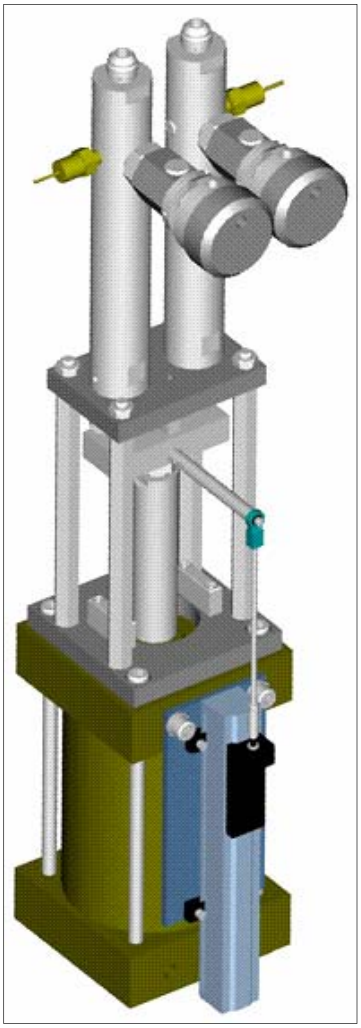
FLUID Automation, Inc
• 49175 WEST ROAD • P.O. BOX 930302 • WIXOM, MICHIGAN 48393 • PH. 248-912-1970 • FAX 248-912-1971 •
• Website: www.fluidautomation.com • E-mail: sales@fluidautomation.com •

Model 631 Meter-Mix Unit

OPERATING INSTRUCTIONS & PARTS BREAKDOWN



Fluid Automation, Inc.

Panel Layout & Operating Instructions

Table of Contents

P.O. Box 930302 • 49175 West Road • Wixom, Michigan 48393-0302 • Phone (248)-912-1970 • Fax (248)-912-1971

Fluid Automation, Inc.

FLUID Automation, Inc

Presets, Calibration Factors, Offsets and Settings

Description	Date: Init. Settings	Date:	Date:	Date:
Mold Machine Shot Size-				
Max System Pressure-				
A Packing Pressure				
B Packing Pressure				
A-B Minimum Refill Pressure -				
Mixed Specific Gravity-				
Refill Fault Time –				
Percent of Color Addition-				
Color Injector Shot Size-				
Throat Pressure Transducer Offset -				
A-Material Pressure Transducer Offset-				
B-Material Pressure Transducer Offset-				

Panel Layout & Operating Instructions

1. 1 PLC Controls & 631 Unit

A. Control Panel Pushbuttons:

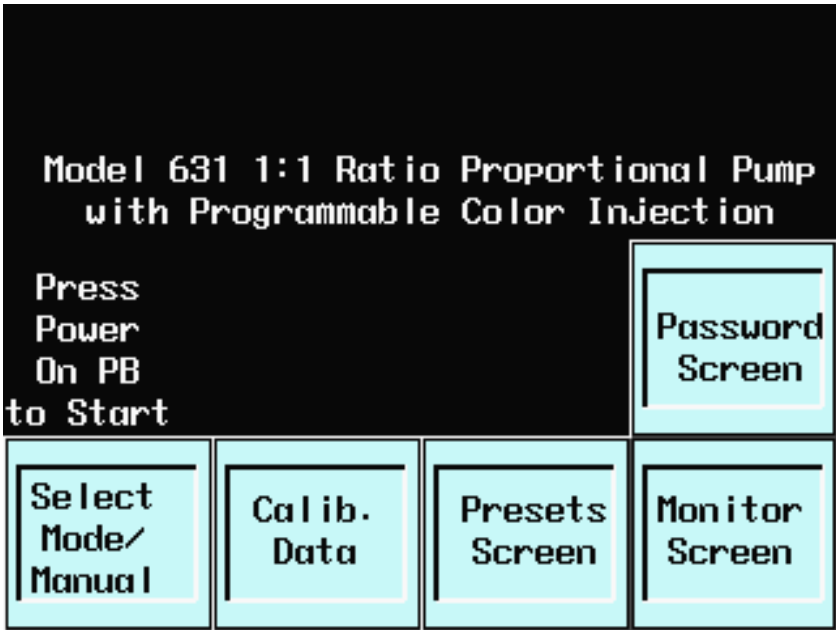
- **Green Pushbutton** ~ This is the power on button which activates the pumping system. Once this button is pressed the operator interface will switch to the "Select Mode Screen".
- **Red Mushroom Pushbutton** ~ This shuts off all of the outputs to the metering unit. Once this button has been pressed, the unit will drop out of its current mode.

B. Touch Screen Controls:

The following sections describe all of the screen in detail. Each screen element is explained under the corresponding screen. To change certain variables, a password is needed. This password is entered on the "Password Screen" which is described in detail later in this section.

Screen #1: **Main Screen**

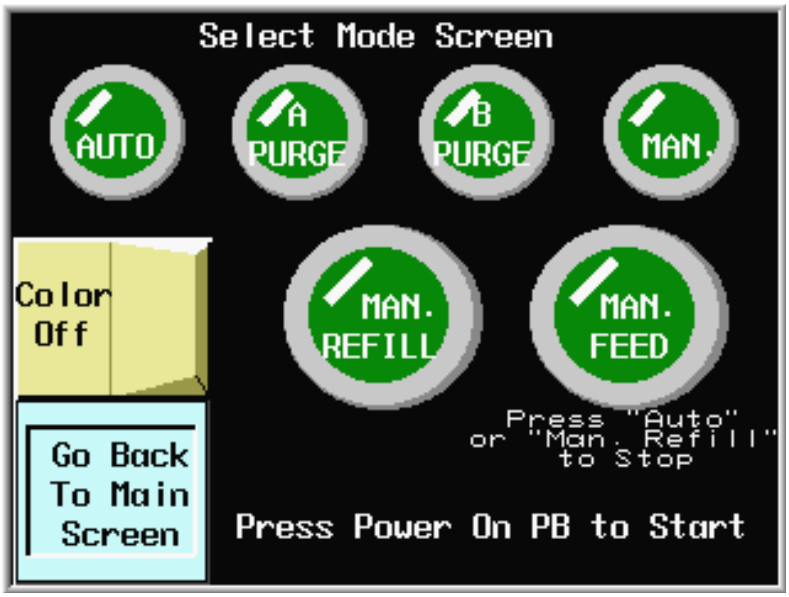
This is the default screen for the unit. Messages will be displayed above the navigation buttons to help determine the next step in operating the metering unit.



Select Mode/ Manual	The Select Mode / Manual Operations key, when depressed, switches the operator interface screen to the "Select Mode Screen". This screen is described in detail in the next section.
Calib. Data	This key activates the "Calibration Screen" where setpoint data values are entered for the pressure transducers. Actual pressure values for the A & B inlets and throat pressures are displayed on this screen as well.
Presets Screen	This key activates the first "Presets Screen" where setpoint data values are entered for Shot Size, Desired Throat Pressure and Packing Pressure for both the A & B Inlets. The second calibration screens is selected from the first calibration screen. This is where the Color Injector Percentage, Color Injector Shot Size, Refill Pressures and Specific Gravity information is entered.
Monitor Screen	The "Monitor Screen" displays, in graphical representation, the Feed Throat Pressure, A-Material Inlet, B-Material Inlet and Position of the metering unit.
Password Screen	To activate certain functions on the control panel, a password must be entered on this screen. This is also where the metering units MAX & ZERO points are set using the Extend and Retract pushbuttons.

Screen #2: **Select Mode Screen**

The "Select Mode Screen" is used to select the desired mode for the metering unit. During normal operations, the machine should be placed in Auto-Mode.



Auto

Auto-Mode is the default mode while dispensing material to the injection molding machine. The metering unit uses all of the information input on the preset screens to provide a consistent amount of material, at the desired pressure setpoint, to the feed throat. When the unit senses that it cannot dispense another complete shot size volume, it will automatically refill. To start an automatic cycle the unit must receive a "Refill" signal from the injection press.

A-Purge

To purge the unit with A-Material only select this mode. When the "Refill" signal activates on the injection press, it will open both the inlet and outlet valves on the A-material side. The metering unit will remain in its current position to prevent any B-material from being dispensed. The color injector will also turn off in this mode providing a visual indicator when the single component exits the static mixer.

Note: When you start the unit back up in Auto-Mode, dispense enough material through the nozzle until it properly cures on the outside of the mold. This will prevent filling the mold with material that doesn't cure.

B-Purge

To purge the unit with B-Material only select this mode. When the unit receives the "Refill" signal from the injection press, it will open both the inlet and outlet valves on the B-material side. The metering unit will remain in its current position to prevent any A-material from being dispensed. The color injector will also turn off in this mode providing a visual indicator when the single component exits the static mixer.

Note: When you start the unit back up in Auto-Mode, dispense enough material through the nozzle until it properly cures on the outside of the mold. This will prevent filling the mold with material that doesn't cure.

Manual

The Manual Mode key places the unit into Manual Mode. This activates the two Manual keys located below the mode selection keys. In manual mode, the unit can be manually refilled or material can be manually dispensed. See the "Manual Refill" and "Manual Feed" keys later in this section for manual operations.

Color Off	Color On

This toggle switch is used to turn on and off the color injector function. When the color injector button is placed in the "ON" position, the color injector fires automatically to achieve the percentage that was entered on the "Preset #2" screen. In order to achieve the correct percentage, it is also dependant on the correct "Color Injector Shot Size" information being entered into the preset screen. To determine the correct color injector shot size see the section "Color Injector Configuration" in the next section.

Note: When not running color, remove the color injector to prevent the tip from curing. (See: Color Injector Operations)

Manual Refill

When the unit is in Manual Mode, pressing this key will refill the metering unit until it reaches its maximum limit. Pressing this key in any other mode will have no effect.

Manual Feed

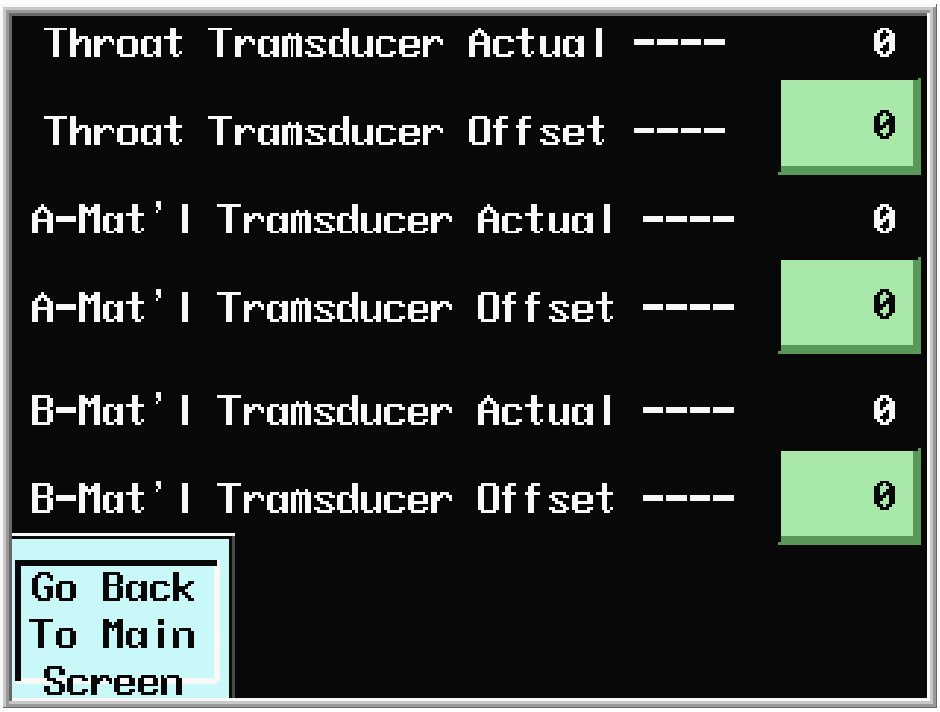
When the unit is in Manual Mode, pressing this key will dispense material until the unit is empty. Pressing this key in any other mode will have no effect. To stop dispensing, either press the "Auto" mode selection key or cycle the power button.

Message Center

Located throughout different screens, a message center displays helpful information and alerts that will prompt the operator to aide in operating the unit.

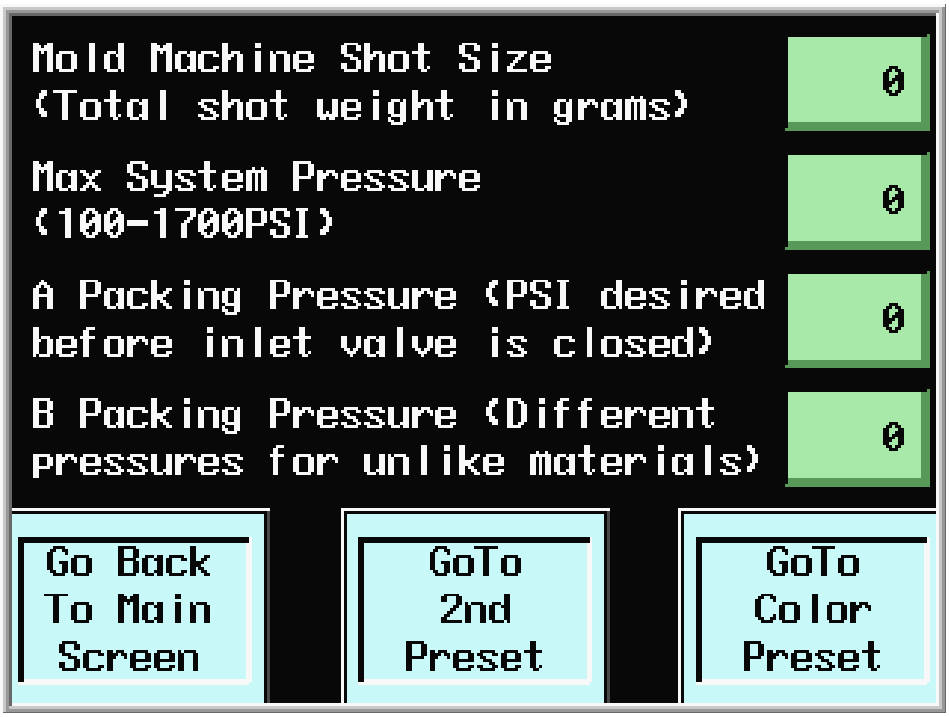
Screen #3: **Calibration Screen**

In order for the pressure transducers to read correctly, they must be calibrated to zero. With all of the pressure in the system removed the units should read zero. If not, enter a zero in the offset value. The value that appears in the "Actual" section is then entered into the "Offset" value for the corresponding transducer. The display will update and the "Actual" value should return to zero.



Screen #4: **1st Preset Screen**

For the unit to function properly certain data must be entered into the PLC via the operator interface panel. There are three preset screens and each variable is described in detail in this section.



- **Mold Machine Shot Size:** This is the total shot size per cycle on the injection press. This valve is used to signal when the metering unit refills. If a incorrect value is entered in this value the metering unit may not be able to refill the injection press barrel without refill. This may cause the injection press to fault out do to a time limit error.

- **Max Throat Pressure:** This is the require material pressure at the inlet to the injection press feed throat. Using the transducer mounted at the feed throat, the metering unit will continually adjust the material output pressure to ensure a consistent shot volume to the barrel.

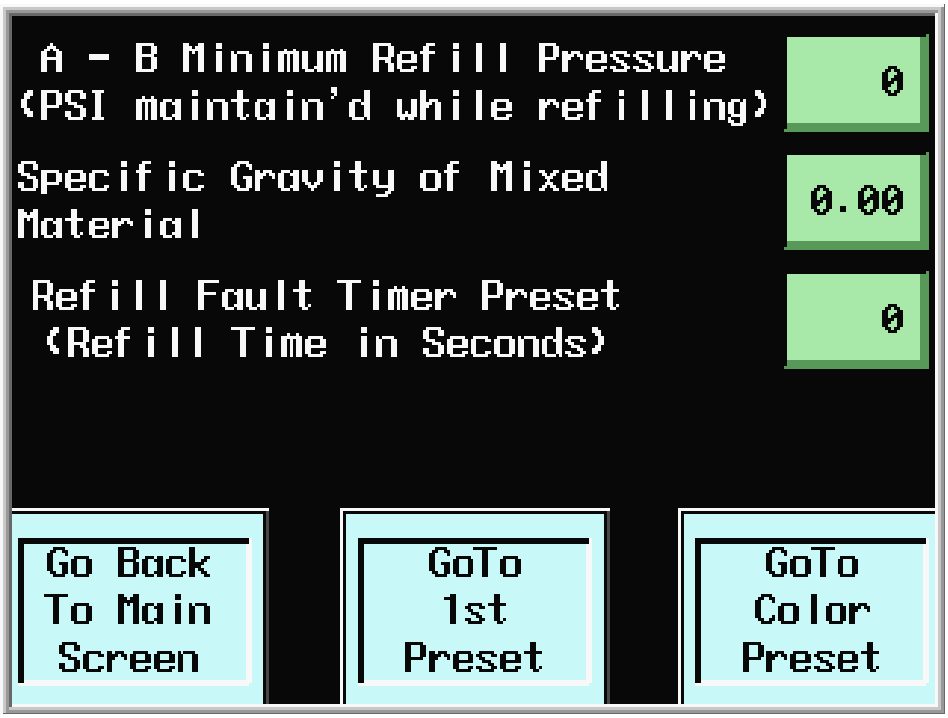
- **A-Packing Pressure:** Set this value to the desired metering unit packing pressure. The inlet valves will remain open until the pressure inside the metering unit reaches this setpoint. This ensures the metering unit has fully refilled and the silicone is compressed to a consistent packing pressure. This will ensure shot-to-shot repeatability. If the viscosities of the materi-

als differ, setting the A & B Packing values to a different setpoint will compensate are ensure a consistent 1:1 ratio. The rule of thumb is to set the higher viscosity material PSI to a higher value.

- **B-Packing Pressure:** Set this value to the desired metering unit packing pressure. The inlet valves will remain open until the pressure inside the metering unit reaches this setpoint. This ensures the metering unit has fully refilled and the silicone is compressed to a consistent packing pressure. This will ensure shot-to-shot repeatability. If the viscosities of the materials differ, setting the A & B Packing values to a different setpoint will compensate are ensure a consistent 1:1 ratio. The rule of thumb is to set the higher viscosity material PSI to a higher value.

Screen #5: **2nd Preset Screen**

For the unit to function properly certain data must be entered into the PLC via the operator interface panel. There are three preset screens and each variable is described in detail in this section.

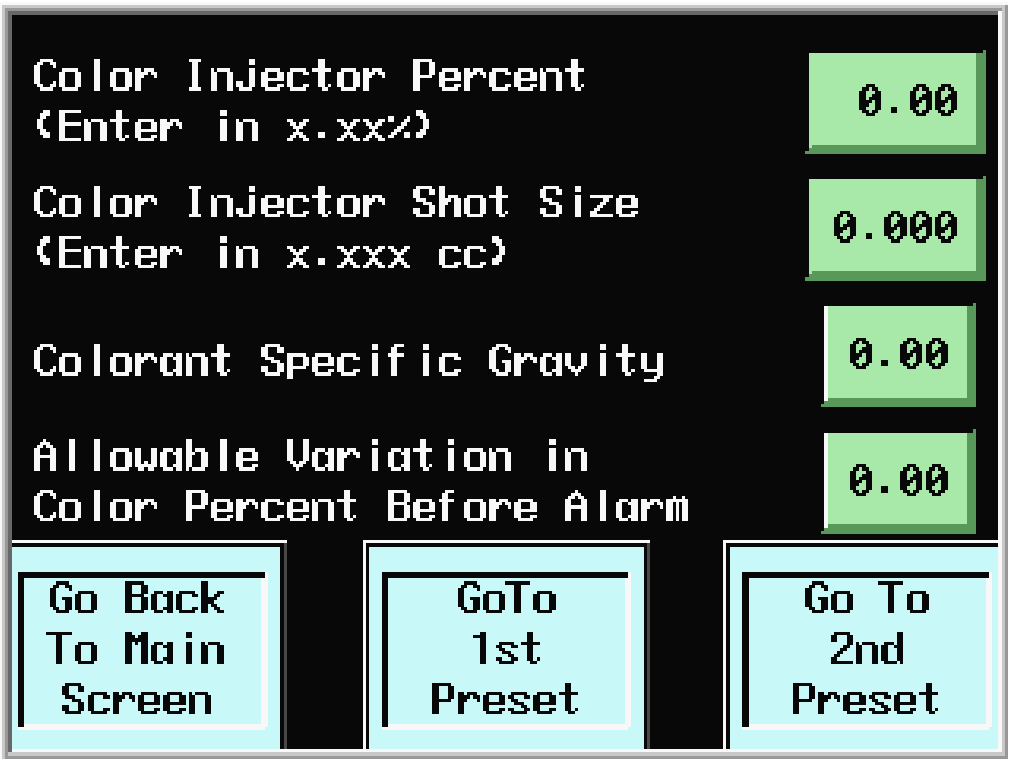


- **A-B Minimum Refill Pressure:** When refilling the metering unit pressure from the feed pumps may vary. Setting a minimum pressure setpoint that the metering must maintain while refilling will prevent the metering unit

from filling only on one side. When the metering unit senses a pressure drop below this value, it closes the control valve for the air cylinder and allows feed pump pressure to build up and fill the metering unit. When pressure increases over this setpoint the air cylinder valve opens and the unit begins to refill again

- **Specific Gravity of Mixed Material:** In order for the computer to calculate grams from cubic centimeters, this value must be set. If it is unknown enter 1.0 and the display will read out the value in cc's.
- **Refill Fault Timer Preset:** This timer activates at the start of the refill cycle. If the metering unit fails to refill in the allotted time, the fault times activates and sends a message to the operator interface. This usually indicates that there is insufficient feed to the metering unit. Check the feed pumps to see if they are empty or shut off.

Screen #6: **Color Preset Screen**



- **Color Injector Percent:** If you are dispensing a 3rd part material using a color injector, enter the desired percentage of material into this setpoint. The unit calculates when to fire the color injector using this value and the

"Color Injector Shot Size" setpoint.

Note: When dispensing the 3rd stream is no longer desired turn the color injector off on the "Select Mode Screen" and remove the color injector from the system. This will prevent curing of material in the tip of the color injector. .

- **Color Injector Shot Size:** In order to dispense the proper percentage the PLC calculates when to fire the color injector using the linear encoder position and the percent of color desired. The PLC needs to know the total shot volume that is being dispensed each time the color injector fires. To set this value use the following techniques.

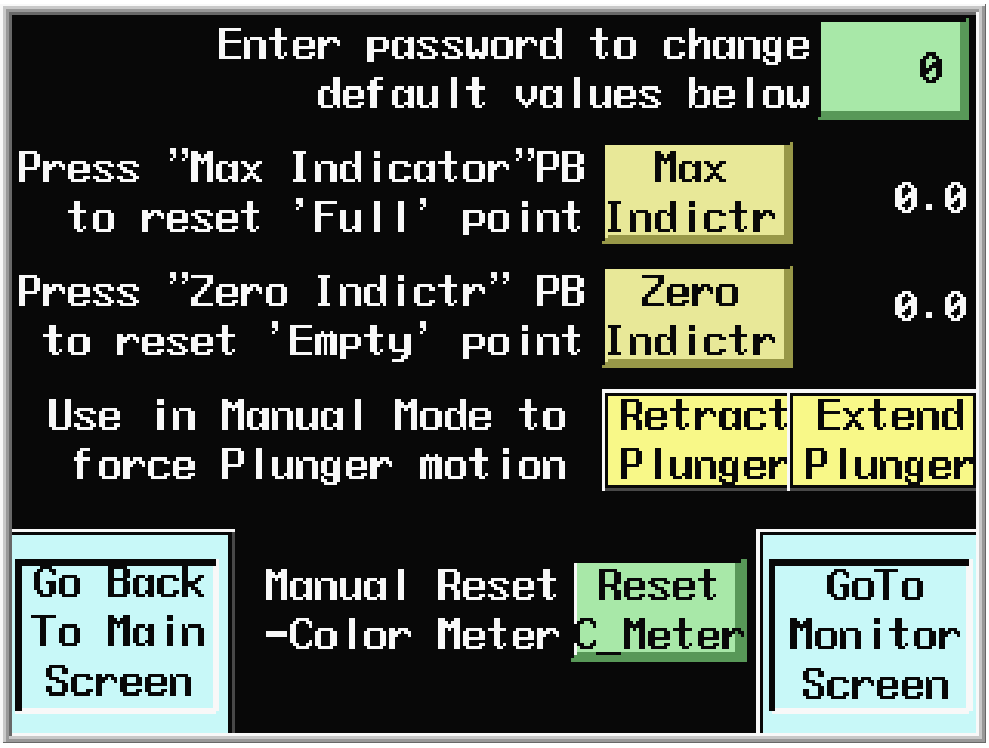
1. Disconnect the color injector from the static mixer if connected.
2. Prime the color injector if needed. (See: Color Injector Operations)
3. Tare weigh a cup and set the color injector so the cup will catch anything dispensed from it.
4. Using the manual actuator on the top valve in the valve stack, press and release it 20 times while collecting the sample in the tare weighed cup.
5. Weigh the contents of the cup.
6. Subtract the tare weight from the sample weight.
7. Divide the remainder by the number of times you pressed the manual actuator.
8. Enter this value into the "Color Injector Shot Size" variable.

- **Colorant Specific Gravity:** To correctly calculate the color percentage through the colorant flow meter, enter the Specific Gravity of the colorant into this variable. If the SG is unknown, enter 1.0 for the default value.

- **Allowable Variation in Color Percent Before Alarm:** This is the tolerance value that is used to signal an alarm. When the alarm is activated an indicator screen will be displayed. (See: Warning Screens)

Screen #7: Password Screen

In order to reset the injection unit after an EEPROM change or power failure that resets the position data, a password must be entered. The password is **3717** and remains active for 10 minutes then reverts back to zero.



A. Entering A Password

1. Using your finger, touch the green section next to the "Enter Password" header and a numeric key pad will appear.

2. Enter the password 3717 then press the enter key to activate this value.

3. The display should change showing 3717 in the password section.

B. Setting The "MAX" Point On The Injection Unit

1. With the password set to 3717, press and hold the "RETRACT PLUNGER" button until the unit fully retracts to its full position.

2. When the unit is fully retracted, press the "MAX INDICATOR" pushbutton and the display value should change to the new value.

C. Zeroing The Injection Unit

1. With the password set to 3717, press and hold the "EXTEND PLUNGER" button until the unit fully extends to its empty position. Note: The unit will try to dispense material. If there is no outlet for the material, pressure will build up inside the unit and it will stall. Therefore, open either the outlet line or nozzle to provide a path for the material pressure to escape.

2. When the unit reaches the empty position, press the "ZERO INDICATOR" pushbutton to reset the zero position.

D. Resetting The Color Flow Meter (Factory Installed Option)

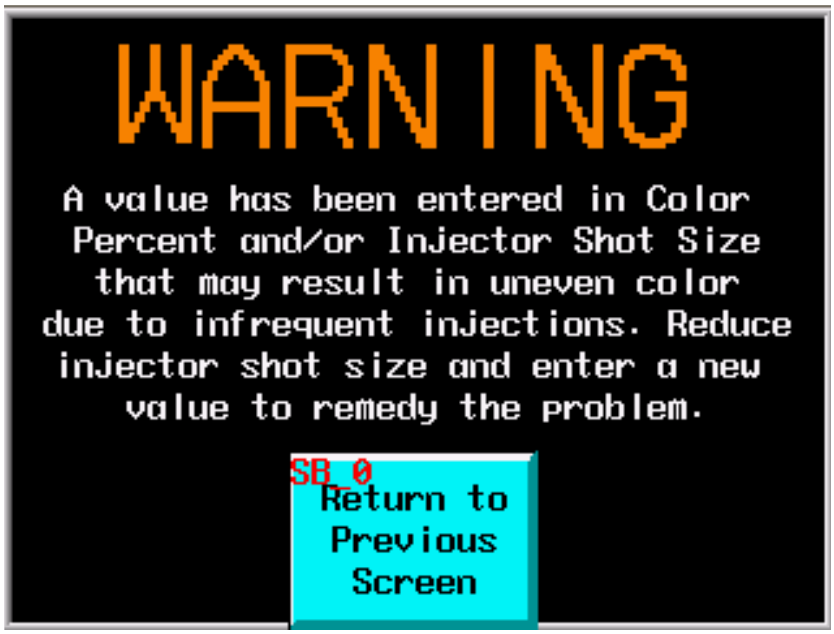
1. To reset the Color Flow Meter Data, press the "RESET C_METER" pushbutton on this screen.

Warning Screens & Indicators

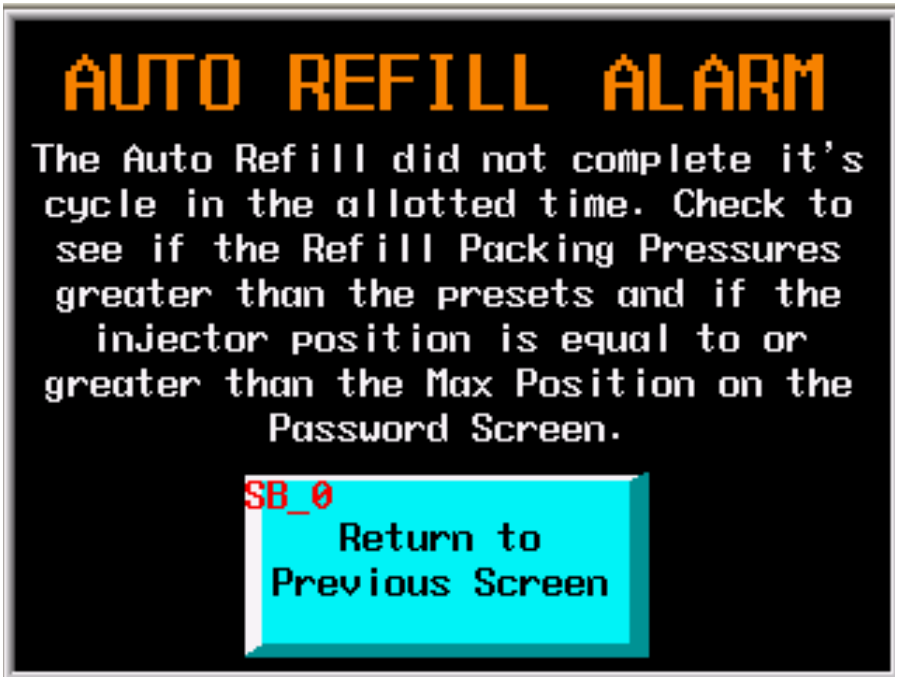
To aide in determining where a problem exists, screens and indicator will alert the operator to the probable cause. This section describes each screen and indicator.

Red Light Warning Light Indicator

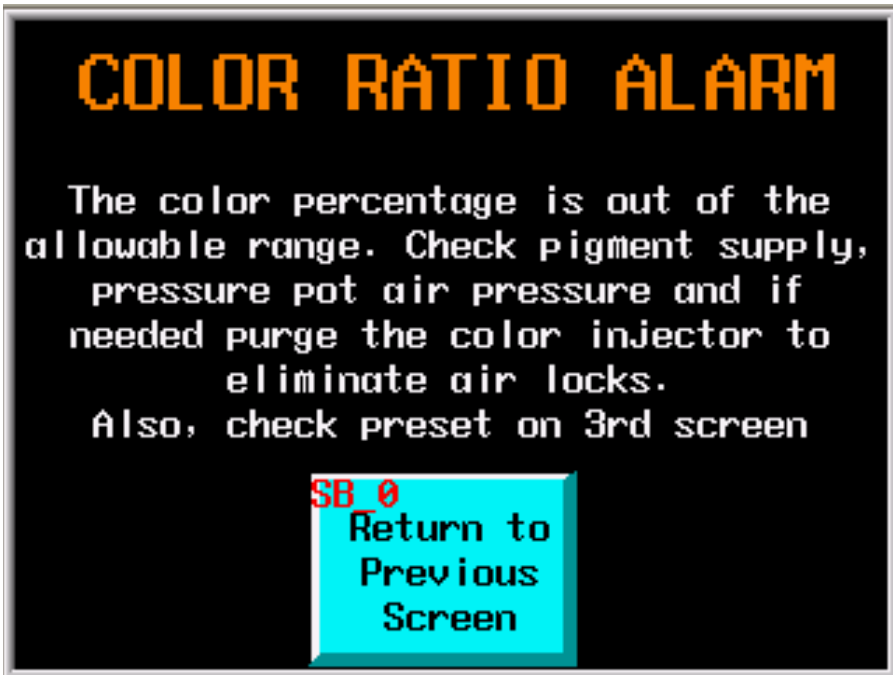
This is an indication that the metering unit has encountered a warning or an error. The operator interface should display a screen detailing the fault that caused the alarm.



This is a warning that the value entered into the “Color Injector Percent” or the “Color Injector Shot Size” will possibly cause uneven coloring of the material. The problem arises when the color injector fires at an interval greater than the static mixer can properly blend. We have set this value to 15 grams or more. The goal is to provide a consistent On/Off time resulting is an even blend being dispensed from the static mixer.



The “AUTO REFILL ALARM” is triggered when the unit fails to refill in the allotted time specified in the “REFILL FAULT TIMER” on Preset Screen #2. This can be an indicating that the feed pumps are out of material or not turned on. If this fault continues to occur and there is sufficient feed pressure, increase the “REFILL FAULT TIMER” value.



- This is an optional screen that indicates that the colorant flow meter measured an out-of-range error. On the Color Preset Screen, the variable “**ALLOWABLE VARIATION IN COLOR PERCENT BEFORE ALARM”** is the deviation setting that triggers this screen.

This factory installed option signals when the Colorant Feed Tank is near empty. It will not stop operations but it will activate and alarm and screen to signal the operator to add colorant.

1.2 Metering Unit Operating Instructions

A. Initial Startup

To ensure that all of air is properly removed from the material lines and metering unit follow these instructions.

1. Make sure the feed pumps have been loaded, primed and purged of air.
2. Fill the material lines full of material before they are connected to the metering unit to aide in the air removal process.
3. Disconnect the material lines at the manifold assembly to prevent filling the barrel and mold with air filled material.
4. Manually advance the metering unit to the empty position by entering Manual Mode and pressing the “Manual Feed” key.
5. Manually open the inlet valves by pressing the manual actuator on the valve stack that corresponds to the A & B Inlet valves.
6. Dispense enough material from the end of the hoses to ensure all of the air has been purged.
7. Reconnect the material lines to the manifold.
8. Make sure all of the settings for the metering unit have been set. (See: Section 1)
9. Manually refill the metering unit by pressing the “Manual Refill” key on the operator interface screen.
10. Place the unit into Auto Mode and fill the barrel.
11. Dispense material out the nozzle until it properly cures on the outside of the mold. This will prevent filling the barrel, nozzle and mold with material that won’t cure.

B. Automatic Cycle

Once the unit is full of material and the setpoint information has been entered, the unit is ready to dispense in an automatic cycle mode. In order for the unit to start an automatic cycle, the following conditions must be met.

1. Power to the unit must be on.
2. The metering unit must be in Auto Mode.

3. If color is desired, make sure the Color On button on the operator interface is pressed.

4. The remote start signal from the injection press is present. This signal only turns on during the refill portion of the cycle.

5. When all of these conditions are met the metering unit will refill the barrel of the injection press automatically.

C. Color Injector Operations

To properly dispense color, use the following steps to set up the color injector. This section assumes that the color variables have been set on the "Color Preset" screen. The variable information is listed below.

- **Color Injector Percent:** If you are dispensing a 3rd part material using a color injector, enter the desired percentage of material into this setpoint. The unit calculates when to fire the color injector using this value and the "Color Injector Shot Size" setpoint.

  Note: When dispensing the 3rd stream is no longer desired turn the color injector off on the "Select Mode Screen" and remove the color injector from the system. This will prevent curing of material in the tip of the color injector.

- **Color Injector Shot Size:** In order to dispense the proper percentage the PLC calculates when to fire the color injector using the linear encoder position and the percent of color desired. The PLC needs to know the total shot volume that is being dispensed each time the color injector fires. To set this value use the following techniques.

Setting the Color Injector Shot Size Value

1. Disconnect the color injector from the static mixer if connected.

2. Prime the color injector if needed.

3. Tare weigh a cup and set the color injector so the cup will catch anything dispensed from it.

4. Using the manual actuator on the color injector control valve in the valve stack, press and release it 20 times while collecting the sample in the tare weighed cup.

5. Weigh the contents of the cup.
6. Subtract the cup tare weight from the sample weight.
7. Divide the remainder by the number of times you pressed the manual actuator.
8. Enter this value into the "Color Injector Shot Size" variable.

Priming The Color Injector

Air is the primary issue in any dispensing application that requires the parts to be bubble free. Use the following steps to properly set up the color injector and purge it of any air.

1. Fill the colorant tank to the desired level.
2. Reduce the pressure on the colorant feed tank to about 10-20 PSI. This will prevent the material from gushing out while trying to remove the air bubble inside the unit.
3. Press and lock the manual actuator for the color injector valve. This will activate the color injector, moving the piston forward.
4. Set the adjustment screw on the back of the color injector to the full stroke position by turning it counterclockwise.
5. Remove the bleed screw or open the bleed valve on the side of the color injector.
6. Slowly increase the air pressure on the feed tank until material starts to flow out the bleed port.
7. Allow enough material to flow until you are sure the material is purged of air.
8. Replace the bleed screw or close the bleed valve.
9. Unlock the manual actuator on the color injector control valve.

10. With the outlet of the color injector pointing at a waste cup, press the manual actuator a few times to dispense a full shot of material out of the injector.

11. When it appears that the injector is firing properly, set the adjustment screw to the desired position.

12. Calculate the average shot size the is being dispensed, (See: Setting The Shot Size), and enter the value into the “Shot Size” variable.

