

A measured step forward™

Operations & Maintenance Manual

**PolyBlend LJPB Series 600 & 1000
Chemical Feed System**



Table of Contents

System Overview	3
1.1 Safety Precautions	3
1.2 Specifications	3
Installation	3
2.1 Location	3
2.2 Unpacking	3
2.3 Connections	3
2.4 Storage	3
LJPB PolyBlend 16, 50, 100 & 200	3
Operation	4
3.1 General	4
3.2 Start-Up	4
3.3 Water Pressure	4
3.4 Solution Output	4
Maintenance	4
4.1 Shutdowns	4
4.2 Maintenance	5
4.3 Special Tools	5
4.4 Lubrication	5
4.5 Predicted Life Span	5
4.7 Emergency Operating Instructions	5
4.8 Disassembly, Repair, & Reassembly	5
4.9 Recommended Spare Parts	5
4.10 To Order Parts	5
Recommended Spare Parts	5
4.11 Trouble Shooting	6
4.12 Differential Pressure Switch	6
4.12.1 Location of Differential Pressure Switch	6
4.12.2 Function of Differential Pressure Switch	6
4.12.3 Adjusting the Differential Pressure Switch	7

System Overview

READ THIS MANUAL BEFORE YOU INSTALL, OPERATE, OR SERVICE THIS UNIT.

1.1 Safety Precautions

Ensure that the control panel is grounded to avoid possible electrical shock or damage to equipment

Before servicing, turn off all power and assure power "lockout" to avoid possible electric shock.

Disconnect external power to the control panel before removing or replacing fuses.

1.2 Specifications

LJPB PolyBlend 600 & 1000			
Specifications		600	1000
Pump	Diaphragm	x	x
Inlet	1" FPT, Water Supply, 5/8" Hose Barb, Polymer Supply	x	x
Outlet	1" FPT, Solution Discharge	x	x
Water Capacity	600 GPH Primary	x	x
	100 GPH Post Dilution		x
Polymer Capacity	2 GPH	x	
	4.5 GPH		x
Pressure Rating	100 PSI	x	x
Electrical Supply	120/1/60, 6 Amps	x	
	120/1/60, 10 Amps		x
Dimensions	32" H x 21" W x 15" D	x	
	35" H x 25" W x 15" D		x
Weight	90 lbs	x	
	110 lbs		x
Motor(s)	(1) 1/3 HP, 120VAC, 6 AMPS		x

Installation

2.1 Location

Select a location that provides:

- Electrical Supply
- Potable Water (Clean)
- Proximity to the Point of Use
- Easy Handling and Storage of Polymer
- Access to Unit
- Protection Against Severe Weather

2.2 Unpacking

Examine package contents for damage. Report any to freight forwarder. Check plastic bag(s) for contents against individual packing list(s).

NOTE: Disregard any moisture; this unit was wet tested.

2.3 Connections

- Use Teflon tape on threads. Use joint compound (pipe dope) in small amounts, if necessary.
- Do not over-tighten fittings.
- Insure that supply water pressure is **less than 100 psi**.
- Install water isolation valve with unions.
- Insure that neat polymer feed line has a **flooded suction**.

NOTE: To enhance performance, reduce the number of piping turns and elevation changes.

2.4 Storage

Store in atmosphere controlled environment. Protect from extreme temperature (above 110°F, 52°C, below 32°F, 0°C) and wide ambient temperature fluctuations.

Protect from direct weather exposure, i.e., sun, rain, high wind, etc.

Operation

3.1 General

This PolyBlend® unit will perform the following functions: meter polymer dosage, regulate mixing water, provide uniform dilution and activation, operate on-line continuously, and feed solution to the point of use. Neat polymer from the metering pump and dilution water controlled by the solenoid valve enter the mixing chamber. Dilution and activation occur, yielding prepared solution ready for use. Neat polymer dosage rate is adjusted at pump face. Primary dilution (and post dilution) water are controlled by individual flow control valves.

3.2 Start-Up

Step 1: Switch pump to external mode at pump face.

Step 2: Prime polymer pump, using priming kit provided with unit.

Step 3: Place unit power switch in Off position.

Step 4: Energize power circuit that feeds unit. Solenoid opens. Allow mixing chamber to fill with water by opening primary dilution water control valve.

NOTE: Do not turn mixer motor on until chamber is filled with water, running dry will damage mechanical seal.

Step 5: Place unit power switch in On position. Mixing chamber motor starts.

Step 6: To turn pump On/Off and for polymer output adjustment. Output can also be adjusted at pump face by varying the stroke length.

NOTE: For optimum pump performance, keep stroke frequency as high as possible. This is done by decreasing the stroke length setting. More stroke repetition with a shorter length is better than fewer strokes with a long stroke length. If stroke length is too short, pump prime may be affected.

Step 7: Adjust water flow at mixing chamber by turning control valve. (The other control valve should be turned for post-dilution adjustment, if applicable.)

NOTE: Do not run polymer pump unless water flow is established. Polymer alone can plug discharge plumbing.

3.3 Water Pressure

This unit is equipped with a flow regulator. The inlet water flow rate is maintained as pressure fluctuates. With the low dilution water rate of this unit, the regulator prevents pressure surges that could cause flow increases and affect solution concentrations. This device is factory set and not field-adjustable.

3.4 Solution Output

Unit output is determined by setting pump stroke length and stroke frequency together with setting dilution water flow. Establish desired solution volume and solution concentration, and then proceed.

EXAMPLE: 100 GPH (380 LPH) of .5% polymer solution desired. A 2 GPH (7.6 LPH) diaphragm pump is used.

—Determine neat polymer requirement.

$(100 \text{ GPH}) \times (.005) = 0.5 \text{ GPH neat polymer}$
 $(380 \text{ LPH}) \times (.005) = 1.9 \text{ LPH neat polymer}$

—Determine pump usage.

$(0.5 \text{ GPH}) \div (2 \text{ GPH}) = 25\% \text{ pump capacity}$
 $(1.9 \text{ LPH}) \div (7.6 \text{ LPH}) = 25\% \text{ pump capacity}$

—Set Controls

A 2 GPH (7.6 LPH) pump @ 100% stroke length and 25 strokes per minute will deliver 0.5 GPH (1.9 LPH). However, 2 GPH (7.6 LPH) pump @ 50% stroke length and 50 strokes per minute will also deliver 0.5 GPH (1.9 LPH) with a more homogeneous mix.

NOTE: Do not exceed polymer concentrations of 1% in the PolyBlend®.

Maintenance

4.1 Shutdowns

If out of service more than one week, flush mixing chamber.

Turn pump off.

- Place unit power switch in On position to establish water flow for five minutes.

If out of service for more than two weeks, flush pump and mixing chamber.

- Connect pump suction to a container of mineral oil (not water).
- Place unit power switch in On position to establish water flow.
- Turn pump on and run for three minutes.
- Turn pump off.
- Continue water flow for five additional minutes.
- Drain water from chamber and piping to prevent freezing.

4.2 Maintenance

1. Clean ancillary water and / or polymer strainers weekly.
2. Flush system monthly following one-week procedure.
3. Refer to the appendix for specific information on drawings, part identification, and components.

4.3 Special Tools

No special tools needed for operation, maintenance, and repair of components.

4.4 Lubrication

No lubrication is required. Equipment is self-lubricating.

4.5 Predicted Life Span

There is no predicted life span of wear parts as each application and operation varies.

4.6 Operating Procedures

For normal operation, once settings are adjusted based on operation parameters, the system can simply be turned ON or OFF. Special operating instructions for Seasonal operation do not apply.

4.7 Emergency Operating Instructions

Emergency operating instructions do not apply to UGSI ChemFeed, Inc. – Stranco® Products equipment. In case of an emergency, TURN OFF POWER TO STOP RUNNING.

4.8 Disassembly, Repair, & Reassembly

This equipment is an open-frame design. It allows for easy removal of all components. There are no special procedures for removal of parts.

4.9 Recommended Spare Parts

Recommended Spare Parts				
Description	Part #	Qty.	600	1000
Chamber Mechanical Seal	7802910	1	x	x
Belt, Chamber	1450430	1	x	x
Bearing, Chamber Base	1411001	1	x	x
Bearing, Chamber Top	1414001	1	x	x
Pump Head	38593	1	x	
	Consult Factory	1		x

4.10 To Order Parts

You may order parts by calling, faxing or mailing your order.

4.11 Trouble Shooting

Symptom	Possible Cause	Corrective Action
No Water Flow	Closed Valve on Water Supply	Make sure valve is open
	Blocked Solenoid Valve	Dis-assemble and clean valve
	Closed or clogged discharge line	Remove any blockages or open any closed valves
	Rate Control Valve Closed	Make sure valve is open
Pump won't pump Chemical	Pump is turned OFF	Make sure pump is in ON position
	No Water Flow	Make sure all water valves (supply and discharge) are open
	Blocked Pump Discharge Line	Take discharge line apart, check for blockage and clean if necessary
	Back Pressure is too high	Reduce Back pressure on unit
	Not enough water flow	Increase water flow or adjust water monitoring device (flow switch, DP switch, etc.) setpoint lower than the desired flow rate
Clogged Injection Check Valve	Debris or Clumps in Polymer	Check polymer supply for contamination
	Valve is stuck open allowing water into polymer line	Remove valve from chamber and clean it
Pump won't stop	Water flow is still established	Shut off water valve or power to the unit
	Pump is in internal mode	Switch pump to external

4.12 Differential Pressure Switch

4.12.1 Location of Differential Pressure Switch

The high pressure port connects to the inlet manifold between the solenoid valve and the rotameter/rate-adjusting valve. The low pressure port connects to the discharge side of the rotameter.

