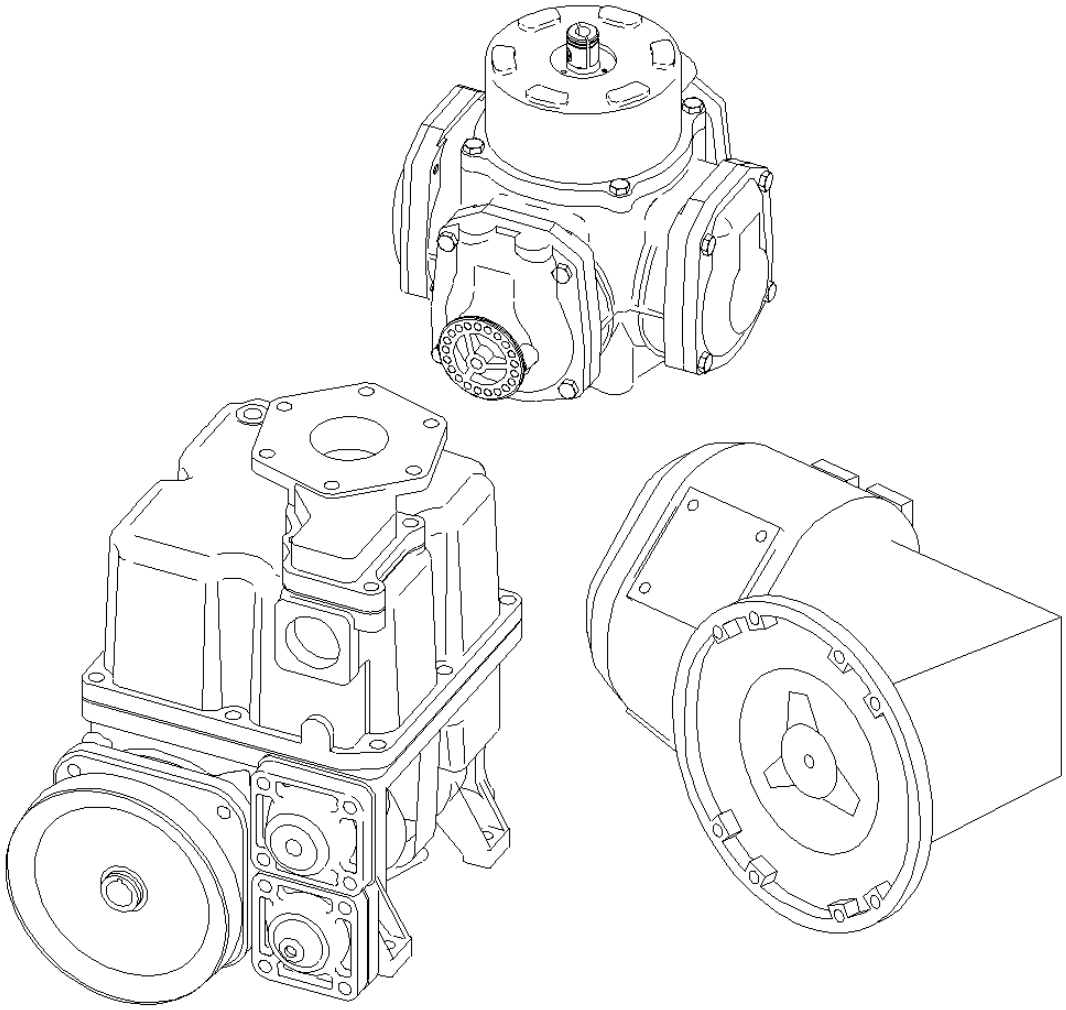
Bennett Pump Company

Mechanical & Hydraulic Service Manual



READ THIS BOOK
This book has important information for safe installation and operation of this equipment. Read and understand this book before applying power. Keep this book and tell all service personnel to read this book. If these instructions are not followed, bodily injury, death, or damage to the equipment
may occur.

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BENNETT MARKETING SERVICES
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SPL1083.3 Rev D 01/06

Bennett 1218 E. Pontaluna Road, Spring Lake, MI 49456
USA 800-235-7618 ~ Outside USA 231-798-1310
sales@bennettpump.com ~ www.bennettpump.com

Safety Instructions

WARNING ADVERTISSEMENT ADVERTENCIA

For the safe installation of this equipment, read and understand all warning and cautions. Look for these warnings:

"DANGER" means: If you do not follow the instructions, severe injury or death will occur.

"WARNING" means: If you do not follow the instructions, severe injury or death can occur.

"CAUTION" means: If you do not follow the instructions, damage can occur to the equipment.

DANGER: Fire, explosion, injury or death will occur if fuel filters are changed by untrained personnel. Make sure only trained personnel change filter.

DANGER: Gasoline is flammable. NO SMOKING OR OPEN FLAME.

DANGER: Disconnect all power to this equipment and associated submerged pump (s) during installation, service or any maintenance, e.g., changing filters.

DANGER: Do not use self-contained dispensers with pressurized product lines, such as above ground tanks.

DANGER: The emergency cut-off valve (also called the fire valve, shear valve or impact valve) must be closed when service or maintenance is performed on this equipment.

WARNING: You must have training in the service or maintenance of Bennett equipment (dispenser, pump, console, control box or submerged pump) before working on it. Maintenance and repairs must be done by authorized personnel only.

WARNING: To prevent electric shock, keep the electrical parts of the dispenser dry.

WARNING: Do not operate this equipment as a dispenser unless it is completely assembled.

WARNING: Make sure this equipment is correctly grounded. Failure to do so can cause injury or damage equipment.

WARNING: Electronic components are static sensitive. Use proper static precautions (static straps) before working on the equipment.

CAUTION: Do not drill holes in fuel dispensers. Holes can cause failure of the electronic equipment and voids the UL label. The warranty will become void. Use only adhesive backed price sign mounting brackets. Order Bennett Kit KR-322.

READ AND UNDERSTAND ALL WARNING LABELS ATTACHED TO THE DISPENSER

Table of Contents

The material included in this Service Manual is accurate at the date of publication. The intent of this manual is to assist. If further assistance is required, please contact the Bennett Technical Service Department.

Bennett Pump Company
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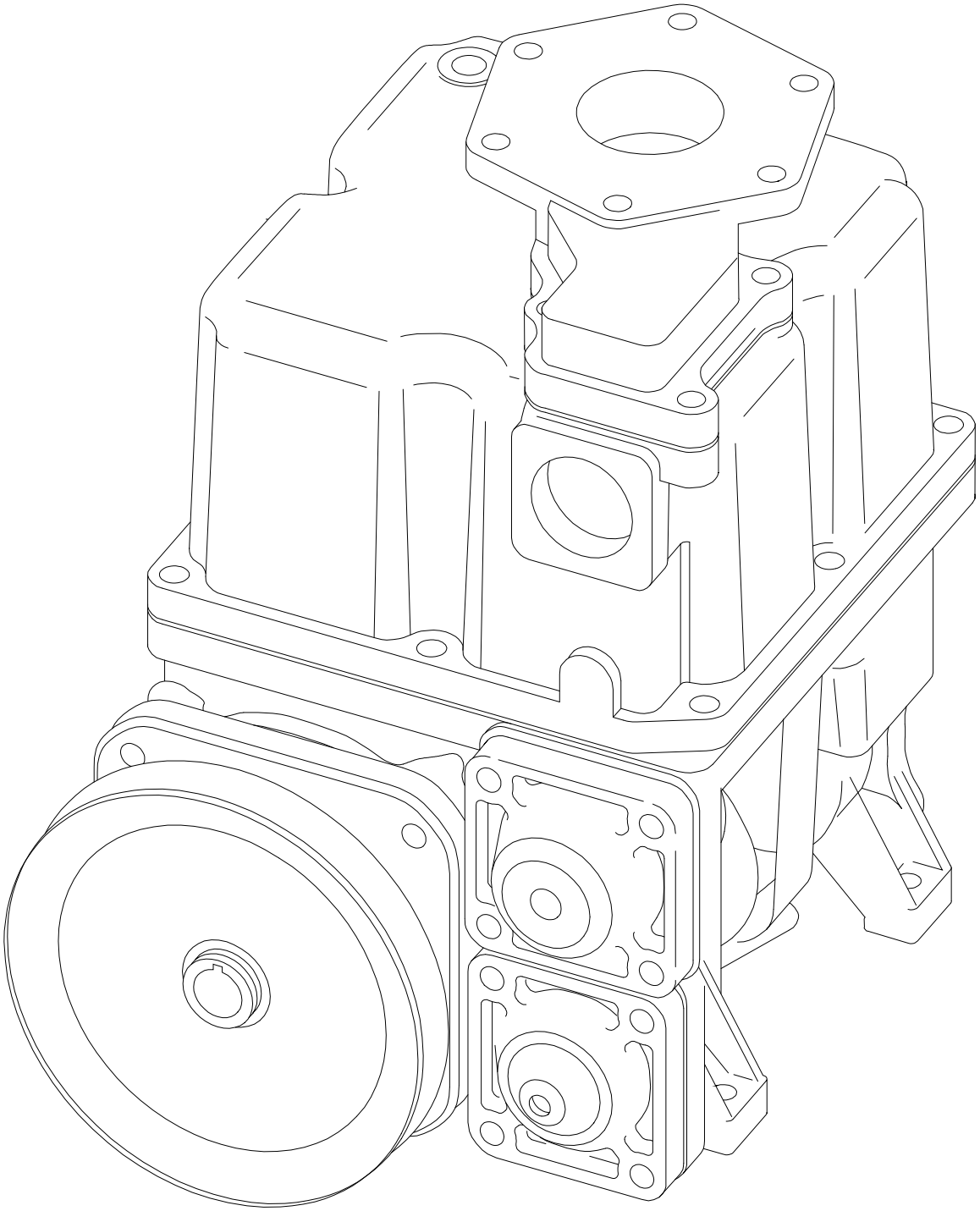
Type 75 Self-Contained (Suction) Pumps



Type 75 Pumping Unit (Production 11-83 to present)

The Type 75 pumping unit is standard on all Bennett self-contained suction pumps manufactured on or after November, 1983.

Flow of Liquid Through Pumping Unit, Air Eliminator and Meter

The Type 75 Pumping Unit moves product from the storage tank to the vehicle or container in the following manner:

1. The fuel is drawn from the storage tank through the strainer screen or filter (1). See Figure 1.
2. The rotary vane pumping unit (2) pressurizes the fluid.
3. Fuel enters the centrifugal air separator assembly (3). Any air that is present is forced out the air tube along with a small amount of liquid into the atmospheric chamber.
4. When the liquid level in the chamber lifts the float and valve assembly (4), the liquid collected in the atmospheric chamber is returned to the pump intake. Air is then vented to the atmosphere through the end tube (5).
5. Air free fuel leaving the air separator opens the control valve (6) and is pumped into the meter (7). The control valve includes a built-in relief valve (8) which relieves excess pressure caused by hot weather expansion.
6. Fuel passes through the meter where it is accurately measured, then through the hose and nozzle to the vehicle or container being fueled.
7. Whenever the nozzle is not fully opened, some liquid is relieved into the pump intake through the bypass valve (9).

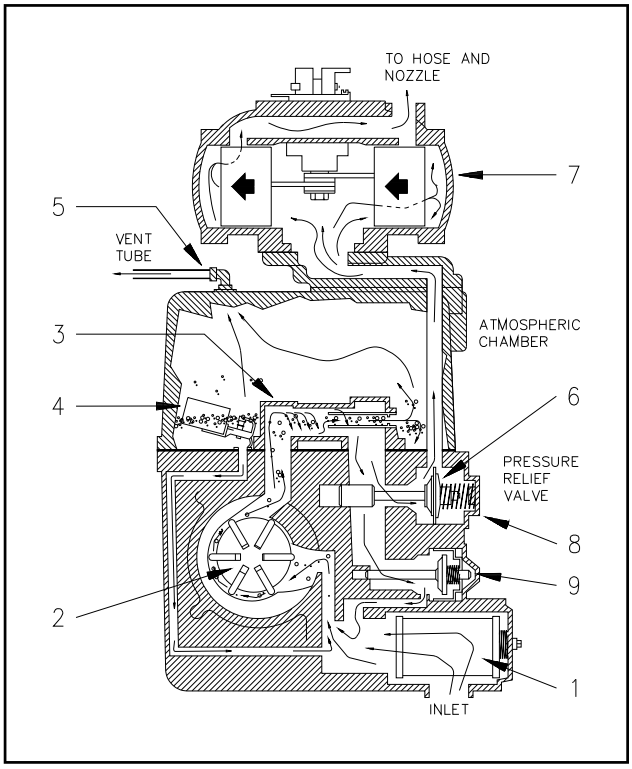


Figure 1 - Type 75 Schematic Flow Diagram

Control Valve

The Type 75 pumping unit uses a control valve that aids in the elimination of air by producing a back pressure and is also used as a check valve for any fuel above it.

The control valve also contains a pressure relief valve. This valve ports excess hose pressure, which may result from the expansion of fuel in the hose during hot weather, to the air eliminator chamber. This action prevents hoses from bursting and helps to prevent pumping unit leaks.

The control valve of standard and heavy-duty pumping units are identical and may be interchanged. The control valve springs for the heavy-duty and standard pumping units are different and must not be interchanged.

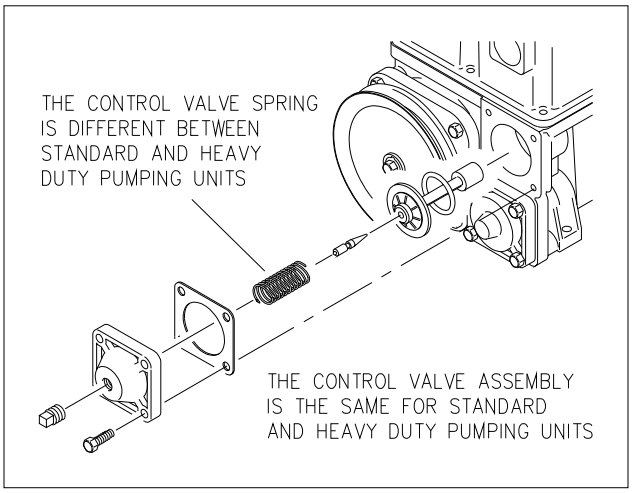


Figure 2 - Control Valve

Rotor Assembly Maintenance

Should it become necessary to service the Type 75 pumping unit's rotor, shaft assembly or blades, the rotor shaft assembly should be removed as shown using a conventional carpenter's crowbar.

1. Remove the four bolts that hold the clamping ring in place.
2. Let the clamping ring hang on the rotor cover.
3. Using the claw or hooked end of the crowbar, place the claw against the pulley as close to the shaft as possible and pry against the flange of the pump body as shown in Figure 3. Depending on the size or shape of the crowbar, it may be necessary to use a small block of wood either at the pulley or at the dome flange to provide adequate leverage.
4. Apply upward pressure on the crowbar to remove the rotor and cover.
5. It is recommended that the "O" ring, which seals the rotor cover, be replaced whenever the rotor assembly is removed from the pumping unit.
6. When reassembling the pumping unit, tap the rotor cover into position and carefully tighten the clamping ring.

