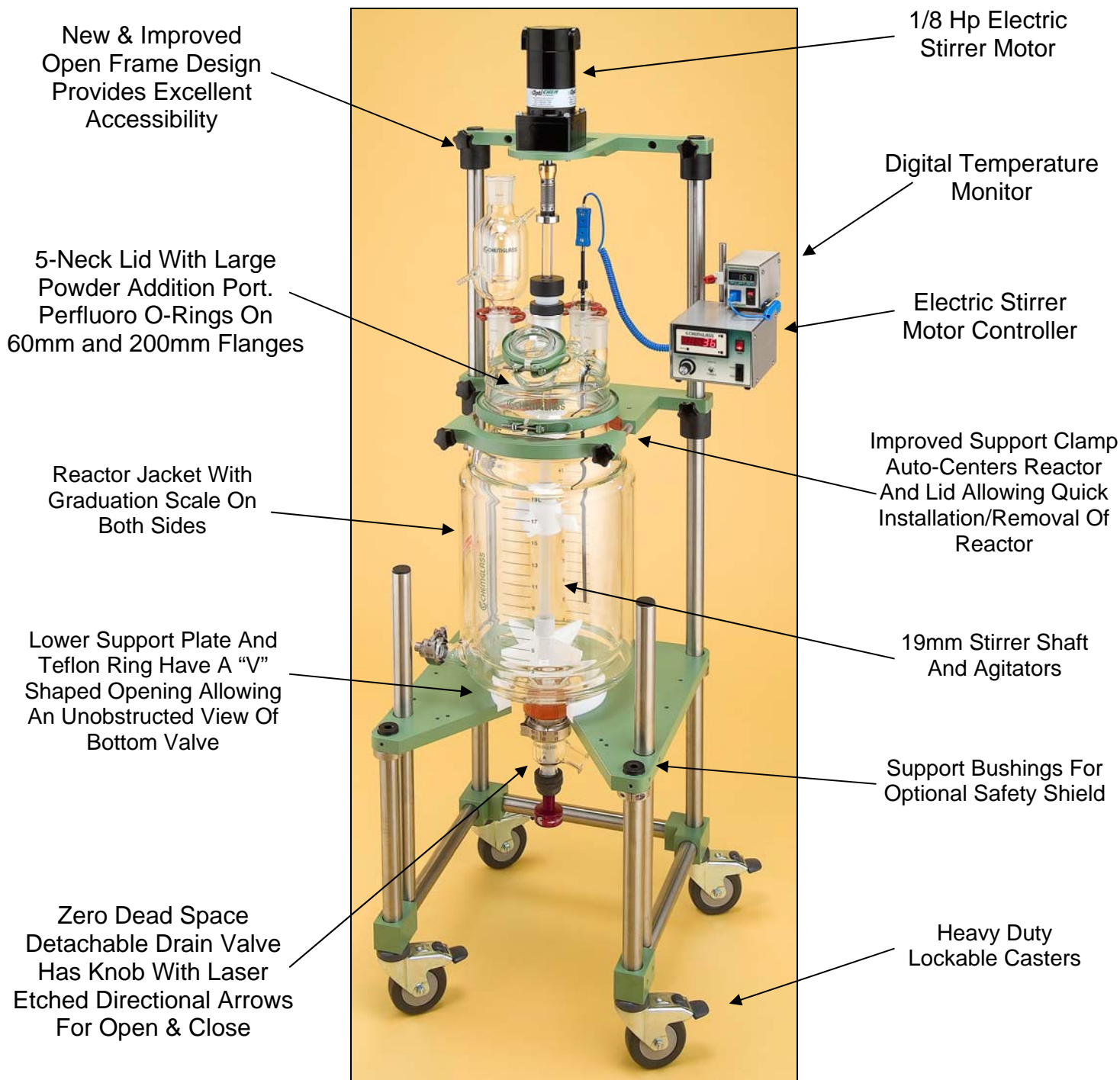


## 10L, 15L, & 20L JACKETED PROCESS REACTOR ASSEMBLY INSTRUCTIONS



## Assembly Instructions

Read entire assembly instructions before you begin. Familiarize yourself with all the parts, and pay close attention to all notes and highlights.

