrical, heavy wall reaction flask, with flat bottom rounded into side wall, and flat, ground flange top. Without constriction at top to facilitate introduction/removal of material, and allow for ease of cleaning. For reaction heads, see 6512, 6513 and 6515. For clamp, see 6508 or 6510.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Flange O.D., mm	Top FETFE Gasket	Order Code
1	110	100	165	137	6495-21	6511-24
2	140	130	185	168	6495-23	6511-27
3	140	130	260	168	6495-23	6511-29
4	140	130	335	168	6495-23	6511-31



CYLINDRICAL FLASK *Flat Flange, w/O-Ring Groove* ♠

Cylindrical, heavy wall reaction flask, with flat bottom rounded inside wall, and flat flange. Flange has an O-Ring groove for use with CAPFE (PTFE encapsulated silicone rubber) O-Ring instead of gasket. Without constriction at top to facilitate introduction/removal of material, and allow for ease of cleaning. For reaction heads, see 6512, 6513 and 6515. For clamp, see 6508 or 6510.

Note: Supplied with (1) CAPFE O-Ring.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Flange O.D., mm	Top CAPFE O-Ring	Order Code
1	110	100	165	137	7855-887	6511-53
2	140	130	185	168	7855-889	6511-56
3	140	130	260	168	7855-889	6511-58
4	140	130	335	168	7855-889	6511-60

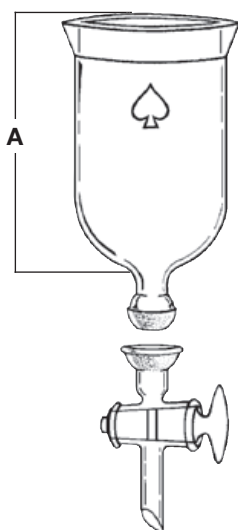


CYLINDRICAL FLASK *Flat Flange, w/Indents* ♠

Cylindrical, heavy wall reaction flask, with flat bottom rounded into side wall, and flat, ground flange. Without constriction at top to facilitate introduction/removal of material, and allow for ease of cleaning. Indented sides for better mixing. For reaction heads, see 6512, 6513 and 6515. For clamp, see 6508 or 6510.

Note: Use caution under vacuum/pressure.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Flange O.D., mm	Top FETFE Gasket	Order Code
1	110	100	165	137	6495-21	6516-01
2	140	130	185	168	6495-23	6516-03
3	140	130	260	168	6495-23	6516-05
4	140	130	335	168	6495-23	6516-07



CYLINDRICAL REACTION FLASK *Conical 4" Flange*

With 4mm bore stopcock. Stopcock is separated from lower section by $\frac{1}{8}$ 28/15 joint. Otherwise, identical to 6491. For bottom joint clamp, order 7669-12. Use 6496 Clamp for securing head to flask. See 6495 for gaskets.

Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Flask, only Order Code	Lower Stopcock Drain, only Order Code	Complete Order Code
1	114	104	220	6492-02 ♠	6492-10 ♠	6492-15 ♠
2	114	104	300	6492-06 ♠	6492-10 ♠	6492-25 ♠

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
28/15 SS Screwlock Pinch Clamp	7669-12	★
Stopcock Plug, Glass	8223-06	♠

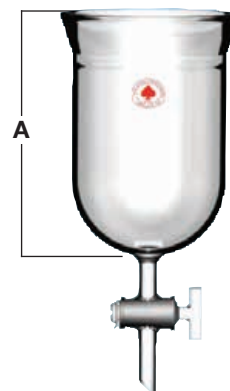
CYLINDRICAL FLASK *Conical 4" Flange*

With 4mm bore stopcock for rapid removal of contents, without disturbing the general arrangement of the apparatus. Conical neck opening is 100mm (4").

Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Order Code	
1	114	104	180	6491-10	♠
2	114	104	260	6491-20	♠

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠


CYLINDRICAL FLASK *Conical 4" Flange*

Rugged, cylindrical flask with conical neck opening of 4" (100mm). Uses 6496 clamp for securing flask head to flask.

Capacity, mL	O.D., mm	I.D., mm	Height, mm	Top PTFE Gasket	Order Code	
500	114	104	120	6495-10	6476-05	♠
1000	114	104	180	6495-10	6476-10	♠
1500	114	104	220	6495-10	6476-15	♠
2000	114	104	260	6495-10	6476-20	♠
3000	114	104	340	6495-10	6476-25	♠

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠


CYLINDRICAL FLASK *Conical 4" Flange, w/Indents*

Same as 6476, except with side indents for improved stirring characteristics. Uses 6496 clamp for securing conical flask head to flask.

Note: Use caution under vacuum/pressure.

Capacity, mL	O.D., mm	I.D., mm	Height, mm	Top PTFE Gasket	Order Code	
500	114	104	120	6495-10	6477-05	♠
1000	114	104	180	6495-10	6477-10	♠
1500	114	104	220	6495-10	6477-15	♠
2000	114	104	260	6495-10	6477-20	♠
3000	114	104	340	6495-10	6477-25	♠

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠


CYLINDRICAL FLASK *Conical 4" Flange, Jacketed*

Jacketed cylindrical flask with conical neck opening of 4" (100mm). Inlet and outlet connections are size 28/15 O-Ring ball joints, both sealed tangentially, one at top and one at bottom of jacketed section.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Order Code	
1	150	104	235	6475-10	♠
1.5	150	104	245	6475-15	♠
2	150	104	335	6475-20	♠
3	150	104	415	6475-25	♠

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠





CYLINDRICAL FLASK 4" Conical Flange, Stainless Steel

Cylindrical flask fabricated from 18-8, type 316 electro-polished, Heliarc-welded stainless steel.* Can be used with 6478 Glas-Col mantles. Interchangeable with our glass units.

Capacity, mL	O.D., mm	I.D., mm	Height, mm	Order Code
500	4.0	4.5	3.5	6497-07
1000	4.1	4.5	6.0	6497-12
2000	4.1	4.5	9.0	6497-17

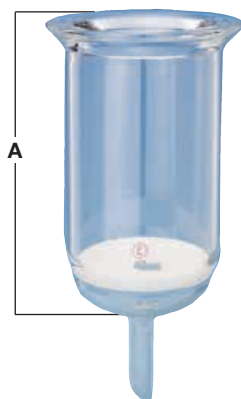
*Other metals are available, call us today.



SPHERICAL FLASK 4" Conical Flange, Stainless Steel

Spherical flask fabricated from 18-8, type 316 electro-polished, Heliarc-welded stainless steel. Interchangeable with our glass units. Can be used with 12043 or 12053 Glas-Col® mantles.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Order Code
3	178	177	254	6498-12
5	216	215	317	6498-17
12	292	291	380	6498-22
22	343	342	416	6498-27



CYLINDRICAL FLASK Duran® Flange, Fritted Disc, Heavy Wall ♦

Cylindrical, heavy wall reaction flask, with integral fritted disc and bottom tube outlet. Flask has flat flange top with an o-ring groove. For reaction heads, see 6528, 6529 and 6530 series. Can be used with two-piece or 6517 quick-release clamps.

Capacity, L	O.D., mm	I.D., mm	Height, (A) mm	Flange I.D., mm (in)	Bottom Tube O.D. in	Frit Porosity	Frit Diameter, mm	Order Code
1	110	100	210	100 (4)	5/8	145-174	100	6300-06
1	110	100	210	100 (4)	5/8	70-100	100	6300-08
1	110	100	210	100 (4)	5/8	25-50	100	6300-10
4	155	145	330	150 (6)	1-1/4	145-174	145	6300-18
4	155	145	330	150 (6)	1-1/4	70-100	145	6300-20
4	155	145	330	150 (6)	1-1/4	25-50	145	6300-22
6	215	205	275	200 (8)	1-1/4	145-174	178	6300-30
6	215	205	275	200 (8)	1-1/4	70-100	178	6300-32
6	215	205	275	200 (8)	1-1/4	25-50	178	6300-34



SUB-ZERO FLASK Triple Wall, Quick-Dump Valve

Uniquely designed triple walled, vacuum jacketed flask for sub-zero work with a need to dump quickly. The flask is designed with a large bulb just below the valve seat to accept a large volume of solution upon opening. Large slots in the PTFE valve ensure a fast dump for solids and temperature sensitive solutions. The flask cooling jacket and vacuum jacket extend into the bulb area to minimize warming. Flask has flat flange top with an o-ring groove. Tested to minus 45°C.

Capacity, L	Flange I.D., mm	Inlet/Outlet Connection	Order Code
5	150	1" Beaded Pipe	6454-05
10	200	1" Beaded Pipe	6454-10
20	200	1" Beaded Pipe	6454-20

Replacement Parts and Accessories

150mm CAPFE O-Ring	7855-881
200mm CAPFE O-Ring	7855-884

CYLINDRICAL FLASK *Duran® Flange, Easy Drain Valve*

Scale-Up Series jacketed, cylindrical flasks with easy drain valve. Graduated on both sides, allowing for either left or right-hand flask orientation. The easy drain valve is designed to prevent accidental removal when opening, and incorporates a compression tube angled side arm for maximum unobstructed drainage.

Capacity, mL	Flange Size, mm	I.D., mm	Inlet/Outlet Connection	Bottom Outlet	Order Code	
Unjacketed						
100	60		–	Easy Drain	6447-02	♠
250	60		–	Easy Drain	6447-04	♠
500	60		–	Easy Drain	6447-06	♠
1000	100		–	Easy Drain	6447-08	♠
2000	100		–	Easy Drain	6447-10	♠
3000	150		–	Easy Drain	6447-12	♠
4000	150		–	Easy Drain	6447-14	★
5000	150		–	Easy Drain	6447-16	★
6000	150		–	Easy Drain	6447-18	★

Jacketed

100	60	60	NW 10	Easy Drain	6441-02	♠
250	60	60	NW 10	Easy Drain	6441-04	♠
500	60	60	NW 10	Easy Drain	6441-06	♠
1000	100	100	NW 16	Easy Drain	6441-08	♠
2000	100	100	NW 16	Easy Drain	6441-10	♠
3000	150	150	NW 25	Easy Drain	6441-12	♠
4000	150	150	NW 25	Easy Drain	6441-14	★
5000	150	150	NW 25	Easy Drain	6441-16	★
6000	150	150	NW 25	Easy Drain	6441-18	★

Replacement Parts and Accessories

Glass Stopcock Plug	6441-33	★
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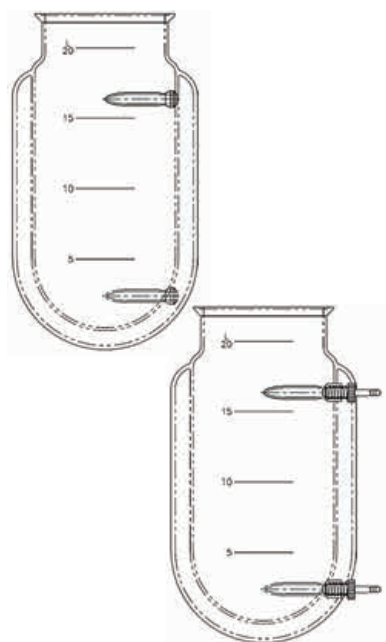
CYLINDRICAL FLASK *Reaction, Jacketed*

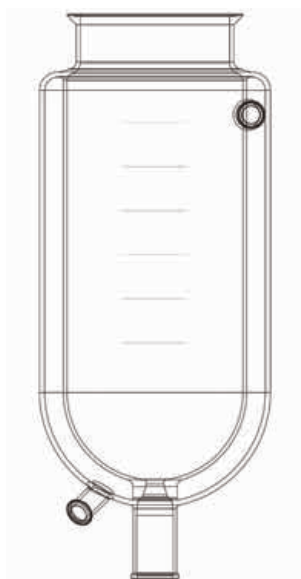
Rugged cylindrical reaction flask with Duran flat flange w/O-Ring groove, for use with 6517 Quick Release Clamp. Inlet and outlet connections on jacket, sealed tangentially, are O-Ring ball joints. 10L and larger are supplied with capacity reference graduations. Each flask is supplied with (1) CAPFE O-Ring (PTFE encapsulated silicone) for flange.

Capacity, L	Full Capacity, L	Depth, mm	Flange I.D. mm (in)	Use Clamp	CAPFE O-Ring	Order Code
35/25 O-Ring Ball Joint Inlet/Outlet						
1	1.5	180	100 (4)	6517-25	7855-880	6523-12
2	2.2	260	100 (4)	6517-25	7855-880	6523-14
3	2.9	343	100 (4)	6517-25	7855-880	6523-16
6	7	280	200 (8)	6517-31	7855-884	6523-19
10	14	470	200 (8)	6517-31	7855-884	6523-22
15	18	470	200 (8)	6517-31	7855-884	6523-27
20	22	570	200 (8)	6517-31	7855-884	6523-30
30	31	540	200 (8)	6517-31	7855-884	6523-32
50	56	890	200 (8)	6517-31	7855-884	6523-37

#11 Ace-Thred™ Inlet/Outlet

1	1.5	180	100 (4)	6517-25	7855-880	6523-312
2	2.2	260	100 (4)	6517-25	7855-880	6523-314
3	2.9	343	100 (4)	6517-25	7855-880	6523-316
6	7	280	200 (8)	6517-31	7855-884	6523-319





CYLINDRICAL FLASK 2" Beaded Pipe Inlet/Outlet, Jacketed ★

Jacketed, cylindrical flush seal with beaded pipe inlet/outlets, and 2" beaded pipe bottom outlet. Graduated on both sides which allows for either left or right-hand flask orientation. The flush seal valve is removable for easy cleaning, and incorporates a 1" beaded pipe angled side arm for maximum unobstructed drainage. Temperature limits -60 to +200°C. Max jacket pressure: 8 psig.

Capacity, L	Flange Size, mm	Length, mm	O.D., mm	I.D., mm	Jacket Volume, Liters	Aspect Ratio	Jacketed Surface Area, sq/cm	Inlet/Outlet Beaded Pipe, in	Order Code
10	200	506	270	201	6.8	1.9	2828	1	12850-02
15	200	540	300	240	7.6	1.8	3254	1	12850-04
20	200	675	300	240	9.8	2.2	4399	1	12850-06

Duran® O-Ring Groove Flange

KF Plane Flat Flange

30	300	760	350	301	10.6	2.2	5328	1.5	12850-08
50	300	730	465	401	14.5	1.6	7502	1.5	12850-10
50	400	670	465	401	14.5	1.4	7502	1.5	12850-11
75	300	995	465	401	21	2.1	8922	1.5	12850-12
100	300	1130	465	401	26	2.4	12440	1.5	12850-14
100	400	905	570	500	34	1.6	11986	1.5	12850-15
150	300	1270	570	500	50	2.2	16986	1.5	12850-16

JACKETED REACTOR CIRCULATOR ADAPTERS Stainless Steel



Connection Description	Order Code
NW10 & NW16 to M16 x 1 Male	12188-02
NW25 to M16 x 1 Male	12188-04
NW25 to M24 x 1.5 Male	12188-06
NW40 to M30 x 1.5 Male	12188-08
NW10/16 to 3/8" Hose Barb	12188-09
NW10/16 to 1/2" Hose Barb	12188-10
NW25 to 3/8" Hose Barb	12188-11
NW25 to 1/2" Hose Barb	12188-12
NW10/16 to 3/4" Hose Barb	12188-20
NW25 to 3/4" Hose Barb	12188-22
NW40 to 3/4" Hose Barb	12188-24
NW25 to 1" Hose Barb	12188-32
NW10/16 to 3/8" Elbow Hose Barb	12188-39
NW10/16 to 1/2" Elbow Hose Barb	12188-40
NW25 to 3/8" Elbow Hose Barb	12188-41
NW25 to 1/2" Elbow Hose Barb	12188-42
NW10/16 to 3/4" Elbow Hose Barb	12188-50
NW25 to 3/4" Elbow Hose Barb	12188-52
NW40 to 3/4" Elbow Hose Barb	12188-54
NW25 to 1" Elbow Hose Barb	12188-62
NW10/16 to M30 x 1.5 Male Elbow	12188-72
NW25 to M30 x 1.5 Male Elbow	12188-74
NW10 & NW16 PTFE Gasket w/Viton O-Ring	12192-02 ★
NW25 PTFE Gasket w/Viton O-Ring	12192-04 ★
NW10 & NW16 PTFE Gasket w/Fluorosilicone O-Ring	12192-22 ★
NW25 PTFE Gasket w/Fluorosilicone O-Ring	12192-24 ★
NW10/16 PTFE Gasket w/CAPFE O-Ring	12192-32 ★
NW25 PTFE Gasket w/CAPFE O-Ring	12192-34 ★
NW40 PTFE Gasket w/CAPFE O-Ring	12192-36 ★
NW10 & NW16 Clamp	12189-02 ★
NW25 Clamp	12189-04 ★
§ 28/15 Socket to M16 x 1 Male	12187-05 ★
§ 35/25 Socket to M16 x 1 Male	12187-07 ★
§ 35/25 Socket to M24 x 1.5 Male	12187-10 ★
§ 35/25 Socket to M30 x 1.5 Male	12187-12 ★
§ 35/25 Socket to M38 x 1.5 Male	12187-14 ★
§ 28/15 Clamp	12187-28 ★
§ 35/25 Clamp	12187-35 ★

CYLINDRICAL FLASK 3" Beaded Pipe Inlet/Outlet, Jacketed ★

Jacketed, cylindrical flush seal with beaded pipe inlet/outlets, and 3" beaded pipe bottom outlet. Graduated on both sides which allows for either left or right-hand flask orientation. The flush seal valve is removable for easy cleaning, and incorporates a 1" beaded pipe angled side arm for maximum unobstructed drainage. Temperature limits -60 to +200°C. Max jacket pressure: 8 psig.



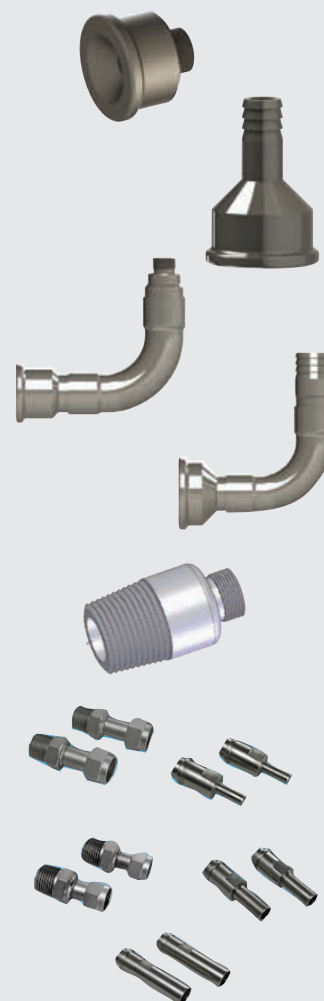
Capacity, L	Flange Size, mm	Length, mm	O.D., mm	I.D., mm	Jacket Volume, Liters	Aspect Ratio	Jacketed Surface Area, sq/cm	Inlet/Outlet Beaded Pipe, in	Order Code
10	200	506	270	201	6.8	1.9	2828	1	12850-3202
15	200	540	300	240	7.6	1.8	3254	1	12850-3204
20	200	675	300	240	9.8	2.2	4399	1	12850-3206

Duran® O-Ring Groove Flange

30	300	760	350	301	10.6	2.2	5328	1.5	12850-3208
50	300	730	465	401	14.5	1.6	7502	1.5	12850-3210
50	400	670	465	401	14.5	1.4	7502	1.5	12850-3211
75	300	995	465	401	21	2.1	8922	1.5	12850-3212
100	300	1130	465	401	26	2.4	12440	1.5	12850-3214
100	400	905	570	500	34	1.6	11986	1.5	12850-3215
150	300	1270	570	500	50	2.2	16986	1.5	12850-3216

KF Plane Flat Flange
JACKETED REACTOR CIRCULATOR ADAPTERS Stainless Steel

Connection Description	Qty	Order Code	
3/4" Beaded Pipe to M16 x 1 Male	1	12187-50	★
3/4" Beaded Pipe to M24x1.5 Male	1	12187-54	★
1" Beaded Pipe to M16 x 1 Male	1	12187-55	★
1" Beaded Pipe to M24 x 1.5 Male	1	12187-56	★
1" Beaded Pipe to M30 x 1.5 Male	1	12187-57	★
1" Beaded Pipe to 3/4" Hose Barb	1	12187-58	★
1-1/2" Beaded Pipe to M24 x 1.5 Male	1	12187-59	★
1-1/2" Beaded Pipe to M30 x 1.5 Male	1	12187-60	★
1 1/2" Beaded Pipe to 3/4" Hose Barb	1	12187-61	★
1" Beaded Pipe to 1" Hose Barb	1	12187-62	★
1-1/2" Beaded Pipe to 1" Hose Barb	1	12187-63	★
1" Beaded Pipe to M16 x 1 Male Elbow	1	12187-70	★
1" Beaded Pipe to M24 x 1.5 Male Elbow	1	12187-71	★
1" Beaded Pipe to M30 x 1.5 Male Elbow	1	12187-72	★
1" Beaded Pipe to 3/4" Hose Barb Elbow	1	12187-73	★
1" Beaded Pipe to 1" Hose Barb Elbow	1	12187-74	★
1-1/2" Beaded Pipe to M24 x 1.5 Male Elbow	1	12187-81	★
1-1/2" Beaded Pipe to M30 x 1.5 Male Elbow	1	12187-82	★
1-1/2" Beaded Pipe to 3/4" Hose Barb Elbow	1	12187-83	★
1-1/2" Beaded Pipe to 1" Hose Barb Elbow	1	12187-84	★
3/4" Beaded Pipe Coupling	1	8856-05	★
1" Beaded Pipe Coupling	1	8856-07	★
1-1/2" Beaded Pipe Coupling	1	8856-09	★
M16x1 Male to 3/4" NPT Male	1	12187-100	★
M30x1.5 Male to 3/4" NPT Male	1	12187-101	★
M24x1.5 Male to 3/4" NPT Male	1	12187-102	★
M16 x 1 Female Nuts & Plug	2	12299-16	
M16 x 1 Male to Female 90 Degree Elbow	2	12299-25	
M16 x 1 Male to M16 x 1 Male Adapter	1	12299-20	
M16 x 1 Female to 1/4" Male NPT	2	12299-28	
M16 x 1 Female to 3/8" Male NPT	2	12300-08	
M16 x 1 Female to 1/2" Male NPT	2	12300-12	
M16 x 1 Female to 1/4" Tube	2	12300-24	
M16 x 1 Female to 3/8" Tube	2	12300-28	
M16 x 1 Female to 1/2" Tube	2	12300-30	





CYLINDRICAL FLASK *Duran® Flange, Instatherm® Heated*

Rugged cylindrical reaction flask with Duran ground 4" flange with O-Ring groove, for use with quick-release clamp and integral heating element that eliminates the local superheating commonly associated with more conventional heating methods, and eliminates cumbersome oil baths. The heating response is rapid and accurate. Supplied with silicone coating for insulation and protection. Flask is coated to within approximately 38mm of the flange for 250°C operation. Interchangeable with ACE 4" reactor heads with Duran flange.

Note: Supplied with (1) CAPFE O-Ring and 9698-20 cord.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Volt/Amp Rating	Watts	Order Code	
1	110	100	180	40/8	400	9655-17	★
2	110	100	200	120/5	600	9655-22	★

Replacement Parts and Accessories

Quick-Release Flange Clamp, Stainless Steel	6517-25	★
CAPFE O-Ring, 100mm	7855-880	♠
Twist-lok Cord, 6ft	9698-20	★



CYLINDRICAL FLASK *Conical 4" Flange, Instatherm® Heated*

Same flask as listed under 6476, except with Instatherm coating. Has flat-ground, 4" conical flange. This integral heating element eliminates the local super-heating commonly associated with more conventional heating methods. Eliminates cumbersome and dangerous oil baths. The heating response is rapid and accurate. Flask is coated to within 38mm of the flange for 250°C operation. For controllers, see ACE or J-Kem temperature controllers with voltage limiting output, such as 12125, 12324.

Note: Supplied with 9698-20 cord for connection to variable voltage or temperature controller.

Capacity, L	O.D., mm	I.D., mm	Height, mm	Volt/Amp Rating	Watts	Order Code	
1	110	100	180	40/8	400	9656-08	★
2	114	104	260	120/5	500	9656-12	★

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠



SPHERICAL FLASK *Three Necks, Jacketed, Heavy Wall*

Round bottom flask with three in-line reinforced F outer joints. Fabricated with heavy walls, approximately 30% heavier than standard wall flasks. Inlet/outlet connections are 28/15 O-Ring ball joints, sealed tangentially.

Capacity, mL	Center Neck F	F Side Necks	Order Code		Capacity, mL	Center Neck F	F Side Necks	Order Code	
500	24/40	24/40	6945-217	★	5000	29/42	29/42	6945-266	★
500	29/42	24/40	6945-219	★	5000	34/45	24/40	6945-268	★
1000	24/40	24/40	6945-223	★	5000	45/50	24/40	6945-270	★
1000	29/42	24/40	6945-225	★	6000	24/40	24/40	6945-274	★
2000	29/42	24/40	6945-245	★	6000	29/42	24/40	6945-276	★
3000	29/42	24/40	6945-255	★	6000	29/42	29/42	6945-278	★
3000	29/42	29/42	6945-257	★	6000	45/50	24/40	6945-280	★
3000	34/45	24/40	6945-259	★	6000	45/50	29/42	6945-282	★
3000	45/50	24/40	6945-261	★	6000	45/50	45/50	6945-284	★
5000	29/42	24/40	6945-264	★					

Accessories

FETFE O-Ring, Size -116	7855-726	♠
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FUNNEL *Buchner, Table Top, Polyethylene* ★

Porous Filter Plate type or Perforated Plate type, fixed or removable, polyethylene Buchner funnel. Features one-piece, welded construction with welded-in plate and multiple-ring support grid below plate. A non-porous ring around plate seals filter paper. Vacuum connection accepts 1/2" I.D. tubing. Temperature limit of 125°F (52°C).

Filter Plate is available in medium (M) or coarse (C) porosity, 1/4" (6.4mm) thick. Medium porosity is 45-90 microns, while coarse porosity is 90-130 microns.

Perforated Plate is 3/16" (4.8mm) thick with 3/16" perforations on 7/16" (11mm) centers. Good for coarse filtration or use with cloth or paper filter.

Filter Paper is to fit 12560 Funnels. Rough crepe surface, .25mm thick, flow rate 235mL/min., retention of 24 microns and wet strength of 25cm of water. Packed 100 per box.



Porous Plate					Perforated Plate	Filter Paper
I.D., in	Overall Height, in	Rim to Plate, in	Plate Type/ Porosity ()	Order Code	Order Code	Order Code
10-1/4 (26cm)	7	5	Fixed/(M)	12560-02	12560-14	12560-70
10-1/4 (26cm)	7	5	Fixed/(C)	12560-04	-	12560-70
10-1/4 (26cm)	7	5	Removable/(M)	12560-30	12560-50	12560-70
10-1/4 (26cm)	7	5	Removable/(C)	12560-32	-	12560-70
18 (45.7cm)	11-1/2	9	Fixed/(M)	12560-05	12560-16	12560-72
18 (45.7cm)	11-1/2	9	Fixed/(C)	12560-06	-	12560-72
18 (45.7cm)	11-1/2	9	Removable/(M)	12560-35	12560-57	12560-72
18 (45.7cm)	11-1/2	9	Removable/(C)	12560-37	-	12560-72
24 (61cm)	13	10-1/2	Fixed/(M)	12560-07	12560-18	12560-74
24 (61cm)	13	10-1/2	Fixed/(C)	12560-08	-	12560-74
24 (61cm)	13	10-1/2	Removable/(M)	12560-38	12560-59	12560-74
24 (61cm)	13	10-1/2	Removable/(C)	12560-39	-	12560-74
36 (91.4cm)	14-3/4	12	Fixed/(M)	12560-09	12560-20	12560-76
36 (91.4cm)	14-3/4	12	Fixed/(C)	12560-10	-	12560-76
36 (91.4cm)	14-3/4	12	Removable/(M)	12560-41	12560-63	12560-76
36 (91.4cm)	14-3/4	12	Removable/(C)	12560-53	-	12560-76

I.D., in		Gallons
10.25	=	1.8
18	=	10
24	=	20
36	=	53

HOLD DOWN RING *Buchner, Filter Paper*

If vacuum is applied, the filter paper or cloth used within the 12560 family of Bel-Art® Buchner Funnels will seat well without the solution bypassing the filter media, however if using just gravity or little vacuum, a hold down ring will help prevent bypass.

I.D., in	Order Code
10.25	12560-81
18	12560-82
24	12560-83
36	12560-84


FUNNEL *Buchner, All Stainless Steel*

Stainless steel Buchner funnel for organic or inorganic chemical synthesis. This funnel incorporates a removable perforated plate that allows thorough manual cleaning and autoclaving. Since the plate is removable, yield is increased because internal supports that would trap product are eliminated. Will not chip, crack or break. Offered in 9.5" and 20" sizes that accept commercially available filter sizes with 240 grit, 30Ra (electropolished) for critical applications, i.e., pharmaceuticals. Outlet port is 1/2" O.D. for both sizes.

I.D., in	Height Above Disc, in	Overall Height, in	Grit Finish	Order Code
9.5	5	7	240	12563-09
20	10	12	240	12563-27



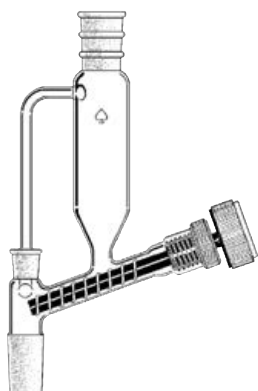
**FUNNEL Powder Dispensing, Vertical ♠**

A vertical, compact, screw feed funnel for the addition of powders and solids, up to 25 mesh, into reactions without seizing or binding.

Features a flexible PTFE screw thread wrapped on a precision PTFE-ceramic shaft and contained within a precision bore housing. This offers a unique flexibility in that the thread can move aside temporarily; as one spacing increases, the adjacent spacing decreases, thereby maintaining an average feed rate.

Completely inert materials allow flushing with solvents without fear of contamination. Ace-Thred at top offers easy disassembly for cleaning. Large 1-1/4" knob makes turning smooth and easy. Overall height, 9-1/2".

Capacity, mL	Side Outer \$ Joint	Bottom Inner \$ Joint	Ace-Thred, #	Order Code
50	14/20	24/40	15	7233-20
100	14/20	24/40	15	7233-30

**FUNNEL Powder Dispensing ♠**

Side operated screw feed funnel for the addition of powders and solids, up to 25 mesh, into reactions without problems of seizing or binding.

Features a flexible PTFE screw thread wrapped on a precision PTFE-ceramic shaft and contained within a precision bore housing. This offers a unique flexibility in that the thread can move aside temporarily; as one spacing increases, the adjacent spacing decreases, thereby maintaining an average feed rate.

Completely inert materials allow flushing with solvents without fear of contamination. #15 Ace-Thred offers easy disassembly for cleaning. Large 1-1/4" knob makes turning smooth and easy. Top outer and bottom inner joints are \$ 24/40. \$ 14/20 outer joint atop inner joint is for easier flushing.

Capacity, mL	Top Outer \$ Joint	Bottom Inner \$ Joint	Ace-Thred, #	Order Code
100	24/40	24/40	15	7234-25
250	24/40	24/40	15	7234-35

**FUNNEL Powder Dispensing ♠**

A vertical, compact, screw feed funnel for the addition of powders and solids, up to 25 mesh, into reactions without seizing or binding.

Features a flexible PTFE screw thread wrapped on a precision PTFE-ceramic shaft and contained within a precision bore housing. This offers a unique flexibility in that the thread can move aside temporarily; as one spacing increases, the adjacent spacing decreases, thereby maintaining an average feed rate.

Completely inert materials allow flushing with solvents without fear of contamination. Ace-Thred offers easy disassembly for cleaning.

Capacity, mL	Top Outer \$ Joint	Bottom Inner \$ Joint	Ace-Thred, #	Order Code
15	14/20	14/20	7	9485-15

**FUNNEL Powder Dispensing ♠**

Side-operated screw feed instrument for addition of powders and solids, up to 25 mesh, into reactions without problems of seizing or binding.

Features a flexible PTFE screw thread wrapped on a precision PTFE-ceramic shaft and contained within a precision bore housing.

Completely inert materials allow flushing with solvents without fear of contamination. Ace-Thred offers easy disassembly for cleaning. Large 1-1/4" knob makes turning smooth and easy.

Capacity, mL	Top Outer \$ Joint	Bottom Inner \$ Joint	Ace-Thred, #	Order Code
100	24/40	24/40	15	7239-30
250	24/40	24/40	15	7239-40

FUNNEL Powder ♠

Useful in pouring powders or liquids into ground joint containers. Available with § or ¤ inner joint.

Top Diameter, mm	Bottom § Joint	Order Code
Standard Taper Joint		
65	14/20	9488-10
65	19/38	7236-06
75	24/40	7236-08
100	24/40	7236-10
125	24/40	7236-11
100	29/42	7236-12
125	34/45	7236-14
190	45/50	7236-16
150	29/42	7236-18
100	24/29	7236-124
100	29/32	7236-129
190	45/40	7236-145

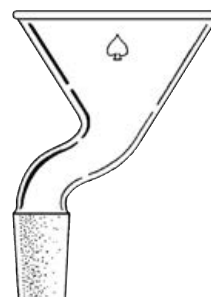
Spherical Joint

100	35/25	7236-20
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FUNNEL Powder, 58° Offset, Heavy Wall ♠

Offset funnel with heavy walls for greater durability when pouring powders or liquids into multi-neck flasks.

Top Diameter, mm	Bottom § Joint	Order Code
75	24/40	7238-06
100	24/40	7238-08


FUNNEL Powder, Angled, Heavy Wall ♠

Borosilicate funnel angled to permit use in multi-neck flasks. On angled neck flasks such as 6948, this funnel will bring the mouth of the funnel back to vertical.

Top Diameter, mm	Height, mm	Bottom § Joint	Order Code
75	120	24/40	7245-07
100	140	24/40	7245-15
100	195	29/42	7245-21
190	325	45/50	7245-25


FUNNEL Powder, Flat Side ♠

Powder funnel with § joint and flattened side for easy use with multi-neck flasks.

Bottom § Joint	B Top Opening, mm	A Height, mm	Order Code
14/20	50	70	7250-01
24/40	75	90	7250-05
24/40	100	145	7250-09
29/42	145	215	7250-10
29/32	145	215	7250-12
45/50	150	200	6469-52
71/60	255	300	7250-15



**FUNNEL** Powder, Duran® Flange Bottom

Borosilicate glass powder or liquid addition funnels with a Duran Flange bottom. Glass funnel fits onto 100mm or 60mm side ports on ACE 6530 glass reactor heads. Funnels are slightly angled to allow for easy pouring of ingredients into reactors. Use the 6517 quick-release clamp to add to head.

For Port Size "C", mm	Approx. Volume, mL	A Top Opening, mm	B Height, mm	Order Code	
60	1,800	200	160	7252-06	♠
100	2,800	200	200	7252-10	♠

Accessories

SS Flange Clamp, 60mm	6517-22	★
SS Flange Clamp, 100mm	6517-25	★

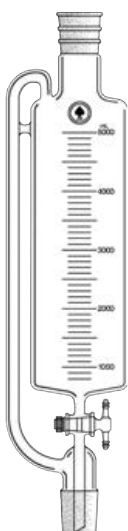
**FUNNEL** Addition, with Offset ♠

Graduated, borosilicate glass, liquid addition funnels with an offset bottom outlet and \$ joint. Bottom outlet has a PTFE stopcock. Top outlet has the same size \$ joint as the bottom. This design is ideal for crowded reactor heads, and allows for a larger addition funnel to be used.

Capacity, mL	Stopcock Plug		Length, mm	Order Code
	Bore, mm	\$ Joint Size		
125	2	24/40	125	7295-03
250	2	24/40	250	7295-05
500	4	24/40	500	7295-07
1000	4	24/40	1000	7295-09
1000	4	29/42	1000	7295-11

Replacement PTFE Stopcock Plugs

2	8224-04
4	8224-12

**FUNNEL** Graduated, Pressure Equalizing, PTFE Stopcock

Borosilicate glass addition funnel. Cylindrical shape with the same \$ joints top and bottom. Funnel has a side pressure equalizing tube and has a PTFE plug stopcock. Inner drip tube at bottom doesn't extend below the main joint, to reduce breakage.

Capacity, mL	Stopcock Plug		Length, mm	O.D., mm	Graduations, mL	Order Code	
	Bore, mm	\$ Joint Size					
125	2	24/40	345	38	1	7297-31	♠
250	2	24/40	390	51	5	7297-33	♠
500	4	24/40	430	64	5	7297-35	♠
1000	4	24/40	500	75	100	7297-37	♠
2000	4	29/42	650	85	100	7297-39	♠
5000	8	45/50	565	155	100	7297-45	★

Replacement PTFE Stopcock Plugs

2	8224-04	♠
4	8224-12	♠
8	8224-18	♠

All full-length outer standard taper joints are reinforced.

FUNNEL *Pressure Equalizing, Graduated, w/PTFE Needle Valve Stopcock* ♠

Double graduated addition funnel with threaded stopcock with PTFE plug permits smooth needle valve adjustment down to 0.1mL/min flow rate. Double PTFE ring seals prevent exposure of backup O-Ring to corrosive liquids. Angled position makes manipulation of stopcock easier than conventional style.

Capacity, mL	⌘ Joints	Overall Length, mm	Bore, mm	Order Code
125	24/40	380	0-3	7298-05
250	24/40	385	0-3	7298-10
500	24/40	500	0-3	7298-15
500	24/40	500	0-5	7298-20
1000	24/40	565	0-5	7298-24
2000	24/40	760	0-5	7298-28

Replacement Stopcock Plugs

PTFE plug w/UHDPE handle	0-3	8192-261
PTFE plug w/UHDPE handle	0-5	8192-263


FUNNEL *Pressure Equalizing, Ace-Thred, w/PTFE Needle Valve Stopcock* ♠

For use with ACE Pressure Reactors. Heavy wall funnel has a #15 Ace-Thred at top that can be stoppered using 5846 Plug, *not supplied*. Bottom drip tip is long enough to be secured in the #15 Ace-Thred on 6433 Reactor Head or One-Piece Reactor and has a bump and groove that restricts blowout when secured with 7506-06 Bushing and FETFE O-Ring, *not supplied*. With pressure equalizing arm and 0-3mm threaded PTFE stopcock plug.

Capacity, mL	Ace-Thred, #	Bore, mm	Order Code
60	15	0-3	7299-06
125	15	0-3	7299-12
250	15	0-3	7299-25
500	15	0-5	7299-34

Replacement Parts and Accessories

PTFE Stopcock Plug	0-3	8189-43
#15 Ace-Thred Nylon Bushing		7506-06
#15 FETFE O-Ring		7855-716
#15 Nylon Plug		5846-12


FUNNEL *Addition, Separatory, Jacketed* ♠

Graduated addition funnels like 7268 series, except with outside jacket for cooling or heating. Jacket extends from just below shoulder of vessel down to the bottom tube just above the bottom PTFE stopcock. Bottom drip tube extends to the bottom edge of the lower, inner standard taper joint, Top outer stopcock size matches the bottom joint size.

Capacity, L	⌘ Joints	Hose Connection, in (mm)	Bore Size, mm	Order Code
1	24/40	3/8 (9.5)	4	7278-15
1	29/42	3/8 (9.5)	4	7278-17
1	29/32	3/8 (9.5)	4	7278-19
2	29/42	3/8 (9.5)	4	7278-23
2	29/32	3/8 (9.5)	4	7278-25

Replacement PTFE Stopcock Plug

Straight Bore	4	8224-12
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FUNNEL Addition, Pressure Equalizing, Jacketed ♠

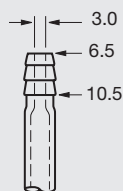
Jacketed version of 7297 series addition funnels. Jacket runs from shoulder at top of vessel to just above the PTFE stopcock. Equalizing side arm runs from top of vessel to just below the stopcock. Graduations are both ascending and descending volume. Top and bottom standard taper joints are the same size. Bottom drip tip extends to the edge of the bottom inner joint. Top outer joint is reinforced.

Capacity, L	⌘ Joints	Hose Connection, in (mm)	Bore Size, mm	Order Code
1	24/40	3/8 (9.5)	4	7281-14
1	29/42	3/8 (9.5)	4	7281-16
1	29/32	3/8 (9.5)	4	7281-18
2	29/42	3/8 (9.5)	4	7281-22
2	29/32	3/8 (9.5)	4	7281-24

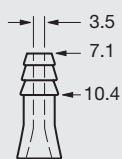
Replacement PTFE Stopcock Plug

Straight Bore	4	8224-12
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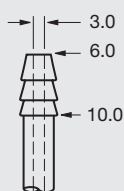
Hose Connection Size Guide – *Dimensions are in millimeters*

**A**

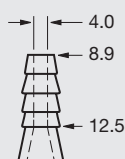
Use with
7.9mm (5/16")
I.D. Tubing

**B**

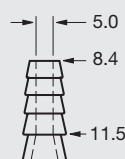
Use with
7.9mm (5/16")
or 9.5mm (3/8")
I.D. Tubing

**C**

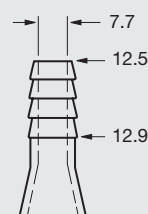
Use with
7.9mm (5/16")
or 9.5mm (3/8")
I.D. Tubing

**D**

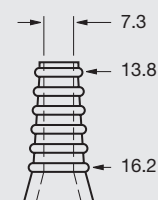
Use with
9.5mm (3/8")
I.D. Tubing

**E**

Use with
9.5mm (3/8")
or 11.1mm (7/16")
I.D. Tubing

**F**

Use with
11.1mm (7/16")
or 12.7mm (1/2")
I.D. Tubing

**G**

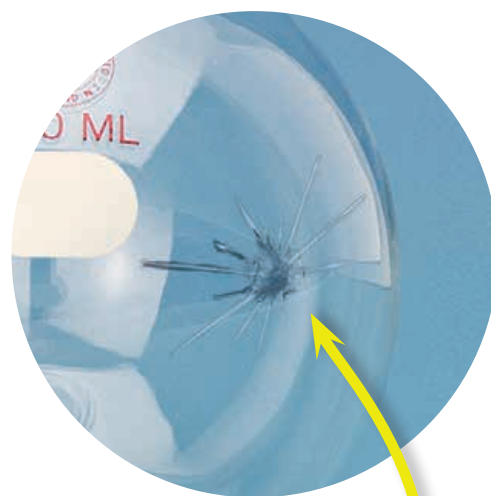
Use with
15.9mm (5/8")
I.D. Tubing

Scientific Glass Repair Service

Yes, we fix it, too!

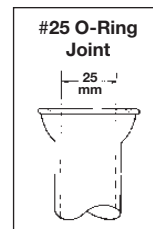
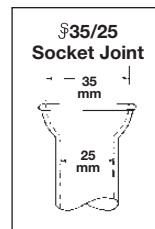
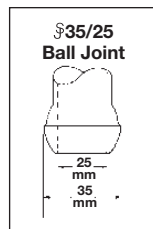
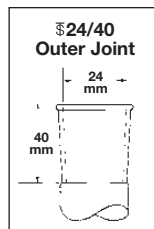
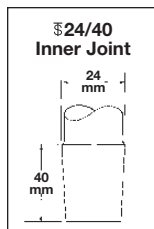
Often, broken laboratory glassware items are thrown out. Instead of spending unnecessary money to replace an item, why not have the item repaired. The majority of the time, these repairs are less expensive than the cost of replacing.

Whether it is a broken joint or a cracked flask, we can restore it!



Contact us today for more information at
1-800-223-4524 or visit us at **www.aceglass.com**

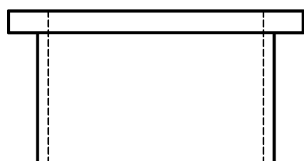
Specifications for Joints



Guide to Flange Styles

Flat Flange

(with or without O-Ring groove)



I.D.

O.D.

Thickness

100 mm (4")

137 mm (5.4")

10 mm (0.4")

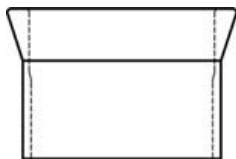
130 mm (5.1")

168 mm (6.6")

10 mm (0.4")

Uses Clamp: 6508, 6509, 6510 Flat clamp

Conical Flange



I.D.

O.D.

Thickness

102mm (4")

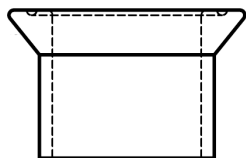
135mm (5.3")

30mm (1.2")

Uses Clamp: 6496 Standard clamp

Duran® Flange

(with or without O-Ring groove)



I.D.

O.D.

Thickness

60mm (2.4")

100mm (4")

20mm (0.8")

100mm (4")

138mm (5.4")

20mm (0.8")

150mm (6")

184mm (7.2")

20mm (0.8")

200mm (8")

242mm (9.5")

20mm (0.8")

Uses Clamp: 6517 Quick-release clamp

KF Plane Flange



I.D.

O.D.

Thickness

200mm (8")

230mm (9")

24mm (0.95")

300mm (12")

338mm (13.3")

24mm (0.95")

Uses Clamp: 6525 Coupling

Beaded Process Pipe Flange



Beaded Process Pipe flanges range 1/2" thru 6" I.D.

Example: 2" pipe = 2" I.D.
2-9/16" bead O.D.
Tube O.D. = 2-5/16"

Uses Clamp: 8856 Coupling

HEAD *Duran® Flange, Ace-Threds ♦*

Reactor head only, with Duran O-Ring grooved style flange and Ace-Threds for use with 6384, 6386 or 6388 reactor bodies. Pressure rating is 35psig. Uses 6517 quick-release clamp.

For Flask Capacity, mL	Flange I.D., mm (in)	Center Neck	Side Necks	Order Code
150-600	60 (2.4)	#15	(2)#15-(1)#7	6433-23
1000-2000	100 (4)	#15	(3)#15-(1)#7	6433-35
3000-6000	150 (6)	#15	(4)#15-(1)#7	6433-44


HEAD *Conical Flange, 4 Necks, Thermometer Ground Joint*

Standard 4" (100mm) head for use with 6475, 6476, 6477, 6479, 6480, 6481, 6491, and 6492 ACE reaction flasks. Supplied with (3) ⌘ outer joints in line, plus a ⌘ 10/30 joint for a ground joint thermometer or 8299 thermometer adapter.

Center ⌘ Joint	Side ⌘ Joints	Thermometer ⌘ Joint	Order Code
24/40	24/40	10/30	6484-10 ♦
29/42	24/40	10/30	6484-20 ♦
45/50	24/40	10/30	6484-40 ♦


Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10 ★
Flat Gasket, PTFE	6495-10 ♦

HEAD *Conical Flange, 4 Necks, Thermometer Threaded Joint*

Standard 4" (100mm), four-outlet head for use with 6475, 6476, 6477, 6479, 6480, 6481, 6491, and 6492 ACE reaction flasks. Supplied with (3) ⌘ outer joints in line, plus a thermometer side neck which is internally threaded (with #7 Ace-Thred) for use with nylon bushing. Use of the threaded side neck permits easy adjustment of thermometer depth.

Note: Supplied complete with bushing and FETFE® O-Ring.

Center ⌘ Joint	Side ⌘ Joints	Order Code
24/40	(2) 24/40; (1) #7	6485-16 ♦
29/42	(2) 24/40; (1) #7	6485-22 ♦


Replacement Parts and Accessories

Nylon Bushing, #7	5029-10 ♦
FETFE O-Ring, size -008	7855-704 ♦
Standard 4" Conical Flange Clamp, Complete	6496-10 ★
Flat Gasket, PTFE	6495-10 ♦

HEAD *Conical Flange, 3 Necks*

Standard 4" (100mm), three-outlet head for use with 6475, 6476, 6477, 6479, 6480, 6481, 6491, and 6492 ACE reaction flasks. Supplied with (3) ⌘ outer joints.

Center ⌘ Joint	Side ⌘ Joints	Order Code
24/40	24/40	6486-10 ♦
29/42	24/40	6486-20 ♦
29/42	29/42	6486-25 ♦
45/50	24/40	6486-40 ♦


Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10 ★
Flat Gasket, PTFE	6495-10 ♦

**HEAD** *Conical Flange, 3 Necks*

Standard 4" (100mm), three-outlet head for use with 6475, 6476, 6477, 6479, 6480, 6481, 6491, and 6492 ACE reaction flasks. Supplied with (3) $\text{\textcircled{S}}$ socket joints.

Center $\text{\textcircled{S}}$ Joint	Side $\text{\textcircled{S}}$ Joints	Order Code	
35/25	35/25	6487-25	♠

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠

**HEAD** *Conical Flange, 4 Necks*

This standard 4" (100mm) head has (3) $\text{\textcircled{S}}$ outer joints in line, plus a $\text{\textcircled{S}}$ 14/35 side joint which takes a 5021, 5028-26 or 8300-07 bushing adapter to be used with ACE 8314 $\text{\textcircled{S}}$ 10/30 thermometer. The 6500 thermometer well can also be used with this head, when using a standard thermometer. For use with 6475, 6476, 6477, 6479, 6480, 6481, 6491, and 6492 ACE reaction flasks.

Center $\text{\textcircled{S}}$ Joint	Side $\text{\textcircled{S}}$ Joints	Thermometer $\text{\textcircled{S}}$ Joint	Order Code	
24/40	24/40	14/35	6488-10	♠
29/42	24/40	14/35	6488-15	♠
29/42	29/42	14/35	6488-20	♠
45/50	24/40	14/35	6488-40	♠

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠

**HEAD** *Conical Flange, 4 Necks*

Standard 4" (100mm) head with (3) $\text{\textcircled{S}}$ socket joints in line, plus a $\text{\textcircled{S}}$ 14/35 side joint for thermometer. For use with 6475, 6476, 6477, 6479, 6480, 6481, 6491, and 6492 ACE reaction flasks.

Center $\text{\textcircled{S}}$ Joint	Side $\text{\textcircled{S}}$ Joint	Thermometer $\text{\textcircled{S}}$ Joint	Order Code	
35/25	35/25	14/35	6489-20	♠

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠

**HEAD** *Conical Flange, 3 Necks, Stainless Steel*

Fabricated from 18-8 type 316 electro-polished, Heliarc-welded stainless steel. Interchangeable with our glass flasks. Fits all ACE 4" conical neck reaction flasks such as 6469, 6475, 6476, 6477, 6479, 6480, 6481, 6491, 6492, 6497, 6498 and 9656.

Center Joint	Side Joints	Order Code	
$\text{\textcircled{S}}$ 24/40	$\text{\textcircled{S}}$ 24/40	6490-12	
$\text{\textcircled{S}}$ 29/42	$\text{\textcircled{S}}$ 24/40	6490-17	
$\text{\textcircled{S}}$ 29/42	$\text{\textcircled{S}}$ 29/42	6490-22	
$\text{\textcircled{S}}$ 35/25	$\text{\textcircled{S}}$ 35/25	6490-27	

Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠

HEAD Conical Flange, 4 Necks

Conical flange with 4" (100mm) opening. (1) ⌘ center joint and (3) ⌘ side necks. Similar to 6488 series except all the side necks are ⌘ 24/40. For use with 6475, 6476, 6477, 6479, 6480, 6481, 6491, and 6492 ACE reaction flasks.

Center ⌘ Joint	(3) Side ⌘ Joints	Order Code	
24/40	24/40	6499-10	♠
29/42	24/40	6499-14	♠
45/50	24/40	6499-18	♠



Accessories

Standard 4" Conical Flange Clamp, Complete	6496-10	★
Flat Gasket, PTFE	6495-10	♠

HEAD Flat Flange, 3 Necks ♠

For use with 6511 ground flat flange flasks. With (3) in-line ⌘ joints. Uses 6508 or 6510 clamps.

For Flask Capacity, L	Center ⌘ Joints	(2) Side ⌘ Joints	Order Code
1	24/40	24/40	6512-16
2-4	24/40	24/40	6512-20
2-4	29/42	24/40	6512-24
2-4	45/50	24/40	6512-28



HEAD Flat Flange, 4 Necks, Thermometer Threaded Joint ♠

For use with 6511 ground flat flange flasks. With (3) in-line ⌘ joints and a #7 Ace-Thred, internally threaded side opening for thermometer (#7 accepts 6-7mm O.D.). Thread forms a compression seal with nylon bushing and permits vertical adjustment of thermometer. Uses 6508 or 6510 clamps.

Note: Supplied complete with Bushing and FETFE O-Ring.

For Flask Capacity, L	Flange I.D., mm	Center ⌘ Joints	(2) Side ⌘ Joints	Order Code
1	100	24/40	24/40	6513-26
1	100	29/42	24/40	6513-27
1	100	45/50	24/40	6513-28
2-4	130	24/40	24/40	6513-30
2-4	130	29/42	24/40	6513-34
2-4	130	45/50	24/40	6513-38



Accessories

Nylon Bushing, #7	5029-10
FETFE O-Ring, size 008	7855-704

HEAD Flat Flange, 4 Necks, Thermometer Ground Joint ♠

For use with 6511 ground flat flange flasks. With (3) in-line ⌘ joints and a perpendicular side joint. Uses 6508 or 6510 clamps.

Note: For use with ACE 8314 series 10/30 joint thermometers.

For Flask Capacity, L	Flange I.D., mm	Center ⌘ Joints	Side ⌘ Joints	Order Code
1	100	24/40	(2) 24/40; (1) 10/30	6515-46
1	100	24/40	(3) 24/40	6515-47
1	100	29/42	(3) 24/40	6515-48
1	100	45/50	(3) 24/40	6515-49
2-4	130	24/40	(2) 24/40; (1) 10/30	6515-50
2-4	130	29/42	(2) 24/40; (1) 10/30	6515-54
2-4	130	45/50	(2) 24/40; (1) 10/30	6515-58
2-4	130	24/40	(3) 24/40	6515-60
2-4	130	29/42	(3) 24/40	6515-62
2-4	130	45/50	(3) 24/40	6515-64





HEAD Duran® Flange, For Filter Reactors

Reactor head only, with Duran® unground, ungrooved joints for use with 6384, 6386 or 6388 reactor bodies. 6527-26 has (3) angled $\text{\textcircled{S}}$ 24/40 joints; 6528-31 and 6529-32 have (4) vertical $\text{\textcircled{S}}$ 24/40 joints. Use 6517 clamp.

For Flask Capacity, mL	Flange I.D., mm (in)	# of Necks	Order Code	
150-600	60 (2.4)	3	6527-26	♠
1000-2000	100 (4)	4	6528-31	♠
3000-6000	150 (6)	4	6529-32	♠

Accessories

Quick-Release Flange Clamp, 60mm	6517-22	★
Quick-Release Flange Clamp, 100mm	6517-25	★
Quick-Release Flange Clamp, 150mm	6517-27	★



HEAD Duran Flange, 4 Necks

Flat ground Duran style flange for use with all reaction flasks that have a 100mm (4") Duran ground mating flange. (3) in-line ground $\text{\textcircled{S}}$ joints and (1) $\text{\textcircled{S}}$ side joint.

Center $\text{\textcircled{S}}$ Joint	Flange I.D., mm (in)	Side $\text{\textcircled{S}}$ Joints	Order Code	
24/40	100 (4)	(2) 24/40, (1) 10/30	6528-01	♠
29/42	100 (4)	(2) 24/40, (1) 10/30	6528-02	♠
45/50	100 (4)	(2) 24/40, (1) 10/30	6528-03	♠
24/40	100 (4)	(3) 24/40	6528-31	♠
29/42	100 (4)	(3) 24/40	6528-35	♠
45/50	100 (4)	(3) 24/40	6528-38	♠

Accessories

Quick-Release Flange Clamp, 100mm	6517-25	★
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HEAD Duran Flange, 5 Necks

Flat ground Duran style flange for use with all reaction flasks that have a 100mm (4") Duran ground mating flange. (3) in-line ground $\text{\textcircled{S}}$ joints and (2) $\text{\textcircled{S}}$ side joints, for thermal probe connection, etc.

Center $\text{\textcircled{S}}$ Joint	Flange I.D., mm (in)	(4) Side $\text{\textcircled{S}}$ Joints	Order Code	
24/40	100 (4)	24/40	6528-42	♠
29/42	100 (4)	24/40	6528-44	♠
29/42	100 (4)	29/42	6528-46	♠
45/50	100 (4)	24/40	6528-49	♠

Accessories

Quick-Release Flange Clamp, 100mm	6517-25	★
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All ACE full-length outer joints are tooled with reinforcement rings for added strength and stability.

