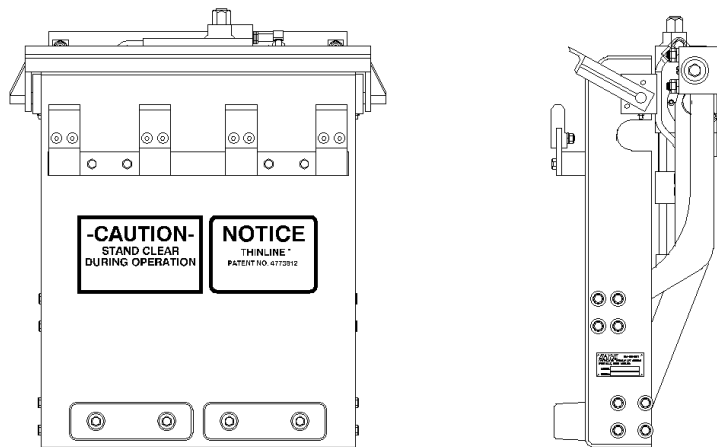




**Premium Lift Systems**

## **OPERATION AND PARTS MANUAL**



MODEL NUMBER : ETL 2220-2524

PART NUMBER : 1900-0053

SERIAL NUMBER : \_\_\_\_\_

**BAYNE MACHINE WORKS, INC.**  
910 FORK SHOALS ROAD  
GREENVILLE S.C., 29605  
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LICENSED UNDER ONE OR MORE OF  
THE FOLLOWING U.S. AND CANADIAN PATENTS:

5,503,512	4,773,812	1,327,765	5,447,405
1,335,648	5,308,211	5,333,984	5,826,485

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SPECIFICATIONS ( WI-0081-A )  
Bayne **THINLINE**<sup>®</sup> Premium Lift Systems

- A. Rotary Actuator - rack and pinion style design.
- Rack, pinion, and shaft bearings are constantly lubricated by the hydraulic oil for extended life.
  - Body and caps are made of high quality ductile iron.
  - Pinion output shaft and racks are made of high tensile alloy steel.
  - The rotary actuator provides smooth motion throughout the lift cycle, which results in longer cart life with virtually no cart damage or abuse.
- B. Arm bearings are made of a composite material which provides superior compression strength along with self-lubrication, thus eliminating the need to grease the arm bearings.
- C. The THINLINE<sup>®</sup> lift unit can measure as little as 5” thick from the front of the mainframe to the front of the faceplate depending on the types of arms used. This allows for easy dumping of large commercial containers without interference.
- D. The faceplate is normally at 45 degrees in the dump position and extends 13” to 15” from the back of the mainframe into the hopper or container opening. This places the cart or barrel 16” to 18” into the truck or container opening thus reducing any potential spillage of materials.
- E. Cycle times for safe, fast, efficient service.
- **6 - 8 seconds** for rear-load and side-load units
  - **8 - 10 seconds** for units with 9” and 15” vertical lifts
  - **10 - 12 seconds** for stationary, recycling, and double wide, and 24” vertical units
  - **15 - 30 seconds** for 3300 series and 3300 series stationary units

*Note : Cycle time is controlled by flowrate, as flowrate increases, cycle times decrease.*

***Warning : Never exceed the cycle times listed above. In order to avoid injury and maintain manufacturer’s warranty never operate outside of these recommendations.***

- F. Recommended flowrates are as follows:
- **2 to 2 1/2 GPM** for 1100 series units
  - **2 to 4 GPM** for 2200 series units
  - **2 1/2 to 6 GPM** for 3300 series units
- G. Hydraulic pressure requirements are as follows:
- **2000 to 2500 PSI** normal working pressure
  - **3000 PSI** maximum pressure
- H. All lifters can be a bolt on type installation for easy, quick maintenance and less downtime.

- I. All parts are manufactured and kept in stock at Bayne Machine Works, Inc. for fast response to customer request.
- J. Two ( 2 ) year limited warranty from date of delivery on all units and models when properly maintained and operated within the recommended cycle time.

*All lift units and parts are inspected by our Quality Control Department before shipment to insure that you always receive the highest quality available in the lift business.*

For more information, please contact us at 1/800/535-2671 or by fax at 1/864/458-7519.

# INSTALLATION INSTRUCTIONS ( WI-0110-C)

## Bayne *THINLINE*<sup>®</sup> Premium Lift Systems

The following information is intended to be a **GENERAL GUIDE** to installing the Bayne *THINLINE*<sup>®</sup> lifter on a typical refuse truck. Before starting the installation, read these instructions completely. **ALWAYS** use the proper tools, lift devices, and personal protective equipment to prevent injury while performing the installation.

**NOTE:** If a Bayne *THINLINE*<sup>®</sup> Tap-In Kit was also acquired for this installation, refer to the installation instructions included in the Tap-In Kit manual for more detailed information.

### I. Mounting lifter(s) on the truck :

1. The truck should be emptied and cleaned before any installation. The truck should be parked on a level solid surface, a concrete floor if possible.
2. All lights, tags, steps, etc. that will interfere with the installation should be removed and/or relocated.
3. Position the lifter(s) on the sill of the truck per *figure I-1* and mounting height drawing ( *Appendix A* ) and tack weld in place. If using an “S” unit for bolt on applications, tack weld the mounting plate in place and attach the lifter to the mounting plate using the 1/2” studs. ( *tack weld only at this time so that adjustments can be made if necessary.* ).

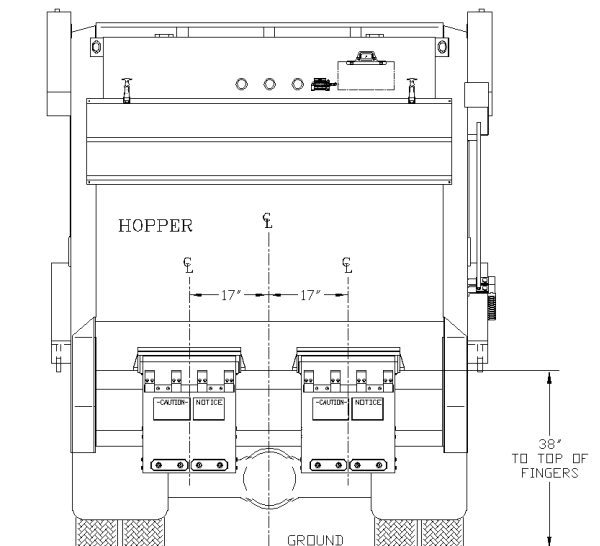
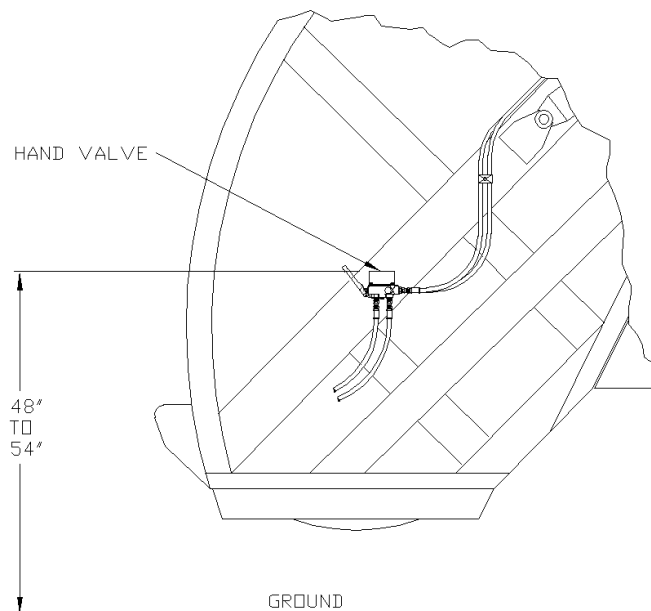


figure I-1

## II. Mounting hand valve(s) on the truck :

1. Choose and mark an acceptable location(s) on the side(s) of the truck to mount the hand valve assembly(s) (*figure I-2*).
2. Remove the mounting bracket(s) from the hand valve assembly(s) and weld to the truck.
3. After the weld has cooled, paint the mounting bracket(s) to match the truck color.
4. After the paint has dried, reassemble the hand valve assembly(s) on the mounting bracket(s).



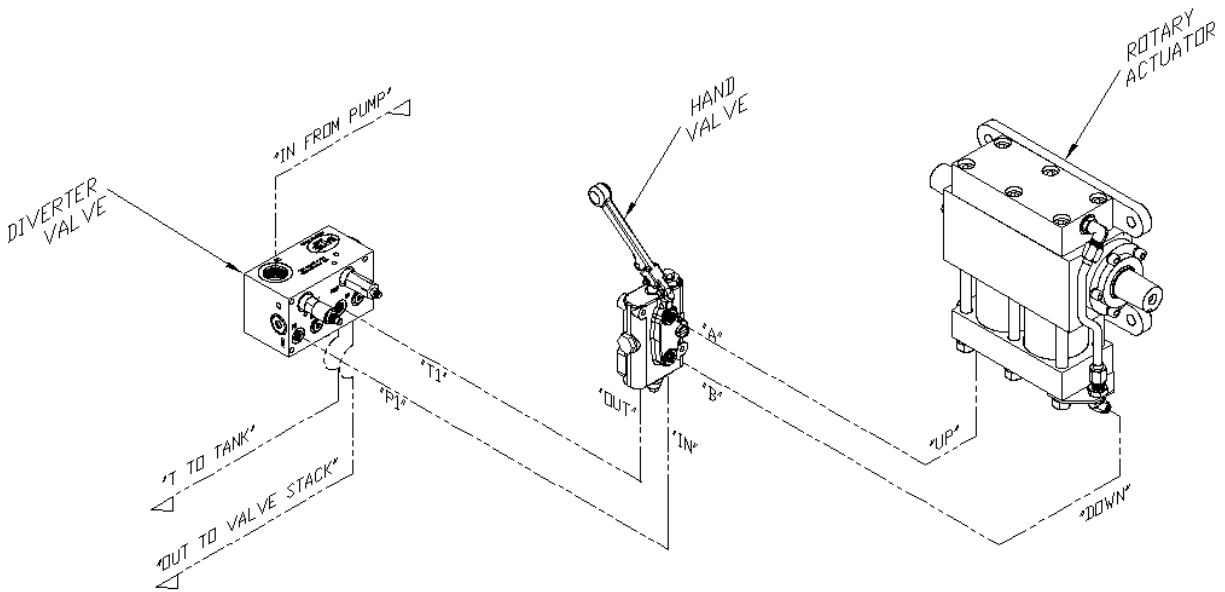
**figure I-2**

## III. Mounting diverter valve on the truck :

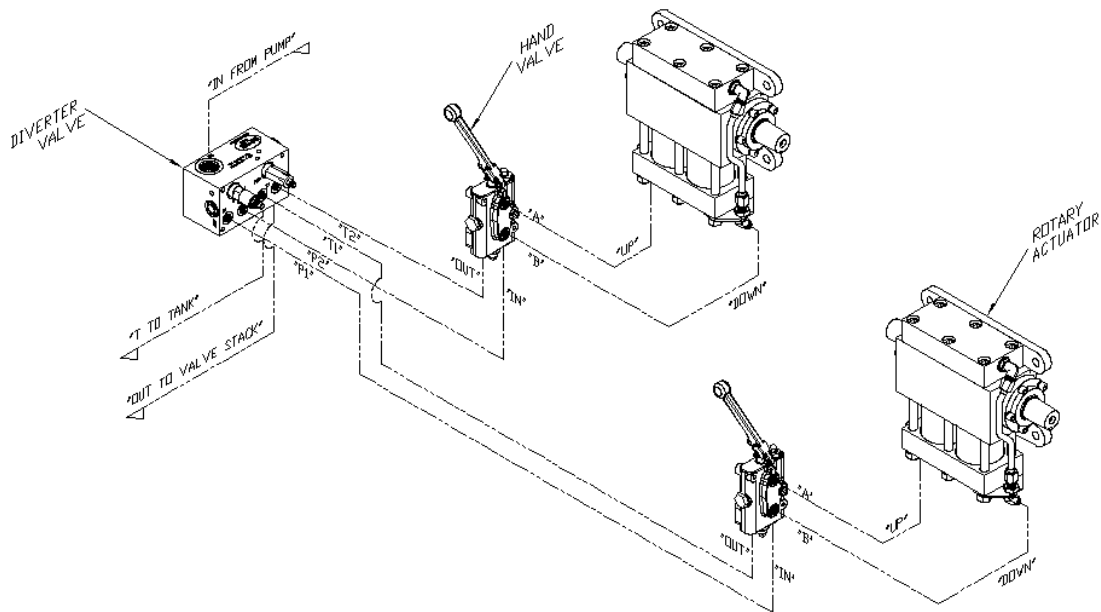
1. Choose and mark an acceptable location to mount the diverter valve assembly. This location should be near the truck's main hydraulic pressure and tank lines on the same area of the truck where the lifter is mounted.
2. Weld diverter valve mounting bracket to the truck.
3. After the weld has cooled, paint the mounting bracket to match the truck color.
4. After the paint has dried, bolt the diverter valve to the mounting bracket using the 1/4" bolts, washers, and elastic lock nuts.

#### IV. Making Hydraulic Connections :

*Before attempting any hydraulic connections, turn the truck's engine off and release all hydraulic pressure from the system. Refer to the hydraulic layouts (figure I-3) and hydraulic schematics (Appendix A) while performing the following steps. Always clean & lubricate fitting threads before installation.*



*Single Lifter Installation*



*Dual Lifter Installation*

**figure I-3**

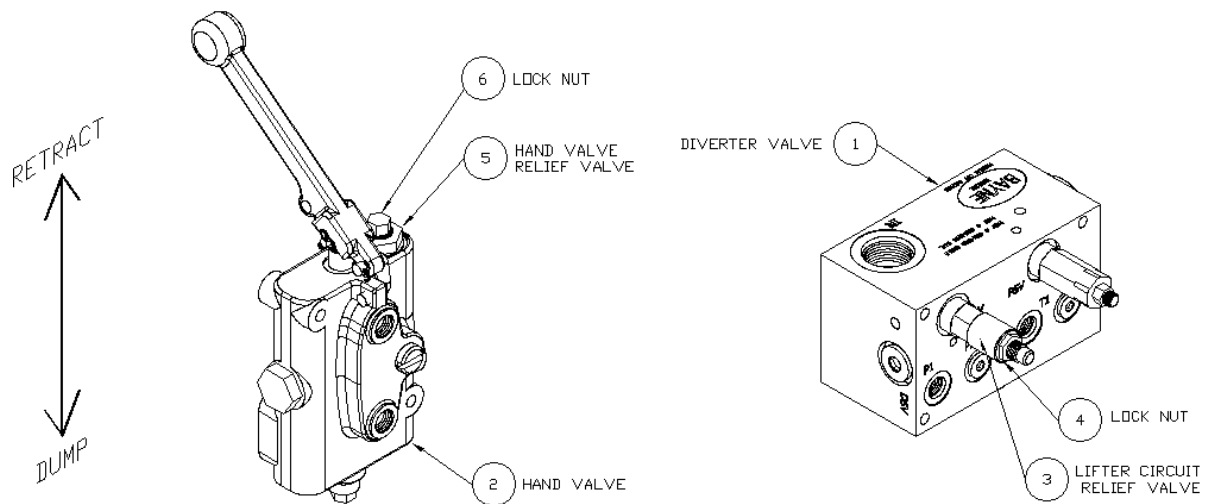
1. Cut or disconnect truck's main hydraulic pressure line and install the diverter valve in series using the "IN" and "OUT" ports.
2. Connect the "T" port on the diverter valve to the truck's hydraulic tank line with an appropriate size line to handle the full system flow.
3. Connect the "P1" port on the diverter valve to the "IN" port on the hand valve.  
*If installing dual lifters, connect the "P2" port on the diverter valve to the "IN" port on the other hand valve.*
4. Connect the "T1" port on the diverter valve to the "OUT" port on the hand valve.  
*If installing dual lifters, connect the "T2" port on the diverter valve to the "OUT" port on the other hand valve.*
5. Connect the "A" port on the hand valve(s) to the "UP" port of the rotary actuator(s).
6. Connect the "B" port of the hand valve(s) to the "DOWN" port of the rotary actuator(s).
7. Disassemble each hose clamp assembly and position weld plates where needed and weld in place.
8. After the weld has cooled, paint the weld plates to match the truck color.
9. After the paint has dried, reassemble the hose clamp assemblies around the hoses.

