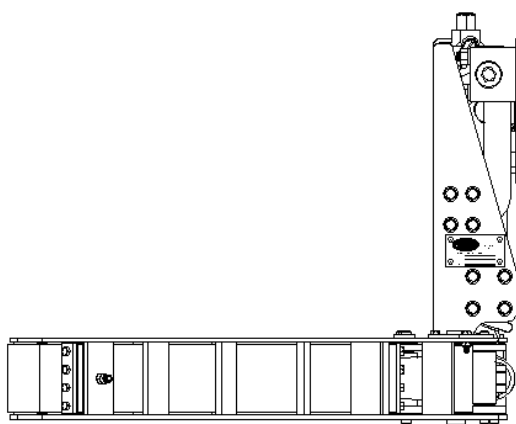
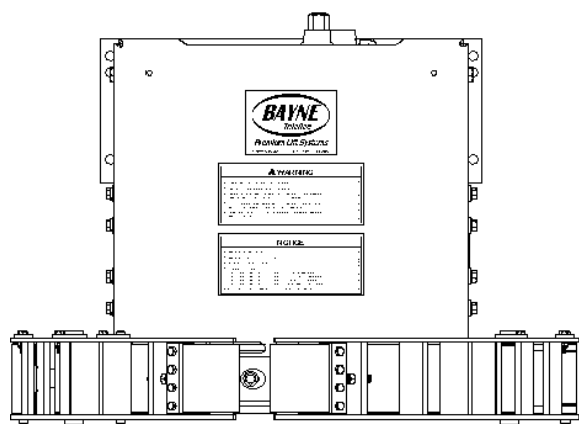




Premium Lift Systems

OPERATION AND PARTS MANUAL



MODEL NUMBER : _____ **GRL 1110**

PART NUMBER : _____ **1900-0560**

SERIAL NUMBER : _____

BAYNE MACHINE WORKS, INC.
910 FORK SHOALS ROAD
GREENVILLE SC, 29605
WEBSITE: *www.baynethinline.com*

PHONE: 864.288.3877
TOLL FREE: 800.535.2671
FAX: 864.458.7519
E-MAIL: *sales@baynethinline.com*

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-0091-A)
Bayne THINLINE[®] 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*[®] lift unit can measure as little as 7 1/8" thick from the back of the mainframe to the front of the lifter, depending on the types of arms used.
- D. The faceplate is normally at 45 degrees in the dump position and extends 10" to 12" from the back of the mainframe into the hopper or container opening. This places the cart or barrel 13" to 15" 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 Actuator to rotate up and down.
 - **3 - 4 seconds** for GRL arms to clamp and unclamp.

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 flow rates are as follows:
- **2 to 2 1/2 GPM** for 1100 series units
 - **2 to 4 GPM** for 2200 series units
- G. Hydraulic pressure requirements are as follows:
- **1800-2000 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-0236-A)

Bayne THINLINE[®] Premium Lift Systems

The following information is intended to be a **GENERAL GUIDE** to installing the **Bayne THINLINE**[®] 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**[®] 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 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 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.*).

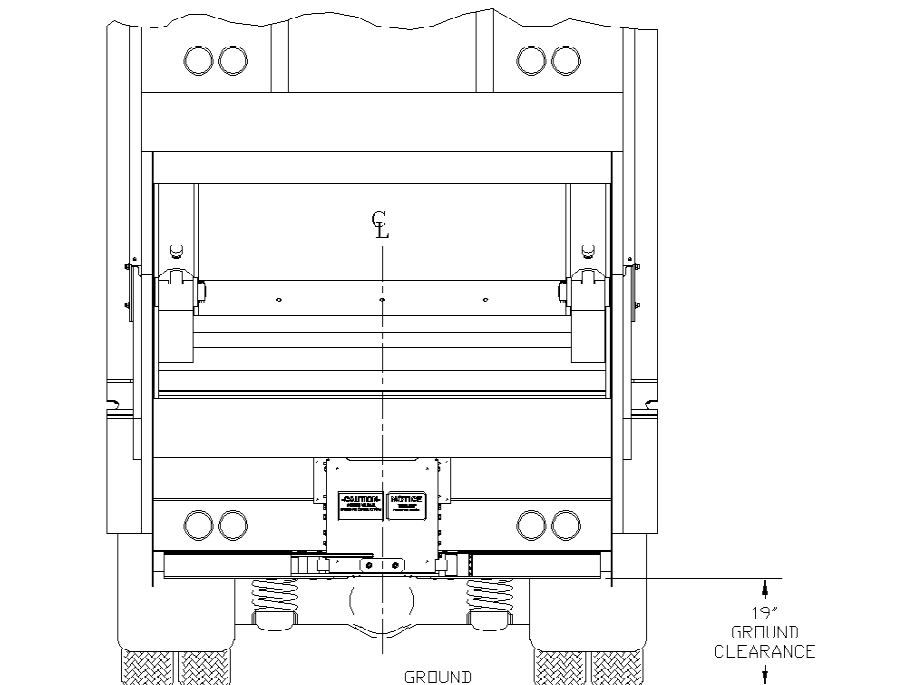


figure I-1

II. 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 layout (figure I-2) and hydraulic schematic (Appendix A) while performing the following steps.

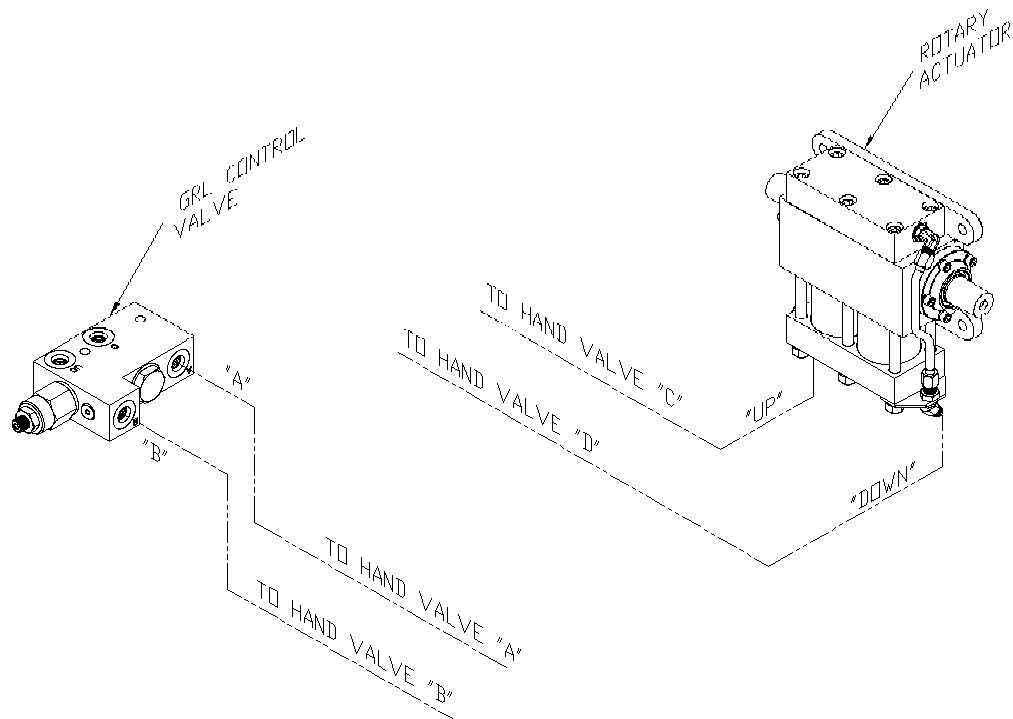


figure I-2

1. Connect the hose from the “UP” port of the rotary actuator to the “C” port of the dual hand valve.
2. Connect the hose from the “DOWN” port of the rotary actuator to the “D” port of the hand valve.
3. Connect the hose from the “C” port of the GRL control valve to the “A” port of the hand valve.
4. Connect the hose from the “UC” port of the GRL control valve to the “B” port of the hand valve.

III. Adjusting the GRL control valve :

The clamping pressure and speed of the **THINLINE[®]** GRL lifter's arms are controlled by the GRL control valve mounted to the lifter.

It is very important to make sure the hydraulic oil is at operating temperature, and the flow rate and relief valve settings have been properly adjusted before setting the GRL control valve pressures. The proper flow rate and relief settings are 2 gpm at 1800 psi.

The amount of pressure the GRL arms use to clamp the container is controlled with a pressure relief valve in the GRL control valve. This valve is preset at the factory to operate with most containers. However, if the lifter seems to be crushing or loosing grip on your specific containers, refer to figure I-3 while performing the following steps to properly adjust the clamping pressure.

1. Loosen the lock nut on the pressure relief valve in the GRL control valve.
2. If the lifter is crushing the waste container, turn the adjustment screw counter-clockwise 1/4 turn. If the lifter is loosing grip on the waste container, turn the adjustment screw clockwise 1/4 turn.
3. Repeat clamping and dumping the container, making necessary adjustments to the pressure relief valve in 1/4 turn increments until the lifter securely holds the container without crushing it.
4. Tighten the lock nut on the pressure relief valve to secure the correct pressure setting.

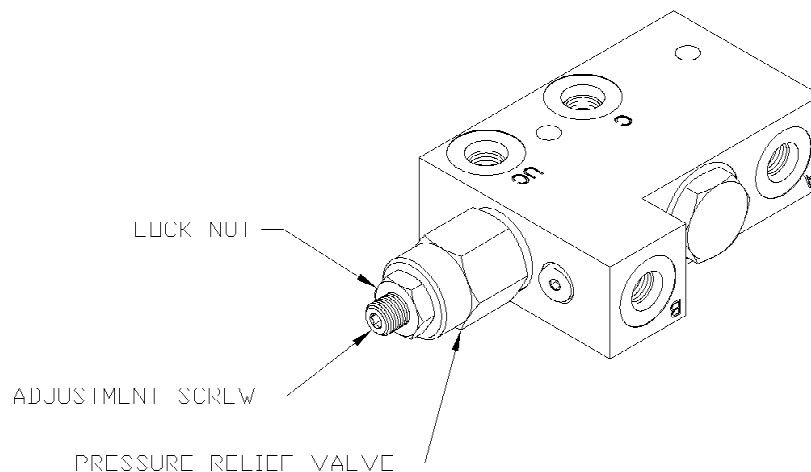


figure I-3

IV. Final operation and mounting:

1. Start the truck's engine and engage the hydraulic system.
2. Operate the lifter and bleed all air from the hydraulic system.
3. Place a cart on the 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 to ensure correct operation.
4. After locating an acceptable mounting position, complete the welding of the lifter to the truck.

OPERATION INSTRUCTIONS (WI-0405-A)

Bayne THINLINE® Premium Lift Systems

The *Bayne THINLINE*® 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 rolled up to the lifter.
- 2) ***CLAMPING*** - The clamp arms are engaged around the cart.
- 3) ***ACTUATOR DUMP*** - The rotary actuator is cycled to dump the contents of the cart.
- 4) ***ACTUATOR REVERSE*** - The rotary actuator is reversed, returning the cart to the ground.
- 5) ***UNCLAMPING*** - The clamp arms are unclamped.

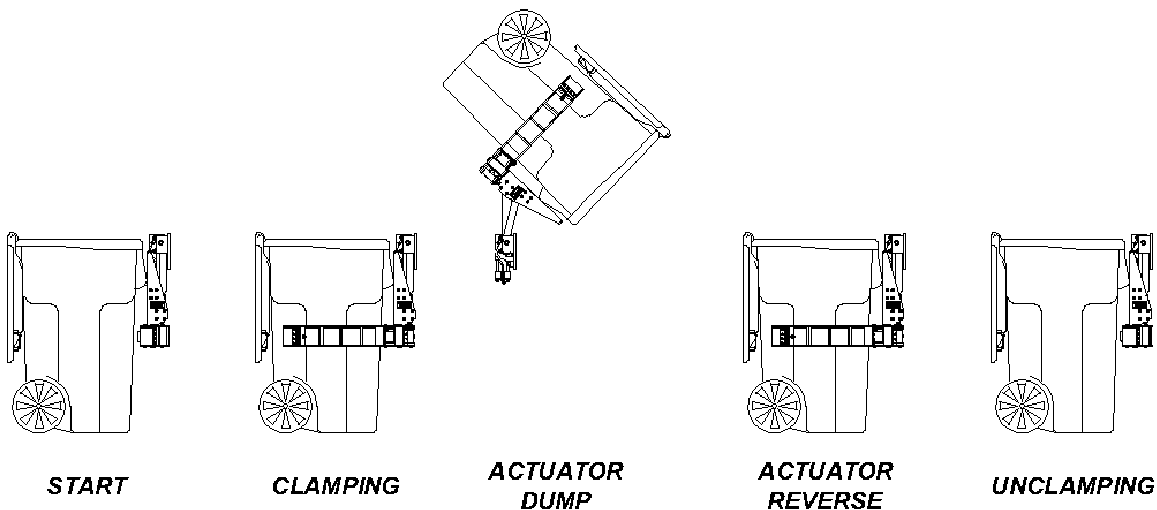


figure O-1

The rotational and clamping motions of the cart lifter are controlled with the use of a dual hand valve. Moving the grabber arm handle on the dual hand valve in the upward direction will cause the grabber arms to perform the *CLAMPING* stage. Moving the actuator handle in the upward direction will cause the lifter to perform the *ACTUATOR DUMP* stage. Moving the actuator handle in the downward direction will cause the lifter to perform the *ACTUATOR REVERSE* stage. Finally, moving the grabber arm handle in the downward direction will cause the lifter to perform the *UNCLAMPING* stage.

MAINTENANCE INSTRUCTIONS (WI-0141-A)

Bayne THINLINE[®] 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*[®] 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 dumper on a weekly basis for loose bolts, fittings, oil leaks, etc. Tighten loose hardware as necessary and replace necessary seals to repair oil leaks.

BAYNE

PREMIUM LIFT SYSTEMS

ASSEMBLY INSTRUCTIONS

1100 SERIES ROLLER BEARING ACTUATOR

PART NUMBER 1122-1015 (WI-1116-D)

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-13 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.