HEAD *Duran® Flange, 5 Ports, Glass ♠*

5 neck head with flat ground Duran flange. (1) 90° center neck, (1) 90° side neck, (2) 10° side necks, and (1) 45° side neck.

Reactor Size, mL	Flange I.D., mm	Center Neck	Size Neck 10°	Size Neck 10°	Size Neck 90°	Size Neck 45°	Order Code
100-500	60	24/40	14/20	14/20	14/20	24/40	6443-02
100-500	60	29/42	14/20	14/20	14/20	24/40	6443-04
1000-2000	100	24/40	24/40	24/40	24/40	29/42	6443-06
1000-2000	100	29/42	24/40	24/40	24/40	29/42	6443-08
3000-6000	150	24/40	24/40	24/40	24/40	45/50	6443-12
3000-6000	150	29/42	24/40	24/40	24/40	45/50	6443-14
3000-6000	150	45/50	24/40	24/40	24/40	45/50	6443-16
100-500	60	24/40	B14	B14	B14	B24	6443-104
100-500	60	29/42	B14	B14	B14	B24	6443-106
1000-2000	100	24/40	B24	B24	B24	B29	6443-108
1000-2000	100	29/42	B24	B24	B24	B29	6443-110
3000-6000	150	24/40	B24	B24	B24	B45	6443-114
3000-6000	150	29/42	B24	B24	B24	B45	6443-116
3000-6000	150	45/50	B24	B24	B24	B45	6443-118


HEAD *Duran Flange, 4 Necks*

Flat ground Duran® style flange for use with all reaction flasks that have a 150mm (6") Duran ground mating flange. Supplied with (4) ground ♂ joints.

Center ♂ Joint	Flange I.D., mm (in)	(3) Side ♂ Joints	Order Code
24/40	150 (6)	24/40	6529-32 ♠
29/42	150 (6)	24/40	6529-36 ♠
45/50	150 (6)	24/40	6529-39 ♠


Accessories

Quick-Release Flange Clamp, 150mm	6517-27 ★
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HEAD *Duran Flange, 5 Necks*

Flat ground Duran style flange for use with all reaction flasks that have a 150mm (6") Duran ground mating flange. Supplied with (5) ground ♂ joints.

Center ♂ Joint	Flange I.D., mm (in)	(4) Side ♂ Joints	Order Code
24/40	150 (6)	24/40	6529-23 ♠
29/42	150 (6)	24/40	6529-25 ♠
29/42	150 (6)	29/42	6529-27 ♠
45/50	150 (6)	24/40	6529-29 ♠


Accessories

Quick-Release Flange Clamp, 150mm	6517-27 ★
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HEAD *Duran Flange, 4 Necks*

Flat ground Duran style flange for use with all reaction flasks that have a 150mm (6") Duran ground mating flange. Supplied with (3) in-line ground ♂ joints and (1) side, 10/30 ♂ joint, for thermal probe connection, etc. For adapter with #7 Ace-Thred for connecting thermometer or other type probe and permits easy vertical depth adjustment, see 5028.

Center ♂ Joint	Flange I.D., mm (in)	(2) In-Line ♂ Joints	Side ♂ Joints	Order Code
24/40	150 (6)	24/40	10/30	6529-03 ♠
29/42	150 (6)	24/40	10/30	6529-04 ♠
29/42	150 (6)	29/42	10/30	6529-05 ♠
45/50	150 (6)	24/40	10/30	6529-06 ♠


Accessories

Quick-Release Flange Clamp, 150mm	6517-27 ★
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**HEAD** *Duran Flange, 3 Necks*

Head with three in-line standard taper joints and a Duran® o-ring flange. Match to vessels with the same flange. For clamps, see our 6517 product family of quick-release clamps.

Center § Joint	Flange I.D., mm (in)	(2) Side § Joints	Order Code	
24/40	150 (6)	24/40	6531-10	♠
45/50	150 (6)	24/40	6531-16	♠

Accessories

Quick-Release Flange Clamp, 150mm	6517-27	★
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**HEAD** *Duran® Flange* ★

Flat ground Duran style flange for use with all reaction flasks that have a 200mm (8") Duran ground mating flange. Supplied with one through seven ground § joints.

Center § Joint	Flange I.D., mm (in)	Side § Joints	Order Code
45/50	200 (8)	—	6530-32
45/50	200 (8)	(3) 24/40	6530-30
45/50	200 (8)	(2) 29/42	6530-33
45/50	200 (8)	(3) 29/42	6530-31
45/50	200 (8)	(3) 45/50	6530-34
45/50	200 (8)	(2) 45/50 – (2) 29/42	6530-35
45/50	200 (8)	(4) 24/40	6530-36
45/50	200 (8)	(3) 45/50 – (3) 29/42	6530-38
45/50	200 (8)	(2) 29/42 – (2) 24/40	6530-39
45/50	200 (8)	(2) 45/50	6530-40

Accessories

Quick-Release Flange Clamp, 200mm	6517-31	
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**HEAD** *Duran Flange, 6 Necks, 60mm Side Port*

Domed-style glass head with Duran style 200mm (8") flange for use with matching flanged reactor flasks like 6472-02, 6472-16, 6522-21, etc. Features a Duran flange 60mm (2.4") I.D. side port with O-Ring groove, angled 45°, for ease in adding materials to the reactor.

Center § Joint	Flange I.D., mm (in)	Side § Joints	Addition Port, mm	Order Code	
45/50	200 (8)	(1) 45/50, (2) 29/42, (2) 24/40	60	6530-37	★

Accessories

Glass Cap, 60mm	15312-30	★
CAPFE O-Ring, 60mm	7855-878	♠
Quick-Release Flange Clamp, 60mm	6517-22	★
Quick-Release Flange Clamp, 200mm	6517-31	★

**HEAD** *KF Plane Flange, 7 Necks, 100mm Side Port*

Domed-style glass head with 300mm (12") flat KF plane flange for use with matching reactor flasks like 6472-03, 6472-05, 6472-030, 6472-050 etc. Features a large Duran flange 100mm (4") I.D. side port with O-Ring groove, angled 30°, for ease in adding materials to the reactor.

Center § Joint	Flange I.D., mm (in)	Side § Joints	Addition Port, mm	Order Code	
45/50	300 (12)	(4) 45/50 – (2) 29/42	100	6530-45	★

Accessories

Glass Cap, 100mm	15312-33	★
CAPFE O-Ring, 100mm	7855-880	♠
Quick-Release Flange Clamp, 100mm	6517-25	★

HEAD *KF Plane Flange, 7 Necks, 100mm Side Port*

Domed-style glass head with flat KF plane flange. Features a large Duran flange 100mm (4") I.D. side port with O-Ring groove, angled 30°, for ease in adding materials to the reactor.

Center § Joint	Flange I.D., mm (in)	Side § Joints	Addition Port, mm	Order Code	
45/50	300 (12)	(5) 45/50	100	6530-46	★
45/50	400 (16)	(5) 45/50	100	6530-75	★

Accessories

Glass Cap, 100mm	15312-33	★
CAPFE O-Ring, 100mm	7855-880	♠
Quick-Release Flange Clamp, 100mm	6517-25	★


HEAD *Duran® Flange, 7 Necks, 150mm Side Port*

Glass photochemical reactor head with Duran style 400mm (16") flange for use with matching flanged reactors and flasks. Features a Duran flange 150mm (6") I.D. side port with O-Ring groove, angled 45°, for ease in adding materials to the reactor.

Center § Joint	Flange I.D., mm (in)	Side § Joints	Addition Port, mm	Order Code	
45/50	400 (16)	(5) 45/50	150	6530-77	★

Accessories

Glass Cap, 150mm	15312-36	★
CAPFE O-Ring, 150mm	7855-881	♠
Quick-Release Flange Clamp, 150mm	6517-27	★


HEAD *Duran Flange, 5 Necks, 60mm Side Port*

Domed-style glass head with Duran style 200mm (8") flange for use with matching flanged reactor flasks like 6472-02, 6472-16, 6522-21, etc. Features a Duran flange 60mm (2.4") I.D. side port with O-Ring groove, angled 45°, for ease in adding materials to the reactor.

Center § Joint	Flange I.D., mm (in)	Side § Joints	Addition Port, mm	Order Code	
45/50	200 (8)	(3) 45/50	60	6530-28	★
45/50	200 (8)	(1) 45/50, (1) 29/42, (1) 24/40, (1) #50 Ace-Thred	60	6530-85	★

Accessories

Glass Cap, 60mm	15312-30	★
CAPFE O-Ring, 60mm	7855-878	♠
Quick-Release Flange Clamp, 60mm	6517-22	★
Quick-Release Flange Clamp, 200mm	6517-31	★

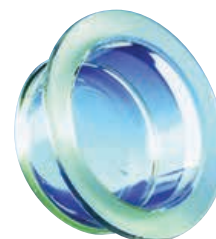

LID BLANK *Duran Flange* ★

Flat flange lid blank for use with 15310 or 15311 flanges. Code-30 is unground; codes -33 and -36 are ground.

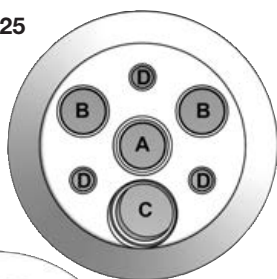
Flange O.D., mm	Joint Surface	Order Code
60	Unground	15312-30
100	Ground	15312-33
120	Ground	15312-34
150	Ground	15312-36
200	Ground	15312-40

Accessories

Quick-Release Flange Clamp, 60mm	6517-22
Quick-Release Flange Clamp, 100mm	6517-25
Quick-Release Flange Clamp, 120mm	6517-24
Quick-Release Flange Clamp, 150mm	6517-27
Quick-Release Flange Clamp, 200mm	6517-31



12860-25



12860-12

HEAD *Duran® Flange, PTFE, 100mm ★*

100mm PTFE heads allow for various combinations of jointed and/or compression fitting openings, as well as, the ability to plug unused openings. For use with any Duran style, O-Ring grooved flanged reaction vessels such as ACE codes 6521, 6522, 6523, 6524 and 6526. For fittings, see ACE codes 12866, 12867, 12869 and 12871. Uses 6517 quick-release clamps.

- A) vertical 3/4" center neck for PTFE standard taper adapter
 B) vertical 3/4" side neck for PTFE standard taper adapter
 C) 10° x 10° 1" compound angle side neck
 D) vertical 1/4" side neck
 E) 10° angled 3/4" side neck

Number of Openings	Order Code
7	12860-12
7	12860-25

Accessories

Quick-Release Flange Clamp, 100mm	6517-25
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**HEAD** *Duran Flange, PTFE, 150mm ★*

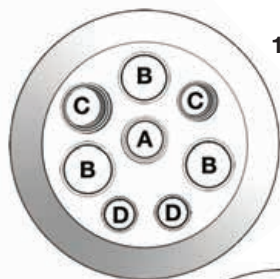
150mm PTFE heads allow for various combinations of jointed and/or compression fitting openings, as well as, the ability to plug unused openings. For use with any Duran style, O-Ring grooved flanged reaction vessels such as ACE codes 6521, 6522, 6523, 6524 and 6526. For fittings, see ACE codes 12866, 12867, 12869 and 12871. Uses 6517 quick-release clamps.

- A) vertical 1" center neck for PTFE standard taper adapter
 B) vertical 1" side neck for PTFE standard taper adapter
 C) 10° x 10° 1" compound angle side neck
 D) vertical 1/2" side neck

Number of Openings	Order Code
9	12862-16

Accessories

Quick-Release Flange Clamp, 150mm	6517-27
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12864-20



12864-27

HEAD *Duran Flange, PTFE, 200mm ★*

200mm PTFE heads allow for various combinations of jointed and/or compression fitting openings as well as the ability to plug unused openings. For use with any Duran style, O-Ring grooved flanged reaction vessels such as ACE codes 6521, 6522, 6523, 6524 and 6526. For fittings, see ACE codes 12866, 12867, 12869 and 12871. Uses 6517 quick-release clamps.

- A) vertical 1" center neck for PTFE standard taper adapter
 B) vertical 1-1/2" side neck for PTFE standard taper adapter
 C) 10° x 10° 1" compound angle side neck
 D) vertical 1/2" side neck for PTFE standard taper adapter
 E) 10° x 10° 1-1/2" compound angle side neck
 F) 10° angled 1" side neck

Number of Openings	Order Code
8	12864-20
8	12864-27

Accessories

Quick-Release Flange Clamp, 200mm	6517-31
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HEAD Duran® Flange, PTFE, 60mm ★

60mm PTFE heads allow for various combinations of jointed and/or compression fitting openings, as well as, the ability to plug unused openings. For use with any Duran style, O-Ring grooved flanged reaction vessels, such as ACE codes 6521, 6522, 6523, 6524 and 6526. For fittings, see ACE codes 12866, 12867, 12869 and 12871. Uses 6517 quick-release clamps.

A) vertical 1/2" center neck for PTFE standard taper adapter

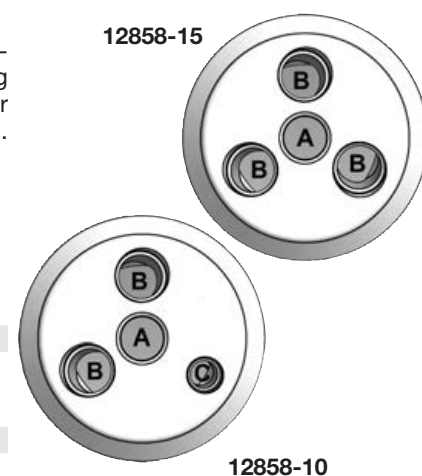
B) 10° x 10° 1/2" compound angle side neck

C) vertical 1/4" side neck


Number of Openings	Order Code
4	12858-10
4	12858-15


Accessories

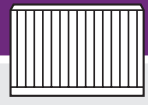
Quick-Release Flange Clamp, 60mm	6517-22
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PTFE Inserts for PTFE Reaction Vessel Heads ★

Description	NPT Size (in)	Order Code
Joint Inserts		
 §19/38 PTFE Standard Taper Adapter, Outer	1/2	12866-05
§19/38 PTFE Standard Taper Adapter, Outer	3/4	12866-08
§24/40 PTFE Standard Taper Adapter, Outer	1/2	12866-14
§24/40 PTFE Standard Taper Adapter, Outer	3/4	12866-16
§24/40 PTFE Standard Taper Adapter, Outer	1	12866-18
§29/42 PTFE Standard Taper Adapter, Outer	1/2	12866-21
§29/42 PTFE Standard Taper Adapter, Outer	3/4	12866-23
§29/42 PTFE Standard Taper Adapter, Outer	1	12866-25
§29/42 PTFE Standard Taper Adapter, Outer	1-1/2	12866-27
§45/50 PTFE Standard Taper Adapter, Outer	3/4	12866-33
§45/50 PTFE Standard Taper Adapter, Outer	1	12866-35
§45/50 PTFE Standard Taper Adapter, Outer	1-1/2	12866-37

Plugs		
 PTFE Plug	1/4	12867-04
PTFE Plug	1/2	12867-12
PTFE Plug	3/4	12867-18
PTFE Plug	1	12867-24

Description	NPT Size (in)	Order Code
Ace-Thred Compression Fittings		
 PTFE 8mm Bore Compression Fitting	1/2	12869-08
PTFE 14mm Bore Compression Fitting	3/4	12869-12
PTFE 14mm Bore Compression Fitting	3/4	12869-25
PTFE 16mm Bore Compression Fitting	3/4	12869-27
PTFE 19mm Bore Compression Fitting	3/4	12869-29
PTFE 14mm Bore Compression Fitting	1	12869-33
PTFE 16mm Bore Compression Fitting	1	12869-35
PTFE 19mm Bore Compression Fitting	1	12869-37
PTFE 25mm Bore Compression Fitting	1	12869-39

Ace-Thred Compression Fittings		
 PTFE Ace-Thred #7-NPT	1/4	12871-03
PTFE Ace-Thred #7-NPT	1/2	12871-07
PTFE Ace-Thred #11-NPT	1/2	12871-11
PTFE Ace-Thred #15-NPT	3/4	12871-14
PTFE Ace-Thred #18-NPT	3/4	12871-18
PTFE Ace-Thred #25-NPT	1	12871-25
PTFE Ace-Thred #25-NPT	1-1/2	12871-28

Supplied with 5029 PTFE Bushing for #7 thread and 7506 PTFE Bushing for all other threads.

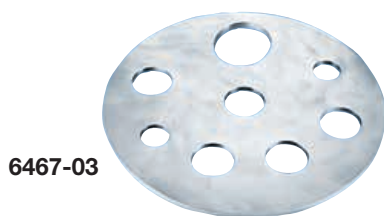
**HEAD** *Glass, Flat, Pilot Plant*

Borosilicate glass head with holes drilled to match (included) 6413 PTFE inserts. Head is 1-1/4" (32mm) thick, designed for use with 300mm (12") flat ground flanges on reaction flasks.

Center ⌘ Joint	Side ⌘ Joints	Order Code	
45/50	(4) 45/50; (2) 29/42	6472-20	★
45/50	(4) 45/50; (2) 29/32; (1) 71/60	6472-21	★

Accessories

71/60 Stopper	8250-28	♠
300mm Coupling	6525-30	★
Nuts & Bolts, 8" length	6472-161	★

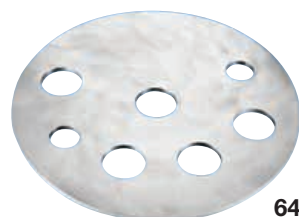


6467-03

HEAD *Stainless Steel, Pilot Plant*

Fabricated from 1/4", 316 stainless steel. This head has the same openings as the flat glass head. Accepts ⌘ PTFE joint inserts secured top and bottom of plate with threaded nuts. 10L size uses (1) ⌘ 45/50, (3) ⌘ 29/42 and (3) ⌘ 24/40 inserts; 30L and 50L sizes use (5) ⌘ 45/50 and (2) ⌘ 29/42 inserts (6467-03 also requires a ⌘ 71/60 insert). Assembled to reaction flask using 6525 coupling (not included) and (1) spacer. *Optional: flat sheet of PTFE covers entire underside of stainless steel head and is secured by coupling and ⌘ joint inserts.*

Note: See 6412 (below) for inserts.

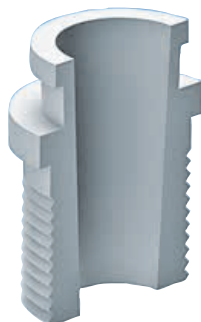


6467-02

Description	Uses Coupling	Diameter, mm	For Reactor Size	Number of Openings	Order Code
Head only	6525-25	200	10L	7	6467-01
Head only	6525-30	300	30L & 50L	7	6467-02
Head only	6525-30	300	30L & 50L	8	6467-03
Head only	6525-33	400	100L Low Pro	8	6467-04

Stainless Steel Flat Head**Accessories**

Flat PTFE cover only	—	200	10L	7	6467-11	★
Flat PTFE cover only	—	300	30L & 50L	7	6467-12	★
Flat PTFE cover only	—	300	30L & 50L	8	6467-13	★
Flat PTFE cover only	—	400	100L Low Pro	8	6467-14	★

**JOINT INSERT** *PTFE, Standard Taper, for Stainless Steel Heads* ★

Solid, virgin PTFE, standard taper joint inserts for 6467 series heads. Top of insert is machined for outside standard taper joint that matches glass inner standard taper joints. Bottom is reverse threaded and has a PTFE collar and FETFE® O-Ring. Tops are also machined to accept the 7597 joint clips. 71/60 size fits glass stopper for 71/60 sample port on 6467-03 head.

Note: 100mm Duran flange O-Rings, 7855-880 (CAPFE) or 7855-696 (Kalrez) sold separately.

For ⌘ Joint Size	Order Code
24/40	6412-05
29/42	6412-07
45/50	6412-09
71/60	6412-11
100mm Duran Flange	6412-13

JOINT INSERT PTFE, Standard Taper, for Flat Glass Heads ★

Solid, virgin PTFE, standard taper joint inserts for 6472 series flat glass heads. This low profile insert allows for increased working space above the head. The insert is secured to the head with a reverse threaded locking nut and sealed using a FETFE O-Ring. The top of the insert is formed to allow the use of 7597 joint clips.



For ⚡ Joint Size	Order Code
24/40	6413-05
29/42	6413-07
45/50	6413-09
71/60	6413-11

COUPLING & ACCESSORIES For KF Style Flange

Coupling for clamping reaction flask to reaction flask heads like 6530-45. Complete coupling consists of phenolic resin or aluminum rings, clamp inserts with clips, and appropriate number of stainless steel bolts, springs, nuts and washers. The coupling inserts are placed inside the coupling and used with the coupling insert clips to firmly secure the flask to the head.

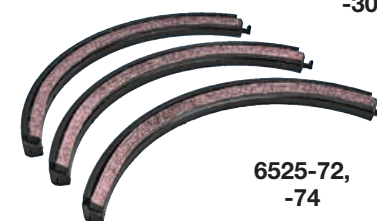
Note: Gaskets (required), torque wrench, and socket are not included with coupling.

Flange Size, mm (in)	Flange material	Order Code
200 (8)	phenolic resin	6525-25 ★
300 (12)	phenolic resin	6525-30 ★
400 (16)	aluminum	6525-33

Replacement Parts and Accessories

PTFE Gasket, 200mm	6525-46 ★
PTFE Gasket, 300mm	6525-51 ★
PTFE Gasket, 400mm	6525-53 ★
Coupling Insert, 200mm (each insert = 3 arcs)	6525-72 ★
Coupling Insert, 300mm (each insert = 3 arcs)	6525-74 ★
Coupling Insert Clips, 200mm or 300mm (package of three)	6525-80 ★
Torque Wrench, only	6525-60 ★
1/4" Socket, only	6525-61 ★

Note: Flat heads require 6525 coupling, but w/6472-161 (longer) bolts/nuts - only for 6525-25 & -30


6525-25,
-30

6525-72,
-74

GASKET ★

PTFE crescent ring "L" shaped gaskets for use with 6525 coupling. Placed between the flat ground glass surfaces of the head and flask. Consists of a flat ring with locating skirt.

Size, mm	Maximum Temperature	Order Code
200	200°C	6525-46
300	200°C	6525-51
400	200°C	6525-53



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Whether you're simply changing a joint size or designing an entire custom unit, our technical staff is at your service!

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6517-54, 56, 60



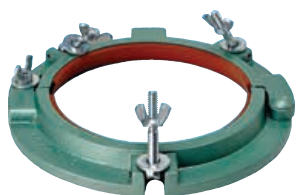
6517-22, 25, 27, 31

CLAMP Quick-release

Stainless steel quick-release clamp for use with reaction flasks and heads with Duran® flanges. Available with or without extension rod, 5/8" O.D. x 12" long for clamping to a support frame. Welded extension is used to stabilize reaction assemblies.

Note: Reactors should be supported from below in usual manner — namely mantles, rings, jacks, etc.

	Without Extension		With Extension	
For Flange Size	Order Code		Order Code	
60mm	6517-22	★	—	
100mm (4")	6517-25	★	6517-54	★
120mm (4.8")	6517-24	★	—	
150mm (6")	6517-27	★	6517-56	★
200mm (8")	6517-31	★	6517-60	★

**STANDARD CLAMP ★**

Anodized aluminum clamp is designed to fit 4" conical flanges, allowing the top half to be removed without disturbing the lower half. Extension arm (1/2" x 8") suitable for attachment to an appropriate support stand or lab frame. Silicone liner will withstand temperatures up to 500°F.

Description	Qty	Order Code
Complete Clamp		
Fits 4" Conical Flanges	1	6496-10
Replacement Parts and Accessories		
Gaskets, only	Set of 4	6496-30

**CLAMP Flat Flange, Two-Piece ★**

Positive, two-piece clamp for securing flat flanges as found on our 6504, 6511 & 6516 reaction flasks. Anodized, high strength aluminum clamp features three brass tilting bolts which will swing freely away from the top piece upon loosening the securing brass knurled thumb nuts. For improved sealing, please see our PTFE or FETFE sealing gaskets.

Fits Flat Flange O.D., mm	Fits Flat Flange I.D., mm	Order Code
137	100	6508-06
168	130	6508-11

Replacement Parts and Accessories

PTFE Grooved Gasket, (136.7mm)	6495-21
FETFE Grooved Gasket, (136.7mm)	6495-43
PTFE Grooved Gasket, (168.4mm)	6495-23
FETFE Ungrooved Gasket, (168.4mm)	6495-47

**CLAMP Flat Flange, One-Piece ★**

One-piece clamp for securing flat flanges as found on our 6504, 6511 & 6516 reaction kettles. Powder coated, high strength aluminum clamp features three brass, stainless steel spring-loaded lugs with nylon knobs, which quickly secure the assembly when pivoted underneath the kettle bottom's flange. For improved sealing, please see our PTFE or FETFE sealing gaskets.

Fits Flat Flange O.D., mm	Fits Flat Flange I.D., mm	Order Code
137	100	6510-05
168	130	6510-10

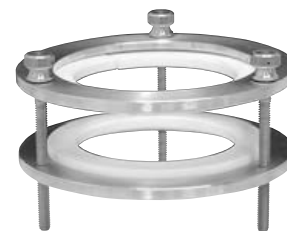
Replacement Parts and Accessories

PTFE Grooved Gasket, (136.7mm)	6495-21
FETFE Grooved Gasket, (136.7mm)	6495-43
PTFE Grooved Gasket, (168.4mm)	6495-23
FETFE Ungrooved Gasket, (168.4mm)	6495-47

CLAMP ★

Two-piece unfinished aluminum clamp with brass tightening bolts. Bolt head is flanged to secure the top half of the bolt as it's threaded into the bottom. Code -03 fits both our 7646-18 (75mm) O-Ring joint and our 7519 (76mm) filter support assembly and is supplied with (2) PTFE gaskets. Code -05 fits our 7519 (102mm) flat-flanged filter support assembly and our 6504 kettles featuring 137mm OD x 100mm ID flat flanges (500mL & 1000mL). The code -05 is not supplied with gaskets.

Fits Flat Flange O.D., mm	Fits Flat Flange I.D., mm	Order Code
152	111	6509-03
160	120	6509-05

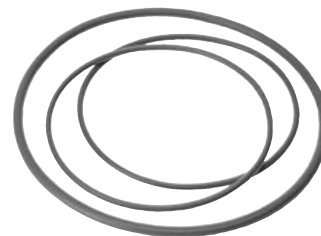


6509-03

O-RING Replacement

Replacement O-Rings for use with 6310, 6521, 6522, 6523, 6533, 6535, 6536, 6537, 6540, 6469, and 6472 only reaction flasks with groove-in ground flange.

For Flange I.D., mm (in)	CAPFE		Silicone		Viton
	Order Code		Order Code		Order Code
60 (2)	7855-878 ♠		7855-251 ★		7855-83 ♠
100 (4)	7855-880 ♠		7855-254 ★		7855-84 ♠
150 (6)	7855-881 ♠		7855-260 ★		7855-85 ♠
200 (8)	7855-884 ♠		7855-288 ★		



GASKET PTFE

PTFE gaskets, white in color, for mating ground flange surfaces on reactor flasks and matching heads. Can be used with all conical style and flat flange style flask and heads. PTFE makes a leak-free seal with slight clamp pressure. They also provide the added chemical resistance and purity of PTFE.

Thickness, in (mm)	O.D., in (mm)	Fits Flask Size, mL	Grooved	Order Code
0.03 (0.8)	5.250 (133.4)	500-3000	No	6495-10 ♠
0.03 (0.8)	5.375 (136.7)	500-1000	Yes	6495-21 ★
0.03 (0.8)	6.625 (168.4)	2000-4000	Yes	6495-23 ★



GASKET FETFE ★

ACE FETFE® gaskets, black in color, for mating ground flange surfaces on reactor flasks and matching heads. Can be used with all conical style and flat flange style flask and heads. FETFE makes a leak-free seal with clamp pressure. FETFE is an exclusive ACE product made from TFE impregnated fluoroelastomers with good chemical and temperature resistance.

Thickness, in (mm)	O.D., in (mm)	Fits Flask Size, mL	Grooved	Order Code
0.02 (0.5)	5.375 (136.7)	500-1000	Yes	6495-43
0.02 (0.5)	6.625 (168.4)	2000-4000	No	6495-47

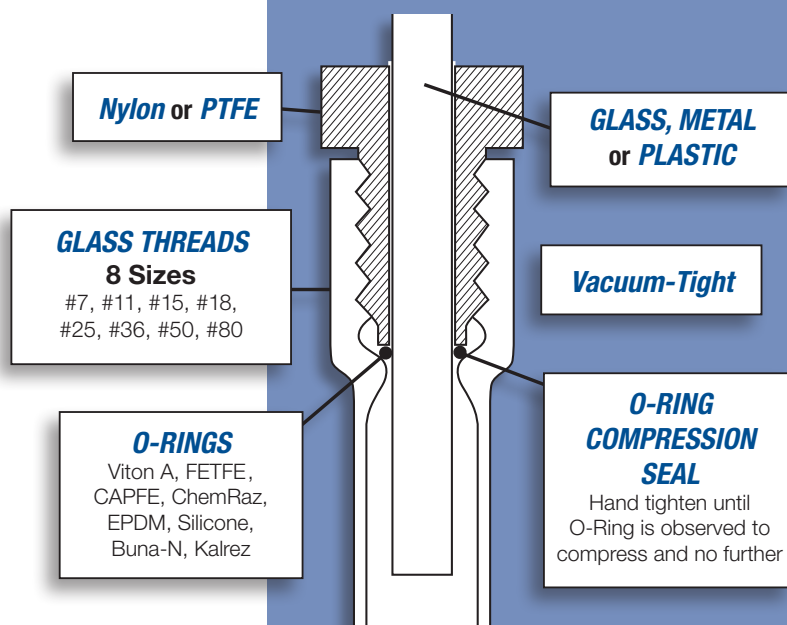


Ace-Thred™ Advantages

U.S. PATENT #3,695,642

Ace-Thred™ Conveniences

- Convert virtually any connection to Ace-Thred™
- Eliminate the need for greased joints
- Can hold vacuum/pressure with use of O-Rings
- No more fumbling with clamps
- Available on adapters, vessels, condensers, heads, and much more
- Adapters to transition from glassware to
 - Hosebarb
 - NPT
 - GPI
 - Swagelok®
 - Temperature probe



Reference Guide to Ace-Thred Sizes

Size	Accepts Tube O.D., mm	Use Bushing Number	Use With O-Ring No.*	Suggested Uses
#7	6-7	5029-10	7855-704	A, B, I
#11	9-10.5	7506-02	7855-708	D, E, F, G
#15	12.5-14	7506-06	7855-716	C, H
#18	16-17	7506-08	7855-720	H, L
#25	24-25	7506-10	7855-734	K
#36	34-35	7506-12	7855-740	K, L
#50	47-48	7506-14	7855-744	K, L
#80	80	7506-20	7855-782	—

A—Thermometers
B—Bleed Tubes
C—Electrodes
D—Sensing Probes

E—Thermowells
F—Gas Dispersion Tubes
G—Vacuum Take-Offs
H—Inlet and Outlet Tubes

I—Miniature Electrodes
K—Manifolds
L—Immersion Wells

*FETFE® O-Rings referenced, other materials are available.

Ace-Threds™ with Bushing and O-Ring have proven useful as Adapters in:

Pressure Ware, Distillation, Filtration, Chromatography, Flasks, Reaction Equipment, Environmental Glassware, Hi-Vacuum Stopcocks, No-Air™ Glassware, Photochemical Equipment, and many other applications.

As a general rule, the #7, #11 and #15 threads can attain a vacuum of 10^{-5} or better using the FETFE O-Ring supplied. The #25 thread will attain a vacuum of 10^{-4} or better. The diameter and surface condition of the inner tube or rod inserted in the thread have an influence on the vacuum that can be attained.

The vacuum that can be attained using PTFE ferrules is slightly less than using O-Rings.

PRESSURE RELIEF MANIFOLD 10L to 150L Jacketed Reactors

A pressure relief manifold for jacketed reaction vessels, designed to protect the vessel from breakage while isolated or disconnected from the circulator. Installed on the outlet side of the vessel, the manifold will reduce the likelihood of breakage caused by an excessive pressure differential exerted by expansion of the heat transfer fluid. Operating range from -195°C through 426°C.

Note: Complete system includes aluminum body, outlet fittings, hose, relief valve, and pressure gauge.

For Use with Flask Size, L	Beaded Pipe Connection, in	Connections	Pressure Setting, Psig	Order Code
Complete Manifold Set				
10-20	1	M16 x 1	10	10015-01
10-20	1	M24 x 1.5	10	10015-02
10-20	1	M30 x 1.5	10	10015-03
30-150	1.5	M16 x 1	10	10015-04
30-150	1.5	M24 x 1.5	10	10015-05
30-150	1.5	M30 x 1.5	10	10015-06

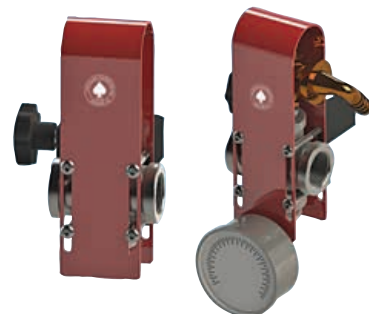


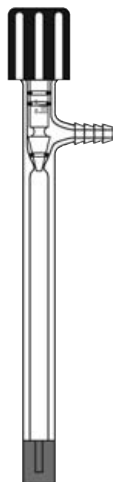
PRESSURE RELIEF MANIFOLD 100mL to 6000mL Jacketed Reactors

Mounted to the Scale-Up Series™ stand via the 12841 vertical rod assembly, the pressure relief manifold inlet/outlet set will help protect the glass vessel from breakage due to an excessive pressure differential exerted by the thermal transfer fluid while the vessel is isolated or disconnected from the circulator. Available as a set, individual inlet or outlet, and sized with either a M16x1 or M24x1 union. Relief pressure is factory set to 10psig. Operating range from -40°C thru 232°C.

Note: Complete set includes hoses and 90° elbows to connect from manifold to vessel.

Description	Order Code
Complete Manifold Set	
M16 x 1 Male, (1) Inlet & (1) Outlet	12194-20
M24 x 1 Male, (1) Inlet & (1) Outlet	12194-22
Inlet Manifold, only	
M16 x 1 Male	12194-02
M24 x 1 Male	12194-04
Outlet Manifold, only	
M16 x 1 Male	12194-06
M24 x 1 Male	12194-08
Accessories (not included)	
Vertical Rod Assembly, 36"	12841-12





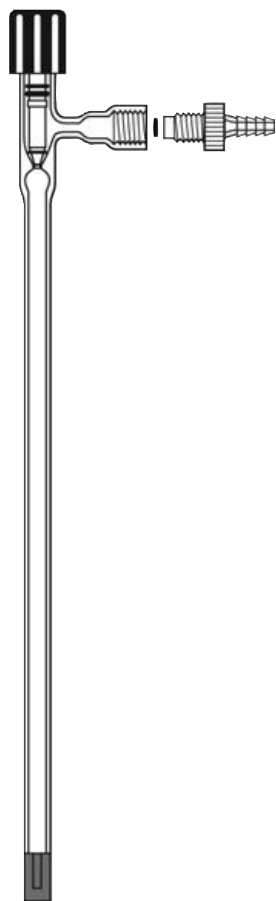
SPARGER *Easy Action Stopcock and Hose Connection* ♦

Sparger tube with ACE frit at bottom, 0-3mm or 0-5mm Easy-Action stopcock at top, and 90° hose barb connection side port. To connect this sparger to a head, use a 5030 adapter that matches the Ace-Thred sizes listed below.

Overall Length, mm	Porosity, micron	Tubing Connection Size (in)	Stopcock Size	Glass Tube O.D., mm	Fits Ace-Thred, #	Order Code
400	145-174	5/16	0-3	10	11	6452-03
400	70-100	5/16	0-3	10	11	6452-05
400	25-50	5/16	0-3	10	11	6452-07
575	145-174	3/8	0-5	14	15	6452-14
575	70-100	3/8	0-5	14	15	6452-16
575	25-50	3/8	0-5	14	15	6452-18
775	70-100	3/8	0-5	14	15	6452-33
915	70-100	3/8	0-5	14	15	6452-44

Replacement Parts and Accessories

PTFE Stopcock Plug	0-3	8189-43
PTFE Stopcock Plug	0-5	8189-45



SPARGER *Easy Action Stopcock and #7 Ace-Safe Connection* ♦

Sparger tube with ACE frit at bottom, 0-3mm or 0-5mm Easy-Action stopcock at top, and 90° #7 Ace-Safe Connector side port for use with 7mm O.D. tubing. To connect this sparger to a head, use a 5030 adapter that matches the Ace-Thred sizes listed below.

Note: Supplied with Ace-Safe Connector.

Overall Length, mm	Porosity, micron	Stopcock Size	Glass Tube O.D., mm	Fits Ace-Thred, #	Order Code
400	145-174	0-3	10	11	6452-104
400	70-100	0-3	10	11	6452-106
400	25-50	0-3	10	11	6452-108
575	145-174	0-5	14	15	6452-121
575	70-100	0-5	14	15	6452-123
575	25-50	0-5	14	15	6452-125
775	70-100	0-5	14	15	6452-132
915	70-100	0-5	14	15	6452-145

Replacement Parts and Accessories

Ace-Safe Connector, #7 to 1/4" tubing		5853-06
PTFE Stopcock Plug	0-3	8189-43
PTFE Stopcock Plug	0-5	8189-45

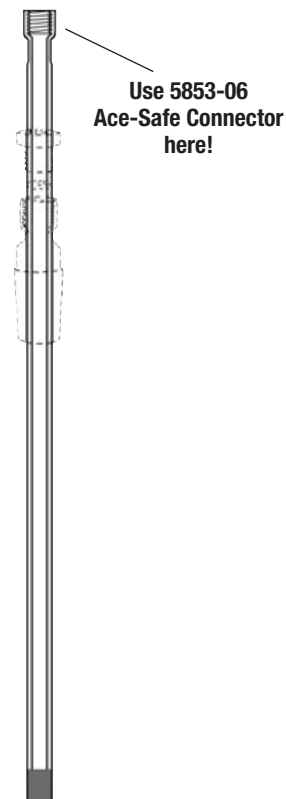
SPARGER *Straight and #7 Ace-Thred ♠*

Straight sparger tube with ACE frit at bottom and #7 Ace-Thred connection at top for 7mm O.D. tubing connection. Supplied with Ace-Safe Connector. To connect this sparger to a head, use a 5030 adapter that matches the Ace-Thred sizes listed below.

Overall Length, mm	Porosity, micron	Tube O.D., mm	Fits Ace-Thred, #	Order Code
400	145-174	10	11	6453-105
400	70-100	10	11	6453-107
400	25-50	10	11	6453-109
575	145-174	14	15	6453-122
575	70-100	14	15	6453-124
575	25-50	14	15	6453-126
775	70-100	14	15	6453-133
915	70-100	14	15	6453-146

Replacement Parts and Accessories

Ace-Safe Connector, #7 to 1/4" tubing	5853-06
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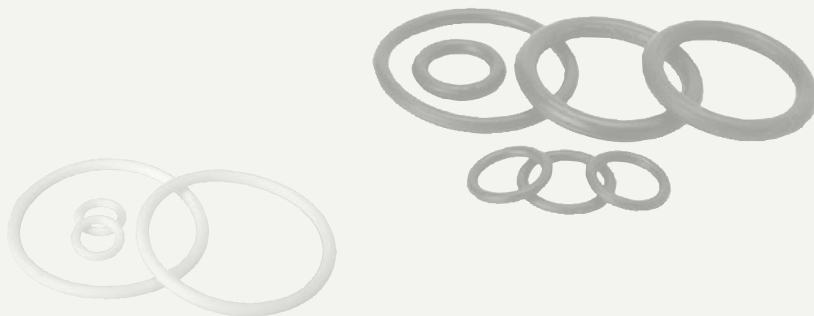

SPARGER *Straight w/Hose Connection ♠*

Straight sparger tube with ACE frit at bottom and size F hose connection at top for 1/2" I.D. hose. To connect this sparger to a head, use a 5030 adapter that matches the Ace-Thred sizes listed below.

Overall Length, mm	Porosity, micron	Tube O.D., mm	Fits Ace-Thred, #	Order Code
400	145-174	10	11	6453-04
400	70-100	10	11	6453-06
400	25-50	10	11	6453-08
575	145-174	14	15	6453-21
575	70-100	14	15	6453-23
575	25-50	14	15	6453-25
775	70-100	14	15	6453-32
915	70-100	14	15	6453-45



O-Rings



KALREZ® 4079

KALREZ 4079 O-RINGS

Offer the resilience and sealing force of an elastomer, with chemical inertness and thermal stability similar to PTFE fluorocarbon resin.

Sealing Performance

- Compared with other elastomers, KALREZ is normally more resistant to swelling and embrittlement and will retain these properties for a longer period of time.
- Compared with metal seals, KALREZ is easily installed and conforms to the sealing surface despite irregularities due to improper assembly or wear.
- Compared with PTFE seals, KALREZ is not likely to creep or cold flow.

Chemical Resistance

KALREZ has excellent chemical resistance, far above that of other commercial elastomers. KALREZ should be considered for service in hot, corrosive environments, including:

- Polar solvents (ketones, esters, ethers)
- Strong organic solvents (benzene, dimethyl formamide, perchloroethylene, tetrahydrofuran (THF))
- Inorganic and organic acids (hydrochloric, nitric, sulfuric, trichloroacetic) and bases (hot caustic soda)
- Strong oxidizing agents (dinitrogen tetroxide, fuming nitric acid)
- Metal halogen compounds (titanium tetrachloride, diethylaluminum chloride)
- Hot mercury/caustic soda
- Chlorine, wet or dry
- Inorganic salt solutions
- Fuels (ASTM Reference Fuel C, JP-5 Jet Fuel, aviation gas, kerosene)
- Hydraulic fluids (SKYDROL1, 500A, PYDRAUL1 312, ANDEROL2 L-774, and transmission fluids)
- Heat transfer fluids (DOWTHERM3A)
- Oil well sour gas (methane, hydrogen sulfide/carbon dioxide/steam)
- Steam

Thermal Stability

KALREZ O-Rings retain their elastic properties in long-term service at temperatures as high as 316°C and in intermittent service up to 327°C.

®Registered DUPONT Trademark

¹ U.S. Trademark of Solutia Co., ² U.S. Trademark of Tenneco Chemicals,

³ U.S. Trademark of Dow Chemical Co.



Size	Dimensions, mm		Order Code	(Use)
	I.D.	W		
-006	2.9	1.78	7855-601	★
-007	3.7	1.78	7855-602	★ (S)
-008	4.5	1.78	7855-604	★ (T,C,S)
-009	5.3	1.78	7855-607	★
-010	6.1	1.78	7855-605	★
-011	7.7	1.78	7855-606	★ (T,J,S)
-012	9.2	1.78	7855-608	★ (C,T,J)
-013	10.8	1.78	7855-610	★ (C,T)
-014	12.4	1.78	7855-612	★ (O)
-015	14.0	1.78	7855-613	★ (O,G)
-016	15.6	1.78	7855-614	★ (T,J)
-018	18.8	1.78	7855-615	★ (J,S)
-110	9.2	2.6	7855-616	★ (J,S)
-021	23.5	1.78	7855-617	★ (C,T,G)
-111	10.8	2.6	7855-618	★ (C,T,S)
-022	25.1	1.78	7855-619	★ (C,T,G)
-112	12.4	2.6	7855-620	★
-113	13.9	2.6	7855-621	★
-114	15.5	2.6	7855-622	★ (J,S)
-115	17.1	2.6	7855-623	★
-116	18.7	2.6	7855-626	★ (C,T,G)
-121	26.6	2.6	7855-627	★ (C,T,G)
-136	50.5	2.6	7855-629	★ (C,T,G)
-210	18.6	3.5	7855-630	★
-211	20.2	3.5	7855-632	★ (T,G)
-212	21.8	3.5	7855-634	★ (T)
-217	29.7	3.5	7855-640	★ (C,T,G)
-220	34.5	3.5	7855-642	★ (T,G,J)
-225	47.2	3.5	7855-644	★ (C,T,G,J)
-229	59.9	3.5	7855-648	★ (C,T,G,J)
-105	3.6	2.6	7855-650	★ (C,T,G)
-108	6.0	2.6	7855-653	★ (T,G)
-118	21.9	2.6	7855-655	★ (O)
-122	28.2	2.6	7855-657	★ (C,T,J)
-123	29.8	2.6	7855-658	★ (C,T)
-125	33.0	2.6	7855-659	★ (O)
-127	36.2	2.6	7855-670	★ (T,J)
-128	37.8	2.6	7855-671	★ (J,S)
-213	23.3	3.5	7855-675	★ (C,T,G)
-214	25.0	3.5	7855-676	★ (T,G)
-216	28.2	3.5	7855-677	★ (C,T,G)
-223	40.9	3.5	7855-680	★ (C,T,G,J)
-226	50.4	3.5	7855-684	★ (C,T,G,J)
-227	53.6	3.5	7855-685	★
-228	56.7	3.5	7855-686	★
-230	63.1	3.5	7855-689	★
-235	78.9	3.5	7855-687	★
-327	43.8	5.3	7855-690	★
-341	88.3	5.3	7855-691	★
-348	110.0	5.3	7855-692	★
Duran Flange	60		7855-695	★
Duran Flange	100		7855-696	★
Duran Flange	150		7855-697	★
Duran Flange	200		7855-698	★

USE REFERENCE CODES

T = Ace-Threds S = Stopcocks C = Chromatographic Fittings
G = Gaskets J = O-Ring Joints O = Special

CHEMRAZ® 514

THE WHITE O-RING

CHEMRAZ O-RINGS *White*

Molded of a perfluoroelastomer polymer, CHEMRAZ has the broadest chemical resistance of any elastomeric material. Combines the resilience and sealing force of an elastomer, with chemical resistance approaching that of PTFE.

Sealing Performance

- Compared with other elastomers, CHEMRAZ is normally more resistant to swelling and embrittlement and will retain these properties for a longer period of time.
- Compared with metal seals, CHEMRAZ is easily installed and conforms to the sealing surface despite irregularities due to improper assembly or wear.
- Compared with PTFE seals, CHEMRAZ is not likely to creep or cold flow.

Chemical Resistance

CHEMRAZ has excellent chemical resistance, far above that of other commercial elastomers. CHEMRAZ should be considered for service in hot, corrosive environments including:

- Polar solvents (ketones, esters, ethers)
- Strong organic solvents (benzene, dimethyl formamide, perchloroethylene, tetrahydrofuran (THF))
- Inorganic and organic acids (hydrochloric, nitric, sulfuric, trichloroacetic) and bases (hot caustic soda)
- Strong oxidizing agents (dinitrogen tetroxide, fuming nitric acid)
- Metal halogen compounds (titanium tetra-chloride, diethylaluminum chloride)
- Hot mercury/caustic soda
- Chlorine, wet or dry
- Inorganic salt solutions
- Fuels (ASTM Reference Fuel C, JP-5 Jet Fuel, aviation gas, kerosene)
- Hydraulic fluids (SKYDROL1, 500A, PYDRAUL1 312, ANDEROL2 L-774, and transmission fluids)
- Heat transfer fluids (DOWTHERM3A)
- Oil well sour gas (methane, hydrogen sulfide/carbon dioxide/steam)
- Steam

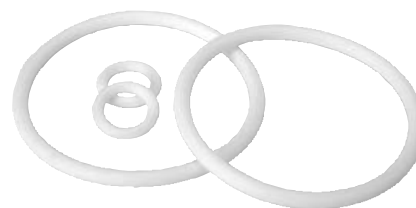
Thermal Stability

CHEMRAZ O-Rings retain their elastic properties longer in harsh chemical environments at temperatures from -30°F to higher than 220°C.

®Chemraz is a Registered Trademark of Greene Tweed & Co.

¹U.S. Trademark of Solutia Co., ²U.S. Trademark of Tenneco Chemicals,

³U.S. Trademark of Dow Chemical Co.



Size	Dimensions, mm		Order Code		(Use)
	I.D.	W			
-006	2.9	1.78	7859-501	★	(O)
-007	3.7	1.78	7859-502	★	(S)
-008	4.5	1.78	7859-504	★	(T,C,S)
-009	5.3	1.78	7859-507	★	(O)
-010	6.1	1.78	7859-505	★	(T,J,S)
-011	7.7	1.78	7859-506	★	(T,J,S)
-012	9.2	1.78	7859-508	★	(C,T,J)
-013	10.8	1.78	7859-510	★	(C,T)
-014	12.4	1.78	7859-512	★	(O)
-015	14.0	1.78	7859-513	★	(J,S)
-016	15.6	1.78	7859-514	★	(T,J)
-018	18.8	1.78	7859-515	★	(J,S)
-021	23.5	1.78	7859-519	★	(C,T,G)
-022	25.1	1.78	7859-517	★	(C,T,G)
-105	3.6	2.6	7859-503	★	(C,T,G)
-108	6.0	2.6	7859-511	★	(T,G)
-110	9.2	2.6	7859-516	★	(J,S)
-111	10.8	2.6	7859-518	★	(C,T,S)
-112	12.4	2.6	7859-520	★	(T,G,J)
-113	13.9	2.6	7859-521	★	(C,T,G,J)
-114	15.5	2.6	7859-522	★	(J,S)
-115	17.1	2.6	7859-524	★	(S)
-116	18.7	2.6	7859-526	★	
-118	21.9	2.6	7859-570	★	(O)
-121	26.6	2.6	7859-527	★	(C,T,G)
-122	28.2	2.6	7859-571	★	(C,T,J)
-123	29.8	2.6	7859-528	★	(C,T)
-125	33.0	2.6	7859-572	★	(O)
-127	36.2	2.6	7859-576	★	(T,J)
-128	37.8	2.6	7859-573	★	(J,S)
-136	50.5	2.6	7859-529	★	(C,T,G)
-210	18.6	3.5	7859-530	★	(J,S)
-211	20.2	3.5	7859-532	★	(T,G)
-212	21.8	3.5	7859-534	★	(T)
-213	23.4	3.5	7859-536	★	(C,T,G)
-214	25.0	3.5	7859-538	★	(T,G)
-216	28.2	3.5	7859-539	★	(C,T,G)
-217	29.7	3.5	7859-540	★	(T,G,J)
-220	34.5	3.5	7859-542	★	(T,G,J)
-223	40.9	3.5	7859-574	★	(C,T,G,J)
-225	47.2	3.5	7859-544	★	(C,T,G,J)
-226	50.4	3.5	7859-546	★	
-227	53.6	3.5	7859-545	★	
-228	56.7	3.5	7859-547	★	
-229	59.9	3.5	7859-548	★	(C,T,G,J)
-230	63.1	3.5	7859-575	★	
-327	43.8	5.3	7859-578	★	
-341	88.3	5.3	7859-550	★	
-348	110.5	5.3	7859-579	★	

USE REFERENCE CODES

T= Ace-Threds S= Stopcocks C= Chromatographic Fittings
 G= Gaskets J= O-Ring Joints O= Special

CAPFE – A “Rubbery” PTFE O-Ring

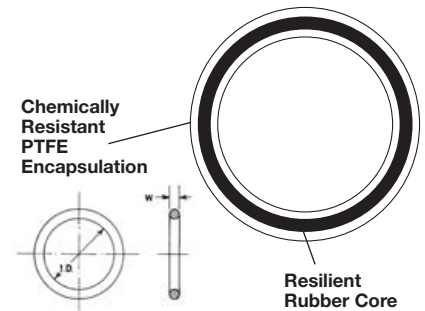
CAPFE O-RINGS

A totally different O-Ring having a resilient rubber core encased in a continuous, thick, non-porous FEP/PTFE encapsulation. This unique O-Ring solves the sealing problems where the chemical inertness of PTFE is a MUST, and where maintenance-free dependability and long service life are required.






CAPFE Advantages

- Continuous encapsulation of thick, pure PTFE offers no seams or weak spots to break and leak.
- CAPFE offers both resilience and chemical resistance.
- Thick PTFE encapsulation permits wide application without leakage or deterioration.
- Resistant to all chemicals except molten alkali metals, hot fluorine and certain complex halogenated compounds.
- Extreme slipperiness of PTFE reduces friction in dynamic applications.
- CAPFE ranges from -60°C to $+204^{\circ}\text{C}$, deterioration vacuum to 10,000psig.



Size	Dimensions, mm		Order Code	
	I.D.	W		
-010	6.1	1.78	7855-805	♠
-011	7.7	1.78	7855-806	♠
-012	9.2	1.78	7855-808	♠
-013	10.8	1.78	7855-810	♠
-015	14.0	1.78	7855-813	♠
-018	18.8	1.78	7855-815	♠
-021	23.5	1.78	7855-819	♠
-022	25.1	1.78	7855-817	♠
-110	9.2	2.6	7855-816	♠
-111	10.8	2.6	7855-818	♠
-112	12.4	2.6	7855-820	♠
-113	13.9	2.6	7855-821	♠
-114	15.5	2.6	7855-822	♠
-115	17.1	2.6	7855-824	♠
-116	18.7	2.6	7855-826	♠
-118	21.9	2.6	7855-870	♠
-121	26.6	2.6	7855-827	♠
-122	28.2	2.6	7855-871	♠
-123	29.8	2.6	7855-828	♠
-125	33.0	2.6	7855-872	♠
-127	36.2	2.6	7855-876	♠
-128	37.8	2.6	7855-873	♠
-136	50.5	2.6	7855-829	♠
-210	18.6	3.5	7855-830	♠
-211	20.2	3.5	7855-832	♠
-212	21.8	3.5	7855-834	♠

Size	Dimensions, mm		Order Code	
	I.D.	W		
-213	23.4	3.5	7855-836	♠
-214	25.0	3.5	7855-838	♠
-217	29.7	3.5	7855-840	♠
-220	34.5	3.5	7855-842	♠
-223	40.9	3.5	7855-874	♠
-225	47.2	3.5	7855-844	♠
-226	50.4	3.5	7855-846	♠
-227	53.6	3.5	7855-845	♠
-228	56.7	3.5	7855-847	♠
-229	59.9	3.5	7855-848	♠
-230	63.1	3.5	7855-875	♠
-232	69.4	3.5	7855-877	♠
-235	79.0	3.5	7855-864	♠
—	134.37	3.5	7855-885	♠
-317	23.2	5.3	7855-860	♠
-329	50.2	5.3	7855-883	♠
-341	88.3	5.3	7855-850	♠
-348	110.5	5.3	7855-879	♠
-349	113.7	5.3	7855-887	♠
-359	145.4	5.3	7855-889	♠
-361	151.8	5.3	7855-861	♠
—	75.0	4.0	7855-878	♠
—	110.0	5.0	7855-880	♠
—	150.0	5.0	7855-881	♠
—	215.0	5.0	7855-884	♠

TYPE OF SEAL	BEFORE COMPRESSION	DURING COMPRESSION	AFTER COMPRESSION	EFFECT
CAPFE O-RING				CAPFE “bounces” back—retains sealing capability like elastomeric ring.



VITON A — A linear copolymer of Vinylidene Fluoride and Hexafluoropropylene.

SILICONE — A group of elastomeric materials made from Silicone, Hydrogen and Carbon.

BUNA-N — A copolymer of Butadiene and Acrylonitrile.

FETFE® — A fluoroelastomer with special TFE Additives.

EPDM (ETHYLENE-PROPYLENE) — An elastomer prepared from Ethylene and Propylene Monomers.

