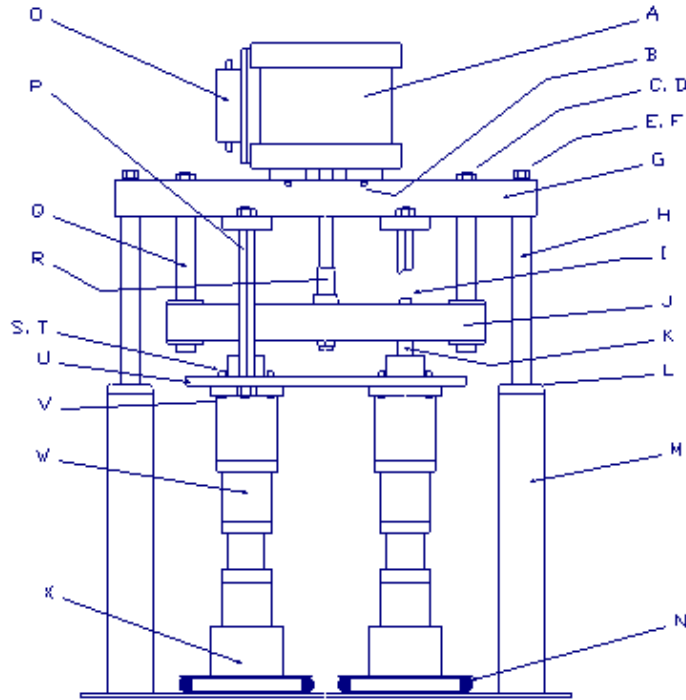


TwinStar Dual Pail Pump For Silicones, Epoxies & Urethanes



Base Plate 30" x 40"
Height 72" Full Up, 52" Down
Shipping Weight 825 Pounds
Standard Hose and Wand Set 25 Feet
20:1 Power Ratio with 8" Diameter Air Motor
30:1 Power Ratio with 10" Diameter Air Motor

Major Component Identification



LTR	PART #	DESCRIPTION	QTY
A	REF.	8" OR 10" AIR MOTOR	1
B	5099.085	SOCKET HEAD SCREW, 1/2"-13 x 1-3/4"	4
C*	5011.08Y.016	HEX NUT, GR8, 1"-14	11
D		1" WASHERS, FLAT & INTERNAL SHAKEPROOF, GR8	10 EA
E	5005.08Y.1418	HEX BOLT, 7/8"-14 x 4-1/2", GR8	2
F		7/8" WASHERS, FLAT & INTERNAL SHAKEPROOF, GR8	2 EA
G	750.300	TIE BAR WELDEMENT	1
H	750.175	ELEVATOR ROD, STAINLESS STEEL	2
I	5277.043	BOLT, SHOULDER, 3/4" x 5"	2
J	750.226	DRIVE BAR ASSEMBLY	1
K	750.270	SPACER, PUMP SHAFT, STAINLESS STEEL	2
L	86348A	CYLINDER CAP, EL NI PLATE	2
M	750.001	ELEVATOR ASSEMBLY	1
N	700.124	FOLLOWER PLATE SEAL	2
O	710.010	AIR VALVE ASSEMBLY	1
P	750.411	STANDOFF ROD, STAINLESS STEEL	4
Q	750.250	GUIDE BAR, STAINLESS STEEL	2
R	750.280	AIR MOTOR SHAFT EXTENSION, SS	1
S	5099.088	SOCKET HEAD SCREW, 1/2"-13 x 2-1/2"	8
T	5020.816	HIGH COLLAR LOCK WASHER	12
U	750.401	PLATE, PUMP MOUNT	1
V	5012.08Y.008	HEX NUT, 1/2"-13, GR8	8
W	709.132.D	PUMP TUBE ASSEMBLY	2
X	700.501	5 GALLON FOLLOWER PLATE ASSEMBLY	2
C*	5005.08Y.1618	HEX BOLT, GR8, 1"-14x 4-1/2" GUIDE BAR AFTER 2003	2



**Value Added Systems
I n c o r p o r a t e d**

WARRANTY REGISTRATION

Goods and equipment sold by Value Added Systems, Inc. are covered by the original manufacturer's warranty. All warranty claims must be processed through us. To register the warranty, this form must be returned to us by fax or by mail at the time the equipment is received by the end user. If the warranty is not registered, the original shipping date from our facility or the manufacturer's plant will be used as the beginning of the warranty period.

Company Name _____

Mailing Address _____

City, State (Prov), Zip (Post Code) _____

Shipping Address _____

City, State (Prov), Zip (Post Code) _____

Phone _____

Fax _____

e-mail _____

Model _____

Ship Date _____

Setup / First Use Date _____



**Value Added Systems
I n c o r p o r a t e d**

Hose and Wand Installation

NOTE:

TO AVOID MATERIAL CONTAMINATION, THIS ASSEMBLY HAS NOT BEEN PRESSURE TESTED! CHECK ALL CONNECTIONS BEFORE USING!

**Always use two wrenches, one to hold the fitting and one to tighten the union or nut!
Do not twist the hose or tubing while tightening fittings.**

1. Lay the hoses out straight and parallel. Connect one hose to each pump outlet union.
2. If the wand has been disassembled for shipment, re-attach the valve set to the wand and manifold using two wrenches as described above.
3. The wand should look like this when you are finished:
4. Position the wand assembly at the other end of the hoses.
5. Connect the hoses to the wand.
6. Attach the static mixer to the outlet end of the wand manifold. Check the linked valve handles for proper operation.

During initial start-up, position the hoses so that they run up-hill from the pump outlet. This aids in purging air from the hoses, which can cause the material to cure.

Refer to machine manual for start-up sequence.

After initial startup, check each fitting on the hose and wand assembly for material leaks. Re-tighten if required.

After startup, the two hoses may be attached together with wire ties through the spring guards, for operator convenience.

New Machine Start-Up

1. Install an air shut-off valve between the air source and the pump air inlet.
2. Bleed all moisture from the air source.
3. Close the air shut-off valve and connect a 3/4" air line to the pump air inlet.
4. Check that all air valves on the machine are closed and that both air regulators are backed out until there is no spring tension on the adjustment knob.
5. Check that the elevator UP – DOWN control valve is in the DOWN position.
6. Check that the material bleed valves between the pumps are in the DOWN / CLOSED position.
7. Turn on the supply air at the source.
8. Open the main air ball valve at the air drive motor.
9. Adjust the main air regulator until tension is felt on the knob; increase pressure until the air motor and drive linkage starts to stroke up and down. After one or two strokes, close the main air ball valve at the air motor. Leave the regulator where it is.
10. Connect the material hoses to the pump outlets. There may be adapter fittings provided depending on the hose diameter.
11. Lay the material hoses out straight from the machine and connect the dispense wand at the other end of the hoses.
12. Check that the blow-off hose(s) are not connected to the follower plate blow-off valves.
13. Check that there is nothing between the top of the follower plates and the elevator cross brace in the back.
14. Check that there is nothing draped over the top of the machine that will prevent it from raising up.
15. Place the elevator control valve in the UP position.
16. Increase the air pressure on the small elevator regulator to 45 PSI. The elevator should start to raise at about 40 PSI.
17. Check that the dispense valves on the wand are closed.
18. Turn off air motor air valve.
19. Raise elevator by placing hand valve in the UP position.
20. Remove lids from material pails.
 - a. When pumping silicone, change the non-moisture sensitive side first.
 - b. Clean debris from top of pail before opening.
 - c. Remove any plastic sheet from surface of material if used.
 - d. Remove any reacted material (solid chunks) from pail. This is especially important on the moisture sensitive side of 2 part silicone.
21. Place two fresh pails under the follower plates.
 - a. This unit pumps at a 1:1 ratio. It is not important which pump gets which material the FIRST time, but the "A" & "B" materials must always remain on the same pump in the future.
 - b. If one material is thinner than the other, and if the machine is equipped with two different size hoses, install the thinner material on the same side of the machine that has the smaller hose. This helps to balance the material pressure.

