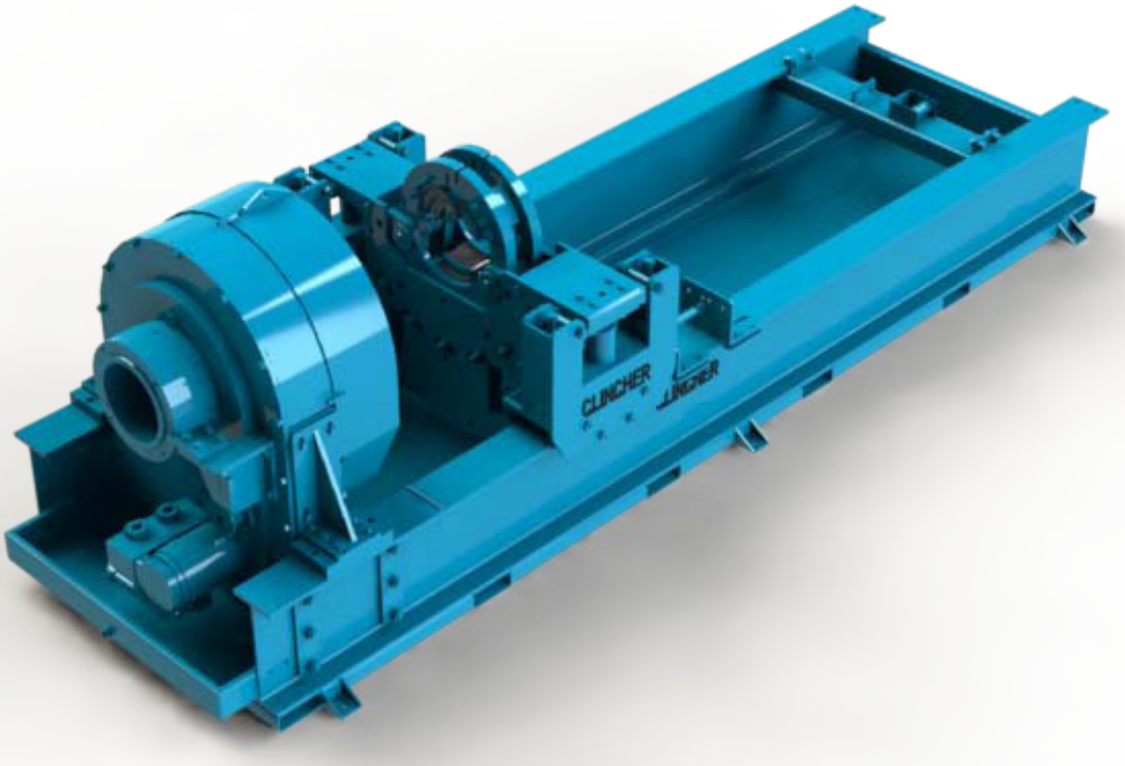
SUPERIOR
Manufacturing & Hydraulics

Technical Manual

11 3/4" CLINCHER® *TYPE 3*

BUCKING UNIT

Model Number CLEBU1175-35



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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 **CLINCHER®** Bucking Unit, we request you complete this form and return the lower half to SUPERIOR Manufacturing and Hydraulics, Inc. 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: _______________

Model No.: _____________ Work Order Number: ____________
Serial No.: _____________ Assembly Date: ____________

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CLINCHER® Bucking Unit Technical Manual Registration Form

Name: ______________________________________
Company: ____________________________________
Address: ____________________________________
Address: ____________________________________
City: _________________ State: ____________
Postal Code: ___________ Country: ____________
Telephone: _____________ Fax: ____________

Model No.: ____________ Work Order No.: ________
Serial No.: ____________ Assembly Date: ________

Return To:

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11 3/4" CLINCHER Type Three BUCKING UNIT

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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® Bucking Units 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 unit to move suddenly and with great force if not properly anchored. The pipe can also move when the unit is not anchored and if the pipe is bent or is not adequately supported. **CLINCHER®** Bucking Units contain rotating and reciprocating parts which can severely or fatally injure personnel who are operating, repairing, or near this equipment during its operation.

WARNING: Bucking Units and Power Units must be maintained and operated by trained personnel. Personnel with diminished physical or mental capacity must not operate this equipment. No work of any type, including changing of dies, is to be carried out while the Bucking Unit is connected to the Hydraulic Power Unit.

CLINCHER® Bucking Units and Hydraulic Power Units utilize high pressure hydraulic fluids. Portions of the unit, 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.

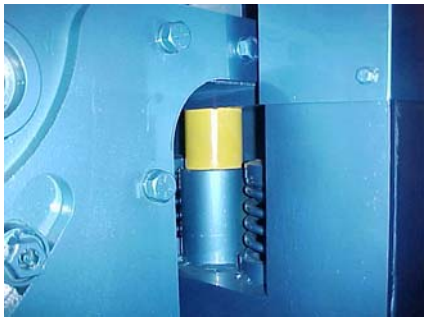
WARNING: Personal protective gear including safety glasses, face shields, protective gloves and protective clothing must be worn to guard against the hazards of high pressure fluids. Tight fitting clothing is required to prevent entanglement in rotating components. These units should be serviced by thoroughly trained and qualified hydraulic technicians using procedures to safely insure hydraulic pressure is bled from these circuits.

No attempt should be made to operate the **CLINCHER®** Bucking Unit 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 Bucking Unit, 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 and backup sections of the Bucking Unit. 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.

WARNING

TWO TROLLY SHIPPING BRACKETS, TWO BACKUP SHIPPING HOLD DOWN BOLTS AND TWO BACKUP SHIPPING SPACERS MUST BE REMOVED BEFORE ATTEMPTING TO OPERATE THIS BUCKING UNIT. THESE COMPONENTS ARE PAINTED YELLOW AND PICTURED BELOW.
Failure to remove these components will result in severe equipment damage that will void all warranties.



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!

DESCRIPTION

SUPERIOR Manufacturing & Hydraulics' **CLINCHER®** BUCKING UNITS are used to make up or break out tubular connections in a horizontal position. They are most frequently used in steel mills, pipe yards, or workshop environments. While they are readily transportable and can be trailer mounted, Bucking Units are not usually used at a drill site. For drill site applications, refer to our **CLINCHER®** MAKE/BREAK Tool Operating Manual for information regarding a compact high torque unit.

CLINCHER® BUCKING UNITS utilize the patented **CLINCHER®** Die System which features a self aligning spline system that wraps around the pipe providing coverage up to 330 degrees. The dies distribute the radial load over the largest possible area to minimize pipe stress and deformation. Three different types of dies are available. Our fine tooth steel dies provide the highest possible torque transmission with minimal pipe marking. Non-marking aluminum dies are available for use with fiberglass or corrosion resistant alloy (CRA) tubulars. **CLINCHER® GRIT FACE™** dies are available for chrome and stainless steel tubing applications where steel dies are not acceptable and which require greater torque capacity than non-marking aluminum dies can provide. Adapters which utilize Dovetail strip dies may be available on special order. See Section 3 for more information concerning Die selection and usage.

CLINCHER® BUCKING UNITS have three main components (see Photo 1):

(1) A powered, rotating tong assembly with hydraulically operated jaws which grip the tubular's coupling.

(2) A non-rotating backup assembly with hydraulically operated jaws which grip the body of the tubular.

(3) A frame system which supports the first two items and contains the drive mechanisms and Bucking Unit Control Panel.

A separate hydraulic power unit supplies the required hydraulic power to drive the tong and operate jaws.

SUPERIOR Manufacturing & Hydraulics produces three different types of Bucking Units. ***Type One*** is primarily intended for use in pipe mills or pipe yards for the installation (make up) or removal (break out) of couplings. This unit will readily accommodate different sizes of tubulars while allowing the spacing between the tong and backup to be adjusted approximately two feet. When using this type of unit the couplings and tubulars must be fed through either the backup or tong into the other component.

The ***Type Two*** and ***Type Three*** Bucking Unit is used for the make up or break out of tool assemblies which have varying diameters and lengths. The ***Type Two*** and ***Type Three*** unit will readily accommodate different sizes of components. The tong and backup spacing can be adjusted from a few inches to many feet.

DESCRIPTION

The ***Type Two*** unit features a chain driven tong with a top loading, open style **LOCKJAW™** Backup to allow easy installation or removal of tubulars or tools using an overhead crane.

The ***Type Three*** unit features a gear driven tong with either a Closed Head Backup *(Type 1)* or a top loading, open style **LOCKJAW™** Backup *(Type 2)*.

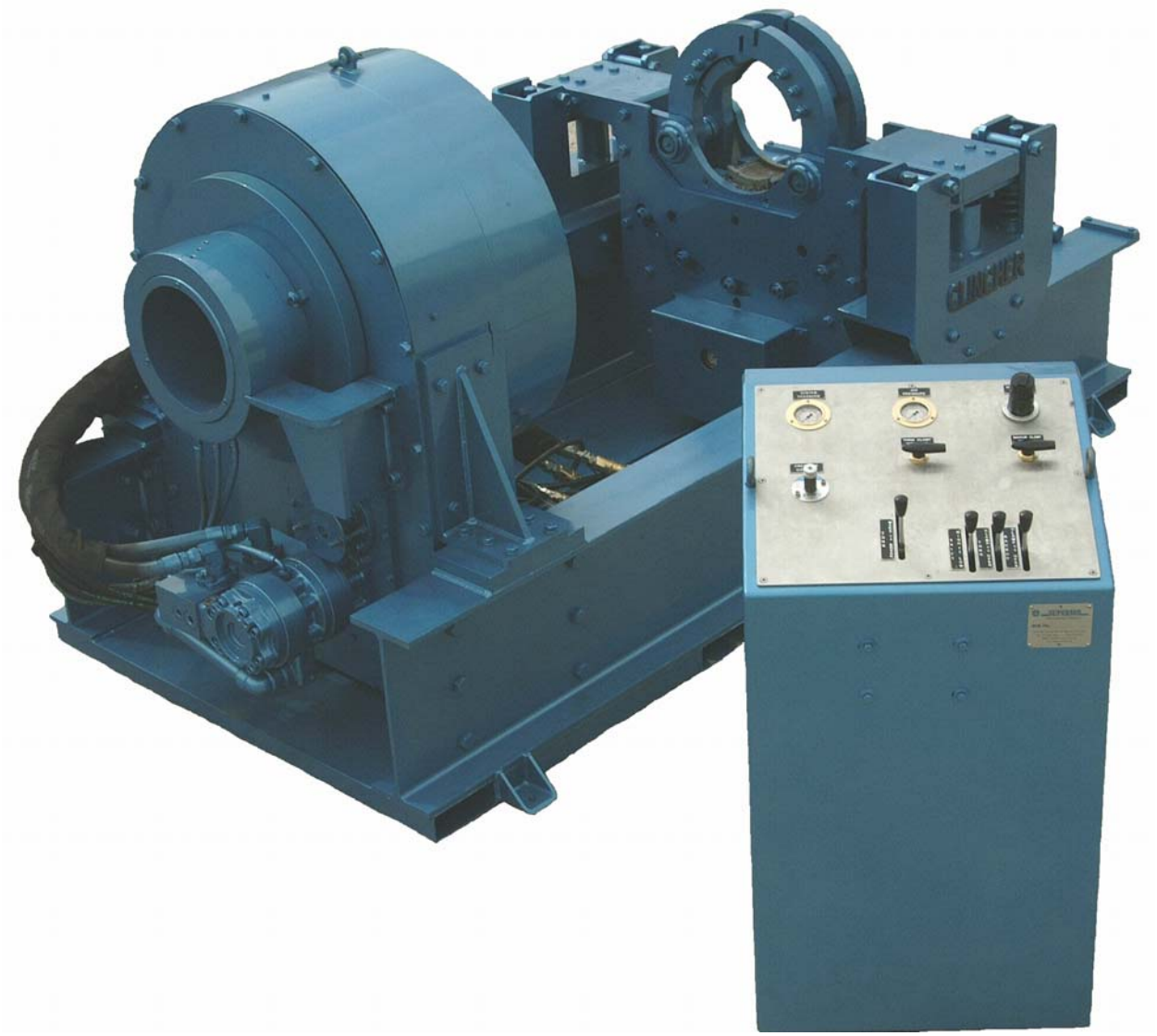
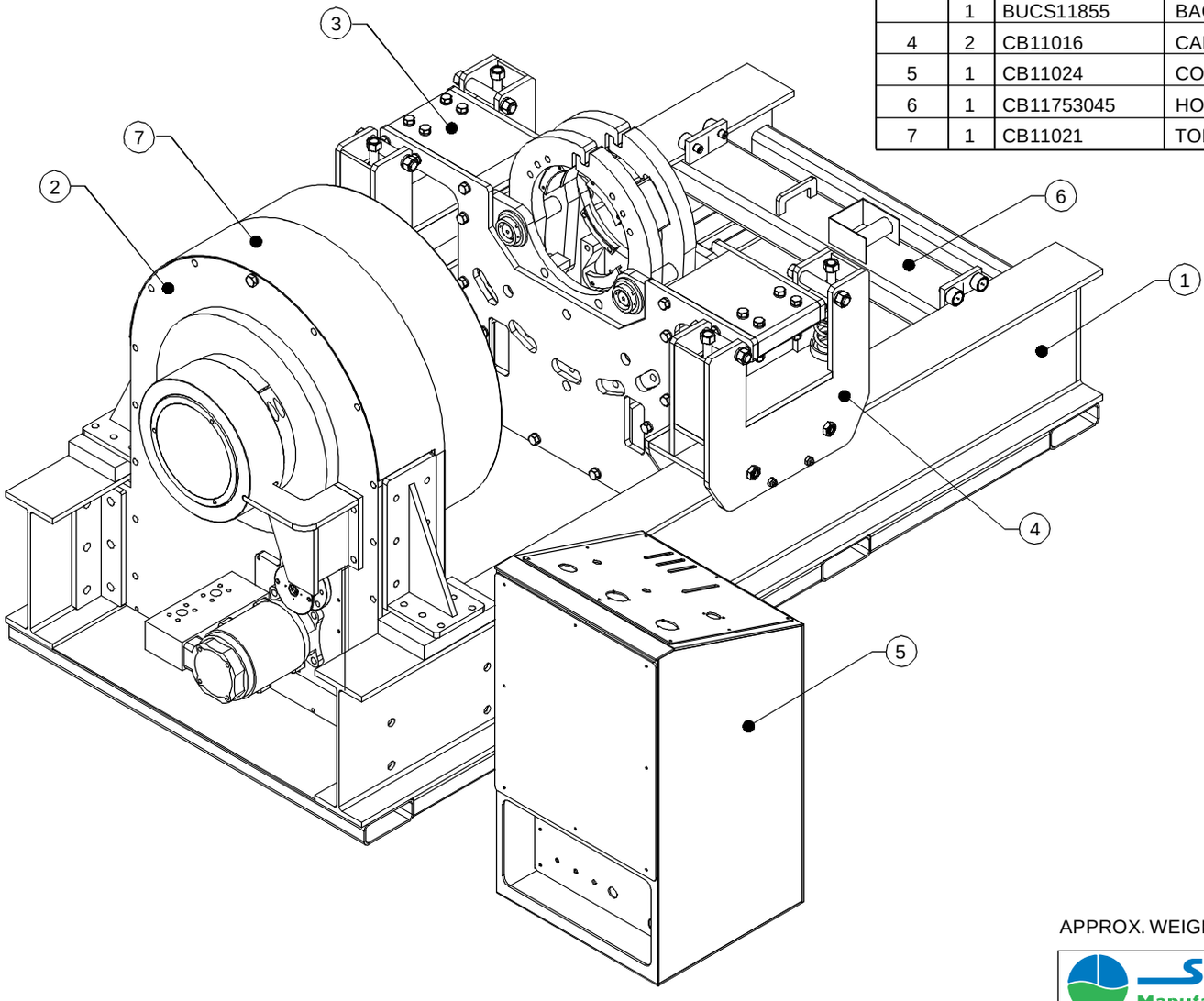


Photo 1

CLINCHER® BUCKING UNIT

Photo represents typical *Type 3* Bucking Unit

Item	Qty.	Part Number	Description
1	1	CB11001	BUCKING UNIT FRAME WELDMENT
2	1	CB11002	11 3/4" TONG ASSEMBLY
3	1	BUCS11850 &	11 3/4" LOCKJAW BACKUP
	1	BUCS11855	BACKUP HOUSING
4	2	CB11016	CARRIAGE ASSEMBLY
5	1	CB11024	CONTROL CONSOLE ASSEMBLY
6	1	CB11753045	HOLD DOWN STRAP ASSEMBLY
7	1	CB11021	TONG SHROUD WELDMENT



11 3/4" BUCKING UNIT - *TYPE 3*

APPROX. WEIGHT (LBS.) = 9319.955

SUPERIOR Manufacturing & Hydraulics
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BROUSSARD, LA 70518
(318) 837-8847

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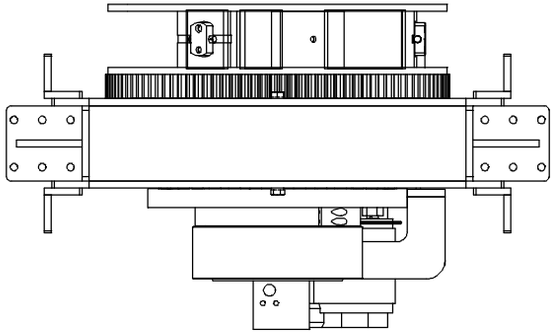
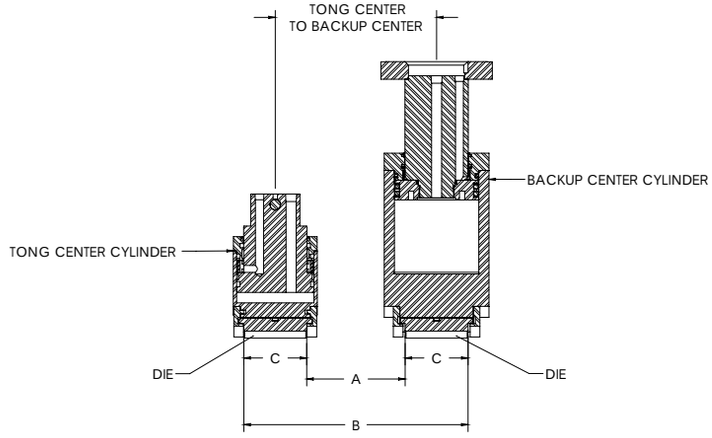
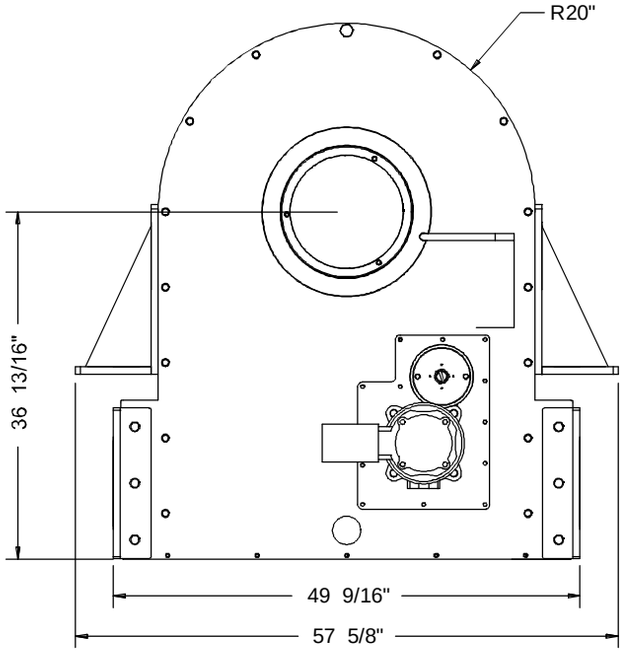
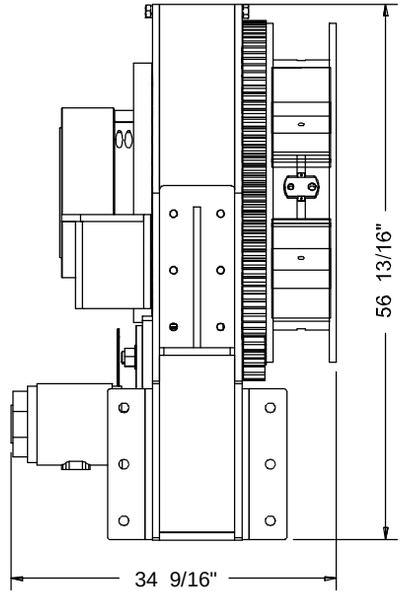


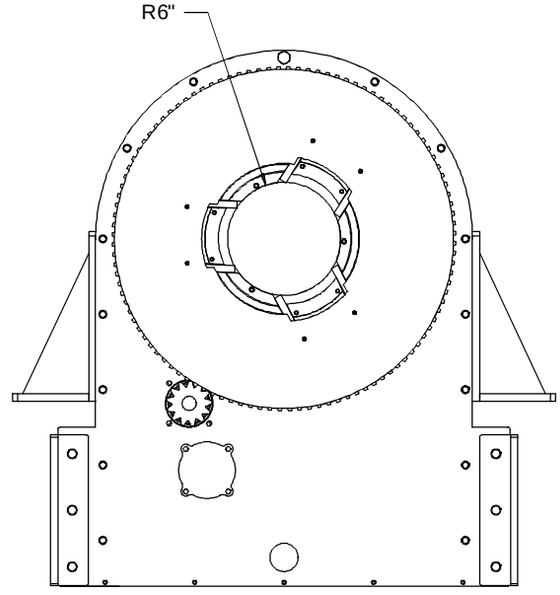


BED LENGTH	DIE THICKNESS, C	BACKUP TRAVEL	MIN. DISTANCE A	MIN. DISTANCE B	MAX. DISTANCE A	MAX. DISTANCE B
10 FT	4.475"	6 FT	7"	16"	79"	88"
14 FT	4.475"	10 FT	7"	16"	127"	136"
16 FT	4.475"	10 FT	7"	16"	127"	136"
20 FT	4.475"	15 FT	7"	16"	187"	196"

DIE SPACING CHART







APPROX. WEIGHT (LBS.) = 4064.982

11 3/4" TONG DIMENSIONS

SUPERIOR Manufacturing & Hydraulics
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(318) 837-8847

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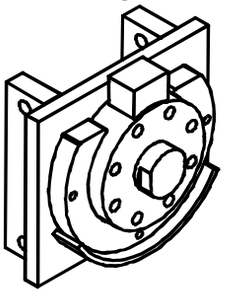
SPECIFICATION for CLINCHER® BUCKING UNITS	
TOOL SIZE	11 3/4
Unit Style	Type III Unit w/ **LOCKJAW™** Backup
Backup Torque Gauge Handle	24" [1]
Min Tubular OD (in)	2.062
Max Tubular OD [2] (in)	11.750
Torque Rating (ft lbs)	35,000
Dies per Tong or Backup [3]	3
Drive Type	Hydraulic
Number of Drive Speeds	2
Max Hydraulic Power Unit Operating Pressure (psi)	3,000
Max Clamping Pressure (psi) Intensified using air operated pump	4,500

Important Notes:

1 Handle length is based on use of 8.75" OD (see illustration of Tandem Load Cell Retainer). Reduction from Pinion Shaft (where encoder is attached) to Ring Gear is 8.308:1. Small diameter electronic loadcells may require a bushing or mounting plates to maintain 24" handle length. If diameter of loadcell changes, handle length will change.