13. Attach the unit to the static mixer.

14. Setup is now complete and ready to run production.

NOTE: The color injector does not dispense color during a purge cycle.

1.3 General Information ~ Feed Pumps

This section details some of the pressure settings for the material feed pumps.

1. Pressure Settings

Feed Pump Ram Air - 40 PSI for low durometer rubbers, 80 PSI for high durometer rubbers (50-70)

Feed Pump Air - as required to get desired flow or to refill the metering unit as needed.

Colorant Feed Tank - as required, 110 PSI maximum. Use about 50 PSI for 2000 centipoise colorant.

Fluid Pressure Gages - Try to set the feed pump outlet pressures to read approximately the same during normal operation of the machine.

2. Low Level Indicator Switch

The Low Level Indicator Switches are designed to stop the feed pumps when the material in the drums runs low. This is to prevent the machine from pumping air into the material lines. When the the switch activates, pneumatic pressure is shutoff to the corresponding feed pump. This will cause the metering unit to fault due to the "Refill Fault Timer". The red indicator light and alarm will turn on and the operator interface on the metering unit will display the "Refill Fault" screen.

3. Follow Plates - A & B Materials

Material Follow Plates - Apply a small amount of lubricant to the seal before using to aide in installation. If drum lines are used on the material drums take special care to prevent them from being pulled into the drum when lowering the follow plate. This is especially critical is the seals are new or have just been cleaned.

4. Solvents

These are rarely used with modern 1:1 silicones. For cleaning, methylene chloride or mineral spirits are still widely used. Company policy and local codes should be observed when using any solvents. Methylene chloride is recommended because it is non-flammable.

C Start-up Procedures ~ Feed Pumps

2.1 Material Drum Load Procedures

a. Initial Machine Setup

1. Remove the cover on both drums paying close attention not to drop dirt or other foreign objects into the new silicone.

2. Wipe the bottom of the Material Follow Plate with a clean rag. Only do this on the initial start up of the machine.

3. Raise the ram assembly by turning the Ram Control Valve to the up position. The air above the piston must evacuate before the ram assembly will begin to move up.

4. Load the new drum into the machine paying special attention to put the "A" material on the "A" side. Failure to do so may result in the curing of material in the pumps and hoses.

5. Apply lubricant to the Material Follow Plate Seals to aide the installation. If you do not have any, use a small amount of material.

6. Open the ball valve on the Material Follow Plate Hub.

7. Turn the Ram Control Valve to the down position to lower the ram assembly into the drum. Note, if your drums have liners use special care not to push them down into the pail with the Material Follow Plate.

Note: The Ram Control Valve should be left in the DOWN position while pumping material; failure to do so will result in cavitation of the material.

8. Once the Material Follow Plate enters the drums, air should be exhausted out the ball valve.

9. Allow enough material to escape to ensure all of the air is forced out from under the follow plate.

10. When it appears that all of the air bubbles have disappeared from the stream of material close the ball valve.

11. Repeat the steps above to load the material pail for the "B" side.

12. Proceed to Section (2.2 Pump Purging and Priming Procedures)

b. Normal Change-over of Pails

1. If a Low Level Indicator Switch activates, it signals that a material drum change is necessary. One indication that the pumping station may be empty is a "Refill Fault" occurring on the metering unit.

2. Turn the Ram Control Valves to the neutral position allowing all of the air to escape from the ram assembly..

3. Press the Pail Blow-off Control Button which forces air into the drum to raise the ram assembly out of the drum.

4. Once the follow plate reaches the top of the drum, move the ram directional control lever to the up position.

5. Clean the bottom of the follow plate off by sliding the edge of the drum across the bottom of the follow plate.

6. Remove the lid off a new drum paying attention not to drop any dirt of foreign objects into the material. Also pay close attention to put the "A" material on the A side. Failure to do so may result in the curing of material in your pumps and hoses.

7. Open the ball valve on the follow plate hub.

8. Turn the Ram Control Valve to the down position to lower the follow plate into the new drum. Note, if your drums have liners use special care not to push them down into the drum with the follow plate.

Note: The Ram Control Valve should be left in the down position while pumping silicone; failure to do so will result in cavitation of the material.

9. Once the Material Follow Plate enters the pail, air will exhaust out the ball valve on the follow plate hub. Allow the material to flow until it is free of bubbles then replace close the ball valve.

10. Repeat the steps above to load the material pail for the "B" side.

11. Proceed to the next section.

2.2 Pump Purging and Priming Procedures

1. Reduce the air pressure for the corresponding ram by adjusting the regulator on the back of the ram assembly.

2. Open the bleed valve located about 1' above the follow plate.

3. Place a waste cup under the bleed valve.

4. Open the Air Control Valve that supplies air to the feed pump. If the pump fails to move, slowly increase the air pressure by adjusting the regulator on the back of the ram assembly.

5. Dispense material into the waste cup until it appears to air free.

6. Close the bleed valve.

7. Adjust the air regulator to the desired feed pressure.

8. Press the "Auto Mode" key on the operator interface to arm the system for automatic changeover.

2.3 Material Line Purging Connections

Use these procedures to purge one material with another. To completely switch to another material that may be incompatible, flush or replace the material lines, disassemble and clean the pumps.

1. Disconnect the lines from the metering unit and the feed pumps.

2. Insert a plug or ball bearing, roughly the same diameter as the inside diameter of the hose, at the pump end. Make sure this is smooth and will not tear the inside lining of the hose.

3. Attach the hose fitting onto the pump leaving the other end open to a waste container.

4. Pump material through the hose until the plug exits the other end. The hose should be filled with new the material.

D. Operating Procedures ~ Feed Pumps

3.1 Pressure Settings

The following section details the pressure settings used to dispense material from the meter-mix machine. These are only suggested settings and need to be adjusted for each application.

a. Pump Air Regulator

Adjust the Pump Air Regulator until the desired output pressure or the correct refill rate for the metering device is achieved. For instance, a 40 PSI setting may result in an outlet pressure of 1000 PSI as seen in the gages on the metering device. For thicker the material, set the Pump Air Regulator between 50 and 60 PSI and determine if this is sufficient outlet pressure for the application.

b. Ram Air Regulator

The Ram Air Regulator controls the amount of air being supplied to the ram assembly. The ram provides a constant down-force pressure on the material to maintain a flow of material to the feed pump.

The ram control valve should always be in the "DOWN" position during normal operations. Failing to do so will result in cavitation of the material.

If this happens, the pump will have to be purged of air and re-primed. (See Section 2.2 Pump Priming and Purging). The Pressure settings for the Ram Air Regulator is dependant upon the thickness of the material. For low viscosity material set the pressure regulator to approximate 60 PSI. For high (50-70) viscosity material set the regulator to approximate 80 PSI.

3.2 Starting the Machine

Once all of the Start-up procedure have been accomplished, the machine is ready to run. Make certain that all material lines are connected and that the fittings are tight. If all material lines are closed, the machine should continue to pump until it stalls due to pressure build up. To increase outlet pressure turn the Pump Air Regulator in the clockwise direction.

E. Shut-down Procedures

4.1 Shut-down Procedure

To shut-down the machine between shifts or at the end of the night, follow these procedures.

1. Press the "Power Off" button on the control panel.

2. Close the Main Air Control Valve on the feed pumps.

F. Feed Pump Test Procedures

5.1 Pump Testing Procedures

Using the gages as a visual indicator, ensure both the A and B materials pumps are working properly.

1. Make sure the system is full of material and the outlet valve is closed. If the machine has material ball valves installed on each stream, close them.

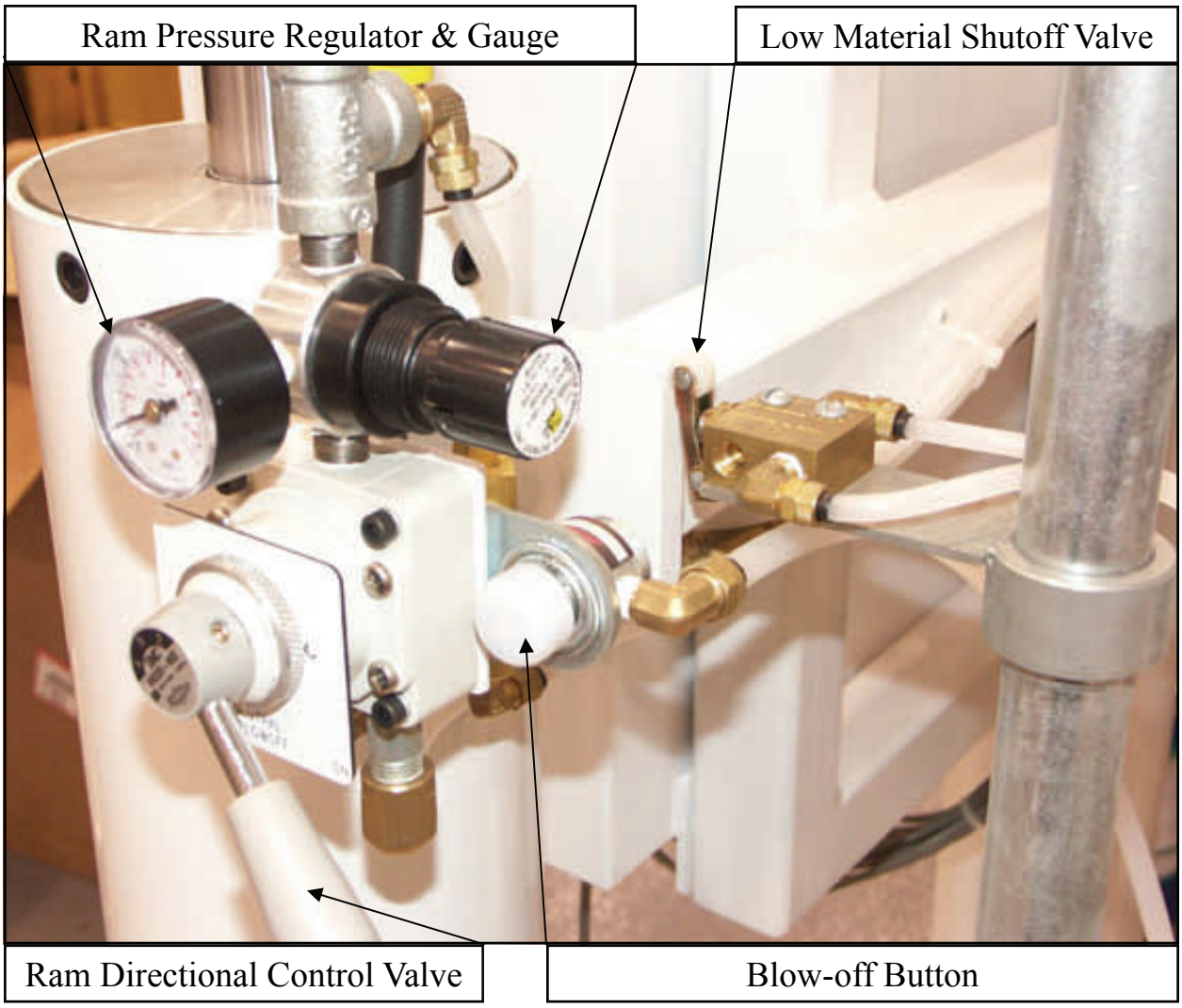
2. Place a waste cup under the bleed valve to catch any waste material.

3. Open the Main Air Control Valve for the corresponding pump you wish to test.

4. With all of the outlets closed, the pump should remain in roughly the same position. It may move until pressure inside the pump build up and stalls the pump.

5. Check the pump in both directions to make sure it stalls. Check it at different pressure settings and positions. If the pump continues to move in one direction or the other refer to the Operators Guide for that style pump for troubleshooting tips. To cycle the pump, open the bleed valve on the front of the pump and let the pump cycle until it changes direction then close the valve and watch for further movement.

6. Perform this procedure for each pump in the system..

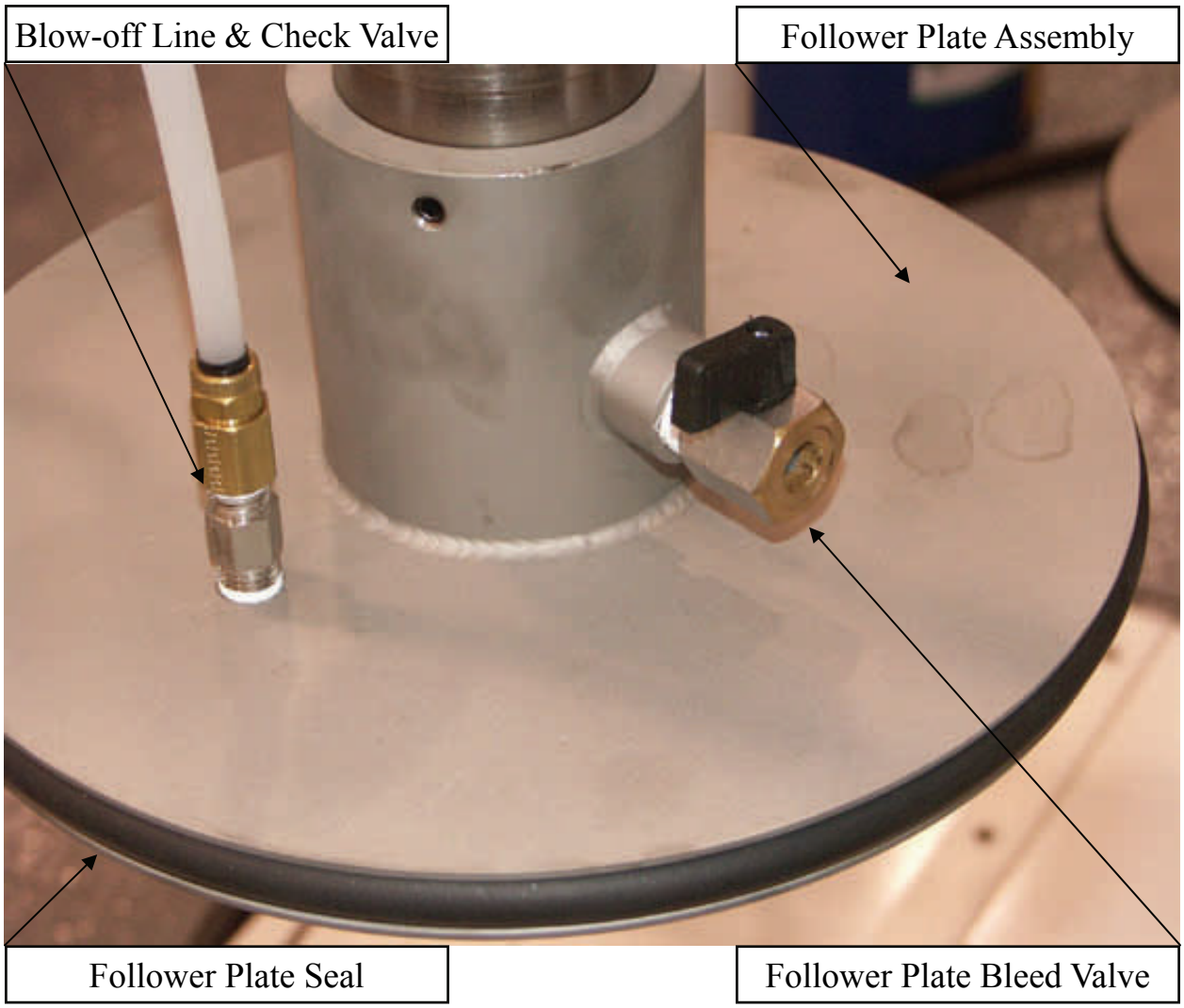


Ram Pressure Regulator & Gauge

- This is the follower plate pressure pushing down on the material in the drum.
- Set this regulator to about 50 PSI and always leave the Ram Directional Control Valve in the DOWN position when in production.

Ram Directional Control Valve

- Controls the direction of the Ram assembly.
- Always left in the DOWN position when in production.
- When the Low Material Shutoff Valve activates, move Ram Directional Control Valve to the BLOWOFF position and let all the air escape. Once the air pressure falls below 30 PSI the Blow-off Button can be activated to raise the Ram assembly out of the pail. After the Ram assembly exits the drum, move the Ram Directional Control Valve into the UP position to raise it out of the way for the next drum.
- Slide the old drum across the bottom of the drum when changing containers to remove any excess material from the bottom of the follower plate.
- Cleanout a passageway from the air bleed valve on the follower plate to the center opening under the follower plate to provide an outlet for the air in the next drum.



Follower Plate Bleed Valve

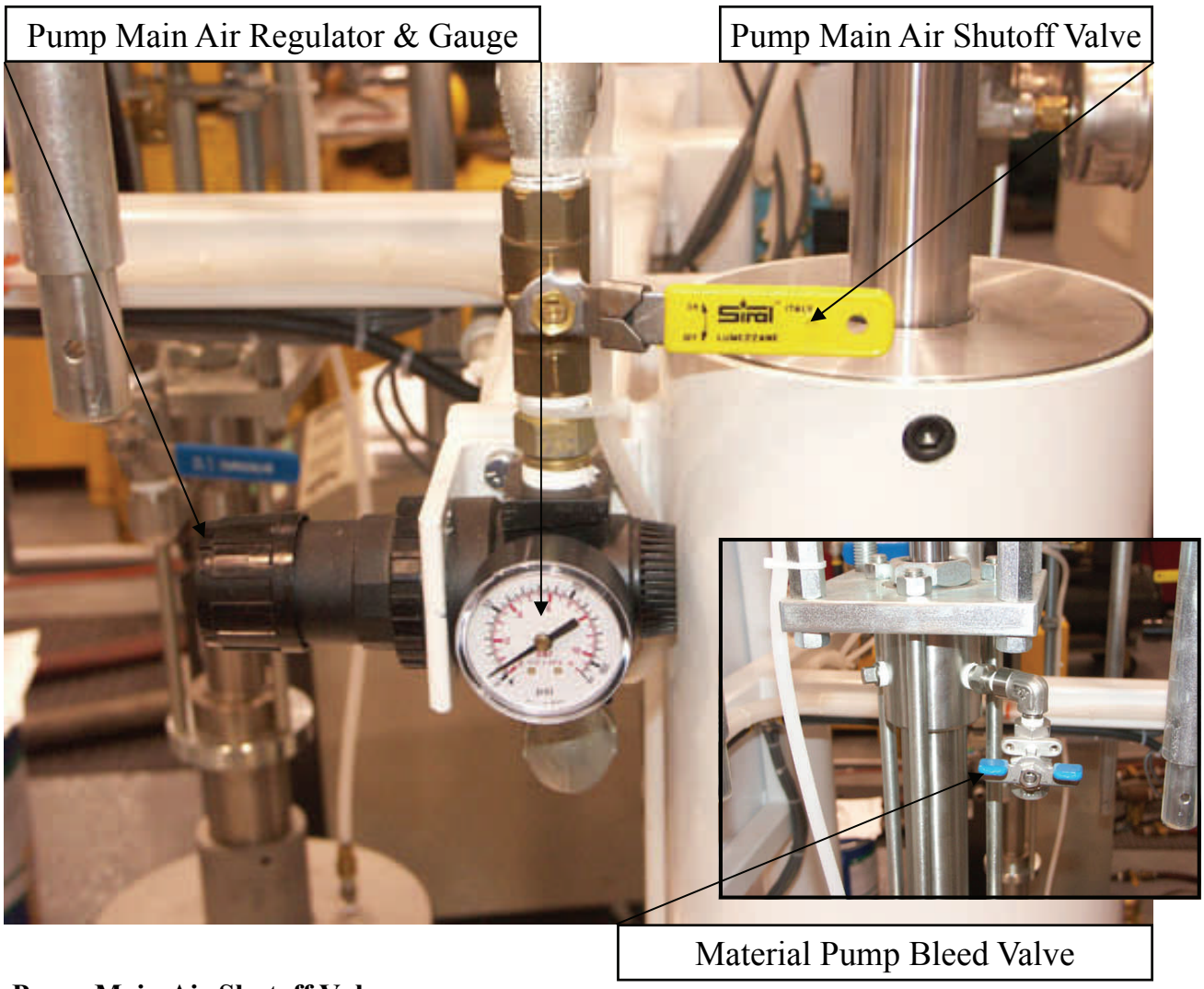
- Open when loading a new material container to allow the air to escape when the follower plate lowers into the container.
- Clean out a path after removing the empty drum so air has a place to exit.
- Close the valve when all of the air has been purged from under the follower plate.

Blow-off Line & Check Valve

- Activates only when the Ram Directional Control Valve is in the BLOWOFF position and the air pressure in the ram assembly is less than 30 PSI. This will prevent accidental blowing air into the material during production.
- The check valve is critical to prevent material entering the pneumatic circuit. Removing it will result in filling all the pneumatic components with material.

Follower Plate Seal

- Lubricate this seal between drums with some new material. This will help the assembly load and also keep the follower plate from pulling the drum liner into the drum.



Pump Main Air Shutoff Valve

- Stops the feed pumps from feeding material to the dosing unit.
- Should be left in the ON position when in production.

Pump Main Air Regulator & Gauge

- Main Air Regulator should be set to a level that causes the output pressure, the pressure measured on the dosing units gauge, to match the dosing units set output pressure.
- When adjusting the gauge to a lower pressure you must bleed off pressure from the Material Pump Bleed Valve.
- Adjust both sides so they feed material to the dosing unit as close to the dosing units Maximum Output Pressure setpoint on the operator interface panel.

Material Feed Pump

Material Shutoff Valve

Feed Pump

- Material Feed Pump supplies material to the dosing unit. Matching the outlet pressure of this pump to the output pressure set on the dosing unit will provide the most consistent metering output.

Material Shutoff Valve

- Stops all output flow to the dosing unit.
- Must be in the ON position during production

Inlet Shutoff Valve

Dosing Unit

Inlet Pressure Gauge

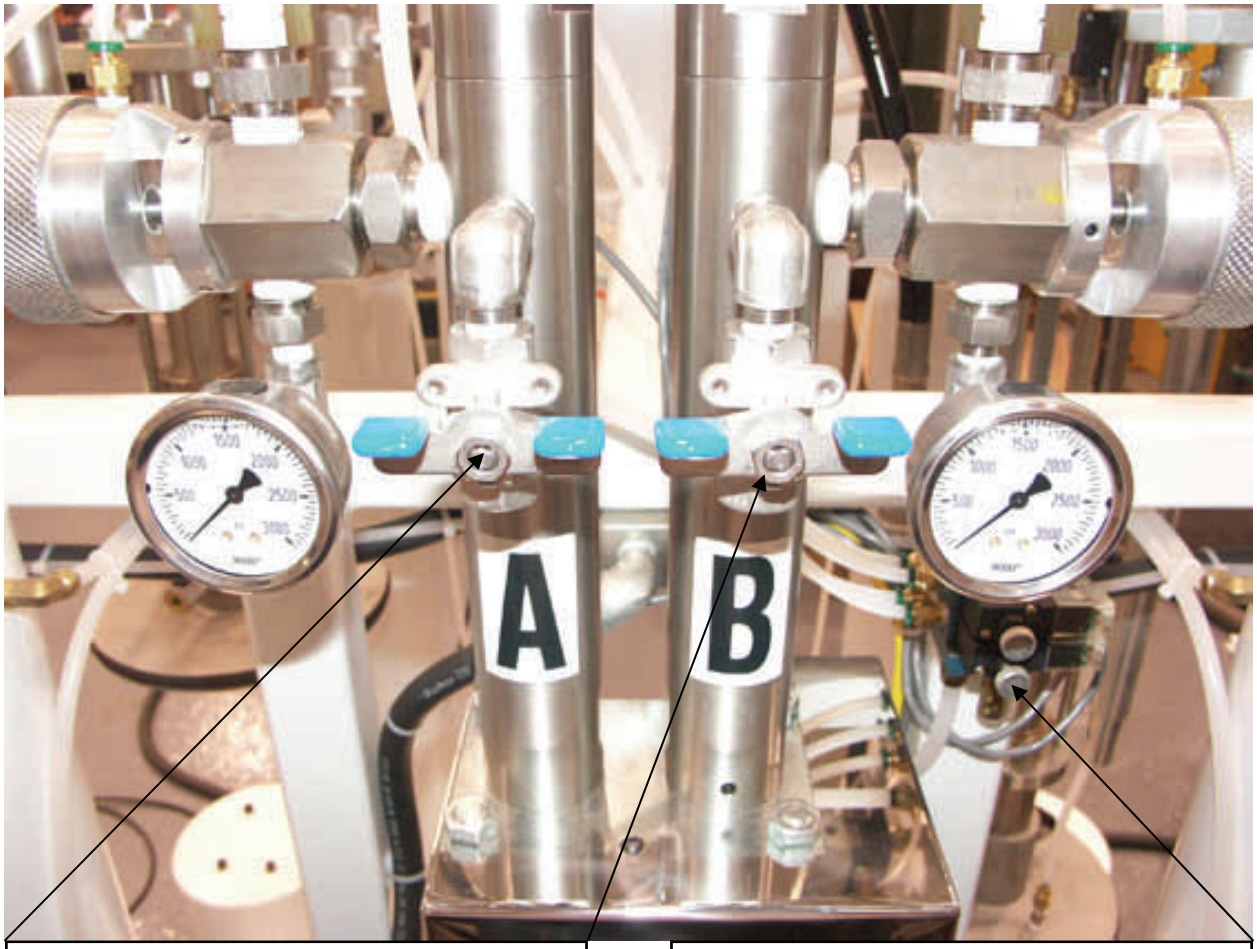
Ratio Sample & Bleed Valve

Inlet Shutoff Valve

- This valves opens when the dosing unit needs refilling. If this valve fails to close and a re-fill fault occurs, it may signal that the material containers need changing.
- If the containers still contain material, check the Material Shutoff Valve to see if it is in the ON position.
- If the valve is in the ON position, try lowering the A-Packing Pressure or B-Packing Presure on the operator interface panel to a setpoint below the feed pressure reading on the Inlet Pressure Gauge.

Ratio Sample & Bleed Valve

- Can be used to purge air from the material lines using feed pump pressure and pressing the manual valve actuator for the Inlet Shutoff Valve.
- Also used to ratio sample material directly out of the dosing unit to ensure a 1:1 ratio is being delivered to the injection molding machine.
- Consult the instruction manual for Ratio Sample Procedures.



Ratio Sample & Bleed Ports

Manual Inlet Shutoff Valve Actuators

Indicating Light Stack

- Red Light ~ Indicates a fault has occurred on the system. The only fault for this system is a Refill Fault Time Alarm. This signals that the dosing unit failed to refill in the allotted time as set on the operator interface panel. This usually indicates that the material containers have emptied and need to be changed.
- Yellow Light ~ Indicates that the dosing unit is in Automatic Mode which is the mode the unit should be in for production. To activate the dosing unit in Auto mode you will need an activation signal from the injection molding machine. This signal must be present through the complete refill cycle of the injector molding machine to ensure a completely refilled barrel.

PNEUMATIC & MATERIAL CIRCUIT DIAGRAM
AND
PARTS LIST

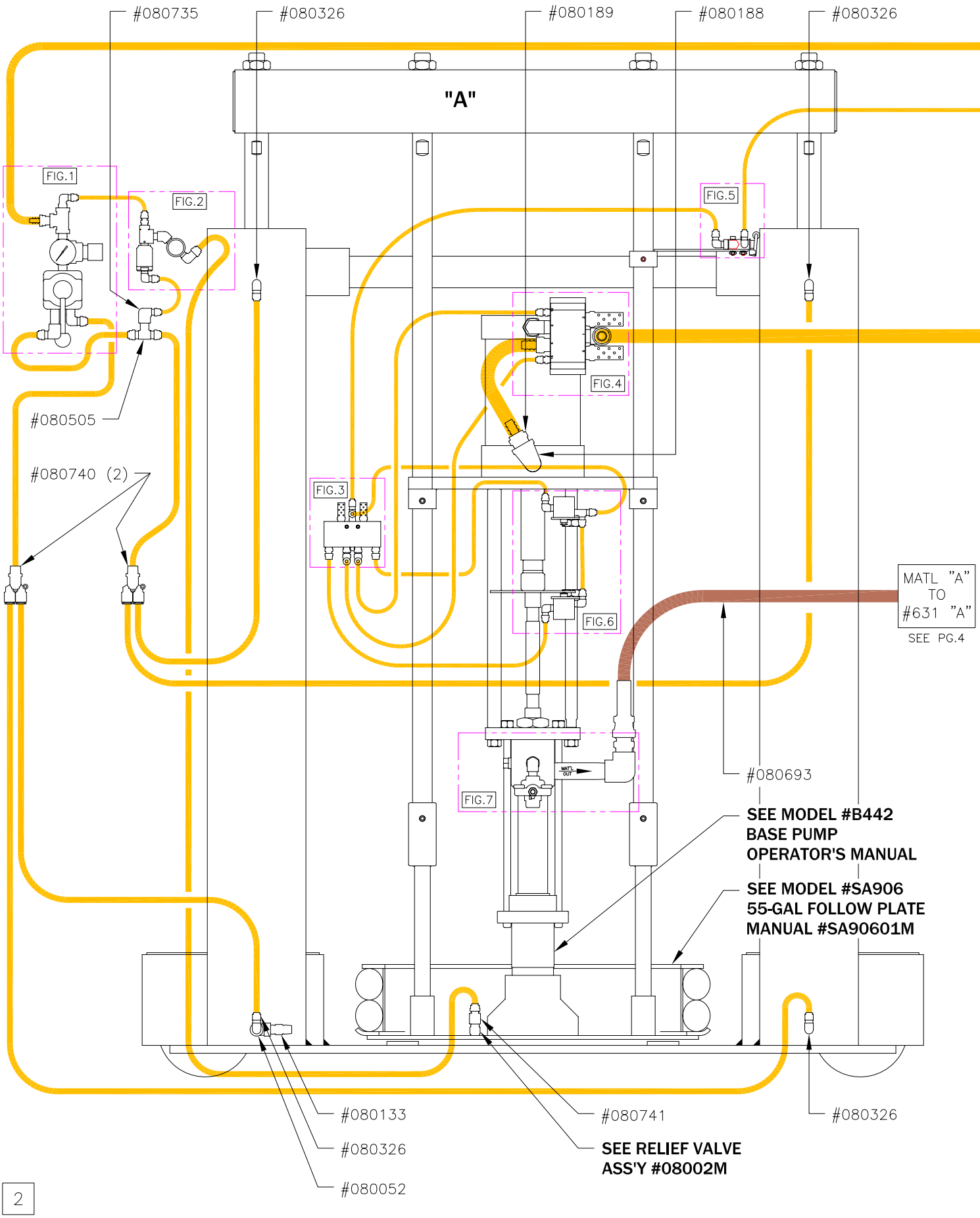
SR657-1-LR ~ INDUSTRIAL
&
SR657-1M-LR ~ MEDICAL
LOW RIDER FRAME
w/MOUNTED METER-MIX
MODEL #631

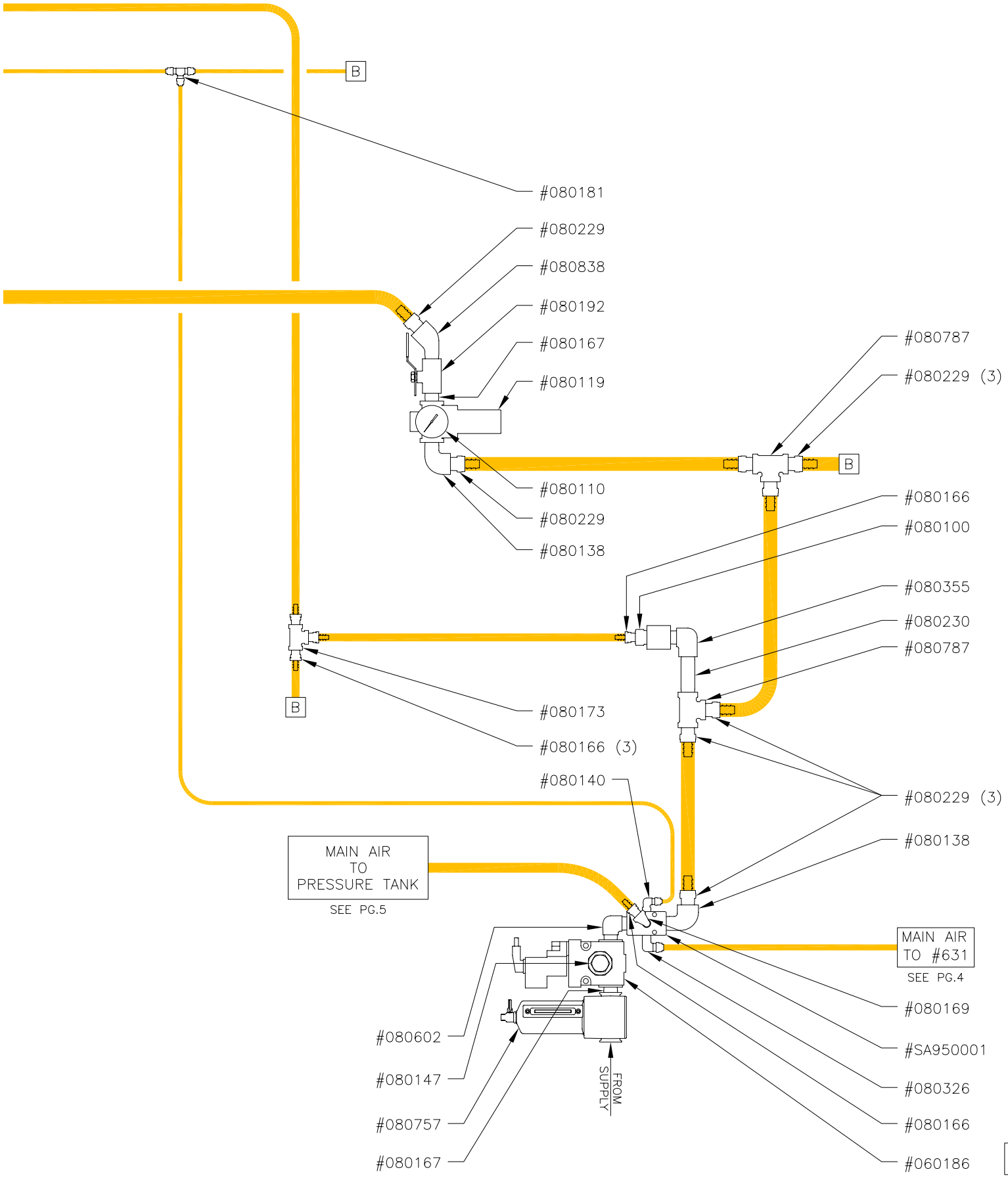
RELEASED: 9-3-03
REVISED: 3-17-08

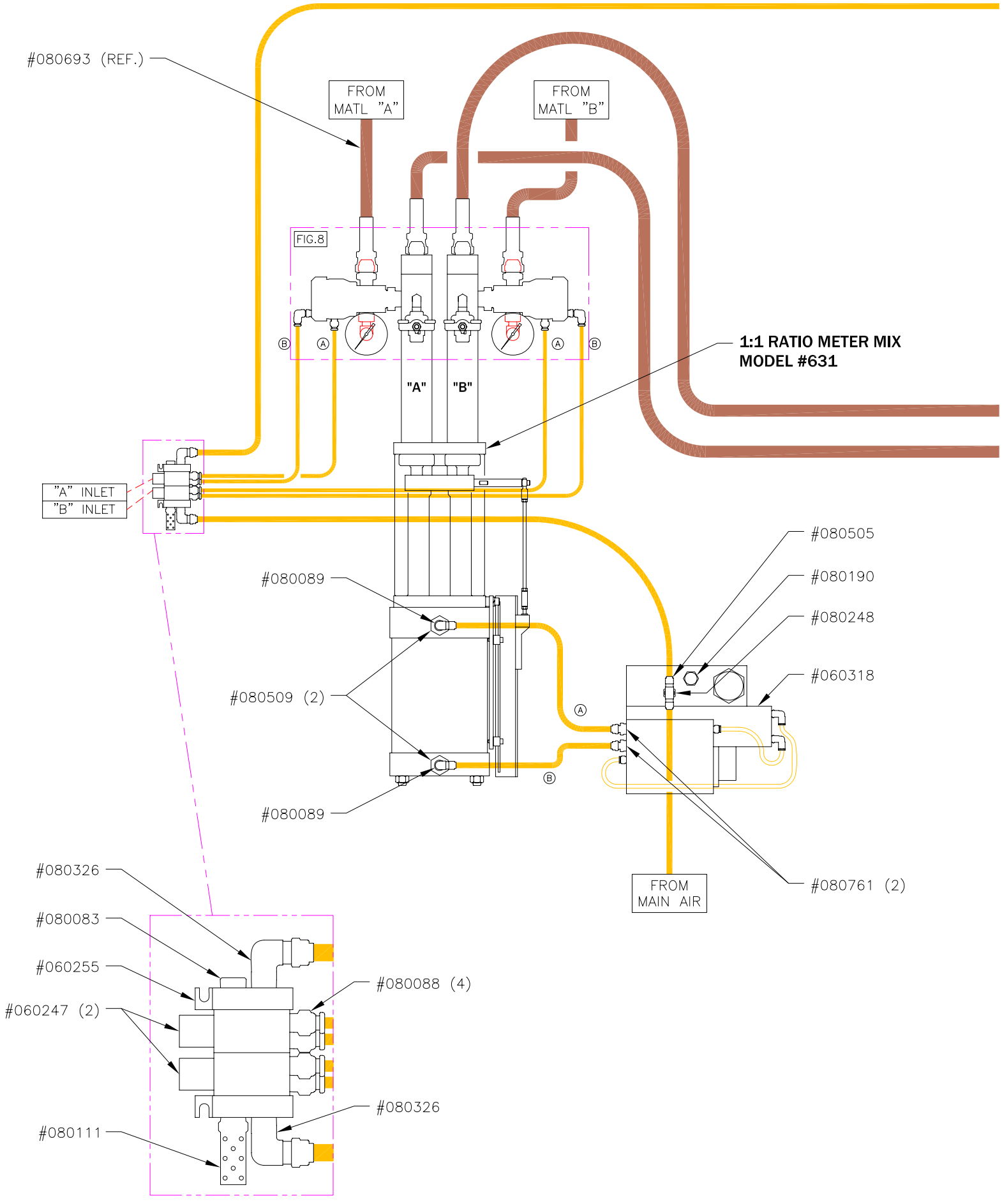
FLUID AUTOMATION INC.
49175 WEST RD. P.O. BOX 930302 WIXOM, MICHIGAN 48393 U.S.A.
PHONE. (248) 912-1970 ~ FAX (248) 912-1971

