SUPERIOR
Manufacturing & Hydraulics

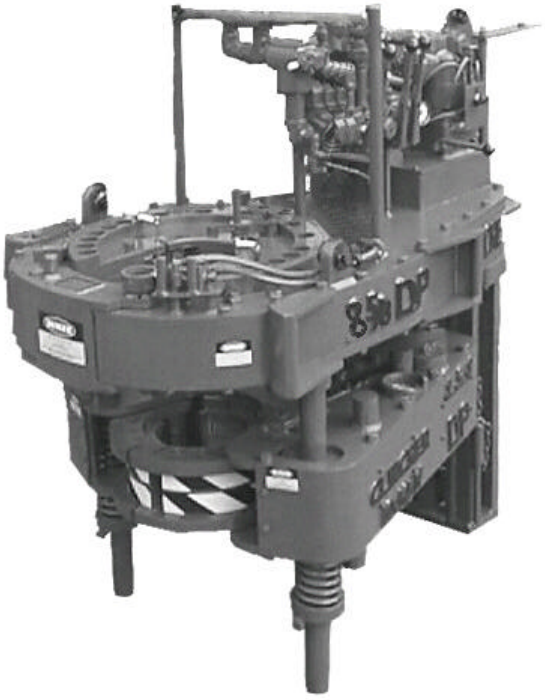
# *TECHNICAL MANUAL*

## 8 5/8" CLINCHER® DRILL PIPE TONG

## 8 5/8" LOCKJAW™ DRILL PIPE BACKUP

## AND

## MOUNTING KIT



## COVERS

## TONG MODELS

## CLE8625DP-03 / CLE8625DP-05

## BACKUP MODEL

## BUCDP8500

Published 05/2000

4225 Highway 90, East
Broussard, Louisiana 70518
Phone: (337) 837-8847
Fax: (337) 837-8839
www.superior-manf.com

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**This manual is not a controlled document and is subject to revision without notice. To receive updates and insure you have access to the latest information concerning the 8 5/8" CLINCHER® Drill Pipe Tong and 8 5/8" LOCKJAW™ Drill Pipe Backup, we request you complete this form and return the lower half to SUPERIOR Manufacturing and Hydraulics by mail or facsimile. Access to our manuals can also be acquired through our web site www.superior-manf.com. Select the tab 'CLINCHER® Products', select the equipment from the list to get Specs page, select the tab 'Download Manual'.**

**Name:** _____
**Company:** _____
**Address:** _____
**Address:** _____
**City:** _____ **State:** _____
**Postal Code:** _____ **Country:** _____
**Telephone:** _____ **Fax:** _____

**Tong Model No.:** _____ **Serial No.:** _____
**Backup Model No.:** _____ **Serial No.:** _____
**Assembly Date:** _____

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**8 5/8" CLINCHER® Drill Pipe Tong & 8 5/8" LOCKJAW™ Drill Pipe Backup**
**Technical Manual Registration Form**

**Name:** _____
**Company:** _____
**Address:** _____
**Address:** _____
**City:** _____ **State:** _____
**Postal Code:** _____ **Country:** _____
**Telephone:** _____ **Fax:** _____

**Tong Model No.:** _____ **Serial No.:** _____
**Backup Model No.:** _____ **Serial No.:** _____
**Assembly Date:** _____

**Return To:**

**SUPERIOR Mfg. & Hyd.**
**4225 Hwy. 90 East**
**Broussard, LA 70518**
**USA**

**Telephone: 337-837-8847**
**Facsimile: 337-837-8839**
**Web Site: www.superior-manf.com**

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# 8 5/8" CLINCHER® DRILL PIPE TONG AND 8 5/8" LOCKJAW™ DRILL PIPE BACKUP

## REVISION TABLE

| *Section* | *Page* | *Date* | *Description* |
|---|---|---|---|
| 1 | 1 | 07/00 | Paragraph 2-Clarified suspension cable breaking strength to be 31 ton minimum.<br>Paragraph 3-Chg. diameter of snubbing line wire cable from 5/8" to 1 1/2" & clarified breaking strength to be 89 ton minimum. |
| 2 | 5 | 07/00 | Added Gripping Range for Dovetail Jaws & Adaptors. |
| 4 | 3 - 5 | 07/00 | Item 9b & 10b-Added Note regarding Bearing Shields PN 73027<br>Item 9e-Chg. HHCS size from 1 3/4" to 2 1/4" & PN 1173 to 1174. Chg. Qty. from (7) to (5) for PN 1174 & 1171. Added (1) SHCS PN 1271 & (1) PN1170-A.<br>Item 20-Clarified Bearing Retainer by putting PN 55063-S4.<br>Item 21-Chg. Qty. from 2 to 4 for PN 243.<br>Item 24-Chg. Steel Ball PN A20-X53-10 to PN 1906.<br>Item 25-Eliminated Motor Spacer PN 55085 (not used). Chg. Bolt size from 1 1/2" to 1 1/4" & PN 1112 to 1111.<br>Item 28-Chg. Bolt size from 6 1/2" to 7" & PN1178-A to 1247. |
| 5 | 1 | 07/00 | A) Clarified suspension cable breaking strength to be 31 ton minimum.<br>D) Chg. diameter of snubbing line wire cable from 5/8" to 1 1/2" & clarified breaking strength to be 89 ton minimum. |
| 7A | 1, 3-5, 7-10, 11, 15-16B | 07/00 | Tbl. of Contents - Added Parts List VP7625-DP61.<br>Parts List CLE8625DP-03: Added P/N's 1174, 1247, 1271, 1610, 204, & X2-24.<br>Chg. Qty. P/N 1111 (6) to (4), 1070-A (4) to (5), 1171 (7) to (5), & 1174 (6) to (5).<br>Deleted P/N's 1112, 1173, 1178-A, 12501437, 55088, 73074-S2, & VP7625-DP60.<br>Chg. P/N 73019 to 73091 (typo).<br>Parts List 55142: Changed P/N 1150-B to 1276.<br>Parts List 73095: Corrected typo in Desc. of P/N 73095-S1 & 73095-S2.<br>Parts List 73099: Added P/N 1608.<br>Parts List 73114: Added P/N's 1176-A & 1213.<br>Chg. Qty. P/N's 1210 & 1218 (3) to (2).<br>Parts List 86010: Added P/N 1087 & 1107.<br>Parts List 86074: Chg. Qty. P/N 45067-S7 (2) to (4).<br>Parts List VP7625DP-60: Added P/N's 1424, 1471-L, 1564, 1602, 1604, & 1658-A.<br>Chg. Qty. P/N 1453-A (4) to (5).<br>Deleted P/N 1570-A.<br>Added Parts List VP7625DP-61. |
| 7B | 1, 3 - 7 | 07/00 | Tbl. of Contents - Added Parts List SLV1000-04.<br>Parts List BUCDP8500: Added P/N's 1008-B, 1400-A, 1456, 1498, 1570, 1611, 173, 76128-S2, BAC-3M25RCFF, BUC5524-A, BUC5524-B, & SLV1000-04.<br>Chg. Qty. P/N's 1001 (8) to (10), 1449 (6) to (4), 1450 (3) to (2), 1451 (1) to (3), 1457 (5) to (3), 1472 (1) to (4), 1486 (2) to (4), 1562 (2) to (5), 1569 (1) to (3), 1598 (3) to (2), 1599 (2) to (3), & 1653 (2) to (3).<br>Deleted P/N's 1110, 1490, 1577, 1579-B, 1587, 1595-A, 1596, BAC60025RCFF, BUCDP8515, BUCS8613, BUCS8616, BUCST7603-S5, SLV1000-01.<br>Added Parts List SLV1000-04. |
| 7C | 1 | 07/00 | Parts List RH8500: Added P/N's BUC4509-06 & BUCS8618.<br>Chg. Qty. P/N BUCS8614 (3) to (1).<br>Deleted P/N's 1167, 1178-A, 73025, BUC4509-04, BUCS8613, & BUCS8616.<br>Added Parts List BUCS8618. |
| 8 | 4 | 07/00 | Revised Illustration to show dimension of Tandem Center Rear Hanger also. |
| 9 | 1, 3, 7, 8 8A, 12A, 12B, 16-18 | 07/00 | Tbl. of Contents - Added Illustrations Encoder Assy., Top Cage Plate Assy., Bottom Cage Plate Assy., & Brake Band Assy.<br>Revised Illustrations 8 5/8" DP Tong Assy., Idler Gear Assy., Outboard Idler Gear Assy., Side Hdle. Assy., & Bail Assy. |
| 10 | 1, 4, 5, 7, 8, 11, 12 | 07/00 | Tbl. of Contents - Corrected Title No. 3 to Top View Without Top Plate, Added Illustration Leg Assembly.<br>Revised Illustrations 8 5/8" LJ DP Backup Top View, Top View Without Top Plate, Inside Door Assy., Outside Door Assy., & Hanger Assy. |
| 10 | 8 | 08/00 | Revised Illustration Outside Door Assy. |

## REVISION TABLE

| *Section* | *Page* | *Date* | *Description* |
|---|---|---|---|
| 14 | | 12/00 | Added info. for Relief Valve, PN BUCI5514 |
| N/A | | 01/02 | Cover & Title Page - Added Tong Model CLE8625DP-05 |
| N/A | | 01/02 | Manual Registration Form - Area Code changed for Superior phone & fax numbers. |
| N/A | | 01/02 | Table of Contents Sect. 12 - Corrected Load Cell P/N SM50-36C to SM60-36C. |
| 2 | 5 | 01/02 | Clarified Max. Opr. Pressure 2,500 psi is for Tong; Added 3,000 psi for Backup. Added Max. Allowable Flow Rate |
| 3 | 1<br>3 - 10 | 01/02 | Last Paragraph - Clarified Fine Toothed Steel Die List to be on pages following; Added Jaw Ranges Chart. Replaced Die Tech Update ver.4 with ver.5. |
| 4 | 3 - 6 | 01/02 | Added PN's for Model CLE8625DP-05 in Assembly Instructions 9 f, 10 e, 14, 15, 17 b, 19 a & c, 20, 21, 22 a, 23 d, 24 - 26. |
| 5 | 6 - 7 | 01/02 | Added Backup Leg Spring Adjustment Stand with illustrations. |
| 7A | 1 - 51 | 01/02 | Removed Parts List's 45061/Shifting Yoke Weldments, 55076-S1/Shifting Box Weldments, 73011/Brake Band Lug Weldments.<br>Added Parts List's CLE8625DP-05, 45067-S6, 45091, 86074-02, KITBOLT-22, KITBRG-22, KITBOLT-24, KITBRG-24, 14213, CJDT76-04125, -04500, -04750, -05250, -06250, -06500, -07000, -07500, -07625, -07812, -08000, CJ-86A.<br>Revised Pick List's CLE8625DP-03, 73095, 86010, 86075, SLV1000-01, VP7625-DP60, VP7625-DP61. |
| 7B | 1 - 12 | 01/02 | Added Parts List's BUCDP8526, KITBOLT-12, KITFIT-12A, KITFIT-12C.<br>Revised Pick List's BUCDP8500. |
| 7C | 1 | 01/02 | Revised Pick List RH8500. |
| 9 | 1-5, 7-10A, 11A, 11B, 17, 18, 21 | 01/02 | Replaced illustration Encoder Assy. with Secondary Gear w/Encoder.<br>Added illustrations Gear Box Housing, Shift Assy. (2nd Generation), Motor Assy., & Splined Jaw Assy. 8 5/8" - 5 1/2".<br>Revised illustrations Tong Assy., Top Plate, Gear Train, Idler Gear, Outboard Idler Gear, Pinion Gear, Secondary Gear, Shift Assy. (1st Generation), Side Handle, Bail Assy. |
| 10 | 1-8, 12, 13 | 01/02 | Added illustration Valve Bank Assembly.<br>Revised illustrations Backup Assy., Top View, Top View w/o Top Plate, Cylinder, Inside Door, Outside Door, Hanger Assy. |
| 11 | 1 | 01/02 | Revised Illustration Lift Cylinder LCR300. |
| 13 | 19 - 20 | 01/02 | Added Rineer Dwgs. Series 15 2-Speed Motor, Stacked Motor. |
| 14 | N/A | 01/02 | Catalog *Swagelok Instrument Ball Valves* - Removed pgs. 3-5 & 7. Modified pg. 6; only for info. of Ball Valve SS-43YF2 (our PN 73028).<br>Page 8 - Corrected 2nd sentence of 1st paragraph . . . the valve packing must be *adjusted* (incorrect word: *added*).<br>Added Superior Dwg. ILL1089 - Maintenance Instructions (for Bleeder Valves). |
| 3 | 5 | 08/03 | Revised Splined Jaw and Die Adapters Chart |
| 2 | 2 | 01/04 | Revised Basic Hydraulic Schematic. |
| 3 | 3 - 4.2<br>7 - 10 | 01/04 | Revised Dovetail Jaw and Die Adapters Chart.<br>Replaced Die Tech Update with Ver 6.0. |
| 7A | 1-2, 9-12, 15-16, 29-32, 44.1, 51 | 01/04 | Added Parts List's 74095, CJDT76-06375 & CJ-LF-86B.<br>Revised Parts List's CLE8625DP-05, 73099, KITBOLT-24, KITBRG-24. |
| 7B | 3-6 | 01/04 | Revised Parts List BUCDP8500. |
| 9 | 1, 6.1, 6.2, 11A-11C, 16, 17, 19-21 | 01/04 | Added Illustrations Sealed Idler Bearing PN 1905 and Installation Instructions, Motor Assy sht.2.<br>Revised Illustrations Shift Assy. 2nd Generation, Motor Assy, Brake Band Assy, Side Handle Assy, Dovetail Jaw Assy, Low Friction & Splined Jaw Assembly, & Splined Jaw Assy 8 5/8" - 5 1/2" |
| 10 | 1, 4 - 9, & 13 | 01/04 | Added Illustration Special Note for BUDT86 Dovetail Die Adapters.<br>Revised Illustrations Top View, Top View w/o Top Plate, Cylinder Assy, Inside Door Assy, Outside Door Assy, Dovetail Die Adapter, & Valve Bank Assy. |

## REVISION TABLE

| *Section* | *Page* | *Date* | *Description* |
|---|---|---|---|
| 12 | 2 - 10 | 01/04 | Added Compression Load Cell Illustration, Pics of 60K ft/lbs Halo & 85K ft/lbs. Halo, and manual Comp. Torque System (Draft 6) August, 2002. |
| 14 | 28A - 28B | 01/04 | Added Typical Valve Section Illustration (Figure 4) and Parts List for Commercial Shearing A20/A35 Directional Control Valves. |
| 3 | 5 | 02/18/04 | Revised Splined Jaw and Die Adapter Chart. |
| 2 | 2 | 01/05 | Revised Schematic. |
| 3 | 0 | 01/05 | Added Dovetail Pencil & Strip Die Chart. |
| 7A | 51 | 01/05 | Revised Pick List CJ-LF-86B. |
| 7B | 7, 9-10 | 01/05 | Revised Pick List BUCDP8526 & KITBOLT-12. |
| 9 | 1-2, 6.1, 7, 14.1, 20 & 21 | 01/05 | Revised Table of Contents, added Illustrations Dumbell Roller Assy. (2nd Generation), Door Assy., (2nd Generation), moved Assy. CJ-LJ-86B to page 21. Revised Illustrations Idler Gear Assy., Low Friction & Splined Jaw Assemblies. |
| 10 | 1, 6, 8.2 & 13 | 01/05 | Added Illustration 8 5/8" Pivoting Jaw Insert - 5 1/2" Die Installation. Revised Illustrations Cylinder Assy. & Valve Bank Assy. |
| 11 | 1 | 01/05 | Revised Illustration Lift Cylinder LCR300. |
| NA | Cover & TP | 01/05 | Removed ISO logo's from Cover & Title Page. |
| 3 | 7-11 | | Removed ISO logo's. |
| 6 | 0 | | |
| 12 | 5-10 | | |
| 9 | 11A, 12A, 12B, 21 | 05/06 | Revised Illustrations Shift Assy.. 2nd Generation, Top & Bottom Cage Plate Assy., 8 5/8" Low Friction & Splined Jaw Assy. |
| 10 | 13 | 05/06 | Revised Illustration Valve Bank Assy. |
| 14 | 45-48 | 05/06 | Added Dump Valve Illustration & Dump Valve Electrical Connector Assy. |
| 7A-7C | All | 06/07 | Removed Parts List's. |
| 9 | 6.1, 10, 10A, 11A | 06/07 | Revised illustration Dumbell Roller Assy. 2nd Generation, Secondary Gear Assy., Secondary Gear w/Encoder, Shift Assy. 2nd Generation. |

# 8 5/8" CLINCHER® DRILL PIPE TONG AND 8 5/8" LOCKJAW™ DRILL PIPE BACKUP

# HAZARD WARNING

Nomenclature used in this manual:

| | |
|---|---|
| **WARNING** | concerns an operating procedure or practice that, if not strictly observed, can result in injury to personnel or loss of life. |
| **Caution** | concerns an operating procedure or practice that, if not strictly observed, can result in damage to or destruction of equipment. |
| Note | concerns an operating procedure or practice that needs highlighting. |

**CLINCHER®** Tongs and Backups are manufactured to provide a means of making up or breaking out high torque tubular connections. They utilize high pressure hydraulic fluid power which can cause the tong to move suddenly and with great force if the tong is not properly rigged up and operated. **CLINCHER®** Tongs and Backups contain rotating and reciprocating parts which can severely or fatally injure personnel who are operating, repairing, or near this equipment during its operation. **WARNING: Tongs and Backups are not to be operated by untrained personnel or personnel with diminished physical or mental capacity. No work of any type, including changing of dies, is to be carried out while the tong and backup are connected to any hydraulic power unit.**

**CLINCHER®** Tongs and Backups are heavy tools. They should be suspended from a secure, high strength 7/8" 1WRC minimum diameter wire cable with a 31 ton minimum breaking strength. The wire rope should be hung as close to the center of the wellbore as possible, without interfering with drilling equipment operation, to allow the tong to be readily swung into the working position. Vertical position control should be achieved by means of a **CLINCHER®** hydraulically operated lift cylinder/spring hanger. **WARNING: Users must insure the entire suspension system including cables, rig mounting points, lift cylinders, tong lifting brackets/bridles, winches, pulleys, counter weights, etc., are capable of handling the static weight of the tong plus any loads which could be transferred to it during the makeup or breakout process PLUS any shock loads which may be seen during operation. This system must readily allow downward movement equal to a minimum of the thread makeup distance to avoid overloading the suspension system and/or damage to equipment.**

A 1 1/2" 1 WRC minimum diameter wire cable with a 89 ton minimum breaking strength should be attached at a 90 degree angle to the tong and at the same level to insure proper readout of torque indicator. A SNUBBING LINE should always be attached even when an integral backup is in use to provide additional safety in the event of a backup slippage. **WARNING: Users must provide a means of safely controlling the tong movements in all directions when it is in use. Failure to account for the its size, weight, movement and the amount of torque developed could result in personnel injury or death.**

# 8 5/8" CLINCHER® DRILL PIPE TONG AND 8 5/8" LOCKJAW™ DRILL PIPE BACKUP

# HAZARD WARNING

**CLINCHER®** Tongs and Backups utilize high pressure hydraulic fluids. Portions of the tong and backup, control valves, hydraulic lines and cylinders may contain high pressure fluid even when the power unit is de-energized and the fluid supply hoses are disconnected. During normal operation the temperature of the hydraulic fluids as well as hoses, piping, valves, etc., can rise to a level which can cause burns. **WARNING: Personal protective gear including safety glasses, face shields, protective gloves and protective clothing must be worn to guard against the hazards of high pressure fluids. Tight fitting clothing is required to prevent entanglement in rotating components. These tools should be serviced by thoroughly trained and qualified hydraulic technicians using procedures to safely insure hydraulic pressure is bled from these circuits.**

The **CLINCHER®** Tong is equipped with a door interlock system which prevents tong rotation whenever the door is open. This system is to be tested before each mobilization and at every shift change. Should this system be determined to be inoperative, the tong is to be removed from service and tagged as ***in-operative*** until repairs are made. **CAUTION:** Operating the tong with the door in the open position could result in severe damage to the equipment and will void all manufacturer warranties. **WARNING: Operating the tong with the door open by means of a defective or bypassed door interlock system exposes the operator and nearby personnel to potentially fatal hazards.**

No attempt should be made to operate the **CLINCHER®** Tong and Backup for any purpose other than which it is intended. This system is capable of generating very large clamping forces and torsional loads which, if improperly applied or controlled, could result in damage to the tubular, to the tong or could possibly result in injury or death of personnel. Do not attempt to operate the unit without correct dies and the proper size tubular being in the tong. See Section 3 for more information concerning the selection and use of dies. **CAUTION: Operating this equipment without the correct size, type and orientation of dies can result in damage to the equipment or tubulars being handled.**

# HYDRAULIC PRODUCT SAFETY

**WARNING: Valve lever (spool) may "stick" (not center) under certain conditions allowing the hydraulic equipment to continue to operate and could cause serious injury, death or equipment failure.**

**VALVE SAFETY: Read and follow instructions carefully. Failure to observe instructions and guidelines may cause serious injury, death or equipment failure. A sticking valve (spool bind) may be caused by one or more of the following factors:**

**DIRTY OIL:** Oil must be filtered to a minimum of 25 microns. Filters should be changed regularly - spin-on types after 50 hours of initial use and then after every two hundred fifty hours of use. Use of a condition indicator is recommended. Consult your tractor or implement owner's manual for filtration and changing recommendations for internal systems.

**OIL REQUIREMENTS:** Premium quality anti-wear type oil with a viscosity between 100 and 200 SSU at operating temperatures. Certain synthetic oils may cause spool seals to swell and the valve to stick. If in doubt, call CROSS Engineering.

**IMPROPER HOOK UP OR MOUNTING:** Always use the proper size fittings. Hook up "in" & "out" as noted on the valve body. Do not overtorque pipe fittings. Mounting surfaces should be flat and care should be used when tightening mounting bolts. Over-tightened bolts can cause spool bind and casting breakage. When hooking a valve in series, always use a power beyond sleeve. Consult your tractor or implement manual to make sure you have the proper quick disconnect line connected to the inlet of the remote valve.

**MISAPPLICATION:** Always use the proper valve for the job. CONVERTA, CD, CS or CA valves should never be used for metered heavy load lifting - loaders or similar applications. Use an open center valve for open center applications and a closed center valve for closed applications. If in doubt, check with your tractor dealer. Contact CROSS if the valve allows the hydraulic equipment to creep excessively.

**MAINTENANCE:** Make sure all bolts are tightened and torqued to the recommended specification. Bent or broken parts should not be used. Replace immediately. Always use exact replacements. Always protect valve spool from paint overspray.

Faulty quick disconnects can cause high back pressures and sticking spools. Check quick disconnects periodically to make sure they are functioning properly. If valve spool does not center or appears to stick, do not use!

**PUMPS & MOTORS SAFETY:**

A relief or bypass in your hydraulic system is necessary to prevent pump from breakage due to overpressurization. Use correct fittings and proper oil as noted in the technical service manual packed with each unit. Change oil as recommended by your implement or tractor manufacturer.

**CYLINDER SAFETY:**

Check clevis clearances before, during and after extending the cylinder and before using the cylinder under pressure to avoid possible injury, or bent or broken rods caused by binding. Never operate a cylinder above recommended pressures. Never use a cylinder as a safety device when transporting equipment.

**PINHOLE LEAKS:**

If you observe a pinhole leak, discontinue use of the component. If oil has penetrated your skin or contacted your eye, seek medical attention immediately!

SUPERIOR
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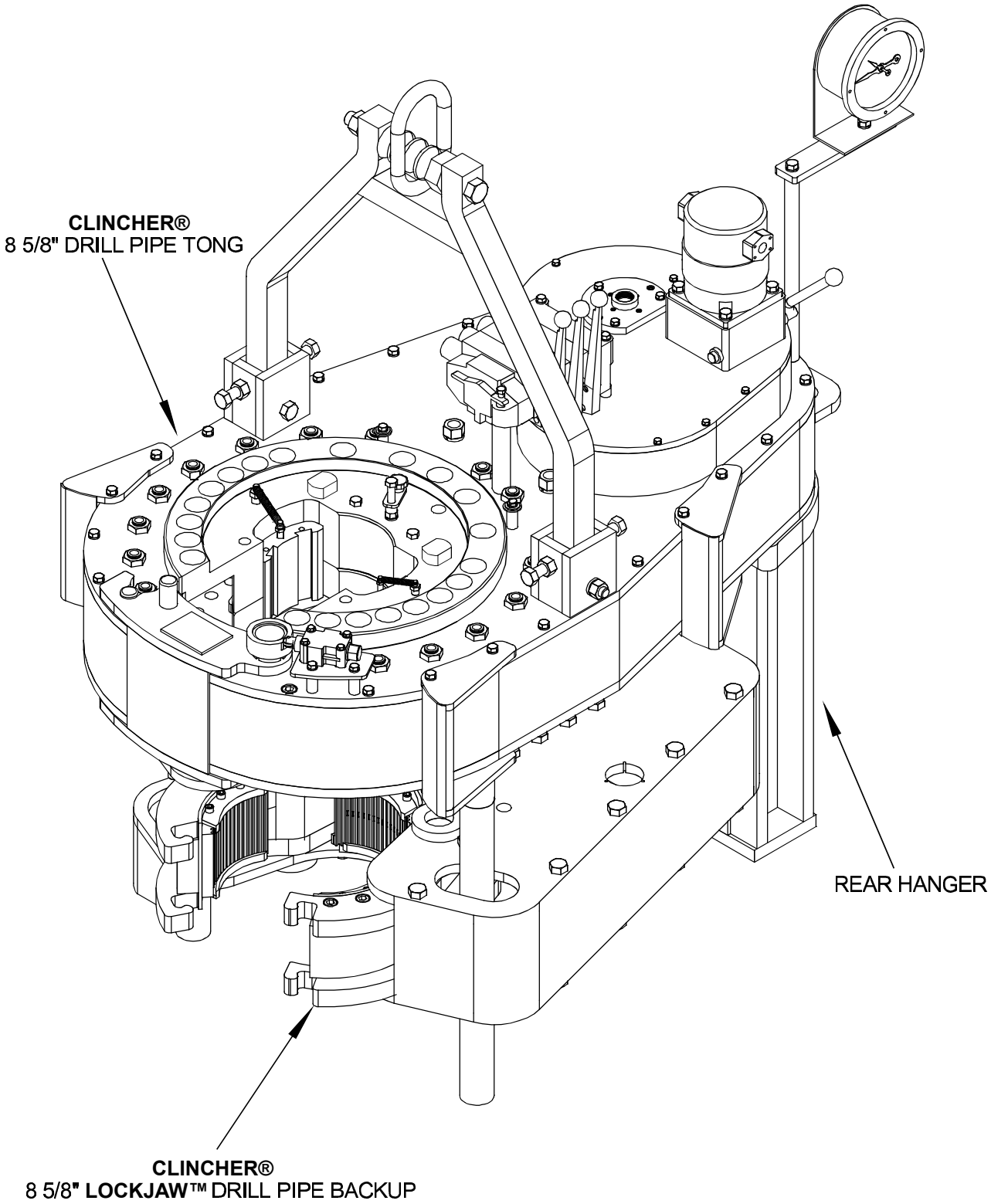

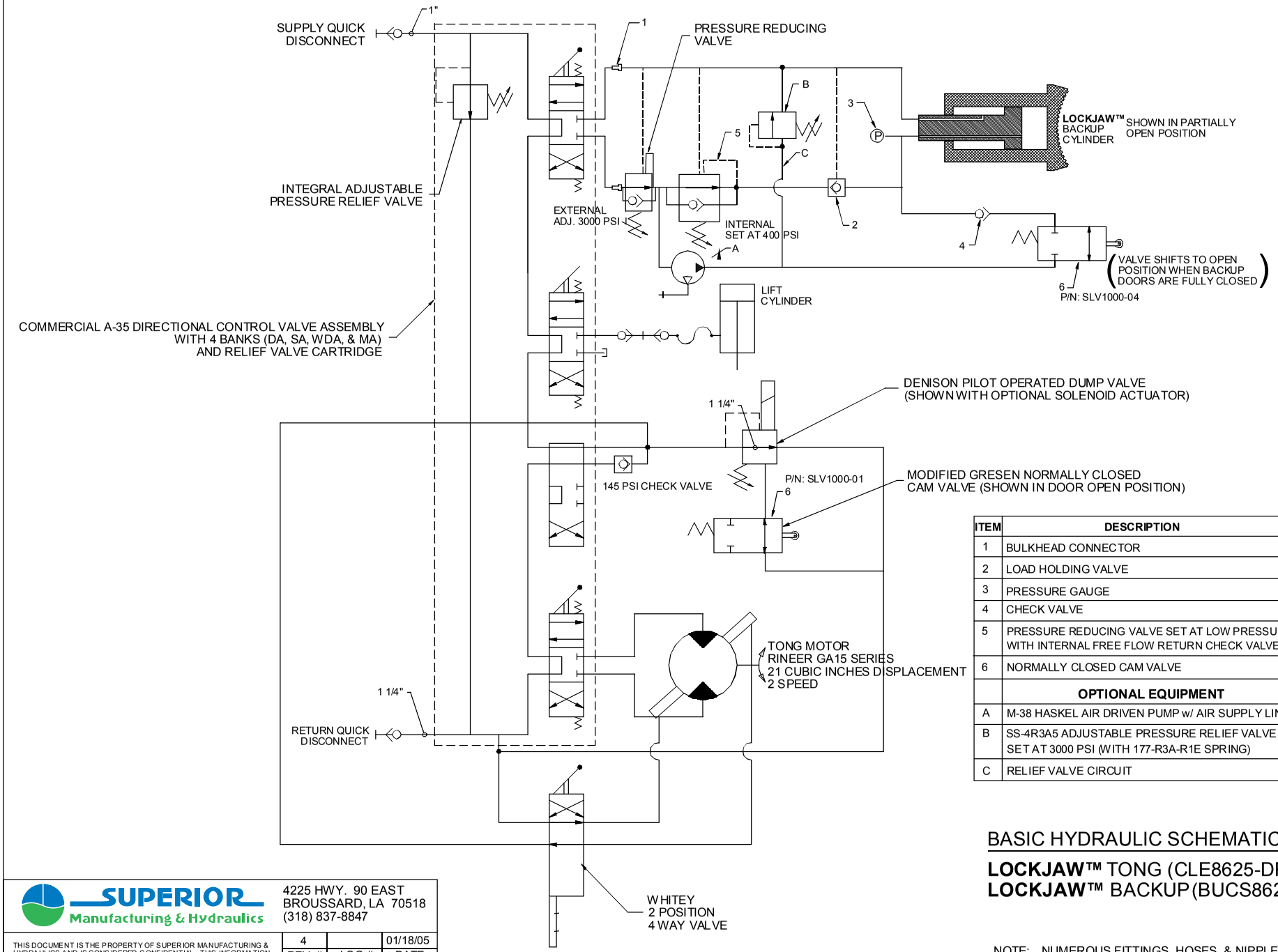


| ITEM | DESCRIPTION |
|---|---|
| 1 | BULKHEAD CONNECTOR |
| 2 | LOAD HOLDING VALVE |
| 3 | PRESSURE GAUGE |
| 4 | CHECK VALVE |
| 5 | PRESSURE REDUCING VALVE SET AT LOW PRESSURE WITH INTERNAL FREE FLOW RETURN CHECK VALVE |
| 6 | NORMALLY CLOSED CAM VALVE |
| | **OPTIONAL EQUIPMENT** |
| A | M-38 HASKEL AIR DRIVEN PUMP w/ AIR SUPPLY LINE |
| B | SS-4R3A5 ADJUSTABLE PRESSURE RELIEF VALVE SET AT 3000 PSI (WITH 177-R3A-R1E SPRING) |
| C | RELIEF VALVE CIRCUIT |

# BASIC HYDRAULIC SCHEMATIC

## **LOCKJAW™** TONG (CLE8625-DP)
## **LOCKJAW™** BACKUP (BUCS8625)

NOTE: NUMEROUS FITTINGS, HOSES, & NIPPLES ARE NOT ILLUSTRATED IN THIS SCHEMATIC

SUPERIOR Manufacturing & Hydraulics
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BROUSSARD, LA 70518
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| REV. # | LOG # | DATE |
|---|---|---|
| 4 | | 01/18/05 |

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# DESCRIPTION and APPLICATION

The **CLINCHER®** Tong and Backup system is an "open-throat" design which can handle tubulars as small as 2 3/8 inches to as large as 8 5/8 inches in diameter. This system features two (2) jaws in the Tong and three (3) in the Backup which encircle the pipe. Wrap Around jaws and dies, combined with our low friction jaw technology and constant radial load cam system provide exceptional gripping capabilities with reduced pipe deformation, stress, and marking. Using our non-marking aluminum die system or **GRIT FACE™** dies in the Tong and Backup will now allow stainless steel corrosion resistant alloys (CRA) to be run as quickly and easily as a traditional tong runs conventional steel tubulars.

**Notable Features and Benefits**

| | |
|---|---|
| Low Friction Jaws | increases cam angle efficiency to allow use of aluminum dies |
| Splined Die System | aligns the die with the tubular and more evenly distributes radial load, essentially wrapping the die around the tube reduces pipe stress, deformation, and minimizes marking |
| Constant Cam Angle | insures an adequate radial load is available regardless of relative rotation to enhance performance on undersized pipe |
| Die Retention Method | provides an enhanced method of preventing equipment damage and die loss if the pipe is inadvertently moved while the tong is still gripping the pipe |
| Self Adjusting Brake | eliminates need to manually adjust brake bands to compensate for normal wear |

In addition to these unique features listed above, the **CLINCHER®** Tong and Backup System is also equipped with numerous standard features including:

| | |
|---|---|
| Door Interlock | prevents tong ring gear rotation whenever the tong door is open but allows control and operation of the lift cylinder at all times |
| Encoder Adapter | accepts customer's turns encoder to signal to a torque/turn computer |
| Pressure Control Valve | adjustable pressure control valves allow the customer to limit the amount of pressure applied and torque developed |

The features described above are covered by US and foreign patents or pending US and foreign patents.

# DESCRIPTION and APPLICATION

## Tong Application

After completing the makeup or breakout cycle the jaws are opened by reversing the tong motor to drive the ring gear and cam surfaces in the opposite direction until the reversing pin contacts the ring gear shoulder. Springs are used to return the jaws to their fully open position.

The cage plate assembly and jaws are rotationally restrained by the cage plate brake system. Relative rotation between the ring gear and the cage plate assembly forces the front jaws to lock or unlock and the rear jaw to advance or retract.

During a jaw closing cycle, the jaws advance until they contact the pipe. After completing the makeup or breakout cycle, the jaws are opened by reversing the tong motor to drive the ring gear and cam surfaces in the opposite direction until the reversing pin contacts the ring gear shoulder. Springs are used to return the jaws to their fully open position.

The tong's cage plate braking system is self adjusting to compensate for brake band wear. Field adjustments are not required under normal conditions.

## Backup Application

The **CLINCHER®** Backup has an Aopen throat@ design with three jaws that encircle the pipe. The front jaws are operated by hydraulic cylinders which force the pipe against the fixed rear jaw. Once locked on the pipe, pressure is locked in the backup cylinder by a load holding valve. When opening the backup jaws, the cylinder operation is reversed to retract the rear die and unlock the jaws. Springs move the front jaws to their fully open position.

# SPECIFICATIONS
# TONG AND BACKUP

| | |
|---|---|
| **Maximum Torque** | 60,000 ft.lbs. / 81,349 Nm |
| **Maximum Operating Pressure / Tong**<br>**Maximum Operating Pressure / Backup** | 2,500 psi / 172 bar<br>3,000 psi / 207 bar |
| **RPM @ 35 GPM / 133 LPM**<br>**Maximum Allowable Flow Rate 68 GPM / 257 LPM**<br>**Manual Gearbox with 2-Speed Hydraulic Motor**<br>**High Gear / High Speed**<br>**High Gear / Low Speed**<br>**Low Gear / High Speed**<br>**Low Gear / Low Speed** | <br><br><br><br>30 RPM<br>15 RPM<br>6 RPM<br>3 RPM |
| **Handle Length / Tong** | 40" / 101.6 cm |
| **Handle Length / Backup** | 36" / 91.44 cm |
| **Overall Length / Tong & Backup** | 60" / 152.4 cm |
| **Overall Width / Tong & Backup (Includes Handles)** | 38" / 96.5 cm |
| **Weight / Tong**<br>**Weight / Backup**<br>**Combined Weight / Tong & Backup** | 2,700 lbs. / 1,224.70 kg<br>1,800 lbs. / 816.47 kg<br>4,500 lbs. / 2,041.17 kg |
| **Jaw Capacity / Tong & Backup** | 2 3/8" thru 8 5/8" |
| **Gripping Range**<br>**Dovetail Jaws & Adaptors Only** | <br>1/2" under nominal size |

Operates using Dovetail Strip Dies, Steel Tooth Wrap Around Dies, **GRIT FACE™** Wrap Around Dies, and Aluminum Wrap Around Dies.

**Standard Equipment:**

- Door Interlock
- Two Speed Hydraulic Motor
- Hydraulic Cage Plate Brake System

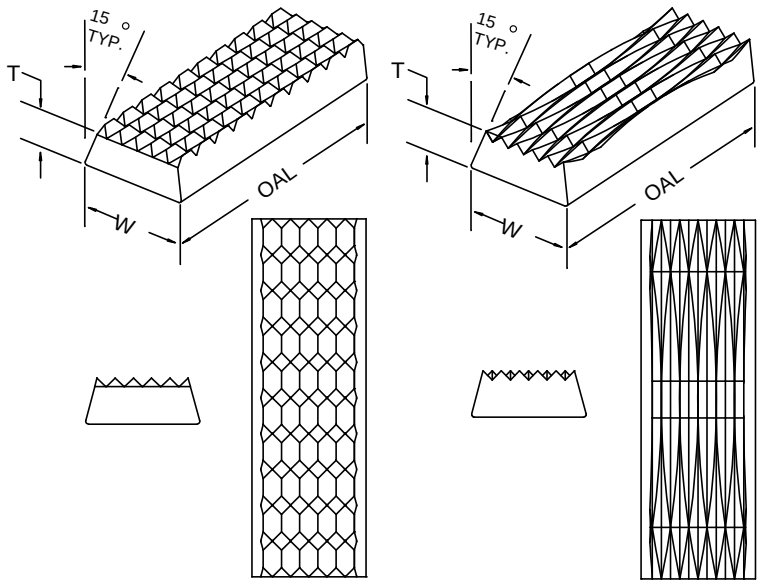
**Optional Equipment:**

- Two Speed Gear Box
- Electronic Solenoid Dump Valve
- Hydraulic Intensifier for Backup
- Shipping Stand, or Skid
- Varying Outlets for Torque Turns Computer Sending Units

# CLINCHER® DIES

Many **CLINCHER®** Tongs and Backups utilize jaws and/or adapters which accept Dovetail Inserts (AKA Pencil Dies or Strip Dies) to effectively grip tubulars. Jaw systems and jaw adapters are also available which accommodate Wrap-Around Fine Tooth Steel Dies, **GRIT FACE™** Dies and Aluminum Dies.

The appropriate jaws, die adapters and dies required for a specific tubular OD are also described in this section of the manual.