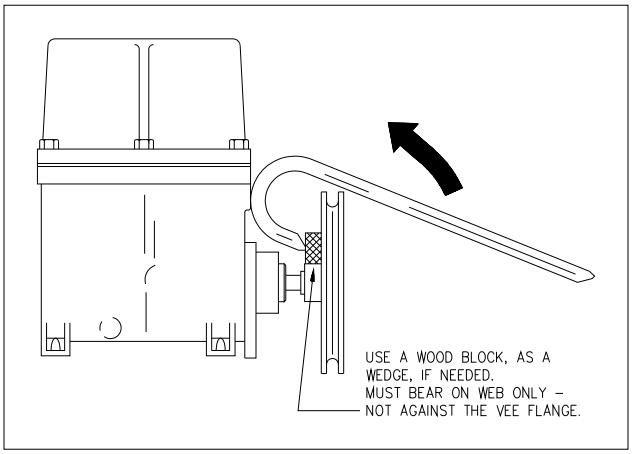


Figure 3

Lip Seal Replacement

To replace the lip seal, follow this procedure:

1. Remove the belt, pulley, and shaft key.
2. Remove the three screws that hold the seal retainer. See Figure 68. Carefully pry the old seal from the recess in the cover plate—do not scratch the shaft.
3. Wipe the shaft clean.
4. With a small plastic plug tool (furnished with new seal), slip the new seal over the shaft. Remove the tool.
5. Reinstall the seal retainer screws, key, pulley, and belt.

Stator Removal

Should it become necessary to repair or replace the stator, remove the rotor cover and rotor shaft assembly. See Figure 68. Be careful to catch the blades when the rotor and shaft assembly is being removed. The stator, in most cases, can be slid out of the pumping unit body at this point.

In some cases, the stator may be slightly wedged in the body of the pumping unit. The filter may be removed, which will expose part of the back of the stator. Using a piece of wood and a hammer, the stator may be gently tapped out.

NOTE: Use caution. Do not tap too hard as this will further wedge the stator in its body.

In extreme cases, the entire pumping unit must be removed from the unit. Once the pumping unit is removed, it should be completely drained.

DANGER: Do not use an open flame device to heat the pumping unit.

After draining, the entire body of the pumping unit can be heated and the stator will slide out.

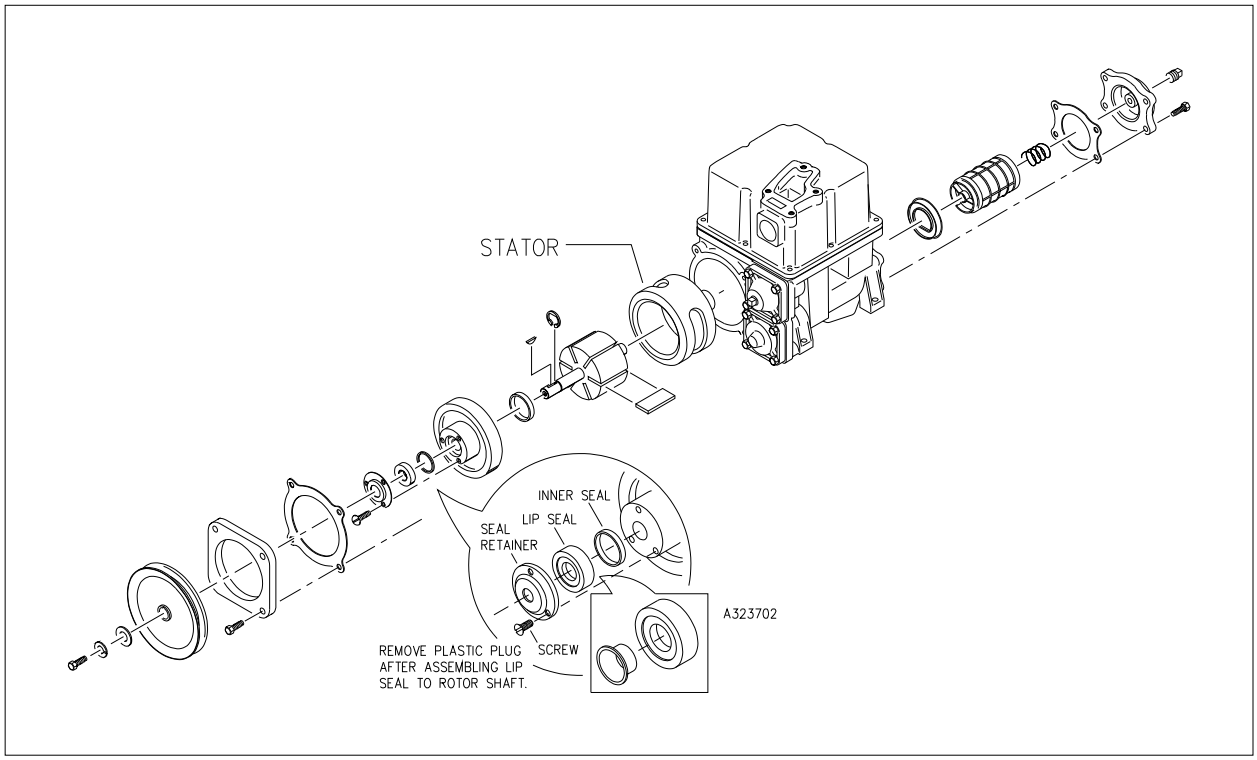


Figure 4

Pumping Units with Throw Out Rings

All pumping units manufactured after February 1, 1989 (standard or heavy-duty) have rotors with throw out rings and carbon blades. Our studies conclude that pumping units with throw out rings produce greater vacuum and are more resistant to vapor lock.

To determine whether a dispenser has a pumping unit with the new throw out rings, look for the date code stamped directly on the pumping unit. The date code is stamped next to the filter cover. If the date code is 2P or higher, the unit has rotors with throw out rings. Any dispenser with a serial number 3P or higher uses the throw out rings.

The following part numbers can be ordered to upgrade your inventory or for a dispenser that has a vapor lock problem. Order KR042001 to receive the components listed below:

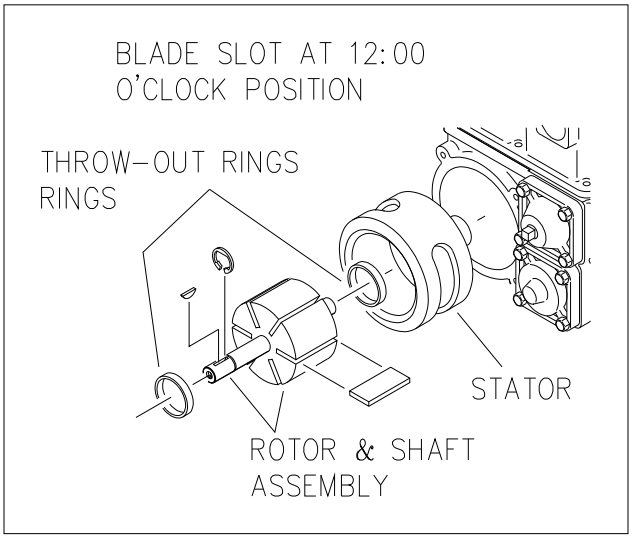


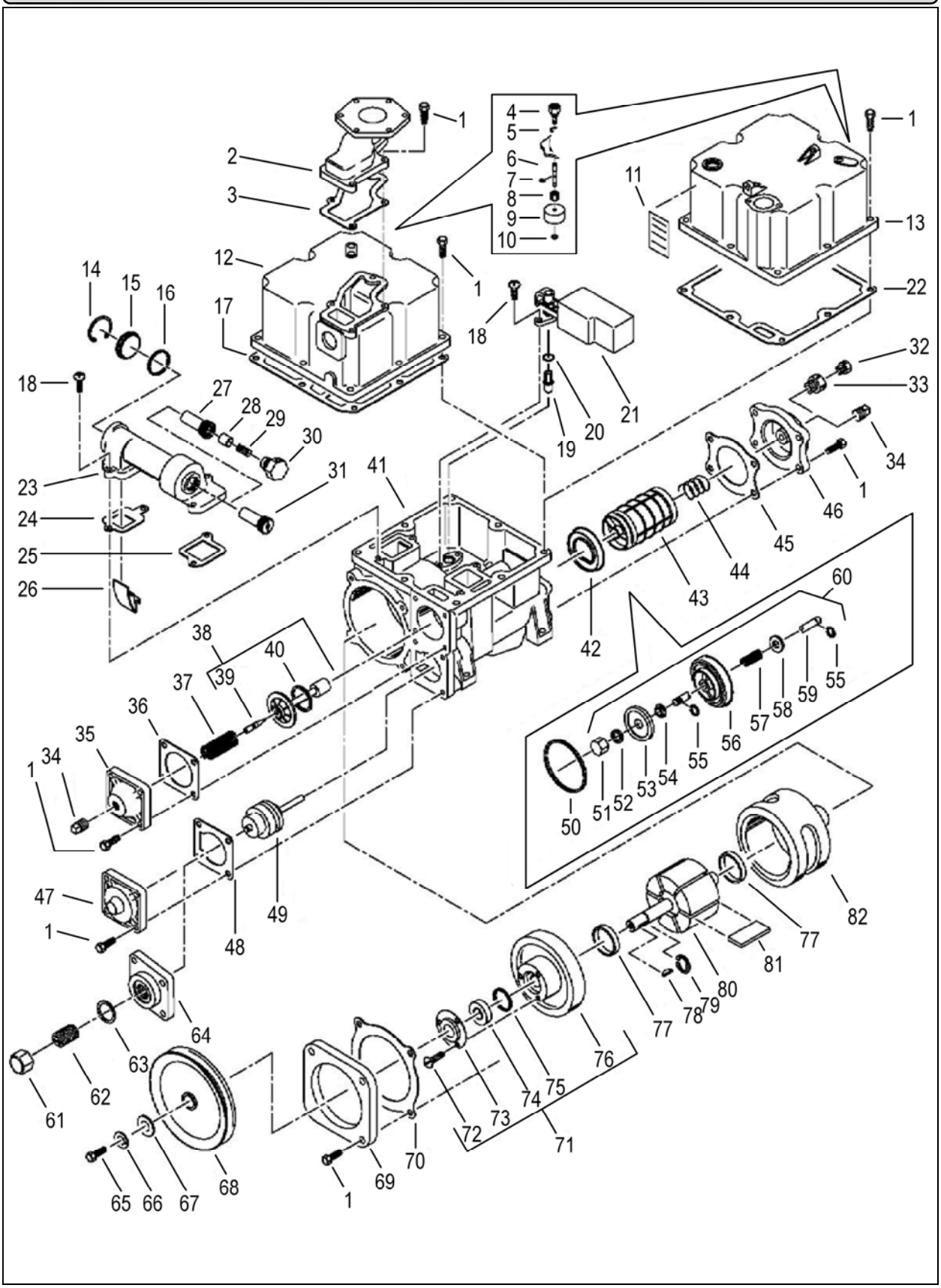
Figure 5

- N238301 Rotor Shaft Assembly - 1 required
- N238201 Carbon Blade - 6 required
- N650401 Throw out Ring - 2 required

To replace blades in rotors with throw-out rings, follow this procedure:

1. Install throw out rings in the recesses of the rotor.
2. Install the rotor in the stator assembly.
3. Rotate the rotor until a blade slot is at the 12:00 o'clock position. Install a blade.
4. Rotate the rotor 2 slots from the installed blade. Make sure the second slot is at the 12:00 o'clock position. Install a blade.
5. Repeat step 4 for the third blade.
6. Repeat steps 3 for the three remaining blades. See Figure 3.

Type 75 Self-Contained (Suction) Pumps



Type 75 Pumping Unit Parts List

Item	Part Number	Description	Comment
1	A479902	Bolt	M8-1.25 X 25 mm (Use N840502 for Seal Wire Bolt)
2	N152902	Meter Inlet Adaptor	With Tap
	105588	Meter Inlet Adaptor	**High Alcohol**
3	N162801	Gasket, Meter Inlet Adaptor	
4	108731	Housing, Air Valve Float Assembly	
5	108737	Gasket	
6	108732	Shaft	
7	108735	Snap Ring	Furnished as an Assembly - 108805
8	108733	Nut	
9	108734	Float	
10	108736	Retainer Ring	
11	110211	ID Tag	
12	N152801	Cover, Atmospheric Chamber	Meter Mount Style
	105787	Cover, Atmospheric Chamber	Meter Mount Style - **High Alcohol**
13	N347901	Cover, Atmospheric Chamber	Pipe Outlet with Motor Mount Ears
	103055	Cover, Atmospheric Chamber	Pipe Outlet with Motor Mount Ears - **High Alcohol**
	108945	Cover, Atmospheric Chamber	GPU
	109582	Cover, Atmospheric Chamber	GPU - **High Alcohol**
14	A471001	Retainer Ring	
15	103089	End Plug (**Alcohol Fuel**)	N225201 for Standard Fuel
16	111789	O-Ring #O28	For use with 3 Piece Body - Also used with **High Alcohol**
17	N162901	Gasket - Atmospheric Cover	
18	A480101	Bolt - Round Head	M6-0.7 X 20 mm
19	N888301	Non-Reversing Float	
20	111788	O-Ring #O17	Also used with **High Alcohol**
21	109892	Atmospheric Float Assembly	
22	N162901	Gasket - Atmospheric Cover	
23	N153801	Air Separator Body	One Piece Body - 113078
	103051	Air Separator Body	One Piece Body - 113079 **High Alcohol**
24	N162501	Gasket, Inlet Separator	
25	N162601	Gasket, Outlet Separator	
26	N190201	Insert - Air Separator Inlet	
27	108727	Tube - Air Separator	
28	108730	Piston	OIML Only
29	108725	Spring	
30	108728	End Cap	
31	N225301	Tube - Air Separator	
32	109668	Screw - Air Test Valve	
33	109666	Adaptor - Air Test Valve	
34	A019902	Pipe Plug	1/4 - 18NPT
35	N154801	Cover, Control Valve	
	103053	Cover, Control Valve	**High Alcohol**
36	N162301	Gasket	
37	E008001	Spring	Standard Delivery Pump 12 GPM
	J325201	Spring	Heavy Duty Delivery Pump 22 GPM
38	N107301	Control Valve Assembly	Brass Body Version
	113022	Control Valve Assembly	Aluminum Body Version with Hard Coat
	110368	Control Valve Assembly	**High Alcohol**
39	A320901	Pressure Relief Valve	
40	111790	O-Ring #210	Also used with **High Alcohol**
41	N150602	Pump Body	
	103052	Pump Body	**High Alcohol**
	N150603	Pump Body	Side Inlet Version
	109735	Pump Body	Side Inlet **High Alcohol**
42	N160301	Filter Insert	
43	100070	Strainer	Standard Production
	A311901	Filter	Paper Filter 35 Micron
		Strainer	Special - Used with Sack
	N347301	Cloth Sack	10 Micron

Type 75 Pumping Unit Parts List

Item	Part Number	Description	Comment
44	N905001	Filter Spring	
45	N162201	Gasket	
46	N154701	Filter Cover	
	103054	Filter Cover	**High Alcohol**
47	N154901	Bypass Cover	Non-Adjustable
	105585	Bypass Cover	**High Alcohol**
48	N162401	Gasket	
49	N481201	Bypass Valve	Standard - Silver Spring Low Pressure
	N481202	Bypass Valve	Standard - Green Spring Medium Pressure
	N481203	Bypass Valve	Standard - Copper Spring High Pressure
50	111791	O-Ring #229	Also used with **High Alcohol**
51	A620801	Cap Nut	
52	A620901	Seal Ring	
53	N873001	Disc	
54	N872801	Adaptor	Not Sold Separately - See Item #60
55	A620101	Retaining Ring	
56	N872901	Check Valve Body	
57	N873201	Spring	
58	N873101	Washer	
59	N872701	Shaft	
60	N873301	Check Valve Assembly	With out Ring
	KR044102	Check Valve Assembly	Includes Item #50 & Item #60
61	N308301	Cap	
62	N308201	Adjustment Screw	
63	A507901	Washer	
64	N308101	Cover - Adjustable Bypass	
65	A479903	Screw	M8 - 1.25 X 20 mm
66	A000301	Lock Washer	
67	A028101	Flat Washer	
68	N106901	Pulley - Single Groove	
	100040	Pulley - Dual Groove	
69	N155901	Clamping Ring	
70	N162701	Gasket	
71	J682702	Rotor Cover Assembly	
72	A480001	Flat Head Screw	
73	H352101	Shaft Seal Retainer	
74	A323702	Shaft Seal (with insertion tool)	109711 Shaft Seal Kit - Includes #74 & 75 with install plug
75	A247014	Square Seal	
76	N103801	Rotor Cover	
77	N650401	Throw Out Ring	Standard Delivery Pump
	N238101	Throw Out Ring	Heavy Duty Pump
78	A199501	Woodruff Key	
79	A263101	Retaining Ring	
80	N238301	Rotor & Shaft Assembly	Standard 6 Blade Rotor
	*KR0420xx	*Rotor Replacement Kit	Includes #70, 74, 75, (2) 77, 80, (6) 81 **xx="01" Std Delivery "02" Heavy Duty**
81	110704	Rotor Blade	
82	N156401	Stator	Standard Delivery Pump
	N159501	Stator	Heavy Duty Pump
	KR036604	Gasket Set for Pumping Unit	Complete Set of Gaskets, Seals, and O-Rings for P/U

Self Contained Troubleshooting

General Vacuum/Pressure Information

The following components are normally associated with the pressure:
1. Control Valve
2. Meter
3. Computer or pulser drive linkage
4. Hose
5. Nozzle

The components listed below are normally associated with vacuum:
1. Blades
2. Rotor/Stator
3. Filter
4. Bypass valve and seat
5. Float (opened)
6. Installation piping
7. Tank vent pipe
8. Angle check valve or foot valve
9. Tank burial depth

Vacuum readings can change from installation to installation.

