DD-1 PUMP MANUAL

For Pumps Built after 09/2006

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This manual was written and designed at Valco Cincinnati, Inc., 411 Circle Freeway Drive, Cincinnati, Ohio 45246.

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Declaration of Conformity

(According to EN 45014)

CE

Manufacturer:	Valco Melton A division of Valco Cincinnati, Incorporated 411 Circle Freeway Drive Cincinnati, OH 45246 USA	
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declares that the product:

Product Name:	DD-1 Pump (built after 9/2006)

complies with the following Council Directives:

Safety of Machinery:	2006/42/EC
Low Voltage Equipment:	2006/95/EC
EMC:	2004/108/EC

and conforms to the following standards:

Safety:	EN60204-1:2006 EN13849-1
Risk:	EN14121-1:2007
EMC Emissions:	EN61000-6-4:2007 EN61000-4-2
EMC Immunity:	EN61000-6-2:2005 EN61000-4-3 EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-8 EN61000-4-11
Place and Date:	Cincinnati, Ohio USA CE Mark first fixed 2006
Signature:	David H. Swedes, Director of Engineering & Manufacturing

This Declaration of Conformity has been generated electronically and is legally binding without signature

VALCO MELTON™

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SECTION 1 - INTRODUCTION

This DD-1 air-driven, electronically controlled, double-diaphragm pump is a process pump composed of two interchangeable diaphragm assemblies driven by shop air to deliver fluid.

The DD-1 is designed to deliver fluid on a continuous or intermittent basis. The two interchangeable diaphragm assemblies are mounted within a frame. The shafts of each diaphragm assembly are coupled so as one diaphragm is being driven to deliver fluid under pressure, the other diaphragm assembly is being recharged with fluid.

Cycling is achieved electronically, instead of mechanically. Two reed switches are mounted in a control box and are activated by a magnet attached to the shaft coupler (chain link). The switch signal passes to an electronic control circuit mounted in the control box that in turn operates standard 3-way solenoid air valves. Flow is controlled by check valves that are mounted in the corner sections.

The DD-1 pump starts dependably, runs more smoothly, and operates at lower pressures and temperatures than ordinary mechanically controlled diaphragm pumps due to its electronic control system. The DD-1 does not use a spool valve that can stick or shorten the stroke of the pump. The switches are either open or closed. Therefore, the pump starts from any position at an inlet air pressure sufficient to overcome internal friction and system head pressure. Lower temperature operation is also achieved since there is no rapid expansion of drive air inside the pump. The 3-way valves exhaust directly to the atmosphere. Reversal cannot occur until a switch is tripped. Electronic reversal is also fast. The speed of reversal and the consistency of volume on each stroke contributes to produce a very smooth flow of fluid.

The DD-1 pump can be ordered with one or two inlet ports and two discharge ports. Each diaphragm chamber is a single-acting pump. Because of its electronic reversing control, the DD-1 has the unique advantage over any other dual, single-acting diaphragm pump. The stroke can be offset electronically so that the output from one side is as much as 50% greater than the other. For closed-loop, recirculating systems like those used in flexographic printing, the pump can be set up so that the amount of fluid that one side of the pump supplies to the reservoir is less than what the other side is capable of pumping away. This assures that the reservoir never becomes over-filled.

Service is easy since the diaphragm assemblies are interchangeable and individually accessible. Each check valve is externally accessible and the air valves are standard devices that are coupled directly to the diaphragm housing through quick-disconnect fittings. Most service requirements can be accomplished without removing the pump from the system.

Five indicator lights are provided on the pump PC board to facilitate electrical service.

SECTION 2 - SAFETY AND USE

Read Thoroughly Before Handling Equipment

WARNING!

Read and follow all safety precautions, warnings, cautions, and other recommendations in this manual. OTHERWISE, DEATH, PERSONAL INJURY OR EQUIPMENT DAMAGE COULD OCCUR.

Read this entire section before handling the equipment.

Symbols

The following symbols may be used on the equipment and/or in this manual.

This symbol represents a **Caution** or a **Warning**. *Cautions* draw special attention to anything that could damage equipment or cause the loss of data. *Warnings* draw special attention to anything that could injure or kill the reader. Both Cautions and Warnings are placed before the step they apply to.

This symbol represents a **Hot Surface**.

This symbol represents a **Puncture Risk.** It is usually used in regard to nozzle cleaning appliances and other sharp instruments that can cause puncture wounds and risk exposure to bloodborne pathogens and other debris.

This symbol means that **Working Gloves** are required.

This symbol means that **Goggles** are required.

This symbol indicates a **Shock Hazard**. There is a presence of non-insulated dangerous voltage within the product's enclosure. This voltage may cause electrical shock or fire.

Continued next page

Symbols - Continued

This symbol indicates the need to **Unplug/Disconnect All Power Sources** and to let them de-energize before attempting any type of work or maintenance. Remember that there can still be energy in equipment, cords, and wires even when unplugged/ disconnected.

This symbol indicates the need to **Lock Out All Power Sources** and to let them de-energize before attempting any type of work or maintenance. If power is not locked out, the person working on the equipment may be injured or killed if someone unknowingly switches on the power to the equipment.

This symbol indicates a **Note**. Notes point out something of special interest or importance to the reader. They give tips, hints, and information in addition to what is necessary for the step preceding it.

Owner Responsibilities

The owner of the equipment is under obligation to manage all safety information. Some examples include:

- Examine all safety materials and documents as well as jurisdictional laws and make certain all laws, recommendations, and other safety/hazard laws, certification requirements, training, and instructions are followed and kept current.
- Maintain all safety materials including tags, labels, documents, and MSDS information. Make certain they are distinct and can be read/understood. Replace any that are dirty, worn, or unreadable.
- Make sure all personnel who will handle, install, maintain, operate, fix, and work around the equipment have ready access to the safety information, training, and equipment according to jurisdictional authorities.

The owner of the equipment is under obligation to make certain that all instructions, requirements, and jurisdictional laws are met. Some examples include:

- Make sure there are regular inspections of equipment and safety devices.
- Have regular safety drills and inspections supervised by the proper authorities.
- Provide all required safety items, first aid equipment, and training.

The owner of the equipment is under obligation to make certain that all personnel who will handle, install, maintain, operate, fix, and work around the equipment are qualified, trained, and up-to-date with all information regarding the equipment. Some examples include:

- Make sure all personnel have the proper safety training, equipment, education, and abilities necessary for the job function according to safety instructions and all jurisdictional laws and regulations.
- It is strongly advised that personnel receive first-responder medical care training in case of burns, medical emergencies, or other injuries. Training should be kept up to date.
- Make sure all personnel understand and can follow safety policies and procedures for the organization as well as for the specific equipment.
- Make sure that all personnel are consistently trained, evaluated, free of alcohol and medications that may impair judgment and reflexes, and are tested for banned substances according to jurisdictional authorities.

Limitations of Use

Read this document and all information regarding the equipment before handling the equipment. The intended use of the equipment is stated in Section 1 of this manual.

Do not use this equipment for anything other than its intended use. Do not modify, change, or alter the equipment in any way. If you are unsure of the intended use and the limitations of use for the equipment, contact your Valco Melton Representative before handling the equipment.

Installation/ Startup/Use Safety Information

Valco Melton hot melt units, cold glue units, controllers, inspection systems and all related accessories have the following universal safety precautions (this is not intended to be an exhaustive list; follow all instructions and safety precautions for the specific type of equipment involved):

WARNING!

Only qualified personnel should install the equipment. Valco Melton strongly recommends that a Valco Melton Technician install all equipment. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

WARNING!

The equipment should be installed so that it can be turned off at a location **away** from the equipment in case of injury, electrical problems, or malfunction. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Properly route all electrical wires. Never tamper with equipment. Only use approved and correct voltage, type of current, fuses, and other power supplies. Replace worn cords, hoses, etc. immediately. FAILURE TO OBSERVE WARNING MAY RESULT IN DEATH, PERSONAL INJURY, AND/OR EQUIPMENT DAMAGE.

WARNING!

Poor ventilation, smoking, and open flames can cause overheated hot melt to ignite. Adequate ventilation must be provided. Smoking should be prohibited in the immediate vicinity of the molten adhesive. Open flames must be kept away from the area around molten adhesive. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

WARNING!

Never use any Valco Melton equipment in an explosive environment. Explosive environments include, but are not limited to, solvent-based cleaners or adhesives, explosive materials, radioactive materials, etc. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Equipment will start automatically when remotely controlled by triggering devices. Be sure to disable all triggering devices, carefully release hydraulic pressure, and disconnect air pressure before servicing or working near guns, valves, and other triggered devices. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

Shut Down Safety Information

Valco Melton hot melt units, cold glue units, controllers, inspection systems and all related accessories have the following universal safety precautions (this is not intended to be an exhaustive list; follow all instructions and safety precautions for the specific type of equipment involved):

WARNING!

Purge the fluid pressure and the air pressure from the system before disconnecting/disabling any part of the system. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Disconnect and lock out all power before maintenance or other need to open the equipment. Only qualified personnel should open and service the control. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Equipment may still be energized even if unplugged! When making adjustments or performing checkout procedures, stay clear of any moving mechanical parts and do not touch exposed electrical equipment or electrical connectors. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Disconnect/disable all mechanical and/or electrical devices that send activation signals to the gun(s), valve(s), melter pump(s), etc. This includes pattern controls, timers, input/output signals, etc. Only qualified personnel should open and service the control. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Disable all triggering devices, relieve all residual pressure (hydraulic and air) and allow adhesive to cool before attempting to disconnect guns, hoses, valves, etc. Only qualified personnel should open and service the control. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Never point an adhesive dispensing gun, valve, hose, air hose, or anything else at yourself or another person. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

Hot-Melt-Specific, General Safety Information

Valco Melton hot melt units have the following universal safety precautions **in addition to all other universal precautions previously mentioned** (this is not intended to be an exhaustive list; follow all instructions and safety precautions for the specific type of equipment involved):

WARNING!

Never process any polyurethane reactive (PUR) hot melt or solvent-based material in a Valco Melton unit unless you are certain that the unit is compatible and is marked “PUR”! Read all instructions and MSDS sheets carefully, following manufacturer’s instructions, especially regarding heat levels. If you have any question as to the compatibility of a Valco Melton unit for PUR hot melt, call your Valco Melton Representative before attempting to use the unit for PUR or solvent-based materials. OTHERWISE, HAZARDOUS FUMES, EXPLOSION, DEATH, OR PERSONAL INJURY COULD OCCUR.

WARNING!

Keep pump cover and electrical enclosures closed except during setup, service, and checkout procedures. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

People with respiratory problems (e.g., asthma, bronchitis, etc.) should not work in the vicinity of molten adhesive. RESPIRATORY PROBLEMS MAY BE AGGRAVATED BY THE FUMES. Do not wear a face mask when working around molten adhesive. THE MASK MAY TRAP THE FUMES AND DEATH OR PERSONAL INJURY COULD OCCUR.

WARNING!

Keep hot melt hoses away from walkways and the moving parts of hot melt systems. OTHERWISE, PERSONAL INJURY OR EQUIPMENT DAMAGE COULD OCCUR.

WARNING!

Hot surfaces! Do not touch! Use extreme caution when refilling the unit by hand. OTHERWISE, PERSONAL INJURY COULD OCCUR.

WARNING!

Wear protective gloves and goggles at all times around all machinery, especially hot melt. OTHERWISE, SERIOUS PERSONAL INJURY COULD OCCUR.

WARNING!

Never use an open flame to heat hot melt components or adhesive. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

What to Do if Contact with Hot Adhesive Occurs

If hot adhesive comes in contact with the skin**,** do the following:

WARNING!

Do not attempt to remove heated hot melt adhesive from the skin. OTHERWISE, SEVERE PERSONAL INJURY AND DEATH COULD OCCUR.

1. Immediately immerse the contacted area in clean, cold water.

   It is strongly recommended that a source of clean, cold water be provided near the hot melt work area.

2. Cover the affected area with a clean, wet compress and call the emergency medical response system (such as 911) immediately.

3. Watch for and treat the subject for signs of shock while waiting for professional help to arrive.

What to Do if Inhalation of Adhesive Fumes Occurs

If adhesive fumes are inhaled, immediately follow these steps:

1. Take the victim away from the immediate work area.

2. Provide victim with fresh air.

3. Call the emergency medical response system (such as 911) immediately.

What to Do if Adhesive-Related Fire or Explosion Occurs

During the heating and melting process, the surface of the adhesive will be exposed to air. The mixture of polymer fumes and air can catch fire if the hot melt is overheated.

WARNING!

Poor ventilation, smoking, and open flames can cause overheated hot melt to ignite. Adequate ventilation must be provided. Smoking should be prohibited in the immediate vicinity of the molten adhesive. Open flames must be kept away from the area around molten adhesive. OTHERWISE, DEATH, PERSONAL INJURY, OR DAMAGE TO EQUIPMENT COULD OCCUR.

WARNING!

Exposed arcing may ignite the fume/air mixture. Shield all electrical equipment from melt fumes to avoid exposed arcing. OTHERWISE, PERSONAL INJURY OR EQUIPMENT DAMAGE COULD OCCUR.

WARNING!

Do not use a water extinguisher to extinguish the fire! OTHERWISE, PERSONAL INJURY OR EQUIPMENT DAMAGE COULD OCCUR.

If the hot melt adhesive ignites, promptly perform the following steps:

1. Sound a fire alarm.
2. Evacuate the immediate area.
3. Turn off all local electrical equipment at the source.
4. Leave the area immediately if conditions are unsafe.

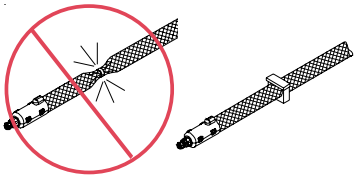
   If you feel you can fight the fire **safely**, do ***one*** of the following:

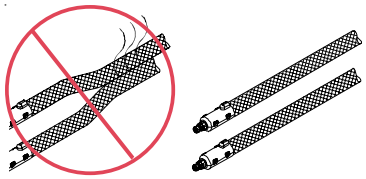
   - Smother the fire with a fire blanket.
   - Aim a CO_2 fire extinguisher at the base of the flames.
   - Aim a dry-powder fire extinguisher at the base of the flames.

Hose Safety Information

Do not use bindings, wire ties, or unapproved fasteners around the hoses.

Do use approved wrapping (P/N 775xx827), making sure the wrapping is slightly snug but not tight.



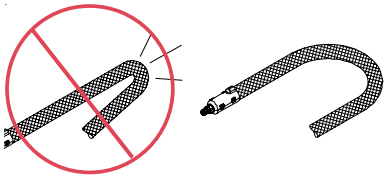


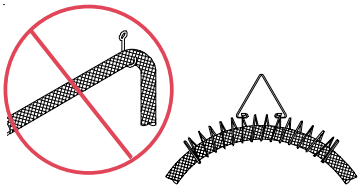
Do not place hoses close together.

Do allow at least 2 inches (5.1 cm) between hoses for proper ventilation.

Do not bend hoses sharply. **Do not** allow kinks or indentations in the hoses.

Do use a minimum bend radius of 10 inches for a 20-inch diameter coil hose.



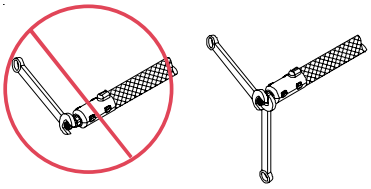


Do not use unapproved hooks to hang hoses. **Do not** wrap hoses over or around objects.

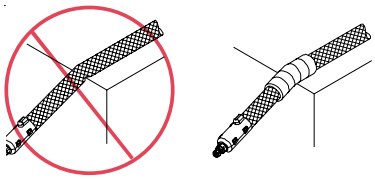
Do use a hose hanging kit (P/N 781xx827).

Do not use the “one handed/one wrench” technique to attach or remove hoses. **Do not** wrench on any surface other than the large hexagon swivel nuts.