22. Lower the elevator until the follower plates almost touch the pails. Align as necessary.
23. Lower the elevator and follower plates into the pails.
24. If a pail is slightly out of alignment, placing the elevator valve briefly in the UP position until the weight is removed and then moving it back to the DOWN position usually takes care of the problem.
25. You must remove the air that is trapped under the follower plate and on top of the material. You must bleed both follower plates together and at the same time.
 - a. Place your thumbs on top of both follower plate blow-off fittings.
 - b. With your index fingers open the ball valves on the blow-off fittings.
 - c. Lift your thumbs off of the fittings – you will hear and feel the air escaping. The follower plates will move down into the pails as you let the air out. Covering the outlet fittings will stop the downward movement.
 - d. As soon as the air quits exhausting from both fittings, cover them to prevent material from flowing up the pipe into the valve.
 - e. Close the ball valves with your index fingers, then remove your thumbs from the fittings.
26. Next you must bleed the air that is trapped in the pump. It is possible to save the material from this operation, hand mix it and use it for repairs, but it may not be practical.
 - a. Place a can, cup or other suitable container under the pair of bleed valves located below the pump outlet pressure gauges.
 - b. Open the handles of the bleed valves. These valves are linked together and they must always be opened and closed together.
 - c. Open the main air ball valve to the air motor. Increase pressure on the main air regulator until the pump starts to stroke. You may have to continue increasing pressure as the pump primes and starts to pick up material.
 - d. Air and material will flow out of the bleed valves. Use care, until most of the air is out spitting will occur.
 - e. Allow the pump to run one or two strokes after all air stops coming from the bleed valve.
 - f. Close the main air ball valve to the air motor.
 - g. Coat the outlet of the bleed valves with grease or petroleum jelly to help keep the material remaining in the valve from plugging the outlet.
27. Point the dispense wand into a waste container.
28. Open the coupled valves on the dispense wand.
29. Open the main air ball valve at the air motor. Material will start to pump through the hoses. NOTE: If the unit is supplied with two different size hoses, the smaller diameter hose will fill up first and that material will start to flow from the manifold first. When the material in the larger hose finally reaches the manifold, air will come out first, and cause spitting to occur.
30. Close the dispense valves, clean the outlet end of the manifold and the threads. Coat the threads with grease or petroleum jelly.
31. Install a new static mixing nozzle and tighten the retainer nut hand tight.
32. Open the dispense valves and run a test sample of mixed material.

Pail Changing

1. Close dispense valves.
2. Turn off air motor air valve.
3. Raise elevator by placing hand valve in the UP position.
4. Remove lids from material pails.
 - a. When pumping silicone, change the non-moisture sensitive side first.
 - b. Clean debris from top of pail before opening.
 - c. Remove any plastic sheet from surface of material if used.
 - d. Remove any reacted material (solid chunks) from pail. This is especially important on the moisture sensitive side of 2 part silicone.
5. Connect blow-off hose to fitting on one follower plate. Open ball valve at connection point.
6. Hold pail on the outside near the top to guide it from tipping, open and close the blow-off hose ball valve (under the elevator control valve) until the pail is pushed off of the follower plate.
7. Disconnect the blow-off hose and close the valve on the follower plate.
8. Inspect the follower plate for cured or foreign material. Clean as necessary.
9. Repeat steps 5, 6, 7 & 8 for the other pail.
10. Place two fresh pails under the follower plates. Make sure that the “A” product is installed under the same pump that had the “A” product before.*
11. Lower the elevator until the follower plates almost touch the pails. Align as necessary.
12. Lower the elevator and follower plates into the pails.
13. If a pail is slightly out of alignment, placing the elevator valve briefly in the UP position until the weight is removed and then moving it back to the DOWN position usually takes care of the problem.

*NOTE: If installing material from a different manufacturer/supplier you MUST make sure that the “A” material of one product is chemically compatible with the “A” material of the other product. Do not rely on color or appearance.

If changing chemical families (epoxy to a silicone for example) the machine must be cleaned of all traces of the old product before installing the new product.

Bleeding Air From Under the Follower Plate

After every pail change you must remove the air that is trapped under the follower plate and on top of the material. You must bleed both follower plates together and at the same time.

1. Place your thumbs on top of both follower plate blow-off fittings.
2. With your index fingers open the ball valves on the blow-off fittings.
3. Lift your thumbs off of the fittings – you will hear and feel the air escaping. The follower plates will move down into the pails as you let the air out. Covering the outlet fittings will stop the downward movement.
4. As soon as the air quits exhausting from both fittings, cover them to prevent material from flowing up the pipe into the valve.
5. Close the ball valves with your index fingers, then remove your thumbs from the fittings.

Bleeding Air From the Pump

After every pail change you must check that no air has been trapped in the pump. It is possible to save the material from this operation, hand mix it and use it for repairs.

1. Place a can, cup or other suitable container under the pair of bleed valves located below the pump outlet pressure gauges.
2. Open the handles of the bleed valves. These valves are linked together and they must always be opened and closed together.
 - a. Opening only one valve will cause the drive bar to cock and will damage the guide rods, bearings and air motor connector shaft.
 - b. If there is a compelling reason to only open one valve, the dispense valves must also be open so that the other material has an open path out of the machine.
3. Allow the pump to run one or two strokes after any air is observed coming from the bleed valve.
4. Coat the outlet of the bleed valves with grease or petroleum jelly to help keep the material remaining in the valve from plugging the outlet.

Pressure Gauges

There are four pressure gauges on this machine. They are used to check that the machine is working as expected, and for troubleshooting.

Small Gauge on Small Regulator

This gauge indicates the air pressure to the elevator/ram. It should normally be set around 45 – 50 PSI. When new follower plate seal rings are installed, it may be necessary to increase this pressure to 90 PSI to insert the seals into the pails the first time, but it should be re-set to 45 – 50 PSI as soon as the air is bleed from the follower plate bleed ports.

To increase the life of the follower plate seals, it is permissible to reduce the pressure to 20 – 25 PSI except while raising the elevator to change pails. 40 – 45 PSI minimum is required to perform this operation.

Large Gauge on Large Regulator

This gauge indicates the air pressure to the pump drive motor. When priming an empty pump this pressure should be 20 – 30 PSI. When the system is primed this pressure is increased to anywhere from 40 PSI to 90 PSI. This pressure controls how hard the pump pushes on the material, and as a result, how fast the material flows out of the mixer.

Two Brass Gauges near the Pump Bleed Valves

These gauges indicate the fluid pressure at the pump outlet when the air motor is driving the pumps. These pressures will be higher when the dispense valves are closed (system pressure is stalled against the valves) than when the dispense valves are open and material is flowing.

These two gauges do not normally agree with each other. Unless both the “A” and “B” materials are exactly the same, the two gauges will show different pressures to get the material to flow through the hoses. Some machines are equipped with two different size hoses to try and bring these two pressures closer together.

Increasing or decreasing the air pressure to the air motor will raise or lower the pressure registered by the material pressure gauges as you try and move more or less material through the hoses in the same period of time.

Each gauge should read the same pressure during the pump’s up stroke as it did during the down stroke.

Large fluctuations in pressure between the pumps up and down stroke indicate that one of the internal checks in the pump is not operating correctly.

Daily Start-Up

1. Inspect the mixing manifold threads and outlet, and the mixer attaching nut; remove any cured material if necessary.
2. Apply grease or petroleum jelly to the threads on the manifold and/or nut.
3. Install a fresh mixing nozzle. *Tighten nut hand tight.*
4. Turn on main air at the source, blow any water out of the air line. Turn off and connect to the pump. Turn back on.
5. Check both pump air regulators. The elevator/ram pressure should be about 45 – 50 PSI. The pump pressure should be between 40 – 90 PSI depending on material being pumped and flow rate desired.
6. Open main air ball valve at the air motor.
7. Start dispensing material into a waste container. Observe both material outlet gauges. They should register pressure in both pump strokes.
8. Dispense a small amount of mixed material in a bead down the center of a piece of paper. Fold the paper in half along the bead & squeeze to spread out the bead. Open the fold back up and inspect the interior of the mixed material for streaks.
9. If mixed material is of a uniform color, proceed with production.

Daily Shut-Down

Only the mixing manifold needs to be cleaned at the end of the day.

1. Place the main air ball valve at the air motor in the off position.
2. Remove the old static mixing nozzle.
3. Place the outlet of the manifold in a waste container.
4. Open the dispense valves and allow the material pressure in the hoses to bleed out and the gauges to go to zero. Close the dispense valves.
5. Clean off the outlet of the manifold and the threads and apply a heavy coat of grease or petroleum jelly.
6. Replace the mixer retaining nut to protect the threads.
7. Secure the hoses and dispense wand to that they are not damaged in transit.