FLUID Automation, Inc

NOTE: "A" SIDE SHOWN, "B" SIDE IDENTICAL BUT NOT SHOWN




B
#080181
#080229
#080838
#080192
#080167
#080119
#080787
#080229 (3)
B
#080110
#080229
#080138
#080166
#080100
#080355
#080230
#080787
B
#080173
#080166 (3)
#080140
#080229 (3)
#080138
MAIN AIR TO PRESSURE TANK
SEE PG.5
MAIN AIR TO #631
SEE PG.4
#080602
#080147
#080757
#080167
FROM SUPPLY
#080169
#SA950001
#080326
#080166
#060186


#080693 (REF.)
FROM MATL "A"
FROM MATL "B"
FIG.8
1:1 RATIO METER MIX
MODEL #631
"A"
"B"
"A" INLET
"B" INLET
#080089
#080509 (2)
#080089
#080505
#080190
#080248
#060318
#080761 (2)
FROM MAIN AIR
#080326
#080083
#060255
#060247 (2)
#080088 (4)
#080326
#080111

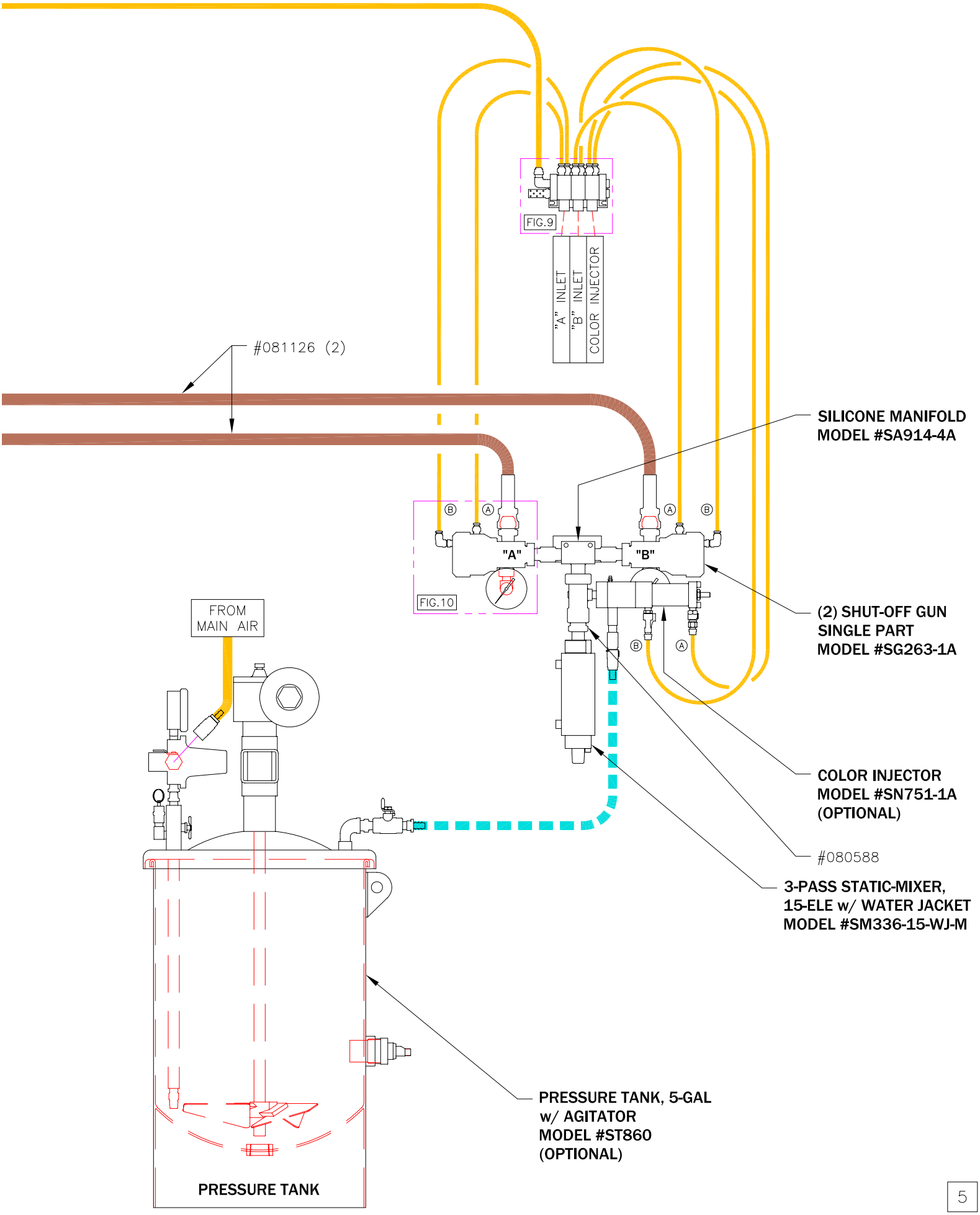


FIG.9
"A" INLET
"B" INLET
COLOR INJECTOR
#081126 (2)
SILICONE MANIFOLD
MODEL #SA914-4A
FIG.10
"A"
"B"
(2) SHUT-OFF GUN
SINGLE PART
MODEL #SG263-1A
FROM
MAIN AIR
COLOR INJECTOR
MODEL #SN751-1A
(OPTIONAL)
#080588
3-PASS STATIC-MIXER,
15-ELE w/ WATER JACKET
MODEL #SM336-15-WJ-M
PRESSURE TANK, 5-GAL
w/ AGITATOR
MODEL #ST860
(OPTIONAL)
PRESSURE TANK

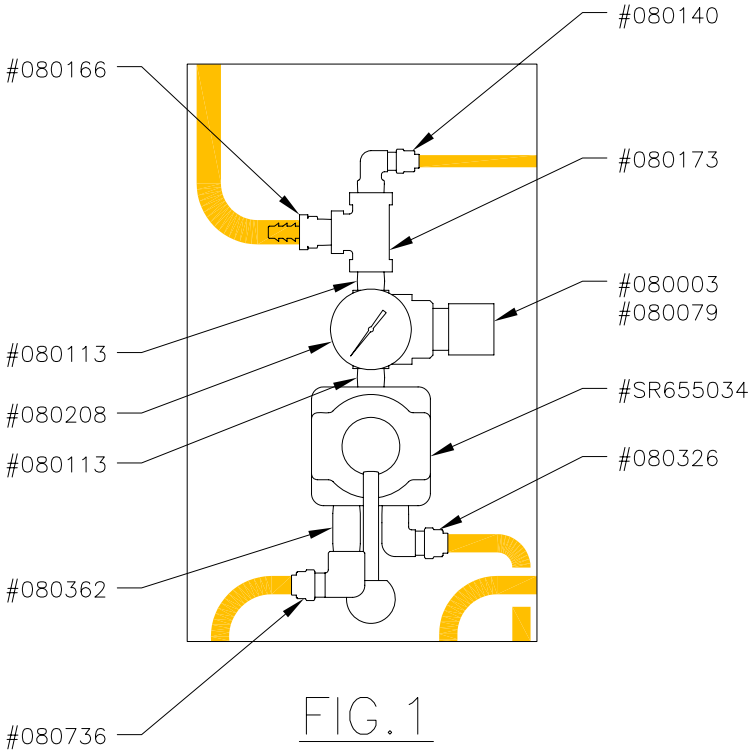


FIG.1

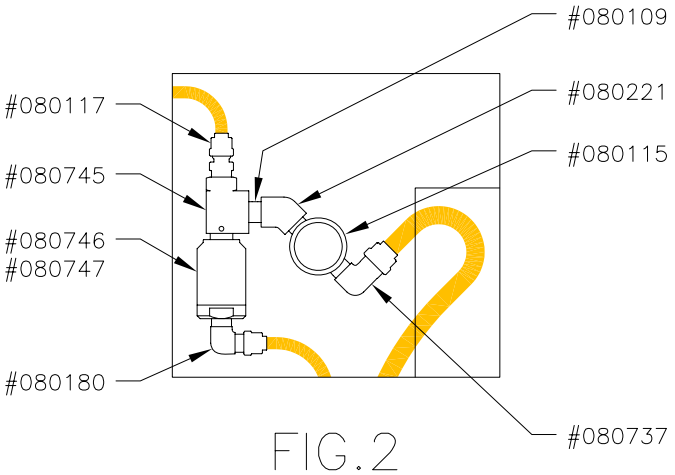


FIG.2

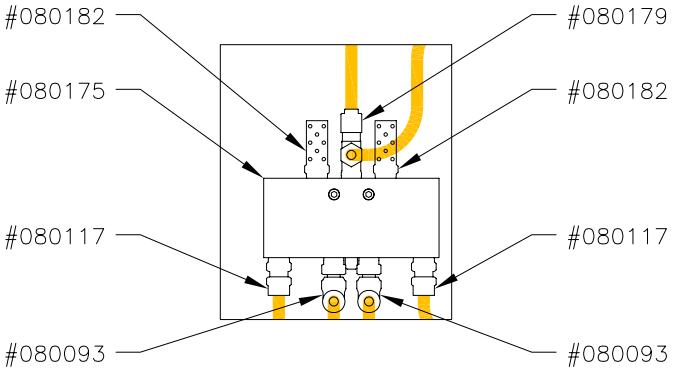


FIG.3

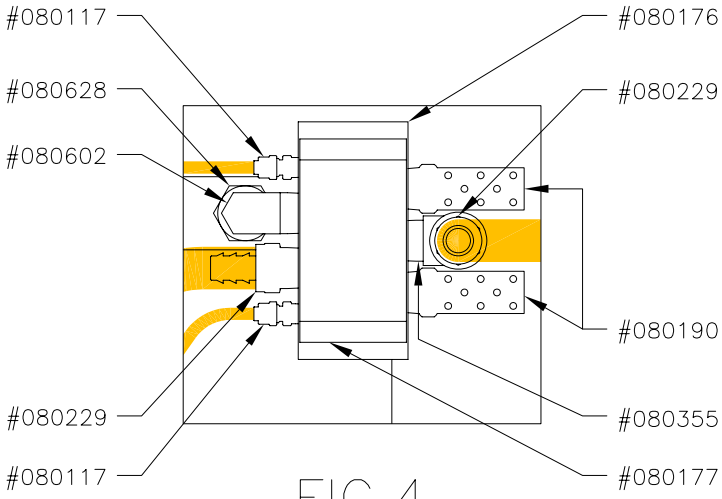


FIG.4

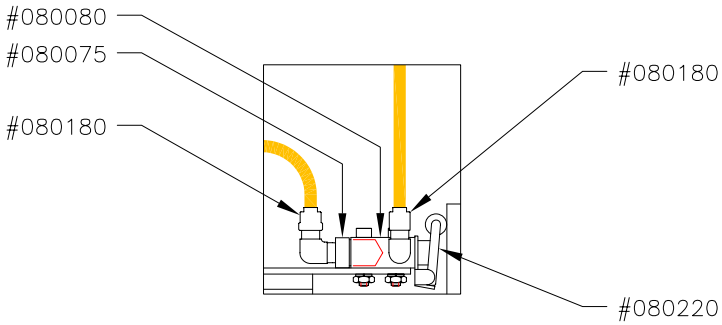


FIG.5

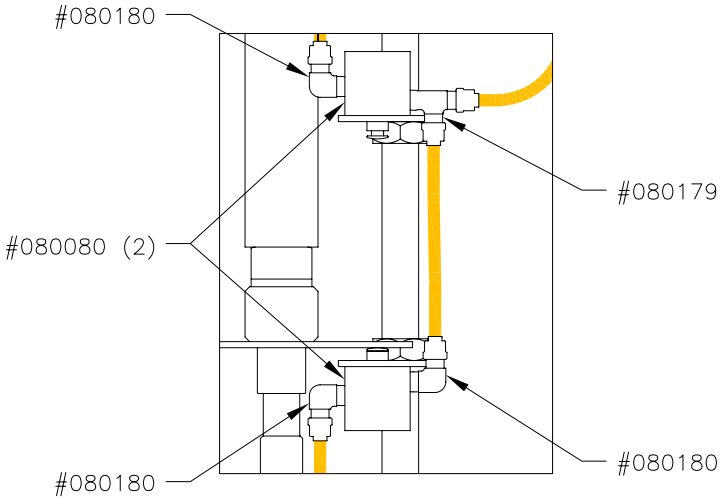


FIG.6

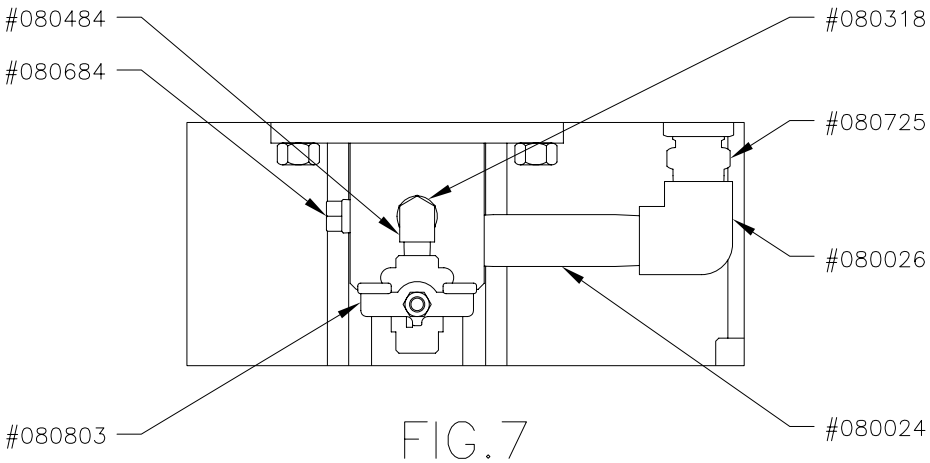


FIG.7

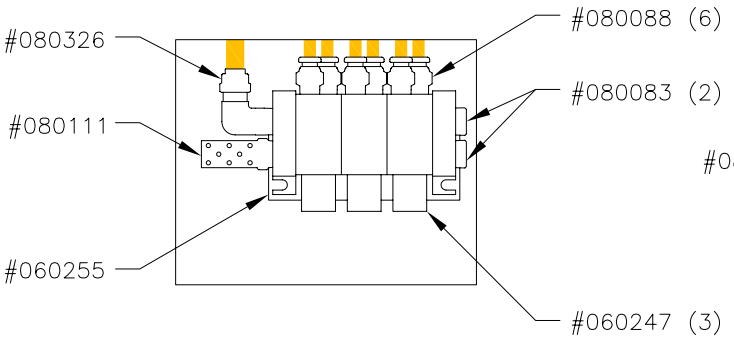


FIG.9

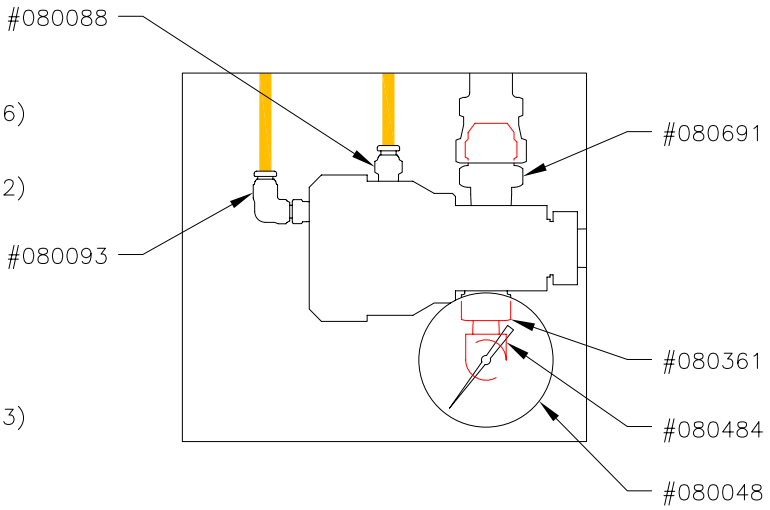


FIG.10
"A" & "B"
SIDES

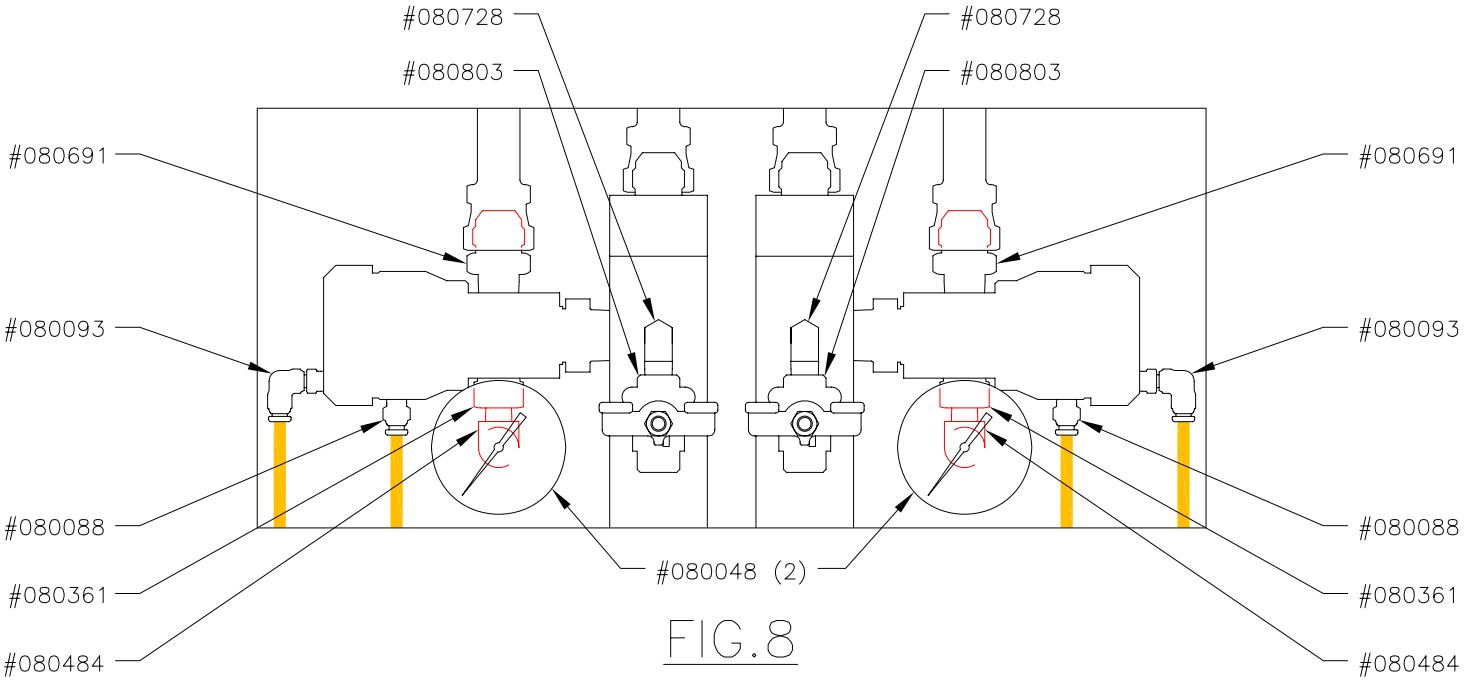


FIG.8

PARTS LIST (SR657-1-LR or SR657-1M-LR w/ 631)

PART NO	DESCRIPTION (QTY)
060186	SOLENOID VALVE
060247	DIRECT SOLENOID (5)
060255	END PLATE KIT (2)
060318	VALVE STACK, SOLENOID & PROPORTIONAL AIR
080003	PRESSURE REGULATOR (2)
080024	3/4" NPTM x 4" LG. NIPPLE (2)
080026	3/4" NPTF x 3/4" NPTF ELBOW (2)
080048	GAUGE, 0-3000psi (4)
080052	1/4" NPT RUN TEE (2)
080075	1/8" NPTM x 1/8" NPTF ELBOW (2)
080079	1/8" NPTM PLUG (2)
080080	VALVE, AIR (6)
080083	1/4" NPTM PLUG (3)
080088	1/8" NPTM x 1/4" OD HOSE PUSH-ON CONNECTOR (14)
080089	3/8" NPTM x 3/8" OD HOSE FERRULE ELBOW (2)
080093	1/8" NPTM x 1/4" OD HOSE PUSH-ON SWIVEL ELBOW (8)
080100	1/2" NPTM x 1/4" NPTF BUSHING
080109	1/8" NPTM x 1/8" NPTM CLOSE NIPPLE (2)
080110	GAUGE, 0-160psi (2)
080111	1/4" NPTM MUFFLER (2)
080113	1/4" NPTM x 1/4" NPTM CLOSE NIPPLE (4)
080115	VALVE, AIR, PUSH BUTTON (2)
080117	1/8" NPTM x 1/4" OD HOSE FERRULE CONNECTOR (10)
080119	PRESSURE REGULATOR, 0-100psi (2)
080133	CHECK VALVE, 1# CRACK PRESS. (2)
080138	1/2" NPTM x 1/2" NPTF ELBOW (3)
080140	1/4" NPTM x 1/4" OD HOSE FERRULE ELBOW (3)
080147	3/4" NPTM MUFFLER
080166	1/4" NPTM x 1/4" ID HOSE BARB FITTING (7)
080167	1/2" NPTM x 1/2" NPTM CLOSE NIPPLE (3)
080169	1/4" NPTM x 1/4" NPTF ELBOW
080173	1/4" NPTF TEE (3)
080175	VALVE, PILOT (2)
080176	SUB BASE (2)
080177	VALVE, AIR, DOUBLE PILOT, TWO POSITION (2)
080179	1/8" NPTM x 1/4" OD HOSE FERRULE RUN TEE (4)
080180	1/8" NPTM x 1/4" OD HOSE FERRULE ELBOW (12)
080181	1/4" OD HOSE FERRULE UNION TEE
080182	MUFFLER, 1/8" NPTM (4)
080188	3/4" NPTM x 3/4" NPTF ELBOW (2)
080189	3/4" NPTM x 1/2" ID HOSE BARB FITTING (2)
080190	MUFFLER, 1/2" NPTM (5)
080192	VALVE, EXHAUST, 1/2" NPTF (2)
080208	GAUGE, MINI, 0-160psi (2)
080220	CAM OPERATOR (2)
080221	1/8" NPTM x 1/8" NPTF 45dg ELBOW (2)
080229	1/2" NPTM x 1/2" ID HOSE BARB FITTING (14)
080230	1/2" NPTM x 3" LG. NIPPLE
080248	3/8" NPTM x 1/4" NPTF BUSHING
080318	3/8" NPTM x 1/4" NPTM NIPPLE (2)
080326	1/4" NPTM x 3/8" OD HOSE FERRULE ELBOW (14)
080355	1/2" NPTM x 1/2" NPTF ELBOW (3)
080361	1/2" NPTM x 1/4" NPTF BUSHING (4)
080362	1/4" NPTM x 1 1/2" LG. NIPPLE (2)
080484	1/4" NPTM x 1/4" NPTF ELBOW (6)
080505	1/4" NPTM x 3/8" OD HOSE FERRULE BRACH TEE (3)
080509	3/4" NPTM x 3/8" NPTF REDUCER (2)
080588	3/4" NPTM x 1/2" NPTF BUSHING
080602	1/2" NPTM x 1/2" NPTM ELBOW (3)
080628	3/4" NPTM x 1/2" NPTF BUSHING (2)
080684	3/8" NPTM PIPE PLUG, SQUARE (2)

CONTINUED ON PAGE 9.....

PARTS LIST (Cont.)

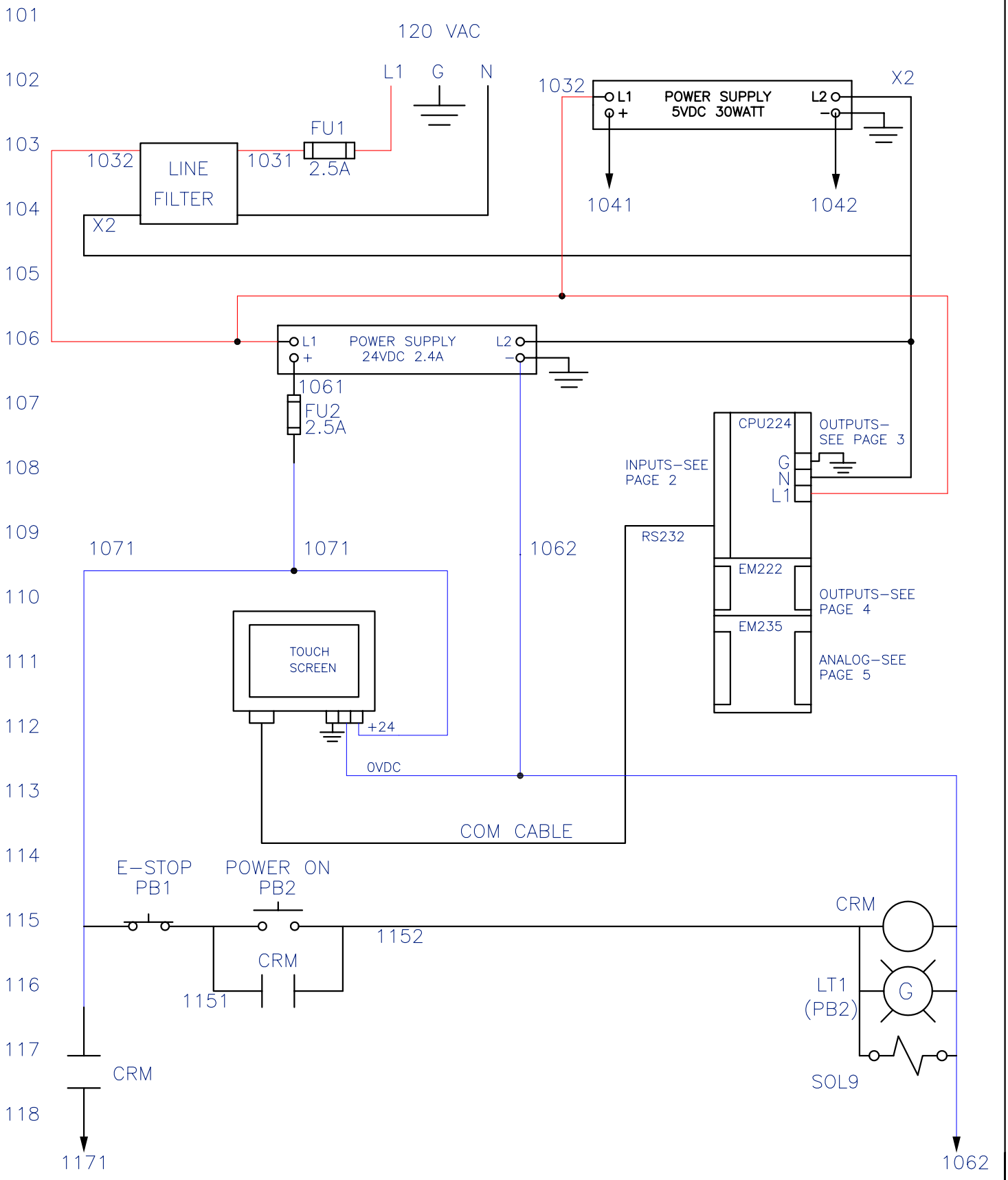
PART NO	DESCRIPTION (QTY)
080691	3/4" JIC MALE x 1/2" NPTM ADAPTER (4)
080693	HOSE ~ S.S., 5/8" I.D. x 72" LG., w/ 3/4" JIC FEMALE SWIVEL FTGS (2)
080725	3/4" JIC MALE x 3/4" NPTM ADAPTER (2)
080728	1/4" NPTM x 1/4" NPTM ELBOW (2)
080735	1/4" NPTF x 1/4" OD HOSE FERRULE ELBOW (2)
080736	1/4" NPTF x 3/8" OD HOSE FERRULE ELBOW (2)
080737	1/8" NPTM x 3/8" OD HOSE FERRULE ELBOW (2)
080740	UNION FITTING, 3/8" OD HOSE PUSH-ON (4)
080741	1/4" NPTM x 3/8" OD HOSE FERRULE CONNECTOR (2)
080745	VALVE, 3-WAY, 300psi (2)
080746	AIR PILOT ACTUATOR (2)
080747	ANGLE BRACKET (2)
080757	FILTER
080761	3/8" NPTM x 3/8" OD HOSE FERRULE CONNECTOR (2)
080787	1/2" NPTF TEE (2)
080803	VALVE, BALL, 1/4" NPTF (4)
080838	1/2" NPTM x 1/2" NPTF 45dg ELBOW (2)
081126	HOSE ~ S.S., 5/8" I.D. x 120" LG., w/ 3/4" JIC FEMALE SWIVEL FTGS (2)
SA950001	AIR INLET MANIFOLD
SR655034	VALVE, HAND (2)

ELECTRICAL SCHEMATICS
1:1 RATIO METER-MIX
MODEL #620, #631 & #632
PROPORTIONAL PUMPS

RELEASED: 1-24-03
REVISED: 1-20-04

FLUID AUTOMATION INC.
49175 WEST RD. P.O. BOX 930302 WIXOM, MICHIGAN 48393 U.S.A.
PHONE. (248) 669-3717 ~ FAX (248) 669-6476

FLUID Automation, Inc

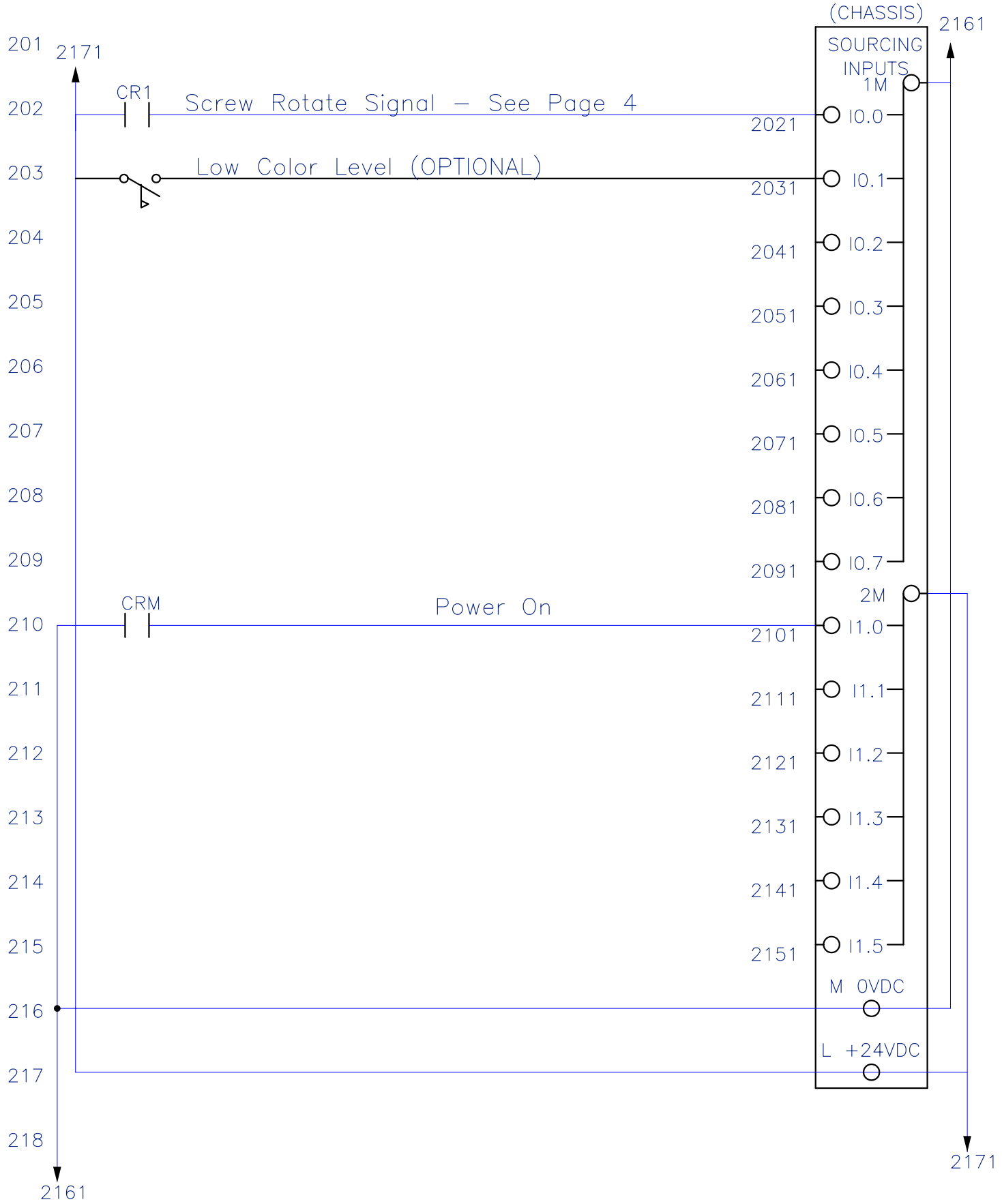


FLUID AUTOMATION INC. WIXOM, MI.

DATE : 10/01/03 | DESIGN : LLD	MACHINE MODEL: 6XX PROP. PUMP
CONTROLS	SERIAL NUMBER:

PAGE #1

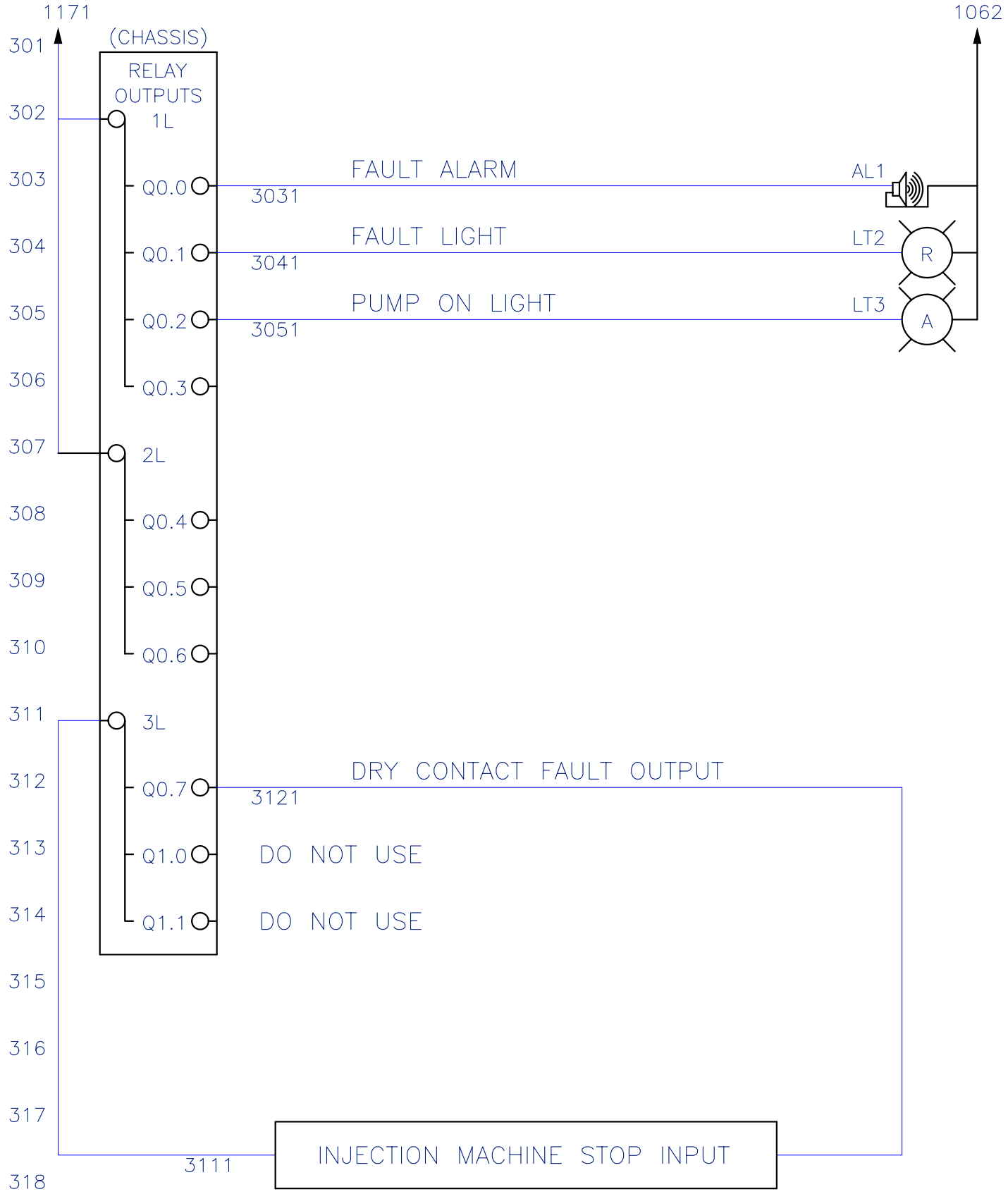
PC#: 6XX UNIVERSAL PROP PUMP



FLUID AUTOMATION INC. WIXOM, MI.