Do use two hands and two wrenches to tighten or loosen connections on hoses. **Do** wrench only on large hexagon swivel nuts.



Hose Safety Information - Continued

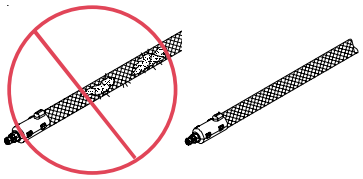


Do not allow hoses to rub against objects or to come into contact with sharp edges or points.

Do wrap the hoses in approved padding (P/N 795xx549) if the hoses must be installed where they will come into contact with objects.

Do not use worn, damaged, or bent hoses.

Do inspect all hoses regularly for damage and/or wear and replace damaged or worn hoses immediately.



Diaphragm Pump/Toxic Fluids Safety

WARNING!

All diaphragm pumps can experience diaphragm failure. If they do, the pumped fluid can enter the air chambers and be exhausted through the air valves. It is also possible for the compressed air to mix with the pumped fluid and be expelled through the pump discharge line. Depending upon the nature of the pumped fluid, CATCHING AND CONTROLLING EXHAUSTED FLUIDS AND VAPORS MAY BE REQUIRED TO AVOID EXPLOSIONS. SINCE FLUIDS CAN BE TOXIC AND HAZARDOUS TO PERSONNEL,

Valco Cincinnati recommends that you seek advice from:

- Your company's safety policy and procedures
- Fluid suppliers (MSDS information)
- Personnel skilled in handling and processing hazardous fluids
- Local, state, and federal agencies.

SECTION 3 - WIRING GUIDELINES

Routing Low-Voltage Leads

Warning! Failure to observe could result in personal injury, death, or damage to equipment.

When routing low-voltage leads, follow these guidelines:

- Do not route low-voltage leads in the same conduit as wires carrying a high-current load.
- Do not route low-voltage leads adjacent to, or across wires carrying a high-current load. If low-voltage leads must cross or run parallel to wires carrying high current, keep the leads at least 6" (152 mm) from high-current wires.
- Do not splice or solder leads.
- Trim leads to the required length. Leads should be only as long as necessary for installation.
- All wiring should be in conduits or wireways.

Connecting the Electrical Power

Warning! Electrical connections should be made only by experienced service personnel! Failure to observe could result in personal injury, death, or damage to equipment.

When connecting the supply of electrical power, follow these guidelines:

- Connect the control to a “clean” supply of electrical power. Use a dedicated circuit if possible.

If a dedicated circuit is not available, do not connect the control to a circuit that supplies high-amperage equipment– use another circuit such as a lighting circuit. Otherwise, equipment may not function properly.

SECTION 4 - BASIC FEATURES

DD-1 Pump Assembly (pumps built after 09/2006)

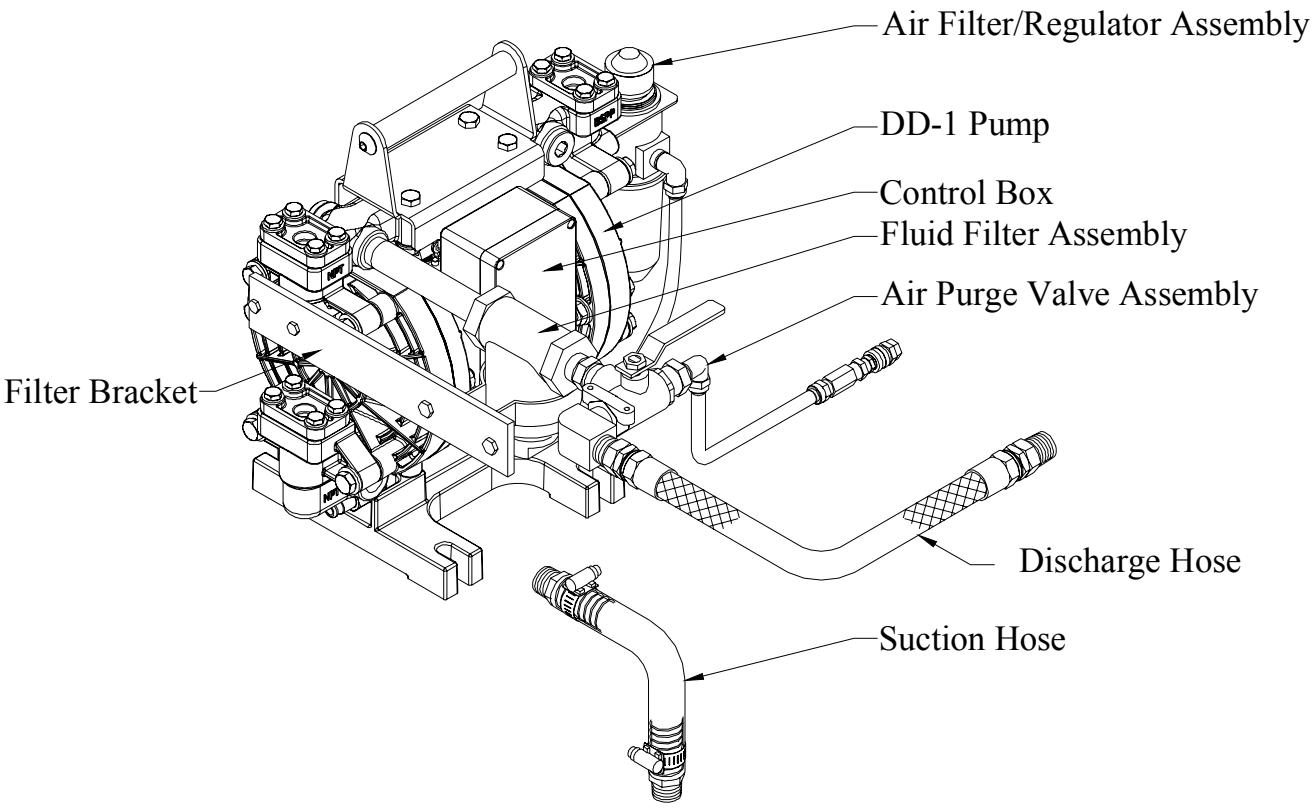


Figure 4-1 - DD-1 Pump Assembly (built 09/2006 and later)

PCB Assembly

The Control Box contains the PCB Assembly.

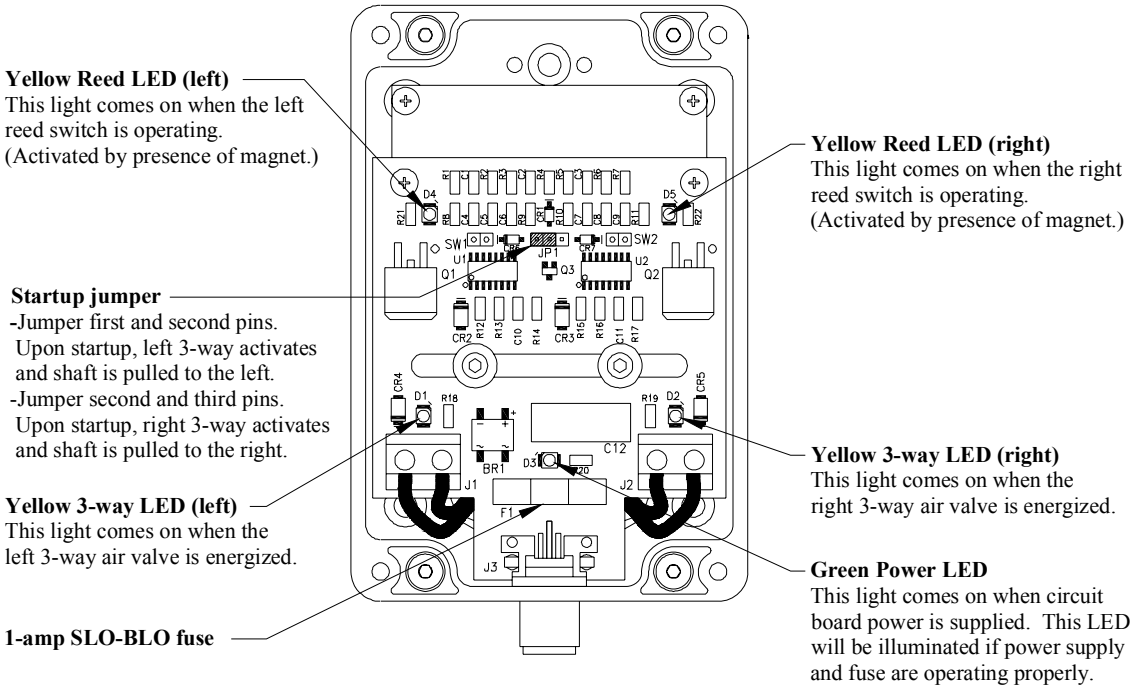


Figure 4-2 - PCB Assembly
(Inside the Control Box)

Light Sequence

Figure 4-3 illustrates the light sequence that occurs during the pump cycle.

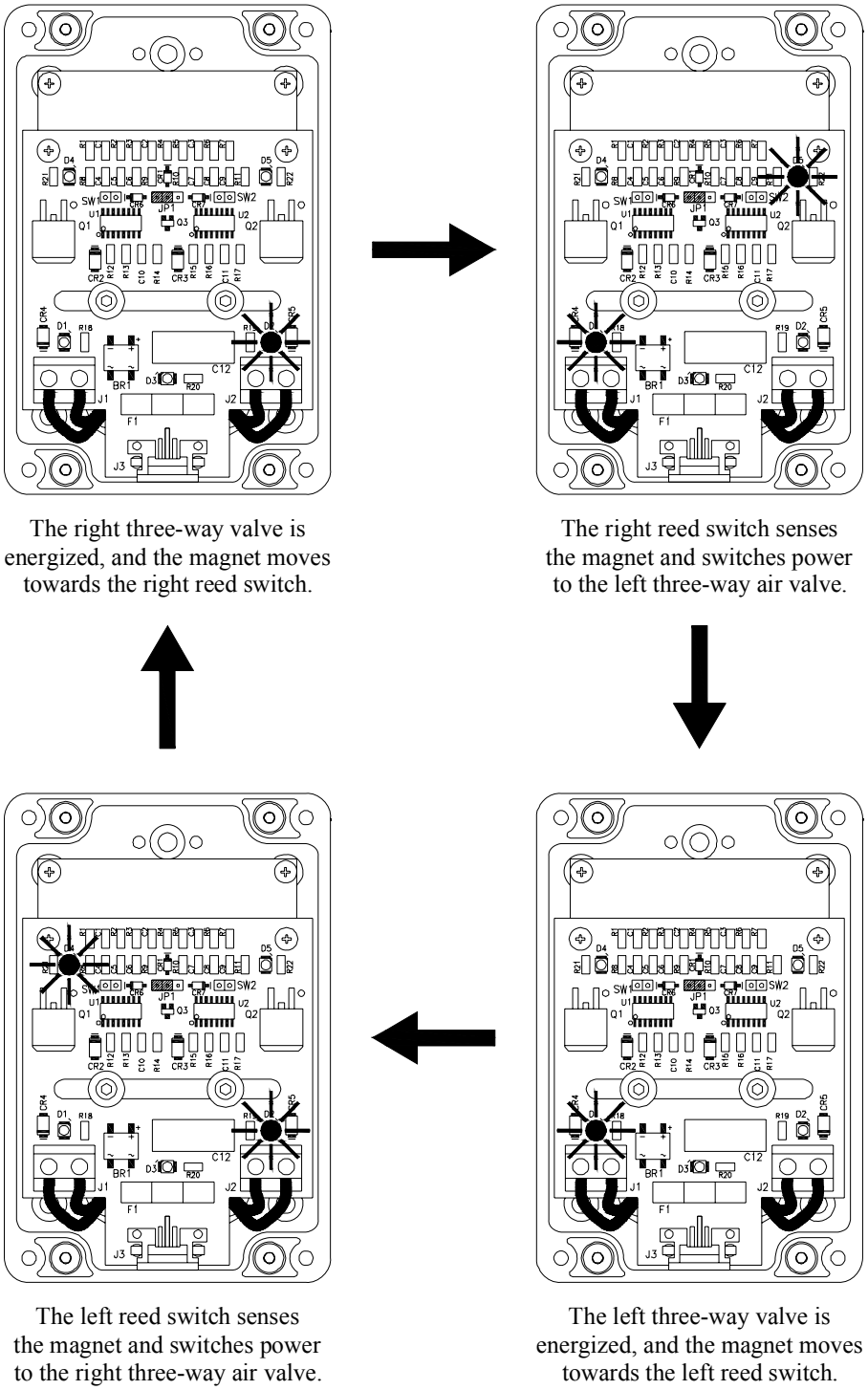


Figure 4-3 - Light Sequence During the Pump Cycle

SECTION 5 - INSTALLATION

Power Requirements

An optional remote transformer is available. This transformer requires 100/120 VAC, 200/240VAC, or 100/200VAC, 1-amp maximum, single-phase power supply with ground, depending on the country where the pump is installed. Please see the Parts List for more information.

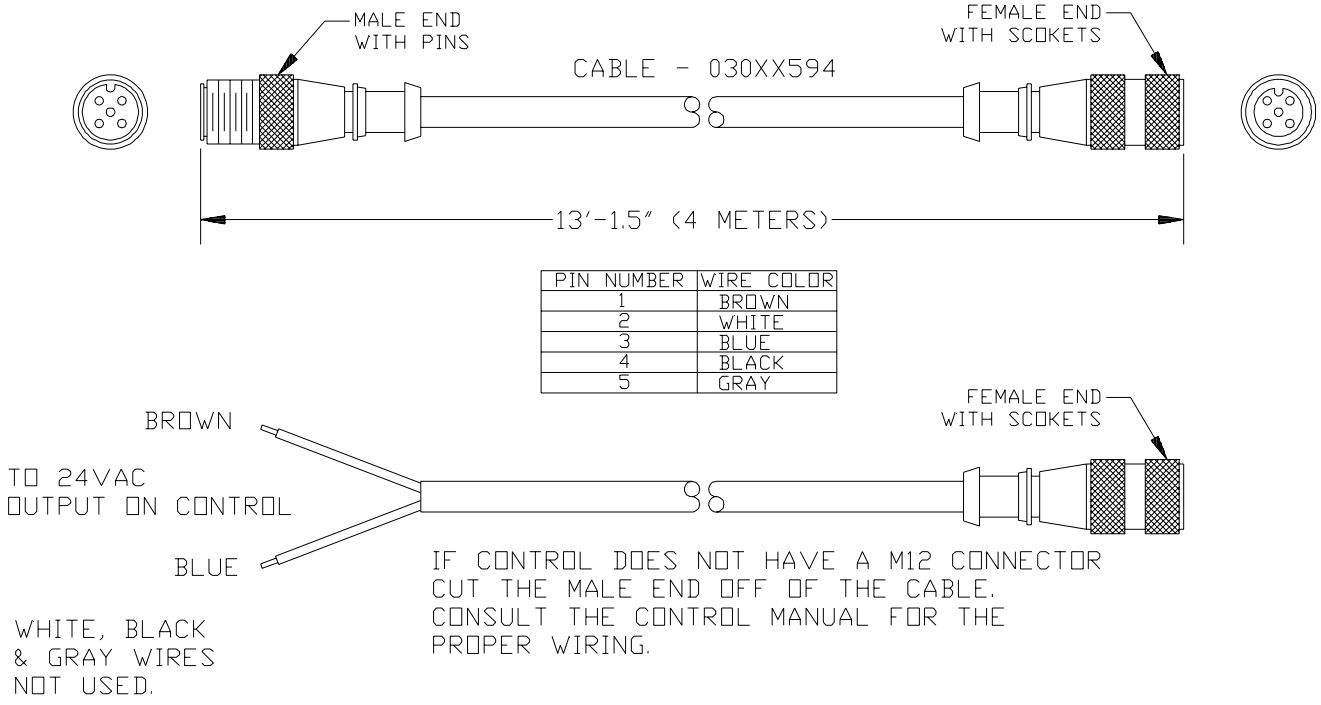
Power Connections

The pump can be powered through either a 24-volt remote power supply, or through any of the following Valco controls:

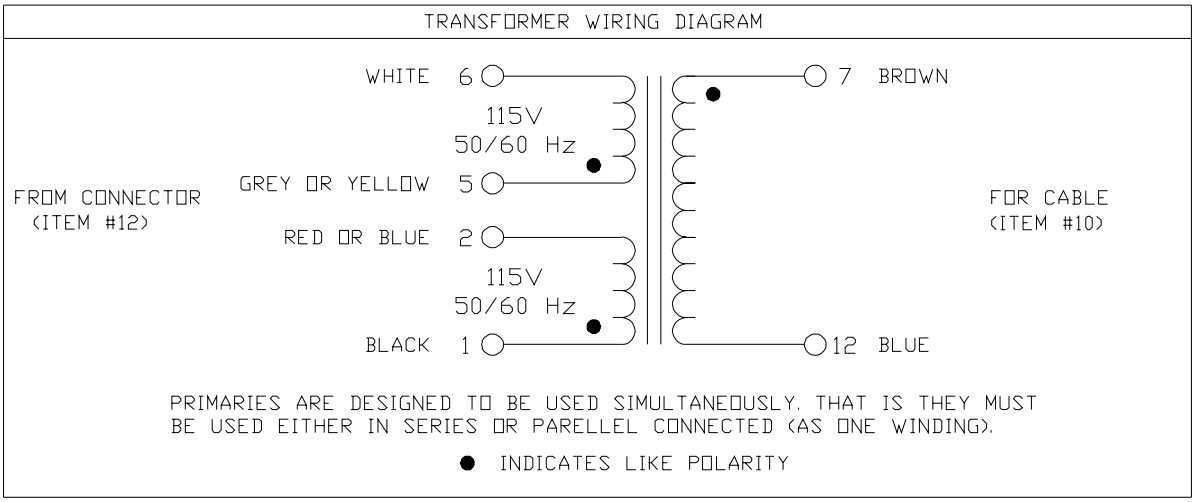
- VC350
- VC450
- VC850
- VC9100
- VC3500
- VC3700
- VC350AG
- MCP-25
- MCP-42
- MCP-25/MS
- MCP-12
- Modular Control System (MCS) control
- MCP-4

Power Cables

Please see the Parts List for all cables available.