**\*\*\* FOR YOUR CONVENIENCE, THE JACKETED PROCESS REACTOR, THE FULLY ASSEMBLED REACTOR HEAD, STIRRER SHAFT & AGITATORS, TRU-STIR™ STIRRER SHAFT COUPLING, FLAKE COLLECTION CUP, TEFLON STIRRER BEARING, TEMPERATURE PROBE AND ADAPTER, S.S. INLET/OUTLET ADAPTERS AND MOTOR ARE SHIPPED ASSEMBLED ON SUPPORT FRAME. TEFLON SLEEVES AND KECK CLIPS ARE AVAILABLE SEPARATELY \*\*\***

Unpack all the parts and check against the packing slip to make sure you have received all necessary components. If possible, keep some of the packing materials from the wood crates in case you need to return items for repair or replacement.

### Crate #1:

- Unpack Support Frame with reactor and components by removing the plastic electrical ties that hold the reactor in place and remove the cardboard/foam packing from around the reactor. Re-tighten all allen screws with supplied wrenches, adjust all Black Knobs and tighten Torque Knobs. The red silicone pad should be touching the straight section of glass below reactor flange. **CHECK ALL ALLEN SCREWS BEFORE PROCEEDING. SCREWS CAN LOOSEN DURING SHIPMENT.**
- Attach the CG-2044 Tru-Stir Stirrer Shaft Coupling to the 1/8 Hp Electric Stirrer Motor.

### Crate #2:

- Contains the Condenser, Zero Dead Space Drain Valve, Temperature Monitor, Motor Controller, and other miscellaneous parts.

Move the reactor assembly and parts near the hood or area where the reactor will be used, but allow enough space to move freely around the Support Frame. During setup, preparation, and process, it is best to keep the wheels in their locked position by stepping down on the tab.

**\*\*\* SUPPORT FRAMES ARE SHIPPED VIA COMMON CARRIER AND REQUIRE LOADING DOCK ACCESS WITH A FORK LIFT OR JACK. IF YOU DO NOT HAVE A LOADING DOCK, THEN A LIFT GATE-EQUIPPED TRUCK MUST BE REQUESTED AT THE TIME OF THE ORDER \*\*\***



## Overhead Stirrer Motor



Air Motor



1/8 Hp Motor



Explosion Proof (XP) Motor

**\*\*\* THE MOTOR IS INSTALLED ON SUPPORT FRAME WHEN SHIPPED. USE THE FOLLOWING INSTRUCTIONS SHOULD YOU NEED TO REMOVE/ADJUST THESE COMPONENTS \*\*\***