4.12.2 Function of Differential Pressure Switch

The differential pressure switch ensures sufficient water flow is present before the polymer pump is energized. This integral, automatic safety feature eliminates the problem of overfeeding neat polymer to an application without proper dilution.

In operation, the rate valve is adjusted to produce the desired flow through the system. This causes a pressure drop to occur across the valve which is applied to the differential pressure switch.

If supply pressure decreases enough to affect flow rate or if back pressure between the PolyBlend and the point of solution application increases enough to affect flow rate, the differential pressure across the rotameter and valve decreases. This causes power to be interrupted to the polymer pump and prevents damage to the mixing system caused by extremely high viscosity developing in the mixing chamber.

NOTICE: If system pressure or flow are not adequate, investigate the cause of lack of flow. (For example, inadequately sized piping can produce inadequate flow.) To avoid undesirable water dilution conditions and damage to equipment, do not bypass or adjust the differential pressure switch for a lower pressure/flow setting.

Question: Why doesn't the polymer pump turn off when I turn the water off using the rotameter?

The differential pressure switch senses flow on either side of a pressure drop. Because the rotameter is the sensing point, the rotameter closing is the only

cause of loss of flow that the differential pressure switch cannot see.

Test the differential switch by turning off the source water or the discharge flow. (See step 5 on the next page.)

4.12.3 Adjusting the Differential Pressure Switch

Adjust the PolyBlend differential pressure switch only if pressure and flow to the system are adequate.

The adjustment logic is the opposite of what you might expect. The PolyBlend differential pressure switches have a red light (on the left side) that lights up whenever source water flow is too low and the polymer pump is disabled. The pump stops pumping when the flow is too low. Low flow may be from lack of incoming water or from too much back pressure on the outgoing side.

	Adjustment		System Reaction
1	Turn the PolyBlend rotameter until water flow is at maximum on the flow gauge.		
2	Screw in the differential pressure knob until the red alarm light goes on.		Polymer pump is disabled.
3	Back off the differential pressure knob until the red alarm light goes off.		The pump starts again.....
4	<div>4a. If you want very close control of flow, leave the knob at this setting. At this setting, any loss of flow (as observed by the rotameter) results in the pump being disabled.</div> <div>4b. If you want to make the system "more forgiving" prior to shutdown, continue to turn the knob another 1-2 turns. The further you turn the knob, the more How can be lost before the pump is disabled.</div>		Step 4 determines how "forgiving" the system is before it shuts down due to inadequate flow.
5	To test sensitivity and operation, turn off the water at the source or the solution at the discharge. The float in the flow meter will fall more for the control knob setting described in step 41) than, for 4a (above).		As the source or discharge is turned off, the float in the flow meter falls and the pump is disabled.
6	Set the rotameter for the desired flow.		Retest (as in step 5).

BALDOR • RELIANCE

Integral Horsepower
AC Induction Motors
ODP, WPI, WPII Enclosure
TEFC Enclosure
Explosion Proof

Installation & Operating Manual

Table of Contents

Section 1	SD 10
General Information	SD-10
Overview	SD 10
Limited Warranty	SD 10
Safety Notice	SD 11
Receiving	SD 13
Storage	SD 13
Unpacking	SD 13
Handling	SD 13
Section 2	SD 14
Installation & Operation	SD 14
Overview	SD 14
Location	SD 14
Mounting	SD 14
Alignment	SD 14
Doweling & Bolting	SD 15
Power Connection	SD 15
Conduit Box	SD 15
AC Power	SD 15
First Time Start Up	SD 17
Coupled Start Up	SD 17
Jogging and Repeated Starts	SD 17
Section 3	SD 18
Maintenance & Troubleshooting	SD 18
General Inspection	SD 18
Lubrication & Bearings	SD 18
Type of Grease	SD 18
Relubrication Intervals	SD 18
Relubrication Procedure	SD 18
Accessories	SD 18
Troubleshooting Chart	SD 19

Section 1

General Information

Overview This manual contains general procedures that apply to Balder Motor products. Be sure to read and understand the Safety Notice statements in this manual. For your protection, do not install, operate or attempt to perform maintenance procedures until you understand the Warning and Caution statements. A Warning statement indicates a possible unsafe condition that can cause harm to personnel. A Caution statement indicates a condition that can cause damage to equipment.

Important: **This instruction manual is not intended to include a comprehensive listing of all details for all procedures required for installation, operation and maintenance. This manual describes general guidelines that apply to most of the motor products shipped by Baldor. If you have a question about a procedure or are uncertain about any detail, Do Not Proceed. Please contact your Baldor distributor for more information or clarification.**

Before you install, operate or perform maintenance, become familiar with the following:

- NEMA Publication MG-2, Safety Standard for Construction and guide for Selection, Installation and Use of Electric Motors and Generators.
- The National Electrical Code
- Local codes and Practices

Limited Warranty

1. Most Balder products are warranted for 18 months from the date of shipment to Balder's customer from Balder's district warehouse or, if applicable, from Balder's factory. Balder Standard-E® standard efficient motors are warranted for 24 months. Standard-E is limited to three phase, general purpose, 1-200 HP ratings that fall under the Energy Policy Act (EPA). Balder Super-E® premium efficient motors are warranted for 36 months. Balder IEEE841 motors are warranted for 60 months. All warranty claims must be submitted to a Balder Service Center prior to the expiration of the warranty period.
2. Balder will, at its option repair or replace a motor which fails due to defects in material or workmanship during the warranty period if:
 - a. the purchaser presents the defective motor at or ships it prepaid to, the Balder plant in Fort Smith, Arkansas or one of the Balder Authorized Service Centers and
 - b. the purchaser gives written notification concerning the motor and the claimed defect including the date purchased, the task performed by the Balder motor and the problem encountered.
3. Balder will not pay the cost of removal of any electric motor from any equipment, the cost of delivery to Fort Smith, Arkansas or a Balder Authorized Service Center, or the cost of any incidental or consequential damages resulting from the claimed defects. (Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.) Any implied warranty given by laws shall be limited to the duration of the warranty period hereunder. (Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.)
4. Balder Authorized Service Centers, when convinced to their satisfaction that a Balder motor developed defects in material or workmanship within the warranty period, are authorized to proceed with the required repairs to fulfill Balder's warranty when the cost of such repairs to be paid by Balder does not exceed Balder's warranty repair allowance. Balder will not pay overtime premium repair charges without prior written authorization.
5. The cost of warranty repairs made by centers other than Balder Authorized Service Centers **WILL NOT** be paid unless first authorized in writing by Balder.
6. Claims by a purchaser that a motor is defective even when a failure results within one hour after being placed into service are not always justified. Therefore, Balder Authorized Service Centers must determine from the condition of the motor as delivered to the center whether or not the motor is defective. If in the opinion of a Balder Authorized Service Center, a motor did not fail as a result of defects in material or workmanship, the center is to proceed with repairs only if the purchaser agrees to pay for such repairs. If the decision is in dispute, the purchaser should still pay for the repairs and submit the paid invoice and the Authorized Service Center's signed service report to Balder for further consideration.
7. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Safety Notice: This equipment contains high voltage! Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt installation, operation and maintenance of electrical equipment.

Be sure that you are completely familiar with NEMA publication MG-2, safety standards for construction and guide for selection, installation and use of electric motors and generators, the National Electrical Code and local codes and practices. Unsafe installation or use can cause conditions that lead to serious or fatal injury. Only qualified personnel should attempt the installation, operation and maintenance of this equipment.

- WARNING:** Do not touch electrical connections before you first ensure that power has been disconnected. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the installation, operation and maintenance of this equipment.
- WARNING:** Be sure the system is properly grounded before applying power. Do not apply AC power before you ensure that all grounding instructions have been followed. Electrical shock can cause serious or fatal injury. National Electrical Code and Local codes must be carefully followed.
- WARNING:** Avoid extended exposure to machinery with high noise levels. Be sure to wear ear protective devices to reduce harmful effects to your hearing.
- WARNING:** This equipment may be connected to other machinery that has rotating parts or parts that are driven by this equipment. Improper use can cause serious or fatal injury. Only qualified personnel should attempt to install operate or maintain this equipment.
- WARNING:** Do not by-pass or disable protective devices or safety guards. Safety features are designed to prevent damage to personnel or equipment. These devices can only provide protection if they remain operative.
- WARNING:** Avoid the use of automatic reset devices. If the automatic restarting of equipment can be hazardous to personnel or equipment.
- WARNING:** Be sure the load is properly coupled to the motor shaft before applying power. The shaft key must be fully captive by the load device. Improper coupling can cause harm to personnel or equipment if the load decouples from the shaft during operation.
- WARNING:** Use proper care and procedures that are safe during handling, lifting, installing, operating and maintaining operations. Improper methods may cause muscle strain or other harm.
- WARNING:** Before performing any motor maintenance procedure, be sure that the equipment connected to the motor shaft cannot cause shaft rotation. If the load can cause shaft rotation, disconnect the load from the motor shaft before maintenance is performed. Unexpected mechanical rotation of the motor parts can cause injury or motor damage.
- WARNING:** Disconnect all electrical power from the motor windings and accessory devices before disassembly of the motor. Electrical shock can cause serious or fatal injury.
- WARNING:** Do not use non UL/CSA listed explosion proof motors in the presence of flammable or combustible vapors or dust. These motors are not designed for atmospheric conditions that require explosion proof operation.