Transformer Wiring



See Parts List for additional information.

Air Requirements

The pump requires filtered and regulated shop air; 100 psi (8 bar) maximum.

Typical Central Pumping System

Materials required for a central pumping system:

- Stainless steel pipe (schedule 40 USA)
- PVC, threaded or glued (schedule 80 USA)

Warning! Follow all special precautions. Otherwise, injury to personnel and damage to equipment may occur.

Special precautions:

- For long runs, it is best to position the pump in the middle.
- Use “T” fittings, not “L” fittings.
- Consult your adhesive supplier for specific information about adhesive compatibility.
- Keep valve outlets plugged except when using the valve to purge the system.

Typical Central Pumping System - Continued

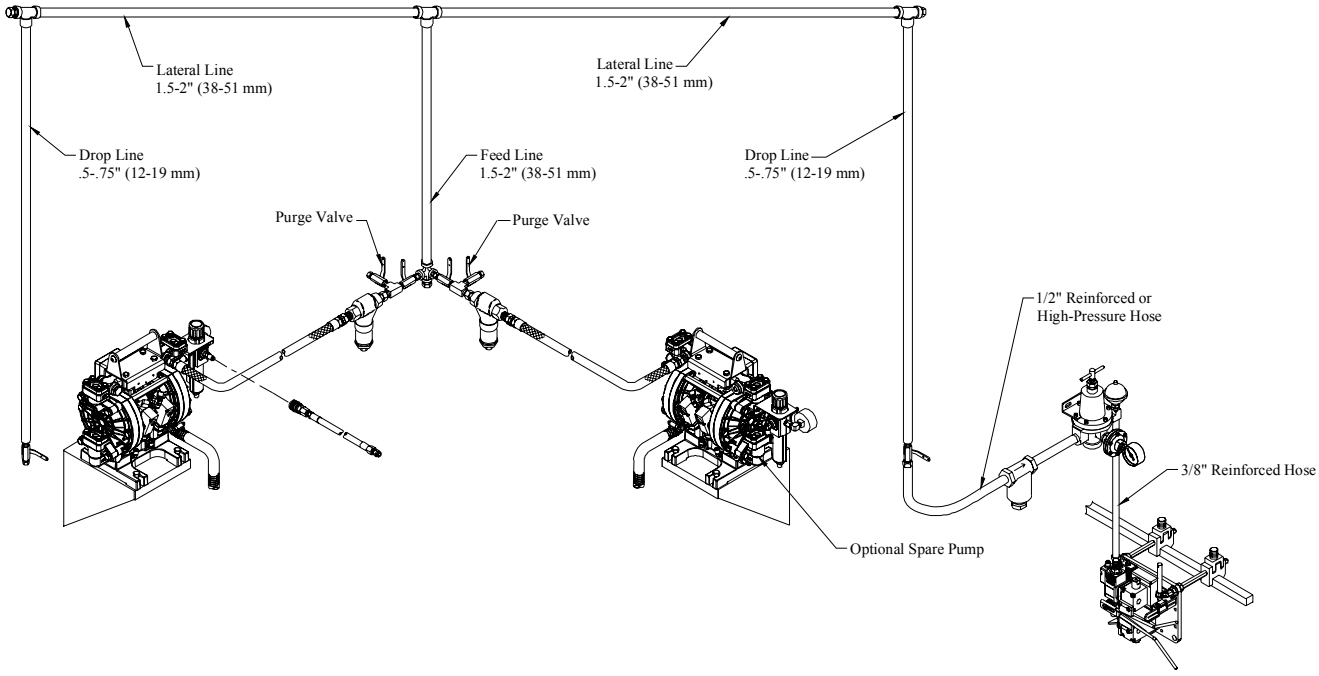


Figure 5-1 - Typical Central Pumping System

Installing the Pump

Installation of the DD-1 pump will depend upon the fluid you are using and your particular application requirements. To install the DD-1 pump, follow these steps:

1. Bolt the pump to a suitable mounting structure.

> The mounting-bolt pattern is rectangular–5.5" (140 mm) wide by 6" (152 mm) deep (Figure 5-2). Wall mounting brackets and 55-gallon drum covers are available from Valco Cincinnati. See the Parts List for more information.

2. Install plant air supply to the solenoid valves.

> If the pump is equipped with a Valco Cincinnati air filter/regulator, the plant air is connected to a quick-disconnect fitting in the input port of the regulator. A 10-foot air-supply hose with disconnect is available(see Parts List).

3. Install a second pump as a backup if desired.

> This type of installation is beneficial when the fluid is supplied in vats because vat replacement, pump service, and purging can be accomplished without system shutdown.

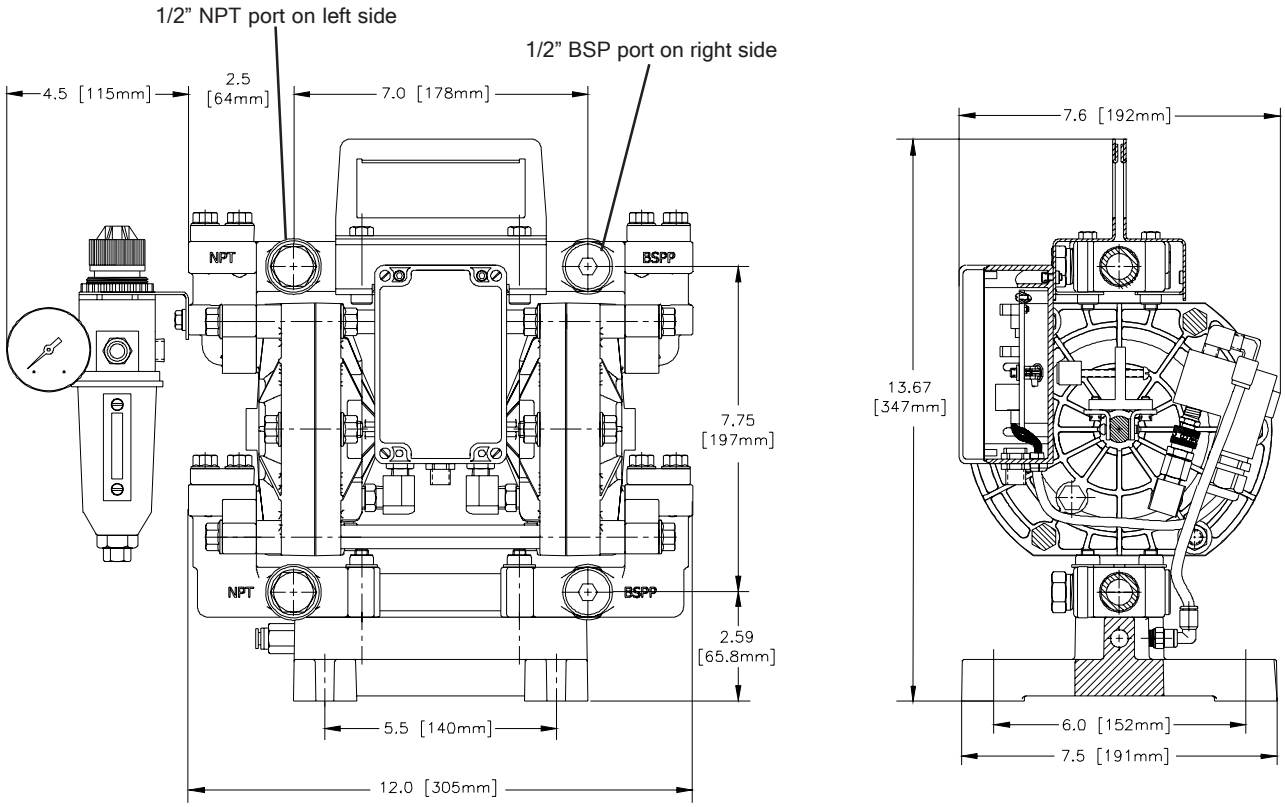


Figure 5-2 - Mounting Hole Dimensions

Installing the Pump - Continued

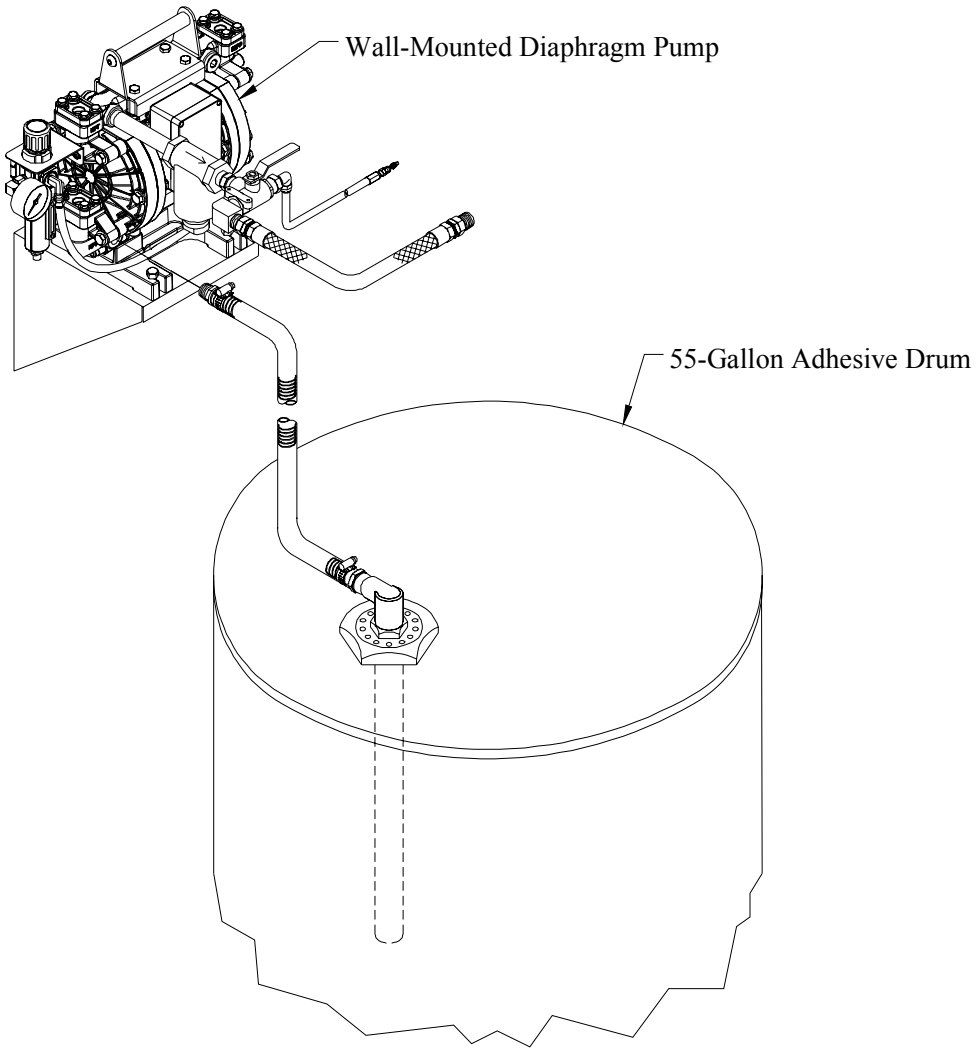


Figure 5-3 - Wall Mounted Pump Installation

Installing the Pump - Continued

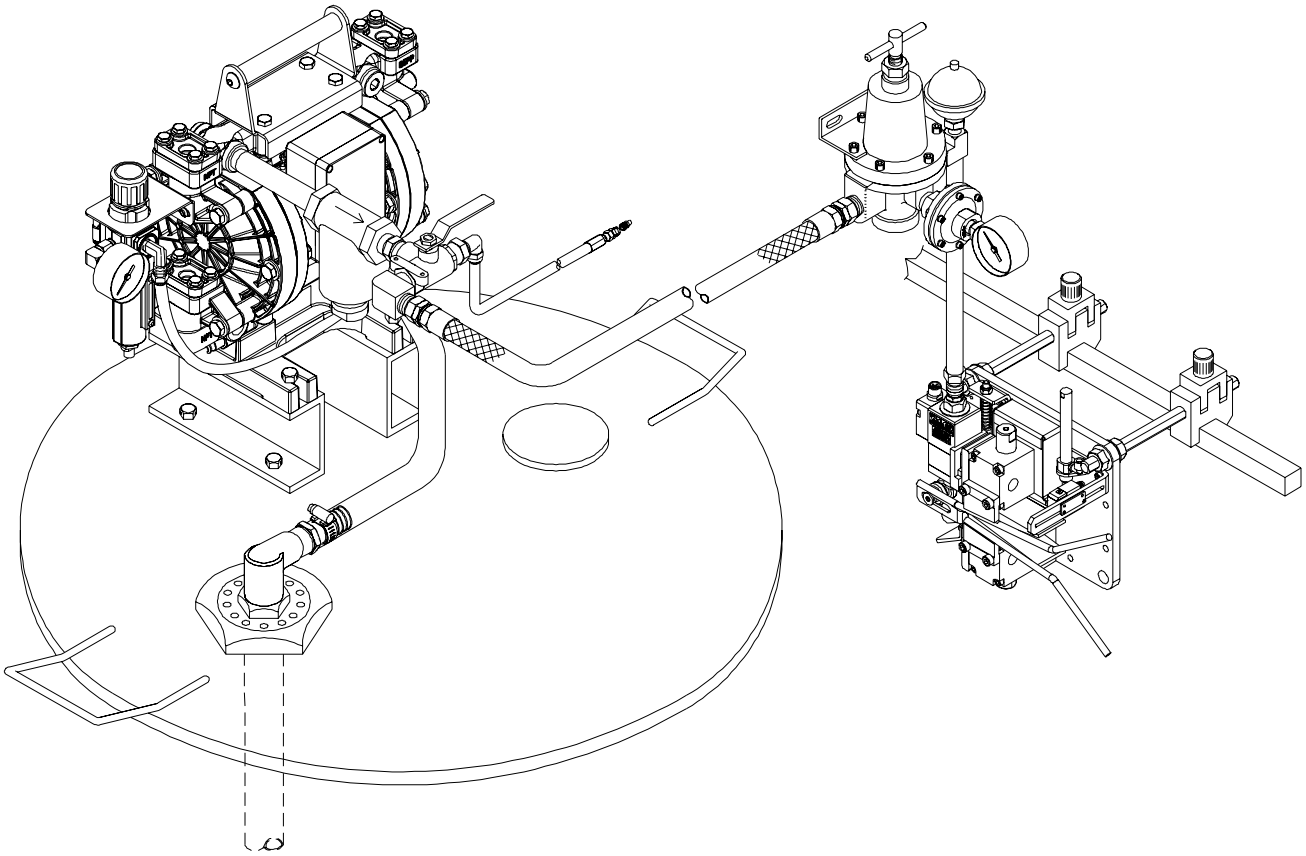


Figure 5-4 - Drum Mounted Pump Installation

Installing the Single Inlet/Outlet Pump

To install a single inlet/outlet pump (Figure 5-5), follow these steps:

1. Connect the suction hose to the lower 1/2" NPT orifice on the rear face of the pump.

2. Connect the other end of the suction hose to the fluid source.

> Some applications will require a suction strainer. If the pump is drum mounted, the rubber suction hose can be replaced with a drum suction tube kit that is available from Valco Cincinnati (see Parts List).