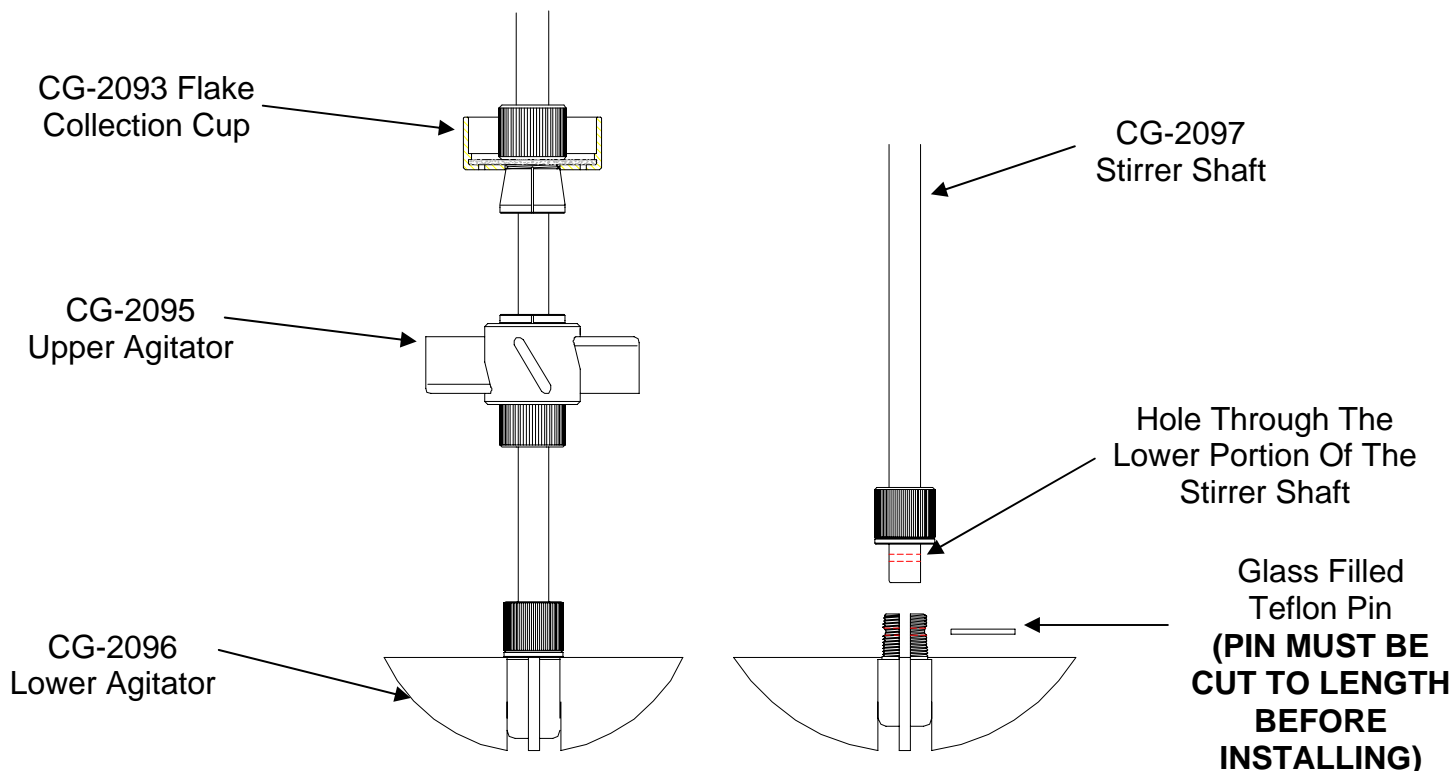
### **Components Needed For Overhead Stirrer Motor:**

1ea	CG-2033-10	1/8 Hp Electric Stirrer Motor
1ea	CG-2025-20	Air Motor (Optional)
1ea	CG-2033-30	Digital Electric Stirrer Motor Controller (Only Supplied with 1/8 Hp Electric Stirrer Motor)
1ea	CG-2044	Tru-Stir™ Stirrer Shaft Coupling
1ea	CG-9253-10	Small Kwik Klamp II
1ea	CG-3498-03	S.S. Support Rod, Bent 90°

1. The support frame has a universal motor mount. It can be used with an Electric, Air, or optional Explosion Proof (XP) motor. The mount automatically centers the motor directly above the reactor.
2. The 1/8 Hp Electric Motor is shipped attached to the support frame via four socket head cap screws.
3. When using the 1/8 Hp Electric Motor, the CG-2033-30 Digital Controller, with mounting bracket on back panel, needs to be mounted on S.S. upright. Use the Small Kwik Klamp II (CG-9253-10) and the S.S. Support Rod bent 90° (CG-3498-03) to mount the controller to support frame. Tighten all knobs securely.

**\*\*\* THE CG-2025-20 AIR MOTOR REQUIRES THE AIR SUPPLY BE FILTERED AND A LUBRICATOR BE INSTALLED BETWEEN THE AIR SOURCE AND MOTOR. FILTER-REGULATOR-LUBRICATOR IS AVAILABLE SEPARATELY, SEE CG-2025-10 \*\*\***

## Stirrer Shaft and Agitator Assembly



\*\*\* THE STIRRER SHAFT AND AGITATORS ARE ASSEMBLED AND INSTALLED WHEN SHIPPED. USE THE FOLLOWING INSTRUCTIONS SHOULD YOU NEED TO REMOVE/ADJUST THESE COMPONENTS \*\*\*