Safety Notice Continued

- WARNING:** Motors that are to be used in flammable and/or explosive atmospheres must display the UL label on the nameplate along with CSA listed logo.
- Specific service conditions for these motors are defined in NFPA 70 (NEC) Article 500.
- WARNING:** UL Listed motors must only be serviced by UL Approved Authorized Balder Service Centers. If these motors are to be returned to a hazardous and/or explosive atmosphere.
- Caution:** To prevent premature equipment failure or damage, only qualified maintenance personnel should perform maintenance.
- Caution:** Do not over-lubricate motor as this may cause premature bearing failure.
- Caution:** Do not lift the motor and its driven load by the motor lifting hardware. The motor lifting hardware is adequate for lifting only the motor. Disconnect the load from the motor shaft before moving the motor.
- Caution:** If eye bolts are used for lifting a motor, be sure they are securely tightened. The lifting direction should not exceed a 20° angle from the shank of the eye bolt or lifting lug. Excessive lifting angles can cause damage.
- Caution:** To prevent equipment damage, be sure that the electrical service is not capable of delivering more than the maximum motor rated amps listed on the rating plate.
- Caution:** If a HI POT test (High Potential Insulation test) must be performed, follow the precautions and procedure in NEMA MG1 and MG2 standards to avoid equipment damage.

If you have any questions or are uncertain about any statement or procedure, or if you require additional information please contact your Balder distributor or an Authorized Balder Service Center.

Receiving

Each Balder Electric Motor is thoroughly tested at the factory and carefully packaged for shipment. When you receive your motor, there are several things you should do immediately.

1. Observe the condition of the shipping container and report any damage immediately to the commercial carrier that delivered your motor.
2. Verify that the part number of the motor you received is the same as the part number listed on your purchase order.

Storage

If the motor is not put into service immediately, the motor must be stored in a clean, dry and warm location. Several precautionary steps must be performed to avoid motor damage during storage.

1. Use a "Megger" periodically to ensure that the integrity of the winding insulation has been maintained. Record the Megger readings. Immediately investigate any significant drop in insulation resistance.
2. Do not lubricate bearings during storage. Motor bearings are packed with grease at the factory. Excessive grease can damage insulation quality.
3. Rotate motor shaft at least 10 turns every two months during storage (more frequently if possible). This will prevent bearing damage due to storage.
4. If the storage location is damp or humid, the motor windings must be protected from moisture. This can be done by applying power to the motors' space heater (if available) while the motor is in storage.

Unpacking

Each Balder motor is packaged for ease of handling and to prevent entry of contaminants.

1. To avoid condensation inside the motor, do not unpack until the motor has reached room temperature. (Room temperature is the temperature of the room in which it will be installed). The packing provides insulation from temperature changes during transportation.
2. When the motor has reached room temperature, remove all protective wrapping material from the motor.

Handling

The motor should be lifted using the lifting lugs or eye bolts provided.

1. Use the lugs or eye bolts provided to lift the motor. Never attempt to lift the motor and additional equipment connected to the motor by this method. The lugs or eye bolts provided are designed to lift only the motor. Never lift the motor by the motor shaft or the hood of a WP11 motor.
2. When lifting a WP11 (Weather Proof Type 2) motor, do not lift the motor by inserting lifting lugs into holes on top of the cooling hood. These lugs are to be used for hood removal only. A spreader bar should be used to lift the motor by the cast lifting lugs located on the motor frame.
3. If the motor must be mounted to a plate with the driven equipment such as pump, compressor etc., it may not be possible to lift the motor alone. For this case, the assembly should be lifted by a sling around the mounting base. The entire assembly can be lifted as an assembly for installation. Do not lift using the motor lugs or eye bolts provided.

If the load is unbalanced (as with couplings or additional attachments) additional slings or other means must be used to prevent tipping. In any event, the load must be secure before lifting.

Section 2

Installation & Operation

Overview

Installation should conform to the National Electrical Code as well as local codes and practices. When other devices are coupled to the motor shaft, be sure to install protective devices to prevent future accidents. Some protective devices include, coupling, belt guard, chain guard, shaft covers etc. These protect against accidental contact with moving parts. Machinery that is accessible to personnel should provide further protection in the form of guard rails, screening, warning signs etc.

Location

It is important that motors be installed in locations that are compatible with motor enclosure and ambient conditions. Improper selection of the motor enclosure and ambient conditions can lead to reduced operating life of the motor.

Proper ventilation for the motor must be provided. Obstructed airflow can lead to reduction of motor life.

1. Open Drip-Proof/WPI motors are intended for use indoors where atmosphere is relatively clean, dry, well ventilated and non-corrosive.
2. Totally Enclosed and WPII motors may be installed where dirt, moisture or dust are present and in outdoor locations.

Severe Duty, IEEE 841 and Washdown Duty enclosed motors are designed for installations with high corrosion or excessive moisture conditions. These motors should not be placed into an environment where there is the presence of flammable or combustible vapors, dust or any combustible material, unless specifically designed for this type of service.

Mounting

The motor must be securely installed to a rigid foundation or mounting surface to minimize vibration and maintain alignment between the motor and shaft load. Failure to provide a proper mounting surface may cause vibration, misalignment and bearing damage.

Foundation caps and sole plates are designed to act as spacers for the equipment they support. If these devices are used, be sure that they are evenly supported by the foundation or mounting surface.

After installation is complete and accurate alignment of the motor and load is accomplished, the base should be grouted to the foundation to maintain this alignment.

The standard motor base is designed for horizontal or vertical mounting. Adjustable or sliding rails are designed for horizontal mounting only. Consult your Baldor distributor or authorized Baldor Service Center for further information.

Alignment

Accurate alignment of the motor with the driven equipment is extremely important.

1. Direct Coupling

For direct drive, use flexible couplings if possible. Consult the drive or equipment manufacturer for more information. Mechanical vibration and roughness during operation may indicate poor alignment. Use dial indicators to check alignment. The space between coupling hubs should be maintained as recommended by the coupling manufacturer.

Doweling & Bolting

After proper alignment is verified, dowel pins should be inserted through the motor feet into the foundation. This will maintain the correct motor position should motor removal be required. (Balder motors are designed for doweling.)

1. Drill dowel holes in diagonally opposite motor feet in the locations provided.
2. Drill corresponding holes in the foundation.
3. Ream all holes.
4. Install proper fitting dowels.
5. Mounting bolts must be carefully tightened to prevent changes in alignment. Use a flat washer and lock washer under each nut or bolt head to hold the motor feet secure. Flanged nuts or belts may be used as an alternative to washers.

Power Connection

Motor and control wiring, overload protection, disconnects, accessories and grounding should conform to the National Electrical Code and local codes and practices.

Conduit Box

For ease of making connections, an oversize conduit box is provided. The box can be rotated 360° in 90° increments. Auxiliary conduit boxes are provided on some motors for accessories such as space heaters, RTD's etc.

AC Power

Connect the motor leads as shown on the connection diagram located on the name plate or inside the cover on the conduit box. Be sure the following guidelines are met:

1. AC power is within $\pm 10\%$ of rated voltage with rated frequency. (See motor name plate for ratings).

OR

2. AC power is within $\pm 5\%$ of rated frequency with rated voltage.

OR

3. A combined variation in voltage and frequency of $\pm 10\%$ (sum of absolute values) of rated values, provided the frequency variation does not exceed $\pm 5\%$ of rated frequency.

Performance within these voltage and frequency variations are shown in Figure 2-2.

Figure 2-1 Accessory Connections



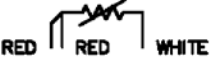
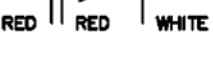
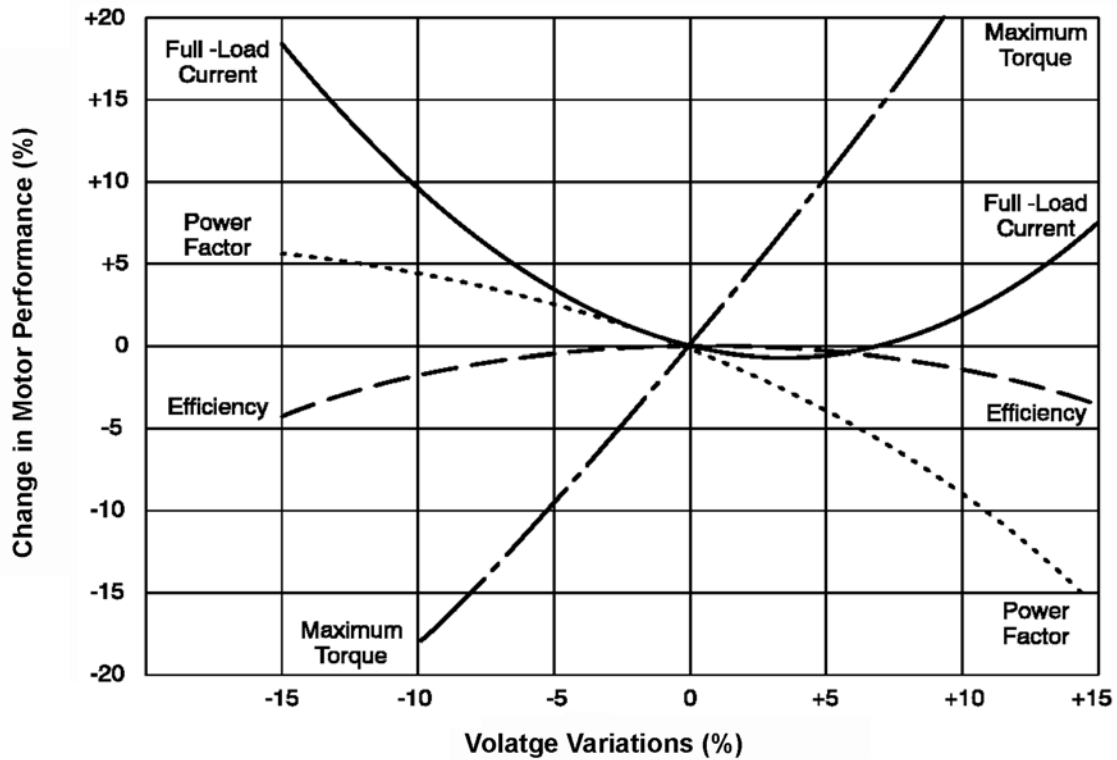
<p>HEATERS</p>  <p>H1 — H2 H1 — H2</p>	<p>One heater installed at each end of motor. Leads for each heater are labeled H1 & H2. (Like numbers should be tied together).</p>
<p>THERMISTERS</p>  <p>T1 — T2</p>	<p>Three thermistors are installed in windings and tied in series. Leads are labeled T1 & T2.</p>
<p>WINDING RTDS</p>  <p>RED RED WHITE</p>	<p>Winding RTDs are installed in windings (2) per phase. Each set of leads is labeled W1, W2, W3, W4, W5 & W6.</p>
<p>BEARING RTD</p>  <p>RED RED WHITE</p>	<p>* One bearing RTD is installed in Drive endplate (PUPE), leads are labeled RTDDE. * One bearing RTD is installed in Opposite Drive endplate (FREPE), leads are labeled RTDODE. * Note RTD may have 2-Red/1-White leads; or 2-White/1-Red lead.</p>