An easy method of calculating vacuum is as follows:

1. An inch of mercury is required to lift gasoline 1-1/2 feet. Divide the total lift by 1-1/2 feet to obtain vacuum.

2. An inch of mercury is required to overcome the restriction of an angle check, foot valve, or vertical check valve.

3. An inch of mercury is required to overcome the restriction of 60 feet of piping.

4. Add the readings obtained in steps 1, 2 and 3 to determine the approximate vacuum reading at fast flow.

NOTE: Excessive vacuum indicates a restriction. Low vacuum indicates a leak.

The following table shows normal vacuum gauge readings for a variety of lift vs. run situations.

VACUUM GAUGE READINGS
(Inches of Mercury)

Vertical Lift (Feet)	3	4	5	6	7	8	9	10
Horizontal Run - 0 Feet	3.0	3.6	4.3	4.9	5.5	6.1	6.8	7.4
Horizontal Run - 60 Feet	3.9	4.5	5.2	5.8	6.4	7.0	7.7	8.3

How to Use Vacuum and Pressure Gauge Readings to Troubleshoot Self-Contained Dispensers

There are a variety of conditions that can contribute to no delivery or slow delivery. A pressure/vacuum gauge is an important tool in determining whether the problem is on the vacuum side or pressure side of the pump.

The vacuum gauge reading can help you determine if there are restrictions of flow in the suction piping system. It will also help you determine the ability of the pumping unit to pump.

To test the vacuum of the pump, follow this procedure:

1. Remove the pipe plug in the center of the strainer or filter cover. The cover is marked for easy identification.
2. Install the vacuum gauge.
3. Start the pump and open the nozzle to full flow for a true reading.
4. With the nozzle open, a normal vacuum reading is 6-8 inches of mercury for normal suction. See Figure 6.
5. With the nozzle closed, a normal vacuum reading is 0. See Figure 7.

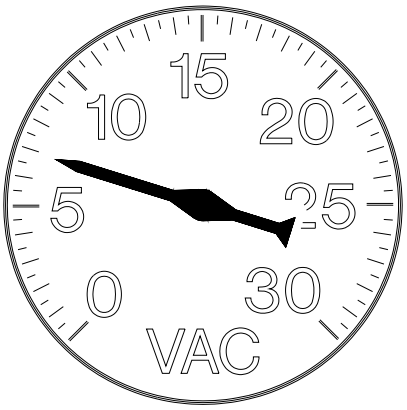


Figure 6

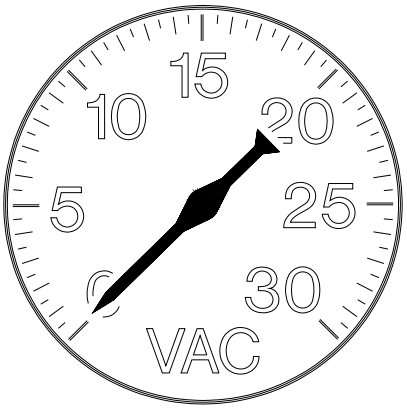


Figure 7

To test the pressure of the pump, follow this procedure:

1. Remove the pipe plug in the center of the control valve cover. Covers are marked for easy identification.
2. Install the pressure gauge.
3. Start the pump and open the nozzle to full flow for a true reading.
4. With the nozzle open, a normal pressure reading is 16-18 pounds per square inch pressure.
5. With the nozzle closed, a normal pressure reading is 25-28 pounds per square inch pressure. See Figure 8.

Figure 8

Type 75 Self-Contained (Suction) Pumps

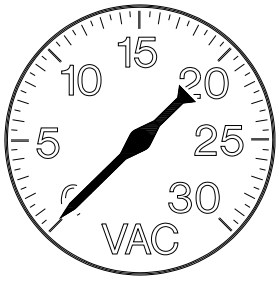
The following examples are offered to help you determine the possible cause of a problem by knowing the gauge readings on the inlet (vacuum) and outlet (pressure) side of the pumping unit. Actual readings may vary slightly depending upon installation and environmental conditions.

SYMPTOM: NO FLOW

NOZZLE OPEN

CHECK INLET SIDE

AT CONTROL VALVE COVER

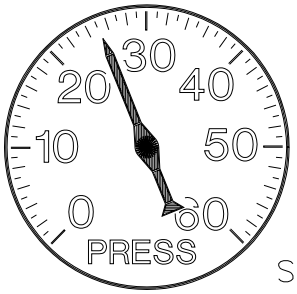


AT STRAINER (OR FILTER) COVER

PROBABLE CAUSES:

CONTROL VALVE STUCK SHUT
BYPASS VALVE OPEN
ATMOSPHERIC FLOAT VALVE OPEN
STUCK ROTOR BLADES
BROKEN SUCTION LINE
STRAINER OR FILTER COMPLETELY PLUGGED OR IN BACKWARDS
EMPTY TANK

SYMPTOM: NO FLOW

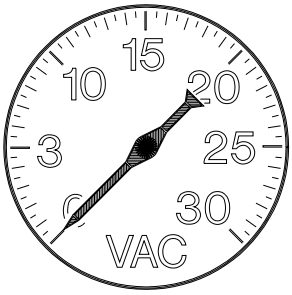


AT CONTROL VALVE COVER

NOZZLE OPEN

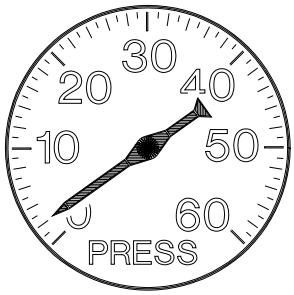
PROBABLE CAUSES:

SEIZED METER
JAMMED COMPUTER OR GEAR BOX
COMPLETELY RESTRICTED
NOZZLE OR HOSE



AT STRAINER (OR FILTER) COVER

SYMPTOM: SLOW OR NO FLOW – PUMP LABORING

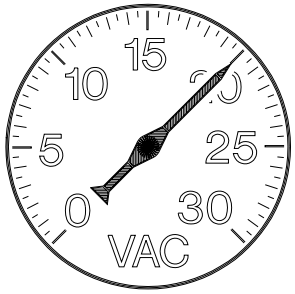


AT CONTROL VALVE COVER

NOZZLE OPEN
CHECK INLET SIDE

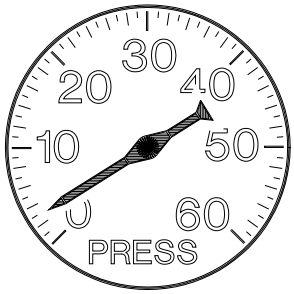
PROBABLE CAUSES:

SUPPLY LINE RESTRICTION
STUCK FOOT VALVE (IN TANK), ANGLE CHECK VALVE, OR VERTICAL CHECK VALVE
RESTRICTED TANK VENT



AT STRAINER (OR FILTER) COVER

SYMPTOM: SLOW OR NO FLOW

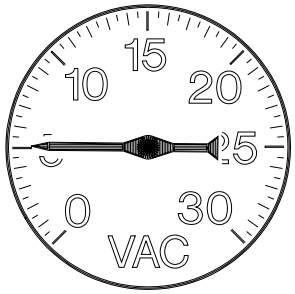


AT CONTROL VALVE COVER

NOZZLE OPEN
CHECK OUTLET SIDE

PROBABLE CAUSES:

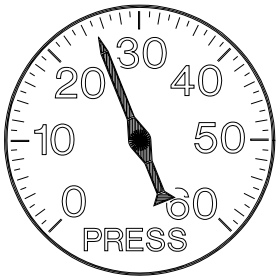
CONTROL VALVE NOT OPENING FULLY
PUMP VAPOR LOCKED



AT STRAINER (OR FILTER) COVER

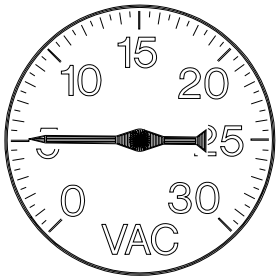
Type 75 Self-Contained (Suction) Pumps

SYMPTOM: SLOW FLOW



NOZZLE OPEN

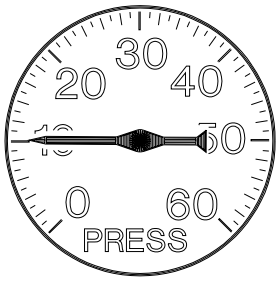
CHECK OUTLET SIDE



PROBABLE CAUSES:

PARTIALLY RESTRICTED NOZZLE OR HOSE
BIND IN COMPUTER, GEAR BOX, METER,
OR PULSER DRIVE LINKAGE

SYPTOM: NO FLOW/SLOW DELIVERY

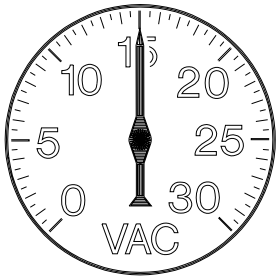


AT CONTROL VALVE COVER

NOZZLE OPEN

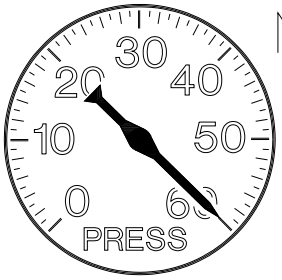
PROBABLE CAUSE:

TANK BURIAL TOO DEEP (HIGH LIFT)



AT STRAINER (OR FILTER) COVER

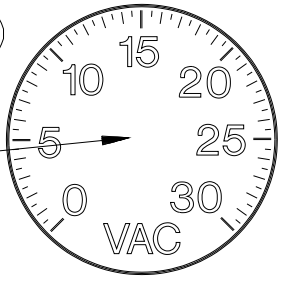
SYMPTOM: MOTOR LABORING, CIRCUIT BREAKER TRIPS OR MOTOR FAILING



AT CONTROL VALVE COVER

NOZZLE CLOSED

READING MAY VARY



AT STRAINER (OR FILTER) COVER

PROBABLE CAUSE:

BYPASS VALVE STUCK SHUT

How to Correct Problems on Pumping Units

PROBLEM	CAUSE	ACTION
1. **The motor starts but the pump does not deliver fuel.**	a. The fuel supply is below the suction stub in the storage tank.	a. Fill the storage tank.
	b. The vent pipe is plugged in the storage tank.	B. Clean the vent pipe
	c. The strainer screen or filter assembly has an obstruction.	c. Remove obstructions from the screen or filter assembly.
	d. The bypass valve is not seating properly due to wear or obstruction.	d. Check the valve for an obstruction causing the valve to stay open, and/or replace the bypass valve.
	e. The v-belt is loose or broken.	e. Adjust or replace the v-belt.
	f. There is an obstruction in the atmospheric float valve.	f. Clean the float and valve area. Check for swelling and binding in the linkage.
	g. The pump is out of prime.	g. Check for a faulty foot valve in the storage tank or a faulty check valve in the suction line.
	h. The suction line is leaking.	h. Start the pump and open the nozzle. If bursts of air are felt while holding a finger on the vent tube, the suction line is damaged. Repair or replace.
	i. The intake line, foot valve, angle check valve, or vertical check valve have an obstruction.	i. Connect a vacuum gauge to the 1/4" plug on the filter cover. Turn the pump on and open the nozzle. A reading of 15 or more inches of mercury with no flow indicates a complete blockage in the suction line. Clean the line or replace.
	j. The suction stub in the storage tank is on the bottom of the tank.	j. Make sure there is a four inch clearance.
	k. The control valve has an obstruction.	k. Clean the control valve. It must slide freely in the valve cavity.
	l. The nozzle is not working.	l. Replace the nozzle.
	m. *Two pumps are connected to one storage tank with one suction line. There is a faulty check valve in one of the supply lines.	m. Disconnect the vent tube on the idle pump. Install a short copper tube. Place the end of the copper tube in a container of liquid. If the liquid is drawn out of the container when the opposite pump is operated with an open nozzle, the line check valve is faulty. Replace the check valve.
	*Not recommended.	

How to Correct Problems on Pumping Units

PROBLEM	CAUSE	ACTION
2. **The pump runs, but delivery is slow.**	a. The fuel supply level is low.	a. Fill the storage tank.
	b. The vent pipe is partially obstructed.	b. Clean the vent pipe.
	c. The strainer screen or filter assembly has a partial obstruction.	c. Remove obstructions from the screen or filter assembly.
	d. The bypass valve is not seated properly.	d. Check the valve for an obstruction causing the valve to stay open.
	e. The v-belt is loose.	e. Adjust the v-belt.
	f. The voltage is too low.	f. Check the power supply voltage. The dispenser uses a 115 VAC, 60 cycle electrical circuit. Check for too many pieces of equipment on one electrical line.
	g. A blade or blades in the rotary pump will not move.	g. Check the rotor and blades for damage. Replace the blades and/or rotor, if necessary.
	h. An automatic nozzle has been installed.	h. Delivery speed will be reduced by 10-25%. If maximum speed is desired, replace with a standard nozzle.
	i. The motor is defective	i. Inspect the motor for loose connections. If no loose connections are found, the motor is defective. Repair or replace.
	j. There is a slow leak in the suction line or intake line.	j. Start the pump and open the nozzle. If bursts of air are felt while holding a finger on the vent tube, the suction line or intake line is damaged. Repair or replace.
	k. The intake line, foot valve, angle or vertical check valve is partially obstructed.	k. Connect a vacuum gauge to the 1/4" plug on the filter cover. Turn the pump on and open the nozzle. A reading of 11 to 13 inches of mercury with no flow indicates a partial obstruction in the suction line. Clean or replace the suction line components
	l. The control valve is partially obstructed.	l. Check the valve for an obstruction. Replace if necessary.
	m. The nozzle check valve is sticking	m. Clean or replace the nozzle check valve.
	n. The hose is defective (flattened).	n. Replace the hose.

