

# CLINCHER<sup>®</sup>

TECHNICAL MANUAL

## RP7018

18" (45.7cm) 105K ft-lbs  
Continuously Rotating Bucking Unit

- Specifications
- Operation
- Maintenance
- Assemblies



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**MCCOY**  
MOVING GLOBAL ENERGY FORWARD

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*The user of the manual shall protect, indemnify, and hold harmless McCoy and its directors, officers, employees, and agents from and against all liability for personal injury, death, or property damage resulting directly or indirectly from the use of the information contained in this manual.*

*Observance of all descriptions, information and instructions set out in this manual is the full responsibility of the user. This manual is intended for guidance and informational purposes and must be used in association with adequate training and on-the-job supervision to provide safe and effective equipment use.*

*It is the responsibility of the user to conform to all regulations and requirements issued by an authority or agency which may affect the operation, safety or equipment integrity, that may overrule the content of this documentation.*

*The user will acknowledge and obey any general legal or other mandatory regulation in force relating to accident prevention, safety, and equipment integrity.*

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## **SECTION I**

### **GENERAL DESCRIPTION:**

Your **CLINCHER®** Bucking Unit is a rugged, self-contained, continuously rotating unit designed to accurately make-up or break-out the threaded connections on tubular components such as oil and gas well drilling tools, casing, tubing, and similar equipment. The unit will accurately make-up and break-out thread connections without damage to the thread.

### **Recommended Safety Guidelines**

The safety guidelines that follow are recommended by McCoy Drilling & Completions, and are in no way intended to supersede the specific health and safety regulations and guidelines of our client's workplace. Workplace rules and regulations are the responsibility of the client.

#### **A. Work Apparel**

To ensure employee safety, it is recommended that the following PPE (Personal Protective Equipment) be worn when using and working around hydraulic equipment:

##### **1. Eye Protection (safety glasses)**

To avoid risk of eye damage due to:

- fracture/failure of die inserts under load
- fracture/failure of tool under load
- failure of hydraulic hose or component under pressure

##### **2. Ear Protection (ear plugs)**

To prevent hearing damage due to:

- electric motor and hydraulic systems noise
- sudden and loud noises that may occur during the work process

##### **3. Head Protection (hard hat)**

To reduce danger due to:

- overhead cranes and hooks
- fracture/failure of die inserts under load
- fracture/failure of tool under load

##### **4. Hand Protection (leather gloves)**

To avoid danger due to:

- metal slivers on the tool or dies produced during the work process
- chemicals used during the work process
- failure of hydraulic hose or components under pressure

##### **5. Foot Protection (steel-toed boots)**

To prevent injury due to:

- falling or rolling work pieces

## **SECTION II**

### **INSTALLATION:**

**CAUTION:** Before lifting the unit with a forklift, the tailstock must be moved to its maximum extended position along the bed of the unit to assure the equipment remains balanced during the lifting process.

1. Inspect unit carefully for shipping damage or missing parts.
2. Position unit on a fairly flat and level floor leaving sufficient clearance on both ends to allow the insertion and removal of the longest tools expected to be serviced.
3. Anchor the unit in place.
4. Clean hydraulic hoses and quick disconnects.
5. Attach all hoses that connect the control console to the Bucking Unit.
6. Fill hydraulic reservoir with recommended hydraulic fluid filtered using 3 micron filter system. Filler cap/breather

is accessible on left side of unit. Level indicator may be viewed through a window in front.

7. Verify suction valve is open if present.
8. Fill pump case with filtered hydraulic oil before connecting power.
9. **CAUTION:** Check that main power supply matches name plate rating on motor in control console. Use of an incompatible power source will result in equipment damage and will void warranty.
10. Connect power supply.
11. Check motor rotation by jogging start/stop switch quickly. Reference the rotation plaque attached to the power unit. If rotation is incorrect, switch any two-phase wires at motor starter.

### **START UP:**

1. Ensure both pressure relief valves are fully rotated counter-clockwise to reduce pressure to minimum.
2. Start motor and check for oil leaks in console. Hold back Backup Clamp Cylinder control lever in Open/Retract position and adjust Clamp Pressure Control until system pressure reads 1,000 psi. Cycle all valves fully several times to completely purge all air from the system.
3. Check Bucking Unit and Hydraulic Power Unit for leaks.
4. Check reservoir for proper fluid levels. Add filtered hydraulic fluid if level is below sight glass when all cylinders are extended. Fill until fluid level reaches midpoint in sight glass. If fluid level is below sight glass level, unit will not operate.

## **SECTION III**

### **OPERATION**

The E-Stop is located on the control console, and must be pulled out for the unit to operate. Locate the start button on the motor starter. Push to start main drive motor.

1. Start the motor.
2. Move Tong Make Up / Break Out lever in either direction until the power tong completes a rotation.
3. Hold Tailstock Clamp / Unclamp lever in the Unclamp position and adjust Clamp Pressure Control until system pressure reads 1,000 psi. Cycle all levers fully several times to completely purge all air from the system.
4. Position work-piece near center of Headstock, shift the Tailstock Clamp / Unclamp lever to the Clamp position. Tailstock Clamp / Unclamp control lever must be left in the 'Clamp' position while work-piece is in machine.
5. Position Tailstock as close as possible to tong, allowing required space for thread travel. **CAUTION:** If adequate space is not left to accommodate thread travel, the backup will contact the tong, potentially damaging the equipment or tubular connection. Such damage is not covered by the warranty.
6. Shift Headstock Clamp / Unclamp lever into Clamp position.
7. Using Tong Make Up / Break Out control lever, apply make-up or break-out torque, then rotate headstock.