#### **V. Adjusting relief valve settings :**

*The diverter valve ( 1 ) ( figure I-4 ) supplies the cart lifter hydraulic system with approximately 2 GPM of oil flow. This diverter valve is equipped with a lifter circuit relief valve ( 3 ) set at 2500 psi, to prevent the diverter valve from shutting down if a blockage occurs in the lifter circuit. There is also a relief valve ( 5 ) set at 1800 psi in the hand valve ( 2 ) to protect the lifter from excessive pressure. These relief valves are preset from the factory to operate properly on most trucks with a system pressure between 2300 and 2500 psi without any adjustment. However, if any adjustment is necessary, follow these instructions.*

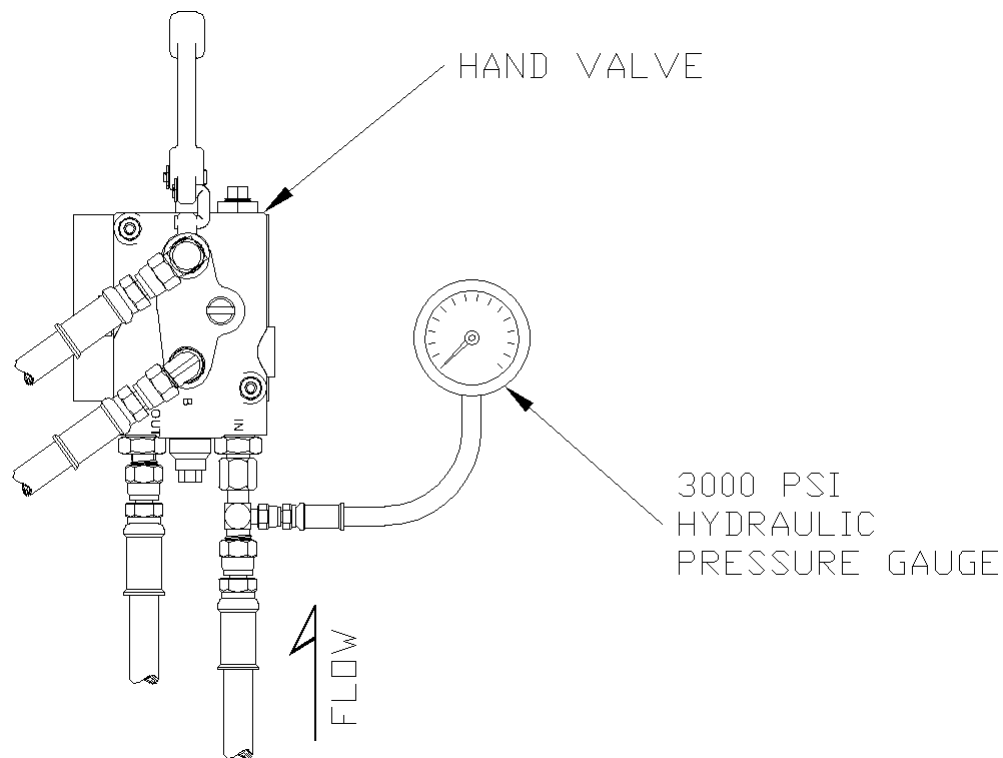
**WARNING :** *Bayne equipment is rated for a maximum pressure of 3000 psi. Operation at pressures above 3000 psi may damage equipment and cause personal injury. In order to avoid injury and maintain manufacturer's warranty never operate above 3000 psi.*





**figure I-4**

1. Determine the truck's system pressure setting.
2. Loosen the lock nut ( 6 ) (*figure I-4*) from the hand valve relief valve(s) ( 5 ) and turn the adjustment screw(s) clockwise until it bottoms out.
3. Loosen the lock nut ( 4 ) (*figure I-4*) on the lifter circuit relief valve ( 3 ) and turn the adjustment screw clockwise until it bottoms out.
4. Start the truck's engine and engage the hydraulic system.
5. Operate the handle on the hand valve ( 2 ) (*figure I-4*) back and forth a few times to bleed all air from the lifter hydraulic system.
6. Turn the truck's engine off and release all hydraulic pressure from the system.
7. Install a 3000 psi hydraulic pressure gauge with the necessary adapter in the hydraulic line connected to the "IN" port of the hand valve as shown in figure I-5. *If installing dual lifters, install the hydraulic gauge at either one of the hand valves.*



**figure I-5**

8. Start the truck's engine and engage the hydraulic system.

**9. Setting the diverter valve lifter circuit relief valve :**

- a) Have an assistant hold the handle on the hand valve ( 2 ) (*figure I-4*) ( *with pressure gauge installed at the "IN" port* ) in the "retract" position to show pressure on the gauge.
- b) Turn the pressure relief adjusting screw on the lifter circuit relief valve ( 3 ) counter-clockwise until the pressure reading on the gauge is either 100 psi less than the truck system pressure or 2300 psi, which ever is the lowest.
- c) Release the handle on the hand valve.

**10. Setting the hand valve relief valve(s) :**

- a) Hold the handle on the hand valve ( 2 ) (*figure I-4*) ( *with pressure gauge installed at the "IN" port* ) in the "retract" position to show pressure on the gauge.
- b) Turn the pressure relief adjusting screw on the hand valve relief valve ( 5 ) counter-clockwise until the pressure reading on the gauge is either 200 psi less than truck system pressure or 1800 psi, which ever is the lowest.
- c) Release the handle on the hand valve.

- d) Turn the truck's engine off and release all hydraulic pressure from the system.
  - e) Remove the hydraulic pressure gauge from the hydraulic line connected to the "IN" port of the hand valve.
  - f) *For dual lifters, install the hydraulic pressure gauge in the "IN" port of the other hand valve as shown in figure I-5, start the truck's engine, engage the hydraulic system, and repeat step 10.*
11. Tighten the lock nut ( 6 ) ( *figure I-4* ) on the hand valve relief valve(s) ( 5 ) to secure the correct pressure setting(s).
  12. Tighten the lock nut ( 4 ) ( *figure I-4* ) on the lifter circuit relief valve ( 3 ) to secure the correct pressure setting.
  13. The hydraulic circuit pressures are now set for optimum performance.

#### **VI. Final operation and mounting:**

1. Start the truck's engine and engage the hydraulic system.
2. Place a cart on each lifter and operate to make sure there are no clearance problems and that the lifter engages the cart properly. Make any adjustments to the mounting position of the lifter(s) to ensure correct operation.
3. After locating an acceptable mounting position, complete the welding of the lifter(s) to the truck.

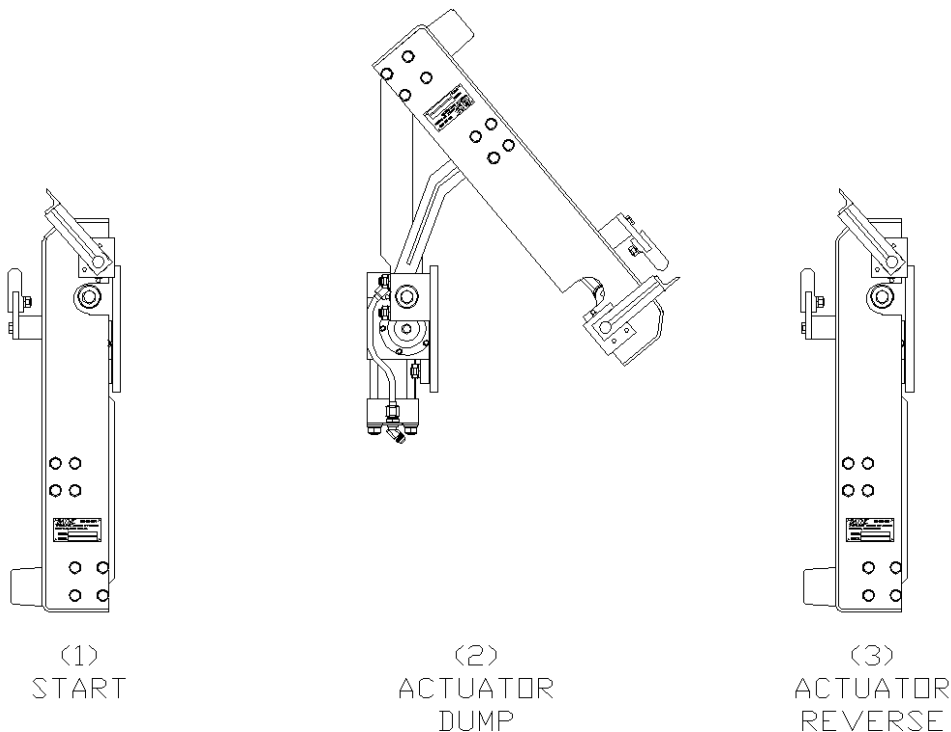
## OPERATION INSTRUCTIONS ( WI-0127 )

### Bayne **THINLINE**<sup>®</sup> Premium Lift Systems

The Bayne **THINLINE**<sup>®</sup> Premium Lift System is a high quality durable cart lifter built to meet your industry's requirements. To insure the safety of all operators of this equipment, please read this manual carefully before operating the lifter. *FAILURE TO COMPLY WITH INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE.*

The operating stages ( *figure O-1* ) in the cycle of the cart lifter are as follows:

- 1) **START** - The cart to be dumped is placed on the lifter.
- 2) **ACTUATOR DUMP** - The rotary actuator cycles to dump the contents of the cart into the box. During this cycle, the clamp bar automatically rotates to "lock" the cart to the lifter.
- 3) **ACTUATOR REVERSE** - The rotary actuator reverses its cycle returning the cart to the start position. The clamp bar automatically retracts to "unlock" the cart from the lifter.



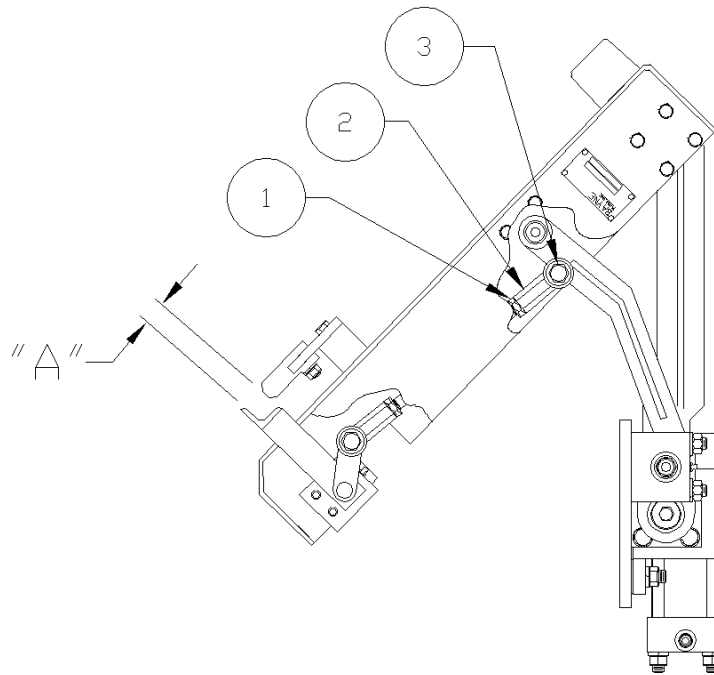
**figure O-1**

**Warning: Exceeding the 6 to 8 second cycle time on any lifter will void the manufacturer's warranty.**

The rotational motions of the cart lifter are controlled with the use of a hand valve. Moving the handle on the hand valve in one direction will cause the lifter to perform the actuator dump stage (*figure O-1*). Moving the handle in the opposite direction will cause the lifter to perform the actuator reverse stage.

## CLAMP BAR ADJUSTMENT

Check the distance ( **A** ) (*figure O-2* ) between the top of the finger bar and the inside of the clamp bar when the lifter faceplate is in the **FULL DUMP** position. Maintain this dimension at approximately **7/8"** for the proper "locking" of the cart to the lifter. To adjust the setting, loosen the jam nuts ( **1** ) on the spherical rod ends ( **2** ). Remove the bolts ( **3** ) that hold the rod ends to the idler arms. Screw the rod ends in or out as required to obtain the correct dimension at ( **A** ). Replace the bolts ( **3** ) and tighten the jam nut ( **1** ).



**figure O-2**

**CAUTION:** *The distance in figure O-2 is an arbitrary figure based on information furnished by cart manufacturers. It is the responsibility of the owner / operator of this equipment to adjust these dimensions to be compatible with his specific application.*

6091/6092-0700 DIVERTER VALVE  
OPERATION AND INSTALLATION INFORMATION  
( WI-0026 )

Bayne ***THINLINE***<sup>®</sup> Premium Lift Systems

The Bayne diverter valve establishes priority flow to the lifter circuit “P1” and “P2” ports and bypasses oil to the “OUT” port, which typically supplies flow to the remainder of the truck’s hydraulic circuit. This bypass occurs only after the lifter circuit is satisfied. The priority flow is controlled by the flow regulator cartridge (FR1) (and FR2 in dual applications) in combination with the differential pressure sensing valve (DPS). This allows the valve to maintain constant flow regardless of changes in load pressure or volume flow rate. Since both the lifter circuit and bypass flow can be utilized in the operation of the truck regardless of which pressure is greater, a single pump can be used to supply two circuits or operations.

The lifter circuit flow is regulated and maintained by the flow regulator cartridge (FR1) (and FR2 in dual applications). The differential pressure sensing valve (DPS), rated for 75 gpm of flow and 3000 psi of pressure, is operated by an internal spring and dampening orifice (OR) which establishes a pressure drop across the block sufficient to ensure the correct operation of the flow regulator (FR1). For a dual diverter valve, a second flow regulator cartridge (FR2) is installed in the “FR2” cavity and a shuttle valve (DSV) is installed in place of the SAE plug in the “DSV” cavity. Once the pressure drop is established, a precision metered flow is provided to the tipper circuit(s) with additional flow being bypassed to the “OUT” port.

The operation of the diverter valve does not require the use of a tank line to be run to the “T” port. However, the efficiency of the block will be significantly increased if a tank line is installed. The logic circuit of the block will manage the flow of oil returning from the tipper circuit to ensure optimum performance. This is primarily controlled with the sequence valve (PSV) which is factory set and should not be adjusted. All oil returning from the tipper circuit will normally be regenerated into the outgoing flow to ensure that the downstream functions are not slowed in any way. When the downstream backpressure rises to a predetermined pressure, the block will redirect the flow to the “T” port to increase the overall efficiency of the block and reduce the pressure drop through the block. If the “T” port is connected to a tank line, the oil will be dumped through the block at a lower pressure. This allows downstream functions to operate at the highest possible pressure when pressure is being required. If the “T” port is blocked, the oil will be redirected back into the outgoing flow through the check valve (CV).

A relief circuit for the tipper function is controlled by a relief valve (RV), which is preset to 2300 psi. This can be adjusted to limit pressure to the tipper(s). This relief valve is more efficient than the relief in the hand valve and will operate with less noise. It is recommended that it be adjusted to relieve before the hand valve relief. It may also be used to limit the weight the lifter can dump. This may be beneficial in avoiding damage to cans resulting from overloading. This should be the only adjustment that the block may require. Any other adjustments should only be made after close consultation with Bayne’s Engineering Department to ensure proper operation.

## POSSIBLE PROBLEMS

1. The most common cause of valve failure is dirty oil. If debris becomes lodged in the cartridge valves they will malfunction. Recommended filtration level is between 15 and 25 microns. Many systems filter the oil on the return side. This does not guarantee clean oil going into the system. It is important to ensure that the tank vent filtration element is properly maintained as well. Very small contaminants may not cause the valve to stop functioning, but can cause “stiction” in the cartridges between the body and the moving spool. This can cause improper operation. A slow moving tipper is most likely the result of contamination in the flow regulator cartridge. A pulsating noise may be the result of contamination in the differential pressure sensing valve causing it to stick. If any valve malfunctions, remove and thoroughly clean the valve, being extremely careful not to score or abrade the “o” ring seals or moving parts of the valve. Be sure that the spool moves freely in the valve body.
2. The flow regulator cartridges (FR1 and FR2) are designed to operate at a designated pressure of 80 psi. This means that in order for the valve to function properly, a minimum of 80 psi is required from the supply line through the “IN” port of the valve. This can present a problem on trucks with a dry valve pump system. Normally in the dry (off) mode of the pump, a flow of approximately 2 gpm at 20 psi is required to circulate through the open center system of the truck. This is for pump lubrication in the off mode. When the diverter valve is placed in the main pressure line of the truck, a blockage occurs because of the differential pressure sensing valve needing 80 psi to initially open and allow the flow regulators function. The path of the lubrication oil is therefore stopped because the valve does not open. When the oil is blocked, the pump will rotate and cavitate in the lubricating oil, causing heat to build up over an extended period of time, possibly leading to premature pump failure. To prevent this problem from occurring, a “bleed line” circuit needs be installed on the truck to allow passage of the lubricating oil back to tank.
3. On front load residential truck applications, several considerations need to be noted. The Bayne hand valve is an open center valve that allows for the lifter circuit to maintain flow through the hand valve and back to the diverter valve when the lifter is not being operated. If flow is not maintained through the hand valve, the oil will constantly be relieving over the lifter circuit relief valve (RV) in the diverter valve, which can cause an increase in operating temperature. Certain front load box designs allow for the hand valve to be located on the arms of the truck which keeps the hand valve in the lifter circuit at all times to maintain flow. Most problems occur with applications where the hand valve is located on the box itself. In this situation, when the operator disconnects the hydraulic lines to the box, a blocked condition occurs in the lifter circuit. To prevent this problem, the pump must be turned off prior to disconnecting the box hydraulic lines. Once the lines have been disconnected from the box, it is necessary to connect the two lines for the hand valve to each other to functionally complete the lifter circuit. It is recommended that male and female quick disconnects be used opposite each other on the truck to provide an uninterrupted circuit. Once the lines have been connected and the circuit continued, the pump could then be turned on to continue operations.