**STRAIGHT TOOTH** **DIAMOND TOOTH**

***Note:*** Diamond Tooth Dies are used when a more aggressive bite is required.

| Thickness | Width | OAL | P/N Straight Tooth | P/N Diamond Tooth |
|---|---|---|---|---|
| 5/16 | 5/8 | 3 1/2 | ★ | ★ |
| 5/16 | 5/8 | 3 7/8 | DTI4052 | ★ |
| 5/16 | 5/8 | 4 1/2 | DTI4002 | ★ |
| 3/8 | 5/8 | 3 1/2 | DTI4030 | ★ |
| 3/8 | 5/8 | 3 7/8 | DTI4051 | ★ |
| 3/8 | 5/8 | 4 1/2 | DTI4001 | ★ |

| Thickness | Width | OAL | P/N Straight Tooth | P/N Diamond Tooth |
|---|---|---|---|---|
| 17/32 | 5/8 | 3 1/2 | DTI4031 | ★ |
| 17/32 | 5/8 | 3 7/8 | DTI4053 | ★ |
| 17/32 | 5/8 | 4 1/2 | DTI4003 | ★ |
| 5/8 | 5/8 | 3 1/2 | DTI4032 | ★ |
| 5/8 | 5/8 | 3 7/8 | DTI4054 | ★ |
| 5/8 | 5/8 | 4 1/2 | DTI4004 | ★ |
| 11/16 | 5/8 | 3 7/8 | DTI4055 | ★ |
| 11/16 | 5/8 | 4 1/2 | DTI4005 | ★ |
| 3/8 | 1 | 3 7/8 | DTI1505 | ★ |
| 3/8 | 1 1/4 | 3 7/8 | DTI1614 | ★ |
| 3/8 | 1 1/4 | 5 | DTI1610 | ★ |
| 7/16 | 1 1/4 | 3 7/8 | DTI1612 | DTI1612D |
| 7/16 | 1 1/4 | 5 | DTI1617 | DTI1617D |
| 1/2 | 1 1/4 | 3 7/8 | DTI1601 | DTI1601D |
| 1/2 | 1 1/4 | 5 | DTI1602 | DTI1602D |
| 9/16 | 1 1/4 | 3 7/8 | DTI1622 | DTI1622D |
| 9/16 | 1 1/4 | 5 | DTI1623 | DTI1623D |
| 5/8 | 1 1/4 | 3 7/8 | DTI1632 | DTI1632D |
| 5/8 | 1 1/4 | 5 | DTI1633 | ★ |
| 11/16 | 1 1/4 | 3 7/8 | DTI1642 | ★ |
| 11/16 | 1 1/4 | 5 | DTI1646 | ★ |
| 3/4 | 1 1/4 | 3 7/8 | DTI1651 | ★ |
| 3/4 | 1 1/4 | 5 | DTI1693 | ★ |
| 3/4 | 1 1/4 | 5 7/8 | DTI1662 | DTI1662D |
| 13/16 | 1 1/4 | 3 7/8 | DTI1661 | ★ |
| 13/16 | 1 1/4 | 5 | DTI1664 | ★ |
| 7/8 | 1 1/4 | 3 7/8 | DTI1671 | ★ |
| 7/8 | 1 1/4 | 5 | DTI1673 | ★ |
| 1 | 1 1/4 | 3 7/8 | DTI1691 | ★ |
| 1 | 1 1/4 | 5 | DTI1697 | ★ |

★ Available upon request.

# CLINCHER® WRAP AROUND DIES

**CLINCHER®** Wrap Around Dies are available in three types:

| | |
|---|---|
| Fine Toothed Steel Dies: | for low to ultra high torque applications on carbon steel tubulars including tubing, casing, and drill pipe |
| Smooth Faced Aluminum Dies: | for low to moderate torque applications on fiberglass and corrosion resistant alloy (stainless steel) tubulars |
| **GRIT FACE™** Dies: | for low to high torque applications on fiberglass and corrosion resistant alloy (stainless steel) tubulars where the use of steel dies is prohibited as well as on carbon steel tubulars where reduced marking is desired |

**CLINCHER®** Dies are designed to match the OD of the tubing, casing, coupling, or accessory being made up or broken out. Each die is stamped on the top or side to identify its size. Using Fine Toothed Steel Dies which are slightly larger than the tubular is acceptable provided the difference in diameters is less than 3/32" (0.093"). Aluminum and **GRIT FACE™** Dies should be matched with the specific tubular diameters required. **Note:** The use of improperly sized dies can result in reduced torque capacity, increased pipe marking, and reduced die life.

**CAUTION:** Do not attempt to grip tubular diameters which are larger than the dies being used. Failure to observe this precaution can result in damage to the tubular or tong jaws.

In emergencies where correct die sizes are unavailable, some operators have successfully used two different sizes of dies to accommodate unusual, nonstandard diameters.

**CLINCHER®** Wrap Around Dies are manufactured in specific diameters to match standard tubing and casing diameters, API coupling diameters, selected work string connection diameters and certain commonly used premium connection coupling diameters. **CLINCHER®** Wrap Around Dies should not be used on tubulars which are larger than the nominal die size. Steel Toothed Dies can be used on tubulars which are no smaller than 3/32" (0.093") less than the nominal die size. Aluminum and **GRIT FACE™** Dies should be matched with the specific tubular diameters required.

Note: Fine Toothed Steel Dies are normally stocked in our Broussard, Louisiana facility. A listing of commonly manufactured sizes is shown on the following pages. Aluminum and **GRIT FACE™** Dies are normally made to order although a limited range of sizes and small quantities may be available from stock. Contact SUPERIOR Manufacturing & Hydraulics for information concerning availability of stock and special die sizes.

## Gripping range, jaw, adapters and dovetail die inserts for CLINCHER® 7 5/8 and 8 5/8 Drillpipe Tong and 8 5/8 LOCKJAW™ Backup for Drillpipe

| Nominal Jaw and Dovetail Die Adapter Size | Jaw Assembly Part Number | dovetail jaw part number | dovetail die adapter part number | nominal jaw size | Jaw gripping range when dressed with1 1/4" wide x x.xx" long dovetail strip dies with thickness of: | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0.8125 | 0.75 | 0.6875 | 0.625 | 0.5625 | **0.5** | 0.4375 | *<<dovetail die thickness* |
| | assembly consists of two jaws c/w pins, rollers, dovetail dies and die retainers | | 3 dovetail die adapters required to dress backup | | undersized (use this size for emergencies only) | undersized | undersized | undersized | undersized | **STANDARD** | oversized (use this size for emergencies only) | *<<pipe application* |
| 7 5/8 x 3 1/8 | CJDT76-XXXXX | 73014-XXXXX | BUDT86-03125 | 3.125 | 2.500 | 2.625 | 2.750 | 2.875 | 3.000 | **3.125** | 3.250 | maximum pipe OD for die & jaw |
| | | | | | *2.000* | *2.125* | *2.250* | *2.375* | *2.500* | ***2.625*** | *2.750* | *minimum undersized condition* |
| 7 5/8 x 3 3/8 | CJDT76-03375 | 73014-03375 | BUDT86-03375 | 3.375 | 2.750 | 2.875 | 3.000 | 3.125 | 3.250 | **3.375** | 3.500 | maximum pipe OD for die & jaw |
| | | | | | *2.250* | *2.375* | *2.500* | *2.625* | *2.750* | ***2.875*** | *3.000* | *minimum undersized condition* |
| 7 5/8 x 4 1/8 | CJDT76-04125 | 73014-04125 | BUDT86-04125 | 4.125 | 3.500 | 3.625 | 3.750 | 3.875 | 4.000 | **4.125** | 4.250 | maximum pipe OD for die & jaw |
| | | | | | *3.000* | *3.125* | *3.250* | *3.375* | *3.500* | ***3.625*** | *3.750* | *minimum undersized condition* |
| 7 5/8 x 4 1/2 | CJDT76-04500 | 73014-04500 | BUDT86-04500 | 4.500 | 3.875 | 4.000 | 4.125 | 4.250 | 4.375 | **4.500** | 4.625 | maximum pipe OD for die & jaw |
| | | | | | *3.375* | *3.500* | *3.625* | *3.750* | *3.875* | ***4.000*** | *4.125* | *minimum undersized condition* |
| 7 5/8 x 4 5/8 | CJDT76-04625 | 73014-04625 | BUDT86-04500 | 4.625 | 4.000 | 4.125 | 4.250 | 4.375 | 4.500 | **4.625** | 4.750 | maximum pipe OD for die & jaw |
| | | | | | *3.500* | *3.625* | *3.750* | *3.875* | *4.000* | ***4.125*** | *4.250* | *minimum undersized condition* |
| 7 5/8 x 4 3/4 | CJDT76-04750 | 73014-04750 | BUDT86-04750 | 4.750 | 4.125 | 4.250 | 4.375 | 4.500 | 4.625 | **4.750** | 4.875 | maximum pipe OD for die & jaw |
| | | | | | *3.625* | *3.750* | *3.875* | *4.000* | *4.125* | ***4.250*** | *4.375* | *minimum undersized condition* |
| 7 5/8 x 5 | CJDT76-05000 | 73014-05000 | BUDT86-05000 | 5.000 | 4.375 | 4.500 | 4.625 | 4.750 | 4.875 | **5.000** | 5.125 | maximum pipe OD for die & jaw |
| | | | | | *3.875* | *4.000* | *4.125* | *4.250* | *4.375* | ***4.500*** | *4.625* | *minimum undersized condition* |
| 7 5/8 x 5 1/4 | CJDT76-05250 | 73014-05250 | BUDT86-05250 | 5.250 | 4.625 | 4.750 | 4.875 | 5.000 | 5.125 | **5.250** | 5.375 | maximum pipe OD for die & jaw |
| | | | | | *4.125* | *4.250* | *4.375* | *4.500* | *4.625* | ***4.750*** | *4.875* | *minimum undersized condition* |
| 7 5/8 x 5 1/2 | CJDT76-05500 | 73014-05500 | BUDT86-XXXXX | 5.500 | 4.875 | 5.000 | 5.125 | 5.250 | 5.375 | **5.500** | 5.625 | maximum pipe OD for die & jaw |
| | | | | | *4.375* | *4.500* | *4.625* | *4.750* | *4.875* | ***5.000*** | *5.125* | *minimum undersized condition* |
| 7 5/8 x 6 1/4 | CJDT76-06250 | 73014-06250 | BUDT86-06250 | 6.250 | 5.625 | 5.750 | 5.875 | 6.000 | 6.125 | **6.250** | 6.375 | maximum pipe OD for die & jaw |
| | | | | | *5.125* | *5.250* | *5.375* | *5.500* | *5.625* | ***5.750*** | *5.875* | *minimum undersized condition* |
| 7 5/8 x 6 3/8 | CJDT76-06375 | 73014-06375 | BUDT86-06375 | 6.375 | 5.750 | 5.875 | 6.000 | 6.125 | 6.250 | **6.375** | 6.500 | maximum pipe OD for die & jaw |
| | | | | | *5.250* | *5.375* | *5.500* | *5.625* | *5.750* | ***5.875*** | *6.000* | *minimum undersized condition* |
| 7 5/8 x 6 1/2 | CJDT76-06500 | 73014-06500 | BUDT86-0650 | 6.500 | 5.875 | 6.000 | 6.125 | 6.250 | 6.375 | **6.500** | 6.625 | maximum pipe OD for die & jaw |
| | | | | | *5.375* | *5.500* | *5.625* | *5.750* | *5.875* | ***6.000*** | *6.125* | *minimum undersized condition* |
| 7 5/8 x 6 5/8 | CJDT76-06625 | 73014-06625 | BUDT86-06625 | 6.625 | 6.000 | 6.125 | 6.250 | 6.375 | 6.500 | **6.625** | 6.750 | maximum pipe OD for die & jaw |
| | | | | | *5.500* | *5.625* | *5.750* | *5.875* | *6.000* | ***6.125*** | *6.250* | *minimum undersized condition* |

## Gripping range, jaw, adapters and dovetail die inserts for CLINCHER® 7 5/8 and 8 5/8 Drillpipe Tong and 8 5/8 LOCKJAW™ Backup for Drillpipe

| Nominal Jaw and Dovetail Die Adapter Size | Jaw Assembly Part Number | dovetail jaw part number | dovetail die adapter part number | nominal jaw size | Jaw gripping range when dressed with1 1/4" wide x x.xx" long dovetail strip dies with thickness of: | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0.8125 | 0.75 | 0.6875 | 0.625 | 0.5625 | **0.5** | 0.4375 | *<<dovetail die thickness* |
| | assembly consists of two jaws c/w pins, rollers, dovetail dies and die retainers | | 3 dovetail die adapters required to dress backup | | undersized (use this size for emergencies only) | undersized | undersized | undersized | undersized | **STANDARD** | oversized (use this size for emergencies only) | *<<pipe application* |
| | | | | | | | | | | | | |
| 7 5/8 x 7 | CJDT76-07000 | 73014-07000 | BUDT86-07000 | 7.000 | 6.375 | 6.500 | 6.625 | 6.750 | 6.875 | **7.000** | 7.125 | maximum pipe OD for die & jaw |
| | | | | | *5.875* | *6.000* | *6.125* | *6.250* | *6.375* | ***6.500*** | *6.625* | *minimum undersized condition* |
| | | | | | | | | | | | | |
| 7 5/8 x 7 1/4 | CJDT76-07250 | 73014-07250 | BUDT86-07250 | 7.250 | 6.625 | 6.750 | 6.875 | 7.000 | 7.125 | **7.250** | 7.375 | maximum pipe OD for die & jaw |
| | | | see note 5 | | *6.125* | *6.250* | *6.375* | *6.500* | *6.625* | ***6.750*** | *6.875* | *minimum undersized condition* |
| | | | | | | | | | | | | |
| 7 5/8 x 7 1/2 | CJDT76-07500 | 73014-07500 | BUDT86-07500 | 7.500 | 6.875 | 7.000 | 7.125 | 7.250 | 7.375 | **7.500** | 7.625 | maximum pipe OD for die & jaw |
| | | | see note 5 | | *6.375* | *6.500* | *6.625* | *6.750* | *6.875* | ***7.000*** | *7.125* | *minimum undersized condition* |
| | | | | | | | | | | | | |
| 7 5/8 x 7 5/8 | CJDT76-07625 | 73014-07625 | BUDT86-07625 | 7.625 | 7.000 | 7.125 | 7.250 | 7.375 | 7.500 | **7.625** | 7.750 | maximum pipe OD for die & jaw |
| | | | see note 5 | | *6.500* | *6.625* | *6.750* | *6.875* | *7.000* | ***7.125*** | *7.250* | *minimum undersized condition* |
| | | | | | | | | | | | | |
| 7 5/8 x 7 13/16 | CJDT76-07812 | 73014-07812 | BUDT86-07812 | 7.812 | 7.187 | 7.312 | 7.437 | 7.562 | 7.687 | **7.812** | 7.937 | maximum pipe OD for die & jaw |
| | | | see note 4 & 5 | | *6.687* | *6.812* | *6.937* | *7.062* | *7.187* | ***7.312*** | *7.437* | *minimum undersized condition* |
| | | | | | | | | | | | | |
| 8 5/8 x 8 | CJDT86-08000 | 86014-08000 | BUCX8000 | 8.000 | 7.375 | 7.500 | 7.625 | 7.750 | 7.875 | **8.000** | 8.125 | maximum pipe OD for die & jaw |
| | | | see note 4 & 5 | | *6.875* | *7.000* | *7.125* | *7.250* | *7.375* | ***7.500*** | *7.625* | *minimum undersized condition* |
| | | | | | | | | | | | | |
| 8 5/8 x 8 5/8 | CJDT86-08625 | 86014-08625 | BUCX8625 | 8.625 | 8.000 | 8.125 | 8.250 | 8.375 | 8.500 | **8.625** | 8.750 | maximum pipe OD for die & jaw |
| | | | see note 4 & 6 | | *7.500* | *7.625* | *7.750* | *7.875* | *8.000* | ***8.125*** | *8.250* | *minimum undersized condition* |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| ***CLINCHER®** part number for 1 1/4" wide x 3 7/8" long straight toothed dovetail die inserts used in dovetail die adapters (2 pcs required per adapter or 6 pcs required per set of 3 adapters>>* | | | | | DTI1661 | DTI1651 | DTI1642 | DTI1632 | DTI1622 | **DTI1601** | DTI1612 | |
| ***CLINCHER®** part number for 1 1/4" wide x 3 7/8" long diamond toothed dovetail die inserts used in dovetail die adapters (2 pcs required per adapter or 6 pcs required per set of 3 adapters>>* | | | | | upon request | upon request | upon request | DTI1632D | DTI1622D | **DTI1601D** | upon request | |
| | | | | | | | | | | | | |
| ***CLINCHER®** part number for 1 1/4" wide x 5" long straight toothed dovetail die inserts used in dovetail jaw assembly (2 pcs required per jaw or 4 pcs required per jaw assembly>>* | | | | | DTI1664 | DTI1693 | DTI1646 | DTI1633 | DTI1623 | **DTI1602** | DTI1617 | |
| ***CLINCHER®** part number for 1 1/4" wide x 5" long diamond toothed dovetail die inserts used in dovetail jaw assembly (2 pcs required per jaw or 4 pcs required per jaw assembly>>* | | | | | upon request | upon request | upon request | upon request | DTI1623D | **DTI1602D** | DTI1617D | |

## Gripping range, jaw, adapters and dovetail die inserts for CLINCHER® 7 5/8 and 8 5/8 Drillpipe Tong and 8 5/8 LOCKJAW™ Backup for Drillpipe

| Nominal Jaw and Dovetail Die Adapter Size | Jaw Assembly Part Number | dovetail jaw part number | dovetail die adapter part number | nominal jaw size | Jaw gripping range when dressed with1 1/4" wide x x.xx" long dovetail strip dies with thickness of: | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0.8125 | 0.75 | 0.6875 | 0.625 | 0.5625 | **0.5** | 0.4375 | *<<dovetail die thickness* |
| | assembly consists of two jaws c/w pins, rollers, dovetail dies and die retainers | | 3 dovetail die adapters required to dress backup | | undersized (use this size for emergencies only) | undersized | undersized | undersized | undersized | **STANDARD** | oversized (use this size for emergencies only) | *<<pipe application* |

Note 1: CJDT86 series tong jaws may be used only in CLE8500DP 8 5/8 Drillpipe tongs.
Note 2: All CJDT76 series of jaws may be used in CLE7625 DP 7 5/8 Drillpipe tongs and in CLE8500DP 8 5/8 Drillpipe tongs.
Note 3: XXXXX indicates this size has not been designed at this time, but is available upon request.
Note 4: Dovetail die adapters are not available for the backup for applications where backup must grip tubulars larger than 8.25. For applications larger than 8.25, splined wrap around dies are required. These are available with full coverage fine teeth. Fine toothed wraparound dies are intended for use on properly sized tubulars. For undersized tubular applications, special dies may be ordered with two columns coarse teeth. These dies are similar in appearance to dovetail die adapters.
Note 5: Replace standard Top Retainer Clip PN CLE18522 with Die Retainer Clip PN CLE18522-01 for applications where tool joints are 7 1/4" - 8 1/4".
Note 6: Replace standard Top Retainer Clip PN CLE18522 with Die Retainer Clip PN CLE18522-02 for applications where tool joints are larger than 8 1/4" to our maximum limit of 8 7/8". This clip uses Splined Die Insert SDI86-XXXX dies.

## Splined jaws, splined die adapters and splined wraparound dies for CLINCHER® 8 5/8 Drillpipe Tong and 8 5/8 LOCKJAW™ Backup for Drillpipe for use on tubing and casing

| Nominal wraparound tong jaw and wraparound adapter size | Splined Jaw Assembly Number | splined jaw part number | splined jaw roller part number | splined jaw pin part number | top clip part number for tong jaws | bottom clip part number for tong jaws | available wraparound die series (two dies are required to dress tong jaws and three dies are required to dress backup for a total of five dies per tool - excludes any dies required for couplings) | | |
|---|---|---|---|---|---|---|---|---|---|
| | *assembly consists of two jaws c/w pins, rollers, clips and clip* | *two pcs reqd per set* | *two pcs reqd per set* | *two pcs reqd per set* | *eight pcs reqd per set* | *eight pcs reqd per set* | fine tooth steel dies for tong | **GRIT FACE™** dies for tong | non-marking aluminum dies for tong |
| 7 5/8 x 7 5/8 - 5 1/2 | CJ-76C | 76062 | 73012-01 | 73013-01 | 73064 | 73064 | BUC7625-nnnnn | BB7625-nnnnn | BUCA7625-nnnnn |
| | | | | | | | | | |
| 8 5/8 x 8 5/8 - 5 1/2 | CJ-86A | 86062 | 86012 | 86013 | 73064 | 73064 | BUC8625-nnnnn | BB8625-nnnnn | BUCA8625-nnnnn |
| | | | | | | | | | |
| 7 5/8 x 5 1/2 - 2 3/8 | CJ-LF-76D | 73063 | 73012 w/ Bushing 72025 & BUCS4027 | 73013 | 73064 | 73064 | BUC5500-nnnnn | BB5700-nnnnn | BUCA5500-nnnnn |
| | | | | | | | | | |
| 8 5/8 x 8 5/8 - 5 1/2 | CJ-LF-86B | 86092 | 73012 w/ Bushing 72025 & BUCS4027 | 73013 | 73064 | 73064 | BUC8625-nnnnn | BB8625-nnnnn | BUCA8625-nnnnn |
| | | | | | | | | | |
| | | | | | | | | | |
| **DIE ADAPTER** | | | | | | | fine tooth steel dies for backup | **GRIT FACE™** dies for backup | non-marking aluminum dies for backup |
| 8 5/8 x 8 5/8 - 5 1/2 | N/A | BUCA86-05500 | N/A | N/A | 73064 | 73064 | BUC5500-nnnnn | BB5700-nnnnn | BUCA5500-nnnnn |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

-nnnnn indicates size by be designated by replacing "nnnnn" sequence with size required (in inches) to three decimal places; i.e., 4.500 for 4 1/2" OD casing.

Note: **CLINCHER®** wraparound dies are machined to specific casing, tubing, coupling or accessory diameter. Additional dies must be orderd to match specific coupling diameters associated with accessories or special clearance premium tubular connections.

# ASSEMBLY INSTRUCTIONS

## FASTENER LUBRICATION AND MAKE UP TORQUE REQUIREMENTS

Most bolts, nuts, and other threaded components are to be lubricated with Never-Seez or equivalent before assembly. Certain fasteners are to be assembled using permanent or removable Loctite as indicated in the assembly instructions. All tapered pipe threads are to be treated with a Teflon based pipe dope to assist in makeup and prevent leakage.

**CAUTION:** Do not use teflon tape. Improper application of teflon tape can cause joint failures. Teflon tape can release large particles which can plug small passages in hydraulic equipment.

All standard fasteners used in **CLINCHER®** products are to be GRADE 8 or better. DO NOT SUBSTITUTE lessor grades of fasteners. All fasteners are to be made up to the torque charted below. Failure to properly assemble these fasteners can result in their loss, product malfunction, and ultimately result in situations where personnel can be exposed to dangerous situations.

| TONG FASTENERS | | |
|---|---|---|
| ***Size*** | ***Application*** | ***Torque*** |
| 1/4 - 20 NC | door switch mounting bolts | 10 ft lbs |
| 3/8 - 16 NC | tong plates, brake bands, brake guards, front followers, clip bolts, jaw bolts | 33 ft lbs |
| 1/2 - 13 NC | motor mounts, upper bearing caps | 93 ft lbs |
| 5/8 - 11 NC | top and bottom tong plates, lower bearing caps | 180 ft lbs |
| 3/4 - 10 NC | cage plate spacer bolts, locking pin, backup door bolts, hanger bolts | 317 ft lbs |
| 7/8 - 14 NF | cam follower | 512 ft lbs |
| 1 - 12 NF | dumbell roller, tong door jam nut | * |
| 1 1/2 - 12 NF | idler shaft | 1,200 ft lbs |
| 1 3/4 - 5 NC | short idler shaft | 2,200 ft lbs |

* Tighten until all slack is removed, but dumbell roller is still free to rotate by hand.

## LUBRICATION STANDARDS

Bearings and gears must be lubricated to minimize friction, cool, exclude foreign matter, and prevent corrosion. **CLINCHER®** recommends using Texaco Marfak MP 2 or equivalent for all grease zerts, roller bearings and bushings. Gears located within the clutch housing or between the tong plates are to be heavily lubricated using PLUSCO 855 or equivalent.

# ASSEMBLY INSTRUCTIONS

This section pertains to the physical assembly of the **CLINCHER®** CLE8625DP Drill Pipe Tong. Section 9 illustrates the individual sub assemblies in more detail. The purpose of this section is to guide the technician in the order of assembly as we would accomplish in the manufacturing process at our plant. Use this section as a guide to help you familiarize yourself with the component parts of the CLE8625DP. We have included drawings on the following pages to aid in the assembly. The drawings are laid out in the order in which you would assemble/disassemble the unit.

Order of Assembly:

1. Locate suitable working height. Approximately 6" above your waist. Tong Assembly Stands are available from Superior Manufacturing & Hydraulics, Inc. which are custom made for tong service work.
2. Install Bottom Tong Plate Assembly PN 86076, on Assembly Stand.
3. Bolt CLE8625DP Tong Mid Body Assembly PN 86075 to Bottom Tong Plate PN 86076, with (16) 5/8"-11 x 1 3/4" Bolt PN 1158, (16) 5/8" Lockwasher PN 1151, and (3) 5/8"-11 x 1" SHCS PN 1153.
4. Press Bearing PN 1905 into Secondary Gear Lower Pinion Bearing Cap PN 73085.
5. Install Secondary Gear Lower Pinion Bearing Cap Assembly onto Bottom Tong Plate Assembly PN 86076 using (4) 5/8"-11 x 1 1/4" SHCS PN 256 (use removable Loctite), and (2) 3/8"-16 x 1/2" Set Screws PN 1029 (use removable Loctite).
6. Press Bearing PN 1905 into Lower Pinion Bearing Cap PN 73085.
7. Install Pinion Gear Lower Pinion Bearing Cap Assembly onto Bottom Tong Plate Assembly PN 86076 using (4) 5/8"-11 x 1 1/4" SHCS PN 256 (use removable Loctite), and (2) 3/8"-16 x 1/2" Set Screws PN 1029 (use removable Loctite).
8. Dumbell Roller Assembly: *(17 Units Required, Including the one for Door Assembly)*
   a) Install (2) 1/8" NPT Zert PN 1001 on Dumbell Roller Shaft PN 55022-A.
   b) Install 1"-12 Low Profile Nylock Nut PN 1213 onto Dumbell Roller Shaft PN 55022-A.
   c) Press (1) Bearing PN 1910-B Outer Race into end of Dumbell Roller PN 73070.
   d) Press (1) Bearing PN 1910-B Outer Race into opposite end of Dumbell Roller PN 73070.
   e) Install Spacer PN 73071 into Dumbell Roller PN 73070.
   f) Install Dumbell Roller Seal PN 14070 and Dumbell Roller Spacer PN 2095, one on each end of Dumbell Roller Assembly.
   g) Make up (1) 1"-12 Nylock Nut PN 1213 on one end of each Dumbell Shaft PN 55022-A.

# ASSEMBLY INSTRUCTIONS

9. Idler Gear Assembly:
   a) Press (2) Bearings PN 1905 into Idler Gear PN 73077.
   b) Install (2) Bearing Shields PN 73027, one on each outer side of Bearings PN 1905 (for tools manufactured early only).
      Note: Bearing PN 1905 now has (2) Internal Shields so PN 73027 is no longer needed.
      Install (2) Internal Snap Rings PN 1926 in Idler Gear PN 73077.
   c) Press Idler Gear Assembly onto Short Idler Shaft PN 73089.
   d) Install External Snap Ring PN 1946 on Short Idler Shaft PN 73089.
   e) Install Idler Gear and Shaft Assembly into Tong using (5) 3/4"-10 x 2 1/4" HHCS PN 1174 with (5) 3/4" Lockwasher PN 1171, and (1) 3/4"-10 x 1 3/4" SHCS PN 1271 with (1) 3/4" Hi Collar Lockwasher PN 1170-A. Bolt Short Idler Shaft PN 73089 with 1 3/4" Lockwasher PN 73056 and 1 3/4"-5 Nut PN 73055.
   f) Install 1/8" NPT Zert PN 1001 (Model CLE8625DP-03) or 65° Zert PN 1236 (Model CLE8625DP-05) at end of Short Idler Shaft PN 73089.
10. Outboard Idler Gear Assembly: *(2 Units Required)*
   a) Press (2) Bearings PN 1905 into Idler Gear PN 73077.
   b) Install (2) Bearing Shields PN 73027, one on each outer side of Bearing PN 1905 (for tools manufactured early only).
      Note: Bearing PN 1905 now has (2) Internal Shields so PN 73027 is no longer needed.
      Install (2) Internal Snap Rings PN 1926 in Idler Gear PN 73077.
   c) Press Idler Gear Assembly onto Outboard Idler Shaft PN 73078.
   d) Install large end of Shaft Assembly and Idler Gear PN 73077 into Bottom Tong Plate Assembly PN 86076 with 1 1/2"-12 Nut PN 1222 and 1 1/2" Lockwasher PN 1223.
   e) Install 65° Zert PN 1236 (Model CLE8625DP-05 only) in bottom of Idler Shaft PN 73078. Install 1/8" NPT Zert PN 1001 at other end of Idler Shaft.
      Note: Outboard Idler Spacer PN 73088 is placed on Outboard Idler Shaft Assembly when it is bolted onto Top Tong Plate Assembly using 1 1/2" Lockwasher PN 1223 and 1 1/2"-12 Nut PN 1222.
11. Install Ring Gear PN 86001 into Tong Body making sure teeth in Outboard Idler Gears PN 73077 align with teeth in Ring Gear.
12. Install (17) Dumbell Roller Assemblies around Ring Gear PN 86001 making sure holes in Dumbell Roller Assemblies match up to holes in Bottom Tong Plate Assembly PN 86076.
    Hint: Temporarily install Dumbell Roller Shafts thru Dumbell Roller Assembly and Bottom Tong Plate to control position.
13. Install Pinion Gear PN 73082-02 into Bearing PN 1905 which was previously installed into Pinion Gear Lower Pinion Bearing Cap PN 73085. Install Low Pinion Gear PN 73079-01 onto Pinion Gear PN 73082-02.

# ASSEMBLY INSTRUCTIONS

14. Install Secondary Input Gear PN 73080-01 (Model CLE8625DP-03) or PN 73080-02 (Model CLE8625DP-05) into Bearing PN 1905, which was previously installed into Secondary Gear Lower Pinion Bearing Cap PN 73085.
15. Install Top Tong Plate Assembly PN 86074 (Model CLE8625DP-03) or PN 86074-02 (Model CLE8625DP-05) onto Mid Body Assembly PN 86075 using (16) 5/8"-11 x 1 3/4" Bolts PN 1158 with (16) 5/8" Lockwashers PN 1151, and (3) 5/8"-11 x 1" SHCS PN 1153.
16. Pinion Gear Assembly:
    a) Press Bearing PN 1905 into Mid Pinion Bearing Retainer PN 73074-S2 (welded onto Top Tong Plate).
    b) Install Lower High Gear Spacer PN 73092 onto Pinion Gear PN 73082-02.
    c) Install High Gear PN 73081-01 onto Pinion Gear PN 73082-02.
    d) Install Upper High Gear Spacer PN 73093 onto Pinion Gear PN 73082-02.
17. Secondary Gear Assembly:
    a) Press Bearing PN 1905 into Mid Pinion Bearing Retainer PN 73074-S2 (welded onto Top Tong Plate).
    b) Install Upper Low Pinion Gear Lower Spacer PN 73097 (Model CLE8625DP-03) or PN 73097-01 (Model CLE8625DP-05) onto Secondary Input Gear PN 73080-01 (Model CLE8625DP-03) or PN 73080-02 (Model CLE8625DP-05).
    c) Install Upper Low Pinion Gear PN 73083-01 onto Secondary Input Gear.
    d) Install Upper Low Pinion Gear Upper Spacer PN 73098 onto Secondary Input Gear.
18. Insert Dumbell Roller Shafts with Nylock Nut through Bottom Tong Plate Assembly, through Dumbell Roller Assemblies, and finally through Top Tong Plate Assembly. After installing Dumbell Roller Shafts through Top Tong Plate fasten with 1"-12 Nylock Nut PN 1213.
    **WARNING:** Insert Dumbell Roller Spacers and correctly position.
19. High Gear Idler Assembly:
    a) Press (2) Bearing PN 1909 (Model CLE8625DP-03) or PN 1920 (Model CLE8625DP-05) into High Gear Idler PN 55123 (Model CLE8625DP-03) or PN 55123-03 (Model CLE8625DP-05).
    b) Install Ext. Snap Ring PN 1950 into High Gear Idler.
    c) Install High Gear Idler Assembly onto High Gear Idler Shaft PN 55124 (Model CLE8625DP-03) or PN 55124-01 (Model CLE8625DP-05) (welded onto Top Tong Plate).
    d) Install Internal Snap Ring PN 1949 onto High Gear Idler Shaft.
20. Press Bearing PN 1901 into Bearing Retainer PN 55063-S4 (welded onto Top Tong Plate) for Motor Shaft PN 73040 (Model CLE8625DP-03) or PN 73040-01 (Model CLE8625DP-05), then install Internal Snap Ring PN 1948 into groove of Bearing Retainer.

# ASSEMBLY INSTRUCTIONS

21. Install Gear Box Housing Assembly PN 73090 (Model CLE8625DP-03) or PN 73090-01 (Model CLE8625DP-05) onto Top Tong Plate Assembly PN 86074 (Model CLE8625DP-03) or PN 86074-02 (Model CLE8625DP-05) using (4) 3/8"-16 x 4" SHCS PN 243. Install Gear Box Cover PN 73091 with (10) 3/8"-16 x 4 1/2" Bolt PN 1075 and (10) 3/8" Lockwasher PN 1027.

22. Upper Pinion Bearing Cap Assembly:

    a) Press Bearing PN 1909 into Upper Pinion Bearing Cap PN 73066 (Model CLE8625DP-03) or PN 73066-01 (Model CLE8625DP-05).

    b) Install 1/8" NPT Zert PN 1001 into Upper Pinion Bearing Cap.

    c) Install Upper Pinion Bearing Cap Assembly onto Pinion Gear PN 73082-02 and attach to Gear Box Cover PN 73091 using (3) 1/2"-13 x 1" Bolts PN 1110 with (3) 1/2" Lockwashers PN 1103.

23. Secondary Bearing Cap Assembly:

    a) Press Bearing PN 1901 into Top Secondary Bearing Cap PN 55143.

    b) Install (4) 3/8"-16 x 1/2" Set Screw PN 1029 (using removable Loctite) into Top Secondary Bearing Cap PN 55143. Do not over-tighten. Back off 1/8 turn after contacting Bearing.

    c) Install (1) 1" NPT Flush Plug PN 1611 (replaces 1/8" NPT Flush Plug PN 1607) into Top Secondary Bearing Cap PN 55143.

    d) Install Top Secondary Bearing Cap Assembly onto Secondary Input Gear PN 73080-01 (Model CLE8625DP-03) or PN 73080-02 (Model CLE8625DP-05) and attach to Gear Box Cover PN 73091 using (3) 1/2"-13 x 1" Bolt PN 1110 with (3) 1/2" Lockwasher PN 1103.

24. Shifting Gear/Detent Assembly:

    Install Drive Gear PN 55084 over Motor Shaft PN 73040 (Model CLE8625DP-03) or PN 73040-01 (Model CLE8625DP-05). Install Steel Ball PN 1906 and Detent Spring PN A20-A1327135. Apply permanent Loctite to (1) 3/8"-16 x 1/4" Set Screw PN 1028. Install Set Screw in Drive Gear PN 55084, tighten Set Screw until good detent action is achieved. Proper adjustment is confirmed when resistance is encountered when shifting gear across detent groove on shaft.

25. Install Motor Assembly PN 73099 with Motor Shaft PN 73040 (Model CLE8625DP-03) or PN 73040-01 (Model CLE8625DP-05), Polypack Seal PN 12501437, and Seal Retainer PN 55088 in Motor Box Housing using (4) 1/2"-13 x 1 1/4" Bolt PN 1111 and (4) 1/2" Lockwasher PN 1103.

26. A) Shift Assembly: *(1st Generation)*

    Install Drive Gear PN 55084 and Motor Shaft Bearing Spacer PN 55121 with Shifting Shaft Assembly PN 45060, Shifting Yoke Assembly PN 45061, Washer PN 45068, (1) 3/16" x 1" Roll Pin PN 1006 in Shifting Box Weldment.

    *Note:* For Tongs manufactured 11/2000 and after, Shifting Shaft Assembly PN 45060 and Shifting Yoke Assembly PN 45061 are replaced with Shift Assembly PN 45091.

# ASSEMBLY INSTRUCTIONS

B) Shift Assembly: *(2nd Generation)*

Install Split Self-Lubricating Flange Bearing PN 45106 onto Shifter Shaft PN 45143. Install Drive Gear PN 55084 and Motor Shaft Bearing Spacer PN 55121 in Shifting Box PN 55076-S1 with Shifter Shaft Assembly and Shifting Yoke Assembly PN 45072. Install Self-Lubricating Flange Bearing PN 45092 onto Shifter Shaft Assembly using 3/8" Flatwasher, 3/8" Lockwasher PN 1027, and 3/8"-16 x 3/4" HHCS PN 1046. Install Handle Ball PN 55071 onto Straight Yoke Handle PN 45142 using 3/8"-16 x 1 1/4" Set Screw PN 1040. Install Handle Assembly onto Shifter Shaft Assembly using 3/8" Flatwasher, 3/8" Lockwasher PN 1027, and 3/8"-16 x 3/4" HHCS PN 1046.

27. Install A-35 Valve Sections with plumbing on Motor Assembly PN 73099.
28. Cage Plate Assemblies:
    a) Install (21) Cam Follower PN SSCF1875 in Top Cage Plate PN 86003 with (21) 1/4" Drive Zert PN 1257, (21) 7/8"-14 Jam Nut PN 1178, and (21) 7/8" Lockwasher PN 1224.
    b) Install (21) Cam Follower PN SSCF1875 in Bottom Cage Plate PN 86004 with (21) 1/4" Drive Zert PN 1257, (21) 7/8"-14 Jam Nut PN 1178, and (21) 7/8" Lockwasher PN 1224.
    c) Fit Top Cage Plate Cam Followers into Ring Gear groove. Use crane to raise Bottom Cage Plate and fit Bottom Cage Plate Cam Followers into Ring Gear groove. Install (5) Cage Plate Spacers PN 73022 using (4) 3/4"-10 x 7" SHCS PN 1247 and (1) 3/4"-10 x 11" SHCS (modified) PN 73020 (Locking Pin Bolt, see step 29 b).
29. Locking Pin Assembly:
    a) Install Locking Pin Bracket PN 73019-01 onto Top Cage Plate PN 86003 using Locking Pin PN 73018 and Flutted Knob PN DK-28.
    b) Install Locking Pin Bolt PN 73020 through Locking Pin Bracket PN 73019-01, then Top Cage Plate PN 86003, using 3/4" Nut PN 1176-A with 3/4" Lockwasher PN 1171, into Cage Plate Spacer PN 73022 (installed in previous step).
30. Door Assembly and Door Installation:
    a) Press Garlock Bushing PN 2021 in top and bottom of Tong Door Assembly PN 86006.
    b) Install 1/8" NPT Zert PN 1001 in Door Shaft PN 73110.
    c) Install 1"-12 Jam Nut PN 1214 on Door Shaft PN 73110.
    d) Mount Tong Door on Tong.
    e) Install Dumbell Thrust Washer PN 45057 between the Top Door Plate and Tong Body.
    f) Slide Tong Door Inner Race PN 1954-A onto Door Shaft Assembly.
    g) Install Tong Door Shaft through Bottom Door Plate, Bottom Tong Plate, Dumbell Roller Assembly, Top Tong Plate, Top Thrust Washer, Top Door Plate, and Top Inner Race.
    h) Slide additional Tong Door Inner Race PN 1954-A onto Tong Door Shaft Assembly.
    i) Install 1/8" NPT Zert PN 1001 in Door Shaft Assembly.

# ASSEMBLY INSTRUCTIONS

j) Install 1"-12 Jam Nut PN 1214 onto Tong Door Shaft Assembly.

k) Install Door Switch Adjustment Sleeve PN 76131 onto top of Door.
Note: Collar is cut with weld bevel and is to be welded to top of Tong Door.

l) Install (2) 3/8"-16 x 1/2" Set Screws PN 1029 (use removable Loctite) on Door Switch Adjustment Sleeve.

31. Door Limiter Switch:

a) Mount Door Switch Assembly PN SLV1000-01 on Door Switch Base Weldment PN 76128 with (4) 1/4"-20 x 2 1/4" Bolt PN 110, and (4) 1/4"-20 Nylock Nut PN 212.

b) Mount Assembly to (2) Door Switch Base Mount PN 45067-S7 (Base Mounts should be welded to Top Tong Plate) with (2) 3/8"-16 x 1" Bolt PN 1047 and (2) 3/8" Lockwasher PN 1027.

32. Door Switch Adjustment Instructions:

a) Loosen 3/8"-16 x 1/2" Set Screws PN 1029 to align recess in Door Switch Adjustment Sleeve PN 76131 with Roller on Door Switch PN SLV1000-01. Tighten Set Screws PN 1029.

b) Loosen 1/4"-20 Nylock Nuts PN 212 and slide Door Switch PN SLV1000-01 forward until fully seated in recess in Door Switch Adjustment Sleeve PN 76131. Tighten Nylock Nuts PN 212.

c) Connect Tong to Power Unit and actuate motor while in low gear. Verify Ring Gear stops rotating when Tong Door is opened.