2 The maximum tubular OD is the limit of the diameter which can be handled in this unit. The end user should carefully review the maximum diameter of the coupling for the tubular being handled to insure it can be accommodated in the **CLINCHER®** BUCKING UNIT. Contact the manufacturer if other diameters are required.

3 Dies and die adapters must be ordered separately.

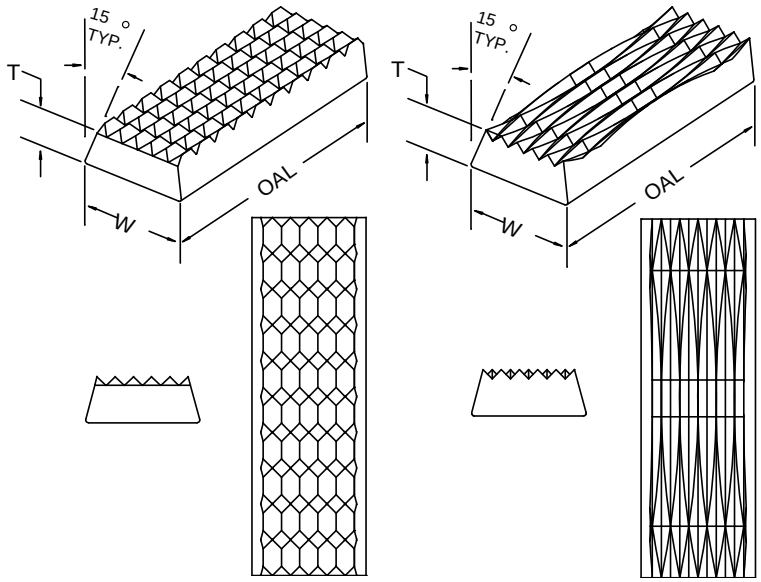


Tandem Load Cell Retainer

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® Bucking Units utilize wrap around dies to maximize pipe coverage allowing maximum torque transmission while minimizing marking and virtually eliminating the possibility of deforming the pipe. These tools have 3 or 4 jaws which accept our dies. **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"). The fine toothed steel dies we are providing for pipe and couplings are manufactured with an ID which is approximately 0.050" larger than the nominal die size. This provides a die which will readily grip pipe and couplings which are manufactured to API external diameter tolerances. In the case of pipe and couplings whose nominal OD is greater than 5 1/2", the API maximum diameter tolerance range can theoretically exceed the die diameter. Should this situation arise, the die will still grip the pipe but will have reduced contact area as the pipe may not contact the die along its midline. It is important to note we have not had any reports of die problems with extremely oversized tubulars. This is probably due to the fact that modern mills are able to control the OD of their products to much tighter tolerances than permitted by the API standards.

Aluminum and **GRIT FACE™** dies should be matched with the specific tubular diameters required. Our non-marking aluminum die system is manufactured with an ID which is 0.035" larger than the nominal die diameter. We have to use a closer fit between the nominal tubular and the die since this system relies on radial loads and the coefficient of friction instead of teeth. This clearance also allows the installation of our silicon carbide screen cloth which is required when using the non-marking system at high torques.

Note: The use of improperly sized dies can result in reduced torque capacity, increased pipe marking and reduced die life.

CLINCHER® WRAP-AROUND DIES

The bucking unit cylinders (which hold our dies) have considerable stroke which could cause some people to believe they can use a die on a tube which is significantly smaller than the nominal size. For example, someone could use a 7" die to grip on a non-standard tubular with an OD of 6.75". While one could successfully grip tubulars with such an arrangement, the pipe would not be exactly centered within the rotating and fixed portions of the bucking unit. The resulting eccentric pipe movement seen when rotating the collar could cause some variation in apparent torque readings. Therefore, we recommend nominal die sizes be matched to specific pipe or coupling diameters and using specially manufactured dies for non-standard premium couplings.

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 the bucking unit.

CAUTION: Do not attempt to use combinations of different die sizes to accommodate a nonstandard tool joint or coupling OD when the correct size dies are not available. Using mismatched die sizes or different die types can cause the tubulars to run eccentrically resulting in erratic torque measurements. This can also initiate thread galling.

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 in sizes 7 5/8" and smaller are normally stocked in our Broussard, Louisiana facility. 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, Inc. for information concerning availability of stock, large diameter and special die sizes.

CLINCHER® WRAP-AROUND DIES

DIE Nomenclature for CLINCHER® Bucking Unit

CLEBU1175-xxxx fine toothed steel dies available in sizes from 7 3/4" to 11 3/4"
CLEA1175-xxxx aluminum dies available in sizes from 7 3/4" to 11 3/4"
BB1175-xxxx **GRIT FACE™** dies (contact Superior f/ size availability)

Note when using dies on tubulars with OD of 7 5/8" or less it is necessary to install reducing adapters in the bucking unit cylinder. The adapter will accommodate smaller sizes listed below.

BUC7625-xxxx fine toothed steel dies available in sizes from 2 1/16" to 7 5/8"
BUCA7625-xxxx aluminum dies available in sizes from 2 1/16" to 7 5/8"
BB7625-xxxx **GRIT FACE™** dies available in sizes from 2 1/16" to 7 5/8"

ORDERING EXAMPLE: Fine toothed steel dies are needed to makeup 8 5/8" OD casing with 9 5/8" OD couplings
Qty. Req'd: Three pieces CLEBU1175-9625 (for tong assembly) and
Qty. Req'd: Three pieces CLEBU1175-8625 (for backup assembly)
(replace xxxx with size req'd in inches)

Contact SUPERIOR Manufacturing & Hydraulics, Inc. for information concerning availability of stock and special die sizes.

INSTALLATION INSTRUCTIONS

Remove all banding straps, protective coverings, etc., provided for shipping. **CLINCHER®** BUCKING UNITS must be installed on a foundation suitable for the weight of the unit plus the weight of the tubular being processed. Leveling jacks are not provided and may be required to insure the unit is supported on each of the four corners. Long bed Type II and Type III units must be securely anchored to the foundation using 3/4" anchor bolts.

HYDRAULIC FLUID

Unless specifically noted, all hydraulic power units are shipped without hydraulic oil. The SUPERIOR Hydraulic Power Units and the **CLINCHER®** BUCKING UNIT are designed to work with conventional industrial hydraulic oils. Superior Manufacturing & Hydraulics utilizes TEXACO Rando HD 68 hydraulic oil. Substitution of brands with comparable properties is acceptable. Use with synthetic, fire resistant or water based fluids should not be considered without consulting with SUPERIOR Manufacturing and Hydraulics. Quick disconnects are provided below the control console to facilitate easy hookup to the hydraulic power supply. No other power is required unless the optional electronic data acquisition/control system is being used.

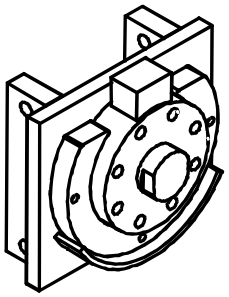
CAUTION: Fill the hydraulic reservoir with the appropriate fluid and insure the suction isolation valve is open before starting power unit.

LUBRICATION

Connect case drain circuit from motor directly to hydraulic reservoir. Do not connect into a return line. Failure to comply with case drain requirements will cause motor failures not covered by our warranty.

Using a grease gun, lubricate all grease fittings with a high quality bearing grease. Remove tong cover and lubricate gear with high quality bearing grease.

INSTALLATION INSTRUCTIONS
TANDEM LOAD CELL RETAINER



After installing electronic load cell in retainer bracket, the load cell must be rotated to close the gap until the button just contacts the load cell brace (Ref. pg. 9-11, Item 5, PN BUCS11816).

LUBRICATION SPECIFICATIONS

Use an EP synthetic grease that meets or exceeds the following specifications: (Used in tong case)

Type	High Temp MP
NLGI Consistency Grade	1
Color	Medium Green
Lithium Complex Soap, wt%	Non Soap
Serv. Temperature	0 Deg. F – 450 Deg. F
Base Oil Viscosity: @ 100º F @ 200º F	1300 SUS 89 SUS
Viscosity Index	77
Penetration, dmm Worked *ASTM D 217*	325-340
Dropping Point, ºF *ASTM D 566*	500 ±
Rust Protection, 5% SSW	N/A
Water Washout %wt loss @ 175ºF	N/A
Timken, OK Load, lbs	50
Bomb Oxidation 100 hrs @ 210ºF, psi drop	N/A
Applications	High & Low Speed Bearings, Wheel Bearings, Pumps, Gears, Lubrication

Use an EP synthetic grease that meets or exceeds the following specifications: (Used as bearing grease)

Type	N/A
NLGI Consistency Grade	2
Color	Blue
Lithium Complex Soap, wt%	14
Serv. Temperature	N/A
Base Oil Viscosity: @ 40ºC, cSt *ASTM D 445* @ 100ºC, cSt	150 14.5
Viscosity Index	N/A
Penetration, dmm Worked, 60X *ASTM D 217*	280
Dropping Point, ºF *ASTM D 2265*	450+
Rust Protection, 5% SSW *ASTM D 5969*	Pass
Water Washout %wt loss @ 175ºF *ASTM D 1264*	6.8
Timken, OK Load, lbs *ASTM D 2509*	45
Bomb Oxidation 100 hrs @ 210ºF, psi drop *ASTM D 942*	5 max
Applications	Industrial application where a high temperature/multipurpose extreme pressure grease is needed, Trailers

Use a premium quality hydraulic fluid that meets or exceeds the following specifications:

Humble Hydraulic H		68
ISO Viscosity Grade		68
Base Oil Viscosity: *ASTM D 445*	cSt @ 40ºC cSt @ 100ºC	65.0 8.5
Viscosity Index – *ASTM D 2270*		95
Pour Point – *ASTM D 97*		-9
Flash Point – *ASTM D 92*	C(ºF)	222 (432)
Demulsibility – *ASTM D 1401*		41/39/0 (20)
Vickers 104C (IP281)		Pass
Vickers M-2950-S		Quality Level
Vickers I-286-S		Quality Level
TOST – *ASTM D 943*		2000+

OPERATING INSTRUCTIONS

The basic procedures to be used when handling and bucking up collars on tubulars should be as follows:

1. Couplings should be started by hand on the pipe.

2. The pipe and coupling are moved by means of a crane or pipe roller system into the bucking unit to position the coupling within the tong section. It is very important that both the bucking unit and the pipe be level at this time.

3. The tong is then clamped on the coupling. The centering cylinder should rise until it just contacts the coupling. It should not stop short, nor should it push the coupling upward. If the tubular is excessively heavy, it may be necessary to adjust the setting of the sequence valve to insure the centering cylinder fully extends. As the pressure in the clamping system increases, the other two cylinders should start extending and moving downwards until they contact the pipe. It is important these two cylinders move in sequence so they contact the pipe at the same time. Significant time delays between contact of the two cylinders can push the pipe off center. Timing is easily adjusted by means of two flow control valves located within the tong and two flow controls within the backup. The pipe should still be level after full clamping pressure is applied. The coupling should be centered within the tong at this time.

4. The backup clamping sequence should be identical to the tong. The centering cylinder should rise until it just contacts the pipe. It should not stop short, nor should it contact the pipe with so much force that it cause the backup suspension spring to be compressed as the backup is forced downward, or alternatively, cause light weight tubulars to be picked up. The pipe should be centered within the backup at this time. If the pipe is not level when the backup is clamped on the pipe, you will observe eccentric movement of the pipe, substantial backup movement and quite possibly very wavy torque graphs as the pipe is flexed.

OPERATING INSTRUCTIONS
FOR AIR INTENSIFIER

1. For regular settings of 2500 psi use as previously, push handles without using air valves.

2. For High Pressure Operation: Push both handles to the extend position until contact on pipe. Hold for 5 to 10 seconds then release. For 4500 psi setting open both air valves with air compressor running. Close air valves, you will be at 4500 psi.

3. If air pressure is adjusted at maximum pressure, there is a relief valve mounted in each unit hooked to the air pump that will not allow pressure over 4500 psi.

4. Outside gauges will not measure the intensified 4500 psi hydraulic supply pressure, just the 3000 psi. Pressure gauges inside tong and backup will show holding pressure. To adjust from 4500 psi to 3000 psi, the air regulator must be adjusted down.

5. To calibrate air gauge to hydraulic pressure, remove the cover from the tong and close cylinders on pipe. Hydraulic pressure on the inside gauge and air pressure on the regulator gives you the calibration.

For more information, reference Section 11.

CONTROLS and INSTRUMENTATION

Figure 1 depicts a standard Bucking Unit Control Panel arrangement. Figure 2 is a hydraulic schematic of the bucking unit system. Part numbers for components can be found in Section 7 information. The pressure valves, shown in the schematic, have been set at the factory for proper performance and should not require adjustment under normal conditions. Situations which would dictate adjustments include handling of fiberglass tubulars or other easily collapsed thin wall materials or if steel dies slip at high torques. We recommend you contact the factory for advise before attempting to make any of these adjustments otherwise warranty coverage on the unit may be limited.

A hydraulic compression style load cell and hydraulic torque gauge are optional features on **CLINCHER®** BUCKING UNITS.

CAUTION: The electronic load cell (if supplied by Superior) has been removed for shipping and must be reattached to the right side of the Backup before operating the unit. In this position it will read torque during makeup operations only. A dummy load cell is attached to the left side of the backup. Should measurement of torque be required during breakout operations, the end user must relocate the electronic load cell and the dummy load cell to the opposite sides of the backup.

The counter mounting bracket has been installed for a Turns Encoder.

DIE INSTALLATION

Insure hydraulic power unit is turned off. Bleed system pressure by moving all control valve levers several times. Remove cap screws and clips from jaws. Insure jaw & die spline surfaces are free of debris or damage and are lightly greased. Install the required dies in the tong and backup by sliding in until they contact the fixed clip. Reinstall clips and cap screws. Tighten cap screws firmly to prevent them from vibrating loose. Do not over tighten. *Note:* The larger Bucking Units require die adapters be installed when using smaller dies. For example, when using the 11 3/4" unit with 5 1/2" casing you must install three 11 3/4" x 7 5/8" die adapters in the tong and backup before installing the 7 5/8" x 6.050" die (required for OD of API coupling) in the tong and the 5.500" die in the backup.

CAUTION: Do not operate the jaws unit without correct dies and the proper size tubular being in the tong and backup.

PRE-JOB UNIT INSPECTION

Connect all hydraulic hoses and insure suction valve is open on power unit reservoir. Energize the hydraulic power unit all it can operate for 10 minutes to warm oil. Operate each valve while monitoring for leaks.

CONTROLS and INSTRUMENTATION

PIPE INSTALLATION

Operate Tong Jaw and Backup Jaw directional control valves (DCV) as labeled on Figure 1 to insure jaws are in the fully open position. Using Tong Rotation DCV, rotate the tong to insure the bottom centering jaw is located at the lowermost point in the head by aligning the paint stripes on the tong with the matching stripes on the frame.

CAUTION: Rotational alignment is a very critical operation as the bottom jaw has controlled stroke to center the pipe in the jaws.

Refer to the hydraulic schematic (Figure 2) for more details regarding the hydraulic circuitry and components.

Manually adjust the spacing between the tong and backup to accommodate the tool joint being torqued. Using pipe handling systems or a crane, carefully install the pipe in the Bucking Unit in a level position. The tubular should be held as close to the unit centerline as is possible. For Type Two and Three units the tubular can be lowered into the open **LOCKJAW™** Backup while feeding the end into the tong section. Close the tong jaws on the pipe using the Tong Jaw DCV. During the clamping operation you will be able to read the clamping pressure on the system pressure gage. Release Tong Jaw DCV and allow it to return to its center position. Pressures cannot be monitored when the valves are in the neutral position. Clamping pressure will be trapped within the jaw cylinders by means of pilot operated check valves. Trapping pressure by means of these check valves allows the pressure to be bled off the rotary swivel seals before rotation begins, thus extending the life of the rotary seals.

Note: This unit has been equipped with optional air driven pressure booster pumps to provide enhanced torque capacity when using non-marking aluminum dies. To operate, shift DCV to clamp position until maximum system pressure is achieved. Simultaneously open respective booster pump air control to allow cylinder pressure to build to required 4500 psi. Only a few strokes are required to achieve required pressure. Continued pumping will not over pressurize the system as a pressure relief valve is built into each pump circuit. Actual clamping pressures can be observed by a means of a gauge located on the rear, lower section of the backup or by means of an observation window at the 12 o=clock position on the rotating section.

Visually confirm proper Backup position before activating its dies. Close the backup jaws on the pipe using the Backup Jaw DCV. Release Backup Jaw DCV and allow it to return to its center position. The height of the Backup Assembly has been adjusted at the factory to position its centerline at the same elevation as the Tong Assembly=s centerline and should not require further adjustment.

CAUTION: Activating the jaws or applying torque with improperly closed jaws could result in mechanical damage or injury to personnel. Improper clamping can occur if the pipe is incorrectly positioned within the **CLINCHER®** BUCKING UNIT or if the improper combination of dies and pipe diameters are used.

CONTROLS and INSTRUMENTATION

CONSIDERATIONS WHEN APPLYING TORQUE TO TUBULARS

The application of torque to a tubular by a tong or similar devise requires a backup tong, vise or wrench to generate a reactive torque. When this reactive torque must pass through a single point, such as a load cell, an unbalanced force is created. If the tubular is sufficiently slender (its OD is small relative to its length) or if torques are high, the tubular may be seen to deflect under this bending load. To minimize the consequence of this bending it is important the backup be positioned as closely to the tong as possible.

If you are using a ***Type Two or Type Three*** unit with certain types of tubulars, such as down hole tools like side pocket mandrels, it may not be possible to position the backup close to the tong. In such cases, the tubular is likely to exhibit some bending when torque is applied. The hold down strap may be used to secure the pipe in such cases.

MAKEUP PROCEDURE

Insure jaws are fully extended and clamped on the pipe. Operate Tong Rotation DCV to makeup (or breakout) joint to required torque. Torque can be monitored using the optional torque gauge or the Data Acquisition System. The computer system features a dump valve which controls the maximum applied makeup torque. Note this dump valve has no effect on breakout torque. Torque can be controlled using the adjustable pressure relief valve on the power unit. Accessories are also available to dump hydraulic pressure and control rotational speed.

Attach crane to tubular (if required) after proper makeup torque has been reached. Use Tong Jaw DCV to fully retract the dies (and open the **LOCKJAW™** Backup). Carefully remove the tubular from the Bucking Unit. Using Tong Rotation DCV, rotate the tong to insure the bottom centering jaw is located at the lowermost point in the head by aligning the paint stripes on the tong with the matching stripes on the frame. The BUCKING UNIT is now ready for the next tubular operation.

BREAKOUT PROCEDURE

Load cells are to be installed on both sides of the Backup to all measurement of torque in makeup and breakout mode. Operations for breaking out of tubulars are precisely the same as for making up except for the direction of rotation controlled by Tong Rotation DCV.

CONTROLS and INSTRUMENTATION

PRODUCT BULLETIN

SUBJECT: Maintaining **CHROMEMASTER™** Bleeder Valves

DATE: January 8, 1998

BULLETIN NO.: SPB98-01-01

REFERENCE: Drawing ILL1089 (attached)

A problem was recently encountered with a **CHROMEMASTER™** which would not hold pressure. The cause of this problem was traced to an improperly maintained bleeder valve. In this case, the set screw which retains the handle loosened and allowed the handle to move until no overlap existed between the tang on the handle and the tang on the valve body. Without contact between the tangs the operator could not properly position the ball valve in the closed position.