PUMP TUBE ASSEMBLY

709.132.CD & 709.132.D



Parts List

1. (Not used on dual pail pumps.)
2. (Not used on dual pail pumps.)
3. (Not used on dual pail pumps.)
4. (Not used on dual pail pumps.)
5. 700.042.B tube center section
6. 700.048 tube inlet
7. 700.040.200 pump head lower section
8. 700.040.100 pump head upper section
9. 700.012.200 tail shaft
10. displacement rod
 - a. 700.012.100
11. 700.125.A primer plate assembly
 - a. 700.125.A01 flow thru disk
 - b. 700.125.A02 primer disk
 - c. 700.125.A03 adapter
 - d. 5006.05Z.0610 hex head bolt
12. 700.072.A lower check seat

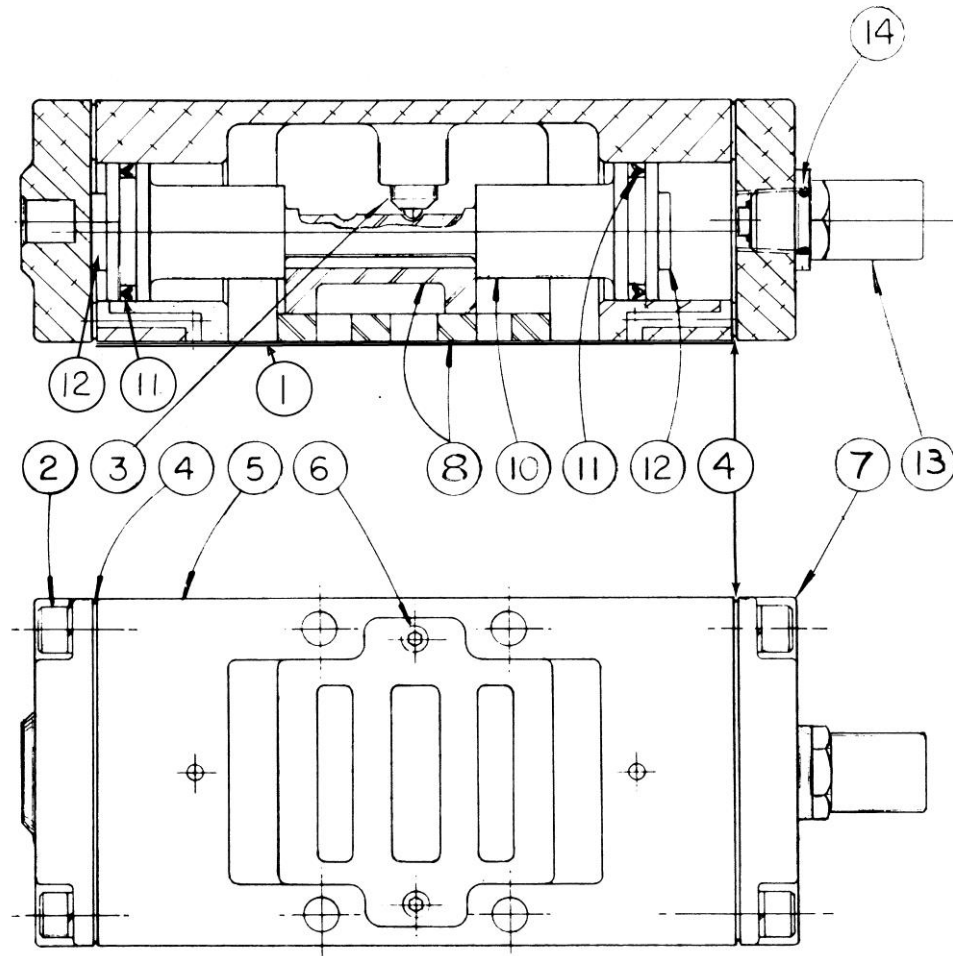
13. 5192.236.V o-ring ‡
14. 700.072.001 lower check spacer
15. 5216.275 snap ring ‡
16. 700.046.A lower check assembly
 - a. 700.046.001 lower check
 - b. 700.046.002 spring retainer
 - c. 700.046.003 spring spacer
 - d. 700.046.004 spring
 - e. 700.046.005 wear band ‡
 - f. 5217.100 snap ring ‡
 - g. 5192.210.V o-ring ‡
 - h. 5284.210 spiral backup ring ‡
17. 5192.234.V o-ring (3) ‡
18. 700.004 upper check seat
19. upper check
 - a. 700.013 upper check
20. 5192.146.V o-ring ‡
21. packing assembly
 - a. 700.021.004 packing assembly
 - i. 700.021.041 male packing brass ring ‡
 - ii. 700.021.142 TFE v-packing (5) ‡
 - iii. 700.021.043 female packing brass ring ‡
22. packing support
 - a. 700.021.003 packing support for 38:1 & 59:1 pumps
23. 700.041 spring
24. (Not used on dual pail pumps.)
25. (Not used on dual pail pumps)
26. 700.050.A packing wrench *
27. 700.021.A01 packing nut
28. 700.040.160 outlet fitting
29. 700.040.150 outlet clamp set
 - a. 5192.219.V o-ring (part of clamp set) ‡

Items with ‡ are included in the SK709.132.C service kit.

Items with an asterisk * are shown for reference only, they are not part of the pump assembly.

AIR MOTOR AIR VALVE

The air motor air valve directs the air to the top and bottom of the air motor piston, causing the air motor to stroke. The air valve receives its signals to shift from the spool & sleeve valves in the air motor end caps.



1. 710.009 base gasket*
2. 5099.041 socket head cap screw (8)
3. 710.016 detent plunger & sleeve (2)
4. 710.040.003 gasket (2)*
5. 710.011 valve body
6. 5154.038.S socket head cap screw (2)

7. 710.023 end cap (2)
8. 710.001.001 shuttle and plate assembly
9. 5020.416 ¼" lock washer – not shown (8)
10. 710.015 spool
11. 710.019 u-cup (2)*
12. 710.018 bumper (2)*
13. 710.024 push button (2)
14. 5192.013.N o-ring (for reference only, included in 710.024)*

*Included in SK710.010 service kit

SK710.010 AIR VALVE KIT INSTALLATION INSTRUCTIONS

Disassemble the air valve and clean all parts. Clean all gasket surfaces.

Inspect the valve slide and plate assembly (the plate is the part with the three rectangular slots and two screw holes in it, the slide is the hollowed out square piece with the two grooves on the back). These are a set. If rebuilding more than one valve, do not mix these parts. If the mating face between the slide and the plate is scored, they must be replaced as a set.

Inspect both detent assemblies. The detent is the brass part with the steel ball in the end of it. It pulls straight out of the valve body. Push on the steel ball. It must move freely. If it does not, the detent needs to be replaced.

Inspect the re-set push buttons in the end caps. If the center part does not slide in and out freely, disassemble and clean. This kit includes new o-rings for the base of the push button

If used, inspect the decoupler chamber on the side of the bottom end cap. These valves have the push button on the top and a cylindrical piece mounted to one side of the bottom end cap that sticks up beside the valve body. Note: this chamber was added to the valve to enhance its operation under certain conditions. No other changes were made to the valve. The decoupler chamber may be replaced with the push button style end cap if necessary when using salvage parts for field repairs.

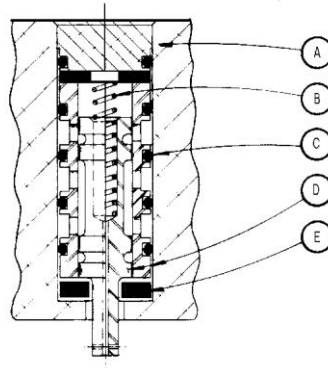
(Note: If you are using this kit to service a Pyles built air valve, the kit includes stainless steel screws to replace the black oxide coated screws that hold the slide plate into the body. The standard screws tend to rust in place. These screws may not work in valves built prior to 1978. Valves built after 1978 can be identified by a three letter code stamped into the valve body. Early valves do not have this code. In any case, after installing these screws snug - NOT TIGHT - sight across the valve plate and body. If the screw head sticks up above the plate they will not work in your valve. Remove the screw and grind off about .030" from the screw head. Re-install the screw and check again.)

Instructions for using a plastic wire tie during valve re-assembly.