DATE : 10/01/03 DESIGN : LLD	MACHINE MODEL: 6XX PROP. PUMP
CONTROLS	SERIAL NUMBER:

PC#: 6XX UNIVERSAL PROP PUMP

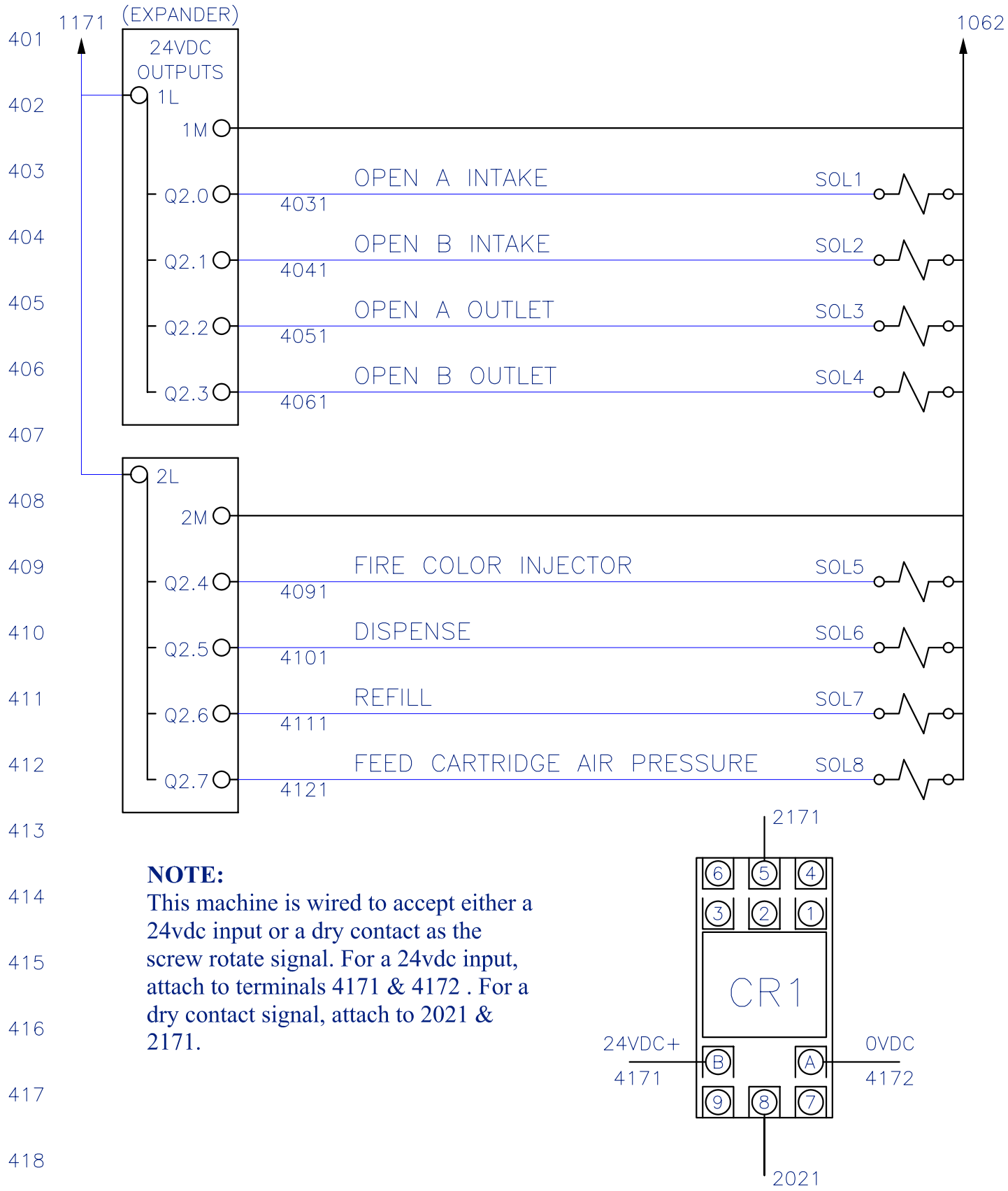


FLUID AUTOMATION INC.

WIXOM, MI.

DATE : 10/01/03 | DESIGN : LLD	MACHINE MODEL: 6XX PROP. PUMP
CONTROLS	SERIAL NUMBER:

PC#: 6XX UNIVERSAL PROP PUMP

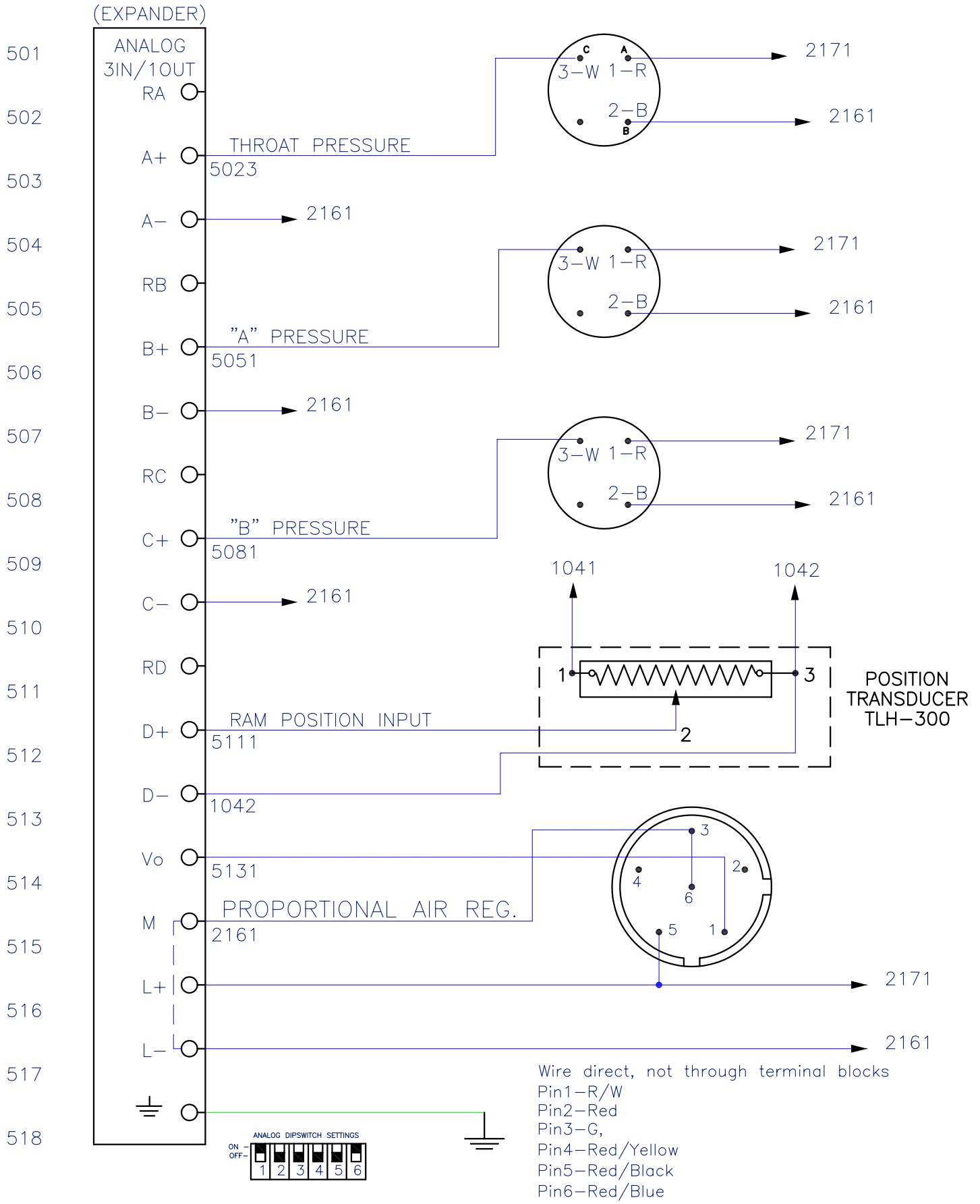


NOTE:
This machine is wired to accept either a 24vdc input or a dry contact as the screw rotate signal. For a 24vdc input, attach to terminals 4171 & 4172 . For a dry contact signal, attach to 2021 & 2171.

FLUID AUTOMATION INC. WIXOM, MI.

DATE : 10/01/03 | DESIGN : LLD	MACHINE MODEL: 6XX PROP. PUMP
CONTROLS	SERIAL NUMBER:

PC#: 6XX UNIVERSAL PROP PUMP

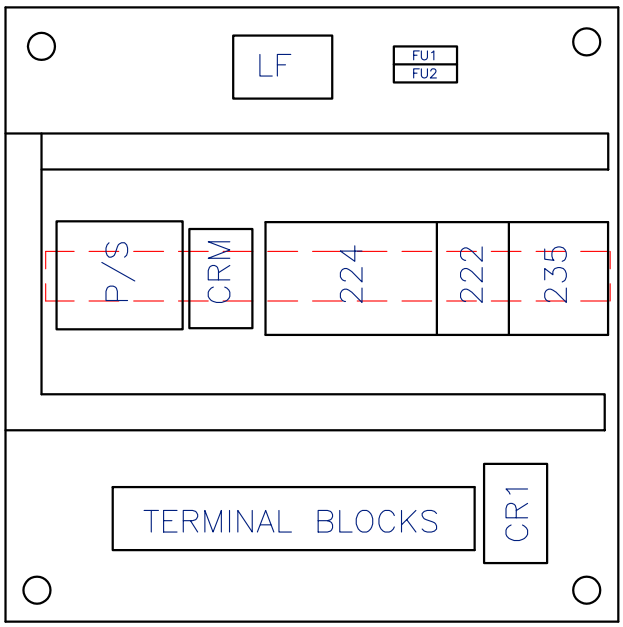


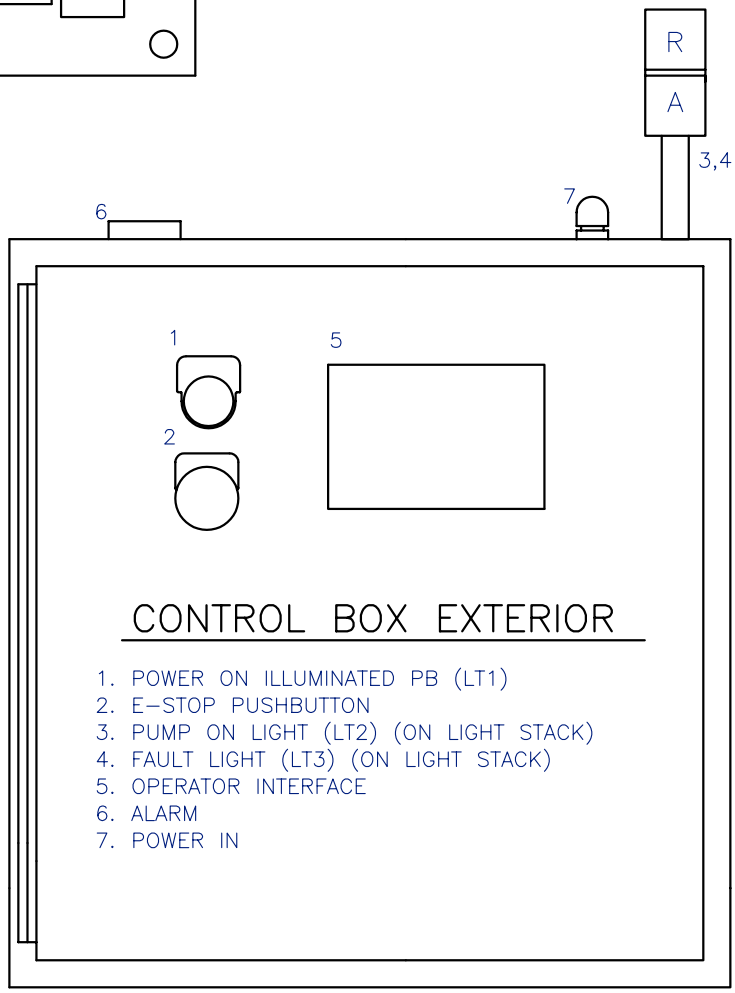
FLUID AUTOMATION INC. WIXOM, MI.

DATE : 10/01/03 DESIGN : LLD	MACHINE MODEL: 6XX PROP. PUMP
CONTROLS	SERIAL NUMBER:

PC#: 6XX UNIVERSAL PROP PUMP

CONTROL BOX PANEL





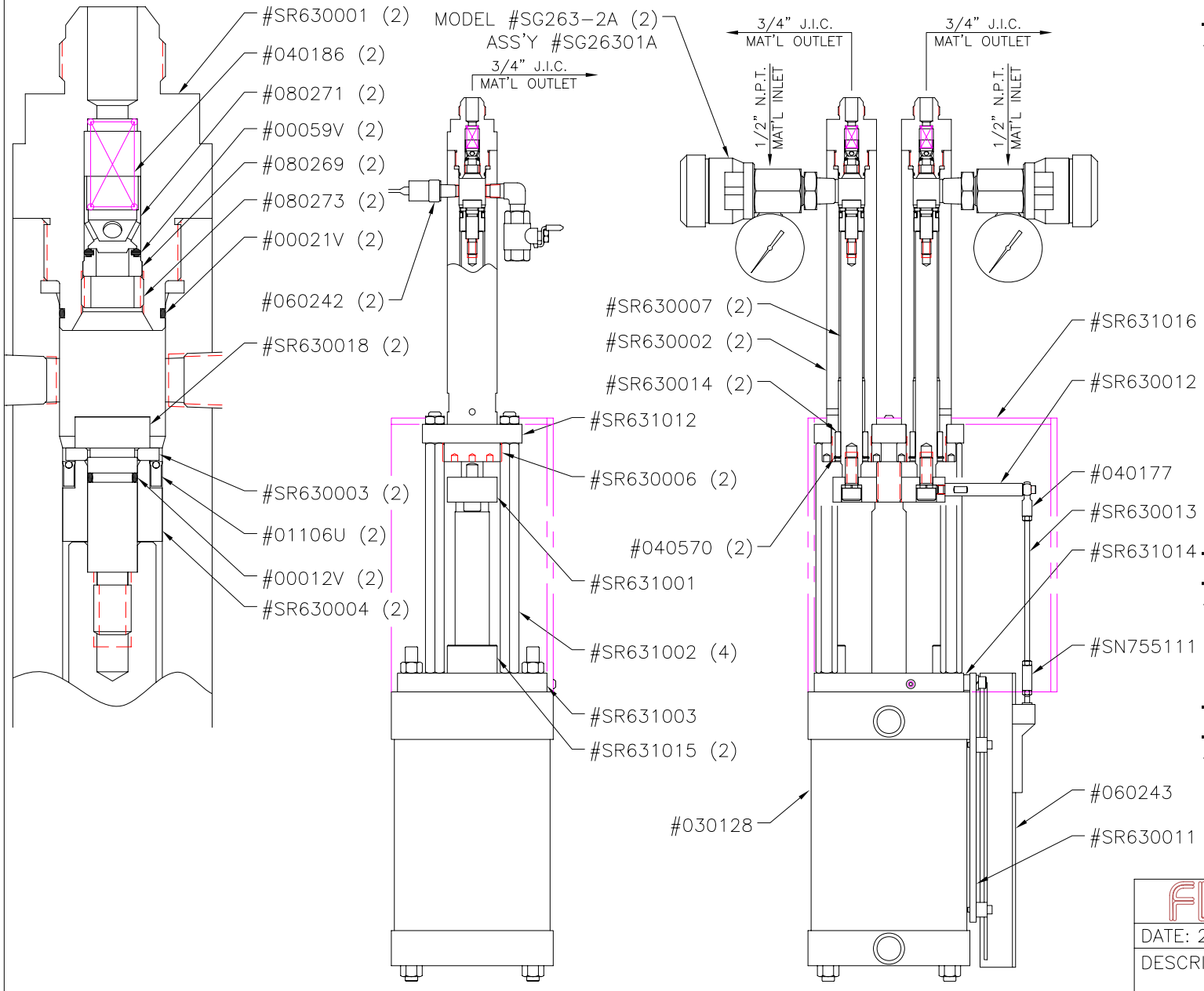
CONTROL BOX EXTERIOR

1. POWER ON ILLUMINATED PB (LT1)
2. E-STOP PUSHBUTTON
3. PUMP ON LIGHT (LT2) (ON LIGHT STACK)
4. FAULT LIGHT (LT3) (ON LIGHT STACK)
5. OPERATOR INTERFACE
6. ALARM
7. POWER IN

FLUID AUTOMATION INC. WIXOM, MI.

DATE : 10/01/03 DESIGN : LLD	MACHINE MODEL: 6XX PROP. PUMP
CONTROLS	SERIAL NUMBER:

PC#: 6XX UNIVERSAL PROP PUMP



PARTS LIST

PART NO.	DESCRIPTION (QTY)
00012V	"O" RING, 1/16" C/S, .375" ID ~ VITON (2)
00021V	"O" RING, 1/16" C/S, .937" ID ~ VITON (2)
00059V	"O" RING, 3/32" C/S, .375" ID ~ VITON (2)
01106U	POLYPAK SEAL, 1.000 OD x .750 ID x .250 C/S ~ ULTRA YELLOW (2)
030128	AIR CYLINDER, 6" BORE, 6" STROKE
040177	BALL JOINT ROD END, M5 x 0.8 FEMALE
040186	SPRING, 25psi ~ STAINLESS STL (2)
040570	SNAP RING (2)
060242	PRESSURE TRANSDUCER (2)
060243	POSITION TRANSDUCER
080269	INSERT (2)
080271	POPPET (2)
080273	INSERT LOCK SCREW (2)
SN755111	COUPLER
SR630001	NOSE PIECE (2)
SR630002	CYLINDER (2)
SR630003	RETAINER (2)
SR630004	PISTON (2)
SR630006	NUT (2)
SR630007	PISTON ROD (2)
SR630011	BRACKET
SR630012	SHAFT
SR630013	THREADED ROD (N.D.)
SR630014	BUSHING (2)
SR630018	SHOULDER SCREW (2)
SR631001	PUSHER
SR631002	TIE ROD (4)
SR631003	CYLINDER MOUNT PLATE
SR631012	PUMP MOUNTING PLATE
SR631014	SPACER
SR631015	STOP (2)
SR631016	GUARD

SEAL KIT ~ #630K

PART NO.	DESCRIPTION (QTY)
00012V	"O" RING, 1/16" C/S, .375" ID ~ VITON (2)
00021V	"O" RING, 1/16" C/S, .937" ID ~ VITON (2)
00059V	"O" RING, 3/32" C/S, .375" ID ~ VITON (2)
01106U	POLYPAK SEAL, 1.000 OD x .750 ID x .250 C/S ~ ULTRA YELLOW (2)
040186	SPRING, 25psi ~ STAINLESS STL (2)

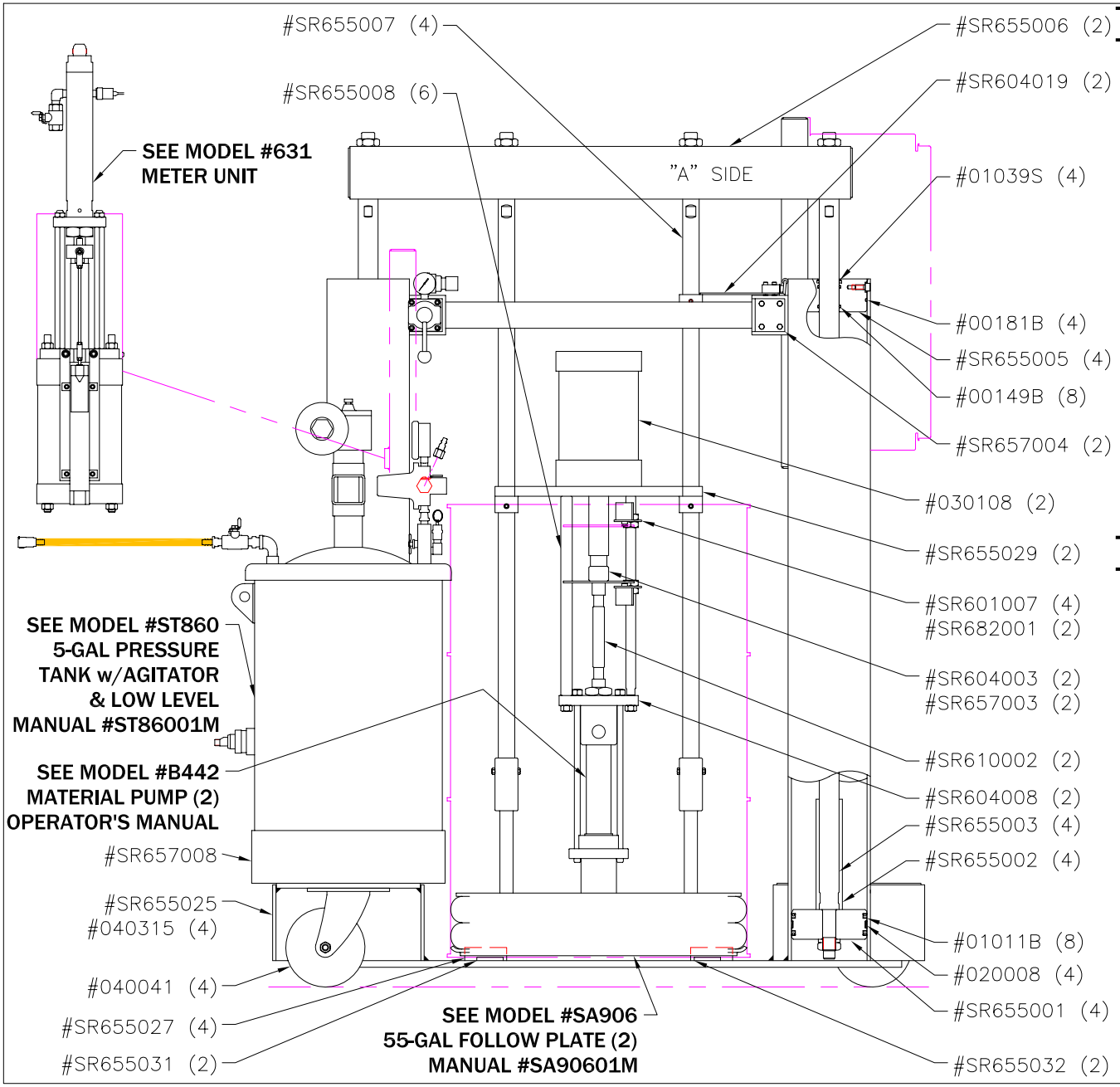
SEAL KIT ~ #630ECK

PART NO.	DESCRIPTION (QTY)
00021V	"O" RING, 1/16" C/S, .937" ID ~ VITON
00059V	"O" RING, 3/32" C/S, .375" ID ~ VITON
040186	SPRING, 25psi ~ STAINLESS STL
080269	INSERT
080271	POPPET
080273	INSERT LOCK SCREW
SR630001	NOSE PIECE

FLUID Automation, Inc WIXOM, MI.

DATE: 2-9-07	DES: J.M.	CHK'D: F.A.

DESCRIPTION:
MODEL #631 (METER-MIX)
MECHANICAL COMPONENT



PARTS LIST

PART NO.	DESCRIPTION (QTY)
00149B	"O" RING, 1/8" C/S, 1.500" ID, BUNA (8)
00181B	"O" RING, 1/8" C/S, 5.500" ID, BUNA (4)
01011B	"U" CUP SEAL, 5.750 OD x 5.125 ID x .312 C/S, NITRILE (8)
01039S	WIPER RING, 1 1/2" OD ROD, URETHANE (4)
020008	WEAR RING, 5.460 ID x 5.750 OD x .500 THK, NYLON (4)
030108	CYLINDER, AIR, 6" BORE, 4 1/2" STROKE, SINGLE ROD (2)
040041	CASTER, 6" DIA., SWIVEL MOUNT WHEEL (4)
040315	LEVEL PAD, SOCKET TYPE, 5/8-11 THREADS, 6000# LOAD (4)
SR601007	MOTOR LIMIT VALVE MOUNT (4)
SR604003	SLEEVE (2)
SR604008	PUMP MOUNT PLATE (2)
SR604019	LOW LEVEL LIMIT SWITCH (2)
SR610002	PUMP DRIVE ROD (2)
SR655001	RAM PISTON (4)
SR655002	STOP TUBE (4)
SR655003	PISTON ROD (4)
SR655005	RAM END HOUSING (4)
SR655006	CROSS BEAM (2)
SR655007	TIE ROD (4)
SR655008	CONNECTING ROD (6)
SR655025	(2) POST RAM ~ LOW RIDER
SR655027	STOP (4)
SR655029	MOTOR MOUNT "B" SIDE (2)
SR655031	L.H. SKID (2)
SR655032	R.H. SKID (2)
SR657003	L.V. MOUNT (2)
SR657004	REGULATOR MOUNT (2)
SR657008	TANK MOUNT
SR682001	CONNECTING ROD (2)

SEAL KITS

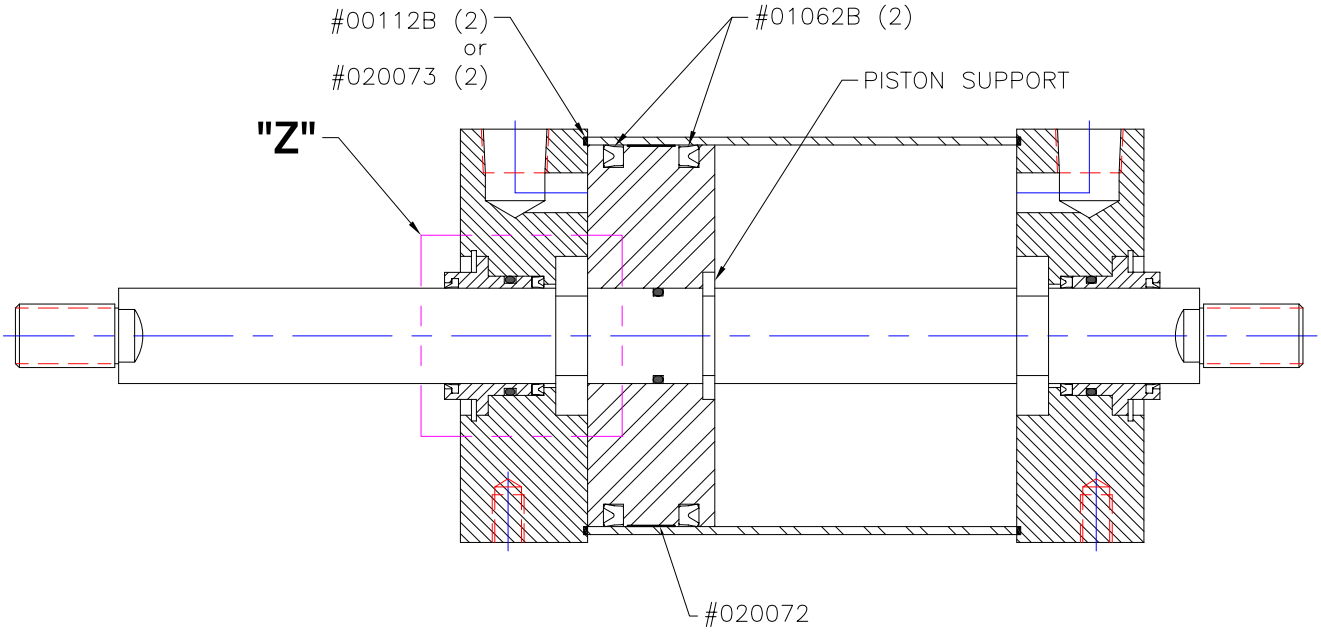
FAR655K (1 KIT PER SIDE):

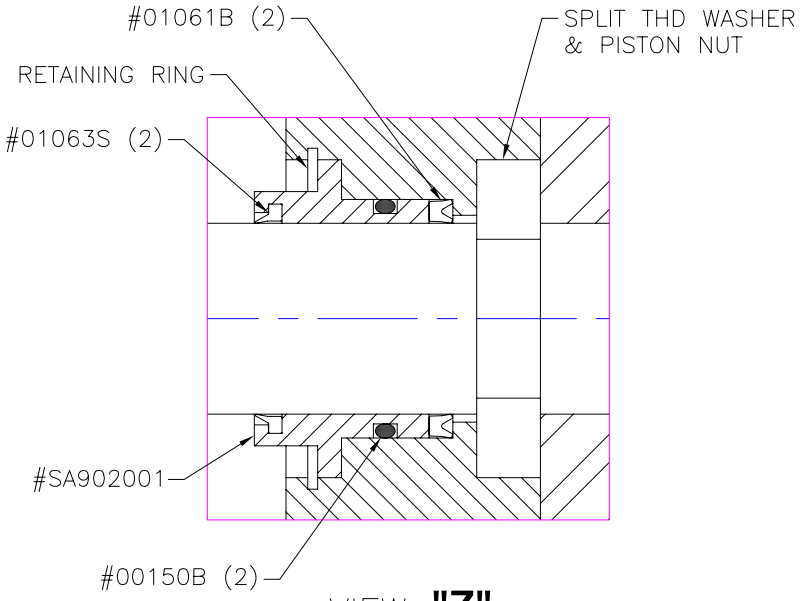
PART NO.	DESCRIPTION (QTY)
00149B	"O" RING, 1/8" C/S, 1.500" ID, BUNA (8)
00181B	"O" RING, 1/8" C/S, 5.500" ID, BUNA (4)
01011B	"U" CUP SEAL, 5.750 OD x 5.125 ID x .312 C/S, NITRILE (8)
01039S	WIPER RING, 1 1/2" OD ROD, URETHANE (4)
020008	WEAR RING, 5.460 ID x 5.750 OD x .500 THK, NYLON (4)

FLUID Automation, Inc WIXOM, MI.

DATE: 2-1-07	DES: J.M.	CHK'D: F.A.

DESCRIPTION:
MODEL #SR657-1M-LR w-631
MECHANICAL COMPONENT





VIEW **"Z"**

SCALE ~ FULL

PARTS LIST

PART NO.	DESCRIPTION
SA902001	BEARING

SEAL KIT - #DM600K:

PART NO.	DESCRIPTION
*00112B	"O" RING (2 REQ'D)
00150B	"O" RING (2 REQ'D)
01061B	"U" CUP SEAL (2 REQ'D)
01062B	"U" CUP SEAL (2 REQ'D)
01063S	WIPER (2 REQ'D)
020072	BEARING
*020073	GASKET (2 REQ'D)

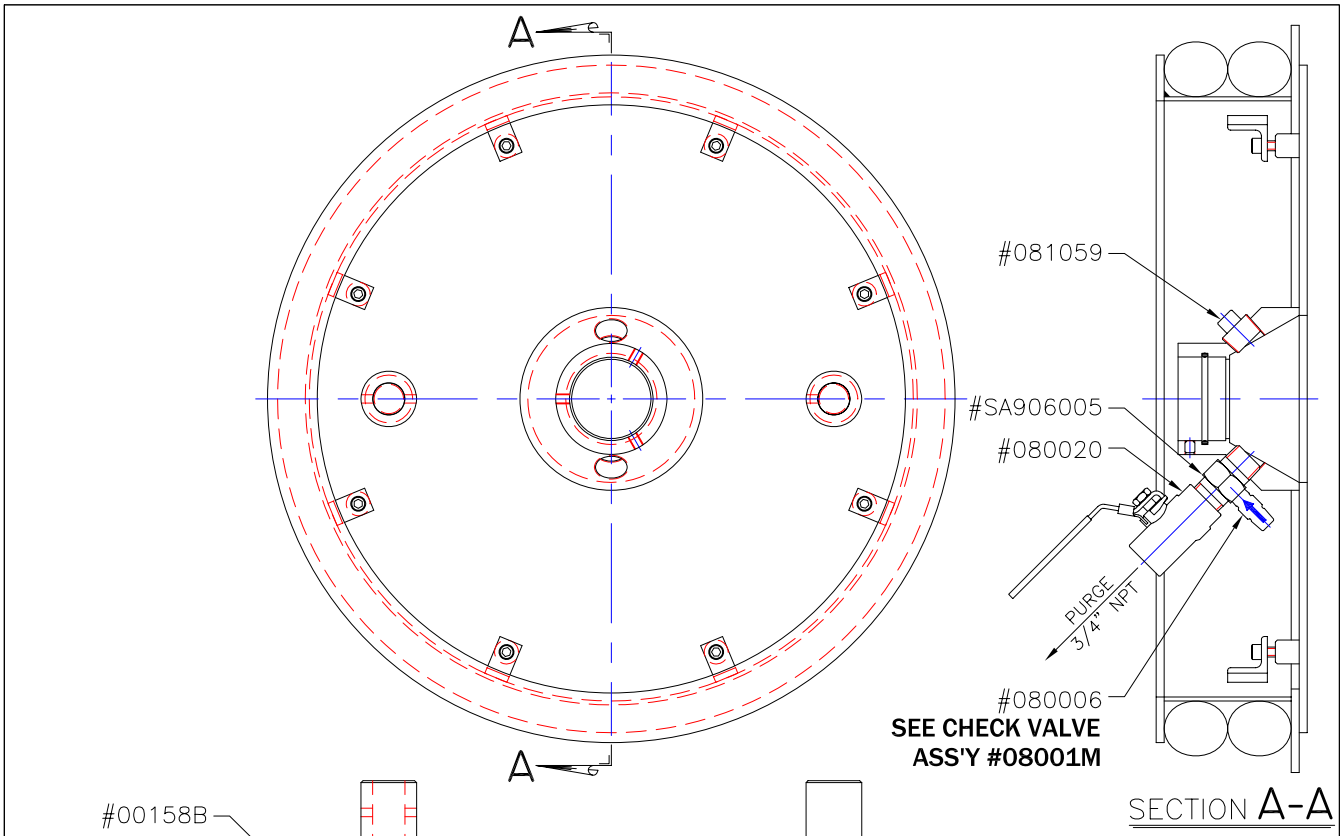
*CHOOSE PART NUMBER DEPENDING ON CYLINDER CONSTRUCTION.

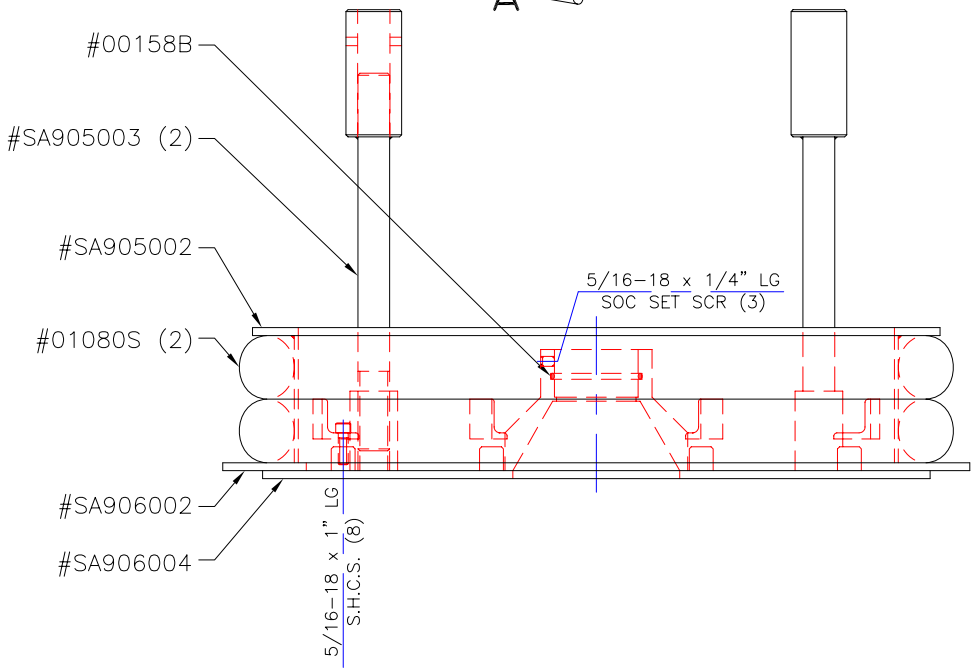
FLUID Automation, Inc WIXOM, MI.