How to Correct Problems on Pumping Units

PROBLEM	CAUSE	ACTION
3. The motor will not run.	A. The power is off.	a. Check the circuit breaker in the station.
	b. The motor is defective.	b. Disconnect the power supply. Inspect the motor for loose connections. If none are found, repair or replace the motor.
4. The dispenser does not deliver an accurate amount of product.	a. There is an obstruction in the control valve.	a. Clean the control valve. It must slide freely in the valve cavity.
	b. There is an obstruction in the air eliminator vent tube.	b. Clean the vent tube.
	c. The meter needs calibration.	c. Check calibration test equipment for accuracy. Calibrate the meter.
5. There is fuel running out the vent tube opening when the pump is in operation.	a. There is an obstruction in the atmospheric float valve. The valve is being held closed.	a. Clean the float and valve area. Make sure the float opens completely.
	b. The suction chamber in the pump is flooded. *(Above ground tank)	b. Check the storage tank level. If it is higher than the pumping unit *(above ground tank), the condition will continue. Install Tokheim 52 valve.
	*Not recommended.	*Not recommended.
6. The computer jumps when the pump is turned on.	A. The control valve is not seated properly.	a. Check the valve for an obstruction between the o'ring and the seat. Inspect the o'ring for damage. Replace the valve or o'ring, if needed.
	b. There is an obstruction in the expansion relief dill valve.	b. Check the valve by pulling the spring loaded seat. Clean any foreign matter from the valve. To install the dill valve in the control valve, use a valve tool.
	c. The gaskets are leaking.	c. Replace worn gaskets.
	d. There is a worn nozzle.	d. Replace the nozzle.
	e. There is a leak in the hose.	e. Replace the hose.
	f. Temperature extremes cause the liquid to expand or contract.	f. Problem will be solved when the pump begins to operate.

The Cause of Vapor Lock

Vapor Lock is a problem that results from ambient temperatures, vapor pressure of the product and the installation. It is not a characteristic of a pump.

Atmospheric Pressure of 14.7 PSI (Sea Level) presses on the liquid in the tank. See Figure 1.

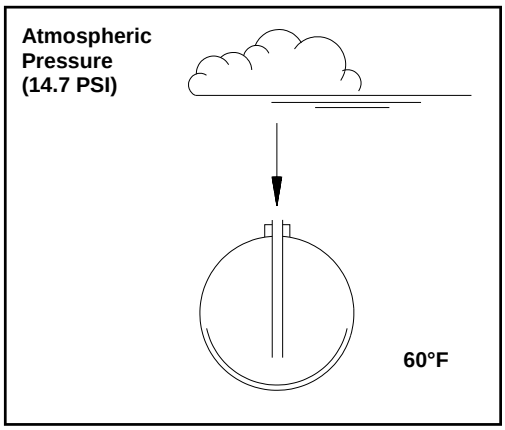


Figure 1

Vapor Pressure (the amount of pressure required to keep the product in a liquid form at 60°F) of today's product is approximately 10 PSI. See Figure 2.

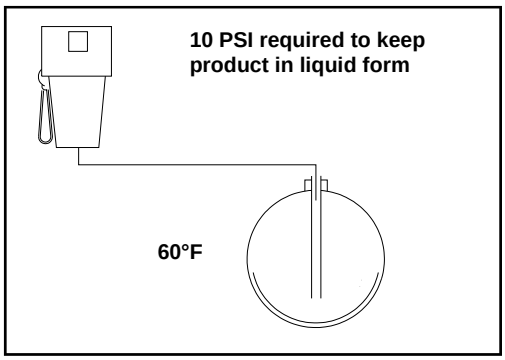


Figure 2

The difference between **Atmospheric Pressure** and **Vapor Pressure** is known as the **Working Pressure.** The Working Pressure is all that the pump can create without the product turning to vapor.

14.7 PSI Atmospheric Pressure
-10.0 PSI Vapor Pressure
4.7 PSI Working Pressure

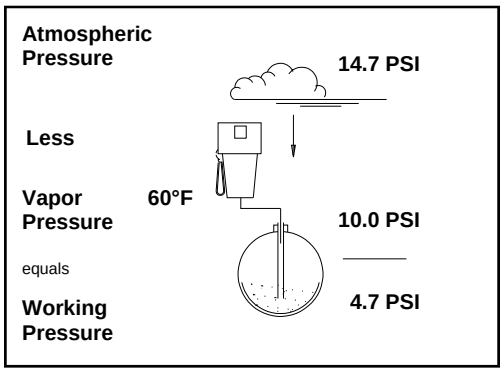


Figure 3

The Cause of Vapor Lock

To measure a pump's suction, the Working Pressure must be converted to inches of vacuum. To do this, multiply the Working Pressure by 2. The result is the number of inches of vacuum that a pump can create before the product changes to a vapor. See Figure 4.

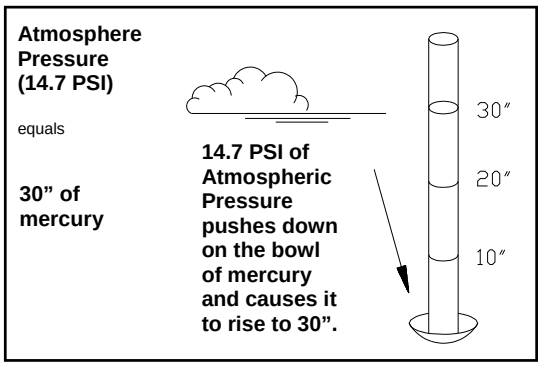


Figure 4

4.7 PSI Working Pressure = 9.4 inches of vacuum. See Figure 5.

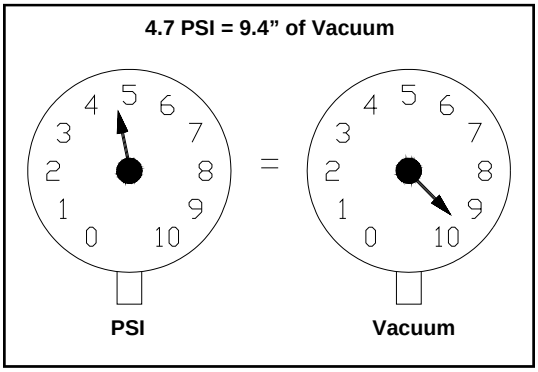


Figure 5

Installation is the Key

The condition of installation dictates how much suction a pump must create to pump the product.

A. It takes 1 inch of vacuum to lift gas 1.5 feet vertically. To determine the inches of vacuum required to lift the gas in a system, follow this procedure:

   Measure the distance from the top of the product in the tank to the center of the pumping unit. See Figure 6. Divide the distance by 1.5 to obtain the inches of vacuum required by the pump to lift the product.

   Example: 9 feet of lift requires 6 inches of vacuum by the pump. See Figure 6.

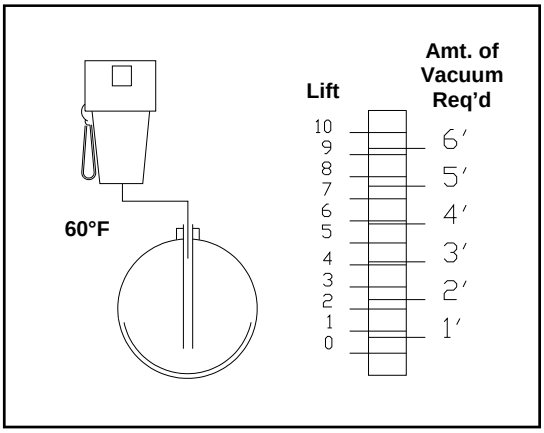


Figure 6

The Cause of Vapor Lock

B. It takes 1 inch of vacuum by the pump to overcome the restriction of an angle check or foot valve. (Not part of the pump, but a necessary part of the installation.) See Figure 7.

C. It takes 1 inch of vacuum by the pump to overcome the restriction of 60 feet of horizontal piping from the tank to the pump. See Figure 8.

To obtain the inches of vacuum to deliver product, simply add A, B and C.

A. 9 feet of lift = 6” of suction

B. Angle check or foot valve = 1” of suction

C. 60 feet horizontal run = 1” of suction

TOTAL = 8” of suction

With 9.4” of suction to work with and only 8” of vacuum required, conditions are normal and the pump delivers product without vapor locking.

Remember this condition exits when the product is at 60°F.

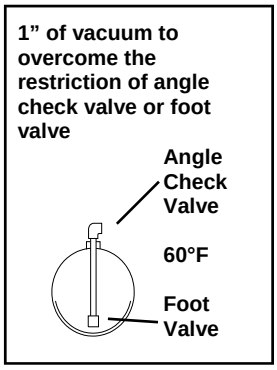


Figure 7

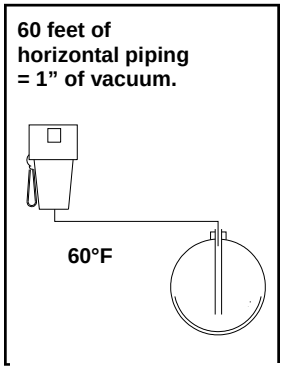


Figure 8

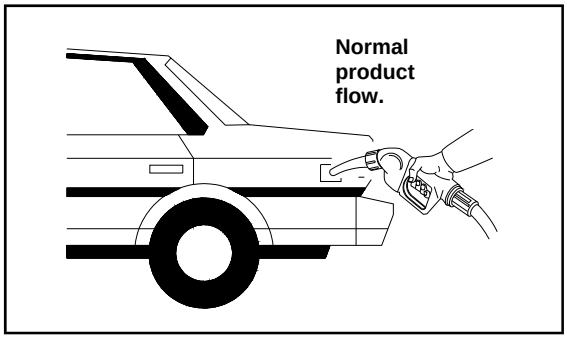


Figure 9

Vapor Lock Conditions

Using the same example as above, 8” of vacuum is still required to deliver product.

With higher ambient temperatures, the vapor pressure of the product changes. As mentioned above, the Vapor Pressure of today’s product is 10 PSI at 60°F. At temperatures of 90°F or higher, it can go as high as 12 PSI.

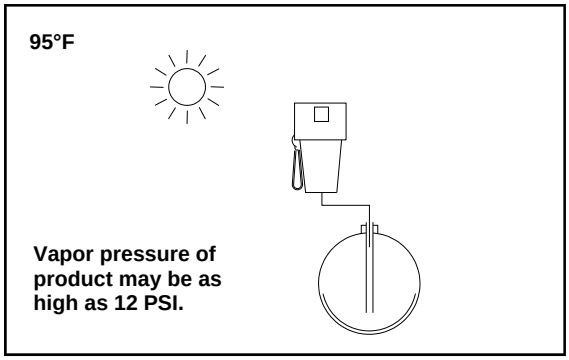


Figure 10

The Cause of Vapor Lock

Using the same formulas as above, the Working Pressure equal Atmospheric Pressure less the Vapor Pressure.

14.7 PSI Atmospheric Pressure
- 12.0 PSI Vapor Pressure of the product
2.7 PSI Working Pressure

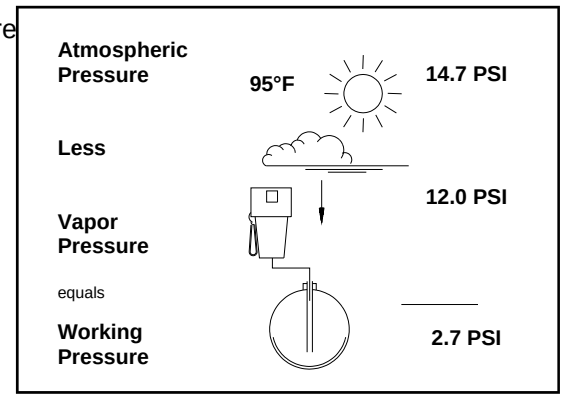


Figure 11

Multiplying the 2.7 Working Pressure by 2 equals 5.4 inches of vacuum that the pump can create before the product turns
to vapor.

It still takes 8 inches of vacuum to deliver product, but with higher temperatures there is only 5.4 inches of vacuum to lift
the product. **The result is Vapor Lock.**

As we have explained, the pump plays a very small part in vapor lock situations. Installation, the amount of product in the storage tank and the Vapor Pressure of the product are the main reasons for vapor lock.

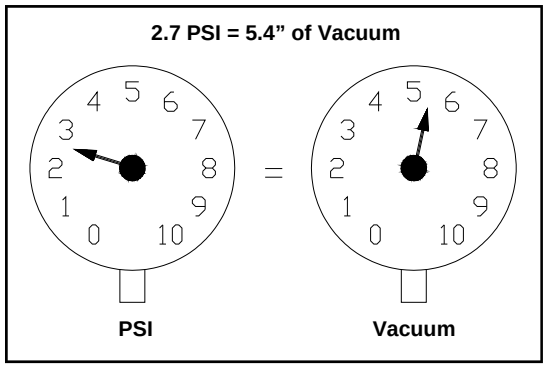


Figure 12

Example: Have you ever heard of vapor lock in a diesel pump? No, because the Vapor Pressure of diesel is approximately 8 PSI.

The only real cure for vapor lock in hot climates is to keep the installation and pump cool.

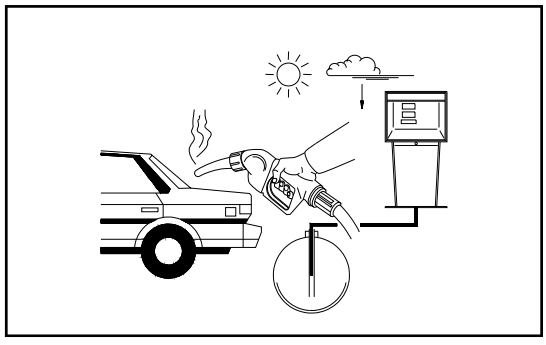
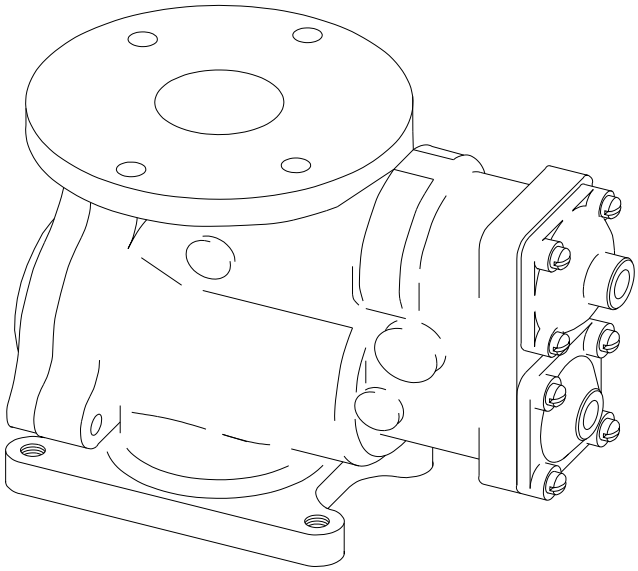
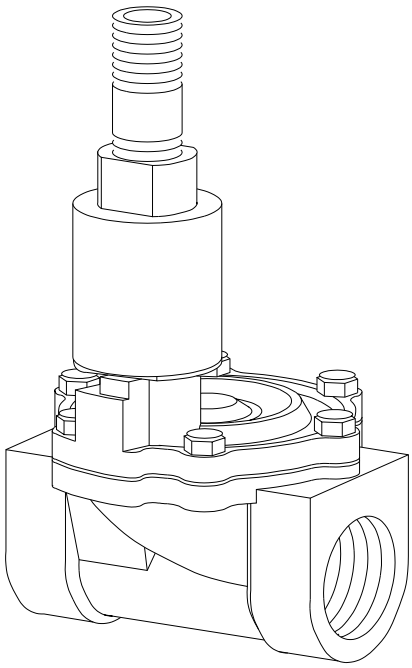


Figure 13

Remote Dispensers





DUAL FLOW SOLENOID VALVE

The Dual Flow Solenoid Valve is presently used on the 7000 and 9000 Series remote and self-contained dispensers. It is mounted after the meter and its main function is to prevent product flow from an unauthorized hose when the pump motor of the same product is on. The solenoid valve is a dual function solenoid valve. One function is to control high or fast flow while the other is to control a low or dribble flow required in prepay or local preset operation. For a better understanding of the solenoid valve, consult the following flow schematic.

Solenoid Valve Circuit Description

Product enters from the right into the inlet chamber (A) and fills the area (B) from the diaphragm orifice to the control seat. See Figure 1. The net forces on the diaphragm, (spring and pressure) are downward holding the diaphragm closed. When the solenoid coils (high and low) are energized, the plunger is pulled up, off the control seat, venting high pressure (B) fluid into the low pressure outlet chamber (C).