# OPERATION

## Suspension

A) Tong should be hung by minimum 7/8" 1 WRC minimum O.D. wire cable with a 31 ton minimum breaking strength. It should be hung as close to the center of the drill rotary without interfering with operation of drill string and lifting equipment. It is recommended the operator make use of the **CLINCHER®** Lift Cylinder. The **CLINCHER®** Lift Cylinder incorporates a hydraulic cylinder and manual lift spring. The hydraulic cylinder portion is used to assist in the raising and lowering of the tong and backup while the spring allows for movement during make-up and break-out.

**WARNING: The suspension system must allow the tong to easily move down a distance equivalent to the thread make-up length. If significant resistance is encountered the suspension system may be subject to load which could cause its failure, damage equipment, or expose personnel to severe or fatal hazards.**

B) Assure that the tong is suspended in level manner. Both tong and backup must be level at the point they contact the tubular. Using adjustment screws and slots in rigid hanger assembly, adjust tong so that it hangs level on horizontal axis and is parallel to tubular on vertical axis. If using 3 point bridle, use turnbuckles to adjust tong so it hangs level.

C) Make certain that floor space is adequate to maneuver tong on and off pipe. The space must be clear of obstructions to allow safe and unrestricted operation.

D) Attach 1 1/2" 1 WRC minimum wire cable with a 89 ton minimum breaking strength as a tong back up line at 90 degree angle to tong and at the same level to insure proper readout of torque indicator. You should always have snubbing line attached. Use of a integral hydraulic backup is safer than manual backup, but operators should maintain additional safety of snubbing line to prevent injury in case of hydraulic failure or the failure of operator to have backup properly applied to tubular. This equipment generates extreme torque and should be used with caution.

## Jaw and Wrap Around Die Installation

A) Be sure all power to unit is off, and power unit is shut down. Disconnect hydraulic hoses.

B) Determine O.D. of tubular to be made-up or broken-out. Use proper dies to bite O.D. of tubular and insert as follows: Remove jaw assembly from tong. Remove upper die retainer clips. Insert die into jaw. Reinstall clips and clip retainer bolts. Reinstall jaws into cage plates, install pivot pins and reattach springs.

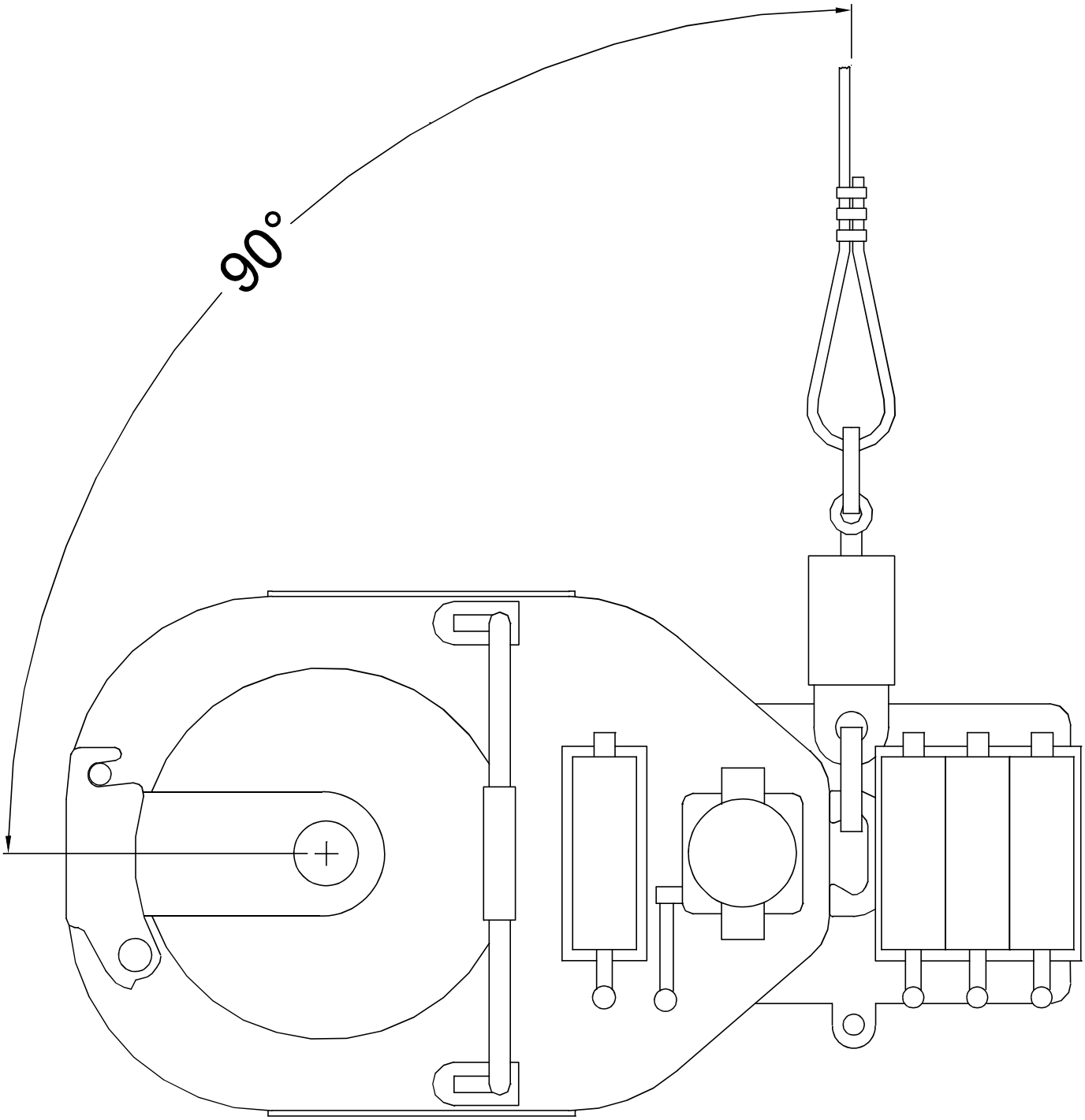
# OPERATION

## Hydraulic Lines

A) Be sure all power to unit is off, and power unit is shut down.

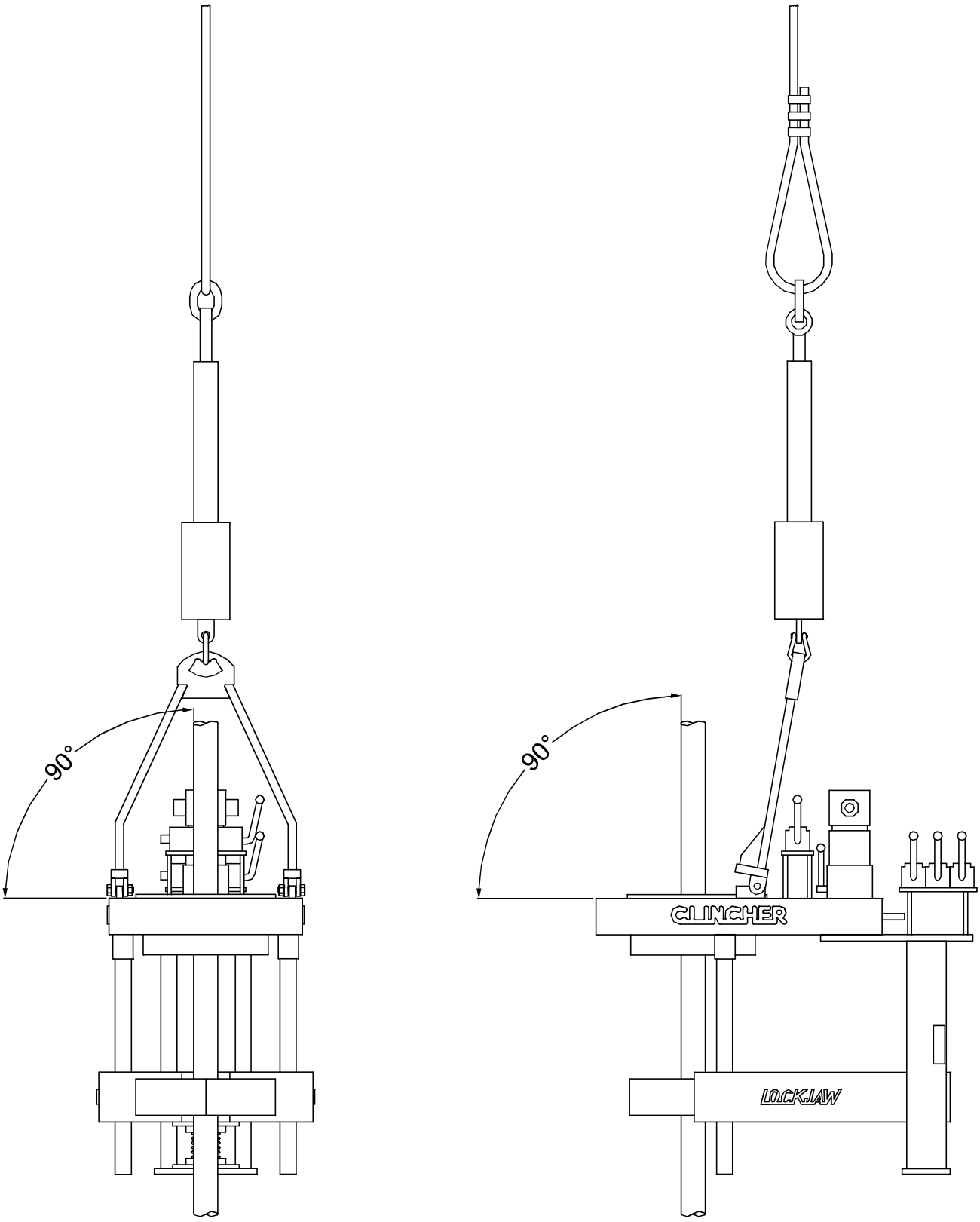
B) Always inspect hoses prior to installation for abrasions, kinks, and other visible damage.

C) Install hydraulic supply hose and hydraulic return hose between tong and hydraulic power unit. Be advised that the standard installation on **CLINCHER®** Tong calls for 1" Hydraulic Supply hose and 1-1/4" Hydraulic Return hose. The differing hoses eliminates the possibility of attaching the wrong hose to the wrong outlet while at the same time reducing back pressure in your hydraulic system.




## TYPICAL SNUB LINE INSTALLATION

NOTE: SNUB LINE IS PERPENDICULAR
TO AXIS OF TONG




## TYPICAL TONG INSTALLATION

NOTE: TONG IS PERPENDICULAR
TO TUBING

# OPERATION

## Tong Operation

A. Insure proper dies are installed. Connect hydraulic hoses, verify reservoir is full of hydraulic fluid and insure suction valve is open.

B. Open bypass valve to hydraulic system, then check to make sure all hose connections are secure and hydraulic system is free of leaks.

C. Be certain door is completely closed before operation to insure safe operation. The **CLINCHER®** CLE8625DP is equipped with a door switch, which prevents operation of the tong when door is even partially open.

D. Use power unit to start up procedure as outlined in your owners manual supplied by the manufacturer.

E. In the event hoses are not tightened securely, possible failures to hydraulic system can occur.

   1) If pressure supply hoses are restricted or flow is blocked, pressure will increase in the hydraulic power unit, resulting in increased RPM in the power unit.

   2) If return line hoses are restricted or flow is blocked, pressure will increase in the hydraulic power unit and the hydraulic system to the tong itself, resulting in the tong motor increasing to maximum pressure and possible motor seal failure.

F. After completion of A through E restart the power unit and allow engine to idle for approximately 10 minutes. Slowly close bypass valve to allow circulation of hydraulic oil through tong and hoses. Place shifting lever into low and rotate several times. Repeat in reverse. If correct jaw-die combination is installed, the unit is now ready to run pipe.

G. Adjust height of tong and backup to proper height, using the control valve located all the way to the right of rear valve bank assembly.

H. Stand in the normal operators position, insert the locking pin into the rear cage plate hole (on operators side). This pin allows ring gear to rotate clockwise (make-up) and engage the can to close jaws on pipe.

I. Swing tong and backup onto tubing, making sure to align tubing on rear jaw of backup. Close backup jaws by pushing middle control lever forward. The design of the **CLINCHER® LOCKJAW™** Backup centers pipe in the backup and tong. Close tong door.

J. Rotate ring gear clockwise by pushing motor control lever on the front valve bank assembly forward until jaws lock on pipe and continue to rotate until desired amount or torque is applied.

K. After correct amount of torque specific to that connection has been applied, release tong jaws by pulling back on motor control lever until jaws release and throat in cage plate is aligned with door opening. Open door.

L. Release backup by pulling back on right control lever on rear valve bank assembly until backup jaws are completely retracted.

M. High and low gear is adjusted by use of shifting lever PN 45060, located to the left side of the shifting housing. With the lever in the upwards position the tong is in high gear. With the shifting lever in the downward position, the tong is in low gear.

# OPERATION

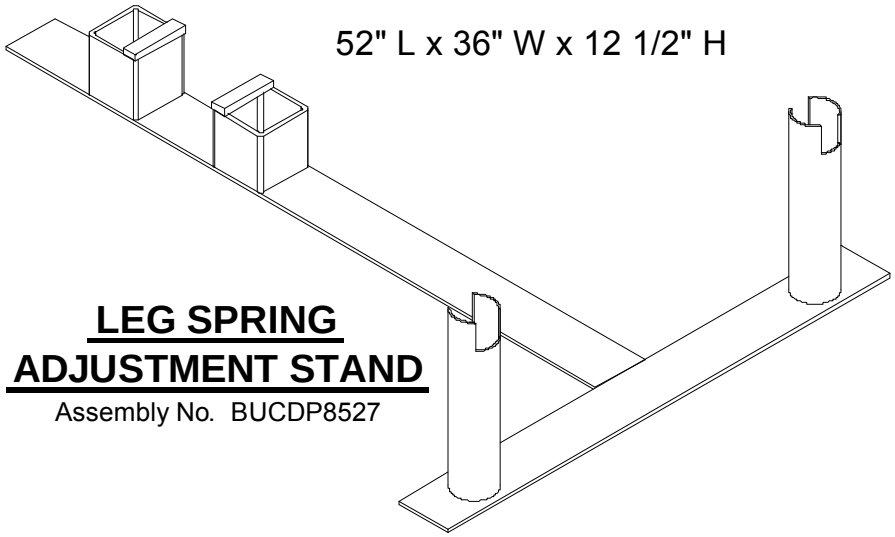
## Backup Leg Spring Adjustment Stand

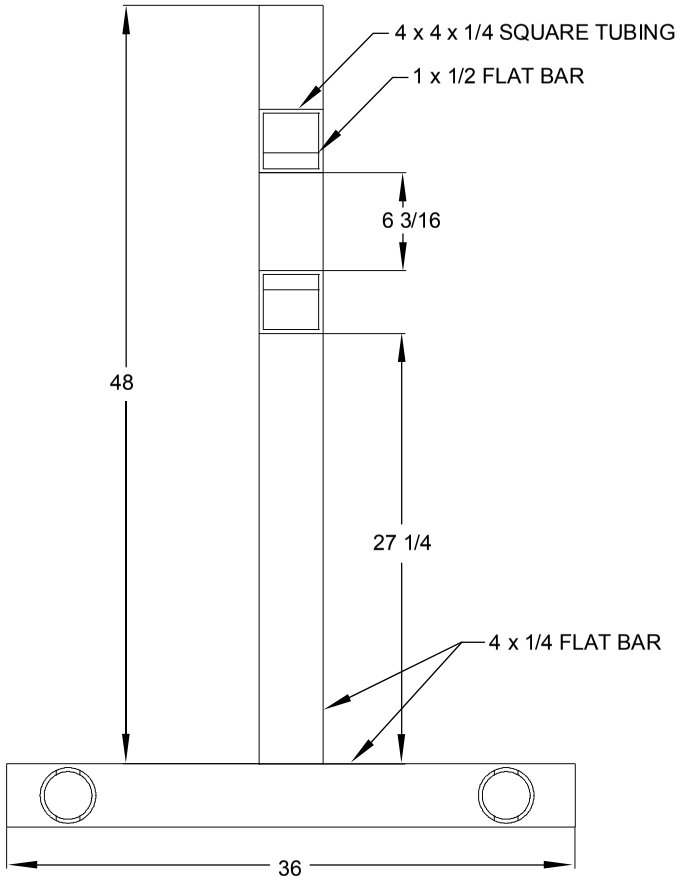
The backup may be pinned in the upper position for drillpipe applications, or in the lower position for coupled tubulars. The backup is pinned in the upper or close position for making-up or breaking-out drillpipe connections.

"Pinning" adjusts the position of the front leg springs and the rear hanger spring which controls the spacing between the tong and backup. During make-up operations, the tong will move down to accommodate the thread lead which relaxes these three springs as it compresses the spring in the lift cylinder. The tong can move downward approximately 2 1/2" before bottoming out on the backup's stops. Should you encounter some unusual down hole tool which has an extremely long thread, it may be necessary to open and then close the tong jaws to "get another bite" before completing the make-up cycle. Failure to consider extra long lead connections my cause significant axial forces to be developed which could damage the die retainers.

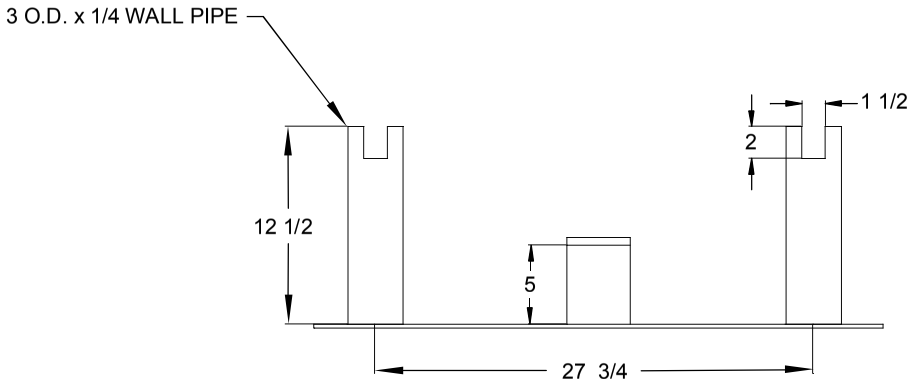
During break-out operations, the tong will move up while compressing the three leg springs as the lift cylinder's spring relaxes. The operator can further compensate for extremely long thread during break-out by opening and closing the jaws and/or by lifting the tong by means of the lift cylinder.

Should you find it necessary to adjust the tong and backup spacing or remove the backup from beneath the tong, you will need some basic hand tools and a simple stand. The illustration below provides basic dimensions for such a stand. While these devices can be supplied by Superior Manufacturing & Hydraulics, some clients might prefer to have a local welder manufacture these stands in a manner which best suits their needs. Some of our clients have had us incorporate these stands into a combination storage and shipping skid as show in the illustration on page 8 - 3 of this Technical Manual. Page 8 - 4 provides the tong "foot print" dimensions.






TOP VIEW




FRONT VIEW

# LEG SPRING ADJUSTMENT STAND DIMENSIONS

Assembly No. BUCDP8527

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 01/28/02 |
|---|---|---|
| REV. # | LOG # | DATE |

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# PRODUCT BULLETIN

**SUBJECT:** REVISION TO 2" JAW PIN (P/N 73013-01) AND ROLLER (P/N 73012-01) FOR CLE7625DP AND CLE8625DP TONGS

**DATE:** July 3, 2002

**BULLETIN NO.:** SPB02-07-03

**REFERENCE:** 7 5/8" AND 8 5/8" DRILL PIPE TONG MANUALS – SECTION 6 / MAINTENANCE

We will be using improved materials as the standard material for all 7 5/8 & 8 5/8 dovetail jaw applications regardless of jaw size or tong torque rating.

These pins and rollers should be lubricated with "neverseez" or equivalent antigalling lubricant. *NOTE:* Neverseez may not be used with low friction jaw pins and rollers. Low friction jaws and rollers are to be lubricated with a high quality bearing grease.

To simplify implementation of these changes, the part numbers will remain the same, however the revised pins and rollers will be stamped with "X" (short for XHT) to simplify identification and the latest revision level. For the pins, this rev level will be "3" or greater. The pin may also be differentiated from the earlier rev levels by its black color. For the roller, the rev level for the new material will be "4" or greater.

With 85,000 ft/lb tongs, any application requiring torques in excess of 60,000 ft/lbs will require the use of these new pins.

4225 Highway 90, East
Broussard, Louisiana 70518
Phone: (337) 837-8847
Fax: (337) 837-8839
www.superior-manf.com

# MAINTENANCE

**CLINCHER®** recommends that owners of **CLINCHER®** Hydraulic Power Tongs, Backups, **CHROMEMASTER™**s, and accessories adapt a regularly scheduled maintenance program. Implementation of this type of program offers several benefits. First you increase the life of your equipment, secondly, you may find a problem before it escalates to a costly repair or down time on the job, and most important, prevent injury to operating personnel.

A major inspection (described at the end of this section) should be carried out if equipment is suspected to have been damaged during transit or is to be mobilized to a remote location where maintenance operations are difficult to carry out.

## Routine Maintenance

Cleaning - Upon return from each and every job:

A) Pre-wash unit to remove majority of dirt and grease build up as to allow removal of dies, and inspection of overall condition of unit.

B) Remove and inspect dies from tong and backup. Note any missing or damaged die retainers, and/or die retainer bolts.

C) Remove side jaws from tong and inspect side jaw for missing or broken parts, damaged splines, broken ears (locking hooks on front portion of side jaws).

D) Clean and inspect side jaws, jaw pins, jaw rollers for damage or excessive wear. Lubricate pins and rollers, and reinstall in tong.

E) Remove, clean (in non-flammable solvent), and inspect back jaws in tong.

F) Check jaw pins for breakage, cracks, and uneven wear patterns. Inspect jaw rollers for cracks, breakage, and flat spots.

G) Reassemble jaw sections replacing any damaged parts. Lubricate jaw pins and rollers using gear grease. Set aside for testing.

H) Clean and inspect backup operating cylinder. Insure spline area is free from damage and any rust or dirt is removed. Replace any missing or damaged die retainer clips and die retainer bolts.

I) Inspect hanger and all hoses for wear, replace as necessary.

J) Inspect hanger assembly to assure all parts are returned and in operating condition. (*i.e.* H-Plates, spring, leg springs, leg spring caps and pins)

K) Replace jaw pins and rollers in tong.

L) Lubricate tong's cam followers (upper and lower), dumbell roller shafts (upper and lower zerts), door shaft, center idler gear shaft, outboard idler gear shafts (3), pinion gear and secondary gear assemblies (Pinion gear and secondary gear assemblies are installed with sealed bearings. There are no provisions to grease these bearings. However, if replaced by non-sealed bearings, the 1/8" NPT flush plugs should be replaced with zerts PN 1001 and both gear assemblies should be added to the regular lubrication schedule.), low gear housing, and shift housing (2 zerts each), and re-pack tong body cavity. Lubricate zerts in backup plates and pins.

# MAINTENANCE

M) Install dies of a size needed for testing purposes, and attach hydraulic power unit to tong. Before energizing power unit make certain no one is working on tong or backup and all tools and parts are removed from the tong and backup.

N) Insert test mandrel of the exact same size as the dies which are installed in the tong and backup.

**Caution:** Testing the function of the backup without the proper size dies installed and/or without the proper size mandrel in place, you risk serious damage to the backup cylinder.

O) After power unit has reached operating RPM and temperature, operate the backup control valve and close backup around test mandrel using sufficient flow and pressure to clamp mandrel and maintain pressure to backup. (Recommended operating pressure of 2,500 psi.) Backup pressure gauge should match system operating pressure. After release of control valve you may experience a slight drop in backup pressure (up to 300 psi), this is normal. If backup pressure drops more than 300 psi within 2 minutes, you may be experiencing a hydraulic leak.

P) While maintaining pressure on backup visually inspect hoses, stainless steel lines, fittings, etc., for seepage of hydraulic fluid. Repair or replace parts causing leaks. If you see no visible external leaks and your backup is still losing pressure, there may be an internal leak in the operating cylinder or load holding valve allowing fluid to bypass the piston. It is recommended that the backup be returned to the manufacturer for repair.

Q) If at this time your backup is functioning correctly, open and close unit several times to insure consistent operation.

R) With the proper dies installed in the tong and backup, and test mandrel locked in the backup, place reversing pin into the make-up position, set tong into low gear and operate tong through several cycles of locking, biting, and torqueing to required torque. Change reversing pin to break-out position and repeat. Repeat same procedure in high gear.

Note: Torque developed in high gear is considerably less than torque developed in low gear.

S) Test door interlock system by opening door slightly with tong rotating. (Remove test mandrel for this procedure.) The tongs rotation should stop. If tong rotation fails to stop, close door, cease rotation, deactivate power unit, and inspect door interlock switch for damage. Insure that adjustment collar is oriented to allow wheel of door switch to fit into recess on collar.

**Warning:** If door switch system is not functioning properly tong must not be used.

T) Reinspect tong and backup hydraulic system for leaks.

U) If at this time the unit is functioning as intended, replace all covers and grease splines in tong and backup (side jaws and back jaws), tape or grease spools on control valves (to prevent paint from adhering to polished spool surface), prime and paint unit for storage.

# MAINTENANCE

## Recommended Lubrication Schedule Performed after Completion of Each Job

## Hydraulic Tong

A) Cam followers: upper and lower (all)
B) Dumbell roller shafts: upper and lower (all)
C) Door shaft
D) Center idler shaft
E) Outboard idler shaft (3)
F) Low gear housing (2 zerts)
G) Shift housing (2 zerts)
H) Re-pack tong cavity
I) Pinion and secondary gear shafts (if sealed bearings have been replaced by non-sealed bearings)
J) Jaw rollers and pins. Remove jaw pins and rollers, clean and lubricate with gear grease.
K) Inspect hydraulic fluid for foreign material and contaminants. Filter or replace. You must filter or replace entire system including power unit tank and lines along with tong and backup to insure all contaminants are removed.

## Annual Major Maintenance

## Inspection and Repair

Routine preventative maintenance will significantly extend the operating life of your equipment, reduce operating cost and avoid downtime. **CLINCHER®** recommends a program of frequent routine inspection, and if equipment is suspected to have been damaged during transit or is to be mobilized to a remote location where maintenance operations are difficult to carry out, perform the following:

A) Visually inspect components on power tong or backup which could possibly have been damaged either during operation or transit. *i.e.* Damage to hanger assembly, hydraulic backup, mounting legs, or hydraulic valve assembly.

B) Check test date. Ensure that a load test and inspection was carried out within the last 9 months.

C) Check ring gear. Check for any signs of damage or wear.

D) Remove motor and valve assembly from tong body.

E) Check motor seal. Apply hydraulic power, run motor and visually check motor seal for any signs of leakage.

F) Check drive gear, high and low pinion gears. Check for excessive sign of wear on motor gear.

G) Check condition of control valve spools. Activate valves and check for any sign of wear, pitting, or scoring of the chrome surface of spools. If spool is damaged in any way, the complete section must be changed out. Spools are not interchangeable.

# MAINTENANCE

H) Check gear selector and shaft. Visually inspect shifting shaft for alignment and straightness.

I) Check Hi/Low Gear assembly. Visually inspect high and low clutch and gears for any sign of chipped, broken, or worn teeth.

J) Check dumbell rollers, shafts, and bushings. Check for excess movement on either bearings, bushings, shafts, or dumbells.

K) Check idler gears and center pinion shaft gears and bearings. Check that there are no signs of worn, chipped, or broken teeth on idler and center pinion shaft gears.

L) Check door bearings. Visually check excess movement on bearings at door assembly. If excess movement is found door must be removed making careful note of bearing washer positions for reassembly.

M) Check door switch system. Visually check that door switch valve has sufficient strength to hold door in closed position. If this is not the case, then repairs are required.

N) Check door safety device. Functionally check tong door safety switch. Engage low gear, open tong door and push rotor control lever forward as if to rotate rotor. If safety device is operational then the rotor will not rotate.

O) Check lifting hanger test date. Check lifting hanger for damage. Ensure that a load test and inspection was carried out within the last 9 months.

P) Check condition of all hydraulic hoses and fittings. Visually inspect all hydraulic hoses fitted to the tong and in the backup for any signs of leaks, cuts, or wear.

Q) Reinstall all parts which were removed for inspection and/or damage. Connect to hydraulic power supply and function test operation of tong in high, low, forward, and reverse. Torque test utilizing appropriate dies and test mandrel. Test operation of lift cylinder.

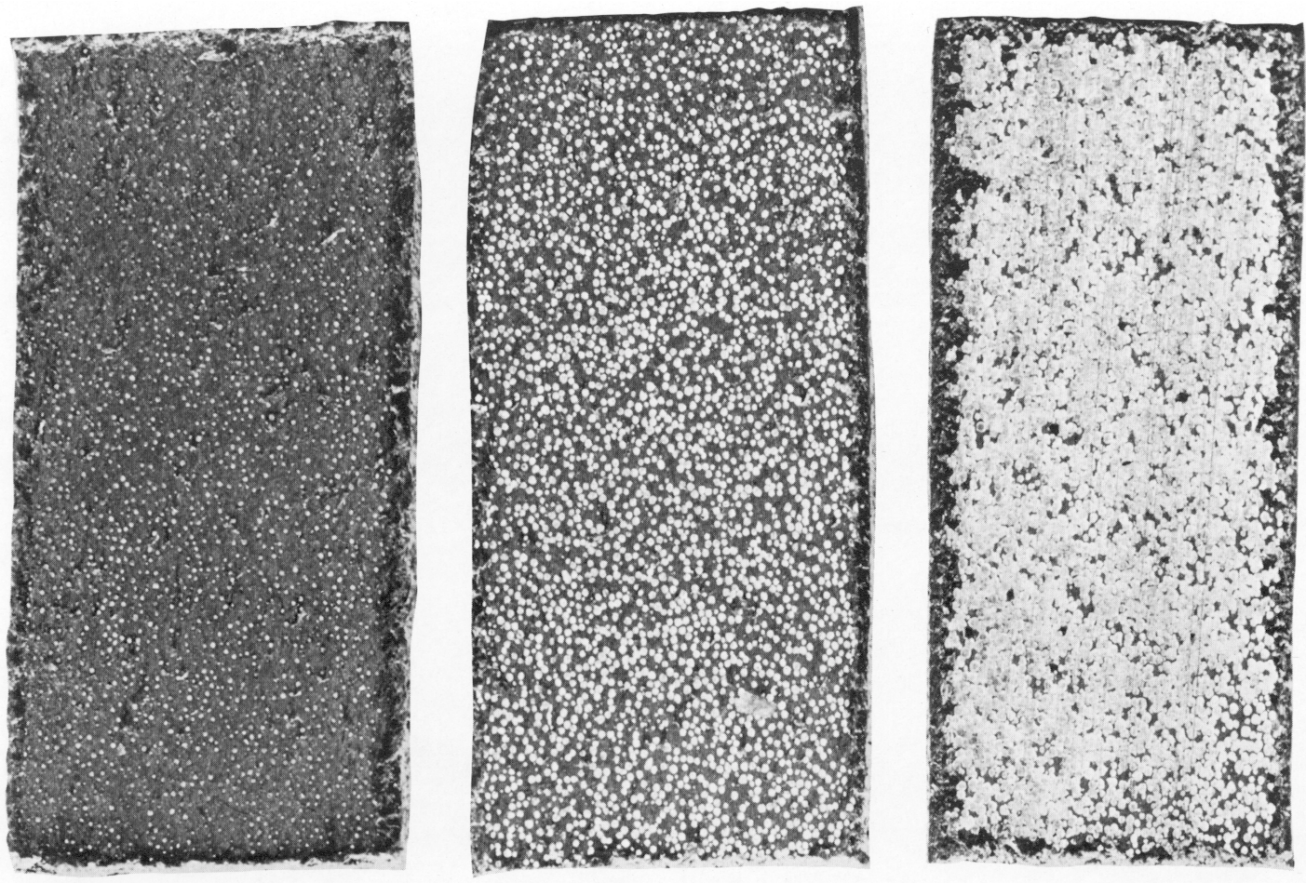
R) Inspect power unit system according to manufactures specifications.

S) Lubricate tong and backup according to maintenance schedule preceding this section.

T) Paint, remembering to mask off surfaces not intending to paint with grease or masking tape.

U) Complete dated inspection report giving details of all duties performed along with complete list of items replaced.

# DU® BEARING DRY WEAR PROCESS



1. 2. 3.

1. Running-in completed. Low wear rate starts when up to 10% of the bronze is exposed.

2. Typical surface appearance when DU® bearing approaches its half life with 40% to 50% of the bronze exposed.

3. Bronze is beginning to smear near the end of DU's useful life as a dry bearing. Over 75% of the bronze is visible at the surface.

For additional information about DU bearings, please contact Garlock Bearings Inc,
700 Mid Atlantic Parkway, Thorofare, New Jersey 08086. **(609) 848-3200** FAX: (609) 848-5115

# TROUBLESHOOTING

## HYDRAULIC SYSTEM

### Hydraulic Pump Making Excessive Noise:

| | Problem | Solution |
|---|---|---|
| A) | Restricted or clogged intake line | Clean line, check for contamination. |
| B) | Contaminated fluid | Flush system, change fluid. |
| C) | Restricted vent | Clean or replace air vent. |
| D) | Air in fluid | Check for leaks and be certain fluid suction in tank is well below hydraulic fluid in reservoir. |
| E) | Damaged or worn parts | Repair or replace damaged parts, check fluid for contamination. |
| F) | Excessive RPM | Check PTO, gears, and recommended speed to assure proper pump is installed for operation. |
| G) | Increased friction | Make sure pump has been assembled using correct torque valves. |
| H) | Damaged or worn relief valve. | Replace relief valve. |
| I) | Damaged or worn check valve. | Replace check valve. |
| J) | Restricted discharge | Check to make sure relief valve is set to proper pressure. |
| K) | Valve system restricted | Inspect and repair or replace defective parts, check system for contamination. |

# TROUBLESHOOTING

### Excessive Wear to Hydraulic Components:

| | Problem | Solution |
|---|---|---|
| A) | Fluid contamination | Flush fluid system, replace with new fluid. |
| B) | Components misaligned | Inspect and realign. |
| C) | High operating pressures | Gauge and set to proper pressure. |
| D) | Exhausted fluid (depletion of additives) | Flush fluid system, replace with new fluid. |
| E) | Air in fluid | Check for leaks, and be certain fluid suction in tank is well below hydraulic fluid in reservoir. |
| F) | Shortened bearing life | Check alignment, insure proper lubrication to non-sealed bearings. |

### HYDRAULIC TONG SECTION

### Slow Tong Speed:

| | Problem | Solution |
|---|---|---|
| A) | Restricted supply line | Clear supply line and check intake on reservoir. |
| B) | Low fluid level | Add fluid to proper volume. |
| C) | Air leak | Locate and repair leak. |
| D) | Pump speed insufficient | Assure proper pump speed for application. |
| E) | Damaged or worn equipment | Isolate pump and check pressure to determine whether motor or pump is defective. Repair or replace defective part. |
| F) | Pump not primed | Check fluid viscosity and restrictions of intake line. Replace fluid if inadequate for operating temperature. |
| G) | Low or no flow from supply line | Check to assure couplings are securely fastened. |
| H) | Hydraulic bypass valve malfunction | Inspect. Adjust unloading pressure. Replace or repair as necessary. |

# TROUBLESHOOTING

## Insufficient Torque:

| | Problem | Solution |
|---|---|---|
| A) | Door switch malfunctioning | Check to make sure door is completely closed. Inspect door switch and dump valve. Replace or repair door switch and/or dump valve. |
| B) | Relief valve malfunctioning | Relief set too low, broken valve spring, contamination or defective seals. |
| C) | Damaged or worn pump parts | Inspect, repair, or replace. |
| D) | Slow pump speed | Assure proper pump speed for application. |
| E) | Improper system fluid | Check fluid viscosity and replace fluid if inadequate for operating temperature. |
| F) | Directional control valve set improperly | Check relief and directional control valve. Neutral should return slightly to reservoir. |

## Hydraulic Tong System:

| | Problem | Solution |
|---|---|---|
| A) | Damage to motor | Inspect, repair, or replace. |
| B) | Restriction of supply line, excessive back pressure | Check to assure couplings are securely fastened. |
| C) | Defective gauge or load cell | Inspect, repair, or replace. Assure unit has been calibrated to proper arm length. NOTE: When using **CLINCHER®** integral backup system, it is the length of backup arm, NOT the tong arm length. |

# TROUBLESHOOTING

## Difficulty Shifting Gears:

| | Problem | Solution |
|---|---|---|
| A) | Broken key in shifting yoke | Inspect and replace key stock in shifting yoke. |
| B) | Worn or damaged shifting yoke pins | Inspect and replace broken or worn pins. |
| C) | Insufficient lubrication | Pump grease into both zerts located on shift housing. |
| D) | Detent ball bearing spring set too tight | Inspect and relieve pressure by adjusting set screw on shifting gear PN 55084. |

## Failure to Grip Tubulars:

| | Problem | Solution |
|---|---|---|
| A) | Jaws move out from neutral, but fail to penetrate pipe. Tong not perpendicular. | Inspect die size and replace with correct dies for pipe. Wrong size dies for tubulars. Assure suspension of tong is perpendicular to tubulars. Adjust hanger as necessary. |
| B) | Jaws fail to move out of neutral. Brake band not tight enough, faulty cam followers, rust debris or damage to jaws. | Inspect for excessive wear on brake band. Inspect and replace defective cam followers. Remove rust and debris from jaws, and jaw pockets. Inspect jaw rollers and pins for wear, flats, and lubrication. Repair, replace, and lubricate as needed. |
| C) | Tong will not release from tubular. Brake band not tight enough, defective cam followers in cage plate, insufficient lubrication to jaw pin and roller. | Inspect for excessive wear on brake band. Inspect and replace defective cam followers. Remove rust and debris from jaws, and jaw pockets. Inspect jaw rollers and pins for wear, flats, and lubrication. Repair, replace, and lubricate as needed. |
| D) | Tong motor runs but ring gear does not rotate. Broken gears or defective shift in hydraulic tongs system. | Inspect and replace defective gears. Inspect and repair or replace defective shifting parts. |
| E) | Tong binds under light load. Worn or damaged cam followers, dumbell roller bearing, or idler bearing. | Inspect and replace defective parts. |

# TROUBLESHOOTING

### Failure to Grip Tubulars:

| | Problem | Solution |
|---|---|---|
| F) | Ring gear rotates while control lever is in neutral. | Replace control valve. |
| G) | Shift will not stay in set position. Lost detent ball or spring. | Replace detent ball and spring. |
| H) | Hydraulic fluid leaking from motor. Damaged or worn motor shaft seal. | Replace motor shaft seal. |

### HYDRAULIC BACKUP SYSTEM

| | Problem | Solution |
|---|---|---|
| A) | Incorrect die for size tubular | Check pipe OD and match die size to pipe OD. |
| B) | Dies have material compacted in tooth area; worn teeth. | Clean dies with wire brush and inspect. Replace with new dies if necessary. |
| C) | Power unit pressure set incorrectly | Inspect relief valve on power unit to make sure enough system pressure is being delivered to backup. |
| D) | Counter balance valve not holding pressure | Remove side plates on backup. Bench test and replace the defective counter balance valve. |
| E) | Internal leakage in backup cylinder | Disconnect lines and bench test cylinder. Repair or replace as necessary. |
| F) | Jaws will not retract. Counter balance valve is stuck. | Replace counter balance valve. |
| G) | External leakage of cylinder | Repair or replace cylinder. |
| H) | Control valve set to neutral, but jaws extend. | Inspect control valve for damage and/or incorrect spool. Repair or replace as necessary. |

# RECOMMENDED SPARE PARTS LIST FOR REMOTE AREAS

| Quantity | Part Number | Description |
|---|---|---|
| 1 | 1250 1437 | Seal for Rineer Motor |
| 2 | 73013 | 1 1/2" Jaw Pins |
| 2 | 73013-01 | 2" Jaw Pins |
| 2 | 73012 | 1 1/2" Jaw Rollers |
| 2 | 73012-01 | 2" Jaw Rollers |
| 8 | 1001 | 1/8" NPT Zerts |
| 1 | SLV1000-01 | Door Switch |
| 1 | 45061 | Shifting Yoke Assembly |
| 1 | 73010 | Brake Band Assembly |
| 1 | CLE18527 | Left Jaw Retract Spring |
| 1 | CLE18528 | Right Jaw Retract Spring |
| 1 | DVG35-HMRV | A-35 Relief Cartridge |
| 2 | BUCDP8512 | Door Rollers |

# ACCESSORIES AND OPTIONS

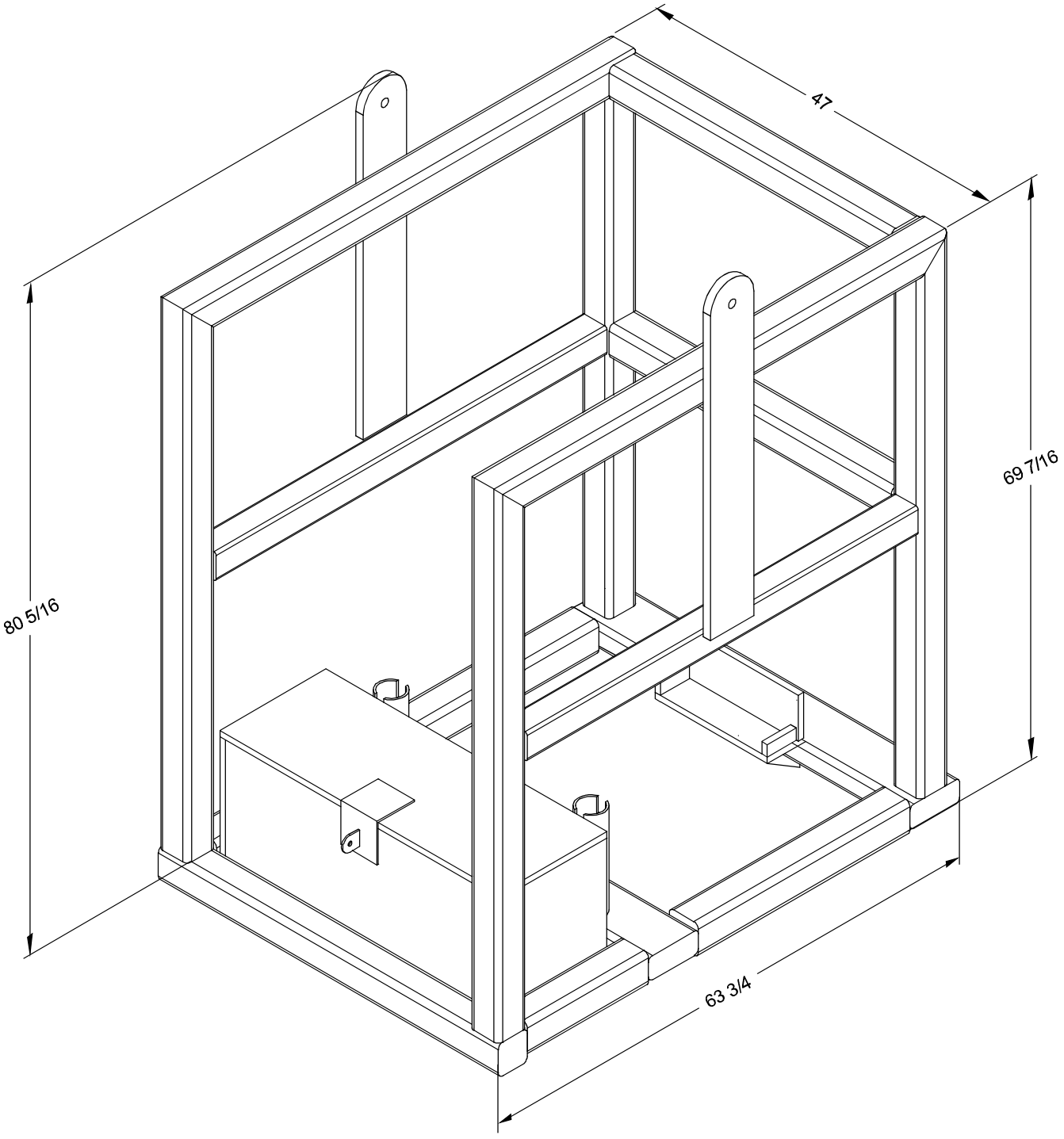
Several different accessory items are available for the **CLINCHER®** Tong and Backup to allow them to be customized to provide a system most appropriate for the inducer's application.