Figure 2-2 Typical Motor Performance VS Voltage Variations



First Time Start Up Be sure that all power to motor and accessories is off. Be sure the motor shaft is disconnected from the load and will not cause mechanical rotation of the motor shaft.

1. Make sure that the mechanical installation is secure. All bolts and nuts are tightened etc.
2. If motor has been in storage or idle for some time, check winding insulation integrity with a Megger.
3. Inspect all electrical connections for proper termination, clearance, mechanical strength and electrical continuity.
4. Be sure all shipping materials and braces (if used) are removed from motor shaft.
5. Manually rotate the motor shaft to ensure that it rotates freely.
6. Replace all panels and covers that were removed during installation.
7. Momentarily apply power and check the direction of rotation of the motor shaft.
8. If motor rotation is wrong, be sure power is off and change the motor lead connections. Verify rotation direction before you continue.
9. Start the motor and ensure operation is smooth without excessive vibration or noise. If so, run the motor for 1 hour with no load connected.
10. After 1 hour of operation, disconnect power and connect the load to the motor shall Verify all coupling guards and protective devices are installed. Ensure motor is properly ventilated.

Coupled Start Up This procedure assumes a coupled start up. Also, that the first time start up procedure was successful.

1. Check the coupling and ensure that all guards and protective devices are installed.
2. Check that the coupling is properly aligned and not binding.
3. The first coupled start up should be with no load. Apply power and verify that the load is not transmitting excessive vibration back to the motor through the coupling or the foundation. Vibration should be at an acceptable level.
4. Run for approximately 1 hour with the driven equipment in an unloaded condition.

The equipment can now be loaded and operated within specified limits. Do not exceed the name plate ratings for amperes for steady continuous loads.

Jogging & Repeated Starts Repeated starts and/or jogs of induction motors generally reduce the life of the motor winding insulation. A much greater amount of heat is produced by each acceleration or jog than by the same motor under full load. If it is necessary to repeatedly start or jog the motor, it is advisable to check the application with your local Balder distributor or Balder Service Center.

Heating-Duty rating and maximum ambient temperature are stated on the motor name plate. Do not exceed these values. If there is any question regarding safe operation, contact your local Balder distributor or Balder Service Center.

Section 3

Maintenance & Troubleshooting

WARNING: *UL Listed motors must only be serviced by UL Approved Authorized Baldor Service Centers if these motors are to be returned to a hazardous and/or explosive atmosphere.*

General Inspection Inspect the motor at regular intervals, approximately every 500 hours of operation or every 3 months, whichever occurs first. Keep the motor clean and the ventilation openings clear. The following steps should be performed at each inspection:

WARNING: *Do not touch electrical connections before you first ensure that power has been disconnected. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the installation, operation and maintenance of this equipment.*

1. Check that the motor is clean. Check that the interior and exterior of the motor is free of dirt, oil, grease, water, etc. Oily vapor, paper pulp, textile lint, etc. can accumulate and block motor ventilation. If the motor is not properly ventilated, overheating can occur and cause early motor failure.
2. Use a "Megger" periodically to ensure that the integrity of the winding insulation has been maintained. Record the Megger readings. Immediately investigate any significant drop in insulation resistance.
3. Check all electrical connectors to be sure that they are tight.

Without Grease Provisions

Note: *Only a Baldor authorized and UL or CSA certified service center can disassemble a UL/CSA listed explosion proof motor to maintain it's UL/CSA listing.*

1. Disassemble the motor.
2. Add recommended amount of grease to bearing and bearing cavity. (Bearing should be about 1/3 full of grease and outboard bearing cavity should be about 1/2 full of grease.)
3. Assemble the motor.

Sample Relubrication Determination

Assume- NEMA 286T (IEC 180), 1750 RPM motor driving an exhaust fan in an ambient temperature of 43° C and the atmosphere is moderately corrosive.

1. Table 3-1 list 9500 hours for standard conditions.
2. Table 3-2 classifies severity of service as "Severe".
3. Table 3-4 shows that 1.2 in³ or 3.9 teaspoon of grease is to be added.

Note: Smaller bearings in size category may require reduced amounts of grease.

Table 3-5 Troubleshooting Chart

Symptom	Possible Cause	Possible Solutions
Motor will not start	Usually caused by line trouble, such as, single phasing at the starter. controls, etc.	Check source of power. Check overloads, fuses, controls, etc.
Excessive humming	High voltage.	Check input line connections.
	Eccentric air gap.	Have motor serviced at local Baldor service center.
Motor over heating	Overload. Compare actual amps (measured) with nameplate rating.	Locate and remove source of excessive friction in motor or load. Reduce load or replace with motor of greater capacity.
	Single Phasing.	Check current at all phases (should be approximately equal) to isolate and correct the problem.
	Improper ventilation	Check external cooling fan to be sure air is moving properly across cooling fins. Excessive dirt build-up on motor. Clean motor.
	Unbalanced voltage.	Check voltage at all phases (should be approximately equal) to isolate and correct the problem.
	Rotor rubbing on stator.	Check air gap clearance and bearings. Tighten "Thru Bolts".
	Over voltage or under voltage.	Check input voltage at each phase to motor.
	Open stator winding.	Check stator resistance at all three phases for balance.
	Grounded winding.	Perform electric test and repair as required.
	Improper connections.	Inspect all electrical connections for proper termination, clearance, mechanical strength and electrical continuity. Refer to motor lead connection diagram.
Bearing over heating	Misalignment.	Check and align motor and driven equipment.
	Excessive belt tension.	Reduce belt tension to proper point for load.
	Excessive end thrust.	Reduce end thrust from driven machine.
	Excessive grease in bearing.	Remove grease until cavity is approximately $\frac{3}{4}$ filled.
	Insufficient grease in bearing.	Add grease until cavity is approximately $\frac{3}{4}$ filled.
	Dirt in bearing.	Clean bearing cavity and bearing. Repack with correct grease until cavity is approximately $\frac{3}{4}$ filled.
Vibration	Misalignment.	Check and align motor and driven equipment.
	Rubbing between rotating parts and stationary parts.	Isolate and eliminate cause of rubbing.
	Rotor out of balance.	Have rotor balance checked and repaired at your Baldor Service Center.
	Resonance.	Tune system or contact your Baldor Service Center for assistance.
Noise	Foreign material in air gap or ventilation openings.	Remove rotor and foreign material. Reinstall rotor. Check insulation integrity. Clean ventilation openings.
Growling or whining	Bad bearing.	Replace bearing. Clean all grease from cavity and new bearing. Repack with correct grease until cavity is approximately $\frac{3}{4}$ filled.

Installation & Maintenance Instructions

2-WAY INTERNAL PILOTED—OPERATED SOLENOID VALVES
BRASS AND STAINLESS STEEL CONSTRUCTION
NORMALLY CLOSED OPERATION — 1", 1 1/4", & 1 1/2" NPT

SERIES
8210
8211

Form No.V545R5

NOTICE: See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Cause of Improper Operation, Coil or Solenoid Replacement.

DESCRIPTION

Series 8210 valves are 2-way normally closed internal pilot—operated solenoid valves designed for general service. Valves are made of rugged forged brass or stainless steel. Series 8210 valves are provided with a general purpose solenoid enclosure. Series EF8210 and 8211 are the same as Series 8210 except they are provided with an explosionproof or explosionproof/watertight solenoid enclosure.

OPERATION

Normally Closed: Valve is closed when solenoid is de-energized; open when energized.

NOTE: No minimum operating pressure differential required.