- Install both u-cups on the spool shaft. Make sure that the open faces of the u-cups face in toward each other. Lightly grease both u-cups.
- Stand the air valve body upright on a flat surface. (*On valves with the PYLES script, the word should be right side up.*) On newer valves with no script, pick one end to be the top and keep that end as the top when the end caps are installed.
- Insert the spool with the u-cups into the valve body from the top. The first u-cup will fold up as it enters each bore in the body.
- When the second u-cup reaches the top of the valve body it will try and spread out rather than enter the bore. Wrap the plastic wire tie around the u-cup and spool. Pull the wire tie tight to collapse the u-cup back inside the spool. Gently push the spool into the valve body

AIR MOTOR SPOOL VALVE

In each end cap of the air motor is a directional 3-way valve. When the piston reaches the end of its stroke, the spool in the valve is shifted. This sends an air signal to the main air valve which re-directs the main air supply to the opposite side of the air motor piston.



- A. 750.050 PLUG (1)
- B. 84010.057 SPRING (1)*
- C. 5192.014.N O-RING (5)*
- D. 710.020 SPOOL & SLEEVE ASSEMBLY (1)
- E. 84010.056 SPACER (2)*

*Included in the air motor repair kit

Typically, if the air motor will not reverse directions, one of the ports to the spool valve in the end cap at that end of the stroke is plugged with dirt.

If the air motor reverses directions and immediately reverses back the other way causing it to “stutter” at one end of the stroke, the spool valve in the OTHER end cap is usually stuck in the open position.

To remove the spool valve for cleaning, remove the plug (or snap ring & plug) from the end cap. Remove the reset spring. Insert an o-ring pick into the center of the spool. Apply a slight side pressure and slide the spool out of the housing. To properly remove the spool sleeve from the air motor end cap, the end cap should be removed from the air motor, and the sleeve pushed out by inserting a 1/8” punch through the hole provided.

An alternate method of removing the sleeve is to insert an o-ring pick or a bent paper clip into the SECOND ring of air holes in the sleeve and gently pull it out of the end cap. DO NOT SCRATCH THE INSIDE DIAMETER OF THE

HOUSING. Any burrs or scratches on the sleeve or the spool will cause the valve to hang up and not operate.

To clean the spool & sleeve, you will need a drill motor, some denture cream or toothpaste and a very light oil such as 3-in-1® oil. (The toothpaste is a very light abrasive, do not use the “gel” style.)

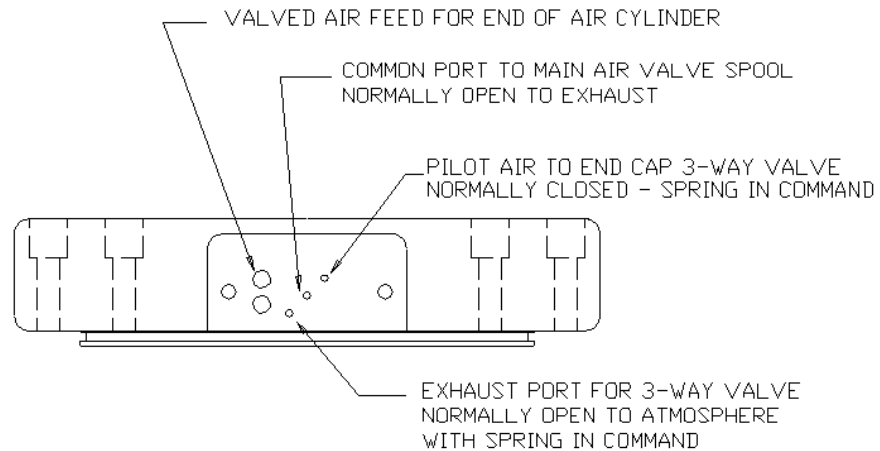
1. Chuck the stem of the spool in the drill motor.
2. Coat the spool with toothpaste or denture cream.
3. Slide the sleeve over the spool. It must be perfectly square with the spool, or it will not go. Rotating it between your fingers while sliding it on helps. When new, these parts have a .0001” clearance between the two diameters, or .00005” per side.
4. Run the drill motor at a low to medium speed while holding the sleeve from turning. Move the sleeve back and forth on the turning spool, but do not come completely out of the bore.
5. Occasionally, slide the sleeve completely off of the spool and reverse it end-for-end. Resume the polishing process.
6. Continue this activity until the sleeve can pass the entire length of the spool without hanging up in any position.

If either the spool or sleeve has a bad build-up of varnish from the lubricating oil, or bad nicks or scratches from dirt or improper handling, this operation can take 15 – 30 minutes.

When the spool passes freely through the sleeve, clean both parts with hot water and dry them thoroughly. Coat both parts with the light oil and re-insert the spool into the sleeve.

Hold the sleeve in a vertical position. The spool should slide completely out from gravity alone. (Don’t let it fall on the floor, or you will end up doing the whole process over.) If the spool will not move from gravity, it will probably not work correctly when installed in the air motor. Either continue to polish it, or replace it with a new one.

AIR MOTOR END CAP SPOOL VALVE TEST



TOP CYLINDER END CAP SHOWN,
BOTTOM CAP IS AN INVERTED MIRROR IMAGE
PORT FUNCTIONS WORK FROM CENTER OUT AT BOTH ENDS

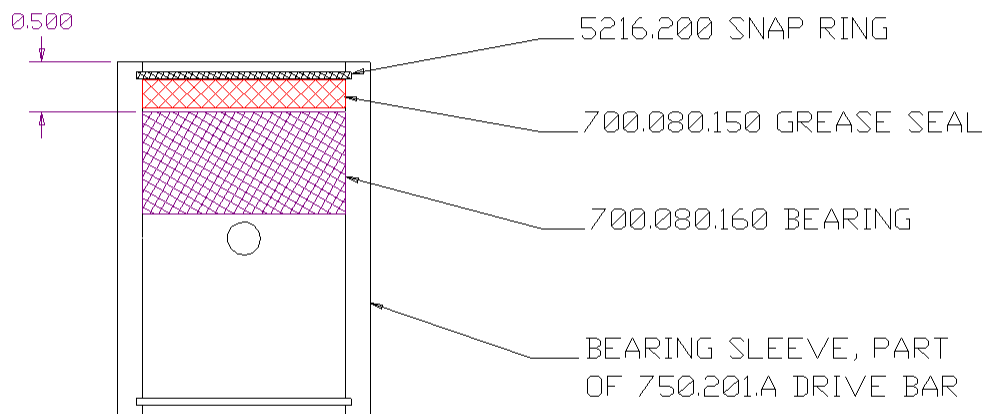
1. With the spool valve installed in the end cap of the air motor, and the air motor piston not in contact with the interior face of the end cap:
2. Squirt oil in the **COMMON PORT** (center port of the diagonal set shown above).
3. Oil should come out of the **EXHAUST PORT** (port closest to the interior face on the diagonal set shown above.)
4. Oil should **NOT** come out of the **PILOT PORT** (port furthest away from the interior face on the diagonal set shown above.)

If the end cap is not installed on the motor, press and hold the end of the spool that projects through the interior face of the end cap. Repeat the steps above. Now oil should come out of the pilot port and not out of the exhaust port.

If oil can flow from the common port to each of the other ports all the time:

- a. An o-ring on the O.D. of the spool sleeve is worn, damaged or missing. Replace o-rings.
- b. The spacer/bumper in the bottom of the spool valve bore is damaged or missing and the ports in the end cap and spool valve are not lined up. Replace 710.018 bumper.
- c. Spool-to-sleeve clearance is excessive. Replace 710.020 valve assembly.
- d. The bore in the end cap for the spool valve is scored and the o-ring(s) on the sleeve are not sealing. Replace end cap or return to manufacturer for repair.