RELEASED: 10-27-97
REVISED: 6-6-06

DESCRIPTION: SPRINGVILLE 6" BORE x 4 1/2" STROKE CYLINDER
FAI PART #DM600K SEAL KIT

MANUAL#:SA90201M





PARTS LIST

PART NO	DESCRIPTION (QTY)
00158B	"O" RING, 1/8" C/S, 2.625" ID ~ BUNA
01080S	"O" RING, 19" ID x 1 3/4" C/S ~ NEOPRENE (2)
080006	1/4" NPTM x 1/4" NPTM CHECK VALVE, 15# CRACK PRESSURE ~ SS
080020	BALL VALVE, 3/4" NPTF STD PORT VALVE w/LOCKING HANDLE, 2000psi MAX ~ SS
081059	3/4" NPTM PIPE PLUG, SQUARE ~ SS
SA905002	FOLLOW PLATE
SA905003	CONNECTING ROD (2)
SA906002	SEAL
SA906004	FOLLOW PLATE HUB
SA906005	NIPPLE

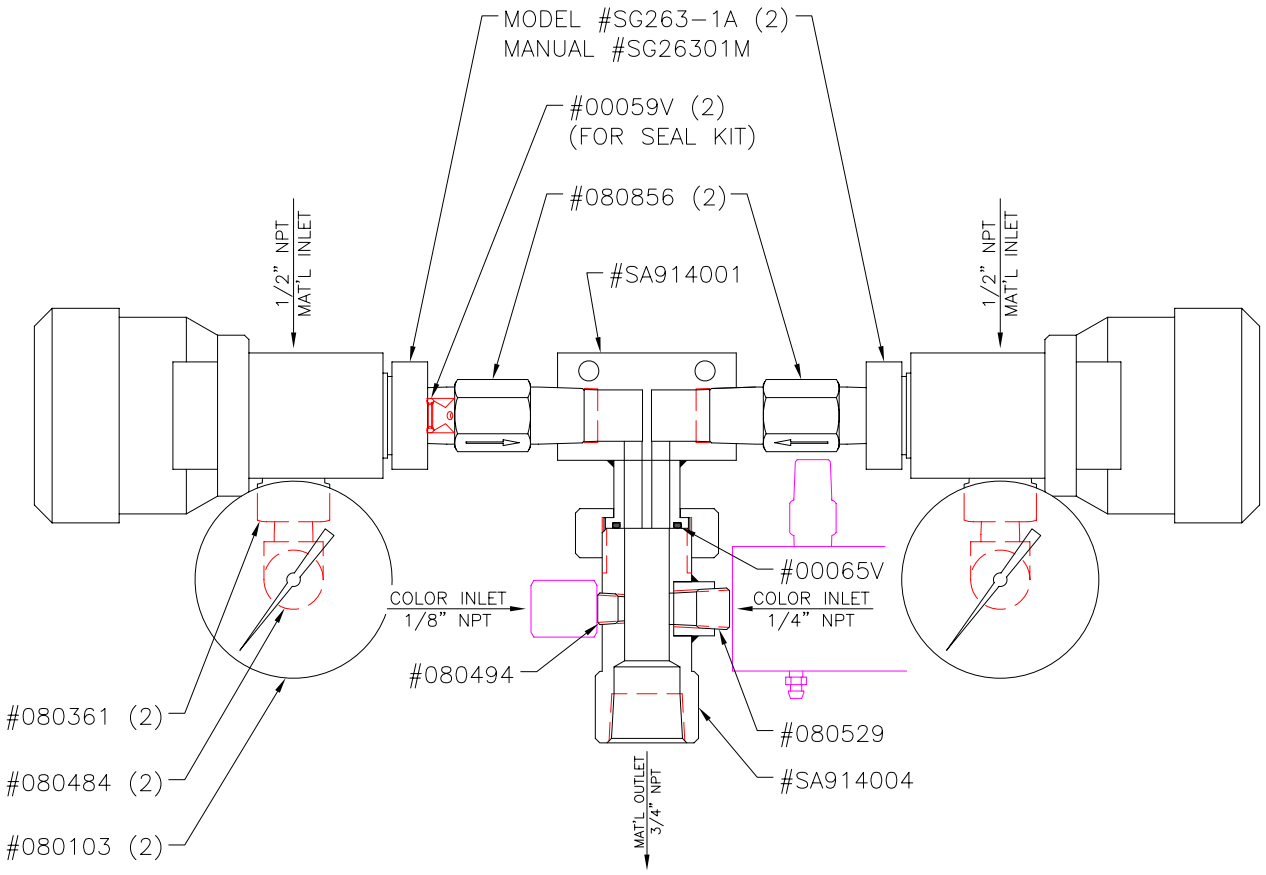
THIS ASSEMBLY USED ON MACHINE:
(1:1) E4-55-55(M) & CE4-55-55(M)
& M4-55-55(M)

FLUID Automation, Inc WIXOM, MI.

RELEASED: 1-30-98
REVISED: 10-11-07

DESCRIPTION:
ACCESSORY MODEL #SA906 (ASS'Y #SA906)
55-GALLON FOLLOW PLATE (FOR B200 & B400 SERIES PUMPS)

MANUAL#:SA90601M



PARTS LIST

PART NO	DESCRIPTION (QTY)
00065V	"O" RING, 3/32" C/S, .750" ID ~ VITON
080103	GAUGE, 0-5000 psi, 1/4" NPTM CENTER BACK MOUNT, LIQUID FILLED (2)
080361	1/2" NPTM x 1/4" NPTF BUSHING ~ SS (2)
080484	1/4" NPTM x 1/4" NPTF ELBOW ~ SS (2)
080494	1/8" NPTM PIPE PLUG ~ SS
080529	1/4" NPTM PIPE PLUG ~ SS
080856	1/2" NPTM x 1/2" NPTM CHECK VALVE, 25# CRACK PRESSURE ~ SS (2)
SA914001	MANIFOLD ASS'Y
SA914004	ADAPTER
SG263-1A	SHUT-OFF GUN (2)

SEAL KIT (MODEL #SA914-3AK)

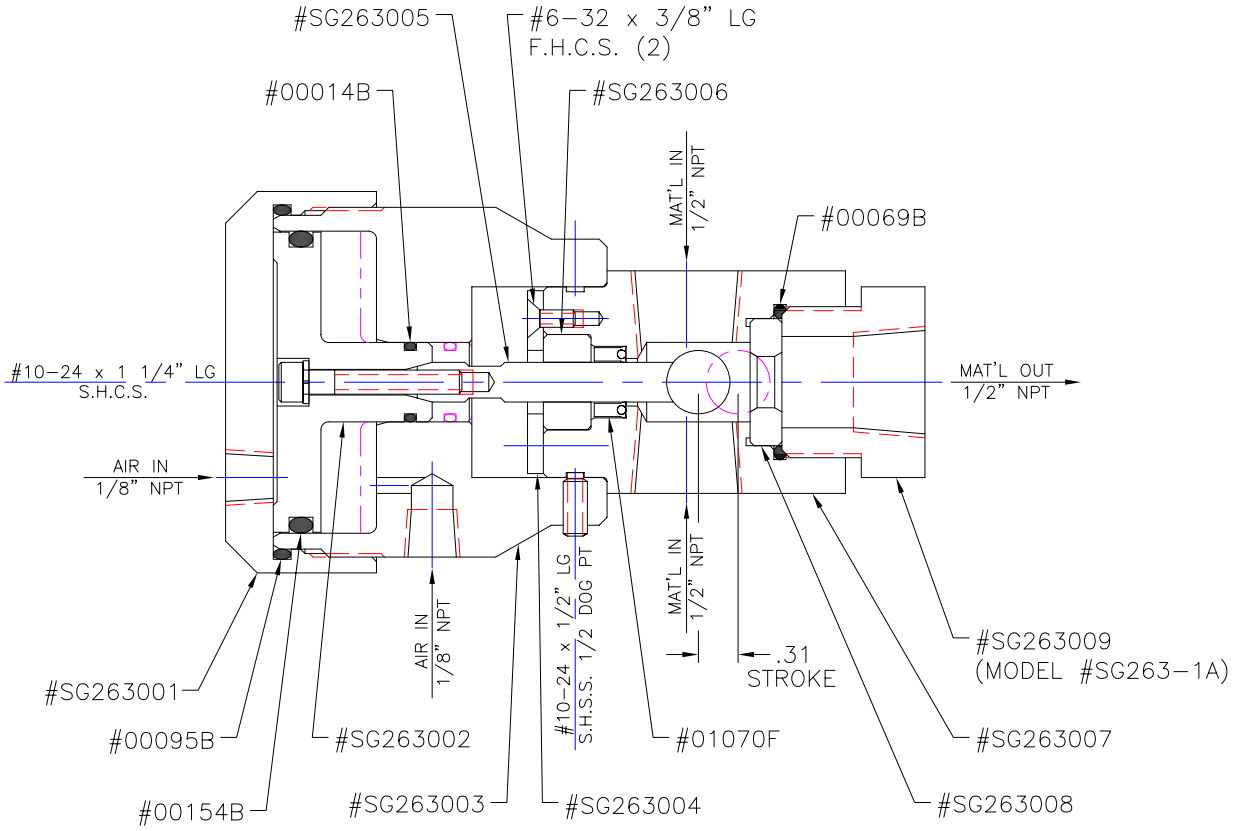
PART NO	DESCRIPTION (QTY)
00059V	"O" RING, 3/32" C/S, .375" ID ~ VITON (2)
00065V	"O" RING, 3/32" C/S, .750" ID ~ VITON
SG263K	SEAL KIT ~ SHUT-OFF GUN (2)

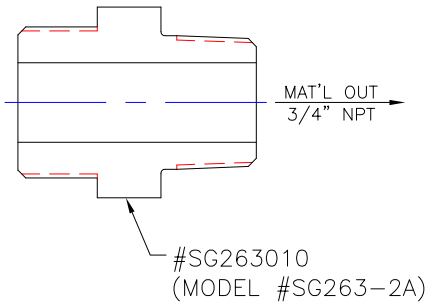
FLUID Automation, Inc WIXOM, MI.

RELEASED: 7-10-02
REVISED: 6-5-08

DESCRIPTION: ACCESSORY MODEL #SA914-4A (ASS'Y #SA914)
SILICONE MANIFOLD ASS'Y ~ MEDICAL

MANUAL#:SA91404M





PARTS LIST

PART NO	DESCRIPTION (QTY)
00014B	"O" RING, 1/16" C/S, .500" ID ~ BUNA
00069B	"O" RING, 3/32" C/S, 1.000" ID ~ BUNA
00095B	"O" RING, 3/32" C/S, 2.625" ID ~ BUNA
00154B	"O" RING, 1/8" C/S, 2.125" ID ~ BUNA
01070F	POLYPAK SEAL TYPE "B", .562 OD x .312 ID x .125 C/S ~ FLUOROMYTE
SG263001	CAP
SG263002	PISTON
SG263003	CYLINDER BODY
SG263004	WASHER
SG263005	PLUNGER
SG263006	BEARING
SG263007	BODY
SG263008	SEAT
SG263009	OUTLET FITTING (SG263-1A ONLY)
SG263010	OUTLET FITTING (SG263-2A ONLY)

SEAL KIT #SG263K

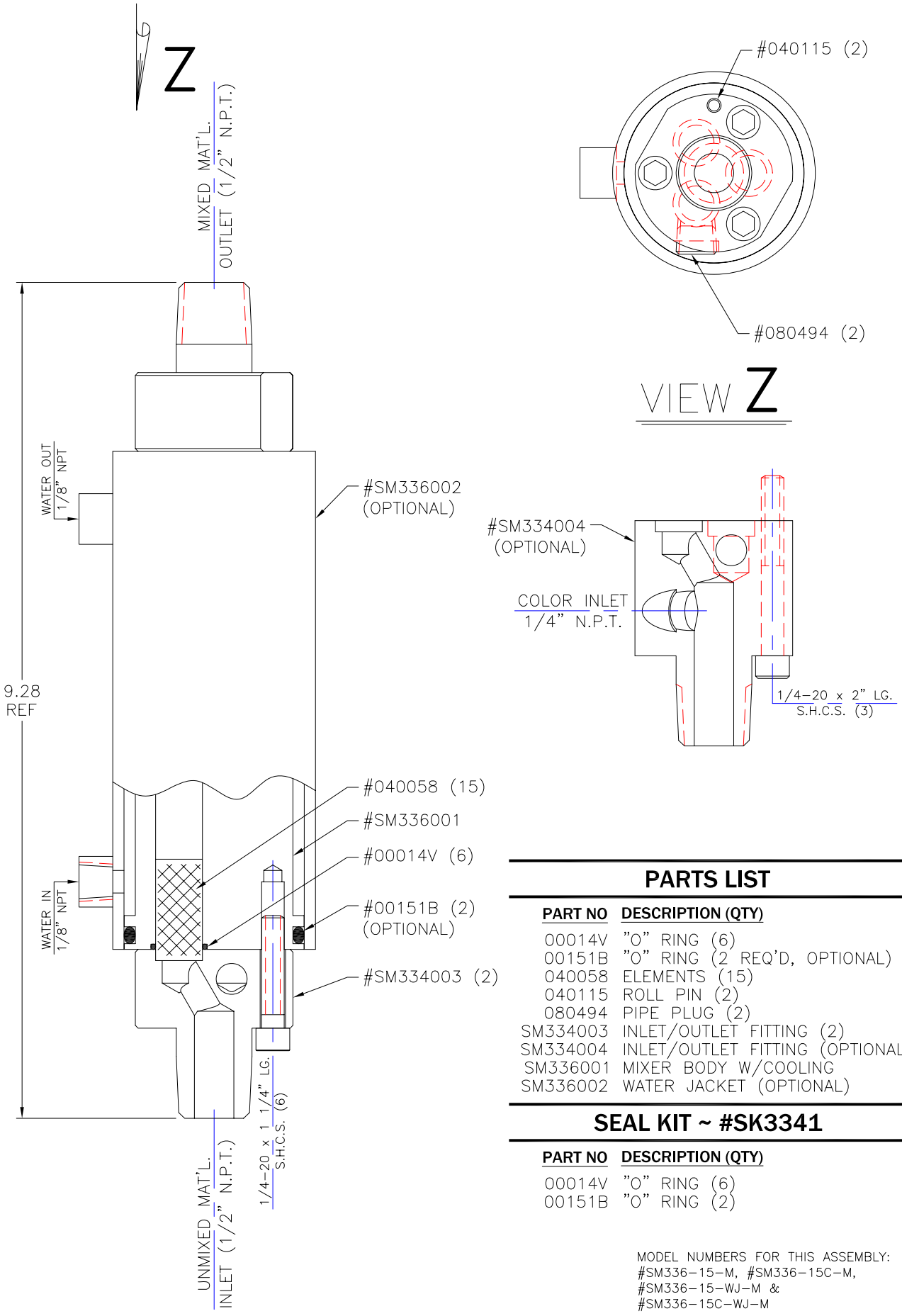
PART NO	DESCRIPTION (QTY)
00014B	"O" RING, 1/16" C/S, .500" ID ~ BUNA
00069B	"O" RING, 3/32" C/S, 1.000" ID ~ BUNA
00095B	"O" RING, 3/32" C/S, 2.625" ID ~ BUNA
00154B	"O" RING, 1/8" C/S, 2.125" ID ~ BUNA
01070F	POLYPAK SEAL TYPE "B", .562 OD x .312 ID x .125 C/S ~ FLUOROMYTE
SG263006	BEARING

FLUID Automation, Inc WIXOM, MI.

RELEASED: 7-10-02
REVISED: 9-8-08

DESCRIPTION: GUN MODEL #SG263-1A & #SG263-2A (ASS'Y #SG263)
SHUT-OFF GUN ~ SINGLE PART

MANUAL#:SG26301M



PARTS LIST

PART NO	DESCRIPTION (QTY)
00014V	"O" RING (6)
00151B	"O" RING (2 REQ'D, OPTIONAL)
040058	ELEMENTS (15)
040115	ROLL PIN (2)
080494	PIPE PLUG (2)
SM334003	INLET/OUTLET FITTING (2)
SM334004	INLET/OUTLET FITTING (OPTIONAL)
SM336001	MIXER BODY W/COOLING
SM336002	WATER JACKET (OPTIONAL)

SEAL KIT ~ #SK3341

PART NO	DESCRIPTION (QTY)
00014V	"O" RING (6)
00151B	"O" RING (2)

MODEL NUMBERS FOR THIS ASSEMBLY:
#SM336-15-M, #SM336-15C-M,
#SM336-15-WJ-M &
#SM336-15C-WJ-M

FLUID Automation, Inc WIXOM, MI.

RELEASED: 1-29-97
REVISED: 7-18-07

DESCRIPTION: MIXER MODEL # SEE NOTE (ASS'Y #SM336) ~ MEDICAL
3 PASS ~ 1/2" DIA. 15 ELEMENT

MANUAL#:SM33601M

OPERATOR'S MANUAL #B442/#B442A/#B442M

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

RELEASED: 10-12-01
REVISED: 1-31-08

4 1/2" STROKE ~ .62 IN.^{2} AREA
5.5 IN.^{3} PER CYCLE
CARBON STEEL CONSTRUCTION

RECIPROCATING, DOUBLE-ACTING
SHOVEL LOADING, METERING PUMP

IMPORTANT: *READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATION OR SERVICING THIS EQUIPMENT.*

OPERATING PRECAUTIONS

- HEED ALL WARNINGS.
- WARNING: HIGH PRESSURE DEVICE. Improper usage of this equipment could result in serious injury. The possibility of injection into the flesh is a potential hazard. Never allow any part of the human body to come in front of or in direct contact with the material outlet. An injection injury can be serious. If injection should occur, contact a qualified physician immediately for treatment.
- COMPONENT RUPTURE. This pump is capable of producing high material pressure. Use appropriate outlet hose and valves.
- Be sure material hoses and other components are able to withstand fluid pressures developed by this pump.
- Do not operate pump continuously at speeds in excess of 20 cycles per minute, to avoid losing material prime.
- Disconnect air line from pump air motor when system sits idle for long periods of time.
- Materials and solvents being pumped by this pump must be compatible with the parts of this pump that come in contact with material and solvent.
- SERVICING. Before servicing or cleaning pump, or removing fluid hose or gun from a unit that has been used, be sure to disconnect air lines and carefully bleed the pressure off the system.

INSTALLATION

- The pump is held together by (3) tie rods from the intake housing (on the pump) to the pump mount plate (with 1/2–13 nuts). Care must be taken to radially align the housing to the plate and to tighten the (3) tie rods evenly, to avoid pump binding or scoring. The pump mount plate is held in position by (4) down rods connecting the pump to the machine.
- Connect the pump (by the displacement rod) to the air motor by connecting a 3/4–10 threaded rod (to the displacement rod) with a 1"–14 coupling on the opposite end which then connects the rod to the drive motor.
- The B442 (#SP444) pump is to be mounted in a 2 5/8" I.D. hub on a 55–gallon or 5–gallon follower plate at the intake by (2) 5/16–18 set screws.

MAINTENANCE

- Cycle pump periodically to keep seals pliable.
- Keep displacement rod clean of all foreign materials.
- Material will keep pump lubricated.
- Cycle pump to bottom of stroke when not using pump.
- If pump is to be inoperative for more than a few hours at a time, disconnect air supply and relieve all pressure from the system.

PUMP DISASSEMBLY

– Basic mechanical (S.A.E.) tools:
1/2", 3/4", 15/16" & 1 1/4" open–end wrench
7" pipe wrench
Adjustable wrench

Before removing pump from machine allow pump to cycle to the down position (bottom of stroke).

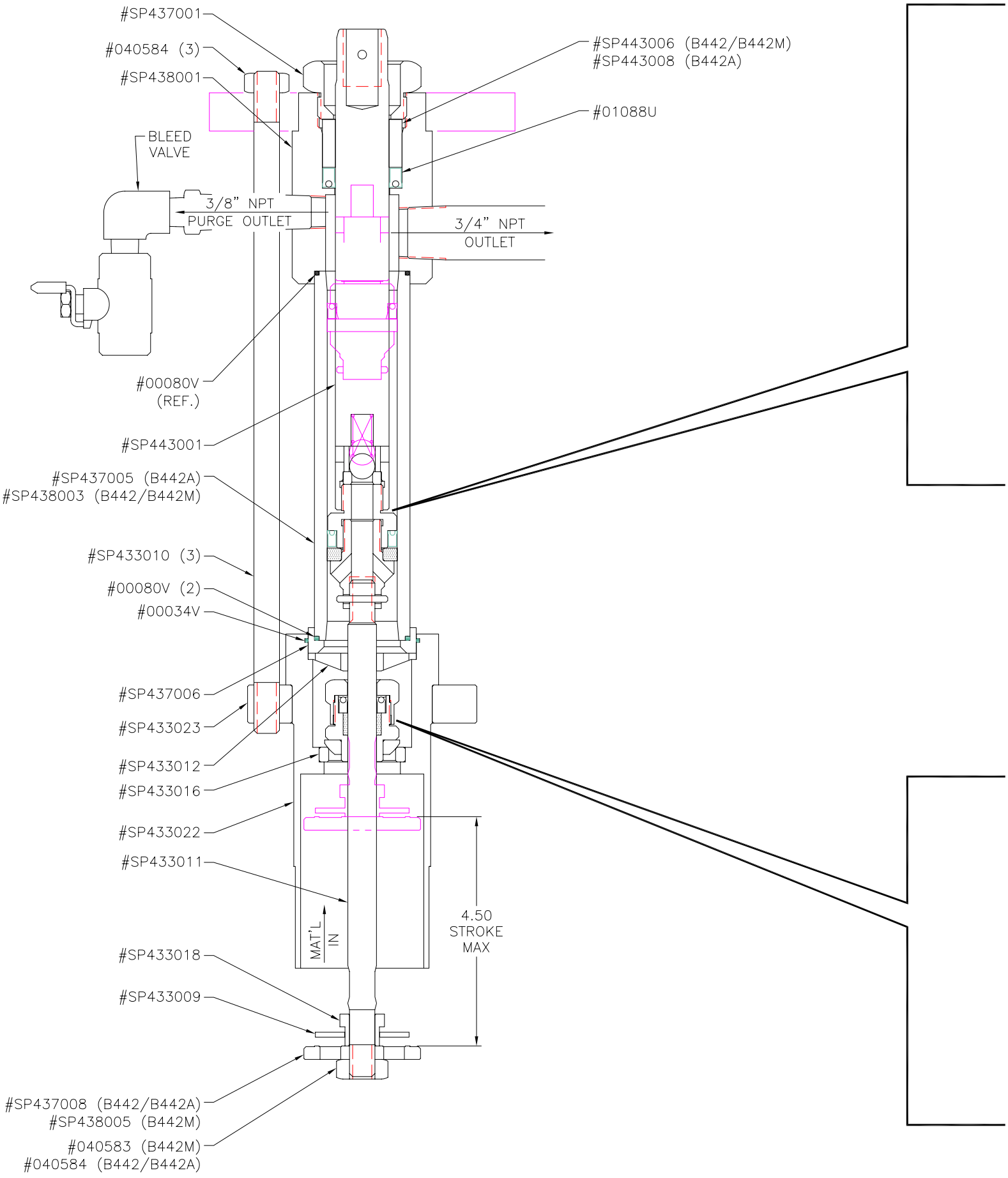
1. Once pump is removed disconnect (3) tie rods which hold pump together.
2. Place pump in vice on flats of displacement rod hold shovel rod (at the flats with 1/2" open–end wrench) and disconnect hex nut (with 3/4" open–end wrench) from bottom of shovel rod.
3. Slide off stop nut, shovel plate and shovel from shovel rod.
4. Remove intake housing by separating it from cylinder (use caution, coming into contact with threads of shovel rod, thus ensuring no damage to seals).
5. Slide seal body from shovel rod in direction of flats (thus ensuring no damage to seals).
6. Hold seal body (with 1 1/4" open–end wrench) and separate packing nut by turning (with 1 1/4" open–end wrench) counterclockwise, thus allowing removal of seal.
7. Separate adapter from intake housing, allowing removal of stop plate and seal.
8. Separate cylinder from packing housing.
9. Hold piston (at the flats with 3/4" open–end wrench) and separate displacement rod by turning (with 7" pipe wrench) counterclockwise, thus allowing removal of bearing and seal.
10. Hold displacement rod (with 15/16" open–end wrench) and separate piston spacer by turning (with 7" pipe wrench) counterclockwise, thus allowing removal of seat, ball and spring.
11. Slide displacement rod from packing housing in opposite direction of packing nut (thus ensuring no damage to seals).
12. Unscrew packing nut (with adjustable wrench) from packing housing.
13. Remove bushing and seal.
14. Place all parts in a solvent tank for cleaning, except seals which will be damaged by the solvent.

NOTE: SEE MACHINE MANUAL FOR PUMP PURGING AND PRIMING PROCEDURES

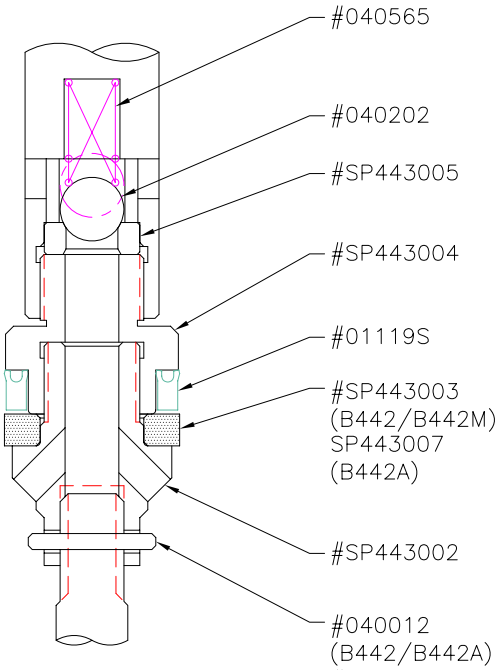
FLUID AUTOMATION INC.
49175 WEST RD. P.O. BOX. 930302 WIXOM, MICHIGAN 48393
PH. (248) 912–1970 – FAX. (248) 912–1971

FLUID Automation, Inc

WIXOM, MI.


#SP437001
#040584 (3)
#SP438001
BLEED VALVE
3/8" NPT PURGE OUTLET
#00080V (REF.)
#SP443001
#SP437005 (B442A)
#SP438003 (B442/B442M)
#SP433010 (3)
#00080V (2)
#00034V
#SP437006
#SP433023
#SP433012
#SP433016
#SP433022
#SP433011
#SP433018
#SP433009
#SP437008 (B442/B442A)
#SP438005 (B442M)
#040583 (B442M)
#040584 (B442/B442A)
#SP443006 (B442/B442M)
#SP443008 (B442A)
#01088U
3/4" NPT OUTLET
MAT'L IN
4.50 STROKE MAX

B442/B442A/B442M (#SP444) PUMP PARTS LIST



PART NO.	DESCRIPTION
00034V	"O" RING (B44)
00080V	"O" RING (B415) (2)
01019U	SEAL (B230)
01088U	SEAL
01119S	SEAL
040202	BALL
040565	SPRING
SP433009	SHOVEL PLATE (B235)
SP433010	TIE ROD (B240) (3)
SP433011	SHOVEL ROD (B226)
SP433015	PISTON SEAT (B231)
SP433016	INTAKE VALVE SEAT (B232)
SP433018	STOP NUT (B234)
SP433022	INTAKE HOUSING
SP433023	RING
SP434006	PACKING NUT (B229SS)
SP434007	SEAL BODY (B231SS)
SP434010	BUSHING
SP437001	PACKING NUT (B401)
SP437006	ADAPTER (B416)
SP438001	PACKING HOUSING (B402SS)
SP443001	DISPLACEMENT ROD
SP443002	PISTON
SP443004	PISTON SPACER
SP443005	SEAT

B442: COMPONENT VARIANT

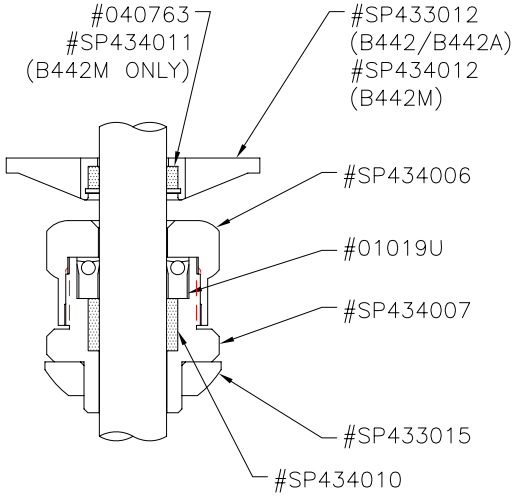
040012 SPRING PIN	SP438003 CYLINDER (B414SS)
040584 JAM NUT (STL.) (4)	SP443003 BEARING
SP433012 STOP PLATE (B227)	SP443006 BUSHING
SP437008 SHOVEL (B418)	

B442A: COMPONENT VARIANT

040012 SPRING PIN	SP437008 SHOVEL (B418)
040584 JAM NUT (STL.) (4)	SP443007 BEARING
SP433012 STOP PLATE (B227)	SP443008 BUSHING
SP437005 CYLINDER (B414)	

B442M: COMPONENT VARIANT

040008 SPRING PIN	SP434012 STOP PLATE
040583 JAM NUT (S.S.)	SP438003 CYLINDER (B414SS)
040584 JAM NUT (STL.) (3)	SP438005 SHOVEL (B418SS)
040763 SNAP RING	SP443003 BEARING
SP434011 BUSHING	SP443006 BUSHING



SEAL KITS

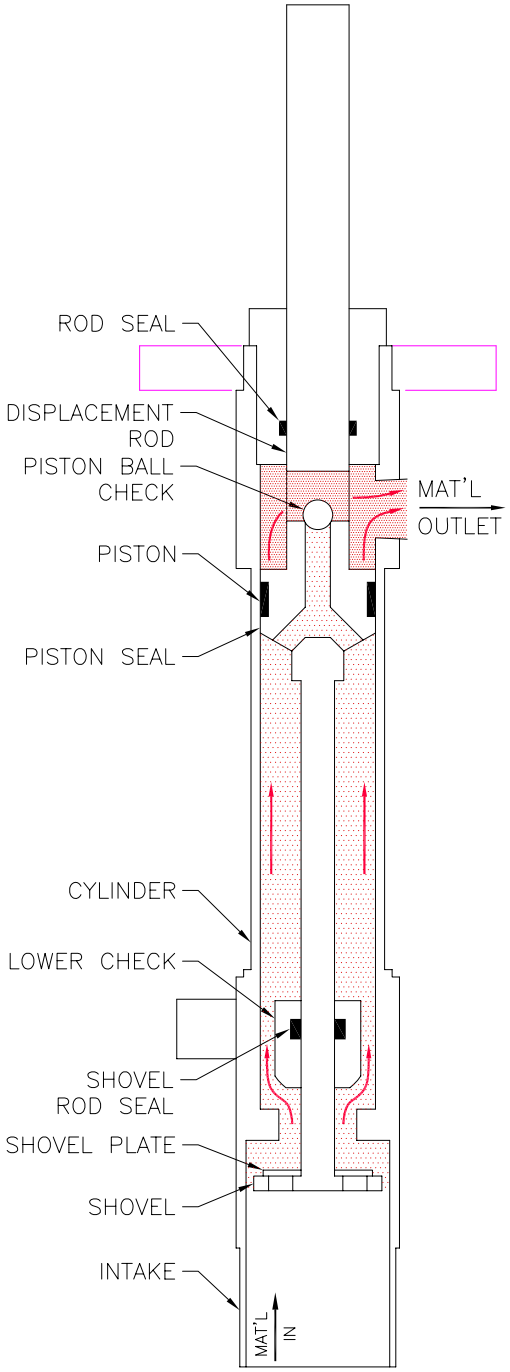
B442K (INDUSTRIAL/MEDICAL):

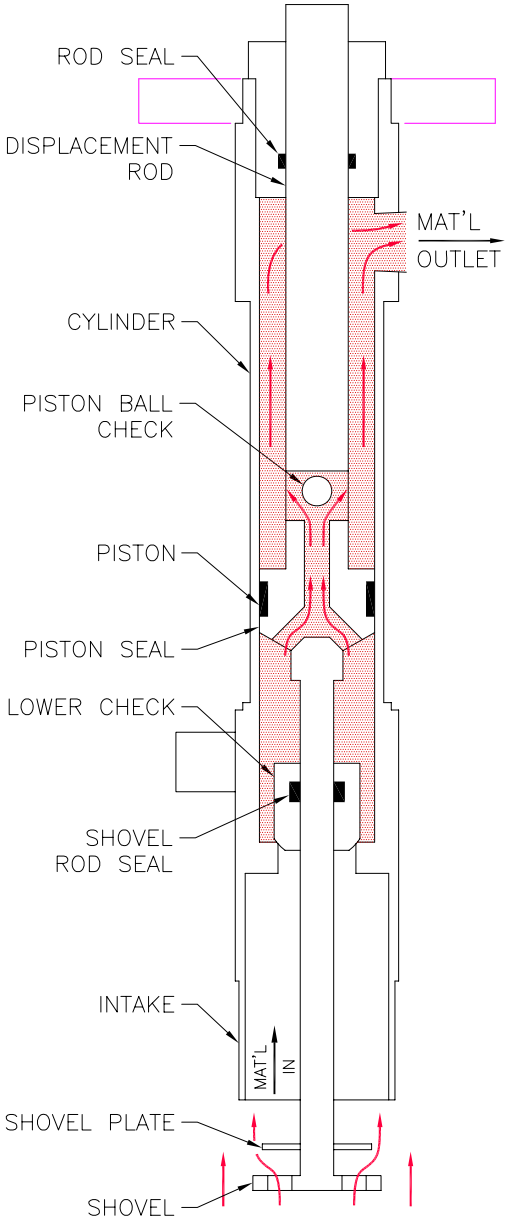
PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
00034V	"O" RING (B44)	040763	SNAP RING
00080V	"O" RING (B415) (2)	SP434010	BUSHING
01019U	SEAL (B230)	SP434011	BUSHING
01088U	SEAL	SP443003	BEARING
01119S	SEAL	SP443006	BUSHING
020216	BEARING		

B442KA (ABRASIVE MAT'L):

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
00034V	"O" RING (B44)	01119S	SEAL
00080V	"O" RING (B415) (2)	SP434010	BUSHING
01019U	SEAL (B230)	SP443007	BEARING
01088U	SEAL	SP443008	BUSHING

THEORY OF OPERATION





UPSTROKE

- DISPLACEMENT ROD MOVES UPWARD IN THE CYLINDER.
- PISTON BALL CHECK IS SEATED AND MATERIAL ABOVE PISTON IS DISPENSED THROUGH MATERIAL OUTLET.
- AS THE PISTON MOVES UP, AIR CYLINDER LIFTS CHECK PLUNGER FROM SEAT AND CYLINDER IS FILLED WITH MORE MATERIAL.
- AS THE SHOVEL MOVES UP, THE SHOVEL PLATE BLOCKS MATERIAL PASSAGE IN THE SHOVEL AND AIDS IN THE REFILL OF THE CYLINDER.

DOWN STROKE

- AS PISTON STARTS DOWN, AIR CYLINDER CLOSES THE CHECK PLUNGER.
- MATERIAL IN CYLINDER FORCES PISTON BALL CHECK FROM SEAT AND FLOWS THROUGH PISTON TO UPPER PORTION OF CYLINDER.
- AS THE DISPLACEMENT ROD MOVES DOWN, HALF OF THE MATERIAL IS FORCED THROUGH THE MATERIAL OUTLET AND THE OTHER HALF REMAINS IN THE CYLINDER ABOVE THE PISTON.
- AS THE SHOVEL MOVES DOWN, THE SHOVEL PLATE LIFTS ALLOWING THE SHOVEL TO PASS THROUGH THE MATERIAL WITHOUT CAVITATING THE PUMP.

TROUBLE SHOOTING

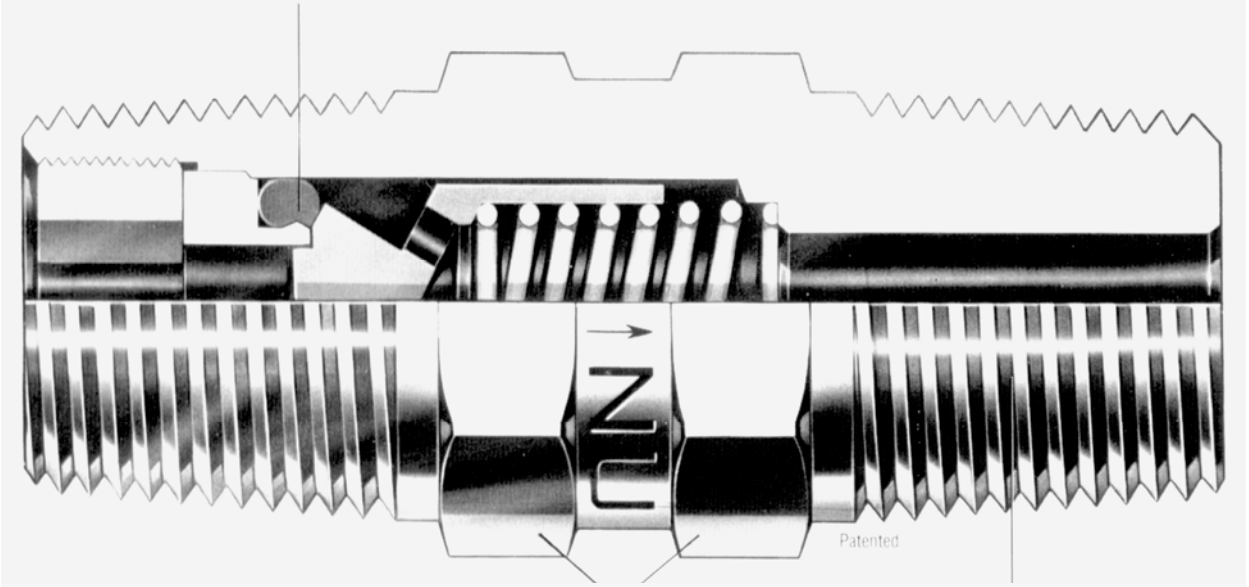
PROBLEM: NO MATERIAL, PUMP STALLED
CAUSE: OBSTRUCTED MATERIAL PATH
SOLUTION: REMOVE OBSTRUCTION, USUALLY CURED MATERIAL

PROBLEM: NO MATERIAL, PUMP CYCLING CONTINUALLY
CAUSE: LOST PRIME
SOLUTION #1: RAM CONTROL VALVE NOT IN DOWN POSITION OR DOWN PRESSURE TOO LOW. CORRECT THE SETTINGS, AND REPRIME THE PUMP.
SOLUTION #2: REDUCE PUMP SPEED IF OPERATING TOO FAST TO MAINTAIN PRIME. AND/OR INCREASE RAM DOWN PRESSURE.
SOLUTION #3: REMOVE OBSTRUCTION FROM PUMP INTAKE, SUCH AS PLASTIC DRUM LINER.