### Components Needed For Stirrer Shaft and Agitator Assembly:

1ea	CG-2097	19mm Stirrer Shaft
1ea	CG-2093-20	Teflon Flake Collection Cup
1ea	CG-2095-05	5" OD Upper Teflon Agitator
1ea	CG-2096-09	7.5" OD Lower High Viscosity Teflon Agitator

1. The Lower Agitator Assembly (CG-2096) is placed on the end of the stirrer shaft aligning the hole on the stirrer shaft with the holes in the Teflon hub. The sand blasted portion is the lower end of the stirrer shaft. Insert the glass filled Teflon pin. The pin must be cut 24mm long. Tighten the compression fitting. **PLEASE NOTE: GLASS FILLED TEFLON PIN MUST BE INSTALLED BEFORE USING.**
2. The Upper Agitator Assembly (CG-2095) slides over the top end of the shaft. The height from the bottom will depend on the total volume you intend to run in the reactor.
3. Once you have the upper agitator in place tighten the compression fitting as tight as possible (by hand). For use at higher temperatures Chemglass recommends heating the upper agitator hub with a heat gun and then retightening. Then tighten the set screw on the flat of the stirrer shaft using a screwdriver. This will minimize the possibility of the agitator falling or slipping at higher temperatures.
4. The Teflon Flake Collection Cup (CG-2093) slides over the top of the stirrer shaft and is positioned approx 18" from the bottom of the CG-2096 agitator. For the cup to work effectively the final position will have to be adjusted so that it is not less than 1" away from the bottom of the Teflon stirrer bearing.

## Inlet/Outlet Jacket Connections



**\*\*\* THE S.S. ADAPTERS ARE ASSEMBLED AND ATTACHED WHEN SHIPPED. USE THE FOLLOWING INSTRUCTIONS SHOULD YOU NEED TO REMOVE/ADJUST THESE COMPONENTS \*\*\***

### Components Needed For Inlet/Outlet:

2ea	CG-1969-A-05	S.S. Adapter, 1" Beaded Pipe to M16 x 1.0 Male
2ea	CG-1968-66	1" Beaded Pipe Coupling

1. Reactor jacket comes standard with 1" glass beaded pipe on the inlet/outlet.
2. Loosen the nut on the beaded pipe coupling. Wet the Teflon/Viton liner inside the coupling and attach one side to the 1" beaded pipe on the jacket.
3. Insert the CG-1969-A 1" beaded pipe adapter into the other side of the coupling.
4. Tighten the 1" beaded pipe coupling to 35 in-lbs using a torque wrench.

**\*\*\* MAX JACKET PRESSURE = 10 PSI**

**\*\*\* MAX  $\Delta T$  = 60°C \*\*\***

**\*\*\* TEMPERATURE RANGE = -60 to 200°C \*\*\***

**\*\*\* THE CHEMGLASS HIGH FLOW MANIFOLD SYSTEM ELEVATES EXCESSIVE MECHANICAL FORCES ON INLET/OUTLET AND PREVENTS OVER PRESSURIZING WITH A PRESSURE RELIEF VALVE. THIS MANIFOLD IS AVAILABLE SEPARATELY, SEE CG-1969-M \*\*\***

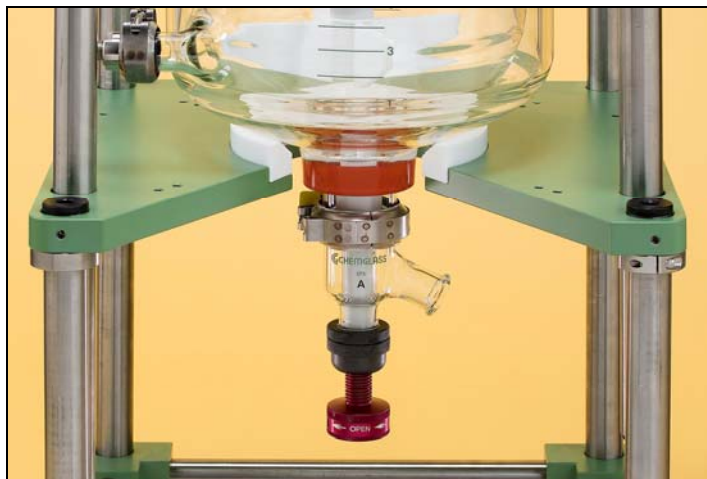


CG-1969-M Inlet Manifold



CG-1969-M Outlet Manifold

## Zero Dead Space Drain Valve



### Components Needed For Zero Dead Space Drain Valve:

1ea	CG-1968-Q-01	Zero Dead Space Drain Valve
1ea	CG-1968-67	2" Beaded Pipe Coupling