The attached drawing and maintenance procedures have been developed to inform the users of **CLINCHER® CHROMEMASTER™** of this potential problem and means of preventing its occurrence. The position of the handle and its securing set screw should be routinely inspected. If evidence of packing leakage is observed, the packing nut should be tightened using the documented procedures. If the valve continues to leak after adjustment, it should be replaced.

WARNING

Failure or improper selection or improper use of the products and/or systems described herein or related items can cause death, personal injury and property damage.

Maximum Allowable Working Pressure & Temperature

Valve Body Material	
Seat Material	Stainless Steel
Kel-F	6000 psi @ 70°F

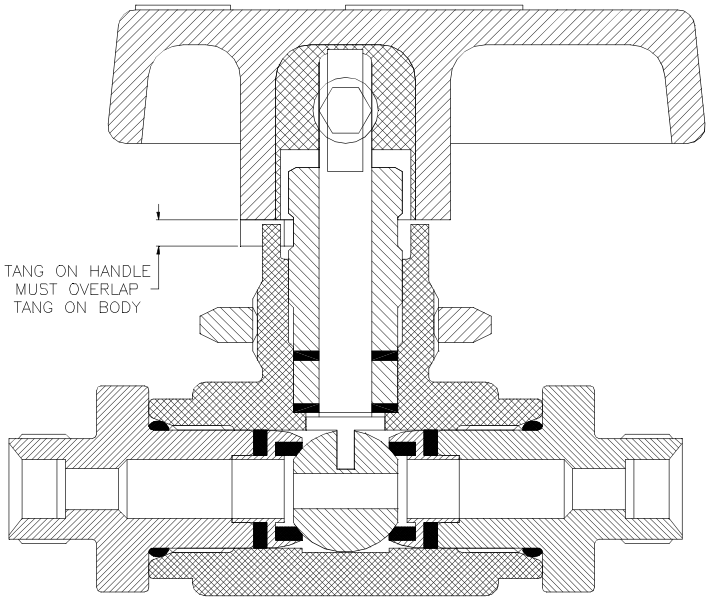


Figure 1 – General Two-Way Ball Valve Cross-Sectional Assembly With Standard Teflon Packing

Packing Adjustment

(For B-Series Ball Valves with Teflon Stem Packing)

Packing adjustments may be occasionally necessary depending on the many and varied uses for the valve. It is recommended an adjustment be made shortly after initial installation and just prior to flow startup. Always consult Superior if questions arise.

1. Remove the handle by turning the set screw counter-clockwise with a 3/32" size hex-socket wrench.
2. Tighten the packing nut 1/8 to 1/4 turn or to 70 in-lbs. using a 7/16" size hex wrench.
3. Re-install the handle and secure by turning the set screw clockwise and torque to 15 in-lbs.

Valve Connector Make-Up Instructions

CAUTION: Whenever installing or removing a ball valve from a system, always place a back-up wrench on the ball valve's end connector. NOT the valve body.

Tube Fitting Connectors

1. Insert the tube into the filter port until the tube bottoms out in the filter body. Care should be exercised to insure the tube is properly aligned with the filter body and port.
2. Normal make-up for port size 4 thru 16 (1/4 thru 1 inch) is 1-1/4 turn from finger tight.

Please follow the above directions for counting the number of turns for proper fitting make-up. Do not make-up the tube fittings by torque or "feel". Variables such as tubing and fitting tolerances, tube wall thickness, and the lubricity of nut lubricants can result in an improperly assembled tube fitting connection.

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE

2 PLACE DEC.	3 PLACE DEC.	FRACTIONS	ANGLES	SURFACE	FLATNESS
±.020	±.010	± 1/16	± .5°	250	± .015 per foot

Rev.#	Log#	Description of Revision
3		
2		
1		

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

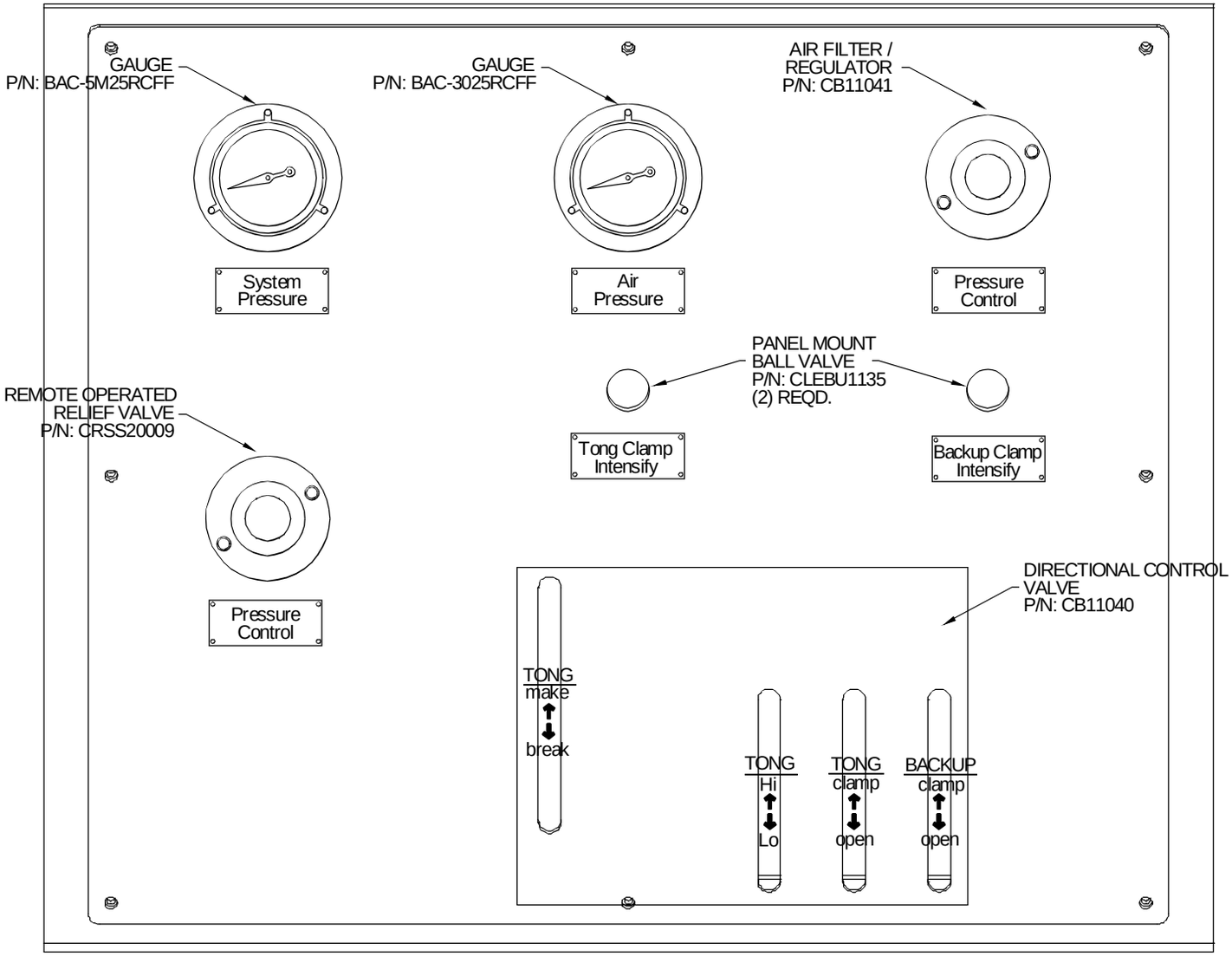
SHEET 1 of 1

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

PART NAME: MAINTENANCE INSTRUCTIONS
CHROMEMASTER™ BLEEDER VALVE CM4556

PART #: ill1089	MATERIAL SPECIFICATION
DRAWN BY: MARK F GRAVOUIA	Matl.Req:
REVISED BY:	Initial Condition:
REF: F:\ill1000\ill1089	Stk.Size:
DATE: 1/7/98 REV.#:	H.T Instructions: Case Depth:

FIGURE 1

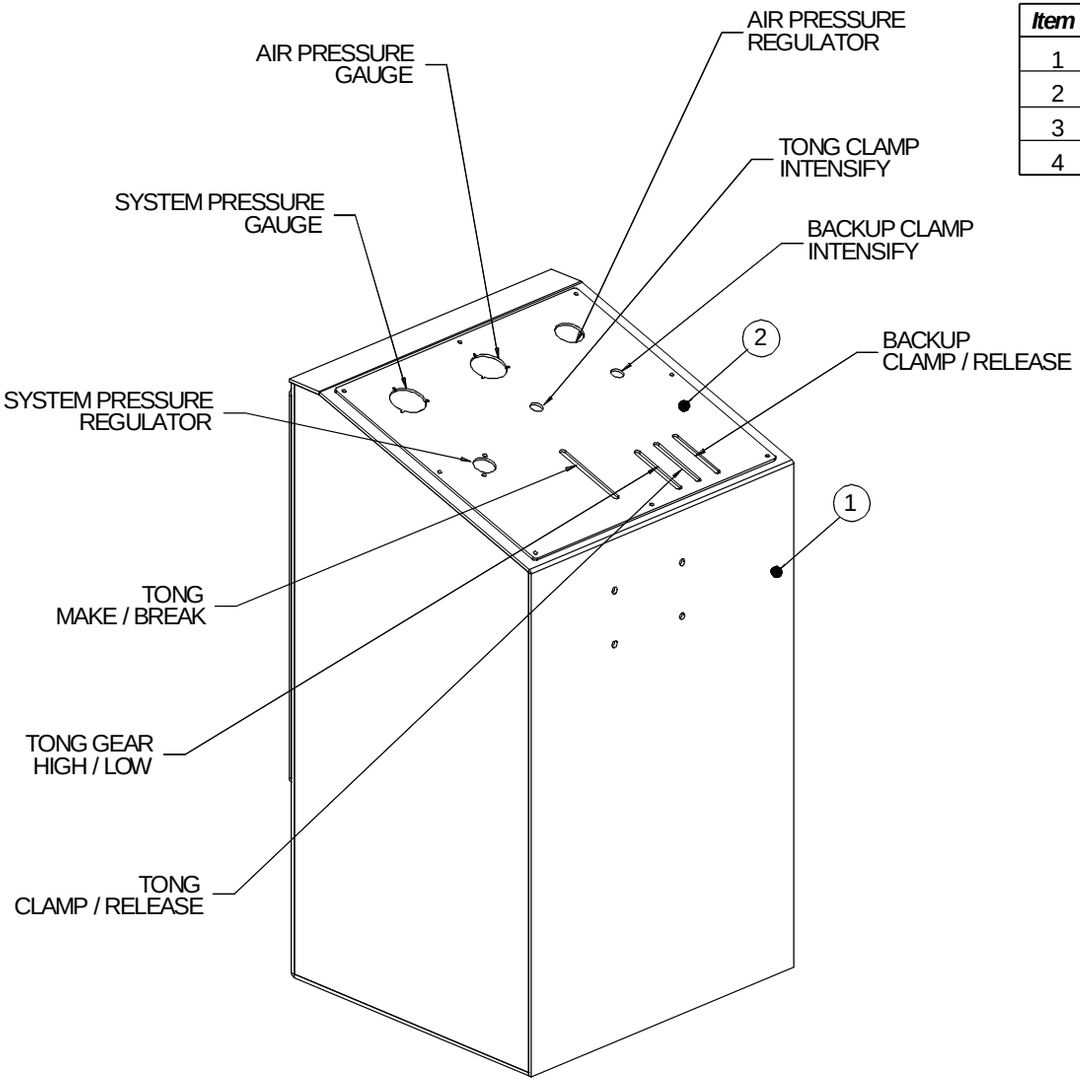


CONTROL PANEL

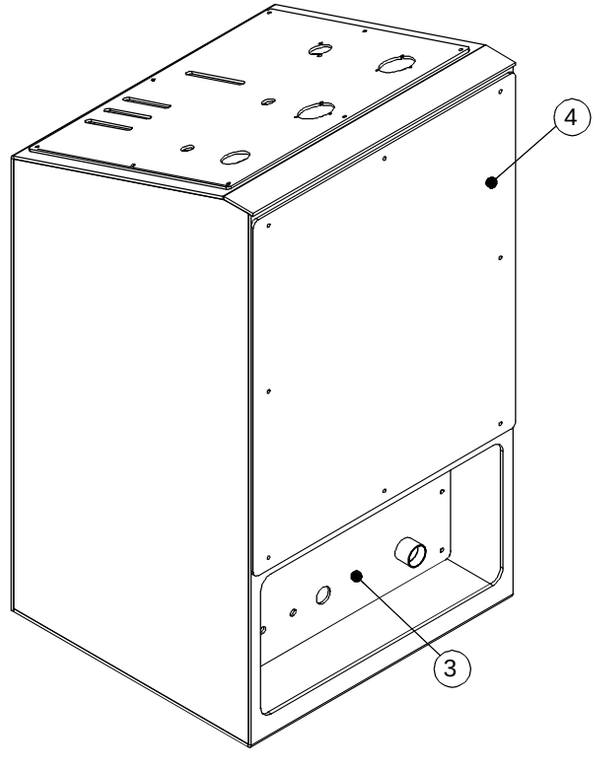
SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

REV. #	LOG #	DATE
		03/25/03

REF: S:\Equip Manuals-Dwgs\CLEBU1175-31\Control Panel.wpg



Item	Qty.	Part Number	Description
1	1	CB11018	CONTROL CONSOLE ASSEMBLY
2	1	CB11019	CONTROL PANEL COVER PLATE
3	1	CB11023	CONSOLE BOLT-ON PLATE WELDMENT
4	1	CB11025	CONTROL PANEL BACK PLATE



CONTROL CONSOLE ASSEMBLY

ASSEMBLY NO. CB11024

APPROX. WEIGHT (LBS.) = 399.342

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REV. #	LOG #	DATE
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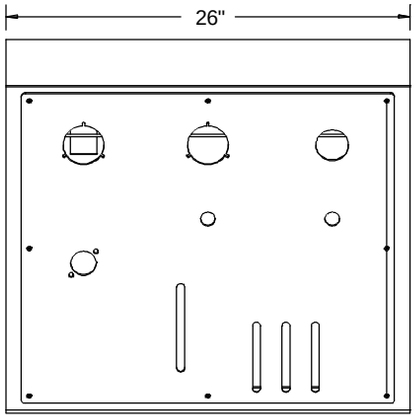
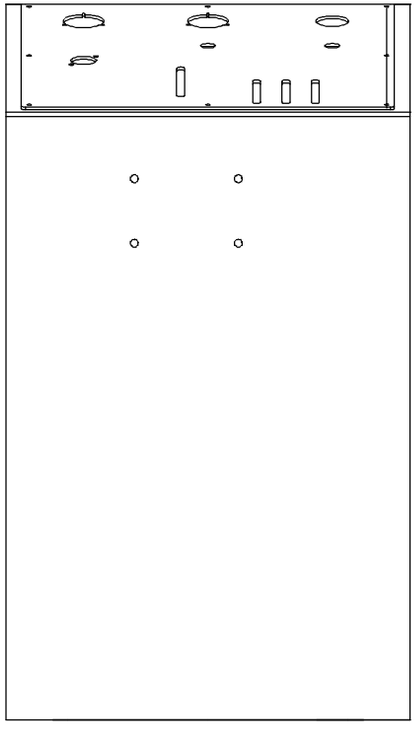
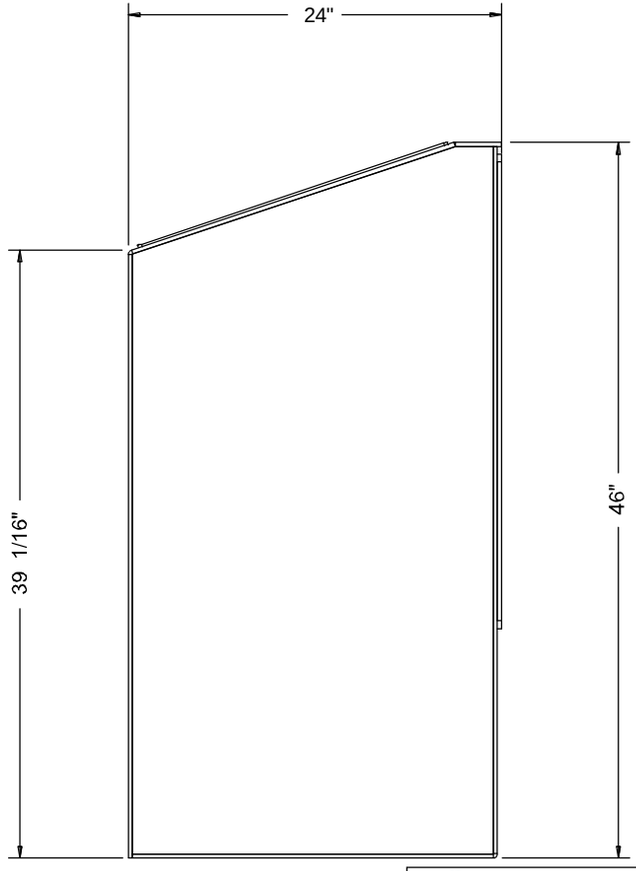






APPROX. WEIGHT (LBS.) = 399.342

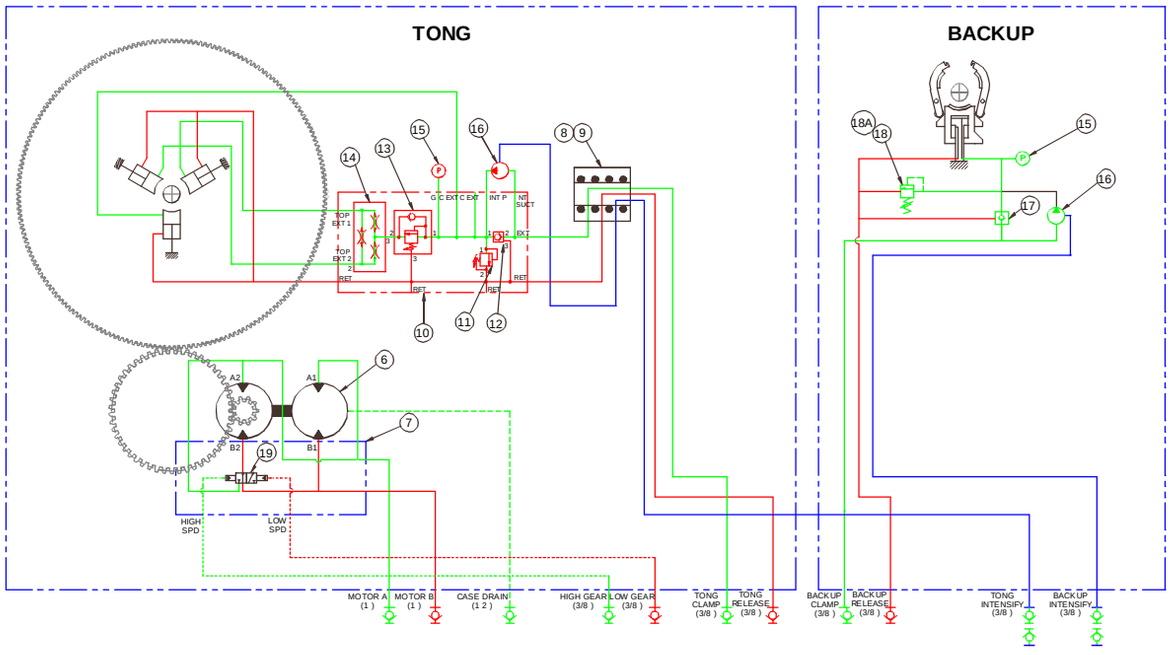
CONTROL CONSOLE DIMENSIONS

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

		03/25/03
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLEBU1175-31\Console Dim.wpg

Item	Qty.	Part Number	Description	Location
1	1	CB11040	PVG 120/32 VALVE, TONG CONTROLS	CONSOLE
2	1	CRSS20009	RELIEF VALVE, REMOTE, PANEL MOUNT	CONSOLE
3	1	CB11041	AIR FILTER / REGULATOR	CONSOLE
4	2	CB11045	BALL VALVE, PANEL MOUNT	CONSOLE
5	1	BAC-30025RCFF	GAUGE 300 PSI, PANEL MOUNT	CONSOLE
6	1	CB11042	HYDRAULIC MOTOR, DUAL SPEED	TONG
7	1	CB11043	DUAL SPEED MANIFOLD	TONG
8	1	CB11064	HYDRAULIC SWIVEL	TONG
9	4	CLEBU9656	ROTARY SEALS (4 PCS = 1 SET)	TONG
	1	B3P0-008	CLAMPING MANIFOLD ASSEMBLY (INCLUDES) :	TONG
10	1	17-B3P0-001	CLAMPING MANIFOLD (CLOSED HEAD)	TONG
11	1	17-B3P0-005	RELIEF VALVE	TONG
12	1	17-B3P0-004	PILOT OPERATED CHECK VALVE	TONG
13	1	17-B3P0-003	SEQUENCE VALVE W/ REV CHECK	TONG
14	1	17-B3P0-002	FLOW DIVIDER / COMBINER	TONG
15	3	BAC-5M25RCFF	PRESSURE GAUGE, 0-5000	TONG, BACKUP, CONSOLE
16	2	BULJ4035	M-36 HASKEL PUMP (INTENSIFIER OPTIONAL)	TONG, BACKUP
17	1	BUC5524	PILOT OPERATED CHECK VALVE	BACKUP
18	1	BULJ4036	RELIEF VALVE	BACKUP
18A	1	BULJ4037	RELIEF VALVE SPRING KIT (WHITE)	BACKUP
19	1	CB11044	DUAL PILOT CARTRIDGE VALVE	TONG
20	1	2070	DUMP VALVE	CONSOLE
	1	58058-S	SOLENOID VALVE NOR. CLOSED	CONSOLE