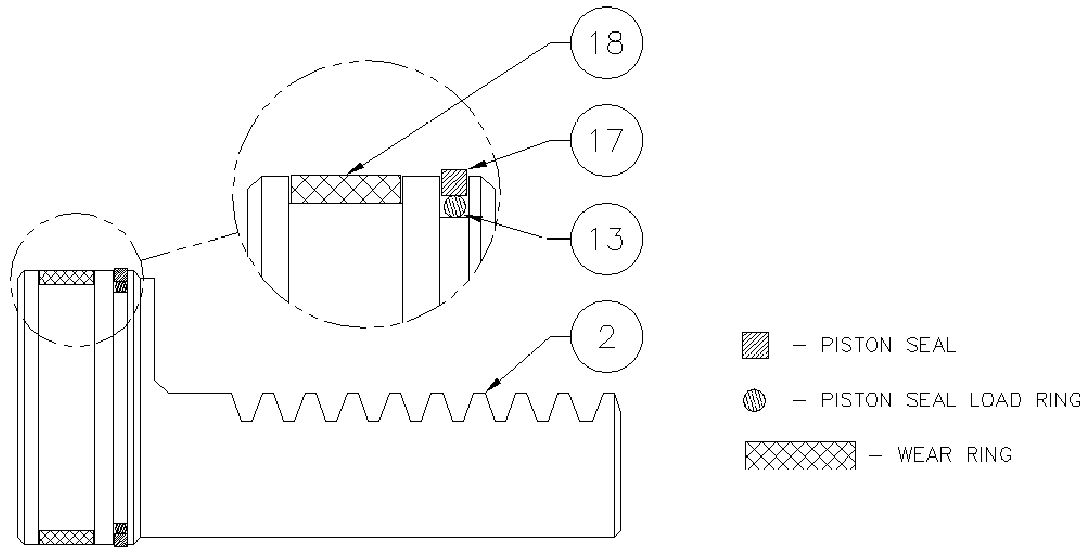


figure A-1

2. Install the tube seal (12) (fig. A-2) and “square” tube seal backup (16) on each end of the actuator tubes (3) (fig. A-13). 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 other tube.

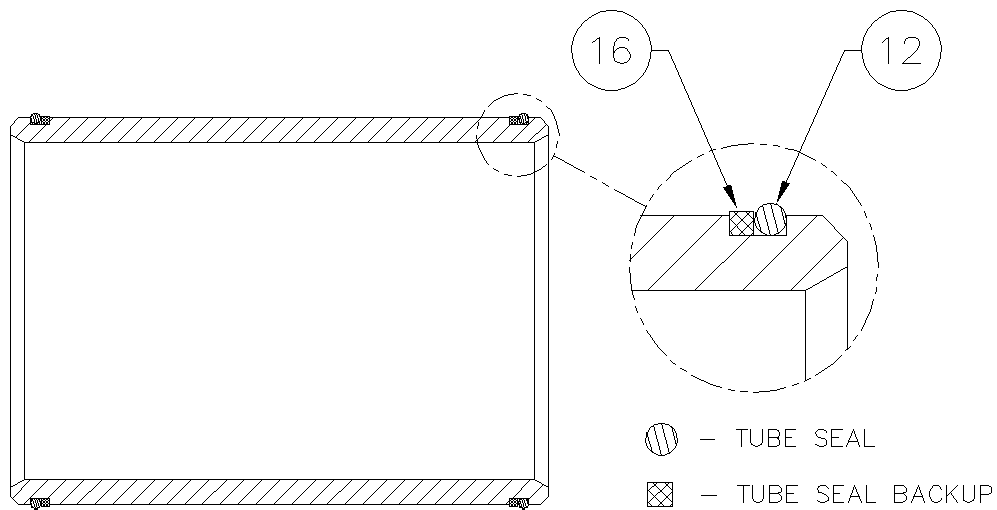


figure A-2

3. Thoroughly clean the pinion shaft (1) (fig. A-3) and inner races (10) with a mild solvent and dry completely. Spray the inner race contact area (shown in figure A-3) at each end of the pinion shaft and the inside diameter of the inner race 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-3) 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.

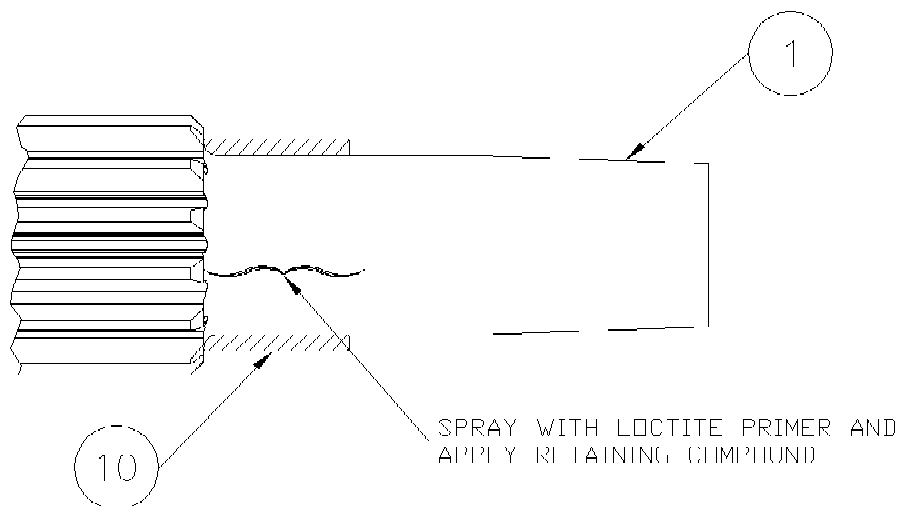


figure A-3

- Place the actuator body (7) (fig. A-4) 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-4. Center the pinion in the actuator body.

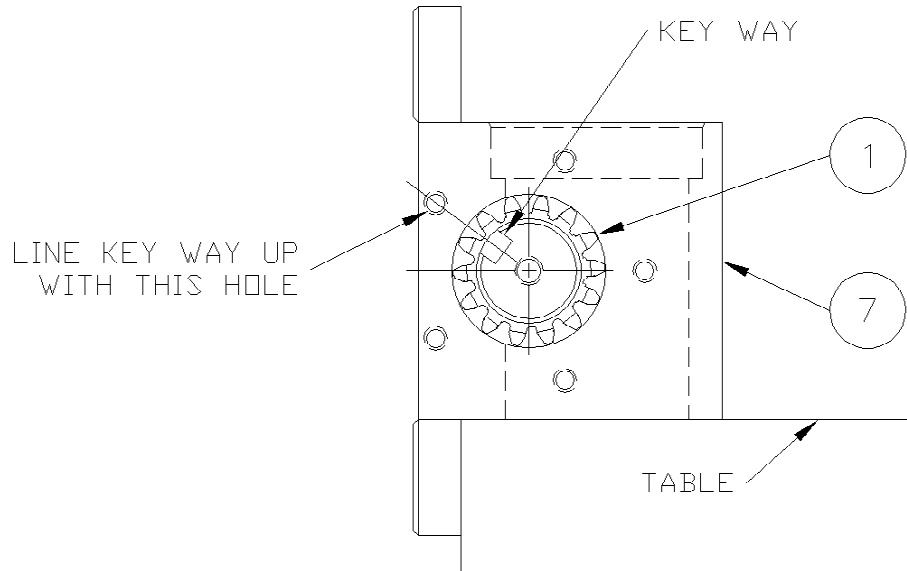


figure A-4

- Coat the head portion of the racks (2) (fig. A-13) with STP Oil Treatment. 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 the pinion.

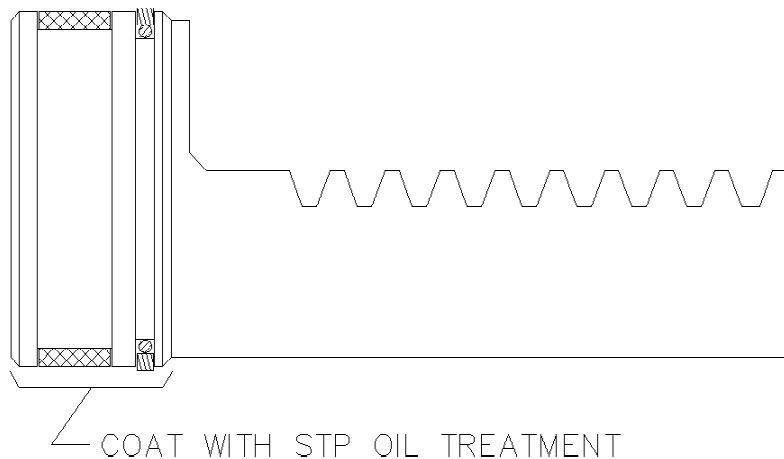


figure A-5

6. 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-6.

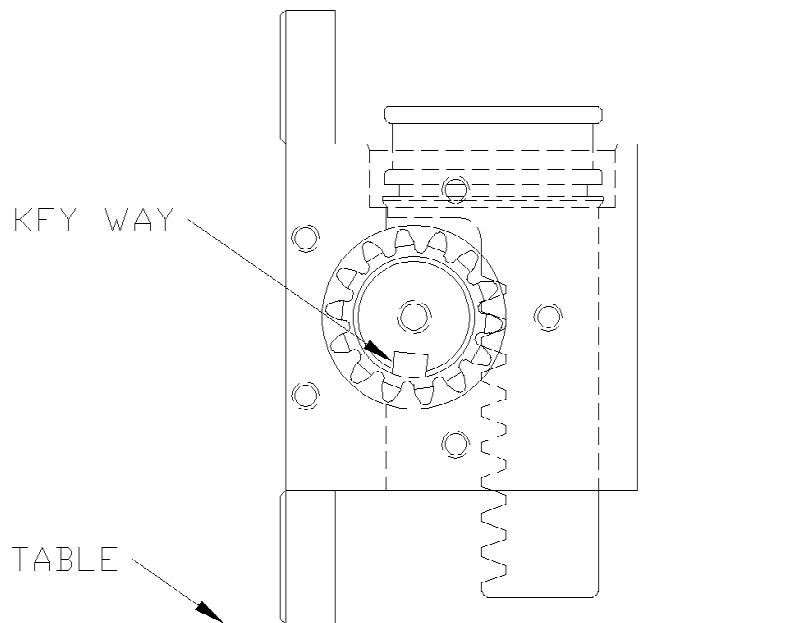


figure A-6

7. Coat one end of the actuator tubes (3) (fig. A-13) around the seal area with STP Oil Treatment as shown in figure A-7. 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.

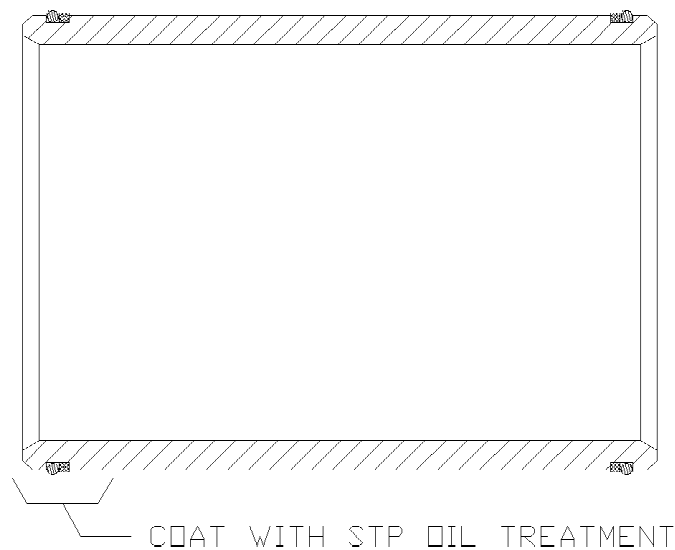
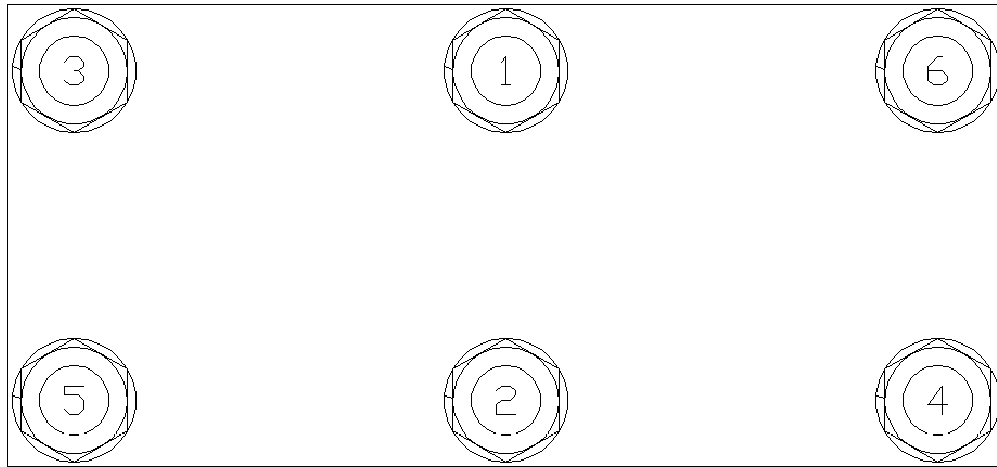


figure A-7

8. Install the six tie rod studs (6) (fig. A-13) by screwing the short threaded end into the actuator body. Hand tighten only at this time (the torque needed will be applied later in the procedure).
9. Place the tube cap (4) (fig. A-13) 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-13. 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.
10. Place the tube mounting bracket (30) (fig. A-13) over the two end rod studs opposite the oil port in the tube cap as shown in figure A-13.
11. Install the hex nuts (23) (fig. A-13) and lock washers (24) on the tie rod studs. Torque the nuts to 50 ft-lb. in the sequence shown in figure A-8.