Manual Operator (optional feature)

Manual operator allows manual operation when desired or during an electrical power outage. To engage manual operator (open the valve), remove operator cap and gasket base of valve. Turn manual operator stem clockwise as far as possible. Do not force operator stem. Valve will then be in the same position as when the solenoid is energized. To disengage manual operator, turn stem counterclockwise as far as possible.

▲ CAUTION: Stem must be fully retracted counterclockwise before operating valve electrically.

Replace manual operator cap gasket and cap.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency, and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

Future Service Considerations

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a nonhazardous, noncombustible fluid after disassembly and reassembly.

Temperature Limitations

For maximum valve ambient and fluid temperatures, refer to chart below. Check catalog number prefix and watt rating on nameplate.

Watt Rating AC/DC	Catalog Number Prefix	Coil Class	Maximum Ambient Temp.	Maximum Fluid Temp.
15.1 & 18.1	None, KF, SF or SC	F	125°F (51.7°C)	180°F (82°C)
AC	HT, KH, ST or SU	H	140°F (60°C)	180°F (82°C)
30.6 DC	HT	H	104°F (40°C)	77°F (25°C)

Positioning

AC Construction (Alternating Current): Valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertical and upright so as to reduce the possibility of foreign matter accumulating in the solenoid base sub-assembly area.

DC Construction (Direct Current): Valve must be mounted with solenoid vertical and upright.

Piping

Connect piping to valve according to markings on valve body. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

▲ CAUTION: To protect the solenoid valve, install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8800, 8801 and 8802 for strainers.

MAINTENANCE

▲ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before servicing the valve.

NOTE: It is not necessary to remove the valve from the pipeline for repairs.

Cleaning

All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to open or close. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the valve as free from dirt and foreign material as possible.
- While in service, the valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Causes of Improper Operation

- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
- **Excessive Leakage:** Disassemble valve and clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Disassembly

1. Disassemble valve in an orderly fashion using exploded views for identification and placement of parts. Refer to Figure 2 for AC construction; Figure 3 for DC construction.
2. Remove solenoid enclosure. See separate instructions.
3. Unscrew solenoid base sub-assembly. For DC construction, a special wrench is supplied in ASCO Rebuild Kit. For wrench only, Order ASCO Wrench Kit No. K168146-001.
4. Remove bonnet screws, valve bonnet, bonnet gasket, spring retainer (AC construction only) core spring, core/diaphragm sub-assembly and body gasket.
5. For valves equipped with a manual operator, remove cap, cap gasket, bonnet and bonnet gasket. Remove stem assembly with stem gasket from bonnet.
6. All parts are now accessible for cleaning or replacement. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Reassembly

1. Lubricate all gaskets and the disc at the base of the core/diaphragm sub-assembly with DOW CORNING 111® Compound lubricant or an equivalent high-grade silicone grease.
2. Replace body gasket and core/diaphragm sub-assembly. Locate bleed hole in core/diaphragm sub-assembly directly over valve outlet. For 1 1/2" NPT construction, locate bleed hole in core/diaphragm sub-assembly approximately 30° from valve outlet.
3. Replace core spring and spring retainer (AC construction only). Install small end of core spring in core first, wide end protruding from top of core. For DC construction, install core spring, small end down toward valve body.
4. Replace valve bonnet and bonnet screws. Hand tighten bonnet screws as far as possible.

IMPORTANT: Press firmly down on core/diaphragm sub-assembly to seat diaphragm assembly against valve seat. While holding this position, torque bonnet screws in a crisscross manner to 144 ± 15 in.-lbs [16,3 ± 1,7 Nm].

5. Replace bonnet gasket and solenoid base sub-assembly. Torque solenoid base sub-assembly to 175 ± 25 in.-lbs [19,8 ± 2,8 Nm]. For DC construction, the solenoid base sub-assembly must be placed inside the housing before assembling into the valve body. Before doing this, read separate lubrication instructions in *Solenoid Installation & Maintenance Instructions*.
6. For valves provided with a manual operator, replace stem assembly and bonnet (with gaskets). Torque bonnet to 75 ± 10 in.-lbs [8,5 ± 1,1 Nm]. Replace cap gasket and cap.
7. Install solenoid. See separate instructions.

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

8. Restore line pressure and electrical power supply to valve.
9. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic click signifies the solenoid is operating.

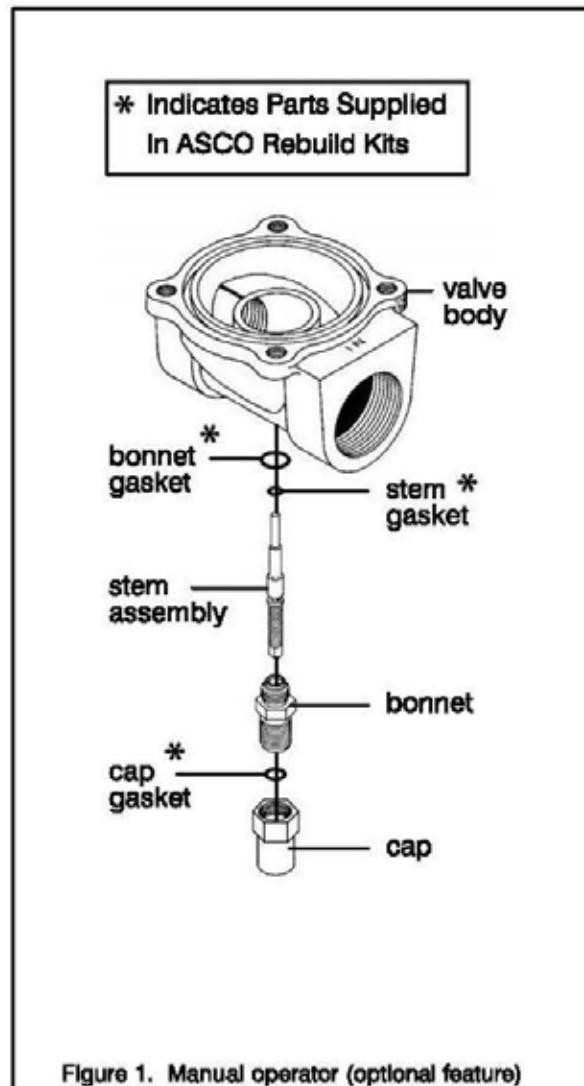
ORDERING INFORMATION

FOR ASCO REBUILD KITS

Parts marked with an asterisk (*) in the exploded view are supplied in Rebuild Kits. When Ordering Rebuild Kits for ASCO valves, order the Rebuild Kit number stamped on the valve nameplate. If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

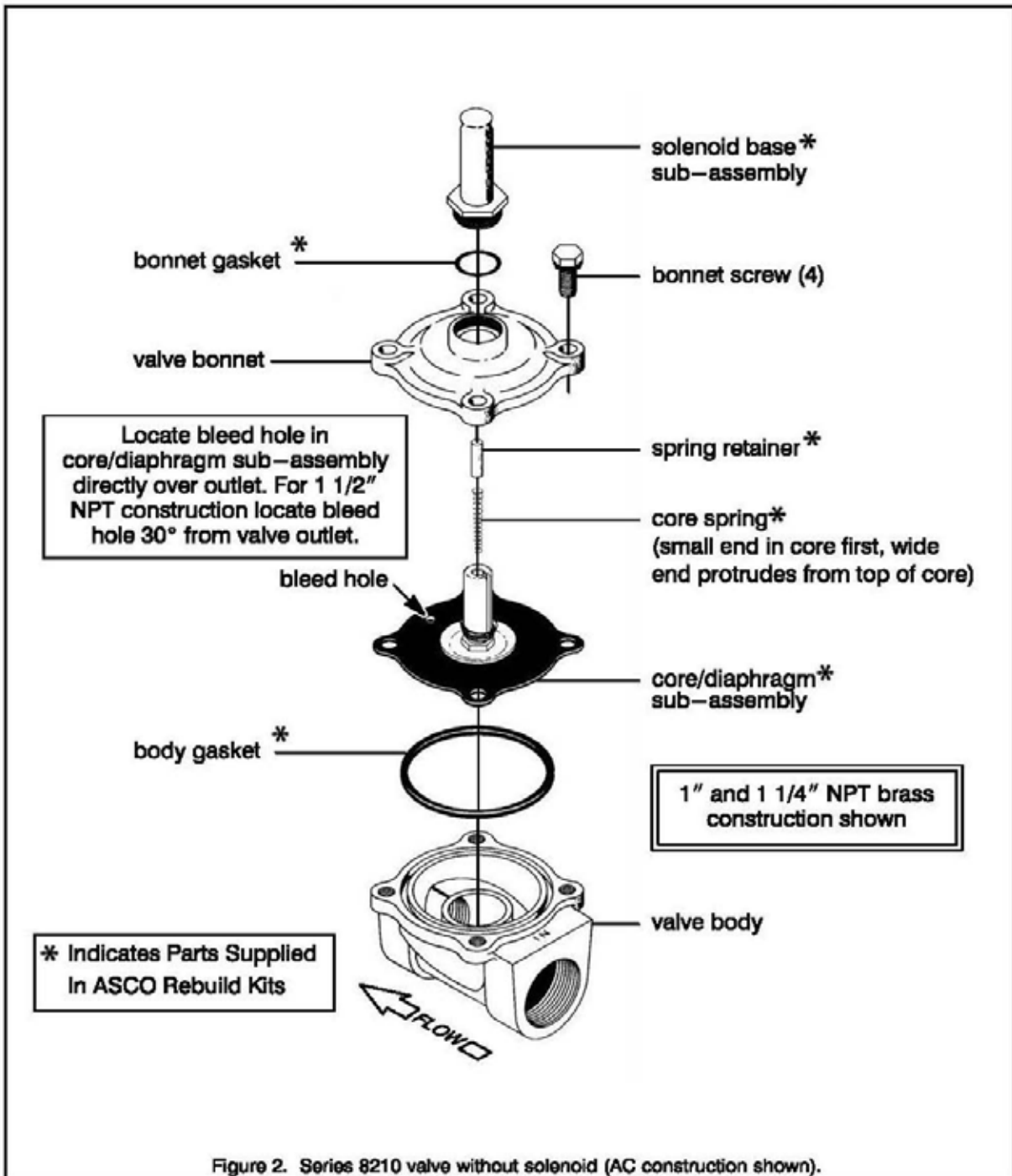
Torque Chart

Part Name	Torque Value Inch-Pounds	Torque Value Newton-Meters
Manual operator bonnet	75 ± 10	8,5 ± 1,1