11 3/4" BUCKING UNIT *Type Three*

HYDRAULIC SCHEMATIC

FIGURE 2

SUPERIOR Manufacturing & Hydraulics
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BROUSSARD, LA 70518
(318) 837-8847

05/13 03

REV. # | LOG # | DATE

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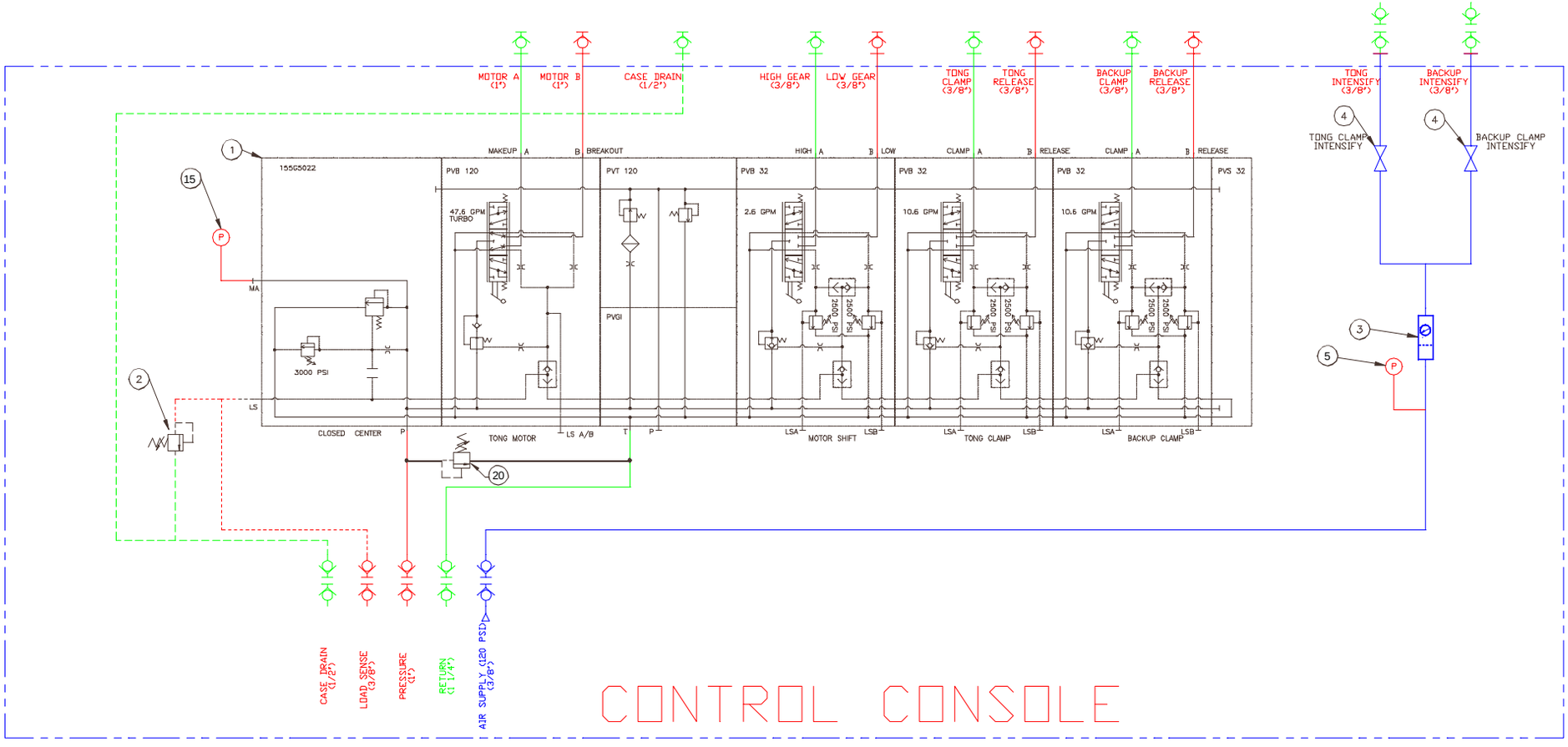

11 3/4" BUCKING UNIT *Type Three*

HYDRAULIC SCHEMATIC

FIGURE 2

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REV. #	LOG #	DATE
		05/13 03

REF: S:\Equip Manuals-Dwgs\CLEBU175-3I Schematic Sh 2.wpg

MAINTENANCE

CLINCHER® recommends that owners of **CLINCHER®** Hydraulic Power Tongs, Backups, **CHROMEMASTER™**, Bucking Units and accessories adopt 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 importantly, 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, perform the following:

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) Clean and inspect jaws for damage or excessive wear. Lubricate splines and all grease zerts.

D) Inspect all hoses for wear, replace as necessary.

E) Inspect backup hanger assembly to assure all parts are in operating condition.

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

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

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

H) After power unit has reached operating 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 3,000 P.S.I.) Control Panel pressure gauge should match Power Unit System operating pressure.

I) While maintaining pressure on backup visually inspect hoses, stainless steel lines, fittings, etc., for seepage of hydraulic fluid. Repair or replace parts causing leaks.

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

MAINTENANCE

K) With the proper dies installed in the tong and backup, and test mandrel locked in the backup, operate tong DCV through several cycles of locking and releasing. While maintaining pressure on Tong Assembly, visually inspect hoses, stainless steel lines, fittings, etc., for seepage of hydraulic fluid. Repair or replace parts causing leaks.

L) Operate Rotational DCV to apply torque to test mandrel up to value required for tubulars to be made up or broken out. While maintaining pressure on motor visually inspect hoses, stainless steel lines, fittings, etc., for seepage of hydraulic fluid. Repair or replace parts causing leaks.

M) **Recommended lubrication schedule performed after completion of each job.** Lubricate all externally accessible grease zerts. Note there are grease zerts for lubricating the cylinders which slide within the tong and backup assemblies which can only be accessed after removing the covers from these assemblies. Check fluid levels in hydraulic power unit reservoir. If bucking unit is chain driven, check fluid levels in chain drive case and gear reducer.

N) 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 to insure all contaminants are removed.

MAINTENANCE

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 Bucking Unit and Power Unit, which could possibly have been damaged either during operation or transit.

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

C) Check sprockets and chain for any signs of damage or wear.

D) Remove motor and valve assembly from the Bucking Unit.

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

F) Check gear reducer per manufacturers specifications.

G) Remove covers from Tong and Backup Assemblies. Inspect hydraulic hoses and components for leaks. Lubricate internal grease zerts.

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

I) If bucking unit is chain driven, remove covers and inspect chain and sprockets for wear or excess slack.

J) 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.

K) Reinstall all parts which were removed for inspection and/or damage. Connect to hydraulic power supply and function test operation. Torque test utilizing appropriate dies and test mandrel.

L) Sample power unit fluid and have processed for contaminants. Replace return filter according to manufacturer=s specifications.

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

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

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

TROUBLE SHOOTING

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 (I/C engines only)	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 values.
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.

TROUBLE SHOOTING

HYDRAULIC SYSTEM

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.

HYDRAULIC TONG SECTION

	Problem	Solution
A)	Shortened bearing life	Check alignment, insure proper lubrication to non-sealed bearings.

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.

TROUBLE SHOOTING

Slow Tong Speed:

	Problem	Solution
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.

Insufficient Torque:

	Problem	Solution
A)	Relief valve malfunctioning	Relief set too low, broken valve spring, contamination or defective seals.
B)	Damaged or worn pump parts	Inspect, repair or replace.
C)	Slow pump speed	Assure proper pump speed for application.
D)	Improper system fluid	Check fluid viscosity and replace fluid if inadequate for operating temperature.
E)	Directional control valve set improperly	Check relief and directional control valve. Neutral should return slightly to reservoir.
F)	Damage to motor	Inspect, repair or replace.
G)	Restriction of supply line, excessive back pressure	Check to assure couplings are securely fastened.
H)	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.

TROUBLE SHOOTING

Failure to Grip Tubulars:

	Problem	**Solution**
A)	Jaws move out from neutral, but fail to penetrate	Inspect die size and replace with correct dies for pipe. Wrong size dies for tubular.
B)	Jaws fail to move out of neutral	Inspect and replace defective cylinders for debris or damage. Remove rust and debris from jaws, and jaw pockets. Repair, replace and lubricate as needed.
C)	Tong will not release from tubular	Inspect Directional Control Valves.
D)	Motor runs but Tong does not rotate	Inspect and replace defective chain, sprocket or gear reducer.
E)	Tong binds under light load	Inspect and replace defective parts. Damaged hub or bearings.
F)	Tong rotates while control lever is in neutral	Replace control valve.
G)	Hydraulic fluid leaking from motor	Replace motor shaft seal.

TROUBLE SHOOTING

HYDRAULIC BACKUP SYSTEM

Backup Fails to Hold Tubular:

	Problem	**Solution**
A)	Incorrect die for size tubular	Check pipe O.D. and match die size to pipe O.D.
B)	Dies have material compacted in tooth area	Clean dies with wire brush and inspect for worn teeth. 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 counter balance valve defective.
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.

SECTION 7 CLEBU1175-35 11 3/4" BUCKING UNIT PARTS LISTS

TABLE OF CONTENTS

SUPERIOR MANUFACTURING

Pick List

CLEBU1175-35 / 11 3/4" BUCKING UNIT TYPE 3

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
12CTX	3/4" MNPT X 3/4" MJIC 90 DE	each	M24-B	2	_____
BUCS11831	3/8" COUPLING MOUNTING	each	M13-F	1	_____
BUCS11850	11 3/4" LJ BACKUP	each		1	_____
BUCS11855	BACKUP HOUSING ASSEMB	each		1	_____
CB11002	11 3/4" TONG ASSEMBLY 35K	each		1	_____
CB11016	CARRIAGE ASSEMBLY F/11 3/4 GEAR DRIVEN BUC	each		2	_____
CB11022	BUCKING UNIT TONG SHRO FOR 11 3/4	each		1	_____
CB11067	BOLT-ON TRAY WELDMENT	each		1	_____
CB11401	BUCKING UNIT FRAME WEL 12' TRAVEL (16' LONG)	each		1	_____
CB11753045	HOLD DOWN STRAP ASSEM	each	WALL 17	1	_____
CB2312	CARRIAGE SPRING RETRAC STOP ASSEMBLY	each		2	_____
CLEBU1114-16	E-CHAIN CABLE TRAY X FOOT	each		1	_____
CLEBU1114-E1	E-CHAIN MALE (RIDGED) E	EACH	M27-A	1	_____
CLEBU1114-E2	E-CHAIN FEMALE (MOVABL END	each	M27-A	1	_____
KITBOLT-43	BOLT KIT FOR CLEBU1175-3	each		1	_____

13-May-03
11:15 AM

SUPERIOR MANUFACTURING

Pick List

BUCS11850 / 11 3/4" LJ BACKUP

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00BUCS11850	PICKLIST FOR BUCS11850 REV DATE: 05/13/03	each		1	_____
1001	ZERT 1/8" NPT	each	50	8	_____
1171-A	SHCS 3/4"-10 X 1 1/4"	each	52	36	_____
BAC-5M25RCFF	GAUGE, 0-5000 PSI 2 1/2" 1/4 NPT PANEL MT.	each	S2-E	1	_____
BUC5524	PILOT OPER CHK VALVE-STEEL (5000 PSI)	each	M12-C	1	_____
BUCS11017	SPACER	each	M13-E	10	_____
BUCS11805	CYLINDER GUIDE	each		4	_____
BUCS11809	BACKUP PLATE	each		2	_____
BUCS11825-01	CAM FOLLOWER ASSEMBLY F/ BUCKING UNIT BACKUP PICK LIST	each	M13-E	10	_____
BUCS11851	INSIDE RIGHT DOOR ASSEMBLY	each		1	_____
BUCS11852	OUTSIDE LEFT DOOR ASSEMBLY	each		1	_____
BUCS11853	BACKUP CYLINDER ASSEMBLY	each		1	_____
BUCS11856	LOAD CELL BRACKET	each		1	_____
BUCS2145	PIVOT PIN F/21" LJ BACKUP	each	M13-F	2	_____
BULJ4035	M-36 HASKEL PUMP	each	M15-F	1	_____
BULJ4036	RELIEF VALVE SS-4R3A5	each		1	_____
BULJ4037	WHITE SPRING KIT	each		1	_____

13-May-03
11:20 AM

SUPERIOR MANUFACTURING

Pick List

BUCS11825-01 / CAM FOLLOWER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1257	DRIVE ZERT 1/4"	each	53	1	_____
73007	CAM FOLLOWER RACE	each	M8-C	1	_____
73009	FLANGE BUSHING 20FDU16	each	2S-G	1	_____
BUCS11825	CAM FOLLOWER STUD F/11 3/4	each		1	_____

SUPERIOR MANUFACTURING

Pick List

BUCS11851 / INSIDE RIGHT DOOR ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1040-A	SHCS 3/8"-16 X 3/4"	each	50	4	_____
1171	LOCKWASHER 3/4" GR8	each	52	3	_____
1176-A	NUT COARSE 3/4" GR8	each	52	3	_____
1184-A	HHCS 3/4"-10 X 8 1/2" GR8	each	53	3	_____
32DU24	GARLOCK BUSHING 32DU24 2" ID X 1 1/2"	each	S2-G	2	_____
BUCS11004	INSERT F/11 3/4" LJ BACKUP	each	M13-E	1	_____
BUCS11013	INSIDE DOOR PLATE F/BUCS1175-01	each		2	_____
BUCS11014	DOOR ROLLER	each	M13-E	1	_____
BUCS11019	SPRING SPACER	each		1	_____
BUCST7615	PIVOT PIN SPACER F/7 5/8" LJ B/U TENSION STYLE	each	M15-E	2	_____
BUCST7617	DOOR ROLLER PIN FOR 7 5/8 LJ BUC.TENSION ST.	each	M15-E	1	_____
CB11059	DIE ADAPTOR RETAINER CLIP F/ 11 3/4 BUCKING UNIT	each		2	_____
CLE18528	RIGHT HAND TORSION SPRING F/ CLE185 3/8"W x 2 1/2 I.D x 5 COILS	each	M16-B	1	_____

SUPERIOR MANUFACTURING

Pick List

BUCS11852 / OUTSIDE LEFT DOOR ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1040-A	SHCS 3/8"-16 X 3/4"	each	50	4	_____
1171	LOCKWASHER 3/4" GR8	each	52	3	_____
1176-A	NUT COARSE 3/4" GR8	each	52	3	_____
1184-A	HHCS 3/4"-10 X 8 1/2" GR8	each	53	3	_____
32DU24	GARLOCK BUSHING 32DU24 2" ID X 1 1/2"	each	S2-G	2	_____
BUCS11004	INSERT F/11 3/4" LJ BACKUP	each	M13-E	1	_____
BUCS11012	OUTSIDE DOOR PLATE	each		2	_____
BUCS11014	DOOR ROLLER	each	M13-E	1	_____
BUCS11019	SPRING SPACER	each		1	_____
BUCST7615	PIVOT PIN SPACER F/7 5/8" LJ B/U TENSION STYLE	each	M15-E	2	_____
BUCST7617	DOOR ROLLER PIN FOR 7 5/8 LJ BUC.TENSION ST.	each	M15-E	1	_____
CB11059	DIE ADAPTOR RETAINER CLIP F/ 11 3/4 BUCKING UNIT	each		2	_____
CLE18527	LEFT HAND TORSION SPRING F/ CLE185 UNIT 3/8"W x 2 1/2 I.D x 5 COILS	each	M16-B	1	_____

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8:24 AM

SUPERIOR MANUFACTURING

Pick List

BUCS11853 / BACKUP CYLINDER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1040-A	SHCS 3/8"-16 X 3/4"	each	50	4	_____
1154	SHCS 5/8"-11 X 1 3/4"	each	51	8	_____
BUCS11801	PISTON	each		1	_____
BUCS11802	GLAND	each		1	_____
BUCS11803	ROD	each		1	_____
BUCS11804	BACKING PLATE	each		1	_____
BUCS11806	OUTSIDE DOOR WEDGE	each		1	_____
BUCS11807	INSIDE DOOR WEDGE	each		1	_____
BUCS11808	REAR JAW	each		1	_____
BUCS11854	SEAL KIT F/11 3/4 BACKUP CYL F/11 3/4 BUCKING UNIT TYPE 3	each		1	_____
CB11059	DIE ADAPTOR RETAINER CLIP F/ 11 3/4 BUCKING UNIT	each		2	_____

19-Mar-03
10:07 AM

SUPERIOR MANUFACTURING

Pick List

BUCS11854 / SEAL KIT F/11 3/4 BACKUP CYL

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
18702625	POLYPACK 3/16" CROSS SECTION 2 5/8 X 3 X 3/16	each	O1-B	1	_____
25004500	POLYPACK 1/4" CROSS SECTION 4 1/2 X 5 X 1/4	each	O1-C	1	_____
25005500	POLYPACK 1/4" CROSS SECTION 5 1/2 X 6 X 1/4	each	O1-C	1	_____
37505250	POLYPACK 3/8" CROSS SECTION 5 1/4 X 6 X 3/8	each	O1-E	2	_____
959-41	ROD WIPER 4 1/2"	each	O3-F	1	_____
W47500625	WEARBAND	each	O5-C	1	_____

SUPERIOR MANUFACTURING

Pick List

BUCS11855 / BACKUP HOUSING

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1171	LOCKWASHER 3/4" GR8	each	52	40	_____
1173	HHCS 3/4"-10 X 1 3/4" GR8	each	52	32	_____
283	3/4-10 HEX NUT	each		8	_____
BUCS11815	HOUSING SPACER	each		6	_____
BUCS11816	LOAD CELL BRACE	each		2	_____
BUCS11855-S1	HOUSING FRONT PLATE	each		1	_____
BUCS11855-S2	HOUSING REAR PLATE	each		1	_____
BUCS11855-S3	HOUSING SPACER	each		2	_____
PH-79347	HHCS 3/4"-10 X 5" F/ STABILIZER MOUNTING	each	S13-E	8	_____

SUPERIOR MANUFACTURING

Pick List

CB11002 / 11 3/4" TONG ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00CB11002	PICKLIST FOR CB11002 REV DATE: 05/13/03	each		1	_____
1042	SHCS 3/8"-16 X 1 1/4"	each	50	2	_____
1049	HHCS 3/8"-16 X 1 1/2" GR8	each	50	12	_____
1050	HHCS 3/8"-16 X 2" GR8	each	50	14	_____
1108	SHCS 1/2"-13 X 3 1/2"	each	51	16	_____
1155	SHCS 5/8"-11 X 2"	each	51	4	_____
1171	LOCKWASHER 3/4" GR8	each	52	72	_____
1174	HHCS 3/4"-10 X 2 1/4" GR8	each	52	72	_____
1210	NUT 1"-8 GR8	each	52	24	_____
1218	1" LOCKWASHER GR8	each	52	48	_____
1225	NUT 1 1/4"-7 GR8	each	52	1	_____
1286	SHCS 1/2"-13 X 7"	each		12	_____
1288	HHCS 1"-8 X 3"	each		24	_____
1319	FLATWASHER 1 1/4" GR8	each	54	1	_____
1902	BEARING MRC5308MZZ	each	S5-D	1	_____
1905	CLINCHER IDLER BEARING X-tra Heavy Duty Sealed type MODIFIED MU5212TM BEARING	each	S5-D	1	_____
257	SHCS 5/8"-11 X 1 1/2"	each	56	4	_____
B3P0-008	TONG/ BACKUP CLAMPING MANIFOLD ASSEMBLY (CLOSED HEAD)	each		1	_____
BAC-5M25RCFF	GAUGE, 0-5000 PSI 2 1/2" 1/4 NPT PANEL MT.	each	S2-E	1	_____
BULJ4035	M-36 HASKEL PUMP	each	M15-F	1	_____
CB11003	HUB WELDMENT	each		1	_____
CB11004	REAR BEARING RING	each		1	_____
CB11005	TONG BODY BOTTOM PLATE	each		1	_____
CB11006	BEARING SPACER	each		1	_____
CB11007	PINION SHAFT	each		1	_____