## MAINTENANCE INSTRUCTIONS ( WI-0140-A )

### Bayne ***THINLINE***<sup>®</sup> Premium Lift Systems

#### **NOTE:**

THE MOST COMMON CAUSE OF HYDRAULIC COMPONENT FAILURE IS CONTAMINATION OF THE HYDRAULIC FLUID ( WATER, CHIPS, DIRT, ETC. ) THE Bayne ***THINLINE***<sup>®</sup> LIFT SYSTEM COMES CLEAN FROM THE FACTORY. IF REMOVED, BE SURE THE HOSES, CYLINDER AND FITTINGS ARE CLEAN BEFORE RE-INSTALLING THEM ON THE UNIT.

Inspect your cart lifter on a weekly basis for loose bolts, fittings, oil leaks, etc. Tighten loose hardware as necessary and replace necessary seals to repair oil leaks.

In order to maintain warranty and for preventive maintenance, grease all points weekly with a good multi-purpose grease at points shown in the lubrication drawing ( *APPENDIX A* ).



**BAYNE**  
**PREMIUM LIFT SYSTEMS**

**ASSEMBLY INSTRUCTIONS**  
**2200 SERIES ROLLER BEARING ACTUATOR**  
**PART NUMBER 2220-1028 ( WI-2210-C )**

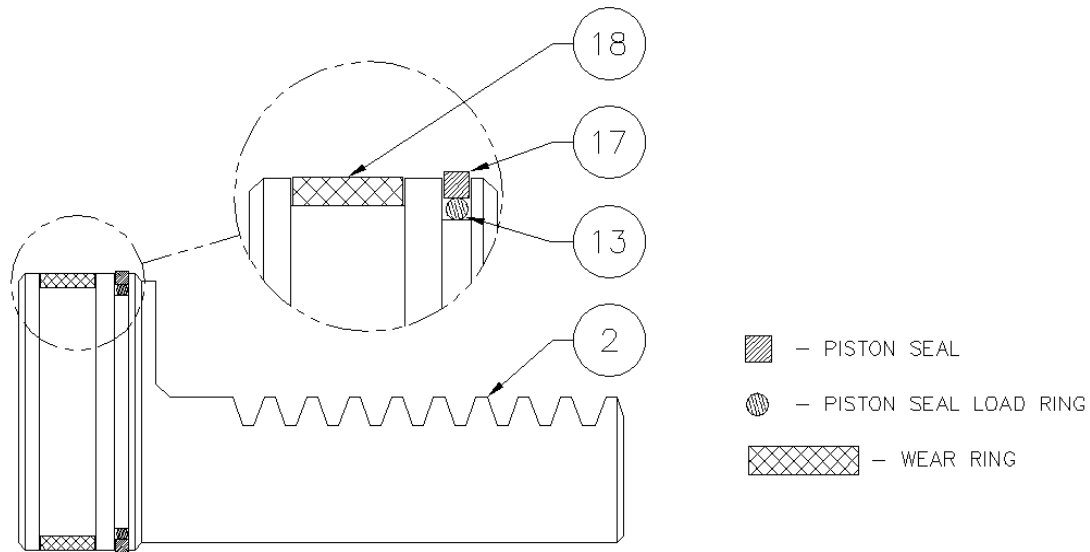
**LICENSED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:**  
**4,773,812    1,327,765    5,308,211    5,333,984**

**READ INSTRUCTIONS COMPLETELY BEFORE STARTING ASSEMBLY.**

Before starting the assembly of the Rotary Actuator, refer to the exploded parts drawing and parts list (fig. A-17 found at the end of these instructions) to familiarize yourself with the individual components. Prepare a clean surface, in an area free of blowing dust and contaminants in which to assemble the Rotary Actuator. Be sure that all parts are thoroughly clean and dry before starting assembly.

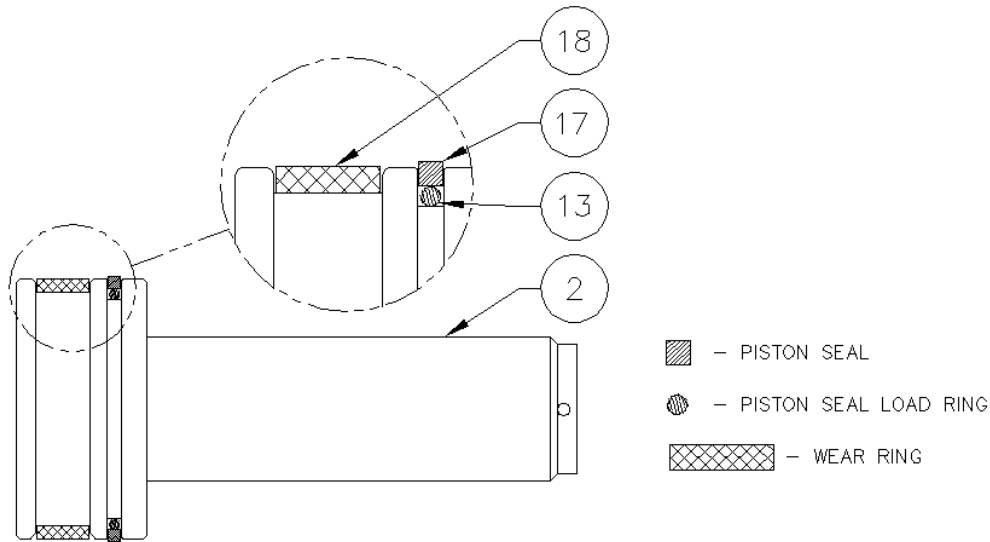
**NOTE:** All torque values given apply to clean dry threads only. Follow these directions closely when repairing the Rotary Actuator.

1. Install the piston seal load ring (13) (fig. A-1) in the small groove on the head of the actuator rack (2). Place the “square” piston seal (17) over the load ring (13) in the same small groove ( a small “*blunt*” flathead screwdriver may be used, taking care not to scratch or damage the seal ). Install the wear ring (18) in the large groove on the head of the rack. Using a ring compressor, firmly seat the rings on the rack before setting it aside, this will help to reverse the effects of any stretching of the rings that occurred during installation. Repeat this procedure for the other rack.



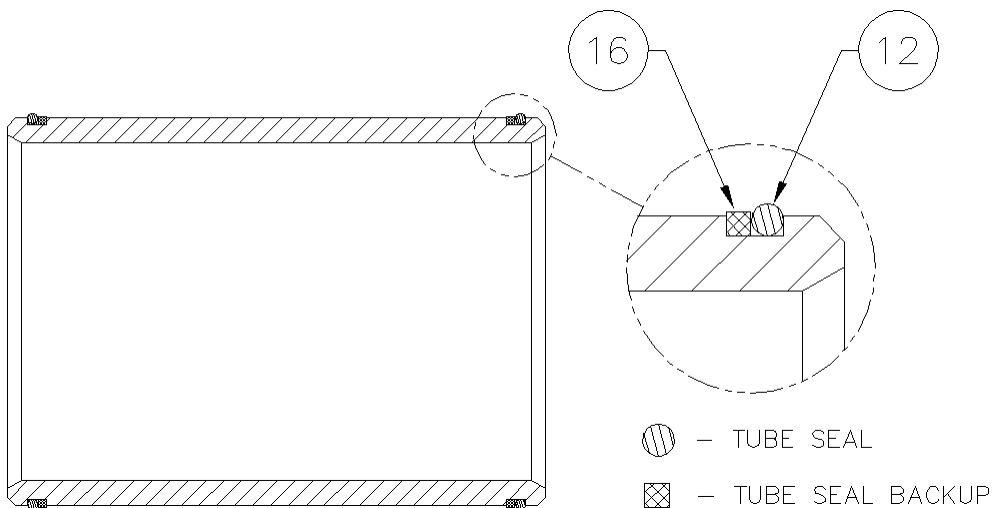
**figure A-1**

2. Install the piston seal load ring (13) (fig. A-2) in the small groove on the head of the lower piston (35). Place the “square” piston seal (17) over the load ring (13) in the same small groove (a small “*blunt*” flathead screwdriver may be used, taking care not to scratch or damage the seal). Install the wear ring (18) in the large groove on the head of the lower piston (35). Using a ring compressor, firmly seat the rings on the lower piston before setting it aside. Repeat this procedure for the other lower piston.



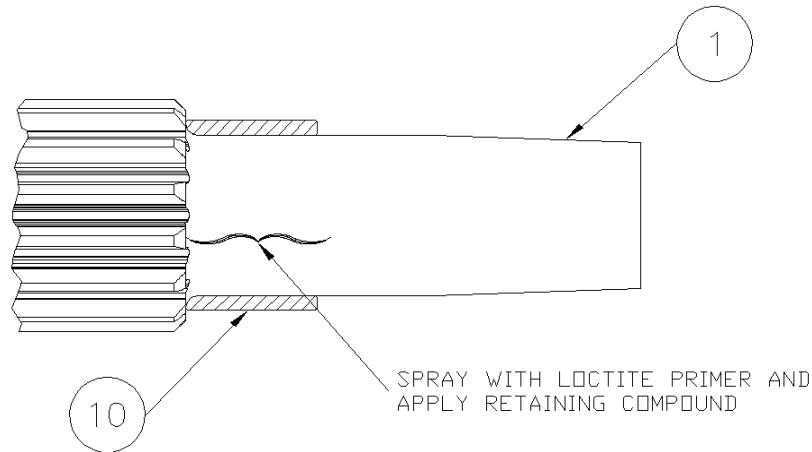
**figure A-2**

3. Install the tube seal (12) (fig. A-3) and “square” tube seal backup (16) on each end of the “shorter” actuator tubes (3) (fig. A-17). Be sure that the “square” tube seal backup ring is toward the inside of the tubes at both ends as shown. Press all rings firmly into the grooves. Repeat this procedure for the “longer” lower piston tubes (32) (fig. A-17).



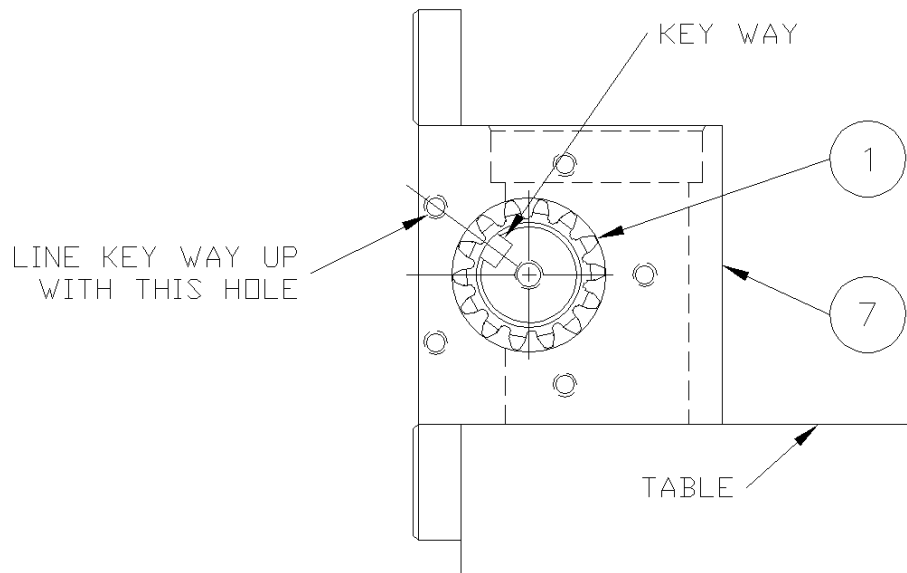
**figure A-3**

4. Thoroughly clean the pinion shaft (1) (fig. A-4) and inner races (10) with a mild solvent and dry completely. Spray the inner race contact area (shown in figure A-4) at each end of the pinion shaft and the inside diameter of the inner races thoroughly with *LOCTITE 7649 N PRIMER*. Apply *LOCTITE RETAINING COMPOUND 609* around the pinion shaft at contact area and the inside diameter of the inner races. Slide the inner races (10) on the pinion shaft (radius end first as shown in figure A-4) until the races seat against the gear teeth. After the races seat against the gear teeth, twist the races on the pinion 360° to spread the retaining compound evenly. Wipe off any excess retaining compound.



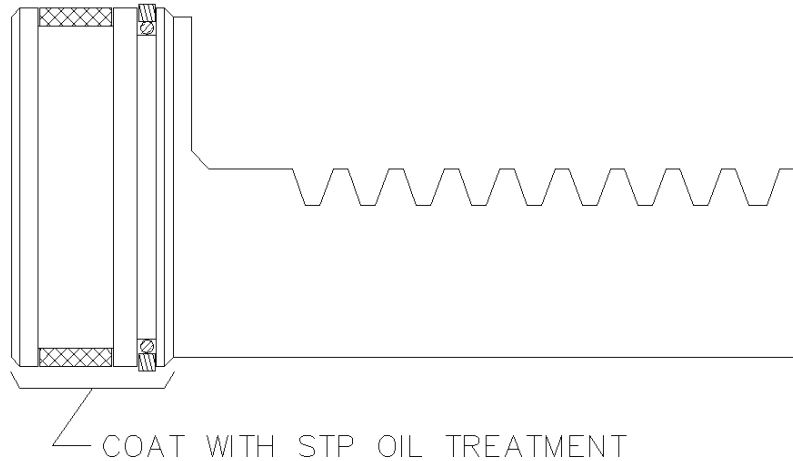
**figure A-4**

5. Place the actuator body (7) (fig. A-5) on the edge of the table, mounting flanges closest to the assembler with the counter-bores facing up. Insert the pinion shaft (1) through the bore on either side of the actuator body with the key ways facing back toward the mounting flanges and up away from the table with the center line of the key ways pointing toward the center of the tapped hole shown in figure A-5. Center the pinion in the actuator body.



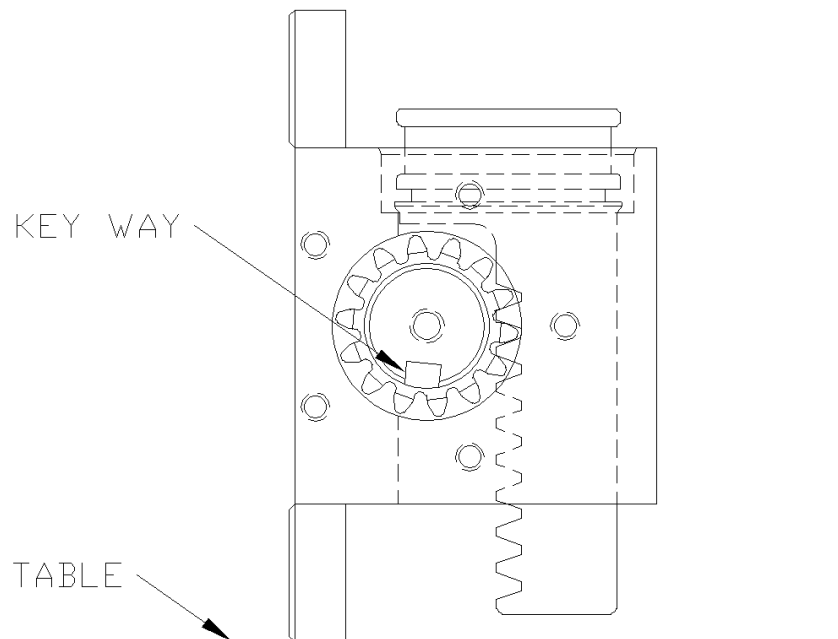
**figure A-5**

6. Coat the head portion of the racks (2) (fig. A-17) with STP Oil Treatment as shown in figure A-6. Install the racks, head portion up with the teeth facing the flanges of the actuator body, into the dual set of bores in the body. Simultaneously slide the racks into the bores so that the racks mesh with the pinion in the same position. Rotate the pinion shaft to engage the racks into pinion.



**figure A-6**

7. Check the position of the racks in the pinion by making sure both racks seat against the actuator body at the same time and also when the racks are seated against the body, the key ways on the pinion shaft should be facing down toward the table and very slightly back toward the mounting flanges on the actuator body as shown in figure A-7.



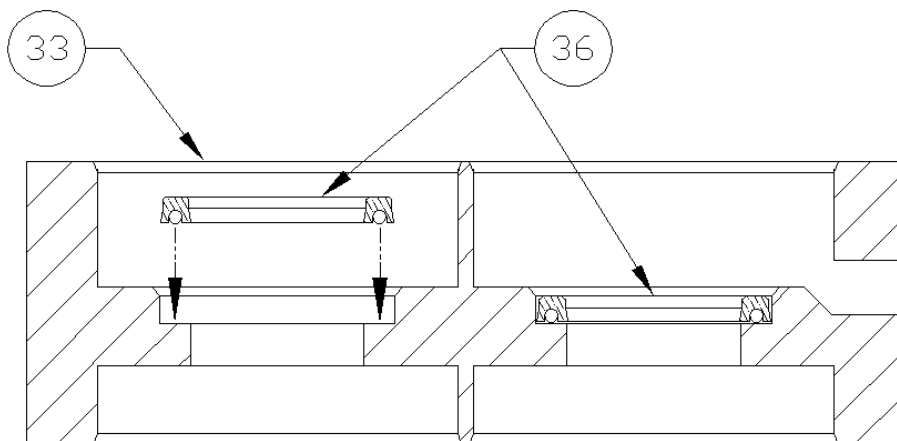
**figure A-7**

- Coat one end of the “shorter” actuator tubes (3) (fig. A-17) around the seal area with STP Oil Treatment as shown in figure A-8. Using a rubber mallet, drive the coated end of the tube onto the exposed rack until the tube end seats in the actuator body, making sure that the seals remain in place as the tube enters the counter-bore. Repeat this procedure for the other side.