3. Connect the discharge hose to the top 1/2" NPT orifice on the rear face of the pump.

> In some cases, it will be necessary to connect a line filter, air purge valve, and shutoff valve before entering the fluid discharge system. A surge suppressor may also be beneficial.

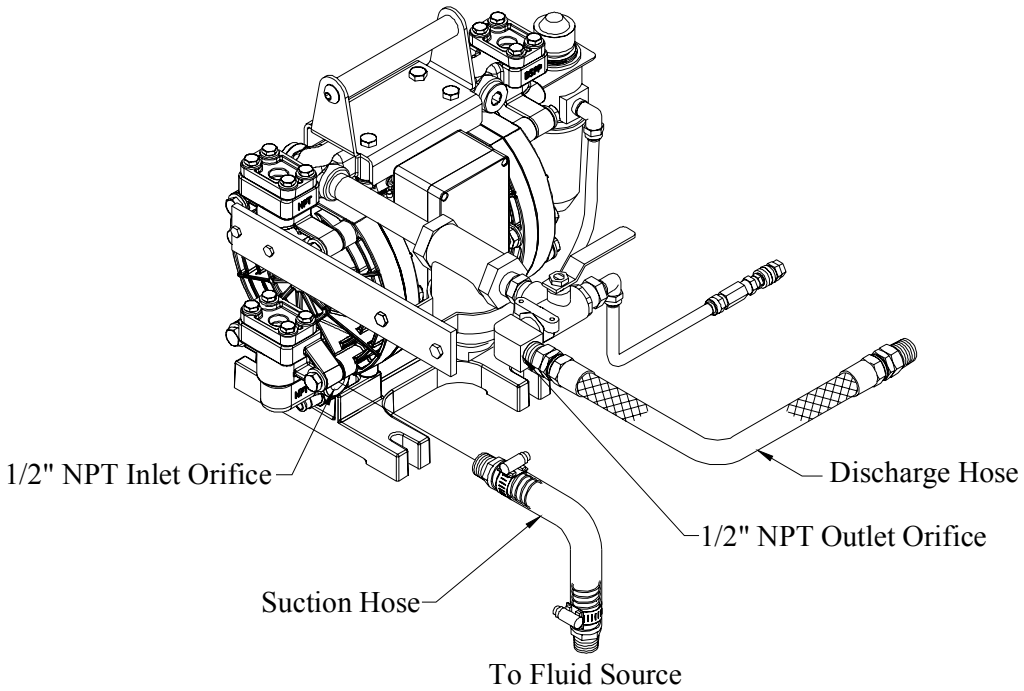


Figure 5-5 - Single Inlet/Outlet Pump

Installing the Dual Inlet/Outlet Pump

To install a dual inlet/outlet pump (Figure 5-6), follow these steps:

- Follow the steps for installing a single inlet/outlet pump to connect the fittings and hoses.

> All DD-1 pumps are set up for suction at the bottom ports and for discharge at the top ports (front or rear).
>
> This recirculating setup should draw more fluid into the pump than is discharged. See “Adjust Reed Switch for Dual Inlet/Outlet Pumps” in this section for details.

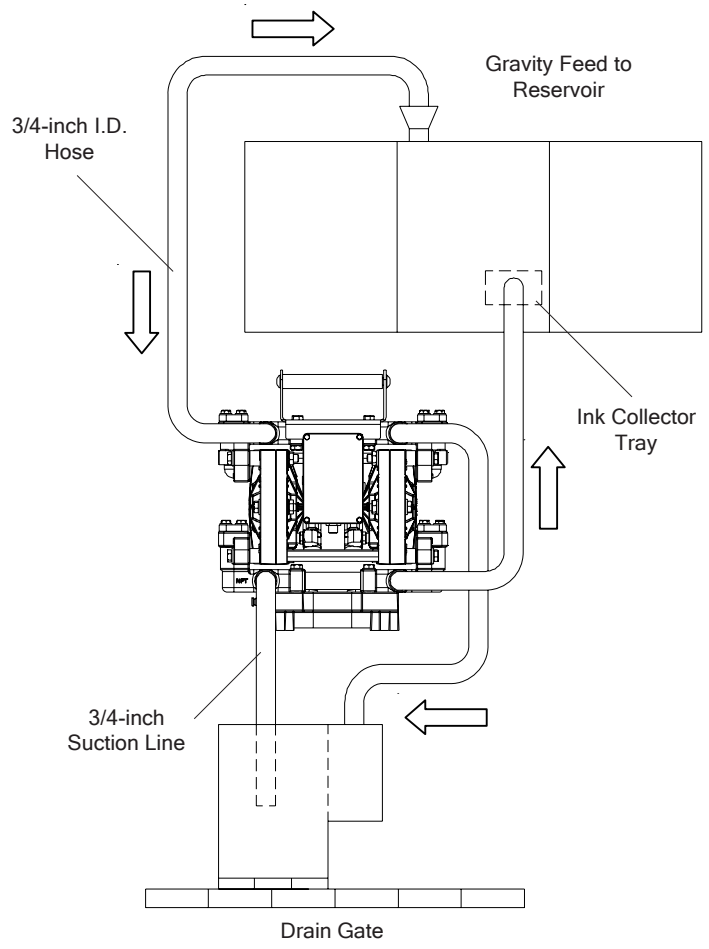


Figure 5-6 - Dual Inlet/Outlet Pump

Installing the Filter/ Regulator Assembly

To install the filter/regulator assembly, follow these steps:

> The glue supply lines must run from the shutoff valve to the fluid pressure regulator.

1. Install the small in-line glue filter (Figure 5-7) between the shutoff valve (located at the end of the drop line) and the fluid regulator.

> It is possible to install the filter directly onto the input of the regulator assembly. This will eliminate the need for a hose between the filter and regulator.

2. Connect the applicator supply hose to the output of the fluid pressure regulator.

3. Close the small valve on the end of the line.

> It may be necessary to fabricate parent-machine mounting brackets for the glue regulator assembly, the encoder assembly, and the glue filter assembly.

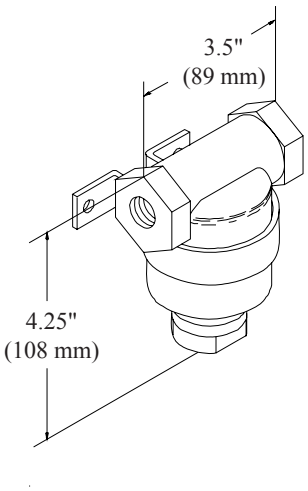


Figure 5-7 - Glue Filter

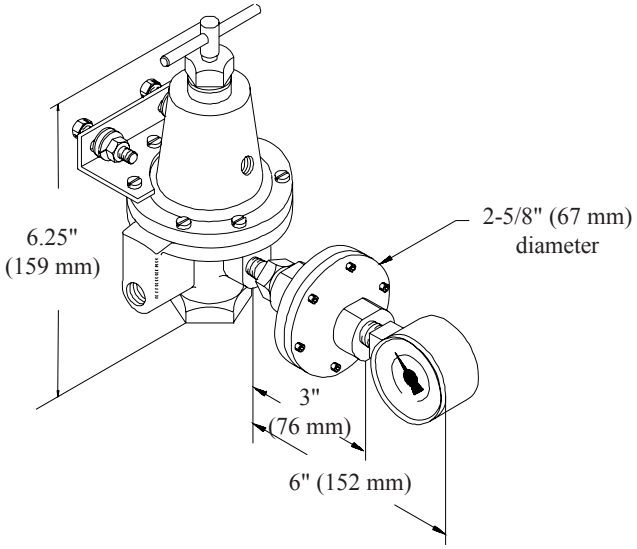


Figure 5-8 - Glue Regulator with Gauge and Protector

Installing the Filter/Regulator Assembly - Continued

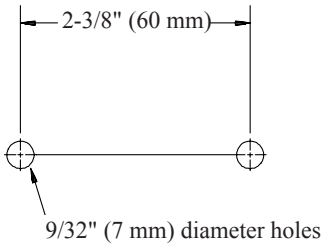


Figure 5-9 - Glue Filter Mounting-Hole Dimensions

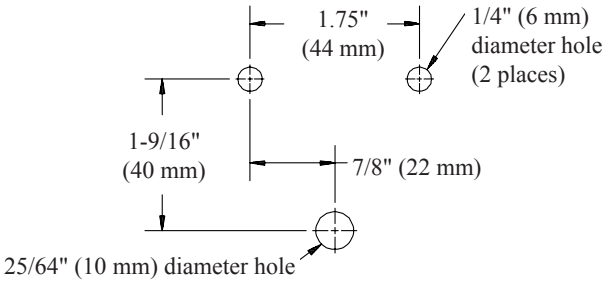


Figure 5-10 - Regulator Mounting-Hole Dimensions

Adjusting the Reed Switches (Single Inlet/ Outlet Pumps)

The positions of the reed switches and the magnet bracket assembly are critical for proper operation of the pump. To adjust the reed switches, follow these steps:

1. Position the magnet as close as possible to the control box without touching it.

   > The magnet should be vertically centered on the horizontal slot containing the socket head capscrews.

2. Remove the cover of the control box.
3. Set the air pressure to the pump so that the pump can cycle slowly (about 10 psi/1.7 bar).
4. Loosen the socket head capscrew that is connected to the left proximity switch (see Figure 5-11).
5. Slide the switch completely to the left side.
6. Slide the switch slowly back to the right until the pump just begins to stroke.
7. Loosen the socket head capscrew that is connected to the right proximity switch.
8. Slide the switch completely to the right side.
9. Slide the switch slowly back to the left until the pump strokes.

   > The pump should now be cycling evenly and slowly.

(Continued)

Adjusting the Reed Switches (Single Inlet/Outlet Pumps) - Continued

10. Move both switches toward the center another 1/8" (3 mm).

11. Visually check the pump by removing the guard and observing the shaft as the pump cycles.

> Shaft travel should be approximately 3/16-1/4" (4.8-6.4 mm) from the air chamber to where the shaft is turned down (that is, where the shaft diameter becomes reduced).

12. Readjust the socket head capscrews if necessary.

13. Tighten the socket head capscrews.

Adjusting the Reed Switches (Dual Inlet/ Outlet Pumps)

The positions of the reed switches and the magnet bracket assembly are critical for proper operation of the pump. To adjust the reed switches, follow these steps:

1. Follow steps 1-12 in the previous procedure “Adjusting the Reed Switches (Single Inlet/Outlet Pumps).”

2. As you are looking at the pump from the control-box side, determine which side of the pump you want to pump more fluid.

3. Move the corresponding reed switch towards the center 1/8" (3 mm).

Reversing-Control Wiring Diagram

Reed Switches wires are permanently soldered to their connections.