SUPERIOR MANUFACTURING

Pick List

CB11002 / 11 3/4" TONG ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
CB11008	TONG BODY FRONT PLATE	each		1	_____
CB11009	TONG BODY REAR PLATE	each		1	_____
CB11010	SWIVEL KEEPER WELDMENT	each		1	_____
CB11011	MID-BODY	each		1	_____
CB11012	TONG MOUNTING BRKT WELDMENT	each		2	_____
CB11014	TONG BODY CENTER SPACER	each		1	_____
CB11015	GEAR HOUSING COVER PLATE	each		1	_____
CB11042	TWO SPEED MOTOR RINEER 37 (20/20)	each		1	_____
CB11043	TWO SPEED MANIFOLD RINEER 15-2852	each		1	_____
CB11044	DUAL PILOT CARTRIDGE VALVE DANFOSS CP723-2-V-0-150-S1	each		1	_____
CB11064	HYDRAULIC SWIVEL F/11 3/4" BUCKING UNIT	each		1	_____
CB11753006	RING GEAR,36" 108 TOOTH	each		1	_____
CB11753013	MIDDLE GEAR	each		1	_____
CB11753014	FRONT BEARING HOUSING	each		1	_____
CB11753015	REAR BEARING HOUSING	each		1	_____
CB11753021	MOTOR PINION GEAR	each		1	_____
CB1175302101	2 1/4" X 1/8" FLAT WASHER	each		1	_____
CB11753024	SHAFT COLLAR	each		1	_____
CB11753035	TONG MOUNTING BRACKET WELDMENT	each		4	_____
CLEBU1123	11 3/4 BU CYLINDER ASSEMBY 11 3/4" BUCKING UNIT PICKLIST	each		2	_____
CLEBU1123-C	CENTER CYLINDER ASSEMBLY 11 3/4" BUCKING UNIT PICKLIST	each		1	_____
CLEBU9610	COUNTER MOUNTING BRACKET	each		1	_____

13-May-03
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SUPERIOR MANUFACTURING

Pick List

CB11002 / 11 3/4" TONG ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
CLEBU9656	ROTARY SEAL SET TGR414000-T29FA	each		4	_____
SSCF1875	1 7/8" SEVERE SERVICE CAM FOLLOWER ASSEMBLY PICKLIST F/ CLE7625DP	each	M19-E	80	_____

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SUPERIOR MANUFACTURING

Pick List

B3P0-008 / TONG/BACKUP CLAMPING MANIFOLD ASSEMBLY (CLOSED HEAD)

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
17-B3P0-001	BACKUP/ TONG CLAMPING MANIFOLD (CLOSED HEAD)	each		1	_____
17-B3P0-002	FLOW DIVIDER/ COMBINER SUN FSCS-XAN	each	M2-A	1	_____
17-B3P0-003	SEQUENCE VALVE W/ REV CHECK SUN SCCA-LAN	each	M2-A	1	_____
17-B3P0-004	P.O. CHECK VALVE SUN CKCB-XCN	each	M2-A	1	_____
17-B3P0-005	RELIEF VALVE SUN RDDA-LCN	each	M2-A	1	_____

19-Mar-03
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SUPERIOR MANUFACTURING

Pick List

CLEBU1123 / 11 3/4 BU CYLINDER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00CLEBU1123	PICKLIST FOR CLEBU1123 REV DATE: 03/19/03	each		1	_____
1040-A	SHCS 3/8"-16 X 3/4"	each	50	4	_____
256	SHCS 5/8"-11 X 1 1/4"	each	56	4	_____
ASAP1123	SEAL KIT F/ 11 3/4" BU CYL.	each		1	_____
BUC5528	GLAND FOR JAW F/5 1/2 B.U.	each	M12-D	1	_____
CLEBU1121	DIE ADAPTOR RETAINER CLIP F/ 11 3/4 BUCKING UNIT	each	M16-B	2	_____
CLEBU1126	ROD F/ 9 5/8 & 10 3/4 BUCKING UNIT	each	M16-C	1	_____
CLEBU1131	11 3/4 CYL. HOUSING MAT 4140 PLATE	each	M16-C	1	_____
CLEBU9624	DOWEL PIN F/ 9 5/8 & 10 3/4 BUCKING UNIT ROD	each		1	_____

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SUPERIOR MANUFACTURING

Pick List

ASAP1123 / SEAL KIT F/ 11 3/4" BU CYL.

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
25004500	POLYPACK 1/4" CROSS SECTION 4 1/2 X 5 X 1/4	each	O1-C	1	_____
25005000	POLYPACK 1/4" CROSS SECTION 5 X 5 1/2 X 1/4	each	O1-C	1	_____
37504750	POLYPACK 3/8" CROSS SECTION 4 3/4 X 5 1/2 X 3/8	each	O1-E	1	_____
959-41	ROD WIPER 4 1/2"	each	O3-F	1	_____
W47500625	WEARBAND	each	O5-C	1	_____
W55000500	NYLON WEAR BAND 5 1/2" OD	each	O5-C	1	_____

SUPERIOR MANUFACTURING

Pick List

CLEBU1123-C / CENTER CYLINDER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00CLEBU1123C	PICKLIST FOR CLEBU1123-C REV DATE: 03/19/03	each		1	_____
1040-A	SHCS 3/8"-16 X 3/4"	each	50	4	_____
256	SHCS 5/8"-11 X 1 1/4"	each	56	4	_____
ASAP1123	SEAL KIT F/ 11 3/4" BU CYL.	each		1	_____
BUC5528	GLAND FOR JAW F/5 1/2 B.U.	each	M12-D	1	_____
CLEBU1121	DIE ADAPTOR RETAINER CLIP F/ 11 3/4 BUCKING UNIT	each	M16-B	2	_____
CLEBU1126	ROD F/ 9 5/8 & 10 3/4 BUCKING UNIT	each	M16-C	1	_____
CLEBU1131	11 3/4 CYL. HOUSING MAT 4140 PLATE	each	M16-C	1	_____
CLEBU9618	CENTER CYLINDER SPACER F/ 9 5/8 & 10 3/4 BUCKING UN	each		1	_____
CLEBU9624	DOWEL PIN F/ 9 5/8 & 10 3/4 BUCKING UNIT ROD	each		1	_____

SUPERIOR MANUFACTURING

Pick List

SSCF1875 / 1 7/8" SEVERE SERVICE CAM FOLL. ASSY.

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00SSCF1875	PICKLIST FOR SSCF1875 REV DATE: 09/08/99 SEE NOTES F/SSCF1875	each		80	_____
1178	JAM NUT 7/8"-14	each	52	80	_____
1224	LOCKWASHER 7/8" GR8 HEAVY SPLIT	each	52	80	_____
1257	DRIVE ZERT 1/4"	each	53	80	_____
73007	CAM FOLLOWER RACE F/ CLE7625DP	each	M8-C	80	_____
73008	CAM FOLLOWER STUD F/ CLE7625DP	each	M8-D	80	_____
73009	FLANGE BUSHING 20FDU16 F/ CLE7625DP	each	S2-G	80	_____

SUPERIOR MANUFACTURING

Pick List

CB11016 / CARRIAGE ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1156-A	NYLOCK NUT 5/8"-11	each	51	5	_____
1171	LOCKWASHER 3/4" GR8	each	52	4	_____
1183	HHCS 3/4"-10 X 2 1/2"	each	52	4	_____
1210	NUT 1"-8 GR8	each	52	4	_____
1218	1" LOCKWASHER GR8	each	52	4	_____
BUC4515	LEG SPRING 4" OD X 7 1/2" lg 3/8" wire 119 lbs/in 7 turns, sqd & grnd ends	each	M22-A--B	2	_____
BUCS11819	STOP TUBE	each		2	_____
BUCS11821	PLATE, SPRING RETAINER WELDMENT (PICKLIST)	each		1	_____
BUCS11823	BOLT, ADJUSTMENT WELDMENT	each		2	_____
BUCS11824	TOP SPRING RETAINER	each		2	_____
BUCS11830	1"-8 X 9" ALL THREAD	each	M13-E	2	_____
CB11017	CARRIAGE WELDMENT F/GEAR DRIVEN 11 3/4 BUCKING PICKLIST	each		1	_____
CB11753031	ROLLER ASSEMBLY PICKLIST	each		2	_____
PCFE-1-1-2	ECCENTRIC CAM FOLLOWER PCFE 1 1/2	each		4	_____

SUPERIOR MANUFACTURING

Pick List

CB11753031 / ROLLER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1001	ZERT 1/8" NPT	each	50	1	_____
1213	NYLOCK NUT LOW PRO 1"-12	each	52	2	_____
14070	DUMBELL ROLLER SEAL ASSY. PICKLIST	each		2	_____
1984	Cylindrical Roller Bearing SKF 5206 - 6800 lb rating 30mm ID x 62mm OD x 23.8mm	each		2	_____
2095	DUMBELL ROLLER SPACER F/20" TONG	each	M2-E	2	_____
CB1175303101	3" X 8 1/2" ROLLER	each		1	_____
CB1175303102	ROLLER SHAFT FOR 8 1/2" ROLLER	each		1	_____
CB1175303104	ROLLER SPACER	each		1	_____

SUPERIOR MANUFACTURING

Pick List

CB11024 / CONTROL CONSOLE ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
2070	R4V10-5A9-10A1 DENNISON DUMP VALVE 1 1/4	each	M2-E	1	_____
58058-S	SOLENOID VALVE-NOR. CLOSED VV01-321-GOQ-E1 (24 VOLT) F/ DENISON DUMP VALVE	each	M7-A	1	_____
BAC-30025RCFF	GAUGE 300 PSI PANEL MOUNT	each	S2-E	1	_____
BAC-5M25RCFF	GAUGE, 0-5000 PSI 2 1/2" 1/4 NPT PANEL MT.	each	S2-E	1	_____
CB11018	CONTROL CONSOLE WELDMENT	each		1	_____
CB11019	CONTROL PANEL COVER PLATE	each		1	_____
CB11023	CONSOLE BOLT-ON PLATE WELD.	each		1	_____
CB11025	CONTROL PANEL BACK PLATE	each		1	_____
CB11040	DIRECTIONAL CONTROL VALVE PVG 120/32 -4 FOR STANDARD BUCKING UNIT	each		1	_____
CB11041	AIR FILTER/ REGULATOR ROSS P/N 5322B4071	each		1	_____
CB11045	PANEL MT. BALL VALVE ON/OFF VALVE B-44S6	each		2	_____
CRSS20009	Remote operated relief valve Panel mount DYNEX RIVETT P/N:8820-01-1/4-21	each	M18-D	1	_____

SUPERIOR MANUFACTURING

Pick List

CB11401 / BUCKING UNIT FRAME WELDMENT

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
283	OBSOLETE REF- 1176-A HEX NUT 3/4"-10 GR8	each	0	4	_____
55044-S5	CLINCHER H.T. NAME PLAT LARGE	each	M05-F	2	_____
BUCS23111	BULKHEAD PLATE	each	M14-C	1	_____
CB11001-S10	BACKUP TRAVEL STOP F/CLEBU1175-31	each		2	_____
CB11001-S2	WELDMENT #2 3" X 8" X 1/4" RECT. TUBE	each		6	_____
CB11001-S5	MOUNTING PAD 2" A-36 PLATE	each		2	_____
CB11001-S6	WELDMENT #6 3" X 8" X 1/4" RECT. TUBE	each		1	_____
CB11030-S12	LEVELING FOOT	each		4	_____
CB11030-S13	WELDMENT #16 F/CLEBU1175-32 FRAME WE	each		1	_____
CB11030-S15	FOOT	each		4	_____
CB11401-S1	WELDMENT #1	each		2	_____
CB11401-S3	WELDMENT #3	each		5	_____
CB11401-S4	WELDMENT #4	each		10	_____
CB11401-S7	FLOOR PLATE	each		1	_____
CB11401-S8	HOSE GUIDE CHANNEL	each		1	_____
CB2012	BRACKET MOUNTING PLAT	each		1	_____

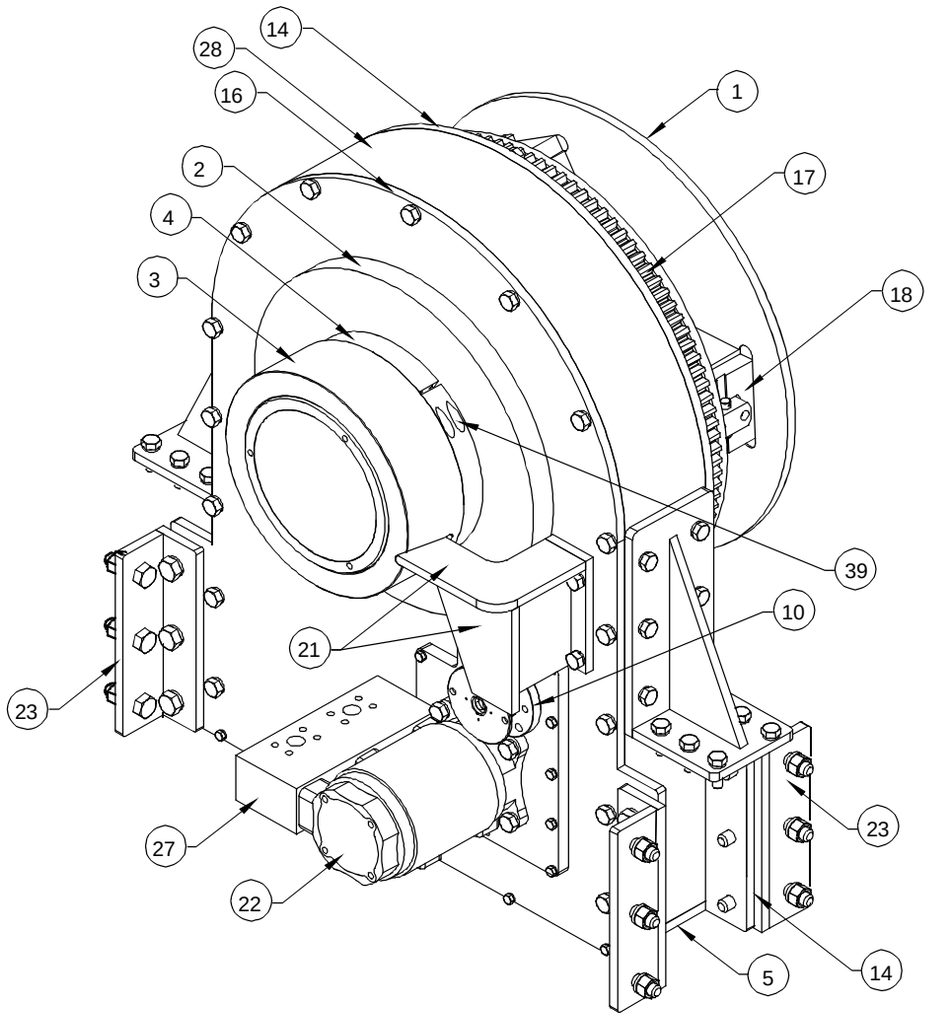
OPTIONS AND ACCESSORIES

OPTIONAL Features and Equipment - In addition to the basic differences between the Type One, Type Two, and Type Three units, several customer specified options are available for all units including:

Maximum diametrical gripping capacity
Maximum backup travel distance (Type One Units)
Maximum length capacity (Type Two Units)
Maximum torque rating
Maximum rotational speed and optional two speed motors
Types of power units
Elevation control systems
Hydraulic load cell and torque gauge
Electronic data acquisition/control systems
Hydraulic load control
Hydraulic speed control
Remotely actuated control valve system
Pipe handling systems
Removable, swiveling control panel

SECTION 9 CLEBU1175-35 ILLUSTRATIONS

TABLE OF CONTENTS



Item	Qty.	Part Number	Description
1	1	CB11003	HUB WELDMENT
2	1	CB11004	REAR BEARING RING
3	1	CB11064	HYDRAULIC SWIVEL
4	1	CB11753024	SHAFT COLLAR
5	1	CB11005	TONG BODY BOTTOM PLATE
6	1	1225	1 1/4"-7 HEX NUT
7	1	CB11006	BEARING SPACER
8	1	1902	BEARING MRC5308MZZ
9	1	CB11753013	MIDDLE GEAR
10	1	CB11753015	REAR BEARING HOUSING
11	1	CB11753014	FRONT BEARING HOUSING
12	1	CB11007	PINION SHAFT
13	1	1905	FRONT BEARING HOUSING BEARING
14	1	CB11008	TONG BODY FRONT PLATE
15	80	SSCF1875	CAM FOLLOWER ASSEMBLY
16	1	CB11009	TONG BODY REAR PLATE
17	1	CB11753006	RING GEAR, 36" 108 TOOTH
18	2	CLEBU1123	CYLINDER ASSEMBLY
	1	CLEBU1123-C	CENTER CYLINDER ASSEMBLY
19	1	CB11753021	MOTOR PINION GEAR
20	1	CB1175302101	2 1/4" X 1/8" FLAT WASHER - PINION KEEPER
21	1	CB11010	SWIVEL KEEPER WELDMENT
22	1	CB11042	RINEER 37 HYDRAULIC MOTOR, TWO SPEED
23	4	CB11753035	TONG MOUNTING BRACKET WELDMENT
24	72	1174	3/4"-10 X 2 1/4" HHCS
25	72	1171	3/4" LOCKWASHER
26	1	CLEBU9610	COUNTER MOUNTING BRACKET
27	1	CB11043	TWO SPEED MANIFOLD RINEER
28	1	CB11011	MID-BODY
29	1	1319	1 1/4" FLAT WASHER
30	2	CB11012	TONG MOUNTING BRACKET WELDMENT
31	1	CB11014	TONG BODY CENTER SPACER
32	1	CB11015	GEAR HOUSING COVER PLATE
33	12	1286	1/2"-13 x 7" SHCS
34	14	1050	3/8"-16 x 2" HHCS
35	12	1049	3/8"-16 x 1 1/2" HHCS
36	4	1155	5/8"-11 x 2" SHCS
37	16	1108	1/2"-13 x 3 1/2" SHCS
38	4	257	5/8"-11 x 1 1/2" SHCS
39	2	1042	3/8"-16 x 1 1/4" SHCS
40	24	1288	1"-8 x 3" HHCS
41	48	1218	1" LOCKWASHER
42	24	1210	1"-8 HEX NUT