O-RINGS

Size	Dimensions, mm		Qty.	VITON Order Code	SILICONE Order Code	BUNA-N Order Code	FETFE Order Code	EPDM Order Code
-006	2.9	1.78	12	7855-01 ♠	7855-201 ♠	7855-401 ♠	7855-701 ♠	—
-007	3.7	1.78	12	7855-02 ♠	7855-202 ♠	7855-402 ♠	7855-702 ♠	—
-008	4.5	1.78	12	7855-04 ♠	7855-204 ♠	7855-404 ♠	7855-704 ♠	7855-904 ♠
-009	5.3	1.78	12	7855-07 ♠	7855-207 ♠	7855-407 ♠	7855-707 ♠	—
-010	6.1	1.78	12	7855-05 ♠	7855-205 ♠	7855-405 ♠	7855-705 ♠	—
-011	7.7	1.78	12	7855-06 ♠	7855-206 ♠	7855-406 ♠	7855-706 ♠	7855-906 ♠
-012	9.2	1.78	12	7855-08 ♠	7855-208 ♠	7855-408 ♠	7855-708 ♠	7855-908 ♠
-013	10.8	1.78	12	7855-10 ♠	7855-210 ♠	7855-410 ♠	7855-710 ♠	7855-910 ♠
-014	12.4	1.78	12	7855-12 ♠	7855-212 ♠	7855-412 ♠	7855-712 ♠	7855-912 ♠
-015	14.0	1.78	12	7855-13 ♠	7855-213 ♠	7855-413 ♠	7855-713 ♠	—
-016	15.6	1.78	12	7855-14 ♠	7855-214 ♠	7855-414 ♠	7855-714 ♠	7855-914 ♠
-018	18.8	1.78	12	7855-15 ♠	7855-215 ♠	7855-415 ♠	7855-715 ♠	—
-021	23.5	1.78	12	7855-19 ♠	7855-219 ♠	7855-419 ♠	7855-719 ♠	—
-022	25.1	1.78	12	7855-17 ♠	7855-217 ♠	7855-417 ♠	7855-717 ♠	—
-105	3.6	2.6	12	7855-03 ♠	7855-203 ♠	7855-403 ♠	7855-703 ♠	—
-107	5.2	2.6	12	7855-09 ♠	7855-209 ♠	7855-409 ♠	7855-709 ♠	—
-108	6.0	2.6	12	7855-11 ♠	7855-211 ♠	7855-411 ♠	7855-711 ♠	—
-110	9.2	2.6	12	7855-16 ♠	7855-216 ♠	7855-416 ♠	7855-716 ♠	7855-916 ♠
-111	10.8	2.6	12	7855-18 ♠	7855-218 ♠	7855-418 ♠	7855-718 ♠	—
-112	12.4	2.6	12	7855-20 ♠	7855-220 ♠	7855-420 ♠	7855-720 ♠	—
-113	13.9	2.6	12	7855-21 ♠	7855-221 ♠	7855-421 ♠	7855-721 ♠	—
-114	15.5	2.6	12	7855-22 ♠	7855-222 ♠	7855-422 ♠	7855-722 ♠	7855-922 ♠
-115	17.1	2.6	12	7855-24 ♠	7855-224 ♠	7855-424 ♠	7855-724 ♠	—
-116	18.7	2.6	12	7855-26 ♠	7855-226 ♠	7855-426 ♠	7855-726 ♠	7855-926 ♠
-118	21.9	2.6	12	7855-70 ♠	7855-270 ♠	7855-470 ♠	7855-770 ♠	—
-121	26.6	2.6	12	7855-27 ♠	7855-227 ♠	7855-427 ♠	7855-727 ♠	7855-927 ♠
-122	28.2	2.6	6	7855-71 ♠	7855-271 ♠	7855-471 ♠	7855-771 ♠	—
-123	29.8	2.6	6	7855-28 ♠	7855-228 ♠	7855-428 ♠	7855-728 ♠	7855-928 ♠
-125	33.0	2.6	6	7855-72 ♠	7855-272 ♠	7855-472 ♠	7855-772 ♠	—
-127	36.2	2.6	6	7855-76 ♠	7855-276 ♠	7855-476 ♠	7855-776 ♠	—
-128	37.8	2.6	6	7855-73 ♠	7855-273 ♠	7855-473 ♠	7855-773 ♠	—
-136	50.5	2.6	6	7855-29 ♠	7855-229 ♠	7855-429 ♠	7855-729 ♠	7855-929 ♠
-210	18.6	3.5	6	7855-30 ♠	7855-230 ♠	7855-430 ♠	7855-730 ♠	7855-930 ♠
-211	20.2	3.5	6	7855-32 ♠	7855-232 ♠	7855-432 ♠	7855-732 ♠	7855-932 ♠
-212	21.8	3.5	6	7855-34 ♠	7855-234 ♠	7855-434 ♠	7855-734 ♠	7855-934 ♠
-213	23.4	3.5	6	7855-36 ♠	7855-236 ♠	7855-436 ♠	7855-736 ♠	—
-214	25.0	3.5	6	7855-38 ♠	7855-238 ♠	7855-438 ♠	7855-738 ♠	7855-938 ♠
-215	26.6	3.5	6	7855-37 ♠	—	7855-437 ♠	—	—
-216	28.2	3.5	6	7855-39 ♠	7855-239 ♠	7855-439 ♠	7855-739 ♠	7855-939 ♠
-217	29.7	3.5	6	7855-40 ♠	7855-240 ♠	7855-440 ♠	7855-740 ♠	—
-218	31.3	3.5	6	7855-41 ♠	—	7855-441 ♠	—	—
-219	32.9	3.5	6	7855-43 ♠	—	7855-443 ♠	—	—
-220	34.5	3.5	6	7855-42 ♠	7855-242 ♠	7855-442 ♠	7855-742 ♠	7855-942 ♠
-221	36.1	3.5	6	7855-51 ♠	—	7855-451 ♠	—	—
-222	37.7	3.5	6	7855-52 ♠	—	7855-452 ♠	—	—
-223	40.9	3.5	3	7855-74 ♠	7855-274 ♠	7855-474 ♠	7855-774 ♠	—
-225	47.2	3.5	3	7855-44 ♠	7855-244 ♠	7855-444 ♠	7855-744 ♠	7855-944 ♠
-226	50.4	3.5	3	7855-46 ♠	7855-246 ♠	7855-446 ♠	7855-746 ♠	7855-946 ♠
-227	53.6	3.5	3	7855-45 ♠	7855-245 ♠	7855-445 ♠	7855-745 ♠	—
-228	56.7	3.5	3	7855-47 ♠	7855-247 ♠	7855-447 ♠	7855-747 ♠	—
-229	59.9	3.5	3	7855-48 ♠	7855-248 ♠	7855-448 ♠	7855-748 ♠	7855-948 ♠
-230	63.1	3.5	3	7855-75 ♠	7855-275 ♠	7855-475 ♠	7855-775 ♠	7855-975 ♠

Continued on following page



VITON A — A linear copolymer of Vinylidene Fluoride and Hexafluoropropylene.

SILICONE — A group of elastomeric materials made from Silicone, Hydrogen and Carbon.

BUNA-N — A copolymer of Butadiene and Acrylonitrile.

FETFE® — A fluoroelastomer with special TFE Additives.

EPDM (ETHYLENE-PROPYLENE) — An elastomer prepared from Ethylene and Propylene Monomers.

O-RINGS (listing continued from previous page)

Size	Dimensions, mm		Qty.	VITON Order Code	SILICONE Order Code	BUNA-N Order Code	FETFE Order Code	EPDM Order Code
-233	72.6	3.5	3	—	—	—	7855-778 ♠	—
-235	79.0	3.5	3	7855-64 ♠	7855-264 ♠	— ♠	7855-764 ♠	—
-239	91.7	3.5	3	—	—	—	—	—
-240	94.9	3.5	3	—	—	—	—	—
-325	37.5	5.3	6	7855-65 ♠	—	7855-453 ♠	—	—
-326	40.6	5.3	6	7855-67 ♠	—	7855-454 ♠	—	—
-327	43.8	5.3	6	7855-68 ♠	7855-278 ♠	7855-455 ♠	—	—
-329	50.2	5.3	3	—	7855-283 ♠	—	7855-783 ♠	—
-335	69.2	5.3	3	—	—	7855-499 ★	—	—
-336	72.4	5.3	3	7855-82 ♠	7855-282 ♠	—	7855-782 ♠	—
-338	78.7	5.3	3	7855-77 ♠	7855-277 ♠	—	7855-777 ♠	—
-341	88.3	5.3	3	7855-50 ♠	7855-250 ♠	7855-450 ♠	7855-750 ♠	—
-343	94.6	5.3	3	7855-66 ♠	7855-266 ♠	—	7855-766 ♠	—
-348	110.5	5.3	3	7855-79 ♠	—	—	7855-779 ♠	—
-349	113.7	5.3	3	—	7855-287 ♠	—	7855-787 ♠	—
-359	145.4	5.3	3	—	7855-289 ♠	—	—	—
5-101	2.5	0.97	12	7855-80 ♠	—	—	—	—
2-105	—	—	12	7855-303	—	—	—	—
5-193	4.5	1.0	12	7855-81 ♠	7855-281 ♠	—	—	—
5-017	6.1	2.6	12	—	—	7855-482	—	—
—	75.5	4.0	1	7855-83 ♠	7855-251 ★	—	—	—
—	110.0	5.0	1	7855-84 ♠	7855-254 ★	—	—	—
—	150.0	5.0	1	7855-85 ♠	7855-260 ★	—	—	—
—	215.0	5.0	1	—	7855-288 ★	—	—	—
O-Ring Kits — 30 Sizes	—	—	500	7855-99 ★	—	7855-499 ★	—	—
O-Ring Sets: one box of 18 sets	—	—	—	—	—	—	8194-310 ♠	—
O-Ring Sets: one box of 18 sets	—	—	—	—	—	—	8194-313 ♠	—
O-Ring Sets: one box of 12 sets	—	—	—	—	—	—	8194-315 ♠	—
O-Ring Sets: one box of 6 sets	—	—	—	—	—	—	8194-317 ♠	—

*Sizes not listed are available via special order. Call or email for quotation.

Pressure Vessels



- Round-bottom, heavy wall design to facilitate use in heating mantles
- Several sizes available with either #7, #15, #25 or #36 Ace-Thred top fitting
- PTFE front seal plug for better sealability with FETFE O-Rings, (other O-Ring materials available)
- Flasks available with side thermowell to accommodate either temperature sensors or thermometers
- Side port options also available for sampling.

Safety coated versions of these vessels are available upon special request.

CHEMICAL COMPATIBILITY CHART

Key: 1=Recommended; 2=Satisfactory; 3=Poor; 4=Marginal; 5=Not Recommended; A=Acceptable; NA=Not Acceptable

	Viton	Silicone	Buna-N	EPDM	Chemraz 514	Kalrez 4079	FETFE	CAPFE
Temperature Range °C	-26 to 204	-62 to 204	-37 to 121	-54 to 149	-30 to 220	-15 to 316	-18 to 204	-60 to 204
Compression set	2	2	2	2	2	2	2	3
Durometer	75	70	70	70	70	75	70	70
Steam < 120 °C	3	4	4	4	1	1	1	5
Acetone	4	3	3	2	1	1	5	1
Toluene	2	3	3	3	1	1	2	2
Tetrachloroethane	1	3	3	3	1	1	1	2
THF	4	4	4	4	1	1	5	3
Methyl Ethyl Ketone	5	5	5	2	1	1	5	2
Acetonitrile	5	5	5	5	1	1	5	2
Hydrochloric Acid (conc)	2	5	4	5	1	1	2	4
Ammonia Gas (cold)	4	1	2	2	1	1	4	2
Tetrachloroethylene	3	5	3	3	1	1	3	2
Sulfuric Acid (dilute)	2	5	1	5	2	2	2	2
Nitric Acid (conc)	2	5	4	5	1	1	2	4
Calcium Carbonate	2	5	1	1	1	1	2	2
Xylene	2	4	4	3	1	1	2	2
Mineral Oils	1	2	1	4	1	1	1	1
Sodium Carbonate	1	1	1	1	1	1	1	2
Vacuum	1	4	2	4	4	4	1	2
FDA	A	A	A	A	NA	NA	NA	A

Chemical compatibility information courtesy of the respective manufacturers of each o-ring type. Ace is not responsible for errors.





Pumps



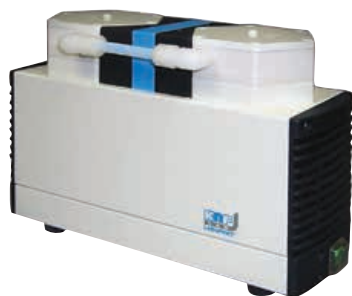
Vacuum Pumps
Liquid Pumps
Vacuum Gauges

**VACUUM PUMP** *Aspirator, Diaphragm* ★*KNF N920 Series*

Adjustable speed, aspirator type, vacuum pump. Oil-free, diaphragm type pumps. Extremely quiet and low-vibration operation. Ideal for aspirator vacuum applications, such as bench filtration apparatus, small vacuum manifolds, low pressure chromatography or small bench rotary evaporators. Variable power supply 90-264V, 50-60Hz brushless DC motor with IP20 protection rating.

- PTFE heads, PTFE-coated diaphragms and FFPM valves
- Temperature range ambient +5 to 40°C
- Dimensions: 133mm (W) x 324mm (L) x 226mm (H)

Flow Rate, Lpm	Vacuum, mBar	Max Pressure, psig	Tubing Connections, in	Weight, Kg	Order Code
1-20	2.0	7	3/8	10	14098-04

**VACUUM PUMP** *Diaphragm* ★*KNF Laboport® Series*

Clean, oil-free performance. All chemically-resistant wetted parts can tolerate wet vapors without damage. All two-stage head design for smooth, efficient vacuum performance. Ideal for bench rotavaps and large scale evaporation for vessels up to 15L. Electric 115V, 60Hz motor with IP44 protection rating.

- PTFE heads, PTFE-coated diaphragms and FFPM valves
- Temperature range ambient +5 to 40°C

Flow Rate, Lpm	Vacuum, Torr (Hg)	Max Pressure, psig	Tubing Connections, in	Weight, Kg	Order Code
10	6.0 (29.7)	15	3/8	7.2	14100-04
20	6.0 (29.7)	15	3/8	9.5	14100-06
34	6.0 (29.7)	15	3/8	12.6	14100-08
34	1.5 (29.9)	15	3/8	13.3	14100-10
60	1.5 (29.9)	15	1/2	14.8	14100-12

**VACUUM PUMP** *Mini-Diaphragm* ★*KNF Laboport® Series*

Clean, oil-free performance. Pumps have both pressure and vacuum capability. All chemically-resistant wetted parts can tolerate wet vapors without damage. All two-stage head design for smooth, efficient performance. Ideal for larger bench rotavaps. (Also available with vacuum gauge). Electric 115V, 60Hz motor with IP100 protection rating.

- PPS heads, PTFE-coated diaphragms, and either FPM or FFPM valves
- Temperature range ambient +5 to 40°C

Flow Rate, Lpm	Vacuum, Torr (Hg)	Max Pressure, psig	Tubing Connections, in	Weight, Kg	Valve Material	Order Code
5.5	120 (25.2)	35.0	1/4	1.9	FFPM	14101-02
13.0	75 (27.0)	15.0	1/4	2.5	FPM	14101-04
30.0	120 (25.2)	7.4	1/4	4.0	FFPM	14101-06
16.0	15 (29.3)	7.4	1/4	4.0	FFPM	14101-08

**VACUUM PUMP** *CRVpro Series* ★**Welch**

Two stage rotary vane vacuum pumps are built to last with increased reliability and longer service interval than comparable pumps on the market. These pumps run 10% cooler, use 36% less oil and have a 40% larger oil capacity to further dilute any harmful vapors that are not condensed in the cold trap. Ask about explosion proof models. CE & cULus rated.

Model	Free Air Displacement cfm (L/min)	Ultimate Pressure torr	Inlet Hose Connection	Order Code
CRVpro 4	2.8 (78)	.0005	5/8" to 3/4"	14113-04
CRVpro 6	4.2 (118)	.0005	5/8" to 3/4"	14113-06
CRVpro 8	5.6 (158)	.0005	5/8" to 3/4"	14113-08
CRVpro 16	12.8 (363)	.0003	5/8" to 3/4"	14113-16

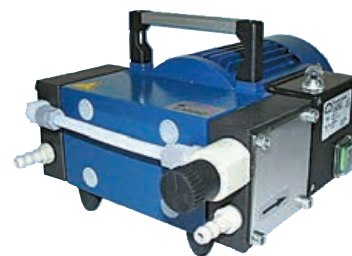
Accessories

CRVpro 4, 6 & 8 Oil Mist Filter, Exhaust Filter (includes replaceable filter element)	14113-40
CRVpro 4, 6 & 8 Filter Element (fits our 14113-40 Welch oil mist filter)	14113-42
CRVpro 16 Oil Mist Filter, Exhaust Filter (includes replaceable filter element)	14113-50*
CRVpro 16 Filter Element (fits our 14113-50 Welch oil mist filter)	14113-52

*Also fits CRVpro 24 & 30. Use 14113-52 Filter Element.

VACUUM PUMP *Diaphragm, Two-Stage ★*
Welch-Illvac MPC101Z

Two-stage, chemically-resistant diaphragm type pump. Ultimate pressure 6 torr (8 mBar), 17L/minute flow rate. Connections are for 8mm I.D. vacuum hose. 115V, 50/60Hz. Pump is compact and extremely quiet — great for all laboratory applications. Low maintenance thanks to beltless, oil-free operation. All wetted parts are PTFE or PTFE-type compounds. Two-year manufacturer's warranty is included.



Flow Rate, Lpm	Vacuum, Torr	Tubing Connections, mm	Order Code
17	6	8	14112-07

VACUUM PUMP *Diaphragm, Three-Stage ★*
Welch-Illvac MPC104T

Three-stage, chemically-resistant diaphragm type pump. Ultimate pressure 1.5 torr (2 mBar), 17L/minute flow rate. Connections are for 8mm I.D. vacuum hose. 115V, 50/60Hz. Pump is compact and extremely quiet — great for all laboratory applications. Low maintenance thanks to beltless, oil-free operation. All wetted parts are PTFE or PTFE-type compounds. Two-year manufacturer's warranty is included.



Flow Rate, Lpm	Vacuum, Torr	Tubing Connections, mm	Order Code
17	1.5	8	14112-09

VACUUM PUMP *Diaphragm, Two-Stage ★*
Welch-Illvac MPC301Z

Two-stage, chemically-resistant diaphragm type pump. Ultimate pressure 6 torr (8 mBar), 38L/minute flow rate. Connections are for 8mm I.D. vacuum hose. 115V, 50/60Hz. Pump is compact and extremely quiet — great for all laboratory applications. Low maintenance thanks to beltless, oil-free operation. All wetted parts are PTFE or PTFE-type compounds. Two-year manufacturer's warranty is included.



Flow Rate, Lpm	Vacuum, Torr	Tubing Connections, mm	Order Code
38	6	8	14112-11

VACUUM PUMP *Diaphragm, Three-Stage ★*
Welch-Illvac MPC201T

Three-stage, chemically-resistant diaphragm type pump. Ultimate pressure 1.5 torr (2 mBar), 37L/minute flow rate. Connections are for 8mm I.D. vacuum hose. 115V, 50/60Hz. Pump is compact and extremely quiet — great for all laboratory applications. Low maintenance thanks to beltless, oil-free operation. All wetted parts are PTFE or PTFE-type compounds. Two-year manufacturer's warranty is included.



Flow Rate, Lpm	Vacuum, Torr	Tubing Connections, mm	Order Code
37	1.5	8	14112-15

VACUUM PUMP *Diaphragm, Hazardous Area*

Oil-free, PTFE diaphragm type vacuum pump for Hazardous Areas. Meets Class 1, Div 1 Groups C & D location ratings. Single or twin head design. Control box has 1" - 14 NPT conduit connection for direct wiring. Pump head ports are 1/4" NPT. Code -05 pump is recommended for ACE Auto-Reactor systems.

- PTFE heads, PTFE-coated diaphragms, and PTFE valves
- Electric 115/230V, 60Hz motor, UL listed USA and Canada



Flow Rate, Lpm	Vacuum, in.Hg	Air, psig	Number of Heads	Weight, Kg	Order Code
29.2	27	50	1	19.5	14092-05
29.2	29.45	Vac only	2	23.0	14092-10

**VACUUM PUMP** *Diaphragm, Hazardous Area*

Oil-free, PTFE diaphragm type vacuum pump for Hazardous Areas. Meets Class 1, Div 1 Groups C & D location ratings. Single head, single-stage design. Chemically-resistant solid PTFE heads, PTFE valves and PTFE-coated diaphragms. Control box has 3/4" - 14 NPT conduit connection for direct wiring.

- Air and vacuum rated
- PTFE heads, PTFE-coated diaphragms, and PTFE valves
- Electric 115/230V, 60Hz motor, UL listed USA and Canada

Flow Rate, Lpm	Vacuum, in.Hg	Pressure Max, psig	Weight, Kg	Order Code
17	27.95	20	16.6	14090-05

**VACUUM PUMP** *Diaphragm, Hazardous Area*

Oil-free, PTFE diaphragm type vacuum pump for Hazardous Areas. Meets Class 1, Div 1 Groups C & D location ratings. Twin head, two-stage design. Chemically-resistant solid PTFE heads, valves and PTFE coated diaphragms. 115/230V, 60Hz. UL listed USA and Canada. Control box has 3/4" - 14 NPT conduit connection for direct wiring.

- Vacuum rated only
- PVDF coated heads, PTFE-coated diaphragms, and stainless steel valves
- Electric 115/230V, 60Hz motor, UL listed USA and Canada

Flow Rate, Lpm	Vacuum, in.Hg	Weight, Kg	Order Code
17	29.5	18.0	14091-10

**VACUUM PUMP** *Diaphragm, Hazardous Area*

Oil-free, PTFE diaphragm type vacuum pump for Hazardous Areas. Meets Class 1, Div 1 Groups C & D location ratings. Single head, two-stage design. Control box has 1" NPT conduit connection for direct wiring. Pump head ports are 3/8" NPT. Ideal for large ACE reactor systems.

- PTFE head, PTFE-coated diaphragms, and FFKM valves
- Electric 115/230V, 60Hz motor, UL listed USA and Canada

Flow Rate, Lpm	Vacuum, in.Hg	Air, psig	Weight, Kg	Order Code
60	29.86	15	18.9	14093-10



13069-02

VACUUM PUMP *Wireless Remote Systems ★***KNF SC920 & SC950**

Create a safer work environment with RF remote control vacuum systems from KNF. Install vacuum system under your bench or in a safety cabinet and control without the need for cable feedthroughs. Using the remote's touchscreen and rotary knob, evacuate a chamber, maintain a pressure you set, automatically find a sample's vapor pressure or follow a user-defined pressure curve.

- Electric 100/240V, 50/60Hz motor

Flow Rate, Lpm	Vacuum, Torr (mbar)	Pneumatic Hose Connection I.D., mm (in)	Coolant Hose Connection I.D., mm (in)	Weight, Kg (lb)	Order Code
20	1.5 (2)	10 (3/8)	8 (1/4)	15 (33)	13069-02
50	1.5 (2)	10 (3/8)	8 (1/4)	14.5 (32)	13069-20

13069-20



PERISTALTIC PUMP

Heidolph Hei-Flow Value 06

Heidolph Hei-FLOW Value 06 peristaltic pump includes leading safety standards and features for superior ease of use and reduced cost of ownership. Constant speed (50-600rpm) is maintained under changing loads and set via an analog speed control accurate to plus/minus 2%. Clockwise and counter-clockwise operation at the touch of a button.

Note: Sold without a pump head or tubing. Contact Ace for a quotation on available tubing sizes, materials, and a suitable pump head.

Flow Rate, mL/m	Variable Speed, rpm	Order Code
3-4.151	50-600	13283-06



LIQUID PUMP *Diaphragm, Process Scale*

KNF UNF300

Self-priming for excellent pressure performance. These pumps are great for pilot plants, large chromatography columns, or large scale rotary evaporator applications. All process pumps have to be hard-wired in. Plumbing connections are 3/8" NPT. 115V, 60Hz, AC capacitor motor or 12V or 24V, BDC motor.

- Up to 3L/min flow rates with suction head at 10.5psig (719mbar, 9.8ft H₂O)
- Pressure head up to 15psig, (1bar)
- Motor protection factor IP54

Head Material	Diaphragm Material, (coated)	Valve Material	Weight, Kg	Motor, Voltage/Hz	Order Code
Polypropylene	PTFE	EPDM	2.8	115/60	13231-03
PDVF	PTFE	FFPM	2.8	115/60	13231-05
PDVF	PTFE	FFPM	1	12V BDC	13231-10
PDVF	PTFE	FFPM	1	24V BDC	13231-15



LIQUID PUMP *Diaphragm, Process Scale, KNF UNF600*

Self-priming for excellent pressure performance. Four separate diaphragm technology for smoother pumping and maximum efficiency. Fluid temperature range is ambient to 80°C. These pumps are great for pilot plants, large chromatography columns or large scale rotary evaporator applications. All process pumps have to be hard-wired in. Plumbing connections are 3/8" NPT. 115V, 60Hz, AC capacitor motor or 24V, BDC motor.

- Up to 6L/min flow rates with suction head at 10.5psig (719mbar, 8.8 ft H₂O)
- Pressure head up to 14.5psig, (1bar)
- Motor protection factor IP54

Head Material	Diaphragm Material, (coated)	Valve Material	Weight, Kg	Motor, Voltage/Hz	Order Code
Polypropylene	PTFE	EPDM	2.5	115/60	13234-07
PDVF	PTFE	FFPM	2.5	115/60	13234-11
PDVF	PTFE	FFPM	2.5	24V BDC	13234-13





LIQUID PUMP Diaphragm, Analog, KNF Liquiport NF ★

Small footprint, splash-proof housing. Manual analog control mode. Self priming to 9.8' of water, maintenance free, and will operate even dry without damage. Flow ranges are adjustable with two pressure head ranges available. A remote control version is also available. PTFE-coated diaphragms and FFPV valves. 100-240V, 50/60Hz motor.

Flow Range, mL/min	Head Pressure, psig	Hose I.D., in	Liquid Temp Range, °C	Order Code
200-1300	85	3/8	ambient to 40	13070-01
200-1300	15	3/8	ambient to 40	13070-03
500-3000	15	1/2	ambient to 40	13070-07
500-3000	85	1/2	ambient to 40	13070-09

PTFE Heads

200-1300	15	3/8	ambient to 80	13071-02
200-1300	85	3/8	ambient to 80	13071-04
500-3000	15	1/2	ambient to 80	13071-08
500-3000	85	1/2	ambient to 80	13071-12



LIQUID PUMP Diaphragm, Dosing, KNF Simdos 10 ★









Small, lightweight, liquid transfer pumps with dosing feature. Digital with manual control. Self priming up to 9.8' of water. Small foot-print, IP65 protection rated splash-proof housing. Following calibration, repeatability is maintained at $\pm 1\%$. Liquid temperature range: ambient $+5^\circ$ up to 80°C . Chemically-resistant PTFE diaphragm and FFKM valves. Normal viscosity rated at 150 centistokes. Maximum viscosity 500cSt attainable with low viscosity fluids. Connects to 1/8" I.D. tubing. 100-240V, 50/60Hz motor.

Flow Range, mL/min	Dosing Volume, mL	Suction Height, Ft.H ₂ O	Pressure Max, psig	Head Material	Order Code
1-100	1-1000	9.8	85	Polypropylene	13080-01
1-100	1-1000	9.8	85	PVDF	13080-03
1-100	1-1000	9.8	85	PTFE	13080-05

w/Remote Control

1-100	1-1000	9.8	85	Polypropylene	13081-03
1-100	1-1000	9.8	85	PVDF	13081-05
1-100	1-1000	9.8	85	PTFE	13081-07

Tubing Sizer for Peristaltic Pumps

Tubing sizes								
Inner diameter (mm):	0.8	1.7	3.1	4.8	6.3	8.0	11.3	12.9
Outer diameter (mm):	4.0	4.9	6.3	8.0	9.5	11.3	12.9	14.6
Wall thickness (wt) (mm):	1.6	1.6	1.6	1.6	1.6	2.5	2.5	2.5
Max. pressure (continuous/short time) (bar):	0.7/1.7	0.7/1.7	0.7/1.7	0.5/1.5	0.5/1.5	0.8/1.8	0.8/1.8	0.8/1.8
Suction height (mH ₂ O):	8.8	8.8	8.8	8.8	6.7	8.8	8.8	8.8
Flow rates in combination with pump head/pump drive								
SP quick	min.	max.	min.	max.	min.	max.	min.	max.
PD 5106/PD 5206 (mL/min):	1.6	40	6.8	169	25.7	643	56	1,400
PD 5006 (mL/min):	3.3	40	14.1	169	53.6	643	116.7	1,400
PD 5101/PD 5201 (mL/min):	0.3	8.0	1.4	34	5.2	129	11.2	280
PD 5001 (mL/min):	0.7	8.0	2.8	34	10.7	129	23.3	280
SP standard/SP vario	min.	max.	min.	max.	min.	max.	min.	max.
PD 5106/PD 5206 (mL/min):	2.4	60.2	10.4	260	41.2	1,029	86.3	2,157
PD 5006 (mL/min):	5.0	60.2	21.7	260	85.8	1,029	179.8	2,157
PD 5101/PD 5201 (mL/min):	0.5	12.0	2.1	52	8.2	206	17.3	431
PD 5001 (mL/min):	1.0	12.0	4.3	52	17.2	206	36	431

VACUUM GAUGE *Progressive Display, Digivac TracVac*

Bar graph style vacuum meter. Visually illustrates vacuum pressure rate changes which enables the quick determination of increasing or decreasing vacuum. 10' sensor cord. CE rated.

Range, microns	Vacuum Interface	Motor, Voltage	Motor, Hz	Order Code	
1-760,000	1/8" NPT or 1/4" flare	100-240	50/60	14301-01	★

Accessories

PTFE #15 Ace-Thred Bushing, 1/8" FMPT	5844-62	♣
24/40 to #15 Ace-Thred Adapter	5030-40	♣
29/42 to #15 Ace-Thred Adapter	5030-42	♣
45/50 to #15 Ace-Thred Adapter	5030-45	♣
1/2" PTFE Sealing Tape	14120-18	★


VACUUM GAUGE *Transmitter, Digivac 22W LCD*

A small, compact versatile vacuum gauge that can fit almost anywhere. Uses a standard, replaceable, vacuum gauge tube with 1/8" MNPT threads. Easily can be adapted to fit onto any schlenk line to give highly accurate and recordable data readings. A built in RS232 port for data download to a PC, and a 5VDC output with a single set-point for output to PLC's or chart recorders. Factory calibrated to NIST traceable standard. CE rated.

Range, microns	Motor, Voltage	Motor, Hz	Order Code	
1-760,000	100-230	50/60	14302-01	★

Accessories

PTFE #15 Ace-Thred Bushing, 1/8" FMPT	5844-62	♣
24/40 to #15 Ace-Thred Adapter	5030-40	♣
29/42 to #15 Ace-Thred Adapter	5030-42	♣
45/50 to #15 Ace-Thred Adapter	5030-45	♣
1/2" PTFE Sealing Tape	14120-18	★


VACUUM GAUGE *Handheld*
Digivac Bullseye Precision Gauge

A rugged, portable vacuum measurement instrument designed specifically for the demands of field use. Precise reading with 11 measurable units and field calibrated. +/-17% accuracy from 1-2000 microns and +/-30% accuracy from 2001-800,000 microns. Selectable graphic mode allows for chart graphs or numerical display. Data can be logged and output in a spreadsheet format. 7' sensor cord, rubber boot, kickstand and magnet for hands free operation.

Range, microns	Vacuum Interface	Power, Alkaline Batteries	Order Code	
1-800,000	1/8" NPT or 1/4" flare	(4) AA	14303-01	★

Accessories

PTFE #15 Ace-Thred Bushing, 1/8" FMPT	5844-62	♣
24/40 to #15 Ace-Thred Adapter	5030-40	♣
29/42 to #15 Ace-Thred Adapter	5030-42	♣
45/50 to #15 Ace-Thred Adapter	5030-45	♣
1/2" PTFE Sealing Tape	14120-18	★


VACUUM GAUGE *Digital ★*
Digivac Model 200

Digital vacuum gauge uses precision current source and solid state electronics for better resolution and accuracy than analog gauges. Does NOT use mercury. Large, easy-to-read display immune to parallax errors. No moving parts; resistant to dropping and rough handling. Inter-changeable tubes; head surfaces are nickel plated steel, ceramic and platinum alloy. Can withstand up to 30psig max.

Note: Supplied with 10' sensor cable with 1/8" MNPT connection, sensor tube and AC adapter.

Description	Total Range, torr	Vacuum Interface	Power,	Order Code
Thermocouple Gauge Type	.001-760	1/8" MNPT	100-240v, 50/60Hz	14034-36

Replacement Parts

Thermocouple Gauge Tube for 14034-36 only	14034-64
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Rotary Evaporators



Rotavap Systems
Glassware Assemblies
Replacement Parts

Industrial Rotary Evaporator

Heidolph Hei-VAP

CE SR approved.



Compact Model



Safety Model

The Heidolph large scale evaporators of the Hei-VAP Industrial series are perfectly designed for a great deal of different distilling processes, from standard evaporation without vacuum control, up to complex distillation processes with vacuum control.

A temperature sensor powers off the bath in case of any uncontrolled heat-up event. The unique integrated evaporating flask support system allows for “one person operation” to remove the flask in just moments. Distilling through automated vacuum distillation allows you to spend a significantly less amount of time on solvent evaporation tasks. The automatic water bath refill system along with an additional control panel for filling and electronics allow for use over an extended period of time.

With the Hei-VAP Industrial series you can be sure you are always on the safe side when doing automatic distillation. Safety features guarantee a smooth distillation process, no matter what solvent you evaporate.

Compact Model Features:

- 230V, 50/60Hz
- w/o Base Cart
- Glassware set RC: (1) ascending condenser, (1) 20L evaporating flask, (2) 10L receiving flask
- Large touch screen control panel with illuminated displays for all process parameters, programmable ramps
- The evaporation flask is illuminated during operation for increased visibility
- Certification according to GMP available for this model: validation for installation (IQ) and operating qualification (OQ)
- Universal heating bath accommodates water or other bath fluids allowing for temperature settings up to 180°C
- Comes standard with integrated refill water system, spillover prevention and a release valve on the bottom

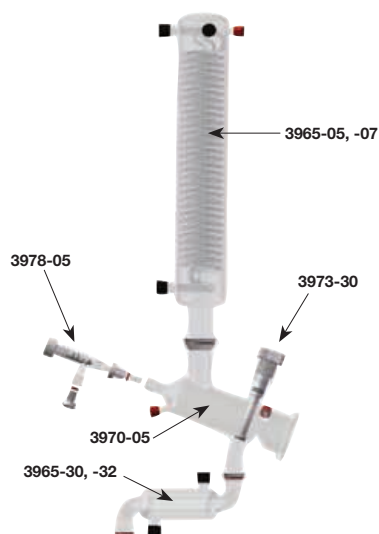
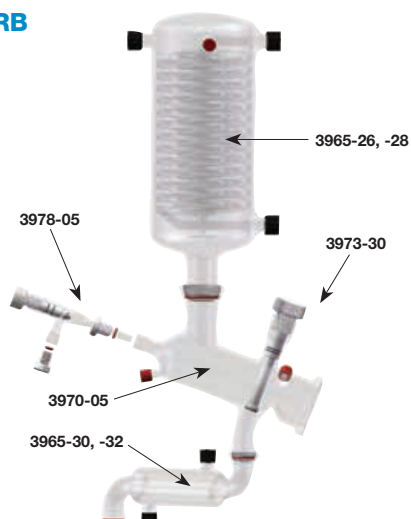
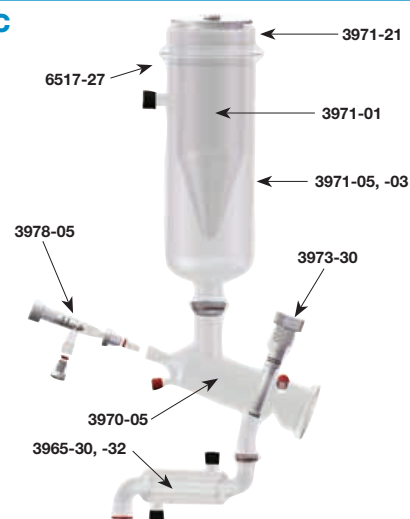
Safety Model Features:

- Compact model features, plus the following features:
 - User safety with high-impact transparent PMMA door
 - Non-fogging safety glass and metal frame guard hood provides excellent user protection
 - Receiver cassettes and additional PMMA door housing protect against threat of glassware breakage

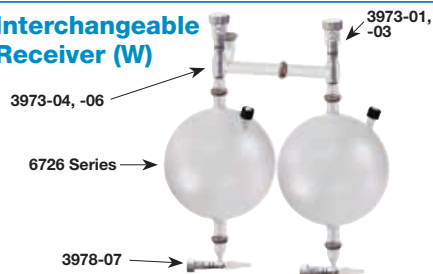
Model	Order Code
Safety	13301-02
Compact	13301-04

Glassware Set RC

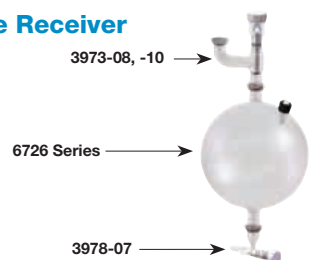
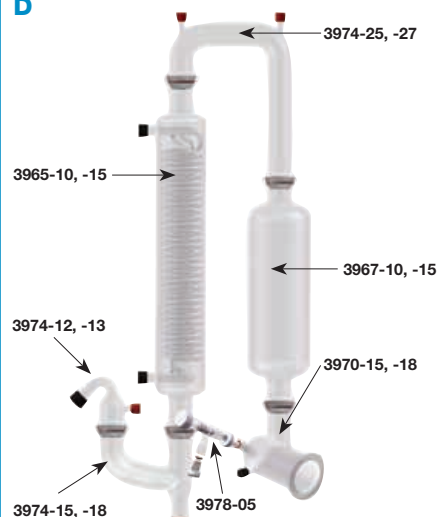
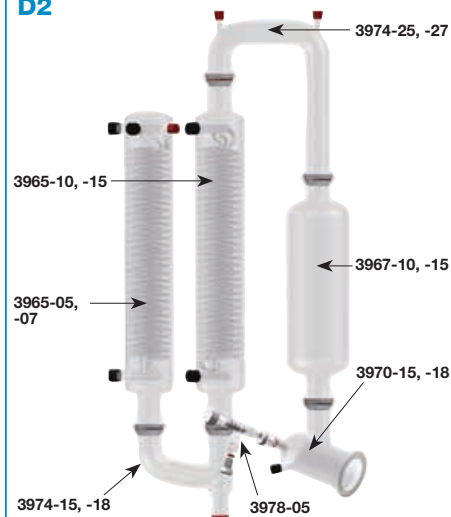
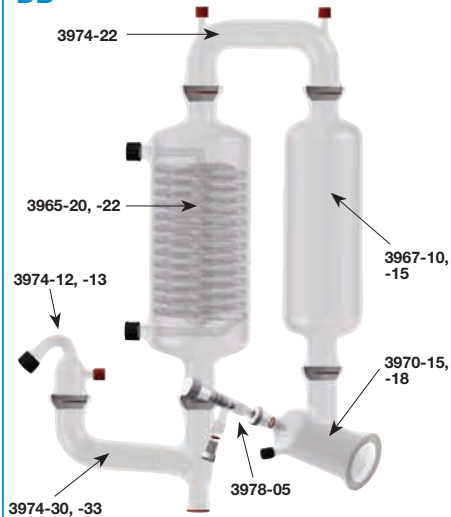
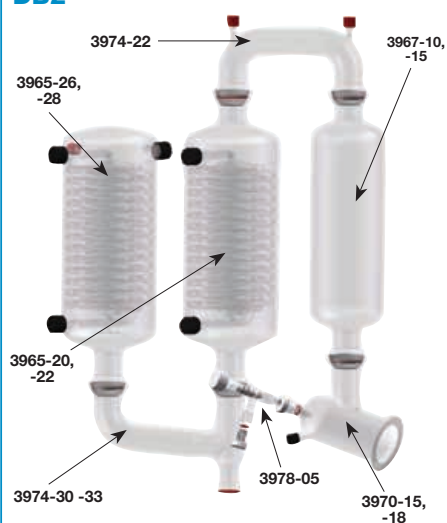


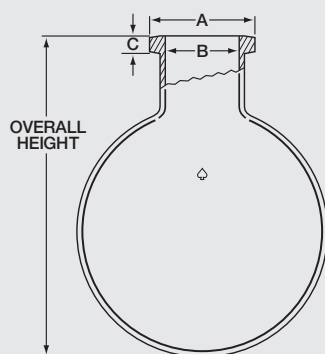
R

RB

C


Interchangeable Receiver (W)



Single Receiver (E)


D

D2

DB

DB2




Flange Sizes

Flange Size Designation	A Flange O.D., mm (in)	B Flange I.D., mm (in)	C Flange Thickness (mm)
S (Small)	90 (3.5)	67 (2.7)	18
M (Medium)	100 (3.9)	72 (2.8)	19
L (Large)	110 (4.3)	83 (3.3)	23
XL (Extra Large)	149.5 (5.9)	118.8 (4.7)	21



FLASK Large Scale ★

These large size evaporation flasks are fabricated from heavy wall flask blanks selected for balance and quality. Necks are carefully fabricated to prevent “rotational whip”. Flasks are now available in clear plain glass, poly-coated, or amberized. Amber coated flask can protect light-sensitive contents. The XL size flange (see table) is compatible with the 150mm, and is standard for *Buchi® Model R220* rotary evaporators.

Capacity, Liters	Similar to Buchi® Part No.	Overall Height, mm	Flange Size	Order Code
6	27470	300	S	6702-05
6	27470	325	M	6702-07
6	27470	380	M	6702-10
6	27470	295	L	6702-15
6	27470	380	L	6702-17
6	27470	351	XL	6702-19
10	27469	350	S	6702-20
10	27469	335	M	6702-25
10	27469	413	M	6702-27
10	27469	410	L	6702-30
10	27469	380	XL	6702-33
20	27468	375	M	6702-35
20	27468	435	M	6702-37
20	27468	435	L	6702-40
20	27468	413	XL	6702-44



FLASK Large Scale, Poly-Coated ★

Same as 6702 above, but poly-coated for added safety. Plastic coated flasks are clear and will withstand temperatures up to 100°C.

Capacity, Liters	Similar to Buchi® Part No.	Overall Height, mm	Flange Size	Order Code
6	—	300	S	6702-105
6	—	325	M	6702-107
6	—	380	M	6702-110
6	—	295	L	6702-115
6	—	380	L	6702-117
6	27470	351	XL	6702-119
10	—	350	S	6702-120
10	—	335	M	6702-125
10	—	413	M	6702-127
10	—	410	L	6702-130
10	27469	380	XL	6702-133
20	—	375	M	6702-135
20	—	435	M	6702-137
20	—	435	L	6702-140
20	27468	413	XL	6702-144

FLASK Large Scale, Amberized ★

Same as 6702, except with an amber coating to protect light-sensitive contents. The XL size matches Buchi® large scale rotary evaporators.

Note: Flasks can be plastic-coated upon request.

Capacity, Liters	Similar to Buchi® Part No.	Overall Height, mm	Flange Size	Order Code
6	—	351	XL/149.5	6702-219
10	—	380	XL/149.5	6702-233
20	—	413	XL/149.5	6702-244

Accessories

Polyethylene Dust Cover	6702-300
-------------------------	----------



FLASK Large Scale, Indented ★

Also referred to as drying flasks, particularly suited for drying of powdered samples. The baffles, indented into the glass provide better circulation and mixing of the powders while rotating.

Note: Flasks can be plastic-coated upon request.

Capacity, Liters	Similar to Buchi® Part No.	Overall Height, mm	Flange Size	Order Code
10	28592	380	XL/149.5	6720-10
20	28593	413	XL/149.5	6720-20

Accessories

Polyethylene Dust Cover	6702-300
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FLASK for Heidolph 20L ★

Used with Heidolph 20L rotary evaporators. These large flasks are from blanks selected for balance and quality. Necks are carefully welded to prevent “rotational whip.” Flasks can be plastic coated upon request.

Note: Flanges for Laborota and Hei-Vap Industrial are different. Refer to the Heidolph original part numbers.

Capacity, Liters	Heidolph Part Number	Order Code
---------------------	-------------------------	---------------

Laborota

10	036303000	6701-12
20	036302990	6701-22

Hei-Vap Industrial

10	036303005	6701-32
20	036302995	6701-33



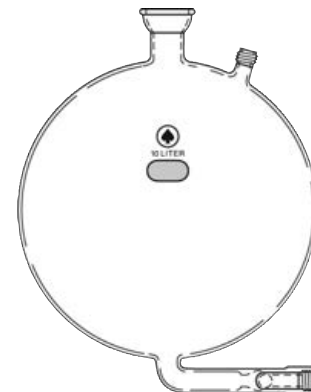
FLASKS Bottom Outlet, Side Neck, for Heidolph 20L ★

Used with Heidolph 20L rotary evaporators. These receiver flasks are fabricated from blanks selected for balance and quality. Center neck is a polished $\frac{1}{2}$ 40/25 joint; side neck is a GL-18 thread, supplied with solid cap. At bottom is a 0-10mm Easy-Action stopcock with a GL-18 side arm, supplied with a $\frac{3}{8}$ " hose connection tube. Flasks can be plastic-coated upon request.

Capacity, Liters	Center Neck	Side Neck	Bottom Outlet	Heidolph Part Number	Order Code
10	$\frac{1}{2}$ 40/25	GL18	0-10mm/GL-18	036303040	6701-44

Accessories

Replacement GL-18 cap	7622-107
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**FLASK** *Receiving, Jacketed*

Standard receiving flask for all rotary evaporators. Similar to 6726 except, with outer jacket for cooling/heating of contents. Inlet/outlet connections are 28/15 O-Ring ball joints and include FETFE O-Rings, size -116. Top and bottom joints are DN25. Bottom inner ball joint includes CAPFE (PTFE-encapsulated silicone rubber) O-Ring, size -217. Side joint is SVL-22 thread, with black vent cap, included.

Description	Plastic Coated?	Fits Rotavap Models	Order Code	
Receiving Flask 8L	No	All	6727-10	★

Replacement Parts

SVL-22 vent cap with PTFE insert	7647-40	★
FETFE O-Ring, Size -116	7855-726	♠
CAPFE O-Ring, Size -217	7855-840	♠

**FLASK** *Receiving*

Replacement borosilicate glass for *Buchi® R220, R220EX, and R220SE* rotary evaporators. Receiving flasks are designed to fit all large-scale rotary evaporators. Now available in coated, non-coated, amberized, and 6727 jacketed versions. Side neck includes SVL-22 threaded black vent cap. Top and bottom socket joints are DN25, and bottom joint includes CAPFE (PTFE-encapsulated silicone rubber) O-Ring, size -217.

Description	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Order Code	
Receiving Flask 10L	Yes	37569	All	6726-10	★
Receiving Flask 10L	No	46519	All	6726-15	★
Receiving Flask 20L	Yes	41446	All	6726-20	★
Receiving Flask 20L	No	28671	All	6726-25	★
Receiving Flask 10L — Amber	No	—	All	6726-30	★
Receiving Flask 20L — Amber	No	—	All	6726-32	★

Replacement Parts

SVL-22 vent cap w/PTFE insert	7647-40	★
CAPFE O-Ring, Size -217	7855-840	♠

**TRAP** *Fits Glassware Set C*

Replacement borosilicate glass components for *Buchi® R220, R220EX, and R220SE* rotary evaporators. Inner and outer cold trap components for *Buchi® C* glassware set. Available poly-coated or non-coated. DN40 inner ball joint includes CAPFE (PTFE-encapsulated silicone rubber) O-Rings, size -225. Black cap (included) is SVL-22 thread. Top CAPFE O-Ring (included) for 3971-03 and 3971-05 is for 150mm grooved top flat flange.

Note: 150mm clamp and PFA cap, listed below, must be ordered separately.

Description	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Order Code	
Inner Cold Trap	No	25124	220, 220EX, 220SE	3971-01	★
Outer Cold Trap	Yes	25978	220	3971-03	★
Outer Cold Trap	No	46518	220EX, 220SE	3971-05	★

Replacement Parts and Accessories

PFA Cap (Lid)	25979	3971-21	★
Duran Quick Clamp		6517-27	★
SVL-22 vent cap w/PTFE insert		7647-40	★
CAPFE O-Ring, Size -225		7855-844	♠
CAPFE O-Ring, 150mm		7855-881	♠

EXPANSION TANK

Replacement borosilicate glass components for *Buchi® R220, R220EX, and R220SE* rotary evaporators. Upper expansion tanks for *Buchi®* glass sets available in either poly-coated or non-coated versions. DN40 ball joints on top and bottom. Inner bottom ball joint includes CAPFE (PTFE-encapsulated silicone rubber) O-Ring, size -225.

Fits Glassware Set	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Order Code	
D, D2, DB, DB2	Yes	01165	R220	3967-10	★
D, D2, DB, DB2	No	41442	R220EX, SE	3967-15	★

Replacement Parts

CAPFE O-Ring, Size -225	7855-844	♠
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VAPOR TUBE Vapor Duct Steam Tube ★

Replacement borosilicate glass vapor tubes for *Buchi® R220, R220EX, and R220SE* rotary evaporators. 3976-05 contains a Porosity C (25-50 micron) glass frit. Replacement 316 stainless steel vapor tube for *Buchi® R220, R220EX, and R220SE* rotary evaporators. Works with all glassware sets.

Description	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Order Code
Borosilicate Glass				
Vapor Duct Tube	No	41084	R220	3976-03
Vapor Duct Tube w/Glass Frit	No	41100	R220	3976-05

Stainless Steel

Vapor Duct Tube	No	41084	R220	3976-10
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VAPOR TUBE for Heidolph Bench-Top Series ★

Used as replacements with Heidolph Bench-Top Series rotary evaporators. Tube is secured in rotary drive with low-stress plastic clip that seats into groove behind ♂ joint. Available plain or with Firestone "splash guard" to protect against splash-up.

Note: The 13286-30 vapor tube comes standard with all Heidolph bench-scale rotary evaporators.

Type	♂ Joint	Order Code
Plain	24/25	13286-28
Plain	24/40	13286-30
Plain	29/42	13286-32
Plain	45/50	13286-34
w/Splash Guard	24/40	13286-37
w/Splash Guard	29/42	13286-39



HEAD Distribution

Replacement components for *Buchi® R220, R220EX, and R220SE* rotary evaporators. Lower distribution heads with easy to use Ace-Threds, PTFE stem valves. Stems are replaceable. Available poly-coated or non-coated. Upper joint is DN40 outer ball joint. Red caps (included) are GL-14 thread; black cap (included) is SVL-15 thread. DN25 inner ball joint on 3970-05 and 3970-10 includes CAPFE (PTFE-encapsulated silicone rubber) O-Ring. End thread is #15 Ace-Thred, for connection to 3978 valve assembly.

Fits Glassware Set	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Order Code	
C, RB, R	No	41373	R220	3970-05	★
C, RB, R	No	46511	R220EX, SE	3970-10	★
D, D2, DB, DB2	Yes	41335	R220	3970-15	★
D, D2, DB, DB2	No	41307	R220EX, SE	3970-18	★

Replacement Parts and Accessories

0-20mm PTFE valve stem <i>includes (2) 7855-626 size -116 and (1) 7855-622 size -114 Kalrez O-Rings</i>	R220EX, SE	3970-30	★
CAPFE O-Ring, Size -217		7855-840	♠



**COVER** Polyethylene, for XL Flange ★

Polyethylene dust cover for evaporating flasks with 149.5mm I.D. XL flange has integral O-Ring to keep a tight seal.

Note: Supplied with Viton O-Ring.

Similar to
Buchi® Part No.
42895

Order
Code
6702-300

**CAP** SVL Thread ★

Black replacement caps with SVL thread for rotary evaporator components. Available with and without vent plug. For Buchi® glassware.

SVL Thread
Size

Similar to Buchi®
Part No.

Order
Code

Solid Top

15

7647-15

22

7647-22

30

7647-30

Vented Top

22

46574

7647-40

**CAP** GL Thread ★

Red polybutylteraphthalate (PBT) replacement caps with GL threads. Temperature range to 140°C. Available with solid tops or open tops. Open tops are for use with 7623 hose barbs.

GL Thread
Size

Order
Code

Solid Top

14

7622-103

18

7622-107

25

7622-114

32

7622-121

45

7622-124

Open Top

14

7621-04

18

7621-08

25

7621-15

**HOSE CONNECTION** GL w/Rubber Seal ★

Polypropylene hose connections with a silicone rubber seal for use with 7621 open-top caps. Available in either straight or angled styles.

For Thread Size
(GL No.)

Style

Order
Code

14

Bent

7623-20

14

Straight

7623-22

18

Bent

7623-24

18

Straight

7623-26

Accessories

Silicone Seal Replacement 10/pk

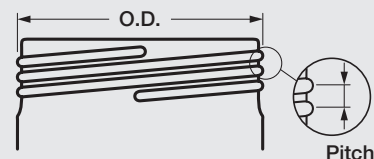
7623-30

GL Threads

Determination of Thread Size

GL threads are round threads. This means there are only round ends at the flanks of the screw thread. This thread can easily be formed on glass bottles, adapters, etc. The extremely high pitch and the large flanks give this thread an important carrying power.

- The GL number refers to the Overall Diameter (O.D.) of the Joint, including the threads. (ie. GLS80 has an O.D. of 80mm)
- Thread pitch refers to the vertical distance from the thread tip to thread tip.



Thread	Type	O. D., mm	Pitch, mm
GL	12	12	2.0
GL	14	14	2.5
GL	18	18	3.0
GL	25	25	3.5
GL	32	32	4.0
GL	45	45	4.0
GLS	80	80	15.0



TUBE Connecting, for Side Receiver Assembly ★

Connecting tubes for side receiver assembly on Buchi® R220 rotary evaporators. Include right and left branching pieces for both double and single receiving assemblies. Ace-Thred valves with Kalrez O-Rings are a significant design improvement. Available poly-coated or non-coated.

Note: Supplied with CAPFE O-Rings on the inner ball joints.

Description	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Order Code
For Double Receiver Assembly				
Upper – #1 Right, Ace Valve	Yes	41048-1	R220	3973-01
Upper – #1 Right, Ace Valve	No	41447-1	R220EX, SE	3973-03
Upper – #2 Left, Ace Valve	Yes	41049 / 41047-2	R220	3973-04
Upper – #2 Left, Ace Valve	No	46520-2	R220EX, SE	3973-06
For Single Receiver Assembly				
Upper – Ace Valve	Yes	41053	R220	3973-08
Upper – Ace Valve	No	46521	R220EX, SE	3973-10

Accessories

0-20mm PTFE valve stem – includes (2) 7855-626 and (1) 7855-622 Kalrez O-Rings	No	—	All	3973-30
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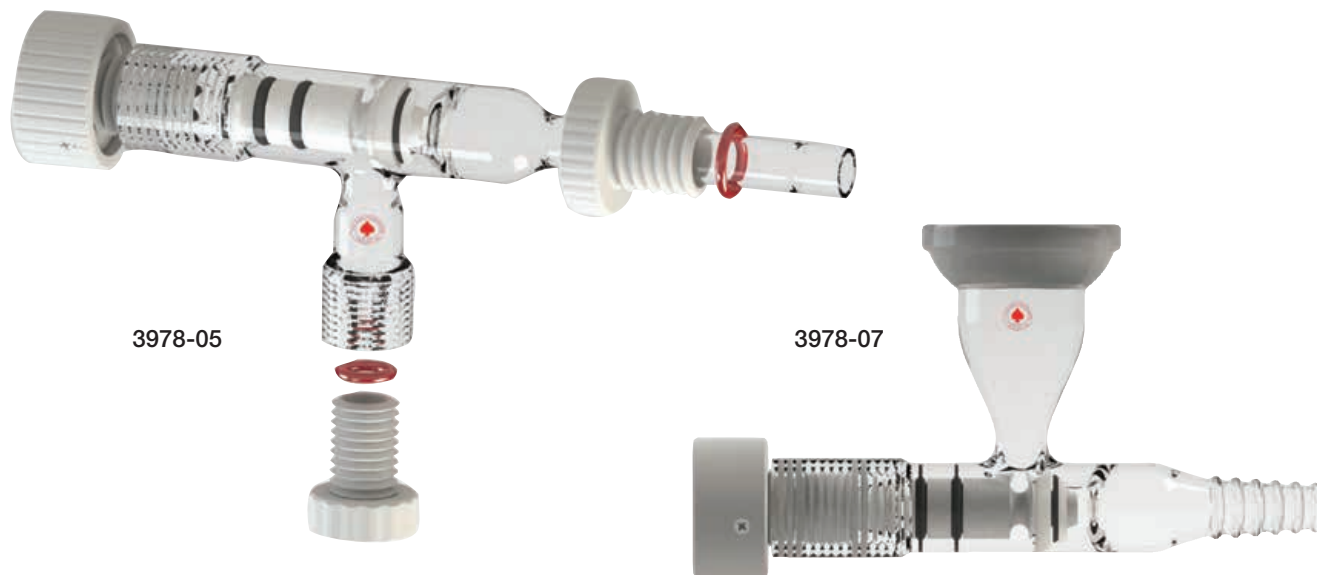
TUBE Connecting, Glass Sets

Replacement tubes for Buchi® R220, R220EX, and R220SE rotary evaporators. Available poly-coated or non-coated. The 3974-20 codes through -27 have (2) GL14 thread ports (with red caps) on top for thermosensor or easy clean out. DN40 inner ball joints on -12, -13, -20, -22, -25, and -27 include CAPFE (PTFE-encapsulated silicone rubber) O-Rings, size -225. Bottom DN25 ball joint on -15 and -18 includes CAPFE O-Ring, (size -217). 3974-12 and -13 both include an SVL-22 thread black cap and a GL-14 thread red cap.