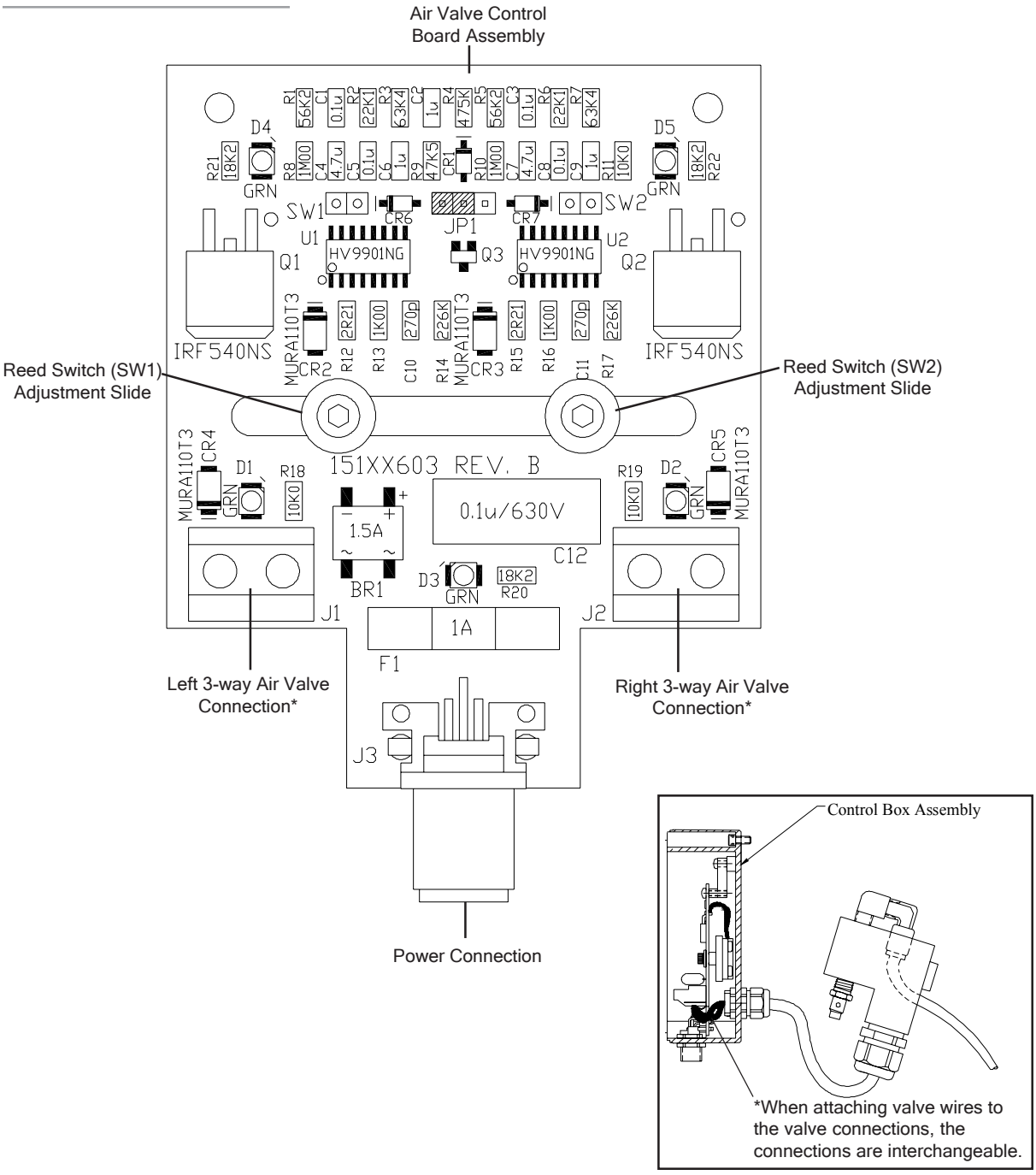


Figure 5-11 - PCB Board

Wiring the Control Box Assembly to the Valves

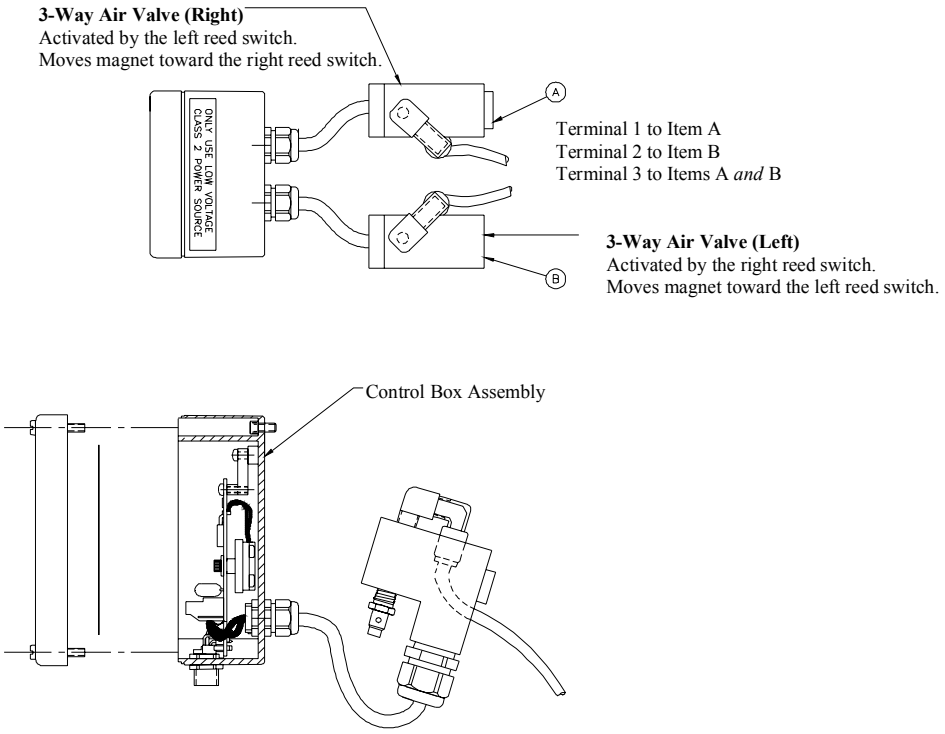


Figure 5-12 - Control Box Assembly

SECTION 6 - OPERATION

Operating the Pump

WARNING!

To avoid potential accidents, Valco Cincinnati recommends that the air supply and electric power be disconnected from the pump when your system is not in operation or is left unsupervised for an extended period of time. OTHERWISE, DEATH, PERSONAL INJURY OR DAMAGE TO EQUIPMENT COULD OCCUR.

To operate the pump, follow these steps:

1. Make sure the air filter/regulator pressure setting is zero psi:

   1a. Pull up on the regulator knob to unlock it.

   1b. Turn the regulator knob counterclockwise to reduce the air-pressure setting to zero.

2. Connect the electrical power.

3. Turn on the air supply to the pump.

4. Turn the regulator knob clockwise to slowly increase the air pressure to the desired flow rate.

For the most efficient operation, the air pressure should be adjusted to the lowest cycling rate that does not decrease flow rate. This may be the maximum flow rate for your particular service conditions.

The pump will not be damaged if operated dry or when the pump temporarily stops due to system requirement fulfillment. It will automatically begin to cycle when flow is needed.

During operation of the pump, you may notice that one solenoid becomes warm. This is a normal condition.

If the pump speeds up noticeably without a proportionate increase in flow as air pressure is increased, the pump may be beginning to cavitate. This can be caused by excessive restriction in suction lines, or the suction line diameter may need to be larger. If suction line checks out for size and tightness, cavitation can be stopped by turning the regulator knob counterclockwise to reduce air pressure.

SECTION 7 - MAINTENANCE

Cleaning the Exterior of the Pump

Caution!

Never hose or steam-clean the unit. If the surrounding area is cleaned in this manner, protect the unit by covering it with plastic or other waterproof material. OTHERWISE, EQUIPMENT DAMAGE COULD OCCUR.

Caution!

When cleaning the pump, keep the electrical control box enclosure closed. OTHERWISE, EQUIPMENT DAMAGE COULD OCCUR.

To clean the exterior of the pump, follow these steps:

1. Turn off the main power.
2. Using a damp cloth, clean the cabinet with a mild soap-and-water solution.

Shutdown Procedure

Warning!

There will be a small amount of system fluid remaining in the manifold and fluid chamber. This material will be released as the diaphragm assemblies or lower check valves are removed. Have rags on hand to facilitate cleanup, and take safety precautions if necessary when using hazardous fluids. OTHERWISE, DEATH OR PERSONAL INJURY COULD OCCUR.

To shut down the system, follow these steps:

1. Disconnect electrical power.
2. Disconnect air line from pressure regulator.
3. Depressurize pump discharge line if check valves or diaphragms are to be serviced.

Disassembly Procedure (DD-1 Pumps Manufactured after September 2006)

To disassemble DD-1 pumps manufactured before September 2006, please see manual MS005.

To disassemble pumps manufactured after September 2006, follow these steps:

1. Follow the shutdown procedure on page 7-1.
2. Remove the control box and the valve assembly from the pump body.

   The control box is mounted to the handle bracket with two screws. The valve assemblies are mounted to the manifold with quick-disconnect fittings.

3. Remove the magnetic element holder and the chain-link shaft coupler.
4. Remove the four bolts that pass through the frame lugs at the end of the housing.
5. Remove the diaphragm housing from the frame.
6. Remove the remaining two bolts in the diaphragm housing.
7. Open the housing.
8. Remove the diaphragm shaft assembly from the housing.

Disassembly Procedure for Check Valves

Teflon check valves (ball type) are standard on the DD-1 pump. Teflon is used with fluid viscosity of 1-2500 cps. Stainless check-balls, for viscosity greater than 2500 cps, are also available .

To disassemble the check valves, follow these steps:

Warning!

Discharge line must be depressurized before removing check-balls. Otherwise, personal injury and damage to equipment may result.

1. Follow the shutdown procedure on page 7-1.
2. Remove the cap and the cap O-ring.
3. Using a small screwdriver, remove the top and bottom check-balls.

   You may also turn the pump on its side and the balls will fall out.

4. Replace the old check-balls with new ones (see Parts List).
5. Replace the corner (see Parts List) if the check seat is damaged (see Figure 7-1).
6. Reassemble the cap and the cap O-ring.

Cleanup Procedure for Recirculating/Ink Pumps - Continued

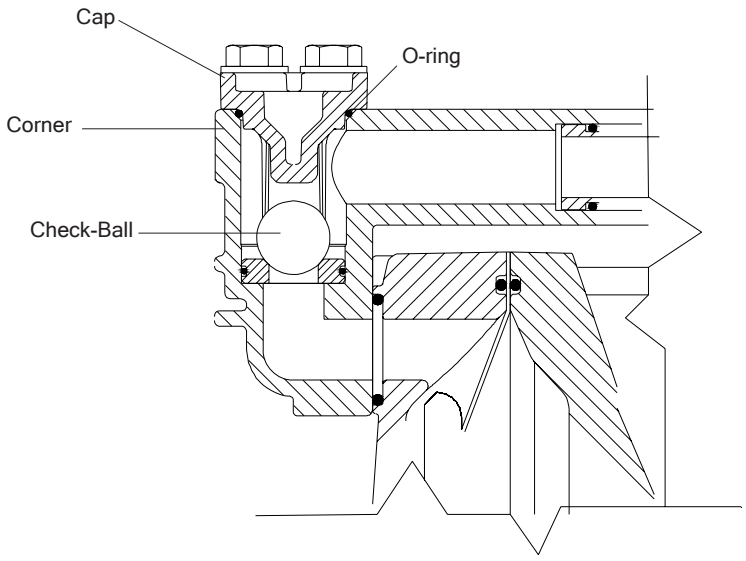


Figure 7-1 - Replace Check-Balls and/or Corners

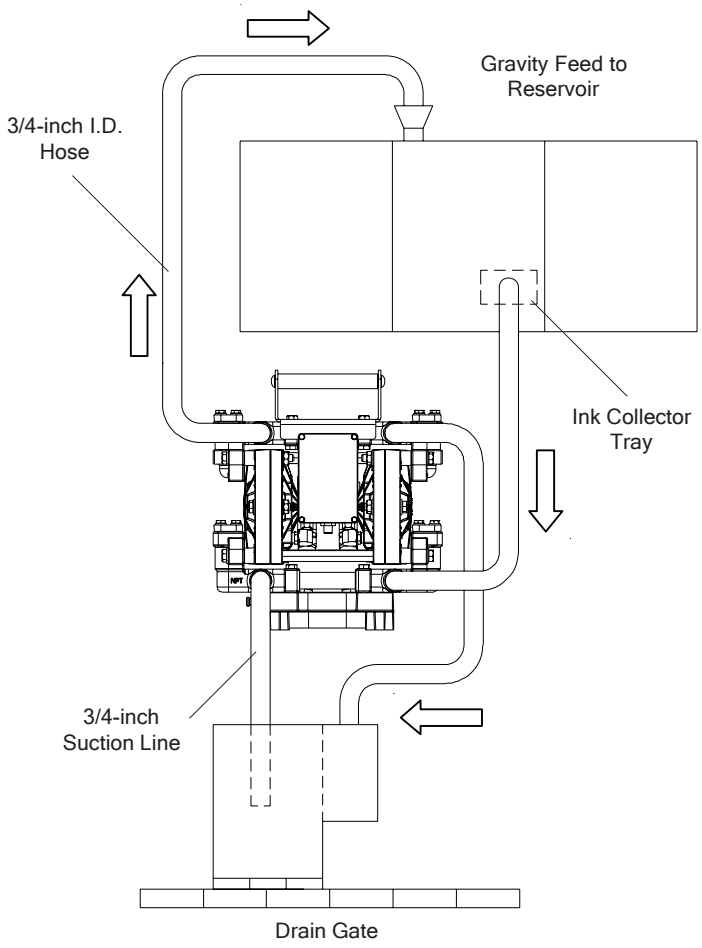


Figure 7-2 - Typical Pump Recirculating System (Dual Inlet/Outlet)

Cleaning the In-Line Filter

The in-line filter should be cleaned regularly. To clean the in-line filter, follow these steps:

1. Remove the filter cap.
2. Remove the filter screen.
3. Clean the filter screen with either a mild vinegar-and-water solution or a propane torch.

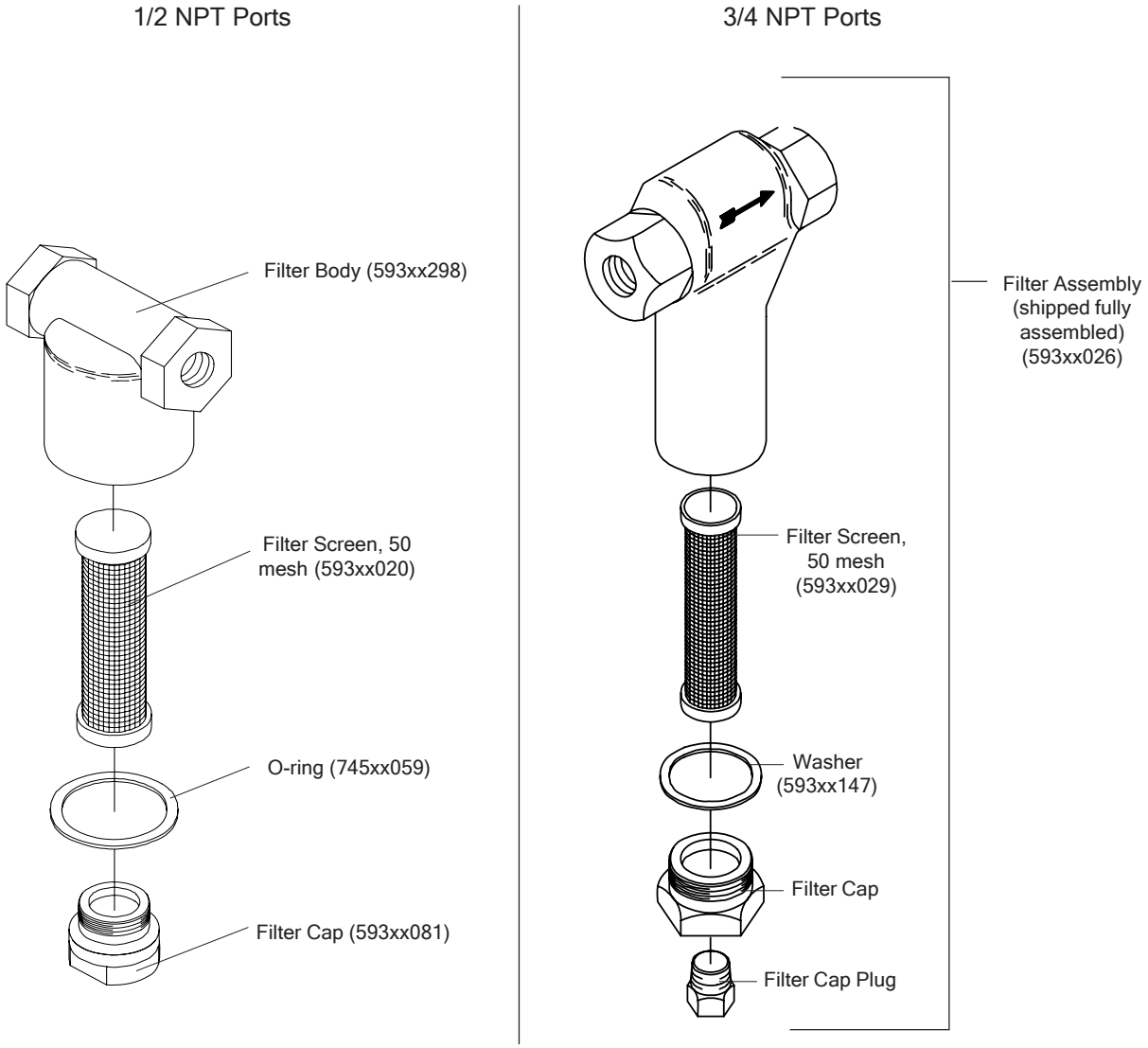


Figure 7-3 - In-Line Filters

SECTION 8 - TROUBLESHOOTING

Problem	Possible Cause	Possible Solution
1. Pump will not start	1a. Electrical:	
	-Power input LED out	1a. Check line fuse. Check plant power supply. Replace PC board/transformer assembly.
	-No electrical service	-Check plant power supply.
	-Service cable faulty	-Repair or replace service cable.
	-Line fuses out	-Replace line fuses.
	-Faulty 3-way solenoid	-Replace solenoid.
	-Faulty reed or hall-effect switches	-Test switches. Replace if needed.
	1b. Pneumatic:	
	-Regulator pressure gauge at zero	1b. Check plant air supply. Open master air valve. Turn regulator adjusting knob clockwise.
	-Regulator pressure gauge not at zero; solenoid valves not operating	-Check air lines to valves.
	1c. Mechanical:	
	-Pumped solidified fluid	1c. Check strainers and filters. -Service the suction and discharge lines. -Service the check valves. -Service the pump.
2. Fluid flow is not steady.	2a. Suction leakage	2a. Test and repair suction components.
	2b. One or more check valves not seating correctly	2b. Shut pump down and service the check valves.
	2c. Diaphragm failure	2c. Check 3-way exhaust for contamination with pumped fluid to determine which diaphragm has failed. Replace diaphragm(s).