DRIVE BAR END BEARINGS

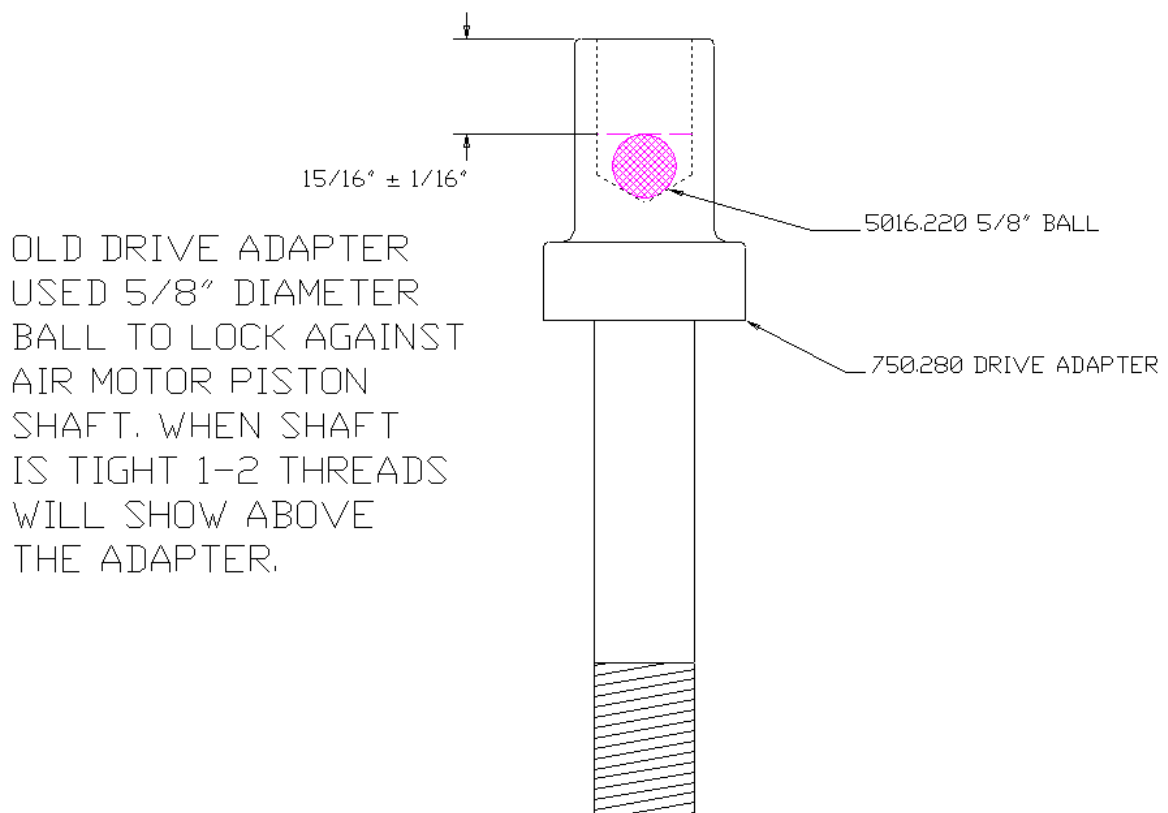


1. Press bronze bearing into bearing sleeve at end of drive bar until end of bearing is $\frac{1}{2}$ " below the surface of the bearing sleeve.
2. Push the grease seal into bearing sleeve until it touches the bronze bearing. The brass scraper ring faces out. Do not crush the brass scraper ring.
3. Install the snap ring into the groove to hold the grease seal in place.
4. Repeat for the other three positions.

DRIVE ADAPTER – ORIGINAL DESIGN USED THROUGH AUGUST 2005

To provide a surface for the air motor piston shaft to lock against that would not damage the threads on the shaft if it was over-tightened, a ball bearing was epoxied in place in the drill point area of the air motor-to-drive bar adapter.

When disassembling the drive adapter from the air motor for any reason, it is important that the ball be retained and used during reassembly. If the ball is not in place, the connection between the air motor and the drive bar will loosen up and the drive bar may start to cock at the up-to-down change over of the air motor stroke.



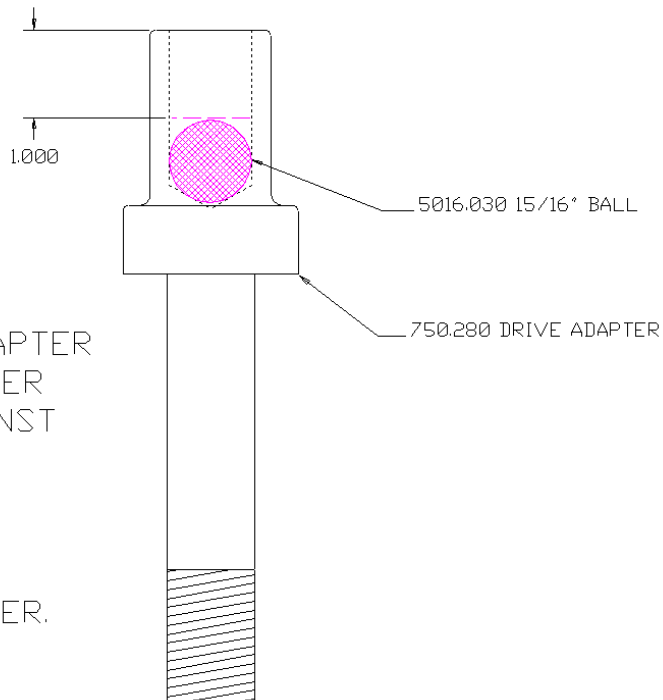
DRIVE ADAPTER – REVISED DESIGN BEGINNING SEPTEMBER 2005

To provide a surface for the air motor piston shaft to lock against that would not damage the threads on the shaft if it was over-tightened, a ball bearing is placed in the drill point area of the air motor-to-drive bar adapter.

When disassembling the drive adapter from the air motor for any reason, it is important that the ball be retained and used during reassembly. If the ball is not in place, the connection between the air motor and the drive bar will loosen up and the drive bar may start to cock at the up-to-down change over of the air motor stroke.

The revision changes the depth of the drilled hole and the diameter of the ball that is used as a locking surface. This revision is for manufacturing and assembly convenience only, and does not change the performance of the parts used. The larger ball does not have to be held in place with epoxy. It is easier to remove during rebuild or repair operations, and it easier to keep track of when it is not installed.

REVISED DRIVE ADAPTER
USES 15/16" DIAMETER
BALL TO LOCK AGAINST
AIR MOTOR PISTON
SHAFT. WHEN SHAFT
IS TIGHT, THREADS
SHOULD BE FLUSH
WITH TOP OF ADAPTER.



DUAL PAIL PUMP FINAL ASSEMBLY ADJUSTMENTS.

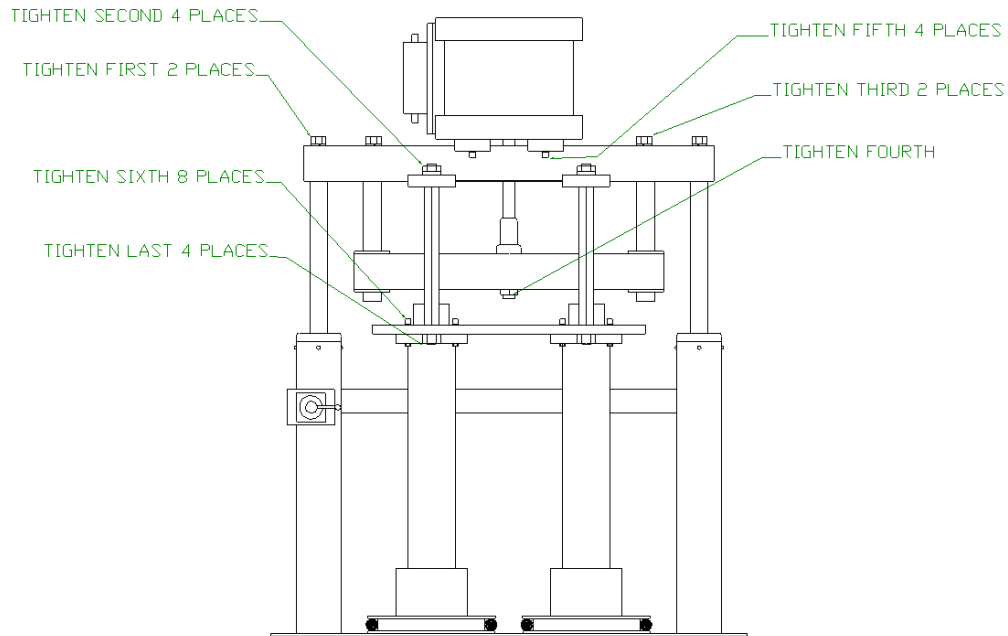
TO INSURE SMOOTH OPERATION IT IS IMPORTANT THAT THE AIR MOTOR, THE DRIVE BAR AND THE PUMP SHAFTS ARE SQUARE WITH EACH OTHER AND MOVING PARRALEL WITH EACH OTHER.