1. Loosen the nut on the 2" Beaded Pipe Coupling. Wet the Teflon/Viton liner inside the coupling and attach one side to the 2" beaded pipe drain valve seat on reactor.
2. Attach the drain valve assembly into the other side of the coupling. **PLEASE NOTE: PLUG MUST BE IN THE OPEN POSITION. AFTER ASSEMBLY BE SURE PLUG IS IN THE CLOSED POSITION PRIOR TO FILLING REACTOR.**
3. Tighten the 2" Beaded Pipe Coupling to 60 in-lbs using a torque wrench.

### Before You Start...

The reactor is now ready for use. Before filling the reactor, make sure the Zero Dead Space Drain Valve is in the closed position. Once setup is complete, the reactor can be moved into position and connected to the circulator. Keep the wheels locked for added safety.

Chemglass presumes some knowledge of this type of equipment on the part of the enduser. Properties such as mechanical strength of glass, thermal stress introduced to the reactor from exothermic reactions, allowable temperature differentials, pressure and vacuum must all be considered with extreme caution. If you have any questions, please contact our technical service department at 800.843.1794 or e-mail [technical-service@chemglass.com](mailto:technical-service@chemglass.com).



CG-1977 Safety Shield

### More Optional Components...



CG-16000 Data Logger



CG-1963-A Side Support Shelf

## Complete Assembly Instructions

**\*\*\* THE JACKETED PROCESS REACTOR, THE FULLY ASSEMBLED REACTOR HEAD, STIRRER SHAFT & AGITATORS, TRU-STIR™ STIRRER SHAFT COUPLING, FLAKE COLLECTION CUP, TEFLON STIRRER BEARING, TEMPERATURE PROBE AND ADAPTER, S.S. INLET/OUTLET ADAPTERS AND MOTOR ARE SHIPPED ASSEMBLED ON SUPPORT FRAME. USE THE FOLLOWING INSTRUCTIONS SHOULD YOU NEED TO REMOVE OR ADJUST THESE COMPONENTS \*\*\***

1. Attach the Zero Dead Space Drain Valve (CG-1968-Q) to reaction vessel via the 2" Beaded Pipe Coupling (CG-1968). Tighten coupling to specified torque setting.
2. Attach the S.S. Beaded Pipe Adapters (CG-1969-A) to the inlet/outlet of reaction vessel via the 1" Beaded Pipe Coupling (CG-1968). Tighten coupling to specified torque setting. **PLEASE NOTE: IF YOU ELECT TO USE THE CG-1969-M HIGH FLOW MANIFOLD SYSTEM, THIS STEP CAN BE SKIPPED.**
3. Carefully place reaction vessel in Support Frame (CG-1965-X-150) on top of the supplied Teflon "V" cut support ring. Replace front reaction vessel clamp and tighten torque knobs evenly until you here a "click".
4. Place the 200mm Perfluoro o-ring (CG-147) into the groove of the reaction vessel flange.
5. Assemble the Stirrer Shaft (CG-2097), Agitators (CG-2095 & CG-2096), and Teflon Flake Collection Cup (CG-2093) and lower into reaction vessel.
6. While lowering the Reaction Vessel Lid (CG-1946) onto the vessel, carefully insert the end of the stirrer shaft through the 45/50 center neck of the lid. **PLEASE NOTE: THE TEFLON STIRRER BEARING IS NOT INSERTED IN HEAD AT THIS TIME.**
7. Slide the Teflon Stirrer Bearing (CG-2077-H) over the end of the stirrer shaft and "press" into the 45/50 center neck sealing the o-ring. Position the powder fill port towards the front of the reactor.
8. Secure the vessel and lid together with the Quick Release Teflon Coated Clamp (CG-141-T) making sure the entire o-ring is seated in the groove. Adjust the threaded bolt to improve the seal around the flange.
9. Attach the Tru-Stir™ Stirrer Shaft Coupling (CG-2044) to the 1/8 Hp Electric Stirrer Motor (CG-2033) motor shaft. Then attach the motor to support frame via the supplied four socket head cap screws.
10. Insert the end of the stirrer shaft into the CG-2044 coupling and tighten the collar with an allen wrench. Check the vertical alignment of the reactor and adjust if necessary.
11. Tighten the black compression nut on Teflon Stirrer Bearing (CG-2077-H), which compresses the bearing onto the stirrer shaft.
12. Attach the Electric Stirrer Motor Controller (CG-2033) and the Digital Temperature Monitor (CG-3498) to the support frame via the Small Kwik Klamp II (CG-9253-10) and 1/2" OD S.S. Support Rod bent 90° (CG-3498-03).
13. Attach the control cord from the electric stirrer motor to the rear panel of the controller. Make sure the speed control knob on the controller is turned completely off **BEFORE** turning controller on. If using the Air Motor (CG-2025-20), attach air source to motor. Brass needle valve on the back of the air motor should be **CLOSED!**
14. Insert thermocouple thru the Thermocouple Adapter (CG-1042-E) and then insert the adapter into the desired 45/50 side neck. Adjust depth of thermocouple by tightening the #7 Chem-Thread at top of the adapter. **PLEASE NOTE: CHECK SO SEE THAT THE THERMOCOUPLE DOES NOT CONTACT THE UPPER OR LOWER AGITATOR BY MANUALLY TURNING THE STIRRER SHAFT.** Attach the thermocouple cord to the probe and then to the temperature monitor.
15. Attach Condenser (CG-1217) and any other peripheral glassware.