Problem	Possible Cause	Possible Solution
3. Pump runs without flow.	3a. Suction leakage	3a. Test and repair suction components.
	3b. Blocked suction line	3b. Check and clean suction strainer if used. Check installation.
	3c. One or more check valves not seating	3c. Shut pump down and service check valves.
	3d. Diaphragm failure	3d. Replace diaphragm if necessary.
	3e. Pump is sucking in air	3e. Check all fittings. Use pipe sealant to seal fittings.
4. Pump speeds up noticeably without a proportionate increase in flow as air pressure is increased.	4a. The pump may be beginning to cavitate due to excessive restriction in suction lines or insufficient suction-line diameter.	4a. If suction line checks out for size and tightness, cavitation can be stopped by turning the regulator knob counterclockwise to reduce air pressure..

SECTION 9 - SPECIFICATIONS

Technical Information Charts

Specifications

Air Inlet:	¼-inch NPT
Inlet:	One ½-inch NPT and one ½-inch BSPP
Outlet:	One ½-inch NPT and one ½-inch BSPP
Suction Lift:	18 feet (5.5 m)
Power Requirements- With Remote Power Supply Box (036xx175):	100/120 VAC, 1-amp, single-phase with ground; 100/200 VAC, 1-amp, single-phase with ground; 200/240 VAC, 1-amp, single-phase with ground
Power Requirements- From Valco Control or other power source:	24 VDC, 1-amp; 24 VAC, 1-amp
Air Requirements:	Filtered and regulated shop air, 100 psi maximum

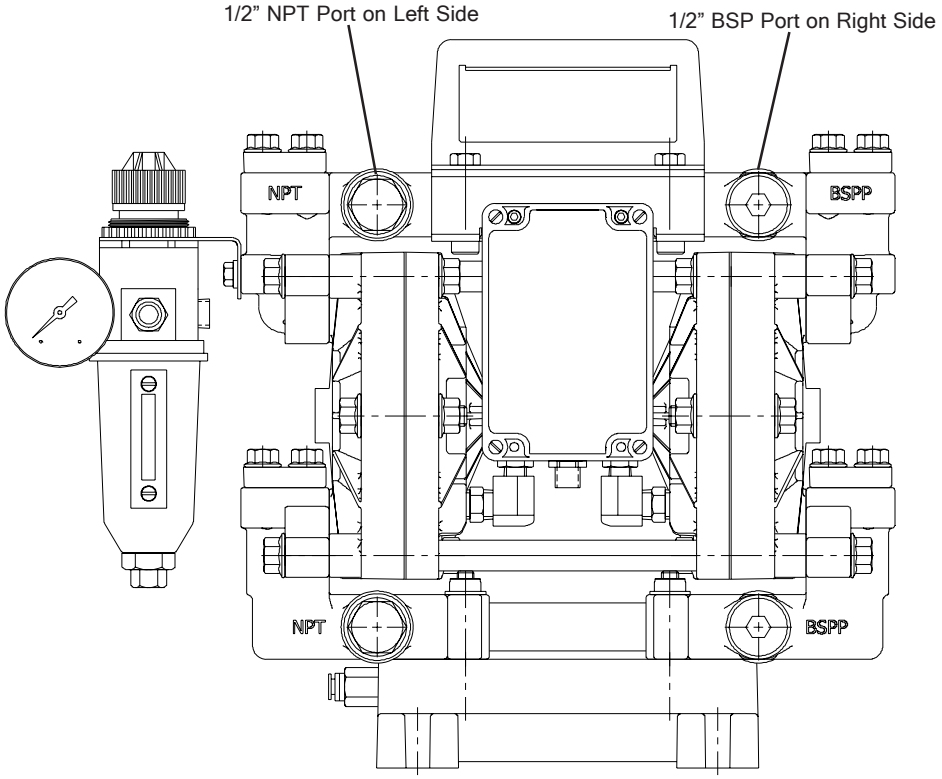
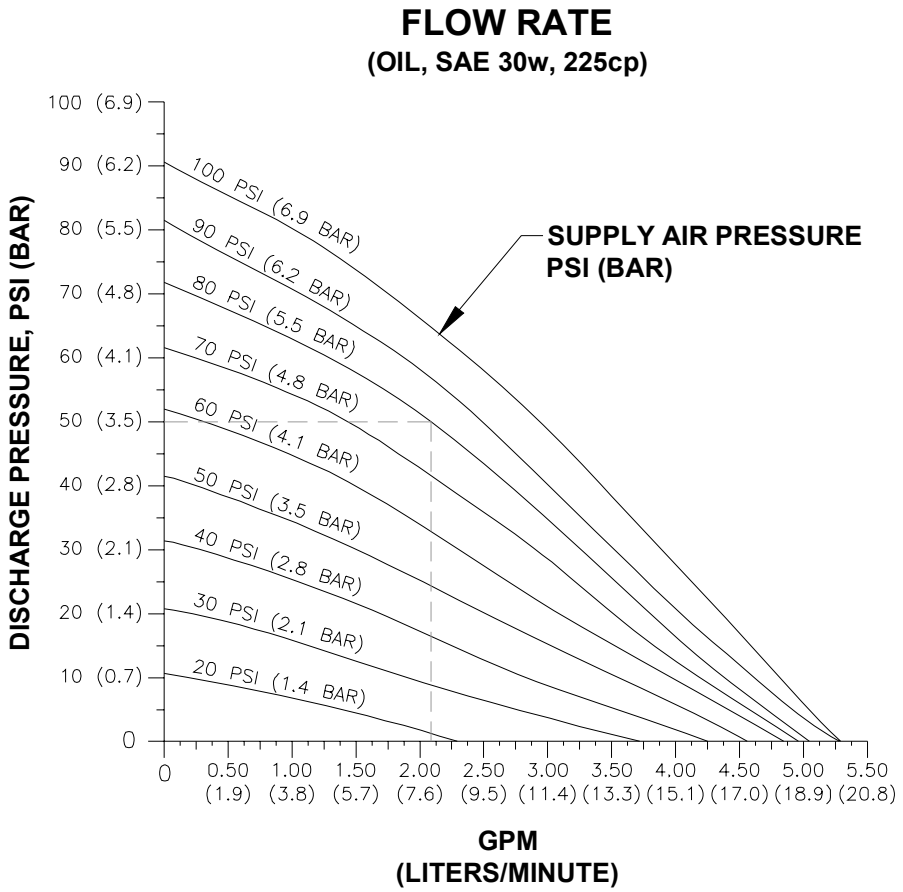


Figure 9-1 - DD-1 Inlet and Outlet Ports

Flow Rate

To determine the discharge pressure and flow rate, do the following:

1. Select the desired discharge pressure for pump operation. For this example, we will use 50 psi (located on the “Discharge Pressure” axis).
2. Select the supplied air pressure value. For this example, we will use 80 psi (located on the “Supply Air Pressure” curve).
3. Project a horizontal line from 50 psi on the “Discharge Pressure” axis to the 80 psi “Supply Air Pressure” curve.
4. Project a line downward from this intersection until it intersects the “GPM” axis. The flow rate is found at this intersection as 2.1 gallons/minute or 7.9 liters/minute.
5. Go to the “Viscosity Correction Chart” in this section to correct the flow data according to the viscosity of the adhesive being used.



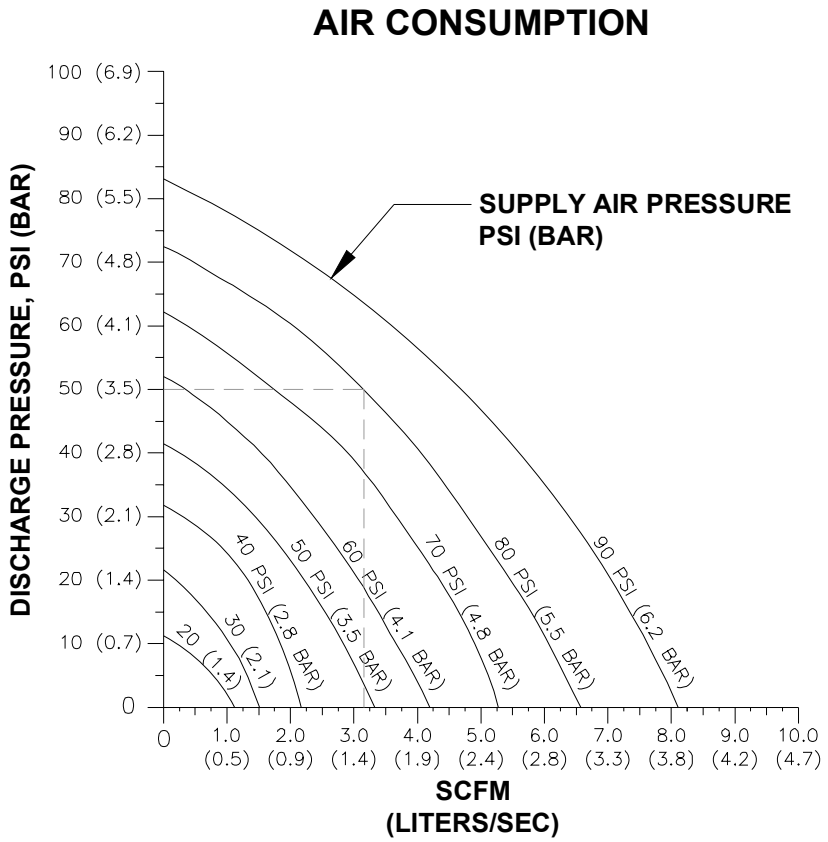
Air Consumption

To determine air consumption, do the following:

1. Using the 50 psi found in Step 1 of the previous Flow Rate subsection, project a horizontal line from 50 psi on the “Discharge Pressure” axis to the 80 psi “Supply Air Pressure” curve.

2. Project a vertical line downward from this intersection until it intersects the “SCFM” axis.

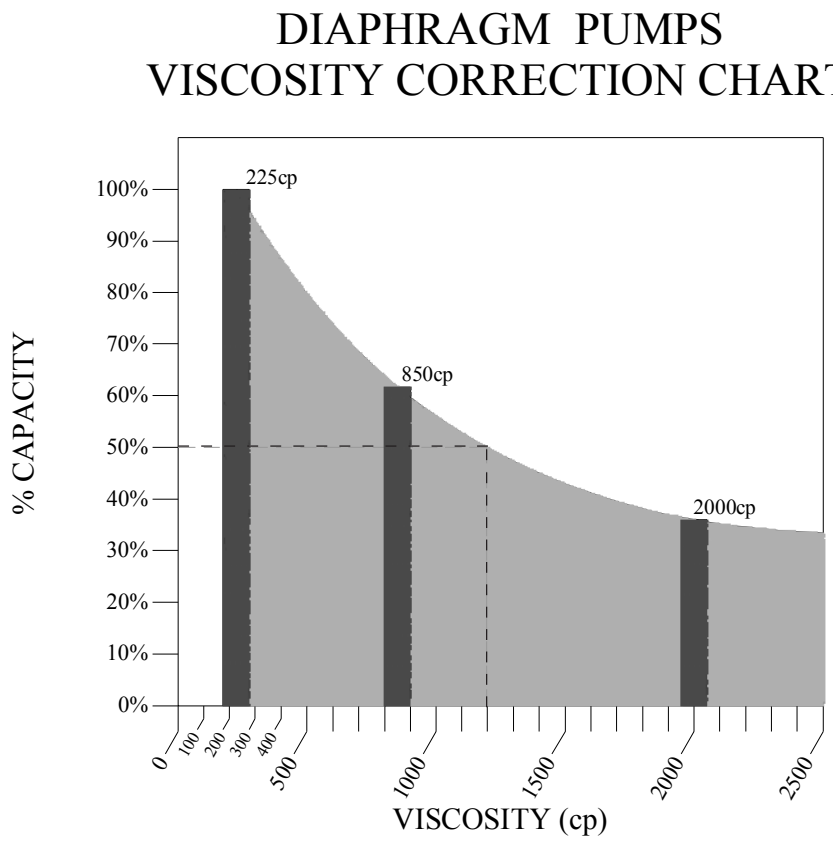
3. Read the air consumption from the “SCFM” axis: 3.25 standard cubic feet/minute or 1.5 liters/second.



Viscosity Correction

To accurately predict flow according to viscosity, do the following:

1. Find the viscosity for the adhesive being used on the “Viscosity” axis. For this example, use 1200 centipoise.
2. Project a vertical line upward until it intersects the curve.
3. Project a horizontal line from this intersection to the “Capacity” axis.
4. Read the percent of flow reduction off of the “Capacity” axis (50%).
5. In the example used, the flow would be corrected from 2.1 gallons/minute (8.1 liters/minute) to 1.05 gallons/minute (4.05 liters/minute).



SECTION 10 - PART NUMBER LIST

How to Order Parts

To order parts, please contact your closest Valco office by mail, phone, or Email:

USA:

Valco Cincinnati, Inc.
497 Circle Freeway Drive
Suite 490
Cincinnati, OH 45246
Tel: (513) 874-6550
Fax: (513) 874-3612
Email: sales@valcomelton.com
Web: http://www.valcocincinnatiinc.com

England:

Valco Cincinnati Limited
Hortonwood 32
Telford, TFI 7YN, England
Tel: (+44) 1952-677911
Fax: (+44) 1952-677945
Email: sales@valco.co.uk
Web: http://www.valco.co.uk

Germany:

Valco Cincinnati GmbH
Bonnerstrasse 349
40589 Dusseldorf-Benrath, Germany
Tel: +49 211 984 798-0
Fax: +49 211 984 798-20

Spain:

Melton S.L.U.
Pol. Industrial Agustinos
calle G, n. 34
31160 Orcoyen, Navarra, Spain
Tel: (34) 948-321-580
Fax: (34) 948-326-584

France:

Valco Melton France
Technoparc des Hautes Faventines
32 Rue Jean Bertin
26000 Valence
Tel: +33 (0)4 75 78 13 73
Fax: +33 (0)4 75 55 74 20