TUBE CAP TORQUE SEQUENCE

figure A-8

12. Place the rack cap (5) (fig. A-13) 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-9) in the rack cap.

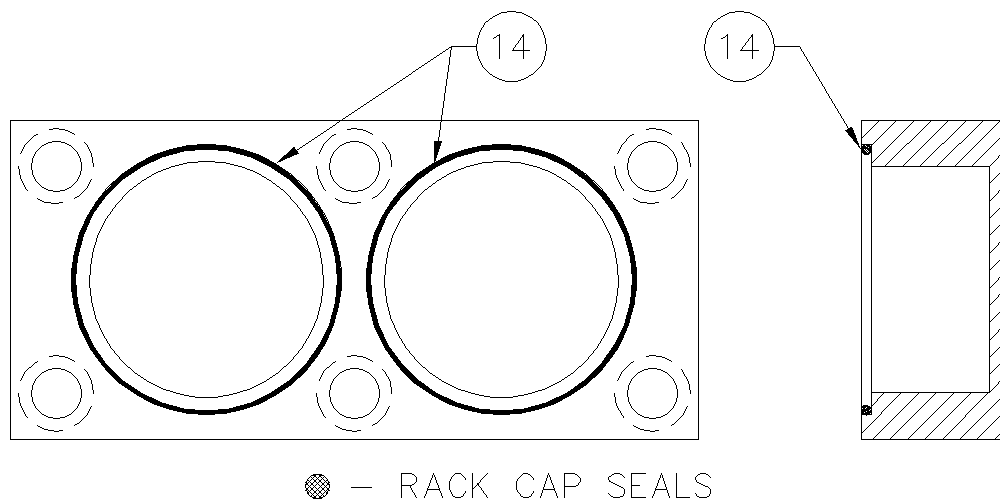
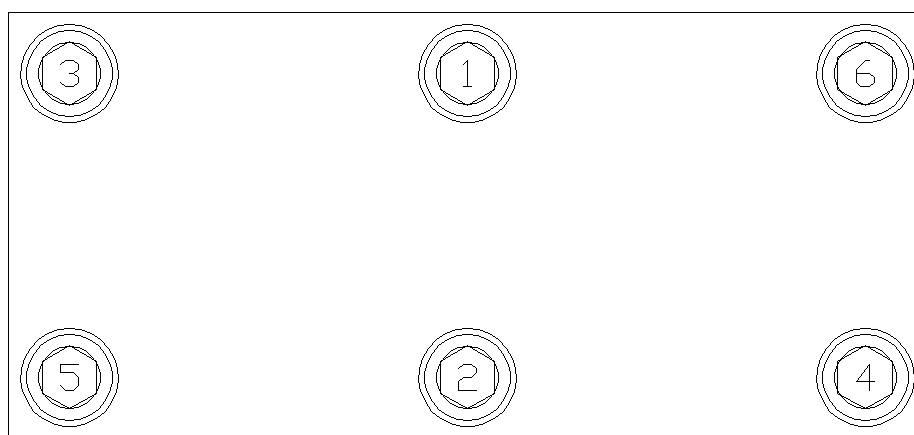


figure A-9

13. 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-13. Attach the rack cap to the actuator body using the socket head bolts (22) (fig. A-13) and lock washers (26). Torque the bolts to 90 ft-lb. in the sequence shown in figure A-10.



RACK CAP TORQUE SEQUENCE

figure A-10

14. 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.

15. 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-13), over the pinion shaft and inner race, and into the actuator body. Repeat this procedure for the other bearing.
16. Thoroughly clean the bearing caps (8) (fig. A-11) 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-11. ***Be careful not to score or scratch the sealing surface during the installation.*** Install the bearing cap seal (15) and thrust washer (32) into their respective grooves on the bearing cap mounting surface as shown in figure A-11.
17. Coat the bearing cap seal area and pinion seal area shown in figure A-11 lightly with STP Oil Treatment.

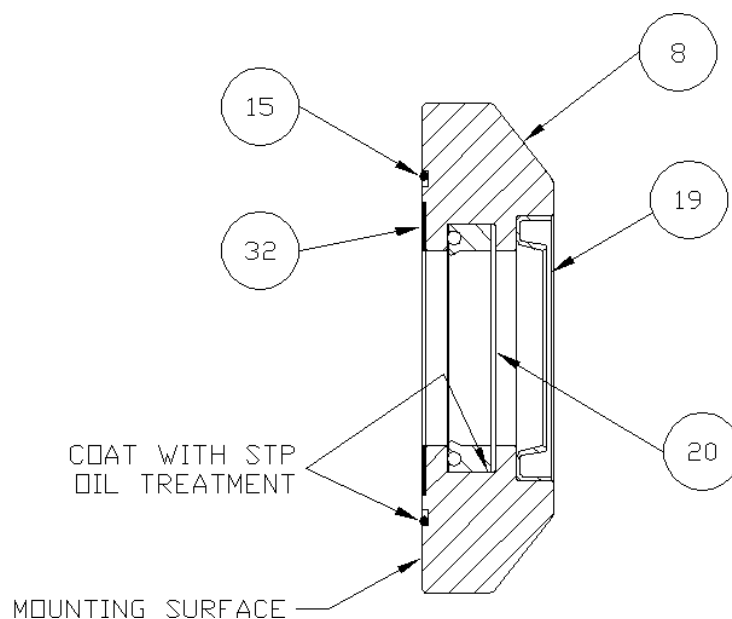


figure A-11

18. 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 bearing cap seal 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-13) and lock washers (25). Hand tighten only at this time. Repeat this procedure for other bearing cap.

19. After both bearing caps have been installed, torque all bearing cap bolts to 30 ft-lb. in the sequence shown in figure A-12.

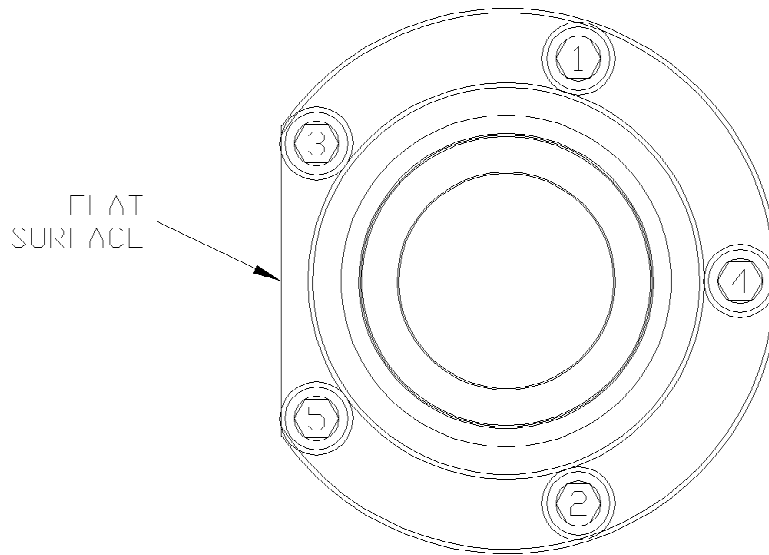


figure A-12

20. Install the 90° fitting (27) (fig. A-13) into the oil port on the side of the rack cap (5). Hand tighten only at this time.
21. Install the 45° bulk-head fitting (31) (fig. A-13) up through the hole in the tube mounting bracket (30) bolted to the tube cap as shown in figure A-13. The 45° end must be pointing down away from the rack cap (5) and back toward the mounting flanges on the actuator body. Hand tighten only at this time.
22. Install the rack cap extension tube assembly (29) (fig. A-13) between the 90° fitting in the rack cap and the 45° fitting in the tube mounting bracket as shown in figure A-13. Tighten all connections.
23. Install the orifice plug (11) (fig. A-13) into the oil port on the side of the tube cap (4), and install the 90° fitting (27) into the oil port over the orifice plug as shown in figure A-13. 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.
24. Install the cap nuts (28) (fig. A-13) onto the open fittings to prevent contamination of the unit until the hoses are installed.

ACTUATOR ASSEMBLY

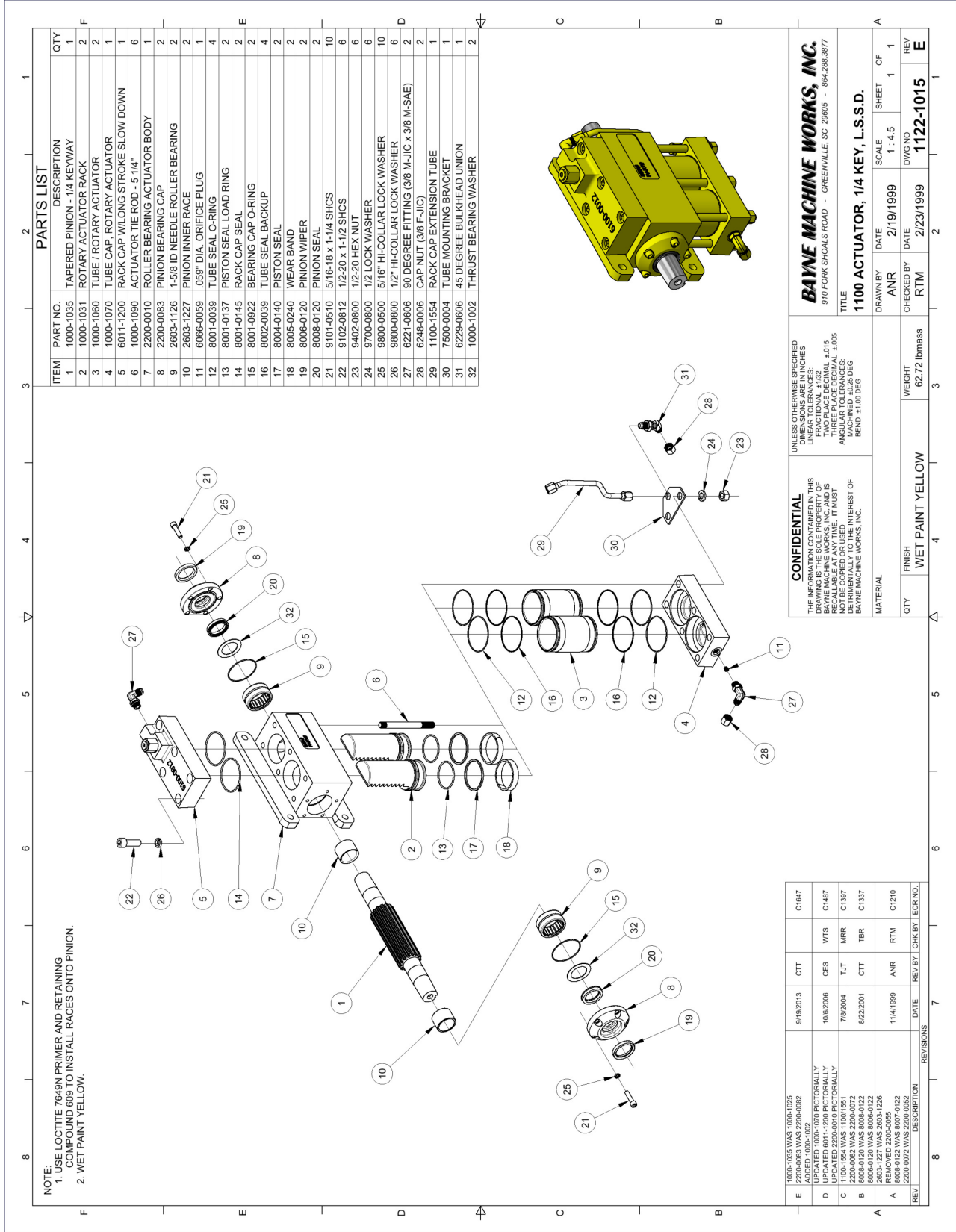


figure A-13
BAYNE

PREMIUM LIFT SYSTEMS

ASSEMBLY INSTRUCTIONS LONG STROKE SLOWDOWN

PART NUMBER 6011-1200 (WI-2301-A)

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.

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 (figure S-4) and parts list 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 when assembling the Slowdown:

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

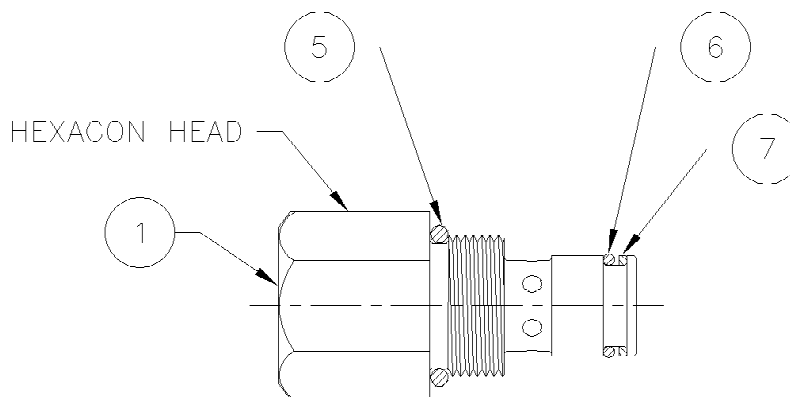


figure S-1

2. Place the plunger (2) (figure 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.

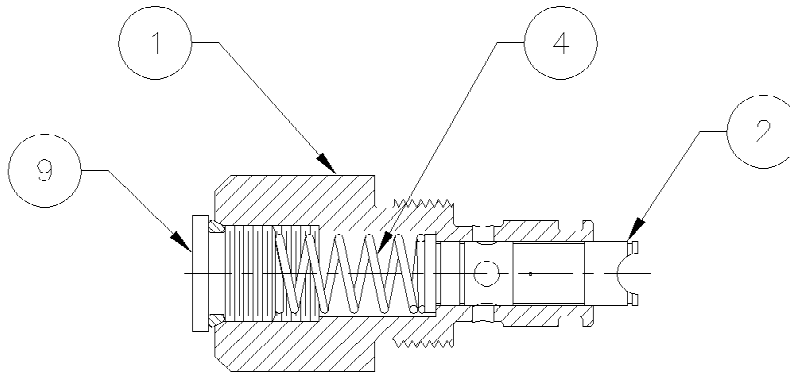


figure S-2

3. Coat the o-rings on the plunger housing (1) (figure 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) (figure S-4) and tighten. Screw the o-ring plug (8) into the side of the rack cap (3) in the bottom port and tighten.