APPROX. WEIGHT (LBS.) = 4088.609

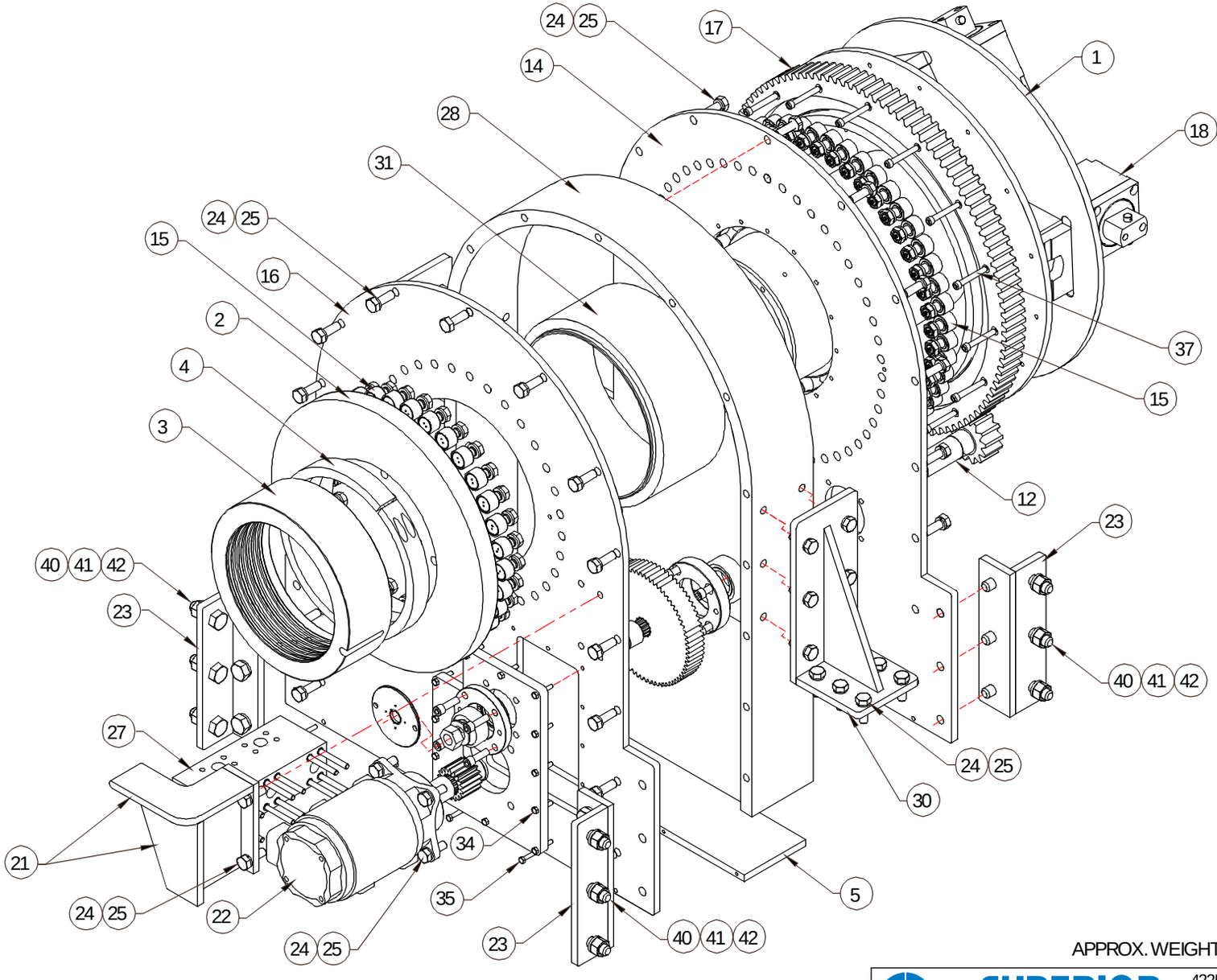
11 3/4" TONG ASSEMBLY

ASSEMBLY NO. CB11002

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

REV. #	LOG #	DATE
		05/13/03

REF: S:\Equip Manuals-Dwgs\CLEBU1175-31\Tong Assy Sh1.wpg



11 3/4" TONG ASSEMBLY

ASSEMBLY NO. CB11002

APPROX. WEIGHT (LBS.) = 4088.609

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

REV. #	LOG #	DATE
		03/28/03

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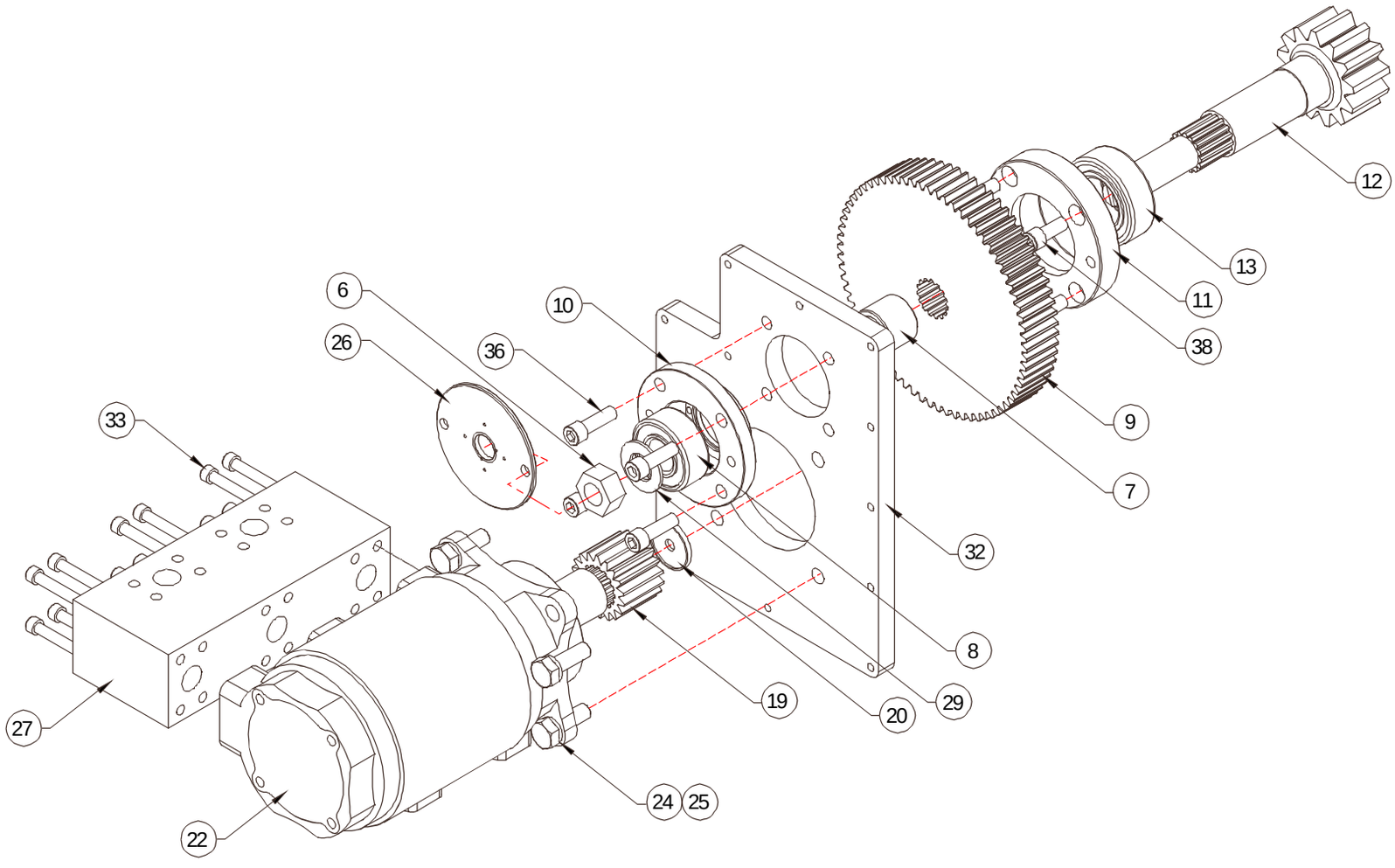

11 3/4" TONG ASSEMBLY

ASSEMBLY NO. CB11002

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

		03/28/03
REV. #	LOG #	DATE

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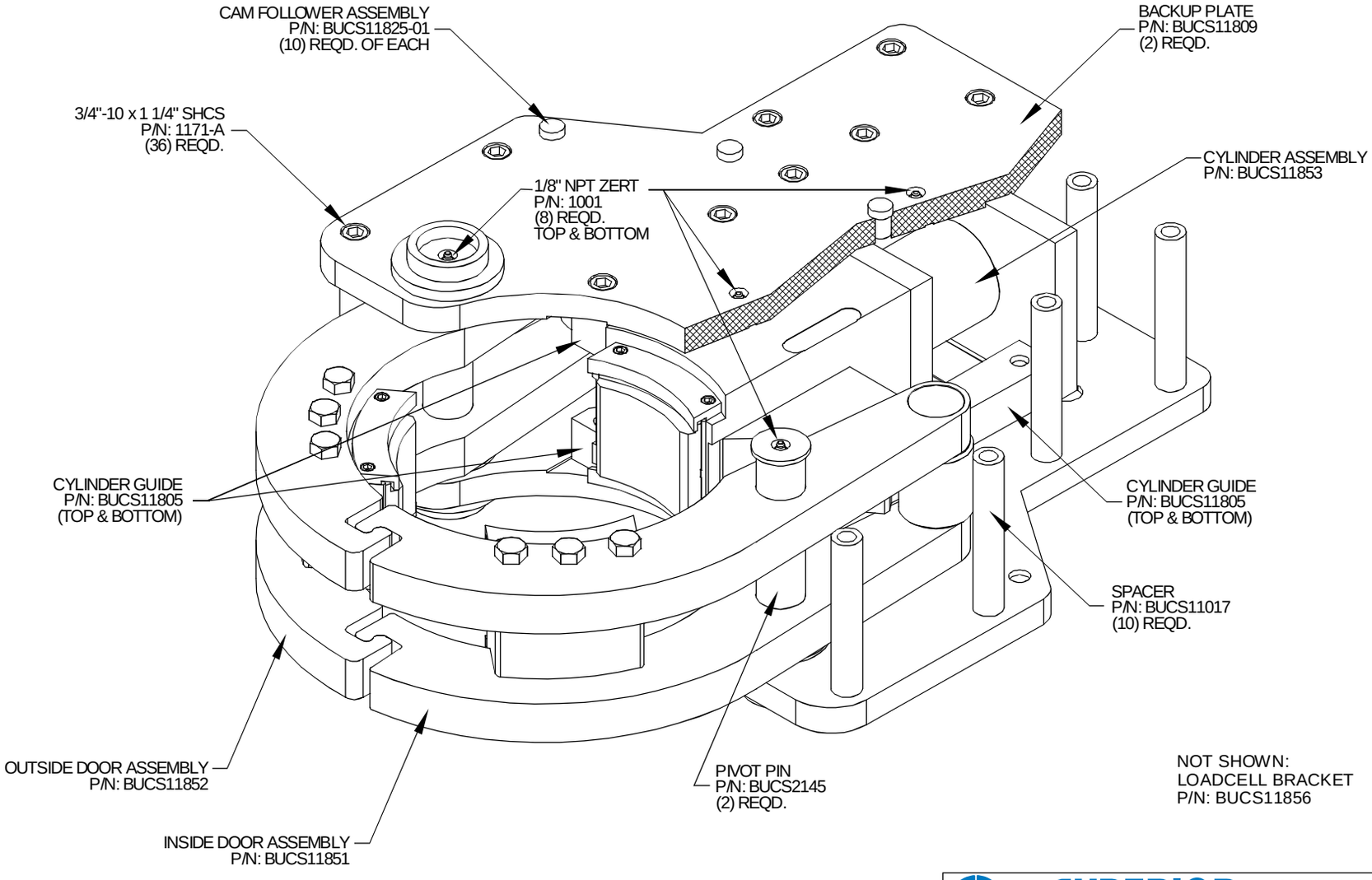

BACKUP ASSEMBLY

ASSEMBLY NUMBER BUCS11850

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

REV. #	LOG #	DATE
		05/13/03

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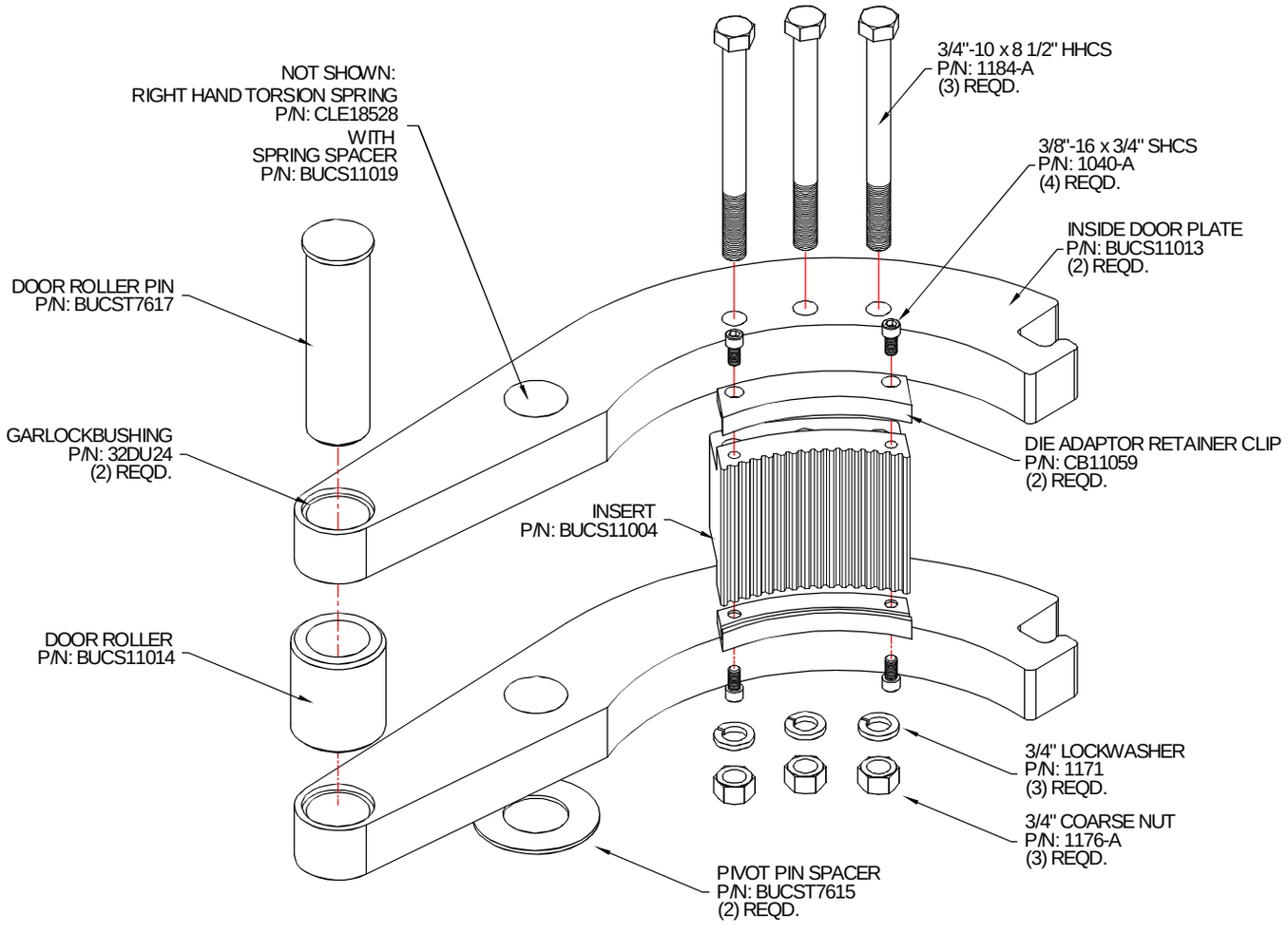

BACKUP INSIDE RIGHT DOOR ASSEMBLY

ASSEMBLY NO. BUCS11851

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

REV. #	LOG #	DATE
		05/13/03

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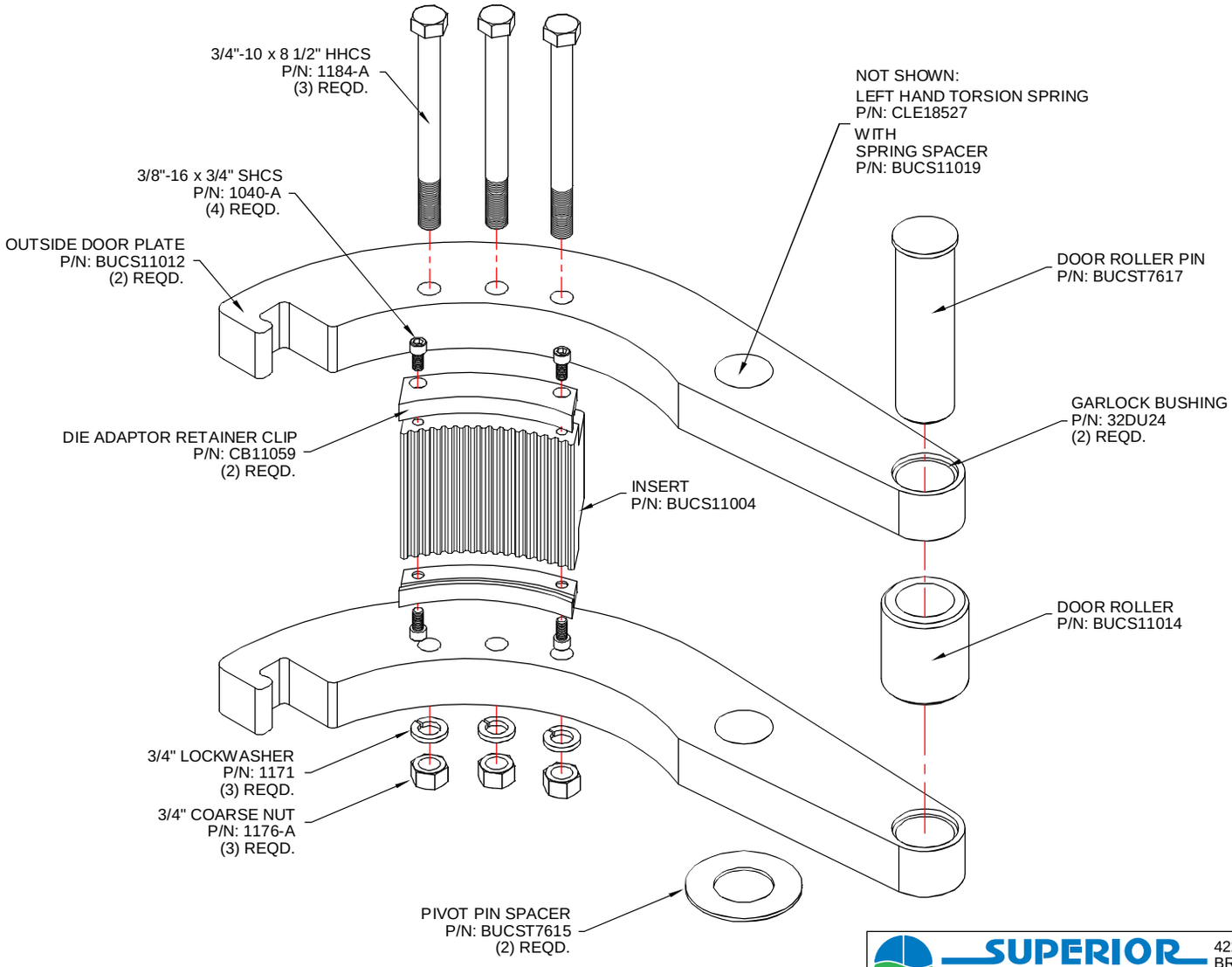

BACKUP OUTSIDE LEFT DOOR ASSEMBLY

ASSEMBLY NO. BUCS11852

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

REV. #	LOG #	DATE
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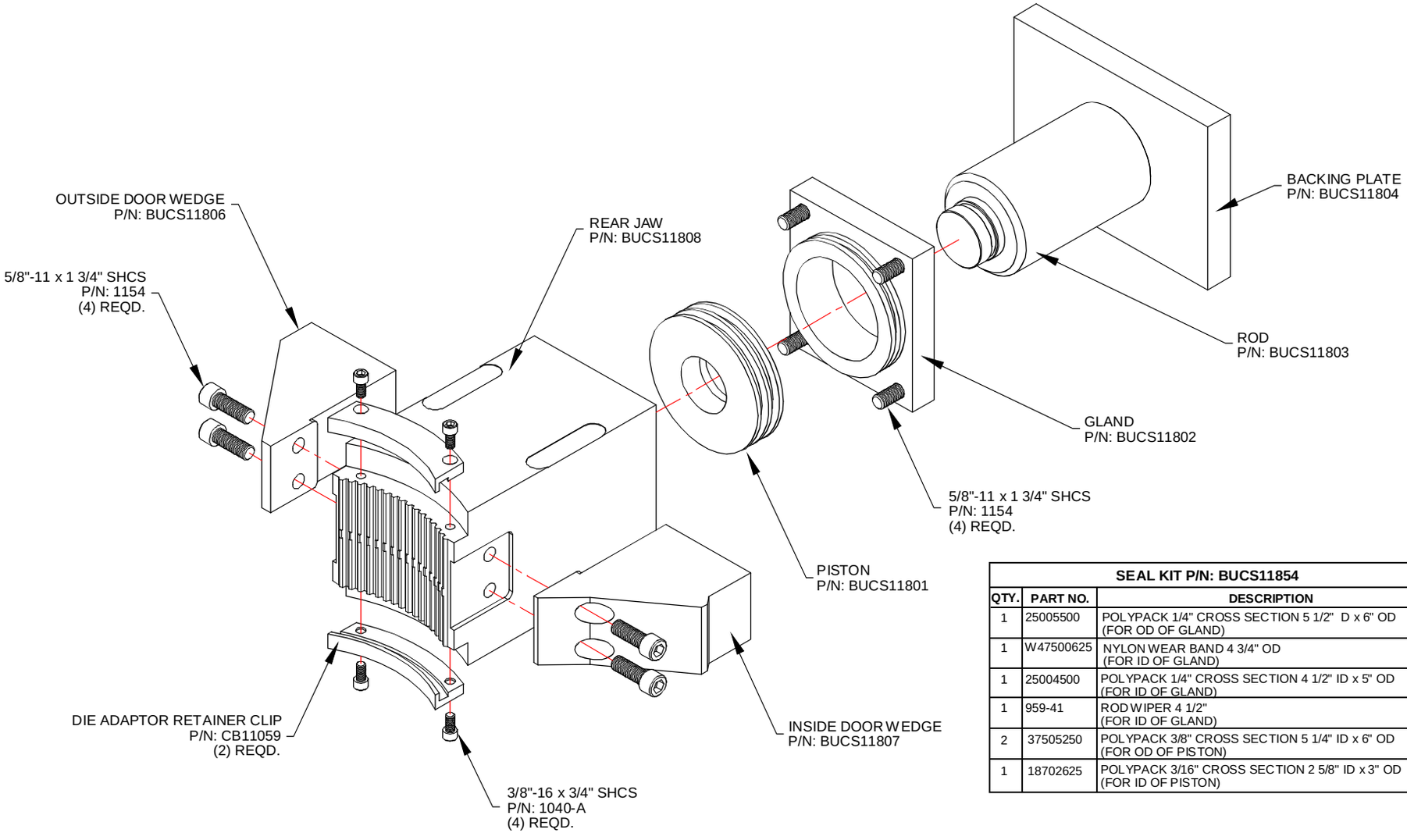

SEAL KIT P/N: BUCS11854		
QTY.	**PART NO.**	**DESCRIPTION**
1	25005500	POLYPACK 1/4" CROSS SECTION 5 1/2" D x 6" OD (FOR OD OF GLAND)
1	W47500625	NYLON WEAR BAND 4 3/4" OD (FOR ID OF GLAND)
1	25004500	POLYPACK 1/4" CROSS SECTION 4 1/2" ID x 5" OD (FOR ID OF GLAND)
1	959-41	ROD WIPER 4 1/2" (FOR ID OF GLAND)
2	37505250	POLYPACK 3/8" CROSS SECTION 5 1/4" ID x 6" OD (FOR OD OF PISTON)
1	18702625	POLYPACK 3/16" CROSS SECTION 2 5/8" ID x 3" OD (FOR ID OF PISTON)

BACKUP CYLINDER ASSEMBLY

ASSEMBLY NO. BUCS11853

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REV. #	LOG #	DATE
		05/13/03