The fluid in high pressure chamber (A) now lifts the diaphragm against the spring and low pressure (B) fluid. Product flows directly from the inlet chamber (A) to the outlet chamber (C).

Low flow is achieved by de-energizing the high flow coil. This allows the bottom half of the plunger to fall, partially restricting flow through the control seat. Pressure at area B rises causing the diaphragm (high flow) to close. Low flow is directed through the diaphragm orifice, then through a .093 diameter drilled hole in the high flow plunger into the outlet chamber (C). When power to the low flow coil is cut, the top plunger drops against the low flow seat and all flow stops.

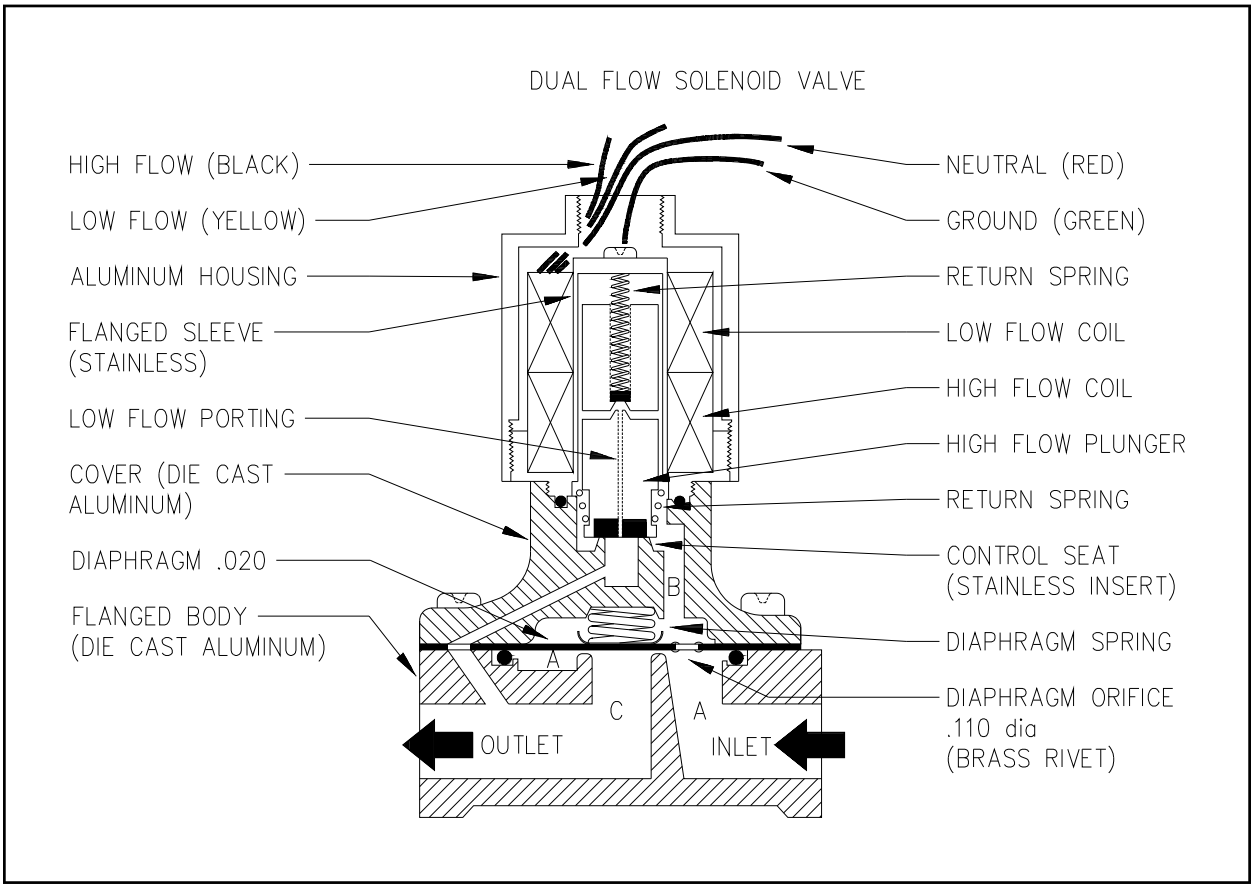
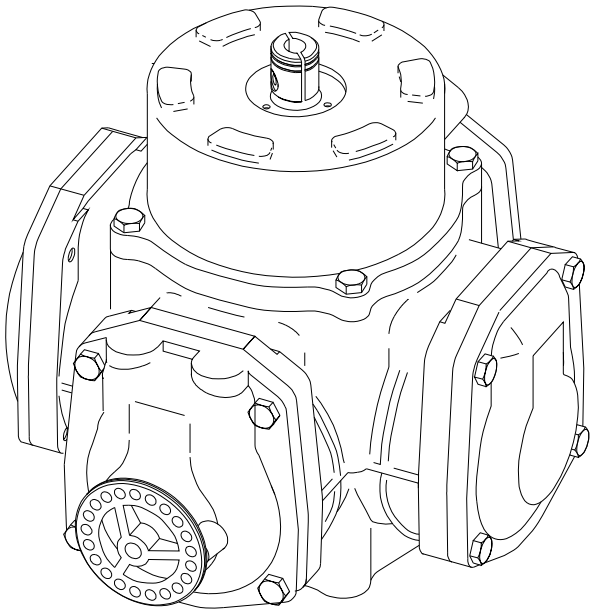
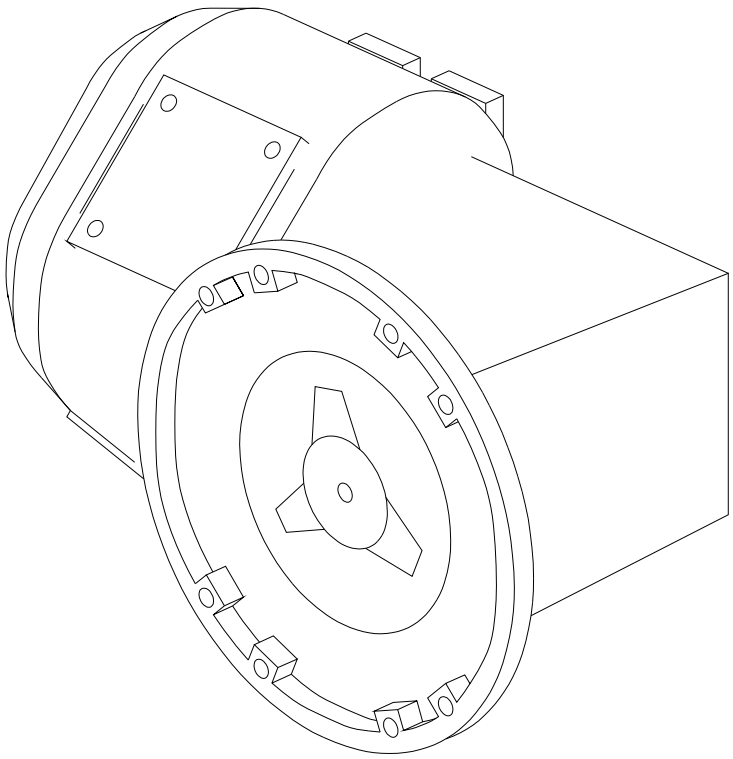


Figure 1

Meters





LIQUID CONTROL M5A1 METER

Bennett Pump Company uses Liquid Control Systems' M5A1 meter in its 7800 High Capacity Series. The M5A1 meter allows the accurate measurement of motor fuel when delivering up to 60 GPM. The meter is calibrated at the factory using a solvent for safety purposes. The meter must be checked and recalibrated, if necessary, at the time of installation. After the initial installation, Bennett recommends follow-up checks at 90 and 180 days to insure accurate measurement. After the break-in period, semi-annual calibration checks are all that is required. Following is the procedure to calibrate the M5A1 meter.

How to Calibrate the Meter

To gain access to the meter, follow this procedure:

1. Use the Bennett 001 key to remove the lower door (1) on the junction box side of the dispenser. See Figure 2. Set the doors aside in a protected area to avoid damage.
2. Remove the two screws (2) that hold the nozzle boot cover to the frame. See Figure 2. Remove the cover and set aside.
3. Cut and remove the meter seal wire (1). See Figure 3.
4. Remove the four screws (2) holding the adjuster housing cover (3). See Figure 3. Remove the cover.

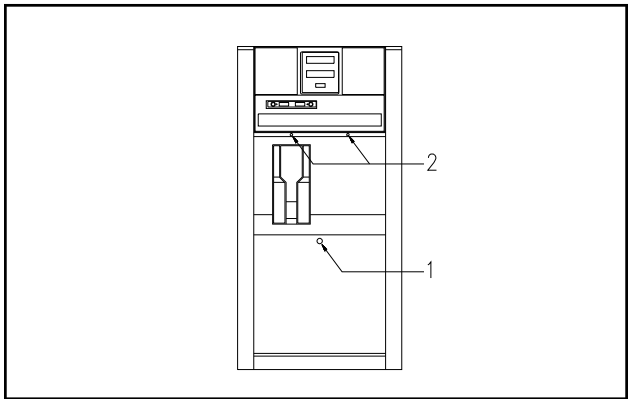


Figure 2

To calibrate the meter, follow this procedure:

1. Dispense 50 or 100 gallons (200 or 400 liters) of fuel into an official test measure to determine the amount of adjustment necessary.

NOTE: A minimum of a 50 gallon test measurement must be used.

2. Read the setting on the calibration adjuster. The amount of error is added to or subtracted from this reading. If an adjustment in calibration is required, loosen the screw (1) holding the clamp on the adjuster. See Figure 96.
3. Turn the adjuster thimble (2) IN (top of thimble moves away from you) on the adjuster barrel to decrease the amount delivered. Turn the thimble OUT (top of the thimble moves towards you) on the adjuster barrel to increase the amount delivered. See Figure 4.

NOTE: One complete turn of the thimble is equal to 1 gallon in 100 gallons or 1% of delivered volume. The adjuster is graduated in divisions of 1%, 0.1% and 0.02%.

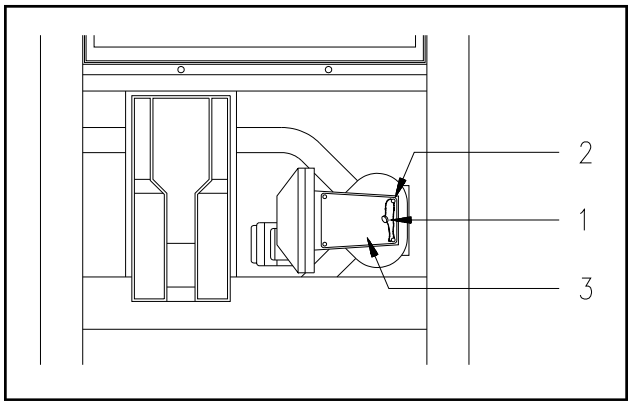


Figure 3

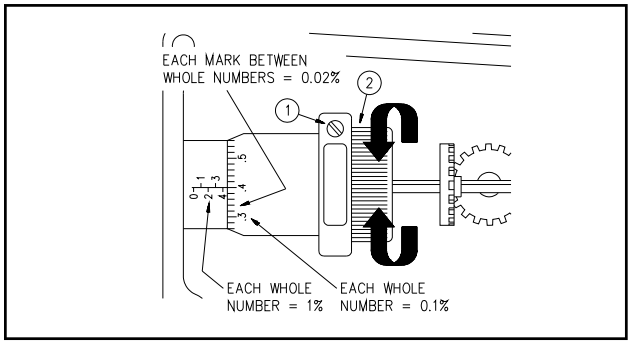


Figure 4

4. Dispense 50 or 100 gallons (200 or 400 liters) of fuel to allow the meter to adjust to the new setting. Do not make any adjustments based on this delivery.
5. Make sure the meter is properly calibrated. Dispense another 50 or 100 gallons (200 or 400 liters) of fuel into an official test measure to check the calibration.
6. After resetting the calibration adjuster, tighten the clamp to hold the adjustment. See Figure 5.

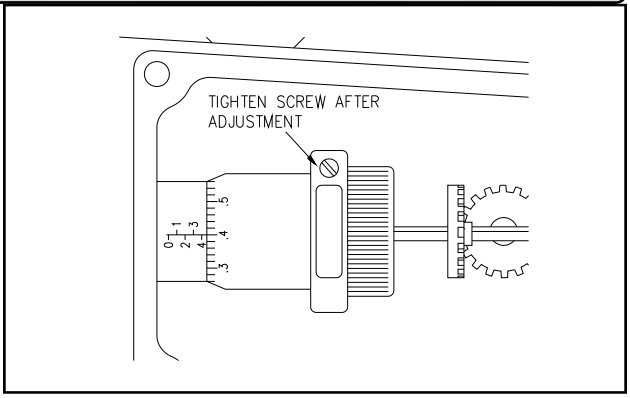


Figure 5

NOTE: Always make the final adjustment by turning IN on the thimble. If the new setting is a higher number than the original, turn beyond the desired figure and come back to it.

The following example will help explain the calibration:

Assume the adjuster setting at the start of the test read 2.05. Product was dispensed until the dispenser registered 100 gallons. The official test measure or prover registered 98.7 gallons or 1.3 gallons short. Add the 1.3 gallon reading to the beginning adjuster reading to get the new setting.

Beginning Adjuster Reading 2.05
+ Amount Short in Prover 1.30

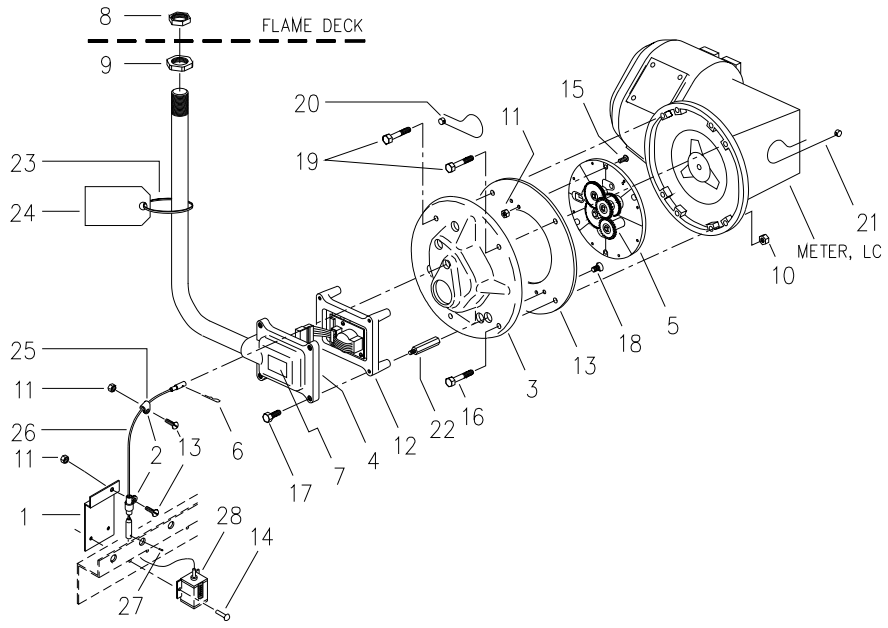
New setting on Adjuster = 3.35

Another test through the meter should then show 100 gallons both on the dispenser volume window and the official test measure or prover.