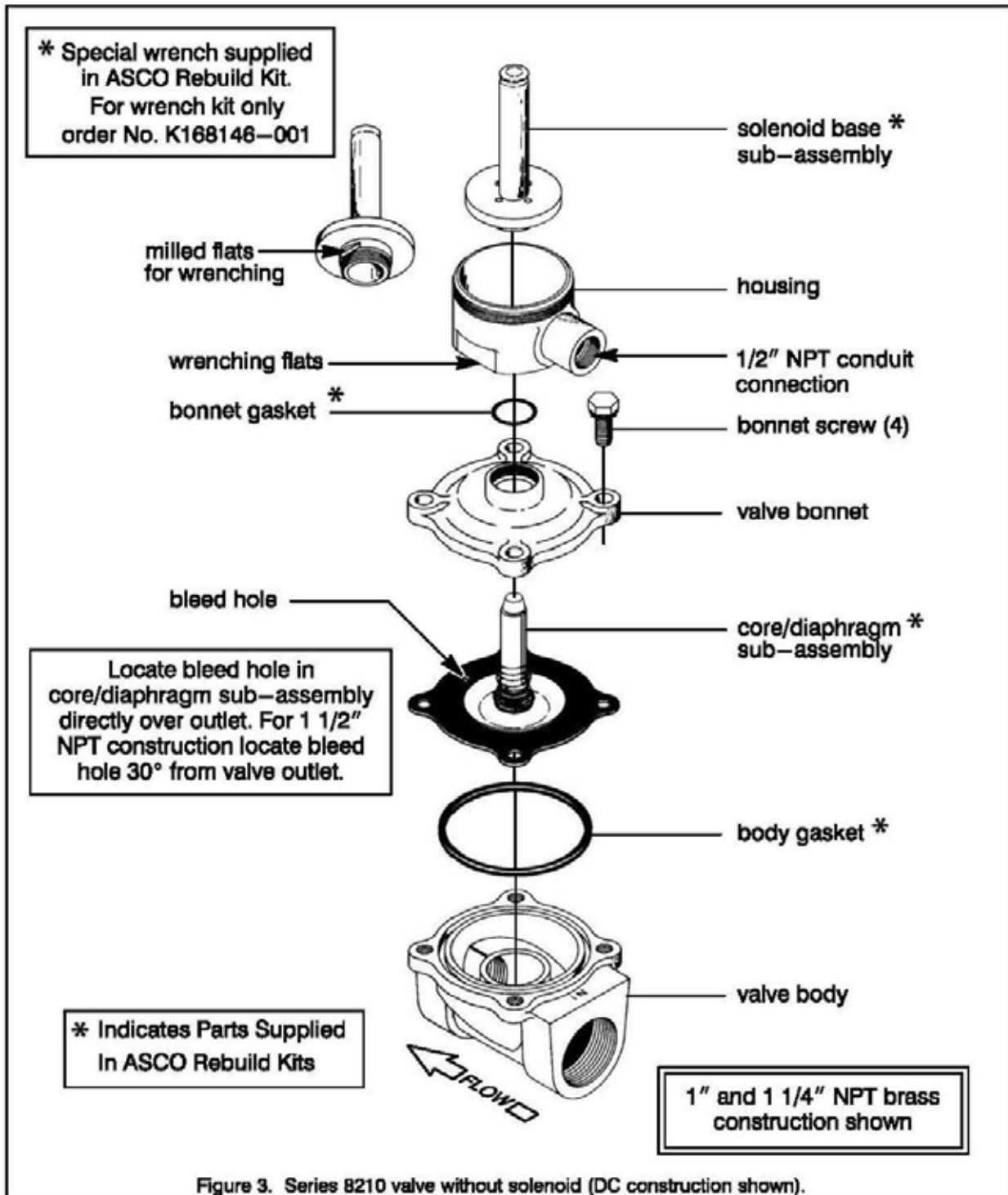
Torque Chart

Part Name	Torque Value Inch-Pounds	Torque Value Newton-Meters
Solenoid base sub-assembly	175 ± 25	19,8 ± 2,8
Bonnet screw	144 ± 15	16,3 ± 1,7



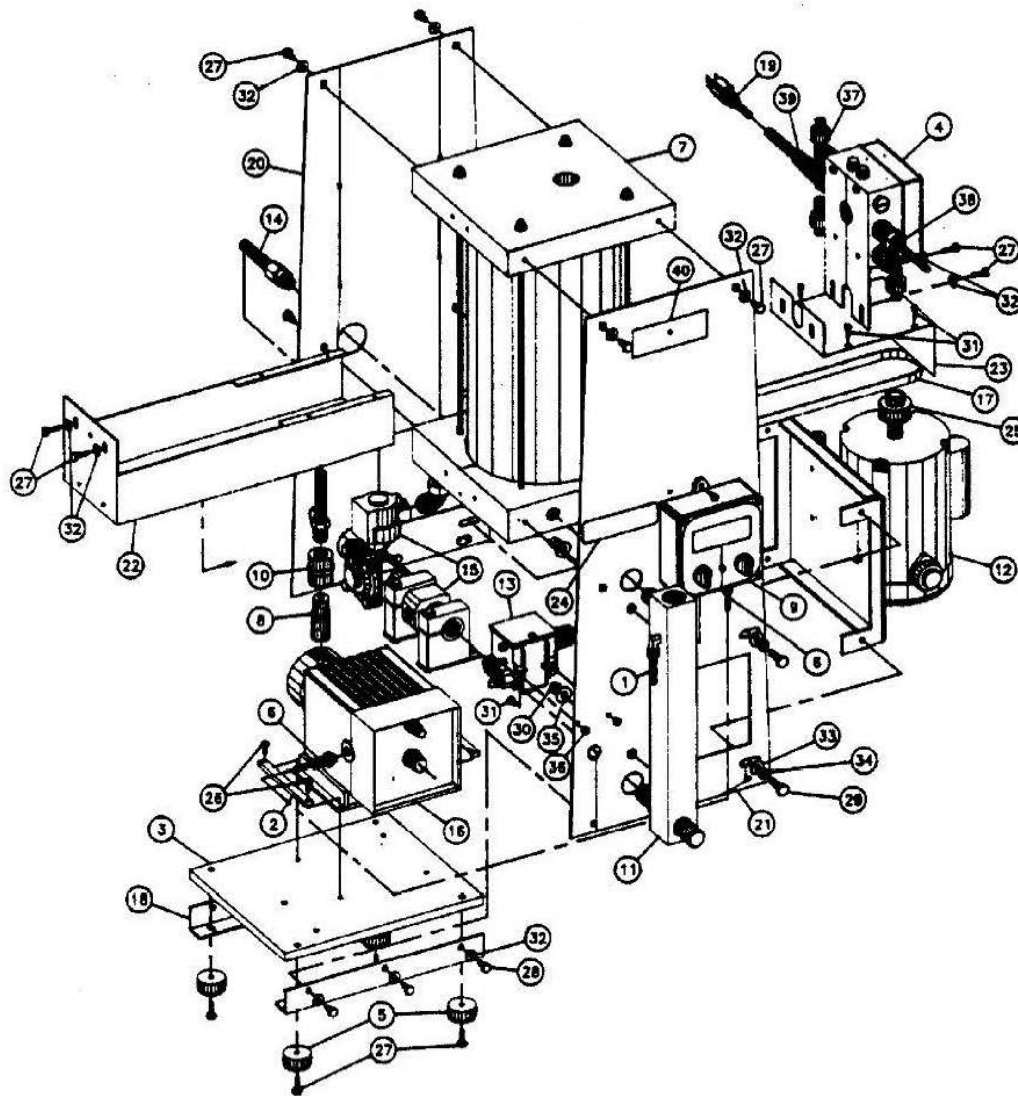
Torque Chart

Part Name	Torque Value Inch-Pounds	Torque Value Newton-Meters
Solenoid base sub-assembly	175 ± 25	19,8 ± 2,8
Bonnet screw	144 ± 15	16,3 ± 1,7