Description	Glassware Set	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Order Code
Vacuum Connector Tube	DB, D	Yes	01129	R220	3974-12 ★
Vacuum Connector Tube	DB, D	No	41443	R220EX, SE	3974-13 ★
“Y” Bottom Tube	DB, D2, D	Yes	01169	R220	3974-15 ★
“Y” Bottom Tube	DB, D2, D	No	46513	R220EX, SE	3974-18 ★
“U” Top Connect Tube	DB, DB2	Yes	27837	R220	3974-20 ★
“U” Top Connect Tube	DB, DB2	No	46515	R220EX, SE	3974-22 ★
“U” Top Connect Tube	D, D2	Yes	27150	R220	3974-25 ★
“U” Top Connect Tube	D, D2	No	46512	R220EX, SE	3974-27 ★
“Y” Bottom Tube	DB2	Yes	41166	R220	3974-30 ★
“Y” Bottom Tube	DB2	No	46514	R220EX, SE	3974-33 ★

Replacement Parts and Accessories

CAPFE O-Ring, Size -225	7855-844 ♠
CAPFE O-Ring, Size -217	7855-840 ♠



VALVE

Replacement borosilicate glass for Buchi® R220, R220EX, and R220SE rotary evaporators. PTFE valve stem parts and valve assemblies, with Kalrez O-Rings, for receiving flasks and 3970 lower distribution heads. Socket joint on 3978-07 is DN25. Joints on 3978-05 are PTFE, Ace-Thred #11 and #15, and they include CAPFE (PTFE-encapsulated silicone rubber) O-Rings. Hose coupling on -07 is size G, for 5/8" I.D. tubing. Replacement O-Rings for the bushings on 3978-05 are CAPFE size -110 for side port and CAPFE size -112 on end.

Description	Fits Glassware Set	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Order Code	
Glass Body (only) for 3978-05 Inlet Valve	All	No	41346	All	3978-01	★
Complete Inlet Valve Assembly for Distribution Head	All	No	41348	All	3978-05	★
Bottom Drain Valve (Receiver)	—	No	41061	All	3978-07	★

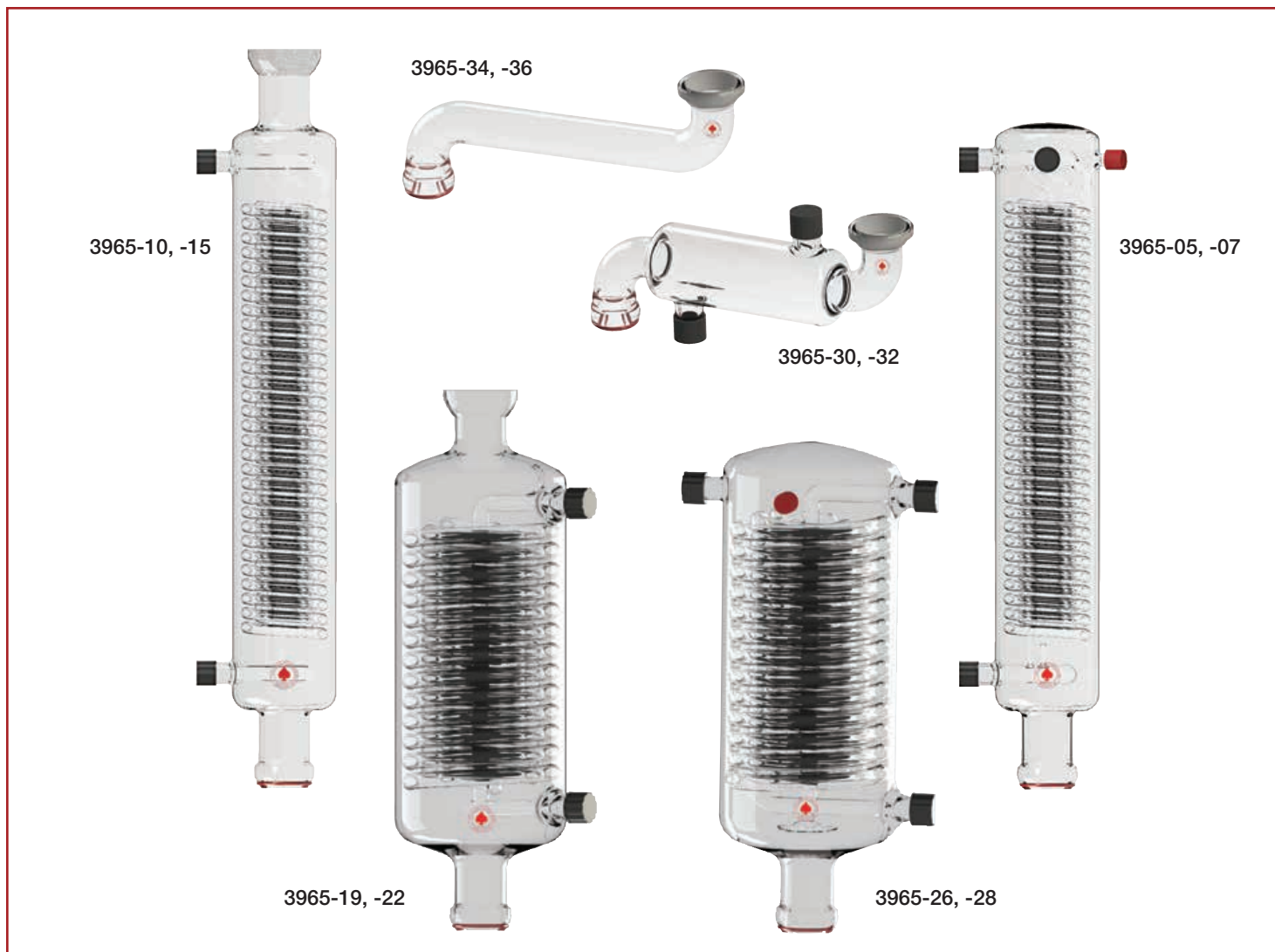
Replacement Parts and Accessories

PTFE valve stem includes (2) 7855-606 size -011 and (1) 7855-618 size -111 Kalrez O-Rings	No	—	All	3978-33	★
CAPFE O-Ring, Size -110				7855-816	♠
CAPFE O-Ring, Size -112				7855-820	♠

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CONDENSER/COOLER for Buchi® Rotary Evaporators ★

The condensers and coolers are available in either poly-coated or plain, non-coated borosilicate glass. All condensers fit easily into the glass sets listed below. Inner ball joints include CAPFE (PTFE-encapsulated silicone rubber) O-Rings. Black caps (included) are SVL-22 threads; red cap (included) is GL-14 thread.

Description	Fits Glassware Set	Plastic Coated?	Similar to Buchi® Part No.	Fits Buchi® Models	Uses O-Ring Size/Code	Order Code
#40 Joint Sizes						
Triple-Coil Condenser	R, D2	Yes	41159	R220	-225/7855-844	3965-05
Triple-Coil Condenser	R, D2	No	41399	R200EX, SE	-225/7855-844	3965-07
Triple-Coil Condenser	D, D2	Yes	27308	R220	-225/7855-844	3965-10
Triple-Coil Condenser	D, D2	No	41333	R200EX, SE	-225/7855-844	3965-15
Glass Condenser (Bullfrog)	DB, DB2	Yes	27825	R220	-225/7855-844	3965-19
Glass Condenser (Bullfrog)	DB, DB2	No	46516	R220EX, SE	-225/7855-844	3965-22
Glass Condenser (Bullfrog)	RB, DB2	Yes	27824	R220	-225/7855-844	3965-26
Glass Condenser (Bullfrog)	RB, DB2	No	41458	R220	-225/7855-844	3965-28

#25 Joint Sizes

Condensate Cooler, Jacketed	C, RB, R	Yes	41162	R220	-217/7855-840	3965-30
Condensate Cooler, Jacketed	C, RB, R	No	46510	R220EX	-217/7855-840	3965-32
Condensate Cooler, Unjacketed	C, RB, R	Yes	—	R220	-217/7855-840	3965-34
Condensate Cooler, Unjacketed	C, RB, R	No	—	R220EX	-217/7855-840	3965-36

Scrubbing



Gas Scrubbers











GAS SCRUBBER Bench and Kilo Scale

Gas scrubbers systems for the bench scale and kilo scale reactors. Reaction exhaust gases are scrubbed of environmentally harmful substances by removal or neutralization.

Description	Capacity, L	Order Code
Support Package		
38" Stand w/Clamps & Power Strip	5	6461-01
82.25" Stand w/Clamps & Power Strip	20	6461-03
Liquid Pump Package		
Pump, Tubing & Fittings	5	6461-02
Pump, Tubing & Fittings	20	6461-04
Glassware Package		
Flask, Bubbler, Column, & Condenser	5	6461-10
Flask, Bubbler, Column, & Condenser	20	6461-20
Replacement Glassware		
Flask, 5L	5	6461-11
Gas Inlet Bubbler	5	6461-12
Absorption Column	5	6461-13
Support Disc	5	6461-14
Gas Exhaust Column	5	6461-15
Shower Cap	5	6461-16
Graham Condenser	5	6461-17
Flask, 20L	20	6461-21
Gas Inlet Bubbler	20	6461-22
Absorption Column	20	6461-23
Support Disc	20	6461-24
Gas Exhaust Column	20	6461-25
Shower Cap	20	6461-26
Graham Condenser	20	6461-27

Tubing Sizer for Peristaltic Pumps

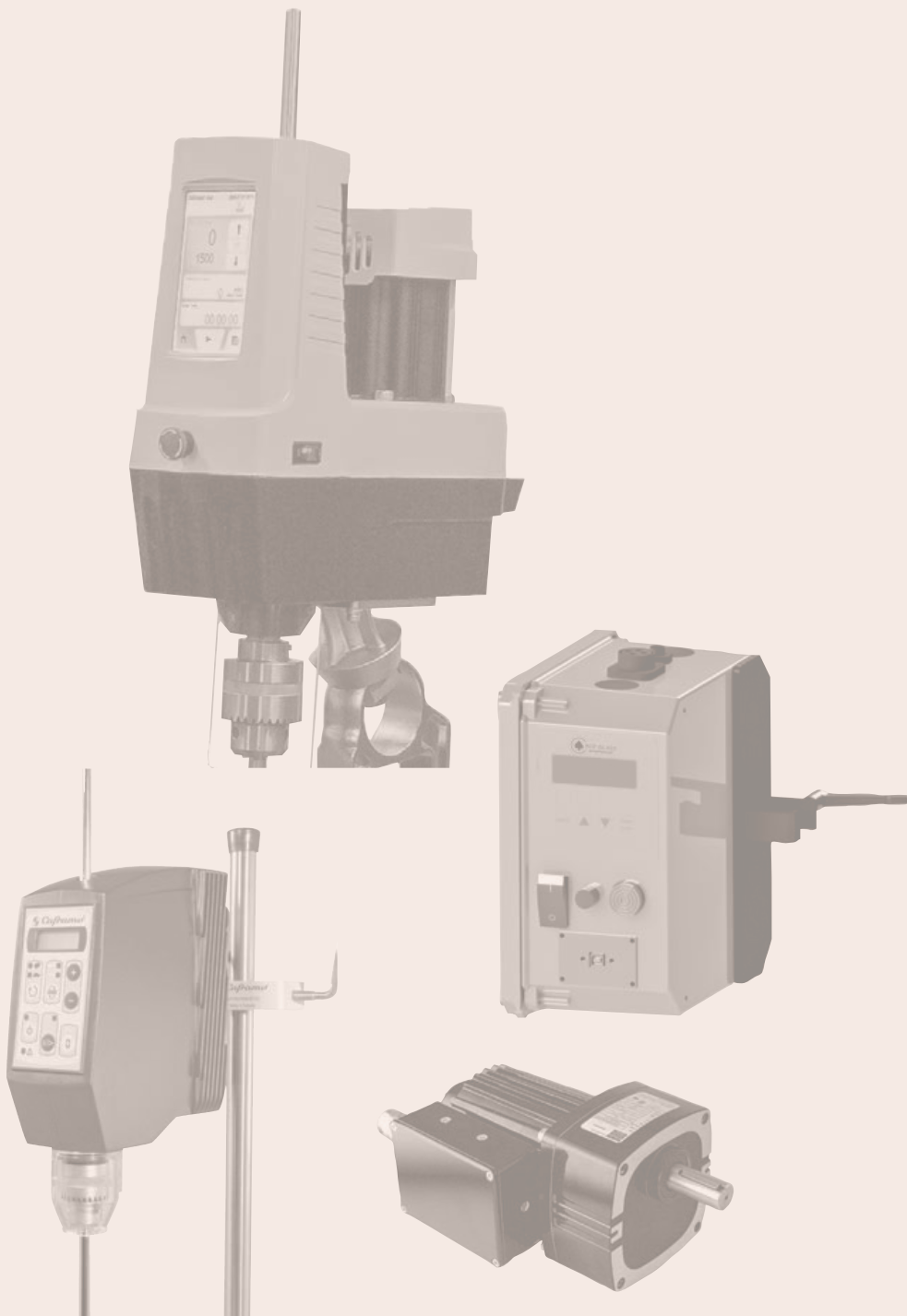
<i>Tubing sizes</i>																
Inner diameter (mm):	0.8	1.7	3.1	4.8	6.3	4.8	6.3	7.9								
Outer diameter (mm):	4.0	4.9	6.3	8.0	9.5	9.8	11.3	12.9								
Wall thickness (wt) (mm):	1.6	1.6	1.6	1.6	1.6	2.5	2.5	2.5								
Max. pressure (continuous/short time) (bar):	0.7/1.7	0.7/1.7	0.7/1.7	0.5/1.5	0.5/1.5	0.8/1.8	0.8/1.8	0.8/1.8								
Suction height (mH ₂ O):	8.8	8.8	8.8	8.8	6.7	8.8	8.8	8.8								
<i>Flow rates in combination with pump head/pump drive</i>																
SP quick	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
PD 5106/PD 5206 (ml/min):	1.6	40	6.8	169	25.7	643	56	1,400	88.7	2,217	56	1,400	88.7	2,217	132	3,300
PD 5006 (ml/min):	3.3	40	14.1	169	53.6	643	116.7	1,400	184.8	2,217	116.7	1,400	184.8	2,217	275	3,300
PD 5101/PD 5201 (ml/min):	0.3	8.0	1.4	34	5.2	129	11.2	280	17.7	443	11.2	280	17.7	443	26.4	660
PD 5001 (ml/min):	0.7	8.0	2.8	34	10.7	129	23.3	280	37.0	443	23.3	280	37.0	443	55	660
SP standard/SP vario	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.		
PD 5106/PD 5206 (ml/min):	2.4	60.2	10.4	260	41.2	1,029	86.3	2,157	146	3,644	86.3	2,157	146	3,644		
PD 5006 (ml/min):	5.0	60.2	21.7	260	85.8	1,029	179.8	2,157	304	3,644	179.8	2,157	304	3,644		
PD 5101/PD 5201 (ml/min):	0.5	12.0	2.1	52	8.2	206	17.3	431	29.2	729	17.3	431	29.2	729		
PD 5001 (ml/min):	1.0	12.0	4.3	52	17.2	206	36	431	60.7	729	36.0	431	60.7	729		

Mixing is one of the key sciences often overlooked when developing a reaction system. Within the following pages can be found the items necessary to achieve the desired mixing profile for your reaction.

Featuring the Following Items:

- **Various shaft materials and sizes**
- **Low Vacuum Bearings**
- **Trubore™ Precision Bearings**
- **Rod and Flange Mounted Motors**
- **Hazardous Duty Motors**
- **Pressure Bearings**

Stirring and Mixing



Bearings

Shafts

Agitators

Accessories

Air Motors

Electric Motors

General Stirring Information

Bearings:

Trubore™, **glass** bearings are for use with precision-ground glass shafts or PTFE-covered, stainless steel (8071) shafts. They are not recommended for use with polished glass or plain, stainless steel shafts.

Trubore™ bearings with a **PTFE Inner** component are for use with polished glass shafts and plain, stainless steel shafts. They are not recommended for precision-ground glass shafts or PTFE-covered, stainless steel shafts.

Glass pressure bearings (8044) are for use with 8074 plain stainless steel or 8075 polished glass shafts.

8050 Low Vacuum Bearing may be used with polished or precision-ground glass, and plain stainless steel shafts (10, 19 & 28mm). Not recommended for use with PTFE-covered shafts.

13443 PTFE Collet Bearing may be used with any type shaft (6, 8 & 10mm).

13445 Debris-free PTFE Bearing should be used with polished glass shafts or plain, stainless steel shafts. They are not recommended for precision-ground glass shafts or PTFE-covered, stainless steel shafts (6, 10 & 19mm).

Stirring Shafts:

Glass, Polished: use only in 8044 glass pressure bearings, or Trubore™ bearings with a PTFE inner component (8066), or our 13443 PTFE collet type, 8050 PTFE ultra-vacuum, and 13445 PTFE debris-free bearings.

Glass, Precision-Ground: use only Trubore™ glass bearings such as our 8059, 8060, 8061, 8065, etc. series, or our 13443 PTFE collet seal type, or 8050 PTFE ultra-vacuum bearings.

Stainless Steel, Plain: use only in 8044 glass pressure bearings or Trubore™ bearings with a PTFE inner component (8066), or our 13443 PTFE collet type, 8050 PTFE ultra-vacuum, or 13445 debris-free bearings.

Stainless Steel, PTFE-Covered: use with Trubore™ glass bearings such as our 8059, 8060, 8061, 8065, etc. series, or our 13443 PTFE collet type bearings. Not recommended for use with our PTFE debris-free 13445 bearing.

Trubore™ Stirring Equipment — Precision Fit and Performance



Bearings and shafts guaranteed interchangeable

Trubore™ stirrers, pioneered and developed by Ace, are the most widely used precision glass stirrers in research today.

If both shaft and bearing of a given size are manufactured by Ace, we guarantee them to be interchangeable.

Precision fit and performance

Every shaft and bearing is individually inspected to insure clearance fit of less than .025mm (0.001").

ACE bearings are smooth and transparent. This feature automatically reduces leak path for a given fit clearance and surface roughness; it also prolongs bearing life.

Special "plateau" grinding is employed on shafts. This provides maximum smoothness consistent with optimum retention of lubricant. In terms of performance, this texture means a low leak rate, which permits attainment of at

least 1mm absolute with unlubricated surfaces at speeds less than 100rpm. It also means that plastic shafts, including Fluorocarbon coated glass shafts, may be used with bearings — a practice not feasible with ground bearings.

Operation

If the components have been properly cleaned prior to operation, a Trubore™ stirring unit can be run unlubricated for a limited time at a maximum speed of 500rpm.

For continuous operation, or operation at speeds greater than 500rpm, proper lubrication is required. We recommend ACE 8117 Stir-Lube® be used as a proper all-purpose lubricant up to 2000rpm (water-cooled) or 1500rpm (non-cooled).

For high-speed stirring over 2000rpm, we recommend a thin base of 8229 grease with application of 8119 Hi-Lube heavy-duty liquid stirrer lubricant. Both materials are also chemically inert. If accidentally introduced into a solvent system reaction, they will

not react with your product, but will be removed with the solvent. Under no circumstances should glycerin be used; it acts as a grinding medium rather than a lubricant.

Note that only a small lubricant well is provided at the top of some ACE bearings; this is because only a slight amount of Stir-Lube® is needed for many hours of stirring.

Care and cleaning

Because of the very close fit between shaft and bearing, a slight amount of dust or grit will quickly scratch the smooth surface of the bearing. To prevent this, both shaft and bearing should be washed with a good detergent and dried with acetone — instead of with a wiping cloth — prior to use.

ACE lubricants may be completely removed with acetone or most other ketones.

Matching ACE Stir Bearings to the Appropriate Shafts

Bearing Type	Size	ACE Stir Bearing Codes	Use with ACE Code Stirring Shafts Listed Below
Trubore™, Glass	5mm	9524-04, 9527-08	9534-04, 9535-06, 9541-04, 9541-15
Trubore, Glass	6mm	9524-06, 9524-08, 9527-12, 9527-14, 9529	9534-06
Vacuum	9mm	8098, 8099, 8133, 9528	8134, 9530
Trubore, Glass	10mm	8036, 8038, 8039, 8040, 8042, 8043, 8047, 8051, 8053, 8055	8068, 8070, 8071, 8073, 9532, 9533
Trubore, Glass	10mm	8041	Complete Assemblies
Trubore, Glass	19mm	8059, 8060, 8061, 8065	8076*, 8077, 8078, 8079
Glass, Pressure	10mm	8044	8074, 8075
Glass, Pressure	19mm	8049	8076
Trubore, PTFE/Glass	10mm	8066 (Plain), 8066 (Debris Trap)	8074, 8075
Trubore, PTFE/Glass	19mm	8067 (Trubore), 8067 (Debris Trap)	8076
Trubore, PTFE/Glass	28mm	8067 (Trubore), 8067 (Debris Trap)	8080
Low Vacuum/PTFE	10mm	8050	8068, 8073, 8074, 8075, 9532, 9533
Low Vacuum/PTFE	19mm	8050	8076, 8077, 8078
Low Vacuum/PTFE	28mm	8050	8080
Collet Type/PTFE	6mm	13443-06, 13443-08	9534-06, 9534-40
Collet Type/PTFE	8mm	13443-10	N/A
Collet Type/PTFE	10mm	13443-12	8068, 8070, 8071, 8073, 8074, 8075, 9532, 9533
PTFE	6mm	13445-06, 13445-09	9534-40
PTFE	10mm	13445-30, 13445-32, 13445-34, 13445-36	8074, 8075
PTFE	19mm	13445-46, -44	8076

*Polished shaft not recommended for 8076.

Pilot Plant Reactor Designs

Selecting components and designing a Pilot Plant System requires you to consider specific site and application aspects, such as:

- Space limitations: what depth, width and height are available for the support stand, stirrer motor, condenser, etc.?
- Do you want a domed or flat head reactor?
- What will be the operating temperature?
- Vacuum or pressure?
- What type bottom outlet (standard, threaded, stopcock, "sink" type valve, etc.)?
- Do you want temperature monitoring/control?
- How much distance is needed below the bottom of the reactor outlet?
- What type of stirring motor (air, electronic, for hazardous or non-hazardous location)?
- What type of stirrer shaft (glass or PTFE)?
- Heat exchange coil needed? PTFE-covered copper or other type metal?
- What accessories are needed (condensers, takeoffs, adapters, spargers, gas inlet/outlet, etc.)?

Custom Assemblies

In addition to our standard 10L through 200L Cylindrical and Spherical Assemblies, ACE can assist you in designing a specific component reactor. Many of the dimensions and items listed can be modified to accommodate your needs.

Call our Technical Design and Support Staff toll-free at **1-800-223-4524**, or visiting us on the web at **www.aceglass.com**.



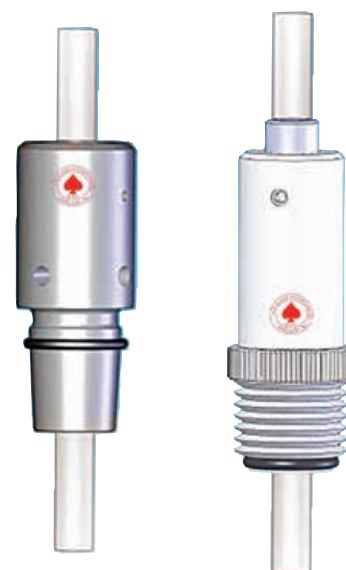
ACE Stir Shaft Quick Reference Chart

Ace Code	Size		Type	Material	Recommended Use				
	O.D., mm	L, mm			Bearing	Chuck	Agitators		
9534-04	5	318	Button Bottom	Solid Ground Borosilicate Glass	9524-04, 9524-06, 9524-08, 9527-08, 9527-12, 9527-14, 9529	8124, 8126	9542		
9534-06	6	318		Solid Polished Borosilicate Glass	8066-120				
9534-40		318		Hollow Borosilicate Glass					
9535-06	5	318	Knob Bottom	Solid Ground Borosilicate Glass	9524-04, 9527-08		9541-06		
9541-04		318		PTFE Coated Stainless Steel			9541-07		
9541-15		318					Attached		
8134-15	9	380	With Paddles	Solid Polished Borosilicate Glass	8098, 8099, 8133, 9528		8083, 8085, 8086		
8134-25		610	9530						
9530-04		416							
8068-02	10	580	Button Bottom	Solid Ground Borosilicate Glass	8036, 8038, 8039, 8040, 8042, 8043, 8047, 8050, 8051, 8053, 8055, 13443	8124, 8125, 8126	8082, 8083, 8085, 8086, 8087, 8096		
8068-03		440					Attached		
8068-04		690							
8068-06		740	Multi-Blade				8082, 8083, 8085, 8086, 8087, 8096		
8068-08		440							
8068-17		580	Double Multi-Blade				8088, 8089, 8090, 8091		
8068-18		440							
8068-25		440	Button Bottom	Hollow Ground Borosilicate Glass			8082, 8083, 8085, 8086, 8087, 8096		
8068-27		580							
8068-30		440	Bead Bottom	Solid Ground Borosilicate Glass			8088, 8089, 8090, 8091		
8068-31		690							
8068-32		580	Button Bottom	PTFE Coated Glass			8082, 8083, 8085, 8086, 8087, 8096		
8070-05		440							
8070-10		690	Bottom Drilled Hole	PTFE Coated Stainless Steel			8088, 8089, 8090, 8091		
8071-05		460							
8071-07		640	Crescent Shaft	Solid Ground Borosilicate Glass	8036, 8038, 8039, 8040, 8042, 8043, 8047, 8050, 8051, 8053, 8055, 13443		Attached		
8071-10		690							
8073		410	Remove Button Bottom	Stainless Steel	8044, 8050, 8066, 13443, 13445		8082, 8083, 8085, 8086, 8087, 8094, 8095, 8096		
8074-02		420							
8074-04		460	Button Bottom		8044, 8066		8082, 8083, 8085, 8086, 8087, 8096		
8074-07		580							
8075-12		440	Plain Shaft	Solid Polished Borosilicate Glass	8044, 8050, 8066, 13443, 13445		8094, 8095		
8075-14		580							
8075-15		690	Bead Bottom		8044, 8050, 8066, 13443, 13445		8088, 8089, 8090, 8091		
8075-21		440							
8075-23		580	Complete W/Vanes	Hollow Polished Borosilicate Glass	8036, 8038, 8039, 8040, 8042, 8043, 8047, 8050, 8051, 8053, 8055, 8066, 13443		Attached		
8075-24		690							
8075-32		440	Bottom Drilled Hole	Solid Ground Borosilicate Glass	8036, 8038, 8039, 8040, 8042, 8043, 8047, 8050, 8051, 8053, 8055, 13443		8091, 8092, 8093, 8100		
8075-33		500							
8075-34		580	Bottom Drilled Hole	Solid Polished Borosilicate Glass	8049, 8050, 8067, 13445		8085		
8075-36		690							
8075-38		560	Bottom Drilled Hole	Solid Polished Borosilicate Glass	8049, 8050, 8067, 13445		8091, 8092, 8093, 8100		
9523-04	445								
9533-02	475	19	Bottom Drilled Hole	Solid Polished Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8085		
8076-03	560								
8076-05	710		Button Bottom	Hollow Polished Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8091, 8092, 8093, 8100		
8076-07	910								
8076-10	1210		Bottom Drilled Hole	Solid Polished Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8091, 8092, 8093, 8100		
8076-39	940								
8076-40	910		Bottom Drilled Hole	Solid Polished Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8091, 8092, 8093, 8100		
8076-41	990								
8076-42	810		Bottom Drilled Hole	Hollow Polished Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8091, 8092, 8093, 8100		
8076-43	810								
8076-44	1210		Bottom Drilled Hole	Solid Polished Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8091, 8092, 8093, 8100		
8076-45	1140								
8076-46	1380		Bottom Drilled Hole	Hollow Polished Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8091, 8092, 8093, 8100		
8076-48	1380								
8077-23	710		Button Bottom	Solid Ground Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8085		
8077-25	910								
8077-27	1210		Bottom Drilled Hole	Hollow Ground Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445		8091, 8092, 8093, 8100		
8078-05	900								
8078-10	1200		Bottom Drilled Hole	PTFE Coated Stainless Steel	8059, 8060, 8061, 8065		8091, 8092, 8093, 8100		
8079-03	730								
8079-05	910		28	Bottom Drilled Holes	Solid Polished Borosilicate Glass	8050, 8067	6472-155, 6472-156, 6472-157	8091, 8093, 8101	
8079-10	1210								
8080-12	1010								
8080-14	1140								
8080-16	1300								
8080-18	1320								
8080-22	1470								
8080-24	1400	Bottom Drilled Holes		Solid Polished Borosilicate Glass	8050, 8067			8091, 8093, 8101	
8080-25	2080								
8080-29	1900								
8080-30	1600								

STIRRER BEARING *Low Vacuum, PTFE ★*

Low vacuum, non-shedding PTFE stirrer bearing factory tested to below 3 Torr. Available in standard taper joint and Ace-Thred™ (10mm shaft only) versions. Rated for up to 400 rpm with both glass (polished, rather than precision ground is best) and stainless steel shafts of 10, 19 and 28mm. Wetted materials are PTFE, Rulon™, PEEK and a perfluoroelastomer O-Ring.

Joint Size	Replacement O-Ring	Order Code
10mm Shaft Size		
§ 24/40	7859-526	8050-02
§ 29/42	7859-534	8050-04
§ 29/32	7859-534	8050-14
#15 Ace-Thred	7859-530	8050-10
#25 Ace-Thred	7859-534	8050-12
19mm Shaft Size		
§ 45/50	7859-573	8050-06
25.4mm Shaft Size		
§ 45/50	7859-573	8050-16
28mm Shaft Size		
§ 45/50	7859-573	8050-08
30mm Shaft Size		
§ 45/50	7859-573	8050-18


BEARING *Debris Free, PTFE ★*

Vacuum tight (~5torr), flake free, chemically-resistant stirrer bearing makes a mechanical seal against a polished glass shaft. Debris trap section consists of a PTFE sleeve for a wide range of joint and shaft diameter sizes. For use with polished glass or stainless steel shafts, NOT recommended for PTFE shafts. Bearing consists of a PTFE standard taper body with added PEEK for better stability, glass filled polypropylene screw cap, PEEK compression spring, PTFE/PEEK sleeve and a glass filled polypropylene loosening nut. For use up to 500rpm.

Joint Size	Replacement PTFE/PEEK Sleeve Seal	Replacement PEEK Compression Spring	Order Code
6mm Shaft Size			
§ 24/40	13445-302	13445-304	13445-09
10mm Shaft Size			
§ 24/40	13445-420	13445-426	13445-30
§ 29/42	13445-420	13445-426	13445-32
§ 34/45	13445-420	13445-426	13445-34
§ 45/50	13445-420	13445-426	13445-36
19mm Shaft Size			
§ 45/50	13445-504	13445-506	13445-46



Ace-Thred Bearing

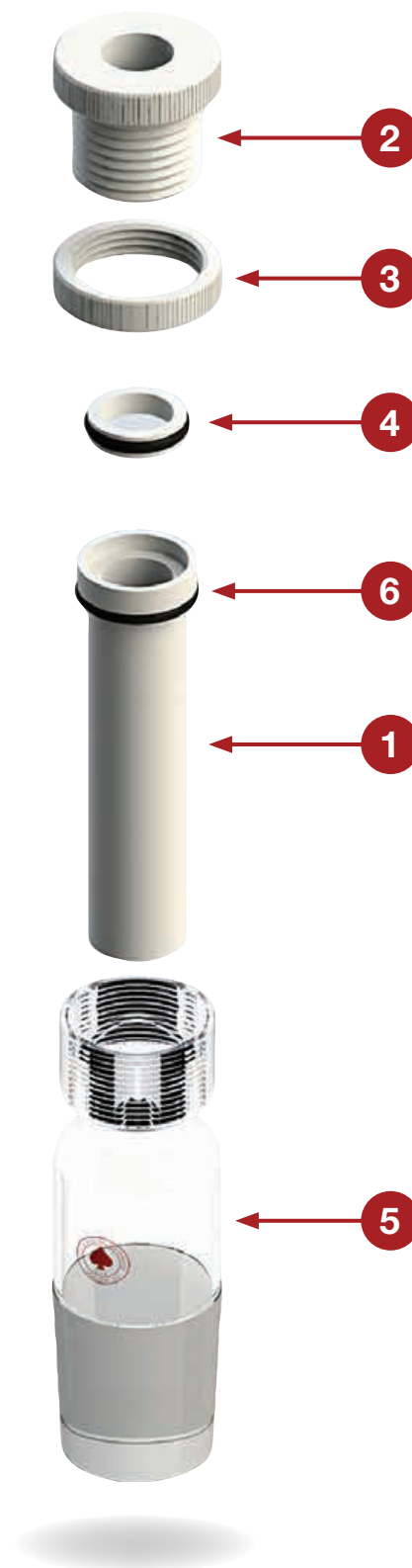
w/o Debris Trap, Trubore™, PTFE

Self-aligning, lubricant-free PTFE Trubore™ glass and PTFE bearing for use with stainless steel or glass stirring shafts. The lock nut permits stirring in either direction without fear of unthreading. The compression saddle with O-Ring maintains constant force with little attention. *Not recommended for precision ground glass shafts.*

Bearing features:

- Maximum 400rpm
- Vacuum Rating of Atm to 1torr

- 1 PTFE Inner Bearing**
The inner bearing sleeve achieves lubricant free action and can be used in either a clockwise or counter-clockwise direction.
- 2 Glass Filled PTFE Bushing**
Applies pressure on the interior saddle O-Ring to achieve a vacuum down to 1mm Hg.
- 3 Glass Filled PTFE Lock Nut**
Made from glass-filled PTFE for longer wear. Permits stirring in either direction.
- 4 Compression Saddle O-Ring**
Provides only glass and PTFE contact with the reaction, while allowing for a vacuum tight seal.
- 5 Glass Body**
Internally threaded glass adapter with an inner joint.
- 6 Inner Bearing O-Ring**
Replaceable and available in various material compositions for all of your reaction needs.



Complete Trubore™ Bearing Assembly

Shaft Size, mm	Bottom Inner Joint	Order Code	
10	24/40	8066-43	♠
	29/42	8066-46	♠
	45/50	8066-55	♠
19	45/50	8067-30	♠
28	45/50	8067-105	★

Included Components

No.	Shaft Size, mm	Description	Order Code	
1	10	PTFE Inner Bearing w/O-Ring	8066-06	♠
	19		8067-05	♠
	28		8067-55	★
2	10	Glass-Filled PTFE Bushing	8066-12	♠
	19		8067-08	♠
	28		8067-58	★
3	10	Glass-Filled PTFE Lock Nut	8066-13	♠
	19		8067-11	♠
	28		8067-60	★
4	10	Compression Saddle w/FETFE O-Ring	8066-15	♠
	19		8067-13	♠
	28		8067-65	♠
5	10	Glass Body	8066-20	♠
	10		8066-24	♠
	10		8066-32	♠
	19		8067-18	♠
	28		5030-78	♠

Replacement Parts and Accessories

			FETFE		Kalrez®		Chemraz®	
4	10	Compression Saddle O-Rings	7855-718	♠	7855-618	★	7859-518	★
	19		7855-730	♠	7855-630	★	7859-530	★
	28		7855-739	♠	7855-677	★	7859-539	★
6	10	Inner Bearing O-Rings	7855-712	♠	7855-612	★	7859-512	★
	19		7855-734	♠	7855-634	★	7859-534	★
	28		7855-740	♠	7855-640	★	7859-540	★



Ace-Thred Bearing

w/Debris Trap, Trubore™, PTFE

Self-aligning, lubricant-free PTFE Trubore™ glass and PTFE bearing for use with stainless steel or glass stirring shafts. The lock nut permits stirring in either direction without fear of unthreading. The compression saddle with O-Ring maintains constant force with little attention. *Not recommended for precision ground glass shafts.* Debris trap is designed to prevent particles from entering the reaction vessel, and contains an easy access clean out port. A slight vacuum may be applied to the clean-out port to pull any excess debris away from the bearing wiper seal.

Bearing features:

- Maximum 400rpm
- Vacuum Rating of Atm to 1torr

1 PTFE Inner Bearing
The inner bearing sleeve achieves lubricant free action and can be used in either a clockwise or counter-clockwise direction.

2 Glass Filled PTFE Bushing
Applies pressure on the interior saddle O-Ring to achieve a vacuum down to 1mm Hg.

3 Glass Filled PTFE Lock Nut
Made from glass-filled PTFE for longer wear. Permits stirring in either direction.

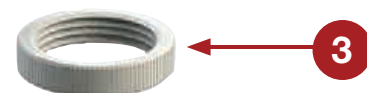
4 Compression Saddle O-Ring
Provides only glass and PTFE contact with the reaction, while allowing for a vacuum tight seal.

5 PTFE Washer Style Wiper Seal
Bearing achieves lubricant-free action and can achieve vacuum down to 1mm Hg.

6 PTFE Ace-Thred Plug (not pictured)
Front sealed solid plug for sealing clean-out port.

7 Ace-Safe Connector
Polypropylene hose barb connector for easy, safe connections.

8 Glass Body
Internally threaded glass adapter with an inner joint. Debris trap prevents particles from contaminating the reaction. Side port for clean-out, evacuating, or purging.



Complete Trubore™ Bearing Assembly w/Debris Trap

Shaft Size, mm	Bottom Inner Joint	Order Code	
10	24/40	8066-320	♠
	29/42	8066-324	♠
	45/50	8066-332	♠
19	45/50	8067-54	♠
28	45/50	8067-80	★

Included Components

No.	Shaft Size, mm	Description	Order Code	
1	10	PTFE Inner Bearing w/O-Ring	8066-08	♠
	19		8067-07	♠
	28		8067-70	★
2	10	Glass-Filled PTFE Bushing	8066-12	♠
	19		8067-08	♠
	28		8067-58	★
3	10	Glass-Filled PTFE Lock Nut	8066-13	♠
	19		8067-11	♠
	28		8067-60	★
4	10	Compression Saddle w/FETFE O-Ring	8066-15	♠
	19		8067-13	♠
	28		8067-65	★
5	10	PTFE Washer Style Wiper Seal	8066-03	♠
	19		8067-09	♠
	28		8067-72	★
6	10	PTFE Ace-Thred Plug	5846-44	♠
	19		5846-46	♠
	28		5846-48	♠
7	10	"Ace-Safe" Connector	5853-06	♠
	19		5853-15	♠
	28		5853-23	♠
8	10	Glass Body	8066-220	♠
	10		8066-224	♠
	10		8066-232	♠
	19		8067-45	♠
	28		8067-75	★

Replacement Parts and Accessories

			FETFE		Kalrez®		Chemraz®	
4	10	Compression Saddle O-Rings	7855-718	♠	7855-618	★	7859-518	★
	19		7855-730	♠	7855-630	★	7859-530	★
	28		7855-739	♠	7855-677	★	7859-539	★
1	10	Inner Bearing O-Rings	7855-712	♠	7855-612	★	7859-512	★
	19		7855-734	♠	7855-634	★	7859-534	★
	28		7855-740	♠	7855-640	★	7859-540	★



**STIRRER BEARING** PTFE ★

Inert PTFE stirrer bearing. Features a totally enclosed bearing body for non-shedding, anti-whip, chemically-resistant design. The bearing can also be used in slight vacuum or slight pressure applications. The design has a composite PTFE/PEEK main internal seal and a specially fabricated glass ball-bearing for rigidity and smoothness during lengthy operation. Maximum recommended speeds up to 500rpm continuous operation. Ideal for glass, metal, or PTFE stir shafts. Bottom is a molded, inner standard taper joint. Average length is 96mm and 45mm O.D. at bearing center.

Joint Size	Order Code
6mm Shaft Size	
⌀ 19/22	13443-06
⌀ 24/40	13443-08
8mm Shaft Size	
⌀ 24/40	13443-10
10mm Shaft Size	
⌀ 24/40	13443-12

**BEARING** Trubore™, Water Cooled ♠

Jacketed, Trubore™ bearing with standard taper or spherical joints for use with precision ground stir shafts. Available with PTFE-clad joint to eliminate the need for grease. Up to 2000rpm using Hi-Lube Heavy Duty Liquid Stirrer Lubricant (8119-07) or up to 1500rpm using Stir-Lube Trubore™ Stirrer Lubricant (8117).

Joint Size	PTFE-Clad Joint	Hose Connection Size, in	Order Code
5mm Shaft Size			
⌀ 14/20	—	3/8 or 5/16	9527-08
6mm Shaft Size			
⌀ 14/20	—	3/8 or 5/16	9527-12
⌀ 14/20	—	3/8 or 5/16	9527-14
10mm Shaft Size			
⌀ 24/40	—	3/8 or 5/16	8040-10
⌀ 29/42	—	3/8 or 5/16	8040-20
⌀ 34/45	—	3/8 or 5/16	8040-30
⌀ 45/50	—	3/8 or 5/16	8040-35
⌀ 35/25	—	3/8 or 5/16	8040-40
⌀ 65/40	—	3/8 or 5/16	8040-55
⌀ 24/40	Yes	3/8 or 5/16	8040-60
⌀ 29/42	Yes	3/8 or 5/16	8040-64
⌀ 34/45	Yes	3/8 or 5/16	8040-68
⌀ 45/50	Yes	3/8 or 5/16	8040-70
19mm Shaft Size			
⌀ 45/50	—	3/8	8059-05

BEARING *Trubore™ ♠*

Trubore™ bearing for use with precision ground stir shafts. Lubricant well at top will accept enough 8117 Stir-Lube® to provide hours of operation at up to 1000rpm. Match bearing I.D. with stir shaft O.D.

Joint Size	Order Code
5mm Shaft Size	
⌀ 14/20	9524-04
6mm Shaft Size	
⌀ 14/20	9524-06
⌀ 19/22	9524-08
10mm Shaft Size	
⌀ 19/22	8038-04
⌀ 19/38	8038-05
⌀ 24/40	8038-10
⌀ 29/42	8038-20
⌀ 34/45	8038-30
⌀ 45/50	8038-32
⌀ 35/25	8038-40
⌀ 65/40	8038-55


BEARING *Trubore™, High Speed Vacuum ♠*

Used with 8111 aluminum packing box. For shaft speeds of 1000rpm and higher, and vacuum operation down to 0.5mm Hg. The seal is made entirely by the packing box. Only infrequent lubrication is required using 8122 packing and 8117 Stir-Lube®. We recommend that you use 8113 vacuum adapter to avoid contaminating the flask contents with lubricant.

Joint Size	Order Code
9mm Shaft Size	
⌀ 24/40	8133-10
⌀ 29/42	8133-15
⌀ 35/25	8133-40
10mm Shaft Size	
⌀ 24/40	8051-10
⌀ 29/42	8051-15
⌀ 34/45	8051-20
⌀ 45/50	8051-25
⌀ 35/25	8051-35
19mm Shaft Size	
⌀ 45/50	8061-04


LUBRICANT TRAP *High Vacuum, 10mm*

Primarily designed for use with ACE 8051 bearings. The inner tube through which the stirring shaft passes, plus the PTFE washer supplied with each unit, prevents the lubricant or foreign particles from contaminating the flask contents.

⌀ Top Joint	⌀ Bottom Joint	Order Code	
24/40	24/40	8113-10	♠
29/42	29/42	8113-20	♠
29/42	34/45	8113-25	♠

Replacement Parts and Accessories

PTFE Washer	8113-89
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**BEARING** *Trubore™, Straight ♠*

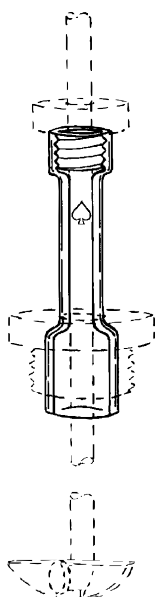
Interchangeable bearing designed to be used with our precision-ground stirring shafts. Recommended top stirring speed with our 8117 Stir-Lube® is 1500rpm.

No Joints	Order Code
10mm Shaft Size	
Plain	8036-10

**BEARING** *Trubore™, Lubricating Cup ♠*

Interchangeable ground joint bearing with top lubricant well for use with our precision-ground stirring shafts. Bearings feature a tooled lubricating cup at the top and a joint at bottom. Recommended top stirring speed with our 8117 Stir-Lube is 1500rpm.

Joint Size	Order Code
10mm Shaft Size	
§ 19/22	8039-03
§ 19/38	8039-05
§ 24/40	8039-10
§ 29/42	8039-20
§ 34/45	8039-25
§ 35/25	8039-35

**BEARING** *Trubore™, Ace-Thred ★*

Designed for use with #25 Ace-Thred bushing. Consists of a Trubore™ bearing, pressure bushing, gland with (2) FETFE® O-Rings, and retainer bushing with FETFE O-Ring. For use with our precision ground stirring shafts.

Description	Order Code
Complete Bearing	
10mm Trubore™ Pressure Bearing	8043-45
Replacement Parts	
Bearing, only	8043-08
Pressure Bushing	8043-16
Gland w/(2) O-Rings	8043-20
Retainer Bushing w/O-Ring	8043-30

BEARING *Trubore™, Gas Balancing* ♠

This glass bearing is supplied with tubulation for feeding inert gases around the bearing to balance any pressure possibly being developed in the flask. Can also be used for gas-liquid reactions and gas dispersions using 10mm hollow shafts.

Joint Size	Hose Connection Size, in	Order Code
10mm Shaft Size		
§ 24/40	3/8 or 5/16	8047-10
§ 29/42	3/8 or 5/16	8047-15



BEARING *Trubore™, Introduction & Dispersion* ♠

Especially useful for controlled atmospheric work. Used with solid shaft to balance small pressure differentials across the bearing. Use hollow shafts for introduction and dispersion of gaseous catalysts, etc.

Joint Size	Hose Connection Size, in	Order Code
10mm Shaft Size		
§ 24/40	3/8	8053-10

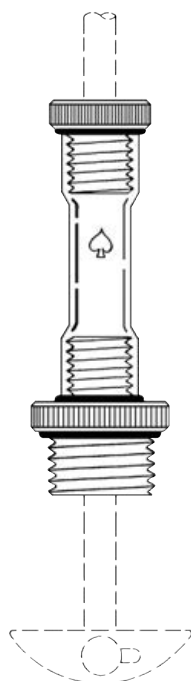


BEARING *Trubore™, High Vacuum* ♠

This bearing is the standard liquid seal type except that the use of Trubore™ tubing enables this unit to perform very satisfactorily under high vacuum conditions. I.D. is 10mm.

Joint Size	Order Code
10mm Shaft Size	
§ 24/40	8055-10





BEARING Pressure, w/Ace-Threds ♠

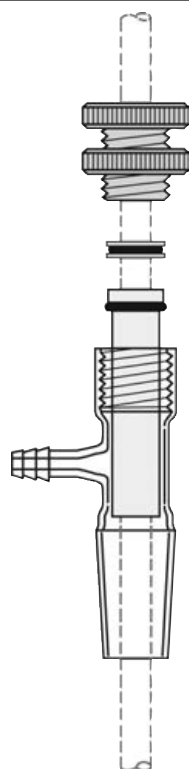
Glass bearing with Ace-Thred at each end and glass tubing between, for use with 10mm O.D. stirring shafts. PTFE coupling, with internal FETFE O-Ring seal, connects bottom of bearing to either #15 or #25 Ace-Thred on vessels. Top bushing also has an internal FETFE O-Ring seal for additional seal on shaft to allow pressure reactions. Maximum operating speed 600rpm.

Note: Coupling and bushing supplied with FETFE O-Rings.

	Shaft Size, mm	Bushing to Coupling Ace-Thred, #	Order Code
Complete Bearing			
	10	15 to 15	8044-24
	10	15 to 25	8044-55

Replacement Parts

Glass Bearing	10	15 to 15	8044-07
PTFE Coupling	10	15 to 15	5840-60
PTFE Coupling	10	15 to 25	5843-62
PTFE Bushing	10	15	8044-13



BEARING Trubore™, PTFE, Hose Connection ♠

Self-aligning, lubricant-free PTFE Trubore™ bearing for use with stainless steel or glass 10mm stirring shafts. Side port hose connection allows purging flask contents with a gas or in airless work, allows for an inert gas blanket. The lock nut permits stirring in either direction without unthreading. The compression saddle with O-Ring maintains constant force with little attention. Vacuum down to 1mm. *Not recommended for precision ground glass shafts.* Up to 400rpm.

Note: Complete consists of PTFE inner Trubore™ bearing, Ace-Thred glass adapter, non-flaking PTFE compression saddle with O-Ring, and glass-reinforced PTFE bushing and lock nut with FETFE O-Ring.

	Shaft Size, mm	Joint Size	Order Code
Complete Bearing			
	10	24/40	8066-130
	10	29/42	8066-132
	10	45/50	8066-136
	10	35/25	8066-140

Replacement Parts

PTFE Straight Inner Bearing	10	—	8066-06
PTFE Glass Filled Bushing	10	—	8066-12
PTFE Glass Filled Lock Nut	10	—	8066-13
Saddle O-Ring	10	—	8066-15
Glass Body w/Hose Connection	10	24/40	8066-70
Glass Body w/Hose Connection	10	29/42	8066-71
Glass Body w/Hose Connection	10	45/50	8066-73
Glass Body w/Hose Connection	10	35/25	8066-79

BEARING *Trubore™, Economy, 6mm ♦*

Self-aligning three-piece bearing. Unique design eliminates costly replacement since inner bearing will spin if shaft binds, or will self-align at O-Ring seal in the event the motor is slightly cocked. Inner bearing and bushing can be used with any joint size.

Note: Complete consists of inner Trubore™ glass bearing, nylon bushing with FETFE O-Ring, and threaded adapter.

	Shaft Size, mm	Joint Size	Order Code
Complete Bearing			
	10	§ 24/40	8042-115
	10	§ 29/42	8042-117
	10	§ 45/50	8042-121
	10	§ 35/25	8042-135
	19	§ 45/50	8065-64

Replacement Parts

Glass Straight Inner Bearing	10	—	8042-05
Bushing w/O-Ring	10	—	8042-09
Glass Body	10	§ 24/40	8042-15
Glass Body	10	§ 29/42	8042-17
Glass Body	10	§ 45/50	8042-21
Glass Body	10	§ 35/25	8042-35
Glass Straight Inner Bearing	19	—	8065-06
Bushing w/O-Ring	19	—	8065-10
Glass Body	19	§ 45/50	8065-16

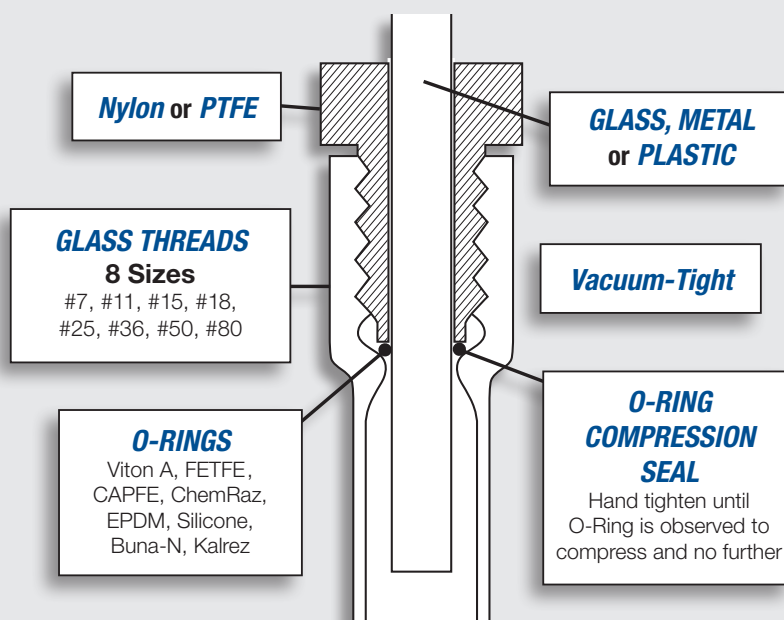


Ace-Thred™ Advantages

Grease-Free | Clamp-Free | More Convenient

Ace-Thred™ Conveniences

- Convert virtually any connection to Ace-Thred™
- Eliminate the need for greased joints
- Can hold vacuum/pressure with use of O-Rings
- No more fumbling with clamps
- Available on adapters, vessels, condensers, heads, and much more
- Adapters to transition from glassware to
 - Hosebarb
 - NPT
 - GPI
 - Swagelok®
 - Temperature probe



STIRRING SHAFT *Precision-Ground Glass* ♠

High tolerance precision ground borosilicate glass stirrer shaft. Ground surfaces help prevent slipping when attaching compression style agitators.



Shaft Size, mm	Length, mm	Order Code
Button Style		
5	318	9534-04
6	318	9534-06
10	440	8068-03
10	580	8068-02
10	690	8068-04
10	740	8068-06
19	700	8077-23
19	900	8077-25
19	1200	8077-27
Hollow Shaft Button Style		
5	318	9535-06
10	440	8068-25
10	580	8068-27
Knob Style		
5	318	9541-04
10	440	8068-30
10	580	8068-32
10	690	8068-31
19	900	8078-05
19	1200	8078-10
Paddle Style		
10	440	8068-08
10	440	8068-18
10	480	8068-17
Vane Style		
10	440	9533-02
Hollow Shaft Vane Style		
10	440	9532-10
"C" Style		
10	523	8073-16
10	551	8073-19
10	574	8073-23

**STIRRING SHAFT** *PTFE-Coated Glass* ♠

High tolerance precision ground borosilicate glass stirrer shaft with PTFE coating to allow for higher stirring speeds with Trubore™ bearings. 500rpm maximum speed if used unlubricated.

Shaft Size, mm	Length, mm	Order Code
Button Style		
10	440	8070-05
10	690	8070-10

STIRRING SHAFT *Polished Glass*

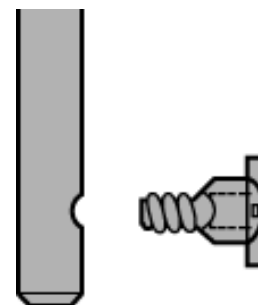
High tolerance polished borosilicate glass stirrer shaft.

Shaft Size, mm	Length, mm	Paddle O.D., mm	Order Code	
Button Style				
9	416	—	9530-04	♠
9	610	—	8134-25	♠
10	440	—	8075-12	♠
10	580	—	8075-14	♠
10	690	—	8075-15	♠
19	700	—	8076-05	♠
19	900	—	8076-07	♠
19	1200	—	8076-10	♠
Knob Style				
10	440	—	8075-32	♠
10	500	—	8075-33	♠
10	580	—	8075-34	♠
10	690	—	8075-36	♠
10	560	—	8075-38	♠
19	800	—	8076-42	♠
19	1200	—	8076-44	♠
19	1400	—	8076-46	♠
Plain Style				
10	440	—	8075-21	♠
10	580	—	8075-23	♠
10	690	—	8075-24	♠
Drill Hole Style				
19	800	—	8076-43	♠
19	900	—	8076-40	♠
19	1140	—	8076-45	♠
19	1400	—	8076-48	♠
28	1010	—	8080-12	★
28	1140	—	8080-14	★
28	1320	—	8080-18	★
28	1400	—	8080-24	★
28	1600	—	8080-30	★
28	1651	—	8080-27	★
28	2030	—	8080-25	★
Paddle Style				
9	380	40	8134-15	♠


STIRRING SHAFT *Stainless Steel ★*

High tolerance polished 316 stainless steel stirrer shaft.