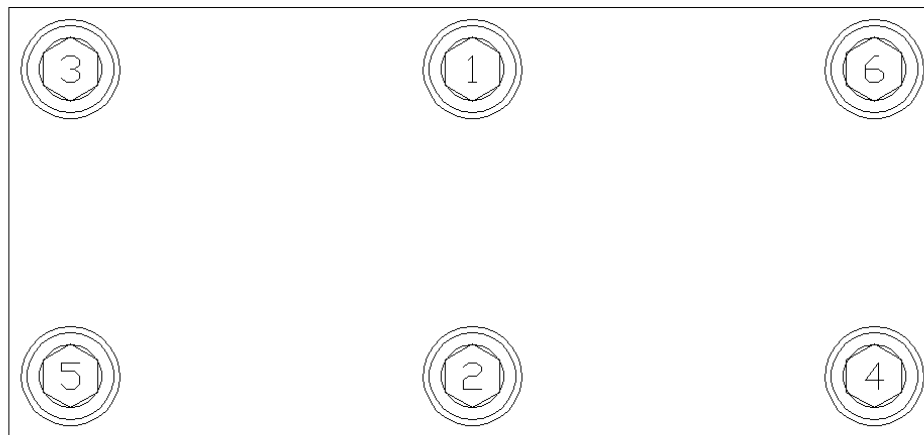
**figure A-8**

- Place the spacer plate (33) (fig. A-9) on the table with the double counter-bore side up as shown in figure A-9. Install the two rod seals (36) into the spacer plate with the “O”-ring insert facing down as shown.



**figure A-9**

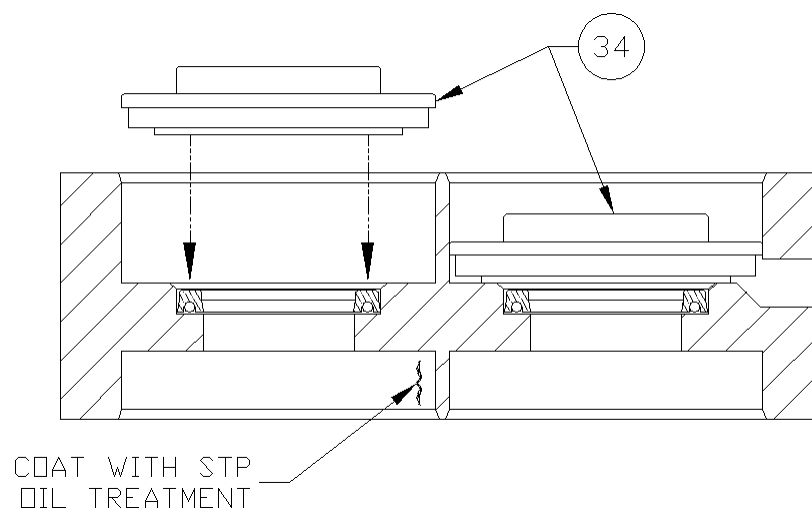
10. Place the lower bearings (34) (fig. A-10) flat on the table, and locate the wear rings (37). Install the wear rings into the inside groove of the lower bearing.
11. Coat the wear ring area with STP Oil Treatment as shown in figure A-10.



RACK CAP TORQUE SEQUENCE

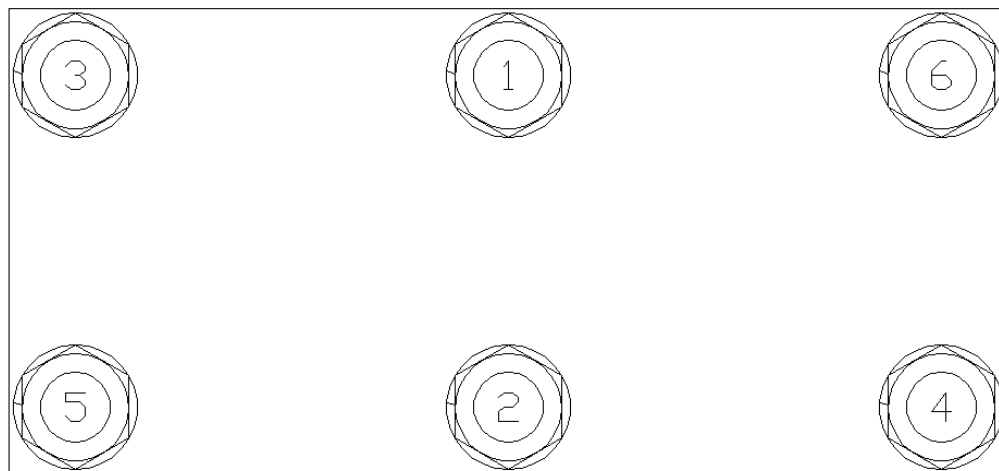
**figure A-10**

12. Coat the sides of the shallow counter-bore in the spacer plate with STP Oil Treatment as shown in figure A-11. Install the spacer plate over the tubes with the rod seals facing up as shown. Using a rubber mallet, tap the spacer plate over the tubes until it seats, making sure the tube seals remain in place and are not damaged.
13. Install the lower bearings (34) into the spacer plate as shown in figure A-11.



**figure A-11**

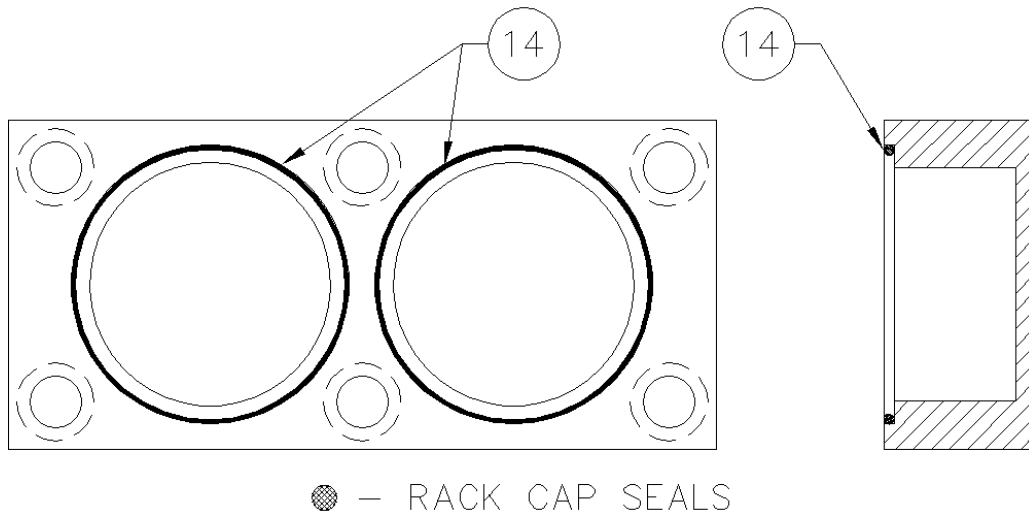
14. Coat one end of the “longer” lower piston tubes (32) (fig. A-17) around the seal area with STP Oil Treatment as shown in figure A-8. Using a rubber mallet, drive the coated end of the tube into the exposed bore of the spacer plate until the tube end seats against the lower bearing, making sure that the seals remain in place as the tube enters the bore. Repeat this procedure for the other side.
15. Coat the head portion of the lower piston with STP Oil Treatment as shown in figure A-6.
16. Install the lower pistons (35) (fig. A-17) head portion up, into the lower bearings and lower piston tubes as shown in figure A-17. Tap the lower pistons using a rubber mallet until they stop against the racks.
17. Install the check valve tee assembly (30) (fig. A-17) into each side of the spacer plate.
18. Install the six tie rod studs (6) (fig. A-17) by screwing the short threaded end through the spacer plate and into the actuator body. Hand tighten only at this time (the torque needed will be applied later in the procedure).
19. Place the tube cap (4) (fig. A-17) on the table. Coat the sides of the two bores in the tube cap with STP Oil Treatment. Install the cap over the tubes and rod studs with the oil port positioned to the left as shown in figure A-17. Using a rubber mallet, tap the tube cap over the tubes until the tubes seat in the cap, making sure that the seals remain in place.
20. Install the hex nuts (23) (fig. A-17) and lock washers (24) on the tie rod studs. Torque the nuts to 50 ft-lb. in the sequence shown in figure A-12.



TUBE CAP TORQUE SEQUENCE

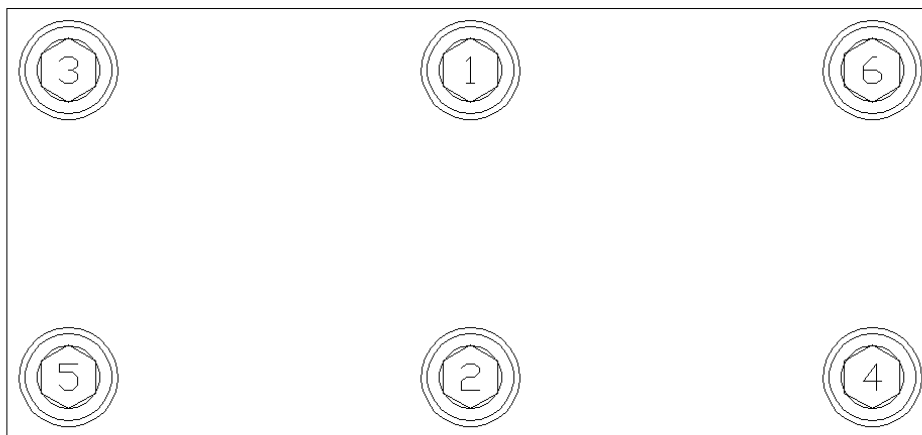
**figure A-12**

21. Place the rack cap (5) (fig. A-17) bore side up on the table and coat the edge of each bore with STP Oil Treatment. Install the rack cap seals (14) (fig. A-13) in the rack cap.



**figure A-13**

22. Reposition the actuator on the table mounting flanges down, and the lower tubes facing away from the assembler. Rotate the pinion shaft to allow 1" of the rack to protrude from the top of the actuator body. Install the rack cap with the oil port positioned to the left hand side of the actuator opposite the bottom oil port located in the tube cap as shown in figure A-17. Attach the rack cap to the actuator body using the socket head bolts (22) (fig. A-17) and lock washers (26). Torque the bolts to 90 ft-lb. in the sequence shown in figure A-14.



RACK CAP TORQUE SEQUENCE

**figure A-14**



23. Reposition the actuator so that the pinion shaft can be rotated with no obstacles. Rotate the pinion shaft to ensure that the racks move freely. Also make sure that the key ways point perfectly straight “up” toward the rack cap and “down” toward the tube cap at each end of the 180° stroke. If the assembly does not perform all of these functions correctly, it must be disassembled, cleaned, and reassembled.
24. Re-center the actuator pinion in the actuator body by tapping on one end of the shaft with a rubber mallet. Install the roller bearing (9) (fig. A-17), over the pinion shaft and inner race, and into the actuator body. Repeat this procedure for the other bearing.
25. Thoroughly clean the bearing caps (8) (fig. A-15) with a mild solvent and lubricate all seal grooves with STP oil treatment. Place the bearing caps (8) on the table (mounting surface down) and install the wiper ring (19) in the outside groove using a rubber mallet or small press. ***(Avoid using tools that may damage seals or scratch bearing cap or bearing surfaces.)*** Turn the bearing cap (8) over. Collapse the pinion seal (20) and carefully work it into the groove. Use fingers to carefully press the seal completely into the groove as shown in figure A-15. ***Be careful not to score or scratch the sealing surface during the installation.*** Install the bearing cap seal (15) by pressing it firmly into the groove on the bearing cap mounting surface.
26. Coat the bearing cap seal area and pinion seal area shown in figure A-15 lightly with STP Oil Treatment.

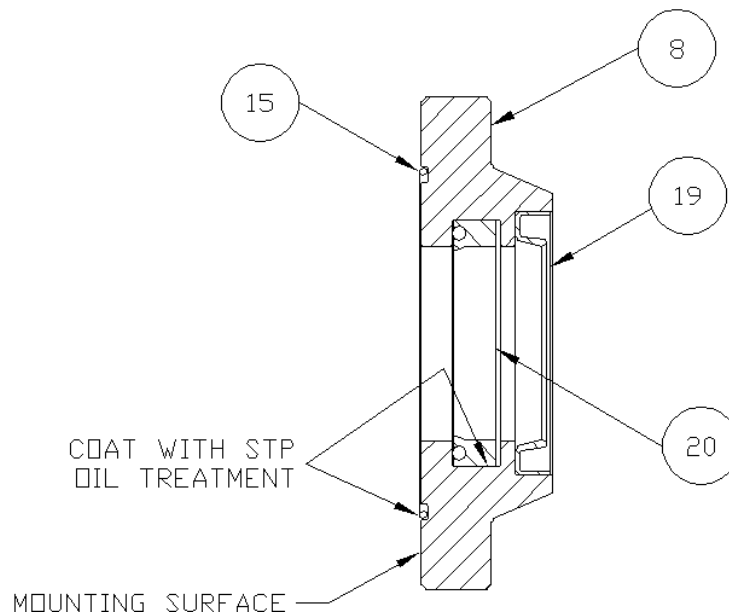
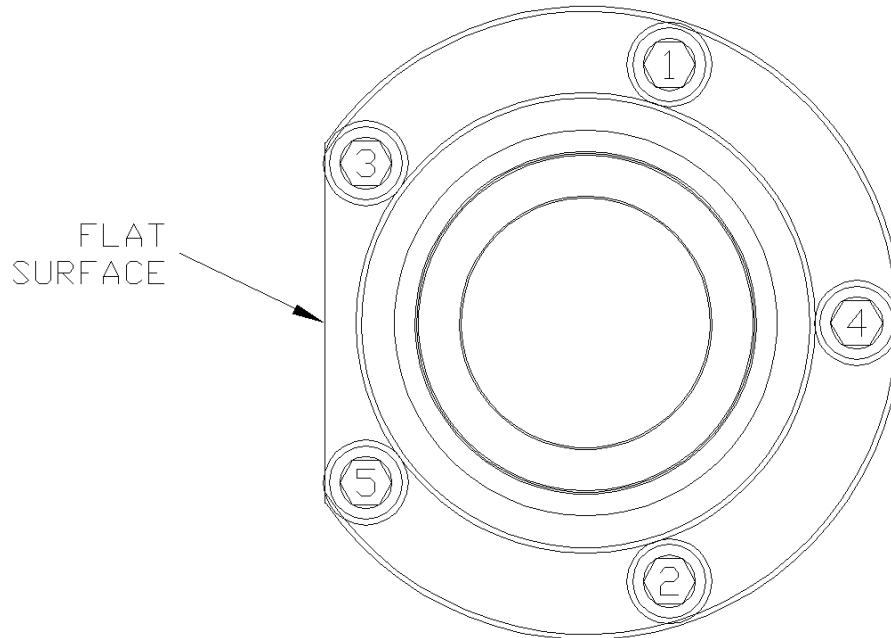


figure A-15

27. Wrap masking tape or electrical tape around the pinion to cover the edges at the keyway. Slide the bearing cap assembly over the pinion shaft with the seal backup facing toward the actuator body and the flat surface of the flange shown in figure A-16 facing toward the actuator mounting flanges. Press against the bearing cap until the shoulder seats against the actuator body, making sure that the seals remain in place. Install the bearing cap bolts (21) (fig. A-17) and lock washers (25). Hand tighten only at this time. Repeat this procedure for other bearing cap.
28. After both bearing caps have been installed, torque all bearing cap bolts to 30 ft-lb. in the sequence shown in figure A-16.



**figure A-16**

29. Install the long 90° fitting (31) (fig. A-17) into the oil port on the side of the rack cap (5). Hand tighten only at this time.
30. Install the rack cap extension tube assembly (29) (fig. A-17) between the long 90° fitting (31) in the rack cap and the check valve tee assembly (30) as shown in figure A-17. Tighten all connections.
31. Install the orifice plug (11) (fig. A-17) into the oil port on the side of the tube cap (4), and install the short 90° fitting (27) into the oil port over the orifice plug as shown in figure A-17. Turn the fitting so that it points down away from the rack cap (5) and back toward the mounting flanges on the actuator body and tighten.
32. Install the cap nuts (28) (fig. A-17) onto the open fittings to prevent contamination of the unit until the hoses are installed.