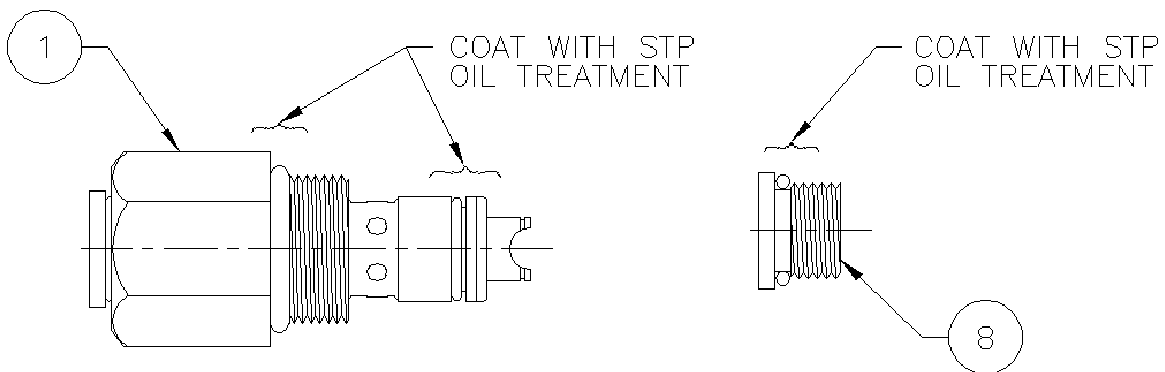


figure S-3

SLOWDOWN ASSEMBLY LONG STROKE PART NO. 6011-1200

ITEM NO	PART NO.	DESCRIPTION	QTY
1	6100-0011	PLUNGER HOUSING	1
2	6100-0006	VALVE-PLUNGER-LONG 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	6011-1214	LONG STROKE SLOW DOWN ASSEMBLY	1

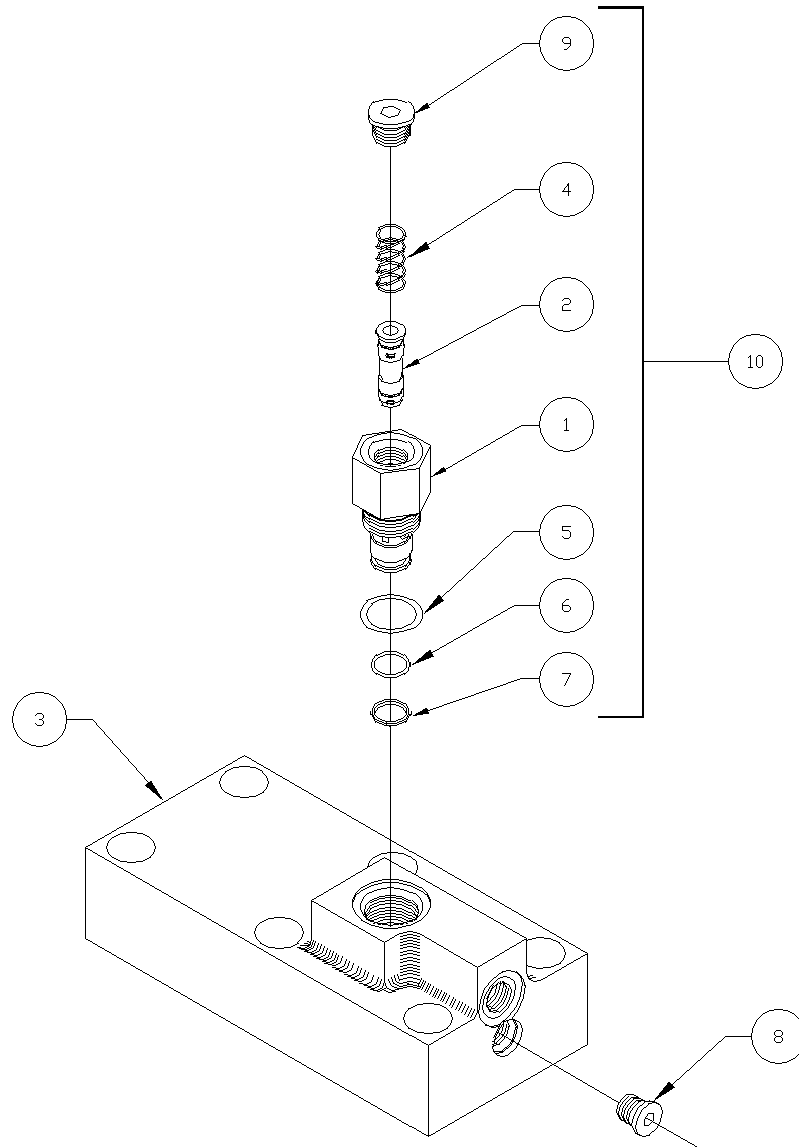


figure S-4

TROUBLE-SHOOTING CHART (WI-0320-A)

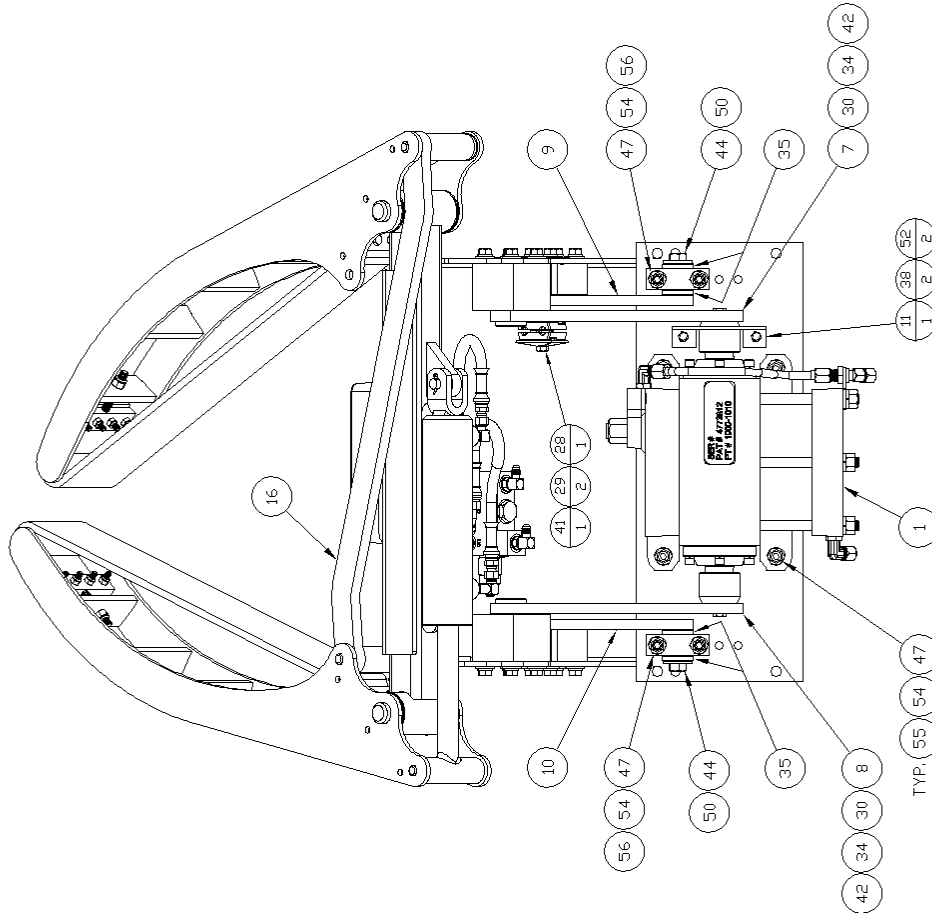
<i>SYMPTOM</i>	<i>POSSIBLE CAUSES</i>	<i>CORRECTIVE ACTION</i>
Lifter operation very erratic.	<ol style="list-style-type: none"> 1. Air trapped in system. 2. Low oil level. 	<ol style="list-style-type: none"> 1. Bleed all air from lifter hydraulic system. 2. Add oil to system.
Cart lifter will not pick up carts.	<ol style="list-style-type: none"> 1. Cart overweight. 2. Lifter system hydraulic pressure too low. 3. Truck system hydraulic pressure too low. 4. Faulty hand valve. 	<ol style="list-style-type: none"> 1. Reduce loaded weight of cart. 2. Check and adjust pressure relief on hand valve. 3. Check and adjust pressure on truck system relief. 4. Replace hand valve.
Lifter operates extremely slow.	<ol style="list-style-type: none"> 1. Engine idle too low. 2. Faulty hand valve. 3. Low hydraulic flow to lifter circuit. 4. Faulty truck hydraulic pump. 	<ol style="list-style-type: none"> 1. Adjust engine idle. 2. Replace hand valve. 3. Check truck's hydraulic system flow. 4. Consult truck maintenance manual.
Lifter operates under recommended cycle time.	<ol style="list-style-type: none"> 1. Engine idle too high. 2. High hydraulic flow to lifter circuit. 	<ol style="list-style-type: none"> 1. Adjust engine idle. 2. Check truck's hydraulic system flow.

TROUBLE-SHOOTING CHART (WI-0320-A)

<i>SYMPTOM</i>	<i>POSSIBLE CAUSES</i>	<i>CORRECTIVE ACTION</i>
Actuator leaking oil around pinion shaft.	1. Worn pinion shaft seals.	1. Install pinion seal kit.
Actuator leaking oil around piston tubes or rack cap.	1. Worn seals in actuator.	1. Install actuator seal kit.
Cylinder leaking around rod.	1. Worn cylinder rod seal.	1. Install cylinder seal kit.
Valve settings quit working after a period of time.	1. Valves were adjusted with cool oil temperature.	1. Adjust valves with oil at operating temperature.
Lifter loses carts when dumping.	1. Clamping pressure setting too low. 2. Cart sides are too weak.	1. Adjust clamping pressure setting per Installation Instructions of this manual. 2. Replace cart.
Lifter crushes carts when dumping.	1. Clamping pressure setting too high. 2. Cart sides are too weak.	1. Adjust pressure setting per Installation Instructions of this manual. 2. Replace cart.

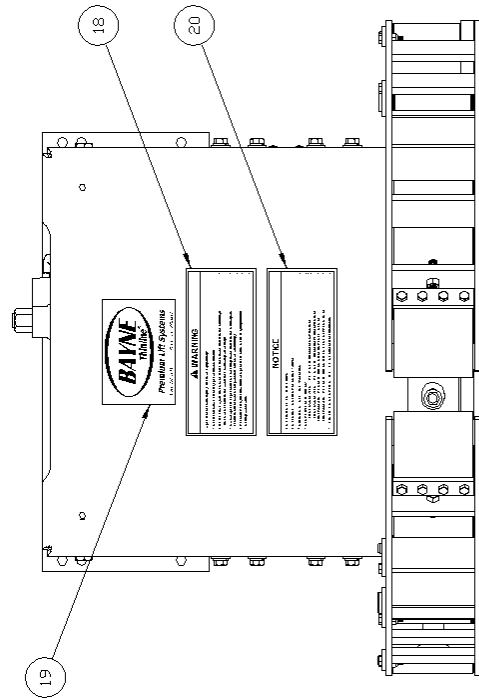
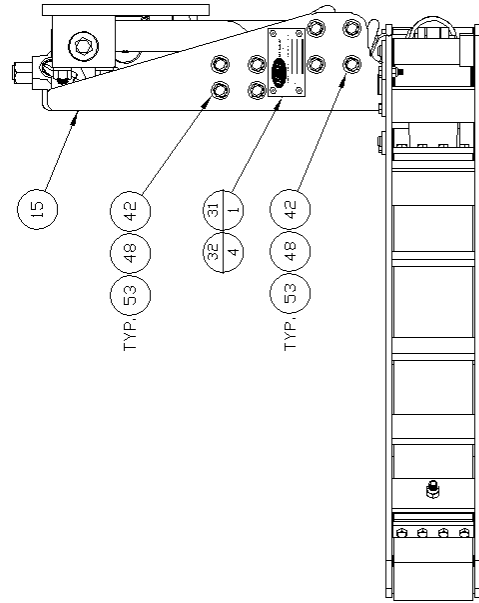
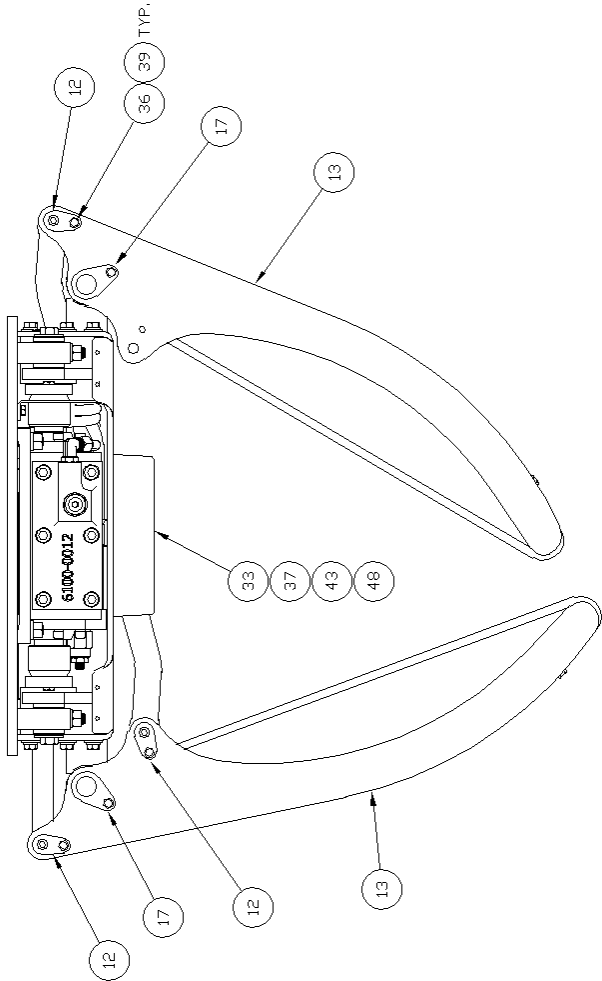
APPENDIX A
Assembly drawings and part numbers

ITEM	PART NO.	DESCRIPTION	QTY
54	9700-0800	1/2" LOCK WASHER	8
55	9902-0814	1/2-20 x 1 3/4" STUD	4
56	9902-0830	1/2-20 x 3 3/4" STUD	4