Shaft Size, mm	Length, mm	Order Code
Button Style		
10	420	8074-02
10	450	8074-04
10	580	8074-07
Replacement Button		
		8074-40





STIRRING SHAFT PTFE-Coated Stainless Steel

High tolerance PTFE-coated stainless steel stirrer shaft allow for higher stirring speeds with Trubore™ bearings. 500rpm maximum speed if used unlubricated. Retreat and Paddle Style are one-piece design with stainless steel inner shaft core.

Shaft Size, mm	Length, mm	Paddle O.D., mm	Order Code	
Drilled Hole Style				
10	460	—	8071-05	♠
10	640	—	8071-07	♠
10	690	—	8071-10	♠
19	700	—	8079-03	★
19	900	—	8079-05	★
19	1200	—	8079-10	★
Retreat Curve Style				
10	400	50	13850-01	★
10	400	70	13850-04	★
Paddle Style				
10	400	50	13852-10	★
10	400	70	13852-15	★
19	900	95	13852-19	★

Viscosity Conversion Factors

Viscosity is the resistance to flow due to the internal friction within a fluid. This is generally expressed as the force required to move one unit area one unit distance. Kinematic and absolute viscosity are related by the density of the fluid.

Kinematic Viscosity

Multiply to get	→	to get Divide
ft ² /sec	92903.04	centistokes
ft ² /sec	0.092903	sq. meters/sec
sq. meters/sec	10.7639	ft ² /sec
sq. meters/sec	1000000.0	centistokes
centistokes	0.000001	sq. meters/sec
centistokes	0.0000107639	ft ² /sec

Absolute to Kinematic Viscosity

Multiply to get	→	to get Divide
centipoises	1/density (g/cm ³)	centistokes
centipoises	0.00067197/density (lb/ft ³)	ft ² /sec
lbf-sec/ft ²	32.174/density (lb/ft ³)	ft ² /sec
kg-sec/m ²	9.80665/density (kg/m ³)	sq. meters/sec
Pascal-sec	1000/density (g/cm ³)	centistokes

Absolute or Dynamic Viscosity

Multiply to get	→	to get Divide
lbf-sec/ft ²	47880.26	centipoises
lbf-sec/ft ²	47.8803	Pascal-sec
centipoises	0.000102	kg-sec/sq. meter
centipoises	0.001	lbf-sec/ft ²
Pascal-sec	0.0208854	Pascal-sec
Pascal-sec	1000	centipoises

Kinematic to Absolute Viscosity

Multiply to get	→	to get Divide
centistokes	density (g/cm ³)	centipoises
sq. meters/sec	0.10197 x density (kg/m ³)	kg-sec/m ²
ft ² /sec	0.03108 x density (lb/ft ³)	lbf-sec/ft ²
ft ² /sec	1488.16 x density (lb/ft ³)	centipoises
centistokes	0.001 x density (g/cm ³)	Pascal-sec
sq. meters/sec	1000/density (g/cm ³)	Pascal-sec

*Sometimes absolute viscosity is given in terms of pounds mass. In this case—centipoises x 0.000672 = lbfm/ft sec.

Dilatant Liquids — viscosity increases as shear rate increases. Mixers can bog down and stall after initially mixing such liquids. Dilatant liquids include slurries, clay, and candy compounds.

Newtonian Liquids — viscosity remains constant regardless of shear rate or agitation. As mixer speed increases, flow increases proportionately. Newtonian liquids include water, mineral oils, and hydrocarbons.

Pseudoplastic Liquids — viscosity decreases as shear rate increases, but initial viscosity may be sufficiently great to prevent mixing. Typical pseudoplastic liquids are gels, latex paints, and lotions.

Thixotropic Liquids — as with pseudoplastic liquids, viscosity decreases as shear rate or agitation increases. When agitation is stopped or reduced, hysteresis occurs and viscosity increases. Often the viscosity will not return to its initial value. Thixotropic liquids include soaps, tars, shortening, glue, inks, and peanut butter.

STIRRING BLADE *Button Style* ♠

Stirring blades for use with button-type stirring shafts.

Shaft Size, mm	Height, mm	Length, mm	Order Code
PTFE			
5	12	41	9542-10
6	12	41	9542-20
10	19	48	8085-03
10	19	60	8085-07
10	19	76	8085-11
10	23	113	8085-15
10	24	134	8085-19
10	24	160	8085-23
19	35	150	8085-52
19	39	160	8085-54
19	44	175	8085-56
19	54	190	8085-58

Borosilicate Glass

9	12	41	9530-08
10	19	48	8083-04
10	19	60	8083-08
10	19	76	8083-12
10	23	113	8083-16
10	24	134	8083-20
10	24	160	8083-24

Stainless Steel

10	19	76	8086-04
10	23	113	8086-08
10	24	134	8086-12
10	24	160	8086-16


STIRRER BLADES *Oval, Button Style* ♠

Oval stir blades for 10mm O.D. button-type stir shafts.

Shaft Size, mm	Height, mm	Length, mm	Order Code
PTFE			
10	19	40	8082-02
10	19	60	8082-04
10	24	80	8082-06
10	24	115	8082-08

Stainless Steel

10	19	40	8096-04
10	24	80	8096-06
10	24	115	8096-10

Stainless Steel w/holes

10	19	60	8096-70
10	24	80	8096-72
10	24	115	8096-74



**STIRRER BLADES** *Banana Type, PTFE ♠*

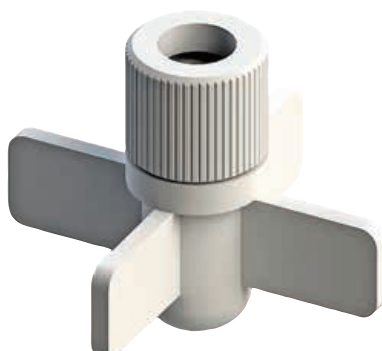
PTFE banana shaped stir blades for 10mm O.D. button-type stir shafts. 3mm thick blades have a number of perforations, and are designed to closely fit various sizes of round bottom flasks.

Shaft Size, mm	Height, mm	Length, mm	Order Code
10	21	87	8087-05
10	23	109	8087-07
10	31	146	8087-09
10	31	157	8087-11
10	35	175	8087-13
10	37	222	8087-15
10	40	263	8087-19

**AGITATOR** *Single Blade Type, PTFE ♠*

PTFE agitator with removable blade secured with a PTFE pin.

Shaft Size, mm	Blade Length, mm	Order Code
Complete, Shaft w/Blade		
10	76	8088-10
19	152	8092-10
Replacement Blades		
	76	8088-03
	152	8092-14

**AGITATOR** *Multi-Blade, PTFE ♠*

PTFE multi-blade agitator for drilled or knob-type shafts. Paddles are replaceable.

Shaft Size, mm	Blade Length, mm	Blade Style	Order Code
Paddle Blades			
10	38	Paddle	8089-04 ♠
10	64	Paddle	8089-06 ♠
10	76	Paddle	8089-08 ♠
19	102	Paddle	8091-10 ♠
19	152	Paddle	8091-20 ♠

Anchor Blades

10	50	Anchor	8091-02 ♠
10	90	Anchor	8091-04 ♠
19	90	Anchor	8091-06 ♠
19	102	Anchor	8091-10 ♠
19	140	Anchor	8091-26 ★
19	203	Anchor	8091-40 ★
28	140	Anchor	8091-34 ★
28	178	Anchor	8091-36 ★

Replacement Blades

10	38	Paddle	8089-14 ♠
10	64	Paddle	8089-16 ♠
10	76	Paddle	8089-18 ♠
19	102	Anchor	8091-14 ♠
19	152	Paddle	8091-15 ♠
19	140	Anchor	8091-28 ★
19	203	Anchor	8091-44 ★
PTFE Nut & Bolt Set, 28mm			8091-134 ★



AGITATOR Turbine

Turbine pitched blade style agitator for use on knob or drilled hole style shafts. Stainless steel model features vertical blades and is for use with stainless steel shafts only.

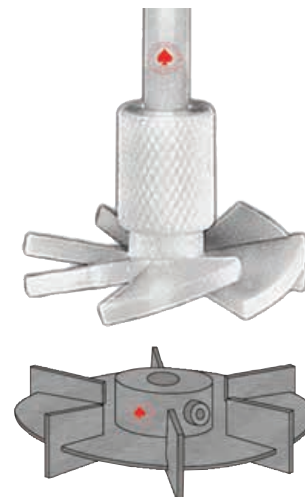
Shaft Size, mm	Blade Length, mm	Order Code	
PTFE Turbine			
10	38	8090-04	♠
10	64	8090-08	♠
19	102	8093-12	♠
19	152	8093-22	♠

Stainless Steel Turbine

10	75	8095-31	★
10	89	8095-35	★

Replacement Blades

19	102	8093-15	♠
19	152	8093-16	♠


AGITATOR Vertical and Pitched Blades ★

Vertical and pitched blade style agitator for use on knob or drilled hole style shafts. Stainless steel models feature pitched blades and are for use with stainless steel shafts only.

Shaft Size, mm	Length, mm	Blade Angle	Order Code
Stainless Steel			
10	75	45	8094-23
10	89	45	8094-27

PTFE, 45°

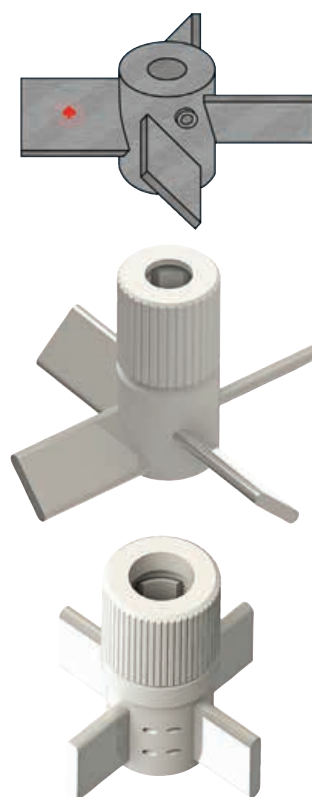
10	38	45	8097-02
10	64	45	8097-04
10	76	45	8097-06
19	64	45	8097-08
19	76	45	8097-10
28	140	45	8093-25
28	150	45	8093-35

PTFE, 90°

10	38	90	8097-22
10	64	90	8097-24
10	76	90	8097-26
19	64	90	8097-28
19	76	90	8097-30

Replacement Parts

Stainless Steel Set Screw, 10mm	8094-50
Kel-F tipped Set Screw, 10mm	8094-52
PTFE Nut & Bolt Set, 28mm	8093-125


AGITATOR Multi-Paddle w/Receptacle

PTFE, large-scale, multi-paddle agitator designed to accept pinned bottom valves, like our 6482 flush-seal valve. The pin helps reduce wobble or flexing at higher rpm.

Shaft Size, mm	Blade Length, mm	Blade Style	Order Code	
PTFE				
19	140	Anchor	8100-09	♠
19	200	Anchor	8100-19	♠
28	140	Anchor	8101-28	★
28	178	Anchor	8101-38	★

Accessories

Flush Seal Bottom Outlet Valve, Pinned	6482-20	★
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**CHUCK** *Flex-Grip®* ♠

Nylon chuck for use with ACE stirring shafts or other shafts of the same dimensions. Chuck has flexible insert which allows for misalignment of shaft without danger of breakage. -30°F to 160°F temperature range.

Shaft Size, mm	Motor Shaft O.D.	Qty	Order Code
PTFE			
6	1/4"	1	8124-04
5	5/16"	1	8124-05
6	5/16"	1	8124-07
10	5/16"	1	8124-10
10	3/8"	1	8124-12
10	13mm	1	8124-13
19	5/16"	1	8124-15
19	3/8"	1	8124-17
19	1/2"	1	8124-20
19	13mm	1	8124-22
19	5/8"	1	8124-23

Replacement Insert

Shaft Size, mm	Qty	Order Code
6	6	8124-24
10	6	8124-25
5	6	8124-26
19	3	8124-30

**CONNECTOR** *Flexible Beam w/Pin* ★

Coated steel flex-beam connector, for attaching directly to stir motor drive shaft. Fits three different standard motor shaft sizes (top). Comes with 1/2" stainless steel pin, (bottom) that attaches to top of 6472-157, 28mm nylon chuck.

Shaft Size, mm	Motor Shaft O.D., in (mm)	Order Code
28	1/2 (12.7)	6472-155
28	5/8 (15.9)	6472-156
28	3/8 (9.5)	6472-159

CHUCK *for 28mm Stir Shaft* ★

Nylon chuck with nylon side pin for connecting to a 28mm glass stir shaft, (8080) to the 6472-155, -156 or -159 flex beam connectors or a 6462 telescoping chuck coupling. Top hole fits onto 1/2" steel pin on 6472 flex beam or 6462 telescoping couplings.

Shaft Size, mm	Order Code
Chuck	
28	6472-157
Side Pin	
28	6472-158

PASS-THROUGH ASSEMBLY *Stainless Steel* ★

Item includes the stir shaft coupling with pin that is attached to 7mm O.D. stainless steel drive shaft. Shaft is 305mm long and fits up through the chuck and opening in the Heidolph® RZR model and Caframo® BDC model overhead stir motors, and allows for adjusting the height of the entire stir shaft assembly.

Shaft Size, mm	Shaft Length, mm	Order Code
10	305	8126-24
19	305	8126-22


SHAFT COUPLING *Stainless Steel* ★

Stir shaft couplings for connecting glass or metal stir shafts to the adjustable chuck on an overhead stir motor. Compression connection is secured to various OD shafts via an Allen screw coupling.

Shaft Size, mm	Motor Shaft O.D., in	Order Code	
3/8	3/8	8126-01	★
1/2	3/8	8126-02	★
1/4	1/4	8126-03	★


COUPLING ★

The universal swivel coupling is designed for connection to a metal chuck. The compression connection is secured via Allen screw, and attaches to various O.D. glass stirring shafts. When used with pass-through assemblies, the coupling allows for easy, flexible height adjustment.

Shaft Size, mm	Motor Shaft O.D., in	Order Code
6	1/4	8126-05
8, 9	1/4	8126-08
10	1/4	8126-10
19	3/8	8126-19
28	3/8	8126-28


COLLAR *w/PTFE Gasket* ♠

Designed to be used with stirring shafts. Handy for positioning shaft in bearing, and preventing shaft from dropping into flask. Supplied with PTFE gasket to prevent scratching top of bearing, and to act as dust cover.

Shaft Size, mm	Order Code
Glass-Filled PTFE	
10	8127-10
19	8127-20
28	8127-28
Stainless Steel	
10	8127-42
19	8127-43
28	8127-44



**SHAFT COUPLING** *Stirring* ★

Couples stir motor shaft to reactor stir shaft. Flexible neoprene rubber body with PTFE sleeve inside corrosion-resistant metal end that provides angular and parallel misalignment of glass or metal stirring shaft without danger of breakage. Rubber body absorbs shock and provides quiet vibration free running with great torsional stiffness. Measures 4" overall.

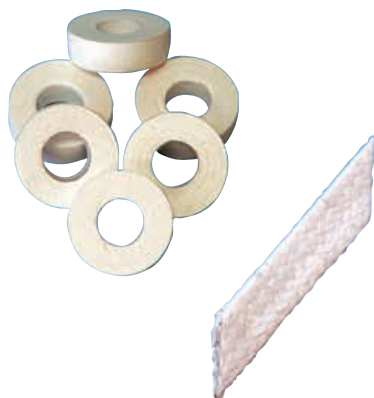
Easy to Use: (1) Slip coupling end with PTFE sleeve over stirring shaft as far as it will go, approximately 3".
 (2) Bring motor shaft down and align visually approximately 1/2" above coupling and shaft. Secure motor position and recheck alignment.
 (3) After motor and reactor are securely in place, slide coupling over motor shaft and tighten set screw.
 (4) Slide stirring shaft up into coupling just enough to clear bottom of reactor. Tighten PTFE sleeve over shaft, using brass set screw, just enough to prevent slippage.

Shaft Size, mm	Motor Shaft O.D., in	Order Code
10	1/4	8125-06
10	5/16	8125-08
10	3/8	8125-11
10	1/2	8125-13
19	3/8	8125-21
19	1/2	8125-25
19	5/8	8125-27
19	3/4	8125-29

**GASKET** *PTFE, Flat* ♠

Designed to fit stirring shafts. Useful as dust cover and as replacement for gasket supplied with 8127 collar. Twelve to a package.

Shaft Size, mm	Qty	Order Code
10	12	8128-10
19	12	8128-20
28	12	8128-42

**STIRRER PACKING** ♠

PTFE packing for use in 8112 stuffing boxes. This material conforms readily to the contour of the stuffing box and shaft.

Shaft Size, mm	Qty	Order Code
10	pk/6	8122-10
19	1	8122-40

ALUMINUM PACKING BOX ★

10mm size designed to be used with 8051 and 8133 bearings; 19mm with 8060 or 8061 bearings supplied with PTFE packing. For replacement packing, see 8122.

Shaft Size, mm	Order Code
10	8111-10
19	8112-10



"STIR-LUBE" ACE Trubore™, Stirrer Lubricant ♠

A superior, low melting, silicone-based lubricant which liquifies at body temperature. Because of its composition, you need apply only a very thin film of "Stir-Lube®" to a stirring shaft to increase bearing and shaft life at least three times over that of bearing lubricated with glycerine. Non-cooled ACE bearing can be operated at 1500rpm and water-cooled bearings up to 2000rpm for many hours with negligible wear.

Size, grams	Order Code
28 (1oz)	8117-10
113 (4oz)	8117-20



"HI-LUBE" Heavy-Duty Liquid Stirrer Lubricant ★

ACE chlorofluorocarbon grease for use at speeds up to 6000rpm with ACE standard glass assemblies. Use 8040 water-cooled type bearing for long-time stirring (over one hour). Below one hour, 8038 type may be used at 1500rpm; eight hours at 1000rpm.

High chemical inertness — unaffected by strong acids and alkalis. Soluble in most organic solvents. Suitable for use with oxidizing gases.

High heat resistance — thermally stable up to 260°C (500°F). Non-flammable; does not carbonize on decomposition. 30mL size.

Size, mL	Order Code
30	8119-07



LUBRICANT Stopcock Grease ★

A smooth, stable, odorless petroleum-based (no silicone) lubricant for lubricating joints and stopcocks. Melts at 52°C (125°F). Can be removed with Xylene.

Size, grams	Qty	Order Code
75 (2.65oz)	1	8118-10
75 (2.65oz)	cs/6	8118-10





KRYTOX® GPL Fluorinated Grease* ★

Superior performance, non-contaminating, nonflammable, general purpose grease. Excellent as a glass bearing lubricant, as a super-inert grease for stopcocks and joints, as a high temperature grease in “baked-out” vacuum systems, or on distillation column joints because it is insoluble in almost all solvents except Freon® 113. Easy removal with fluorinated solvents.

CHEMICAL STABILITY

Krytox GPL grease has demonstrated an exceptional degree of inertness when contacted with a wide range of reactive chemicals. There is no reaction with the following chemicals:

- oxygen • caustic • fluorine • hydrazine • diethylene triamine • hydrocarbons
- chlorine • hydrogen • ethanol • hydrogen peroxide • phosphoric acid
- red fuming nitric acid • sulfuric acid • methanol • aniline • ammonia
- hydrochloric acid • unsymmetrical dimethyl hydrazine

THERMAL STABILITY

Krytox GPL can be used at operating temperatures up to 204°C (400°F) for extended periods of time and at 290°C (550°F) intermittently. Approximate minimum use temperature is -35°F.

**Reg. U.S. Pat. & Tm. Office, DuPont Company. Fluorinated Greases are made only by DuPont.*

Size,
oz
2

Order
Code
8115-08



KRYTOX LVP High Vacuum Grease* ★

Very low vapor pressure, highly inert, nonflammable grease. The grease for high-vacuum systems. Superior performance in laboratory and pilot plant equipment, as a lubricant and sealant for stopcocks, valves, fittings and O-Rings operating at high vacuum or in hostile environments.

Description

Krytox LVP high vacuum grease is a combination of an extremely low vapor pressure perfluoroalkylpolyether oil and a fluorocarbon resin thickener. This white, buttery grease is designed to lubricate the fittings and accessories of high vacuum systems at operating temperatures down to 10⁻¹² torr at 20°C (1.33 x 10⁻¹³ kPa).

The optimum useful temperature range of Krytox LVP is -20° to 260°C (-5° to 500°F).

Properties

- Krytox LVP high vacuum grease has the following important properties:
- Very low vapor pressure
- High degree of chemical inertness
- Excellent lubricating properties
- Complete nonflammability
- Compatibility with metals, plastics and elastomers
- Excellent oxidation and thermal stability
- Vapor Pressure: torr at 20°C — 1 x 10⁻¹³; torr at 200°C — 1 x 10⁻⁵

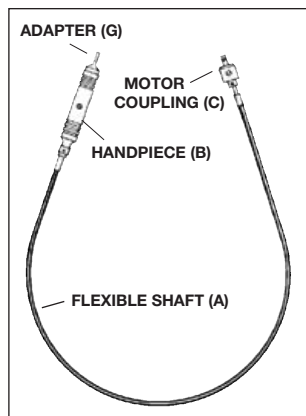
**Reg. U.S. Pat. & Tm. Office, DuPont Company. Krytox® LVP is made only by DuPont.*

Size,
oz
2

Order
Code
8116-10

Use the ACE flexible shaft for added convenience and safety

- Safer when stirring corrosive liquids
- Safer when stirring liquids with explosive vapor
- Available in two lengths

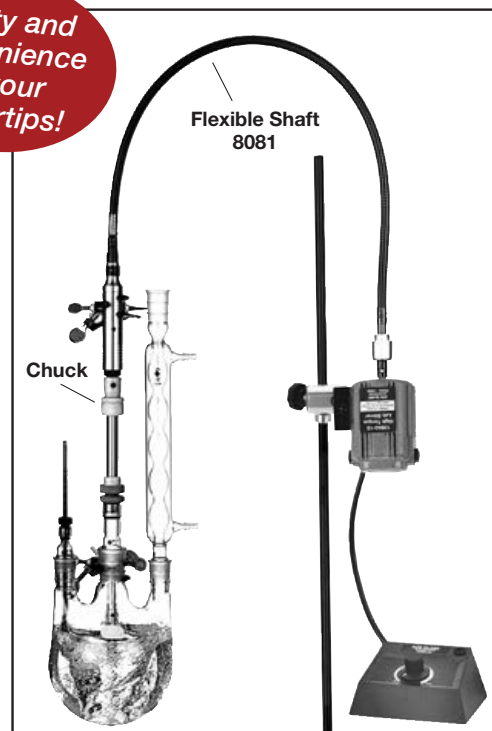


FLEXIBLE SHAFT ★

Fully flexible drive shaft connects the motor to any size or type of reactor stir shaft. Designed with a ball bearing motor coupling at one end, for connection to any motor with an 8mm (5/16") diameter shaft. The other end has a detachable handpiece with an 8mm round aluminum pin adapter (8081-24) for connection to our 8124 chucks (supplied separately). The handpiece can be supported by a standard lab clamp or can be hand-held. The shafts operate up to 14,000rpm. Shafts should run in a counter-clockwise direction. Typical torque ratings: sharp bend in shaft, (4" loop) — 4.7 Kg-cm, (4in-lbs). Straight shaft — 28 Kg-cm, (24in-lbs). Shafts measure approximately 91.4 cm, (36") or 152.4cm, (60") with handpiece and motor coupling attached. Optional adapter 8081-27 allows for connection to motors with 9.5mm (3/8") O. D. shaft. Operating and lubrication instructions included.

Note: Complete units consist of: either shaft A: 8081-05 or shaft A-1: 8081-06, motor coupling for 8mm motor shaft, 8081-12, handpiece with 1/4" collet and adapter, chuck wrench, and key chain.

Safety and convenience at your fingertips!



	Order Code
(A) Flexible shaft only, 91.4cm	8081-05
(A-1) Flexible shaft only, 152.4cm	8081-06
(B) Handpiece with 8mm adapter (G), with 1/8" and 1/4" collet, only	8081-08
(B-1) Handpiece with chuck wrench with key and chain (E), only	8081-07
(C) Motor coupling for 8mm shaft, only	8081-12
Complete, 91.4cm (consists of A, B, C & E)	8081-30
Complete, 152.4cm (consists of A-1, B, C & E)	8081-32

Additional Parts:

(E) Chuck wrench with key and chain	8081-15
(F) Shaft lubrication, 30mL	8081-19
(G) Adapter, handpiece	8081-24
(H) Adapter, connecting (3/8" O.D. motor shaft to motor coupling)	8081-27

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www.us.vwr.com



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Contract GS07F119CA

www.gsamart.com

FLANGE MOUNT



AIR STIRRER Heavy Duty, High Torque, Arrow® ★

A compact, heavy duty air motor with highly damped muffler. Complete unit consists of an air hose with a snap coupling on motor end, and shut-off valve on the other end. Motor will develop 1.5hp at 90lbs air pressure. Speeds are variable from 300 rpm to 3000 rpm. It consumes approximately 70 cfm at 3000 rpm and 100 psig. Motor shaft is 12.7mm (1/2") diameter for use with 8124 chuck, not included. For filter/regulator/lubricator, see 13372.

Order
Code

13370-10



FILTER/REGULATOR/LUBRICATOR Arrow® ★

Space-saving multiple unit, recommended for use with 13665 and 13370 air motors. Pressurized air flows through louvered deflector in swirling pattern, with liquids and dirt falling into lower baffle where they are prevented from re-entering the air stream. Element removes impurities down to 40 microns. Clean air then passes through precision needle valve feed mist lubricator that can be filled under pressure. 150psig maximum pressure range is adjustable through spring action of T-handle. Maximum operating temperature is 125°F. Manual drain. Shatter-proof polycarbonate bowls not recommended for use in atmospheres containing acetone, benzene, carbon tetrachloride, ethylene dichloride, gasoline or toluene. Inlet and outlet connections are 1/4" NPT.

Note: Supplied complete with gauge and mounting bracket.

Order
Code

13372-45



GAUGE Pressure ★

Pressure gauges for monitoring pressure in laboratories; especially suited for use with the Michel-Miller HP/LPLC system, or other applications when pressure monitoring is necessary. Available with brass or 316 SS internals. **Note:** Code -52 is a compound gauge, pressure and vacuum.

Pressure Range, psig	Dial Size, in	Male NPT Connector, in	Internals	Order Code
0-400	2-1/2	1/4	Brass	13385-12
0-400	2-1/2	1/4	Stainless Steel	13385-14
0-60	1-1/2	1/8	Stainless Steel	13385-44
0-160	1-1/2	1/8	Stainless Steel	13385-48
Full vacuum-60	1-1/2	1/8	Stainless Steel	13385-52

Pressure Conversions

Absolute									Gauge Pressure	
cm of Hg	Torr or mm of Hg	Micron	Atmo-sphere	lb/ in. ²	ton/ ft. ²	gram/ cm ²	ft. of H ₂ O	in. of Hg	lb. in.	in. of Hg
76	760	760000	1	14.7	1.06	1033	33.9	29.9	0.00	0.00
70	700	700000	0.921	13.53	0.975	952	31.2	27.6	1.16	2.36
60	600	600000	0.79	11.6	0.835	816	26.8	23.6	3.10	6.30
50	500	500000	0.659	9.67	0.696	680	22.3	19.7	5.03	10.2
40	400	400000	0.526	7.74	0.557	545	17.8	15.7	6.97	14.2
30	300	300000	0.395	5.8	0.417	408	13.4	11.8	8.90	18.1
20	200	200000	0.263	3.87	0.278	272	8.92	7.87	10.8	22.0
10	100	100000	0.132	1.94	0.139	136	4.46	3.94	12.8	26.0
5	50	50000	0.006	0.967	0.07	68	2.23	1.97	13.7	27.9
1	10	10000	0.013	0.194	0.014	13.6	0.446	0.394	14.5	29.5
0.1	1	1000	0.001	0.019	0.001	1.36	0.045	0.039	14.68	29.88
0	0	0	0	0	0	0	0	0	14.7	29.92

AIR STIRRER *Light Duty* ★

This small, compact and quiet air motor is ideal for stirring all types of solvents, lacquers, paints, oils, synthetics, and fine and heavy chemicals where danger of explosion may exist, as there are no sparks. It is a complete unit, ready for mounting on a laboratory stand. Air supply of only 30psig to 100psig is necessary. Variable speeds range from 200rpm to 10,000rpm merely by turning the air supply line valve. For bath sizes to 20L, this smooth running unit has little or no service cost. Unit adjusts itself to compensate for wear. The shaft and propeller are made of stainless steel to resist most acids and chemicals and for easier cleaning. Will start in most stalled positions with low air pressure and cannot burn out from overload. Air Motor — 0-1/3hp at 80lbs Coupler and stainless steel shaft 30.5cm overall. Propeller: stainless steel 6.4cm diameter. Shaft is 9.5mm (3/8" h) O.D. Air consumption = 13cfm.

Note: For filter/regulator/lubricator, see 13372.

Arrow Model A

Order
Code

13365-05

**ROD
MOUNT**

AIR STIRRER *Heavy Duty* ★

Specially designed air motor for use on the more viscous materials, provides speed with power. More constant speed is attained through gear reduction, lowering speed fluctuations due to changes in air pressure. Speeds range from 50rpm to 1200rpm by merely turning valve on air supply line. This smooth running unit is complete and ready to mount on laboratory stand. Air supply of only 30 to 80psig is necessary. Another outstanding feature of the unit is the muffler, which provides quiet operation. The shaft and propeller are stainless steel to resist most acids and chemicals and for easier cleaning. Service costs are almost nil as the unit adjusts itself to compensate for wear. Air Motor — 0-1/3hp at 80lbs Gear Ratio — 7-1. Coupler and stainless steel shaft 30.5cm overall. Propeller: stainless steel 6.4cm diameter. Shaft is 9.5mm (3/8" h) O.D. Air consumption = 13cfm.

Note: For filter/regulator/lubricator, see 13372.

Arrow Model G

Order
Code

13365-10

**ROD
MOUNT**




ROD MOUNT



STIRRERS Overhead, RZR 1

Heidolph

Heidolph RZR 1 overhead stirrer with tools and accessories features 2 gears delivering 280 to 2200rpm with analog control. 115v/60Hz input motor is high torque, up to 100Ncm. Use code -32 stir shaft for slow speed, up to 250rpm and code -34 shaft for speeds up to 2200rpm. Universal stand and clamp are available not only in the standard height of 700mm, but also in Ace modified heights of 920mm & 1220mm.

Number of Gears		2
Speed Range	rpm	35-250 / 280-2,200
Speed Display		Scale
Speed Control		Mechanic
Max. Torque	Ncm	100
Torque Indicator		-
Overheat Protection		Mechanical Power Limitation
Max. Viscosity	mPa s	40,000
Stirring Capacity, Max. (H ² O)	Liters	20
Through-shaft Design		Yes
Shaft Diameter, Max.	mm	8
Dimensions (W x D x H)	mm in	71 x 172 x 250 2.8 x 6.77 x 9.84
Weight	Kg/lbs	2.7/5.95
Motor Input/Output	Watts	77/18
Protection Class DIN EN 60529		IP 20
Heidolph Model		501-11000-00
Order Code		13550-05



Ace Glass offers the complete line of...
J-Kem Temperature Controllers

- Monitors and controllers for pressure, vacuum and temperature that cover the entire spectrum of performance
- Data logging/control software included with most models
- USB ports and CE certification standard
- Two-year warranty
- NIST traceable
- Advanced PID algorithm

Arrow Engineering Laboratory Stirrers

- Completely enclosed, non-ventilated, permanent magnet DC motor for long service life
- Eye level, heavy cast aluminum control box integrated with motor for safe and easy operation of stirrers
- Control knob electronically regulates speed of application required
- Overload protection — a manually resettable circuit breaker for total safety
- On/Off switch for quick stopping if necessary
- Stirrers come complete as shown, including 9/16" dia. x 10" long aluminum support rod
- 100% backed by the best guarantee in the business:
 - 30-day satisfaction guarantee
 - Six-month unconditional guarantee

Note: Not supplied with shaft, propeller or coupling. For stainless steel shaft, propeller and coupling, order 13542-60. For glass shafts, agitators and coupling, see 8068-8124.



STIRRER Laboratory, Heavy Duty, Variable Speed ★

Arrow

- Handles high viscosity fluids up to 4400cps in 5-gallon batch or up to 100L water
- Variable speed — up to 1000rpm, Gear Head
- Constant torque throughout speed range is 7.35in-lbs.
- 1/10hp motor operates at 120V, 60Hz
- Motor shaft is 3/8" (9.5mm)

Type	Speed Range, rpm	Constant Torque, in-lbs	Motor, HP	Power, VAC	Order Code
Gear Head	to 1000	7.35	1/10	120	13542-25

STIRRER Laboratory, Light Duty ★

Arrow

- Handles watery to light syrupy mixtures, or up to 20L water
- Variable speed — up to 6000rpm, Direct Drive
- Constant torque throughout speed range is 1.05in-lbs.
- 1/10hp motor operates at 120V, 60Hz
- Motor shaft is 3/8" (9.5mm)

Type	Speed Range, rpm	Constant Torque, in-lbs	Motor, HP	Power, VAC	Order Code
Direct Drive	to 6000	1.05	1/10	120	13543-12

STIRRER Laboratory, Medium Torque, Variable Speed ★

Arrow

- Handles light to syrupy mixtures, or up to 100L water
- Variable speed — up to 2000rpm, Direct Drive
- Constant torque throughout speed range is 2.43in-lbs.
- 1/15hp motor operates at 120V, 60Hz
- Motor shaft is 3/8" (9.5mm)

Type	Speed Range, rpm	Constant Torque, in-lbs	Motor, HP	Power, VAC	Order Code
Direct Drive	to 2000	2.43	1/15	120	13544-20

Optional Accessory

CLAMP

"Power Hold"

Fits stirring stand with 3/8" to 5/8" diameter shaft and stirrers with mounting rod from 3/8" to 5/8" diameter.

Note: Stop collar included.

Order Code

11082-07



SPECIFICATIONS

Model #	Type	Speed Range	Constant Torque	Motor	Power	Shipping Weight
13542-25	Gear Head	to 1000rpm	7.35in-lbs	1/10hp	120VAC	8 lbs
13543-12	Direct Drive	to 6000rpm	1.05in-lbs	1/10hp	120VAC	8 lbs
13544-20	Direct Drive	to 2000rpm	2.43in-lbs	1/15hp	120VAC	8 lbs

**STIRRER Digital ★****IKA**

Laboratory stirrer designed for simple tasks for quantities from 25L to 40L of water. It automatically adjusts the speed through microprocessor-controlled technology within the speed range of 0/30rpm to 2000rpm. Safety circuits installed ensure automatic cut-off in anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample. 230V versions available upon request.

Note: Two-year manufacturer's warranty.

ROD MOUNT

	Eurostar 40	Eurostar 60
Stirring Quantity Max (H2O)	25L	40L
Speed Range	0/30-2000rpm	0/30-2000rpm
Viscosity Max	30000 mPas	50000 mPas
Setting Accuracy Speed	1 ±rpm	1 ±rpm
Weight	4.4kg	4.4kg
Chuck Range (Dia.)	0.5-10mm	0.5-10mm
Electrical Input (230vac available)	115V, 50/60Hz	115V, 50/60Hz
Output Max. (at Stir Shaft)	84W	126W
Torque Max. (at Stir Shaft)	40Ncm	60Ncm
Order Code	13514-10	13516-20

**STIRRER Removable Wireless Control ★****IKA**

Universal laboratory stirrer designed with a removable wireless controller and a digital TFT display. It automatically adjusts the speed through microprocessor-controlled technology with the speed range of 0/30rpm to 2000rpm. The stirrer comes equipped with a RS232 and USB interface to control and document all parameters. An integrated torque trend display is provided for the measurement of viscosity changes. Safety circuits installed to ensure automatic cut-off in anti-stall or overload conditions. 230V versions available upon request.

Note: Two-year manufacturer's warranty.

ROD MOUNT

	Eurostar 60	Eurostar 100
Stirring Quantity Max (H2O)	40L	100L
Speed Range	0/30-2000rpm	0/30-2000rpm
Viscosity Max	50000mPas	70000mPas
Setting Accuracy Speed	1 ±rpm	1 ±rpm
Weight	4.7kg	4.7kg
Chuck Range (Dia.)	0.5-10mm	0.5-10mm
Electrical Input (230vac available)	115V, 50/60Hz	115V, 50/60Hz
Output Max. (at Stir Shaft)	126W	136W
Torque Max. (at Stir Shaft)	60Ncm	100Ncm
Order Code	13517-30	13518-02

STIRRER Mechanical ★

Powerful, mechanically-controlled stirrer with LED digital display. Suitable for quantities up to 20L (H₂O). For use in laboratories and pilot plant stations. Two speed ranges within 60-2000rpm, for highly viscous media and intensive mixing. Push-through mixing tools. Special motor overheating protection by means of self-locking temperature limiter. 230V versions available upon request.

Note: Two-year manufacturer's warranty.

IKA

ROD MOUNT



RW 20

Stirring Quantity Max (H ₂ O)	20L
Speed Range	60-2000rpm
Viscosity Max	10000mPas
Setting Accuracy Speed	1 ±rpm
Weight	3.1kg
Chuck Range (Dia.)	0.5-10mm
Electrical Input (230vac available)	115V, 50/60Hz
Output Max. (at Stir Shaft)	26W
Torque Max. (at Stir Shaft)	150Ncm
Order Code	13523-10

STIRRER Overhead, Crossover Stirrer/Mixer ★

A powerful stirrer/mixer for the most taxing laboratory uses and suitable for many industrial uses. Brushless DC motor with a GUI interface and a resistive touch screen and can be controlled by a PC via USB or DB9 connection or a PLC control unit via 4-20mA wiring. With a maximum torque of 3000 Ncm and a stirring capability up to 180,000 cP, this 1/2hp motor is equal to the most demanding tasks. Couple with our 13569-12 clamp or 13569-11 stand for portable power. 120vac/60Hz

Note: Three-year manufacturer's warranty.

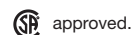
Caframo

ROD MOUNT



1540 Crossover

Speed	50-299 / 300-1500rpm
Maximum Volume	55 US Gallons (200L)
Maximum Viscosity	180,000 cps (180,000 mPas)
Maximum torque	3000 N-cm (264 in/lbs)
Output Power	1/2hp, 300W
Electrical Input	120V, 60Hz
Through-shaft	Yes
Weight	26.5 lbs (12 kg)
Chuck	accepts up to 5/8" (16mm) shafts
Connectivity Ports	Standard USB A, Mini USB B, DB9 4-20 mA
Timer / Alarm	Yes / Yes
Order Code	13569-01



ROD MOUNT



  approved.

STIRRER Overhead, Digital ★

Caframo

Rugged ultra-speed model with range from 40-6000 rpm. Microprocessor-controlled brushless DC motor with automatic overload protection. Digital display of RPM and torque. Keypad adjustable. Maintains set speed as viscosity changes. 2-speed transmission selects hi-torque or hi-speed range. Adjustable steel chuck with hinged chuck guard. 120V version UL and CSA approved.

Note: A 230V (CE rated) version is available (13565-06). Three-year manufacturer's warranty.

BDC6015

Low Speed Range	40-1200rpm
High Speed Range	1200-6000rpm
Maximum torque (low speed range)	170 N-cm (15in-lbs)
Maximum torque (high speed range)	34 N-cm (3in-lbs)
Speed Accuracy	+/- 1% of reading or +/- 1rpm
Torque Accuracy	+/- 5% of reading or +/- 1in-lb
Electrical Input	120V, 50/60Hz, 5amps
Output Power	1/5hp, 150W
Weight	11 lbs (5 kg)
Chuck	accepts up to 3/8" (10.1mm) shafts
Maximum Volume	6.6 US Gallons (25L)
Maximum Viscosity	20,000cps

Order Code 13565-05

ROD MOUNT



  approved.

STIRRER Overhead, Digital ★

Caframo

Universal Model with all the specifications and features of the BDC 6015, except with lower speed range (20-3000 rpm).

Note: A 230V (CE rated) version is available (13565-11). Three-year manufacturer's warranty.

BDC3030

Low Speed Range	20-600 rpm
High Speed Range	600-3000rpm
Maximum torque (low speed range)	339 N-cm (30in-lbs)
Maximum torque (high speed range)	68 N-cm (6in-lbs)
Speed Accuracy	+/- 1% of reading or +/- 1rpm
Torque Accuracy	+/- 5% of reading or +/- 1in-lb
Electrical Input	120V, 50/60Hz, 5amps
Output Power	1/5hp, 150W
Weight	11 lbs (5 kg)
Chuck	accepts up to 3/8" (10.1mm) shafts
Maximum Volume	15.8 US Gallons (60L)
Maximum Viscosity	50,000cps

Order Code 13565-10

STIRRER Overhead, Reversing, Digital ★

The 2010 has a rugged DC brushless motor that delivers from 40-2010 RPM. This model has a small footprint and is loaded with features such as “Stirlight” which lights a downward beam of light into the mixture, timer, reverse feature, xRx agitation for a controllable vortex effect, automatic overload protection, and maintains speed at all viscosities. The 2010 is the only stirrer of its kind, and can be set up for automatic time and auto-reverse for better mixing.

Note: Three-year manufacturer’s warranty.

Caframo

ROD MOUNT

BDC2010	
Speed	40–2010rpm (clockwise and/or counterclockwise)
Timer	Set from 1-2000 minutes (33.3 hours)
Maximum torque	100 N-cm (8.8in-lbs)
Electrical Input	100-240V, 50/60Hz
Output Power	1/10hp, 70W
Weight	8.2 lbs (5.6 kg)
Chuck	accepts up to 3/8" (10.1mm) shafts
Maximum Volume	6.6 US Gallons (25L)
Maximum Viscosity	20,000cps
Order Code	13566-05



UL CE SF approved.

STIRRER Overhead ★

Compact size and powerful overhead stir motor. Rugged stir motor that delivers 12-1800 rpm with 1/5 horsepower DC brushless motor. Digital display of RPM and Torque. Keypad adjusts speed and rotation. Set speed is automatically maintained and adjusts to torque changes. 120V CSA and UL approved. Comes with adjustable chuck and chuck protective cover.

Note: A 230V (CE rated) version is available (13565-21). Three-year manufacturer’s warranty.

Caframo

ROD MOUNT

BDC1850	
Low Speed Range	12–360rpm
High Speed Range	360-1800rpm
Maximum torque (low speed range)	565 N-cm (50in-lbs)
Maximum torque (high speed range)	113 N-cm (10in-lbs)
Speed Accuracy	+/- 1% of reading or +/- 1rpm
Torque Accuracy	+/- 5% of reading or +/- 1in-lb
Electrical Input	120V, 50/60Hz, 5amps
Output Power	1/5hp, 150W
Weight	11 lbs (5 kg)
Chuck	accepts up to 3/8" (10.1mm) shafts
Maximum Volume	21 US Gallons (80L)
Maximum Viscosity	90,000cps
Order Code	13565-20



UL SF approved.

FLANGE MOUNT



A Certificate of Safety Conformance stating all components are CE/UL/CSA available upon request.

STIRRING MOTOR/CONTROLLER *Brushless DC, Pilot Plant*

Pilot plant motor and controller for use on reactor systems up to 200L. The controller displays rpm and torque, and features a digital timer with shut-down capability. The 3/8hp brushless DC motor is compact, lightweight, and capable of 35in-lbs of continuous torque from 30 - 500rpm. RPM readings are kept precise through closed loop feedback. Optional software available for data acquisition. Controller is available in either 120V, 60Hz or 240V, 50/60Hz.

Controller:

- Micro-processor based control technology
- Speed 30 to 500rpm
- Speed display resolution: 1rpm
- Speed setting increment: 5rpm
- 4-line, back-lit LCD display
- Built-in digital timer
 - seconds: 1-60
 - minutes: 1-60
 - hours: 1-1250
- Elapsed timer
- Mini-USB communications port
- Membrane switch user interface (8-button)
- Optional software for real-time data acquisition and control
- Input Voltage
 - 120/240, IEC 60320 input
- Output Voltage
 - 24VDC, 10amps maximum
- Audible alarm
- 10" W x 11.5" H x 6" D

Motor:

- 3/8hp
- 24VDC
- 30 to 50rpm
- 35lb-in Torque
- 6' Detachable Motor Cable
- 3/4" shaft supplied with 3/8" adapter to our 8126 swivel shaft couplings
- Mounting Hardware

Order Code

Motor Controller 120V, 60Hz	13553-02
Motor Controller 240V, 50/60Hz	13553-04
Brushless DC Motor	13553-20

FLANGE MOUNT



UL CE SF approved.

STIRRING MOTOR/CONTROLLER *Digital, Haz Mat Series ★*

Heavy-duty, 1/2hp stirrer motors complete with the digital Microdrive control box. The low-power, AC variable-speed drive has a compact design and is available in switched or non-switched enclosures. Its IP-55/NEMA 12 rating makes it ideal for use in harsh environments. Control box features dust-tight construction. Easy to read LED display and flat panel controls. Controller is wall or stand-mountable. The control is CE and cULus rated. The motor is CSA and UL rated.

Motor is 230V 3-phase, 60Hz, the Microdrive which steps down to, and is 115V, 50Hz. Sold complete only. Supplied with adapter to 3/8", 5:1 gear reducer and mounting hardware.

Order Code

1/2hp motor with Microdrive controller	13555-50
--	----------

STIRRER Laboratory, Solid State

Totally enclosed, 1/40hp, permanent magnet motor with dual 8mm (5/16") armature, and gear shafts with milled flats. Armature shaft with maximum speed of 4000rpm; 18:1 ratio gear shaft rated 4.2 Kg-cm (58.3oz-in) torque, up to 333rpm. Black enamel finish, precision die-cast housing, lifetime lubricated ball bearings with steel inserts in die-casting.

Motor: Supplied with 1.5 meter three-wire cable with plug and ground lead for connection to controller. Measures: 5-1/2" x 4" x 4". Weight: 4lbs 7oz

Controller: ACE 13530* solid state 120V, 10amp AC maximum or 0-120V, 6amp DC maximum. Features rear ring stand clamp, Forward-Off-Reverse switch. Supplied with heavy duty 1.8 meter three-wire power cord with NEMA plug and a 0.5 amp fuse to protect motor beyond its rated torque. Measures 4" x 2-1/8" x 1-5/8". Weight: 4.1lbs

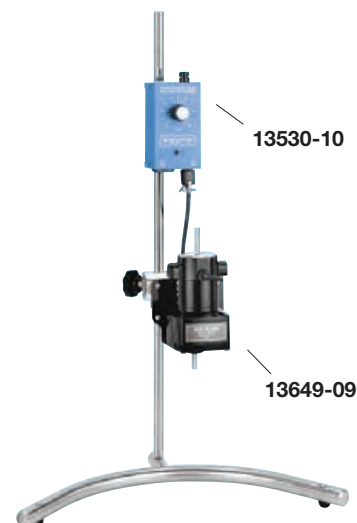
Note: Complete consists of motor, controller and mounting rod.

Description	Order Code
Motor, only, w/Mounting Rod	13649-09
Controller, only	13530-10 ★
Complete	13649-19

Parts and Accessories

Three-jaw, keyless chuck, 9.5mm (3/8") Rod	13649-24
Nylon chuck, Flex-Grip, for shaft size approximately 10mm	8124-10 ♦
Paddle, 3-6.4cm blades, S-S, on 22.2cm shaft	13649-32
Propeller, 3-3.8cm blades, S-S, on 22.2cm shaft	13649-34

*ACE 13530 motor controller offers better performance at slower speeds; for more torque at higher speeds, use 13532.



(Stand Not Included)

DUAL MOTOR SPEED & POWER CONTROLLER Solid State ★

Similar to 13530, but with buffered load control and DC filtration to provide more torque at higher speeds, and a higher top speed- than-motor rating.

Ratings: AC three-prong output socket, standard NEMA type, 1200 watts, 0 -120V, variable, 60 Hz maximum 10 amps. DC four-prong output socket, cinch type, 360 watts, 0 -150 volts, variable, filtered approximately 1/2hp maximum three (3) amps.

A compact 8.9 x 8.9 x 17.8cm (3-1/2" x 3-1/2" x 7"), lightweight 1Kg (2-1/4lbs) solid- state control with rugged control regulation and rectification circuitry. Two output sockets AC and DC which work in conjunction. Fwd/Off/Rev. DC control switch only. Fused for AC and DC outputs, 10 amps and three (3) amps respectively. Rear ring stand clamp for easy mounting and access. Red control knob with Click-Off. Heavy duty 1.8 meter neoprene, three-wire power cord with NEMA plug.

Uses — AC output socket, rear mounted: Heating mantles • Universal motors • Hot plates and heating baths • Incandescent lighting, resistive loads • Most loads accept 120v AC up to 10 amps — functions comparable to the autotransformer.

DC output socket, front mounted: Four-conductor output socket for DC reversible series wound motors • Plug supplied with instructions to obtain a DC output of 0-150 volts variable, maximum current three (3) amps at 360 watts.



Order Code
13532-10

STIR/HEAT CONTROL Dual Control, Glas-Col

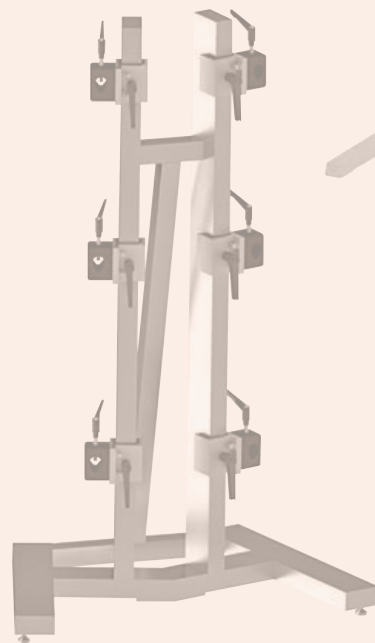
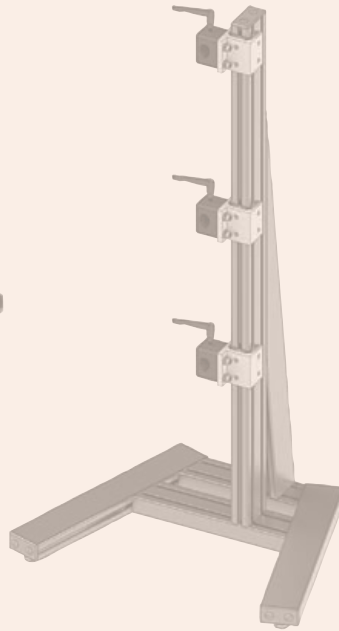
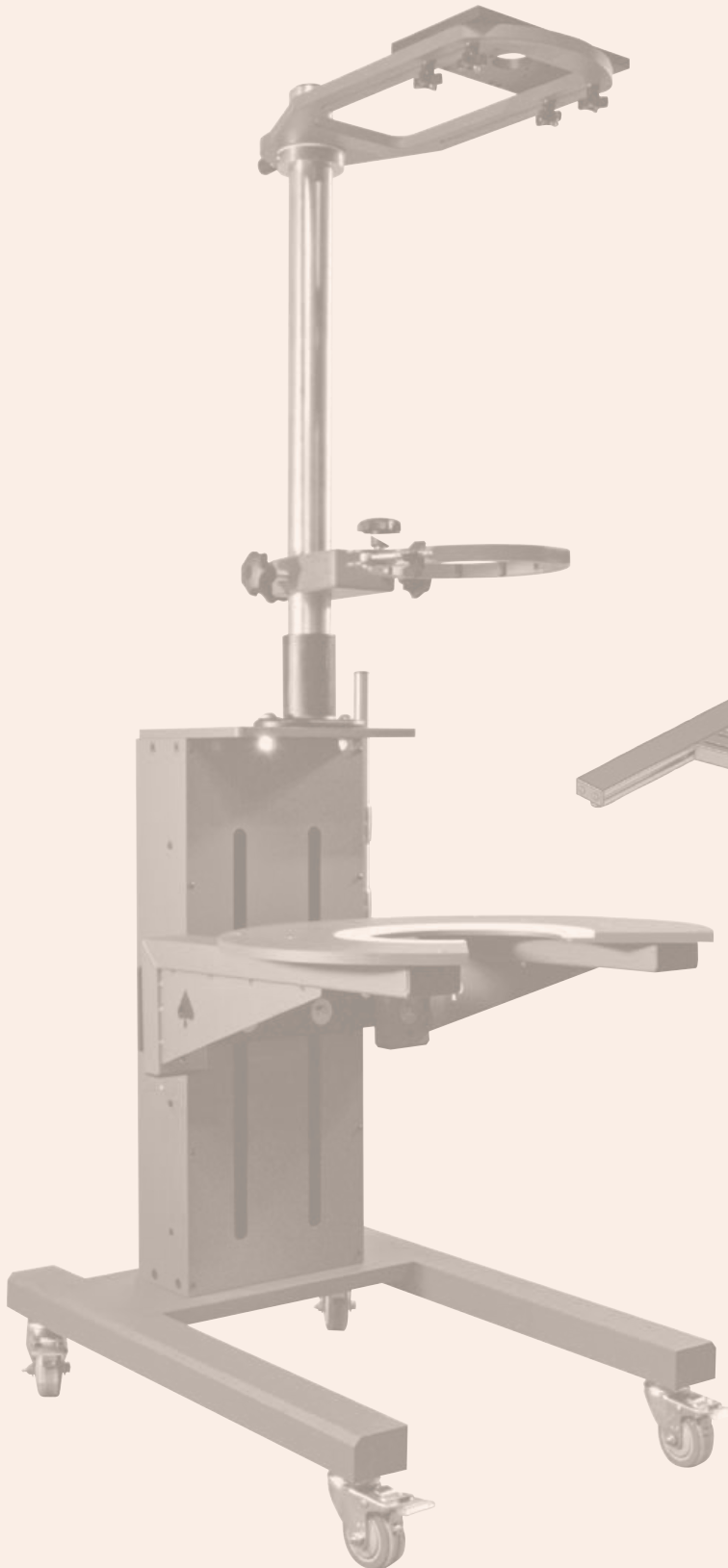
Combination stirring and temperature controller for Glas-Col® Stirrants. Available in 1800 and 2400 watt, two and three power outlet versions. Unit is often used to simultaneously power the Stirrants heating, stirring and an additional top mantle for those applications where vapor condensation on the upper half of the flask is undesirable. Features include a universal J, T and K probe input, thermocouple break alarm, two or three NEMA 5-15R receptacles and a lab frame support bracket.

# of Outlets	Watts per Channel	Volts	Order Code
2	900	120v, 50/60Hz	12048-02
3	800	120v, 50/60Hz	12048-03





Support Stands



Universal Support Stand

10L to 150L Kilo-Scale Pilot Plant Reactors

Universal open frame stand design allows for maximum clearance and access to the ports on the head. To allow for vessel diversity and future scale-up, the frame has been designed to be fitted with Ace Glass large scale reactors.