THESE INSTRUCTIONS ASSUME THAT THE UNIT IS NEW, OR RECENTLY REBUILT AND THAT THERE IS NO MATERIAL IN EITHER PUMP.*

MAKE SURE THAT THE ELEVATOR LIFT ROD TO CROSS BAR BOLTS ARE TIGHT BEFORE YOU START. ALSO TIGHTEN THE NUTS ON THE TOP OF THE FOUR STANDOFF RODS BETWEEN THE ELEVATOR CROSS BAR AND THE PUMP MOUNTING PLATE, BUT NOT THE NUTS ON THE BOTTOM OF THE PLATE.

MAKE SURE ALL OF THE FOLLOWING BOLTS AND NUTS ARE LOOSE ENOUGH SO THAT THE LOCK WASHERS OR STAR WASHERS ARE NOT COMPRESSED:

- a. FOUR ½”-13 SOCKET HEAD SCREWS FROM UNDER THE ELEVATOR CROSS BAR UP INTO THE BOTTOM OF THE AIR MOTOR.
- b. TWO 1”-14 HEX HEAD BOLTS FROM THE TOP OF THE ELEVATOR CROSS BAR DOWN INTO THE 12” LONG CHROME GUIDE BARS.
- c. ONE 1”-14 HEX NUT FROM UNDER THE PUMP SHAFT DRIVE BAR THAT CONNECTS THE AIR MOTOR PISTON SHAFT ADAPTER TO THE DRIVE BAR.
- d. EIGHT ½”-13 SOCKET HEAD SCREWS THAT HOLD THE PUMPS (FOUR ON EACH PUMP) TO THE PUMP MOUNTING PLATE.
- e. FOUR 1”-14 HEX NUTS UNDER THE PUMP MOUNTING PLATE TO THE FOUR 1-1/4” DIAMETER SPACERS BETWEEN THE PUMP MOUNTING PLATE AND THE ELEVATOR CROSS BAR.
- f. THE TWO SOCKET HEAD SHOULDER BOLTS THAT CONNECT THE PUMP SHAFTS TO THE DRIVE BAR MUST BE IN PLACE AND AT LEAST SNUG AT THIS POINT.



2. RAISE THE ELEVATOR JUST ENOUGH SO THAT THE PUMPS ARE OFF OF THE ELEVATOR BASE PLATE AND HANGING IN THE AIR. BLOCK THE ELEVATOR IN PLACE WITH BOARDS BETWEEN THE UNDERSIDE OF THE CROSSBAR AND THE TOP OF THE LIFT CYLINDER.
3. SNUG UP AND THEN TIGHTEN BOTH 1"-14 HEX HEAD BOLTS FROM THE TOP OF THE ELEVATOR CROSS BAR DOWN INTO THE 12" LONG CHROME GUIDE BARS. THE DRIVE BAR MUST BE CENTERED ON THE TWO GUIDE BARS FOR THE UNIT TO OPERATE SMOOTHLY.
4. TIGHTEN THE 1"-14 HEX NUT UNDER THE DRIVE BAR THAT CONNECTS THE AIR MOTOR PISTON SHAFT ADAPTER TO THE DRIVE BAR. THIS STEP SETS THE RELATIONSHIP BETWEEN THE AIR MOTOR PISTON SHAFT AND THE PUMP SHAFTS.
5. APPLY AIR PRESSURE (20-40 PSI) TO THE AIR MOTOR LONG ENOUGH TO MAKE IT MOVE THROUGH PART OF ITS STROKE. INCLUDE A BOTTOM CHANGEOVER SO THAT THE AIR MOTOR IS PULLING THE DRIVE BAR UP. *
6. TIGHTEN THE FOUR ½"-13 SOCKET HEAD SCREWS FROM UNDER THE ELEVATOR CROSS BAR UP INTO THE BOTTOM OF THE AIR MOTOR. THIS STEP CENTERS THE AIR MOTOR OVER THE DRIVE BAR.
7. APPLY AIR PRESSURE TO THE AIR MOTOR LONG ENOUGH TO MAKE IT MOVE THROUGH PART OF ITS STROKE. INCLUDE A TOP CHANGEOVER SO THAT THE AIR MOTOR IS PUSHING THE DRIVE BAR DOWN. *
8. IF NOT ALREADY TIGHT, TIGHTEN THE SOCKET HEAD SHOULDER BOLT THAT GOES THROUGH THE DRIVE BAR INTO THE TOP OF EACH

- PUMP SHAFT. THIS STEP ALLOWS EACH PUMP TO BE CENTERED UNDER ITS ATTACHING POINT ON THE DRIVE BAR.
9. SNUG, THEN TIGHTEN THE EIGHT ½”-13 SOCKET HEAD SCREWS THAT HOLD THE PUMPS (FOUR ON EACH PUMP) TO THE PUMP MOUNTING PLATE.
 10. TIGHTEN FOUR 1”-14 HEX NUTS UNDER THE PUMP MOUNTING PLATE TO THE FOUR 1-1/4” DIAMETER SPACERS BETWEEN THE PUMP MOUNTING PLATE AND THE ELEVATOR CROSS BAR. CHECK TO MAKE SURE THAT THE FOUR NUTS ON THE TOP ARE TIGHT AS WELL.
 11. APPLY AIR PRESSURE TO THE AIR MOTOR AND LET THE MACHINE GO THROUGH SEVERAL CYCLES. *

*IF THERE IS ALREADY MATERIAL IN THE MACHINE, OPEN THE BLEED VALVES AT THE PUMP HEAD AND HAVE AN ASSISTANT COLLECT MATERIAL IN A CAN, BAG OR BOX. CYCLE THE MACHINE SLOWLY SO THAT THERE IS MINIMAL FLUID PRESSURE BUILD UP IN THE PUMPS WHILE CENTERING ALL OF THE COMPONENTS. THERE ARE ALTERNATE INSTRUCTIONS IN THE TROUBLESHOOTING SECTION OF THE MANUAL FOR MACHINES THAT ARE ALREADY IN SERVICE.

ELEVATOR DISASSEMBLY

Clean the cylinders and replace the seals once each year. Moisture collects in the cylinders causing a rust ring to build up at the top of the piston travel which makes disassembly very difficult if it is not cleaned out properly.

Total time about 1 hour. You will need one SK700.080.C service kit, o-ring grease, air tool oil, large snap ring pliers and a hex key set, rags or shop towels and Scotch Brite or similar pads.. A flashlight and an automotive cylinder hone are desirable.

1. Disconnect air supply from pump.
2. Bleed remaining air in elevator using hand valve.
3. Remove tie bar by removing hex bolts, lock washers and flat washers. If still connected, remove nuts and washers from follower plate support rods.
4. Remove all 4 button head cap screws from the cylinder ends.
5. Lift the cylinder rod out of the cylinder. ***DO NOT ATTEMPT TO USE AIR PRESSURE TO FORCE THE ROD OUT! THIS WILL LAUNCH THE PISTON AND ROD SEVERAL FEET IN THE AIR!***
6. Remove the cylinder cap & guide from the cylinder rod.
7. Remove the grease seal and bearing from the cylinder cap.
8. Remove 2 external and 2 internal o-rings from the cylinder cap.
9. Remove the lower snap ring from the cylinder rod.
10. Remove the piston from the cylinder rod.
11. Remove the o-ring from the cylinder rod.
12. Remove the upper snap ring from the cylinder rod.
13. Remove the wear band and o-ring from the piston.
14. Clean all components.
15. Remove the pipe plugs from the bottom of the cylinder.
16. Clean out the inside of the cylinder with clean rags attached to a rod.
17. Use the abrasive pads attached to a rod or a cylinder hone to clean the inside of the cylinder. (To use the hone in a deep cylinder requires a chuck extension for your drill motor.)
18. Flush any dirt from the cylinder with water.
19. Dry the cylinder with clean rags or towels attached to a rod.
20. Wipe the cylinder down with oil on a clean rag or towel attached to a rod.
21. Reassemble in the opposite order.

Apply a liberal amount of o-ring grease to all o-rings during re-assembly.

When installing the piston on the cylinder rod, put the upper snap ring and the o-ring on the rod first. Put the piston on the rod with the o-ring groove down and the wear band groove up.

Installing the piston and rod into the cylinder is easier for 2 people. Insert the piston into the cylinder as far as the o-ring. Have a helper wrap the wear band around the piston and make sure that it stays completely in the groove. Slide the piston and wear band into the cylinder.