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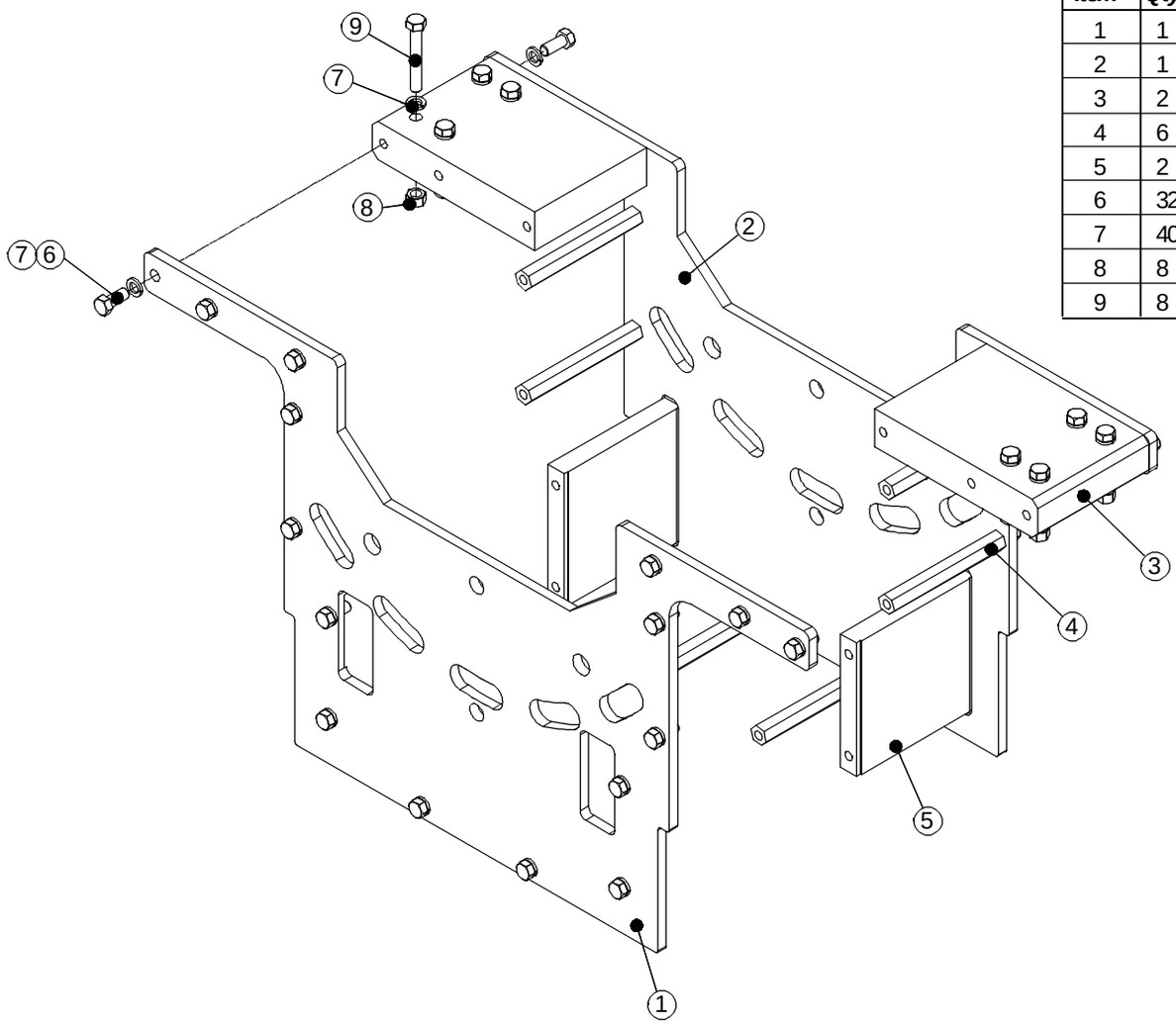

Item	Qty.	Part Number	Description
1	1	BUCS11855-S1	HOUSING FRONT PLATE
2	1	BUCS11855-S2	HOUSING REAR PLATE
3	2	BUCS11855-S3	SPACER
4	6	BUCS11815	HOUSING SPACER
5	2	BUCS11816	LOAD CELL BRACE
6	32	1173	3/4"-10 x 1 3/4" HHCS
7	40	1171	3/4" LOCKWASHER
8	8	283	3/4"-10 HEX NUT
9	8	PH-79347	3/4"-10 x 5" HHCS

BACKUP HOUSING ASSEMBLY

ASSEMBLY NUMBER BUCS11855

APPROX. WEIGHT (LBS.) = 755

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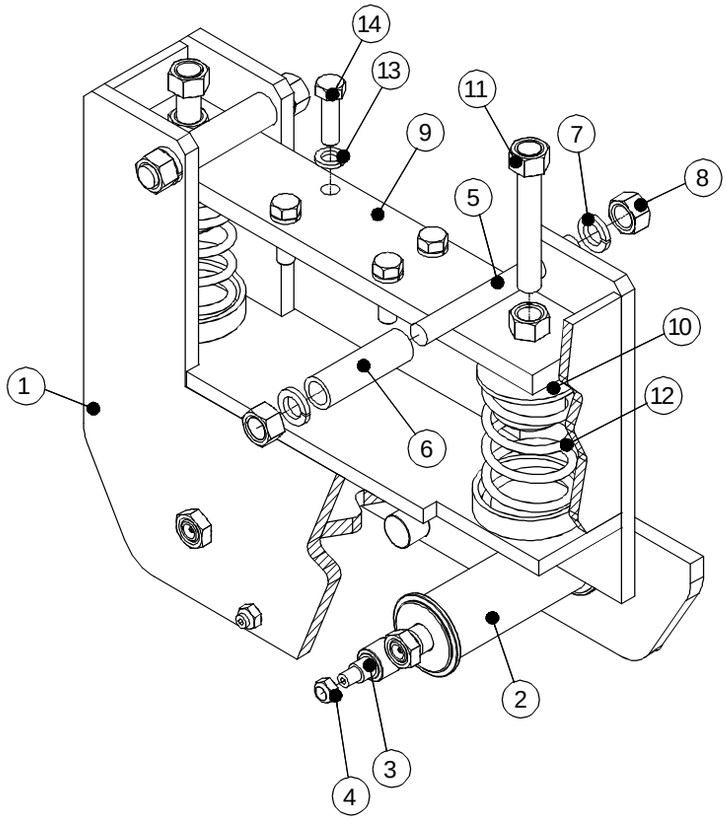

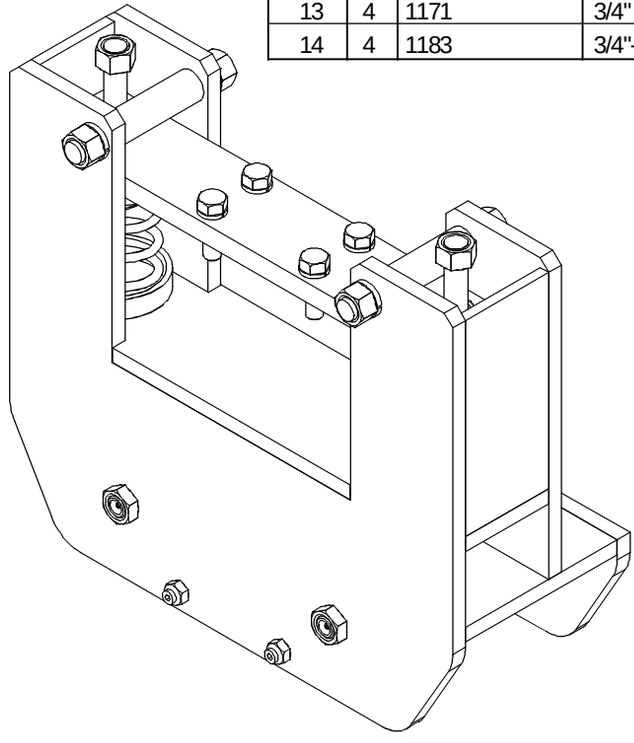

Item	Qty.	Part Number	Description
1	1	CB11017	CARRIAGE WELDMENT
2	2	CB11753031	ROLLER ASSEMBLY
3	4	PCFE-1-1-2	ECCENTRIC CAM FOLLOWER (PCFE-1 1/2)
4	5	1156-A	5/8"-11 NYLOCK NUT
5	2	BUCS11830	CARRIAGE ALL-THREAD ROD
6	2	BUCS11819	STOP TUBE
7	4	1218	1" LOCKWASHER
8	4	1210	1"-8 HEX NUT
9	1	BUCS11821	SPRING RETAINER PLATE WELDMENT
10	2	BUCS11824	TOP SPRING RETAINER
11	2	BUCS11823	ADJUSTMENT BOLT WELDMENT
12	2	BUC4515	SPRING
13	4	1171	3/4" LOCKWASHER
14	4	1183	3/4"-10 x 2 1/2" HHCS

APPROX. WEIGHT (LBS.) = 359

CARRIAGE ASSEMBLY

ASSEMBLY NUMBER CB11016

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BROUSSARD, LA 70518
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		03/25/03
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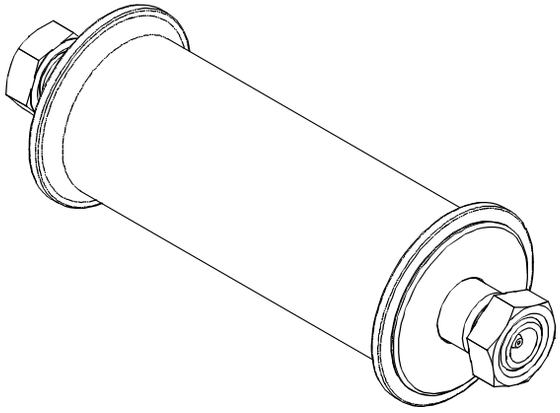
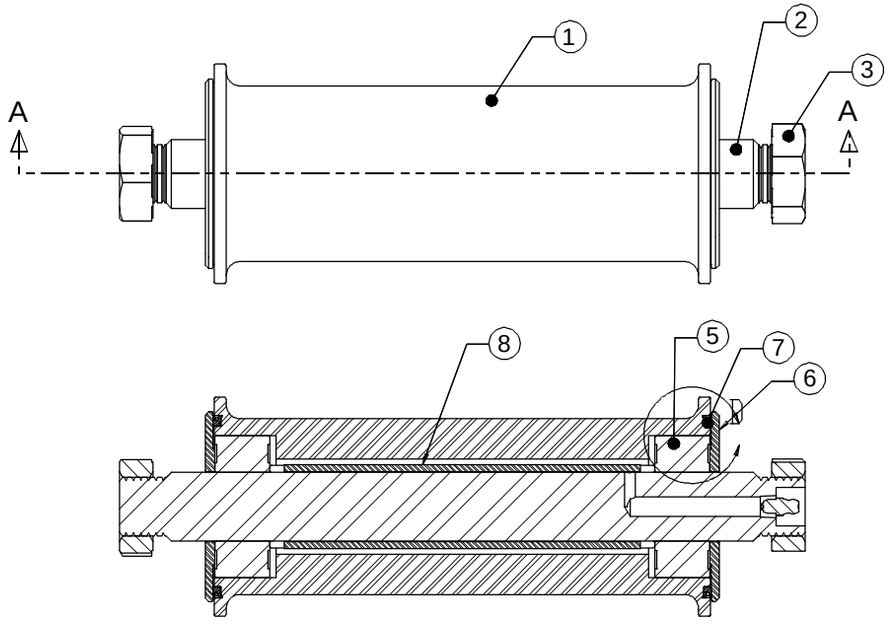
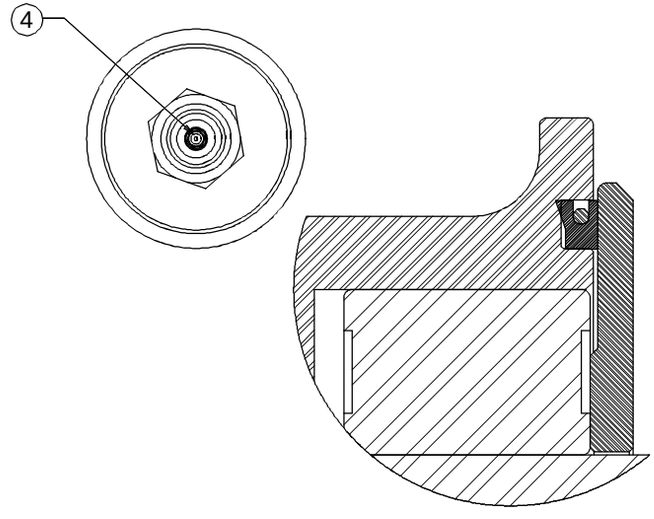


Item	Qty.	Part Number	Description
1	1	CB1175303101	3" x 8 1/2" ROLLER
2	1	CB1175303102	ROLLER SHAFT FOR 8 1/2" ROLLER
3	2	1213	1"-12 NYLOCK JAM NUT
4	1	1001	1/8" NPT ZERT
5	2	1984	CYLINDRICAL ROLLER BEARING
6	2	2095	DUMBELL ROLLER SPACER
7	2	14070	SEAL ASSEMBLY
	1	14070-S1	DUMBELL ROLLER SEAL
	1	2-041	O-RING
8	1	CB1175303104	ROLLER SPACER



SECTION A-A



DETAIL D
SCALE 1.5 : 1

ROLLER ASSEMBLY

ASSEMBLY NUMBER CB11753031

APPROX. WEIGHT (LBS.) = 17.54

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REV. #	LOG #	DATE
		03/25/03

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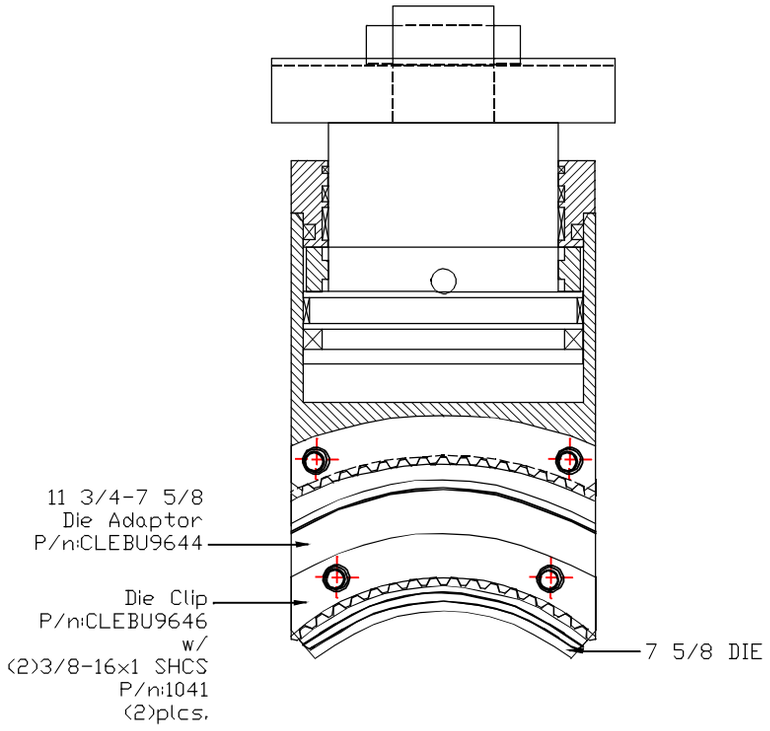
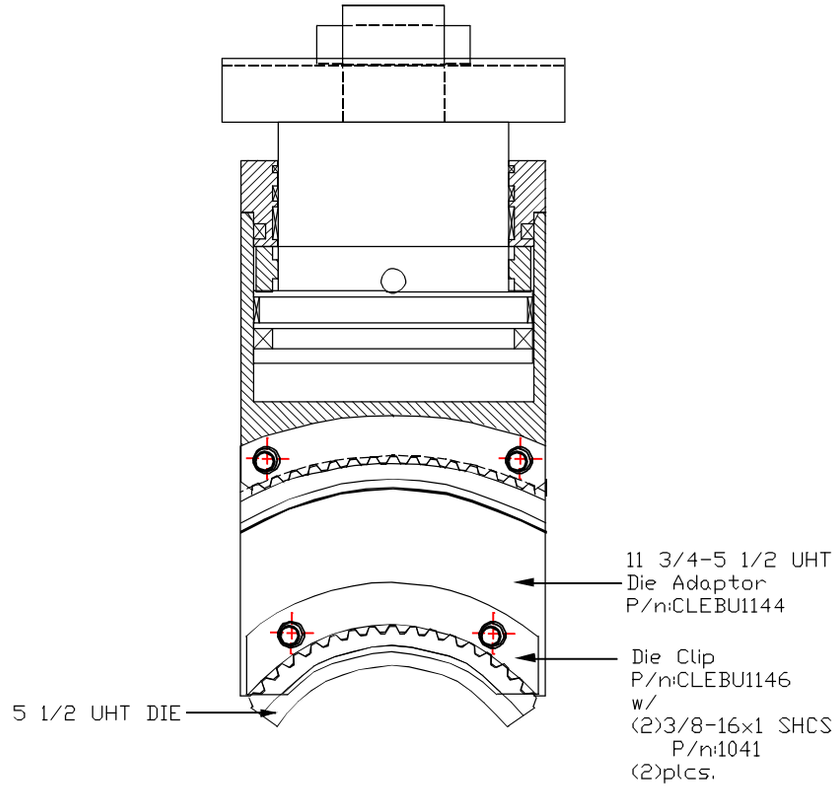


SECTION VIEW
11 3/4-7 5/8



SECTION VIEW
11 3/4-5 1/2 UHT

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE

2 PLACE DEC.	3 PLACE DEC.	FRACTIONS	ANGLES	SURFACE	FLATNESS
±.020	±.010	± 1/16	± .5°	250	± .015 per foot

Rev.#	Log#	Description of Revision
3		
2		
1		

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

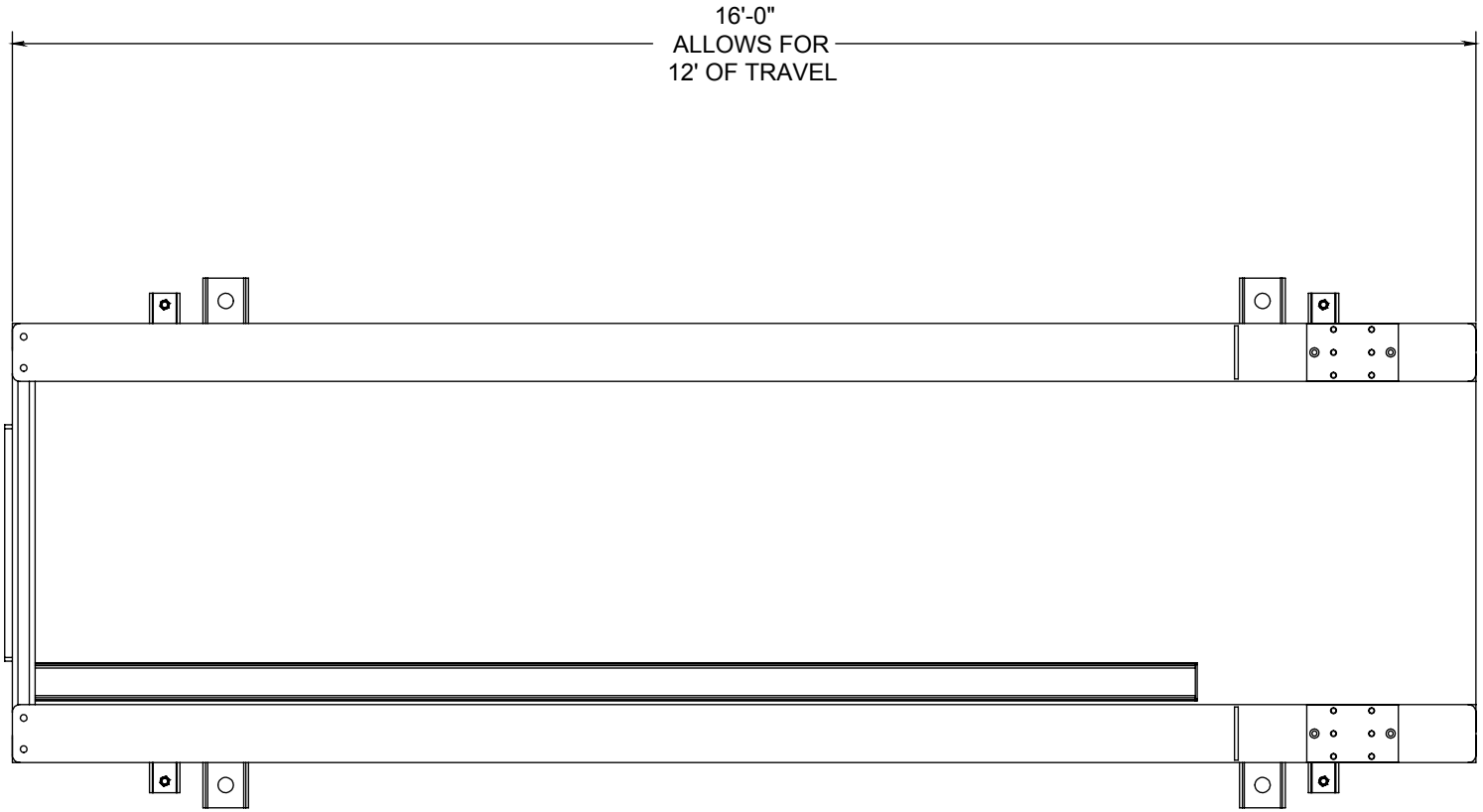
1.000 = Critical Dimension 100% Inspection Required

SHEET 1 of 1

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

PART NAME: DIE ADAPTOR VARIATION FOR 11 3/4 BUCKING UNIT CLEBU1175

PART #: CLEBU1123	MATERIAL SPECIFICATION
DRAWN BY: NING M	Matl.Req:
REVISED BY:	Initial Condition:
REF: F:\DWG\CBU1123	H.T Instructions:
DATE: 1-26-98 REV.#:	Case Depth:



BUCKING UNIT FRAME WELDMENT

P/N: CB11401

SUPERIOR
Manufacturing & Hydraulics

SECTION 10 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

Note: Some **CLINCHER®** Bucking Units feature Rineer Motors with two rotor sections to provide greater output torque. Please contact SUPERIOR Manufacturing & Hydraulics for additional information concerning these motors, spare parts, and replacement procedures.