Reactor Size, L	Flange Clamp, mm	Motor Mount Type	D x W x H in	Order Code
10-20	200	Rod	27.5 x 24.25 x 82.25	12842-02
10-20	200	Flange	27.5 x 24.25 x 82.25	12842-04
30-50	300	Flange	27.5 x 24.25 x 82.25	12842-06
50-150	300	Flange	27.5 x 24.25 x 96.25	12842-08
100 (low-profile)	400	Flange	27.5 x 24.25 x 82.25	12842-10
50-150	400	Flange	27.5 x 24.25 x 96.25	12842-12
10-50	N/A	Dual Rod	27.5 x 24.25 x 82.25	12842-20

Stand Accessories

Bracing Set for Explosion Proof Motors	12842-41
Universal Safety Shield, 10L to 150L Reactors (rear not included)	12842-42
Side Shelf for (1) or (2) Receiving Flasks	12842-43
Rear Panel Safety Shield	12842-44
Swinging Motor Mount, (Designed for use with our 13553 standard motor and the (13569-01 Caframo 1540 Crossover)	12842-45
Bolt Latch Clamp, 200mm Flanged Vessels	12842-50
Bolt Latch Clamp, 300mm Flanged Vessels	12842-60
Bolt Latch Clamp, 400mm Flanged Vessels	12842-70
Rod-Mounted Equipment Mount	12842-80
Flange-Mounted Equipment Mount	12842-90



Bracing Set for Explosion Proof Motor -41 	Safety Shield -42 	Rod-Mounted Equipment Mount -80 	Rear Panel Safety Shield -44 
200mm Flange Bolt Latch Clamp -50 		Flange-Mounted Equipment Mount -90 	
300 & 400mm Flange Bolt Latch Clamp -60 -70 		Side Shelf for Receiving Flasks -43 	Swinging Motor Mount -45 

Modular Support Stand

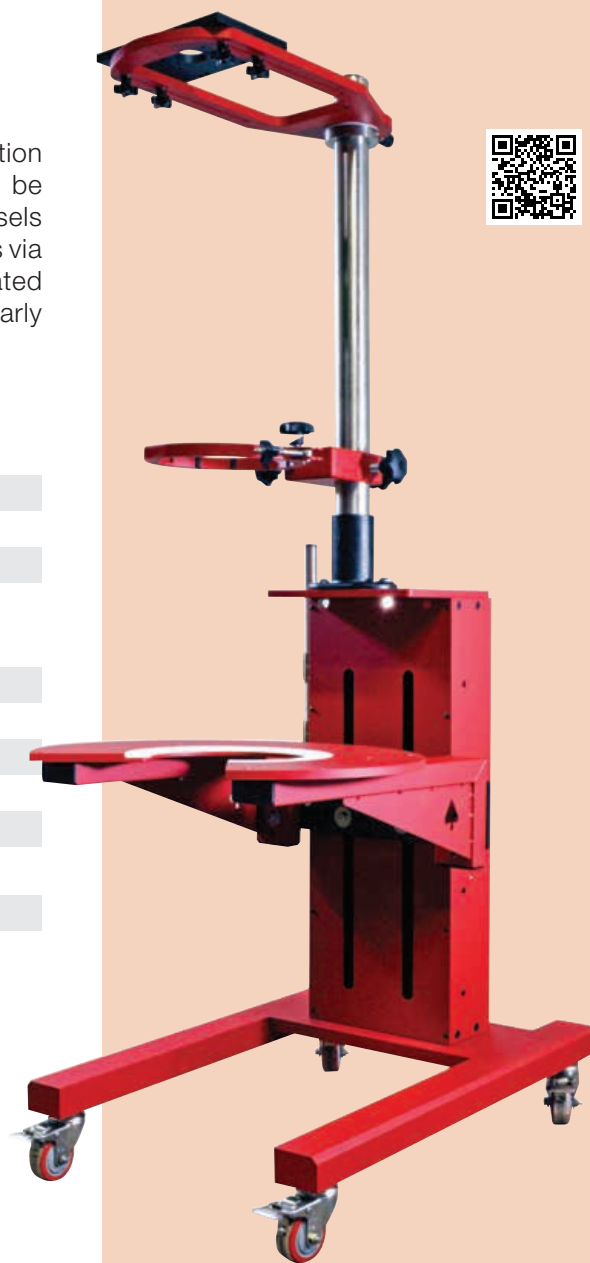
10L to 150L Kilo-Scale Pilot Plant Reactors




Kilo-scale modular stand is a mobile platform for reactors and filtration vessels from 10L on up to 150L. Modular design allows a stand to be modified to accept 200mm, 300mm, 400mm and 450mm flanged vessels as well as accommodating rod mounted or flange mounted stirring motors via interchangeable parts. This low profile stand features a vessel lift operated via a ratcheting handle that eases reactor assembly and is particularly useful for lowering a filter reactor's base below the vessel.

For Flange Size, mm	Vessel Support Type	Motor Support Type	D x W x H in	Order Code
200	Rod	Rod	27.5 x 24.25 x 82.25	12852-200
300	Ring Plate	Flange	27.5 x 24.25 x 82.25	12852-300
400	Ring Plate	Flange	27.5 x 24.25 x 82.25	12852-400
450	Ring Plate	Flange	27.5 x 24.25 x 96.25	12852-450

Stand Accessories

9" Extension Module, for 30L to 150L Vessels	12852-610
Mid-Stand Ring Plate, for 300mm to 450mm Flanged Vessels	12852-620
Jaw Set, 300mm Flanged Vessels (Designed for use with our 12852-620 Ring Plate)	12852-631
Jaw Set, 400mm Flanged Vessels (Designed for use with our 12852-620 Ring Plate)	12852-632
Jaw Set, 450mm Flanged Vessels (Designed for use with our 12852-620 Ring Plate)	12852-633
Mid-Stand Rectangular Plate (Replaces our 12852-620 Ring Plate in 10L to 20L Stand Configurations)	12852-640
Flanged Motor Mount Assembly, 360° Swivel	12852-650
Rod Motor Mount Block	12852-660



Extension Module -610 	Ring Plate -620 	Jaw Set, 300mm -631 	Jaw Set, 400mm -632 
Jaw Set, 450mm -633 	Rectangular Plate -640 	Flanged Motor Mount -650 	Rod Motor Mount Block -660 

**CLAMP** *Pilot Plant* ★

Used with 11065 versatile jaw clamp to secure condenser, etc., on 6472 pilot plant reactor. Holder clamps to 1" bar frame of reactor stand; 11065 clamp is held in clamp holder with thumb screw. Vertical hole to accommodate straight bar or clamp. Fabricated of aluminum, epoxy powder coated black.

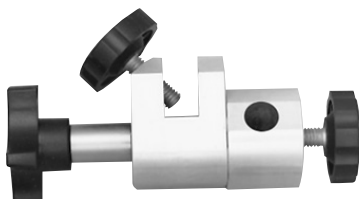
Order
Code
11081-21

**CLAMP** *"Power Hold"* ★

Fits support stand with 3/8" to 5/8" diameter shaft, and stirrers with mounting rod from 3/8" to 5/8" diameter.

Note: Stop collar included.

Order
Code
11082-07

**CLAMP** *Universal Swivel, "Power Hold"* ★

Universal swivel clamp allows positioning of stirrer at any compound angle for best stirring action.

- One knob — Lets you lower or raise stirrer
- One knob — Locks stirrer on support rod, tilts right/left
- One knob — Controls swivel setting, forward/backward

Fits support stand from 3/8" to 5/8" (9.5mm to 16mm) diameter. Will hold stirrer mounting rod from 3/8" to 5/8" diameter. Fabricated of precision machined aluminum.

Order
Code
11084-11

**CLAMP** *Caframo*

A popular clamp for its durability, strength, and ease of use. Includes a convenient place to hold chuck key. The cast zinc-aluminum alloy is coated for protection from corrosion and chemical spills.

Stirrer Support Rod, Max O.D., mm	Stand Support Rod, O.D., mm
16	15 - 30

Order
Code
13568-16

**CLAMP** *Boss Head Clamp, IKA*

Fits support stand with 6 to 16mm diameter mounting rod. Made from cast aluminum.

Order
Code
13602-44

**CLAMP** *Chain* ★

Fast, sure way to secure large equipment to rods and lattices. Holds 76 to 165mm bottles, flasks, and large objects. Loop steel chain around object. Attach to hook on movable slide. Tighten slide with large nonslip knob. Holds equipment firmly in place at any angle. You can vary distance from support rod.

Length in.	For Vessel O.D. mm.	Order Code
7.4	170	11079-24
8.11	280	11079-38
15.12	280	11079-40

CLAMP Quick Release, Stainless Steel ★

For use with 15310/15311 Duran® flanges and all Duran conical style flanges.

For Flange Size, mm (in)	Order Code
60 (2.4)	6517-22
100 (4)	6517-25
120 (4.8)	6517-24
150 (6)	6517-27
200 (8)	6517-31



SUPPORT SHELF ★

Adjustable cast alloy, black epoxy coated support shelf. With knob, measures 7" x 10". Fits up to 5/8" O.D. rod. Plain or with 102mm (4") O.D. hole and with 1" rubber around perimeter. Rod-mounted version has a 5/8" O.D. x 12" long stainless steel mounting rod with a through hole.

Style/Size	Order Code
Rod-Mounted Small Platform w/ Hole	11173-04
Rod-Mounted Large Platform w/ Hole	11173-06
Solid, No Hole	11173-08
102mm (4") Center Hole	11173-17



EXTENSION SUPPORT

Mantle support with extension rod for Glas-Col M series mantles consists of a steel ring with a 6" rod. Use to support M series aluminum housed mantles by attaching to a stable ring stand or lab rack.

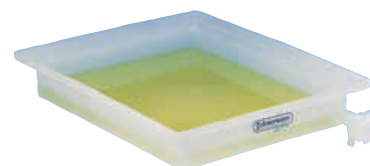
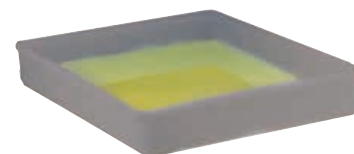
Flask Capacity, mL	Works with		Order Code
	Ace Glass Mantle	Glas-Col Mantle	
50-200	12043-05	100C M94	12094-02
	12043-07	100C M96	
		100C M98	
250-500	12043-13	100C M102	12094-04
		100C M104	
1000	12043-19	100C M108	12094-06
2000/3000	12043-21	100C M110	12094-08
	12043-23	100C M112	
5000	12043-25	100C M114	12094-12



CONTAINMENT TRAY

Made of rugged, molded Low Density Polyethylene (LDPE) or 14-gauge, 304 Stainless Steel. Designed to place under a reactor or system to contain a spill or leak.

Size, (LxWxH, in)	Capacity, (L)	Order Code
Stainless Steel		
24 x 24 x 2	18	13219-03
24 x 24 x 3	28	13219-05
28 x 28 x 3	38	13219-07
28 x 28 x 4	51	13219-09
36 x 36 x 5	106	13219-11
Polyethylene		
23 x 21 x 2	18	13220-16 ★
24 x 24 x 3	28	13220-18 ★
24 x 24 x 4	37	13220-20 ★
26 x 20 x 4	34	13220-22 ★
30 x 28 x 4	55	13220-24 ★
51 x 31 x 4	103	13220-26 ★
Polyethylene, w/Spigot		
12 x 16 x 3	9	13220-33 ★
16 x 20 x 3	15	13220-35 ★
21.5 x 25.5 x 4	35	13220-37 ★
17.5 x 23.5 x 6	40	13220-39 ★





SUPPORT STAND *Scale-Up Series, Bench Top*

Stand only, designed for Ace's Scale-Up Series Reactor product line.

Stand features: lightweight aluminum, adjustable leveling feet, and (3) quick adjustment rod-holding brackets for up to 5/8" (16mm) diameter rods

Dimensions (LxWxH): 19.5" x 24.75" x 38" (48" height for 3L to 6L vessels)

Note: Not included are our 6442 family mounting clamps and 11177 family bottom ring supports which must be sized to the supported vessel.

Description	Reactor Size, mL	Order Code
Reactor Stand, 38" Height	100-2000	12841-02
Reactor Stand, 48" Height	3000-6000	12841-01

Accessories

Vertical Mounting Rod Assembly, 36"	12841-12
Polyethylene Spill Tray, 4.5L Capacity	12841-50



SUPPORT STAND *Dual, Scale-Up Series, Bench Top*

Dual Stand only, designed for Ace's Scale-Up Series Reactor product line.

Stand features: lightweight aluminum, adjustable leveling feet, and (6) quick adjustment rod-holding brackets for up to 5/8" (16mm) diameter rods

Dimensions (LxWxH): 19.5" x 30" x 38" (48" height for 3L to 6L vessels)

Note: Not included are our 6442 family mounting clamps and 11177 family bottom ring supports which must be sized to the supported vessel.

Description	Reactor Size, mL	Order Code
Reactor Stand, 38" Height	100-2000	12843-38
Reactor Stand, 48" Height	3000-6000	12843-48

Accessories

Vertical Mounting Rod Assembly, 36"	12841-12
Polyethylene Spill Tray, 6L Capacity	12843-50



CLAMP *Rod-Mounted, Bolt Latch ★*

Bolt latch clamp secures the top of Scale-Up Series™ reaction flask to our stand.

Flange O.D., mm	Reactor Size, mL	Order Code
60	100-500	6442-02
100	1000-2000	6442-04
150	3000-6000	6442-06



OPEN RING SUPPORT *Extension ★*

Open ring supports with long extension arms for supporting glassware from the bottom, such as separatory funnels and powder funnels. PVC coated ring also protects glass from scratching. Long extension arms allow for easier connection to lab frames or stands.

Reactor Size, mL	Ring Size, in	Arm Length, in	Material	Order Code
100-500	3	10	PVC Coated	11177-13
1000-2000	4	12	PVC Coated	11177-17
3000-4000	5	12	PVC Coated	11177-19
5000-6000	9.5	7.5	Epoxy Coated	11177-21

TRIPOD MANTLE SUPPORT

Tripod mantle support for larger Glas-Col O series fabric mantles. Support is fabricated from steel with aluminum basket straps. The bottom of each leg is drilled for benchtop attachment.

Flask Capacity, L	Works with		Order Code
	Ace Glass Mantle	Glas-Col Mantle	
5	12031-25	100A O1143	12096-05
12		100A O1163	12096-10
22		22L Custom	12096-14



TRIPOD MANTLE SUPPORT *Static or Adjustable Height*

Tripod mantle support for larger Glas-Col M series aluminum housed mantles. Support is fabricated from steel and features a drilled mounting hole at the bottom of each leg.

Height, in	Works with		Order Code
	Ace Glass Mantle	Glas-Col Mantle	
Static Height			
14	12043-23	100C M112	12097-04
14	12043-25	100C M114	12097-06
14	12043-27	100C M116	12097-08
14	12043-29	100C M118	12097-10
16	12043-31	100C M120	12097-12
18	12043-33	100C M122	12097-14



Adjustable Height (3" increments)

24-36	12043-27	100C M116	12097-45
24-36	12043-29	100C M118	12097-47
24-36	12043-31	100C M120	12097-49
24-36	12043-33	100C M122	12097-51

TILTING MANTLE SUPPORT

Tilting support provides a finger-tip method of emptying flasks by pouring. Mantle support ring may be adjusted to, and locked at, any convenient height. Upper cross member strengthens assembly; serves as stop for tilted mantle. Base is compact, 91 x 98cm, but extremely stable.

Note: Complete item sold with one set of rings.

Works with		Support Ring only	Complete Support
Ace Glass Mantle	Glas-Col Mantle	Order Code	Order Code
12043-27	100C M116	12100-04	12100-34
12043-29	100C M118	12100-07	12100-38
12043-31	100C M120	12100-11	12100-42
12043-33	100C M122	12100-15	12100-46



SUPPORT STAND *Caframo, Bench Top*

Caframo® H-Base stand with 1" O.D., 304 stainless steel tube and (2) tapped holes for additional support tubes. Base of stand and clamp are cast zinc-aluminum alloy, coated with a chemical-resistant epoxy paint. Clamp can be used with rod-mounted equipment, with a maximum rod diameter of 5/8". It can be used with 1/2" to 1" diameter upright support stands. A hole is supplied for holding chuck keys.

Description	Size, (LxWxH, in)	Order Code	
28" Bench Top Stand	17 x 16-3/8 x 28	13568-02	★
38" Bench Top Stand	17 x 16-3/8 x 38	13568-04	★
48" Bench Top Stand	17 x 16-3/8 x 48	13568-06	★

Accessories

Clamp	13568-16
28", 5/8" Support Rod	13568-25



Temperature Control



Circulators and Chillers
Heating Mantles
Temperature Controllers
Thermocouples
Monitors
Pilot Plant Controllers
Cooling Coils and Controls

Julabo
THE TEMPERATURE CONTROL COMPANY



Presto A80

Presto A30 / A40



CE

Julabo Presto Highly Dynamic Temperature Control Systems – Air Cooled

Order Code	Model No.	Temp Range (°C)	Cooling Capacity (kW)								Heating Capacity (kW)
			+200	+20	0	-20	-30	-40	-60	-80	
12262-51	A30	-30 to +250	0.5	0.5	0.4	0.2	.05	--	--	--	2.3
12262-52	A40	-40 to +250	1.2	1.2	0.9	0.6	0.3	0.1	--	--	2.3

Julabo Presto Time to Temperature – Air Cooled Units (minutes)*

Order Code	Model No.	Temperature Range	Reactor Capacity								
			100mL	250mL	500mL	1000mL	2000mL	3000mL	4000mL	5000mL	6000mL
12262-51	A30	RT to 100°C	4	5	6	8	12	16	20	24	28
		RT to -20°C	11	13	16	22	34	46	57	70	81
12262-52	A40	RT to 100°C	5	6	7	9	13	17	22	26	30
		RT to -20°C	7	8	9	12	17	22	28	33	38

*Estimated times calculated using silicone heat transfer fluid and water as media.

JULABO PRESTO AIR COOLED MODELS *for working temperature ranges -80 to +250°C*

Highly dynamic systems of the Presto® series employ cutting-edge temperature control technology delivering the thermodynamic power needed to handle almost any application. Great for use with jacketed reactors, calorimeters, autoclaves for polymerization, combinatorial chemistry, reaction blocks, organic synthesis, life sciences, distillation, and the semiconductor industry.

- Extremely fast cool-down and heat-up times
- Wide working temperature ranges without changing the bath fluid
- Ultra-fast compensation of exothermic and endothermic reactions
- Heating capacity of up to 2.8kW
- Space-optimized design to create more space directly next to the units
- Precision temperature control to +/- .01°C
- Connections for USB, Ethernet, RS232, and Alarm Output
- Optional analog connections for RS485, Profibus DP, Modbus

...continued

Pump Conn.	Pump Capacity		Min HTF Volume (L)	Weight (lbs)	Dimensions WxLxH (in)	Voltage (V/Hz/A)	Model No.	Order Code
	Flow Rate (l/min)	Pressure (psig)						
M24x1.5	25	7.25	2.4	137	9.5 x 22.9 x 24	208/60/14	A30	12262-51
M24x1.5	16 to 38	1.45 to 18.85	3.5	174	12.7 x 22.9 x 26	208/60/15	A40	12262-52

...continued

Continued from left	Reactor Capacity								Temperature Range	Model No.	Order Code
	10L	15L	20L	30L	50L	75L	100L	150L			
	NR	NR	NR	NR	NR	NR	NR	NR	RT to 100°C	A30	12262-51
	NR	NR	NR	NR	NR	NR	NR	NR	RT to -20°C		
	51	73	95	NR	NR	NR	NR	NR	RT to 100°C	A40	12262-52
	65	94	122	NR	NR	NR	NR	NR	RT to -20°C		

NR = Not Recommended

Julabo

THE TEMPERATURE CONTROL COMPANY



Presto W40



Julabo Presto Highly Dynamic Temperature Control Systems – Water Cooled

Order Code	Model No.	Temp Range (°C)	Cooling Capacity (kW)								Heating Capacity (kW)
			+200	+20	0	-20	-30	-40	-60	-80	
12262-50	W40	-40 to +250	1.2	1.2	0.9	0.55	0.3	0.06	--	--	2.3

Julabo Presto Time to Temperature – Water Cooled Units (minutes)*

Order Code	Model No.	Temperature Range	Reactor Capacity								
			100mL	250mL	500mL	1000mL	2000mL	3000mL	4000mL	5000mL	6000mL
12262-50	W40	RT to 100°C	5	6	7	9	13	17	22	26	30
		RT to -20°C	7	8	9	12	17	22	28	33	38

*Estimated times calculated using silicone heat transfer fluid and water as media.

Julabo Accessories



JULABO TRIPLE INSULATED CIRCULATOR HOSE

Flexible corrugated metal hosing covered with insulation for thermal protection. Female metric circulator connections on each end. -100°C to +350°C working temperature range.

Length, meters	Order Code	Order Code	Order Code	Order Code
	M16 x 1	M24 x 1.5	M30 x 1.5	M38 x 1.5
.5	12677-05	--	--	--
1	12677-10	12677-22	12677-30	--
1.5	12677-15	12677-24	12677-32	12677-40
2.0	--	12677-26	12677-34	12677-42
3.0	12677-20	12677-28	12677-36	12677-44
5.0	--	--	12677-38	12677-46



JULABO PRESTO HEAT TRANSFER FLUIDS

Heat transfer fluids for use in Presto circulators.

Temperature Range	Model No.	Volume, L	Order Code
-60 to +250°C	Thermal P60	5	14108-26
-90 to +170°C	Thermal P90	5	14108-27

JULABO PRESTO WATER COOLED MODELS for working temperature ranges -92 to +250°C

Highly dynamic systems of the Presto® series employ cutting-edge temperature control technology, delivering the thermodynamic power needed to handle almost any application. Great for use with jacketed reactors, calorimeters, autoclaves for polymerization, combinatorial chemistry, reaction blocks, organic synthesis, life sciences, distillation, and the semiconductor industry.

- Extremely fast cool-down and heat-up times
- Wide working temperature ranges without changing the bath fluid
- Ultra-fast compensation of exothermic and endothermic reactions
- Heating capacity of up to 36kW
- Space-optimized design to create more space directly next to the units
- Precision temperature control to +/- .01°C (+/- .05 on -91/-92)
- Connections for USB, Ethernet, RS232, and Alarm Output (USB and Ethernet not included on LH50 and Magnum 91)
- Optional analog connections for RS485, Profibus DP, Modbus (LH50 and Magnum 91 include RS485)

...continued								
Pump Conn.	Pump Capacity		Min HTF Volume (L)	Weight (lbs)	Dimensions WxLxH (in)	Voltage (V/Hz/A)	Model No.	Order Code
	Flow Rate (l/min)	Pressure (psig)						
M24x1.5	25	1.45 to 18.85	3.5	174	12.7 x 22.9 x 26	208/60/15	W40	12262-50

...continued											
Continued from left	Reactor Capacity								Temperature Range	Model No.	Order Code
	10L	15L	20L	30L	50L	75L	100L	150L			
	51	73	95	NR	NR	NR	NR	NR	RT to 100°C	W40	12262-50
	65	94	122	NR	NR	NR	NR	NR	RT to -20°C		

NR = Not Recommended

Julabo Accessories

JULABO ADAPTERS / VALVES / CONNECTORS Stainless Steel

For use with 15310/15311 Duran flanges and all Duran conical style flanges.

Description	Qty	Order Code	Order Code	Order Code	Order Code
		M16 x 1	M24 x 1.5	M30 x 1.5	M38 x 1.5
90° Elbow (female x male)	2	12299-25	12299-24	12299-23	12299-22
Male x Male Adapter	2	12299-20	12299-19	12299-18	12299-17
Collar Nuts (female)	2	12299-16	12299-15	12299-14	12299-13
Metric Female to 1/2" NPT Female	2	12299-33	12299-32		
Metric Female to 3/4" NPT Female	2	--	12299-37	12299-36	
Metric Female to 1" NPT Female	2	--	--	12299-40	12299-39
Metric Female to 1-1/4" NPT Female	2	--	--	--	12299-43

Description	Qty	Order Code
M24x1.5 Female x M16x1 Male	2	12299-47
M24x1.5 Female x M30x1.5 Male	2	12299-48
M30x1.5 Female x M16x1 Male	2	12299-49
M30x1.5 Female x M38x1.5 Male	2	12299-50



LAUDA



11505-15



CE

Lauda Integral XT – Air Cooled

Order Code	Model No.	Temp Range (°C)	Cooling Capacity (kW)								Heating Capacity (kW)
			+200	+20	0	-20	-30	-40	-60	-80	
11505-15	XT 150	-45 to +220	1.5	1.5	1.10	0.62	0.28	0.06	--	--	3.5
11505-16	XT 550	-50 to +200	5.0	5.0	4.6	2.2	1.25	0.60	--	--	5.3
11505-75	XT 750	-50 to +220	7.0	6.7	4.8	2.2	1.25	0.60	--	--	5.3
11505-17	XT 280	-80 to +200	1.5	1.5	1.4	1.3	1.3	1.3	1.0	0.10	4.0

Lauda Integral XT Time to Temperature Chart – Air Cooled Units (minutes)*

Order Code	Model No.	Temperature Range	Reactor Capacity								
			100mL	250mL	500mL	1000mL	2000mL	3000mL	4000mL	5000mL	6000mL
11505-15	XT 150	RT to 100°C	3	3	4	5	8	11	13	16	19
		RT to -20°C	4	5	6	8	13	17	21	26	30
11505-16	XT 550	RT to 100°C	3	4	4	5	7	9	10	12	14
		RT to -20°C	2	2	2	3	4	5	6	7	8
11505-75	XT 750	RT to 100°C	3	4	4	5	7	9	10	12	14
		RT to -20°C	2	2	2	3	4	5	6	7	8
11505-17	XT 280	RT to 100°C	5	5	5	7	9	11	14	16	19
		RT to -40°C	10	10	12	14	19	24	29	35	40

*Estimated times calculated using silicone heat transfer fluid and water as media.

LAUDA INTEGRAL XT AIR COOLED MODELS *for working temperature ranges -92 to +250°C*

The Lauda® Integral XT process thermostats are ideally designed for the requirements of rapid and precise temperature control of an external application in process plant and pilot plant environments. The air-cooled process thermostats offer high performance in a small footprint while still providing functionality across a wide temperature range. The special high-temperature version enables process temperatures up to 300°C. The larger expansion vessel in the Lauda Integral XT absorbs temperature-induced changes in volume, thereby ensuring smooth operation, even in large connected external systems.

- Process thermostat with integrated cooling system for dynamic temperature control in external circuits
- Back-lit graphic LCD display with high resolution and different display modes
- Additional green LED display for temperature
- Input either via cursor keys, numeric soft keys, or both. Additional Tmax key for over temperature
- Command console can be detached and used as remote control
- EasyUse system for simple operation of the whole unit
- SelfCheck Assistant for system diagnosis
- Fully electronic, continuous controller with PID action for internal and external control
- PowerAdapt system for the use of the maximum possible amount of heat, as long as permitted by the power supply system
- Low-level protection and adjustable over-temperature protection with acoustic alarm. Float switch for identifying low or high level
- Powerful LAUDA Variopump (pressure pump) with 8 selectable output levels or control of outflow pressure
- Optically decoupled RS 232/485 interface integrated as a standard
- Option for upgrading with up to 2 interfaces (RS 232/485, Profibus, analogue or contact modules)
- Programmer with 150 temperature/time segments that can be separated into 5 programs
- Timer function for switching on the thermostat, entering the stand-by mode, or running of programs
- Digital display of pump pressure
- Very small internal volume and big non-thermostated expansion vessel (cold fluid layer system)
- SmartCool system for energy-saving digital cooling management including compressor on-off control
- Condenser is air cooled

...continued

Pump Conn.	Pump Capacity		Min HTF Volume (L)	Weight (lbs)	Dimensions WxLxH (in)	Voltage (V/Hz/A)	Model No.	Order Code
	Flow Rate (l/min)	Pressure Max. (psig)						
M30x1.5	18 to 45	7.25 to 42	2.6	191.8	13.2 x 21.65 x 26.0	208-220/60/17.7	XT 150	11505-15
M30x1.5	18 to 45	7.25 to 42	5.0	330.0	18.1 x 21.65 x 50.6	208-220(3ph)/60/37.5	XT 550	11505-16
M30x1.5	18 to 45	7.25 to 42	5.0	330.0	18.1 x 21.65 x 50.6	208-220(3ph)/60/37.5	XT 750	11505-75
M30x1.5	18 to 45	7.25 to 42	5.0	396.8	18.1 x 21.65 x 50.6	208-220(3ph)/60/43.3	XT 280	11505-17

...continued

Continued from left	Reactor Capacity								Temperature Range	Model No.	Order Code
	10L	15L	20L	30L	50L	75L	100L	150L			
	33	47	62	80	NR	NR	NR	NR	RT to 100°C	XT 150	11505-15
	52	75	98	128	NR	NR	NR	NR	RT to -20°C		
	23	33	42	55	91	135	178	NR	RT to 100°C	XT 550	11505-16
	13	19	24	32	53	78	102	NR	RT to -20°C		
	23	33	42	55	91	135	178	NR	RT to 100°C	XT 750	11505-75
	13	18	23	30	50	75	98	NR	RT to -20°C		
	30	43	56	72	NR	NR	NR	NR	RT to 100°C	XT 280	11505-17
	65	93	120	155	NR	NR	NR	NR	RT to -40°C		

NR = Not Recommended

LAUDA



11505-03



CE

Lauda Integral XT – Water Cooled

Order Code	Model No.	Temp Range (°C)	Cooling Capacity (kW)								Heating Capacity (kW)
			+200	+20	0	-20	-30	-40	-60	-80	
11505-02	XT 250 W	-45 to +220	2.1	2.1	1.3	0.62	0.28	0.06	--	--	3.5
11505-03	XT 350 W	-50 to +220	3.1	3.1	3.1	2.0	1.2	0.25	--	--	3.5
11505-05	XT 550 W	-50 to +200	5.4	5.4	5.4	2.9	1.6	0.80	--	--	5.3
11505-06	XT 950 W	-50 to +220	9.0	9.0	6.6	3.0	1.7	.90	--	--	5.3
11505-07	XT 1850 W	-50 to +220	18.5	18.5	10.3	5.9	3.8	2.2	--	--	10.6
11505-08	XT 280 W	-80 to +200	2.0	2.0	2.0	1.8	1.7	1.6	1.4	0.4	4.0
11505-09	XT 490 W	-90 to +200	4.4	4.4	4.4	4.4	4.4	4.0	2.3	0.7	5.3
11505-10	XT 1590 W	-90 to +220	15.0	15.0	10.5	8.5	8.5	7.0	3.7	0.9	8.0

LAUDA INTEGRAL XT WATER COOLED MODELS *for working temperature ranges -92 to +300°C*

Independent of variations in ambient temperature, Lauda® Integral XT water-cooled process thermostats achieve constantly high-cooling performance. The temperature of the ambient air remains virtually unchanged due to the dissipation of the process heat through the cooling water. This is a particular advantage in setups similar to production process plants or in the mini-plant, where work is conducted under the most strained conditions. Water-cooled Integral XT systems are also the perfect choice for air-conditioned spaces, since they do not tax, or place unnecessary burden on air-conditioning systems.

- Process thermostat with integrated cooling system for dynamic temperature control in external circuits
- Back-lit graphic LCD display with high resolution and different display modes
- Additional green LED display for temperature
- Input either via cursor keys, numeric soft keys, or both. Additional Tmax key for over temperature
- Command console can be detached and used as remote control
- EasyUse system for simple operation of the whole unit
- SelfCheck Assistant for system diagnosis
- Fully electronic continuous controller with PID action for internal and external control
- PowerAdapt system for the use of the maximum possible amount of heat, as long as permitted by the power supply system
- Low-level protection and adjustable over-temperature protection with acoustic alarm. Float switch for identifying low or high level
- Powerful LAUDA Variopump (pressure pump) with 8 selectable output levels or control of outflow pressure
- Optically decoupled RS 232/485 interface integrated as a standard
- Option for upgrading with up to 2 interfaces (RS 232/485, Profibus, analogue or contact modules)
- Programmer with 150 temperature/time segments that can be separated into 5 programs
- Timer function for switching on the thermostat, entering the stand-by mode, or running of programs
- Digital display of pump pressure
- Very small internal volume and big non-thermostated expansion vessel (cold fluid layer system)
- SmartCool system for energy-saving digital cooling management including compressor on-off control
- Condenser is water cooled

...continued								
Pump Conn.	Pump Capacity		Min HTF Volume (L)	Weight (lbs)	Dimensions WxLxH (in)	Voltage (V/Hz/A)	Model No.	Order Code
	Flow Rate (l/min)	Pressure Max. (psig)						
M30x1.5	18 to 45	7.25 to 42	2.6	191.8	13.2 x 21.65 x 26.0	208-220/60/17.7	XT 250 W	11505-02
M30x1.5	18 to 45	7.25 to 42	5.0	330.0	18.1 x 21.65 x 50.6	208-220/60/17.7	XT 350 W	11505-03
M30x1.5	18 to 45	7.25 to 42	5.0	352.7	18.1 x 21.65 x 50.6	208-220(3ph)/60/37.5	XT 550 W	11505-05
M30x1.5	18 to 45	7.25 to 42	5.0	352.7	18.1 x 21.65 x 50.6	208-220(3ph)/60/37.5	XT 950 W	11505-06
M38x1.5	35 to 90	14.5 to 84	9.0	551.2	27.56 x 21.65 x 63	440-480(3ph)/60/31.3	XT 1850 W	11505-07
M30x1.5	18 to 45	7.25 to 42	5.0	396.8	18.1 x 21.65 x 50.6	208-220(3ph)/60/43.3	XT280	11505-08
M30x1.5	18 to 45	7.25 to 42	9.5	551.2	27.56 x 21.65 x 63	440-480(3ph)/60/20.5	XT 490 W	11505-09
M30x1.5	18 to 45	7.25 to 42	10.5	551.2	27.56 x 21.65 x 63	440-480(3ph)/60/31.3	XT 490 W	11505-10

Lauda Integral XT Time to Temperature Chart *continued on next spread*

LAUDA INTEGRAL XT WATER COOLED MODELS *continued*

Lauda Integral XT Time to Temperature Chart – Water Cooled Units (minutes)*

Order Code	Model No.	Temperature Range	Reactor Capacity								
			100mL	250mL	500mL	1000mL	2000mL	3000mL	4000mL	5000mL	6000mL
11505-02	XT 250 W	RT to 100°C	3	3	4	5	8	11	13	16	19
		RT to -20°C	4	4	5	7	11	14	18	22	25
11505-03	XT 350 W	RT to 100°C	5	6	6	8	10	13	16	18	21
		RT to -20°C	3	3	4	4	6	7	9	10	12
11505-05	XT 550 W	RT to 100°C	3	4	4	5	7	9	10	12	14
		RT to -20°C	2	2	2	3	3	4	5	6	7
11505-06	XT 950 W	RT to 100°C	3	4	4	5	7	9	10	12	14
		RT to -20°C	1	2	2	2	3	3	4	5	6
11505-07	XT 1850 W	RT to 100°C	3	3	3	4	5	6	7	8	8
		RT to -20°C	2	2	2	2	2	3	3	4	4
11505-08	XT 280 W	RT to 100°C	5	5	5	7	9	11	14	16	19
		RT to -40°C	7	7	8	10	14	17	21	24	28
11505-09	XT 490 W	RT to 100°C	6	7	7	8	10	11	13	15	17
		RT to -40°C	6	6	6	7	9	10	12	14	15
11505-10	XT 1590 W	RT to 100°C	5	5	5	6	7	8	9	10	12
		RT to -40°C	3	3	3	3	4	5	5	6	7

*Estimated times calculated using silicone heat transfer fluid and water as media.

Lauda Accessories

TRIPLE INSULATED CIRCULATOR HOSE *Lauda*

Flexible corrugated metal hosing covered with insulation for thermal protection. Female metric circulator connections on each end. -50 to +300°C working temperature range.

Length, meters	Order Code M30 x 1.5	Order Code M38 x 1.5
1	11505-90	11505-93
2.0	11505-91	11505-94
3.0	11505-92	11505-95

HEAT TRANSFER FLUIDS *Lauda*

Heat transfer fluids for use in Integral XT circulators.

Temperature Range	Model No.	Volume, L	Order Code
-70 to +220°C	Kyro 70	5	11505-100
-90 to +140°C	Kyro 90	5	11505-101

...continued

<i>Continued from left</i>	Reactor Capacity								Temperature Range	Model No.	Order Code
	10L	15L	20L	30L	50L	75L	100L	150L			
	32	47	62	80	NR	NR	NR	NR	RT to 100°C	XT 250 W	11505-02
	44	64	83	108	NR	NR	NR	NR	RT to -20°C		
	35	50	64	83	138	NR	NR	NR	RT to 100°C	XT 350 W	11505-03
	20	28	36	47	78	NR	NR	NR	RT to -20°C		
	23	33	42	55	91	135	178	NR	RT to 100°C	XT 550 W	11505-05
	11	16	21	27	45	66	87	NR	RT to -20°C		
	23	33	42	55	91	135	178	NR	RT to 100°C	XT 950 W	11505-06
	9	13	17	22	37	55	71	NR	RT to -20°C		
	13	18	22	29	47	69	90	130	RT to 100°C	XT 1850 W	11505-07
	7	9	12	15	24	35	46	67	RT to -20°C		
	30	43	56	72	NR	NR	NR	NR	RT to 100°C	XT 280 W	11505-08
	46	65	84	109	NR	NR	NR	NR	RT to -40°C		
	26	36	45	58	94	138	180	NR	RT to 100°C	XT 490 W	11505-09
	23	32	41	52	85	125	163	NR	RT to -40°C		
	18	24	30	39	63	92	120	173	RT to 100°C	XT 1590 W	11505-10
	10	14	17	22	36	52	69	99	RT to -40°C		

NR = Not Recommended

Lauda Accessories

ADAPTERS / VALVES / CONNECTORS *Stainless Steel, Lauda*

Description	Order Code	Order Code
90 Degree Elbow (female x male)	M30 x 1.5	M38 x 1.5
Male x Male Adapter	11505-60	11505-61
Bypass Valve System	11505-62	--
Ball Valve	11505-63	11505-64
	11505-65	11505-66
Description	Order Code	
M30x1.5 Female x M16x1 Male	11505-67	
M30x1 Female x M16x1 Male	11505-68	
M30x1.5 Female x M38x1.5 Male	11505-69	



**CHILLER HOSES & CLAMPS** *Lauda*

EPDM hose solutions for Lauda Chillers, including insulating tubing and clamps. See product families 12187 and 12188 for NW flange and beaded pipe reactor adapters. Lauda temperature control units include various hose adapters to complete the hose to control unit connection.

Tubing Size	Temp. Range, °C	Qty	Order Code
Clamps			
16 - 25mm	–	1	11507-01
22 - 32mm	–	1	11507-02
29 - 44mm	–	1	11507-03

EPDM Hose

1/2"	-40 to 100	1m	11507-110
3/4"	-40 to 100	1m	11507-111
1"	-40 to 100	1m	11507-112
1/2"	-40 to 120	1m	11507-120
3/4"	-40 to 120	1m	11507-121
1"	-40 to 120	1m	11507-122
1/2"	-40 to 100	2m	11507-210
3/4"	-40 to 100	2m	11507-211
1"	-40 to 100	2m	11507-212
1/2"	-40 to 120	2m	11507-220
3/4"	-40 to 120	2m	11507-221
1"	-40 to 120	2m	11507-222
1/2"	-40 to 100	3m	11507-310
3/4"	-40 to 100	3m	11507-311
1"	-40 to 100	3m	11507-312
1/2"	-40 to 120	3m	11507-320
3/4"	-40 to 120	3m	11507-321
1"	-40 to 120	3m	11507-322

Insulating Tubing

1/2"	1m	11507-160
3/4"	1m	11507-161
1"	1m	11507-162
1/2"	2m	11507-260
3/4"	2m	11507-261
1"	2m	11507-262
1/2"	3m	11507-360
3/4"	3m	11507-361
1"	3m	11507-362

LOW PROFILE ALUMINUM HOUSED HEATING MANTLE*50L, 72L & 100L Spherical Flasks*

- Operating Temperature Range: Ambient +10 to +450°C
- Rigid housing provides strength and durability while supporting the weight of the vessel
- Fabric interior to reduce the chance of thermal shock and damage to glassware
- Supplied with 4' detachable cord with locking connector



Warning: Chemical spillage, overheating, overloading, and general misuse will greatly reduce service life!

HEATING MANTLES MUST BE OPERATED THROUGH A TEMPERATURE CONTROLLER

Flask Size,
L

Watts Volts,
vac Order
Code

Works with the Following Flask Order Codes

w/o Drain Valves

50	1000	115	12050-34	6530-08, 6530-42, 6530-43, 6530-44, 6530-47, 6530-48, 6530-49, 6533-25, 6957-65, 5479-25
72	1300	230	12050-36	6530-15, 6530-52, 6530-54, 6530-56, 6533-28
100	1600	230	12050-38	6530-20, 6530-64, 6530-65, 6530-66

w/Drain Valves

50	1000	230	12050-41	6530-14, 6534-64
72	1300	230	12050-43	6530-21, 6536-66
100	1600	230	12050-45	6530-27

ALUMINUM HOUSED HEATING MANTLE 500mL to 5000mL Cylindrical Flasks

- Operating Temperature Range: Ambient +10 to +450°C
- Rigid housing provides strength and durability while supporting the weight of the vessel
- Fabric interior to softly nest glass vessels to reduce the chance of thermal shock and damage to glassware
- Supplied with 4' detachable cord with locking connector

Warning: Chemical spillage, overheating, overloading, and general misuse will greatly reduce service life!

HEATING MANTLES MUST BE OPERATED THROUGH A TEMPERATURE CONTROLLER



Flask Size, mL	Flask O.D., mm	Depth, mm	Watts	Volts, vac	Order Code	
Cylindrical Flasks w/o Drain Valves						
500	70	159	280	115	12058-03	6423-05
500	95	114	270	115	12058-08	6504-06
500	110 to 114	76	250	115	12058-07	6423-07, 6436-06, 6476-05, 6477-05
500	110 to 114	64	250	115	6478-45	6476-05, 6477-05
1000	110	133	335	115	12058-12	6423-10, 6436-09, 6504-11, 6511-06, 6511-42, 6511-24, 6511-53, 6516-01, 6521-10, 6526-10
1000	110 to 114	114	270	115	12075-08	6423-10, 6436-09, 6476-10, 6477-10, 6504-11, 6511-06, 6511-24, 6511-42, 6511-53, 6521-10, 6526-10
1000	110 to 114	143	300	115	6478-47	6423-10, 6436-09, 6476-10, 6477-10, 6504-11, 6511-06, 6511-24, 6511-42, 6511-53, 6521-10, 6526-10
1500	110 to 114	168	380	115	6478-49	6476-15, 6477-15
2000	110 to 114	225	450	115	6478-51	6476-20, 6477-20, 6521-12
2000	110 to 114	191	400	115	12075-10	6476-20, 6477-20, 6521-12
2000	140	152	470	115	12058-16	6423-20, 6436-22, 6504-16, 6511-08, 6511-45, 6511-27, 6511-56, 6516-03
3000	110 to 114	279	600	115	12075-12	6476-25, 6477-25, 6521-14
3000	110 to 114	254	600	115	6478-53	6476-25, 6477-25, 6521-14
3000	140	229	550	115	12058-22	6504-21, 6511-10, 6511-47, 6511-29, 6511-58, 6516-05
3000	165	152	600	115	12058-30	6423-30, 6436-31
4000	140	279	750	115	12058-28	6504-26, 6511-12, 6511-49, 6516-07
5000	165	277	1000	115	12058-33	6423-35, 6436-37

Cylindrical Flasks w/Drain Valves

500	70	159	280	115	12058-44	6425-04
500	110 to 114	76	250	115	12058-47	6425-06, 6437-07
1000	110	133	335	115	12058-49	6425-12, 6437-13, 6518-10, 6522-11
2000	140	152	470	115	12058-51	6425-15, 6437-16
3000	165	152	600	115	12058-53	6425-19, 6437-20
5000	165	277	1000	115	12058-55	6425-23, 6437-24

Heating Mantles



Flask Size, mL Flask O.D., mm Depth, mm Watts Volts, vac

FABRIC HEATING MANTLE 500mL to 4000mL Cylindrical Flasks

Operating Temperature Range: Ambient +10 to +450°C. Fabric exterior provides effective heating in a space saving configuration. Fabric interior to reduce the chance of thermal shock and damage to glassware. Supplied with 4' detachable cord with locking connector.

Note: Must be operated with a temperature controller.

Order Code

Works with the Following Flask Order Codes

Cylindrical Flasks w/o Drain Valves

500	95	114	270	115	12036-17	6504-06
500	110 to 114	64	250	115	6478-05	6476-05, 6477-05
1000	110	133	270	115	12036-19	6423-10, 6436-09, 6504-11, 6511-06, 6511-42, 6511-24, 6511-53, 6516-01, 6521-10, 6526-10
1000	110 to 114	143	300	115	6478-10	6423-10, 6436-09, 6476-10, 6477-10, 6504-11, 6511-06, 6511-24, 6511-42, 6511-53, 6521-10, 6526-10
1500	110 to 114	168	380	115	6478-15	6476-15, 6477-15
2000	110 to 114	225	450	115	6478-20	6476-20, 6477-20, 6521-12
2000	140	152	470	115	12036-21	6423-20, 6436-22, 6504-16, 6511-08, 6511-45, 6511-27, 6511-56, 6516-03
3000	110 to 114	254	600	115	6478-25	6476-25, 6477-25, 6521-14
3000	140	229	550	115	12036-23	6504-21, 6511-10, 6511-47, 6511-29, 6511-58, 6516-05
4000	140	279	750	115	12036-24	6504-26, 6511-12, 6511-49, 6516-07

Cylindrical Flasks w/Drain Valves

1000	110 to 114	143	300	115	6494-10	6300-06, 6300-08, 6491-10, 6492-15, 6518-10, 6522-11
2000	110 to 114	225	450	115	6494-20	6491-20, 6492-15, 6518-12, 6522-13
3000	110 to 114	254	600	115	6494-25	6518-16, 6522-15

**HEATING TOPS** BriskHeat®

Upper hemispherical heating mantles are a fiberglass-insulated heater designed specifically for 1-, 2- and 3-neck flasks. Ideal for preventing vapor condensation in the upper half of the flask. Features a 3" lead wire and 4' power cord with NEMA 1-15 plug. CSA approved, RoHS compliant.

Note: Must be operated with a temperature controller.

Flask Size, mL	Wattage	Max Temp., °C	Qty	Order Code
2000	120v 50/60Hz	482	1	12147-07
5000	120v 50/60Hz	482	1	12147-11
12000	120v 50/60Hz	482	1	12147-15

HEATING TOPS Glas-col®

For 1-, 2- and 3-neck flasks. Lacing closure allows installation without disturbing attached glassware. Heating mantles are supplied with a detachable 4', 2-wire cord with locking connector. Insulating tops have no electrical connections. Heating Tops are CSA approved.

Note: Heating Tops must be operated with a temperature controller.

Flask Size, mL	Wattage	Max Temp Limit	Description	Qty	Order Code
Heating Tops					
250	140w-115v	450°C		1	12047-13
300	140w-115v	450°C		1	12047-15
500	140w-115v	450°C		1	12047-17
1000	140w-115v	450°C		1	12047-19
2000	200w-115v	450°C		1	12047-21
3000	200w-115v	450°C		1	12047-23
5000	300w-115v	450°C		1	12047-25
5000		450°C	fits 6531-10 head	1	12047-26
12000	590w-115v	450°C		1	12047-27
12000		450°C	fits 6531-16 head	1	12047-28
22000	650w-115v	450°C		1	12047-29
50000	1000w-115v	450°C		1	12047-31
72000	1000w-230v	450°C		1	12047-33

Insulating Tops (Does NOT Heat)

2000	—		1	12047-210
5000	—		1	12047-250
12000	—		1	12047-270
22000	—		1	12047-290

All 115v units are also available in 230v versions.

ALUMINUM HOUSED HEATING MANTLE 3L to 200L Flasks

- Operating Temperature Range: Ambient +10 to +450°C
- Rigid housing provides strength and durability while supporting the weight of the vessel
- Fabric interior to reduce the chance of thermal shock and damage to glassware
- Supplied with 4' detachable cord with locking connector
- 50L to 200L Mantles supplied with terminal box for hard wiring

Warning: Chemical spillage, overheating, overloading, and general misuse will greatly reduce service life!

Note: Must be operated with a temperature controller.



Works with the Following Flask Order Codes

Cylindrical Flasks w/o Drain Valves

Flask Size, L	Max. Flask O.D., mm	Circuits	Watts	Volts, vac	Order Code
6 to 10	22	1	180	115	12053-40 6521-16, 6521-20
15 to 20	251	1	250	115	12053-43 6521-25, 6521-27
30 to 50	317	1	370	115	12053-45 6521-30, 6521-35

Cylindrical Flasks w/Drain Valves

Flask Size, L	Max. Flask O.D., mm	Circuits	Watts	Volts, vac	Order Code
6 to 20	235	1	700	115	12053-162 6522-17, 6522-81, 6522-82
30 to 50	365	1	625	115	12053-70 6522-83, 6522-84
100 to 200	470	1	775	230	12053-75 6473-05, 6473-11, 6522-85, 6522-86

Spherical Flasks w/o Drain Valves

Flask Size, L	Max. Flask O.D., mm	Circuits	Watts	Volts, vac	Order Code
3	183	1	500	115	12053-23 6537-07, 6533-03, 6481-05, 6479-05
5	235	1	700	115	12053-26 6537-12, 6533-05, 6533-07, 6481-10, 6479-10
12	293	2	650	115	12053-27 6537-24, 6533-12, 6481-15, 6479-10
22	350	2	770	115	12053-30 6530-06, 6957-28, 6957-26, 6533-15, 6479-20
50	457	3	1000	115	12053-31 6530-08, 6530-42, 6530-43, 6530-44, 6530-47, 6530-48, 6530-49, 6533-25, 6957-65, 5479-25
72	522	2	2000	230	12053-33 6530-15, 6530-52, 6530-54, 6530-56, 6533-28
100	610	3	1800	230	12053-35 6530-20, 6530-64, 6530-65, 6530-66
200	750	4	2000	230	12053-78 6474-29

MANTLE Aluminum Housing

Offers the benefit of grounding through aluminum housing. The heating element is embedded in layers of glass fabric to protect the flask wall from thermal strain. Mantle is thoroughly covered with glass insulation to prevent heat from being radiated outward. Glass fabric affords operating temperatures to 450°C. With detachable 4', 3-wire cord and locking connector. Available with a bottom opening to accommodate bottom outlets. *Requires 12094 support. 230v version is also available for 250mL and larger mantles.*

Note: Must be operated with a temperature controller.



Flask Size, mL	Max. Flask O.D., in/mm	I.D. x Depth, in/mm	Watts/Volts	Opening O.D., in/mm	Qty	Order Code
1000	5.1/130	5.1/130 x 2.5/65	380w-115v	—	1	12043-19
2000	6.6/170	6.6/170 x 3.3/85	500w-115v	—	1	12043-21
3000	7.2/183	7.2/184 x 3.6/91.5	500w-115v	—	1	12043-23
5000	8.6/220	8.7/222 x 4.3/110	600w-115v	—	1	12043-25
12000	11.5/293	11.5/294 x 5.8/147.6	(2) 650w-115v	—	1	12043-27
22000	13.6/347	13.7/350 x 6.8/173.5	(2) 770w-115v	—	1	12043-29
50000	17.9/456	18.0/458 x 8.9/228	(3) 1000w-115v	—	1	12043-31
50000 (Duran)	19.9/506	19.9/506 x 8.9/228	(3) 1000w-115v	—	1	12043-32
72000	20.5/522	20.6/525 x 10.1/258.9	(2) 2000w-230v	—	1	12043-33

w/Bottom Opening

Flask Size, mL	Max. Flask O.D., in/mm	I.D. x Depth, in/mm	Watts/Volts	Opening O.D., in/mm	Qty	Order Code
3000	7.2/183	7.2/184 x 3.6/91.5	500w-115v	2.5/63.5	1	12044-24
5000	8.6/220	8.7/222 x 4.3/110	600w-115v	2.5/63.5	1	12044-26
12000	11.5/293	11.5/294 x 5.8/147.6	(2) 650w-115v	2.5/63.5	1	12044-28
12000	11.5/293	11.5/294 x 5.8/147.6	(2) 650w-115v	5.0/127	1	12044-29
22000	13.6/347	13.7/350 x 6.8/173.5	(2) 770w-115v	2.5/63.5	1	12044-30
22000	13.6/347	13.7/350 x 6.8/173.5	(2) 770w-115v	5.0/127	1	12044-31
50000	17.9/456	18.0/458 x 8.9/228	(3) 1000w-115v	5.0/127	1	12044-34
72000	20.5/522	20.6/525 x 10.1/258.9	(2) 2000w-230v	5.0/127	1	12044-37

Heating Mantles

**FABRIC GIRDLE MANTLE** for 6L to 200L Cylindrical & Spherical Flasks

- Operating Temperature Range: Ambient +10 to +450°C
- Fabric exterior provides effective heating in a space saving configuration
- Fabric interior to softly nest glass vessels to reduce the chance of thermal shock and damage
- Supplied with 4' detachable cord with locking connector

Warning: Chemical spillage, overheating, overloading, and general misuse will greatly reduce service life!

HEATING MANTLES MUST BE OPERATED THROUGH A TEMPERATURE CONTROLLER

Flask Capacity, L	Maximum Flask O.D., mm	Circuits	Watts	Volts, vac	Order Code	Works with the Following Flask Order Codes
6 to 15	205	1	495	115	12041-10	6522-17, 6522-81, 6521-16, 6521-20
15 to 20	205	1	700	115	12041-12	6522-82, 6521-25, 6472-02
30	301	2	880	115	12041-16	6522-83, 6521-30
50	301	2	725	240	12041-35	6522-84, 6521-35
50	301	2	880	240	12041-18	6522-84, 6521-35
50	301	3	1100	115	12041-37	6522-84, 6521-35
100	457	4	1200	115	12041-48	6473-05
100 to 200	450	2	1100	230	12041-53	6473-11
50	457	1	1200	230	12041-40	6530-04, 6530-08, 6530-42, 6530-43, 6530-44, 6530-47, 6530-48, 6530-49, 6533-25, 6957-65, 5479-25, 6534-64
72	508	2	1800	230	12041-42	6530-21, 6530-15, 6530-52, 6530-54, 6530-56, 6533-28, 6534-66, 6533-28
100	610	3	1400	230	12041-44	6530-27, 6530-20, 6530-64, 6530-65, 6530-66

**FABRIC GIRDLE MANTLE** Scale-Up Series, Glas-Col

Fabric mantle mated to our 6447 Scale Up Series™ reaction flasks.

Flask Capacity, mL	Watts	Volts, vac	Works with Flask Order Code	Order Code
100	95	115	6447-02	12079-02
250	160	115	6447-04	12079-04
500	285	115	6447-06	12079-06
1000	485	115	6447-08	12079-08
2000	650	115	6447-10	12079-10
3000	875	115	6447-12	12079-12
4000	950	115	6447-14	12079-14
5000	950	115	6447-16	12079-16
6000	1250	115	6447-18	12079-18

**STIRMANTLE** Stirring/Heating, Large Capacity, Spherical

Mantle with magnetic stirrer 1/50hp motor built-in. These mantles are ideal for continuous distillations by providing controlled heating and stirring in a single unit. Independent speed and heat control is accomplished via the use of Glas-Col's bundled speed control and your choice of another supplier's temperature control or via Glas-Col's combination control (see 12048 product family). Complete Stirrmantle ships with motor, stir control, stir bar and cord.

Note: Must be operated with a temperature controller.

Flask Size, mL	Wattage	Cord Type	Speed, RPM	Mantle, only Order Code	Complete Order Code
2	120v 50/60Hz	4'	100-1850	12045-03	12045-02
5	120v 50/60Hz	4'	100-1850	12045-06	12045-05
12	120v 50/60Hz	4'	100-1850	12045-13	12045-12
22	120v 50/60Hz	4'	100-1850	12045-23	12045-22
50	120v 50/60Hz	Requires Hard Wiring	100-1850	—	12045-50
50	230v 50/60Hz	Requires Hard Wiring	100-1850	—	12045-55
72	230v 50/60Hz	Requires Hard Wiring	100-1850	—	12045-72

*12045-50 works with Corning spherical flasks, 12045-55 works with 490mm diameter spherical flasks.

MANTLE Aluminum Housing, Small Capacity, Spherical

The StirMantle adds electromagnetic stirring capability (50-750 rpm) to the Series TM heating mantle for spherical flasks. Heating and stirring are independent; choose either or both. Speed is easily adjusted by a single dial on the StirControl II (**ordered separately**).

The StirControl II creates and synchronizes the magnetic field. Glas-Col's exclusive "Synchrostart" feature maintains linkage between the field and the bar. Features (2) receptacles for operating (2) Stirmantles at once. Ships complete with mantle, PTFE stirbar and 4' cord.

Note: For heating control, we recommend you purchase our 12125-14 temperature controller and our 12110-15 J type temperature probe with 72" lead.