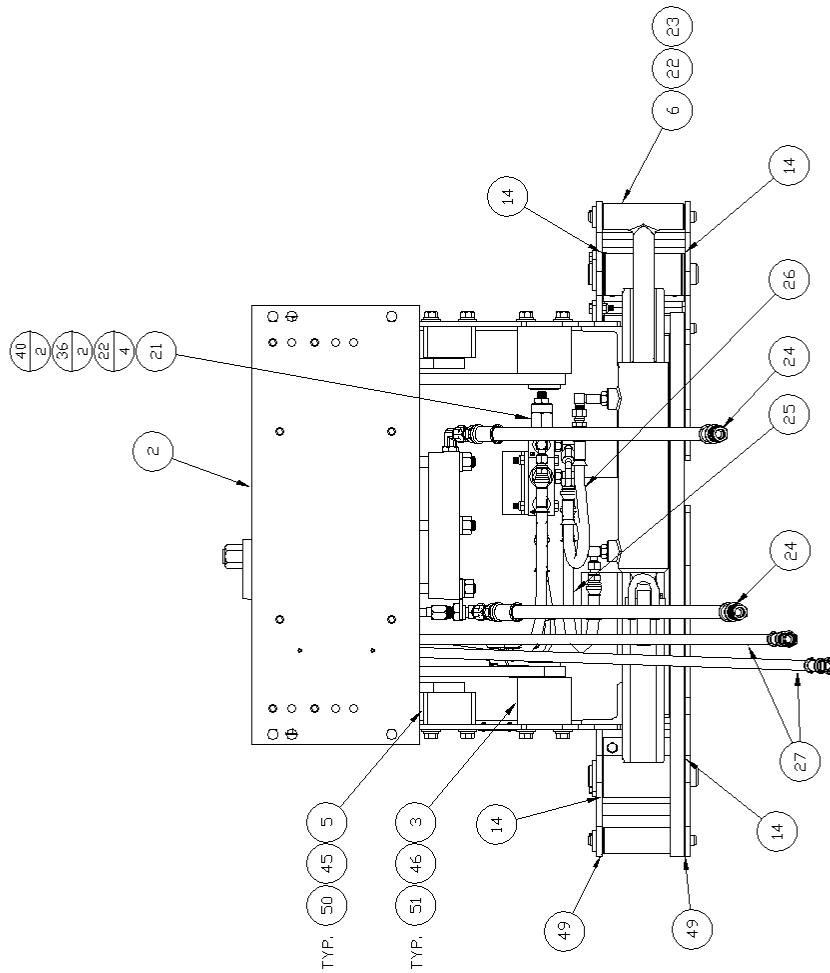


ITEM	PART NO.	DESCRIPTION	QTY
1	1122-1015	1100 ACTUATOR (0.59" DRIFICE)	1
2	2000-1131	121" GTL MAINFRAME	1
3	2000-1230	TORQUE BEARING ASSEMBLY	2
4	2000-1335	UPPER IDLER BEARING	2
5	2000-1338	LOWER IDLER BEARING ASSEMBLY	2
6	3112-1044	GRL CLAMP CYLINDER ASSY	1
7	4010-1207	10" GTL TORQUE ARM	1
8	4010-1220	10" TORQUE ARM	1
9	4010-1328	10" RH IDLER ARM WELDMENT	1
10	4010-1329	10" LH IDLER ARM WELDMENT	1
11	4800-0009	GTL HOSE PROTECTOR BRACKET	1
12	4800-0058	GRL CYLINDER PIN WELDMENT	3
13	4800-0060	GRL CLAMP ARM ASSEMBLY	2
14	4800-0066	BRONZE THRUST WASHER	4
15	4800-0272	GRL FACE PLATE WELDMENT	1
16	4800-0277	GRL CLAMP ARM LINK WELDMENT	1
17	4900-0025	LOWER CYL. PIN WELDMENT	2
18	5000-0010	WARNING LABEL	1
19	5000-0015	BAYNE LOGO LABEL	1
20	5000-0077	NOTICE LABEL	1
21	6065-2710	GRL CONTROL VALVE	1
22	6221-0404	90° ADAPTER (4SAE x 4JIC)	5
23	6222-0404	90° L. ADAPTER (4SAE x 4JIC)	1
24	6420-0674	HOSE ASSY (Ø3/8" x 87')	2
25	6427-0411	HOSE ASSY (Ø1/4" x 11')	1
26	6427-0412	HOSE ASSY (Ø1/4" x 12')	1
27	6427-4126	HOSE ASSY (Ø1/4" x 126')	2
28	6530-0010	HOSE CLAMP COVER PLATE	1
29	6530-0014	1/2" PLASTIC CLAMP	2
30	7300-0410	KEY (1/4" x 1 3/16" LG.)	2
31	7500-0070	MODEL/SERIAL NAME PLATE	1
32	7500-0071	DRIVE SCREW	4
33	7500-0080	RUBBER BUMPER	1
34	7500-0117	TORQUE ARM WASHER	2
35	7500-0171	ARM WASHER	4
36	8901-0400	1/4-20 SELF-LOCKING NUT	7
37	8901-0600	3/8-16 SELF-LOCKING NUT	2
38	9001-0404	1/4-20 x 1/2" H.H.C.S.	2
39	9001-0408	1/4-20 x 1" H.H.C.S.	5
40	9001-0416	1/4-20 x 2" H.H.C.S.	2
41	9001-0514	5/16-18 x 1 3/4" H.H.C.S.	1
42	9001-0608	3/8-16 x 1" H.H.C.S.	18
43	9001-0618	3/8-16 x 2 1/4" H.H.C.S.	2
44	9001-0808	1/2-13 x 1" H.H.C.S.	2
45	9201-0808	1/2-13 x 1" B.H.C.S.	2
46	9201-1010	5/8-11 x 1 1/4" B.H.C.S.	2
47	9402-0800	1/2-20 HEX NUT	8
48	9600-0500	5/16" FLAT WASHER	18
49	9600-0700	7/16" FLAT WASHER	4
50	9600-0800	1/2" FLAT WASHER	4
51	9600-1000	5/8" FLAT WASHER	2
52	9700-0400	1/4" LOCK WASHER	2
53	9700-0500	3/8" LOCK WASHER	16

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BAYNE MACHINE WORKS, INC.		TOLERANCES: IF NOT NOTED: 0.001, 0.0005, 0.0015 0.001, 0.0005, 0.0015		1=4	1	3
8101 PARK CIRCLE, ROUND - GREENVILLE, SC 29615		DRAWN BY: VTS		TITLE:	DATE:	DWG. NO.:
970-21738 - AUGULAR 25835		05/13/13		LIFTER ASSEMBLY		1900-0560
CHKD BY:	DATE:	REV.:	OF:			

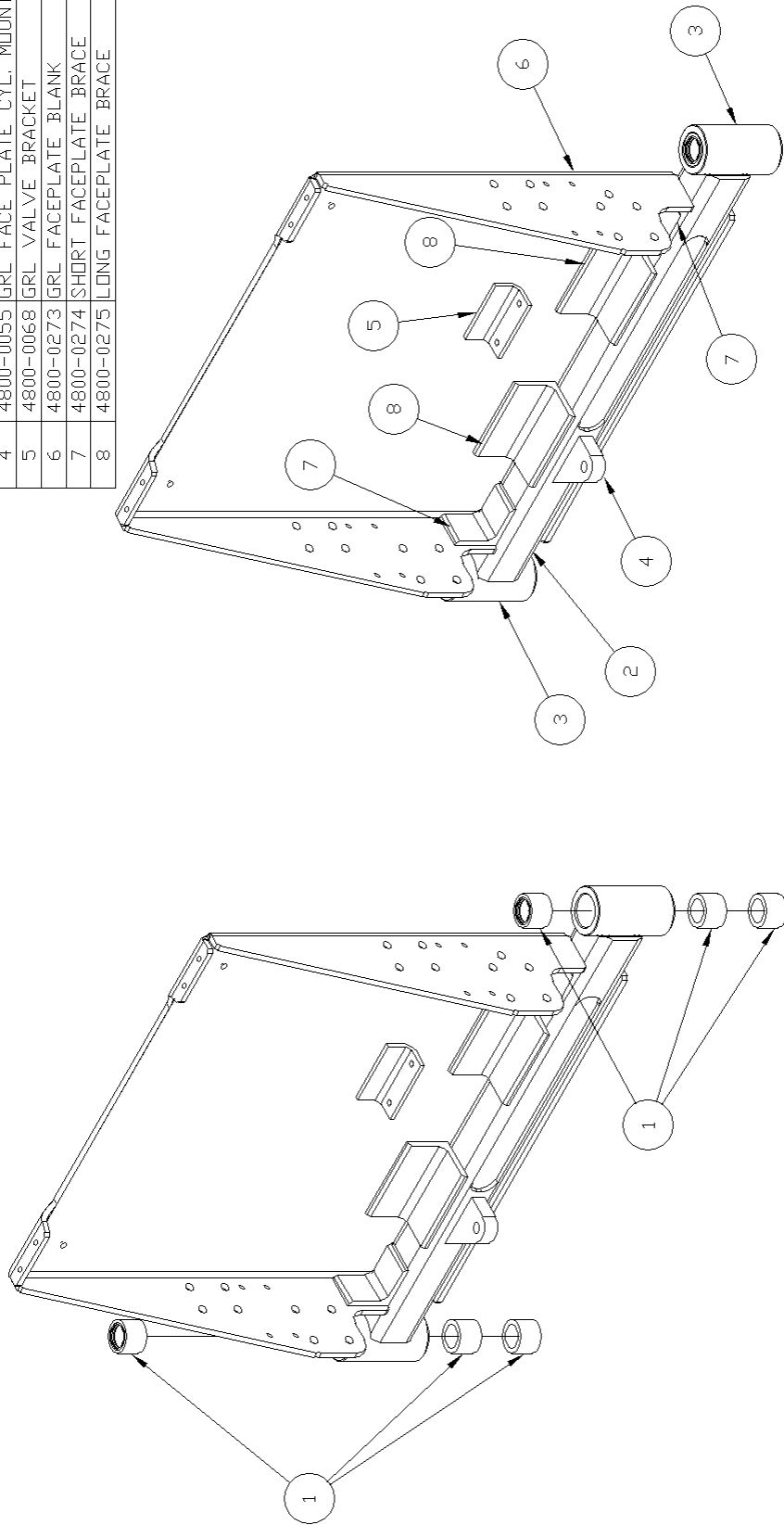


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BAYNE MACHINE WORKS, INC. 810 PARK SIGNAL ROAD - GREENVILLE, SC 29605 970-217-3434 - AUGULAR 25923		TOLERANCES IF NOT NOTED: 0.000 - 0.0005 0.000 - 0.0015 0.000 - 0.0025		1"=4"	2	3	-
DRAWN BY: VTS		DATE: 05/13/13		TITLE: LIFTER ASSEMBLY		DWG. NO.: 1900-0560	



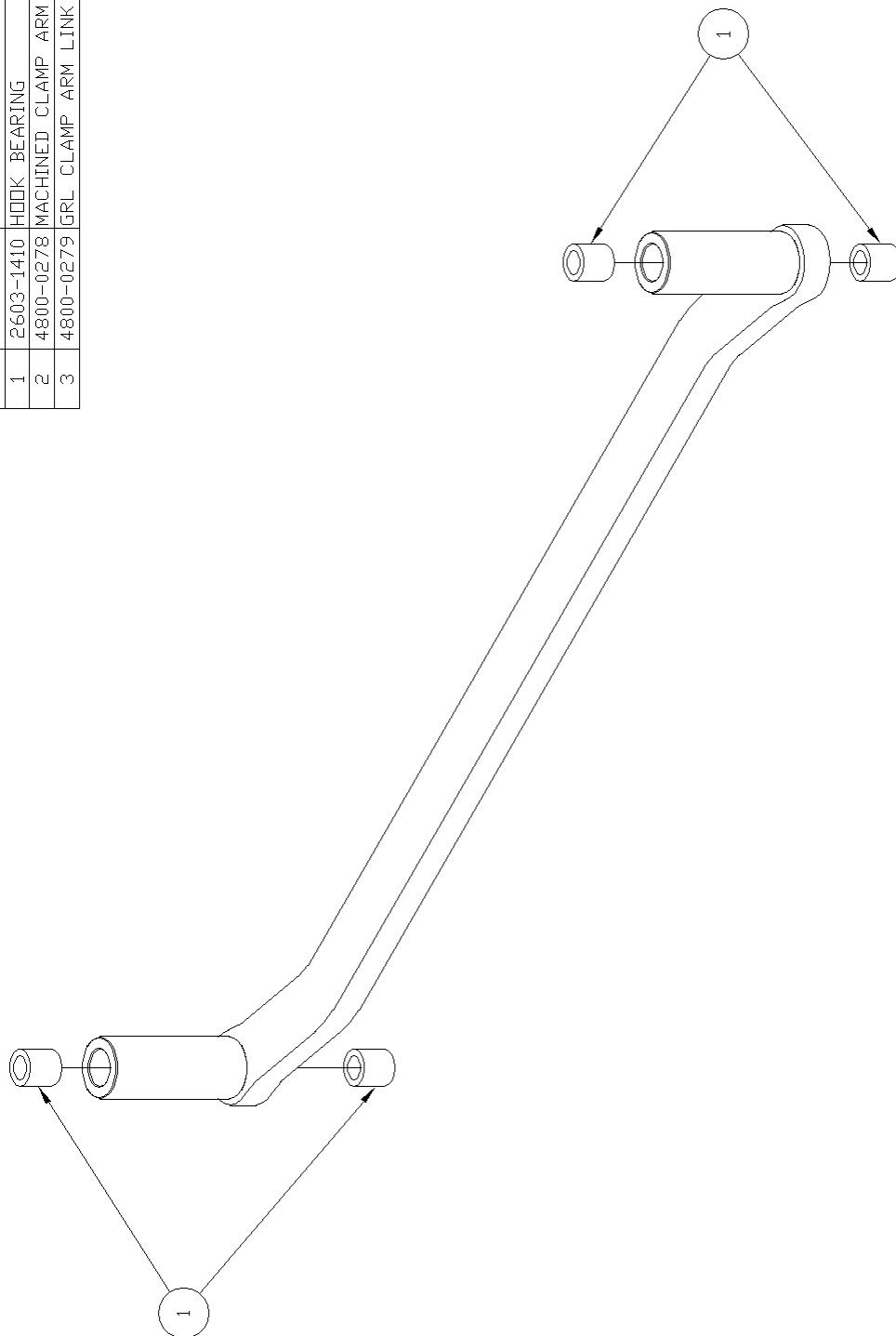
CONFIDENTIAL		This drawing is private and confidential communication and the property of BAYNE MACHINE WORKS, INC., Greenville, S.C. It MUST NOT be copied or lent without consent of BAYNE MACHINE WORKS, INC., and must be promptly returned with tender and/or completion of order to the purchasing department.		SCALE:	SHEET	OF	REV.
BAYNE MACHINE WORKS, INC. 810 PARK DRIVE, GREENVILLE, SC 29603 919-251-1331 - AUGUST 2008		DATE:	CHKD BY:	1=4	3	3	-
TOLERANCES IF NOT NOTED: 0.004 ±0.005 0.010 ±0.015 0.015 ±0.020		DATE:	CHKD BY:	TITLE:		DWG. NO.:	
		05/13/13	VTS	LIFTER ASSEMBLY		1900-0560	

ITEM	PART NO.	DESCRIPTION	QTY
1	2603-1309	Ø1" BUSHING W/SEAL	6
2	4800-0053	GRL FACE PLATE TUBE	1
3	4800-0054	GRL PIVOT TUBE	2
4	4800-0055	GRL FACE PLATE CYL. MOUNT	1
5	4800-0068	GRL VALVE BRACKET	1
6	4800-0273	GRL FACEPLATE BLANK	1
7	4800-0274	SHORT FACEPLATE BRACE	2
8	4800-0275	LONG FACEPLATE BRACE	2



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BAYNE MACHINE WORKS, INC. 910 FORK SHOALS ROAD - GREENVILLE, SC 29608 - 864.288.3377		DATE: 03/04/13	CHKD BY: WTS	DRAWN BY: WTS	TITLE: GRL FACEPLATE WELDMENT		DWG. NO.: 4800-0272