## CLE8625DP Tong Accessories

| | |
|---|---|
| Compression Load Cell and Torque Gauge | directly measures applied torque |
| Tension Load Cell and Torque Gauge | directly measures applied torque |
| Tong Handles with closed covers | protects operators hands |
| Solenoid Operated Module for Dump Valve | allows computer to limit torque applied |
| Adapter for Turns Proximity Switch | allows computer to sense rotation |
| 3 Point Lifting Bridle | alternative lifting system |
| Lift Cylinder with Integral Spring Hanger | controls vertical position |
| TSP-80 Tong Speed Control | allows slow speed rotation with full torque |
| 2 Speed Motors | |
| Alternate Motor Displacements | |

## BUCDP8500 Backup Accessories

| | |
|---|---|
| Backup Handles | simplifies manipulation |
| Shipping Skids and Cages | simplify handling, transport and help guard against damage |




# 8 5/8" DRILL PIPE TONG SKID

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



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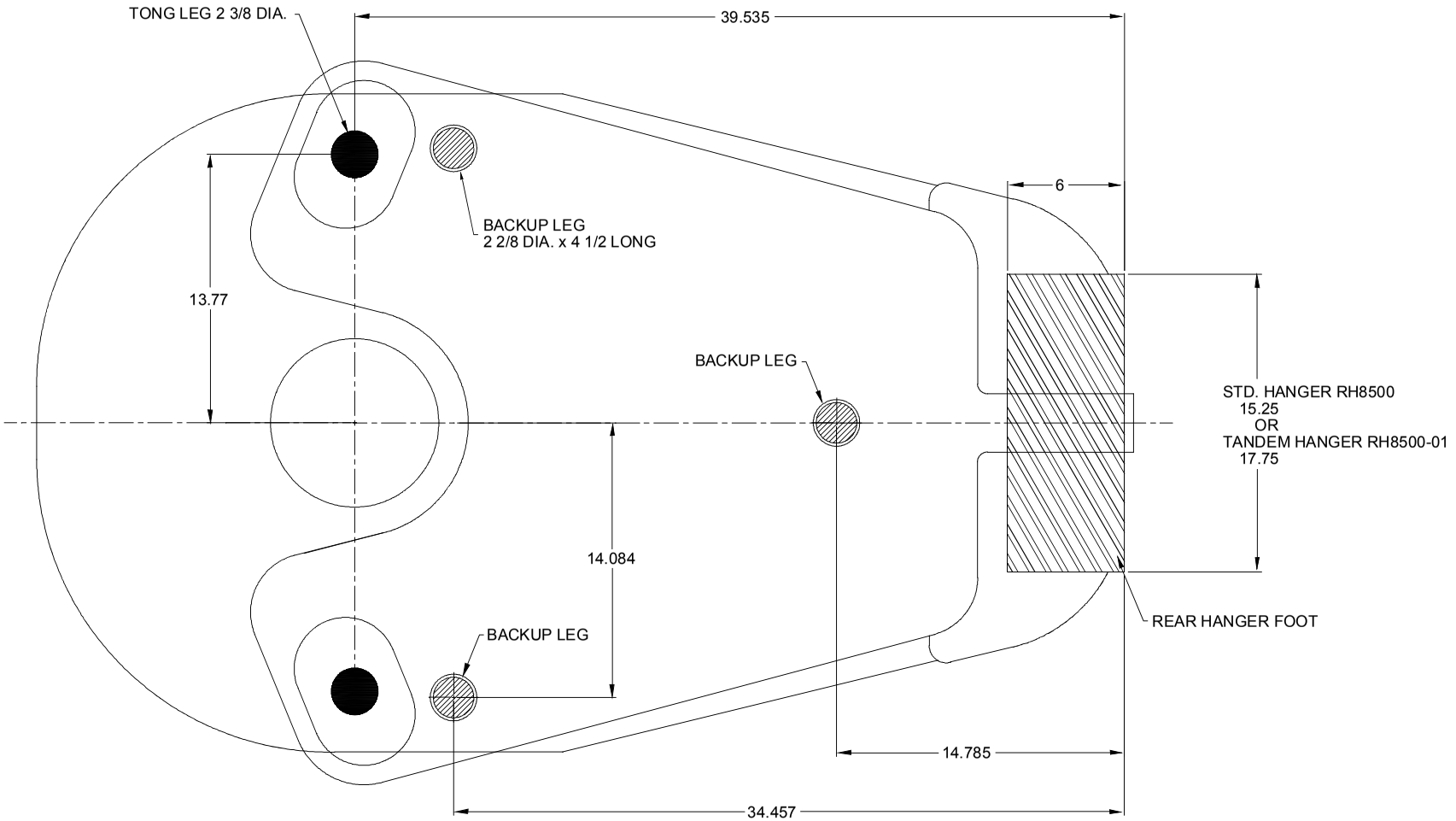




# 7 5/8" & 8 5/8" DRILL PIPE TONG &

# 8 5/8" DRILL PIPE BACKUP FOOT PRINT

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 08/08/00 |
|---|---|---|
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## SECTION 9 TONG ILLUSTRATIONS



*- Continued -*

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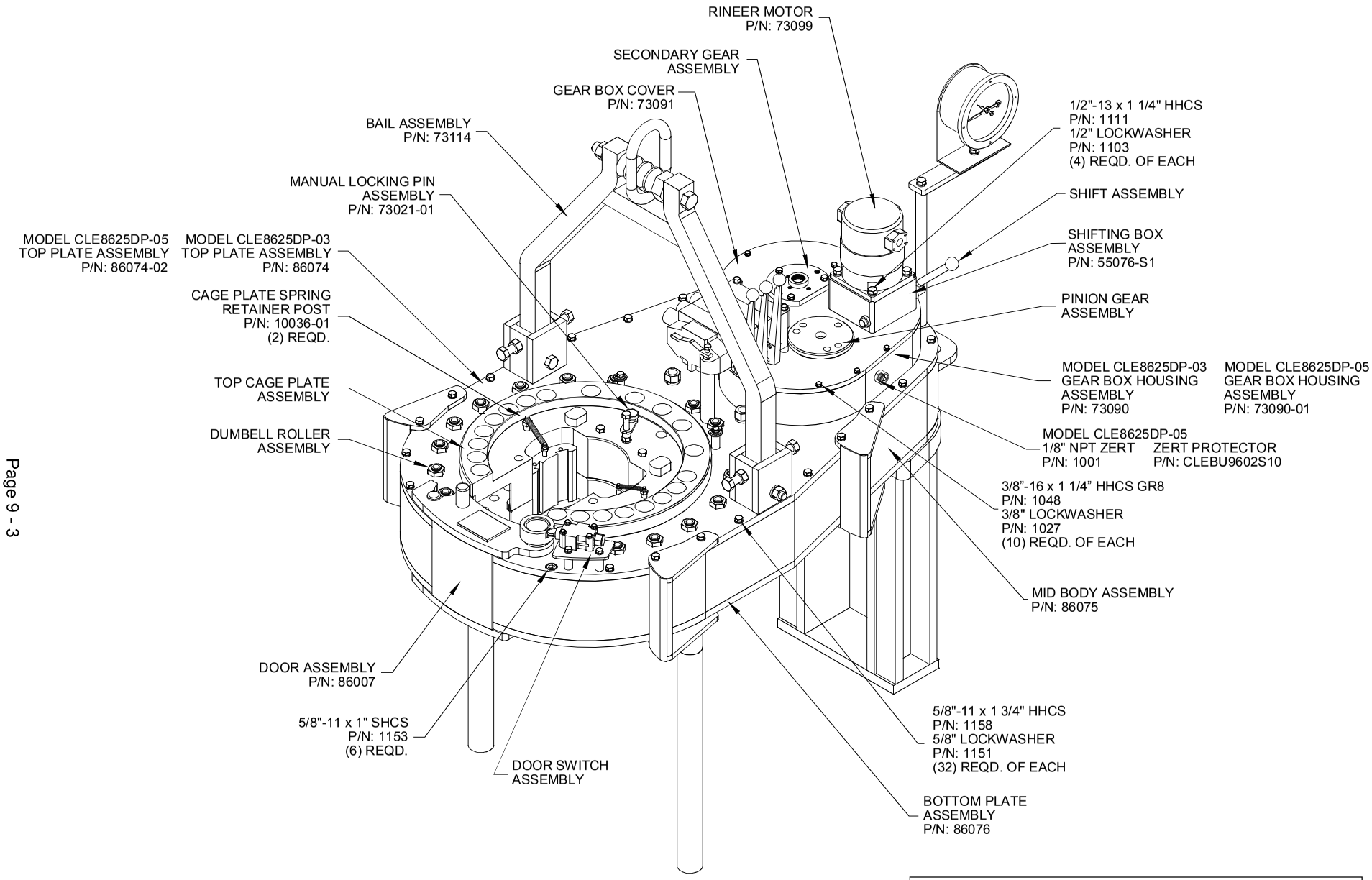


# 8 5/8" CLINCHER® DRILL PIPE TONG ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 5/08/09 |
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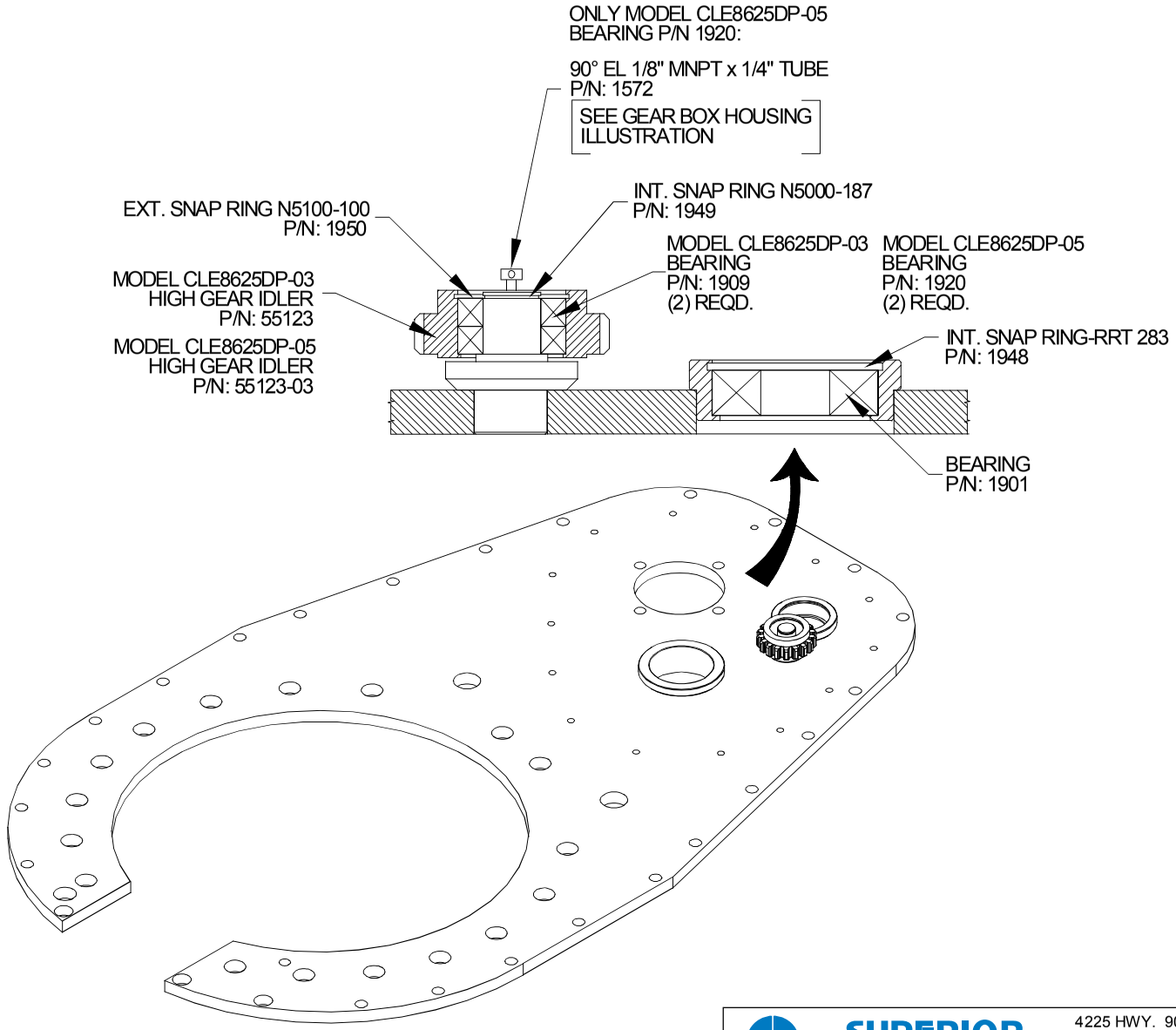


# TOP PLATE ASSEMBLY

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4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



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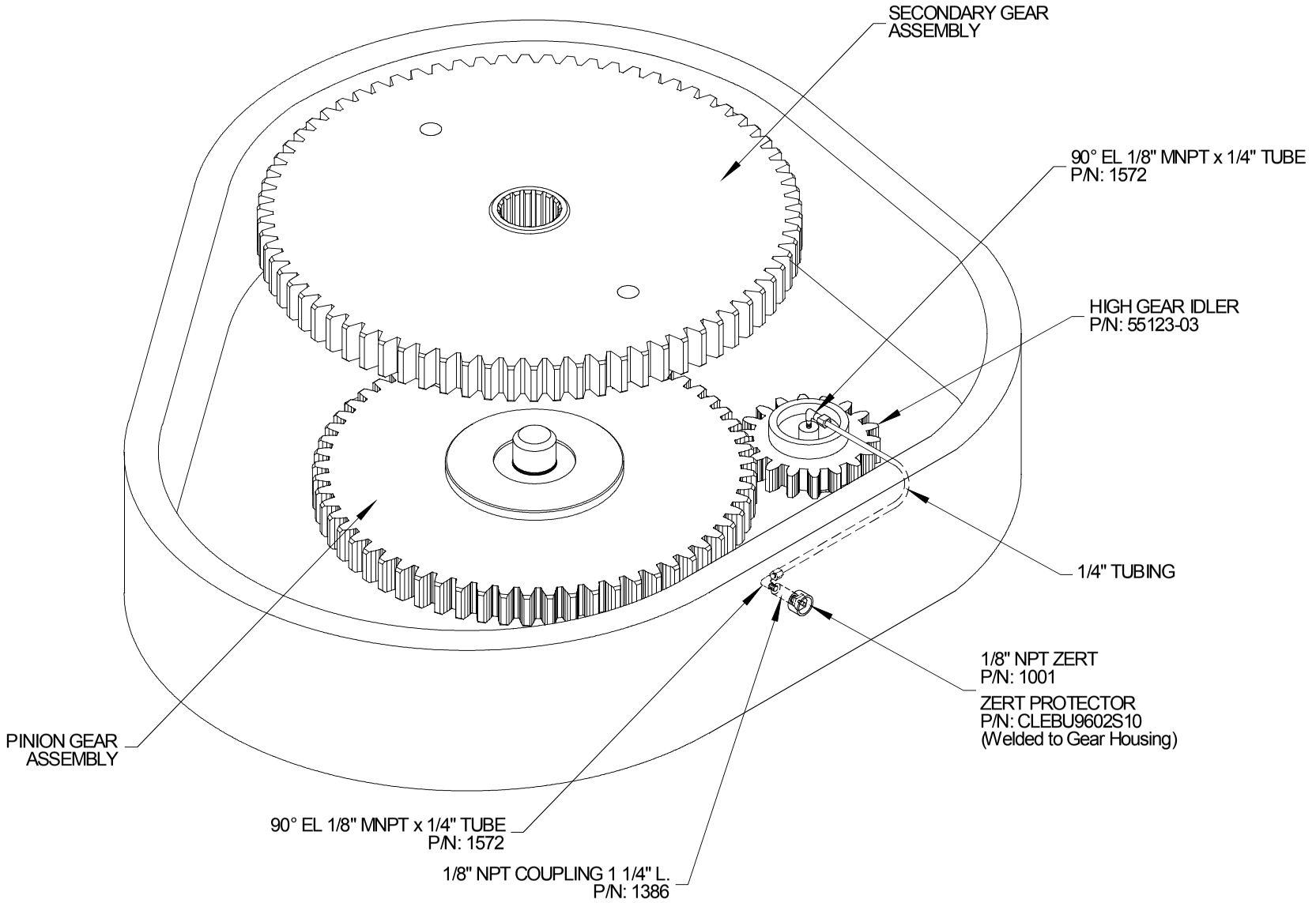


# GEAR BOX HOUSING

TONG MODEL CLE8625DP-05

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



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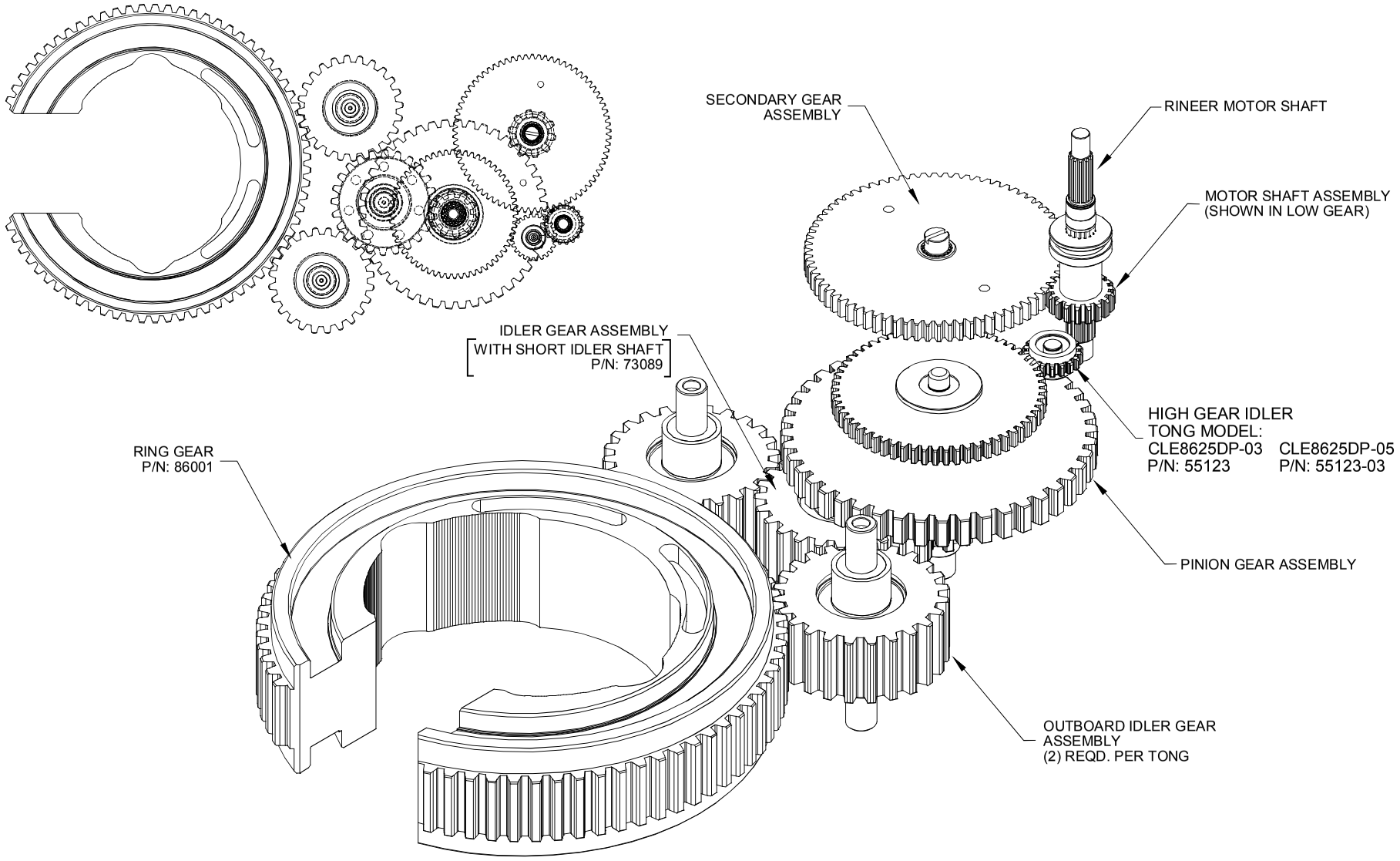




# 8 5/8" DRILL PIPE TONG GEAR TRAIN

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



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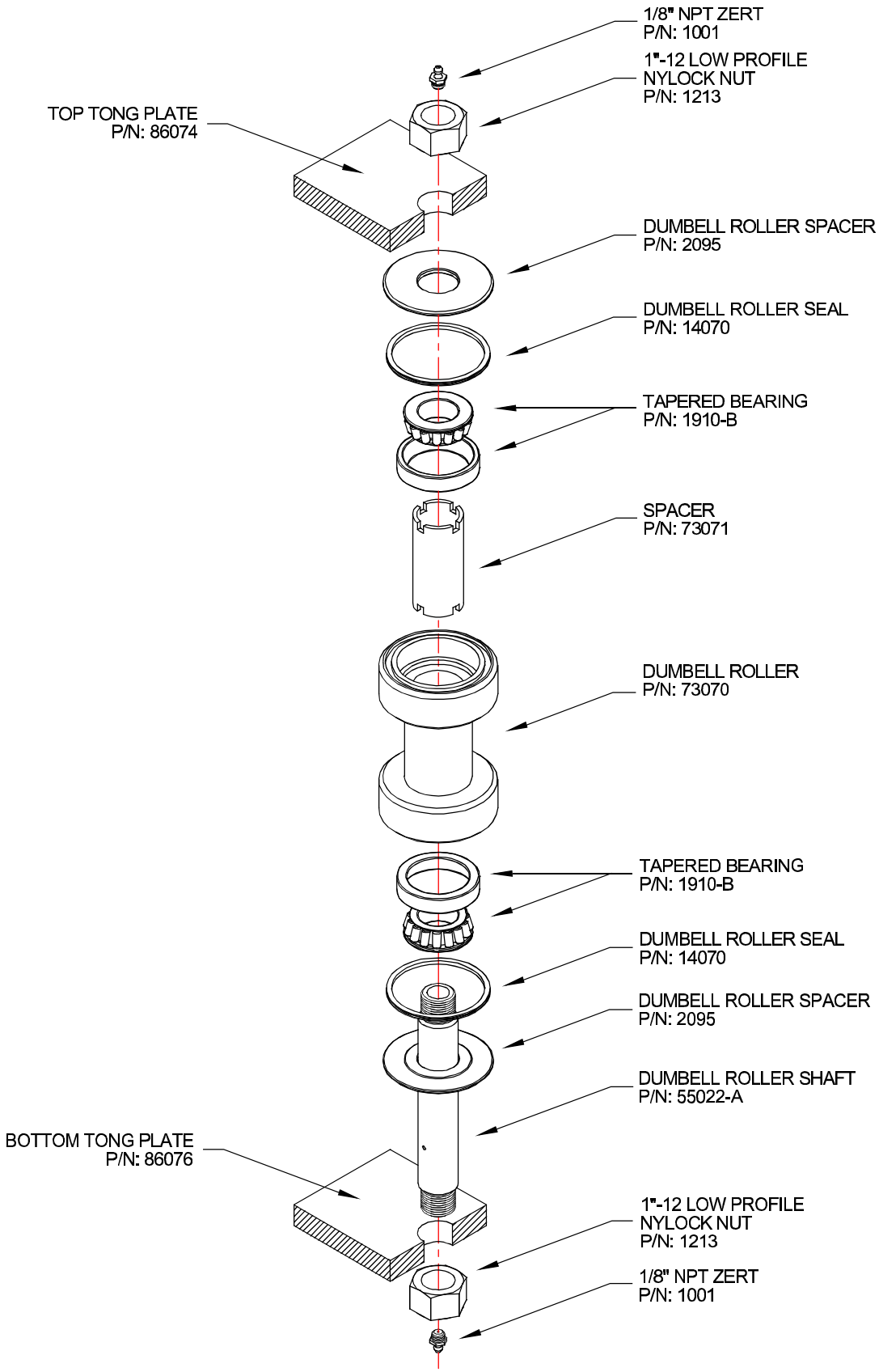


# DUMBELL ROLLER ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 01/27/00 |
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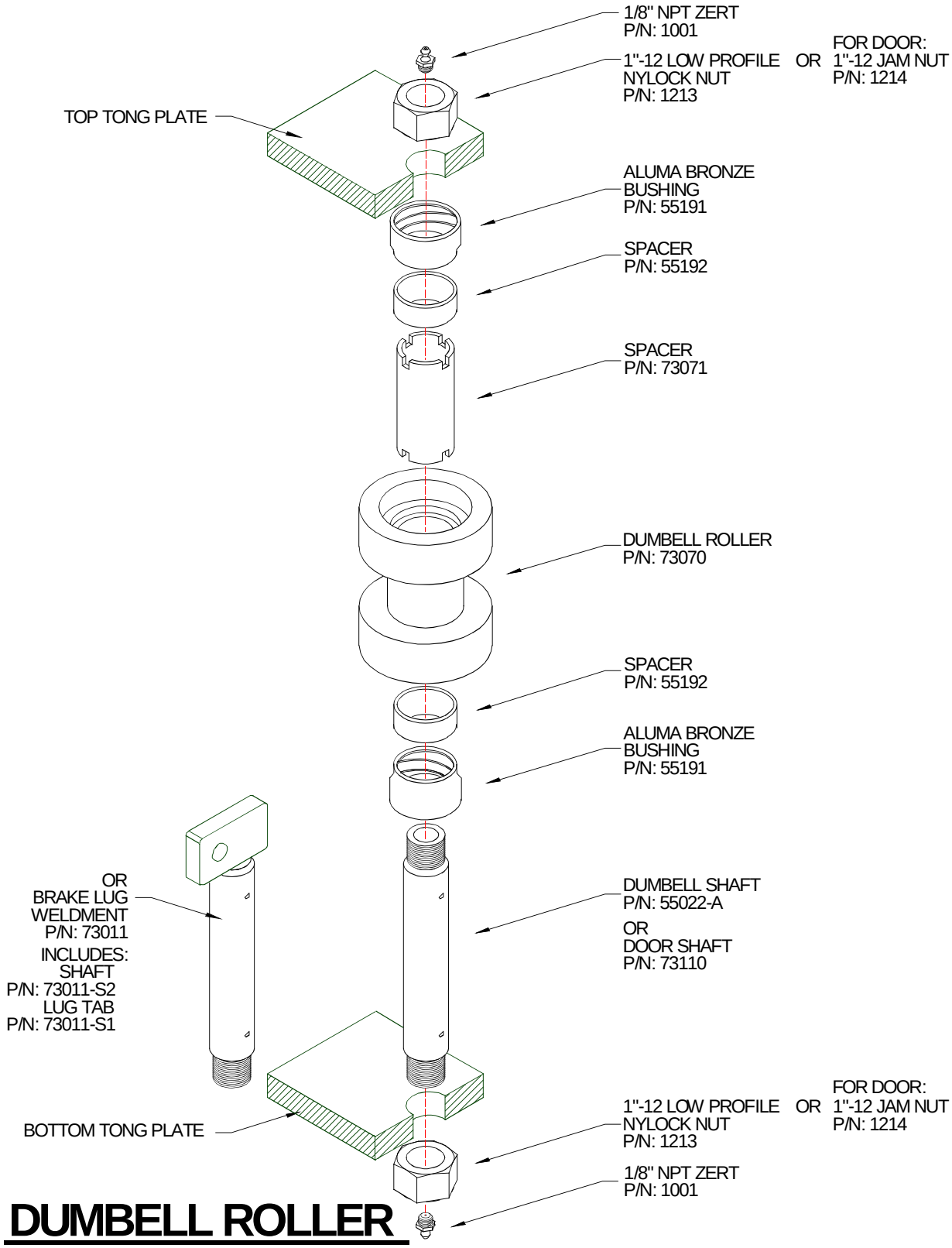


# DUMBELL ROLLER ASSEMBLY

2ND GENERATION ASSEMBLY NO. 73069
BRAKE BAND DUMBELL ROLLER
ASSEMBLY NO. 73069-BB
DOOR DUMBELL ROLLER
ASSEMBLY NO. 73069-DR

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



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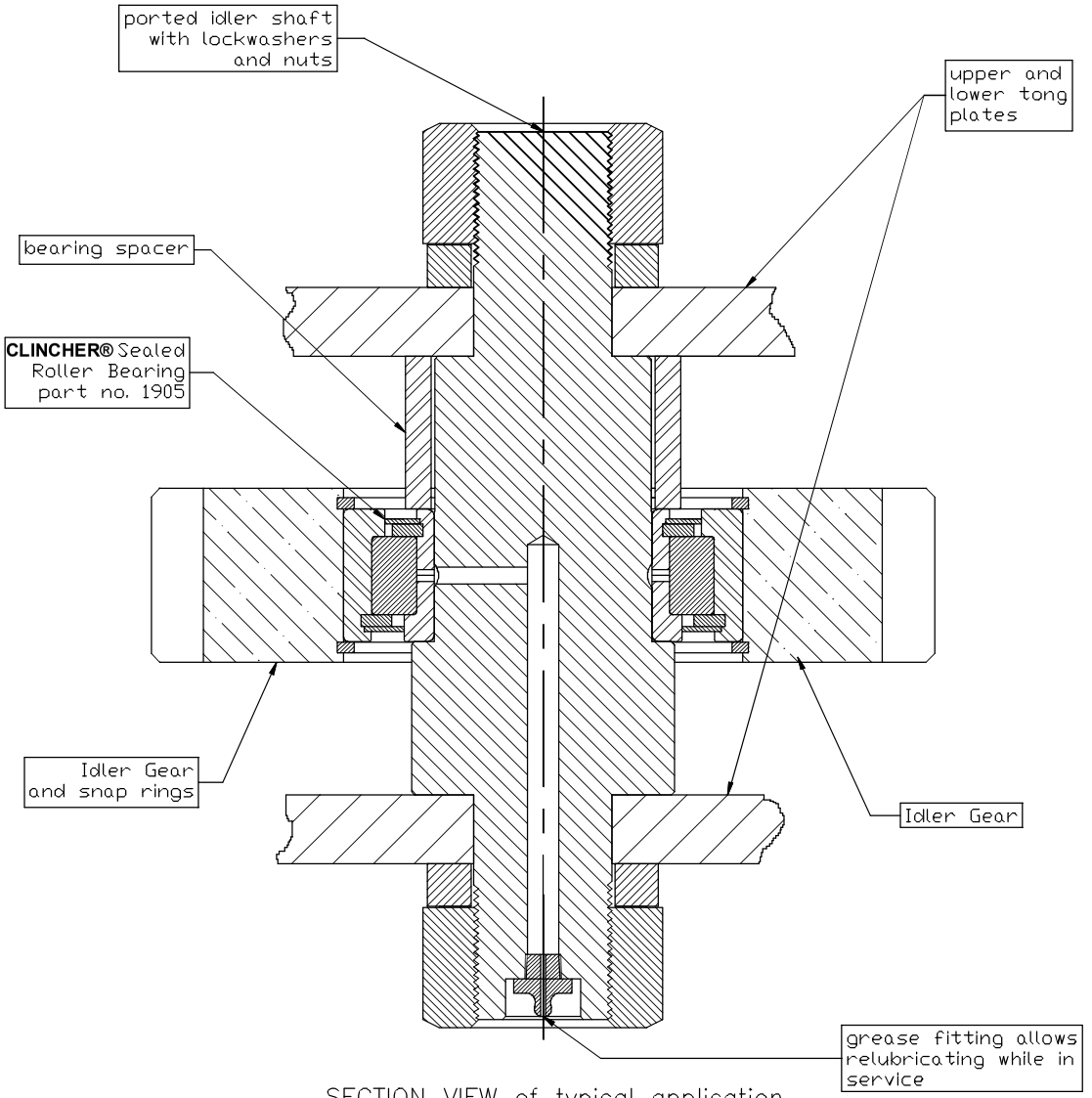
Features and Benefits:
Proprietary sealed bearing with full compliment roller design offers greater load ratings than commercially available sealed ball bearings. The ported inner race allows the bearing to be relubricated without disassembly. Integral elastomeric seals allow grease to be displaced but prevent migration of contaiminants into bearing.

Elastomeric seals are corrosion resistant and suitable for use in environments which are incompatible with traditional aluminum bearing shrouds.

Unique geometric design allows rollers to absorb thrust loads to maximize component life.

Nominal OD: 4.3307 inches
Nominal ID: 2.3622 inches
Nominal Ht: 1.4375 inches
static rating: 37540 lbs
dynaminc rating: 29230 lbs
(1mm cycles, 33 1/3 RPM f/ 500 hrs.)