Flask Size, mL	Inside Depth, in/mm	Volts	StirControl, only	Stirmantle, only	Complete
			Order Code	Order Code	Order Code
1000	2.56/65.02	120v, 50/60Hz	12046-01	12046-15	12046-10
1000	2.56/65.02	230v, 50/60Hz	12046-02	12046-17	12046-23
2000	3.35/85.09	120v, 50/60Hz	12046-01	12046-25	12046-20
2000	3.35/85.09	230v, 50/60Hz	12046-02	12046-27	12046-23

STIR/HEAT CONTROL Dual Control, Glas-Col

Combination stirring and temperature controller for Glas-Col® Stirmantles. Unit is often used to simultaneously power the Stirmantle's heating, stirring and an additional top mantle for those applications where vapor condensation on the upper half of the flask is undesirable. Features include a universal J, T and K probe input, thermocouple break alarm, (2) or (3) NEMA 5-15R receptacles and a lab frame support bracket.

# of Outlets	Watts per Channel	Total Watts	Volts	Order Code
2	900	1800	120v, 50/60Hz	12048-02
3	800	2400	120v, 50/60Hz	12048-03



VOLTAGE CONTROLLER Mantle Minder II™

For controlling all Glas-Col® mantles. Time proportioning, 1/16 DIN, automatic control for use with mantles, tapes, cords, small ovens, and other resistive heating loads. Features a detachable iron-constantan "J" thermocouple with 6" stainless steel probe, lighted ON/OFF power switch with auxiliary indication, load and thermocouple receptacles located on front panel for easy accessibility, and set-point dial calibrated in 20°C increments. Fused to protect small loads. Supplied with three-wire load receptacle, three-wire line cord with molded plug. Power consumption 4watts plus load. Accuracy ±1.5% of full scale. Thermocouple included.

Temperature Range	Ambient Temp Range	Total Watts	Volts	Dimensions, W x D x H	Order Code
0-750°C	30-130°F	1800	120v, 50/60Hz	8 x 6 x 3-3/8	12085-20



VOLTAGE CONTROLLER 0-120v at 10 Amps, Solid State ★

Variable control from zero output to 95% line voltage. A voltage-limit, rear-mounted center-off switch is used to select a 40v or 120v maximum output with the control knob full on. 0-10 amp meter. 5% accuracy. **NOT recommended for heaters rated less than 120volts.** Warning glow light, mounted next to correcting switch, will illuminate when dangerous reversed wiring condition exists. Easy-access 10amp fuse Type 3 AG (rear mounted). Standard 1.8meter heavy duty neoprene three-wire power cord (grounded to case) with NEMA plug.

Weight, grams	Volts	Dimensions, W x D x H	Order Code
794	120v, 50/60Hz	7 x 4 x 3-1/2	12087-10



VOLTAGE CONVERTER Step Up/Down 2000watt ★

2000watt voltage converter can be used as a step up transformer in 110/120volt countries or as a step down transformer in 220/230/240volt countries. CE certified for continuous use. It will convert voltages of 220-240volts to 110-120 and will also convert voltages from 110-220 to 220-240volts. Operates in either 50/60Hz but will not change frequency. Fuse protected and supplied with (2) spare fuses. Features a 220v Universal output plug which will accept most International plugs. One year parts and labor manufacturers warranty.

Step Up, Volts to Volts	Step Down, Volts to Volts	Total Watts	Order Code
110/120 to 220/240	220/240 to 110/120	2000	7834-17



Temperature Controllers

**TEMPERATURE CONTROLLER** *Time Proportional, 2 Outlet ★*

Compact time proportional digital temperature controller for use with type J temperature probes with a male SMP/OST plug. Controller has (2) 120vac front outlets (1800watts total from either plug or in combination) ideal for two-circuit heating mantles and one rear alarm outlet. Features include over-temp cutoff, RFI free power and 0.1°C accuracy. One year limited warranty.

- (2) 120vac front outlets (1800watts total)
- (1) rear alarm outlet
- 120vac, 50/60Hz input
- 6" x 6" x 3-1/2" (LxWxH)

Note: For PC control & data logging via LoveLink™ III software, order codes -25 & -26 USB dongle & Cat5 patch cable.

Description	Probe Type	Order Code
Temperature Controller	J	12116-15
USB Communications Module	—	12116-25
Cat5 Cable, 6'	—	12116-26

Controller w/Probe

w/J type thermocouple sensor probe (12110-15)	12116-33
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**TEMPERATURE CONTROL SAFETY DEVICE** *Single Outlet, Alarm, 1800watt ★*

Single outlet, secondary temperature control safety device for applications where temperature overshoot will cause dangerous conditions. Used as a power source for your in-house temperature controller, the limit control will cut power to its outlet when your upper temperature setpoint is reached. Upon being tripped, an audible alarm will sound and a manual reset will be required. Accuracy is 0.1% of span, plus/minus 1.0°C. Includes integral rack mounting bracket. One year limited warranty.

- (1) outlet (1800watts)
- 120vac, 15amp, 60Hz input

Description	Probe Type	Order Code
Temperature Control Safety Device	J	12331-10
Temperature Control Safety Device	K	12331-20
Temperature Control Safety Device	T	12331-30
Temperature Control Safety Device	Pt100	12331-40

Controller w/Probe

w/J type thermocouple sensor probe (12110-15)	12331-15
w/K type thermocouple sensor probe (12113-20)	12331-25
w/T type thermocouple sensor probe (12180-33)	12331-35
w/Pt100 type thermocouple sensor probe (12137-10)	12331-45

**TEMPERATURE CONTROLLER** *Single Outlet, 1200watt ★*

Single outlet, 1200 watts of power temperature controller with audible alarm. Accuracy is 0.1% of span, plus/minus 1.0°C with setpoint ramping feature. LED is user selectable for Fahrenheit or Centigrade. Includes integral rack mounting bracket. cULus safety rating. One year limited warranty.

- (1) outlet (1200watts)
- 120vac, 10amp, 60Hz input

Description	Probe Type	Order Code
Temperature Control, Single Outlet	J	12332-10
Temperature Control, Single Outlet	K	12332-20
Temperature Control, Single Outlet	T	12332-30

Controller w/Probe

w/J type thermocouple sensor probe (12110-15)	12332-15
w/K type thermocouple sensor probe (12113-20)	12332-25
w/T type thermocouple sensor probe (12180-33)	12332-35

TEMPERATURE CONTROLLER Ramp/Soak Stepping, Audible Alarm, 1200watt ★

Single outlet, ramp and soak stepping temperature controller with audible alarm and 1200watts of output. Temperature, Time, Hold, Soak and End steps are programmed via the PC EZ-ZONE software and RS-485 interface cable, sold separately (12335-75). Accuracy is 0.1% of span, plus/minus 1.0°C. LED is user selectable for Fahrenheit or Centigrade. Includes integral rack mounting bracket. One year limited warranty.

- (1) outlet (1200watts)
- 120vac, 10amp, 60Hz input



Description	Probe Type	Order Code
Temperature Control, Ramp/Soak	J	12333-10
Temperature Control, Ramp/Soak	K	12333-20
Temperature Control, Ramp/Soak	T	12333-30

Controller w/Probe

w/J type thermocouple sensor probe (12110-15)	12333-15
w/K type thermocouple sensor probe (12113-20)	12333-25
w/T type thermocouple sensor probe (12180-33)	12333-35

TEMPERATURE CONTROLLER Single Outlet, 1800watt ★

Single outlet, 1800 watts of power temperature controller. Accuracy is 0.1% of span, plus/minus 1.0°C with setpoint ramping feature. LED is user selectable for Fahrenheit or Centigrade. Includes integral rack mounting bracket. cULus safety rating. One year limited warranty.

- (1) outlet (1800watts)
- 120vac, 10amp, 60Hz input



Description	Probe Type	Order Code
Temperature Control, Single Outlet	J	12334-10
Temperature Control, Single Outlet	K	12334-20
Temperature Control, Single Outlet	T	12334-30

Controller w/Probe

w/J type thermocouple sensor probe (12110-15)	12334-15
w/K type thermocouple sensor probe (12113-20)	12334-25
w/T type thermocouple sensor probe (12180-33)	12334-35

TEMPERATURE CONTROLLER Single Outlet, Selectable Voltage ★

Single outlet, output voltage selectable temperature controller with audible alarm and data logging via an RS-485 interface cable, sold separately. Positive stop, multi-voltage dial offers over-voltage protection for Instatherm® products rated at less than 120vac maximum. Accuracy is 0.1% of span, plus/minus 1.0°C with setpoint ramping feature. LED is user selectable for Fahrenheit or Centigrade. Includes integral rack mounting bracket. One year limited warranty.

- (1) outlet (1200watts)
- 120vac, 10amp, 60Hz input



Description	Probe Type	Order Code
Temperature Control, Selectable Voltage	J	12335-10
Temperature Control, Selectable Voltage	K	12335-20
Temperature Control, Selectable Voltage	T	12335-30

Controller w/Probe

w/J type thermocouple sensor probe (12110-15)	12335-15
w/K type thermocouple sensor probe (12113-20)	12335-25
w/T type thermocouple sensor probe (12180-33)	12335-35

Accessories

USB to RS-485 Communications Conversion Cable	12335-75
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TEMPERATURE CONTROLLER *Process and Limit, 2 Outlet* ★

This control combines a Process control and Limit control in one box. (2) 900watt outlets, independent Process & Limit sensors and audible alarms. The Limit control will turn off the power when a user selectable value is reached. Unit requires a manual reset if tripped. Accuracy is 0.1% of span, plus/minus 1.0°C with setpoint ramping feature. LED is user selectable for Fahrenheit or Centigrade. Includes integral rack mounting bracket. cULus safety rating. One year limited warranty.

- (2) 900watt front outlets (1800watts total)
- 120vac, 15amp, 60Hz input

Description	Probe Type	Order Code
Temperature Control, Process and Limit	J	12336-10
Temperature Control, Process and Limit	K	12336-20
Temperature Control, Process and Limit	T	12336-30

Controller w/Probe

w/J type thermocouple sensor probe (12144-06)	12336-15
w/K type thermocouple sensor probe (12144-22)	12336-25
w/T type thermocouple sensor probe (12144-24)	12336-35



TEMPERATURE CONTROLLER *Twin Control* ★

Two independent temperature controllers in one cabinet. Each channel has 900watts of power, independent LED display and independent audible over-temp protection alarms. Ideal for saving bench space, or for attachment to a support frame via the included mounting bracket. Accuracy is 0.1% of span, plus/minus 1.0°C with setpoint ramping feature. LED is user selectable for Fahrenheit or Centigrade. cULus safety rating. One year limited warranty.

- (1) 900watt front outlet (per channel), 2 total
- 120vac, 15amp, 60Hz input

Description	Probe Type	Order Code
Temperature Control, Twin Process	J	12337-10
Temperature Control, Twin Process	K	12337-20
Temperature Control, Twin Process	T	12337-30

Controller w/Probes

w/two J type thermocouple sensor probes (12110-15)	12337-15
w/two K type thermocouple sensor probes (12113-20)	12337-25
w/two T type thermocouple sensor probes (12180-33)	12337-35

Need Something Special? Choose ACE

Whether you're simply changing a joint size or designing an entire custom unit, our technical staff is at your service!

Give us a call at 1-800-223-4524 or sales@aceglass.com

TEMPERATURE CONTROLLER *Glas-Col Digitrol II*

The Digitrol II temperature controller displays both setpoint and process temperature. Microprocessor-based, this controller features automatic temperature control and an auto-tune feature which minimizes overshoot and learns your process. The controller can also perform ramp rate operations to slowly raise the process temperature. The unit comes with a 6' detachable power cord and grid support bracket. Three year manufacturer's limited warranty.

Note: J, K or T Probes are not included.



Description	Probe Type, not included	Rating	Order Code
120 Volt, 50/60Hz			
Temperature Controller	J	cUL	12090-22
Temperature Controller	K	cUL	12090-25
Temperature Controller	T	cUL	12090-29

240 Volt, 50/60Hz

Temperature Controller	J	CE	12090-42
Temperature Controller	K	CE	12090-45
Temperature Controller	T	CE	12090-49

TEMPERATURE CONTROLLER *Glas-Col Powrtrol*

Solid-state proportional-voltage power control that provides precise manual control of heating mantles, tapes, cords, and other resistive loads. The output range is conveniently adjustable from 5-100% of rated voltage. Has a foxtip gray and charcoal, low profile lab bench cabinet with clamp. Three year manufacturer's limited warranty.



Description	Rating	Order Code
120 Volt, 60Hz, 1200w		
Temperature Limit Controller	—	12089-30
240 Volt, 50Hz, 2300w		
Temperature Limit Controller	CE	12089-40

The Safest Heating Method...

ACE Instatherm® for Glass Vessels

- Eliminate the need for heating tape, immersion heaters and heating mantles.
- Can be added to custom orders!



ACE GLASS Temperature Controller

For general laboratory use including mantles up to 22L.

- Two front-mounted 120v outlets
- Compact (3.5" high)
- New digital technology
- 16 segment ramp and soak function
- Fuzzy logic auto tune PID



**For use in
controlling all
Glas-Col Mantles
rated at 115volts**

Features & Specifications:

- Two front-mounted outlets.
- Bar mountable or benchtop operation.
- Single loop type, downsized and lightweight.
- Temperature range: -70 to 870°C, adjustable.
- 0.1°C/0.1°F temperature resolution, field selectable.
- Absolute accuracy: $\pm 0.25\%$ of range, max. $\pm 2^\circ\text{C}$.
- Control accuracy: $\pm 0.1^\circ\text{C}$ typical.
- Microprocessor-based 1/32 DIN model for digital accuracy and reliability.
- Dual four-digit LED display for instant recognition of process temperature and setpoint 1 value.
- Auto tune PID control can maintain $\pm 0.1^\circ$ under normal conditions.
- Ramp and soak, field selectable, 16 segment with hold or shut-off.
- Field selectable output % power limit when heating smaller vessels or when using very low setpoints. (factory set at 60% for safety). See OEM Manual (S10H) secure menu.
- Output circuitry utilizes zero crossing fired solid state relay proportional control that provides interference free power (RFI) to electrical heater type resistive loads.
- Heater outlets provide time proportional control, meaning overshoot is minimized. Percent output decreases as set temperature is approached.
- Universal TC input jack for "mini" or "standard" plugs.
- Input power: 120volts, 50/60Hz, 15amps maximum, fused.
- Unit measures: 3.5" high x 6-3/16" wide x 6-5/16" deep; weight: 2.5lbs.
- Operating instruction label on top for quick reference

TEMPERATURE CONTROLLER Improved Model ★

	Order Code
Controller, only	12126-24
Sensor, Type J Thermocouple, 318mm, 1/4"	12110-15
Complete	
	12126-45

Digital interface available. Call for details.

ACE GLASS Economy Model Temperature Controller

For general laboratory use.

Features & Specifications:

- Bar mountable or benchtop operation.
- Single loop type, downsized and lightweight.
- Temperature range: -50 to 800°C, adjustable.
- 0.1°C* or 0.1°F temperature resolution, selectable.
- Absolute accuracy: $\pm 0.25\%$ of range, max. $\pm 2^\circ\text{C}$.
- Control accuracy: $\pm 0.1^\circ\text{C}$ typical.
- Microprocessor-based 1/32 DIN model for digital accuracy and reliability.
- Dual four-digit LED display for instant recognition of process temperature and setpoint 1 value.
- Auto tune PID control can maintain $\pm 0.1^\circ$ under normal conditions.
- Ramp and soak, field selectable, 16 segment with hold or shut-off.
- Field selectable output % power limit when heating smaller vessels or when using very low setpoints. See OEM manual (SIOH) secure menu, affects all heaters.
- Output circuitry utilizes zero crossing fired solid state relay proportional control that provides interference free power (RFI) to electrical heater type resistive loads.
- Rear heater outlet provides time proportional control, meaning overshoot is minimized. Percent output decreases as set temperature is approached.
- Input power: 120volts, 50/60Hz, 15amps maximum
- Unit measures: 2" high x 5-1/4" wide x 5-1/4" deep; weight: 2lbs, 2oz.
- Operating instruction label on top for quick reference.
- Three-year warranty

■ Economy model

■ Ultra compact (2" high)

■ New digital technology

■ 16 segment ramp and soak function

■ Fuzzy logic auto tune PID

■ Temp. Range Field Selectable



TEMPERATURE CONTROLLER *Economy Model* ★

	Order Code
Controller, only ("J" type)	12125-14
Controller, only ("T" type)	12125-16
Controller, only ("K" type)	12125-18
Sensor, Type J Thermocouple, 318mm, 1/4"	12110-15
Complete ("J" Type only)	
	12125-32

**For use in
controlling all
Glas-Col Mantles
rated at 115 volts**

Temperature Controllers



A Certificate of Safety Conformance stating all components are CE/UL/CSA available upon request.

TEMPERATURE CONTROLLER J-Kem 410 Series

Designed for heaters that cannot be operated at 120vac, such as some styles of oil baths. The maximum output voltage is selected using the Power Output knob on the front of the controller. Selectable output voltage limits provide precise power and temperature control while protecting low voltage heaters.

At the heart of J-KEM's 200-Series controllers is a new, high speed microprocessor that performs 3 functions:

1. Power regulation J-KEM's original power control computer is replaced by a next generation microprocessor. The power control computer is J-KEM's patented technology that adjusts power to the heater 2048 times per second resulting in 0.1°C regulation.
2. USB communications PC communications and free KEM-Net software enable remote PC control, GLP/GMP compliant data collection, and multi-temperature ramps built in an Excel-like table.
3. KEM-IO allows the controller to turn other pieces of equipment On/Off, change the temperature set point, or Start/Stop heating based on external inputs, temperature, or time.

3.25" x 5.25" x 7.25" (HxWxD)

J-Kem Model	w/Sensor, Cord and Adapter	Temperature Range, °C	Thermocouple Type	Order Code
410-T	No	-200 to 250	T	12324-08
410-J	No	0 to 800	J	12324-10
410-K	No	-50 to 1200	K	12324-12



A Certificate of Safety Conformance stating all components are CE/UL/CSA available upon request.

TEMPERATURE CONTROLLER J-Kem Apollo Series, 2 Channel

Has all the features of the Gemini series, above, but also has an independent 100-hour digital timer on each controller channel.

4" x 8" x 9" (HxWxD)

120vac, 15amps, 1800watts total

1200watts maximum per channel

J-Kem Model	w/Sensor, Cord and Adapter	Temperature Range, °C	Thermocouple Type	Order Code
Apollo-T	No	-200 to 250	T	12312-03
Apollo-J	No	0 to 800	J	12312-05
Apollo-K	No	-50 to 1200	K	12312-07
Apollo-Pt	No	-200 to 400	RTD	12312-09

These units require (2) thermocouple sensors. (2) cords and (2) adapters.



A Certificate of Safety Conformance stating all components are CE/UL/CSA available upon request.

TEMPERATURE CONTROLLER J-Kem Quad Series, 4 Channel

The Quad is your solution when bench space is at a premium — the Quad packs four independent temperature controllers into a single unit! Each of the four controller channels has 1200 watts of power, an independent display, and an over-temperature protection circuit.

5.25" x 7" x 7.5" (HxWxD)

120vac, 15amps, 1800watts total

1200watts maximum per channel

J-Kem Model	w/Sensor, Cord and Adapter	Temperature Range, °C	Thermocouple Type	Order Code
Quad-T	No	-200 to 250	T	12314-05
Quad-J	No	0 to 800	J	12314-07
Quad-K	No	-50 to 1200	K	12314-09
Quad-Pt	No	-200 to 400	RTD	12314-11

The Quad Series units noted above require (4) thermocouple sensors. (4) cords. and (4) adapters.

THERMOMETER *Digital Display, Electronic, w/Recorder Output*

A complete package to enable the user to monitor the temperature of cylindrical jacketed pilot plant reactors.

Consists of:

- 8318-35, Type "J" input digital thermometer w/ 5/8" LED display. 120v, 50/60Hz operation, 1°C resolution, -20°C to 390°C range, ±2% accuracy reading, ±1°C w/recorder output, fused w/clamp for mounting to 1/2 inch bars.
- 7482-33 or 5028-30, PTFE adapter, #25-#7
- 12141, PFA covered type "J" thermocouple sensor, w/detachable cord. 24" for 10L cylindrical, 36" for 30L cylindrical, 48" for 50L cylindrical.
- 8067-18, adapters to secure temperature sensor in head of reactor
- 5029-10, #7 nylon bushing



Item	For Use with 10L & 20L Cylindrical		For Use with 30L Cylindrical		For Use with 50L & 100L Cylindrical	
Thermometer, Digital	8318-35	★	8318-35	★	8318-35	★
Adapter, Glass 45/50 — #25	—		8067-18	♠	8067-18	♠
Adapter, PTFE, #25 — #7	—		7482-33	★	7482-33	★
Bushing, Nylon, #7	—		5029-10	♠	5029-10	♠
Adapter, #7 — 24/40	5028-30	♠	—		—	
"J" Thermocouple Sensor, PFA Covered, Detachable	12141-26	★	12141-28	★	12141-29	★
Sensor Cord, only	12141-80	★	12141-80	★	12141-80	★
Complete	8318-204	★	8318-207	★	8318-209	★

DIGITAL TEMPERATURE MONITOR *J-Kem*

Monitors and displays the temperature of an attached piece of equipment on a bright LED display. Built-in USB port and free data logging software allows remote temperature monitoring and provides a GMP, GLP compliant temperature history. Audible digital alarm available as an option. 230vac versions are CE marked.

2.5" x 4.75" x 5.5" (HxWxD)

120vac, 50watts, USB 2.0

J-Kem Model	Temperature Range, °C	Thermocouple Type	Order Code
DM120-T	-200 to 250	T	12327-03
DM120-J	0 to 800	J	12327-05
DM120-K	-50 to 1200	K	12327-07



DIGITAL TEMPERATURE MONITOR *J-Kem*

230vac, CE-marked version of digital temperature monitor, above.

J-Kem Model	Temperature Range, °C	Thermocouple Type	Order Code
DM230-T	-200 to 250	T	12327-33
DM230-J	0 to 800	J	12327-35
DM230-K	-50 to 1200	K	12327-37

**A Certificate of Safety
Conformance stating all
components are CE/UL/CSA
available upon request.**

Thermocouples

**T-TYPE SENSORS**

Type "T" thermocouple temperature sensors for use with all J-Kem "T" type model temperature controllers. Either 1/4" or 1/8" O.D. Available in 304 stainless steel or PTFE coated stainless steel sheaths of various lengths. See ACE 12190 series extension cords.

O.D., in	Length, in	PTFE Coated	Order Code
1/8	6	No	12180-03
1/8	12	No	12180-05
1/8	18	No	12180-07
1/8	24	No	12180-09
1/8	36	No	12180-11
1/8	6	Yes	12180-20
1/8	12	Yes	12180-22
1/8	18	Yes	12180-24
1/8	24	Yes	12180-26
1/8	36	Yes	12180-28
1/4	6	No	12180-31
1/4	12	No	12180-33
1/4	18	No	12180-35
1/4	24	No	12180-37
1/4	36	No	12180-39
1/4	6	Yes	12180-40
1/4	12	Yes	12180-42
1/4	18	Yes	12180-44
1/4	24	Yes	12180-46
1/4	36	Yes	12180-48

J-TYPE SENSORS

Type "J" thermocouple temperature sensors for use with all J-Kem "J" type model temperature controllers. Either 1/4" or 1/8" O.D. Available in 304 stainless steel or PTFE coated stainless steel sheaths of various lengths. See ACE 12190 series extension cords.

O.D., in	Length, in	PTFE Coated	Order Code
1/8	6	No	12181-02
1/8	12	No	12181-04
1/8	18	No	12181-06
1/8	24	No	12181-08
1/8	6	Yes	12181-21
1/8	12	Yes	12181-23
1/8	18	Yes	12181-25
1/8	24	Yes	12181-27
1/8	36	Yes	12181-29
1/4	6	No	12181-32
1/4	12	No	12181-34
1/4	18	No	12181-36
1/4	24	No	12181-38
1/4	36	No	12181-39
1/4	6	Yes	12181-41
1/4	12	Yes	12181-43
1/4	18	Yes	12181-45
1/4	24	Yes	12181-47
1/4	36	Yes	12181-49

K-TYPE SENSORS

Type "K" thermocouple temperature sensors for use with all J-Kem "K" type model temperature controllers. Either 1/4" or 1/8" O.D. Available in 304 stainless steel or PTFE coated stainless steel sheaths of various lengths. See ACE 12190 series extension cords.

O.D., in	Length, in	PTFE Coated	Order Code
1/8	6	No	12182-01
1/8	12	No	12182-03
1/8	18	No	12182-05
1/8	24	No	12182-07
1/8	36	No	12182-09
1/8	6	Yes	12182-20
1/8	12	Yes	12182-22
1/8	18	Yes	12182-24
1/8	24	Yes	12182-26
1/8	36	Yes	12182-28
1/4	6	No	12182-32
1/4	12	No	12182-34
1/4	18	No	12182-36
1/4	24	No	12182-38
1/4	36	No	12182-40
1/4	6	Yes	12182-41
1/4	12	Yes	12182-43
1/4	18	Yes	12182-45
1/4	24	Yes	12182-47
1/4	36	Yes	12182-49

RTD TYPE SENSORS

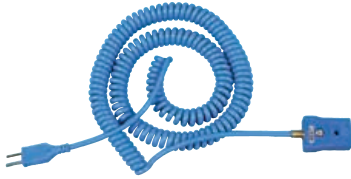
"RTD" (Pt/100) type thermocouple temperature sensors for use with J-Kem model "RTD" temperature controllers. Either 1/4" or 1/8" O.D. All PTFE coated stainless steel sheaths of various lengths. Uncoated available via special order. See ACE 12190 series extension cords.

O.D., in	Length, in	PTFE Coated	Order Code
1/8	6	Yes	12183-02
1/8	12	Yes	12183-04
1/8	18	Yes	12183-06
1/8	24	Yes	12183-08
1/8	36	Yes	12183-10
1/4	6	Yes	12183-40
1/4	12	Yes	12183-42
1/4	18	Yes	12183-44
1/4	24	Yes	12183-46
1/4	36	Yes	12183-48

For extension cords, see ACE 12190 straight and coiled cords.

SENSOR CORDS *Coiled and Straight*

Sensor extension cords for use with all J-Kem thermocouple probes. Cords match color of probe type: blue, black, yellow or white. Available in either 10' or 20' coiled or straight styles. Select length, type, and connector, SMP (flat plug) or OST (round plug).


SMP

OST

Probe Style	Length, ft	Connector Type	Order Code
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Coiled

J	10	SMP	12190-01
K	10	SMP	12190-02
T	10	SMP	12190-03
RTD	10	SMP	12190-04
J	10	OST	12190-08
K	10	OST	12190-10
T	10	OST	12190-11
J	20	SMP	12190-20
K	20	SMP	12190-21
T	20	SMP	12190-22
J	20	OST	12190-26
K	20	OST	12190-27
T	20	OST	12190-28

Probe Style	Length, ft	Connector Type	Order Code
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Straight

J	10	SMP	12190-40
K	10	SMP	12190-41
T	10	SMP	12190-42
J	10	OST	12190-44
K	10	OST	12190-45
T	10	OST	12190-46
J	20	SMP	12190-50
K	20	SMP	12190-51
T	20	SMP	12190-52
J	20	OST	12190-56
K	20	OST	12190-57
T	20	OST	12190-58

DUAL SENSORS *PTFE Coated*

Dual coupling temperature thermocouple sensors for use with Model HCC and 270 J-Kem temperature controllers. Available in "J", "T" or "K" types. Probes are PTFE coated stainless steel in various lengths and O.D. Probes require 12191 extension cords.

O.D. in	Length, in	Sensor Type	Order Code
1/8	12	T	12184-02
1/4	12	T	12184-04
1/4	24	T	12184-06
1/4	36	T	12184-08
1/8	12	J	12184-12
1/4	12	J	12184-14
1/4	24	J	12184-16
1/4	36	J	12184-18
1/8	12	K	12184-20
1/4	12	K	12184-22
1/4	24	K	12184-24
1/4	36	K	12184-26

DUAL SENSOR CORDS

Dual element extension cords for use with dual element 12184 sensors for J-Kem models HCC and 270 temperature controllers. Available in "T", "K", and "J" types in 10' or 25' lengths.

Probe Style	Length, ft	Order Code
T	10	12191-02
J	10	12191-06
K	10	12191-08
T	25	12191-20
J	25	12191-22
K	25	12191-24



Thermocouples

**THERMOCOUPLE SENSOR** *RTD, PTFE Coated* ★

RTD type thermocouple sensors for use with RTD type circulators with LEMO type plugs. PTFE coated stainless steel probes. Temperature range: -200 to 400°C.

Reactor Size, mL	O.D., in	Thermocouple Length, in	Cord Length, in	Order Code
100	1/8	8	10	12137-02
100-500	1/8	12	10	12137-04
100-500	1/4	12	10	12137-10
1000-2000	1/4	18	10	12137-12
3000-6000	1/4	24	10	12137-14
3000-6000	1/4	36	10	12137-16
3000-6000	1/4	48	10	12137-18

**TEMPERATURE SENSOR** *Dual Sensor Probe*

Temperature sensor with (2) 72" SMP leads for use with limit controllers or for sending data to two different temperature devices simultaneously. See our 12336 Process/Limit Controls for use with our 12316, 12310, 12312 & 12337 series controllers. Temperature Max: up to 550°C.

Sensor Type	O.D., in	Thermocouple Length, in	Cord Length, in	Sheath Material	Order Code
J	1/4	4	72	Inconel	12144-04
J	1/4	12	72	Inconel	12144-06 ★
K	1/4	12	72	Inconel	12144-22 ★
T	1/4	12	72	316 Stainless Steel	12144-24 ★

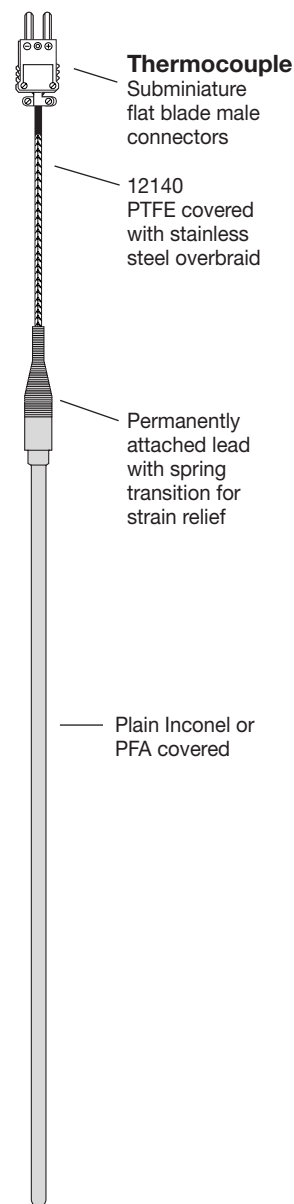
THERMOCOUPLE SENSOR PROBES ★

Type	Length of Inconel Sheath, mm (in)	Sheath O.D., mm/in.	Sheath Coating	Max. Sheath Temp.	Lead Length, ft	Lead Attachment	Order Code
"J"	102 (4)	4.76/0.19	Plain	550°C	6	Permanent	12110-17
"J"	305 (12)	1.59/0.06	Plain	550°C	12	Permanent	12140-04
"J"	305 (12)	3.17/0.12	Plain	550°C	12	Permanent	12140-05
"J"	305 (12)	6.35/0.25	Plain	550°C	6	Permanent	12110-15
"J"	305 (12)	6.35/0.25	Plain	550°C	12	Permanent	12140-06
"J"	600 (24)	6.35/0.25	Plain	550°C	12	Permanent	12140-10
"J"	900 (36)	6.35/0.25	Plain	550°C	12	Permanent	12140-14
"J"	1200 (48)	6.35/0.25	Plain	550°C	12	Permanent	12140-16
"J"	1800 (72)	6.35/0.25	Plain	550°C	12	Permanent	12140-18
"J"	305 (12)	1.59/0.06	PFA	260°C	12	Permanent	12140-17
"J"	305 (12)	3.17/0.12	PFA	260°C	12	Permanent	12140-19
"J"	305 (12)	6.35/0.25	PFA	260°C	12	Permanent	12140-20
"J"	600 (24)	6.35/0.25	PFA	260°C	12	Permanent	12140-21
"J"	900 (36)	6.35/0.25	PFA	260°C	12	Permanent	12140-25
"J"	1200 (48)	6.35/0.25	PFA	260°C	12	Permanent	12140-26
"J"	1800 (72)	6.35/0.25	PFA	260°C	12	Permanent	12140-28
"J"	305 (12)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-11
"J"	600 (24)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-12
"J"	900 (36)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-17
"J"	1200 (48)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-18
"J"	1800 (72)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-20
"J"	305 (12)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-25
"J"	600 (24)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-26
"J"	900 (36)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-28
"J"	1200 (48)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-29
"J"	1800 (72)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-30
"K"	102 (4)	4.76/0.19	Plain	550°C	6	Permanent	12113-22
"K"	305 (12)	1.59/0.06	Plain	550°C	12	Permanent	12140-36
"K"	305 (12)	3.17/0.12	Plain	550°C	12	Permanent	12140-61
"K"	305 (12)	6.35/0.25	Plain	550°C	6	Permanent	12113-20
"K"	305 (12)	6.35/0.25	Plain	550°C	12	Permanent	12140-39
"K"	600 (24)	6.35/0.25	Plain	550°C	12	Permanent	12140-41
"K"	900 (36)	6.35/0.25	Plain	550°C	12	Permanent	12140-45
"K"	1200 (48)	6.35/0.25	Plain	550°C	12	Permanent	12140-46
"K"	1800 (72)	6.35/0.25	Plain	550°C	12	Permanent	12140-48
"K"	305 (12)	1.59/0.06	PFA	260°C	12	Permanent	12140-37
"K"	305 (12)	3.17/0.12	PFA	260°C	12	Permanent	12140-62
"K"	305 (12)	6.35/0.25	PFA	260°C	12	Permanent	12140-51
"K"	600 (24)	6.35/0.25	PFA	260°C	12	Permanent	12140-53
"K"	900 (36)	6.35/0.25	PFA	260°C	12	Permanent	12140-57
"K"	1200 (48)	6.35/0.25	PFA	260°C	12	Permanent	12140-58
"K"	1800 (72)	6.35/0.25	PFA	260°C	12	Permanent	12140-59
"K"	305 (12)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-43
"K"	600 (24)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-44
"K"	900 (36)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-47
"K"	1200 (48)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-48
"K"	1800 (72)	6.35/0.25	Plain	550°C	3-15	Detachable*	12141-50
"K"	305 (12)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-52
"K"	600 (24)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-53
"K"	900 (36)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-58
"K"	1200 (48)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-59
"K"	1800 (72)	6.35/0.25	PFA	260°C	3-15	Detachable*	12141-60

*Lead only, for TYPE "J" Sensor (Black)

*Lead only, for TYPE "K" Sensor (Yellow)

PFA: Colored black, less permeable than either FEP or TFE. Maximum temperature 260°C.





TEMPERATURE CONTROLLER *Pilot Plant*

This temperature controller is for use with unjacketed pilot plant reactor systems. The controller allows for up to 4 or 5 heating sources to be connected and controlled by one single PID controller, from a Type J thermocouple placed within the reactor. Optional software can be used for real-time data acquisition. Supplied with mounting hardware for mounting on 1" pipe or smaller. 120vac or 240vac.

Consists of:

- Pilot Plant Controller
- On/Off main power circuit breaker
- Load outputs on back of control and individually fused
- Control PID w/Auto-tune algorithm, solid state relay
- Input Type: Type "J" thermocouple
- Display shows process and set-point temperatures
- USB communications port
- Optional software for real time data acquisition
- 10" W x 11.5" H x 6" D

A Certificate of Safety Conformance stating all components are CE/UL/CSA available upon request.

Circuits	Watts/Circuit	Total Watts	Voltage	Order Code
4	900	3600	120V, 30A	13552-02
4	1800	7200	240V, 30A	13552-04
4	2400	9600	240V, 40A	13552-06
5	2400	12000	240V, 50A	13552-08



TEMPERATURE CONTROLLER *Time Proportional, Digital*

Microprocessor based, compact, temperature controller, with bright LED display. Temperature range is -70° to 870°C with 0.1°C resolution. Temperature readout in Fahrenheit or Centigrade is field selectable. Designed to use Type "J" thermocouple sensors. The code -15 and -33 units have (2) 120V front outlets. Both models have 16 segment ramp and soak selectable profile. This model has an over-temp cutoff and alarm output for added safety. Output circuitry utilizes zero-crossing fired solid state relay for proportional control that provides interference-free power (RFI) to electric heater type resistive loads. 120V, 15amp, 60Hz input. Unit is 6" x 6.5" x 5.5" (HxDxW); weight = 4lbs. Three year conditional warranty.

Note: Complete unit comes with type "J" thermocouple.

Description	Order Code
Controller with (2) front 120v outlets, only	12111-15
Sensor, Type "J" Thermocouple, 318mm, 1/4" O.D.	12110-15 ★

Complete

	12111-33
--	----------

Optional Components

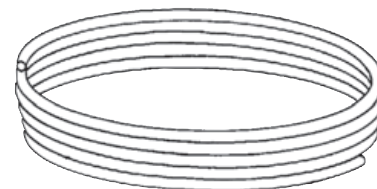
Sensor, Type "J" Thermocouple, 102mm, 3/16"	12110-17	★
Sensor, Type "J" Thermocouple, 305cm, fiberglass insulated, w/o sheath	12110-24	★
Sensor, Type "J" Thermocouple, 305cm, double PTFE insulated, w/o sheath	12110-25	★
Sensor Extension, 2.4M (8") w/mating connectors, double PTFE insulated	12110-26	★

HEAT EXCHANGER TUBING *Fluorocarbon Covered* ★

Copper tubing encapsulated with Fluorocarbon for use as a make-your-own heat exchanger coil. Can be used in corrosive solutions or strong solvents like ammonia, fuming sulfuric acid, potassium hydroxide concentrate, sodium sulfate, etc. Eliminates need for costly metals like Tantalum. Highly temperature resistant, electrically insulated and will not stain, corrode or contaminate. Does not support bacteria, and anti-stick property of Fluorocarbon rinses easily of sticky or clinging materials.

Easy to custom make your own exchanger for heat or cooling by wrapping around simple mandrel or form to desired size. Tubing ends can be connected to most any compression type fitting.

Shipped in 2-3' diameter coils for forming to desired shape, 50' max. continuous run. ACE can supply coiled exchanger to suit your needs. For a quotation, please send us specifications.



Nominal Copper O.D., in	Fluorocarbon Wall, in	Copper Wall, in	Approx. Min. Bend O.D., in	Approx. Sq. Ft. of Surface Per Linear Ft	Order Code
1/4	.015	.030	2	.0733	12067-15
3/8	.015	.030	4	.106	12067-20
1/2	.020	.030	8	.141	12067-25

ADAPTER *Connecting, Heat Exchange Coil* ★

Stainless steel adapter for connecting 12067 heat exchange coil tubing to pipe thread (NPT). Adapter fits over tubing and makes a compression seal via O-Ring for working pressure of 25psig.

Note: Complete item includes compression adapter, elbow, and pipe nipple.

Adapter Size, in	Elbow (FPT), in	Nipple (MNPT), in	O-Ring Size	Order Code
1/4 O.D. tube x 1/4	1/4	1/4	-010	12067-02
3/8 O.D. tube x 1/4	1/4	1/4	-012	12067-04
1/2 O.D. tube x 1/2	1/2	1/2	-014	12067-06



Ace Glass offers the complete line of...

Lauda Integral XT Circulators

LAUDA Integral XT process thermostats allow extremely rapid temperature changes, resulting from the small, internal, thermally active heat transfer medium. The instruments work according to the highly efficient flow principle with a broad working temperature range. The process thermostats are used where rapid temperature changes or high refrigeration and heating performance are required.



Cooling Coils and Controls

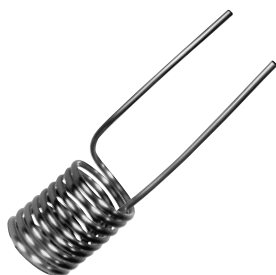
**COIL** Cooling/Heating, Cylindrical Flasks

For use with pilot plant reactors with cylindrical or spherical flasks, with 150mm (6"), 200mm (8") or 300mm (12") size flanges. Coils are ideal for steam heating or water cooling of reactor contents. See chart below for tubing size and materials selection; PTFE coated copper, Hastelloy or stainless steel.

Flask Size, L	Neck Size, in (mm)	Tubing Size, in	Copper/PTFE	316 Stainless Steel	Hastelloy C-276
			Order Code	Order Code	Order Code
For Cylindrical Flasks					
10	8 (200)	1/4	12067-39 ★	12067-239 ★	12067-439
10	8 (200)	1/2	12067-71 ★	—	—
15	8 (200)	1/2	12067-71 ★	—	—
20	8 (200)	1/4	12067-48 ★	12067-248 ★	12067-448
20	8 (200)	1/2	12067-71 ★	—	—
30	12 (300)	1/2	12067-40 ★	12067-240 ★	12067-440
50	12 (300)	1/2	12067-44 ★	12067-244 ★	12067-444
100	12 (300)	1/2	12067-79 ★	12067-279 ★	12067-479
200	12 (300)	1/2	12067-80 ★	12067-280 ★	12067-480

For Spherical Flasks

12	6 (150)	3/8	12067-58 ★	—	—
22	6 (150)	3/8	12067-58 ★	—	—
50	8 (200)	3/8	12067-61 ★	12067-261 ★	12067-461
50	8 (200)	1/4	12067-52 ★	—	—
72	8 (200)	3/8	12067-63 ★	12067-263 ★	12067-463
72	8 (200)	1/4	12067-54 ★	—	—
100	8 (200)	3/8	12067-65 ★	12067-265 ★	12067-465
100	8 (200)	1/2	12067-84 ★	—	—
100	8 (200)	1/4	12067-56 ★	—	—
200	12 (300)	1/2	12067-68 ★	12067-268 ★	12067-468

**COIL** Cooling/Heating, Halar-Coated ★

Halar coated 1/4" O.D. stainless steel coil for heating and cooling. Designed for small reactors like the ACE PTFE reactor or 1L filter reactors. Fits PTFE threaded adapters for PTFE heads.

Order
Code
12069-06

**LAB SAFETY CONTROLLER** J-Kem Model LS-120

Lab safety controller by J-Kem combines all the features of the digital temperature monitor and the water-flow monitor into a single versatile instrument. Plug any piece of equipment into the monitor; then if the water flow rate falls below the set level, or if the reaction temperature goes above or below the user set limits, the outlet power turns off automatically. The unit will also cut off power if the main power is interrupted. The controller then has to be reset.

J-Kem Model	with Sensor Cord and Adapter	Temperature Range °C	Thermocouple Type	Flow Rate, LPM	Order Code
LS-120-T	No	-200 to 250	T	—	12167-01
LS-120-J	No	0 to 800	J	—	12167-03
LS-120-K	No	-50 to 1200	K	—	12167-05

Accessories

Flow Sensor, J-Kem WFM-01	0.1 to 2.5	12168-01
Flow Sensor, J-Kem WFM-02	1 to 10	12168-02
Flow Sensor, J-Kem WFM-03	2 to 30	12168-03
Shut-Off Valve	—	12168-10
Digital Alarm	—	12169-01

**A Certificate of Safety
Conformance stating all
components are CE/UL/CSA
available upon request.**

SENSING HEAD w/filter ★

Supplied with replaceable filter cartridge. Has 3/8" O.D. hose connections. Labeled inlet and outlet. 50micron screen prevents failure of sensing head due to dirt or rust coming from the water supply. Water filter installs **ahead of** sensing head.



Description	Order Code
Sensing Head, w/Water Filter	12160-06
Water filter 50 micron, 3/8" hose connection	12160-35

WATER FLOW MONITOR J-Kem Model WFM-120

J-Kem monitor precisely measures the flow of water through a condenser, bath, or a photochemical reactor. Upon interruption, or if the flow drops below an operator set rate, power to the monitored equipment is cutoff. Manual power reset. Inclusion of a 12168-10 shut-off valve and either a 12169-01 audible alarm or a 12169-05 digital alarm is recommended.

J-Kem Model	Description	Flow Rate, LPM	Order Code
WFM-01	Flow Sensor	0.1 to 2.5	12168-01
WFM-02	Flow Sensor	1 to 10	12168-02
WFM-03	Flow Sensor	2 to 30	12168-03
—	Shut-Off Valve	—	12168-10
WFM-120	Water Flow Monitor	—	12168-120

Accessories

Digital Alarm	12169-01
Audible Alarm	12169-05



A Certificate of Safety Conformance stating all components are CE/UL/CSA available upon request.

'ELECTRO-FLO' SHUT-OFF VALVE ★

A water or air* shut-off solenoid valve for use with 12160, 12162 or 12164 water-flo power cut-off, or as a general laboratory shut-off valve. Operates from 0.35Kg/cm² to 10.5Kg/cm² (5 to 150psig) for water or 0.35Kg/cm² for air and up to 91°C. Internal design of pilot-operated, piston-type valve assures exceptional flow performance. Constructed of cast bronze with waterproof cast-coil that has a lifetime warranty. Valve must be installed in horizontal piping with solenoid in vertical position. Supplied with 1.8 meter grounded cord and female pipe thread. Codes -14, -20 and -26 for use with 12160 and 12162. Codes -48, -54 and -57 for use with 12164.

Note: A pre-filter is recommended when this product is used with water or air (15 micron or less).

Pipe Sizes, mm	(For 120v) Order Code	(For 230V) Order Code
9.5 (3/8 in.)	12165-14	12165-48
12.7 (1/2 in.)	12165-20	12165-54
19.1 (3/4 in.)	12165-26	12165-57

When used as air shut-off valve, a strainer is recommended.



ALARM J-Kem

Digital alarm outlet and audible alarm accessories for J-Kem safety controller and water-flow monitors. Allows 12167 and 12168 units to be set up for alarm warnings when in unsafe conditions. The audible alarm sounds during low or no water conditions for the 12168 monitor, and the digital alarm activates on either the water flow monitor or the safety controller when conditions are out of set ranges.

Note: Optional alarm will be installed inside of 12167 and 12168 controllers. Therefore we recommend purchasing alarm at the same time as these controllers.

J-Kem Model	Alarm Type	For Controllers	Order Code
WFM-AA	Digital	12167 & 12168	12169-01
WFM-OC	Audible	12168	12169-05



A Certificate of Safety Conformance stating all components are CE/UL/CSA available upon request.

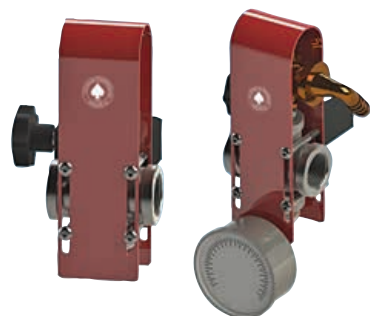


PRESSURE RELIEF MANIFOLD 10L to 150L Jacketed Reactors

A pressure relief manifold for jacketed reaction vessels, designed to protect the vessel from breakage while isolated or disconnected from the circulator. Installed on the outlet side of the vessel, the manifold will reduce the likelihood of breakage caused by an excessive pressure differential exerted by expansion of the heat transfer fluid. Relief pressure is factory set to 10psig. Operating range from -195°C to 426°C.

Note: Complete system includes aluminum body, outlet fittings, hose, relief valve, and pressure gauge.

For Use with Flask Size, L	Bead Pipe Connection, in	Connections	Order Code
Complete Manifold Set			
10-20	1	M16 x 1	10015-01
10-20	1	M24 x 1.5	10015-02
10-20	1	M30 x 1.5	10015-03
30-150	1.5	M16 x 1	10015-04
30-150	1.5	M24 x 1.5	10015-05
30-150	1.5	M30 x 1.5	10015-06



PRESSURE RELIEF MANIFOLD 100mL to 6000mL Jacketed Reactors

A pressure relief manifold for Scale-Up Series jacketed reaction vessels, designed to protect the vessel from breakage while isolated or disconnected from the circulator. Installed on the outlet side of the vessel, the manifold will reduce the likelihood of breakage caused by an excessive pressure differential exerted by expansion of the heat transfer fluid. Relief pressure is factory set to 10psig. Operating range from -40°C to 232°C.

Note: Includes hoses and 90° elbows to connect from manifold to vessel.

Description	Order Code
Complete Manifolds – (Inlet and Outlet)	
M16x1	12194-20
M24x1	12194-22
M16x1 Replacement Parts	
Inlet Manifold Only (M16x1 Male)	12194-02
Outlet Manifold Only (M16 x 1 Male)	12194-06
M24x1 Replacement Parts	
Inlet Manifold Only (M24x1 Male)	12194-04
Outlet Manifold Only (M24x1 Male)	12194-08



- Adapters
- Bottles, Flasks, and Beakers
- Cell Culture
- Chromatography
- Coated Glassware
- Condensers
- Distillation
- Extraction
- Filtration
- No-Air Vacuum Products
- O-Rings
- Photochemical
- Reactors
- Pressure Vessels
- Rotary Evaporator Glassware
- Septa and Seals
- Temperature Control
- Vials and Closures



Did You Know? A Few Ace Glass Firsts...

- First American-made Spherical Joints
- First Ace Tubore Stirrers
- First Micro/Mini Labware and Kits
- First Heating Blocks
- Sonochemistry Glass and Equipment
- First American-made sintered fritted ware
- First internally threaded glass joints — Ace Threads
- First lab scale Pilot Plants and Reactors
- Photochemistry Glass and Equipment
- Pressure Vessels and Reactors



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Manufacturers whose quality products are listed in this catalog:

- | | | | |
|--------------------------|-----------------------------|-------------------------------|------------------------------|
| ■ Assem-Pak | ■ E. I. DuPont & Co. | ■ KNF Neuberger Inc. | ■ Scientific Development Co. |
| ■ Arrow Engineering | ■ Electrothermal | ■ Julabo | ■ Sigma-Aldrich |
| ■ Bel Art Products | ■ Gallagher Controls | ■ Lamson & Goodnow Mfg. Co. | ■ SGE |
| ■ BriskHeat | ■ Glas-Col Apparatus | ■ Lauda | ■ Sonics & Materials, Inc. |
| ■ Heidolph | ■ Greene, Tweed & Co., Inc. | ■ Master Appliance | ■ Thermo-Fisher Scientific |
| ■ Cadence Science | ■ W.A. Hammond Drierite Co. | ■ Optimize Technologies, Inc. | ■ The Superior Electric Co. |
| ■ Caframo | ■ Hanovia | ■ Parr Instrument Co. | ■ Troemner |
| ■ Cannon Instrument Co. | ■ IKA Works | ■ PolyScience | ■ VWR International |
| ■ Cowie Technology | ■ I.W. Tremont | ■ Pope Scientific | ■ Welch/ILMVAC |
| ■ DWK Life Sciences GmbH | ■ J-Kem | ■ Quartz Scientific, Inc. | ■ Worldwide Glass Resources |

Ace Sales Contacts

Name	Phone	Email Address
Domestic USA Sales Inside Sales Department	1-856-692-3333 1-800-223-4524	sales@aceglass.com
International Sales Export Sales Department	1-856-692-3333	export@aceglass.com
Canada Sales Canada Sales Department	1-856-692-3333	canada@aceglass.com

North American Distributors

Company	Phone	Fax	Website / E-Mail
UNITED STATES			
VWR International	(800) 932-5000	(866) 329-2897	www.vwr.com
Millipore Sigma	(800) 325-3010	(800) 325-5052	www.sigmaaldrich.com
Thermo-Fisher Scientific	(800) 766-7000	(800) 926-1166	www.fishersci.com
J-Kem Scientific	(800) 827-4849	(314) 863-6070	www.jkem.com
Cole-Parmer	(800) 323-4340	(847) 247-2929	www.coleparmer.com
Supelco	(800) 325-3010	(800) 325-5052	www.sigmaaldrich.com
Mega-Depot, LLC	(800) 850-9483	(718) 504-6285	www.megadepot.com
CANADA			
VWR International	(800) 932-5000	(800) 668-6348	www.vwr.com
Thermo-Fisher Scientific	(800) 766-7000	(800) 926-1166	www.fishersci.com

International Distributors

Company	Phone	Fax	Website / E-Mail
ARGENTINA			
Julabo Sudamerica	54 11 4371 1647	54 11 4371 1756	www.julabo-sudamerica.com.ar info@julabo-sudamerica.com.ar
CHINA			
Shinetek Instruments Ltd.	86 10 51652068	86 10 64390585	www.shinetek.com shinetec@vip.sina.com
INDIA			
VWR Lab Products Pvt. Ltd.	91 80 28078400		www.srilekhabioenvirotech.com insales@vwr.com
Srilekha Bio Envirotech Products	91 40 65578728		info@srilekhabioenvirotech.com
IRELAND			
Mason Technology	353 1 453 4422	353 1 415 4492	www.masontechnology.ie info@masontec.ie
JAPAN			
Osaka Chemical Co. Ltd.	81 6 6311 1050	81 6 6311 1070	www.daichem.co.jp info@daichem.co.jp
MEXICO			
VWR International	52 55 5005 0100	52 55 2451 97 39	www.vwr.com vwrms@vwr.com
NETHERLANDS			
VWR International	31 20 4808 400	31 20 4808 480	www.vwr.com info@nl.vwr.com
PUERTO RICO			
VWR International	(866) 870-6336	(866) 329-2897	www.vwr.com prspq@vwr.com
SINGAPORE			
VWR International	86 6505 0760	86 6264 3780	www.vwr.com sales@sg.vwr.com
SOUTH KOREA			
Don & Bros., Inc.	562-754-0608 310-354-8030	562-924-0607	donnbros@sbcglobal.net
TAIWAN			
Pojet Industries Corp.	886-2-2361-5720	886-2-2591-5151	pojet.jw@gmail.com
UNITED KINGDOM			
Millipore Sigma	44 1202 712300	44 1202 715460	www.sial.com ukcustsv@europe.sial.com
VWR International, LLC	0800 22 33 44	01455 55 85 86	uksales@vwr.com

Reference Guide to Ace-Thred Sizes

Size		Accepts Tube O.D., mm	Use Bushing Number	Use With O-ring No.	Optional Ferrule	Suggested Uses
Mini	#7	6-7	5029-10	7855-704	11710-07	A, B, I
Midi	#11	9-10.5	7506-02	7855-708	11710-11	D, E, F, G
Maxi	#15	12.5-14	7506-06	7855-716	11710-15	C, H
	#18	16-17	7506-08	7855-720	11710-18	H, L
Giant	#25	24-25	7506-10	7855-734	11710-25	K
	#36	34-35	7506-12	7855-740	—	K, L
Jumbo	#50	47-48	7506-14	7855-744	11710-50	K, L
	#80	80	7506-20	7855-782	—	—

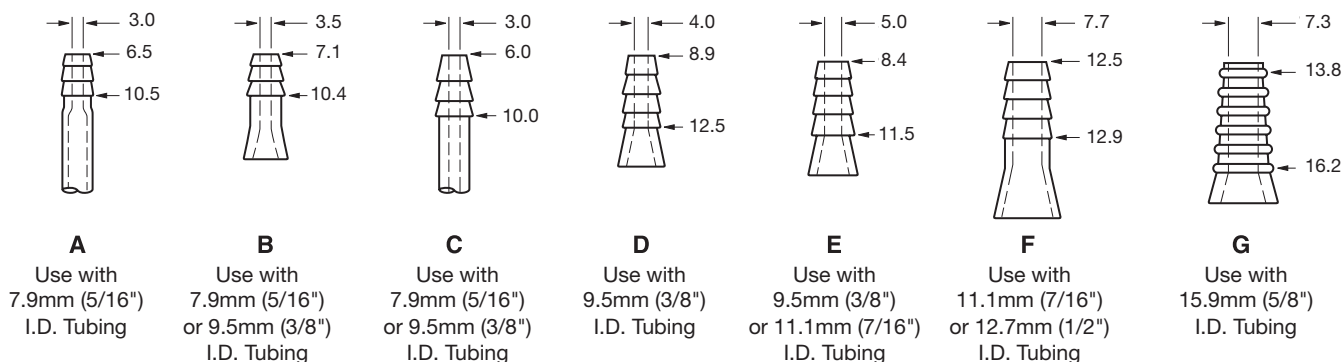
A—Thermometers, **B**—Bleed Tubes, **C**—Electrodes, **D**—Sensing Probes, **E**—Thermowells, **F**—Gas Dispersion Tubes, **G**—Vacuum Take-Offs, **H**—Inlet and Outlet Tubes, **I**—Miniature Electrodes, **K**—Manifolds, **L**—Immersion Wells

Fraction Conversion

Length, Fractional Inches	Millimeters
1/16	1.6
1/8	3.2
3/16	4.8
1/4	6.4
5/16	7.9
3/8	9.5
7/16	11.1
1/2	12.7
9/16	14.3
5/8	15.9
11/16	17.5
3/4	19.1
13/16	20.6
7/8	22.1
15/16	23.8
1	25.4

Hose Connection Size Guide

Dimensions in Millimeters



Specifications for Joints, Threads, and Stopcocks



Standard Taper

Symbol used to designate interchangeable joints, stoppers and stopcocks that comply with the requirements of Commercial Standard CS-21 published by N.I.S.T.