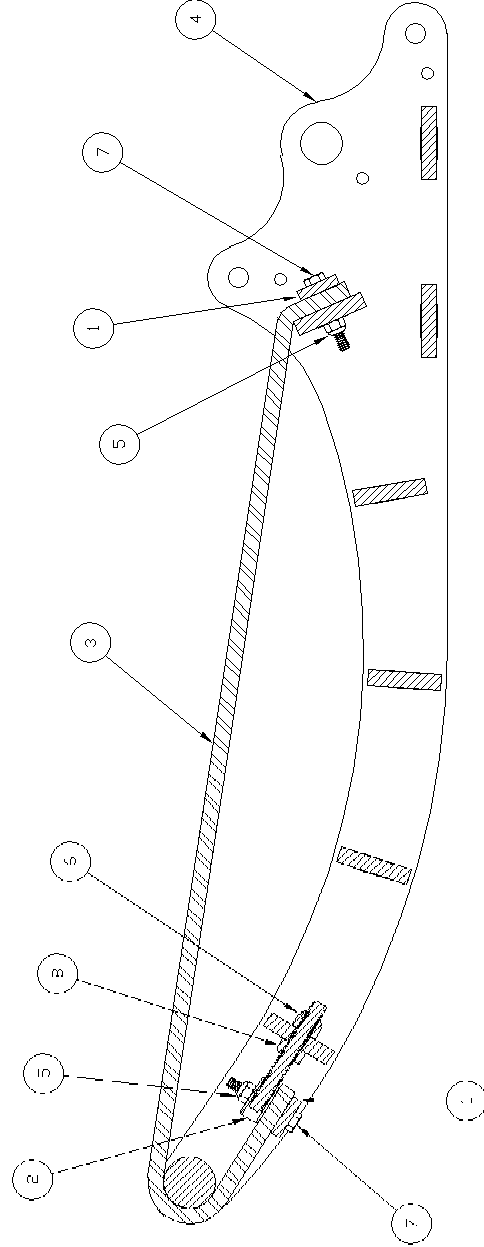
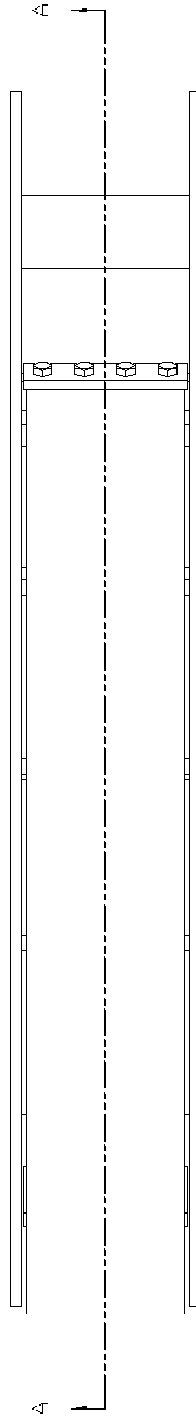
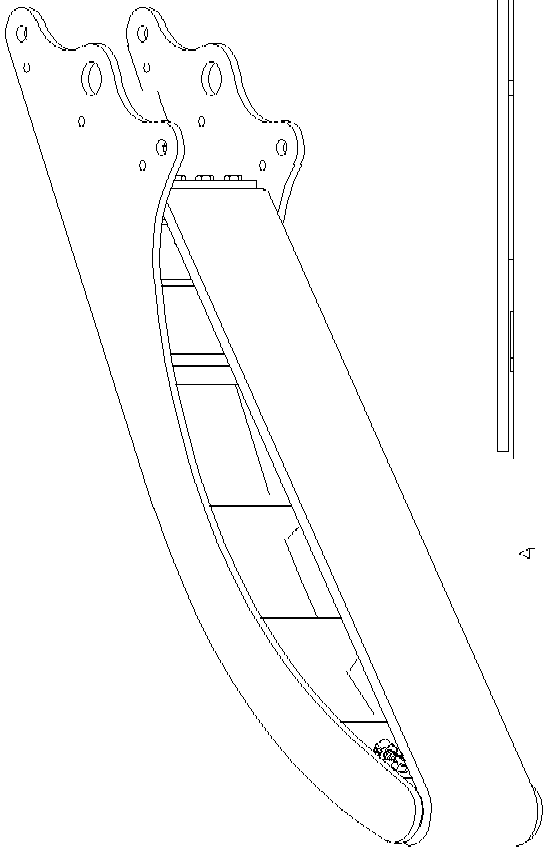
ITEM	PART NO.	DESCRIPTION	QTY
1	2603-1410	HOOK BEARING	4
2	4800-0278	MACHINED CLAMP ARM LINK	1
3	4800-0279	GRL CLAMP ARM LINK TUBE	2



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BAYNE MACHINE WORKS, INC. 910 FORK SHOALS ROAD - GREENVILLE, SC 29608 - 864.288.3377		TOLERANCES IF NOT NOTED: 0.000 ±0.005 - 0.00 - ±0.015 0/0 ±1/32 - ANGULAR ±0.25	DATE:	1=2	2	2	-
DATE:	03/05/13	CHK'D BY:	WTS	TITLE: GRL CLAMP ARM LINK WELDMENT		DWG. NO.: 4800-0277	

ITEM	PART NO.	DESCRIPTION	QTY
1	4800-0021	GTL ARM BELT SQUISH PLATE	2
2	4800-0026	GTL ARM BELT TENSIONER	1
3	4800-0056	GRL CLAMP ARM BELT	1
4	4800-0061	GRL CLAMP ARM WELDMENT	1
5	8901-0400	1/4-20 SELF-LOCKING NUT	8
6	8901-0600	3/8-16 SELF-LOCKING NUT	1
7	9001-0414	1/4-20 x 1 3/4" HHCS.	8
8	9401-0600	3/8-16 HEX NUT	1

NOTE:
1. ORIENT THICK RUBBER SIDE OF BELTING AWAY FROM ARM WELDMENT.



SECTION "A-A"

REV. SET	DATE	BY	CHK	DATE	BY	CHK
A	05/17/05	CTT	CTT	06/19/02	TBR	TBR

CONFIDENTIAL

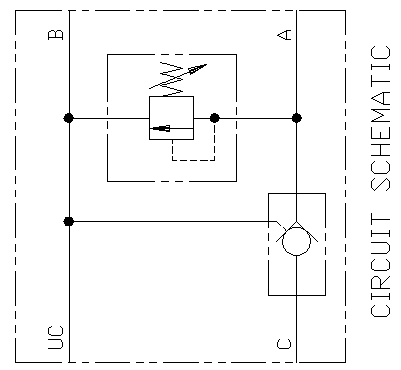
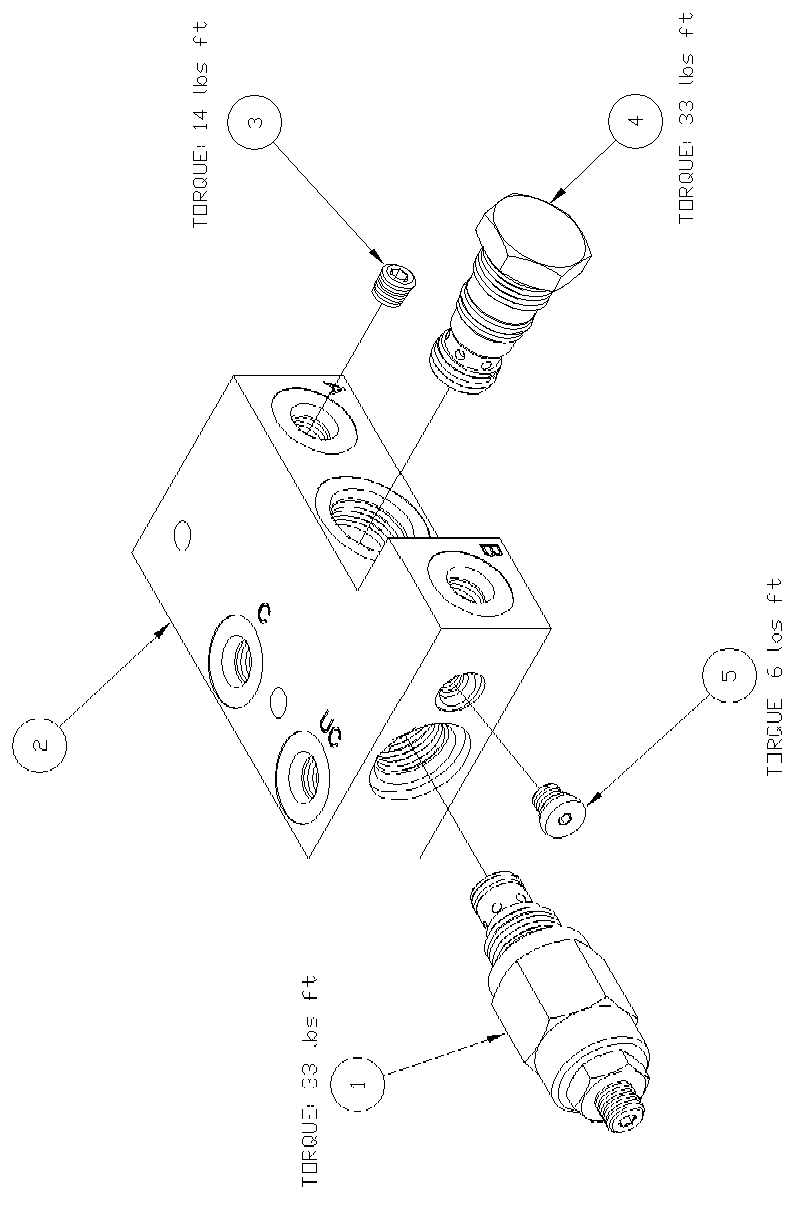
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BAYNE MACHINE WORKS, INC.
255 PATENT RD. - GREENVILLE, SC 29601 - 864-255-3871

DATE	CHKD BY	SCALE	SHEET	CF	REV.
06/19/02	CTT	1=2	1	1	A
DATE	CHKD BY	TITLE	DWS NO.		
08/22/02	GRL	CLAMP ARM ASSEMBLY	4800-0060		

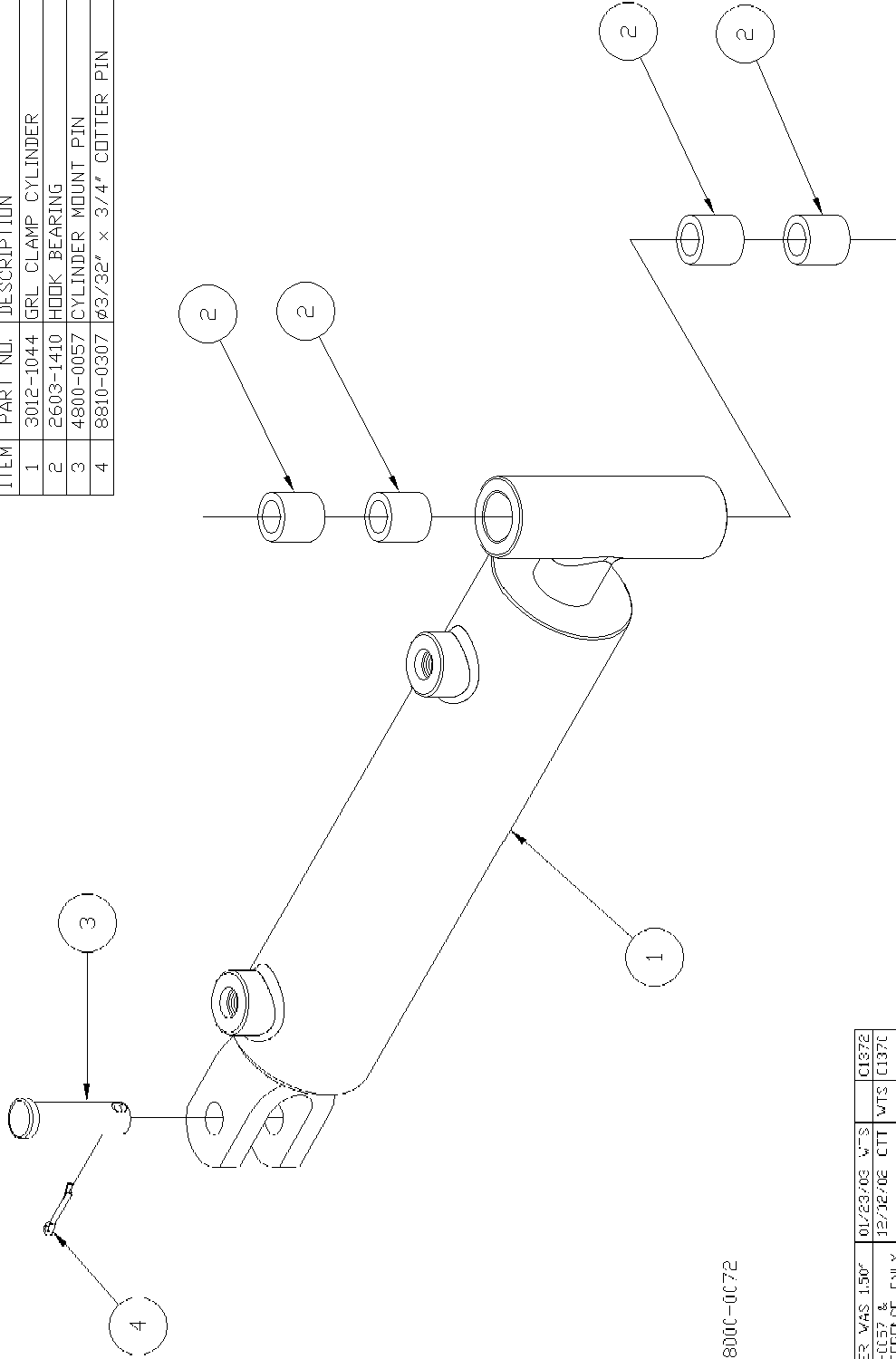
ITEM	PART NO.	DESCRIPTION	CTY
1	6065-2702	RELIEF VALVE CARTRIDGE	1
2	6065-2711	GRL VALVE MANIFOLD	1
3	6066-0043	Ø.043" DRIFICE PLUG	1
4	6069-3000	P.D. CHECK VALVE (4CK30)	1
5	6246-0002	#2 SAE SOCKET HEAD PLUG	1

NOTE:
 1 SET PRESSURE RELIEF VALVE (6065-2702) TO 1400 PSI AT ASSEMBLY.