## Standard Process Reactor Setup

Item No	Part Number	Description
1	CG-1217-25	Condenser, 45/50
2	CG-2097	19mm Stirrer Shaft
3	CG-2077-H-05	19mm Teflon Stir Bearing
4	CG-149-01	60mm Glass Cap
5	CG-141-T-11	60mm S.S. Clamp, Teflon Coated
6	CG-147-80	60mm Perfluoro O-Ring
7	CG-147-84	200mm Perfluoro O-Ring
8	CG-1930	Jacketed Reaction Vessel
9	CG-1969-A-05	S.S. Adapter, 1" Beaded Pipe to M16 X 1 Male (2ea)
10	CG-1968-66	1" Beaded Pipe Coupling (2ea)
11	CG-1968-67	2" Beaded Pipe Coupling
12a	CG-2033-10	Electric Stir Motor, 1/8Hp, 266 RPM
12b	CG-2025-20	Air Motor, 3/8Hp
12c	CG-2025-10	Filter-Regulator-Lubricator (Air Motor Only)
13a	CG-2044-20	19mm Tru-Stir® Shaft Coupling, (Electric)
13b	CG-2044-16	19mm Tru-Stir® Shaft Coupling, (Air)
14	CG-3499-02	10ft Coiled Extension Cord, "T"
15	CG-2033-30	Stir Motor Controller (Electric Only)
16	CG-3498-01	Temperature Monitor, Type "T"
17	CG-3498-03	1/2" OD Rod, 90° Bend
18	CG-9253-10	Universal Kwik Klamp II
19	CG-1042-E-10	Thermocouple Adapter, 45/50
20	CG-1946-50	5-Neck Lid, 200mm
21	CG-141-T-15	200mm S.S. Clamp, Teflon Coated
22	CG-2093-20	Teflon Flake Catching Cup
23	CG-3498-106	1/4" Diameter X 26" Long Thermocouple, "T"
24a	CG-2095-05	5" OD Teflon Agitator, 60°
24b	CG-2096-09	7.5" OD Teflon Agitator, High Viscosity
25	CG-3055-10	Teflon Support Ring, "V" Cut
26	CG-1965-X-150	Support Frame, 63.25" OAH
27	CG-1968-Q-01	Zero Dead Space Drain Valve
---	CG-1963-B-10	Beam Torque Wrench
---	CG-1963-B-14	7/16" Deep Socket, 6 Point, 1/4" Drive