# ACTUATOR ASSEMBLY

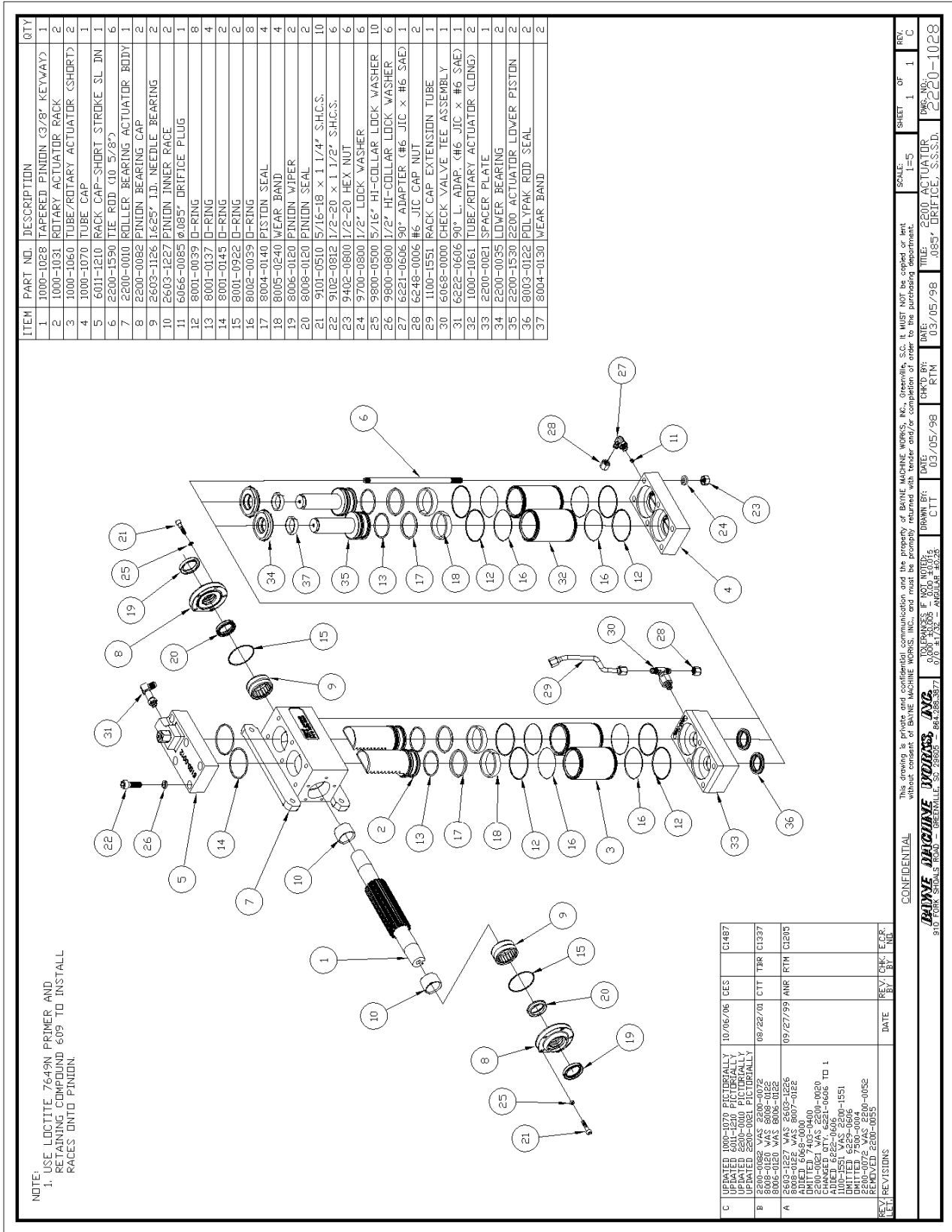


figure A-17

**BAYNE**  
**PREMIUM LIFT SYSTEMS**

**ASSEMBLY INSTRUCTIONS**  
**SHORT STROKE SLOWDOWN**  
**PART NUMBER 6011-1210 ( WI-2303-A )**

**LICENSED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:**  
**1,327,765      5,308,211      5,333,984**

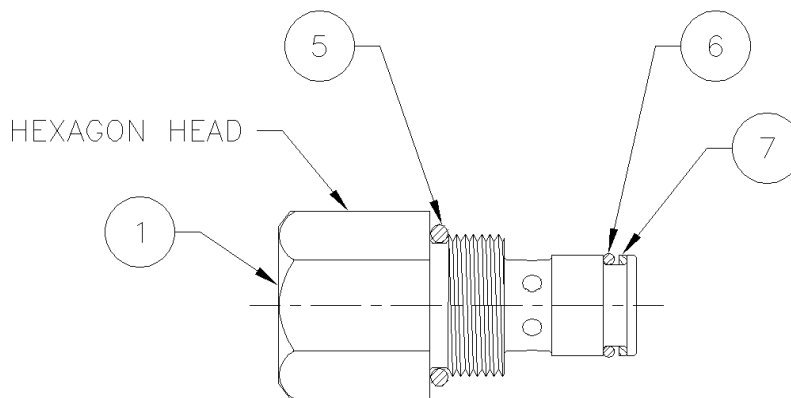
**READ INSTRUCTIONS COMPLETELY BEFORE STARTING ASSEMBLY.**

The Slowdown is a patented device used to cushion the unit as it completes its rotation into the dump position. This cushioning prevents the tearing of carts and helps protect the dumper from abuse. The Slowdown is part of the Actuator assembly and is assembled into the rack cap.

Before starting the assembly of the Slowdown, refer to the exploded parts drawing and parts list ( fig. S-4 found at the end of these instructions ) to familiarize yourself with the individual components. Prepare a clean surface in an area free from blowing dust and contaminants in which to assemble the Slowdown. Be sure that all parts are clean and dry before starting assembly.

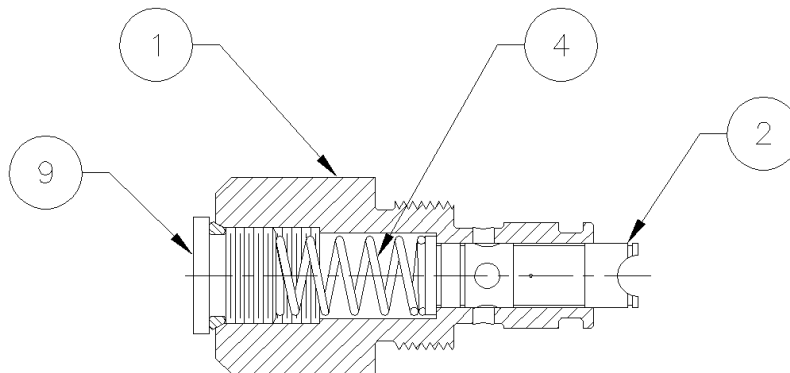
**NOTE:** All torque values given apply to clean dry threads only. Follow these directions closely when assembling the Slowdown.

1. Install the housing seal ( 5 ) ( fig. S-1 ) in the groove next to the hexagon head of the plunger housing ( 1 ). Place the o-ring ( 6 ) and the square backup ring ( 7 ) in the groove at the end of the plunger housing as shown in figure S-1.



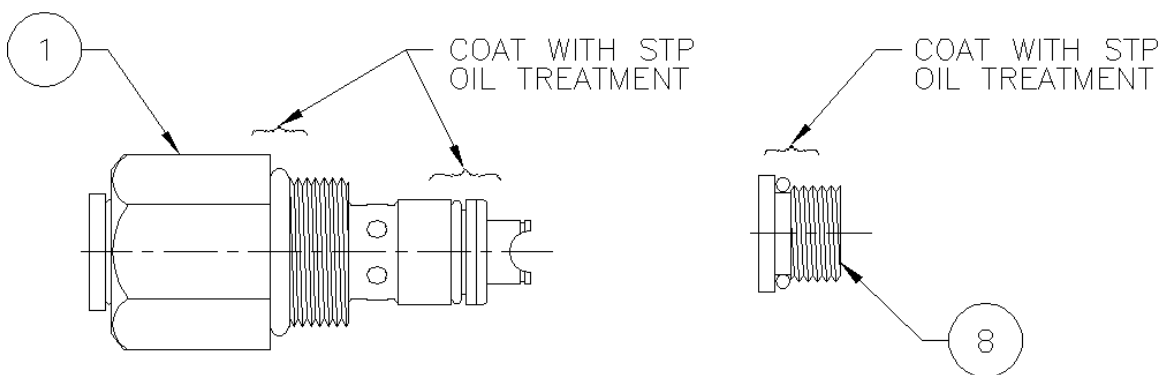
**figure S-1**

- Place the plunger ( 2 ) ( fig. S-2 ) into the plunger housing ( 1 ). Place the spring ( 4 ) on top of the plunger ( 2 ). Coat the o-ring on the o-ring plug ( 9 ) with STP Oil Treatment. Screw the o-ring plug ( 9 ) into the plunger housing ( 1 ) on top of the spring ( 4 ) and tighten to 30 in-lb. torque.



**figure S-2**

- Coat the o-rings on the plunger housing ( 1 ) ( fig. S-3 ) and the o-ring on the o-ring plug ( 8 ) with STP Oil Treatment. Screw the plunger housing ( 1 ) into the top of the rack cap ( 3 ) ( fig. S-4 ) and torque to 30 in-lb. Screw the o-ring plug ( 8 ) into the side of the rack cap ( 3 ) in the bottom port and tighten.



**figure S-3**

SLOWDOWN ASSEMBLY  
SHORT STROKE  
PART NO. 6011-1210

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	6100-0011	PLUNGER HOUSING	1
2	6100-0009	VALVE-PLUNGER-SHORT STROKE	1
3	6100-0012	RACK CAP- SOFT START/SLOW DOWN	1
4	3400-0020	SPRING-SLOWDOWN/SOFT START VALVE	1
5	8001-0910	O-RING	1
6	8001-0014	O-RING	1
7	8002-4014	BACK-UP WASHER	1
8	6246-0004	PLUG <ST. THREAD HOLLOW HEX>	1
9	6246-0006	PLUG <ST. THREAD HOLLOW HEX>	1
10	6011-1213	SHORT STROKE SLOW DOWN ASSEMBLY	1

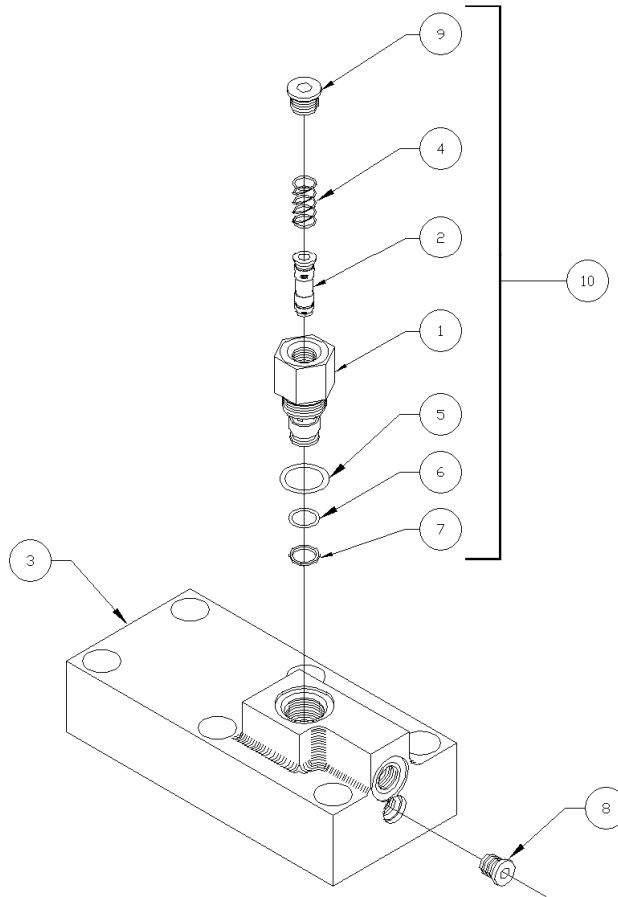


figure S-4

## TROUBLE-SHOOTING CHART ( WI-0051 )

<i><b>SYMPTOM</b></i>	<i><b>POSSIBLE CAUSES</b></i>	<i><b>CORRECTIVE ACTION</b></i>
Lifter operation very erratic.	<ol style="list-style-type: none"> <li>1. Air trapped in system.</li> <li>2. Low oil level.</li> </ol>	<ol style="list-style-type: none"> <li>1. Bleed all air from lifter hydraulic system.</li> <li>2. Add oil to system.</li> </ol>
Cart lifter will not pick up carts.	<ol style="list-style-type: none"> <li>1. Cart overweight.</li> <li>2. Lifter system hydraulic pressure too low.</li> <li>3. Truck system hydraulic pressure too low.</li> <li>4. Faulty hand valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce loaded weight of cart.</li> <li>2. Check and adjust pressure relief on hand valve and lifter circuit relief in diverter valve.</li> <li>3. Check and adjust pressure on full system relief in diverter valve.</li> <li>4. Replace hand valve.</li> </ol>
Lifter operates extremely slow.	<ol style="list-style-type: none"> <li>1. Engine idle too low.</li> <li>2. Faulty hand valve.</li> <li>3. Faulty truck hydraulic pump.</li> <li>4. Trash in diverter valve.</li> <li>5. Orifice in diverter valve is too small.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust engine idle.</li> <li>2. Replace hand valve.</li> <li>3. Consult truck maintenance manual.</li> <li>4. Remove orifice from diverter valve body and clean thoroughly.</li> <li>5. Remove orifice from diverter valve body and increase diameter.</li> </ol>
Lifter operates under recommended cycle time.	<ol style="list-style-type: none"> <li>1. Engine idle too high.</li> <li>2. Orifice in diverter valve is too large.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust engine idle.</li> <li>2. Remove orifice from diverter valve body and replace with a smaller diameter.</li> </ol>

## TROUBLE-SHOOTING CHART ( WI-0051 )

<i><b>SYMPTOM</b></i>	<i><b>POSSIBLE CAUSES</b></i>	<i><b>CORRECTIVE ACTION</b></i>
Hydraulic components downstream of diverter valve not operating or operating extremely slow.	<ol style="list-style-type: none"> <li>1. Truck system hydraulic pressure too low.</li> <li>2. Faulty full system relief valve cartridge in diverter valve.</li> <li>3. Faulty truck system relief valve.</li> <li>4. System flow is being restricted.</li> <li>5. Trash in flow regulator cartridge.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and adjust pressure on truck system relief and full system relief in diverter valve.</li> <li>2. Replace full system relief valve cartridge in diverter valve.</li> <li>3. Consult truck maintenance manual.</li> <li>4. Ensure there is proper flow throughout the hydraulic system. Remove any restrictions.</li> <li>5. Remove flow regulator cartridge from diverter valve body and clean thoroughly.</li> </ol>
Diverter valve leaking oil around cartridges.	<ol style="list-style-type: none"> <li>1. Worn or damaged seals on cartridge valves.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install diverter valve seal kit.</li> </ol>
Hand valve lever sticks in up or down position.	<ol style="list-style-type: none"> <li>1. Worn or broken spring center device.</li> <li>2. Trash in or around hand valve shift spool.</li> <li>3. Pressure ( IN ) and tank ( OUT ) ports are hooked up backwards.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install spring center kit.</li> <li>2. Disassemble and clean spool and housing.</li> <li>3. Make sure all hoses are plumbed according to the hydraulic schematic.</li> </ol>
Hand valve leaking oil around shift spool.	<ol style="list-style-type: none"> <li>1. Worn or damaged o-rings.</li> <li>2. Worn spool.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install hand valve seal kit.</li> <li>2. Replace hand valve.</li> </ol>



TROUBLE-SHOOTING CHART ( WI-0051 )

<i><b>SYMPTOM</b></i>	<i><b>POSSIBLE CAUSES</b></i>	<i><b>CORRECTIVE ACTION</b></i>
Clamp bar connecting rods frequently breaking or bending.	1. Clamp bar to finger dimension out of adjustment.	1. Adjust clamp bar to finger dimension as described in the Operation Instructions of this manual.
Lifter looses carts when dumping.	1. Clamp bar to finger dimension out of adjustment.  2. Loose saddle box assembly on faceplate.	1. Adjust clamp bar to finger dimension as described in the Operation Instructions of this manual.  2. Tighten all bolts on saddle box.
Top of carts being scored or damaged in clamp bar area.	1. Clamp bar to finger dimension out of adjustment.	1. Adjust clamp bar to finger dimension as described in the Operation Instructions of this manual.