SECTION VIEW of typical application

| Rev.# | By | Log# | Description of Revision |
|---|---|---|---|
| 3 | | | |
| 2 | | | |
| 1 | DB | 12/07/02 | added desc of thrust load capability |

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE R3

| 2 PLACE DEC. ±.020 | 3 PLACE DEC. ±.005 | FRACTIONS ± 1/16 | ANGLES ± .5° | SURFACE 250 | FLATNESS AR PL. ± .015 per foot |
|---|---|---|---|---|---|

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R



1 or 1 = Revision Number

1.000 = Critical Dimension 100% Inspection Required

SHEET 1 of 2

SUPERIOR Manufacturing & Hydraulics
4225 HWY.90 E
BROUSSARD,LA 70518
(318)837-8847

PART NAME: SEALED IDLER BEARING

PART #: 1905

DRAWN BY:

APPROVED BY:

CHK BY: DATE:

REF: REF ILL1000/ILL1142.DWG

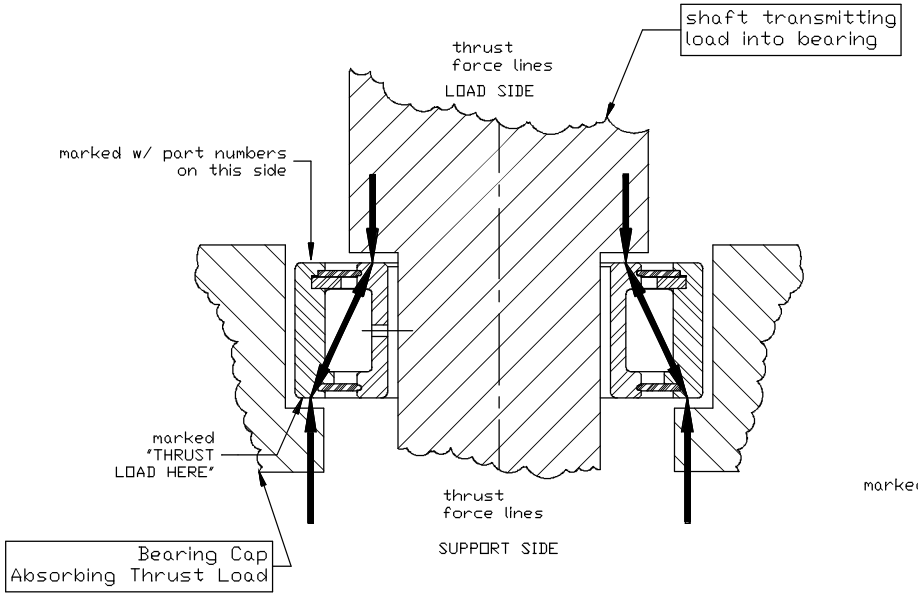
MATERIAL SPECIFICATION

Matl.Req:

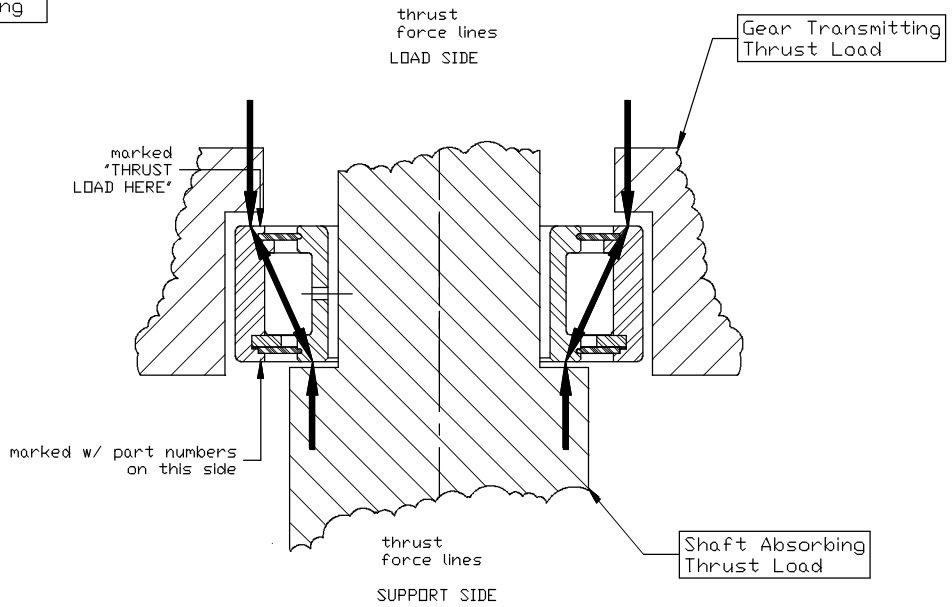
Initial Condition:

Alternative Matl:

H.T Instructions: Case Depth: C.D




Bottom Bearing Cap Application




Gear Support Application

# Installation instructions for **CLINCHER®** BEARING Part Number 1905

| Rev.# | By | Log# | Description of Revision |
|---|---|---|---|
| 3 | | | |
| 2 | | | |
| 1 | DB | 12/07/02 | added desc of thrust load capability |



UNLESS OTHERWISE SPECIFIED TOLERANCES ARE R3

| 2 PLACE DEC. ±.020 | 3 PLACE DEC. ±.005 | FRACTIONS ± 1/16 | ANGLES ± .5° | SURFACE 250 | FLATNESS AR PL. ± .015 per foot |
|---|---|---|---|---|---|

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R

△1 or ⟨1⟩ = Revision Number

1.000 = Critical Dimension 100% Inspection Required

SHEET 2 of 2

SUPERIOR Manufacturing & Hydraulics
4225 HWY.90 E
BROUSSARD,LA 70518
(318)837-8847

PART NAME: Installation instructions for P/N 1905 SEALED IDLER BEARING

PART #: 1905

DRAWN BY:

APPROVED BY:

CHK BY: DATE:

REF: REF ILL1000/ILL1142.DWG

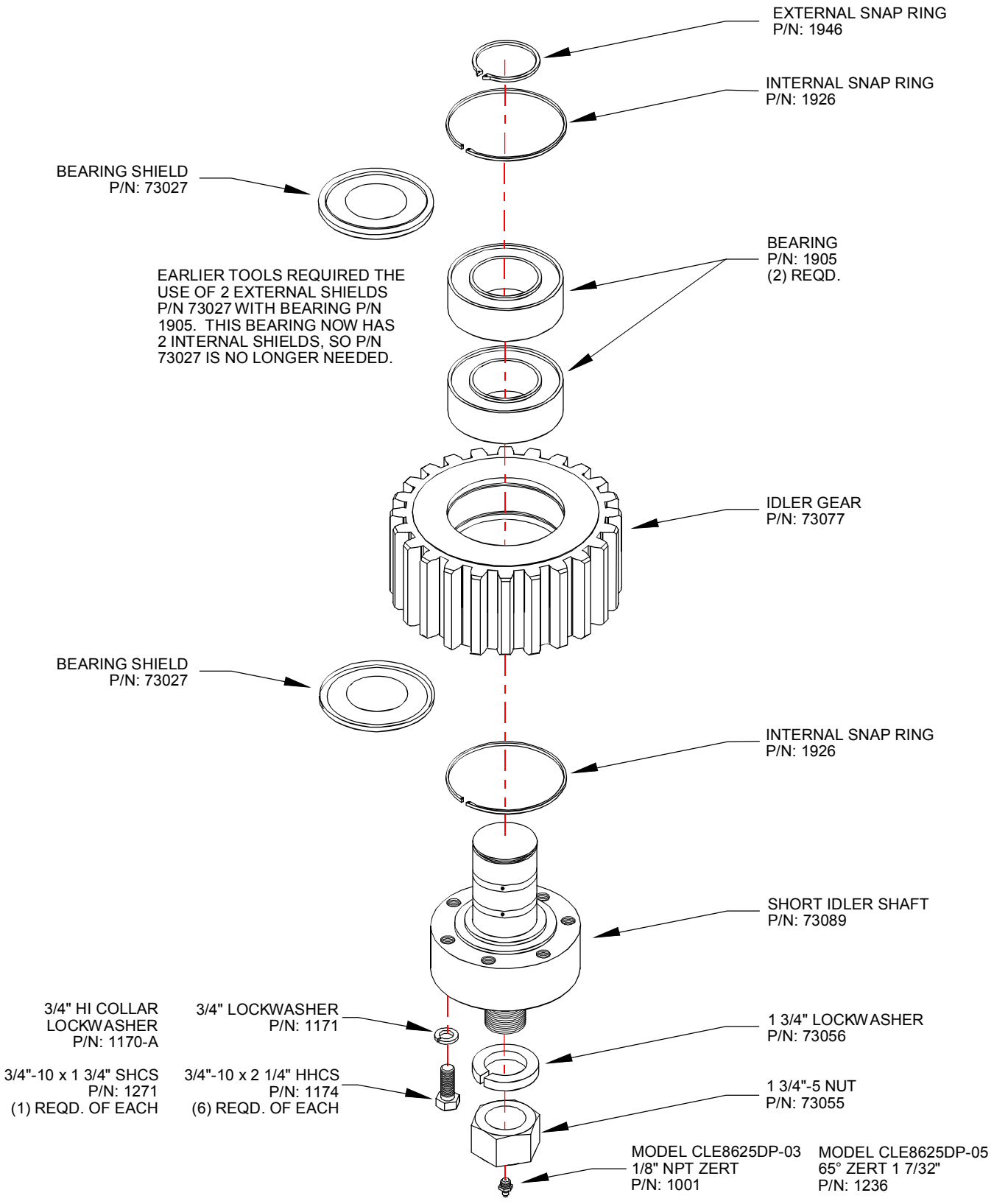
MATERIAL SPECIFICATION

Matl.Req:

Initial Condition:

Alternative Matl:

H.T Instructions: Case Depth: C.D



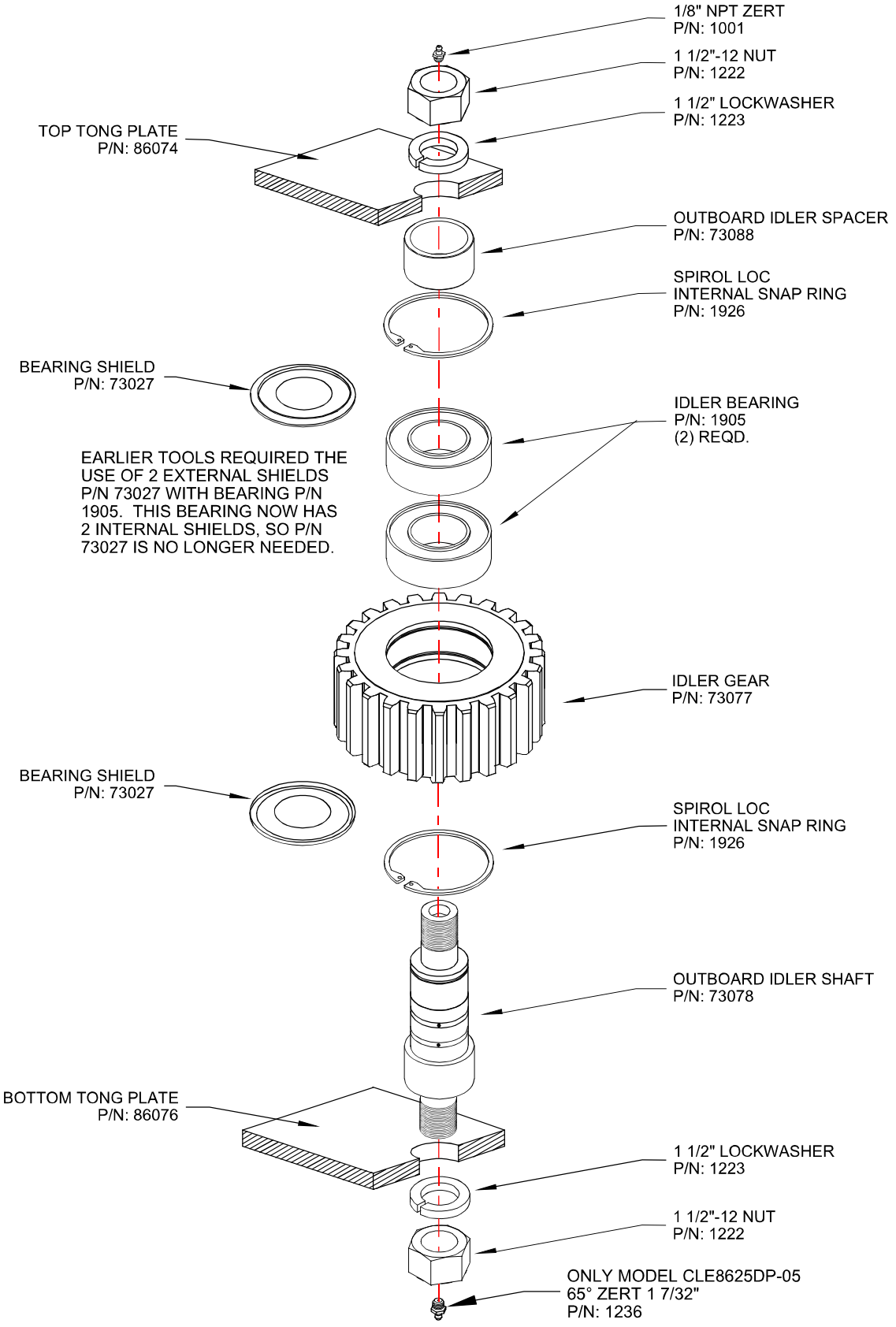

# IDLER GEAR ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 3 | | 01/17/05 |

REF: S:\Equip Manuals-Dwgs\CLE8625DP\Idler Gear rev3.wpg



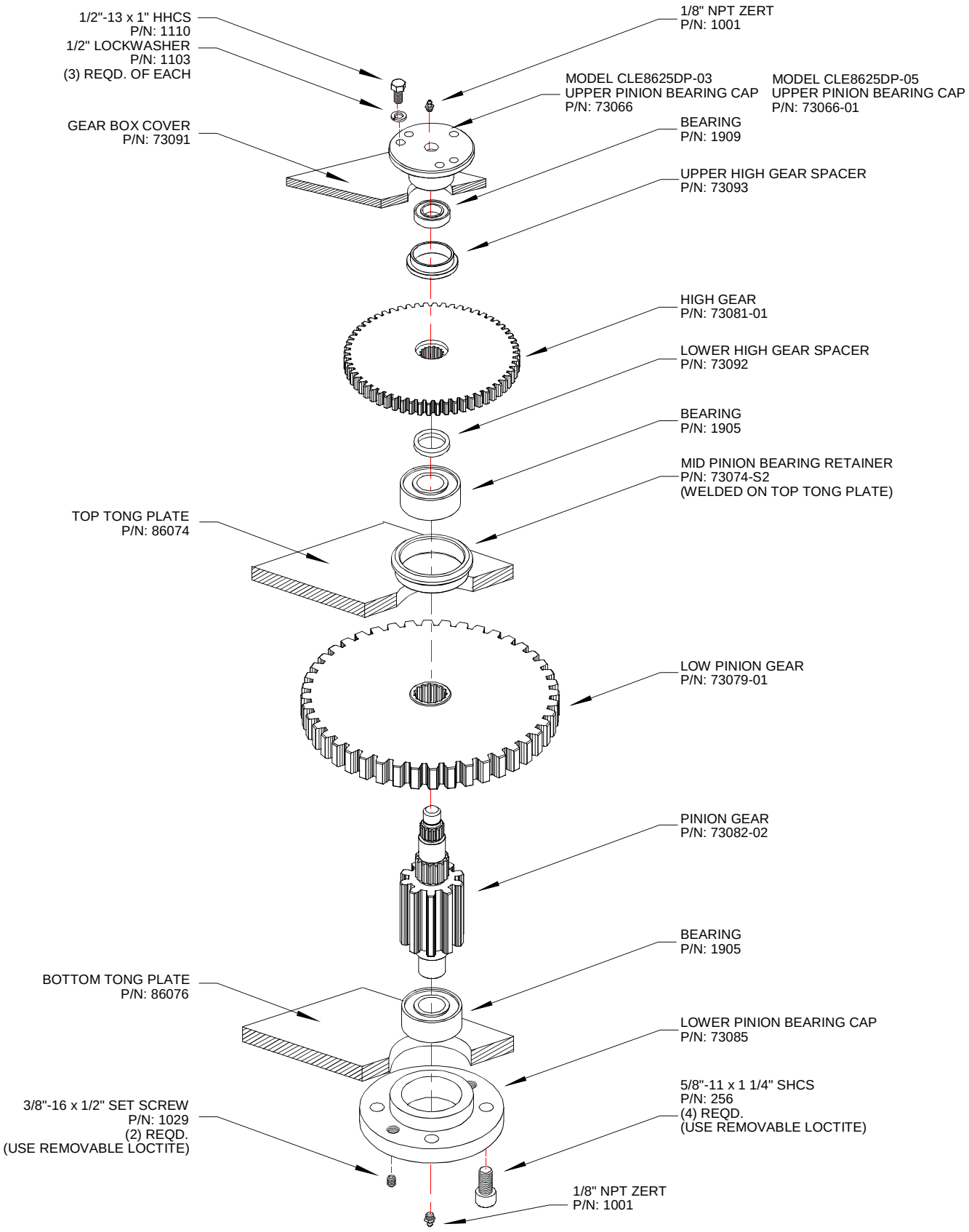

# OUTBOARD IDLER GEAR ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 2 | | 01/15/02 |

REF: S:\Equip Manuals-Dwgs\CLE8625DP\Outboard Idler rev2.wpg



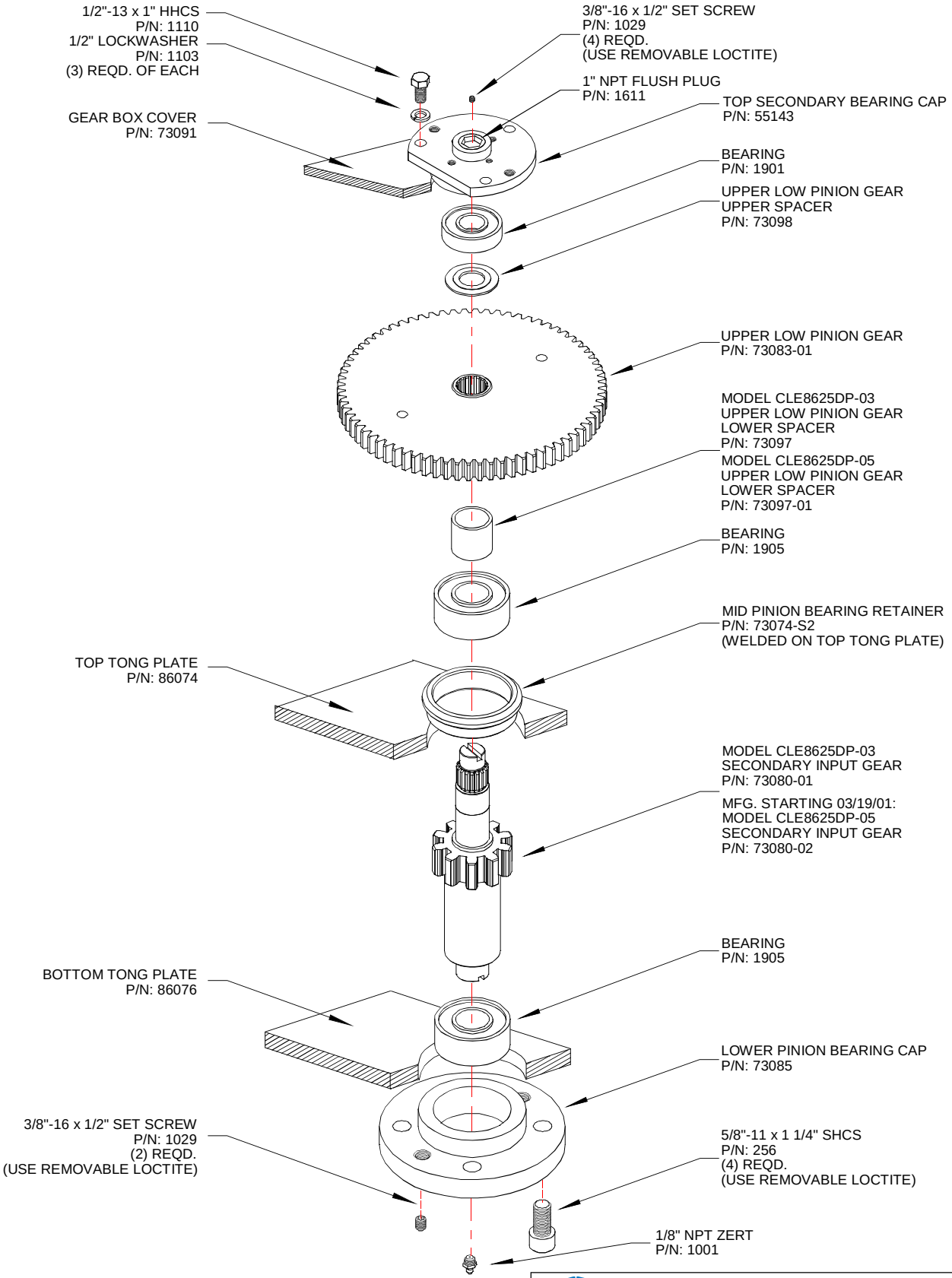

# PINION GEAR ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| 1 | | 01/14/02 |
|---|---|---|
| REV. # | LOG # | DATE |

REF: P:\Manuals\Equip Manuals\Dwgs\CLE8625DP\Pinion Gear rev1.wpg



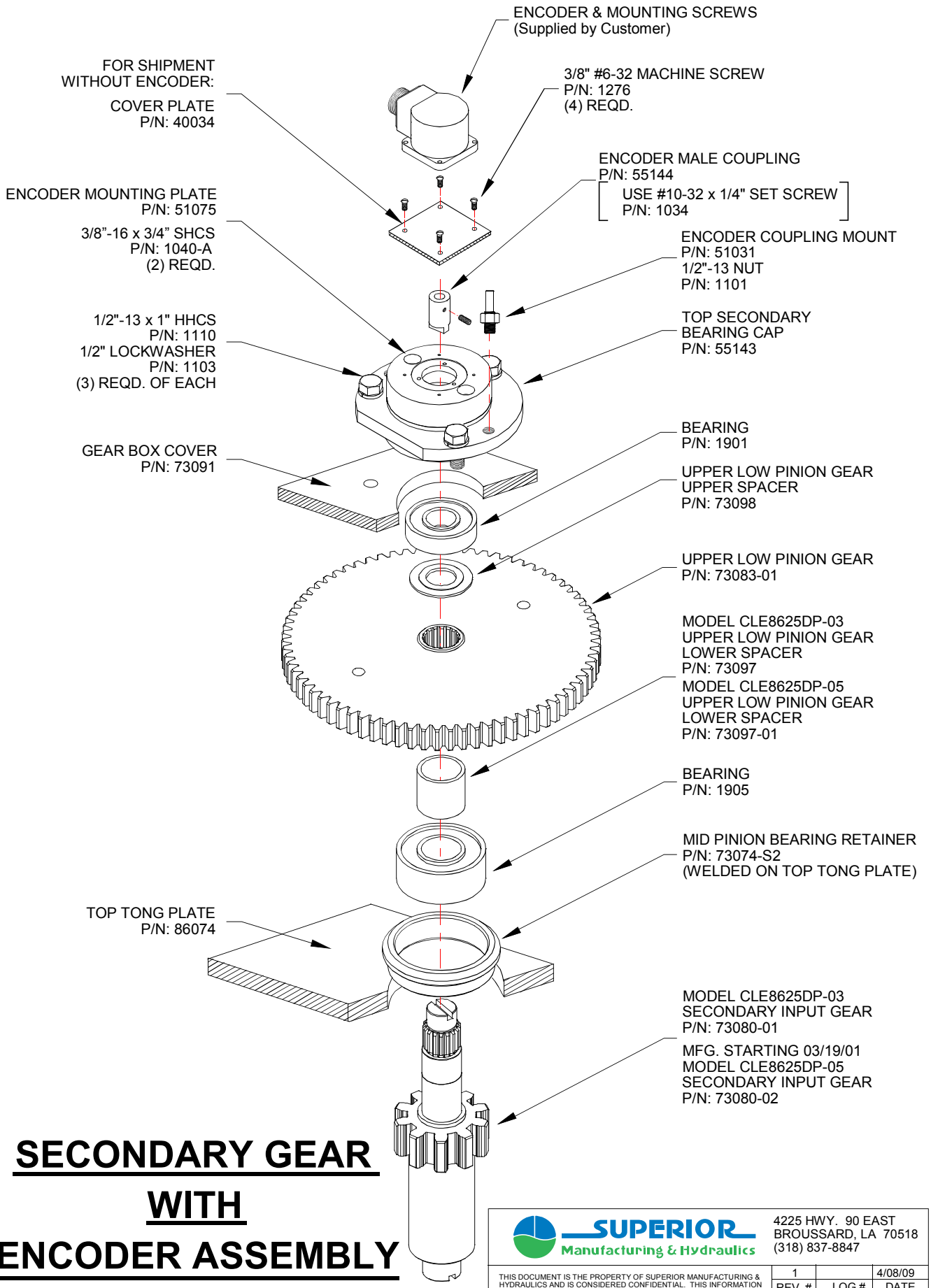

# SECONDARY GEAR ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 2 | | 06/08/07 |

REF: P:\Manuals\Equip Manuals\Dwgs\CLE8625DP\Secondary Gear rev2.wpg




# SECONDARY GEAR WITH ENCODER ASSEMBLY

ENCODER ASSEMBLY NO. 55142

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 4/08/09 |
| C | | |

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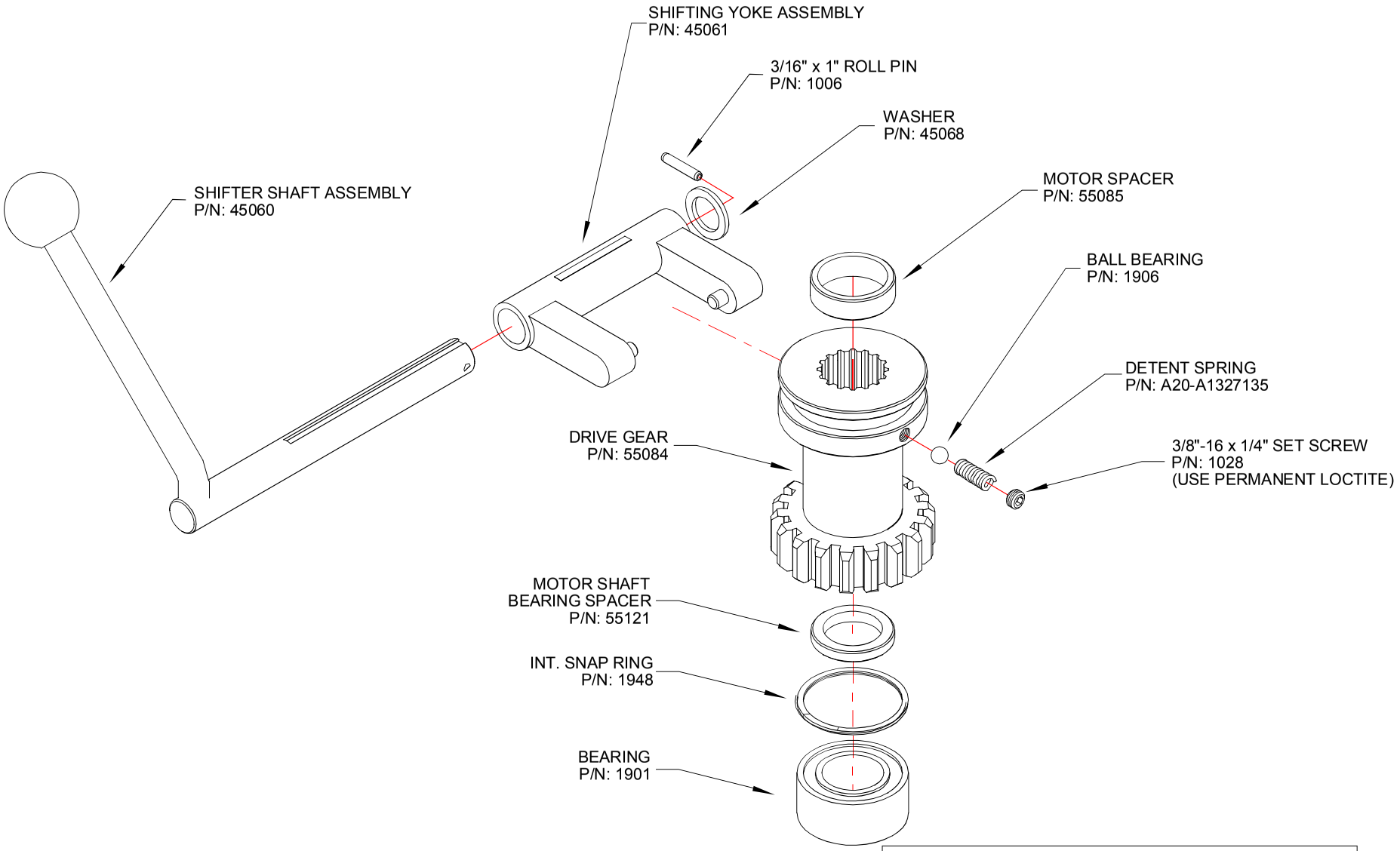



# SHIFT ASSEMBLY

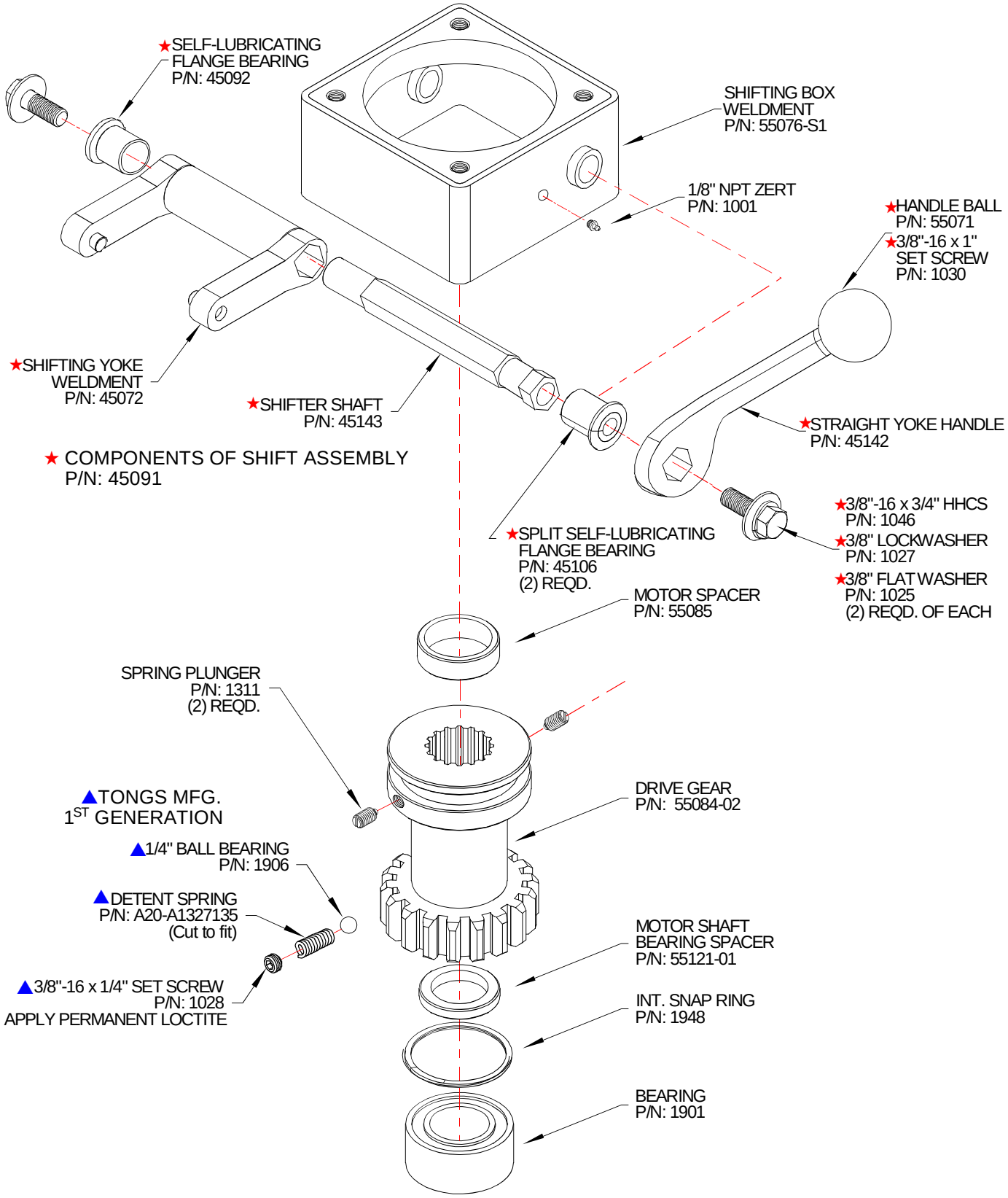
1st GENERATION

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 01/23/02 |

REF: S:\Equip Manuals-Dwgs\CLE8625DP\Shift Assy 1st rev1.wpg




# SHIFT ASSEMBLY

2nd GENERATION
Mfg. 11/2000 & After

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 4 | | 06/08/07 |

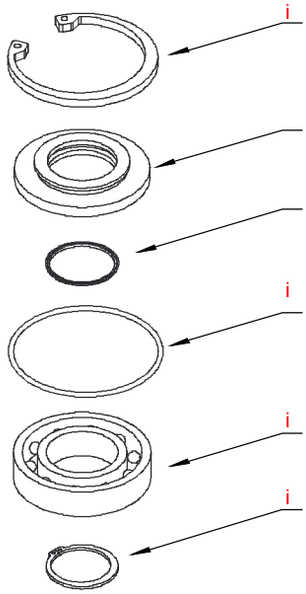
REF: P:\Manuals\Equip Manuals\Dwgs\CLE8625DP\Shift Assy 2nd rev4.wpg

CLE8625DP-03
MOTOR SHAFT
P/N: 73040

CLE8625DP-05
MOTOR SHAFT
P/N: 73040-01

**NOT SHOWN:**

| | P/N | QTY | DESCRIPTION |
|---|---|---|---|
| i | 150300 | 1 | ROTOR-RINEER |
| i | 150430 | 2 | DOWEL PINS RINEER |
| i | 150600 | 1 | PLATE F/STACKED GA15 RINEER MOTOR SINGLE & 2 SPEED |
| i | 150601 | 2 | PLATE F/2 SPEED GA15 RINEER MOTOR |
| i | 150930 | 1 | STATOR VANE KIT-RINEER |
| i | 1608 | 1 | HEX PLUG O RING 3/8" |
| i | 2-160 | 2 | O RING 5 1/4" ID, 5 7/16" OD, 3/32" W |
| i | 73099-S2 | 1 | RINEER GA8 STACKED STATOR 0150404S |



i SNAP RING
P/N: 0150111

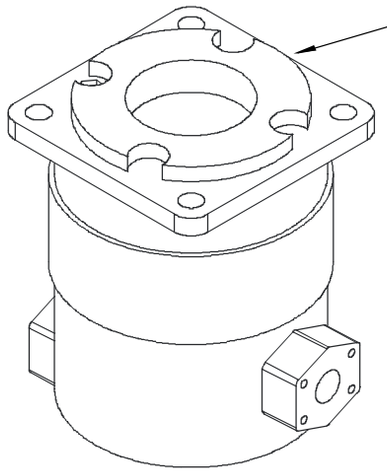
SEAL RETAINER
P/N: 55088

POLYPACK
P/N: 12501437

i O-RING
2 7/8" ID, 3 1/16" OD, 3/32" W
P/N: 2-150

i MOTOR SHAFT BEARING
P/N: 0150710

i SNAP RING
P/N: 1945



RINEER GA-15 MOTOR
P/N: 73099-S1

i COMPONENTS OF MOTOR 73099-S1

# MOTOR ASSEMBLY

ASSEMBLY NO. 73099

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 07/10/02 |

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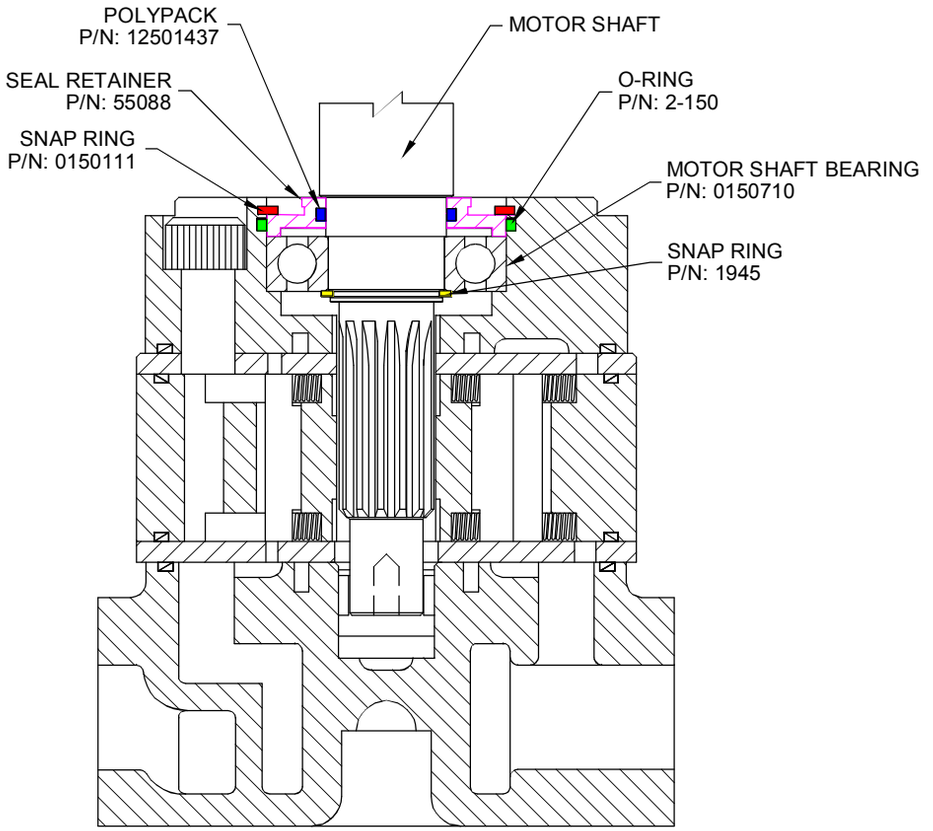


W/ OUT WIPER RING

# MOTOR ASSEMBLY

FOR CLARITY PURPOSE ONLY
NOT TO SCALE

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
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| 2 | | 04/29/03 |
|---|---|---|
| REV. # | LOG # | DATE |

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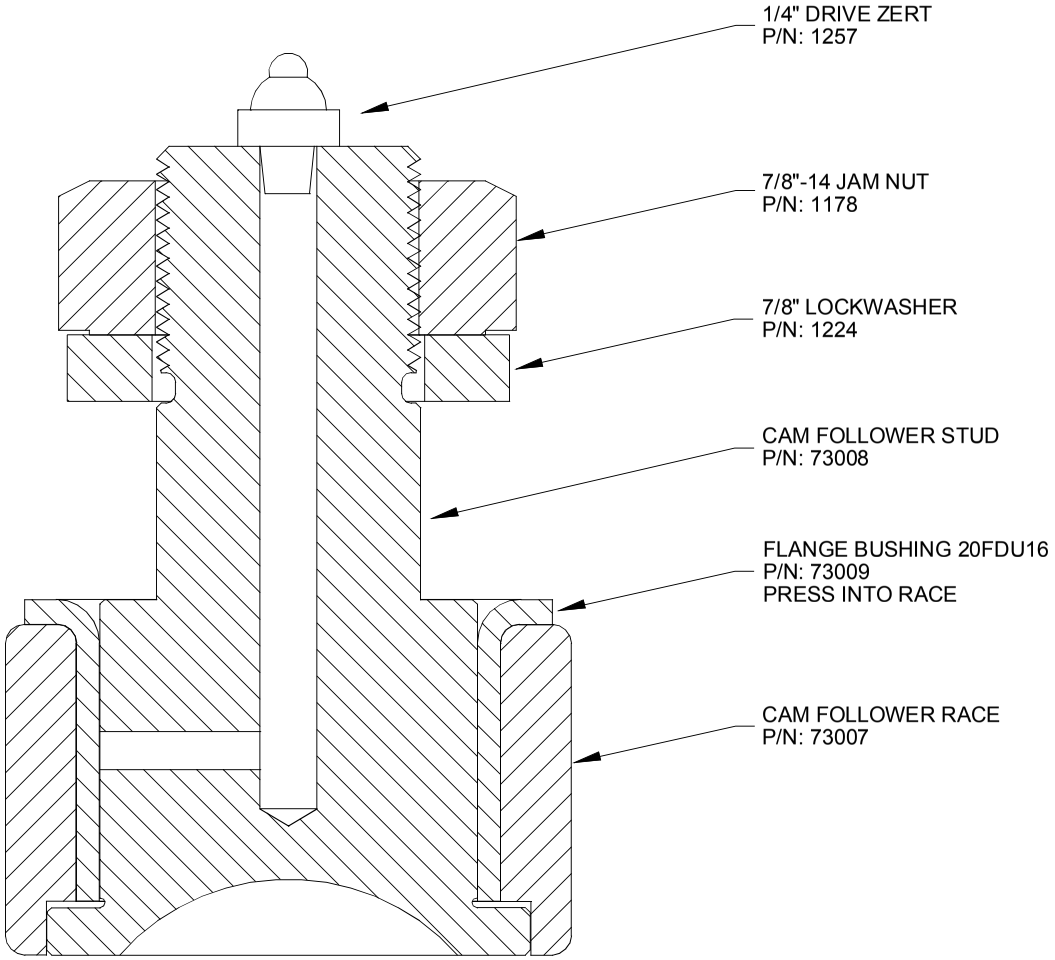


SECTION VIEW

# 1 7/8" SEVERE SERVICE CAM FOLLOWER

## ASSEMBLY NUMBER SSCF1875

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 01/27/00 |
|---|---|---|
| REV. # | LOG # | DATE |