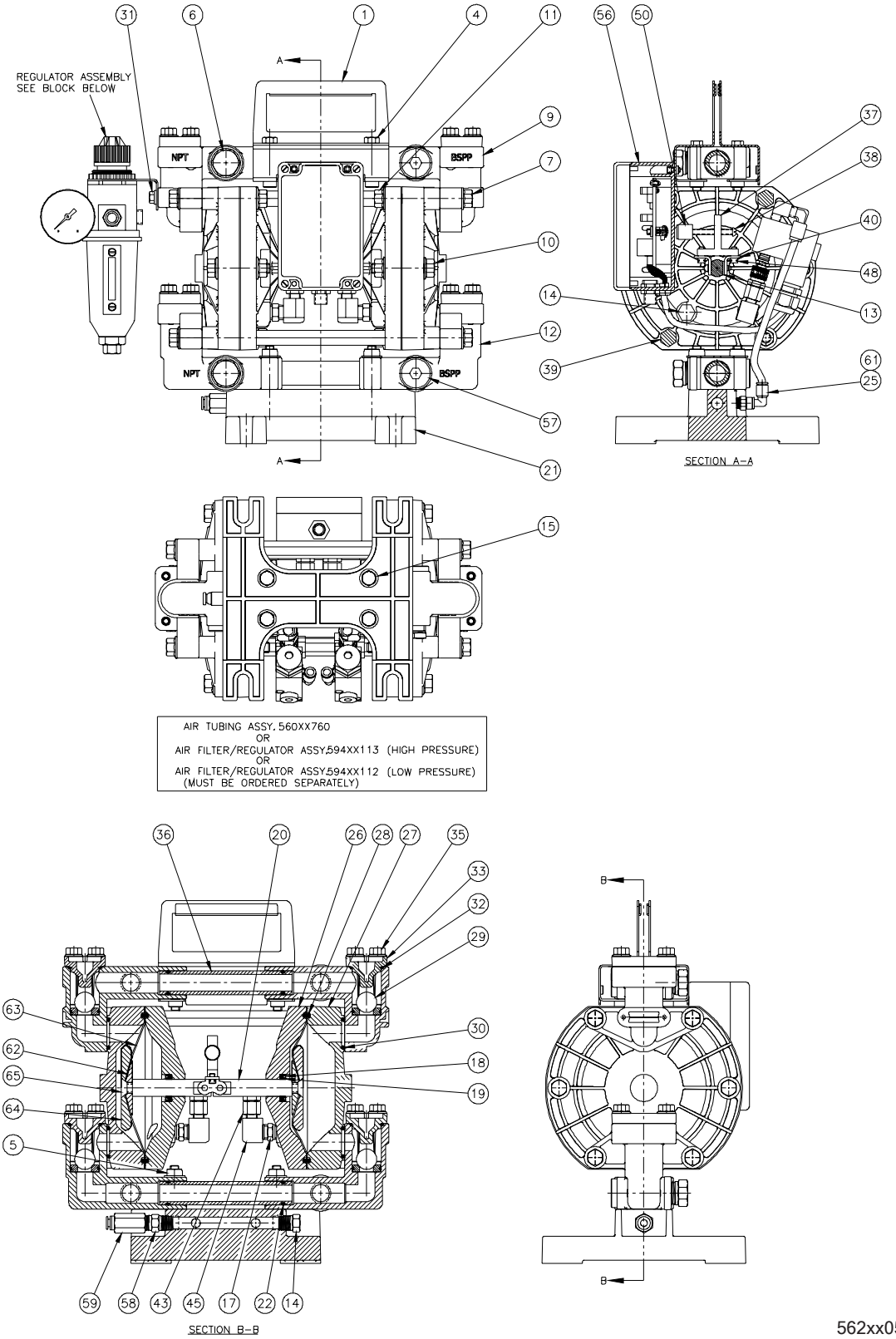
Pump Assemblies

Description	Part Number
DD-1 pump: Teflon diaphragms and check valves, single inlet/single outlet	562xx050
DD-1 pump: Teflon diaphragms, stainless-steel check valves	562xx051
DD-1 pump: EPDM diaphragms, Teflon check valves, dual outlet	562xx052
DD-1 pump: Teflon diaphragms and check valves, dual inlet/dual outlet	562xx053

Pump Kits

Kit Part #	Includes
562xx024	DD-1 pump assembly, Teflon diaphragm, stainless steel check valves—562xx051 DD-1 transformer assembly—036xx175 Power plug, 16A, 250V—061xx170
562xx030	DD-1 ink pump assembly, Teflon diaphragm, Teflon check valves, dual outlet—562xx053 Cable assembly, valve, 33-ft.—030xx738
562xx031	DD-1 ink pump assembly, Teflon diaphragm, Teflon check valves, dual outlet—562xx053 DD-1 transformer assembly—036xx175 Cable assembly, extension, 15-ft.—030xx594
562xx032	DD-1 glue pump, Teflon diaphragms and check valves, single inlet/single outlet—562xx050 Cable assembly, valve, 33-ft.—030xx738
562xx033	DD-1 pump assembly, Teflon diaphragms and check valves, single inlet/single outlet—562xx050 DD-1 transformer assembly—036xx175
562xx034	DD-1 pump assembly, EPDM diaphragms, Teflon check valves, dual outlet—562xx052 Cable assembly, valve, 33-ft.—030xx738
562xx035	DD-1 pump assembly, EPDM diaphragms, Teflon check valves, dual outlet —562xx052 DD-1 transformer assembly—036xx175
562xx036	DD-1 pump assembly, Teflon diaphragms, stainless-steel check valves—562xx051 Cable assembly, valve, 33-ft.—030xx738
562xx037	DD-1 pump assembly, Teflon diaphragms, stainless-steel check valves—562xx051 DD-1 transformer assembly—036xx175

Pump Parts



562xx050.dwg

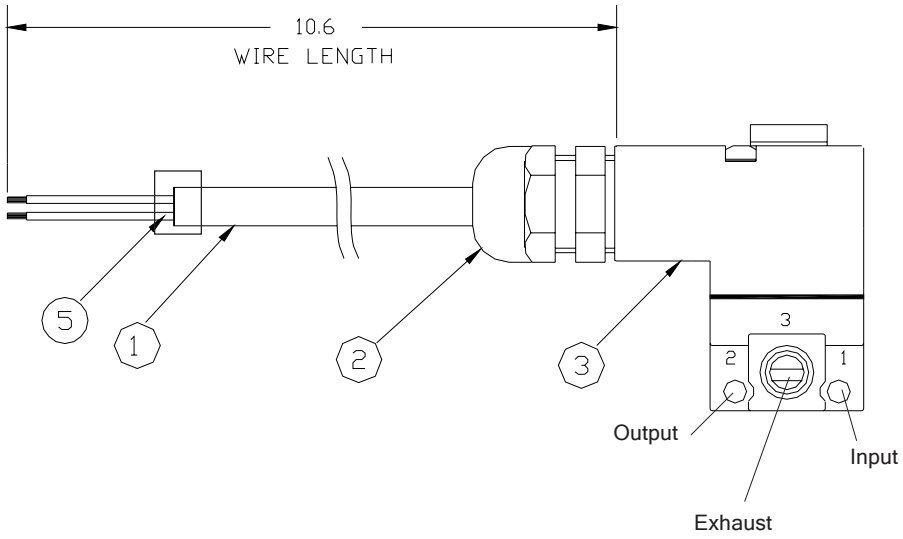
Pump Parts - Continued

Item Number	Description	Part Number	QTY
1	HANDLE DD-1 PUMP	583XX633	2
4	SCREW	798XX620	4
5	NUT BAR DD-1 PUMP	884XX430	2
6	HEX HEAD PIPE PLUG	797XX040	4
7	SCREW,HEX FLANGE	784XX955	8
9	CORNER-TOP DD-1 PUMP	561XX160	2
10	SCREW,HEX FLANGE	784XX956	4
11	NUT,FLANGE	798XX719	8
12	CORNER-BOTTOM DD-1 PUMP	561XX159	2
13	FLAT WASHER	798XX756	1
14	HEX HEAD PIPE PLUG	797XX038	3
15	SCREW	798XX629	4
17	BUSHING	797XX045	2
18	RETAINING RING	793XX058	2
19	SEAL	745XX820	2
20	SHAFT	791XX045	2
21	BASE-MOUNTING,DD-1 PUMP	561XX161	1
22	O-RING	745XX035	4
25	MALE CONNECTOR	799XX661	2
26	CHAMBER-AIR;DD-1 PUMP	561XX163	2
27	CHAMBER-FLUID;DD-1 PUMP	561XX164	2
28	O-RING	745XX099	4
29	BALL, TEFLON (FOR 562XX050; 562XX052; 562XX053)	560XX410	4
	BALL, S.S. (FOR 562XX051)	560XX961	4
30	O-RING	745XX082	4
31	SCREW	784XX933	2
32	O-RING	745XX319	4
33	CAP-CORNER;DD-1 PUMP	561XX162	4
35	SCREW	784XX560	16
36	MANIFOLD CONNECTOR PIPE (FOR 562XX050; 562XX051)	560XX562	2
	MANIFOLD SUPPORT BAR (FOR 562XX052; 562XX053)	560XX563	2
37	BRACKET, MAGNET	581XX107	1

Pump Parts - Continued

Item Number	Description	Part Number	QTY
38	SCREW	798XX429	1
39	SUPPORT BAR	580XX633	2
40	LINK	788XX499	1
43	SWIVEL FTG. - FEMALE	750XX001	2
45	STREET ELBOW	797XX005	2
48	SCREW	798XX085	2
50	MAGNET & HOLDER ASSY.	560XX761	1
56	CONTROL BOX;DD-1,24VDC/AC	098XX087	1
57	PLUG	799XX850	4
58	HEX NIPPLE	797XX080	1
59	FITTING-TUBE	799XX616	1
60	MANUAL-DD-1 PUMPS ON CD	MS013CD	1
61	FITTING,ELBOW ADAPTER	799XX640	2
62	DIAPHRAGM PLATE	560XX556	2
63	DIAPHRAGM (FOR 562XX050; 562XX051; 562XX053)	560XX625	2
	DIAPHRAGM (FOR 562XX052)	560XX425	2
64	DIAPHRAGM PLATE	560XX555	2
65	SCREW	798XX919	2

24VDC Air Valve Assembly (411xx434)

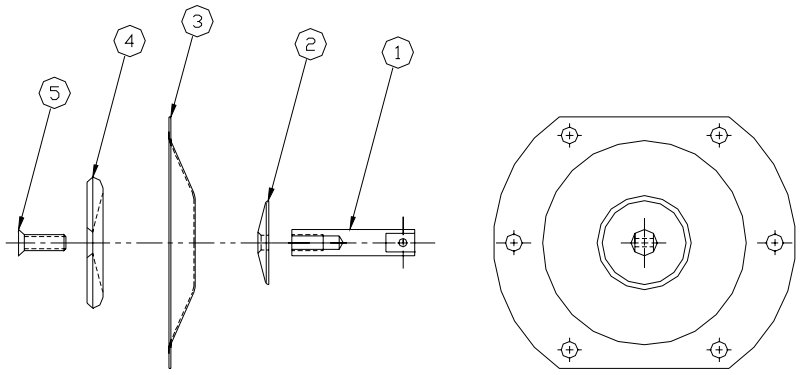


Push insulation tubing over the wires and up to the rubber grommet inside the valves's housing.

Strip the end of each wire 0.16" (4 mm) from the end and solder. Do not solder the wires together.

Item Number	Part Number	Description
1	755xx029	Tubing
2	066xx003	Cord grip
3	411xx066	Air valve
4 (not shown)	781xx035	Label, Caution
5	094xx004	Tubing

Diaphragm Shaft Assemblies



Teflon/Stainless Steel (560xx554)

Item Number	Part Number	Description
1	791xx045	Shaft
2	560xx556	Diaphragm plate
3	560xx625	Diaphragm
4	560xx555	Diaphragm plate
5	798xx919	Diaphragm retainer screw

EPDM/Stainless Steel (560xx633)

Item Number	Part Number	Description
1	791xx045	Shaft
2	560xx556	Diaphragm plate
3	560xx425	Diaphragm
4	560xx555	Diaphragm plate
5	798xx919	Diaphragm retainer screw

Pump Seal Kits

Seal Kit (561xx174) for Teflon Check Valves, EPDM Diaphragms

Seal Kit 561xx174 is used to rebuild pump 562xx052.

Part Number	Description	Quantity
745xx820	Shaft seal, Viton	2
793xx058	Retaining ring, shaft seal	2
560xx425	Diaphragm, EPDM	2
745xx099	O-ring, nitrile, for diaphragm chamber	4
560xx410	Teflon ball	4
745xx319	O-ring, Viton, for end cap	4
745xx035	O-ring, Viton, for manifold/connector pipe seal	4
745xx082	O-ring, Viton, for manifold/diaphragm chamber seal	4

Seal Kit (561xx170) for Adhesive Containing Ethyl Acetate

Seal Kit 561xx170 is used to rebuild the pump being used with adhesive containing Ethyl Acetate.

Part Number	Description	Quantity
745xx820	Shaft seal, Viton	2
793xx058	Retaining ring, shaft seal	2
560xx625	Diaphragm, Teflon	2
746xx196	*O-ring, EPDM, for diaphragm chamber	4
560xx410	Teflon ball	4
745xx142	O-ring, EPDM, for end cap	4
745xx335	O-ring, EPDM, for manifold/connector pipe seal	4
745xx333	O-ring, EPDM, for manifold/diaphragm chamber seal	4

* REF: BAW2324

Seal Kit (561xx171) for Teflon Check Valves; Solenoid and Fuse Pack Included

Seal Kit 561xx171 is used to rebuild pumps 562xx050 and 562xx053.

Part Number	Description	Quantity
745xx820	Shaft seal, Viton	2
793xx058	Retaining ring, shaft seal	2
560xx625	Diaphragm, Teflon	2
745xx099	O-ring, nitrile, for diaphragm chamber	4
560xx410	Teflon ball	4
745xx319	O-ring, Viton, for end cap	4
745xx082	O-ring, Viton, for manifold/diaphragm chamber seal	4
745xx035	O-ring, Viton, for manifold/connector pipe seal	4
411xx066	Solenoid valve	1
085xx255	Fuse, pack of 5	1

Seal Kit (561xx172) for Teflon Check Valves

Seal Kit 561xx172 is used to rebuild pumps 562xx050 and 562xx053.

Part Number	Description	Quantity
745xx820	Shaft seal, Viton	2
793xx058	Retaining ring, shaft seal	2
560xx625	Diaphragm, Teflon	2
745xx099	O-ring, nitrile, for diaphragm chamber	4
560xx410	Teflon ball	4
745xx319	O-ring, Viton, for end cap	4
745xx082	O-ring, Viton, for manifold/diaphragm chamber seal	4
745xx035	O-ring, Viton, for manifold/connector pipe seal	4

Seal Kit (561xx173) for Stainless Steel Check Valves, Teflon Diaphragms

Seal Kit 561xx173 is used to rebuild pump 562xx051.

Part Number	Description	Quantity
745xx820	Shaft seal, Viton	2
793xx058	Retaining ring, shaft seal	2
560xx625	Diaphragm, Teflon	2
745xx099	O-ring, nitrile, for diaphragm chamber	4
560xx961	Stainless steel ball	4
745xx319	O-ring, Viton, for end cap	4
745xx082	O-ring, Viton, for manifold/diaphragm chamber seal	4
745xx035	O-ring, Viton, for manifold/connector pipe seal	4

Seal Kit (561xx202) for Stainless Steel Check Valve for Pumps used with Ethyl Acetate*

Part Number	Description	Quantity
745xx820	Seal	2
793xx058	Retaining ring	2
560xx625	Diaphragm	2
746xx196	O-ring, nitrile, for diaphragm chamber	4
560xx961	Ball, Teflon	4
746xx142	O-ring	4
745xx333	O-ring	4
745xx335	O-ring	4
999xB561-12	Illus. Dwg., Seal Kit, DD1 Pump	1

*REF: BAW2325

Pump Support Equipment

Pump Support Equipment Kit (560xx768)

Part Number	Description	Quantity
580xx941	Support bracket, filter	1
594xx113	Air filter regulator assembly	1
703xx334	Ball valve	1
755xx012	Input air hose	1
799xx104	½-inch x ½ NPT swivel fitting	2
755xx522	Tubing, PVC	120
795xx883	Clamp	2
797xx054	Bushing, M-F ¾ x ½	2
797xx821	Adapter, barb, ½ NPT x ¾ inch	2

Pump Support Equipment Kit (560xx806)

Part Number	Description	Quantity
755xx012	Input air hose	1
755xx234	Hose, 10 ft. (3 m)	1
799xx104	½ NPT fittings	2
594xx113	Air regulator assembly	1
703xx334	Ball Valve (for 3-way assembly)	1
580xx941	Filter support bracket	1