Slide the 2 rubber bumpers over the rod now. You will probably forget them if you don't.

Pour about ¼ cup of air tool oil into the cylinder on top of the piston.

Set the bearing into the cylinder cap with a large diameter socket, or order the bearing & grease seal insertion tool. The bearing must go into the cap square, or it will deform and not fit over the rod. The bearing goes to the bottom of its cavity.

Set the grease seal into the cylinder cap with a large diameter socket. It sits flush with the top of the cylinder cap. Take care to not damage the brass scraper lip.

Use the pump packing wrench in the holes in the top of the cylinder cap to align the threaded holes with the holes in the cylinder. You should be able to install all 4 button head screws by hand.

Repeat the steps above for the other cylinder.

PREPARATION FOR MAJOR REPAIR OR REBUILD

These instructions assume that the pump is at least partially operational. If it is not, please call the support number in the back of the book for additional assistance.

USE CARE, CAUTION AND COMMON SENSE WHEN WORKING ON THIS, OR ANY, EQUIPMENT.

If the elevator works, even if nothing else is working, do steps 1 thru 8 below before doing any additional work. This will keep material from curing on the follower plate, resulting in additional cleanup. **DO NOT REMOVE THE PUMPS FROM THE PAILS AND LEAVE THE FOLLOWER PLATE EXPOSED TO THE AIR.**

1. Raise the pump to the full height of the elevator.
 - a. Cut two boards (2"X4", 2"X2" or similar) just slightly less than the distance between the top of the elevator cylinders and the underside of the elevator crossbar.
 - b. Place the boards on top of the elevator cylinders and against the elevator shafts where they are right under the crossbar. Duct tape or wire ties are useful in keeping the boards in place.
 - c. Lower the elevator until the crossbar is resting on the boards. **DO NOT TRUST THE ELEVATOR CONTROL VALVE TO KEEP THE ELEVATOR UP WHILE YOU ARE WORKING ON THIS PUMP.**
2. If connected, remove the blow-off hose from the valve and fittings that go down into the follower plates.
3. Remove all of the fittings and valve that go into the follower plate.
 - a. Disassemble and inspect the quick disconnect stem, ball valve and any pipe nipples or bushing involved. These must all be clean and operational before proceeding.
 - b. If there is a one-way check valve (a spring loaded device that lets air flow into the plate but doesn't let material flow back out) installed at the follower plate, clean it, and set it aside at this time. Replace it with an appropriate reducing bushing from a local hardware supply, if required, to match up sizes.
4. Remove the boards and set them aside for future use.
5. Obtain 2 clean empty pails and 5 – 10 gallons of mineral spirits & xylene (assuming you have been pumping a silicone, other materials may require other solvents. Check with your material supplier for an adequate solvent.)
6. Install the clean pails with solvents the same way you would a fresh material pail.
 - a. **WEAR SAFETY GLASSES.**
 - b. **WHEN THE FOLLOWER PLATE REACHES THE SOLVENT LEVEL, OPEN THE BALL VALVE ON THE BLOW-OFF FITTINGS TO LET OUT ANY AIR TRAPPED UNDER THE DRUM. PLACE YOUR THUMB OVER THE QUICK DISCONNECT STEM OUTLET TO**

START AND STOP THE FLOW OF AIR UNTIL IT IS ALL EXHAUSTED. CLOSE THE BALL VALVE.

7. Reduce the air pressure at the pump air motor to zero. If the pump was at least partly operational, place a waste container under the bleed valves at the pump head and open them. Some bleed valves have a 1/4" pipe thread in their outlet. You may connect pipe fittings or a hose of adequate working pressure at this point to help control the flow of material and solvent.
 - a. **WEAR SAFETY GLASSES! WHEN THE SOLVENT PUSHES THE MATERIAL OUT OF THE BLEED VALVE, THE FLOW RATE WILL INCREASE SHARPLY.**
 - b. **HAVE A HELPER AVAILABLE TO TURN OFF THE AIR TO THE PUMP.**
8. Increase the air pressure to the air motor slowly until the pump starts to cycle. Catch the material and then some solvent in the waste container. Turn off the air to the pump. Close the bleed valve.
9. Open the dispense valve.
10. Increase the air pressure to the air motor slowly until the pump starts to cycle; continue to pump solvent until it reaches the outlet.
11. If no solvent or material reaches the outlet and the pump stalls (stops moving even though there is still air pressure applied), the hose, valve, or outlet fittings may be plugged with cured material. Turn off the air to the pump motor.
12. Remove the tip from the dispense wand. Repeat steps 10 & 11 above. If material, then solvent flow, go on to step 13. If there is no flow, remove the next item at the end of the wand and repeat steps 10, 11. Keep removing items from the end of the dispense hose and wand assembly until you determine which item was plugged. *Remember to always bleed off trapped pressure before removing a part that may be plugged.*
13. Flushing the pump. There are two ways to deal with the solvent when flushing the pumps.
14. Swapping Pails:
 - a. Use 4 clean empty drums and a waste pail or drum. Using solvent in a clean pail, pump the material out of the system into the waste pail or drum.
 - b. As soon as mostly solvent is being pumped, turn off the pump and switch the outlet to the second pair of empty pails.
 - c. Start the pump and continue pumping solvent until the first pair of pails are empty.
 - d. Change pails and pump from the second pail into the first pail.
 - e. Keep swapping pails for 10 – 20 minutes.
15. If the follower seals are going to be replaced:

- a. Use 2 clean empty pails and a waste pail or drum. With solvent in the clean pails, pump the material out of the system into the waste pail or drum.
 - b. As soon as mostly solvent is being pumped, turn off the pump.
 - c. Raise the pump from the pails and remove the follower seals. (Pry off with two large screwdrivers.) Remove the blow-off valve & fittings.
 - d. Lower the pumps back into the pails until they are immersed in the solvents. Point the outlet hose back into the pails. Start the pump and recirculate solvent very slowly for 20 – 30 minutes.
16. Stop the pump and transfer the discharge hoses to the waste container. Start the pump again and pump out as much of the dirty solvent as possible. Stop the pump.
17. Add clean solvent to the pails under the pump inlet. Start and pump into the waste container until the fresh solvent reaches the end of the discharge hose. Stop the pump.
18. Cap the end of the discharge hose and let the pump soak for 24 – 48 hours. It may be necessary to skip this step due to production requirements, but it will make disassembly and clean-up much easier. If possible, recirculate some solvent through the pump periodically during the soak period.

The pump fluid sections are now ready to be disassembled and cleaned with the least amount of effort.

TROUBLESHOOTING AND TIPS SECTION

End user input is always welcome for this section. Please fax any tips that we can include in future manuals to 800.736.4119.

Do not mix products from Dow-Corning and Watson Bowman Acme in the same pump. The cure system chemistry is different between the two: the material may set up inside the pump. Completely flush the pump, hose and wand with mineral spirits before making a material change

Do not mix any of the silicone products with an epoxy product without completely flushing the pump, disassembling and hand cleaning. The chemistry is totally different. Replacing the hoses is also recommended.

Do not let the pump run empty. It is capable of pulling a vacuum on the pails and sucking the bag liners (if used) up into the pump. The ONLY way to correct this condition is to completely disassemble and clean the pump fluid section.

Pails with minor dents will work. The follower plate will push out smooth dents as much as 2” deep. It may not push out deeper dents, nor dents that are creased. Refuse badly dented drums at the time of shipment.

Silicone and Urethane joint sealant materials cure from exposure to the moisture that is in the air. The higher the humidity, the faster the cure. Always keep your system sealed up. Remove the pumps from an empty pails only long enough to change pails.

For short term storage between jobs, leave the pump in the last pail used. Once a week, start the pump and dispense about a quart of material – enough to move fresh material from the pail into the pump and hose.

For long term storage, more than 3 months, it is best to flush the entire system with mineral spirits or xylene. Leave the solvents in the system for a week and flush it out again. Remove and cap the hose(s) with fresh solvent in them. Disassemble and clean the pumps by hand, install new packings and o-rings, lightly lubricate and store empty. Clean the follower plates, install new seals, lubricate lightly and store clean. These operations are relatively easy to do with fresh material and very difficult to do with cured material.

DO NOT REPLACE ANY OF THE FLUID FITTINGS WITH PIPE FROM THE LOCAL HARDWARE STORE. Use high pressure fittings designed for use in hydraulic systems.