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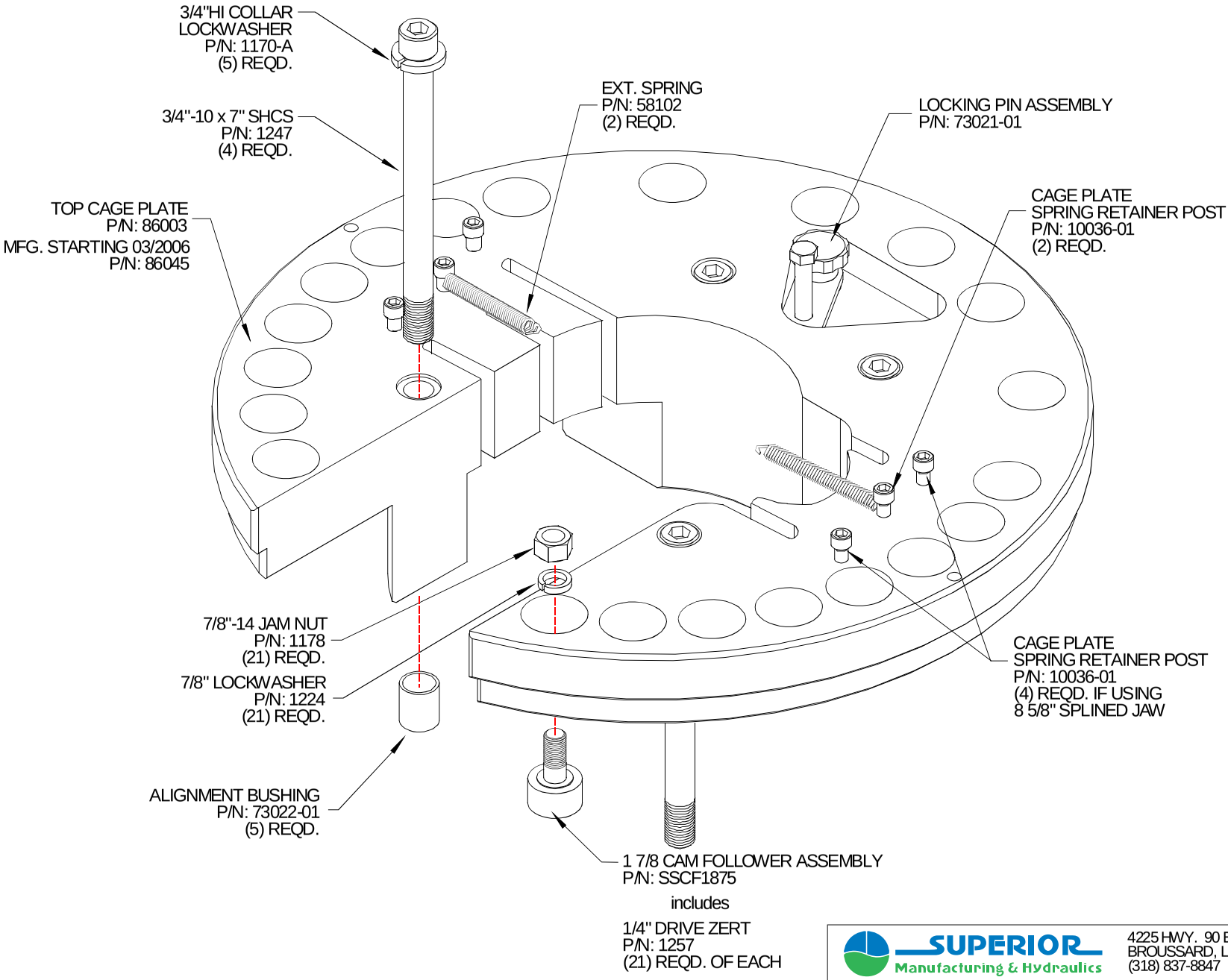


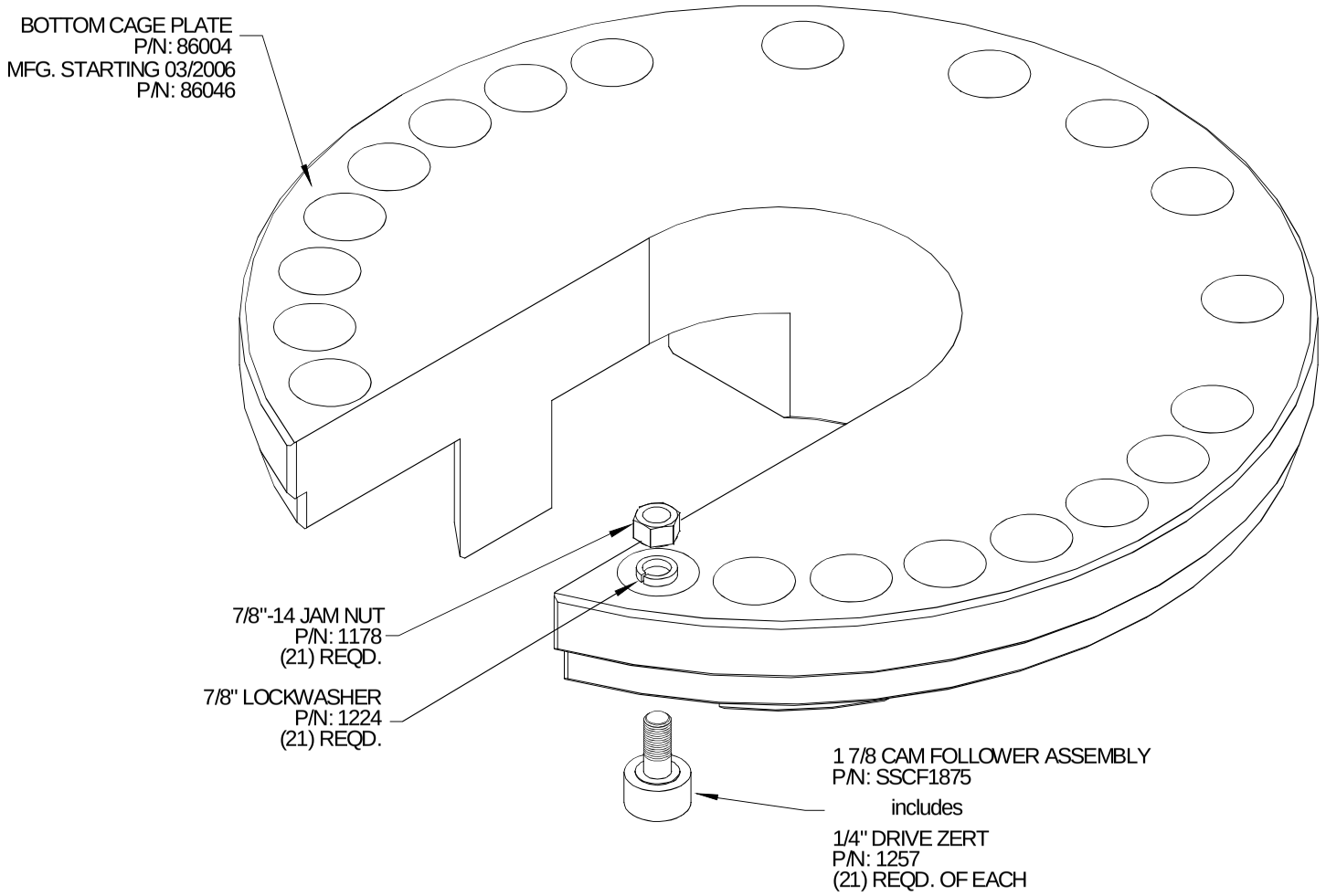

# TOP CAGE PLATE ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 05/17/06 |

REF: P:\Manuals\Equip Manuals\Dwgs\CLE8625DP\Cage Plate Top rev1.wpg



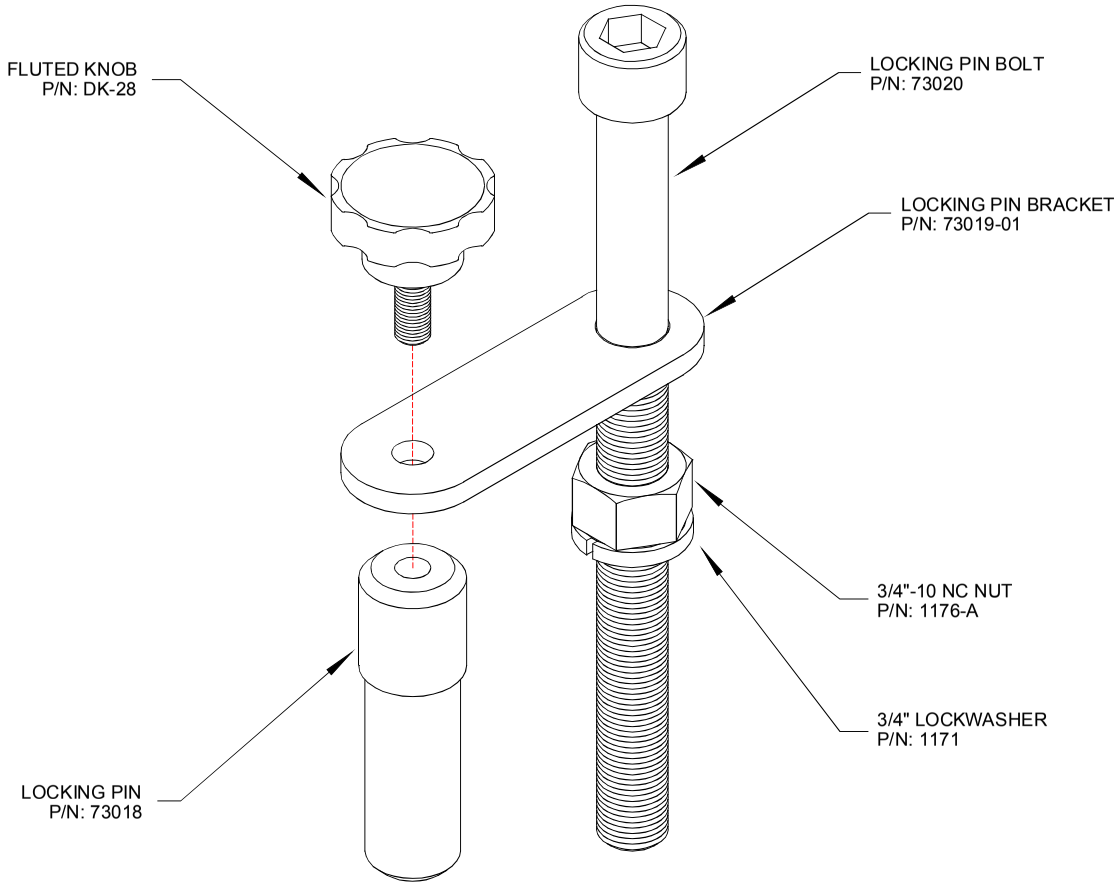

# BOTTOM CAGE PLATE ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 05/17/06 |

REF: P:\Manuals\Equip Manuals\Dwgs\CLE8625DP\Cage Plate Bottom rev1.wpg




# MANUAL LOCKING PIN ASSEMBLY

## P/N: 73021-01

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 01/27/00 |
|---|---|---|
| REV. # | LOG # | DATE |

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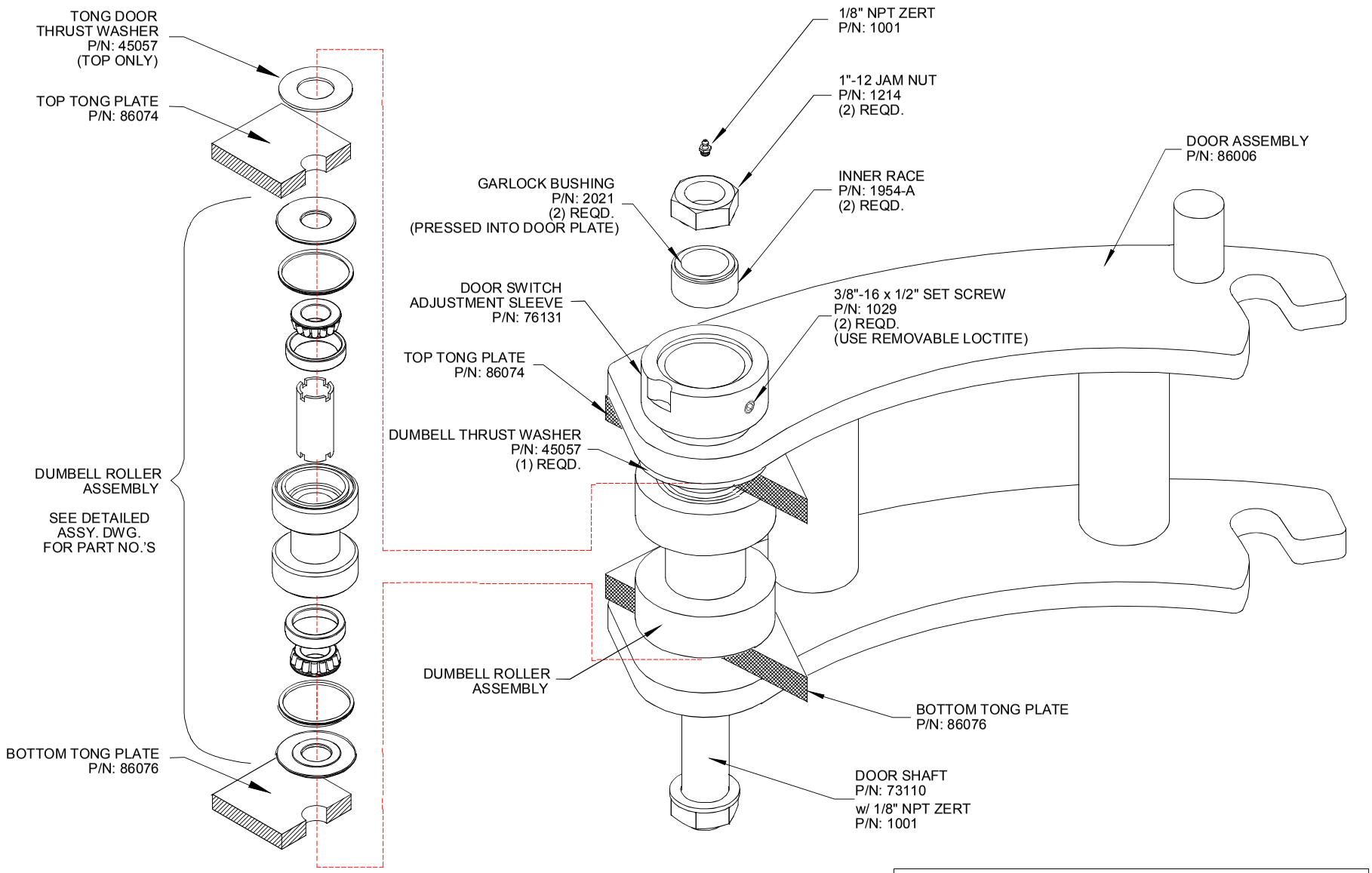


# DOOR ASSEMBLY

## ASSEMBLY NUMBER 86007

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 02/01/00 |
|---|---|---|
| REV. # | LOG # | DATE |

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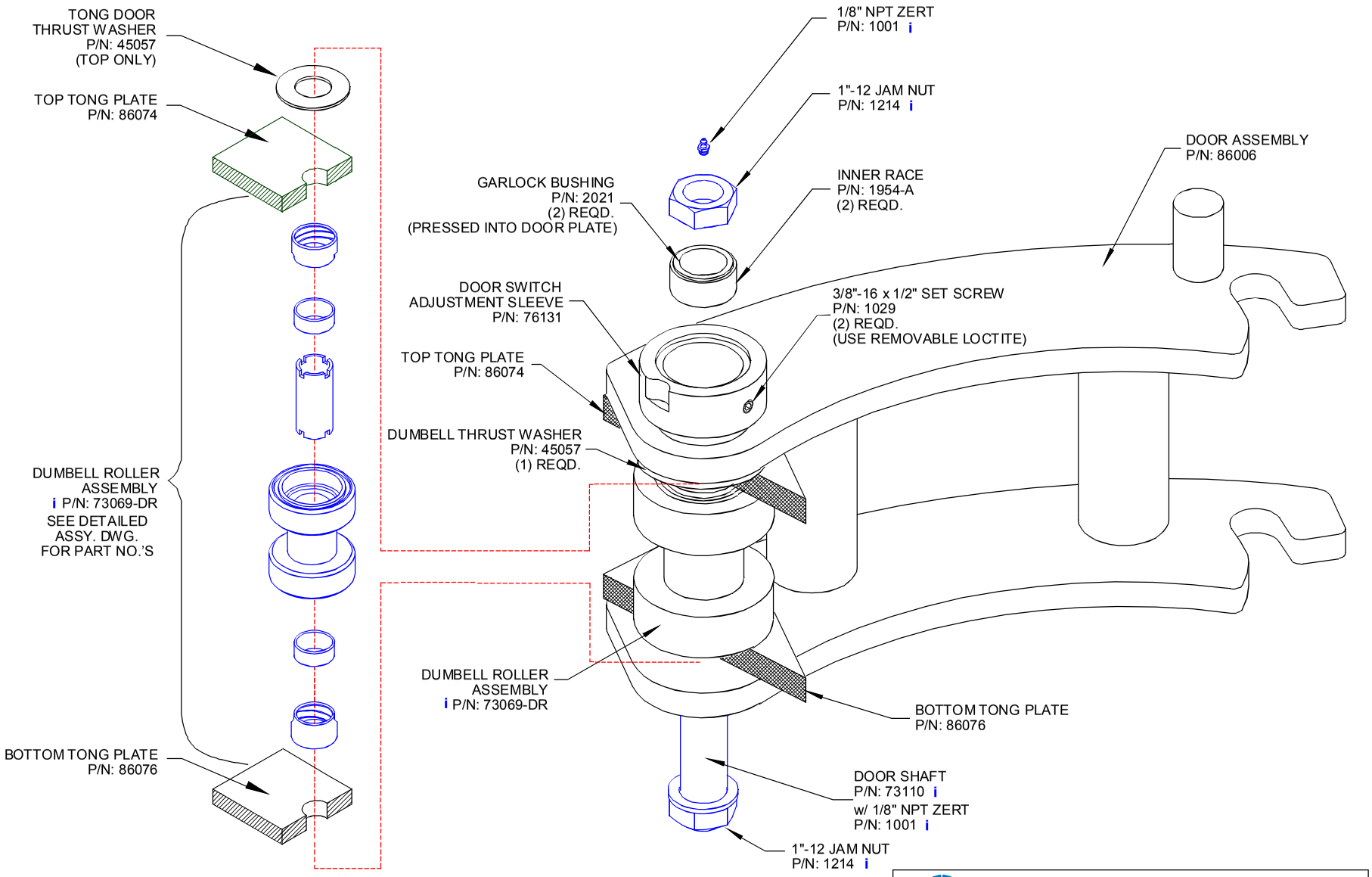


# DOOR ASSEMBLY

## 2ND GENERATION
## ASSEMBLY NUMBER 86007

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 08/31/04 |
|---|---|---|
| REV. # | LOG # | DATE |

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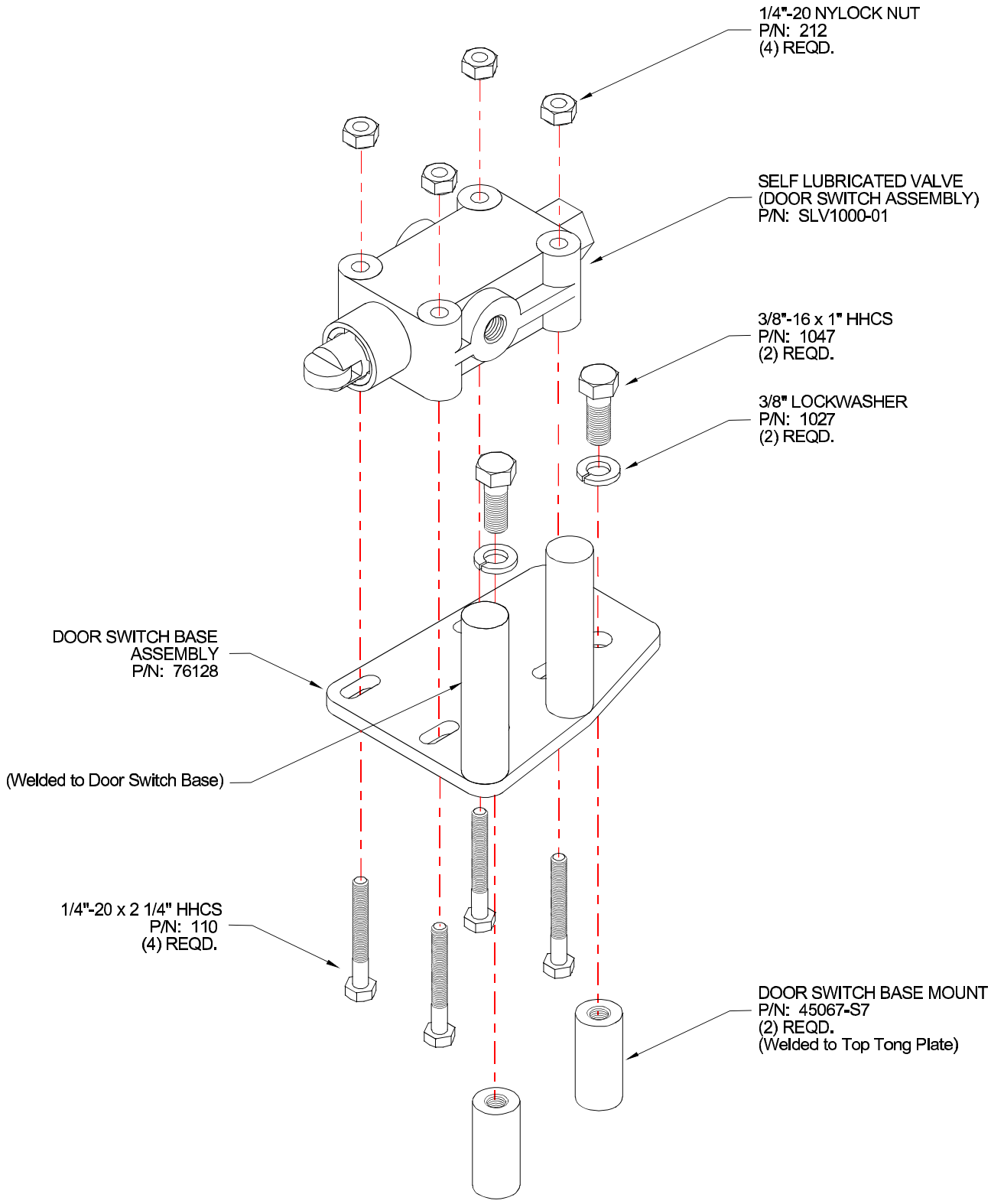


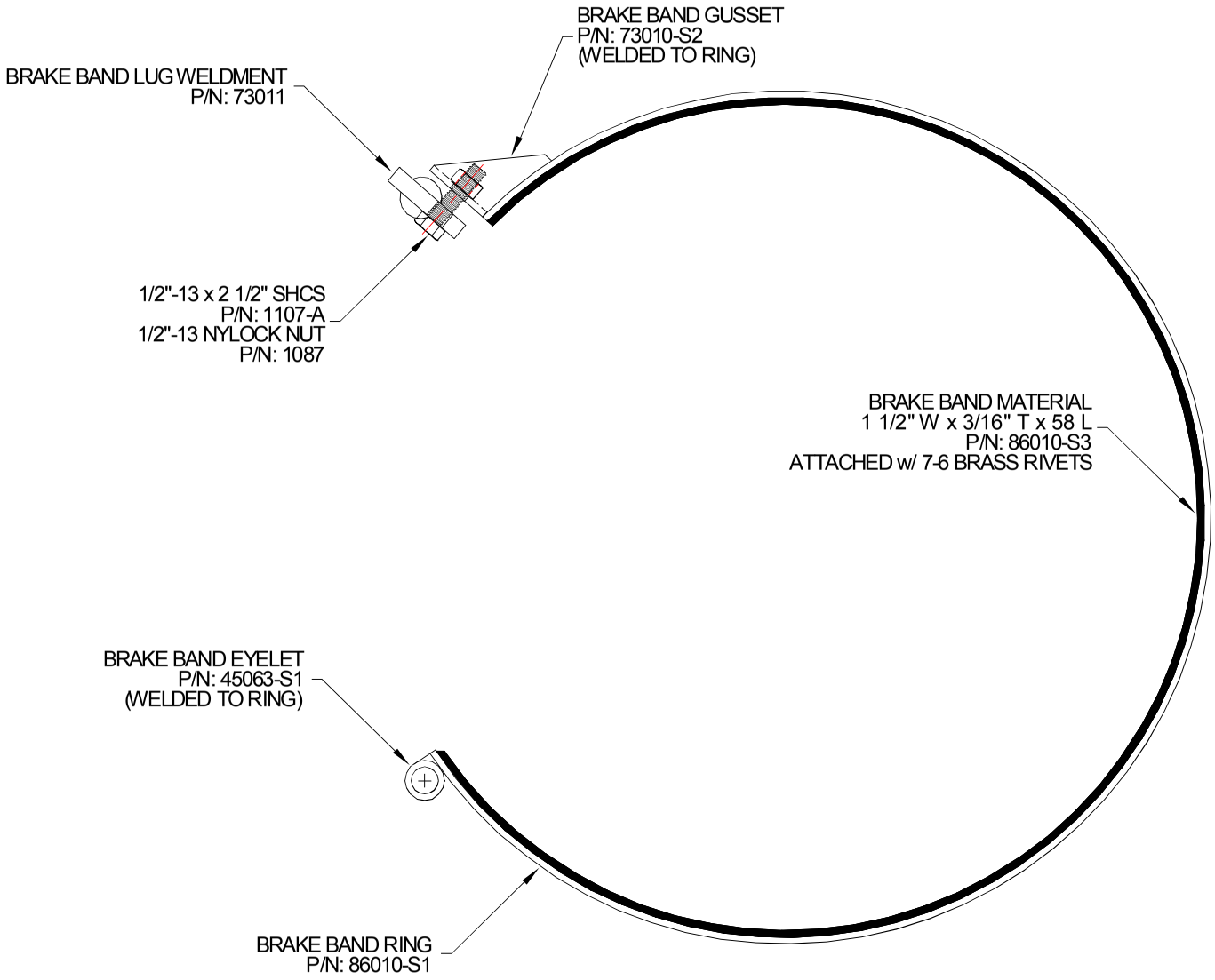

# DOOR SWITCH ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 01/21/00 |
|---|---|---|
| REV. # | LOG # | DATE |

REF: S:\Equip Manuals-Dwgs\CLE8625DP\Door Switch.wpg




# BRAKE BAND ASSEMBLY

ASSEMBLY NUMBER 86010

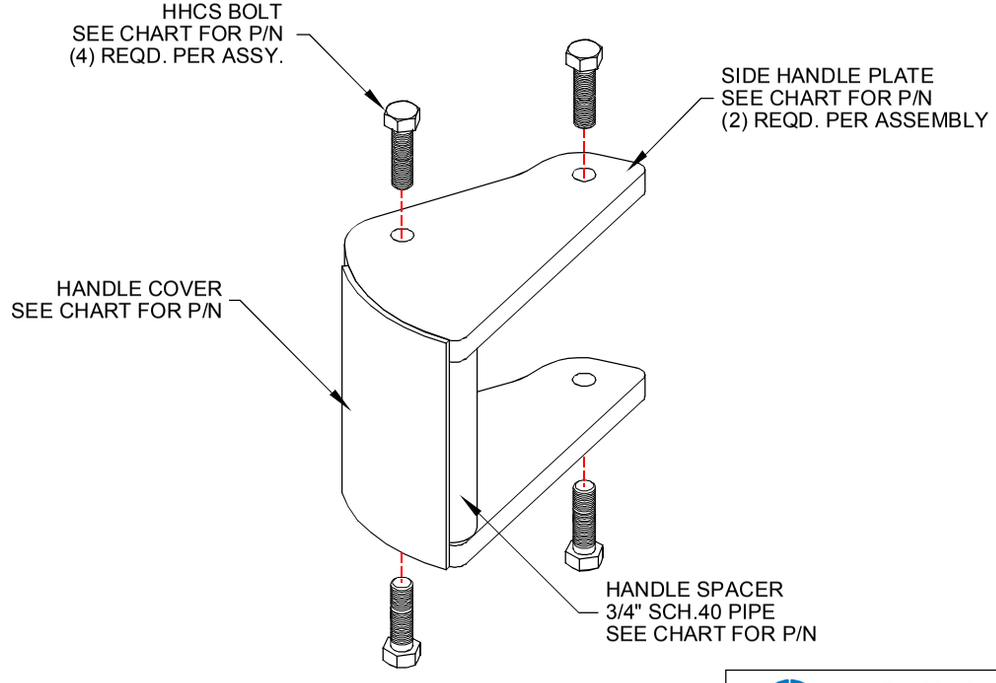
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 07/10/02 |

REF: S:\Equip Manuals-Dwgs\CLE8625DP\Brake Band rev1.wpg

| TONG | ASSEMBLY NUMBER | HANDLE SPACER PIPE PART NO. | HANDLE COVER PLATE PART NO. | SIDE HANDLE PLATE PART NO. | HHCS BOLT | |
|---|---|---|---|---|---|---|
| | | | | | PART NO. | SIZE |
| 4 1/2 STANDARD | 41111 | 41111-S1 | 41111-S2 | 45121 | 1055 | 3/8"-16 x 2 1/4" |
| 5 1/2 STANDARD | 51111 | 51111-S1 | 51111-S2 | 45119 | 1055 | 3/8"-16 x 2 1/4" |
| 5 1/2 LOCKJAW | 58086 | 51111-S1 | 51111-S2 | 45121 | 1055 | 3/8"-16 x 2 1/4" |
| 5 1/2 UHT & XHT | 55141 | 73017-S1 | 55141-S2 | 55200 | 201 | 5/8"-11 x 2 1/4" |
| 5 1/2 XHT01 | 59067 | 73017-S1 | 73017-S2 | 59067-S1 | 201 | 5/8"-11 x 2 1/4" |
| 7 5/8 STANDARD | 76133 | 73017-S1 | 55141-S2 | 55200 | 201 | 5/8"-11 x 2 1/4" |
| 7 5/8 DRILL PIPE -35 | 73017 | 73017-S1 | 73017-S2 | 14035 | 201 | 5/8"-11 x 2 1/4" |
| 7 5/8 LOCKJAW | (2) 73095 | 73095-S1 | 73095-S2 | 14035-01 | 201 | 5/8"-11 x 2 1/4" |
| 7 5/8 & 8 5/8 DRILL PIPE -60 & -03 | (1) 74095 | 73095-S1 | 73095-S2 | 14035-02 | 201 | 5/8"-11 x 2 1/4" |




# SIDE HANDLE ASSEMBLY

SEE CHART FOR ASSEMBLY NUMBER

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 6 | | 10/24/03 |

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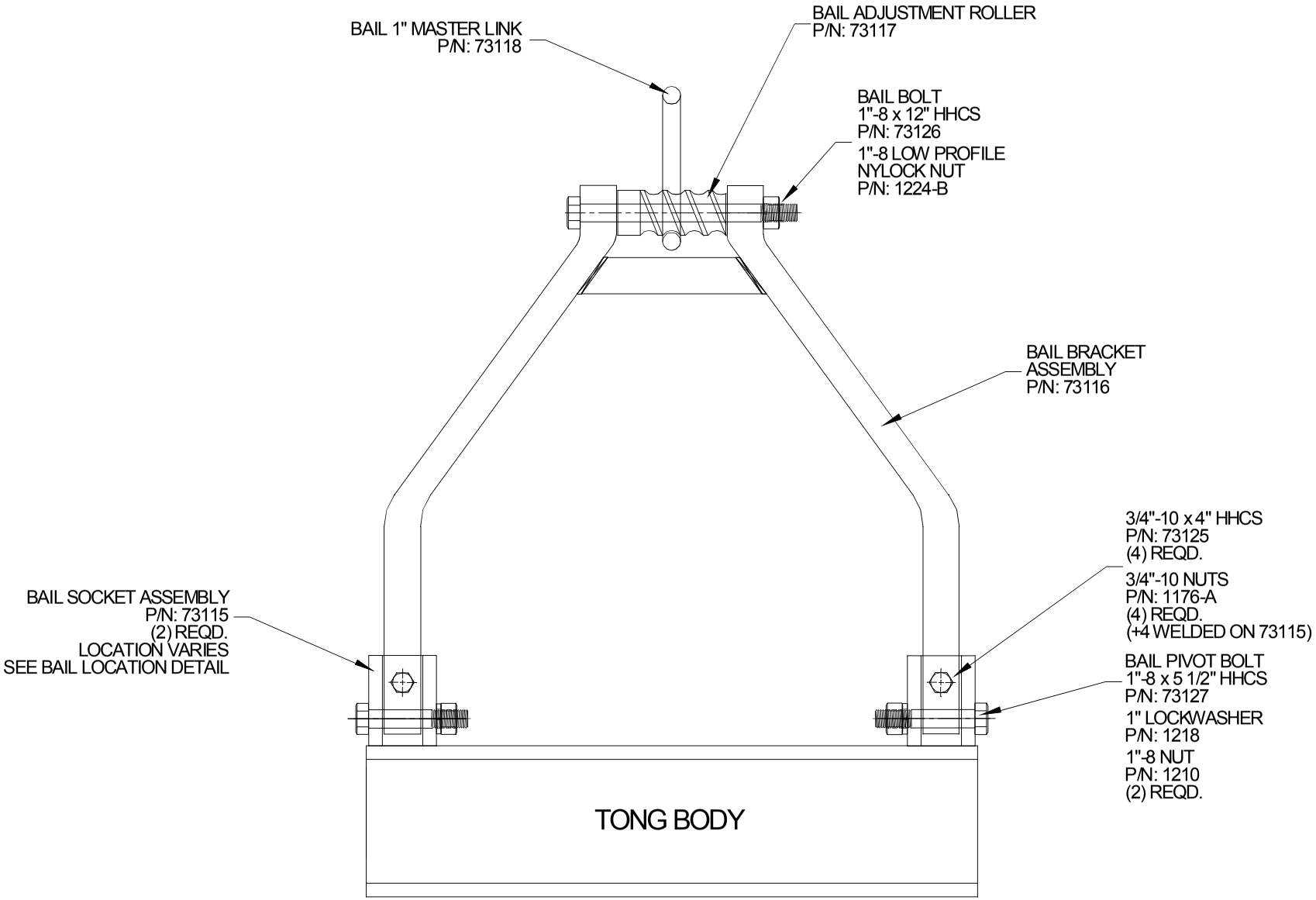



# BAIL ASSEMBLY

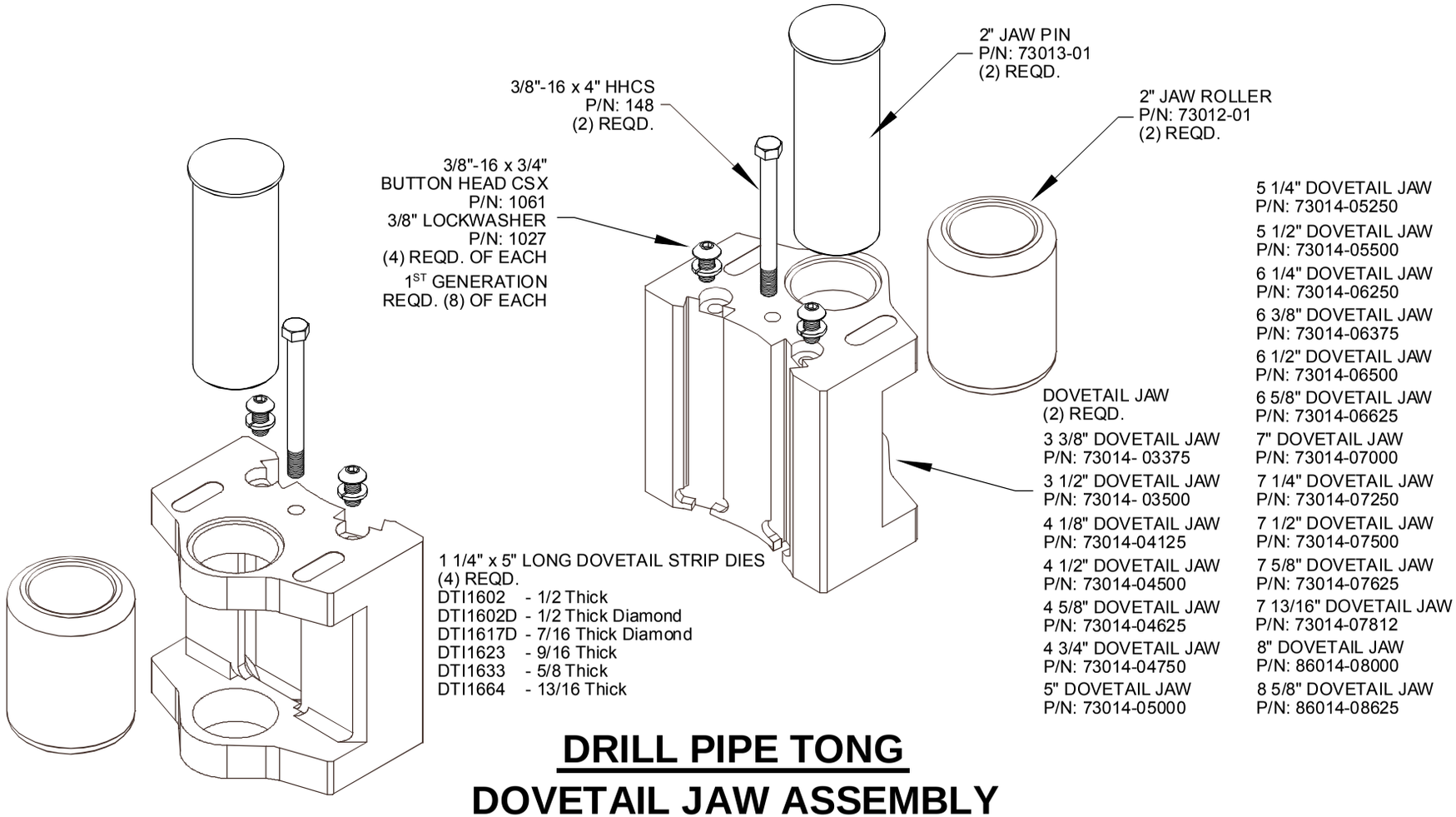
## ASSEMBLY NUMBER 73114

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 2 | | 01/15/02 |

REF: S:\Equip Manuals-Dwgs\CLE8625DP\Bail Assy rev2.wpg




# DRILL PIPE TONG
# DOVETAIL JAW ASSEMBLY

3 3/8" Assembly Number CJDT76-03375
3 1/2" Assembly Number CJDT76-03500
4 1/8" Assembly Number CJDT76-04125
4 1/2" Assembly Number CJDT76-04500
4 5/8" Assembly Number CJDT76-04625
4 3/4" Assembly Number CJDT76-04750
5" Assembly Number CJDT76-05000

5 1/4" Assembly Number CJDT76-05250
5 1/2" Assembly Number CJDT76-05500
6 1/4" Assembly Number CJDT76-06250
6 3/8" Assembly Number CJDT76-06375
6 1/2" Assembly Number CJDT76-06500
6 5/8" Assembly Number CJDT76-06625
7" Assembly Number CJDT76-07000

7 1/4" Assembly Number CJDT76-07250
7 1/2" Assembly Number CJDT76-07500
7 5/8" Assembly Number CJDT76-07625
7 13/16" Assembly Number CJDT76-07812
8" Assembly Number CJDT86-08000
8 5/8" Assembly Number CJDT86-08625

(Right & Left Jaw are reversible and interchangeable)

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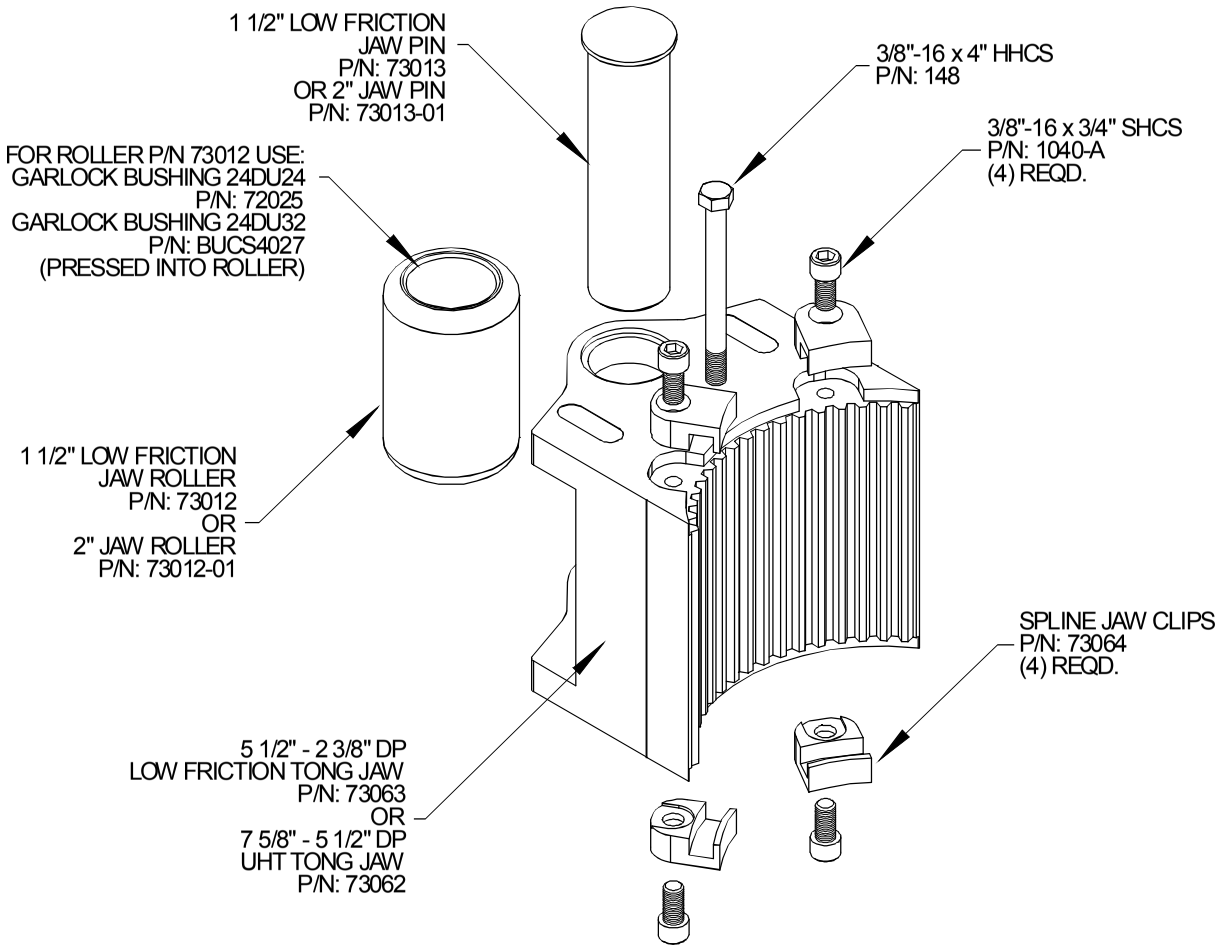
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 2 | | 03/31/03 |