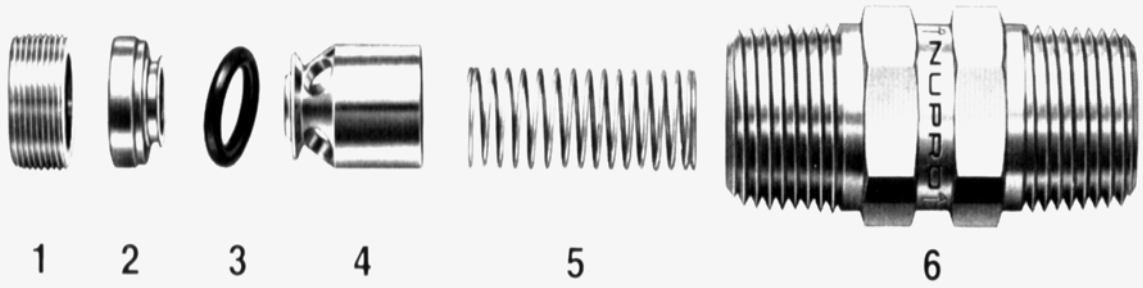
PROBLEM: NO MATERIAL ON DOWN STROKE
CAUSE #1: NO CHECK PLUNGER MOVEMENT
SOLUTION: CHECK SIGNAL TO VALVE, VALVE OPERATION, AND CORRECT FAULTY COMPONENT.
CAUSE #2: CHECK PLUNGER IS NOT SEATING
SOLUTION: REMOVE THE CHECK PLUNGER, CLEAN AND INSPECT FOR FOREIGN MATERIAL OR DAMAGE, IF DAMAGED REPLACE.
CAUSE #3: SHOVEL ROD SEAL LEAKING
SOLUTION: REPLACE SEAL & BEARING

PROBLEM: NO MATERIAL ON UP STROKE
CAUSE #1: PISTON BALL CHECK NOT SEATING
SOLUTION: REPLACE SPRING, BALL OR SEAT IF DAMAGED OR REMOVE FOREIGN MATERIAL FROM BETWEEN BALL AND SEAT
CAUSE #2: PISTON SEAL LEAKING
SOLUTION: REPLACE SEAL. INSPECT CYLINDER BORE AND PISTON BEARING FOR DAMAGE

FULLY CONTAINED O-RING SEAL



MATERIALS OF CONSTRUCTION



	F.A.I. PART NUMBERS			
	Ass'y #080006	Ass'y #080292	Ass'y #080005	Ass'y #080291
	316SS ~ 1/4" N.P.T.	316SS ~ 1/2" N.P.T.	Brass ~ 1/4" N.P.T.	Brass ~ 1/2" N.P.T.
1. Insert Lock Screw	080272	080273	080278	080279
2. Insert	080268	080269	080274	080275
3. O-Ring	00009V	00059V	00009B	00059B
4. Poppet	080270	080271	080276	080277
5. Spring	040182	040186	040182	040186
6. Body	080299	080300	080297	080298

FLUID Automation, Inc WIXOM, MI.

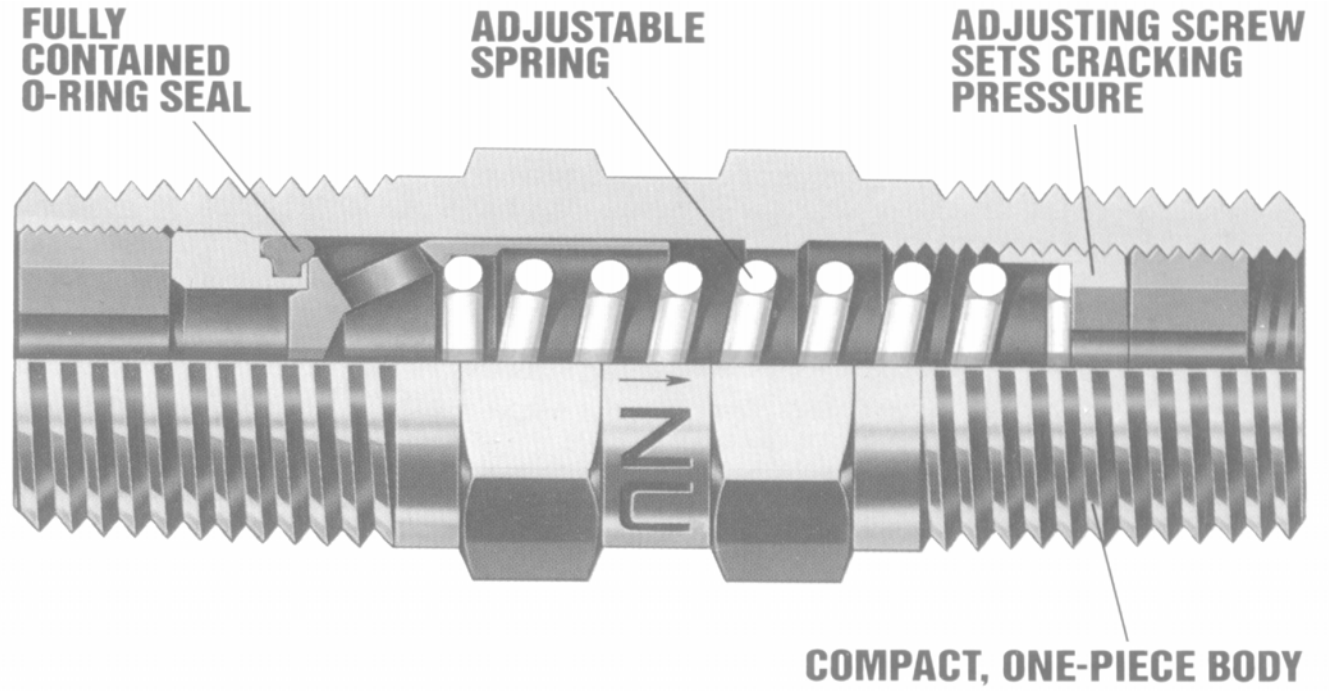
RELEASED: 5-5-97

REVISED:

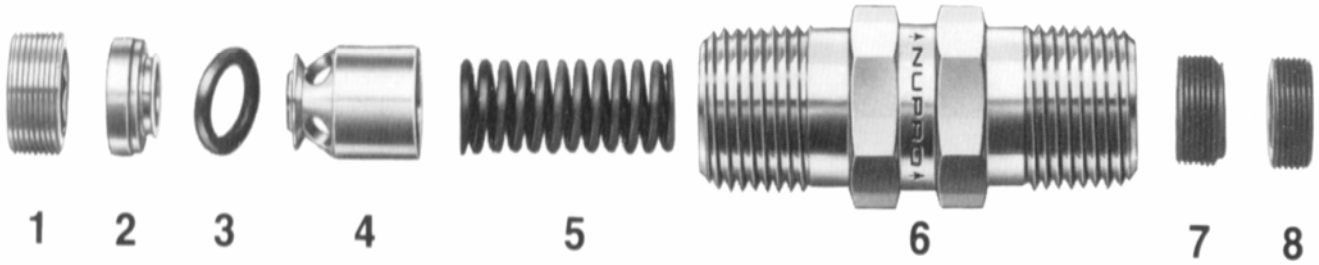
DESCRIPTION:

CHECK VALVE ASSEMBLY
15# ~ NON-ADJUSTABLE

MANUAL#: 08001M



MATERIALS OF CONSTRUCTION



	F.A.I. PART NUMBERS			
	Ass'y #080294	Ass'y #080296	Ass'y #080004	Ass'y #080295
	316SS ~ 1/4" N.P.T.	316SS ~ 1/2" N.P.T.	Brass ~ 1/4" N.P.T.	Brass ~ 1/2" N.P.T.
1. Insert Lock Screw	080272	080273	080278	080279
2. Insert	080268	080269	080274	080275
3. O-Ring	00009V	00059V	00009B	00059B
4. Poppet	080270	080271	080276	080277
5. Spring	040187	040188	040187	040188
6. Body	080303	080304	080301	080302
7. Adjusting Screw	080307	080308	080305	080306
8. Locking Screw	080311	080312	080309	080310

Service Instructions MS-CRD-0047
April 1995

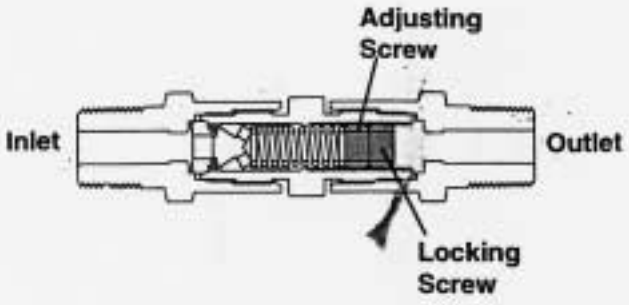
NUPRO
A SWAGELOK® COMPANY

CA & CPA Series Check Valve Cracking Pressure Adjustment

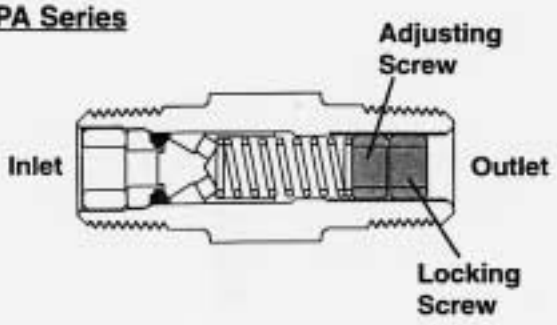
Tools Needed

CA & 4CPA	8CPA
5/32 in. hex key	5/16 in. hex key

CA Series

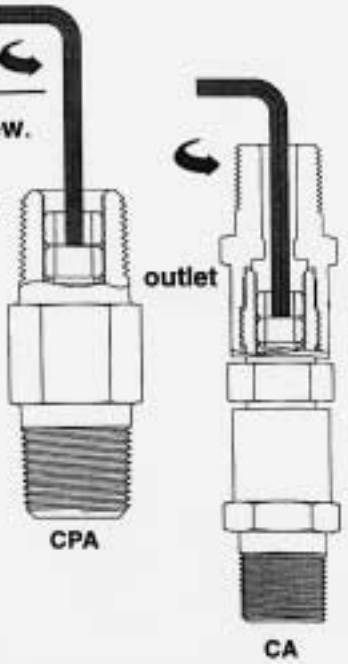


CPA Series

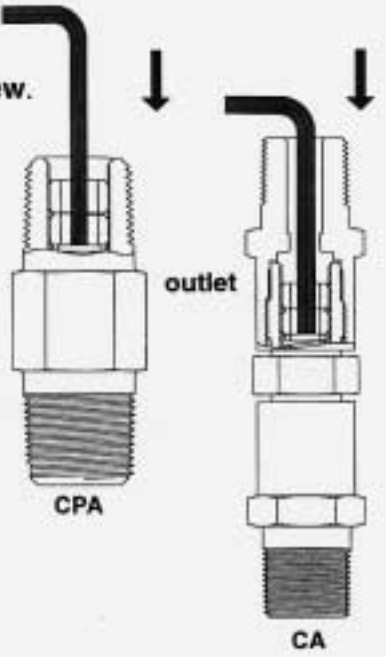


1. Insert **wrench** into **locking screw.**

   Loosen screw by turning counter-clockwise.

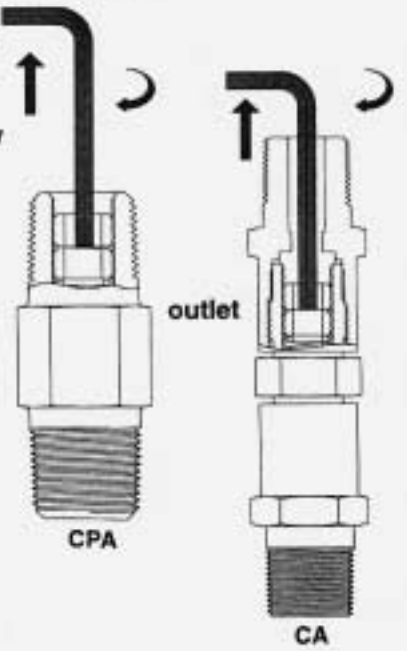


2. Slide **wrench** down into **adjusting screw.**



3. Turn both screws to reach desired cracking pressure. (Turn clockwise to increase cracking pressure, counter clockwise to decrease cracking pressure)

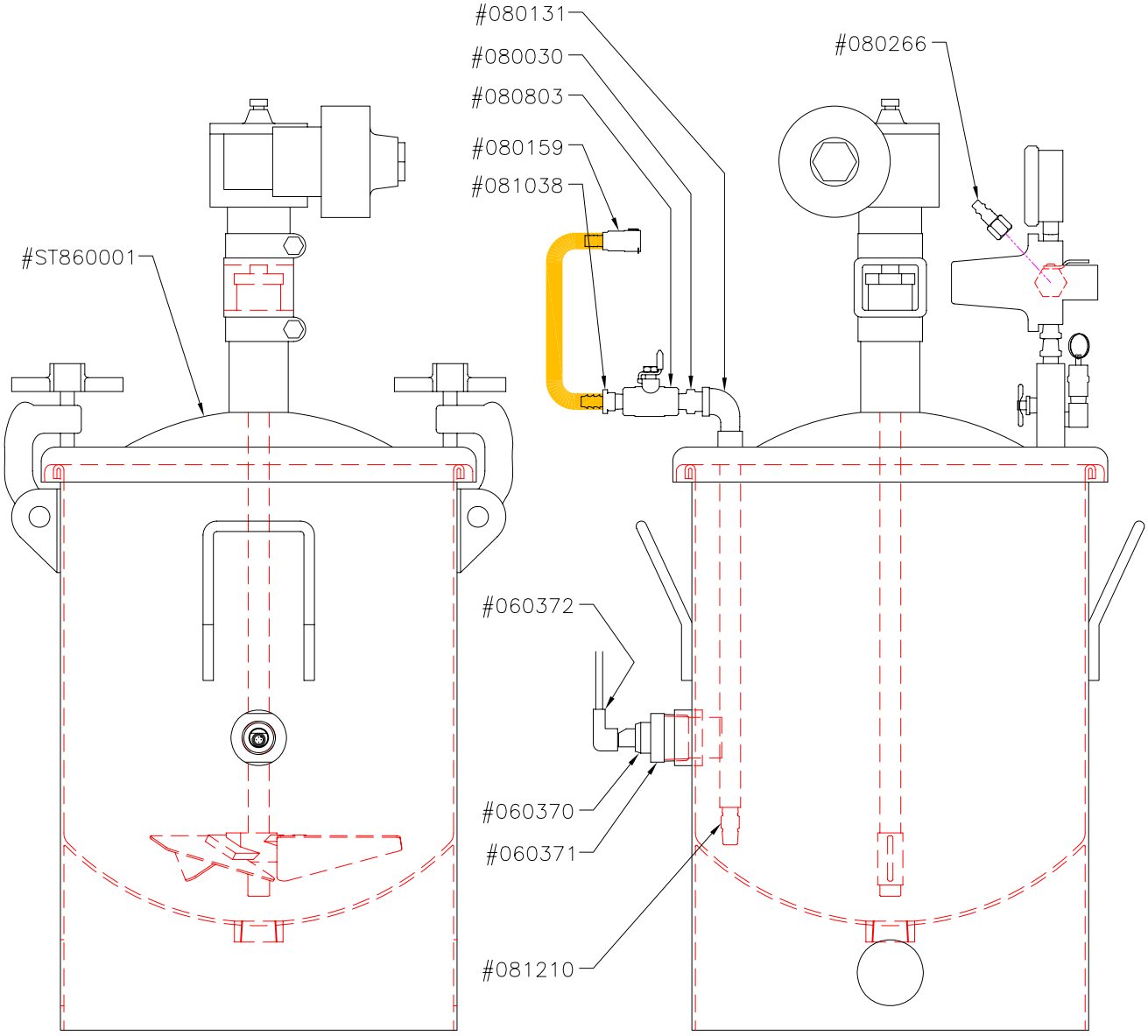
4. Slide **wrench** back up into **locking screw** and turn clockwise to lock.



5. Verify cracking pressure and adjust screws if required.

NUPRO
A SWAGELOK® COMPANY
NUPRO Company
4800 E. 345th Street
Willoughby, Ohio 44094, U.S.A.

10-95-CP
MS-CRD-0047



PARTS LIST

PART NO.	DESCRIPTION (QTY)
060370	CAPACITIVE LEVEL SWITCH, 30mm x 1.5 THDS, QUICK DISCONNECT
060371	MOUNTING ADAPTER, 1 1/4" NPT (PTFE)
060372	90deg CABLE w/4 PIN CONNECTOR, 10-METER
080030	3/8" NPTM x 1/4" NPTM HEX NIPPLE
080131	3/8" NPTM x 3/8" NPTF ELBOW
080159	3/8" ID HOSE BARB x 1/4" FLOW QUICK COUPLING IN-LINE BODY
080266	1/4" NPTF x QUICK DISCONNECT FITTING
080803	BALL VALVE, 1/4" NPTF PORTS
081038	1/4" NPTM x 3/8" ID HOSE BARB FTG
081210	1/4" NPTM x 1/4" NPTM CHECK VALVE, 1# CRACK PRESSURE
ST860001	5-GAL PRESSURE TANK ASSY w/AGITATOR & LOW LEVEL PORT

NOTE:
TANK CAPACITY = 9.8 GALLONS ACTUAL

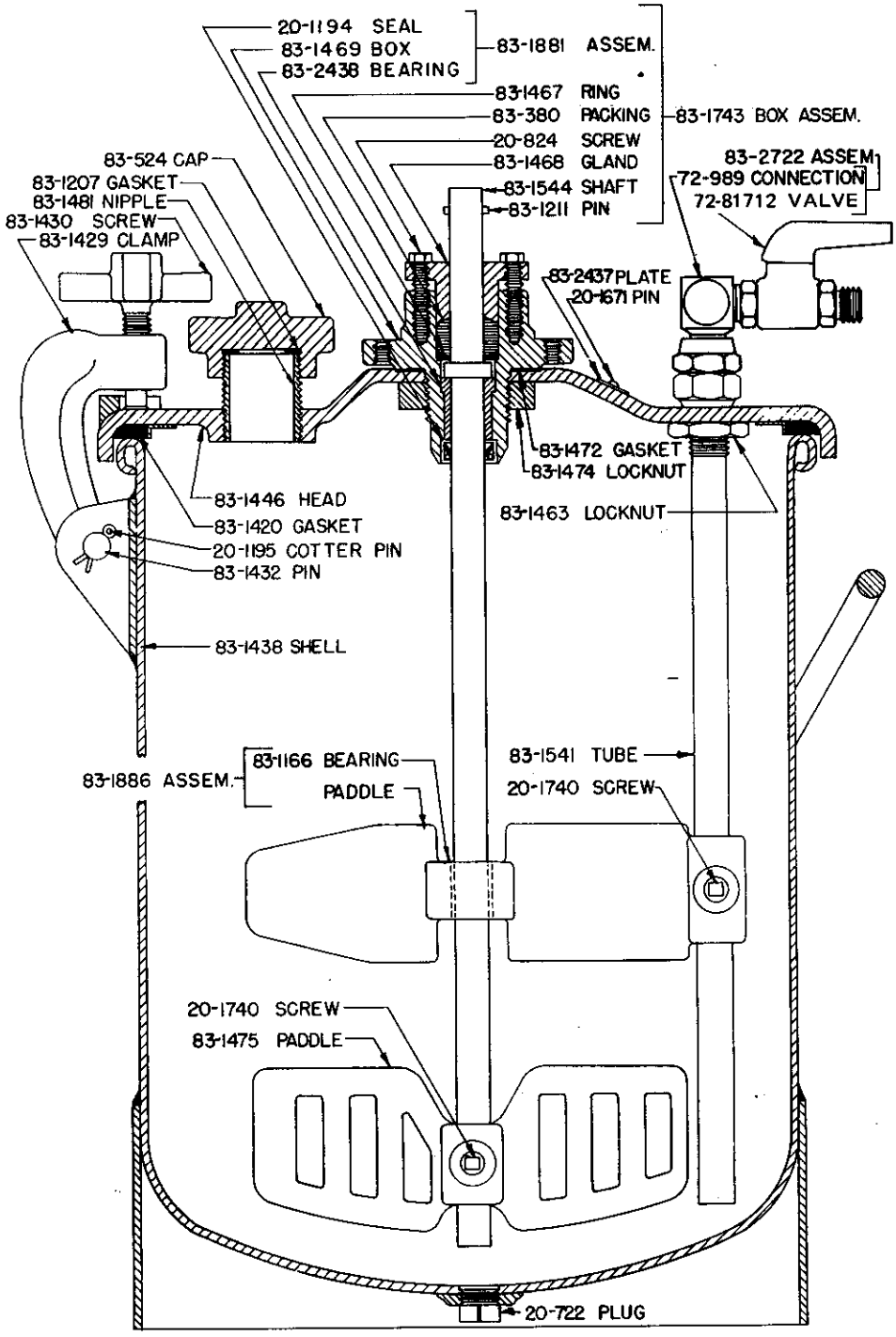
FLUID Automation, Inc WIXOM, MI.

RELEASED: 7-11-05
REVISED: 5-29-07

DESCRIPTION: F.A.I. STANDARD MODEL #ST860-1A (ASS'Y #ST860)
5-GALLON PRESSURE TANK (STAINLESS STL) w-AGITATOR & LOW LEVEL ASS'Y

MANUAL#:ST86001M

Binks 5 GALLON STANDARD PRESSURE TANK
WITH AGITATOR AND TOP FLUID OUTLET
MODELS 83-5403 thru 83-5408



BINKS

Replaces Part Sheet 1131R-8

Part Sheet 1131R-9

Binks 5 GALLON STANDARD PRESSURE TANK
WITH AGITATOR AND TOP FLUID OUTLET
MODELS 83-5403 thru 83-5408

PARTS LIST

PART NO.	DESCRIPTION	QTY.
20-722	PIPE PLUG, 1 NPT	1
20-824	HEX. CAP SCREW, 5/16-18 x 1 1/4" Lg.	2
20-1194	OIL SEAL	1
20-1195	COTTER PIN, 1/8 Dia. x 3/4" Lg.	6
20-1740	SQ. HEAD SET SCREW, 7/16-14 x 7/8" Lg.	2
31-116	AIR MOTOR AGITATOR DRIVE (83-5406, 83-5407 & 83-5408)‡, not shown	1
72-989	CONNECTION	1
72-81712	BALL VALVE, 3/8 NPS	1
83-380	SHAFT PACKING	4
83-524	FILLER CAP	1
83-1166	PADDLE BEARING	1
83-1187	HAND CRANK (83-5403, 83-5404 & 83-5405)‡, not shown	1
83-1207	FILLER CAP GASKET	1
83-1211	DRIVE PIN	1
83-1420	HEAD GASKET, Thiokol	1
83-1429	"C" CLAMP	6
83-1430	CLAMP SCREW	6
83-1432	CLAMP PIN	6
83-1438	TANK SHELL	1
83-1446	TANK HEAD	1
83-1463	FLUID TUBE LOCK NUT	1
83-1467	RETAINING RING	1
83-1468	PACKING GLAND	1
83-1469	STUFFING BOX	1
83-1472	STUFFING BOX GASKET	1
83-1474	STUFFING BOX LOCK NUT, 1 1/4 NPS L.H.	1
83-1475†	PADDLE	1
83-1481	FILLER NIPPLE	1
83-1541*	FLUID TUBE	1
83-1544*	AGITATOR SHAFT	1
83-1743	STUFFING BOX ASS'Y.	1
83-1881	BEARING ASS'Y.	1
83-1886	STATIONARY PADDLE ASS'Y.	1
83-2438	SHAFT BEARING	1
83-2722	SINGLE OUTLET ASS'Y.	1
85-102	AIR CONTROL UNIT (83-5403 & 83-5406)‡, not shown, Part Sheet 1169	1
85-203	AIR CONTROL UNIT (83-5404 & 83-5407)‡, not shown, Part Sheet 1827	1
85-204	AIR CONTROL UNIT (83-5405 & 83-5408)‡, not shown, Part Sheet 1828	1

*Cut off at groove if Inner Container, 83-1546, is added to tank.

†Mount on shaft with straight edge down if Inner Container, 83-1546, is added to tank.

‡Numbers in parenthesis refer to pressure tank models with whick item is furnished.

ACCESSORIES
Not furnished. Please order separately.

PART NO.	DESCRIPTION	QTY.
83-1485	INNER CONTAINER COVER	1
83-1546	GALVANIZED INNER CONTAINER	1
83-1852	DOUBLE AIR OUTLET, 1/4 NPS	1
83-2035■	HEAD ASSEMBLY.	1
83-2094	HEAD GASKET, Rubber	1
83-2372	BOTTOM OUTLET KIT, Single	1
83-2373	BOTTOM OUTLET KIT, Double	1
83-2847	HEAD GASKET, Teflon	1
83-2723	DOUBLE FLUID OUTLET, 3/8 NPS, Top	1

■ Less air control units.

SPECIFICATIONS

Working Pressure		110 PSI	7.7 Kg./cm^2
Overall Height	with Hand Crank	33 13/16 in.	85.9 cm
	with Air Control	27 in.	68.6 cm
	with Air Motor Agitator	26 1/2 in.	67.3 cm
Base Diameter		12 1/2 in.	31.8 cm
Diameter across Closed Clamps		16 1/4 in.	41.3 cm
Diameter across Open Clamps		25 in.	63.5 cm
Air Inlet & Outlet Connection Size		1/4 NPS	—
Fluid Outlet Connection Size		3/8 NPS	—

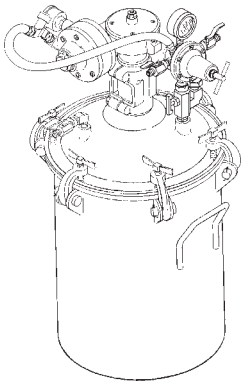
Revision: Added 83-2035 to Accessories.

Printed in USA 7/82

SERVICE BULLETIN
SBBI-21-070-F
REPLACES SBBI-21-070-E

83G (GALVANIZED) AND 83S (STAINLESS STEEL) TANKS
Large Tank - Up To 9.8 Gallons

IMPORTANT: Read and follow all instructions and SAFETY PRECAUTIONS before using this equipment. Retain for future reference.



Factory Mutual System
Approved

DESCRIPTION

Binks pressure feed tanks are intended for use as a pressure container to supply material at a constant preset pressure up to a maximum of 110 psi. The tanks are built to ASME specifications and are FM approved. These pressure tanks are also certified for vacuum operation.

WARNING

(Galvanized Tanks)
Halogenated hydrocarbon solvents - for example: 1,1,1, - trichloroethane and methylene chloride - can chemically react with aluminum parts and components and cause an explosion hazard. These solvents will also corrode the galvanized tank coating. Read the label or data sheet for the material. Do not use materials containing these solvents with galvanized pressure tanks. Stainless steel tank models may be used with halogenated solvents.

CAUTION

Refer to specifications chart to ensure that fluids and solvents being used are chemically compatible with the tank wetted parts. Before placing fluids or solvents in tank, always read accompanying manufacturer's literature.

Standard Fluid Regulated Tanks
(Single Regulation)

Standard type tank for use on jobs where precision control of both fluid and atomization air pressures is not required. Also used where atomization air can be taken from filter/regulator air lines. Provides standard fluid pressure control only. Equipped with pressure regulator, pressure gauge, air bleed down valve, safety valve, and inlet and outlet air valves. (For conversion to double regulation, use kit QMS-436.)

Standard Air and Fluid Regulated Tanks
(Dual Regulation)

Precision controlled tanks for use with materials that are best applied at low, closely controlled, fluid and atomization air pressures. Used with portable air compressors or with air lines when no other means of air pressure regulation (filter/regulator) is available. Equipped with two regulators (one for fluid pressure, the other for atomization air pressure), two pressure gauges, air bleed down valve, safety valve, and inlet and outlet valves.

Agitation

Pressure tanks can be equipped with different types of fluid agitation, or no agitation.

WARNING

Air pressure loads that are higher than design loads, or changes to the pressure feed tank, can cause the tank to rupture or explode.

- **A safety valve protects the tank from overpressurization. During each use, pull ring on the safety valve to make sure it operates freely and relieves air pressure. If the valve is stuck, does not operate freely, or does not relieve air pressure, it must be replaced with a safety valve having the same rating. Do not eliminate, make adjustments to, or substitute this valve.**
- **Changes to the air tank will weaken it. Never drill into, weld, or change the tank in any way.**
- **Maximum working pressure of this tank is 110 psi.**

WARNING

Static electricity is created by the flow of fluid through the pressure tank and hose. If all parts are not properly grounded, sparking may occur. Sparks can ignite vapors from solvents and the fluid being sprayed.

If static sparking, or slight shock, is experienced while using this equipment, stop spraying immediately.

Ground the pressure tank by connecting one end of a 12 gauge minimum ground wire to the pressure tank and the other end to a true earth ground. Local codes may have additional grounding requirements.

Note
(For non-direct drive models)
A tank with agitator assembly is shipped with the curved edge of the paddle down. When a steel insert container is used it is necessary to turn the bottom paddle upside down so that the flat side is down. In either position, the correct adjustment on the paddle position is with the end of the paddle hub flush with end of the shaft. This mounting should give 1/2 inch clearance between the edge of the paddle and the insert container.

WARNING

Pressure Relief Procedure

High pressure can cause a serious injury. Pressure is maintained in a pressure tank after the system has been shut down. Before attempting removal of fill plug or cover, pressure must be relieved using the following steps:

1. **Turn off the main air supply to the tank.**
2. **Close air inlet valve located on tank air manifold.**
3. **Bleed off air in the tank by turning the air relief valve thumb screw counterclockwise. Wait until all the air has escaped through the valve before removing the pressure tank cover or fill plug.**

(Continued on page 4)

SAFETY PRECAUTIONS

This manual contains important information that all users should know and understand before using the equipment. This information relates to USER SAFETY and PREVENTING EQUIPMENT PROBLEMS. To help you recognize this information, we use the following terms to draw your attention to certain equipment labels and portions of this Service Bulletin. Please pay special attention to any label or information that is highlighted by one of these terms:

WARNING

Important information to alert you to a situation that might cause serious injury if instructions are not followed.

CAUTION

Important information that tells how to prevent damage to equipment, or how to avoid a situation that might cause minor injury.

Note

Information that you should pay special attention to.

WARNING

The following hazards may occur during the normal use of this equipment. Please read the following chart.

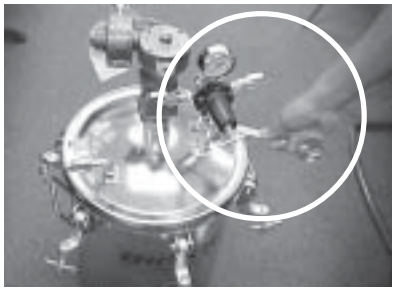
HAZARD	CAUSE	SAFEGUARDS
Fire 	Solvents and coatings can be highly flammable or combustible, especially when sprayed.	1. Adequate exhaust must be provided to keep the air free of accumulations of flammable vapors. 2. Smoking must never be allowed in the spray area. 3. Fire extinguishing equipment must be present in the spray area.
Fire - Pressure Tank 	Vapors from flammable liquids can catch fire or explode.	1. Keep tank at least 10 feet away from sources of ignition. Ignition sources include hot objects, mechanical sparks, and arcing (non-explosion proof) electrical equipment.
InhalingToxic Substances 	Certain materials may be harmful if inhaled, or if there is contact with the skin.	1. Follow the requirements of the Material Safety Data Sheet supplied by your coating material manufacturer. 2. Adequate exhaust must be provided to keep the air free of accumulations of toxic materials. 3. Use a mask or respirator whenever there is a chance of inhaling sprayed materials. The mask must be compatible with the material being sprayed and its concentration. Equipment must be as prescribed by an industrial hygienist or safety expert, and be NIOSH approved.
Explosion, Pressure Tank - Rupture 	Making changes to pressure tank will weaken it.	1. Never drill into, weld, or modify tank in any way. 2. Do not adjust, remove, or tamper with the safety valve. If replacement is necessary, use the same type and rating of valve.
General Safety	Improper operation or maintenance may create a hazard.	Operators should be given adequate training in the safe use and maintenance of the equipment (in accordance with the requirements of NFPA-33, Chapter 15 in U.S.). Users must comply with all local and national codes of practice and insurance company requirements governing ventilation, fire precautions, operation, maintenance and housekeeping (in the U.S., these are OSHA Sections 1910.94 and 1910.107, and NFPA-33).

GALVANIZED MODELS		
9.8 GAL 83G	**Air Regulation**	**Fluid Agitation***
83G-510	Single Reg.	No Agitation
83G-520	Double Reg.	No Agitation
83G-513 (I)	Single Reg.	Std. Agitation
83G-523 (I)	Double Reg	Std. Agitation
83G-516 (R)	Single Reg	Opt. Agitation
STAINLESS MODELS		
9.8 GAL 83S	**Air Regulation**	**Fluid Agitation***
83S-510	Single Reg	No Agitation
83S-520	Double Reg	No Agitation
83S-513 (I)	Single Reg	Std. Agitation
83S-523 (I)	Double Reg	Std. Agitation
83S-516 (R)	Single Reg	Opt. Agitation

*(I)= Indirect Drive Agitator: Air Motor coupled to gearbox for higher torque at lower speeds.

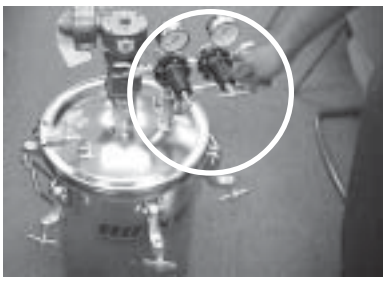
*(R)= Reciprocating Agitator: Self-Reversing Air Motor for efficient mixing and reduced cavitation.

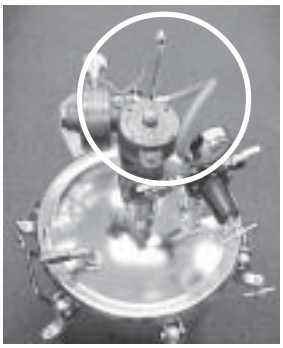
TO ASSEMBLE REGULATORS AND HOSE TO TANK

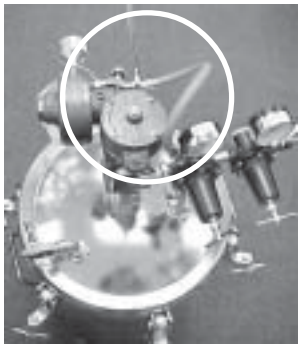


Assemble single regulator to manifold using an 11/16 wrench.

Assemble double regulator to manifold using an 11/16 wrench.







Assemble hose to either manifold using a 5/8 wrench.

SPECIFICATION CHART

	(Galvanized Models)	(Stainless Steel Models)
Maximum Working Pressure	110 PSI	110 PSI
Tank Shell	SA-414 H.R. Steel Zinc Plate 12 gauge (0.105 in.) thick	304 Stainless Steel, 13 gauge (.0897 in.) thick
Tank Lid	SA-414 H.R. Steel Zinc Plate 3/16 in. thick	304 Stainless Steel, 3/16 in. thick
Agitator Shaft	CRS Zinc Plate	303 Stainless Steel
Fluid Tube	Galvanized Zinc Plate, 3/8 in. pipe	316 Stainless Steel, 3/8 in. pipe
Fluid Valve, Outlet	Brass 3/8-18 NPSM outlet	316 Stainless Steel, 3/8-18 NPSM outlet,
Air Manifold	CRS Zinc plated	CRS Zinc plated
Shaft Seal	Engineered Teflon, Stainless Steel	Engineered Teflon,Stainless Steel
Agitator Paddles	Nylon, Glass Filled	Nylon, Glass Filled
Fluid Outlet	Galvanized Steel Zinc Plate	316 Stainless Steel
Bottom Outlet (Optional Kit) (QMS-443)	304 Stainless Steel, 3/4 in. NPSM Valve	304 Stainless Steel, 3/4 in. NPSM outlet

DIMENSIONS

TANK SIZE	INSIDE DIAMETER (Inches)	INSIDE HEIGHT AT CENTER (Inches)	OVERALL HEIGHT* (Inches)	OVERALL WIDTH (Inches)	WEIGHT* (Pounds)
9.8 Gallon	14	16	20-5/16	18-1/2	64 (Galvanized) 51 (Stainless Steel)

*Basic tank, not including regulators or agitation.

4. Leave the air relief valve open until you have reinstalled the cover or fill plug.

Mix and prepare material to be used according to manufacturer's instructions. Strain material through a fine mesh screen to remove lumps, skin, and foreign matter that might enter and clog fluid passages and/or spray equipment.

1. Follow pressure relief procedures listed on page 1.

2. To add material to tank, remove lid and pour directly into the tank or container.

Note

If desired, a U.S. or metric 5 gallon pail of fluid can be placed directly into the tank.

3. Replace the lid assembly and tighten thumb screws (6) securely.

4. The air supply to the tank should be filtered to remove dirt, water and oil. Connect the air supply line to the tank inlet valve.

5. Connect the material hose to fluid outlet ball valve (16).

USING BOTTOM OUTLET PORT

The pressure tank has a 1 inch NPT drain port in the bottom of the tank. Bottom outlet kits may be connected into the drain port. Use bottom outlet feature when top outlet is not desirable.

OPERATION

1. Close air inlet valve to tank. Turn handle on regulator counterclockwise until spring tension is relieved.

2. Turn on air supply to tank.

3. Open air inlet valve to tank.

4. Open fluid outlet valve.

5. Turn handle on tank pressure regulator clockwise to pressurize tank. Clockwise increases material pressure; counterclockwise will decrease material pressure.

6. Turn on atomization air to spray gun at source of supply.

7. Test spray. For further instructions, see spray gun Service Bulletin SB-2-001.

8. If an air motor drive is used, start the agitator by slowly opening the needle valve. Air motor speed should be regulated according to the nature of the material being agitated.

PREVENTIVE MAINTENANCE

To clean equipment, proceed as follows:

1. Turn off the air supply.

2. Follow pressure relief procedure on page 1.

3. Turn T-handle adjusting screw on tank fluid regulator counterclockwise until no spring pressure is felt.

4. Loosen thumb screws (6), tip clamps (7) back, and tip lid (15) to one side of tank. Do not remove lid from tank.

5. Loosen spray gun air cap retaining ring about three turns.

6. Turn on air supply.

7. Cup cloth over air cap on the gun and pull trigger. This will force material back through the hose, into the tank.

8. Empty and clean tank and parts that come into contact with material. Use a solvent compatible with material being used.