**APPENDIX A**  
Assembly drawings and part numbers

ITEM NO	PART NO.	DESCRIPTION	QTY
1	2220-1028	2200 SERIES ROLLER BEARING ACTUATOR	1
2	2000-1101	21" STANDARD MAINFRAME	1
3	1220-1231	20" TORQUE ARM (R.H.)	1
4	1220-1235	20" TORQUE ARM (L.H.)	1
5	2000-1230	TORQUE BEARING ASSEMBLY	2
6	9201-1010	5/8-11 x 1 1/4" B.H.C.S.	2
7	9600-1000	5/8" FLAT WASHER	2
8	7500-0117	TORQUE ARM WASHER	2
9	7300-0612	KEY (3/8" x 1 3/16" LG.)	2
10	1220-1301	20" IDLER ARM (R.H.)	1
11	1220-1305	20" IDLER ARM (L.H.)	1
12	2000-1338	LOWER IDLER BEARING ASSEMBLY	2
13	2000-1335	UPPER IDLER BEARING ASSEMBLY	2
14	9902-0830	1/2-20 x 3 3/4" THREADED STUD	4
15	7500-0171	ARM WASHER	4
16	2501-1505	UNIVERSAL FACE PLATE	1
17	2501-1600	CLAMP BAR	1
18	7636-1500	FINGER SUPPORT	1
19	2500-1420	CLAMP PAD	4
20	7500-0080	RUBBER BUMPER	2
21	7202-0800	SPHERICAL ROD END	4
22	2500-1908	8" CONNECTING ROD	2
23	5000-0010	CAUTION LABEL	1
24	5000-0020	NOTICE LABEL (6-8 SECONDS)	1
25	7500-0070	MODEL/SERIAL NAME PLATE	1
26	7500-0071	DRIVE SCREW	4
27	8701-0612	3/8-16 x 1 1/2" F.H.S.C.S.	8
28	9001-0608	3/8-16 x 1" H.H.C.S.	24
29	9001-0614	3/8-16 x 1 3/4" H.H.C.S.	4
30	9001-0620	3/8-16 x 2 1/2" H.H.C.S.	4
31	9401-0600	3/8-16 HEX NUT	16
32	9600-0500	5/16" FLAT WASHER	20
33	9700-0600	3/8" LOCK WASHER	38
34	9001-0808	1/2-13 x 1" H.H.C.S.	2
35	9001-0812	1/2-13 x 1 1/2" H.H.C.S.	4

ITEM NO	PART NO.	DESCRIPTION	QTY
36	9201-0808	1/2-13 x 1" B.H.C.S.	2
37	9402-0800	1/2-20 HEX NUT	8
38	9502-0800	1/2-20 HALF NUT	4
39	9600-0800	1/2" FLAT WASHER	4
40	9700-0800	1/2" LOCK WASHER	12
41	9902-0814	1/2-20 x 1 3/4" THREADED STUD	4

NOTE:

- XX FIGURE ABOVE LINE INDICATES ITEM NO.  
XX FIGURE BELOW LINE INDICATES QTY. REQD.
- USE LOCTITE #242 (BLUE) P/N 7500-0055 ON ALL THREADED FASTENERS UNLESS OTHERWISE NOTED.
- USE LOCTITE #271 (RED) P/N 7500-0057.

B	UPDATED	2000-1101	PICTORIALLY	05/27/03	TJT	CI317
A	7500-0171	QTY. 4	WAS	QTY. 2	06/11/01	CTT ANR CI302
REV. LET.	REVISIONS	DATE	REV. BY	CHK. BY	E.C.R.	IND.

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**BAYNE MACHINE WORKS, INC.**  
208 FAIRFOREST WAY - GREENVILLE, SC 29607 - 864-288-3577

TOLERANCES IF NOT NOTED:  
0.000 ±0.005 - 0.00 ±0.015  
0.0° ±1/32° - ANGULAR ±0.25°

DRAWN BY: TBR

DATE: 12/18/00

CHKD BY: CTT

DATE: 12/19/00

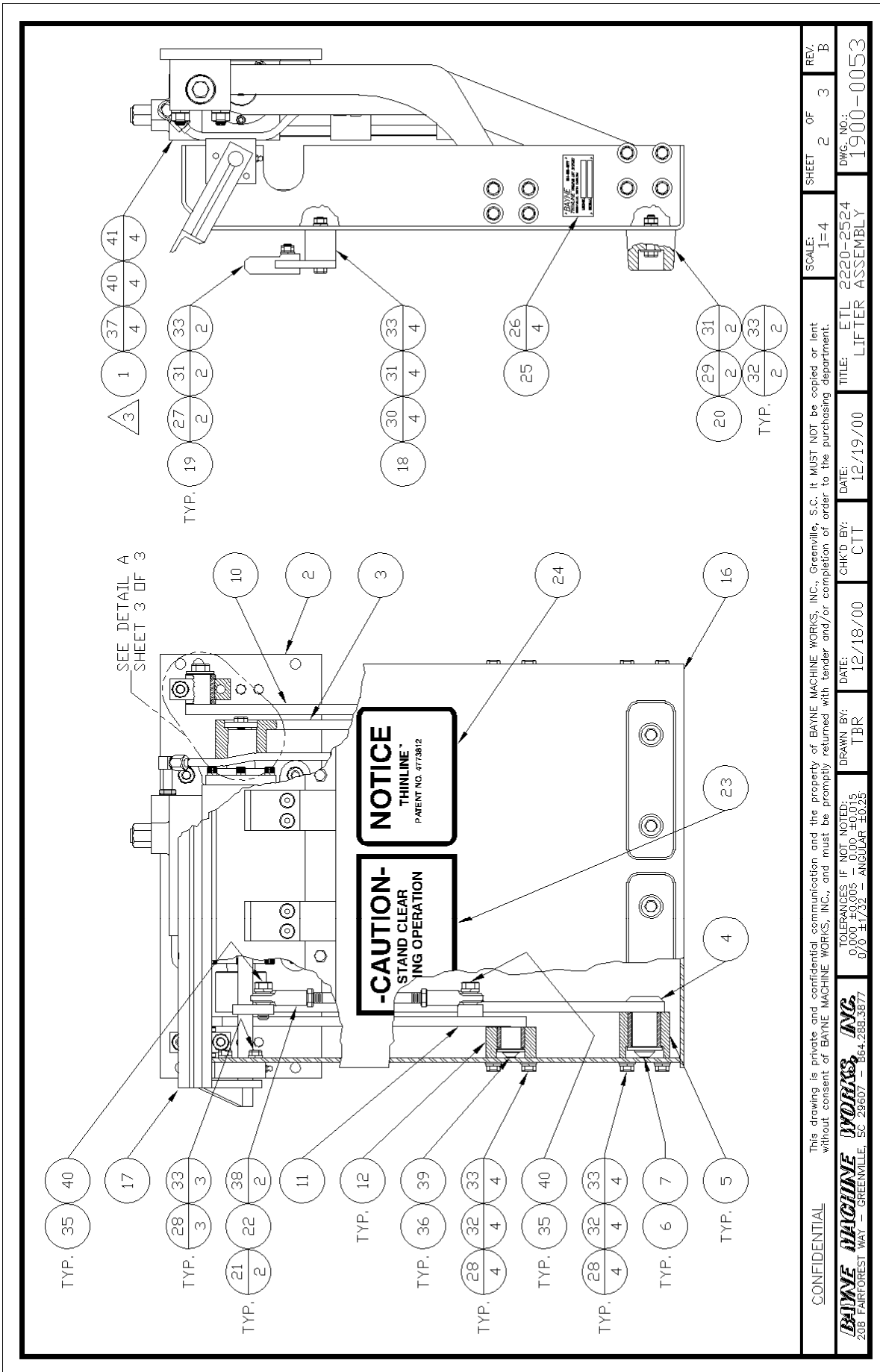
TITLE: ETL 2220-2524 LIFTER ASSEMBLY

SCALE: 1=1

SHEET 1 OF 3

REV. B

DWG. NO.: 1900-0053



SCALE: 1=4  
SHEET 2 OF 3  
REV. B

TITLE: ETL 2220-2524  
LIFTER ASSEMBLY  
DWG. NO.: 1900-0053

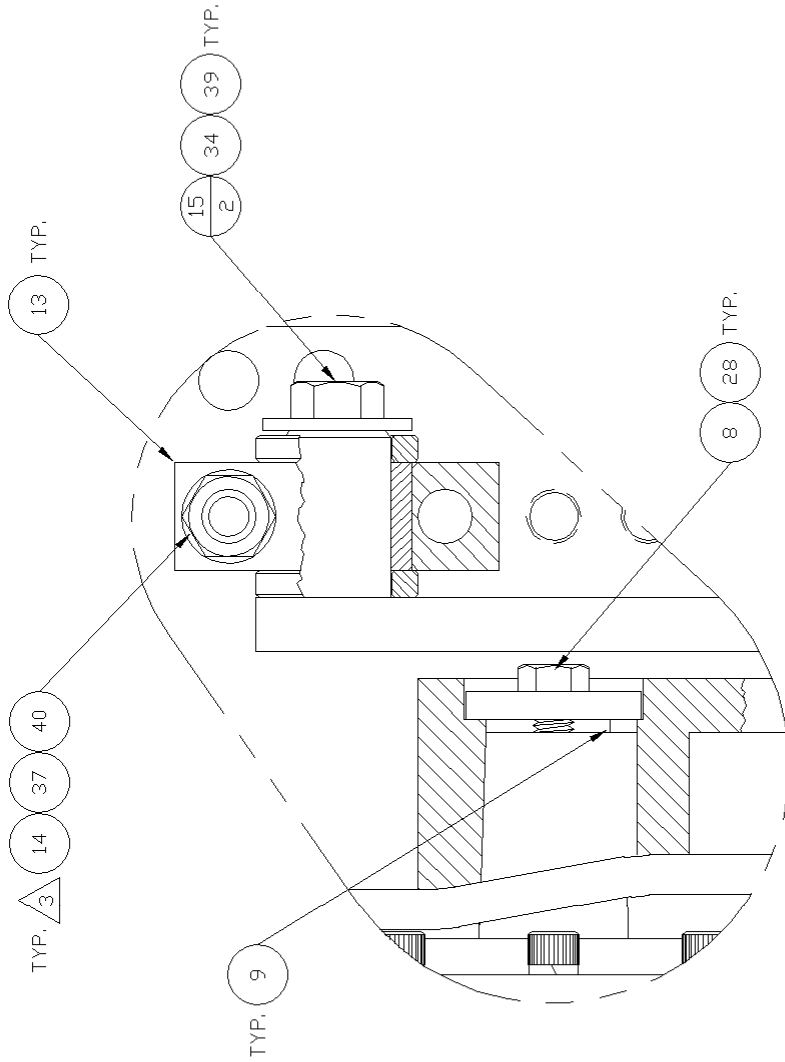
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CHKD BY: CTT

DATE: 12/18/00  
DRAWN BY: TBR

TOLERANCES IF NOT NOTED:  
0.000 ±0.005 - 0.00 ±0.015  
0/0 ±1/32 - ANGULAR ±0.25

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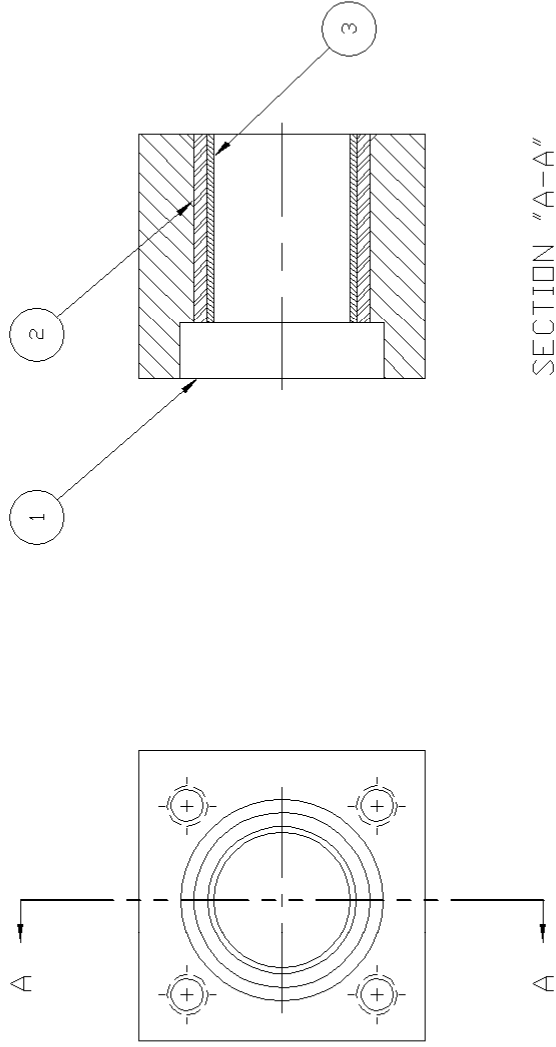


DETAIL A

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	1=1	3	3	B
TOLERANCES IF NOT NOTED: 0.000 ±0.005 - 0.00 ±0.015 0/0 ±1/32 - ANGULAR ±0.25	DATE:	CHK'D BY:	DATE:	DWG. NO.:
12/18/00	TBR	CIT	12/19/00	1900-0053
				TITLE: ETL 2220-2524 LIFTER ASSEMBLY

ITEM	PART NO.	DESCRIPTION	QTY
1	C20001220	TORQUE BEARING MOUNT CASTING	1
2	2603-1207	TORQUE ARM BUSHING	1
3	2603-1208	TORQUE ARM SLEEVE	1

NOTE:  
 1. MACHINE CASTING PER SHEET 2 AND PAINT BEFORE ASSEMBLY.  
 2. LAY BEARING MOUNT ON FLAT SURFACE AND PRESS BEARING IN.  
 PRESS SHOULD STOP ON FLAT SURFACE OF BEARING MOUNT  
 TO PREVENT DAMAGING THE BEARING.



SECTION "A-A"

REV.	REVISIONS	DATE	BY	CHK.	DATE	CTT	BY	CTT
D	2603-1207 & 2603-1208 WERE 2603-1205	05/24/05	CTT			CI439		CI439
C	UPDATED PICTORIALY	01/27/05	TJT	CTT		CI415		CI415
B	C20001220 WAS 2000-1210 ADDED MACHINING PRINT	04/16/04	CTT	TJT		CI393		CI393
A	UPDATED 2000-1210 PICTORIALY	10/16/02	CTT	WTS		CI357		CI357
LET.			REV.	CHK.	DATE		BY	CTT

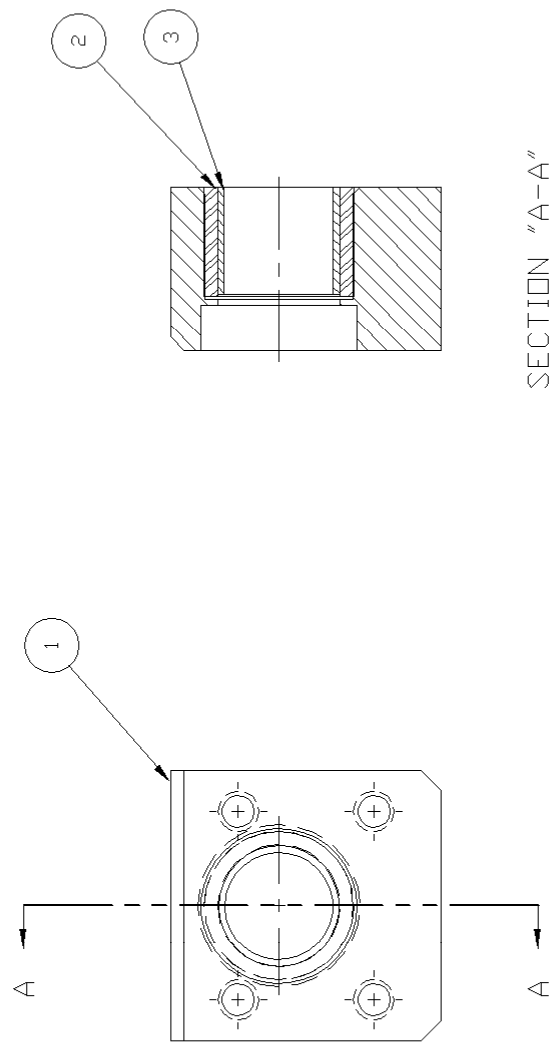
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**BAYNE MACHINE WORKS, INC.**  
 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-288-3877

SCALE:	SHEET	OF	REV.
1=1	1	2	D

CHKD BY:	DATE:	TITLE:	DWG. NO.:
RTM	06/13/00	TORQUE BEARING ASSEMBLY	2000-1230

ITEM	PART NO.	DESCRIPTION	QTY
1	C20001330	LOWER IDLER BEARING CASTING	1
2	2603-1307	IDLER BEARING BUSHING	1
3	2603-1308	IDLER BEARING SLEEVE	1

NOTE:  
 1. MACHINE CASTING PER SHEET 2 AND PAINT BEFORE ASSEMBLY.  
 2. LAY BEARING MOUNT ON FLAT SURFACE AND PRESS BEARING IN.  
 PRESS SHOULD STOP ON FLAT SURFACE OF BEARING MOUNT  
 TO PREVENT DAMAGING THE BEARING.



SECTION "A-A"

REV.	REVISIONS	DATE	CHK. BY	E.C.R. BY	NO.
C	L1030* WAS L1010*	08/30/05	CTT		C1448
B	REMOVED 2603-1306	12/08/04	TJT	CTT	C1410
A	ADDED 2603-1307 & 2603-1308	04/19/04	CTT	TJT	C1393
	ADDED MACHINING PRINT				

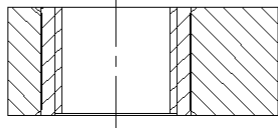
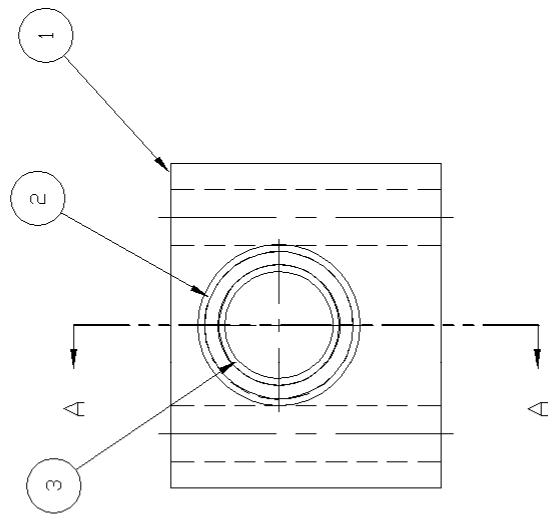
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**BAYNE MACHINE WORKS, INC.**  
 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-288-3877

SCALE: 1=1  
 SHEET 1 OF 2  
 REV: C  
 TITLE: LOWER IDLER BEARING ASSEMBLY  
 DWG. NO.: 2000-1338  
 DATE: 06/20/00  
 CHK'D BY: RTM  
 DATE: 03/22/00  
 DRAWN BY: ANR  
 DATE: 03/22/00

ITEM	PART NO.	DESCRIPTION	QTY
1	73-061025	1" x 2 1/2" C.R.S. FLAT BAR	.021
2	2603-1307	IDLER BEARING BUSHING	1
3	2603-1308	IDLER BEARING SLEEVE	1

NOTE:  
 1. MACHINE PER SHEET 2 AND PAINT BEFORE ASSEMBLY.  
 2. LAY BEARING MOUNT ON FLAT SURFACE AND PRESS BEARING IN. PRESS SHOULD STOP ON FLAT SURFACE OF BEARING MOUNT TO PREVENT DAMAGING THE BEARING.