For test volumes other than 100 gallons, the following formula applies:

Divide the result	Gallons on Prover minus	=	Adjuster Percent to increase
By this Amt.	Gallons on Dispenser		or decrease prover volume

Remote Dispensers



Ref. No.	Part No.	Description	7811	7812	7822
1	N778701	Bracket, Totalizer	1	2	2
2	A533101	Clamp, Cable	1	2	2
3	N748101	Cover, Gear Plate	1	2	2
4	N748401	Cover & Conduit Assembly-Pulser	1	2	2
5	N747201	Gear Plate Assembly	1	2	2
6	J794701	Nut, Conduit	1	2	2
7	J771501	Nut, Conduit	1	2	2
8	A219010	Nut, 1/4-20	4	8	8
9	A219004	Nut & Washer	2	2	2
10	N237903	Pulser Assembly	1	2	2
11	N746401	Retainer, Gear Plate	1	2	2
12	A228502	Rivet, Pop	2	4	4
13	A099001	Screw	1	2	2
14	A188601	Screw	2	4	4
15	A277601	Screw, 10-24x3/4	4	8	8
16	A397202	Screw, Flat head	4	8	8
17	N749201	Screw, Special	2	4	4
18	132X100101	Seal Wire	1	2	2
19	132X100102	Seal Wire	1	2	2
20	A585001	Standoff	3	6	6
21	N789401	Support Strap, Cable	—	—	1
22	N780901	Totalizer & Cable Assembly	1	2	1
	N780908	Totalizer & Cable Assembly	—	—	1
23	J992813	Cable Assembly, 14.13	1	2	1
	J992817	Cable Assembly, 31.88	—	—	1
24	A294701	Pin	1	2	1
25	A584101	Totalizer (Counter)	1	2	1

SB-100 METER

The SB-100 Meter was introduced in Bennett's 3900 and 4000 Series in the last quarter of 1991. The introduction of the meter in other models began in the first quarter of 1992. The SB-100 meter is a precision device built to maintain .3% accuracy for flow rates from 1.5 GPM (5 LPM) to 26 GPM (100 LPM). The SB-100 is a volumetric meter employing four pistons with seals and associated chambers. During the first year of use, the SB-100 meter's calibration should be checked upon installation, after 90 days and after 180 days in order to insure accurate measurement. After the break-in period, semi-annual calibration checks are all that is required.

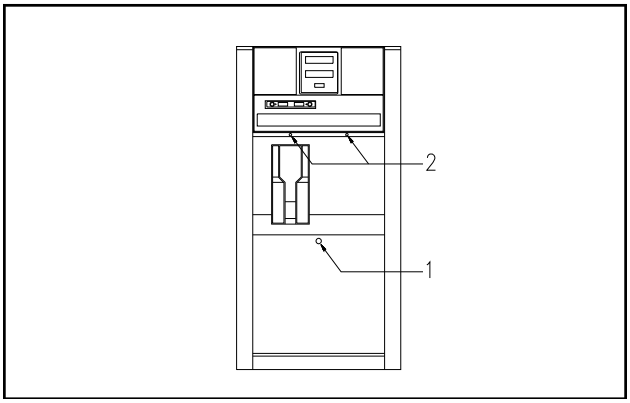


Figure 6

To check the calibration of the SB-100 meter, perform the following:

1. Fill an official test measure with fuel to wet its interior. Return the fuel to the proper storage tank and drain the test measure for 10 seconds. Failure to drain the test measure for 10 seconds may cause different calibration readings.
2. Dispense five gallons of fuel at full flow into the official test measure. If calibration readings are within the local Weights and Measures tolerance, return the fuel to its proper storage tank and perform the required slow flow test.

   The slow flow test is performed when the latch on the nozzle is at its lowest setting or at five gallons per minute, whichever is least. The slow flow calibration readings must be within tolerance to the fast flow calibration readings as well as to the zero reading of the official test measure. Failure to maintain the above tolerance during the slow flow test indicates a defective meter which must be replaced. Calibration adjustment will not alter tolerances between slow flow and fast flow test.

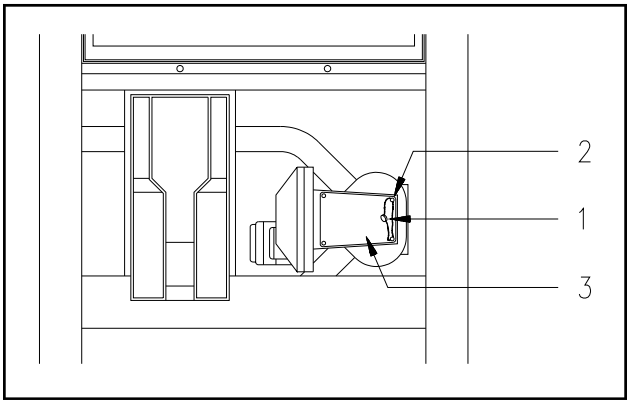


Figure 7

SB-100 METER - FIELD CALIBRATION

Each SB-100 meter is provided with the following calibration information.

- The dial adjusting cover has (+) and (-) arrows to indicate the correct direction to rotate the dial to either increase or decrease delivery.
- A self-adhesive metal label listing the minimum incremental adjustment is attached to the collector housing immediately above the adjusting dial.

These provisions were made to assist the service person in making a quick and accurate change to the meter's calibration.

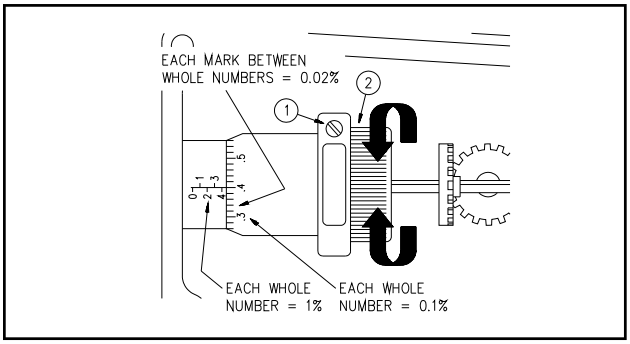


Figure 8

The dial cover has two pin hubs, one to the left of the shaft and one to the right. The seal pin may be inserted in either hub. See Figure 9. The smallest adjustment (.6 cu. in.) occurs when the pin is pulled from one side and inserted in the other side by moving the dial the least amount or half a hole. A 1.2 cu. in. adjustment is made by pulling the pin and turning the dial until the next adjacent hole aligns with the same hub and re-inserting the pin.

To calibrate the meter, follow this procedure:

1. Measure the actual delivery of the meter at fast flow in an accurate test measure.
2. Cut and remove the existing seal wire and remove the seal pin. See Figure 10.
3. Turn the dial the necessary amount in the (+) or (-) direction to increase or decrease the quantity of fuel delivered.
4. Re-insert the seal pin in the desired pin hub.
5. Test calibration at the new setting by dispensing five gallons (20 liters) of fuel to allow the meter to adjust to the new settings. Do not make any adjustments based on this delivery.
6. Make sure the meter is properly calibrated. Dispense another five gallons (20 liters) of fuel into an official test measure to check the calibration and make adjustments, if necessary.
7. Reseal the meter adjustment.

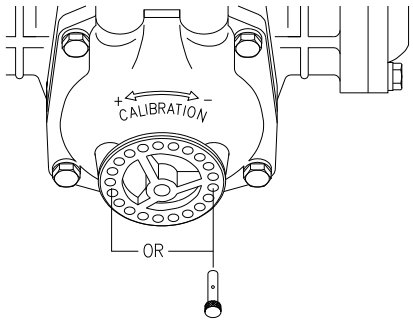


Figure 9

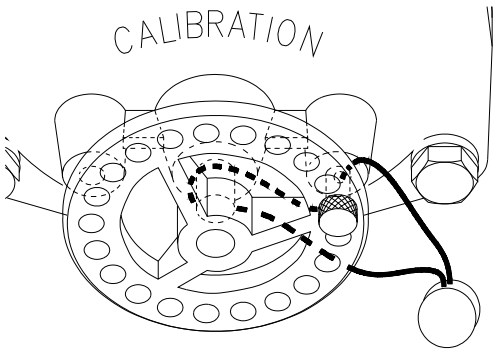


Figure 10

Example 1

1. **A fast flow test at 11 GPM shows a +3 cu. in. reading in a five gallon test measure.**
2. **Remove the existing seal and pin and turn the dial clockwise (-) 5 minimum adjustments (half holes) and reinsert the pin.**

   3 cu. in. = 5 half holes (-) CW
   6 cu. in./adjustment
3. **Test and reseal.**

Example 2

1. **A fast flow test at 25 GPM shows a -2 cu. in. reading in a five gallon test measure.**
2. **Remove the existing seal and pin and turn the dial counterclockwise (+) 3 minimum adjustments (half holes) and reinsert the pin.**

   2 cu. in. = 3.333 = 3 half holes
   6 cu.in./adjustment (+) CCW
3. **Test and reseal.**

SB-100 Flow Schematic

1. Product enters at the bottom inlet (1) and fills the inner cavity of the meter. See Figure 11.
2. As the meter body fills, product passes around the crankshaft and up to the top throat of the meter body. From the top throat, product flows to the distributor (2) which either ports product “to” or “from” each of the four piston chambers.
3. When the distributor (2) is in a position that allows product to be ported “to” a piston chamber (3), equal pressure is applied across both sides of the piston. Equal pressure applied across a piston offers zero resistance to the crankshaft (5) via the piston’s connecting rod (6).
4. When the distributor (2) is in a position that allows product to be ported “from” a piston chamber (4), there is greater product pressure applied to the inside of the piston than to its outer side. The differential of pressure causes the piston to travel in an outward direction. As the piston travels in an outward direction, product is ported to the meter’s top collector and to its outlet.
5. As a piston is forced in its outward direction, a rotational force is applied to the crankshaft via the piston’s connecting rod. This rotational force of the crankshaft is then applied to adjacent pistons, which offering zero resistance, allows them to be pulled in their inner direction easily. This allows product from the distributor to fill the piston chamber. The above process is repeated by all four pistons.
6. A spring and pressurized countervalve (7) employing a diaphragm imparts a downward thrust on the rotating distributor to seal its surfaces and prevent internal leakages which would result in unmeasured product being delivered.

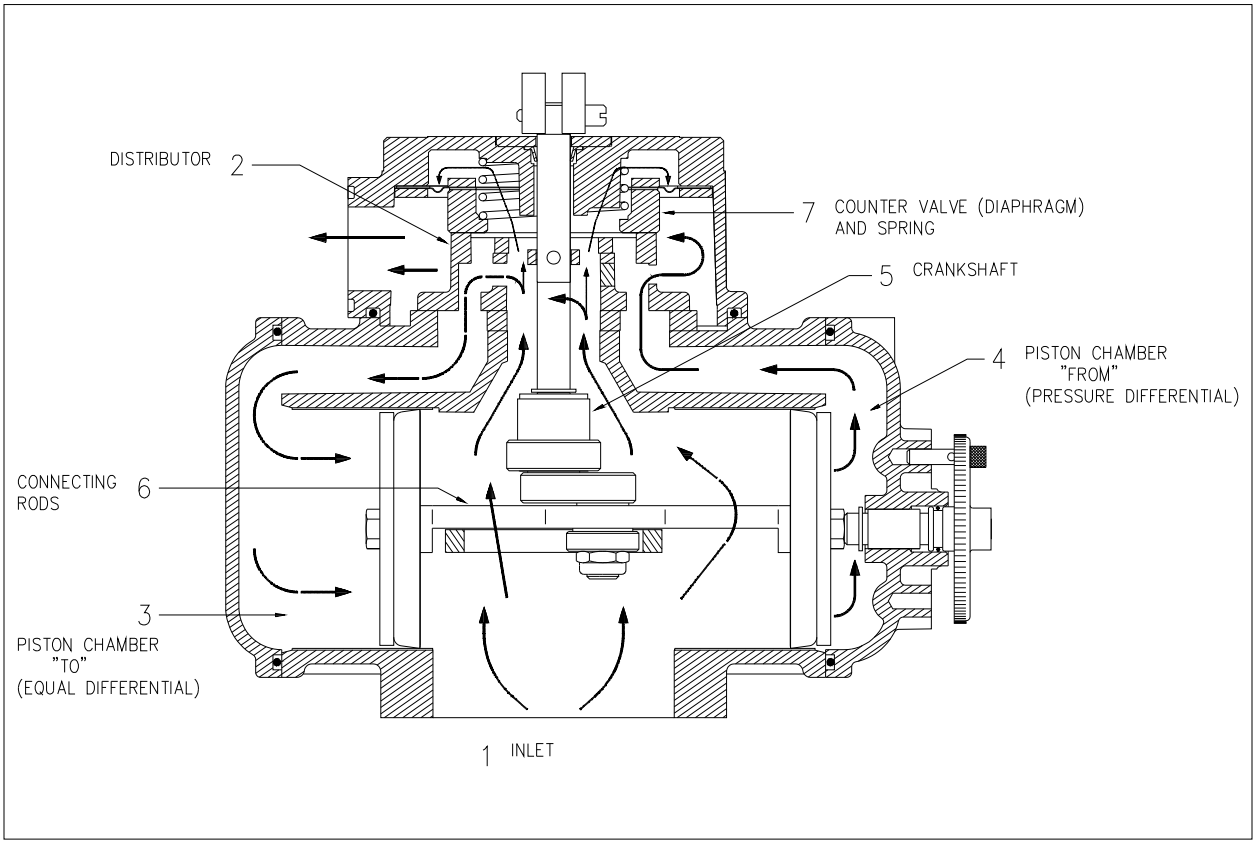


Figure 11

Remote Dispensers

PROBLEM	CAUSE	SOLUTION
1. Over delivery and out of tolerance difference between fast and slow delivery.	a. Dirty or gummed pistons and/ or piston chambers.	a. Remove cylinder covers. Remove screw holding piston to connecting rod. Using vise grips, secure the center hub of the piston and pull straight out. Clean piston seal and piston chamber using mineral spirits. Reassemble in reverse order.
	b. Damage or worn piston seals.	b. Replace all pistons.

NOTE: To install piston in piston chamber, the piston must be rotated 90 degrees and the seal depressed with thumb and forefinger. Install the piston into the chamber. Rotate the piston back 90 degrees and install the screw that connects the piston to the connecting rod. See Figure 12.

CAUTION: When the piston is removed from the chamber, use extreme caution so that the connecting rods do not scratch the cylinder or chamber sleeves. When the piston is re-installed or a new piston is installed, extreme caution must be used to prevent damage to the piston seal.