REF: S:\Equip Manuals-Dwgs\CLE8625DP\Jaw DT rev2.wpg




# DRILL PIPE TONG
# LOW FRICTION & SPLINED JAW ASSEMBLY

5 1/2" - 2 3/8" DP LF  Assembly Number CJ-LF-76D
7 5/8" - 5 1/2" DP UHT  Assembly Number CJ-76C

(2) Required
(Right & Left Jaw are reversible and interchangeable)

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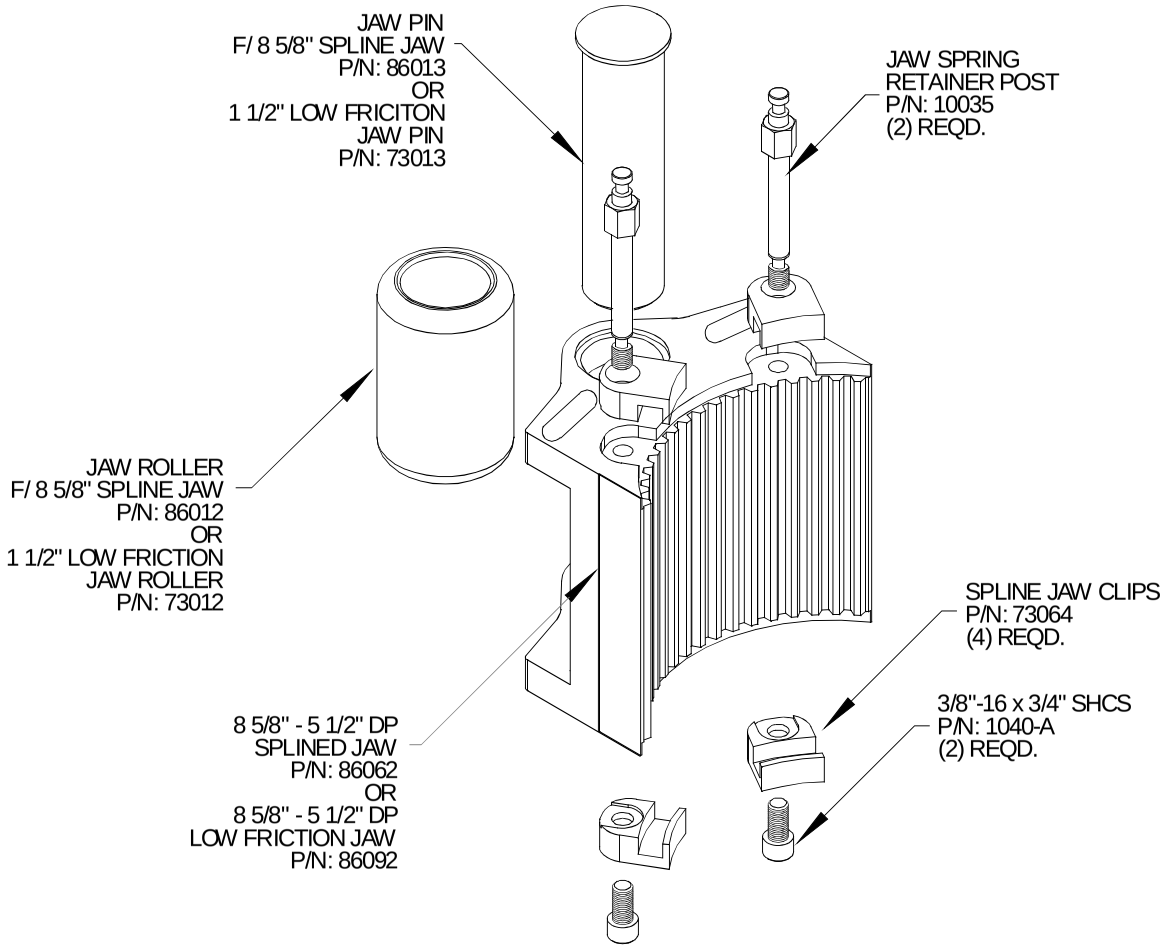
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 2 | | 12/13/04 |

REF: S:\Equip Manuals-Dwgs\CLE8625DP\Jaw Assy rev2.wpg




# DRILL PIPE TONG
# LOW FRICTION & SPLINED JAW ASSEMBLY

8 5/8" - 5 1/2" DP Assembly Number CJ-86A
8 5/8" - 5 1/2" DP LF Assembly Number CJ-LF-86B

(2) Required
(Right & Left Jaw are reversible and interchangeable)

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4225 HWY. 90 EAST
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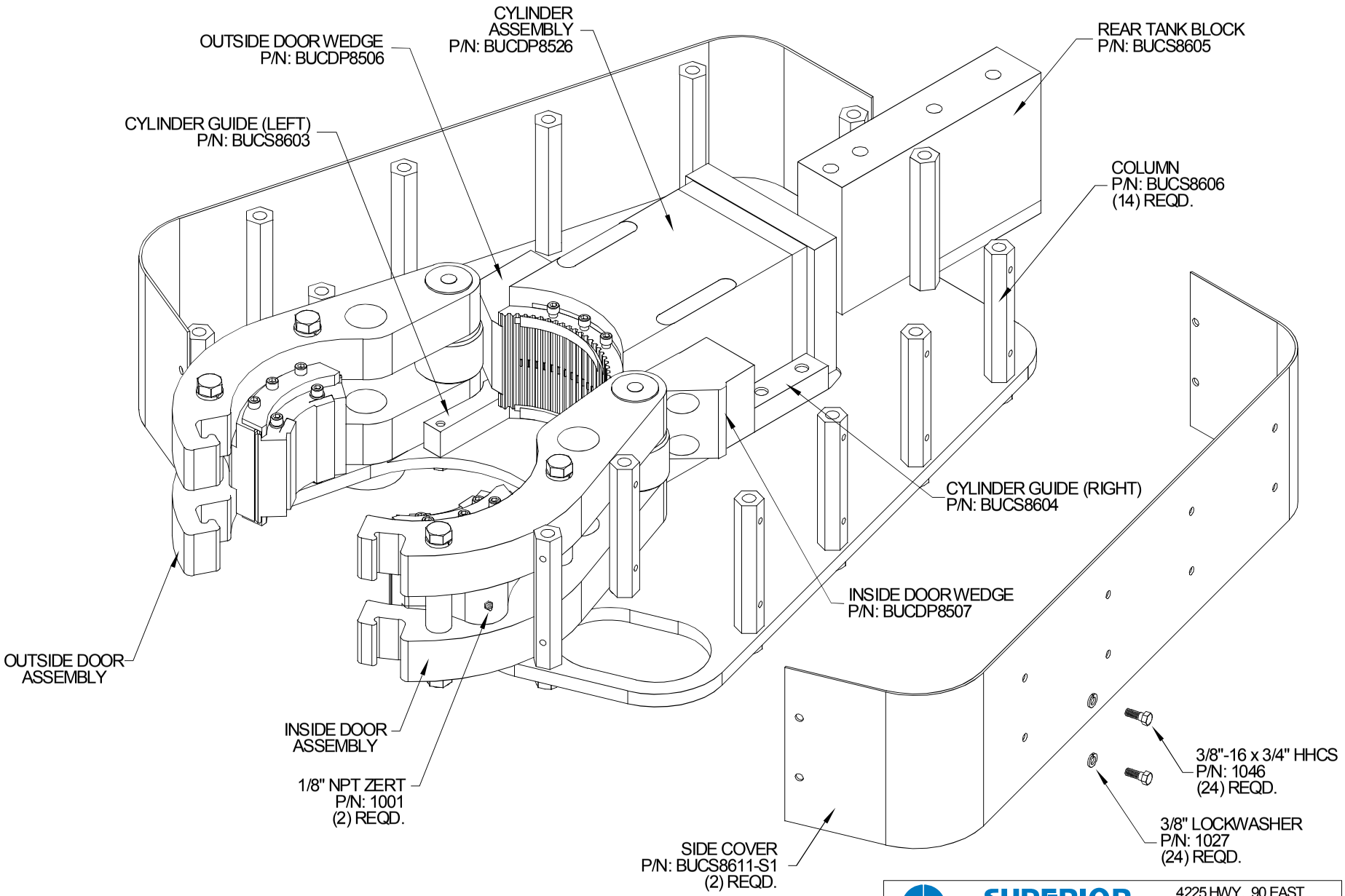
| REV. # | LOG # | DATE |
|---|---|---|
| 3 | | 05/17/06 |

REF: P:\Manuals\Equip Manuals\Dwgs\CLE8625DP\Jaw Assy 8625 rev3.wpg

# TABLE OF CONTENTS

## SECTION 10 BACKUP & MOUNTING KIT ILLUSTRATIONS




# 8 5/8” LOCKJAW™ DRILL PIPE BACKUP

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 01/22/02 |

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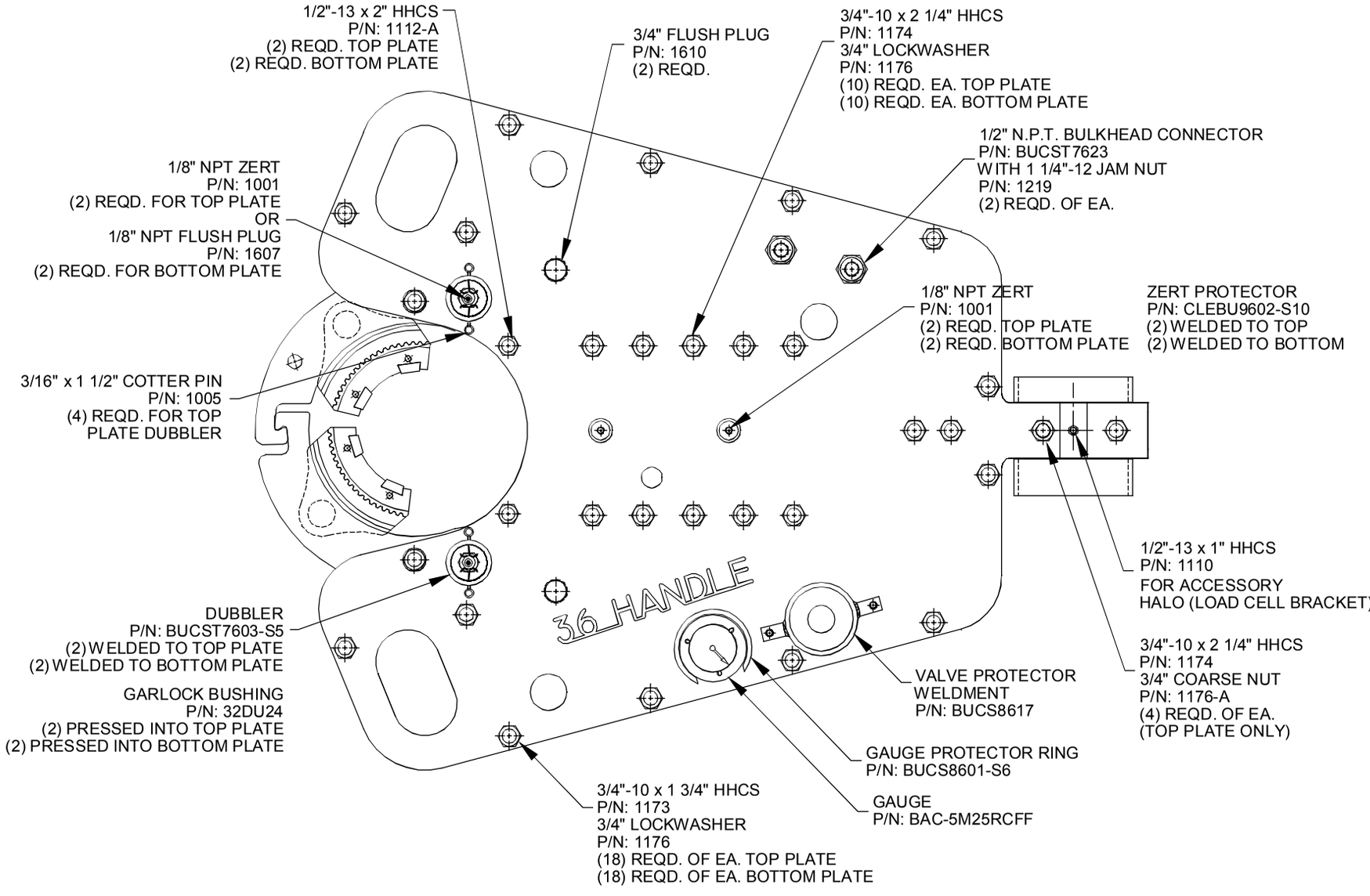



# 8 5/8” LOCKJAW™ DRILL PIPE BACKUP

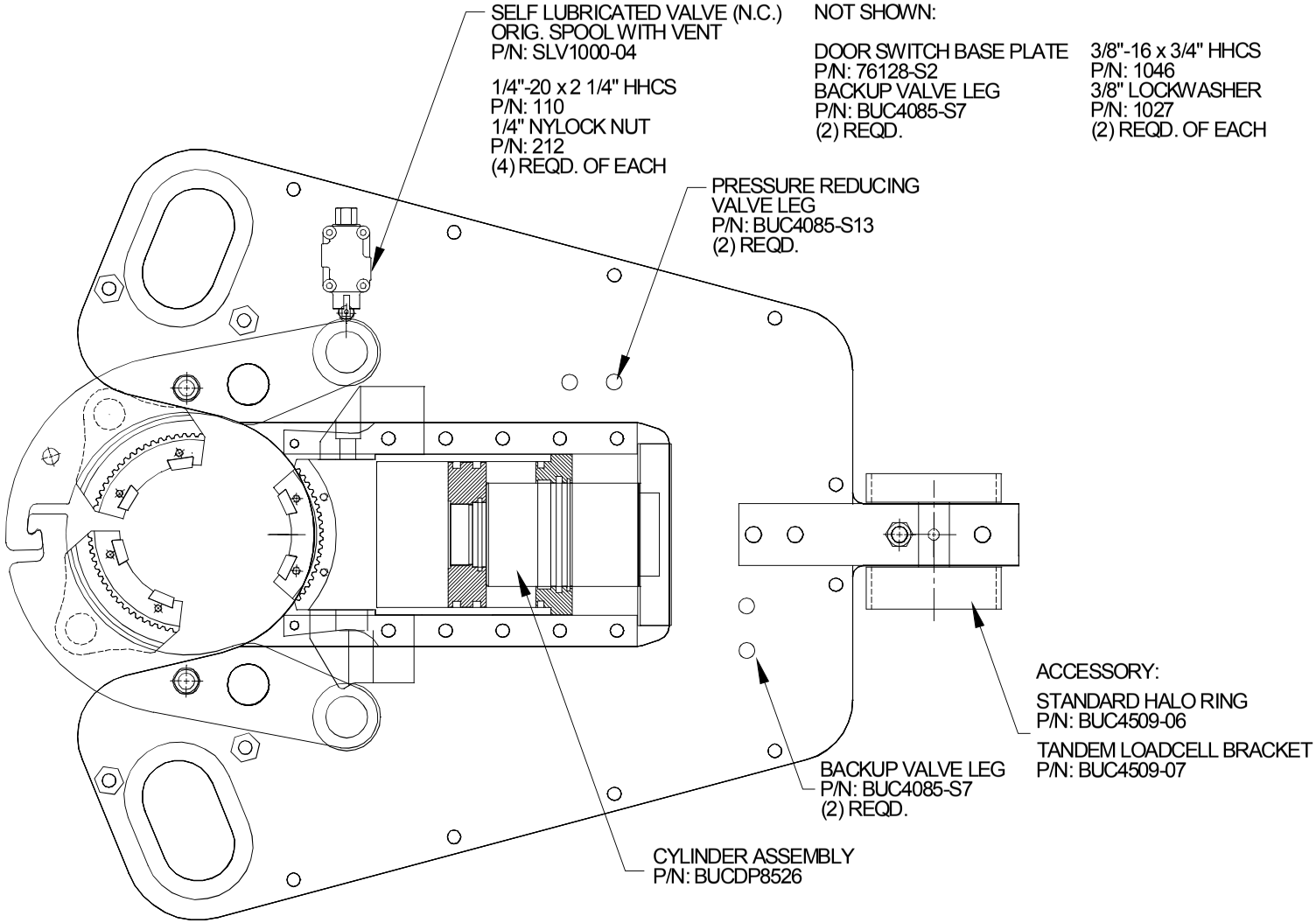
# TOP VIEW

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 4 | | 01/15/04 |

REF: S:\Equip Manuals-Dwgs\BUCDP8500\Top View rev4.wpg




# 8 5/8” LOCKJAW™ DRILL PIPE BACKUP
# TOP VIEW WITHOUT TOP PLATE

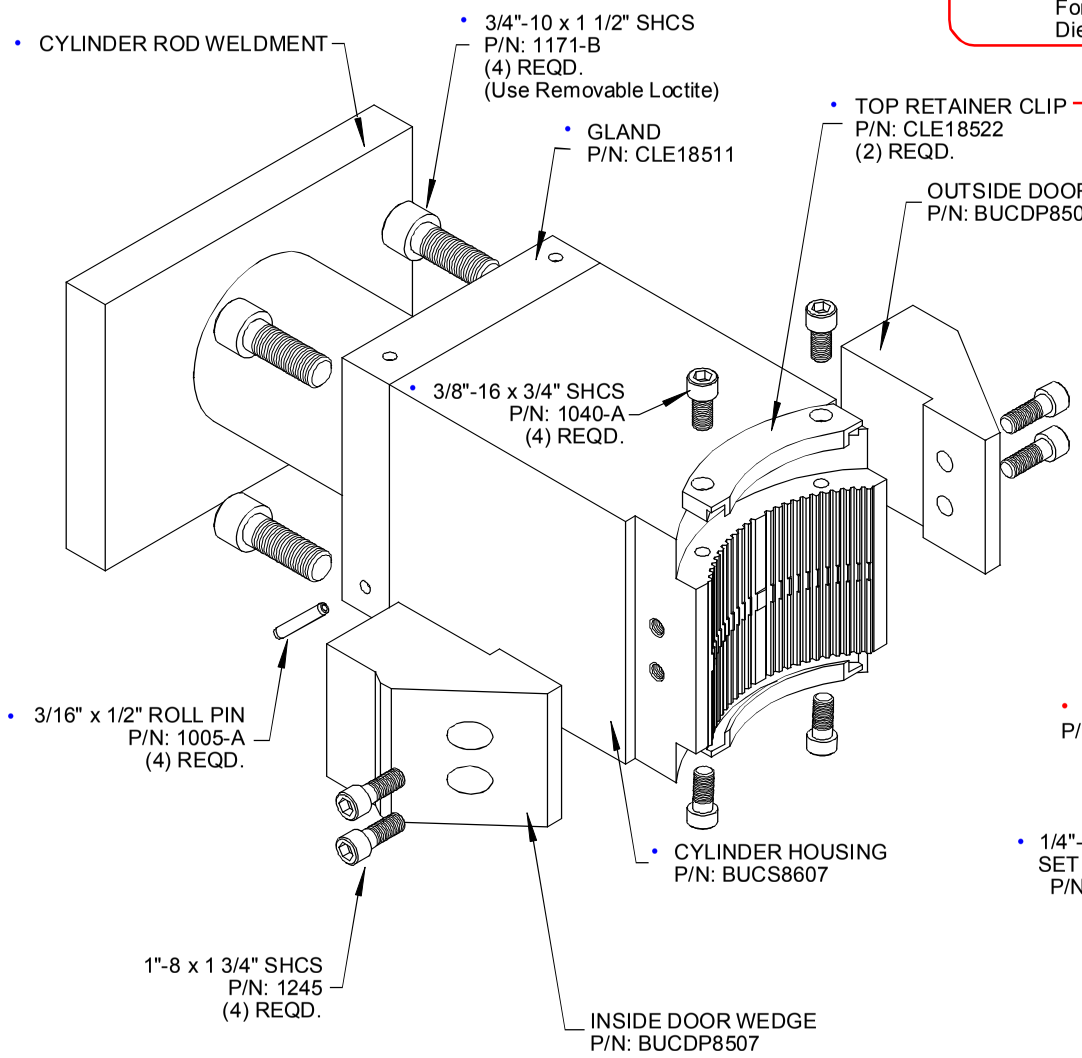
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

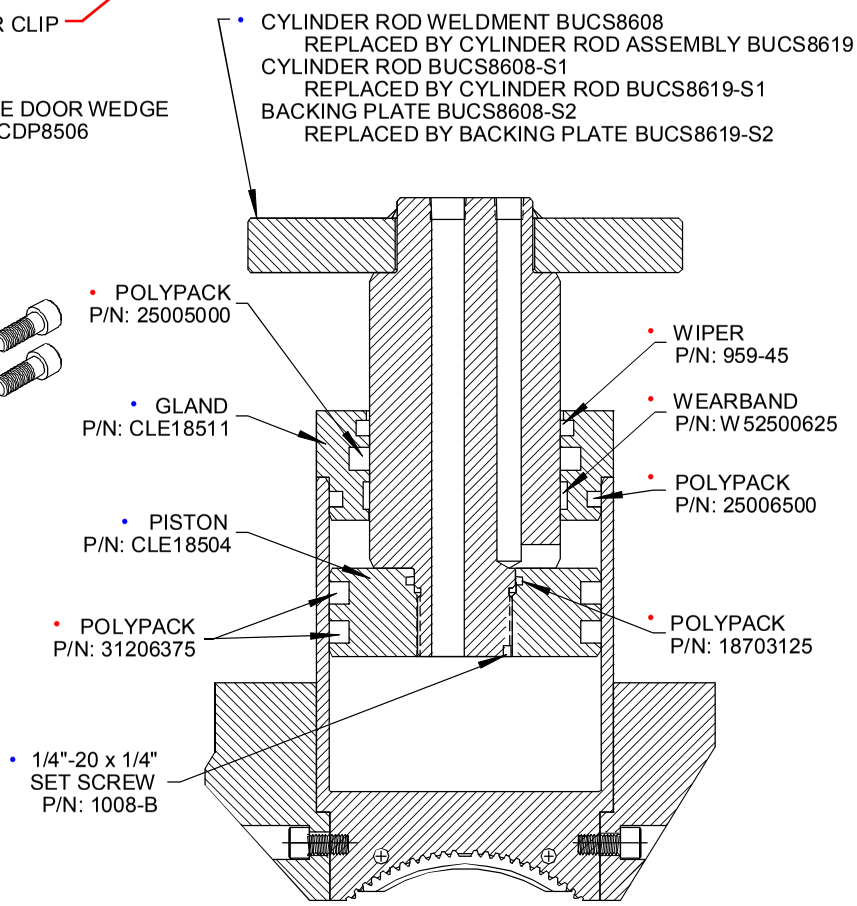


| REV. # | LOG # | DATE |
|---|---|---|
| 3 | | 07/10/02 |

REF: S:\Equip Manuals-Dwgs\BUCDP8500\Top View woPlate rev3.wpg

**NOTE:** Replace standard Top Retainer Clip PN CLE18522 with Die Retainer Clip PN CLE18522-01 for applications where tool joints are 7 1/4" - 8 1/4".
For applications where tool joints are 8 1/4" to our maximum limit of 8 7/8" use Die Retainer Clip PN CLE18522-02 with Splined Die Inserts SDI86-XXXX.




• SEAL KIT
P/N: ASAP2350 •

# 8 5/8" LOCKJAW™ DRILL PIPE BACKUP CYLINDER ASSEMBLY NO. BUCS8103

ASSEMBLY NO. BUCDP8526 •

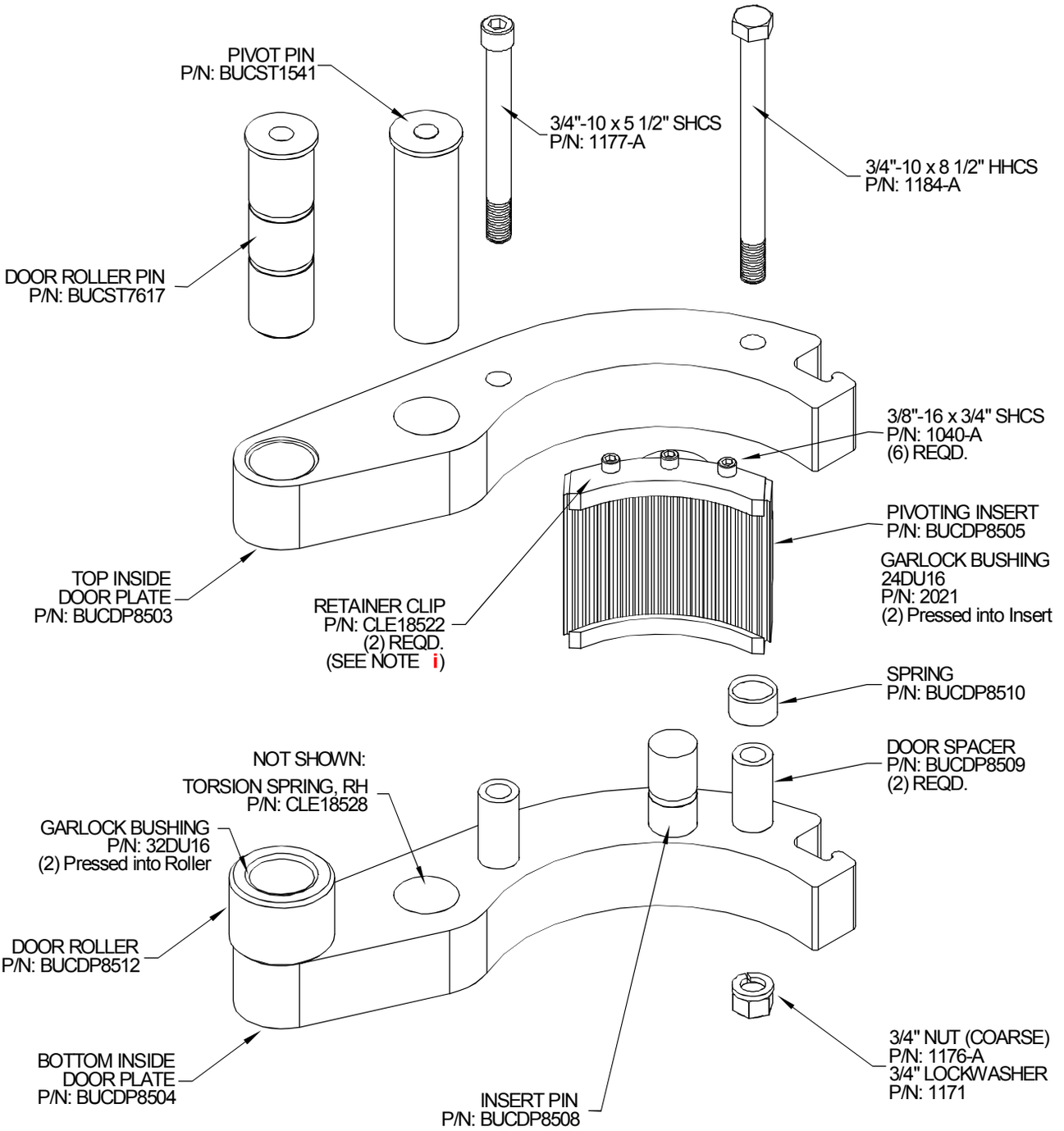
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 5 | | 01/14/05 |

REF: S:\Equip Manuals-Dwgs\BUCDP8500\CylinderAssy rev5.wpg

**i NOTE:** Replace standard Top Retainer Clip PN CLE18522 with Die Retainer Clip PN CLE18522-01 for applications where tool joints are 7 1/4" - 8 1/4".
For applications where tool joints are 8 1/4" to our maximum limit of 8 7/8" use Die Retainer Clip PN CLE18522-02 with Splined Die Inserts SDI86-XXXX.




# INSIDE DOOR ASSEMBLY

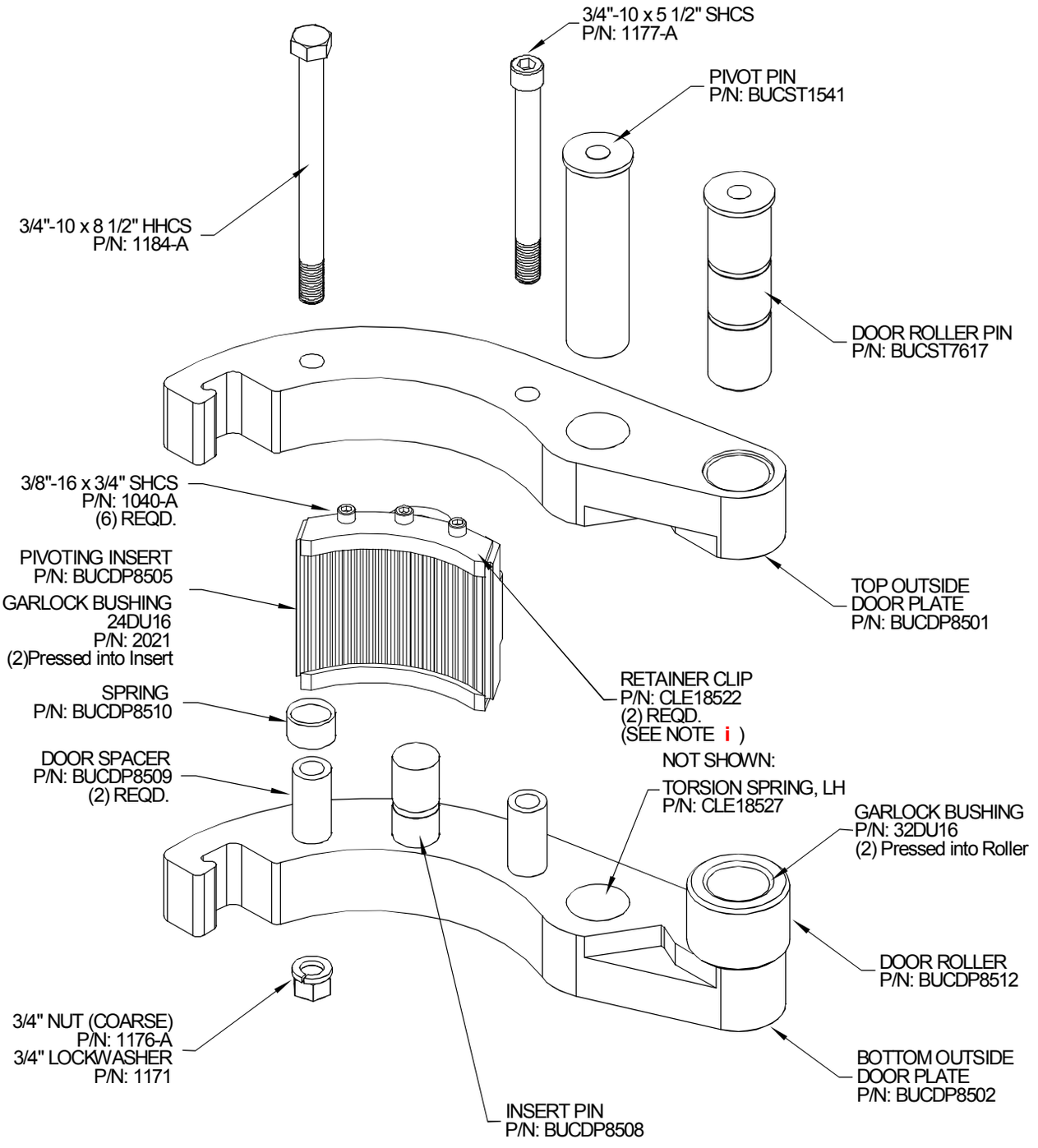
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 4 | | 01/12/04 |

REF: S:\Equip Manuals-Dwgs\BUCDP8500\Door Inside rev4.wpg

**i NOTE:** Replace standard Top Retainer Clip PN CLE18522 with Die Retainer Clip PN CLE18522-01 for applications where tool joints are 7 1/4" - 8 1/4".
For applications where tool joints are 8 1/4" to our maximum limit of 8 7/8" use Die Retainer Clip PN CLE18522-02 with Splined Die Inserts SDI86-XXXX.




# OUTSIDE DOOR ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 5 | | 01/12/04 |

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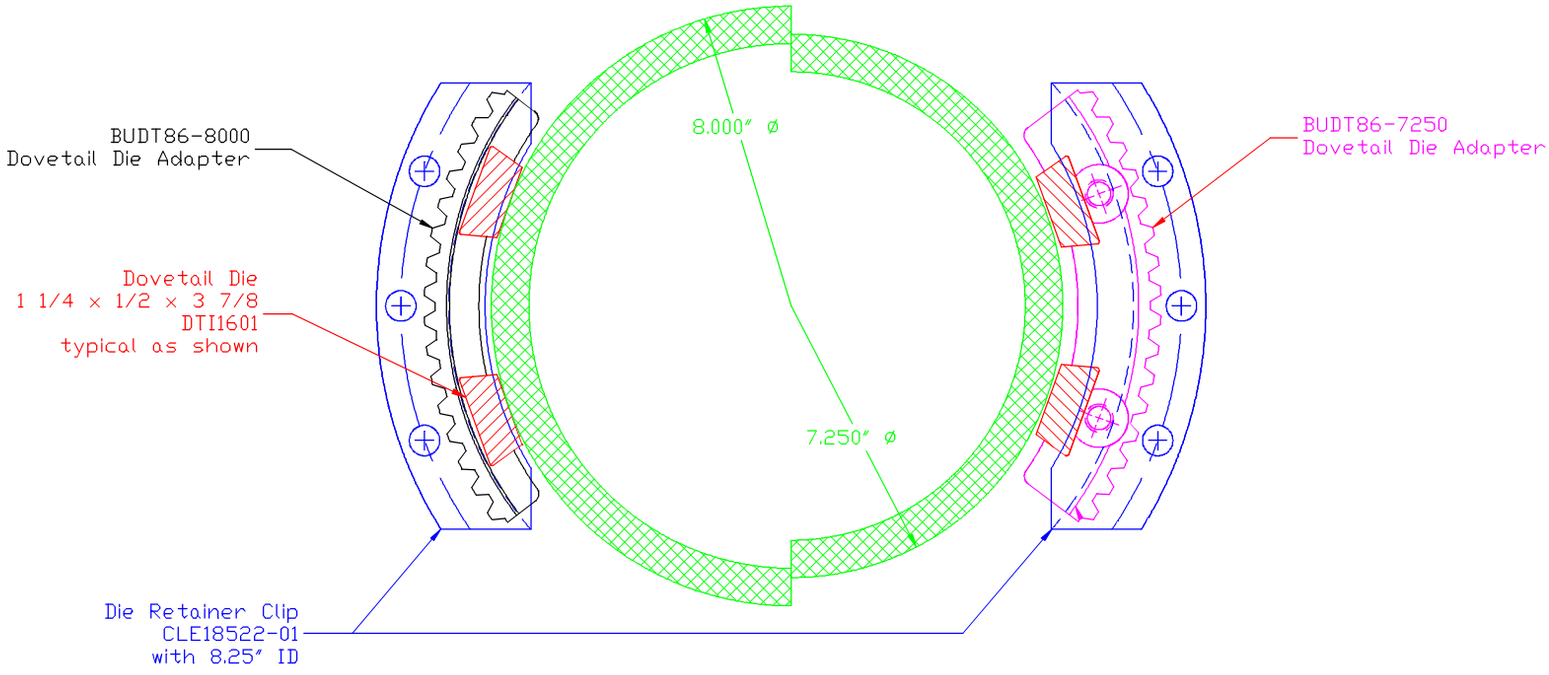


Special Note for applications requiring BUDT86–xxxx dovetail die adapters larger than 7 1/4". These larger adapters cannot accommodate die retainer screws and utilize a special die retainer clip CLE18522–01 to retain the dovetail die inserts. This clip is used in place of the standard upper clip CLE18522 in all BUCDP8500 **LOCKJAW™** Backups.

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(318) 837-8847



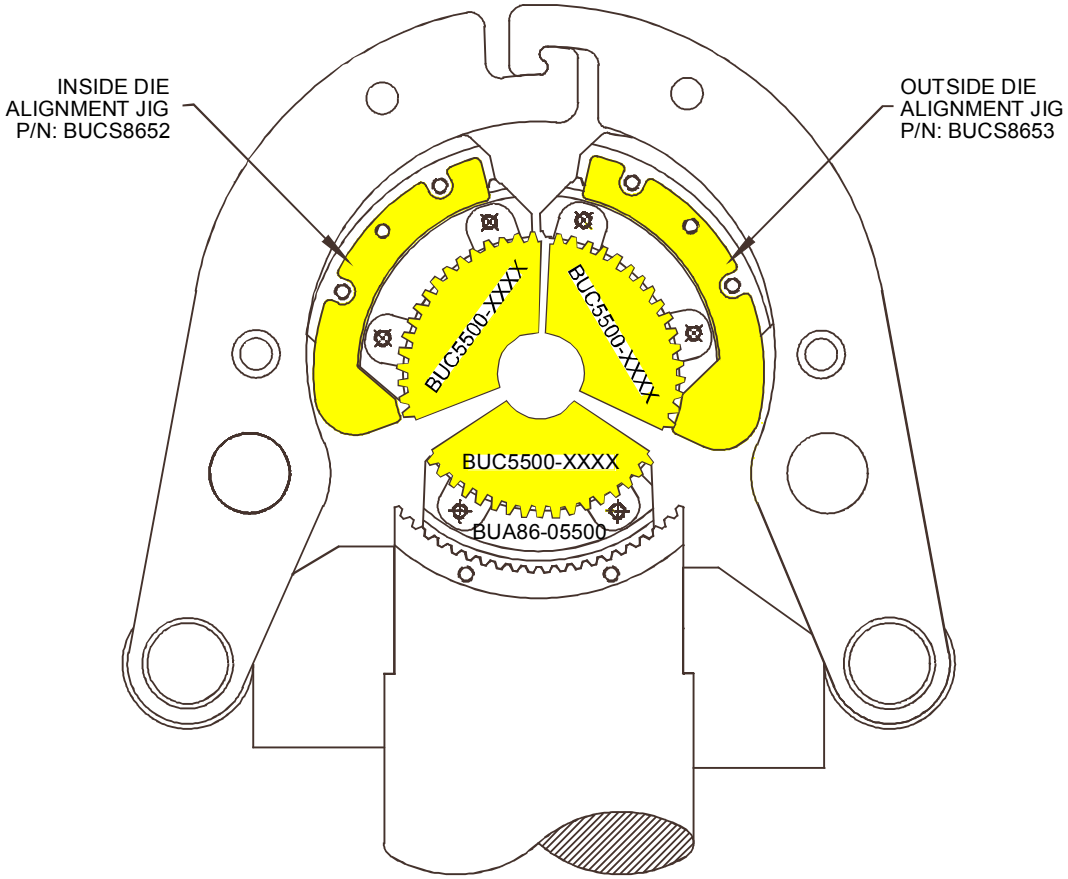
| REV. # | LOG # | DATE |
|---|---|---|
| | | 01/12/04 |

REF: S:\Equip Manuals-Dwgs\BUCDP8500\BUDT86 Special Note.wpg

NOTE: 8 5/8 DP BACKUP & 8 5/8 BUCKING UNIT BACKUP HAVE THE SAME CONFIGURATION.