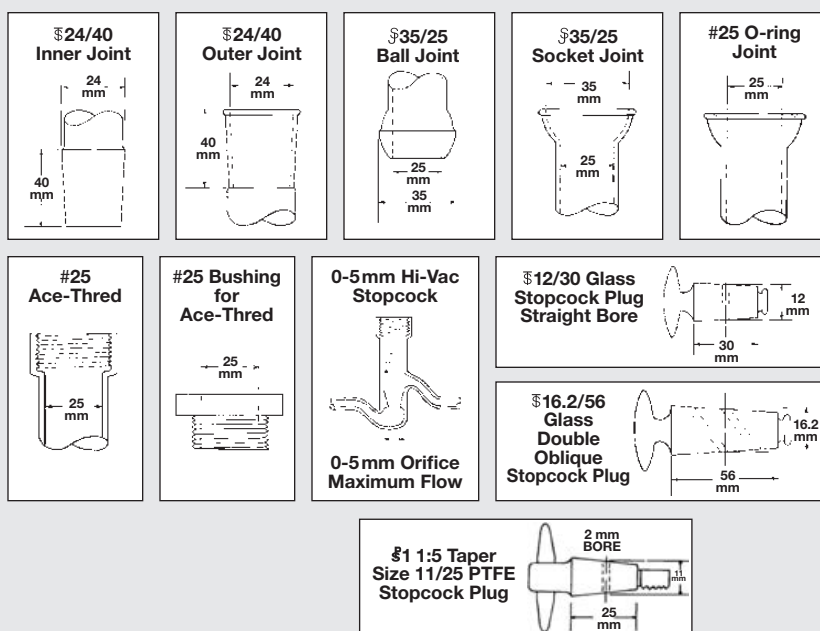
Spherical Joint

Symbol designates spherical joints that comply with CS-21.



Product Standard

Symbol designates stopcock plugs made of PTFE that meet requirements of N.I.S.T. Voluntary Product Standard PS 28-70.



Plastic Properties	Low Density Polyethylene (LDPE)	High Density Polyethylene (HDPE)	Polypropylene (PP)	PTFE FEP	Polycarbonate (PC)	Polymethylpentene (PMP)
Temperature Limit, °C	80	120	135	205	135	175
Specific Gravity	0.92	0.95	0.90	2.15	1.20	0.83
Tensile Strength, psi	2000	4000	5000	3000	8000	4000
Brittleness Temperature, °C	-100	-100	0	-270	-135	20
Water Absorption, %	<0.01	<0.01	<0.02	<0.01	0.35	<0.01
Flexibility	excellent	rigid	rigid	excellent	rigid	rigid
Transparency	translucent	translucent	translucent	translucent	clear	clear

Conversion Factors

Length

1 millimeter (mm)0.1 centimeter (cm)
 1 centimeter 0.01 meter (M)
 1 centimeter0.394 inch
 1 inch.....2.540 centimeters
 1 meter 3.2808 feet
 1 foot 0.305 meter

Area

1 square centimeter (cm).....0.1550 square inch
 1 square inch6.452 square centimeters
 1 square meter (M) 10.764 square feet
 1 square foot 0.09290 square meter

Mass

1 gram0.03527 ounce (Avoirdupois)
 1 ounce (Avoirdupois)..... 28.3495 grams
 1 kilogram..... 2.20462 pound (Avoirdupois)
 1 pound (Avoirdupois)0.45359 kilogram

Volume

1 cubic centimeter.....0.001 liter (L)
 1 cubic centimeter.....0.0610 cubic inch
 1 cubic inch16.3872 cubic centimeter
 1 cubic meter35.314 cubic feet
 1 cubic foot 0.02832 cubic meter

Capacity

1 milliliter (mL)0.03382 ounce (U.S. Liquid)
 1 ounce (U.S. Liquid)29.573 milliliters
 1 liter (L)..... 1.05671 quarts (U.S. Liquid)
 1 quart (U.S. Liquid)0.94633 liter
 1 liter.....0.26418 gallon (U.S. Liquid)
 1 gallon (U.S. Liquid)3.78533 liters
 1 lambda..... 0.001 cc / 1 microliter

Power

1 watt.....0.73756 foot pound per second
 1 foot pound per second 1.3582 watts
 1 watt..... 0.056884 BTU per minute
 1 BTU per minute17.580 watts
 1 watt.....0.001341 horsepower (U.S.)
 1 horsepower (U.S.).....754.7 watts
 1 watt.....0.01433 kilogram-calorie per minute
 1 kilogram-calorie per minute69.767 watts

Temperature

°C = (F-32) 5/9
 °F = 9/5 C +32

Borosilicate Glass Properties

Unless otherwise specified, ACE GLASS brand glassware is fabricated from Corning 7740, Kimble KG-33, Kavalier/Simax, or Duran® glass and conforms to federal specifications DD-G-541B and ASTM E-438. Also meets the U.S. Pharmacopoeia specs for Type I Borosilicate Glass. Glass properties are those represented by the aforementioned companies.

Composition (approximate percent)

	Corning 7740	Duran	Kavalier/Simax
SiO ₂	80.6%	81%	80.4%
B ₂ O ₃	13.0%	13%	13.0%
Na ₂ O/K ₂ O	4.1%	4%	4.2%
Al ₂ O ₃	2.3%	2%	2.4%

Properties

	Corning 7740	Duran	Kavalier/Simax
Coefficient of Expansion	32.5 x 10 ⁻⁷ cm/cm/°C	3.3 x 10 ⁻⁶ cm/cm/°K	3.3.1 x 10 ⁻⁶ cm/cm/°K
Strain Point	510°C	510°C	510°C
Annealing Point	560°C	560°C	560°C
Softening Point	821°C	815°C	820°C
Density	2.53 g/cm ³	2.23 g/cm ³	2.23 g/cm ³
Temperature Limits	230°C (Normal use) 400°C (Extreme, short-term use only)	230°C (Normal use) 400°C (Extreme, short-term use only)	240°C (Normal use) 400°C (Extreme, short-term use only)
Maximum Thermal Shock	160°C	160°C	160°C
Refractive Index	1.474 ¹	1.474 ¹	1.472 ¹

¹At Sodium D Line

Needle Sizes









Gauge	O.D. in./mm	I.D. in./mm [†]	Wall Thickness in./mm	Gauge	O.D. in./mm	I.D. in./mm [†]	Wall Thickness in./mm
33	.0082/.21	.0042/.11	.002 /.05	21	.0323/.82	.0202/.51	.006 /.15
32	.0093/.24	.0042/.11	.002 /.05	20	.0358/.91	.0237/.60	.006 /.15
31	.0103/.26	.0052/.13	.0025/.06	19	.0420/1.07	.0270/.69	.0075/.19
30	.0123/.31	.0062/.16	.003 /.08	18	.0500/1.27	.0330/.84	.0085/.22
29	.0133/.34	.0072/.18	.003 /.08	17	.0580/1.47	.0420/1.07	.008 /.20
28	.0143/.36	.0072/.18	.0035/.09	16	.0650/1.65	.0470/1.19	.009 /.23
27	.0163/.41	.0082/.21	.004 /.10	15	.0720/1.83	.0540/1.37	.009 /.23
26s	.0187/.47	.0050/.13	.007 /.18	14	.0830/2.11	.0630/1.60	.010 /.25
26	.0183/.46	.0102/.26	.004 /.10	13	.0950/2.41	.0710/1.80	.012 /.31
25s	.0203/.51	.0060/.15	.007 /.18	12	.1090/2.77	.0850/2.16	.012 /.31
25	.0203/.51	.0102/.26	.005 /.13	11	.1200/3.05	.0940/2.39	.013 /.33
24	.0223/.57	.0122/.31	.005 /.13	10	.1340/3.40	.1060/2.69	.014 /.36
23	.0253/.64	.0133/.34	.006 /.15				
22s	.0283/.72	.0060/.15	.011 /.28				
22	.0283/.72	.0162/.41	.006 /.15				

† mm are nominal

Pressure Equivalents

Micron or Millitorr	Torr or mm of Hg
1000	100
100	10 ⁻¹
10	10 ⁻²
1	10 ⁻³
0.05	5x10 ⁻⁴
0.1	10 ⁻⁴
0.01	10 ⁻⁵
0.001	10 ⁻⁶

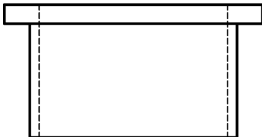

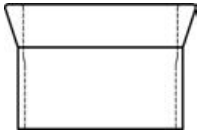
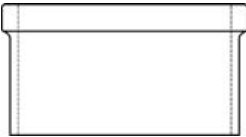
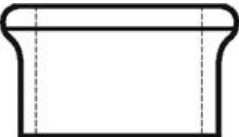
Tubing Sizer for Peristaltic Pumps

																
Tubing sizes																
Inner diameter (mm):	0.8	1.7	3.1	4.8	6.3	4.8	6.3	7.9								
Outer diameter (mm):	4.0	4.9	6.3	8.0	9.5	9.8	11.3	12.9								
Wall thickness (wt) (mm):	1.6	1.6	1.6	1.6	1.6	2.5	2.5	2.5								
Max. pressure (continuous/short time) (bar):	0.7/1.7	0.7/1.7	0.7/1.7	0.5/1.5	0.5/1.5	0.8/1.8	0.8/1.8	0.8/1.8								
Suction height (mH ₂ O):	8.8	8.8	8.8	8.8	6.7	8.8	8.8	8.8								
Flow rates in combination with pump head/pump drive																
SP quick	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
PD 5106/PD 5206 (ml/min):	1.6	40	6.8	169	25.7	643	56	1,400	88.7	2,217	56	1,400	88.7	2,217	132	3,300
PD 5006 (ml/min):	3.3	40	14.1	169	53.6	643	116.7	1,400	184.8	2,217	116.7	1,400	184.8	2,217	275	3,300
PD 5101/PD 5201 (ml/min):	0.3	8.0	1.4	34	5.2	129	11.2	280	17.7	443	11.2	280	17.7	443	26.4	660
PD 5001 (ml/min):	0.7	8.0	2.8	34	10.7	129	23.3	280	37.0	443	23.3	280	37.0	443	55	660
SP standard/SP vario	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.		
PD 5106/PD 5206 (ml/min):	2.4	60.2	10.4	260	41.2	1,029	86.3	2,157	146	3,644	86.3	2,157	146	3,644		
PD 5006 (ml/min):	5.0	60.2	21.7	260	85.8	1,029	179.8	2,157	304	3,644	179.8	2,157	304	3,644		
PD 5101/PD 5201 (ml/min):	0.5	12.0	2.1	52	8.2	206	17.3	431	29.2	729	17.3	431	29.2	729		
PD 5001 (ml/min):	1.0	12.0	4.3	52	17.2	206	36	431	60.7	729	36.0	431	60.7	729		

Reference Guide to ACE Boiling Flasks

Capacity, mL	Approx. O.D. mm	Approx. O.D. Inches	Capacity, mL	Approx. O.D. mm	Approx. O.D. Inches	Capacity, mL	Approx. O.D. mm	Approx. O.D. Inches
5	25	1.0	200	75	3.0	12000	285	11.22
10	31	1.24	250	82	3.25	22000	350	13.78
15	35	1.4	300	86	3.385	50000	457	18.0
20	38	1.5	500	100	4.0	72000	508	20.0
25	42	1.68	1000	125	5.0	100000	610	24.0
50	50	2.0	2000	160	6.3	200000	750	29.5
100	58	2.25	3000	180	7.0			
			5000	225	8.86			

Guide to Flange Styles

Flat Flange (with or without O-Ring groove)  <p>Uses Clamp: 6508, 6509, 6510 Flat clamp</p>	Duran Flange (with or without O-Ring groove)  <p>Uses Clamp: 6517 Quick release clamp</p>	Conical Flange  <p>Uses Clamp: 6496 Standard clamp</p>	KF Plane Flange  <p>Uses Clamp: 6525 Coupling</p>	Beaded Process Pipe Flange  <p>Uses Clamp: 8856 Coupling</p>
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Flask Stoppers

Stopper Number	Approximate Diameter at Small End, mm	Length of Ground Zone, mm	Diameter at Large End, mm
8	7.25	10 ±1.0	8.25
9	8	14 ±1.0	9.40
13	12	14 ±1.0	13.40
16	15	15 ±1.0	16.50
19	18	17 ±1.0	19.70
22	20	20.5 ±1.0	22.05
27	25	21.5 ±1.0	27.15
32	30	21.5 ±1.0	32.15
38	35	30 ±1.0	38.00

ACE Glass Fiber Filter Discs

ACE Porosity Designation	Porosity Maximum Pore Diameter Range (micron)	Corning, Kimble and ChemGlass Equivalents/ Porosities	Uses
A	145-174	EC (170-220)	Coarse Filtration
B	70-100	—	Coarse Filtration
C	25-50	C (40-60)	Gas Dispersion
D	10-20	M (10-15)	Extraction
E	4-8	F (4-5.5)	Extraction
VF	2-2.5	VF (2-2.5)	Bacteria Filtration
UF	0.9-1.4	UF (0.9-1.4)	Bacteria Filtration

Pressure Conversions

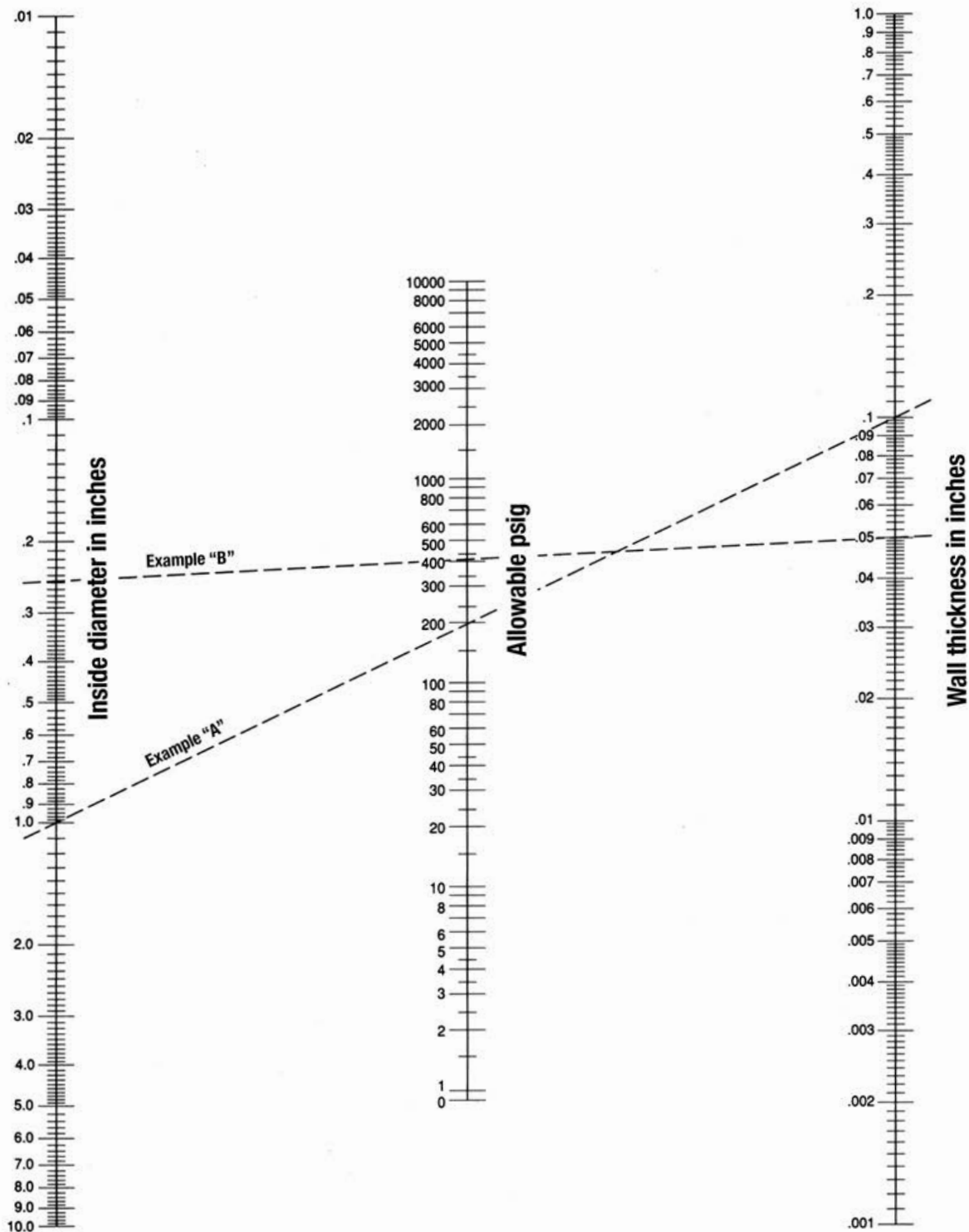
Absolute									Gauge Pressure	
cm of Hg	Torr or mm of Hg	Micron	Atmo-sphere	lb/ in. ²	ton/ ft. ²	gram/ cm ²	ft. of H ₂ O	in. of Hg	lb. in.	in. of Hg
76	760	760000	1	14.7	1.06	1033	33.9	29.9	0.00	0.00
70	700	700000	0.921	13.53	0.975	952	31.2	27.6	1.16	2.36
60	600	600000	0.79	11.6	0.835	816	26.8	23.6	3.10	6.30
50	500	500000	0.659	9.67	0.696	680	22.3	19.7	5.03	10.2
40	400	400000	0.526	7.74	0.557	545	17.8	15.7	6.97	14.2
30	300	300000	0.395	5.8	0.417	408	13.4	11.8	8.90	18.1
20	200	200000	0.263	3.87	0.278	272	8.92	7.87	10.8	22.0
10	100	100000	0.132	1.94	0.139	136	4.46	3.94	12.8	26.0
5	50	50000	0.006	0.967	0.07	68	2.23	1.97	13.7	27.9
1	10	10000	0.013	0.194	0.014	13.6	0.446	0.394	14.5	29.5
0.1	1	1000	0.001	0.019	0.001	1.36	0.045	0.039	14.68	29.88
0	0	0	0	0	0	0	0	0	14.7	29.92

Selecting a Septa

Material(s)	Compatible	Incompatible	Resealability
Butyl Rubber	Acetone, alcohols, diethylamine, DMSO, MEK, sodium peroxide	Benzene, chloroform, DMF, HF, HCL, phenol, toluene, xylene	Very good
Butyl Rubber/PTFE	PTFE resistance until punctured, then septa or liner will have compatibility of butyl rubber		Teflon does not reseal after being punctured
PTFE		Diethylamine, fluorine	Single injection use
Red Rubber	Acetone, alcohols, diethylamine, DMSO, sodium peroxide	Chloroform, DMF, HF, HCL, MEK, phenol, toluene, xylene	Excellent
Red Rubber/PTFE	PTFE resistance until punctured, then septa or liner will have compatibility of red rubber		Teflon does not reseal after being punctured
Silicone	Alcohol, DMF, DMSO, hydrogen peroxide, sodium hydroxide	ACN, benzene, chloroform, hexane, HCL, MEK, THF, toluene	
Silicone/PTFE	PTFE chemical resistance until punctured, then septa or liner will have compatibility of silicone		Teflon does not reseal after being punctured
Viton®	Alcohols, benzene, chlorinated solvents, HF, heptane, hexane	Acetone, ACN, DMF, dioxane, pyridine, ketones, MEK, THF	Good

Note: All septa liners are designed for a variety of applications. Individual performance requirements may vary; therefore, it is recommended that customers perform the proper tests to determine which septa or liner is most suitable for the exact application.

Nomogram of Allowable Pressures for Borosilicate Glass Tubes



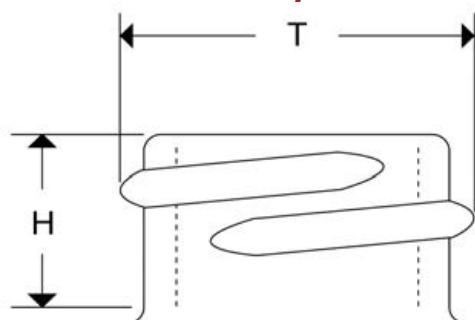
CAUTION: With any glassware used for pressure or vacuum applications, great care must be taken in handling. The strength of the glass can be degraded due to scratches, checks and abrasions. Always use protective shielding and eyewear when working with glass under pressure.

GPI Thread Finishes

GPI refers to the "Glass Packaging Institute" which is responsible for establishing and issuing uniform standards regarding the types of finishes produced by American Glass Manufacturers. GPI replaces the former GCMI or "Glass Container Manufacturers Institute." When a cap is designated as 15-425, it means that the diameter across the threaded area is approximately 15 millimeters. (See "T" dimension on illustration below.) The numerical 425 designates a specific

style. The methods employed in manufacturing containers and culture tubes from tubing do not include a transfer ring as commonly observed on mold-blown vessels. As a result, the "H" dimension may vary slightly from GPI's published values. Since the "H" dimension is not designated in the size code, the chart below will assist in differentiating styles of finishes having similar thread diameters. The dimensions listed are averages. The finishes below appear in this catalog.

GPI Thread Finish Comparison Chart



400
425



430



415

"T" Dimension	"H" Measurements in millimeters (mm)				
	400	410	415	425	430
8				6.52	
10				6.86	
13			11.22	7.50	
15			13.90	7.50	
18	9.05	13.03	15.42		15.34
20	9.50	13.82	18.59		15.34
22	9.50	14.60	21.01		15.34
24	10.25	16.15	24.05		16.43
28	10.25	17.73	27.23		18.39
33	9.85				19.69
38	9.85				24.03
38					22.00

Suggested Screw Cap Application Torque

(Reference U.S.P. XXI, page 1240)

Cap Size (Millimeters)	Torque (Inch-Pounds)	Cap Size (Millimeters)	Torque (Inch-Pounds)
8*	3-5	38	15-23
10*	4-6	43	17-26
13*	5-7	48	19-29
15	6-9	53	21-32
18	7-11	58	23-35
20	8-12	63	25-38
22	9-13	70	28-42
24	10-15	83	34-49
28	11-17	89	36-53
33	13-20	120	48-72

*Not included in USP table.

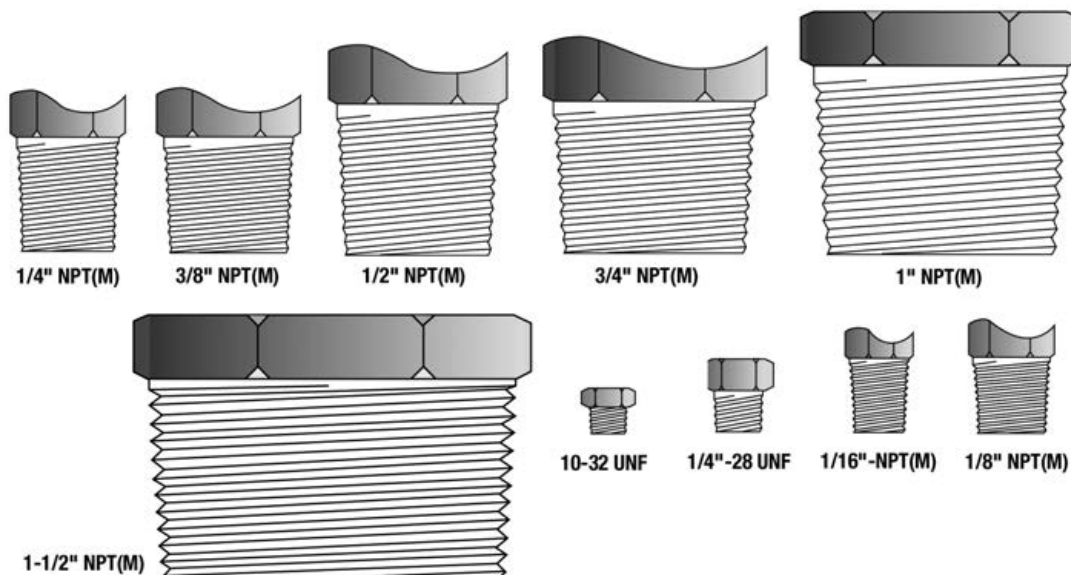
The figures at left are offered as guidelines for automatic capping machines. Obviously, variables such as cap and liner material and product characteristics play an important part in correct torque application.

The recommended procedure for checking capping machines torque application is as follows:

Apply caps to a representative number of product filled containers with the torque required. Then, the cap removal torque is established. Once the removal torque for a known application is established, the machine can be checked at intervals for proper application torque by measuring removal cap torque.

Standard Pipe Thread Fittings

The illustrations are actual size. If you have any questions as to the size of fitting you require, simply compare the threads per inch, the diameter and length of the threading, and the taper of the threading of your existing fittings to these drawings.



Sterilization Reference Guide

Method	Procedure
Autoclave:	Cycle is 121°C, 15 psig (1bar) 20 min
Dry Heat:	170°C for 60 min
Gas:	Ethylene Oxide for formaldehyde
Microwave:	Transmission of microwaves
Gamma Irradiation:	High energy ionizing gamma radiation from a Cobolt 60 source
Chemical Disinfectants:	Quaternary Ammonium Compounds, Iodophors, Formalin, Benzalkonium Chloride, Ethanol, etc.

Viscosity Conversion Factors

Viscosity is the resistance to flow due to the internal friction within a fluid. This is generally expressed as the force required to move one unit area one unit distance. Kinematic and absolute viscosity are related by the density of the fluid.

Kinematic Viscosity

Multiply to get	→	to get
	←	Divide
ft ² /sec	92903.04	centistokes
ft ² /sec	0.092903	sq. meters/sec
sq. meters/sec	10.7639	ft ² /sec
sq. meters/sec	1000000.0	centistokes
centistokes	0.000001	sq. meters/sec
centistokes	0.0000107639	ft ² /sec

Absolute to Kinematic Viscosity

Multiply to get	→	to get
	←	Divide
centipoises	1/density (g/cm ³)	centistokes
centipoises	0.00067197/density (lb/ft ³)	ft ² /sec
lb-sec/ft ²	32.174/density (lb/ft ³)	ft ² /sec
kg-sec/m ²	9.80665/density (kg/m ³)	sq. meters/sec
Pascal-sec	1000/density (g/cm ³)	centistokes

Absolute or Dynamic Viscosity

Multiply to get	→	to get
	←	Divide
lb-sec/ft ²	47880.26	centipoises
lb-sec/ft ²	47.8803	Pascal-sec
centipoises	0.000102	kg-sec/sq. meter
centipoises	0.001	lb-sec/ft ²
Pascal-sec	0.0208854	Pascal-sec
Pascal-sec	1000	centipoises

Kinematic to Absolute Viscosity

Multiply to get	→	to get
	←	Divide
centistokes	density (g/cm ³)	centipoises
sq. meters/sec	0.10197 x density (kg/m ³)	kg-sec/m ²
ft ² /sec	0.03108 x density (lb/ft ³)	lb-sec/ft ²
ft ² /sec	1488.16 x density (lb/ft ³)	centipoises
centistokes	0.001 x density (g/cm ³)	Pascal-sec
sq. meters/sec	1000/density (g/cm ³)	Pascal-sec

*Sometimes absolute viscosity is given in terms of pounds mass. In this case—centipoises x 0.000672 = lbm/ft sec.

Dilatant Liquids — viscosity increases as shear rate increases. Mixers can bog down and stall after initially mixing such liquids. Dilatant liquids include slurries, clay, and candy compounds.

Newtonian Liquids — viscosity remains constant regardless of shear rate or agitation. As mixer speed increases, flow increases proportionately. Newtonian liquids include water, mineral oils, and hydrocarbons.

Pseudoplastic Liquids — viscosity decreases as shear rate increases, but initial viscosity may be sufficiently great to prevent mixing. Typical pseudoplastic liquids are gels, latex paints, and lotions.

Thixotropic Liquids — as with pseudoplastic liquids, viscosity decreases as shear rate or agitation increases. When agitation is stopped or reduced, hysteresis occurs and viscosity increases. Often the viscosity will not return to its initial value. Thixotropic liquids include soaps, tars, shortening, glue, inks, and peanut butter.

Chemical Resistance for Plastic Resins @ 20°C

Classes of Substances

	Acids, dilute or weak	Acids, strong & conc.	Alcohols, aliphatic	Aldehydes	Bases	Esters	Hydrocarbons, aliphatic	Hydrocarbons, aromatic	Hydrocarbons, halogenated	Ketones	Oxidizing agents, strong
ACL	×	×	▲	■	▲	▲	●	●	▲	▲	×
ECTFE/ETFE	●	▲	●	●	●	●	●	●	●	▲	■
FEP/TFE/PFA	●	●	●	●	●	●	●	●	●	●	●
FLPE	●	●	●	▲	■	●	●	●	▲	●	■
XLPE	●	●	●	▲	●	▲	▲	▲	■	▲	■
HDPE/XLPE	●	●	●	▲	●	▲	▲	▲	■	▲	■
DLPE	●	●	●	▲	●	▲	■	■	×	▲	■
PC	●	×	▲	■	×	×	■	×	×	×	×
PCT	●	■	●	■	▲	■	●	×	×	■	×
PTE	●	×	●	×	×	×	●	×	×	×	×
PMMA	▲	×	×	▲	■	×	▲	×	×	×	×
PMP	●	●	●	▲	●	▲	■	■	×	■	■
PP/PPCO	●	●	●	▲	●	▲	▲	■	■	▲	■
PS	●	■	●	×	●	×	×	×	×	×	×
PSF	●	▲	▲	■	●	×	▲	×	×	×	▲
PUR	▲	■	■	▲	×	×	●	×	×	×	×
PVC Bottles	●	●	●	×	●	×	●	×	×	×	▲
Flexible PVC Tubing	●	■	▲	×	▲	×	■	×	×	×	■
PVDF	●	●	●	●	●	▲	●	●	×	×	▲
TPE	●	■	●	×	●	×	×	×	×	×	×

Resin Codes

ACL	Acetal (Polyoxymethylene)
ECTFE	Halar® ECTFE (Ethylene-Chlorotrifluoroethylene Copolymer)
ETFE	Tefzel® ETFE (Ethylene-Tetrafluoroethylene)
FEP	Teflon® FEP (Fluorinated Ethylene Propylene)
FLPE	Fluorinated High-Density Polyethylene
HDPE	High-Density Polyethylene
LDPE	Low-Density Polyethylene
PC	Polycarbonate
PCT	Poly (1,4 Cyclohexylene Dimethylene Terephthalate)
PET	Polyethylene Terephthalate
PFA	Teflon® PFA (Perfluoroalkoxy)
PMMA	Polymethyl Methacrylate (Acrylic)
PMP	Polymethylpentene ("TPX®")
PP	Polypropylene
PPCO	Polypropylene Copolymer
PS	Polystyrene
PSF	Polysulfone
PUR	Polyurethane
PVC	Polyvinyl Chloride
PVDF	Polyvinylidene Fluoride
TFE	Teflon® TFE (Tetrafluoroethylene)
TPE	Thermoplastic Elastomer
XLPE	Cross-Linked High-Density Polyethylene

Chemical Resistance Classifications

- 30 days of constant exposure causes no damage. Plastic may even tolerate for years.
- ▲ Little or no damage after 30 days of constant exposure to the reagent.
- Some effect after seven days of constant exposure to the reagent. Depending on the plastic, the effect may be crazing, cracking, loss of strength or discoloration. Solvents may cause softening, swelling and permeation losses with LDPE, HDPE, PP, PPCO and PMP. The solvent effect on these five resins are normally reversible; the part will usually return to its normal condition after evaporation.
- × Not recommended for continuous use. Immediate damage may occur. Depending on the plastic, the effect will be a more severe crazing, cracking, loss of strength, discoloration, deformation, dissolution or permeating loss.

Care and Handling of Borosilicate Glass

Always inspect your glass before use, even when purchased new. Bumping of glass in transit or in washing is always possible, and this can cause small fractures or star cracks. You can usually see these when you hold the vessel up to normal sunlight. If you should have one, a polariscope is an even better way to view the glass for stress. If it's cracked or abraded — even if it's minor — the glass can fail under elevated pressure or temperature.

When washing, always take care not to bump glass together or against the wall of a sink. Also, always use a soft bristle brush or a brush with a plastic or soft wooden handle. This will help cut down on scratching. Never use HF or strong alkali soaps or acids.

When using glass labware, always make sure it's borosilicate glass or quartz — some bottles used in lab work or sampling are made of soda lime or soft glass, and these do not have the temperature, pressure or autoclaving capability of standard borosilicate or quartz labware.

Autoclaving of Glass: Always make sure of the materials you are working with. Most lab glass is 32-33 expansion borosilicate glass. Standard borosilicate glass is autoclavable. One cautionary measure is to always let the autoclave and glass cool and vent slowly. Most failures are due to two things: glassware that has a scratch or abrasion and can fail when autoclaved; or a very rapid cool down or return to atmospheric pressure.

Depyrogenation and ashing or extreme heat cleaning of lab glassware

Any abrasions, micro-cracks or star cracks will weaken the glass and degrade performance. And any of these issues will certainly cause the glass to fail when using high temperature ovens. Ashing glass in mechanical ovens or furnaces over 500° for long periods of time will cause the glass to weaken, and in some cases, even fail. It will certainly shorten the life span of your glassware.

Borosilicate glass temperatures:

- **Standard use — up to 230-240°C.**
- **Extreme use — for short intervals — 400°C.**

Cleaning Laboratory Glassware

Introduction

Laboratory procedures require exact methods and should include good glassware cleaning to insure excellent lab results. In all instances, labware should be physically clean, including both chemical-residue-free and grease-free, and in many cases, it should even be sterile. All Class A glassware used in precise measuring of liquids should have fully wettable surfaces. A good test is to use distilled water and see if the water wets all the inner surfaces equally. Grease or residues will not only contaminate the reaction and test results, but will also alter the measurement of the liquids.

Good cleaning practices should also be accompanied by good inspection of the glass surfaces for chips, cracks or abrasions which cause mechanical failure.

Cleaning

Always wash glass labware immediately after use. If a thorough cleaning is not immediately possible, always allow the glassware to soak. If not cleaned immediately some residues may be impossible to remove.

Most new glass is slightly alkaline and should be washed upon receipt and generally can be soaked in a 1% HCL or HNO₃ solution before wash and DI rinse.

Never soak for long periods in strong alkaline solutions as this will damage the glass.

Always follow up a soap or acid wash with a good DI water rinse.

Always use soft brushes with a wooden or soft plastic handle to avoid abrasion. Do not use wire brushes or brushes with a wire core as this can abrade the glass.

Glass Cleaners

Alconox is the best cleaner to use, as it is not abrasive. In fact, Alconox offers a full line of detergents for soaking, hand washing and automatic washers. A detergent, such as a non-abrasive dishwasher soap, will also work well. Always use soft brushes. Always rinse glass well and do a final DI rinse. If you need to do an acid wash, always rinse the soap off the glass completely or it may cause a reaction and leave a film on the glass. There are many lab detergents available commercially such as; Mallinckrodt's KleanAR and Chem-Solv. Texwipe and EM Science also make good cleaning detergents.

Chromic Acid or Chromerge

Chromic Acid/Chromerge are great cleaners, and will also remove organic residues. Use gloves and well ventilate the area when using chromic acid, as it is a carcinogen and very corrosive. Make sure metal clamps or flanges are removed. It is best to fill the vessel or soak the item in the solution for a short time in a plastic tub so that you can contain the wash material, then rinse immediately several times before proceeding to a detergent wash. Make sure the residual chromic acid is diluted after use and disposed of properly and according to your local and/or company regulations.

Occasionally, stronger acid washes are necessary for certain types of precipitates or residues. It is best to keep these very dilute, and they should be used in an area where there is good ventilation. Make sure you contain the residual acid and dissolved material for proper disposal. This method should only be used when absolutely necessary. Disposal of seriously stained glass maybe a less troublesome and less expensive course of action than using strong acid washes.

Cleaning Laboratory Glassware (continued):

One other caution: strong acid or Chromerge-type washes may damage the graduation markings.

Removal of Grease

Grease is best removed by boiling the glass in a weak solution of sodium carbonate. Acetone or any other organic solvent can be used also, followed by several water and DI water rinses.

Other Stains

For permanganate stains, use a mixture of equal 3% sulfuric acid and 3% hydrogen peroxide.

For iron stains, use a solution containing one part hydrochloric acid and one part water.

For bacteriological contamination, glassware should be soaked in a disinfectant solution, steam autoclaved, and then followed by a suitable washing and rinsing.

Caution: Make sure you refer to MSDS sheets for the cleaning solutions and the materials that were in the glassware to insure that there won't be any adverse reactions from the combination of the materials.

Ultrasonic Cleaners

Ultrasonics is a good method of cleaning glassware. Ultrasonic cleaners that are heated will be the best type and generally combined with a mild detergent they will clean most residues off of glassware. We typically clean all glass in our factory both during and after the fabrication process in heated ultrasonic cleaners.

Rinsing

Glassware should always have a water rinse after any cleaning procedure followed by a DI rinse. It is best to give smaller pieces such as test tubes a soaking rinse followed by a DI soaking rinse. Glass pipettes are best soaked in a suitable pipette washer and washed and given both a water rinse and DI soaking rinse.

Drying

Oven drying at 100°C is best for all glassware. If this is not convenient, rack drying will work.

Steam Autoclaving or Sterilizing

Proper protocol for steam autoclaving of borosilicate glassware is 15-20 minutes at 100-120°C. Always leave closures off or loose during autoclaving.

Inspection after Cleaning

Always inspect all glassware before steam autoclaving for cracks, chips or damage. If it is already damaged, the autoclave procedure will cause your glassware to break.

Remember: all labware is generally borosilicate glass, especially if it's made in the USA. The suggestions herein refer to borosilicate labware only. Bottles are generally NOT borosilicate glass and are made from soda lime or soft glass. Bottles do not have the temperature range or autoclave range of borosilicate glass. Please refer to the manufacturer's cleaning procedures for these containers. Do not mix bottles and labware in the same washers or heat dryers, and especially not during autoclaving procedures.

Cleaning Glass Fiber Frits

Flow Characteristics

Aqueous flow rate from 0.5 to 200mL/min./cm² at 100mm Hg. pressure drop are covered in the porosities A to E. A tabulation of these flow rates for various porosities is almost meaningless since operating conditions vary so widely. In addition, a number of interesting phenomena occur that may rapidly change the flow rate of a given filter by a factor of two or more, particularly in filters of smaller pore size. Hence, any discussion of flow rate becomes detailed and involved. Glass filters carry a negative charge.

Care and Cleaning

Only materials that attack glass will affect these filters, i.e. HF, Alkalies, H₃PO₄. HF attacks rapidly; the others, relatively slowly.

Inasmuch as surface scratches materially reduce the strength of glass, scratching the envelope in the vicinity of the disc should be guarded against, particularly on large filters, since this is the area of maximum stress under vacuum. Mechanical cleaning can be accomplished by reverse-flow washing. This is the most effective mechanical means. Do not exceed 1.06 Kg/cm² pressure.

For Chemical Cleaning, the following is recommended:

Material to be Removed:	Removal Agent:
Barium Sulfate	Concentrated H ₂ SO ₄ plus a small amount of KClO ₄ to 80-90°C and soak
Fat	CCl ₄
Mercury	Hot HNO ₃
Mercuric Sulfide	Hot Aqua Regia
Organic Residues	Warm concentrated H ₂ SO ₄ plus a small amount of KNO ₃ and soak
Silver Chloride	NH ₄ OH
Sugars & Glucose	Hot H ₂ SO ₄ plus HNO ₃
Free Carbon	Heat in a muffle furnace to 482°C in an oxidizing atmosphere. Cooling may be at the rate of -12°C/min. or greater, but thermal shock must not exceed 93°C.
Dia (micron) = $\frac{30\phi}{P}$	Surface tension in a dynes/cm at test temperature P = mm Hg. where first bubble appears.

The test liquid must wet the filter; that is, the contact angle must be negligible.

Lab Glassware Safety Tips

Unsticking glass to glass joints and stopcocks

If a freezer is available, place the part inside for a brief period of time. Then use gloves and gently twist apart. If a freezer is not convenient, use a hair dryer or a similar type heat gun to gently heat the area. Again, wear gloves and gently twist apart.

If you are fortunate enough to have a glassblower on site, let them dislodge the joint or stopcock.

Best recommendation for prevention: use stopcock grease or use PTFE sleeves for joints. You might also consider using PTFE stoppers or PTFE hollow stoppers instead of glass stoppers.

To unstick PTFE stopcocks

Simply put the part in a freezer overnight and gently twist apart.

Safety shields — use of glass under pressure

Always use shields or safety coated glassware when using high pressures. Most standard borosilicate glassware with standard wall weight has only a 15-20 psig pressure rating at room temperature. Elevating the temperature will lower the pressure capability. It's best to check with our Ace Engineering Department if you plan to work with higher temperatures and pressures. Finally, make sure you always use safety glasses and shields when working at higher temperatures and pressures.

It may sound very simplistic, but always make sure you have the proper size vessels and flasks when working, especially when doing any exothermic reactions, to allow for changes in volume or for boil over.

Ace-Safe Connectors

The most common lab injuries are from broken or chipped glass. One innovation from ACE is our Ace-Safe connectors, which utilize Ace-Threds and plastic/PTFE hose barbs. This not only reduces breakage and injury, but is also economical, as you only have to replace the plastic/PTFE barb (if it does snap off) rather than replacing the entire vessel. See Ace-Safe connectors all throughout this catalog.

Glass wall weight and uniformity

Uniform, consistent glass wall weight is very important. A thin wall is not as bad as some manufacturers would like you to think. A uniform, thin wall is excellent for heating and has good thermal properties, while a thick wall is good for mechanical shock but not as good thermally as a thinner wall. But wall uniformity is very important throughout. The lip of a beaker, the neck of a flask, and the corners on a beaker should all be rounded and uniform. Otherwise, both thermal and mechanical breakage can occur. Our glass blanks and tubing are mainly from Schott glass, and are very uniform with consistent wall thicknesses.

Alconox Detergent Selection Guide for Laboratory Cleaning

Application Key Concern	Articles Cleaned/ Soil Removed	Cleaning Method	Recommended Alconox Cleaner
Laboratory Reproducible results, no interfering residues, extending equipment life, keep laboratory accreditation, laboratory safety	Glass, metal, plastic labware, ceramics, tissue culture, porcelain, clean rooms, animal cages, bioreactors tubing, benches, safety equipment	Manual, Ultrasonic, Soak	Alconox powder Liquinox liquid (P-free)
		Machine, power spray, labware washer, washer-sterilizer, cage-washer	Alcojet powder Detojet liquid Tergajet powder (P-free) Solujet liquid (P-free)
	Tubes and pipettes	Siphon rinser/washer	Alcotabs tablet
	Microbiology, water lab, environmental sampling, phosphate sensitive labware, EPA procedures	Field, manual, ultrasonic, soak	Liquinox liquid (P-free)
		Machine washer, labware washer	Tergajet powder (P-free) Solujet liquid (P-free) Citrajat acid rinse liquid (P-free)
	Radioactive equipment, stopcock grease	Manual, Ultrasonic, Soak	Alconox powder
		Machine washer, labware washer	Alcojet powder Detojet liquid
	Trace metals, oxides, salts, scale, starch, amines	Manual, Ultrasonic, Soak	Citranox liquid (P-free)
		Machine washer, labware washer	Citrajat liquid (P-free)
	Proteins, bio-wastes, tissue, blood, body fluids, fermentation residues	Manual, Ultrasonic, Soak	Tergazyme powder
		Machine washer, labware washer	Alcojet powder Detojet liquid
	P-free = phosphate free		

Courtesy: Alconox, Inc.

McLaughlin and Zisman, *The Aqueous Cleaning Handbook*, (AI Technical Communications, 2005) available from Alconox, Inc.

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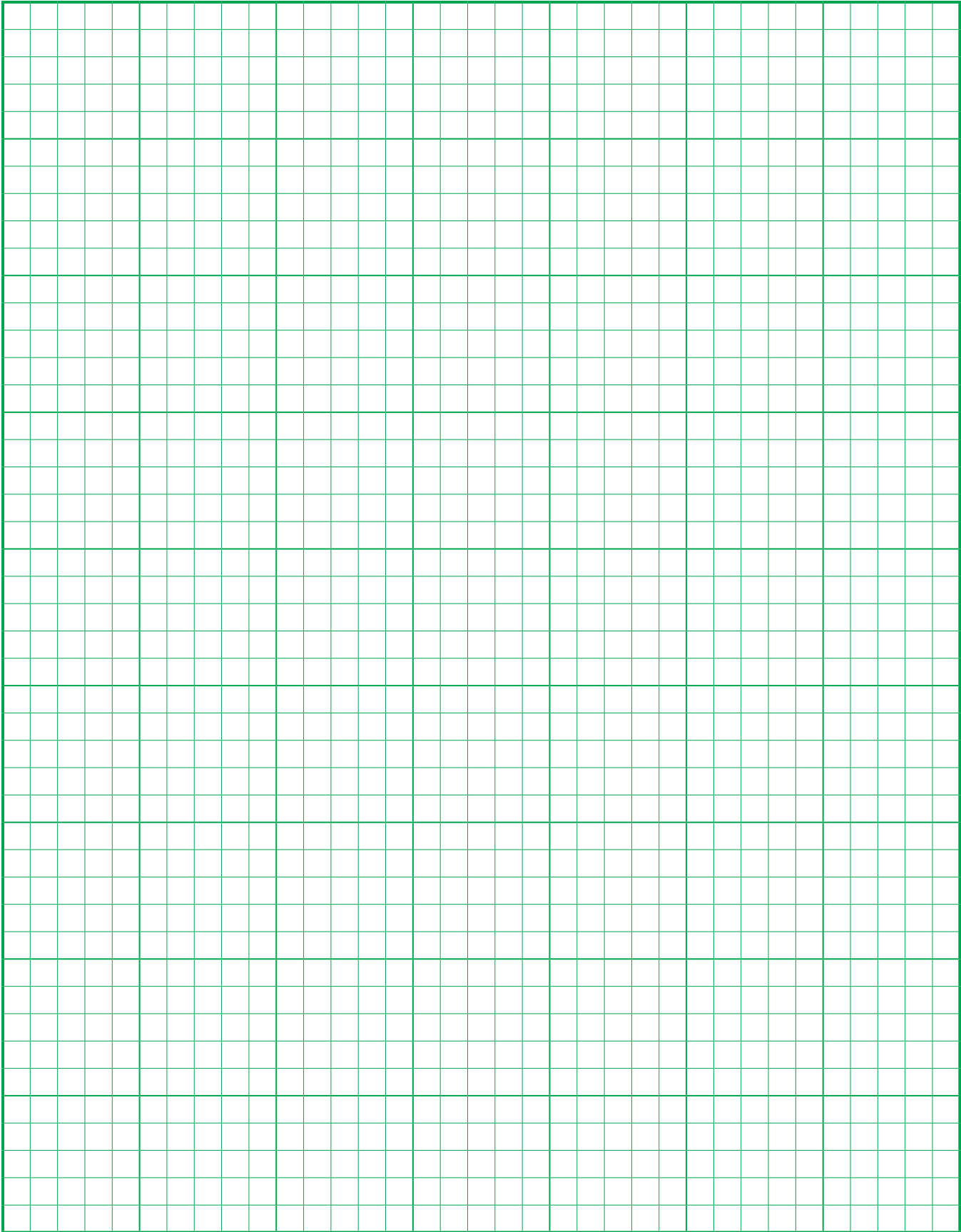


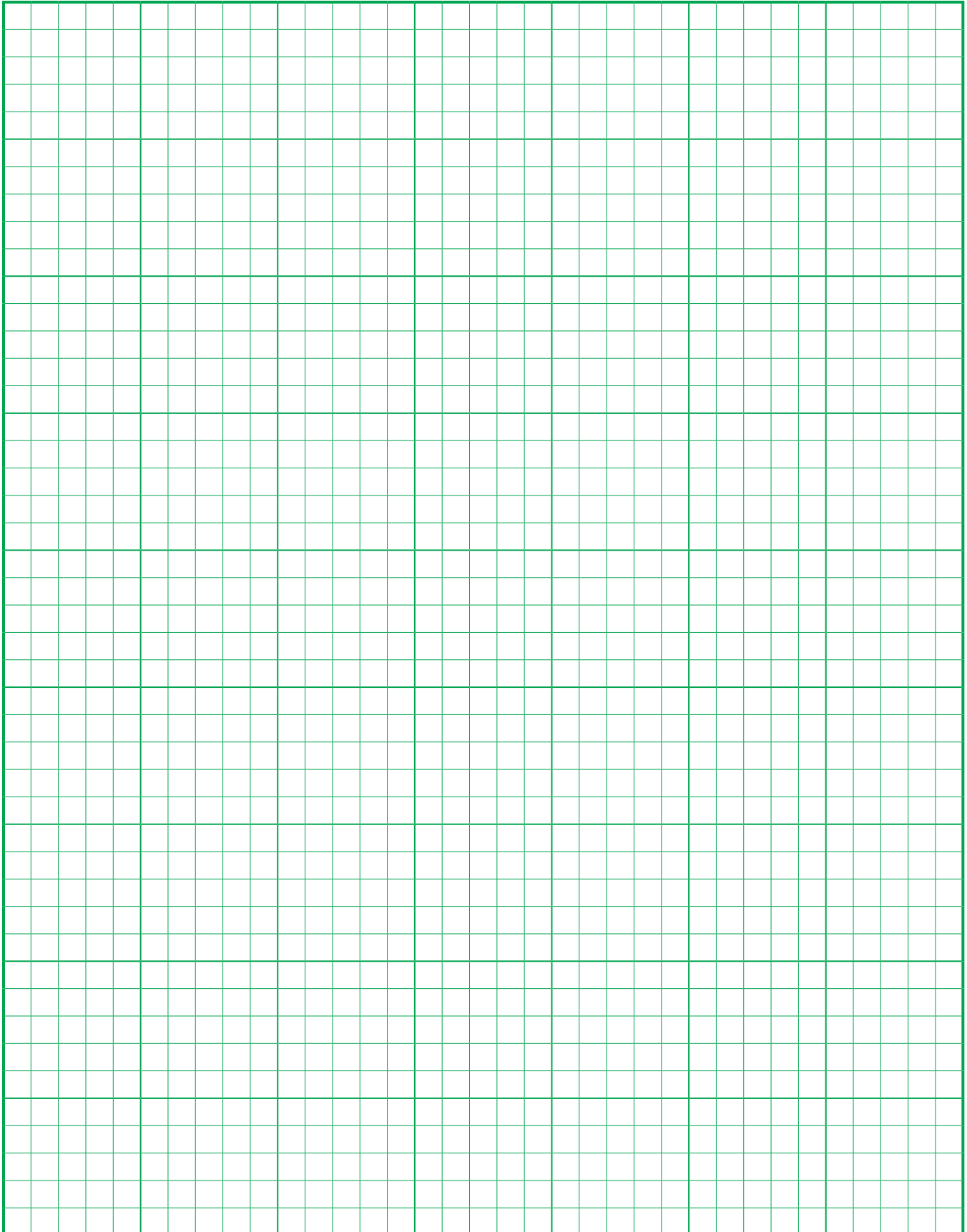
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[illegible]



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Periodic Table of Elements

Key:

1

H

Hydrogen

1.008

2

He

Helium

4.0026

3

Li

Lithium

6.94

4

Be

Beryllium

9.0122

5

B

Boron

10.81

6

C

Carbon

12.011

7

N

Nitrogen

14.007

8

O

Oxygen

15.999

9

F

Fluorine

18.998

10

Ne

Neon

20.180

11

Na

Sodium

22.990

12

Mg

Magnesium

24.305

13

Al

Aluminium

26.982

14

Si

Silicon

28.086

15

P

Phosphorus

30.974

16

S

Sulfur

32.06

17

Cl

Chlorine

35.45

18

Ar

Argon

39.948

19

K

Potassium

39.098

20

Ca

Calcium

40.078

21

Sc

Scandium

44.956

22

Ti

Titanium

47.88

23

V

Vanadium

50.942

24

Cr

Chromium

51.996

25

Mn

Manganese

54.938

26

Fe

Iron

55.845

27

Co

Cobalt

58.933

28

Ni

Nickel

58.69

29

Cu

Copper

63.546

30

Zn

Zinc

65.38

31

Ga

Gallium

69.723

32

Ge

Germanium

72.630

33

As

Arsenic

74.922

34

Se

Selenium

78.96

35

Br

Bromine

79.904

36

Kr

Krypton

83.798

37

Rb

Rubidium

85.468

38

Sr

Strontium

87.62

39

Y

Yttrium

88.906

40

Zr

Zirconium

91.224

41

Nb

Niobium

92.906

42

Mo

Molybdenum

95.94

43

Tc

Technetium

44

Ru

Ruthenium

101.07

45

Rh

Rhodium

102.91

46

Pd

Palladium

106.42

47

Ag

Silver

107.87

48

Cd

Cadmium

112.41

49

In

Indium

114.82

50

Sn

Sn

118.71

51

Sb

Antimony

121.76

52

Te

Tellurium

127.6

53

I

Iodine

126.90

54

Xe

Xenon

131.29

55

Cs

Cesium

132.91

56

Ba

Barium

137.33

57

La

Lanthanum

58

Ce

Cerium

140.12

59

Pr

Praseodymium

140.91

60

Nd

Neodymium

144.24

61

Pm

Promethium

62

Sm

Samarium

150.36

63

Eu

Europium

151.96

64

Gd

Gadolinium

157.25

65

Tb

Terbium

158.93

66

Dy

Dysprosium

162.50

67

Ho

Holmium

164.93

68

Er

Erbium

167.26

69

Tm

Thulium

168.93

70

Yb

Ytterbium

173.05

71

Lu

Lutetium

174.967

72

Hf

Hafnium

178.49

73

Ta

Tantalum

180.948

74

W

Tungsten

183.84

75

Re

Rhenium

186.21

76

Os

Osmium

190.23

77

Ir

Iridium

192.22

78

Pt

Platinum

195.08

79

Au

Gold

196.97

80

Hg

Mercury

200.59

81

Tl

Thallium

204.38

82

Pb

Lead

207.2

83

Bi

Bismuth

208.98

84

Po

Polonium

209

85

At

Astatine

86

Rn

Radon

87

Fr

Francium

88

Ra

Radium

89

Ac

Actinium

90

Th

Thorium

232.04

91

Pa

Protactinium

231.04

92

U

Uranium

238.03

93

Np

Neptunium

237.05

94

Pu

Plutonium

244.06

95

Am

Americium

243.06

96

Cm

Curium

247.07

97

Bk

Berkelium

98

Cf

Californium

99

Es

Einsteinium

100

Fm

Fermium

101

Mn

Mendelevium

102

Nb

Nobelium

103

Lr

Lawrencium

104

Rf

Rutherfordium

105

Db

Dubnium

106

Sg

Seaborgium

107

Bh

Berkelium

108

Hs

Hassium

109

Mt

Meitnerium

110

Ds

Darmstadtium

111

Rg

Röntgenium

112

Cn

Copernicium

113

Nh

Nihonium

114

Fl

Flerovium

115

Mc

Moscovium

116

Lv

Livermorium

117

Ts

Tennessine

118

Og

Oganesson

atomic number

Symbol

name

atomic weight

Alkali Metals

Alkaline Earth Metals

Transition Metals

Lanthanoids

Actinoids

Poor Metals

Nonmetals

Noble Gases

Solid

Liquid

Gas

Element values obtained through International Union of Pure and Applied Chemistry (IUPAC). Current as of November 28, 2016.



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