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BAYK & MACHINE WORKS, INC. 3-D -DRK SHOLS ROAD - GREENVILLE, SC 29635 - 664-2881-3377		DATE:	07/19/02	1=1	1	:	-
TO: ERANCES IF NOT NOTED: D=AWY BY: C-T		CHKD BY:	C-T	TITLE:		CONTROL VALVE	
DWG. NO.:		6065-2710					

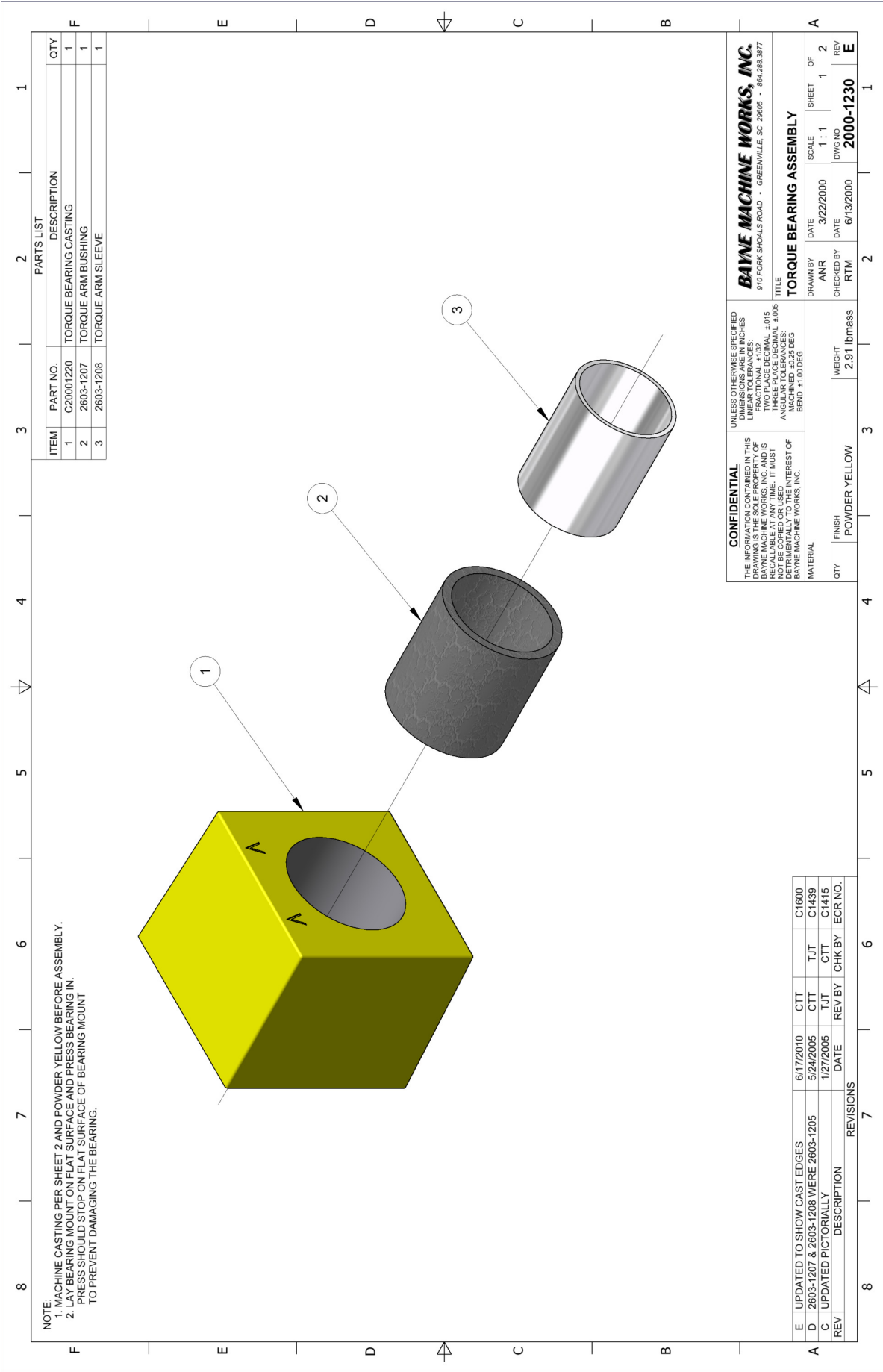
ITEM	PART NO.	DESCRIPTION	QTY
1	3012-1044	GRL CLAMP CYLINDER	1
2	2603-1410	HOKK BEARING	4
3	4800-0057	CYLINDER MOUNT PIN	1
4	8810-0307	Ø3/32" x 3/4" COTTER PIN	1



NOTE
1. SEP. KIT: 8000-0072

REV.	DATE	REV. BY	CHK. BY	DATE	WTS	QTY	WTS
B	01/23/03	WTS	CIS7E				
4	12/02/06	WTS	CIS7C				

CONFIDENTIAL
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BAYK E MACHINE WORKS, INC.
 301 DORR SHOALS ROAD - GREENVILLE, SC 29635 - 864-288-3377
 D-RWY: B.V.
 C.T.
 DATE: 07/15/02
 CHKD BY: TBR
 DATE: 07/22/02
 TITLE: GRL CLAMP CYLINDER ASSEMBLY
 SCALE: NTS
 SHEET 1 OF 1
 REV. B
 DWG. NO.: 3112-1044

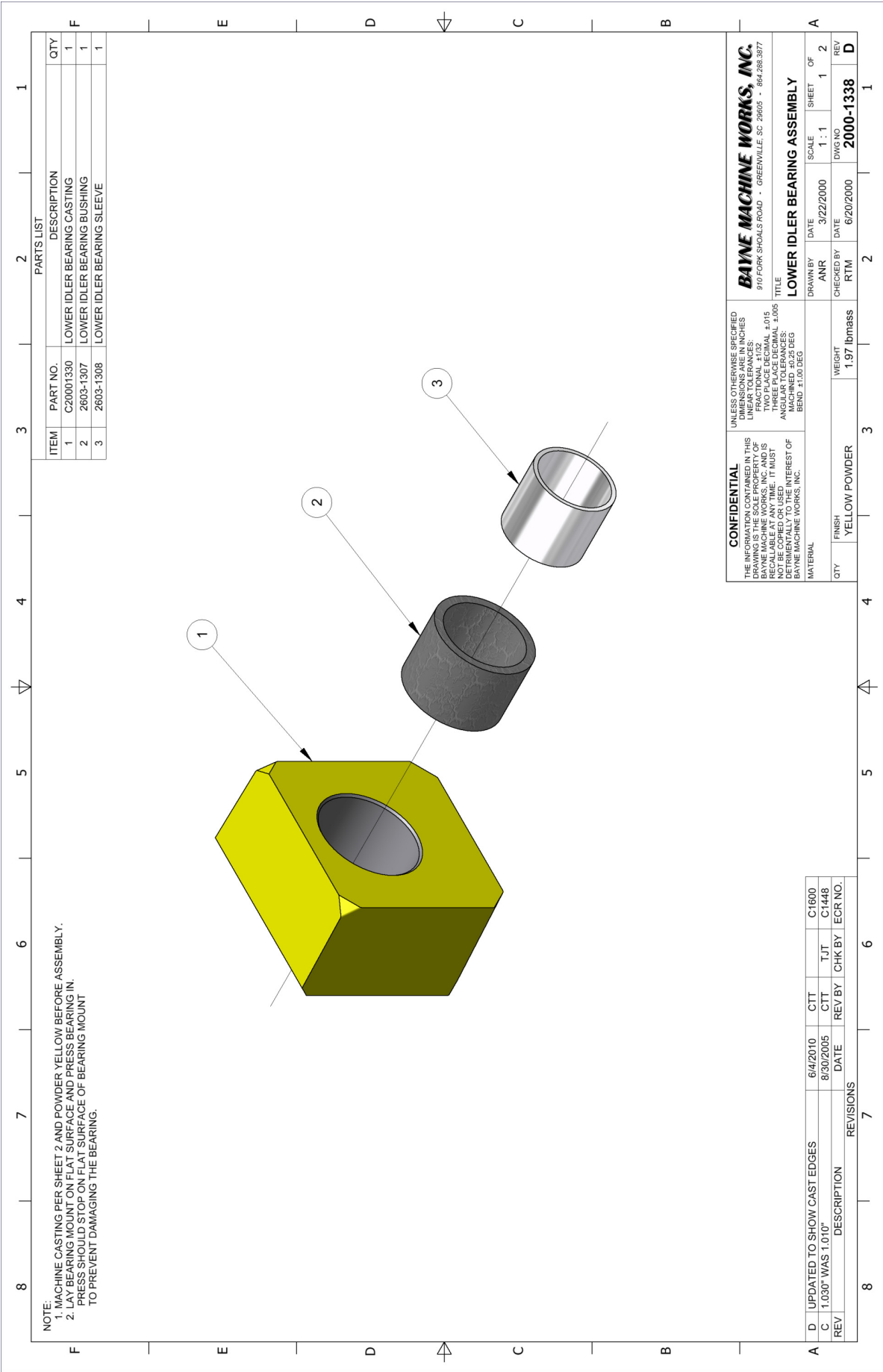


NOTE:
 1. MACHINE CASTING PER SHEET 2 AND POWDER YELLOW BEFORE ASSEMBLY.
 2. LAY BEARING MOUNT ON FLAT SURFACE AND PRESS BEARING IN.
 PRESS SHOULD STOP ON FLAT SURFACE OF BEARING MOUNT
 TO PREVENT DAMAGING THE BEARING.

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

CONFIDENTIAL		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DIMENSIONAL TOLERANCES FRACTIONAL ±.132 TWO PLACE DECIMAL ±.015 THREE PLACE DECIMAL ±.005 ANGULAR TOLERANCES MACHINED ±0.25 DEG BEND ±1.00 DEG	
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BAYNE MACHINE WORKS, INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM. ANY UNAUTHORIZED USE OR REPRODUCTION OF THIS DRAWING IS STRICTLY PROHIBITED AND IS CONSIDERED TO BE A VIOLATION OF THE PATENT RIGHTS OF BAYNE MACHINE WORKS, INC.			
BAYNE MACHINE WORKS, INC. 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864.298.3977			
TITLE TORQUE BEARING ASSEMBLY			
DRAWN BY	DATE	SCALE	SHEET OF
ANR	3/22/2000	1:1	1 2
CHECKED BY	DATE	DWG NO	REV
RTM	6/13/2000	2000-1230	E
QTY	FINISH	WEIGHT	
	POWDER YELLOW	2.91 lbmass	

REV	DESCRIPTION	DATE	REV BY	CHK BY	ECR NO.
E	UPDATED TO SHOW CAST EDGES	6/17/2010	CTT	TJT	C1600
D	2603-1207 & 2603-1208 WERE 2603-1205	5/24/2005	CTT	TJT	C1439
C	UPDATED PICTORIALY	1/27/2005	TJT	CTT	C1415

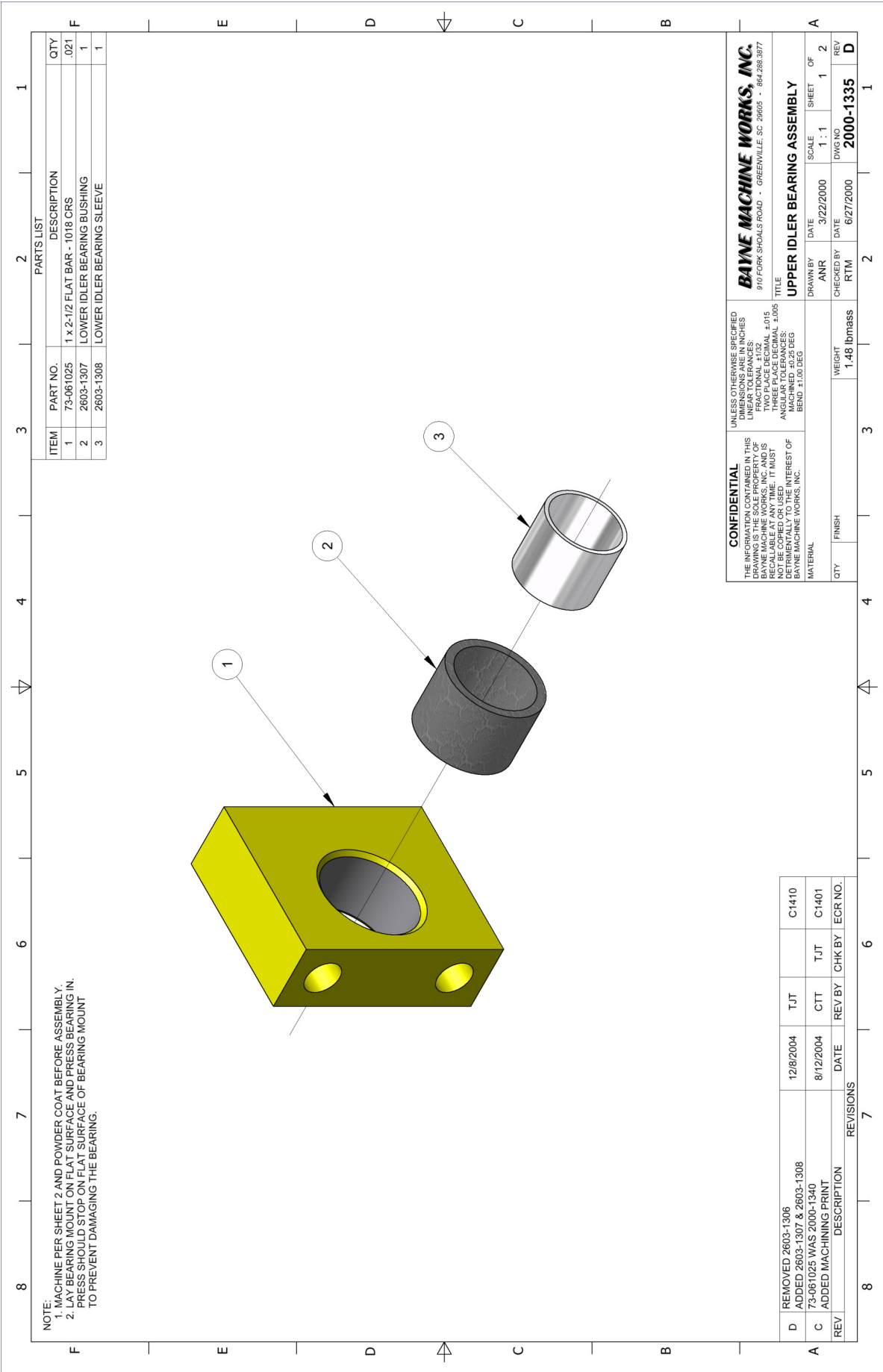


NOTE:
 1. MACHINE CASTING PER SHEET 2 AND POWDER YELLOW BEFORE ASSEMBLY.
 2. LAY BEARING MOUNT ON FLAT SURFACE AND PRESS BEARING IN.
 PRESS SHOULD STOP ON FLAT SURFACE OF BEARING MOUNT
 TO PREVENT DAMAGING THE BEARING.