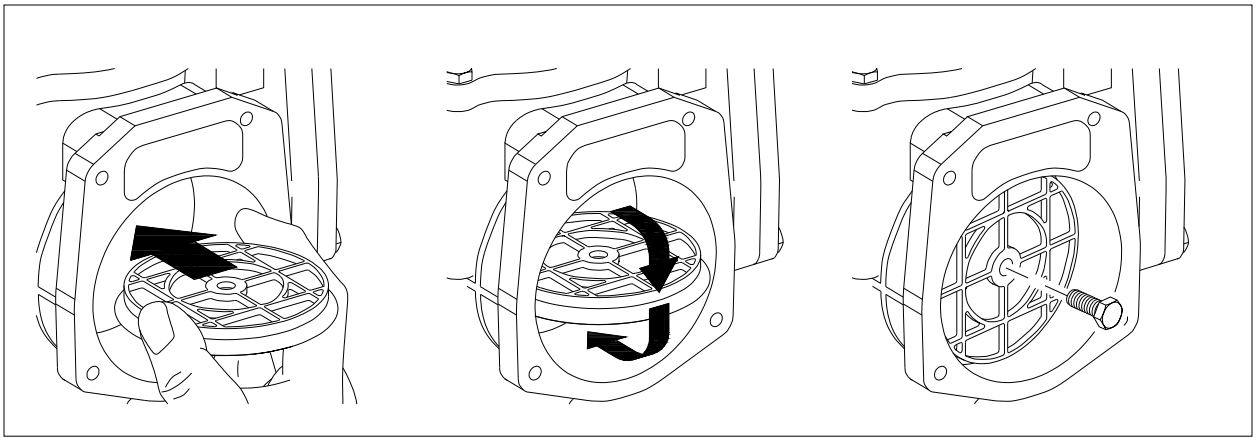
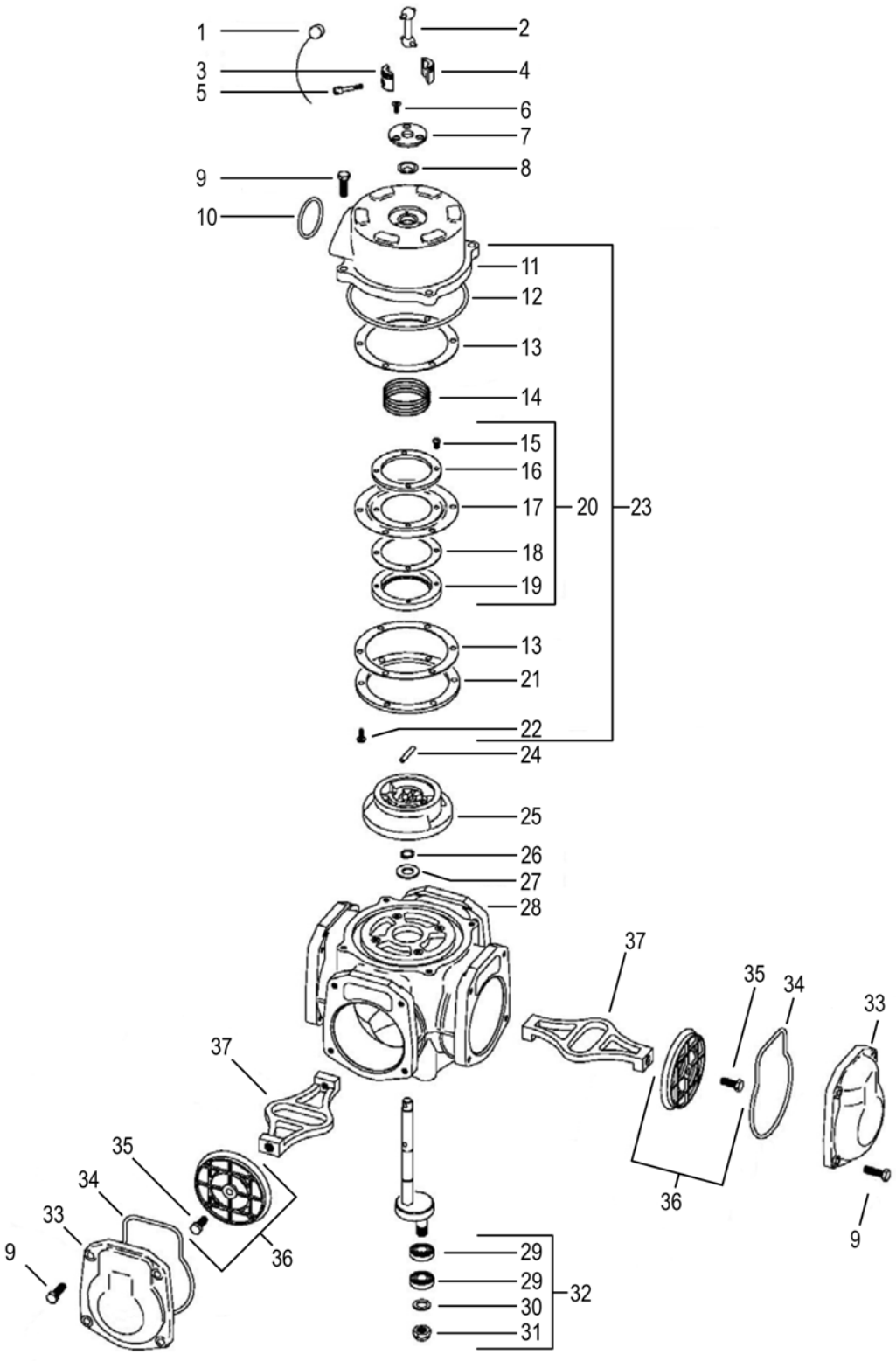


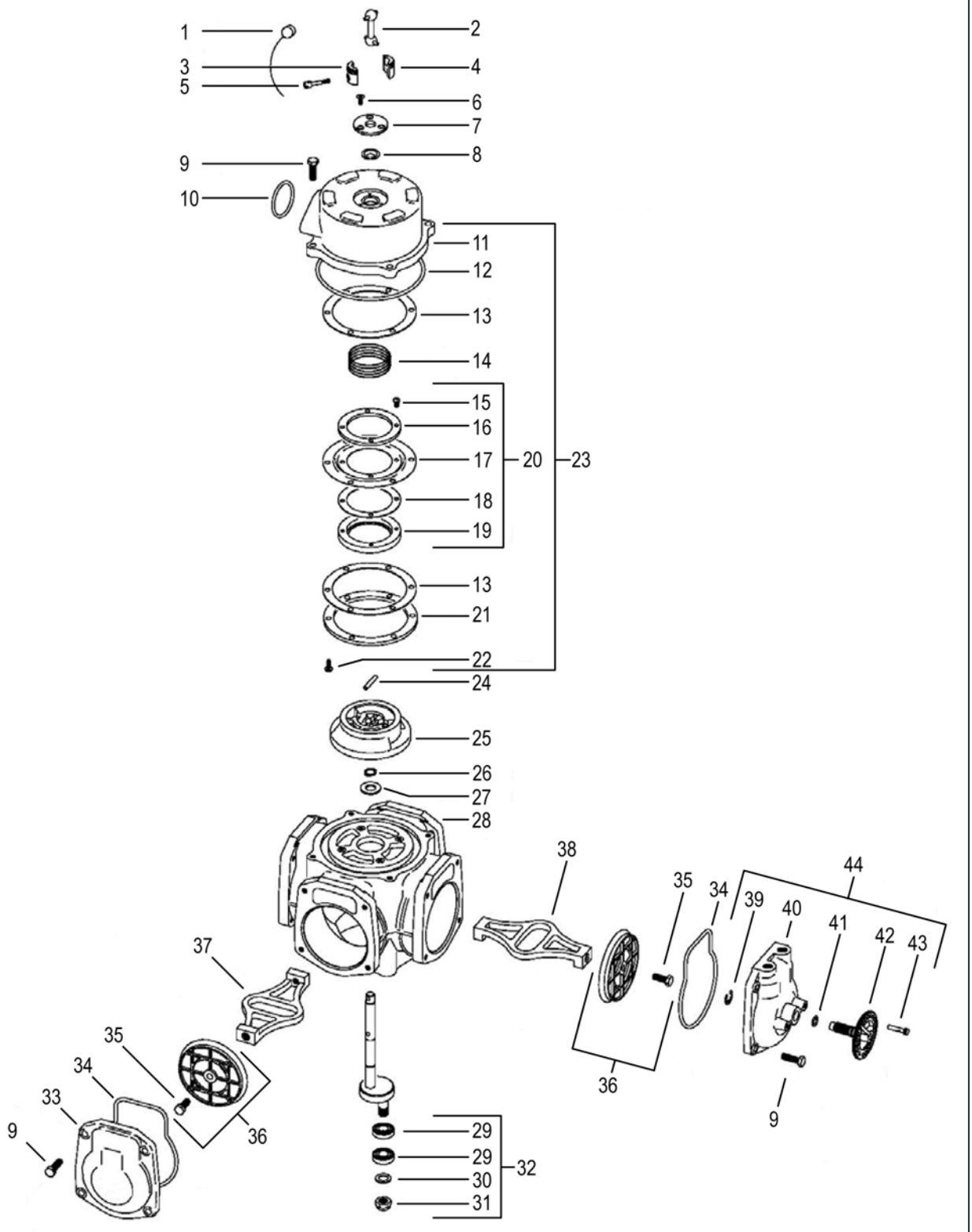
Figure 12

PROBLEM	CAUSE	SOLUTION
2. Leakage between meter shaft and collector body.	a. Top lip seal is damaged	a. Replace top lip seal.
3. Internal leakage between the distributor and top countervalve assembly or bottom valve plate resulting in over delivery.	a. Damaged counter valve assembly distributor, and countervalves. NOTE: Replace all items to insure proper mating surfaces.	a. Replace counter valve assembly, distributor, and countervalves. See Figure on next page. 1 Remove coupling half. 2 Remove lip seal retainer 3 Remove lip seal 4 Remove four screws holding collector body 5 Remove collector body 6 Remove six screws holding retainer to bottom of collector body 7 Remove retainer 8 Remove and replace countervalve assembly 9 Remove and replace distributor

SB100 Electronic Meter



SB100 Mechanical Meter



SB100 Meter Parts List

Item	Part Number	Description	Comment
1	N/A	Lead Seal Wire	Please Call 231-798-1310 for details
2	N/A	Universal Link	Please Call 231-798-1310 for details
3	H651203	Half Coupling	Unthreaded **See Kit List**
4	H650402	Half Coupling	Threaded
5	H650501	Screw	
6	A480001	Screw, Flat Head	M3.5 - 0.6 X 8 mm
7	N666401	Shaft Seal Retainer	
8	107694S	Shaft Seal	
9	A586901	Screw, Hex Head	M6 - 1.0 X 20 mm
9	N840401	Screw, Hex Head	M6 - 1.0 X 20 mm with Seal Hole
10	A247018	O-Ring, Square Section	
11	N646502	Collector Cover	
11	103044	Collector Cover	**High Alcohol**
12	A247019	O-Ring, Square Section	
13	N673201	Gasket	
14	103077	Spring	
15	A631901	Screw, Fil Head	M4 - 0.7 X 10 mm Stainless Steel
16	N685901	Inner Diaphragm Retainer	
17	100081	Diaphragm	
18	N673101	Gasket	
19	N902501	Counter Valve	
20	101183	Counter Valve Assembly	
21	N685801	Outer Diaphragm Retainer	
22	A586801	Screw, Pan Head	M5 - 0.8 X 12 mm
23	101184	Collector Cover Assembly	
23	103048	Collector Cover Assembly	**High Alcohol**
24	N672601	Drive Pin	
25	N891601	Distributor	
26	A579901	Retaining Ring	
27	A584001	Washer	Crankshaft Support
28	101185	Meter Body Assembly	
28	103049	Meter Body Assembly	**High Alcohol**
29	N903701	Roller & Bearing Assembly	
30	A631801	Washer	
31	A239401	Lock Nut	
32	N903801	Crank Shaft Assembly	Gallons
32	N903802	Crank Shaft Assembly	Liters
33	N659201	Cylinder Cover	
33	103041	Cylinder Cover	**High Alcohol**
34	A247010	O-Ring, Square Section	
35	N792201	Piston Screw, Hex Head	With Nylon Patch (also use with **High Alcohol**)
36	N701502	Piston Assembly	
36	103046	Piston Assembly	**High Alcohol**
37	N654802	Connecting Rod	Lower Rod
38	N654801	Connecting Rod	Upper Rod
39	A586401	Retaining Ring	
40	N683701	Calibrating Cover	
40	103043	Calibrating Cover	**High Alcohol**
41	111787	O-Ring	Also used with **High Alcohol**
42	N701601	Calibrating Dial & Screw Assembly	
43	N675801	Seal Pin	
44	N779601	Calibration Cover Assembly	
44	103047	Calibration Cover Assembly	**High Alcohol**
45	100535	Gasket, Meter Inlet	Not Shown
46	N902401S	Valve Plate	Not Shown
47	A586601	Screw, Valve Plate	Not Shown
48	A578404	DU Bearing, Meter Body	Not Shown, for meters built since 1995
49	N906501	DU Bearing and Retainer, Meter Body	Not Shown, for meters built before 1995

Kit List

Part Number	Description	Comment
100965	Kit, SB100, V'Plate/C'Valve Replacement	Includes 1 each of items 8, 10, 12, 13, 14, 20, 25 & 46
KR043601	Kit, SB-100 Piston Retail, 4 Per	Includes 4 of items 34, 35, & 36, 1 each of 10 & 45
112343	Kit, SB-100 Piston Retail, **Alcohol** Meters	Includes 4 of items 34, 35, & 36, 1 each of 10 & 45
107170	Kit, Crankshaft Bearing Replacement	Includes 2 of item 29, 1 ea. of 10, 31 & 45
112246	Kit, Lower Hydraulic Gallon SB-100	Includes 4 of items 34, 35, & 36, 1 ea. of 8, 10, 12, 26, 32, 45 & 48
112347	Kit Lower Hydraulic Gallon SB-100 **Alcohol**	Includes 4 of items 34, 35, & 36, 1 ea. of 8, 10, 12, 26, 32, 45 & 48
112247	Kit Lower Hydraulic Liter SB-100	Includes 4 of items 34, 35, & 36, 1 ea. of 8, 10, 12, 26, 32, 45 & 48
112348	Kit Lower Hydraulic Liter SB-100 **Alcohol**	Includes 4 of items 34, 35, & 36, 1 ea. of 8, 10, 12, 26, 32, 45 & 48
KR044601	Kit, SB-100 Diaphragm/Distributor	Includes 4 of item 15, 1 ea. of 8, 10, 12, 13, 14, 17, 25 & 45
112651	Kit, SB-100 Meter Coupling	Includes items 3, 4 & 5
103490	Kit, Tools for Du Bearing Replacement	
112248	Field Du Bearing Install/Removal Tool	

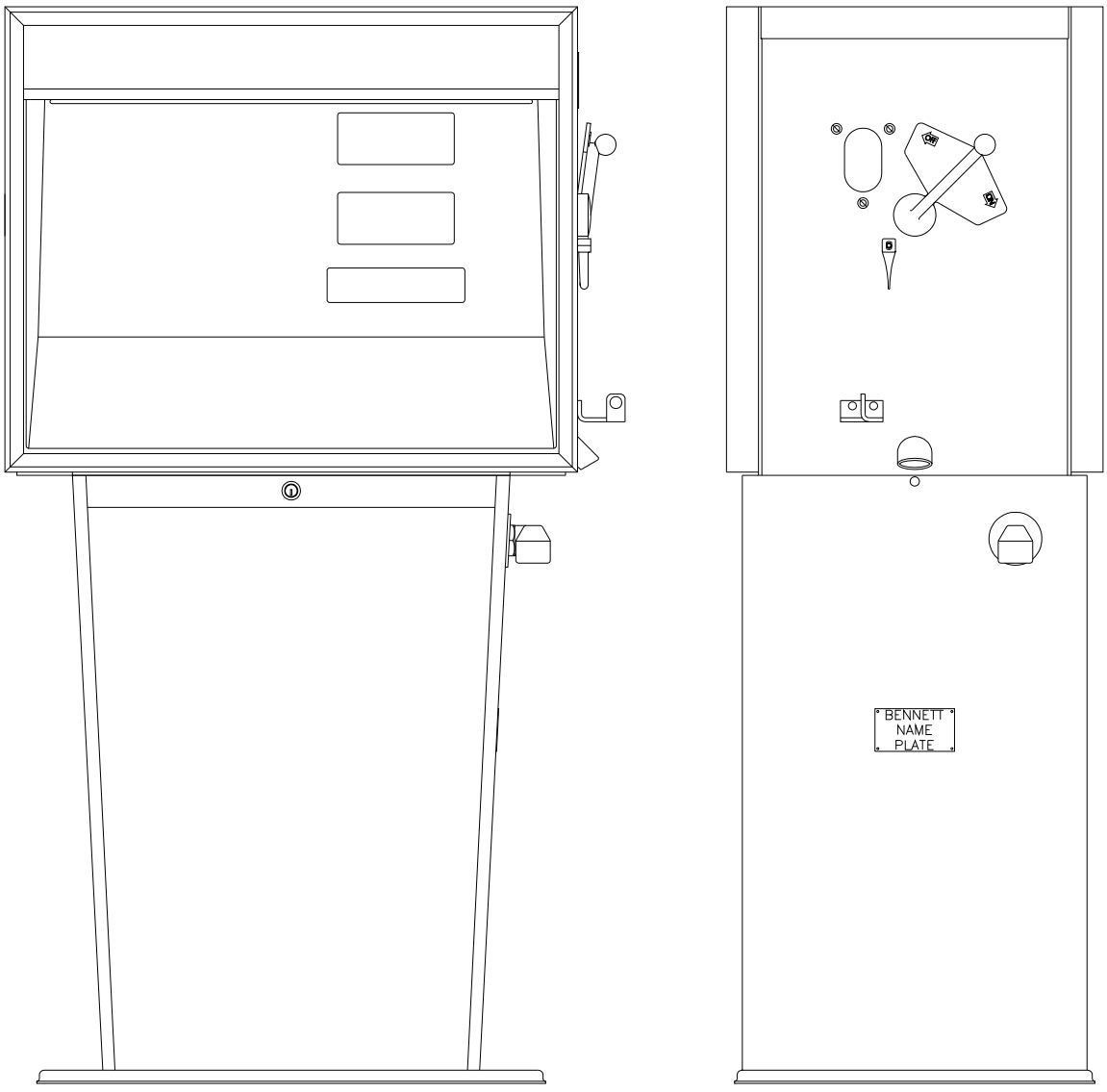
These two kits are for SB100 meters built since 1995

KR044703	Kit, SB-100 Meter, Crankshaft, Gallons	Includes 4 of item 34, 1 ea. of 8, 10, 12, 26, 32, 45 & 48
KR044704	Kit, SB-100 Meter, Crankshaft, Liters	Includes 4 of item 34, 1 ea. of 8, 10, 12, 26, 32, 45 & 48

These two kits are for SB100 meters built before 1995

KR044701	Kit, SB-100 Meter, Crankshaft, Gallons	Includes 4 of item 34, 1 ea. of 8, 10, 12, 26, 32, 45 & 49
KR044702	Kit, SB-100 Meter, Crankshaft, Liters	Includes 4 of item 34, 1 ea. of 8, 10, 12, 26, 32, 45 & 49

Cam-AC Manual Reset Mechanism



Cam-AC Manual Reset Mechanism

Servicing the Cam-AC Operating Mechanism and Motor Switch

The Cam-AC handle assembly is used with Veeder-Root computers equipped with a mechanical reset. The computer is reset by a separate reset mechanism that is part of the computer. The reset mechanism is activated by a small lever located next to the operating handle.