TO INSURE THAT THE DOOR DIES DOES NOT INTERFERE AT THE CLOSED POSITION, FOLLOW THESE INSTRUCTIONS:

1. 1 TOOTH MUST BE MILLED OFF ON EACH OF THE DIE ADAPTERS BUA86-05500 ON EACH DOOR.
2. ROTATE INSIDE DOOR DIE SO THAT 1 TOOTH IS EXPOSED TOWARDS THE CYLINDER.
3. ROTATE OUTSIDE DOOR DIE SO THAT 2 TEETH ARE EXPOSED TOWARDS THE CYLINDER.
4. TO ASSURE PERFECT ALIGNMENT EVERY TIME, USE THE DIE ALIGNMENT JIGS BUCS8652 & BUCS8653.




# 8 5/8" PIVOTING JAW INSERT

PART NUMBER BUCDP8505

# 5 1/2" DIE INSTALLATION

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

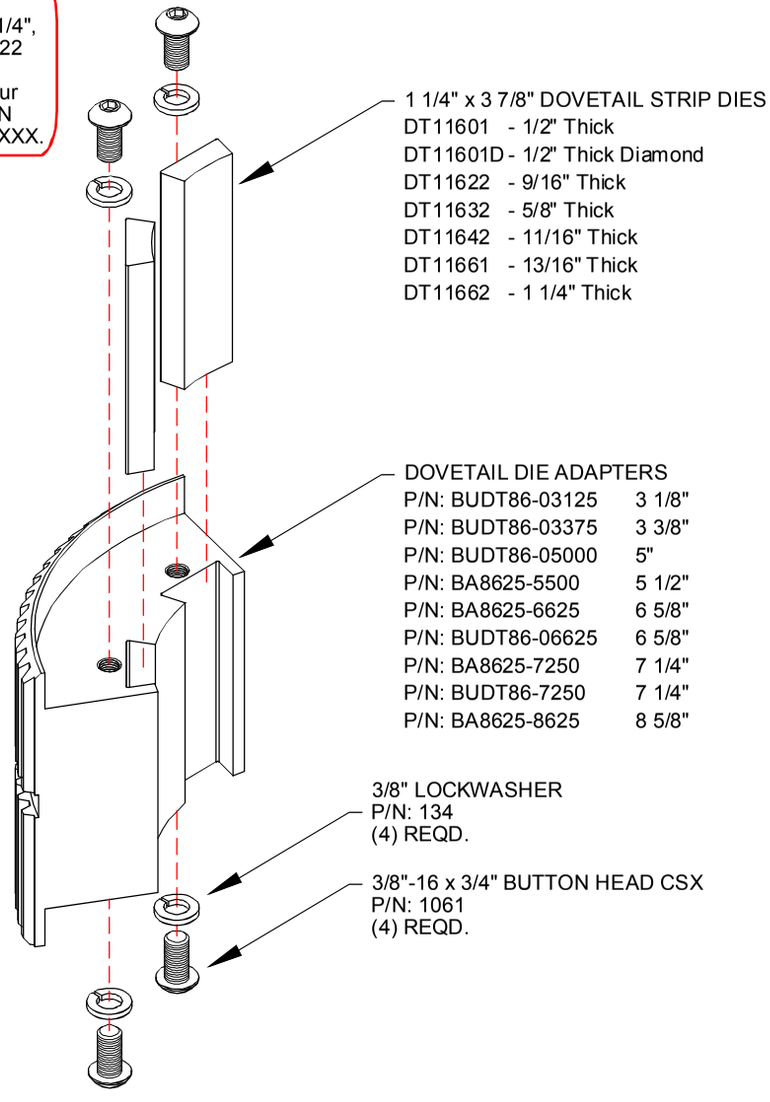


| 1 | | 01/11/05 |
|---|---|---|
| REV. # | LOG # | DATE |

REF: S:\Equip Manuals-Dwgs\Dies\Die Alignment 5.5 rev1.wpg

- ***SPECIAL NOTE:***

  For applications where tool joints are 7 1/4" - 8 1/4", replace standard Top Retainer Clip PN CLE18522 with Die Retainer Clip PN CLE18522-01.
  For applications where tool joints are 8 1/4" to our maximum limit of 8 7/8" use Die Retainer Clip PN CLE18522-02 with Splined Die Inserts SDI86-XXXX.



1 1/4" x 3 7/8" DOVETAIL STRIP DIES
DT11601 - 1/2" Thick
DT11601D - 1/2" Thick Diamond
DT11622 - 9/16" Thick
DT11632 - 5/8" Thick
DT11642 - 11/16" Thick
DT11661 - 13/16" Thick
DT11662 - 1 1/4" Thick

DOVETAIL DIE ADAPTERS

| | |
|---|---|
| P/N: BUDT86-03125 | 3 1/8" |
| P/N: BUDT86-03375 | 3 3/8" |
| P/N: BUDT86-05000 | 5" |
| P/N: BA8625-5500 | 5 1/2" |
| P/N: BA8625-6625 | 6 5/8" |
| P/N: BUDT86-06625 | 6 5/8" |
| P/N: BA8625-7250 | 7 1/4" |
| P/N: BUDT86-7250 | 7 1/4" |
| P/N: BA8625-8625 | 8 5/8" |

3/8" LOCKWASHER
P/N: 134
(4) REQD.

3/8"-16 x 3/4" BUTTON HEAD CSX
P/N: 1061
(4) REQD.

# 8 5/8” LOCKJAW™ DRILL PIPE BACKUP
# DOVETAIL DIE ADAPTER

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 01/12/04 |

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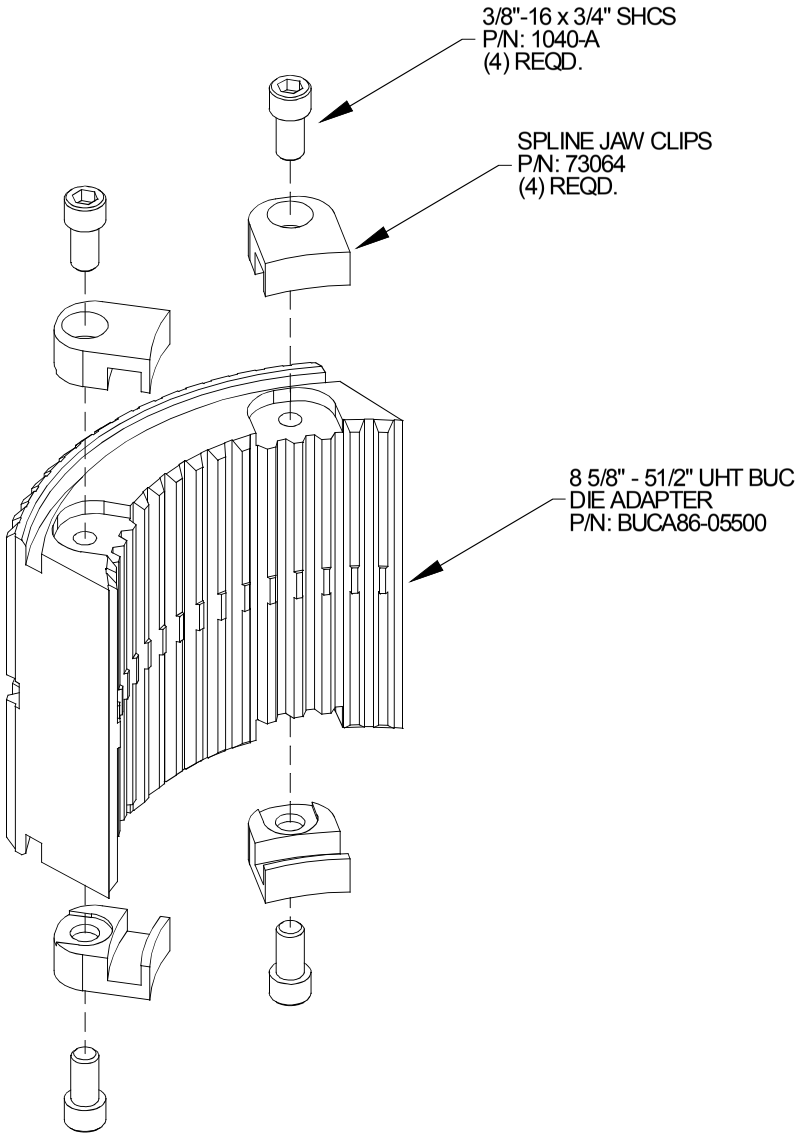


# 8 5/8” LOCKJAW™ DRILL PIPE BACKUP

## SPLINED DIE ADAPTER

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 12/06/99 |
|---|---|---|
| REV. # | LOG # | DATE |

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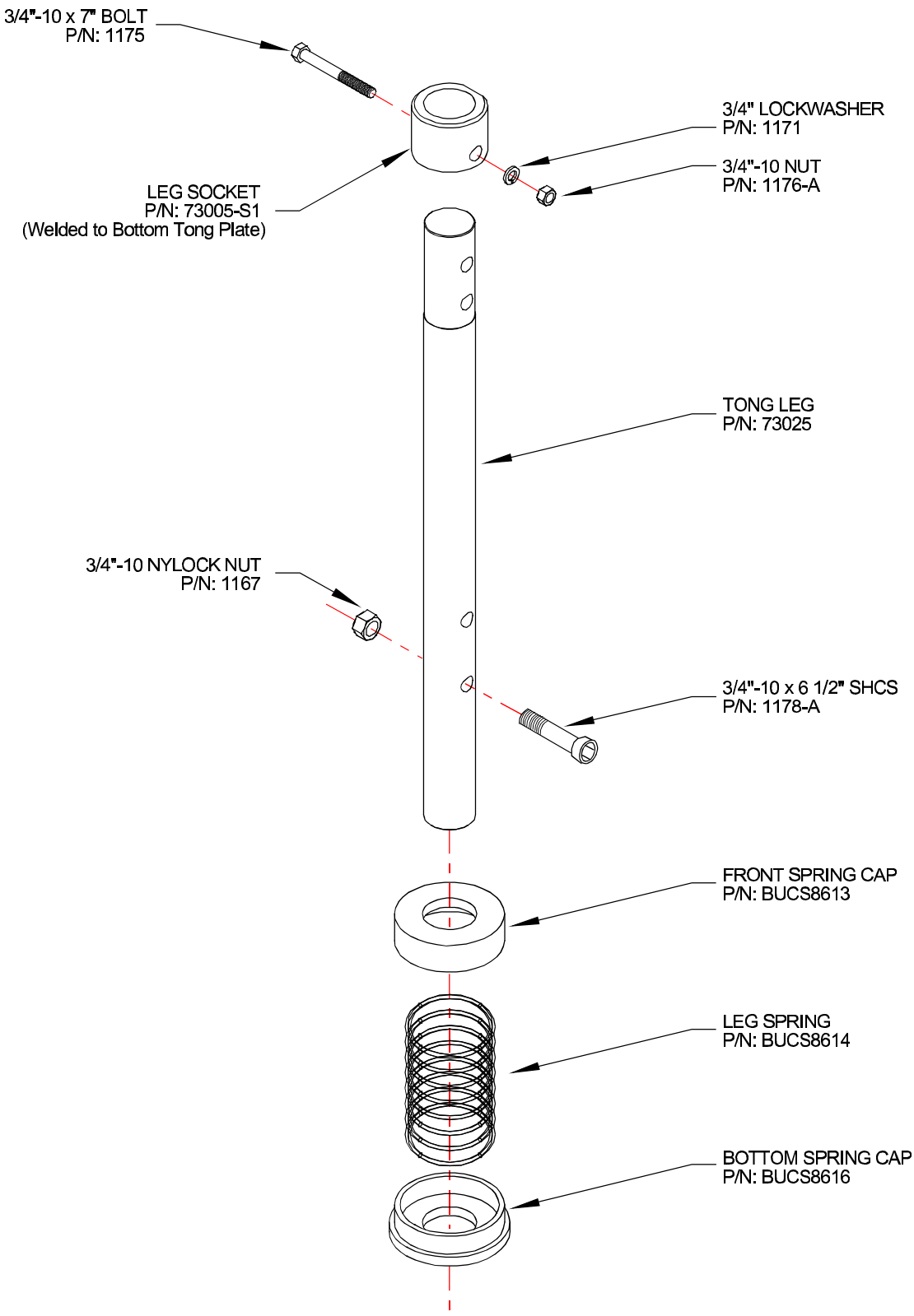



# LEG ASSEMBLY

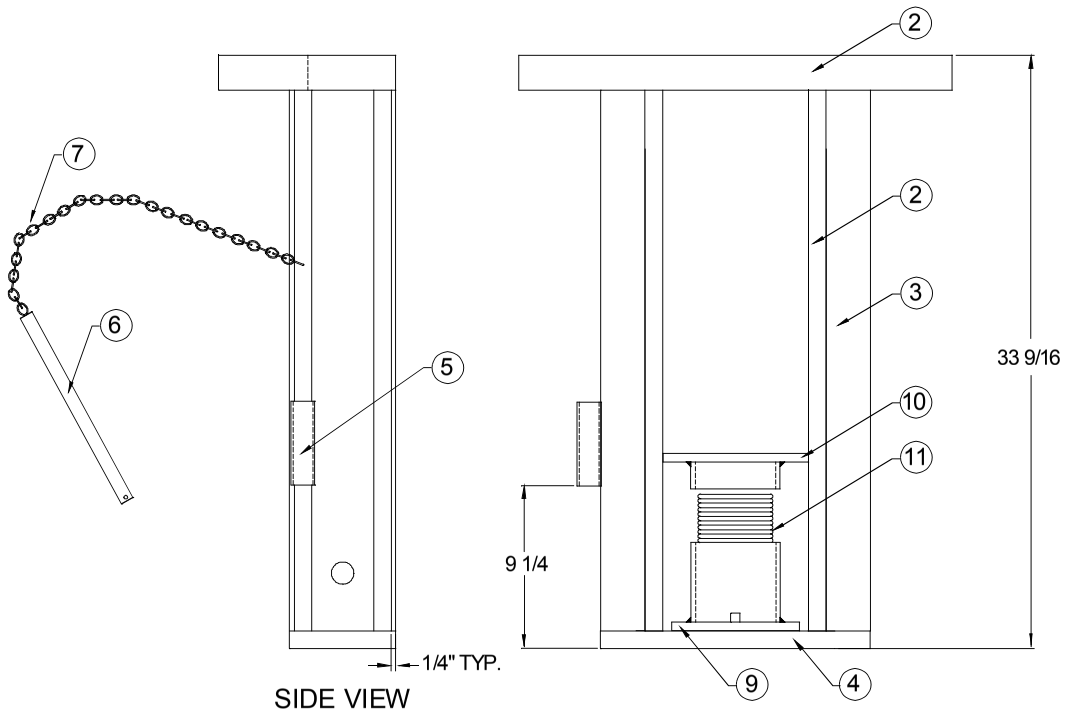
ASSEMBLY NUMBER BUCS8618

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

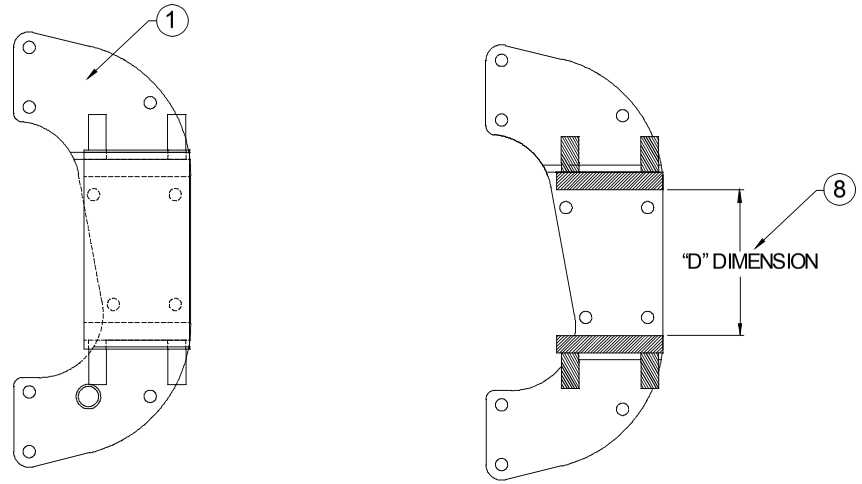


| REV. # | LOG # | DATE |
|---|---|---|
| | | 06/29/00 |

REF: S:\Equip Manuals-Dwgs\BUCDP8500\Leg Assy.wpg




SIDE VIEW




BOTTOM VIEW

BOTTOM SECTIONAL VIEW

| Item No. | Qty.Reqd. /Unit | Description | Part No. | |
|---|---|---|---|---|
| | | | Standard Rear Hanger (P/N: RH8500) | Tandem Center Rear Hanger (P/N: RH8500-01) |
| 1 | 1 | Hanger Plate | RH8501-S1 | RH8507-S1 |
| 2 | 2 | Side Members | RH8501-S2 | Same |
| 3 | 4 | Side Gussets | RH8501-S3 | Same |
| 4 | 1 | Base Plate | RH8501-S4 | RH8507-S4 |
| 5 | 1 | Adjustment Pin Socket | RH8501-S5 | Same |
| 6 | 1 | Adjustment Pin | RH8501-S6 | RH8507-S6 |
| 7 | 1 | Adjustment Pin Chain | BUC5508-S7 | Same |
| 8 | | "D" Dimension | 8 1/4" | 10 3/4" |
| 9 | 1 | Bottom "H" Plate Weldment | RH8502 | RH8505 |
| 10 | 1 | Top "H" Plate Weldment | RH8503 | RH8506 |
| 11 | 1 | Rear Hanger Spring | BUCS8614 | Same |

NOT SHOWN:

| Qty.Reqd. /Unit | Description | Part No. | |
|---|---|---|---|
| | | Standard Rear Hanger (P/N: RH8500) | Tandem Center Rear Hanger (P/N: RH8500-01) |
| 1 | Halo Ring | BUC4509-06 | - - - - - |
| 2 | Set Screw 1/4"-20 x 1" | - - - - - | 1008 |
| 3 | SHCS 5/16"-18 x 2" | - - - - - | 229 |
| 2 | Tong Leg | - - - - - | 73025 |
| 1 | Tandem Load Cell Bracket | - - - - - | BUC4509-07 |
| 1 | Electronic Load Cell Retainer | - - - - - | BUC7705-01 |
| 1 | Electronic Dummy Load Cell | - - - - - | BUC7706 |

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| REV. # | LOG # | DATE |
|---|---|---|
| 1 | | 01/28/02 |

REF: S:\Equip Manuals-Dwgs\BUCDP8500\Hanger Assy rev1.wpg

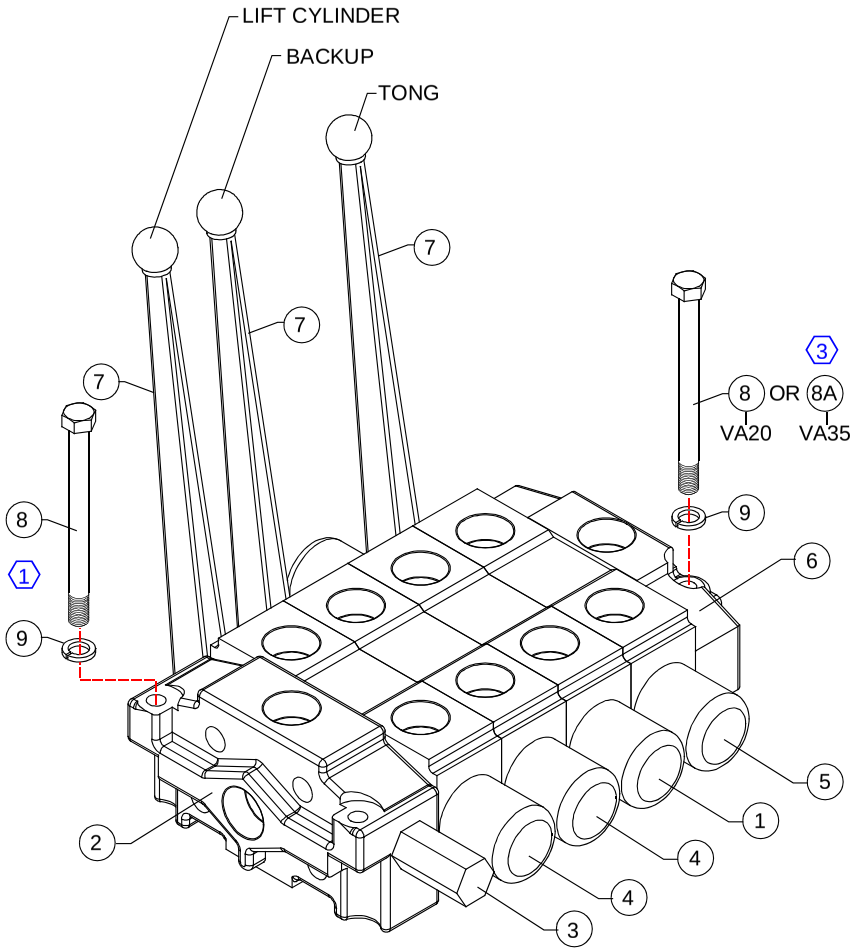
# HANGER ASSEMBLY

## A20 VALVE BANK ASSEMBLY

| Item # | Qty. | Part Number | Description |
|---|---|---|---|
| 1 | 1 | 55201 | CONTROL VALVE ASSEMBLY - MODIFIED VA20-WDA3 |
| | | | BEFORE 04/15/04 |
| 2 OR | 1 | VA20-MOD | WORK SECTION |
| | | | AFTER 04/15/04 |
| 2 | 1 | VA20-AA440 | INLET VALVE W/O RELIEF |
| 3 | 1 | VA20-MRV-1 | RELIEF CARTRIDGE |
| 4 | 2 | VA20-DA3 | WORK SECTION |
| 5 | 1 | VA20-MA3 | WORK SECTION |
| 6 | 1 | VA20-TR44 | OUTLET SECTION |
| 7 | 3 | A20-V1526K-8 | A20 8" HANDLE |
| 1 8 | 3 | 1072 | HHCS 3/8"-16 x 3 3/4" (COMPONENT OF KIT P/N: 4 BANK) |
| 1 9 | 3 | 134 | LOCKWASHER 3/8" (COMPONENT OF KIT P/N: 4 BANK) |

## A35 VALVE BANK ASSEMBLY

| Item # | Qty. | Part Number | Description |
|---|---|---|---|
| 1 | 1 | 14213 | CONTROL VALVE ASSEMBLY - MODIFIED VA35-WDA4 |
| | | | BEFORE 04/15/04 |
| 2 OR | 1 | VA35-MOD | WORK SECTION |
| | | | AFTER 04/15/04 |
| 2 | 1 | VA35-AA440 | INLET VALVE W/O RELIEF |
| 3 | 1 | DVG35-HMRV 4 | RELIEF CARTRIDGE |
| 4 | 2 | VA35-DA4 | WORK SECTION |
| 5 | 1 | VA35-MA4 | WORK SECTION |
| 6 | 1 | VA35-TR55 | OUTLET SECTION |
| 7 | 3 | A35-V1526K-8 | A35 8" HANDLE |
| 1 8 | 2 | X2-40 3 | HHCS 1/2"-13 x 4 1/4" 3 |
| 3 8A | 1 | X2-45 | HHCS 1/2"-13 x 4 1/2" |
| 1 9 3 | 3 | 1103 | LOCKWASHER 1/2" |




# VALVE BANK ASSEMBLY

| Rev. | Date | Description |
|---|---|---|
| 4 | 08/19/05 | Item 3 - Chg.PN from A35-MRV-1 to DVG35-HMRV; ECN#05-0064. |
| 3 | 12/13/04 | Item 8 - Chg. Length from 5" to 4 1/4", PN from X2-79 to X2-40. |
| | | Item 8A - Added Part. Item 9 - Chg. Qty. from 2 to 3. |
| 2 | 10/21/04 | Item 1 - Added VA20-MOD & VA35-MOD for Production after 04/15/04. |
| 1 | 06/10/02 | Item 8 & 9 - Added Part. |


SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847




| REV. # | LOG # | DATE |
|---|---|---|
| 4 | | 08/19/05 |

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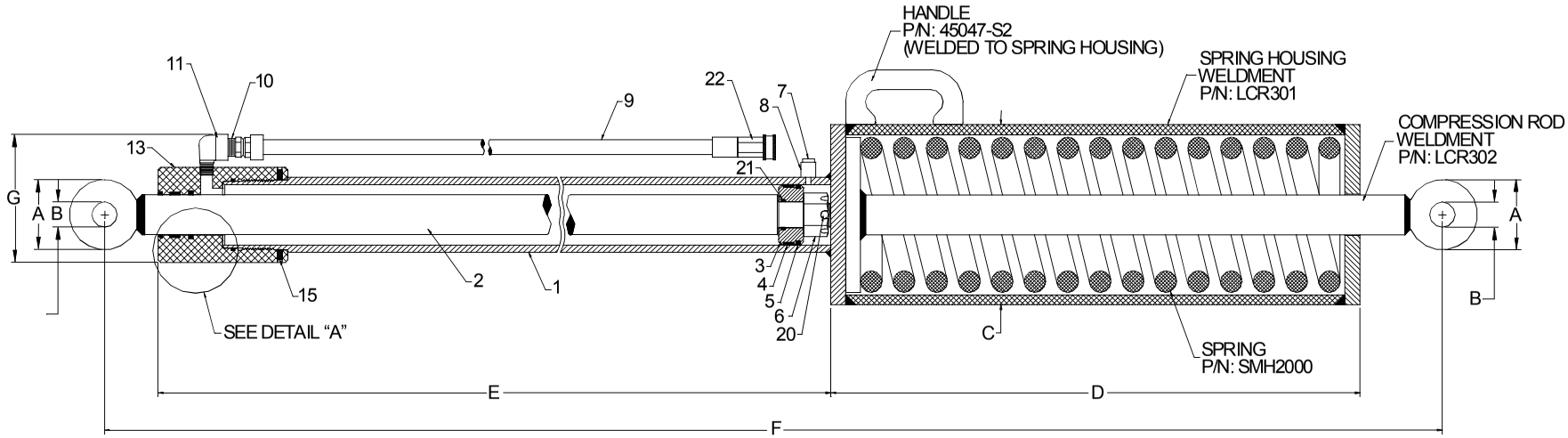
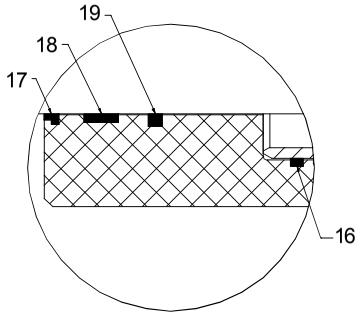



i SEAL KIT P/N: ASAP300

**BILL OF MATERIALS**

| Item | Qty. | Description | P/N |
|---|---|---|---|
| 1 | 1 | HYD/AIR CYLINDER BARREL | LCR122 |
| 2 | 1 | CYLINDER ROD WELDMENT | LCR118 |
| 3 | 1 | PISTON | LCR121 |
| i 4 | 1 | WEARBAND | W30000500 |
| i 5 | 1 | POLYPACK 2 5/8" x 3" x 3/16" | 18702625 |
| 6 | 1 | 1 1/4"-12 SLOTTED NUT | 1381 |
| 7 | 1 | 1/2" NPT FLUSH PLUG W/ 1/8" ORIFICE | 1657 |
| 8 | 1 | 1/2" HALF COLLAR | 1380 |
| 9 | 1 | 1/2" x 120" HOSE ASSY. MNPT x FJIC SWVL | LCR107-A |
| 10 | 1 | 3/8" MNPT x 1/2" MJIC ADAPTER | 1466 |
| 11 | 1 | 3/8" STREET EL W/ORIFICE | LCR109 |
| 12 | --- | --------- | --------- |
| 13 | 1 | GLAND | LCR123 |
| 14 | --- | --------- | --------- |
| 15 | 2 | 1/4"-20 x 1/2" SET SCREW | 1019 |
| i 16 | 1 | O RING 3 3/8"ID, 3 5/8"OD, 1/8"W | 2-237 |
| i 17 | 1 | WIPER | 959-21 |
| i 18 | 1 | WEARBAND | W2250500 |
| i 19 | 1 | POLYPACK 2" x 2 3/8" x 3/16" | 18702000 |
| 20 | 1 | 1/4" x 2" ROLL PIN | 1009B |
| i 21 | 1 | O RING 1 1/4"ID, 1 1/2"OD, 1/8"W | 2-218 |
| 22 | 1 | QUICK DISCONNECT 1/2" FEMALE SNAPTITE | 1430 |




DETAIL "A"
SCALE: 3X

## SPECIFICATIONS

| | |
|---|---|
| MAXIMUM SPRING TRAVEL (PRELOAD TO SOLID) | 11.9 in. |
| MAXIMUM ALLOWABLE STATIC LOAD (WITH 6.1" SPRING COMPRESSION STILL AVAILABLE) | 3,800 lbs. |
| MAXIMUM ALLOWABLE LOAD (SPRING FULLY COMPRESSED) | 7,812 lbs. |
| PRESSURE REQUIRED TO LIFT MAXIMUM ALLOWABLE LOAD | 2,000 psi |
| MAXIMUM ALLOWABLE INTERNAL PRESSURE | 3,000 psi |
| CYLINDER I.D. | 3 in. |
| ROD O.D. | 2 in. |
| STROKE | 35.640 in. |

| DIMENSIONAL DATA |
|---|
| A: 3 1/2" x 3/4" |
| B: 1 1/4" |
| C: 9" |
| D: 25" |
| E: 41 1/2" |
| F: 74.800" |
| G: 6 3/8" |

# LIFT CYLINDER ASSEMBLY

ASSEMBLY NUMBER LCR300

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| | | 01/29/02 |
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| REV. # | LOG # | DATE |

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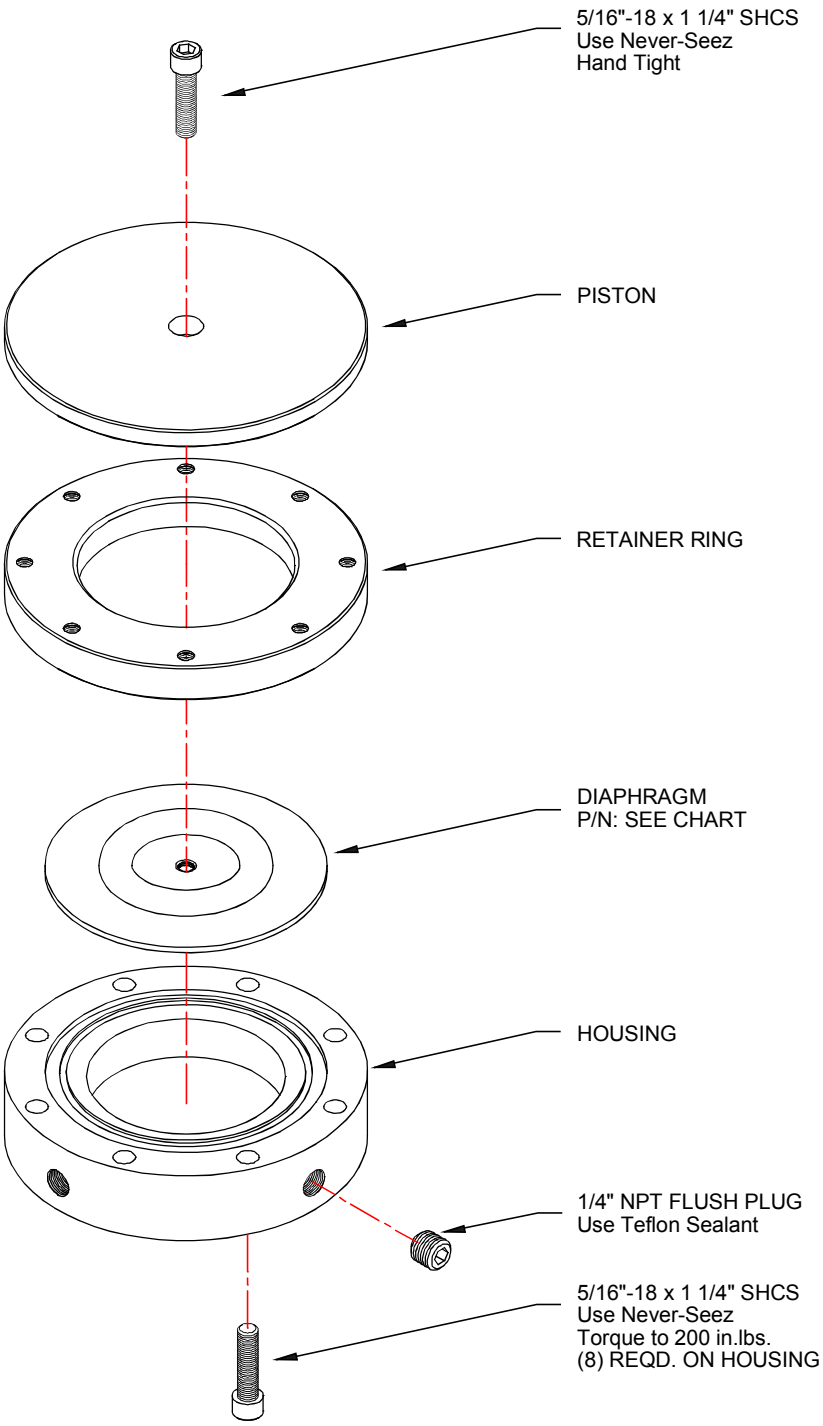
# CLINCHER® LOAD CELL and TORQUE GAUGE ASSEMBLIES

The **CLINCHER®** Tong and Backup are available in versions which accommodate compression load cells or tension style load cells. All information contained in this Technical Manual refers to products which utilize compression load cells. Contact SUPERIOR for information concerning products using tension load cells.

| | |
|---|---|
| Part Number | SM60-36C |
| Torque Rating | 60,000 ft lbs |
| Handle Length | 36 inches |
| Loadcell Type | Compression |
| Loadcell Manufacturer | SUPERIOR MANUFACTURING & HYDRAULICS |
| | |
| Torque Gauge Mfr. | **CLINCHER®** |
| Torque Gauge Size | 8" |
| Assembly Documentation | Calibration Certificate |

**CLINCHER®** Load cells and Torque Gauges are produced by several manufacturers. The information provided by MD TOTCO or Acadiana Oilfield Instruments may not be applicable to all torque gauges or load cells. This reference information is provided with the permission of MD TOTCO and Acadiana Oilfield Instruments.




| LOAD CELL SIZE | DIAPHRAGM P/N |
|---|---|
| 6.44 SQ.IN. | CLC203 |
| 8.0 SQ.IN. | CLC205 |
| 12.0 SQ.IN. | CLC206 |
| 16.1 SQ.IN. | CLC207 |
| 25.0 SQ.IN. | CLC208 |

# COMPRESSION LOAD CELL

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847



| 1 | | 07/03/02 |
|---|---|---|
| REV. # | LOG # | DATE |

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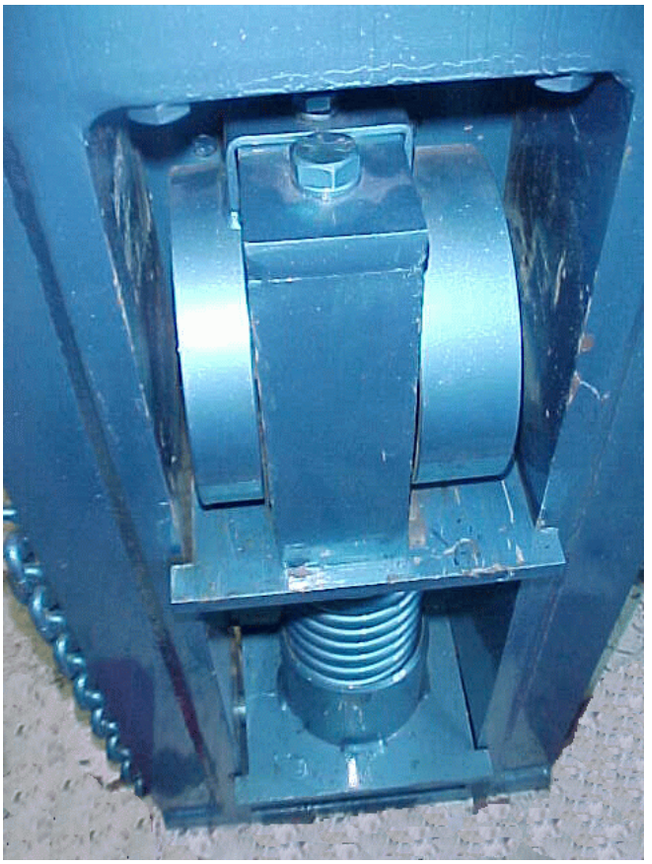
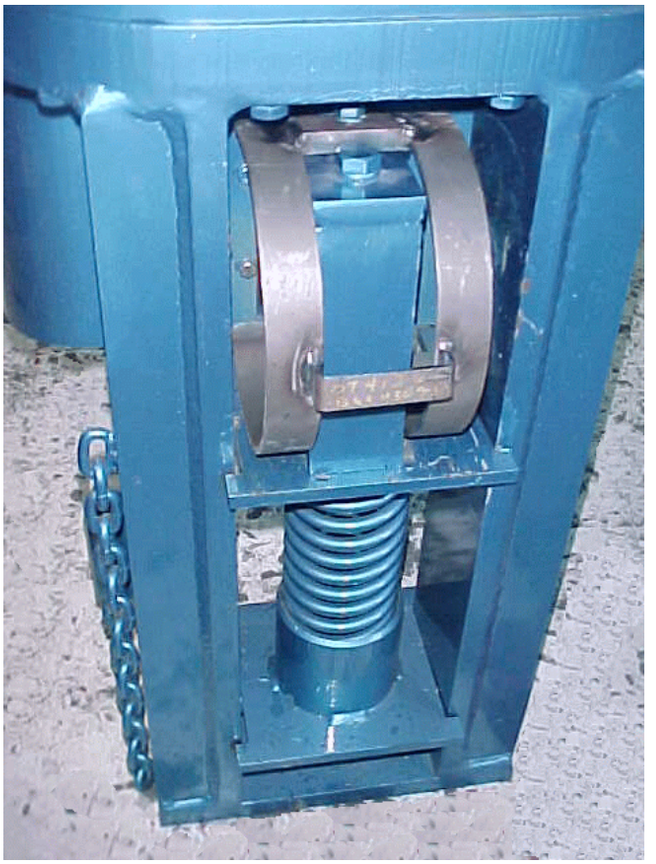
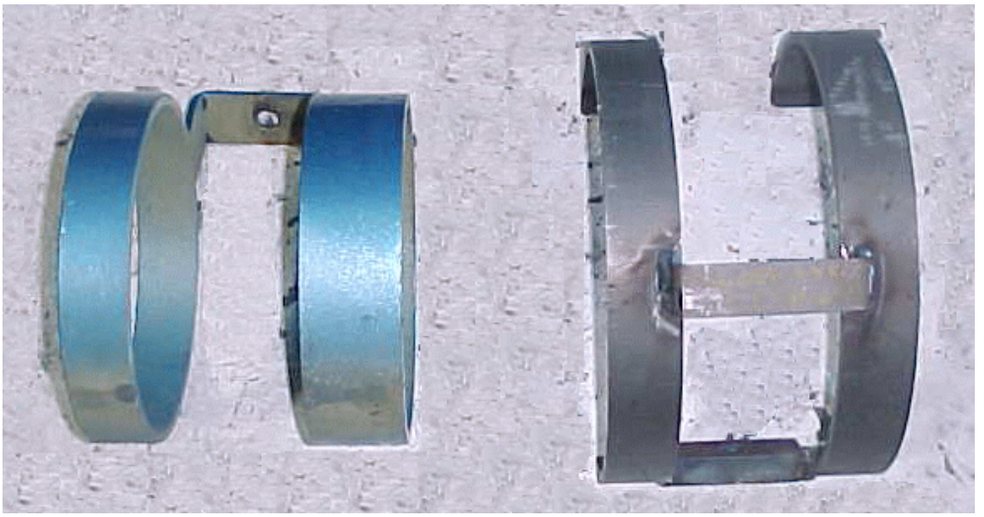


HALO - 60,000 FT/LBS



HALO - 85,000 FT/LBS



HALO - 60,000 FT/LBS

HALO - 85,000 FT/LBS

## CLINCHER® LOAD CELL and TORQUE GAUGE ASSEMBLIES

To request copy of
Compression Torque System
Technical Manual,
please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

# SECTION 13 MOTOR SERVICE MANUALS

To request copy of Rineer Motor Service Manuals, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

# SECTION 14 CONTROL VALVE TECHNICAL DATA

To request copy of Control Valve Technical Data, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com