SECTION "A-A"

REV.	LET.	REVISIONS	DATE	REV. BY	CHK. BY	E.C.R. NO.
D		REMOVED 2603-1306 ADDED 2603-1307 & 2603-1308	12/08/04	TJT		C1410
C		73-061025 WAS 2000-1340 ADDED MACHINING PRINT	08/12/04	CTT	TJT	C1401
B		2603-1306 WAS 2603-1305 REMOVED 8302-0404	05/16/01	ANR	TBR	C1302
A		2000-1340 WAS 2000-1306 ADDED 8302-0404	08/24/00	ANR	TBR	C1283

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 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-288-3877

TOLERANCES IF NOT NOTED:  
 0.000 ±0.005 - 0.00 ±0.015  
 0/0 ±1/32 - ANGULAR ±0.25

DRAWN BY: ANR  
 DATE: 03/22/00  
 CHK'D BY: RTM  
 DATE: 06/27/00

TITLE: UPPER IDLER BEARING ASSEMBLY  
 DWG. NO.: 2000-1335

SCALE: 1=1  
 SHEET 1 OF 2

REV. D





MODEL NUMBER	PART #	"A" DIM.	"B" DIM.	"C" DIM.	"D" DIM.	"E" DIM.	"F" DIM.	"G" DIM.	"H" DIM.	"J" DIM.	"K" DIM.	"L" DIM.
ETL 1116	1900-0047	38 1/8"	7 1/8"	16 1/4"	40 1/8"	40 5/8"	1/4"	14 1/4"	39 5/8"	31 3/4"	84 1/8"	50°
ETL 2216 **	1900-0296											
ETL 1116-2524	1900-0297	38 5/8"	12 7/8"	16 1/4"	41 1/8"	43 1/8"	3/4"	16 3/4"	44 1/2"	30 7/8"	83 1/4"	56°
ETL 2216-2524 **	1900-0298											
ETL 1116-2526	1900-0123	38 1/8"	13 1/8"	16 1/4"	40 3/8"	42 1/2"	1 1/2"	16 7/8"	47"	29 1/8"	80 7/8"	63°
ETL 2216-2526 **	1900-0299											
ETL 1120-2524	1900-0049	42 5/8"	12 7/8"	16 1/4"	46 3/8"	50 3/8"	1 1/2"	17 7/8"	44"	39 7/8"	92 1/8"	52°
ETL 2220-2524 **	1900-0053											
ETL 1120-2526	1900-0081	42 1/4"	13 1/2"	16 1/4"	45 5/8"	50 1/4"	1 3/4"	18 3/8"	46 3/4"	38 1/4"	90 1/2"	58°
ETL 2220-2526 **	1900-0124											
ETL 1124-2524 **	1900-0051	46 1/8"	11 1/8"	16 1/4"	50 1/4"	56 3/4"	1 3/8"	17 7/8"	44"	47 3/8"	99 3/4"	52°
ETL 2224-2524 **	1900-0055											
ETL 1124-2526 **	1900-0092	46 1/8"	13 1/8"	16 1/4"	50 5/8"	57 1/2"	1 5/8"	19 1/8"	46 3/8"	46 5/8"	99"	55°
ETL 2224-2526 **	1900-0125											
ETL 1128-2524 **	1900-0191	50 1/8"	11 1/8"	16 1/4"	55 3/8"	63 3/4"	1 3/8"	18 1/4"	43 5/8"	55 7/8"	108 1/8"	50°
ETL 2228-2524 **	1900-0057											
ETL 2228-2526 **	1900-0126	50 3/8"	14 1/8"	16 1/4"	56 1/2"	65 3/8"	1 1/2"	20 1/8"	45 3/4"	55 7/8"	108 1/4"	51°
ETL 1132-2524 **	1900-0295	54 1/8"	11 1/8"	16 1/4"	60 1/2"	71 1/8"	1 5/8"	18 5/8"	43 3/8"	64 1/4"	116 3/8"	48°
ETL 2232-2524 **	1900-0059											
ETL 2232-2526 **	1900-0127	54 1/8"	13 1/8"	16 1/4"	60 3/4"	71 3/4"	1 5/8"	20 1/8"	45 3/4"	63 5/8"	116"	51°
ETL 2234-2524 **	1900-0061	56 1/8"	11 1/8"	16 1/4"	63"	74 3/4"	1 5/8"	18 3/4"	43 1/4"	68 3/8"	120 1/2"	48°
ETL 2234-2526 **	1900-0128	56 3/8"	14 1/8"	16 1/4"	64 1/4"	76 1/4"	1 1/2"	20 5/8"	45 3/8"	68 1/2"	120 5/8"	48°

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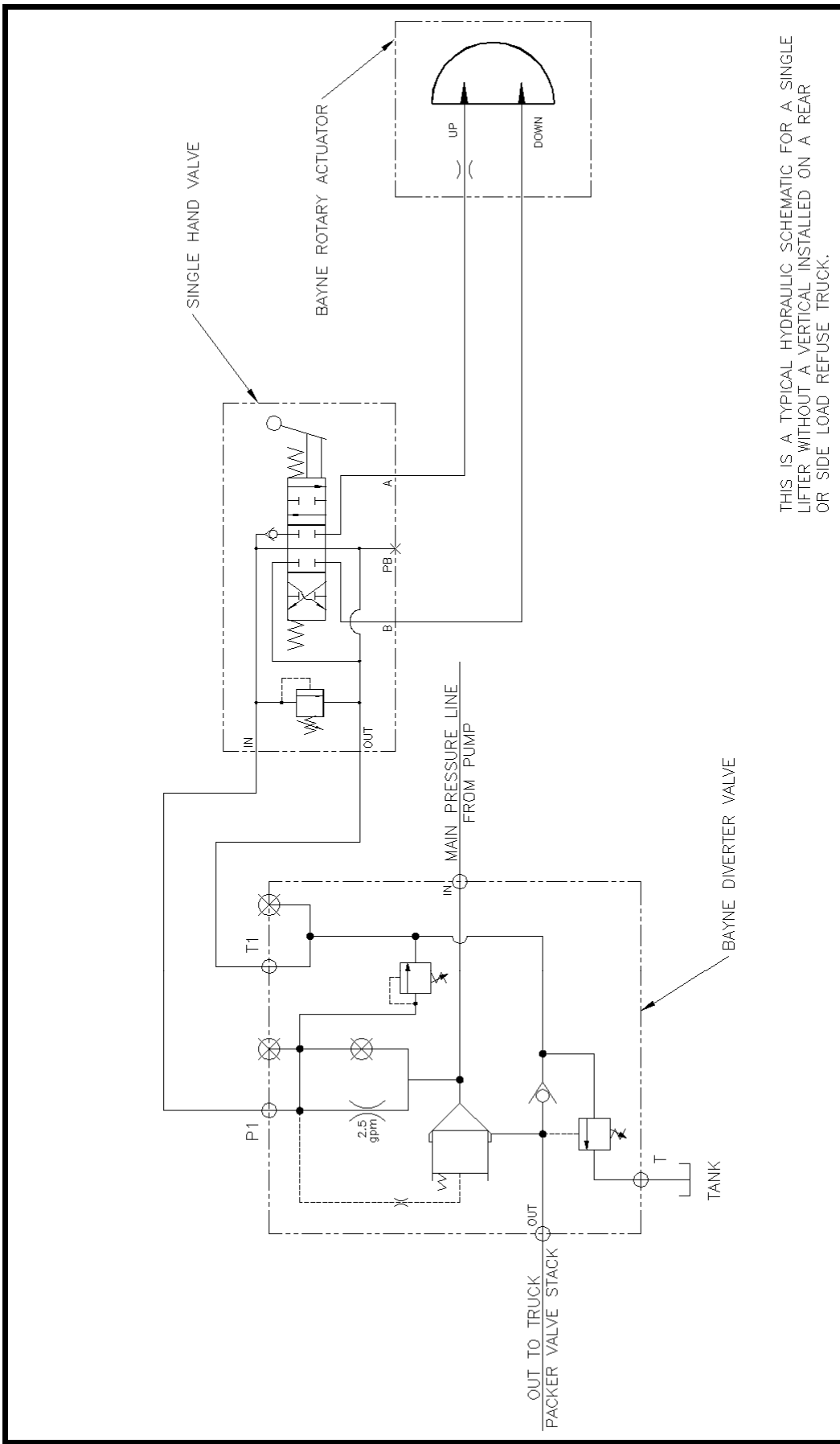
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES LINEAR TOLERANCES: FRACTIONAL: ±0.005 DECIMAL: ±0.015 THREE PLACE DECIMAL: ±0.005 ANGULAR TOLERANCES: MACHINED: ±0.25 DEG BEND: ±1.00 DEG

**BAYNE MACHINE WORKS, INC.**  
 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864.288.3877

TITLE: ETL SERIES SPECIFICATIONS

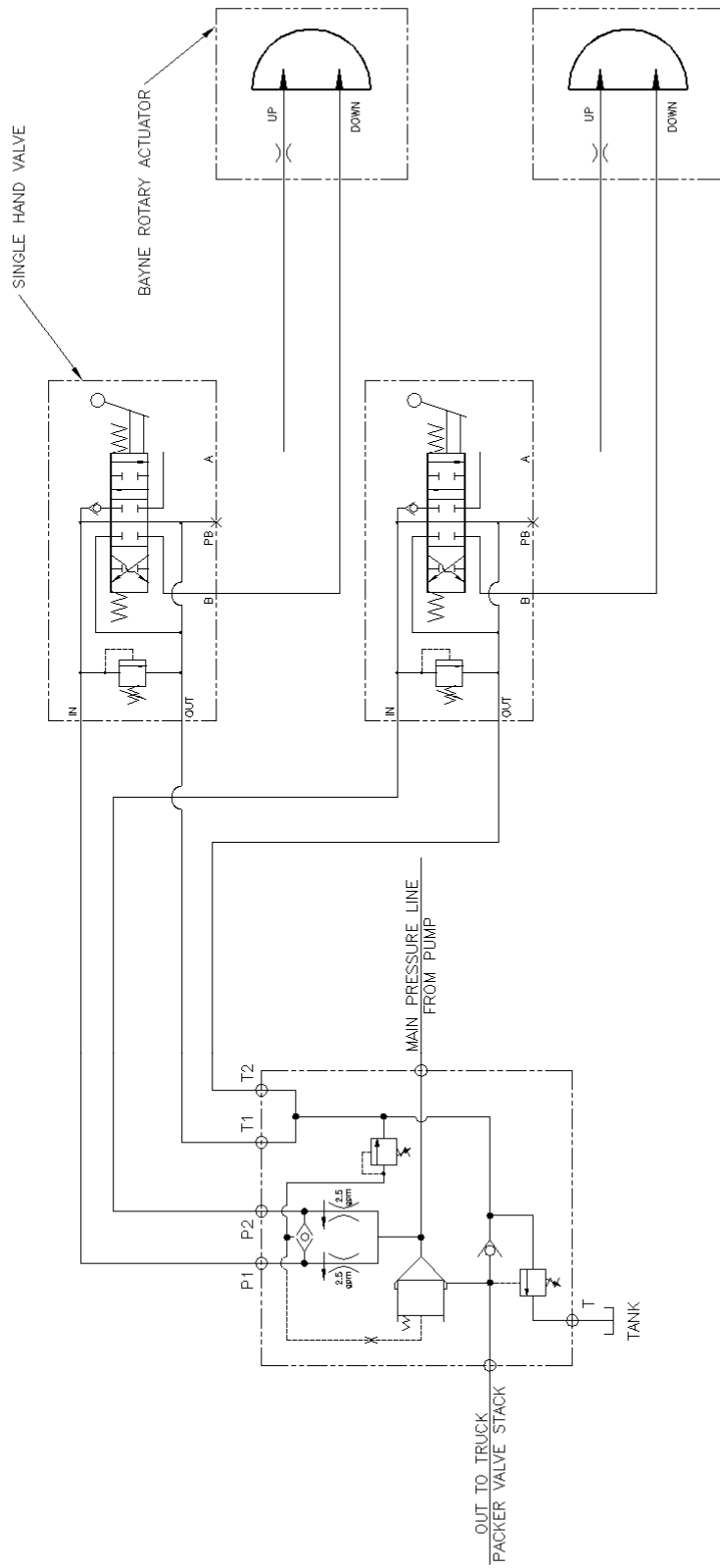
DRAWN BY: CTT DATE: 10/16/2009 SCALE: NONE SHEET OF: 2  
 CHECKED BY: DATE: DWG NO: H0700008 REV: -

MATERIAL: QTY: FINISH: WEIGHT: QTY: FINISH: WEIGHT: QTY: FINISH: WEIGHT: QTY: FINISH: WEIGHT:



THIS IS A TYPICAL HYDRAULIC SCHEMATIC FOR A SINGLE LIFTER WITHOUT A VERTICAL INSTALLED ON A REAR OR SIDE LOAD REFUSE TRUCK.

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<b>BAYNE MACHINE WORKS, INC.</b>	TOLERANCES IF NOT NOTED: 0.000 ±0.005 - 0.00 ±0.015 0/0 ±1/32 - ANGULAR ±0.25	DATE: 10/14/04	CHK'D BY: T JT	DWG. NO.: 6900-0700
910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-288-3877				TITLE: HYDRAULIC SCHEMATIC



THIS IS A TYPICAL HYDRAULIC SCHEMATIC FOR A DUAL LIFTER WITHOUT A VERTICAL INSTALLED ON A REAR OR SIDE LOAD REFUSE TRUCK.

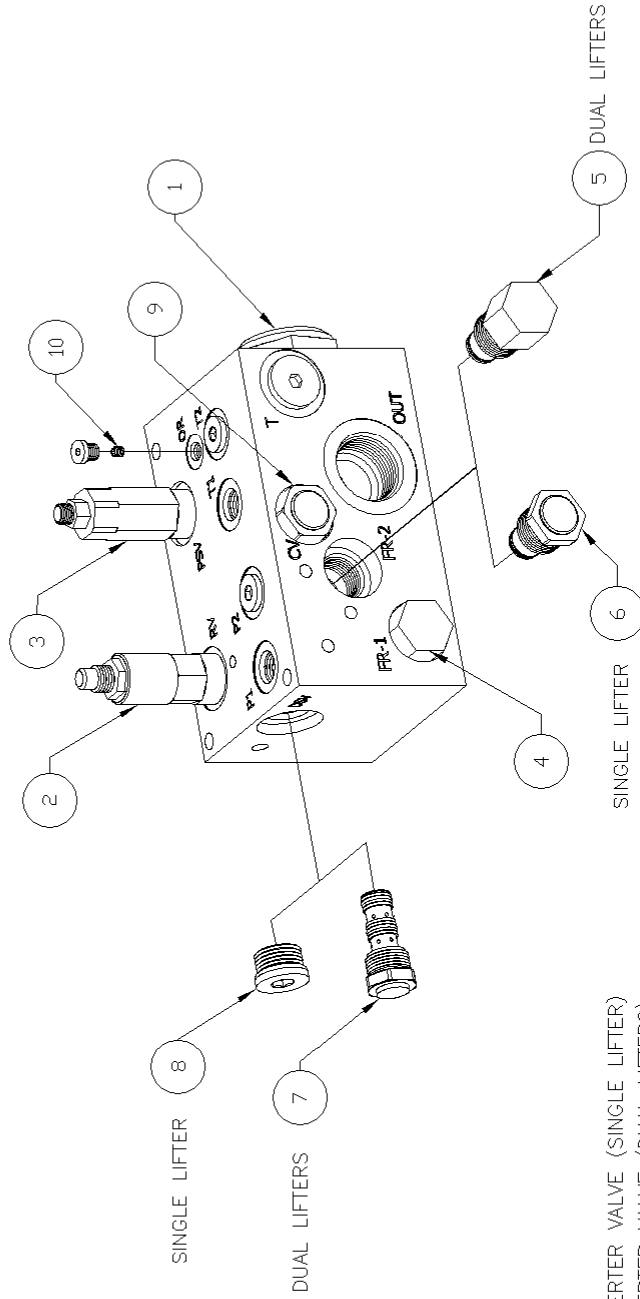
CONFIDENTIAL	This drawing is private and confidential communication and the property of BAYNE MACHINE WORKS, INC., Greenville, S.C. It MUST NOT be copied or lent without consent of BAYNE MACHINE WORKS, INC., and must be promptly returned with tender and/or completion of order to the purchasing department.	SCALE: NTS	SHEET 1 OF 1	REV. -
<b>BAYNE MACHINE WORKS, INC.</b>	TOLERANCES IF NOT NOTED: 0.000 ±0.005 - 0.00 ±0.015 0.0 ±1/32 - ANGULAR ±0.25	TITLE: HYDRAULIC SCHEMATIC	DWG. NO.: 6900-0704	
910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-288-3877	DATE: 10/20/04	CHK'D BY: T JT	DATE:	