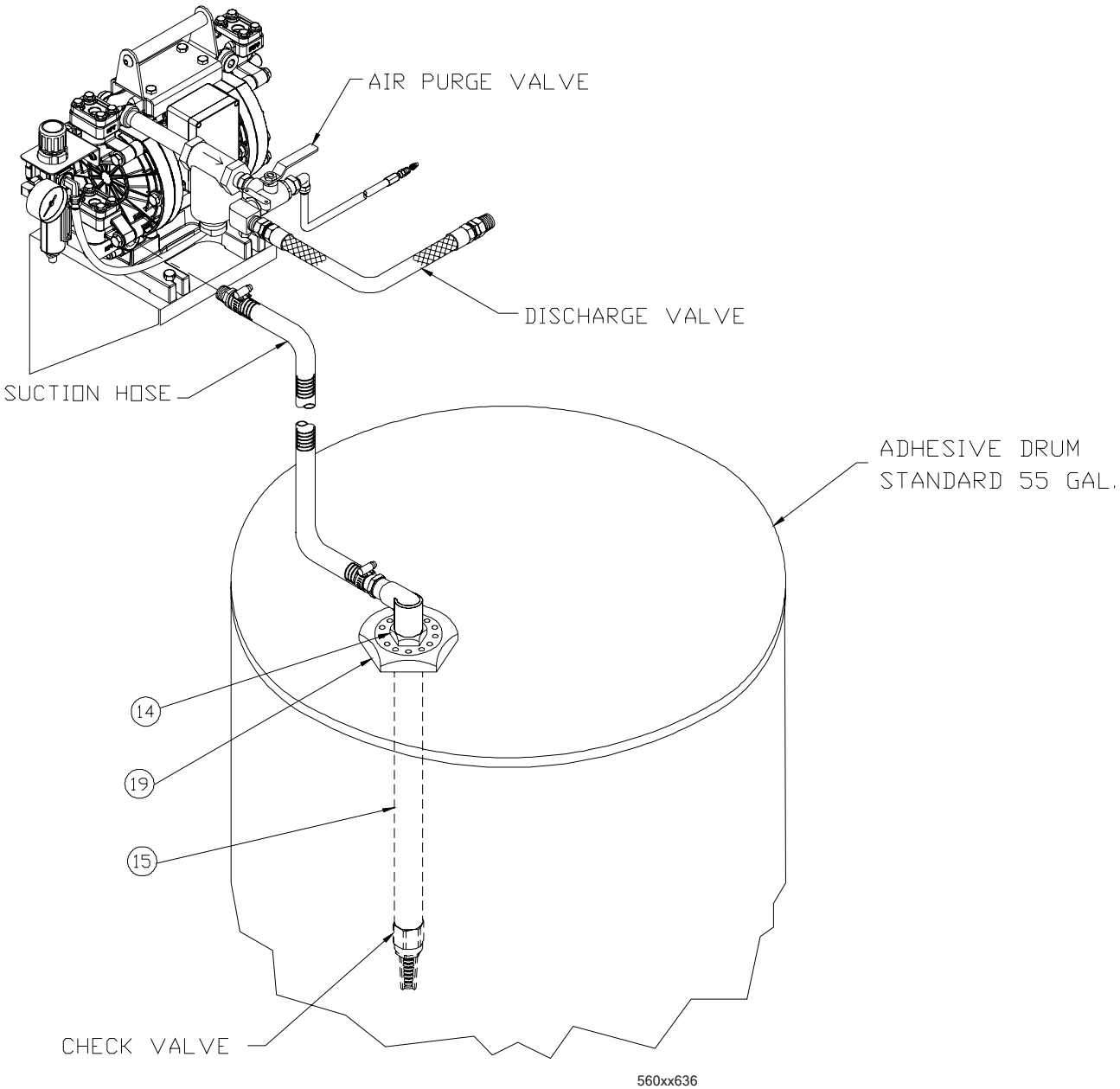
Pump Support Equipment Kit - Suction Tube With Check Valve (561xx078)

Part Number	Description	Quantity
794xx538	Tube support bushing	1
794xx536	Bushing 2 NPT x 1 NPT	1
797xx821	Adapter, barb, ½ NPT x ¾ NPT	2
795xx883	Clamp	2
755xx522	Tubing, PVC	21.5
561xx075	Suction tube, drum mount with check valve	1

Pump Support Equipment Kit - Suction Tube Without Check Valve (560xx638)

Part Number	Description	Quantity
794xx538	Tube support bushing	1
794xx536	Bushing 2 NPT x 1 NPT	1
797xx821	Adapter, barb, ½ NPT x ¾ NPT	2
795xx883	Clamp	2
755xx522	Tubing, PVC	21.5
560xx838	Drum tube assembly	1

Suction Tube Conversion Kits



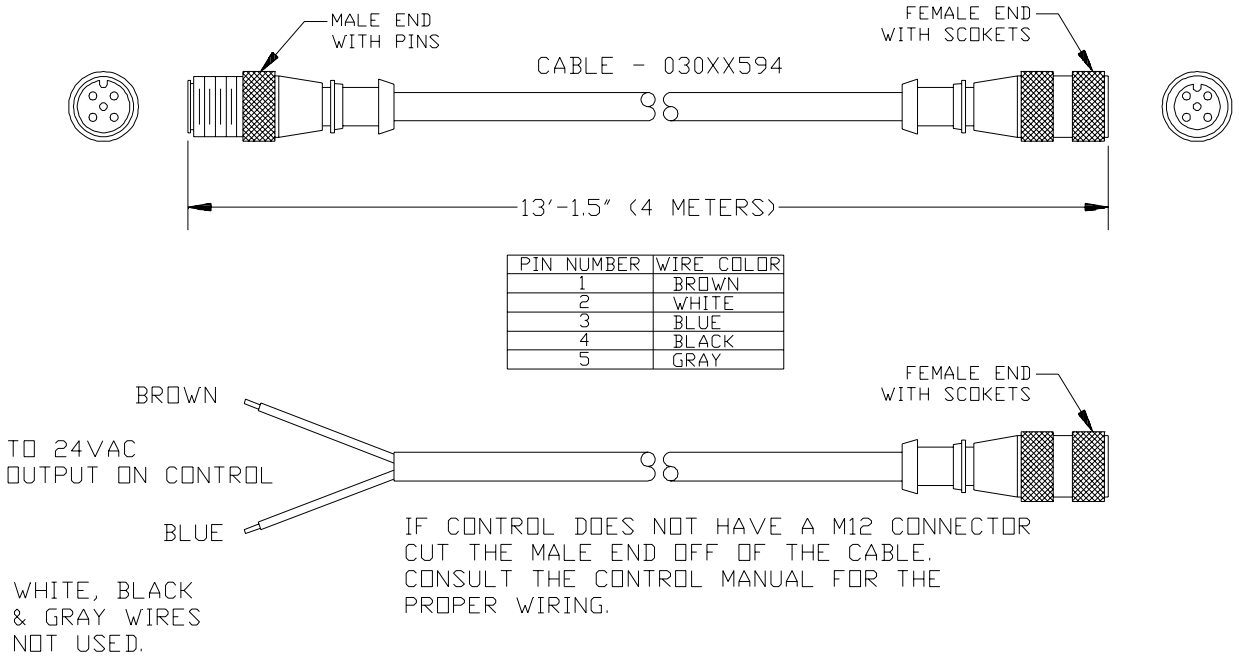
Suction Tube Conversion Kit - With Check Valve (561xx079)

Part Number	Description	Quantity
794xx538	Tube support bushing	1
794xx536	Bushing 2 NPT x 1 NPT	1
560xx075	Drum tube assembly with check valve	1
794xx038	Plug (not shown)	1

Suction Tube Conversion Kit - Without Check Valve (560xx636)

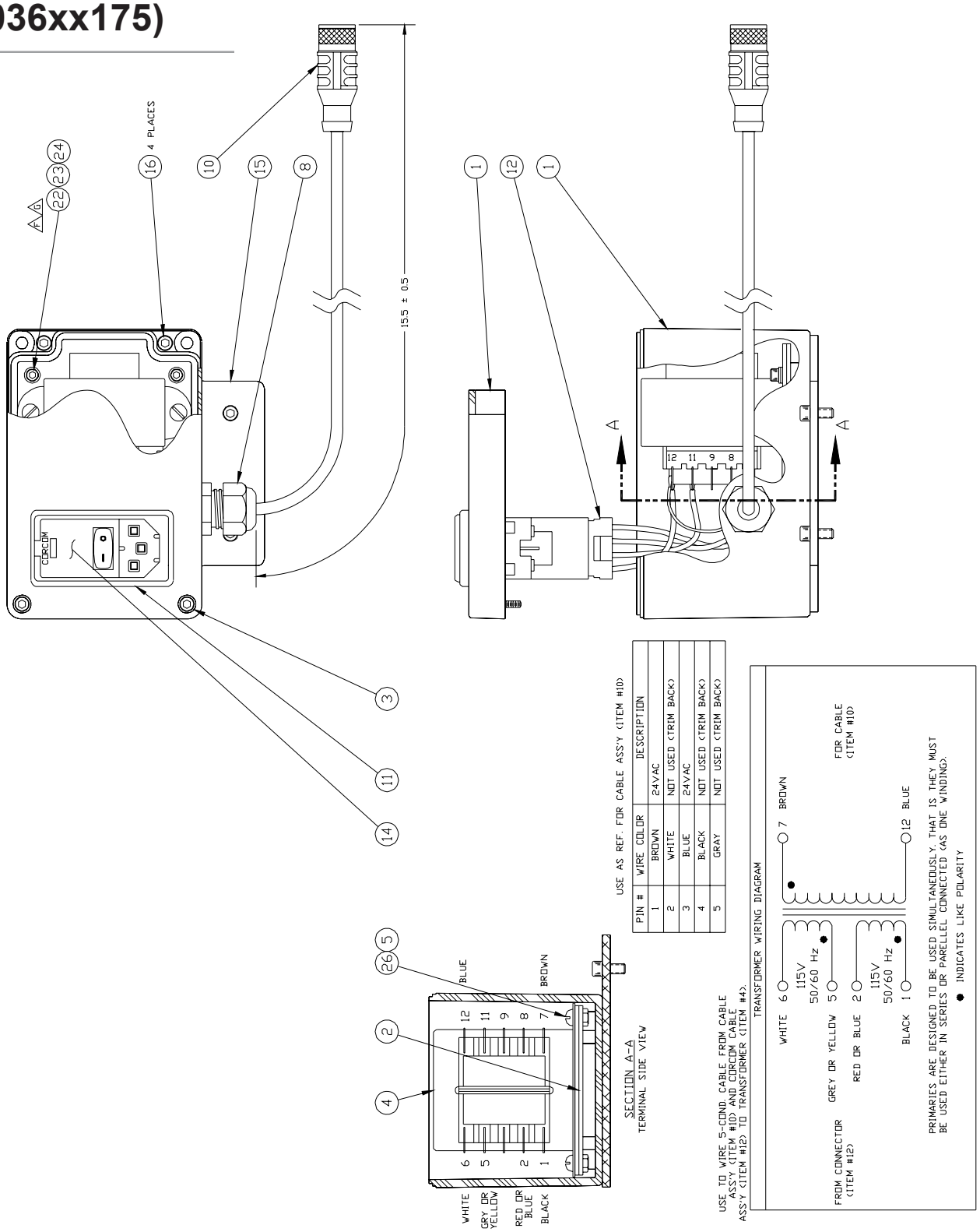
Part Number	Description	Quantity
794xx538	Tube support bushing	1
794xx536	Bushing 2 NPT x 1 NPT	1
560xx838	Drum tube assembly	1
794xx038	Plug (not shown)	1

Power Supply Cables



Part Number	Description
030xx594	13-foot (4.0 m) connector cable, M12 5-pin connector both ends
030xx604	20-foot (6.0 m) (field-wireable)
030xx604	20-foot (6.0 m) connector cable (field-wireable)
030xx596	33-foot (10.0 m) connector cable (field-wireable)
030xx738	33-foot (10.0 m) connector cable M12 5-pin connector both ends—**STANDARD CABLE**
030xx739	50-foot (15.0 m) connector cable M12 5-pin connector both ends
030xx740	66-foot (120.0 m) connector cable M12 5-pin connector both ends

Transformer (036xx175)



Transformer (036xx175) - Continued

Item	Description	Part Number	Quantity
1	Enclosure; Trans. Assy.	025XX664	1
2	Plate; Mounting	025XX665	1
3	Shcs M4 X 25 Ss	784XX108	4
4	*Transformer; Dual, 24v	550XX089	1
5	Sphs #8-32 X 3/8	798XX460	2
8	Cord Grip, 4-8mm, Gray	066XX141	1
10	Cable Assy; M12 Female, 0.5m	030XX629	1
11	*Power Entry Module	086XX055	1
12	*Cable Assy, 4 Wire, Corcom	030XX425	1
14	*Fuse, 1 Amp Slo-Blo	085XX001	1
15	Bracket; Transf.	581XX389	1
16	Shcs #8-32 X 3/8 Ss	798XX029	4
22	Flat Washer #4 Zinc	798XX750	4
23	Lock Washer #4 Zinc	798XX727	4
24	Phms M3 X 8 Zinc	784XX259	4
25	Install Kit, Xfmr, Dd-1	781XX204	1
26	Kep Nut #8-32 Zinc	784XX319	2
27	*Tubing	094XX001	2

Control Box

Part Number	Description
098xx087	Reed control box 24VDC

Miscellaneous

Part Number	Description
560xx588	Drum cover for 55-gallon drum
558xx855	Pail lid for DD-1 pump with LLD
560xx813	Pail lid for DD-1 pump
560xx589	Wall mount bracket
594xx113	Air filter for DD-1 pump, 0-160 psi, 1 outlet
036xx175	Remote transformer (optional)
755xx012	10-ft. air supply hose with disconnect

SECTION 11 - WARRANTY

General Warranty Information

Valco Cincinnati, Inc. warrants its equipment worldwide against defects in material and workmanship as outlined in this section.

Liability of the company is limited to repair of the product, or replacement of any part shown to be defective, and does not extend to defects caused by accidents, misuse, abuse, neglect, tampering or deterioration by corrosion. This warranty does not cover those items determined by Valco Cincinnati, Inc. to be normal wear items such as seals, O-rings, diaphragms, springs, etc.

Reconditioned equipment, unless specified otherwise at the time of purchase, will be warranted as described above for a period of ninety (90) days from the date of shipment by Valco Cincinnati.

Components purchased by Valco Cincinnati, Inc. from others for inclusion in its products are warranted only to the extent of the original manufacturer's warranty. In no event shall Valco Cincinnati, Inc. be liable for indirect or consequential damages arising out of the use of Valco Cincinnati products.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to Valco Cincinnati, Inc. for examination and verification. If claimed defect is verified, repairs or replacements will be made F.O.B. Cincinnati, Ohio, U.S.A. or ex-works Telford, U.K. If the inspection of the equipment does ***not*** disclose any defect of workmanship or material, any necessary repairs will be made at a reasonable charge and return transportation will be charged.

This is the only authorized Valco Cincinnati, Inc. warranty and is in lieu of all other expressed or implied warranties, representations or any other obligations on the part of Valco Cincinnati, Inc.

Cold Glue Equipment and Electronic Controls

The warranty for cold glue equipment and electronic controls is for a period of one (1) year from the date of shipment by Valco Cincinnati.

Hot-Melt Units, Hoses, Valves, Guns, and Related Equipment

All hot-melt components except cast-in heating elements are warranted for a period of six (6) months from the date of shipment by Valco Cincinnati. Cast-in heaters carry an additional, pro-rated warranty not to exceed three (3) years from the date of shipment by Valco Cincinnati.

DD-1 Pump Exclusions

Valco Cincinnati is not responsible for the following:

- Overpressurization
- Modification of parts
- Using damaged or excessively worn parts
- Unauthorized/improper service
- Improper installation
- Improper use of unauthorized and/or hazardous fluids
- Use of incompatible fluids

SECTION 12 - SERVICE

If you experience a problem with the DD-1 pump, consult the Troubleshooting Section.

If a problem with your system persists, contact a Valco Cincinnati Technical Support representative. If your need is urgent, we encourage you to contact our corporate office in Cincinnati, Ohio, U.S.A. at (513) 874-6550. If the problem cannot be resolved, Valco Cincinnati will promptly arrange to have a technical representative visit your facility. Any charges for a service call will be quoted at that time. Any part that fails during the warranty period shall be returned prepaid to Valco Cincinnati, Inc. by the customer for disposition.

Upon request, Valco personnel are available to repair or replace such parts at the customer's facility. Charges for this service include travel time and expenses.

If an equipment problem is the result of customer abuse, improper installation or operation, all travel time, labor, parts, and expenses will be charged to the customer.

If the responsibility for a problem cannot be absolutely determined, the customer will be charged for travel time and expenses only. No charge will be made for parts and labor.