9. Pour solvent into tank.

10. Replace lid and tighten thumb screws and clamps.

11. Spray until clean solvent appears.

12. Repeat steps 4 through 8.

LUBRICATION

Refer to the service manual provided with the agitator air motor for lubrication information.

The bearings in the agitator bearing assembly are impregnated with a special non-gumming oil. Therefore, additional lubrication is not required.

The agitator shaft seal does not require lubrication.

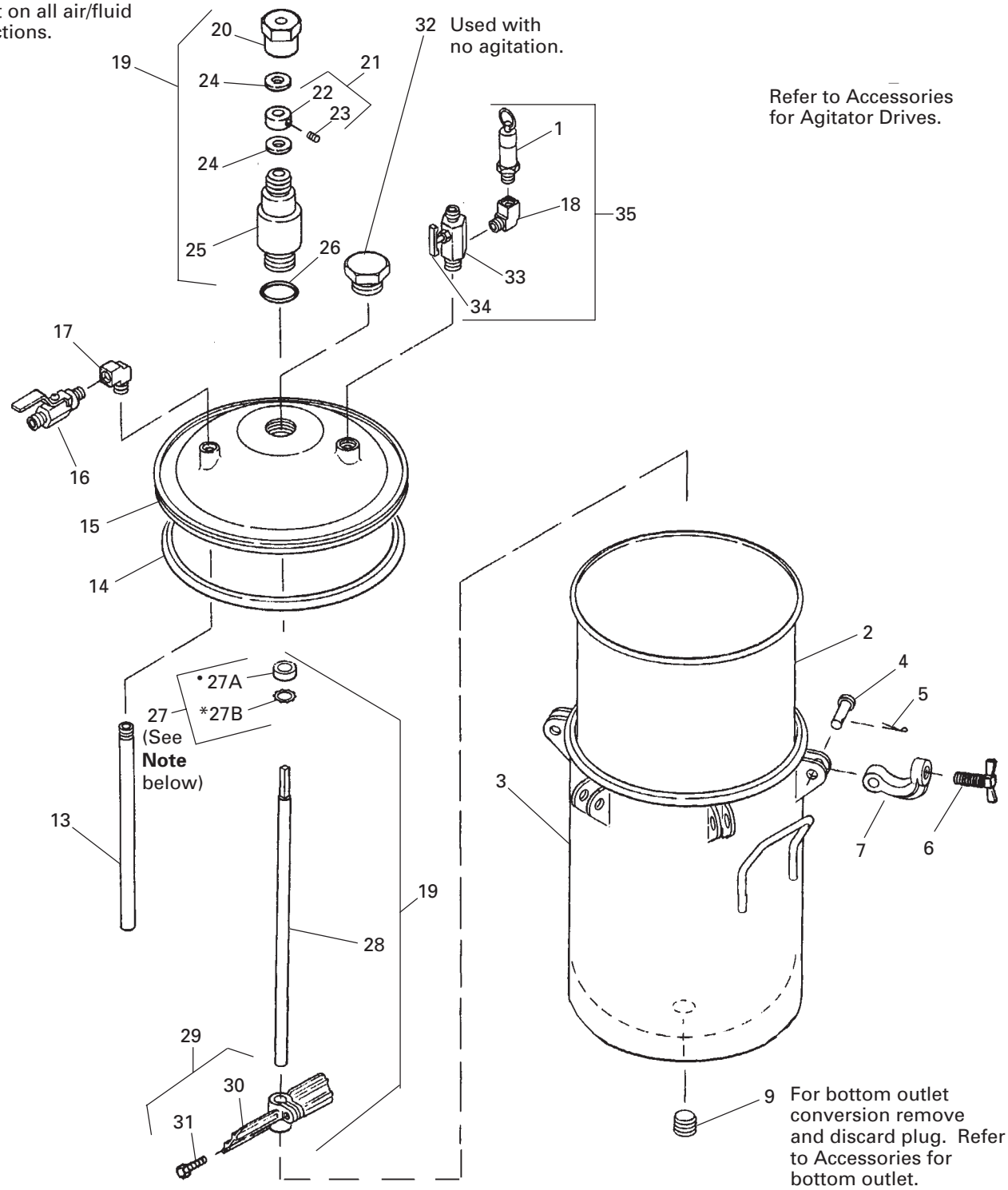
SERVICE CHECKS

CONDITION	CAUSE	CORRECTION
A. Air escaping from port on regulator cap.	1. Broken or damaged diaphragm.	1. Replace diaphragm.
B. Pressure creepage registered on gauge.	1. Dirty or worn valve seat in regulator.	1. Clean or replace valve seat.
C. Material tends to settle out rapidly.	1. Not enough agitation of material.	1. Increase agitation.
D. Air leakage at agitator seal.	1. Worn seal assembly.	1. Replace.
E. Paint getting into bearing assembly of agitator.	1. Paint level in tank too high. 2. Worn agitator shaft seal.	1. Do not fill tank above agitator bearing assembly. 2. Replace.
F. Fluid or air leak at lid gasket.	1. Thumb screw not tight. 2. Defective lid gasket.	1. Tighten. 2. Replace.
G. Air mixing with paint.	1. Fluid tube not sealed to lid. 2. Excessive agitation.	1. Tighten fluid tube into lid. 2. Reduce speed of agitator.

NOTE: Occasionally check pressure gauge. The needle should return to zero with no pressure on the gauge.

9.8 Gallon Tank Exploded View

Note
Use a Teflon based sealant on all air/fluid connections.



Note

• Open side of Shaft Seal (27A) faces downward.

* Retainer 27B only required in tank if used for vacuum operation. Not necessary to replace if tank is used for pressure only.

PARTS LIST

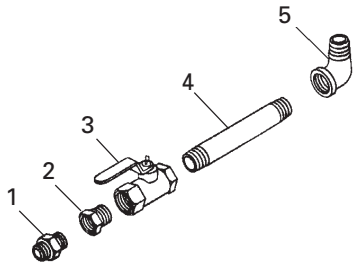
REF NO.	REPLACEMENT PART NO. 9.8 GAL. GALVANIZED	REPLACEMENT PART NO. 9.8 GAL. STAINLESS STEEL	DESCRIPTION	INDIVIDUAL PARTS REQ.
1	TIA-5110	Same	Safety Valve Assembly, 110 psi	1
2	PTL-408-K20	Same	Disposable Polyethylene Tank Liner	1
3	QMG-505	QMS-505	Tank Assembly	
+4	---	---	Clevis Pin	6
+5	---	---	Cotter Pin (1/8 dia. x 1 in. long)	6
+6	QM-1352	Same	Thumb Screw	6
+7	---	---	Clamp	6
8	Not Used	Not Used	---	
9	---	---	Plug	1
10	Not Used	Not Used	---	
11	Not Used	Not Used	---	
12	Not Used	Not Used	---	
13	QMG-32	QMS-10-1	Fluid Tube (3/8"-18 NPT)	1
14	QM-1458-1	Same	Lid Gasket, Santoprene	1
15	QMG-402	QMS-417	Tank Lid	1
16	VA-540	VA-527	Ball Valve	1
•17	---	SSP-1939	Street Elbow (3/8"-18 NPT)	1
•18	---	---	Street Elbow (1/4"-18 NPT Brass)	1
19	QMG-418	QMS-432	Agitator Assembly (includes items 20 through 34)	1
20	QMS-46	Same	Retaining Nut	1
21	QMS-447	Same	Thrust Collar Kit (includes items 22 and 23)	1
22	---	---	Thrust Collar	1
•23	---	---	Setscrew (5/16-18 x 3/8)	1
24	KK-5049	Same	Thrust Washer Kit (includes 2 washers)	1
25	QMG-409	QMS-407	Bearing Assembly	1
26	SSG-8184-K2	Same	O-Ring (Kit of 2)	1
27	KK-5042	Same	Shaft Seal Kit	2
27A	---	---	Shaft Seal	1
27B	---	---	Retainer	1
28	QMG-28	QMS-6	Agitator Shaft (5/8" Dia.)	1
29	QMS-444	Same	Agitator Paddle Kit (includes items 30 and 31), Nylon	1
30	---	---	Agitator Paddle	1
•31	---	---	Hex Socket Head Cap Screw (5/16-18 x 1-1/4, Stainless Steel)	1
32	QMG-19	QMS-3	Plug	1
33	QMG-21	Same	Air Manifold	1
34	SS-2707	Same	Air Relief Valve	1
*35	KK-5077	Same	Air Manifold Kit	1

• Purchase locally.
+ KK-5014 Clamp, Pin and Screw Kit includes 1 each of Items 4, 5, 6 and 7.
* Not sold by ITW Industrial Finishing—order individual items 1, 18, 33 or 34.

ACCESSORIES

QMS-443 BOTTOM OUTLET CONVERSION KIT

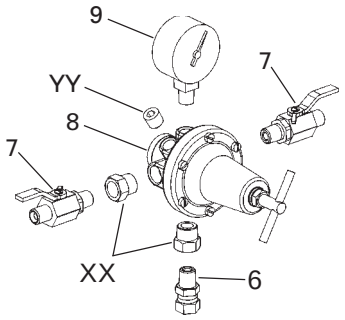
Fittings that allow standard top outlet tank to feed from bottom by removing plug in bottom port. Kit includes stainless steel shutoff valve and all stainless steel parts.



Ref No.	Replacement Part No.	Description	Qty.
1	---	Adapter, 3/4" NPT to 3/4-14 NPS(M)	1
2	---	Reducer Bushing, 3/4 to 1" Stainless Steel	1
3	---	Ball Valve, 1 x 1 NPT(F) Stainless Steel 150 PSI	1
4	---	Pipe Nipple (1" s.s.)	1
5	---	Street Elbow (1" Stainless Steel)	1

QMS-4006 SINGLE REGULATOR KIT (STANDARD)

Provides standard fluid pressure control only. For use when atomization air is controlled by a separate filter-regulator. Kit includes pressure regulator with gauge, inlet and outlet shutoff valves, and connection fittings. Refer to 77-2781 for regulator service parts.

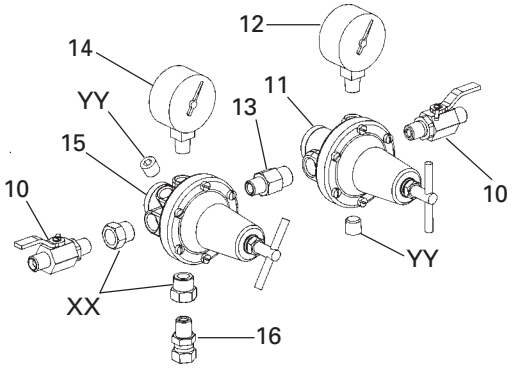


Ref No.	Replacement Part No.	Description	Qty
6	SSP-8217-ZN	Swivel Adapter	1
7	VA-542	Valve	2
8	HAR-511	Regulator	1
9	83-1290	Gauge, 150 lbs.	1
•XX	----	Bushing, 3/8(m) x 1/4 (f) (Supplied/Regulator)	2
•YY	----	Pipe Plug, 1/4 NPT (Supplied/Reg)	1

• Purchase locally.

QMS-4007 DUAL REGULATOR KIT (STANDARD)

Provides independent controls for fluid pressure in tank and atomization air pressure. Kit includes two regulators with gauges, inlet and outlet shutoff valves, and connection fittings. Refer to SBBI-6-147 and 77-2781 for regulator service parts.

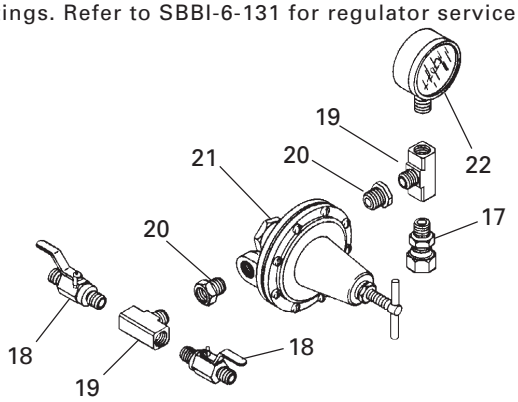


Ref No.	Replacement Part No.	Description	Qty
10	VA-542	Valve	2
11	HAR-507	Regulator	1
12	83-1355	Gauge, 100 lbs.	1
13	83-4233	D.M. Nipple, 1/4 x 3/8 Universal Pipe Thread	1
14	83-1290	Gauge, 150 lbs.	1
15	HAR-511	Regulator	1
16	SSP-8217-ZN	Swivel Adapter	1
•XX	----	Bushing, 3/8(m) x 1/4 (f) (Supplied/Regulator)	2
•YY	----	Pipe Plug, 1/4 NPT (Supplied/Reg)	2

• Purchase locally.

QMS-4010 EXTRA SENSITIVE REGULATOR KIT

Use with electrostatic spray or other applications requiring extremely sensitive nonfluctuating low pressure control. Kit includes one extra sensitive gauge, one extra sensitive regulator, inlet and outlet shutoff valves, and connection fittings. Refer to SBBI-6-131 for regulator service parts.



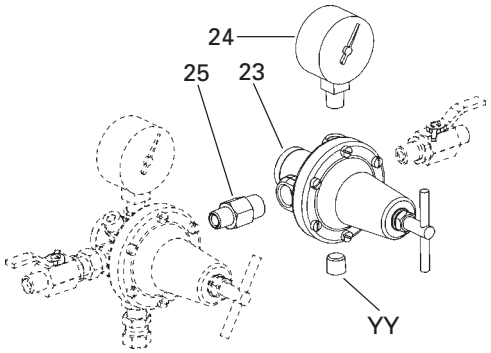
Ref No.	Replacement Part No.	Description	Qty.
17	SSP-8217-ZN	Swivel Adapter	1
18	VA-542	Valve	2
19	SSP-2629-ZN	Tee Male Branch	2
20•	-----	Hex Reducer Bushing (3/8 x 1/4 Galvanized)	2
21	HAR-501	Extra Sensitive Regulator	1
22	83-1414	Gauge 30 lb	1

• Purchase locally.

ACCESSORIES (CONTINUED)

QMS-436 CONVERSION TO DOUBLE REGULATOR ASSEMBLY KIT

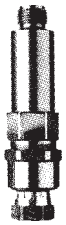
Adapts to tanks equipped with single regulator to provide independent pressure control of atomization air and fluid pressures. Converts QMS-4006 single regulator to a QMS-4007 dual regulator. Refer to SBBI-6-147 for regulator service parts.



Ref No.	Replacement Part No.	Description	Qty
23	HAR-507	Regulator	1
24	83-1355	Gauge, 100 lbs.	1
25	83-4233	D.M. Nipple, 1/4 x 3/8 Universal Pipe Thread	1
•YY	----	Pipe Plug, 1/4 NPT (Supplied/Reg)	1

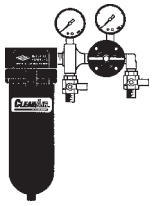
• Purchase locally.

VS-534 FLUID STRAINER



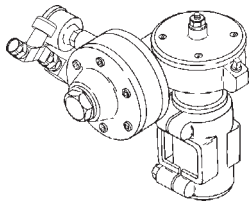
Primary fluid strainer that attaches between fluid outlet valve and fluid hose to strain material. Components made of stainless steel with nylon filter. Comes standard with 100-mesh screen. For more information see SBBI-7-072.

HFRL-508, HFRL-509 CLEAN AIR™ CONTROL UNITS



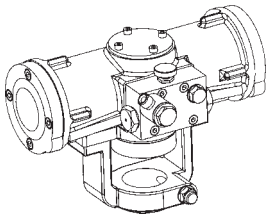
These units are designed to remove dirt, pipe scale and most liquid aerosol. Includes an automatic drain which expels liquids which accumulate in the filter bowl.

QS-5012 INDIRECT AGITATOR DRIVE



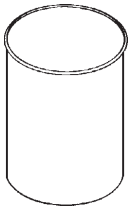
Standard duty 1/2 hp agitator drive with 15:1 gear reduction. Operates from 20 to 120 rpm. Mounts on agitator shaft. Includes throttling valve, fittings, and hose for connection to air supply on tank lid. For further information see SBBI-19-087.

31-381 OSCILLATING AIR MOTOR



Low air consumption motor mounts easily on tanks equipped for material agitation. Slow back and forth motion ensures proper agitation. Operates at 10 to 30 cycles per minute. For more information see Part Sheet 77-2788.

DISPOSABLE TANK LINERS



Molded polyethylene tank liners to reduce solvent waste and tank cleanup time. The liner is made of tough, durable, leakproof polyethylene and can be used with all compatible materials.

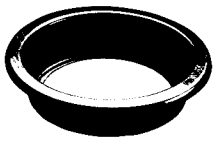
PTL-408-K20 Kit of 20 tank liners for 9.8 Gal.

SCRUBS® HAND CLEANER TOWELS

Scrubs® are a pre-moistened hand cleaner towel for painters. No water is needed.

29-3100 ITW Industrial Finishing
192218 ITW Automotive Refinishing

PROSPECTOR PAINT STRAINERS



A convenient way to strain paint while filling pressure tank.

PTS-5 GAL-K20-200 (200 micron)
PTS-5 GAL-K20-400 (400 micron)
PTS-5 GAL-K20-600 (600 micron)

WARRANTY

This product is covered by Binks' 1 Year Limited Warranty.

Binks Worldwide Sales and Service Listing: www.binks.com

ITW Industrial Finishing

Binks has authorized distributors throughout the world. For technical assistance or the distributor nearest you, see listing below.

U.S./Canada Technical Service Office:

195 Internationale Blvd., Glendale Heights, IL 60139
Toll-Free Telephone: 1-888-992-4657 (U.S.A. and Canada only)
Toll-Free Fax: 1-888-246-5732

ITW Automotive Refinishing

Binks has authorized distributors throughout the world. For equipment, parts and service, check the Yellow Pages under "Automotive Body Shop Equipment and Supplies." For technical assistance, see listing below.

U.S./Canada Customer Service Office:

1724 Indian Wood Circle, Suite J-K, Maumee, OH 43537
Toll-Free Telephone: 1-800-445-3988 (U.S.A. and Canada only)
Toll-Free Fax: 1-800-445-6643

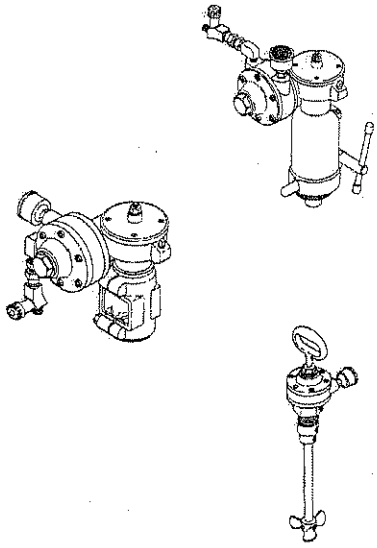
BINKS
An Illinois Tool Works Company

BINKS

SERVICE BULLETIN
SBBI-19-087-A
Replaces SBBI-19-087

AIR MOTOR DRIVES

Important: Read and follow all instructions and SAFETY PRECAUTIONS before using this equipment. Retain for future reference.



DESCRIPTION

The air motors covered in this service bulletin are designed to drive paint agitators when connected to a source of clean, dry, air pressure.

QS-5012 air motor drive, 15-1 gear reduced for pressure tank agitator. Includes air adjusting valve with necessary hose and fittings for hookup to tank regulator.

QMS-430 direct drive air motor and agitator assembly for 2.8 gal. stainless pressure tanks. Includes removable agitator and air motor with air shut off valve and necessary hose and fittings for hookup to tank regulator. Agitator supplied is suitable for use with halogenated hydrocarbon based solvents.

QMG-416 direct drive air motor and agitator assembly for 2.8 gal. galvanized pressure tanks. Includes removable agitator and air motor with air shut off valve and necessary hose and fittings for hookup to tank regulator. Agitator supplied is not suitable for use with halogenated hydrocarbon based solvents.

QS-5003 air motor drive, 15-1 gear reduced for paint drums having built-in agitators. Includes air adjusting valve for 1/4" NPT(M) inlet.

WARNING

High pressure can cause serious injury. Pressure is maintained in a pressure tank after the system has been shutdown. Before attempting removal of fill plug or cover, relieve tank pressure.

Pressure Relief Procedure

1. Turn off the main air supply to the tank.
2. Close air inlet valve located on tank air manifold.
3. Bleed off air in the tank by turning the air inlet valve handle counterclockwise. Wait until all the air has escaped through the valve before removing the pressure tank cover or fill plug.
4. Leave the air relief valve open until you have reinstalled the cover or fill plug.

INSTALLATION

QS-5012 Installation onto Pressure Tank with Agitator (Refer to Figure 3.)

1. Position agitator assembly over bearing assembly in lid until support (60) is fully seated on bearing assembly. It may be necessary to rotate the drive assembly in order to get the agitator assembly to engage in the gear box. Once engaged, again rotate the drive assembly until the air motor inlet and exhaust ports are aimed toward the rear of the tank. This will allow proper hookup of air hose and fittings to the tank regulator.
2. Tighen hex head cap screw (61).
3. Remove main air supply inlet valve from tank regulator and install service tee (67) in open port.
4. Connect tank air supply inlet valve to open end port of service tee (67). Install nipple (64) in open port of service tee.
5. If not already connected, install elbow (63) in air motor inlet port and upper nipple (64) in open elbow port. Connect air adjusting valve (65) to upper nipple. Connect hose assembly (66) between lower nipple (64) and air adjusting valve.

QMS-430 and QMG-416 Installation into Pressure Tank (Refer to Figure 1.

1. Follow pressure relief procedure before removing or loosening any tank lid components.
2. If not already separated, loosen propeller set screw (32) and remove propeller from shaft.
3. Remove seal plug from paint tank lid and clean sealing surface around threaded port.
4. Make sure that the o-ring (26) is fully seated in groove of adapter (24). Install and tighten air motor adapter and shaft assembly into threaded center hole in tank lid.
5. Loosen set screws (25) in adapter. Rotate air motor assembly until inlet port is aimed toward the rear of the tank to allow hookup of air hose and fittings to supply air inlet of tank regulator or service tee. Air hose provided for hookup is 10" long.
6. Retighten both set screws (25).
7. Install propeller (31) on end of agitator shaft (30). Secure propeller with set screw (32).
8. Remove main air supply inlet valve from tank regulator and install service tee (23). Install lower nipple (20) in open port of service tee.
9. Connect tank air supply inlet valve to end port of service tee (23). Install lower nipple (20) in open port of service tee.
10. If not already connected, install elbow (19) in air motor inlet port. Install upper nipple (20) in open port of elbow. Connect air adjusting valve (21) to upper nipple. Then, connect hose assembly (22) between air adjusting valve and lower nipple.

(Continued on Page 3)

SAFETY PRECAUTIONS

This manual contains important information that all users should know and understand before using the equipment. This information relates to USER SAFETY and PREVENTING EQUIPMENT PROBLEMS. To help you recognize this information, we use the following terms to draw your attention to certain equipment labels and portions of this Service Bulletin. Please pay special attention to any label or information that is highlighted by one of these terms:

CAUTION

Important information that tells how to prevent damage to equipment, or how to avoid a situation that might cause minor injury.

WARNING

Important information to alert you to a situation that might cause serious injury if instructions are not followed.

Note

Information that you should pay special attention to.

WARNING

The following hazards may occur during the normal use of this equipment. Please read the following chart.

HAZARD	CAUSE	SAFEGUARDS
Fire 	Solvents and coatings can be highly flammable or combustible, especially when sprayed.	1. Adequate exhaust must be provided to keep the air free of accumulations of flammable vapors. 2. Smoking must never be allowed in the spray area. 3. Fire extinguishing equipment must be present in the spray area.
Explosion Hazard Tank Rupture 	Making changes to pressure tank will weaken it.	1. Never drill into, weld, or modify tank in any way. Carefully follow all instructions for motor drive installation. 2. Do not adjust, remove, or tamper with the safety valve. If replacement is necessary, use the same type and rating of valve.
Explosion Hazard- 	Halogenated hydrocarbon solvents - - Trichloroethane are not chemically compatible with the aluminum that might be used in many system components. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.	Aluminum is widely used in spray application equipment - such as material pumps, cups, regulators, valves, etc. Check all equipment items before use and make sure they can be used safely with these solvents. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your material supplier. Any other type of solvent may be issued with aluminum equipment.

QS-5003 Installation onto Drum Mounted Agitator (Refer to Figure 2)

1. Adapter (47) has two thread sizes: 1-1/2" NPS (M) on one end and 2" NPS (M) on the other end. Choose the proper thread size and place adapter over agitator shaft of drum and screw down securely.

2. Select proper driver shaft (46) and attach it to drive coupling assembly (48) with driver pin (45) and cotter pins (44). Place this assembly on shaft of drum agitator.

3. Slip air motor support (39) down over drive coupling assembly (48) and adapter (47).

4. Tighten air motor support (39) securely with screw assembly (43).

5. Install gear box (38) on air motor support (39), being sure to engage shaft of drive coupling assembly (48).

6. Tighten cap screw and hex nut (40 and 42).

7. Connect air supply line to air adjusting valve (52).

OPERATION

Before operating air motor, lubricate as covered in next section. Open valve to main air line; then slowly open air adjusting valve until agitator turns. To extend air motor life, adjust air pressure setting to run motor at about one revolution per second. The agitator should be run continuously while using the tank.

PREVENTIVE MAINTENANCE

Air Motor Lubrication

CAUTION

Failure to properly lubricate the air motor will result in premature motor failure and will void warranty.

Lubricate air motor daily by adding 4 or 5 drops of SAE 10 weight oil into air inlet fitting. For convenience, an automatic oiler may be connected to the air inlet.

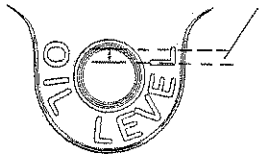
Periodically - Remove air adjusting valve and air strainer and flush motor with a clean suitable solvent. Remove trapped particles from screen in air inlet and clean air strainer felt.

Air Motor Gear Box Lubrication

Every 2 Days - Remove oil fill plug and check oil level. Proper oil level is indicated on outside of gear box housing. If oil level is low, add 140-weight SAE Gear Oil or a high quality worm gear lubricant. Replace pipe plug and tighten to 20 foot-pounds (27 N-m) of torque.

Note

Gear box oil is most easily drained just after motor operation, while oil is still warm.



Note

Do not overfill. Overfilling may cause oil to leak out of vent cap on top of gear box.

After first 250 hours of operation, remove gear box and drain gear oil. Refill gear box with 140-Weight SAE Gear Oil or a high quality worm gear lubricant. Replace pipe plug and tighten to 20 foot-pounds (27 N-m) of torque.

6 Months or 2500 Operating Hours - Replace gear oil according to instructions above. Replace gear oil more often if environment causes oil to become contaminated during use.

REPLACEMENT OF PARTS

Removal of Air Motor and Gear Box (Refer to Figure 3 - typical assembly.)

1. Follow pressure relief procedure (Ref. Pg. 1) before removing or loosening any components.

2. Turn off valve to main air supply and disconnect air adjusting valve (65) at nipple (64).

3. Loosen upper cap screw (61) and remove air motor and gear box assembly from support (60).

Air Motor (Refer to Figure 4)

Holes must be drilled for new dowel pins (72) after assembling front plate (77) on new body (76) for alignment of parts.

Do not pry front plate (77) or end plate (71) from air motor body (76) with a screw driver; this will dent the surface of the body and plates causing leaks. A puller tool should be used to remove the plate from the motor body while maintaining the position of the shaft.

Always install new gaskets (73) when reassembling air motor.

Assemble the end plates to the body using an arbor press with a pusher acting on both races of the bearing while rigidly supporting the opposite (drive) end of the shaft.

Gear Box (Refer to Figure 5)

1. Remove oil fill plug (88) or cover plate (84) and drain gear box lubricant.

2. Remove set screws (91) and remove gear box from air motor.

3. Disassembly gear box per exploded view, Figure 5. Discard gaskets (87 and 92). Do not remove oil seal (90) unless leakage or seal damage is indicated.

4. If oil seal (90) was removed, inspect seal seating bore in housing (89). Remove any burrs or contaminants from seal seating bore. Burrs or contaminants could distort new oil seal during installation.

5. Inspect gear and shaft assembly (86) for wear grooves, burrs, or contamination of seal seating area. If seal seating area is damaged, shaft must be repaired or replaced.

6. Inspect all other parts for wear spots, chipping, or other damage. Replace damaged or worn parts.

7. If oil seal (90) is being replaced, inspect new seal for damage before installing. Use arbor press to install seal. Press fixture diameter must be close fit with gear box bore diameter to avoid damage to seal. Install with inner casing and sealing lip toward bottom of bore. Drive seal squarely into bore to avoid warping. Check that seal is fully seated all around at bottom of bore.

8. Reassemble gear box per exploded view. Install new gaskets (87 and 92). Just prior to assembling gear box with air motor, apply a small dab of thread locking compound (81) to threads of setscrews (91). Connect motor and gear box and torque set screws (91) to 60 inch-pounds (6.8 N-m), minimum. Refill gear box per gear box lubrication instructions.

AIR MOTOR DRIVE SERVICE CHECKS

CONDITION	CAUSE	CORRECTION
A. Air motor sluggish or inefficient.	1. Air motor needs lubrication or cleaning.	1. Lubricate (see "Air Motor Lubrication" section). Disassemble and clean per parts replacement instructions.
	2. Motor vanes need replacing or contaminants present in motor chamber, Figure 4.	2. Disassemble, clean motor per parts replacement instructions. Replace worn vanes.
	3. Low oil level in gear box, Figure 5.	3. Add oil per lubrication instructions.
	4. Gear and shaft assembly (86) and/or worm gear (93) worn, Figure 5.	4. Replace worn parts per parts replacement instructions.
	5. Air motor bearing (68 or 79) worn, Figure 4.	5. Replace bearings per parts replacement instructions.
B. Oil leakage from gear box.	1. Seal (90, Figure 5) worn.	1. Replace seal per parts replacement instructions.

Direct Drive Air Motor and Agitator Assemblies QMS-430 (Stainless Steel Shaft) QMG-416 (Plain Steel Shaft)

Parts List for Figure 1

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
1	QN-97	Carrying Handle	1
2	QMG-18	End Cap	1
•†3	---	End Cap Gasket	1
†4	PT-58	Bearing	2
†5	Purchase Locally	Machine Screw 1/4-28 x 1/2	12
†6	---	Front Plate	1
•†7	PT-59-1-K10	End Plate Spacer Kit (Kit of 10)	2
†8	QS-189-1-K10	Dowel Pin (Kit of 10)	4
†9	---	Body	1
•10	---	Vane	4
†11	PT-57	Rotor Assy. for QMG-416	1
	---	Rotor Assy. for QMS-430 (Not available separately, order QMS-428 Air Motor	1
†12	---	End Plate	1
†13	PT-56	Seal	1
14	---	Strainer Cup	1
◆15	---	Screen	2
•◆16	---	Felt	1
17	---	Strainer Body	1
†18	350-401	Air Strainer	1
*19	Purchase Locally	Street Elbow 1/4" (M) x 1/4" (F) NPT	1
20	H-2008	Nipple 1/4" NPS (M) 1/4" NPT (M)	2
21	HAV-500	Air Adjusting Valve, 1/4" NPS (M) x 1/4" NPS (F)	1
22	HA-57011	Hose Assembly	1
23	Purchase Locally	Service Tee 1/4" Galv.	1
#24	---	Adapter	1
#25	---	Set Screw (1/4-20 x 1/4")	2
26	SSG-8184-K2	O-Ring (Kit of 2)	1
27	KK-5041	Shaft Seal Kit	1
27A	---	Shaft Seal	1
27B	---	Retainer	1
#28	---	Shaft Coupling	1
#29	Purchase Locally	Set Screw (1/4-20 x 1/4" s.s.)	2
30	QMS-73	Agitator Shaft for QMS-430	1
	QMG-56	Agitator Shaft for QMG-416	1
31	QMS-448	Propeller Kit (includes 31A and 32	1
31A	---	Agitator Propeller	1
32	Purchase Locally	Set Screw (1/4-20 x 3/8" s.s.)	1
32A	KK-4991	Agitator Kit for QMS-430 (Includes Item Nos. 24, 25, 28, 29)	1
	KK-4990	Agitator Kit for QMG-416 (Includes Item Nos. 24, 25, 28, 29)	1

• Parts included in KK-5001-1 Air Motor Repair Kit.

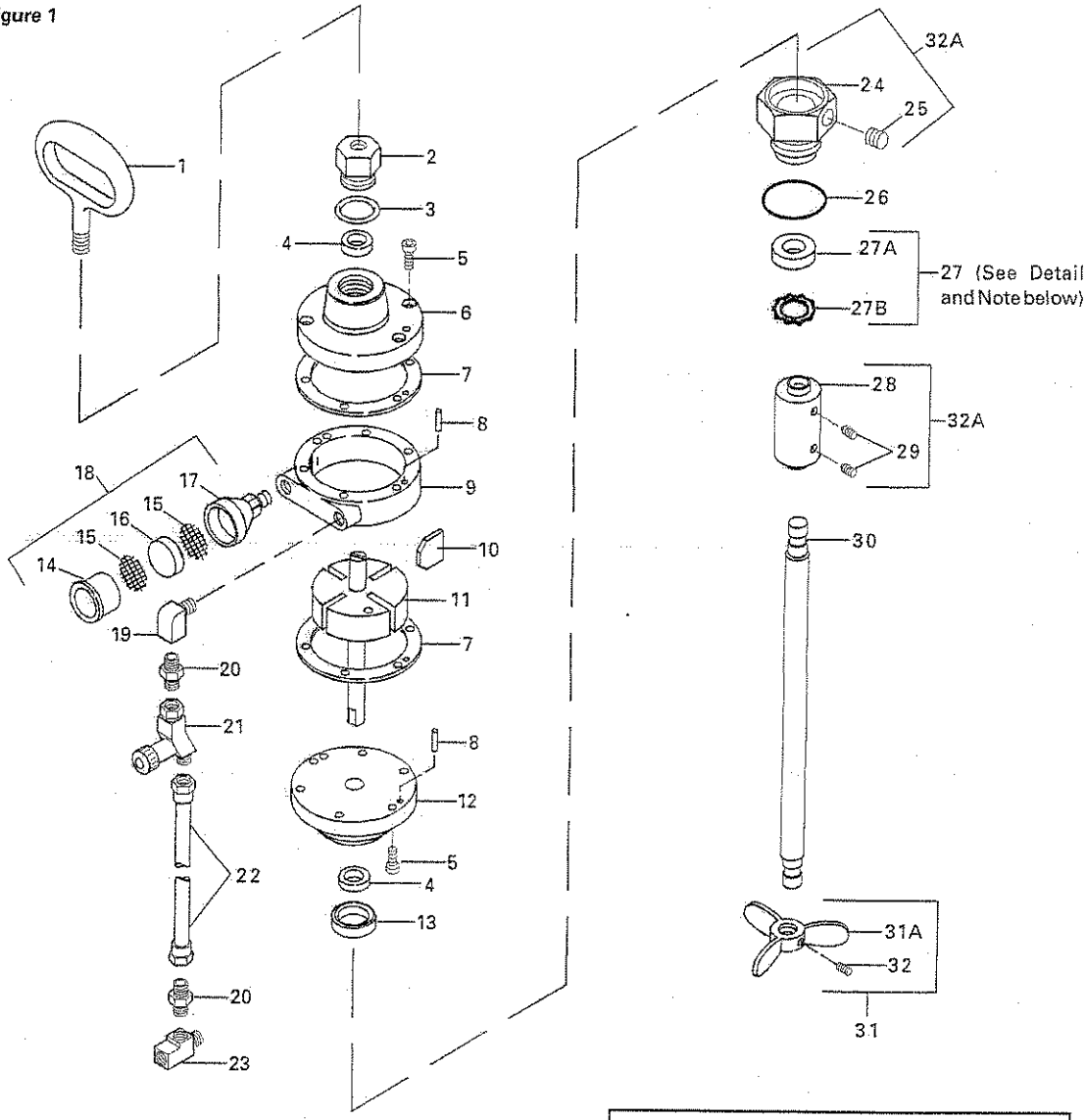
When replacing either Ref. Nos. 24, 25 or 28 and 29, you must order Ref. No. 32A, KK-4991 for QMS Models or KK-4990 for QMG Models. The kit includes necessary parts.

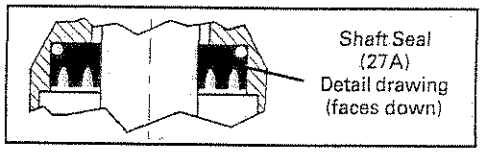
◆ Ref. No. (15) 2 ea. and Ref. No. (16) 4 ea. are included in KK-5006 Strainer Screen and Felt Kit.

† Parts included in PT-410 Air Motor Assembly.