### SERVICE PARTS

ITEM	PORT	PART NO.	DESCRIPTION	SEAL KIT	APPLICATIONS
1	DPS	6091-0716	DIFF. PRESSURE SENSING VALVE	8000-0782	ALL
2	RV	6091-0712	RELIEF VALVE	8000-0784	ALL
3	PSV	6091-0713	PRESSURE SEQUENCE VALVE	8000-0781	ALL
4	FR-1	6091-0710	FLOW REGULATOR	8000-0784	FOR DUAL LIFTERS
5	FR-2	6091-0715	CAVITY PLUG	8000-0783	FOR SINGLE LIFTERS
6	DSV	6246-0008	IND. 8 SAE SOCKET HEAD PLUG	8000-0784	FOR SINGLE LIFTER
7	CV	6091-0714	CHECK VALVE	-	ALL
8	DR	6066-0028	Ø0.028" DRIFICE	-	ALL

**NOTE:**

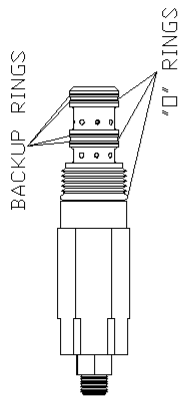
1. MAXIMUM WORKING PRESSURE 3000 PSI
2. MAXIMUM WORKING FLOW 50 GPM
3. TEMPERATURE RANGE = 160° MAXIMUM
4. PORT SIZES  
IN & OUT = #16 SAE  
T = #10 SAE
5. T1, T2, P1 & P2 = #6 SAE  
PLUGS IN SINGLE LIFTER APPLICATIONS



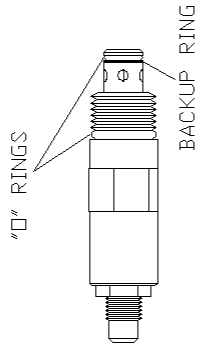
- 6091-0700 COMPLETE DIVERTER VALVE (SINGLE LIFTER)
- 6092-0700 COMPLETE DIVERTER VALVE (DUAL LIFTERS)

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				1=2	1	1	A
<b>BAYNE MACHINE WORKS, INC.</b>		DRAWN BY: TJT		DATE: 09/24/04		CHK'D BY: CTT	
910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-286-3877		DATE: 10/11/04		TITLE: SINGLE/DUAL DIVERTER VALVE PARTS		DWG. NO.: M3500005	

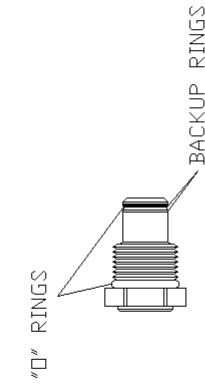
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	8000-0781	PRES. SEQUENCE VALVE SEAL KIT	1
2	8000-0782	PRESSURE SENSING VALVE SEAL KIT	1
3	8000-0783	SHUTTLE VALVE SEAL KIT	1
4		RELIEF VALVE SEAL KIT	1
5	8000-0784	FLOW REGULATOR SEAL KIT	1
6		FLOW REG. CAVITY PLUG SEAL KIT	1
7		CHECK VALVE SEAL KIT	1



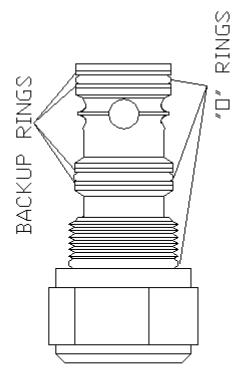
PRESSURE SEQUENCE VALVE SEAL KIT



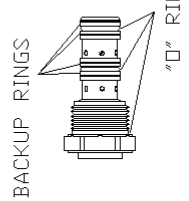
RELIEF VALVE SEAL KIT



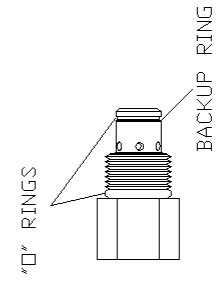
FLOW REGULATOR CAVITY PLUG SEAL KIT



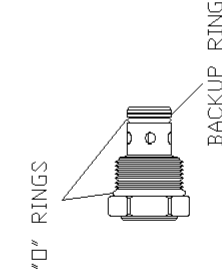
DIFFERENTIAL PRESSURE SENSING VALVE SEAL KIT



SHUTTLE VALVE SEAL KIT



FLOW REGULATOR SEAL KIT



CHECK VALVE SEAL KIT

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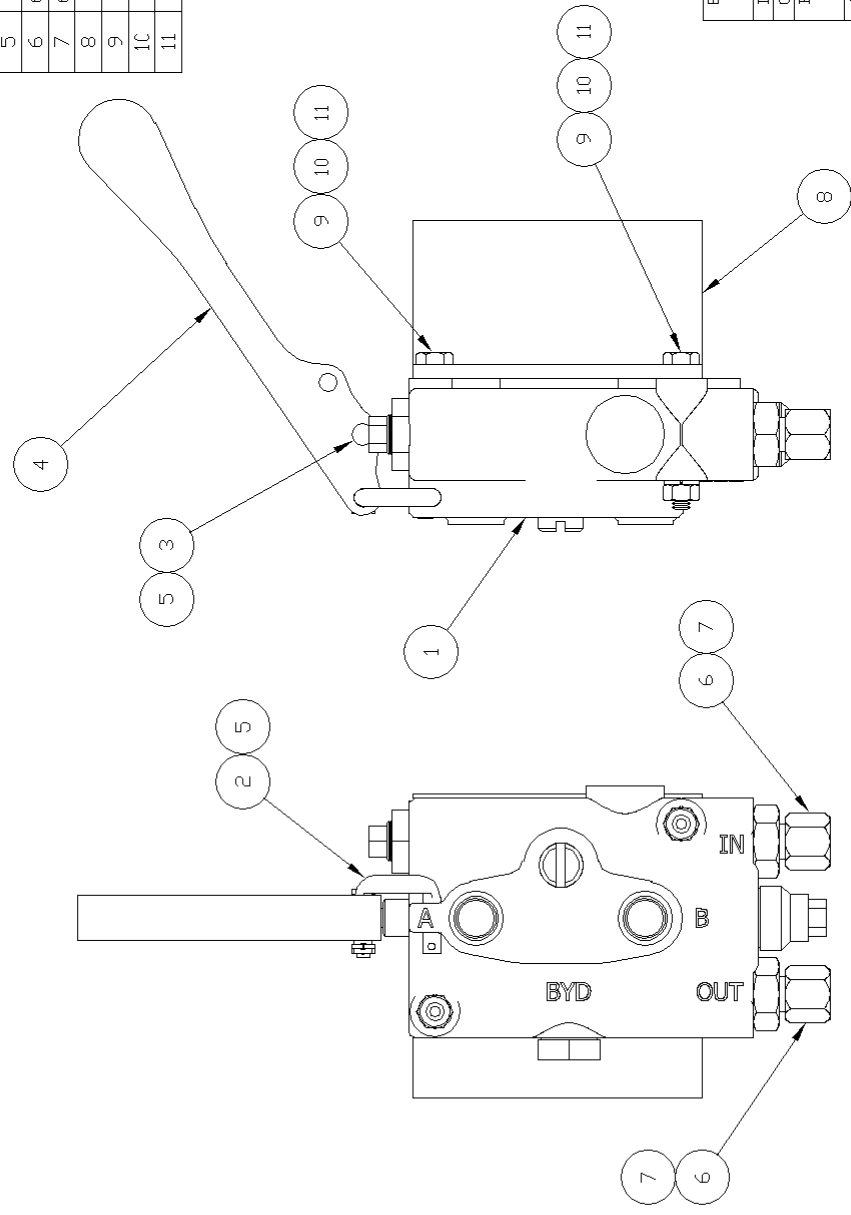
TOLERANCES IF NOT NOTED:  
 0.000 ±0.005 - 0.00 ±0.015  
 0.0 ±1/32 - ANGULAR ±0.25

DRAWN BY: T JT DATE: 09/29/04  
 CHK'D BY: DATE:  
 TITLE: DIVERTER VALVE SEAL KIT  
 DWG. NO.: 8000-0780

SCALE: 2=3 SHEET 1 OF 1 REV. -

ITEM	PART NO.	DESCRIPTION	QTY
1	6083-1025	HAND VALVE - 1750 PSI RELIEF	1
2	6083-1510	UNIVERSAL C-HOOK	1
3	6083-1511	CLEVIS PIN (Ø3/16" x 7/8")	1
4	6083-1520	METRO/EATON H.V. HANDLE	1
5	8810-0303	COTTER PIN (1/16" x 1/2")	2
6	6220-0806	ST ADAPTER (#6 JIC x #6 SAE)	2
7	6248-0006	#6 JIC CAP NUT	2
8	7601-0003	HAND VALVE MOUNTING BRACKET	1
9	9001-0416	1/4-20 x 2" H.H.C.S.	2
10	9401-0400	1/4-20 HEX NUT	2
11	9700-0400	1/4" LOCK WASHER	2

NOTE:  
 1. SEAL REPAIR KIT P/N : 8000-0085  
 2. HANDLE REPLACEMENT KIT P/N : 6083-1501



E	6083-1025 WAS 6083-1020 ADDED 6083-1510 & 6083-1511 ADDED 6083-1520 & 8810-0303	05/24/07	CTT	CI515
D	REVISED 6083-1020 PICTORIALY	07/13/05	TJT	CTT
C	REVISED 6083-1020 PICTORIALY	03/30/99	TBR	RTM
B	6083-1020 WAS 6083-0420 ADDED 6220-0806 & 6248-0006 UPDATED DRAWING & TITLE BLOCK	05/15/98	CTT	RTM
A	REVISED 7601-0003 PICTORIALY	08/27/97	EFJ	RTM
REV. LET.	REVISIONS	DATE	REV. BY	CHK. BY

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 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-288-3877

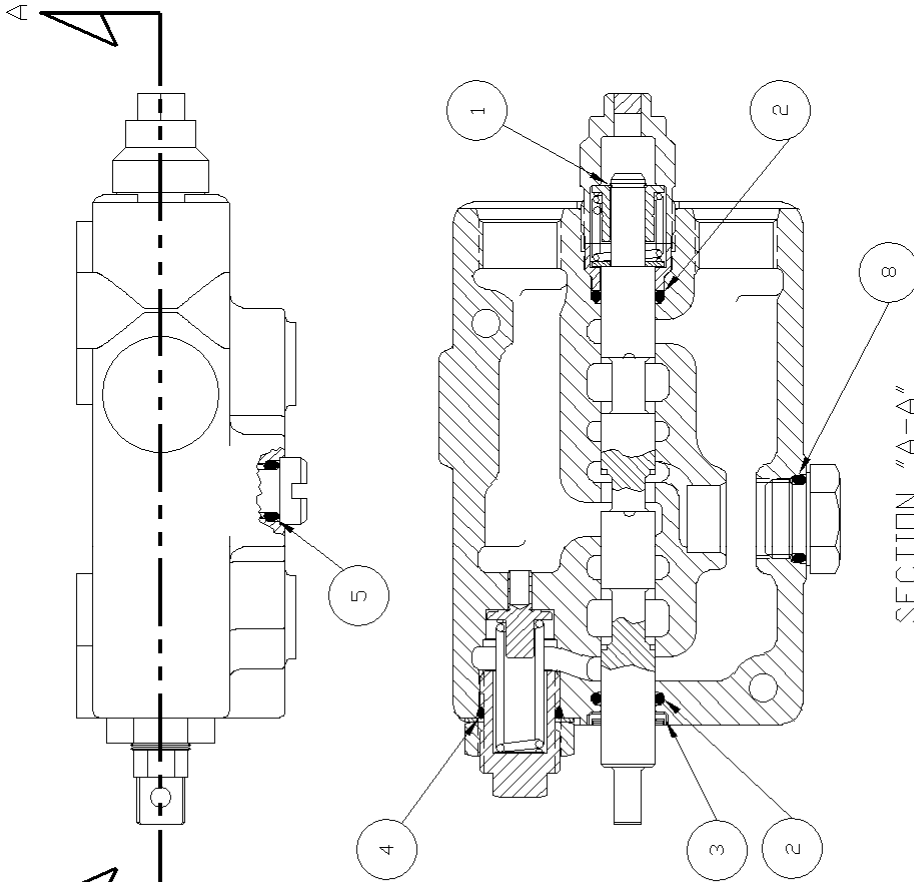
TOLERANCES IF NOT NOTED:  
 0.000 ±0.005 - 0.00 ±0.015  
 0/0 ±1/32 - ANGULAR ±0.25

DRAWN BY: TBR DATE: 06/07/96  
 CHKD BY: BKB DATE: 06/11/96

SCALE: 2=3  
 SHEET 1 OF 1 REV. E

TITLE: VALVE W/BRACKET  
 DWG. NO.: 6083-1010

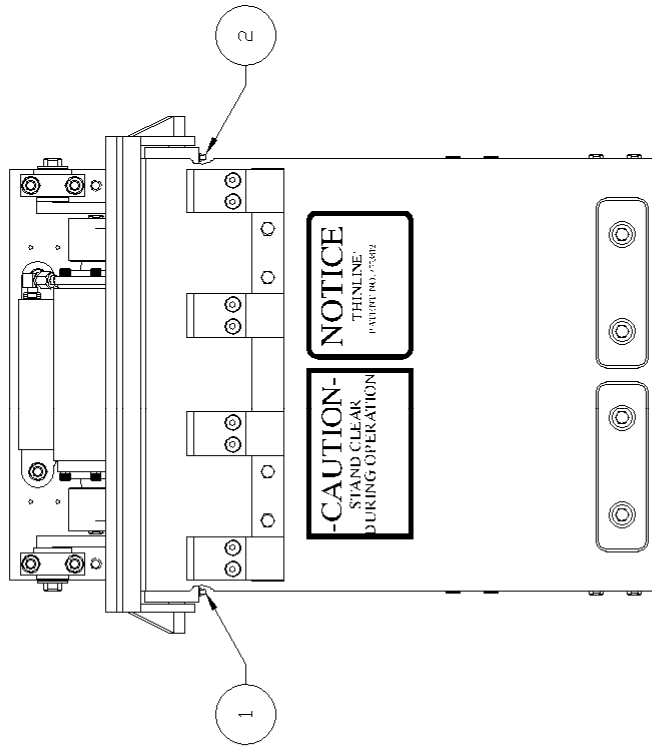
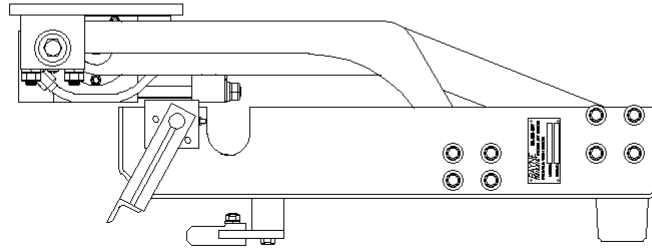
ITEM NO	DESCRIPTION	QTY
1	RETAINING RING	1
2	3/32" x 1/2" I.D. O-RING	2
3	WIPER SEAL	1
4	3/32" x 41/64" I.D. O-RING	1
5	3/32" x 3/8" I.D. O-RING	1
6	1/16" x 1/2" I.D. O-RING	1
7	1/16" x 1/2" BACK-UP WASHER	1
8	3/32" x 5/8" I.D. O-RING	1
9	5/64" x 15/32" I.D. O-RING	1



NOTES:  
 1. ASSEMBLY INSTRUCTIONS ARE INCLUDED WITH EACH KIT.  
 2. ITEMS 6,7 AND 9 ARE NOT USED WITH THIS HAND VALVE.

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<b>BAYNE MACHINE WORKS, INC.</b>	TOLERANCES IF NOT NOTED: 0.000 ±0.005 - 0.00 ±0.015 0.0 ±0.005 - 0.00 ±0.015	DATE: 07/20/05	CHK'D BY: T JT	TITLE: HAND VALVE SEAL REPAIR KIT	DWG. NO.: 8000-0085
910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-288-3877					





LUB POINTS 3-6 ARE LOCATED ONE IN EACH ROD END.



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<b>BAYNE MACHINE WORKS, INC.</b>	TOLERANCES IF NOT NOTED: 0.000 ±0.005 - 0.00 ±0.015 0/0 ±1/32 - ANGULAR ±0.25	ETL	DWG. NO: LUB2550F	
910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864-288-3877	DATE: 12/7/00	TITLE: LUBRICATION POINTS	CHK'D BY: TBR	DATE: 12/7/00