If the main air motor air valve does not shift properly **DO NOT BEAT ON IT WITH A HAMMER OR OTHER HANDY OBJECT!!!** This will not fix the problem and it frequently results in a cracked valve body.

Do not use the red Marvel Mystery Oil in the air line oiler. It is not designed to lubricate an air cylinder or air valves. Use any air tool oil or 5 weight non-detergent oil. Air tool oil is available at most hardware stores and other places that sell pneumatic tools (impact wrenches, air drills etc.)

What is the correct elevator down pressure? If the pump cavitates (cycles without moving any fluid) there is not enough down pressure. If material starts to leak up around the follower plate seals there is too much down pressure. 40 – 60 PSI is common.

What is the correct air motor pressure? The air pressure on the air motor controls how fast the pump runs. You may need more or less pressure depending on the skill of the operator and the width & depth of the joint. 50 PSI is a good place to start and adjust from there.

The exhaust muffler is forming ice on the outside. There is too much moisture in the compressed air service. Ice on the muffler will eventually stop the pump. Do not remove the muffler from the air motor. The air valve needs the back pressure to operate properly. Running the pump without the muffler will damage the valve. Fix the problem with the air supply instead. A temporary work-around is to buy a ¾” street elbow, a ¾” x 12” – 18” pipe nipple and a ¾” pipe coupler from a hardware store. Remove the muffler, install the elbow pointing up, install the pipe, the coupler and the muffler. This will reduce the icing problem until you can correct the source.

Drive Bar Cocking or Binding

Care has been taken during the initial assembly of the TwinStar pump to make sure that the drive bar linkage is true and square. It is always tested prior to shipment, both before and after the pumps are installed. Linkage that does not perform normally is disassembled, inspected and any problems are corrected as necessary.

Things that can Cause the Drive Bar to Cock or Bind

- ✓ Lack of grease on the guide rod bearings. The bearings have become dry and are dragging on the guide rods. Apply grease to the two fittings in the end of the drive bar at least once a week.
- ✓ One of the two pumps is not pumping material on one or both strokes. This allows all of the mechanical force to work on one pump and may cause the drive bar to cock. In the worst condition, one of the guide bars could become bent. Correct the pumping problem first before looking for a drive bar problem.
- ✓ One of the two pumps has air trapped in it from a pail change. This causes uneven material pressures during the pump stroke which lets the mechanical load transfer to the other pump. See problem above. Go through the air bleed procedures the same way as when you change a pail.
- ✓ The coupling bar between the two bleed valve handles or between the two dispense valve handles has been removed and someone attempted to run just one of the two materials. This will usually bend one of the guide rods on the ends of the drive bar. Check for straightness and replace as necessary.
- ✓ A variation on the problem above – one of the two ball valves in the dispense wand is not shutting off due to wear, improper assembly, or seal failure. In the off position, material pressure from one pump bleeds down to zero, the mechanical force transfers to the other pump and the linkage is cocked when opening the ball valves for the next pour. This will usually smooth out during the pour and then cock again when the valves are closed. Replace the seals in the ball valves, make sure the ball valves are indexed to open and close together.
- ✓ One of the pump components has come loose, or been removed and replaced, and is causing a side load on some portion of the drive bar linkage. Follow the alignment steps below.

Drive Bar Linkage Alignment

If you are unsure which component may be causing the problem, follow all of the steps below. If you are unsure about an individual component, and are familiar with the machine, you may skip some of the initial steps.

1. Loosen the 4 socket head cap screws that mount the air motor to the elevator cross bar. Do not remove, back out until the lock washers are free.
2. Loosen the 4 nuts and socket head cap screws that hold each pump to the pump mount plate. Do not remove, back out until the lock washers are free.
3. Loosen all 4 top and all 4 bottom nuts on the standoff bars between the elevator cross bar and the pump mounting plate. Do not remove, back out until the lock washers are free.
4. Loosen the 2 bolts that hold the drive bar guide rods to the elevator cross bar. Do not remove, back out until the lock washers are free.
5. Raise the elevator 3 – 4 inches. Do not remove the material pails if they are in place.
6. At this point, each pump should be hanging from the single bolt between the drive bar and the pump rod. The drive bar should be hanging from the air motor piston shaft. Make sure that the nut on the air motor piston shaft is tight. Make sure that each bolt between the drive bar and its pump shaft is tight.
7. Tighten all 4 top and all 4 bottom nuts on the standoff bars between the elevator cross bar and the pump mounting plate. When finished you should still be able to move each pump slightly on its mounting bolts without binding against the pump mounting plate.
8. Snug the 4 socket head cap screws that mount the air motor to the elevator cross bar. Do not tighten, just get some tension on the lock washers.
9. Snug the 4 socket head cap screws that hold each pump to the pump mount plate. Do not tighten, just get some tension on the lock washers.
10. Lower the elevator until the material pails (or follower plates) are touching the pump base plate.
11. Turn the pump air motor air pressure down to about 5 PSI.
12. Open the bleed valves between the pump heads – catch the material the same as when changing pails.
13. Open the air motor air valve and increase the air pressure until the linkage starts to cycle. Allow unit to run 1 or 2 cycles. It should run free in both the up and down stroke.
 - a. If the drive bar linkage cocks or binds, but the mounting bolts for the air motor and both pumps are slightly loose AND both materials are being pumped out of the bleed valves in both the up and down stroke, one of the two guide bars is probably bent..
 - i. Remove one guide bar and cycle the linkage again. If the problem goes away, check that guide bar for straightness. If the problem did not go away, remove the other guide bar and check it for straightness.
 - ii. Repair or replace guide bar as necessary.

- b. If the drive bar linkage runs correctly with the mounting bolts for the pumps and air motor loose, the problem is usually misalignment of one of the two pumps or the air motor.
14. Tighten the 4 socket head cap screws that hold the air motor to the elevator cross bar.
15. Dispense some material out of the bleed valves. If the drive bar linkage runs correctly, tighten the mounting bolts for one of the two pumps.
16. Dispense some material out of the bleed valves. If the drive bar linkage runs correctly, tighten the mounting bolts for the other pump.

If the binding problem persists after the checks above have been made, the problem is usually more serious than an alignment

TECHNICAL SUPPORT

If you purchased this pump from a re-seller, contact that company first. They know you and your operation better than the factory representatives, and have agreed to provide you with field and customer support as part of their sales effort.

If you purchased this pump from the factory representative Value Added Systems, Inc., or need second tier technical support, please call us 940-566-2508. You may be asked to leave a message: if so, please describe your problem briefly and leave a name, company name and phone number. Every effort is made to return these calls within 30 minutes.

If you prefer to contact us via e-mail, or have digital pictures of an area of concern, please send to info@dispense.com.

Warranty Statement

VALUE ADDED SYSTEMS, INC. Inc. warrants to the original purchaser / end user, for a period of 12 months from date of purchase that its products are free from defects in material and workmanship. This warranty does not cover, and VALUE ADDED SYSTEMS, INC. Inc. shall not be liable for, normal wear or to damage or wear resulting from misuse, abrasion, corrosion, negligence, accident, improper installation or tampering, inadequate or improper maintenance.

VALUE ADDED SYSTEMS, INC. Inc. will repair or replace at no charge any part(s) it determines are defective if said part(s) returned prepaid to its authorized warranty agent or reseller. If the claimed defect is verified, VALUE ADDED SYSTEMS, INC. Inc. will repair or replace the defective part(s) and return it (them) to the original purchaser freight prepaid. Damages due to causes other than defective material or workmanship will be repaired at normal service charges which may include labor, parts and transportation. VALUE ADDED SYSTEMS, INC. Inc. is not responsible for labor or material charges arising from removal or replacement of warranted parts.

Any part which is incorporated into VALUE ADDED SYSTEMS, INC. Inc. products but are made by others, if warranted at all, are warranted only by the original manufacturer.

There are no warranties, express or implied, beyond those stated herein. Damages for breach of warranty are limited to the purchase price of the product. Upon repayment of such amount to the buyer / end user, the contract of sale of the equipment is cancelled without reservation of rights. VALUE ADDED SYSTEMS, INC. Inc. is not liable for any incidental or consequential damages arising out of any failure of its equipment, including losses caused by defective materials and workmanship.

This warranty is exclusive, and is in lieu of any other warranties, express or implied, including but not limited to warranty of merchantability or warranty of fitness for a particular purpose.

VALUE ADDED SYSTEMS, INC.