Direct Drive Air Motor and Agitator Assemblies
QMS-430 (Stainless Steel Shaft)
QMG-416 (Plain Steel Shaft)

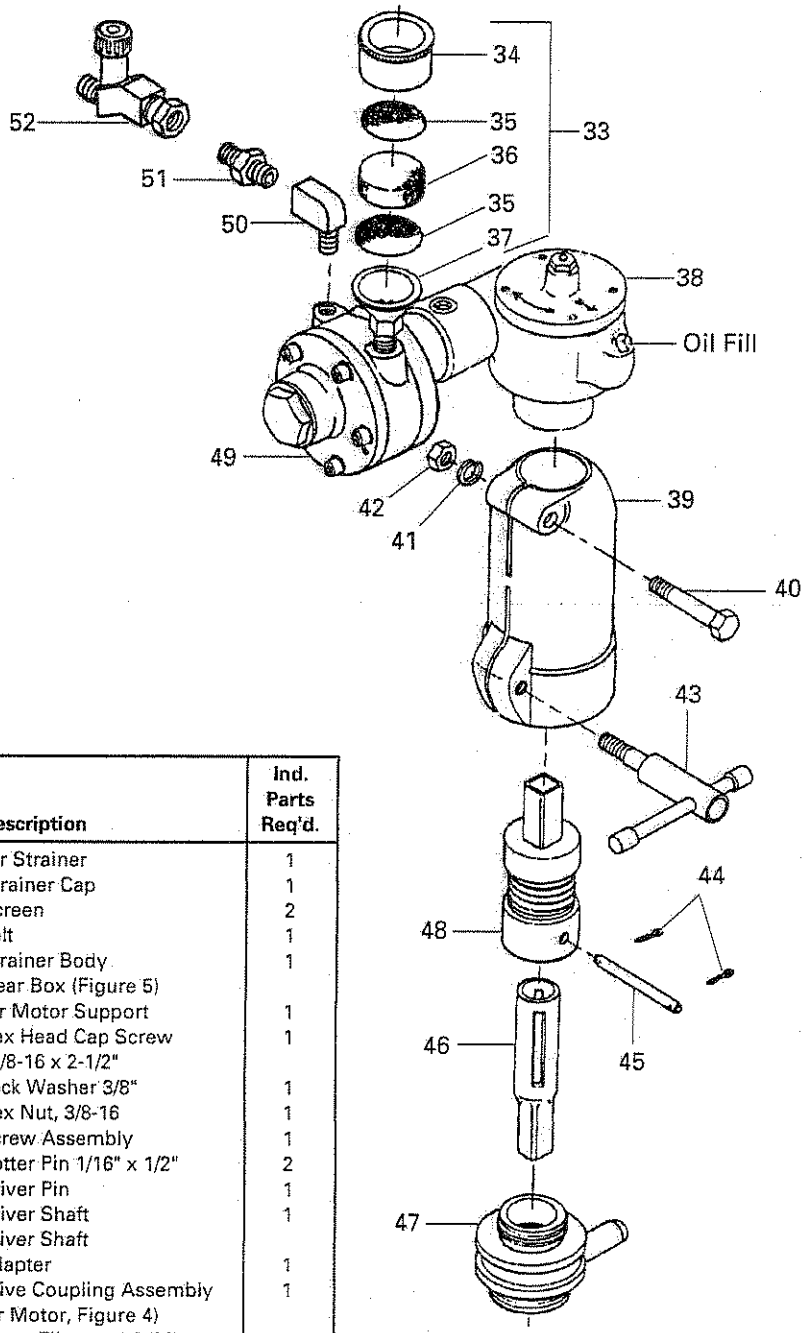
Figure 1





Note: Retainer (27B) required only if tank is used for vacuum operation.

Figure 2 QS-5003 Gear Drive Air Motor



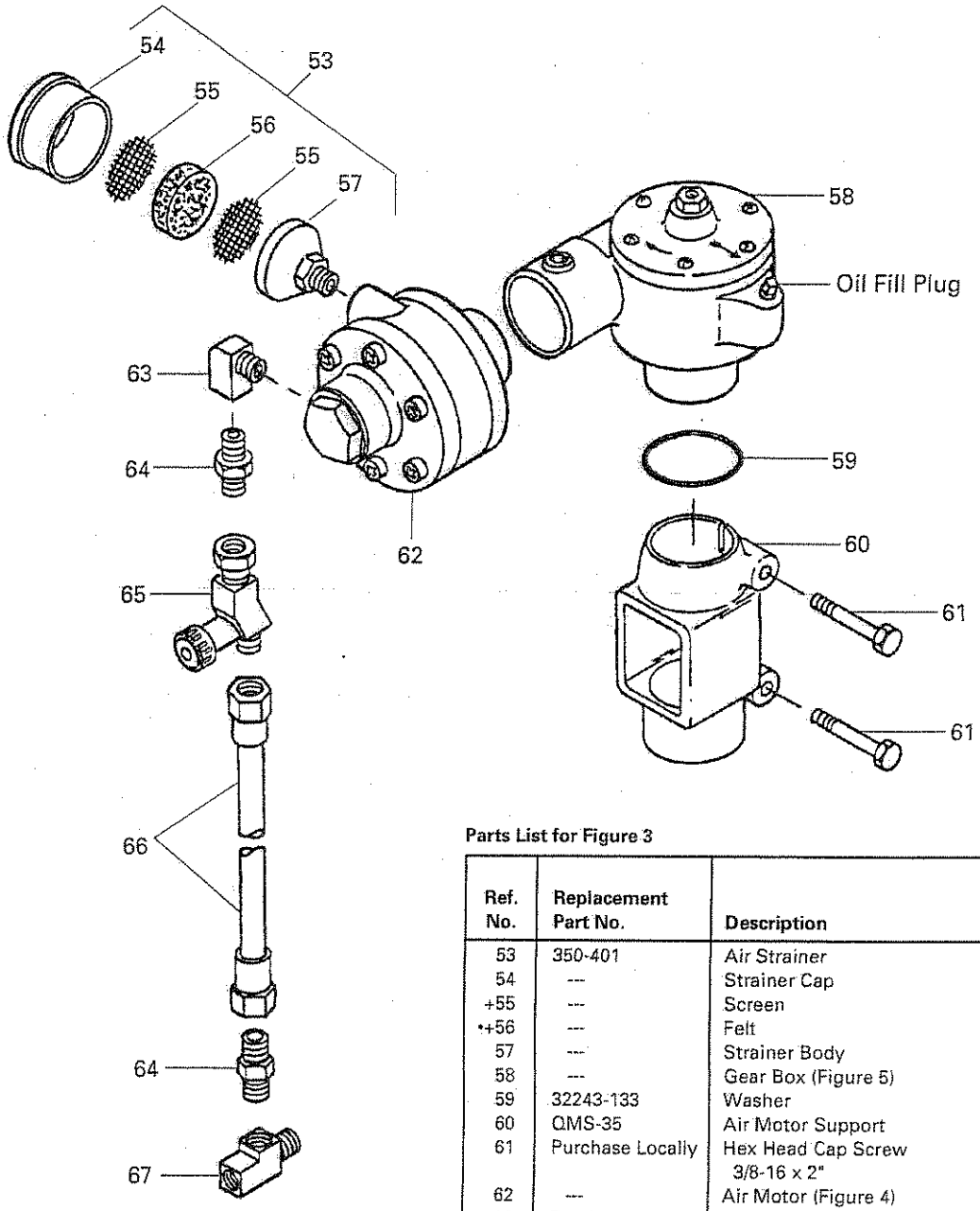
Parts List for Figure 2

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
33	350-401	Air Strainer	1
34	---	Strainer Cap	1
+35	---	Screen	2
•+36	---	Felt	1
37	---	Strainer Body	1
38	---	Gear Box (Figure 5)	
39	QS-238	Air Motor Support	1
40	Purchase Locally	Hex Head Cap Screw 3/8-16 x 2-1/2"	1
41	Purchase Locally	Lock Washer 3/8"	1
42	Purchase Locally	Hex Nut, 3/8-16	1
43	QS-456	Screw Assembly	1
44	Purchase Locally	Cotter Pin 1/16" x 1/2"	2
45	QS-237	Driver Pin	1
46	QS-240 1/2"	Driver Shaft	1
	QS-242 7/16"	Driver Shaft	
47	QS-457	Adapter	1
48	QS-455	Drive Coupling Assembly	1
49	---	Air Motor, Figure 4)	
50	Purchase Locally	Street Elbow, 1/4" (M) x 1/4" (F) NPT Galvanized	1
51	H-2008	Nipple, 1/4" NPS (M) x 1/4" NPT (M)	1
52	HAV-500	Air Adjusting Valve 1/4" NPS (M) x 1/4" NPS (F)	1

• Included in KK-5001-1 Air Motor Repair Kit. See page 8 for additional parts included in kit.

+ Ref. No. (35) 2 ea. and Ref. No. (36) 4 ea. included in KK-5006 Strainer Screen and Felt Kit.

Figure 3 QS-5012 Gear Drive Air Motor



Parts List for Figure 3

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
53	350-401	Air Strainer	1
54	---	Strainer Cap	1
+55	---	Screen	2
•+56	---	Felt	1
57	---	Strainer Body	1
58	---	Gear Box (Figure 5)	
59	32243-133	Washer	1
60	QMS-35	Air Motor Support	1
61	Purchase Locally	Hex Head Cap Screw 3/8-16 x 2"	2
62	---	Air Motor (Figure 4)	1
63	Purchase Locally	Street Elbow 1/4" (M) 1/4" NPT (F)	1
64	H-2008	Nipple 1/4" NPS (M) 1/4" NPT (M)	1
65	HAV-500	Air Adjusting Valve 1/4" NPS (F) x 1/4" NPS (M)	1
66	HA-57011	Hose Assembly	1
67	Purchase Locally	Service Tee 1/4" Galv.	1

• Included in KK-5001-1 Air Motor Repair Kit. See page 8 for additional parts included in kit.

+ Ref. No. (55) 2 ea. and Ref. No. (56) 4 ea. included in KK-5006 Strainer Screen and Felt Kit.

QS-4016 Air Motor (for QS-5003 and QS-5012)

Parts List for Figure 4

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
68	QS-336	Oil Seal	1
69	QS-197	Bearing	1
70	Purchase Locally	Machine Screw, 1/4-28 x 1/2	12
71	QS-334	End Plate	1
72	QS-189-1-K10	Dowel Pin (Kit of 10)	4
•73	PT-59-1-K10	End Plate Spacer Kit (Kit of 10)	2
•74	---	Vane	4
75	QS-442	Rotor and Shaft Assembly	1
76	QS-335	Body	1
77	QS-333	Front Plate	1
•78	---	End Cap Gasket	
79	PT-58	Bearing	1
80	QS-190	End Cap	1

• Parts available in KK-5001-1 Air Motor Repair Kit.

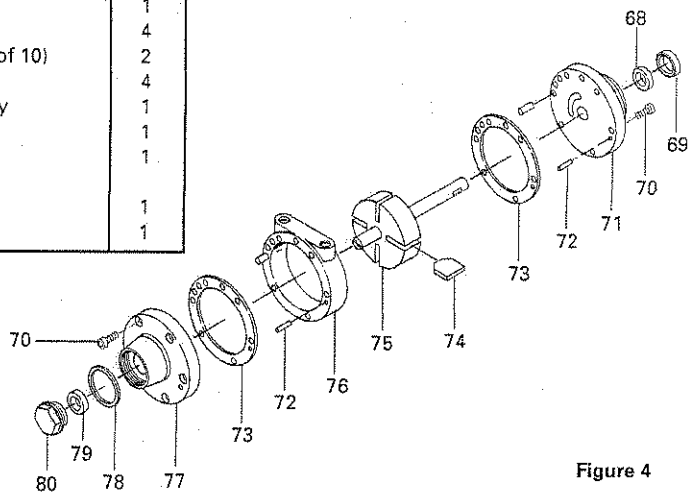


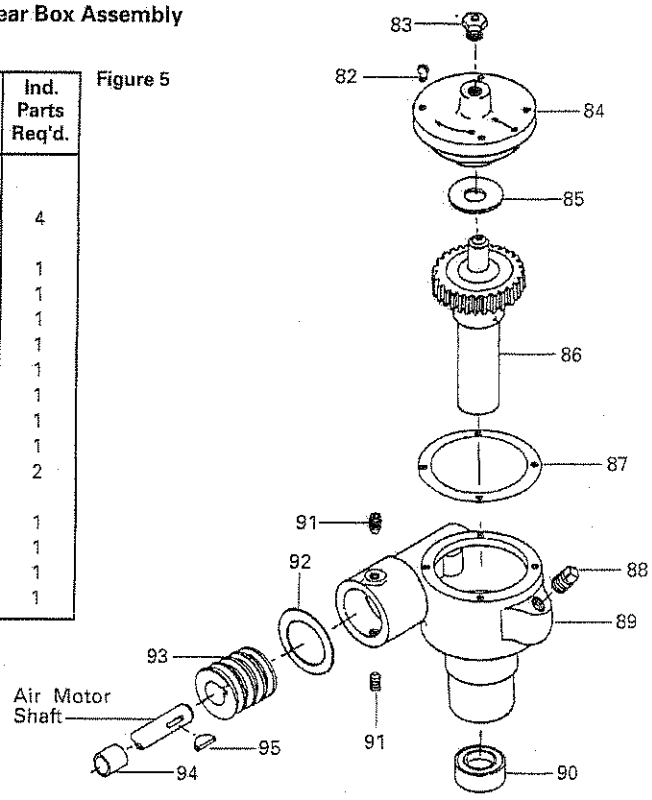
Figure 4

Gear Box Assembly

Parts List for Figure 5

Ref. No.	Replacement Part No.	Description	Ind. Parts Req'd.
81	---	Thread Locking Compound, not shown	
•82	---	Fillister Head Machine Screw 10-24 x 5/8"	4
83	QS-108	Pressure Relief Fitting	1
84	QS-37-1	Cover Plate	1
•85	---	Washer	1
86	QS-416-1	Gear and Shaft Assembly	1
•87	---	Gasket	1
88	Purchase Locally	Pipe Plug 1/4", Galvanized	1
89	QS-36-1	Housing	1
•90	---	Oil Seal	1
•91	---	Cup Point Setscrew 5/16-18 x 3/8"	2
•92	---	Gasket	1
93	QS-59	Worm Gear	1
•94	---	Spacer	1
•95	---	Key, No. 5, 5/8" x 1/8"	1

Figure 5



• Parts included in KK-5010 Gear Box Kit.

When replacing Ref. No. 82, torque to 15 in-lbs. min.
When replacing Ref. No. 91, torque to 60 in-lbs. min.
Apply SS-9868 sealant to threads as needed.

WARRANTY
This product is covered by Binks'1 Year Limited Warranty.

Binks Industrial Spray Equipment

195 Internationale Blvd.
Glendale Heights, IL 60139

(630) 237-5000
Toll Free 1-888-992-4657

BINKS
An Illinois Tool Works Company

OPERATOR'S MANUAL

#SN751

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

RELEASED: 2-2-99
REVISED: 3-19-08

AIR CYLINDER DIA. = 1.25"
METERING PIN DIA. = .1875"
PRESSURE RATIO = 44:1

STROKE ADJUSTABLE 0.0" to 0.5"
SHOT VOLUME MAX. = 0.0138^3"
(0.226cc)

FLUID METERING VALVE
ADJUSTABLE VOLUME

IMPORTANT: *READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATION OR SERVICING THIS EQUIPMENT.*

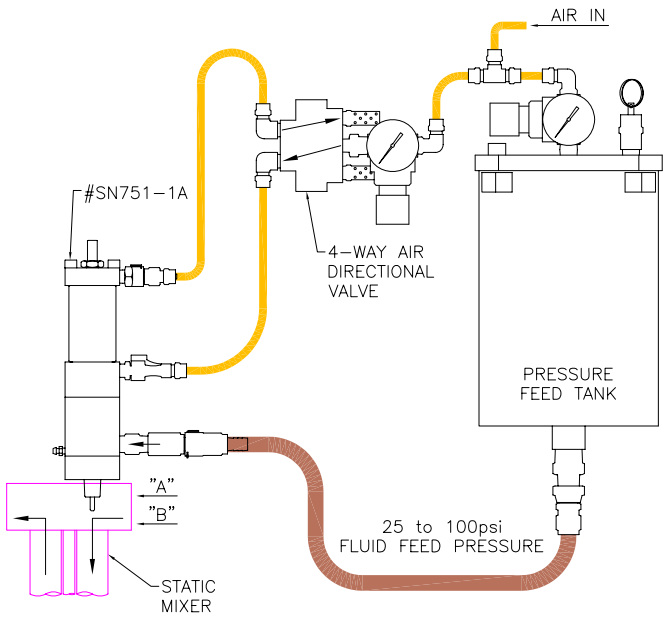
OPERATING PRECAUTIONS

- HEED ALL WARNINGS.
- WARNING: HIGH PRESSURE DEVICE. Improper usage of this equipment could result in serious injury. The possibility of injection into the flesh is a potential hazard. Never allow any part of the human body to come in front of or in direct contact with the material outlet. An injection injury can be serious. If injection should occur, contact a qualified physician immediately for treatment.
- COMPONENT RUPTURE. This unit is capable of producing high material pressure. Use appropriate outlet hose and valves.
- Be sure material hoses and other components are able to withstand fluid pressures developed by this unit.
- Materials and solvents being metered by this unit must be compatible with the parts of this unit that come in contact with material and solvent.
- SERVICING. Before servicing or cleaning this unit, or removing fluid hose or gun from a unit that has been used, be sure to disconnect air lines.

MAINTENANCE

- Use a clean fluid supply, check valves will not function if foreign materials are present.
- If material appears at the leakage vents, replace seal #01071U.

TYPICAL HOOK-UP FOR #SN751-1A

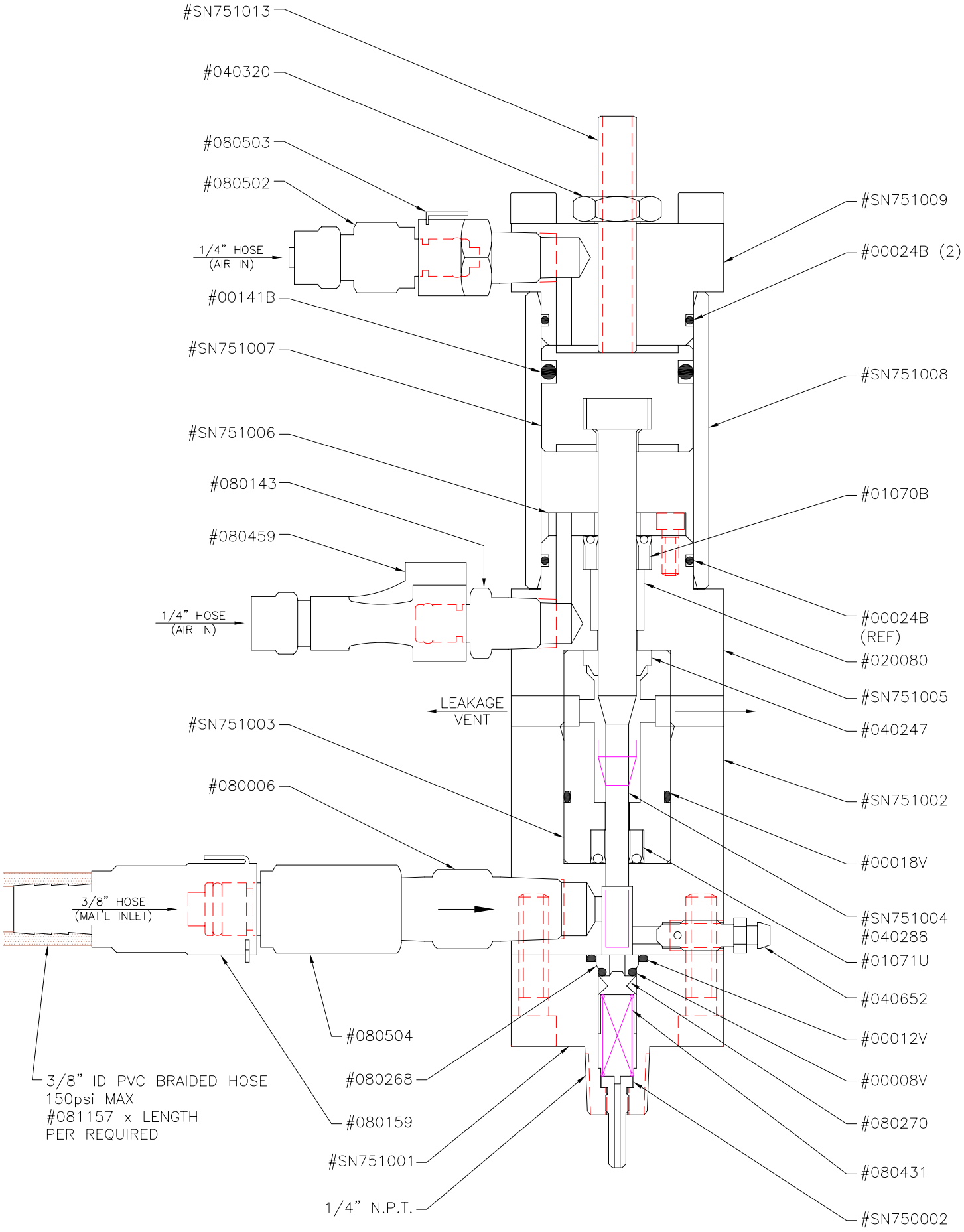


COLOR INJECTOR DISASSEMBLY

- Basic mechanical (S.A.E.) tools:
  7/64" Allen wrench
  5/32" Allen wrench
  3/16" Allen wrench
  9/16" open-end wrench
  5/8" open-end wrench
  Flat head screwdriver

- Once color injector is removed from machine place in vise (at flats just above check valve, with inject screw facing downward).
- Remove (4) 1/4" screws (with 3/16" Allen wrench) opposite injection end.
- Hold front cap and separate from block (use caution, to not damage metering pin while separating).
- Slide front cap out of cylinder (set parts including cylinder and metering pin on workbench).
- Remove (3) #6 screws (with 7/64" Allen wrench) from seal retainer, allowing the removal of seals and bearing.
- Separate rear cap from cylinder, then remove seal.
- Unscrew set screw (with 5/32" Allen wrench) from rear cap, allowing removal of locknut (with 5/8" open-end wrench).
- Slide piston from cylinder, then remove metering pin and seal.
- Take insert out of block (in vise) and remove seals and wiper ring.
- Unfasten block from vise and refasten in vise at flats just below check valve, with inject screw facing upward.
- Remove (4) 1/4" screws (with 3/16" Allen wrench), careful to not let insert, poppet, seal and spring fall out, allowing removal of said parts along with remaining seal.
- Unscrew inject screw (with flat head screwdriver) from valve body.
- Remove #6 screw (with 7/64" Allen wrench) from block.
- Unfasten block from vise and refasten in vise with check valve facing upward and remove (with 9/16" open-end wrench).
- Place all parts in a solvent tank for cleaning, except seal which will be damaged by the solvent.
- [Model SN751-2A & -3A only:
- Remove (4) 1/4" screws (with 3/16" Allen wrench) from mixer tube mtg. block and separate color injector from mixer tube.
- Follow instructions as stated; substitute references to valve body with mixer tube mtg. block.]

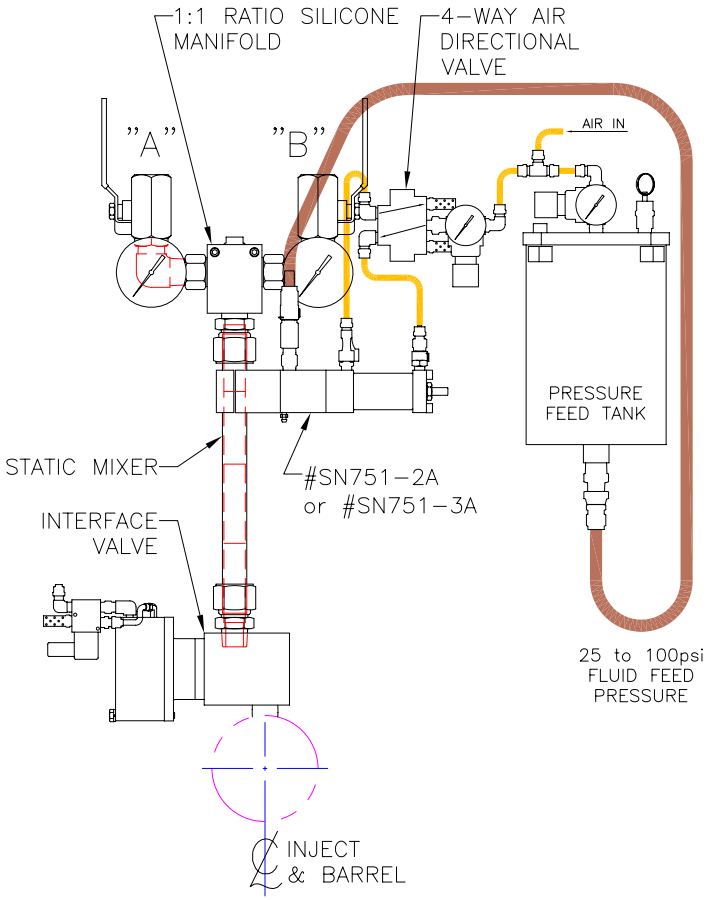
FLUID AUTOMATION INC.
49175 WEST RD. P.O. BOX. 930302 WIXOM, MICHIGAN 48393
PH. (248) 912-1970 – FAX. (248) 912-1971
WIXOM, MI.



VIEW SHOWING
MODEL #SN751-1A

TYPICAL HOOK-UP FOR #SN751-2A or #SN751-3A

W/ RECIPROCATING SCREW INJECTION MOLDING MACHINE



SN751 (#SN751) COLOR INJECTOR PARTS LIST

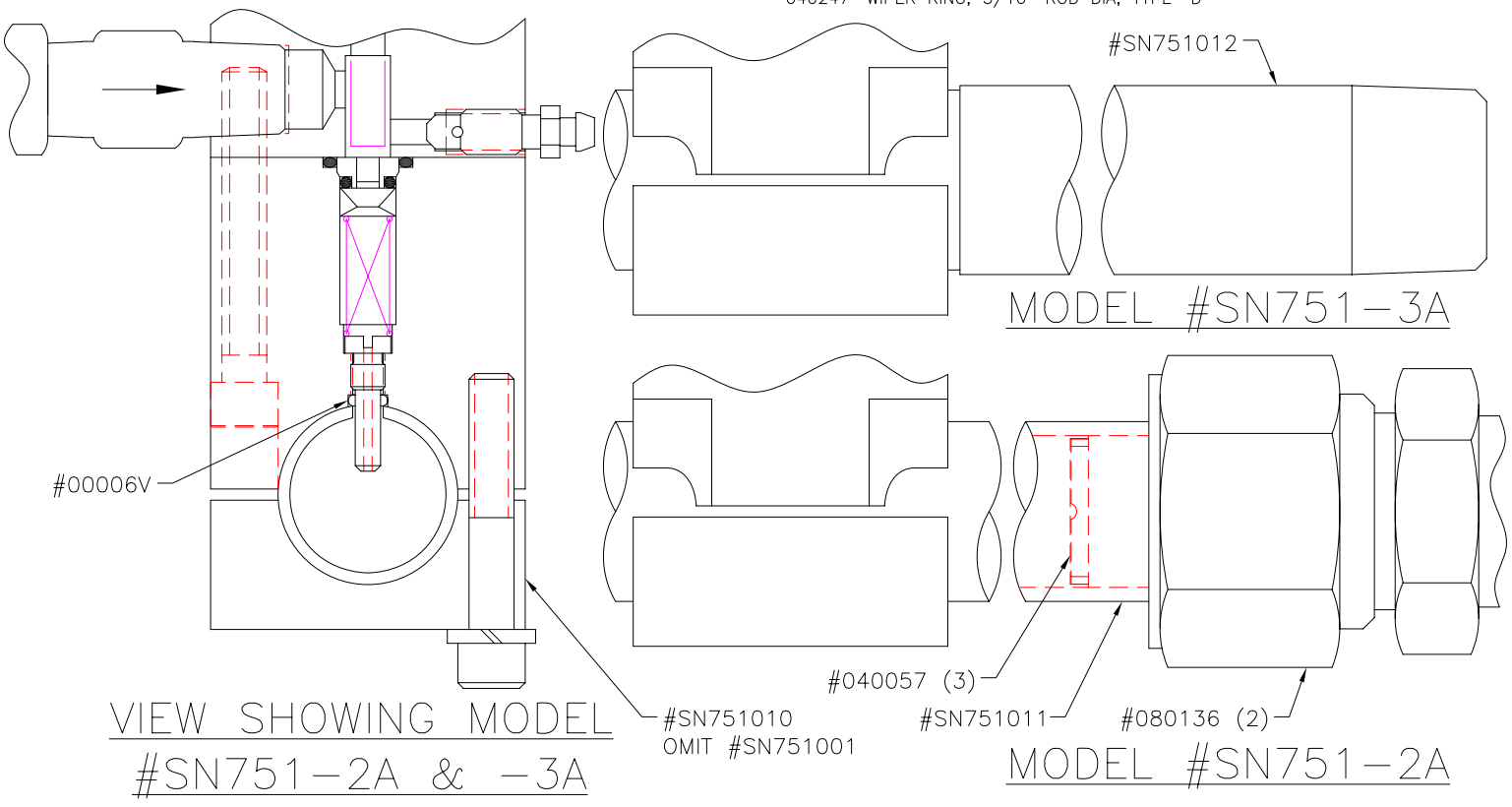
	PART NO	DESCRIPTION (QTY)
*	.....00006V	"O" RING, 1/16" C/S, .125" ID ~ VITON
	00008V	"O" RING, 1/16" C/S, .188" ID ~ VITON
	00012V	"O" RING, 1/16" C/S, .375" ID ~ VITON
	00018V	"O" RING, 1/16" C/S, .750" ID ~ VITON
	00024B	"O" RING, 1/16" C/S, 1.125" ID ~ BUNA (2)
	00141B	"O" RING, 1/8" C/S, 1.000" ID ~ BUNA
	01070B	POLYPAK SEAL TYPE "B", .562 OD x .312 ID x .125 C/S ~ BUNA
	01071U	POLYPAK SEAL TYPE "B", .437 OD x .187 ID x .125 C/S ~ ULTRA YELLOW
	020080	CAST BRONZE SLEEVE BEARING, 7/16" OD x 5/16" ID x 1/2" LG
*	040057	7/8" DIA x 2" MIXER ELEMENT (3)
	040247	WIPER RING, 5/16" ROD DIA, TYPE "D"
	040320	SELF-SEALING LOCKNUT, 5/16-24 THREADS, MEDIUM PRESSURE ~ BRASS
	040652	BLEEDER SCREW, 1/4-28 THDS
	080006	1/4" NPTM x 1/4" NPTM CHECK VALVE, 15# CRACK PRESSURE ~ SS
*	080136	1" OD TUBE COMPRESSION x 3/4" NPTM HEX NIPPLE ~ SS (2)
	080143	1/8" NPTM x 1/8" FLOW QUICK COUPLING INSERT ~ THERMOPLASTIC
	080159	3/8" ID HOSE BARB x 1/4" FLOW QUICK COUPLING BODY ~ BRASS
	080268	INSERT ~ SS
	080270	POPPET ~ SS
	080431	SPRING, 50psig ~ SS
	080459	1/8" FLOW x 1/4" OD HOSE QUICK COUPLING BODY ~ THERMOPLASTIC
	080502	1/8" FLOW x 1/4" OD HOSE QUICK COUPLING INSERT ~ THERMOPLASTIC
	080503	1/8" NPTM x 1/8" FLOW QUICK COUPLING BODY ~ THERMOPLASTIC
	080504	1/4" NPTF x 1/4" FLOW QUICK COUPLING INSERT ~ BRASS
	SN750002	INJECT SCREW
	SN751001	VALVE BODY
	SN751002	BLOCK
	SN751003	INSERT
	SN751004	PIN
	SN751005	FRONT CAP
	SN751006	SEAL RETAINER
	SN751007	PISTON
	SN751008	CYLINDER
	SN751009	REAR CAP
*	..SN751010	MIXER TUBE MTG. BLOCK
*	..SN751011	TUBE
*	..SN751012	MIXER
	SN751013	SET SCREW

* OPTIONAL EQUIPMENT

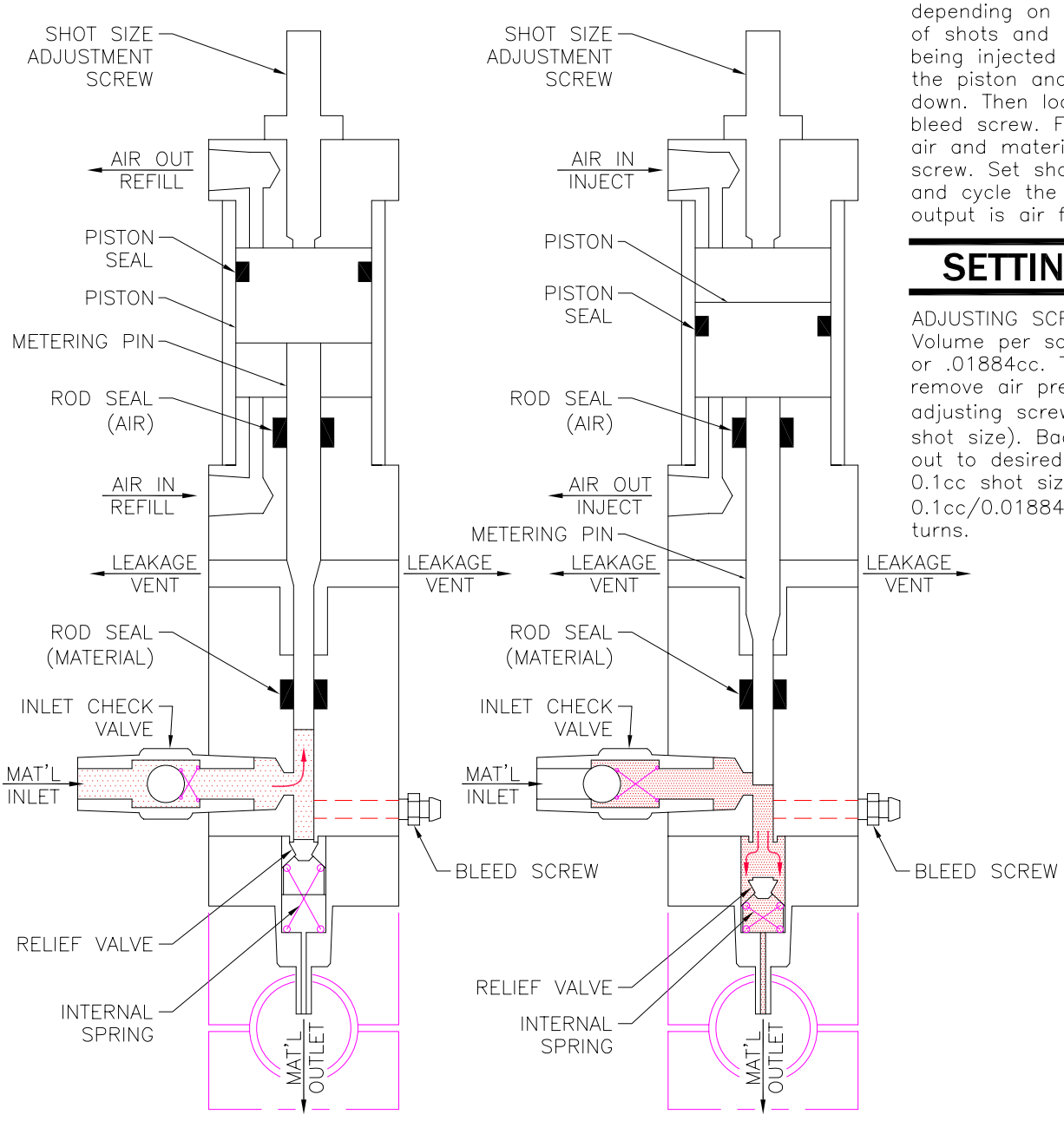
SEAL KITS

SN751K:

PART NO	DESCRIPTION (QTY)
00006V	"O" RING, 1/16" C/S, .125" ID ~ VITON
00008V	"O" RING, 1/16" C/S, .188" ID ~ VITON
00009V	"O" RING, 1/16" C/S, .218" ID ~ VITON
00012V	"O" RING, 1/16" C/S, .375" ID ~ VITON
00018V	"O" RING, 1/16" C/S, .750" ID ~ VITON
00024B	"O" RING, 1/16" C/S, 1.125" ID ~ BUNA (2)
00141B	"O" RING, 1/8" C/S, 1.000" ID ~ BUNA
01070B	POLYPAK SEAL TYPE "B", .562 OD x .312 ID x .125 C/S ~ BUNA
01071U	POLYPAK SEAL TYPE "B", .437 OD x .187 ID x .125 C/S ~ ULTRA YELLOW
040247	WIPER RING, 5/16" ROD DIA, TYPE "D"



THEORY OF OPERATION



OPERATION

Material supply pressure 25psi minimum, up to 100psi if the fluid is viscous or shot frequency is fast. Refill and inject air supply pressure should be regulated at 20 to 100psi depending on viscosity and frequency of shots and pressure of the stream being injected into. AIR BLEED. Extend the piston and metering pin fully down. Then loosen or remove the bleed screw. Feed pressure will purge air and material out the hole. Tighten screw. Set shot size at maximum and cycle the valve several times till output is air free.

SETTING SHOT SIZE

ADJUSTING SCREW. 24 thread/inch. Volume per screw turn = .00115in^3 or .01884cc. To set shot size, first remove air pressure then thread the adjusting screw into bottom (zero shot size). Back the adjusting screw out to desired shot size. Example – 0.1cc shot size, requires 0.1cc/0.01884cc per turn = 5.3 turns.

REFILL (UPSTROKE)

- AIR MOVES THE PISTON AND METERING PIN UP.
- MATERIAL PRESSURE (25 to 100psi) OPENS THE INLET CHECK VALVE ALLOWING MATERIAL TO FILL THE VOLUME PREVIOUSLY OCCUPIED BY THE METERING PIN.
- THE INLET CHECK VALVE IS RE–SEATED BY THE INTERNAL SPRING.
- MATERIAL DOES NOT ESCAPE THROUGH THE OUTLET BECAUSE OVER 120psi IS REQUIRED TO UNSEAT THE RELIEF VALVE.

INJECT (DOWN STROKE)

- THE INLET CHECK VALVE IS ALREADY CLOSED.
- AIR MOVES PISTON AND METERING PIN DOWN.
- MATERIAL PRESSURE BUILDS IMMEDIATELY, OPENING THE RELIEF VALVE AND ALLOWING MATERIAL TO EXIT.