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

CONFIDENTIAL		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES LUNGS FRACTIONAL ±1/32 TWO PLACE DECIMAL ±.015 THREE PLACE DECIMAL ±.005 ANGULAR TOLERANCES MACHINED ±0.25 DEG BEND ±1.00 DEG	
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MATERIAL YELLOW POWDER		WEIGHT 1.97 lbmass	SCALE 1:1
QTY	FINISH	DATE	DRAWN BY
		3/22/2000	ANR
		6/20/2000	RTM
			CHECKED BY
			RTM
			DATE
			6/20/2000
			DWG NO
			2000-1338
			REV
			D

REV	DESCRIPTION	DATE	REV BY	CHK BY	ECR NO.
D	UPDATED TO SHOW CAST EDGES	6/4/2010	CTT	TJT	C1600
C	1.030" WAS 1.010"	8/30/2005	CTT	TJT	C1448
REVISIONS					



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

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	73-061025	1 x 2-1/2 FLAT BAR - 1018 CRS	.021
2	2603-1307	LOWER IDLER BEARING BUSHING	1
3	2603-1308	LOWER IDLER BEARING SLEEVE	1

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 DECIMALS TO THREE PLACES
 FRACTIONAL 1/32
 TWO PLACE DECIMAL ±.015
 ANGULAR DIMENSIONS ±.005
 MACHINED ANGULAR TOLERANCES
 MACHINED ±0.25 DEG
 BEND ±1.00 DEG

BAYNE MACHINE WORKS, INC.
 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864.298.3977

TITLE: **UPPER IDLER BEARING ASSEMBLY**

DRAWN BY	ANR	DATE	3/22/2000	SCALE	1:1	SHEET	1	OF	2
CHECKED BY	RTM	DATE	6/27/2000	DWG NO	2000-1335		REV	D	

MATERIAL: **1.48 lbmass**

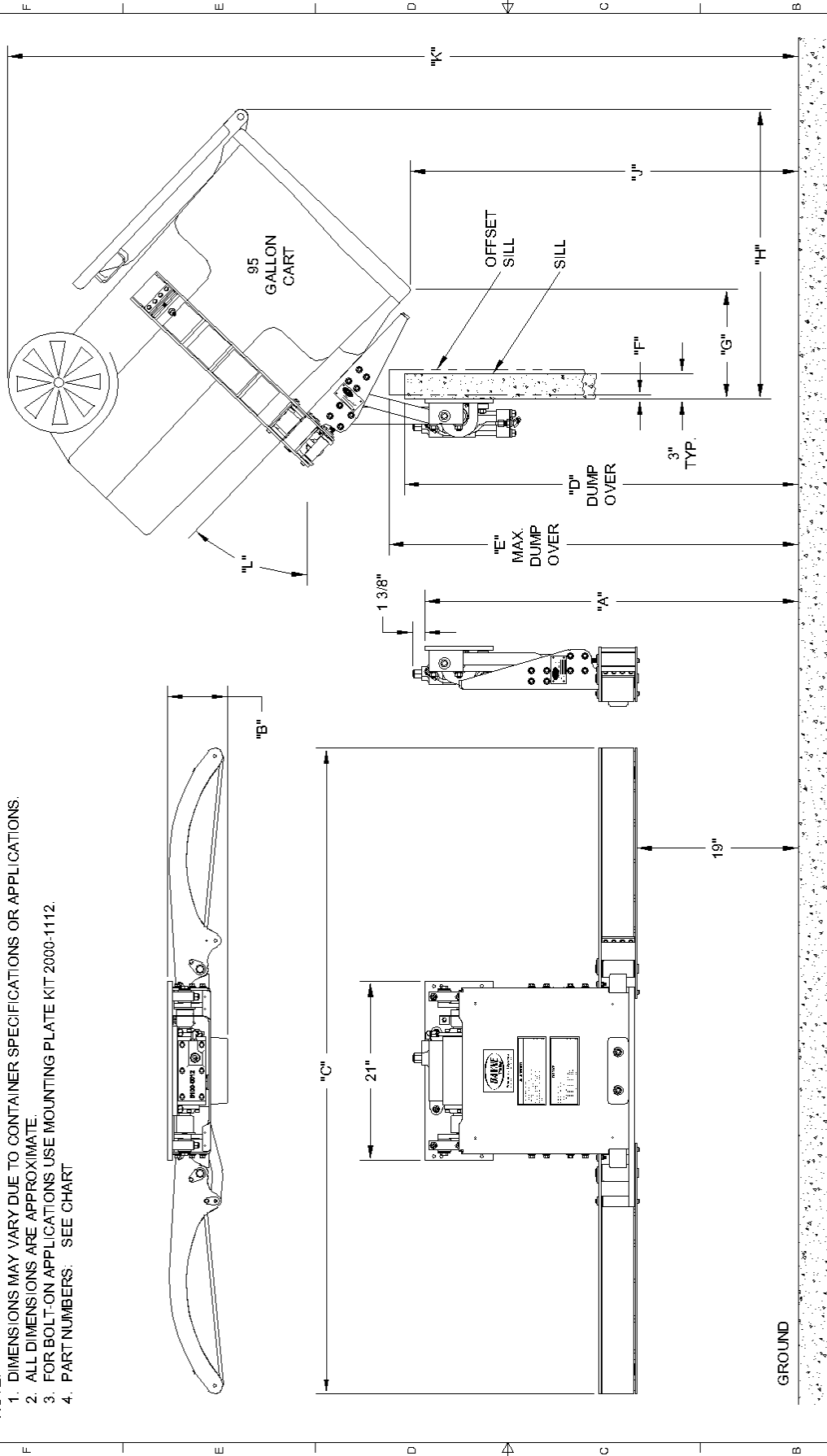
QTY	FINISH	WEIGHT	1.48 lbmass
-----	--------	--------	-------------

REV	DESCRIPTION	DATE	REV BY	CHK BY	ECR NO.
D	REMOVED 2603-1306	12/8/2004	TJT		C1410
C	ADDED 2603-1307 & 2603-1308	8/12/2004	CTT	TJT	C1401
A	ADDED MACHINING PRINT				

REVISIONS

NOTE:

1. DIMENSIONS MAY VARY DUE TO CONTAINER SPECIFICATIONS OR APPLICATIONS.
2. ALL DIMENSIONS ARE APPROXIMATE.
3. FOR BOLT-ON APPLICATIONS USE MOUNTING PLATE KIT 2000-1112.
4. PART NUMBERS: SEE CHART



<p>CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BAYNE MACHINE WORKS, INC. AND IS NOT BE COPIED OR USED IN ANY MANNER WITHOUT THE EXPRESS WRITTEN CONSENT OF BAYNE MACHINE WORKS, INC.</p>		<p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DIMENSIONS IN PARENTHESES ARE FRACTIONAL INCHES TYPICAL PLACE DECIMAL .005 ALL DIMENSIONS ARE TO UNMACHINED SURFACES UNLESS OTHERWISE SPECIFIED BEND ±100 DEG</p>	
<p>BAYNE MACHINE WORKS, INC. 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864.286.3877</p>			
<p>TITLE: GRL SERIES SPECIFICATIONS</p>			
DRAWN BY	DATE	SCALE	SHEET OF
WTS	05/14/2013	NONE	1 2
CHECKED BY	DATE	DWG NO	REV
		H5900001	-

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.
GRL 1110	1900-0560	40"	7 1/8"	76"	40 1/2"	N/A	N/A	12 7/8"	34"	37 3/4"	85 1/4"	43°
GRL 1110 E	1900-0570	40"	7 1/8"	82"	40 1/2"	N/A	N/A	12 7/8"	34"	37 3/4"	85 1/4"	43°
GRL 1110 3/8 KEYWAY	1900-0571	40"	7 1/8"	76"	40 1/2"	N/A	N/A	12 7/8"	34"	37 3/4"	85 1/4"	43°
GRL 1111	1900-0561	41"	7 1/8"	76"	42 1/4"	42 3/4"	1/8"	13 1/8"	33 5/8"	40 1/4"	87 3/8"	41°
GRL 1112	1900-0562	42"	7 1/8"	76"	43 5/8"	44 3/4"	3/8"	13 1/4"	33 1/4"	42 5/8"	89 3/8"	40°
GRL 1113	1900-0563	43"	7 1/8"	76"	45 1/8"	46 7/8"	1/2"	13 3/8"	33"	45"	91 3/8"	39°
GRL 1114	1900-0564	44"	7 1/8"	76"	46 1/2"	48 1/4"	1/2"	12 7/8"	34"	45 3/4"	93 1/4"	43°
GRL 1115	1900-0565	45"	7 1/8"	76"	48"	51"	3/4"	13 5/8"	32 1/2"	49 3/8"	95 3/8"	37°
GRL 1120	1900-0569	50"	7 1/8"	76"	55 1/8"	60 3/4"	7/8"	12 3/4"	34"	57 1/2"	104 15/16"	45°
GRL 1128	1900-0572	58"	7 1/8"	76"	69 1/2"	73 5/8"	3/4"	12 3/4"	34"	73 1/2"	121 1/8"	44°

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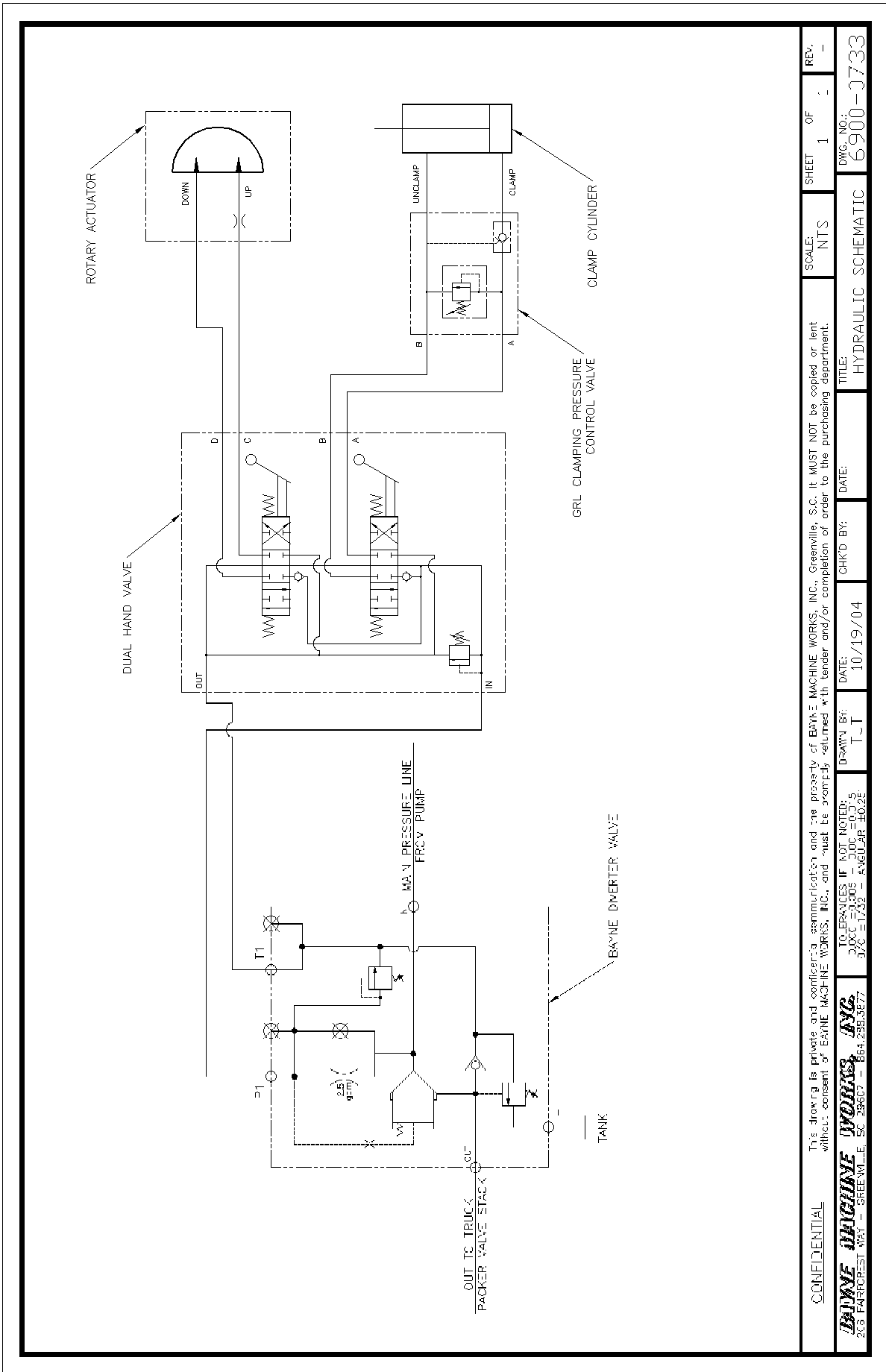
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 DIMENSIONS IN PARENTHESES ARE FRACTIONAL DIMS
 TWO PLACE DECIMAL ±.015
 THREE PLACE DECIMAL ±.005
 ANGLES ±.015 DEGREES
 MACHINED ±.025 DEG
 BEND ±100 DEG

BAYNE MACHINE WORKS, INC.
 910 FORK SHOALS ROAD - GREENVILLE, SC 29605 - 864.286.3877

TITLE: **GRL SERIES SPECIFICATIONS**

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WTS	05/14/2013	NONE	2	2
CHECKED BY	DATE	DWG NO	REV	
		H5900001	-	

QTY FINISH WEIGHT



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BAYNE MACHINE WORKS, INC. 203 FARFORD WAY - GREENVILLE, SC 29607 - 864-255-3677		DATE:	CHKD BY:	DATE:	10/19/04	T.J.T.	DRAWN BY:
TOLERANCES IF NOT NOTED: FRACTIONS = 1/32 - 1/16 - 1/8 - 1/4 - 3/8 - 1/2 - 5/8 - 3/4 - 7/8 - 1 - 1 1/8 - 1 1/4 - 1 1/2 - 1 3/4 - 2 - 2 1/4 - 2 1/2 - 3 - 3 1/4 - 3 1/2 - 4 - 4 1/4 - 4 1/2 - 5 - 5 1/4 - 5 1/2 - 6 - 6 1/4 - 6 1/2 - 7 - 7 1/4 - 7 1/2 - 8 - 8 1/4 - 8 1/2 - 9 - 9 1/4 - 9 1/2 - 10		TITLE:		HYDRAULIC SCHEMATIC			
		DWG. NO.:		6900-3733			