The Cam-AC assembly was designed to alleviate computer and linkage damage due to activating the handle if the computer was not reset. This is accomplished by the use of a "clutch" which disengages if the computer exerts more pressure than a spring in the Cam-AC assembly. If the computer is reset, there is more pressure exerted by the Cam-AC spring than the computer thus allowing the handle to activate the computer and a pump motor switch.

Operation

Once the computer is reset, turning the handle (1) clockwise rotates the shaft (2), engages the clutch (3-5), and rotates the universal link (6). The clockwise rotation of the universal link activates the computer to its ON position. At the same time, the cam lobe of the clutch half (5) rotates to its smaller diameter side. This allows the switch shaft (9) to be in its down position which activates the motor switch to its ON position. See Figure 1.

If the computer is not reset, turning the handle clockwise forces the computer to exert greater pressure on the clutch half (5) than the spring (4) forces on clutch half. This forces the clutch halves apart preventing the universal link from rotating and trying to activate the computer. The above action prevents damage to the computer as well as the universal link.

When the handle is turned to its OFF position, the clutch stays engaged which rotates the universal link in a counter clockwise position. This locks out the computer until it is reset again. At the same time, clutch half (5) rotates to the position that its large diameter side forces the switch shaft to its UP position. This action opens the switch and shuts off the pump motor.

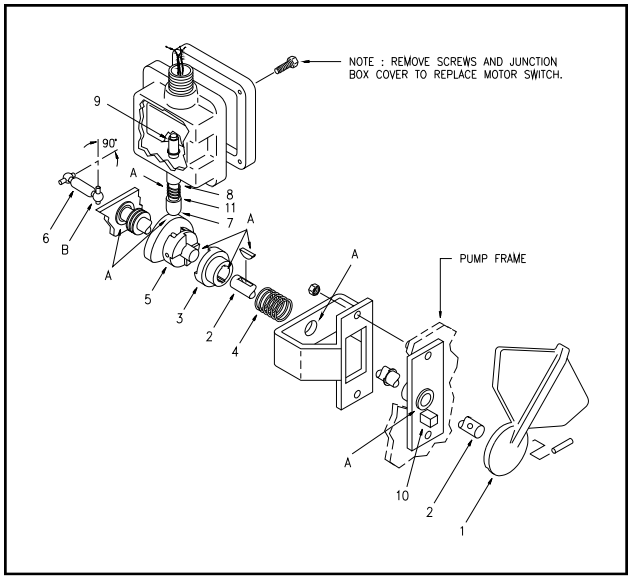


Figure 1

Cam-AC Manual Reset Mechanism

Computer Reset

Motor Switch ON Position. See Figure 2.
The linkage connecting the switch actuating mechanism to the computer should be adjusted so the pump motor does not turn on until the reset latch pawl (A) fully engages the deep notch in the shaft cam (B). This makes certain that the computer reset mechanism is in proper position to function when released by the trip lever next to the operating handle.

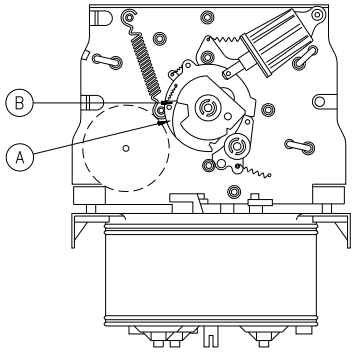


Figure 2

Motor Switch OFF Position. See Figure 3.
The operating linkage must be adjusted so the motor turns off after pawl (C) engages notch (D) of shaft cam (B). This happens before second notch (E) is engaged. This assures proper function of the interlock mechanism. Also, the stop adjustment should be set so approximately 1/8" overtravel is allowed after pawl (C) engages third notch (F).

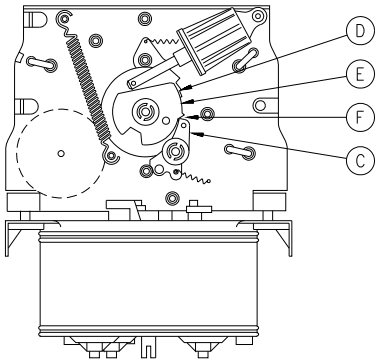


Figure 3

Make sure that all rods or connecting links attached to the computer are free and do not exert thrust against the computer or introduce binds when being operated.

Maintenance
Lubricate all points marked "A" in Figure 1 with a light weight engine oil twice a year.

The Cam-AC assembly does not require adjustment. If a failure occurs, the individual part of the assembly may be replaced.

NOTE: Due to non-interchangeable improvements, be certain to specify model and specification numbers when ordering replacement parts.

Cam-AC Manual Reset Mechanism

Switch Adjustment

DANGER: To prevent personal injury and/or equipment damage, all power must be removed from the pump or dispenser before adjusting the switch.

To adjust the motor switch, remove the junction box cover of the Cam-Ac assembly. Using a continuity tester across the terminals of the switch, rotate the switch cam follower to the position where the operating handle operates the switch as shown in Figure 4.

NOTE: Before rotating the cam follower, the jam nut must be loosened. When proper switch adjustment is complete, tighten the jam nut securely.

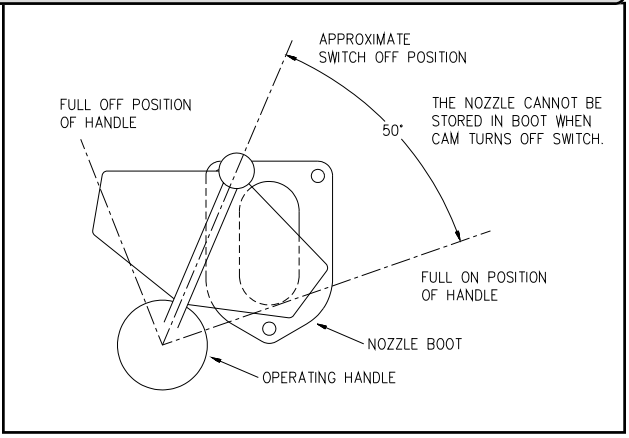


Figure 4

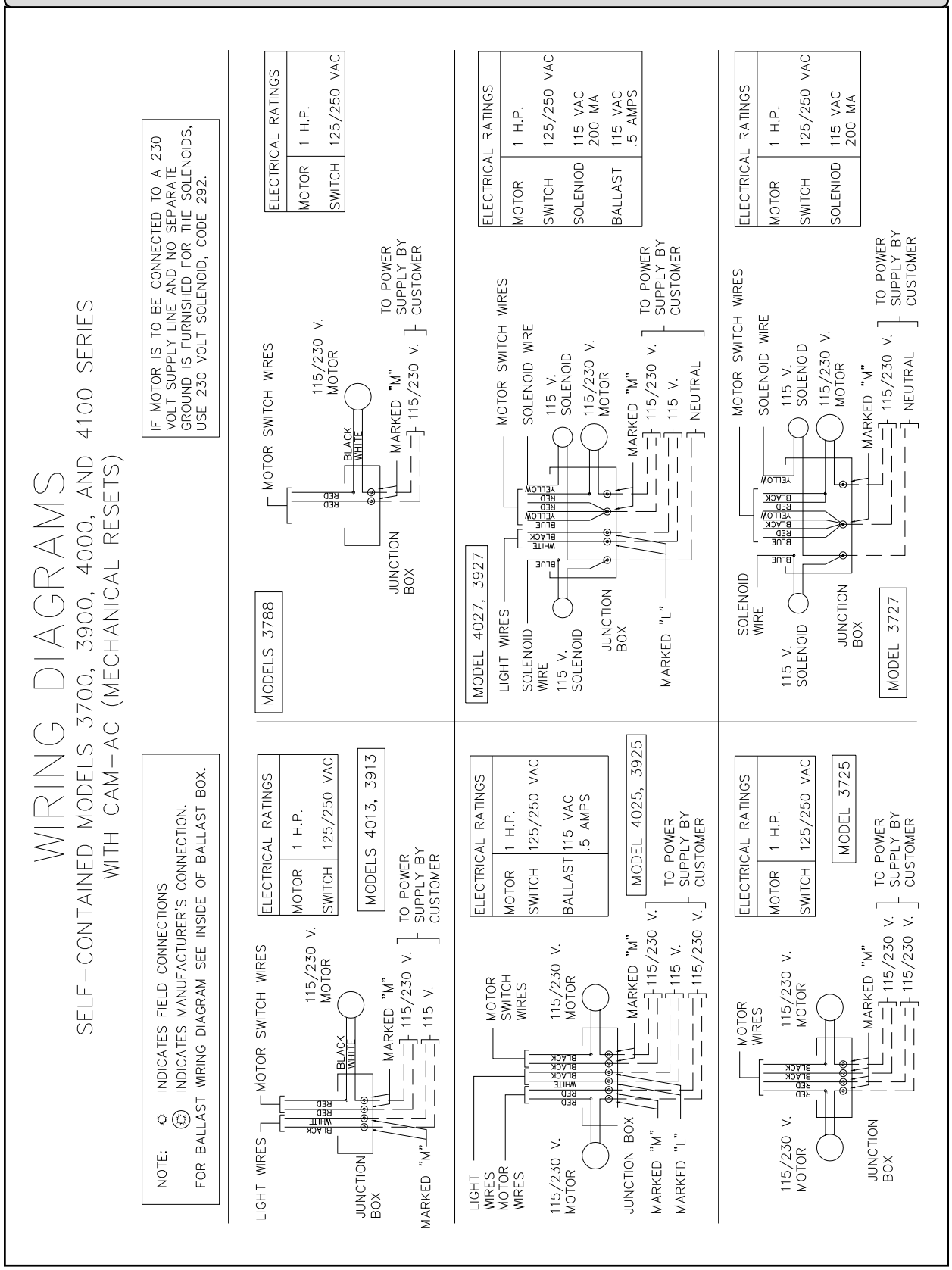


Figure 5 - Wiring for Cam-AC

Cam-AC Manual Reset Mechanism

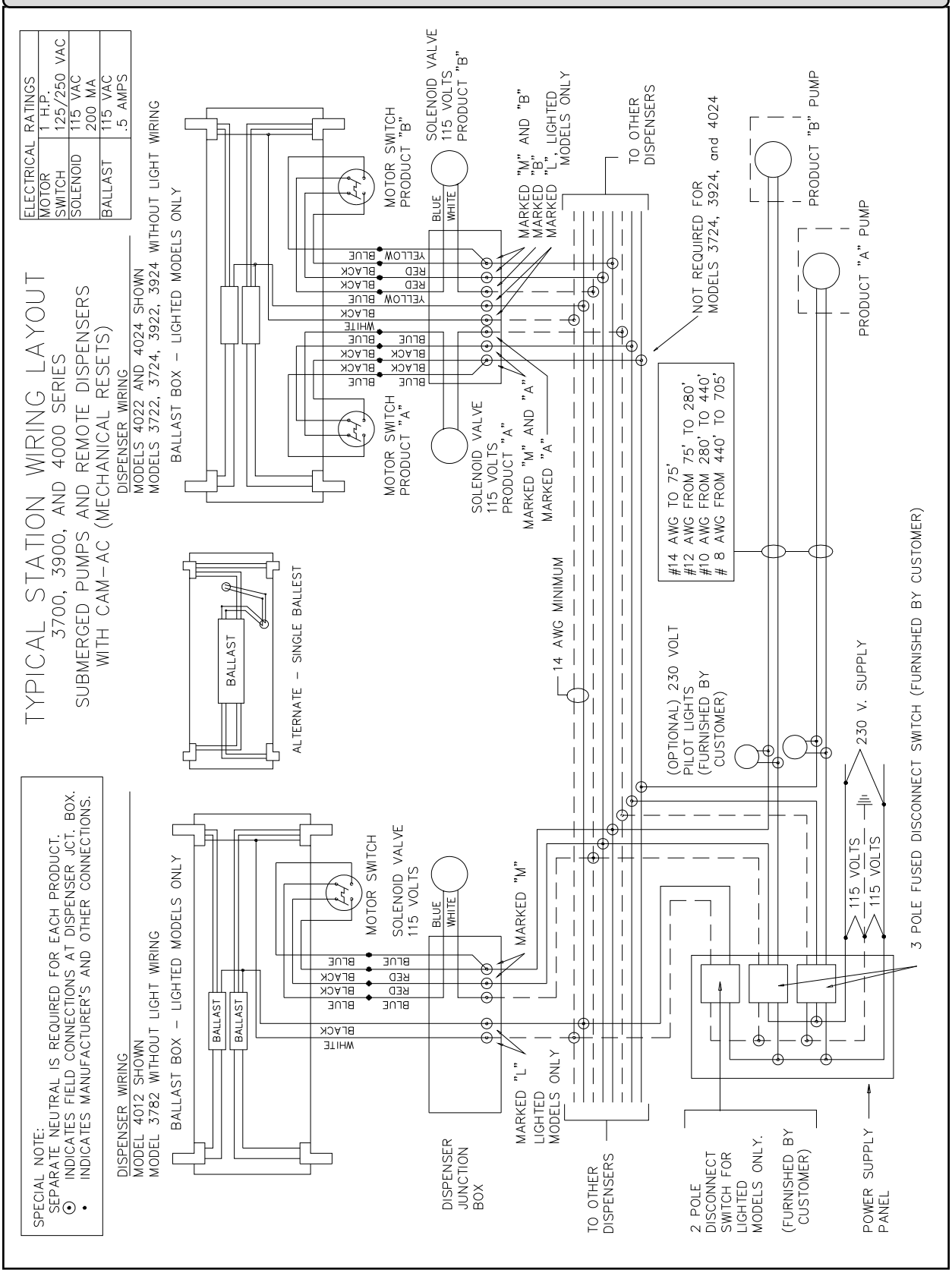


Figure 6 - Typical Station Wiring Layout

Bennett 1218 E. Pontaluna Road, Spring Lake, MI 49456
USA 800-235-7618 ~ Outside USA 231-798-1310
sales@bennettpump.com ~ www.bennettpump.com