AIR DRIVEN
HYDRAULIC PRESSURE INTENSIFIERS

These optional air driven hydraulic pressure intensifiers boost the hydraulic clamping pressure to levels greater than can be produced using your main hydraulic power unit.

Two intensifier systems are used in the unit. Each consists of a pump and preset pressure relief valve. One system is located within the tong section and the other located within the backup section of your bucking unit. The pumps are supplied with hydraulic oil from the low pressure (upstream) side of the pilot operated check valve. High pressure is returned to the high pressure (downstream) side of the pilot operated check valve (see schematic). Both intensifiers are remotely operated by means of two 1/4 turn air control ball valves located near your bucking unit's hydraulic directional control valves. These two ball valves control the air supply to each pump.

Haskle Pump: M-71 Series 1/3 hp pumps (maximum rated output 8,800 psi) using 15 CFM @ 125 psi for maximum pressure and flow rate performance.

Swagelok Pressure Relief Valve: SS-4R3A5-G with RED spring kit 177-R3A-K1-G for 4000 to 5000 psi cracking pressure.

OPERATING PROCEDURES

1. Check all fluid levels including diesel, engine oil, hydraulic oil, compressor oil (if applicable).
2. Drain all water from air dryer. Add oil to air lubricator.
3. Install correct dies in tong and backup sections.
4. Start electric or diesel hydraulic power unit, electrical generator and air compressor (as required for your system).
5. Determine clamping pressure requirement:
   a. For low torque/large diameter tubulars use only hydraulic power unit pressure.
   b. For moderate torque/smaller diameter tubulars use only hydraulic power unit pressure plus limited intensified pressures. Limited intensified pressures are controlled by reducing air supply pressure at air regulator.

> DO NOT ATTEMPT TO ADJUST SWAGELOK PRESSURE RELIEF VALVES.
> Failure to comply with this regulation may cause irreparable equipment damage and expose personnel to potentially fatal hazards.

   c. For high torque/small diameter tubulars use hydraulic power unit pressure plus maximum intensified pressure. Maximum intensified pressure is achieved by adjusting regulator to maximum air pressure setting.

AIR DRIVEN
HYDRAULIC PRESSURE INTENSIFIERS

6. Install tubular to be bucked up in bucking unit tong and backup.

   a. Actuate directional control valve to clamp backup. If intensified pressure is required, maintain directional control valve in clamped position and rotate backup intensifier air control valve to turn on air to actuate intensifier. Pump will actuate several times building pressure in clamping cylinders.

> DO NOT EXTEND CYLINDERS OR ACTUATE INTENSIFIERS UNLESS P IPE CORRECT DIES ARE INSTALLED I N THE BUCKING UNIT.
> Failure to comply will cause extensive equipment damage and expose personnel to dangerous high pressure hydraulic leaks.

   Note: The hydraulic system pressure gauge reading will not change as it is measuring pressure on low pressure side of pilot operated check valve. Note: Pump will continue to slowly cycle if air pressure setting allows pump to intensify pressure greater than the relief valve setting.

   Return air control valve to closed position. Release backup directional control valve.

   b. Actuate directional control valve to clamp tong. If intensified pressure is required, maintain directional control valve in clamped position and rotate tong intensifier air control valve to actuate intensifier. The pump will actuate several times building pressure in clamping cylinders.

> DO NOT EXTEND CYLINDERS OR ACTUATE INTENSIFIERS UNLESS PIPE CORRECT DIES ARE INSTALLED I N THE BUCKING UNIT.
> Failure to comply will cause extensive equipment damage and expose personnel to dangerous high pr essure hydraulic leaks.

   Note: The hydraulic system pressure gauge reading will not change as it is measuring pressure on low pressure side of pilot operated check valve. Note: Pump will continue to slowly cycle if air pressure setting allows pump to intensify pressure greater than the relief valve setting.

   Return air control valve to closed position. Release tong directional control valve.

   c. Actuate tong make/break directional control valve as required.

   d. Release clamping cylinders in tong and backup using directional control valves.

To request copy of Haskel Pump 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

SECTION 12 CONTROL VALVE TECHNICAL DATA

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

Superior Manufacturing & Hydraulics
4225 Hwy90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

SECTION 13 HYDRAULIC POWER UNIT

PARTS LIST

PU4060 Electrically Driven Hydraulic Power Unit

1800 RPM, 60 HZ, 40 HP, 3 PH, 230/460 V, 60 GPM, 3,000 PSI Power Unit with Horse Power Limiting Load Sense

Description	Manufacturer	Model Number
Reservoir	Saint Mfg.	TM-L-150-DL
40 HP Electric Motor	US Motors	H40E2E
Pump/Motor Adapter	Magnalloy	M324872C(4C)
Motor/Pump Coupling	Magnalloy	Motor – M50011612M500 1 1/2 B x 3/8 K
		Pump – M50020416
Motor/Pump Coupling Spider	Magnalloy	M570U9
Suction Strainer	Schroeder	SS-2 1/2-100-3
Hydraulic Pump	Vickers	PVH131-CLF*S11C25VT21
Relief Valve	Dynex Revett	8821-06-1-25
Return Filter Cartridge Assembly	Schroeder	RT-2K3-P32-P32-Y2
Pressure Filter Assembly	Schroeder	KF30-2K3-P-D

Note: Standard industrial hydraulic system components including hydraulic hoses, pipe fittings, and low pressure suction isolation valve components are not specifically identified.

Note: This Power Unit features a piston pump system with a pressure compensator / horsepower limiting / load sense control. The pump will deliver a maximum of 60 gpm below pressures of 1000 psi. Above 1000 psi, the flow is decreased as not to overdraw the electric motor. (Example: 40 gpm @ 1500 psi) The maximum compensator setting is set to 2500 psi. The pump requires a load sense signal from the control valve to match the operating pressure with the load requirement. If there is no load requirement, the load sense signal will be "0" and the pump will be at a standby pressure (approximately 400-600 psi).

Hyd HP = (max flow (gpm) x max pressure (psi)) / 1714

SECTION 13 HYDRAULIC POWER UNIT

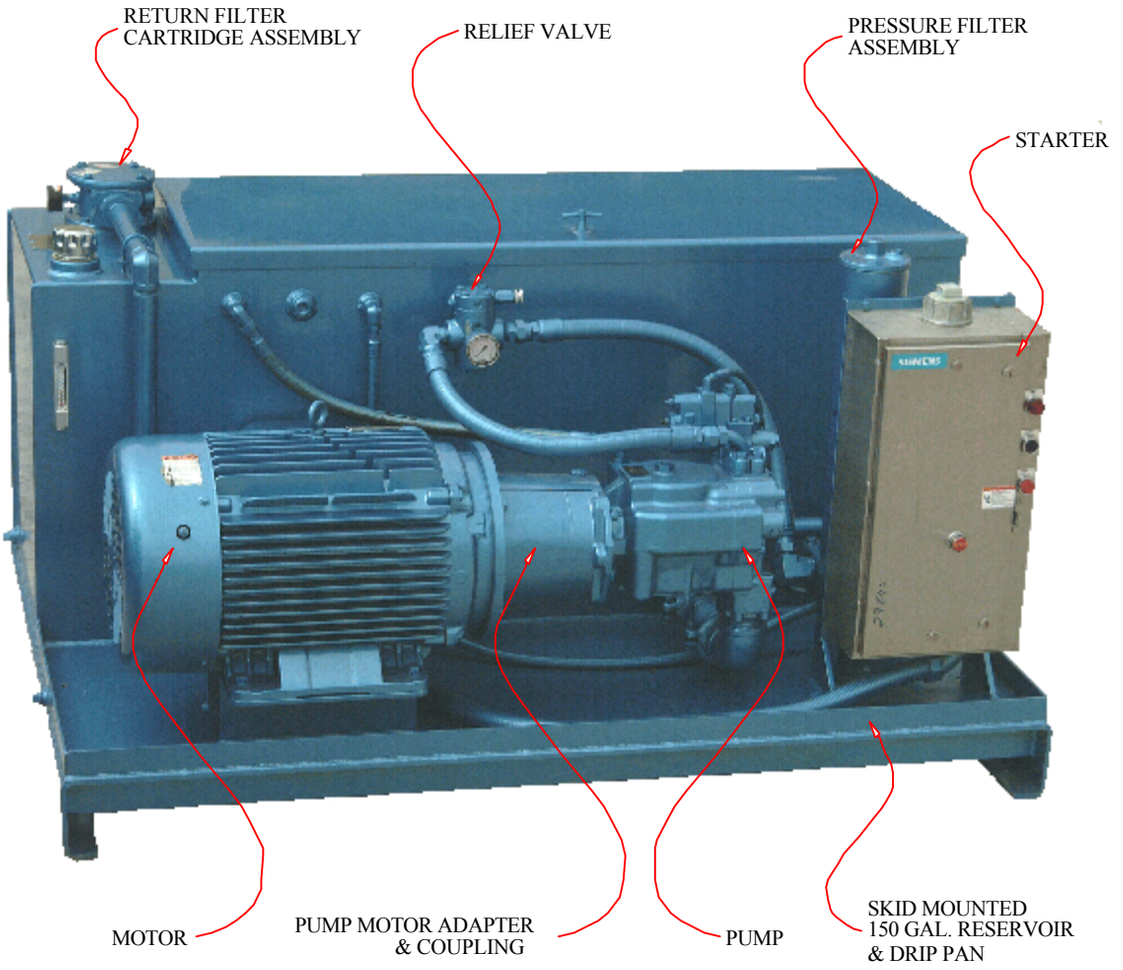
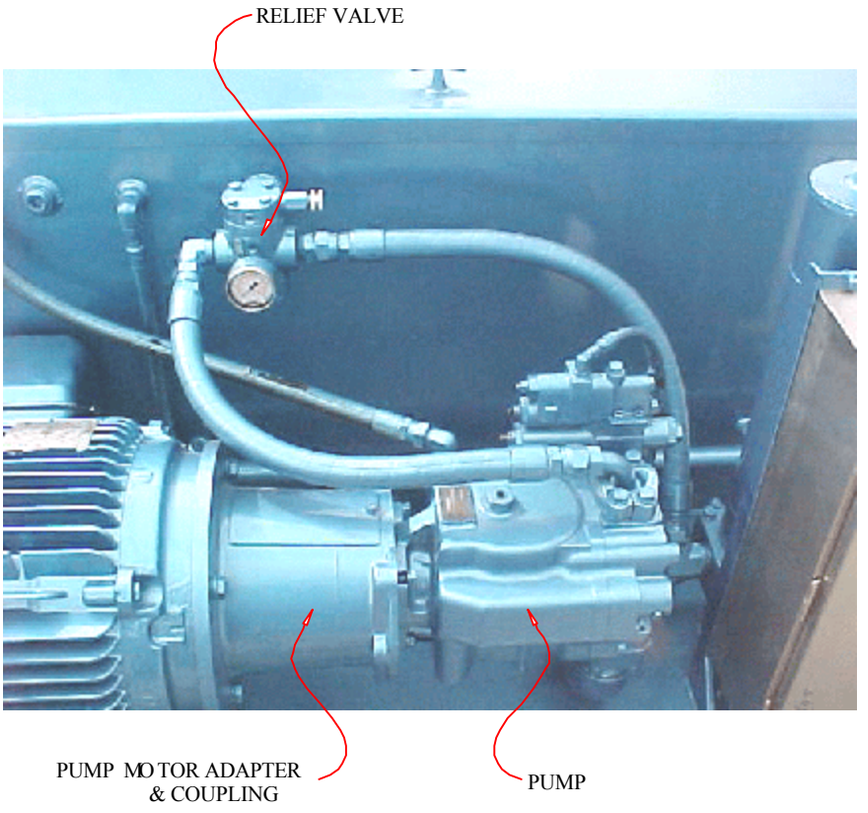
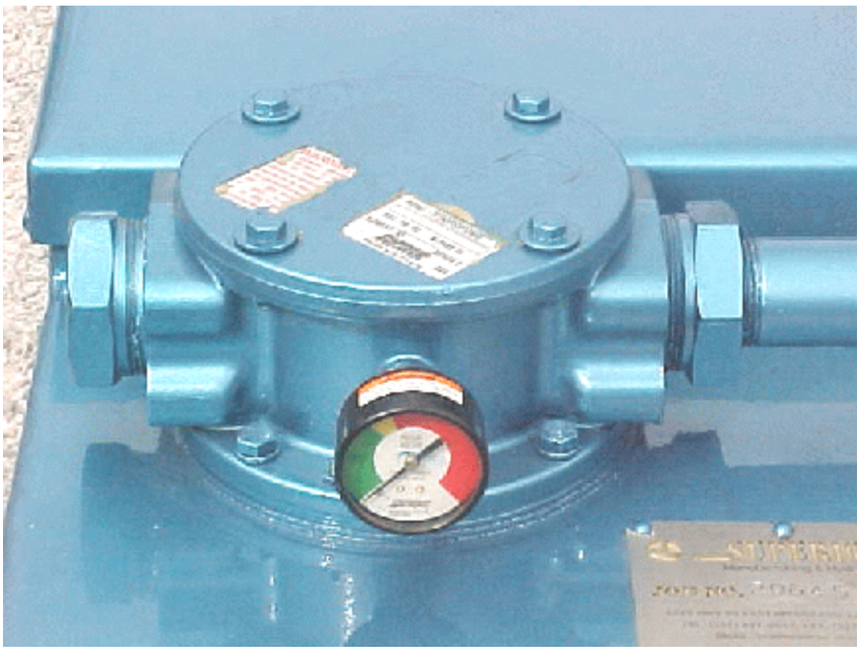


Photo 2

HYDRAULIC POWER UNIT

SECTION 13 HYDRAULIC POWER UNIT





RETURN FILTER CARTRIDGE

Photo 3

HYDRAULIC POWER UNIT COMPONENTS

SECTION 13 HYDRAULIC POWER UNIT

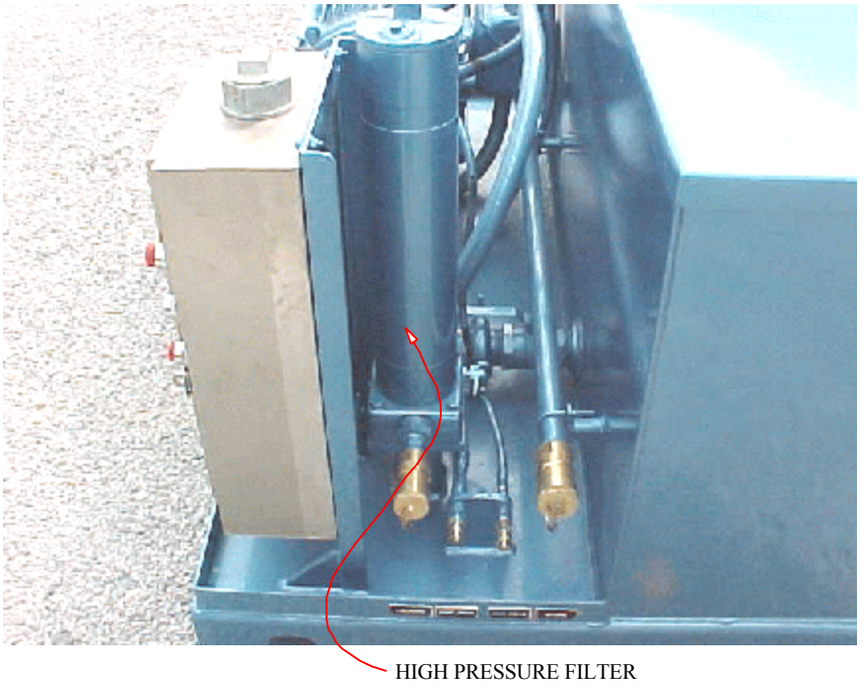
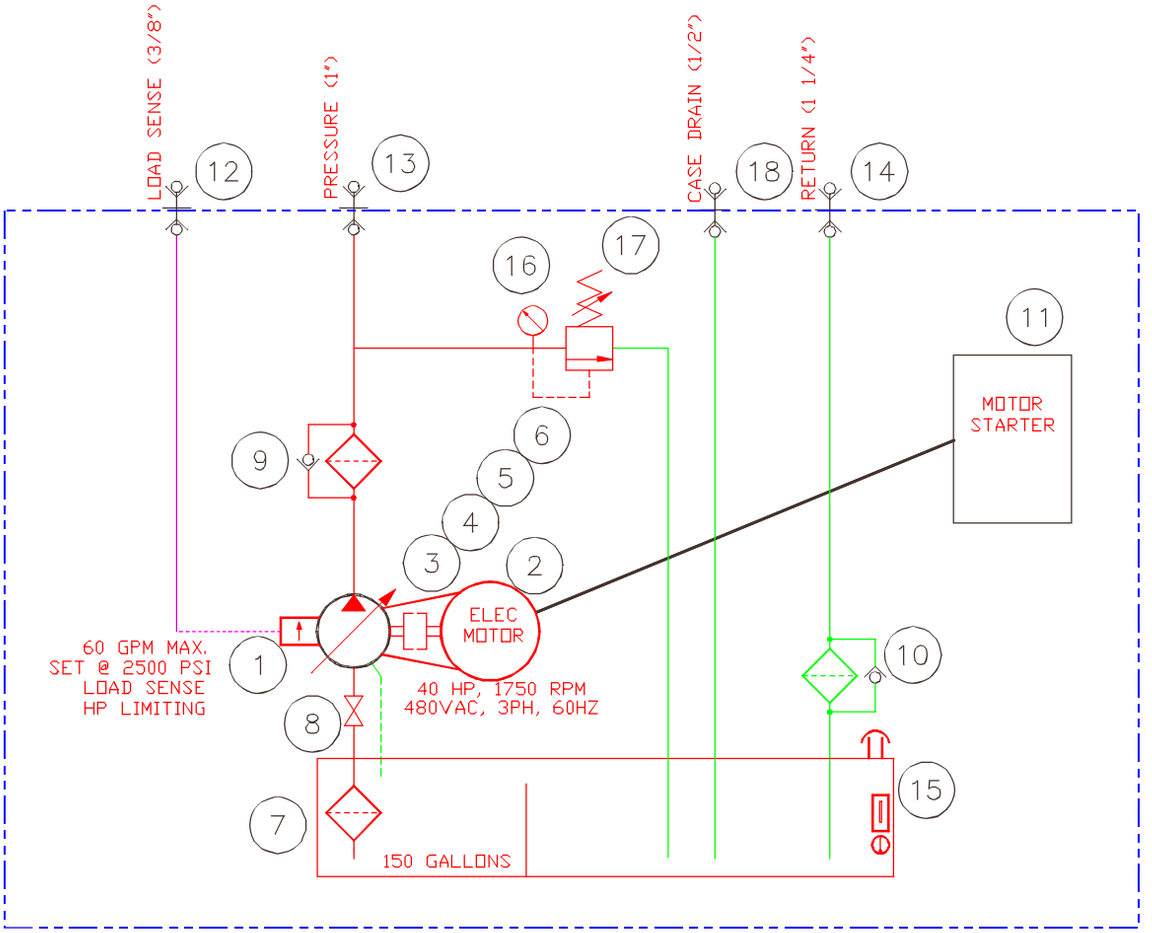


Photo 4
HYDRAULIC POWER UNIT COMPONENTS

Item	Qty.	Description
1	1	HYDRAULIC PUMP, PRESSURE COMP, LOAD SENSE
2	1	ELECTRIC MOTOR
3	1	PUMP/MOTOR MOUNTING ADAPTER
4	1	SHAFT COUPLING, PUMP HALF
5	1	SHAFT COUPLING, MOTOR HALF
6	1	SHAFT COUPLING INSERT
7	1	SUCTION STRAINER
8	1	SUCTION SHUTOFF VALVE
9	1	PRESSURE FILTER
10	1	RETURN FILTER
11	1	MOTOR STARTER
12	1	1/2" QUICK DISCONNECT, MALE
13	1	1" QUICK DISCONNECT, MALE
14	1	1 1/4" QUICK DISCONNECT, MALE
15	1	RESERVOIR / SKID
16	1	PRESSURE GAUGE
17	1	SYSTEM RELIEF VALVE
18	1	1/2" QUICK DISCONNECT, MALE



ELECTRIC DRIVEN HYDRAULIC POWER UNIT SCHEMATIC

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

		05/13/03
REV. #	LOG #	DATE

REF S:\Equip Manuals-Dwgs\CLEBU1175-31\Schematic PU.wpg

SECTION 14 HYDRAULIC POWER UNIT COMPONENT INFORMATION

To request copy of Hydraulic Power Unit Component Information, please contact:

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