OVERALL

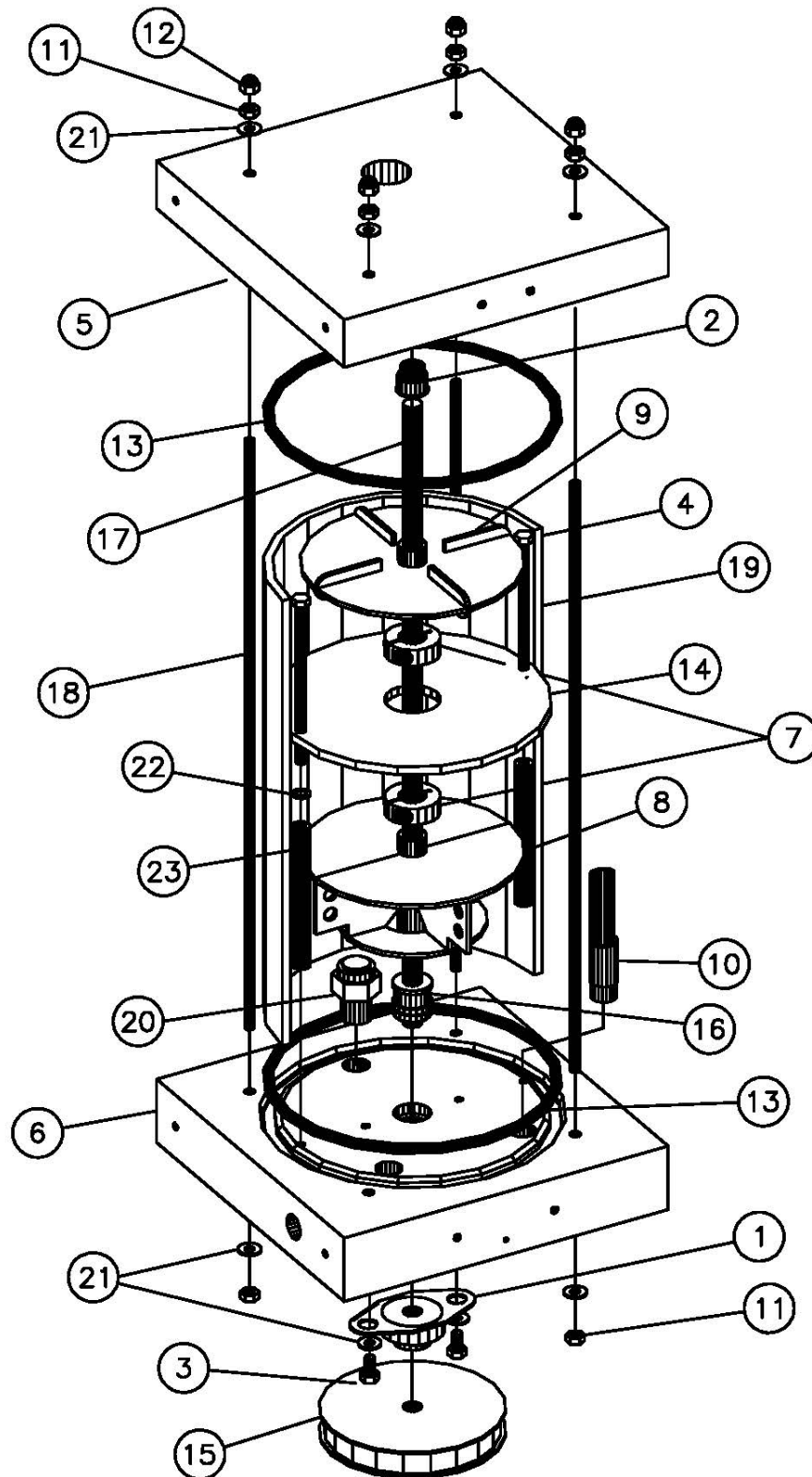
ITEM	P/N	DESCRIPTION	QTY	UM
1	10342	TUBING, 3/8" OD X 1/4" ID, POLYETHYLENE	1.00	FT
2	10746	BRACKET, PUMP	2.00	EA
3	1364002	BASE SUB-ASSY. PB600-0	1.00	EA
4	1672006	BOX JUNCTION	1.00	EA
5	1890002	BUMPER, RUBBER	4.00	EA
6	1984005	CABLE ASSY.	1.00	EA
7	*****	CHAMBER ASSY, MIXING (SEE SECTION)	1.00	EA
8	26033	VALVE	1.00	EA
9	2846006	CONTROLLER, REM-1D	1.00	EA
10	2930004	CPLG, PVC, SCH 80 1/2" FPT	1.00	EA
11	*****	FLOWMETER, SUB-ASSY. (SEE SECTION)	1.00	EA
12	5902002	MOTOR	1.00	EA
13	8724903	SWITCH DIFF. PRESSURE	1.00	EA
14	9414003	TUBE BRAIDED SS, 1/2" MPT X 1/2" MPT X 18" LG*	1.00	EA
15	9571341	VALVE SOLENOID	1.00	EA
16	*****	PUMP (SEE SECTION)	1.00	EA
17	1450430	BELT	1.00	EA
18	1693007	BRKT. CHASSIS	2.00	EA
19	1983001	CABLE ASSY., 110V, 8FT GROUNDED, MALE PLG., 16/3	1.00	EA
20	2383003	CHASSIS, BACK	1.00	EA
21	2383004	CHASSIS, FRONT	1.00	EA
22	4684304	GUARD BELT, BOTTOM	1.00	EA
23	4685301	GUARD BELT, TOP	1.00	EA
24	5554000	LABEL, SERIAL PLATE	1.00	EA
25	7070100	PULLEY	1.00	EA
26	7772508	SCREW, MACH, 10-32 X 1/2 SLTD PH, SS	4.00	EA
27	1600312	BOLT, HH, 1/4-20 X 3/4 SS	8.00	EA
28	1600308	BOLT, HH, 1/4-20 X 1/2 SS	10.00	EA
29	1601316	BOLT, HH, 5/16-18 X 1 SS	4.00	EA
30	6020235	NUT, 3/8-24, HEX, SS	2.00	EA
31	7771558	SCREW, MACH, SS PAN HD, PHIL, 8-32 X 1/2	6.00	EA
32	9740300	WASHER, SS, FLAT 1/4"	20.00	EA
33	9741300	WASHER, SS, FLAT, 5/16	4.00	EA
34	9741315	WASHER, SS, SPLIT, LOCK 5/16"	4.00	EA
35	9742300	WASHER, SS, FLAT, 3/8	2.00	EA
36	6020962	NUT, 8-32, HEX	2.00	EA
37	2577264	ELBOW, CONDUIT	3.00	EA
38	2726564	CONNECTOR CORD GRIP	1.00	EA
39	2726562	CONNECTOR W/JACKET 1/2 MPT	1.00	EA
40	5551210	LABEL, POLYBLEND	1.00	EA



MIXING CHAMBER 2341101

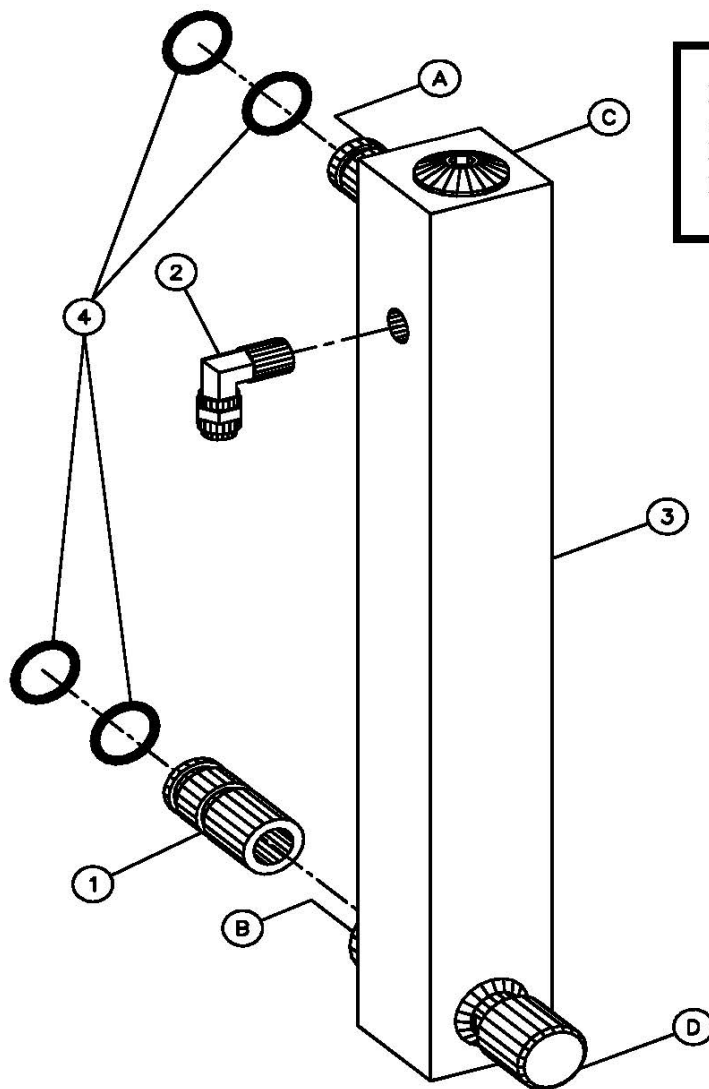
ITEM	PART NO.	DESCRIPTION	QTY.
1	1411001	BEARING	1
2	1414001	BEARING, THRUST	1
3	1600308	BOLT, HH, 1/4-20 X 1/2	2
4	1600341	BOLT, HH, 1/4-20 X 5	2
5	2124006	CAP, TOP, MIXING CHAMBER	1
6	2124007	CAP, BOTTOM, MIXING CHAMBER	1
7	2650002	COLLAR	2
8	5173601	IMPELLER, PRIMARY	1
9	5173602	IMPELLER, SECONDARY	1
10	5993002	NOZZLE, MIX CHAMBER (MANNICH POLYMER)	1
11	6020031	NUT, 1/4-20, HEX, SS	8
12	6023031	NUT, ACORN, 1/4", S.S.	4
13	6091802	O-RING	2
14	6676001	PLATE, BAFFLE	1
15	7070412	PULLEY	1
16	7802910	SEAL, MECHANICAL	1
17	7854304	SHAFT	1
18	8603001	STUD	4
19	9412801	TUBE, ACRYLIC	1
20	9572323	VALVE, INJ. CHECK	1
21	9740300	WASHER, FLAT, 1/4"	10
22	9740330	WASHER, SS, INT TOOTH, 1/4"	2
23	RM6600021	1/4" S-80 PVC PIPE	1

MIXING CHAMBER 2341101

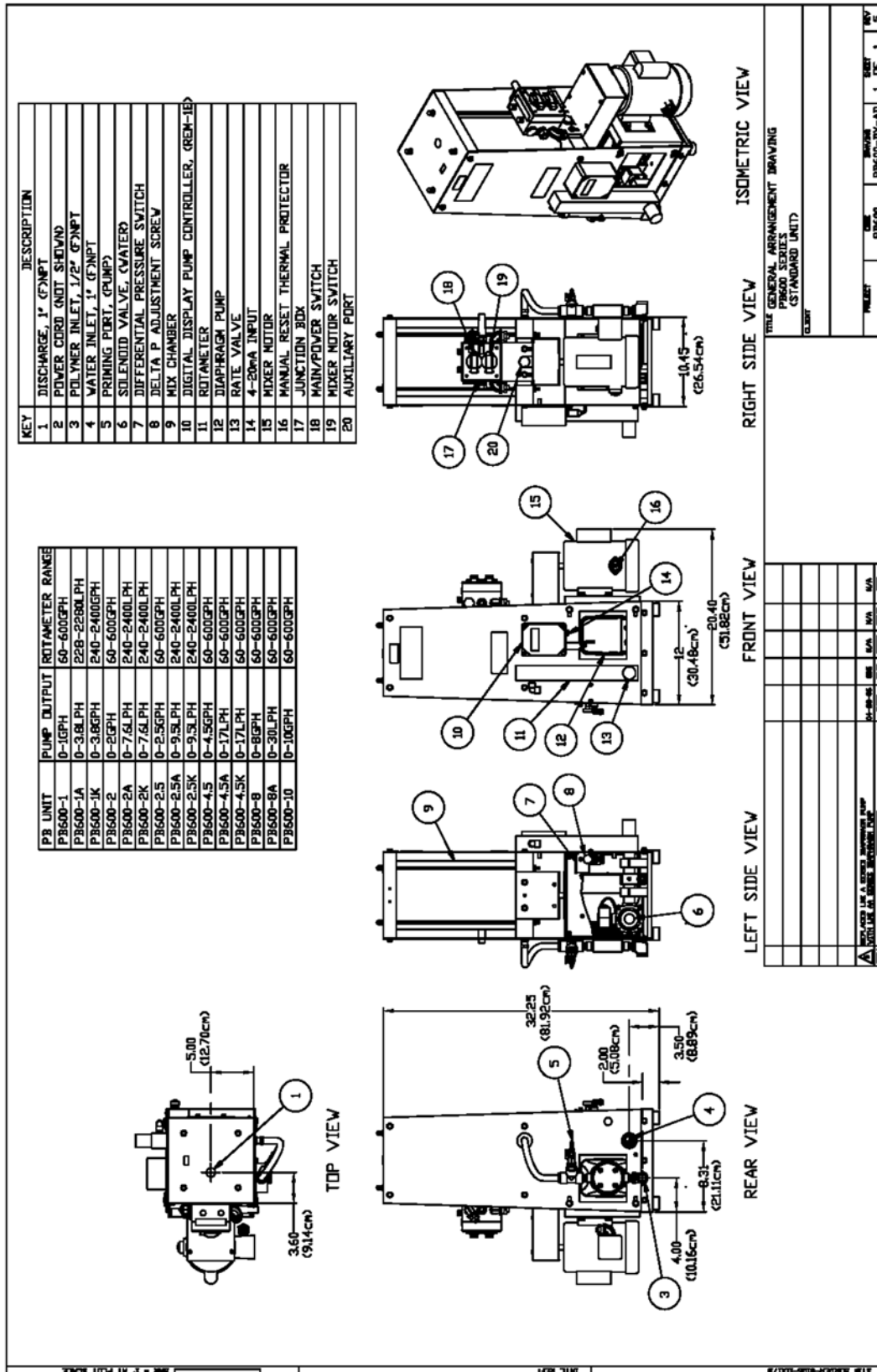


FLOWMETER ASSEMBLY – P/N 4303105

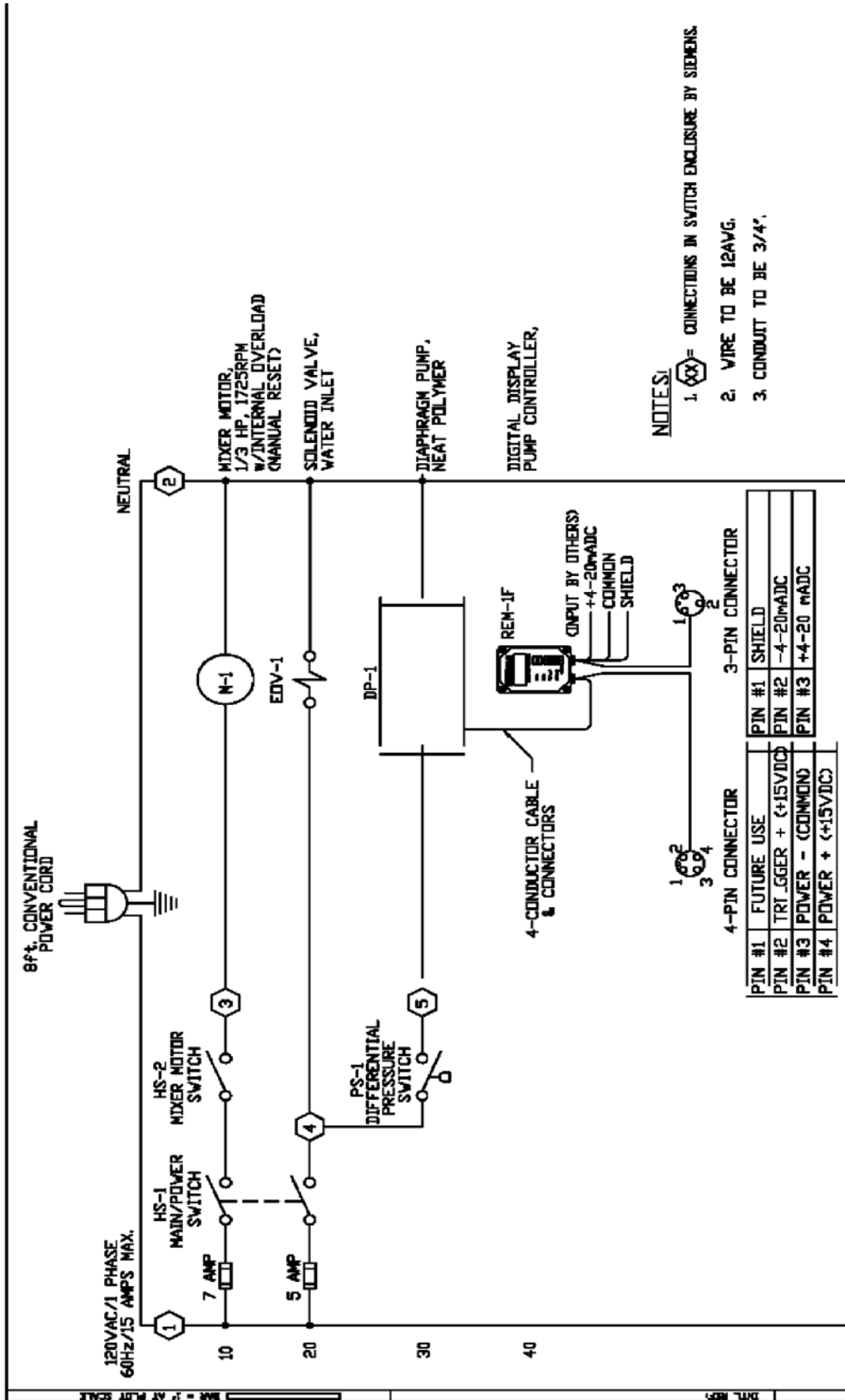
ITEM	PART NO.	DESCRIPTION	QTY.	UM
1	1048005	ADAPTER, SPUD	1	EA
2	3581634	ELBOW, BRASS, 1/4" MPT X 3/8" OD COMP	1	EA
3	4293101	FLOWMETER, KING, 10GPM	1	EA
4	6091302	O-RING, BUNA N	4	EA
A	1040094	ADAPTER, OUTLET, FLOWMETER	1	EA
B	1048402	ADAPTER	1	EA
C	6720702	TOP PLUG, KING	1	EA
D	9579302	VALVE, KING	1	EA



Items with alphabetical callouts are components of Item #3. They are shown here in case you wish to order replacement parts.



Operation & Maintenance Instructions ■ PolyBlend LJPB Series 600 & 1000

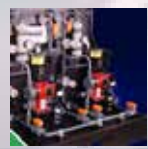




Accessories



Chemical Feed Systems



Measuring and Control Technology



Transfer Pumps

Metering Pumps

March 2014