### **MAKE-UP**

When making up connections, set relief valve to proper setting before rotating headstock.

### **BREAK-OUT**

Set relief valve to proper setting before rotating headstock.

## SECTION IV

### MAINTENANCE

#### DAILY:

1. With all clamp cylinders fully extended, check hydraulic reservoir oil level on sight glass on front of console. Fill with filtered hydraulic fluid if needed until level reaches midpoint on sight glass.
2. Inspect die inserts. Clear any debris from around clamp cylinders.

#### WEEKLY:

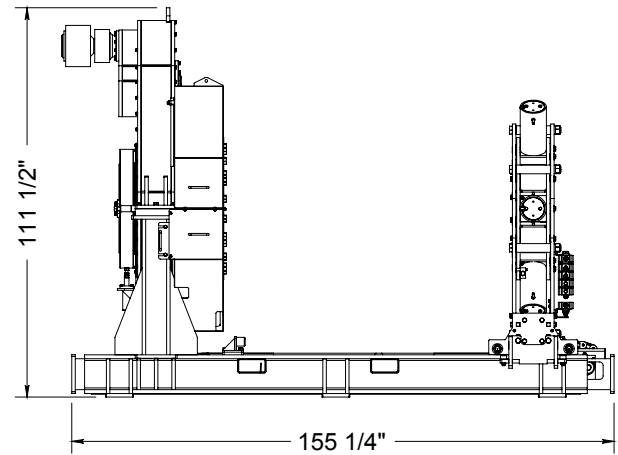
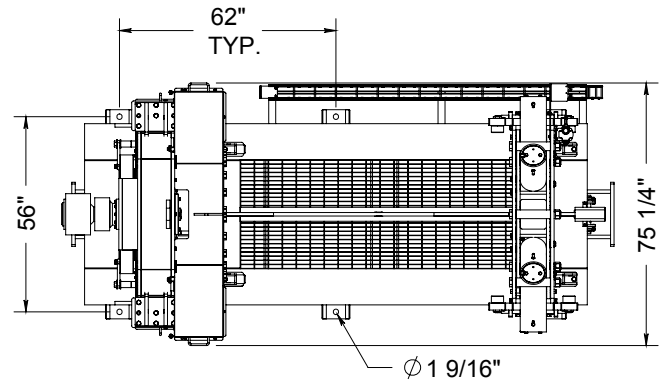
1. Remove dies and inspect jaw retainer bolt torque. Torque should be set to 180 ft-lbs.

#### MONTHLY:

1. Grease fittings.

#### ANNUALLY (or following any system repair):

1. Drain and clean hydraulic reservoir. Analyze contamination / quality status of hydraulic oil (with the use of an analysis kit or by other third party means). Filter / replace oil as required.
2. Remove and clean suction strainer.
3. Refill reservoir with new filtered hydraulic oil.



## SECTION V

### HYDRAULIC POWER UNIT

The hydraulic power unit incorporates a number of pressure control and relief valves. These valves are correctly adjusted and set prior to shipment from our factory.

**CAUTION:** Adjusting internal relief valves or pump compensator settings will void warranty.

## SECTION VI

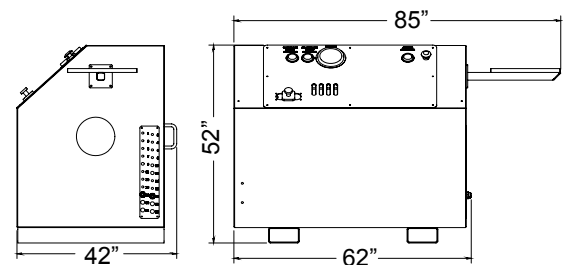
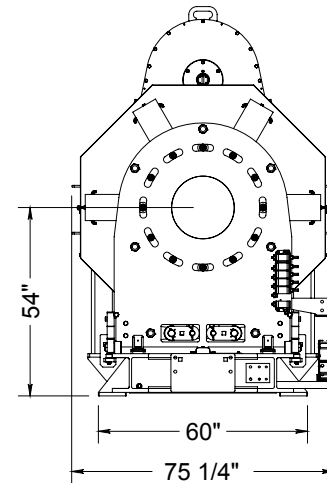
### SPECIFICATIONS

#### Console / Power Unit:

Electric Motor:	50 Horsepower, 480 Volt, 3 phase, 60 Hertz
Hydraulic Oil:	AW-68
Hyd. Oil Capacity:	90 gal.
Overall Length:	42"
Overall Width:	85"
Overall Height:	52"
Weight (approx.):	2,200 lbs.

#### Bucking Unit (12' skid without accessories):

Max. Torque:	105,000 ft-lbs
Handle Length:	36"
Overall Length:	155 1/4"
Overall Width:	75 1/4"
Overall Height:	111 1/2"
Weight (approx.):	18,100 lbs.



### CHUCKING CAPACITIES

3.500" to 17.400" Diameter (6 jaw mode)  
1.900" to 3.500" Diameter (3 jaw mode)

### TORQUE CAPACITY

Make-up 105,000 ft-lbs / Break-out 105,000 ft-lbs

# LUBRICATION SPECIFICATIONS

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

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

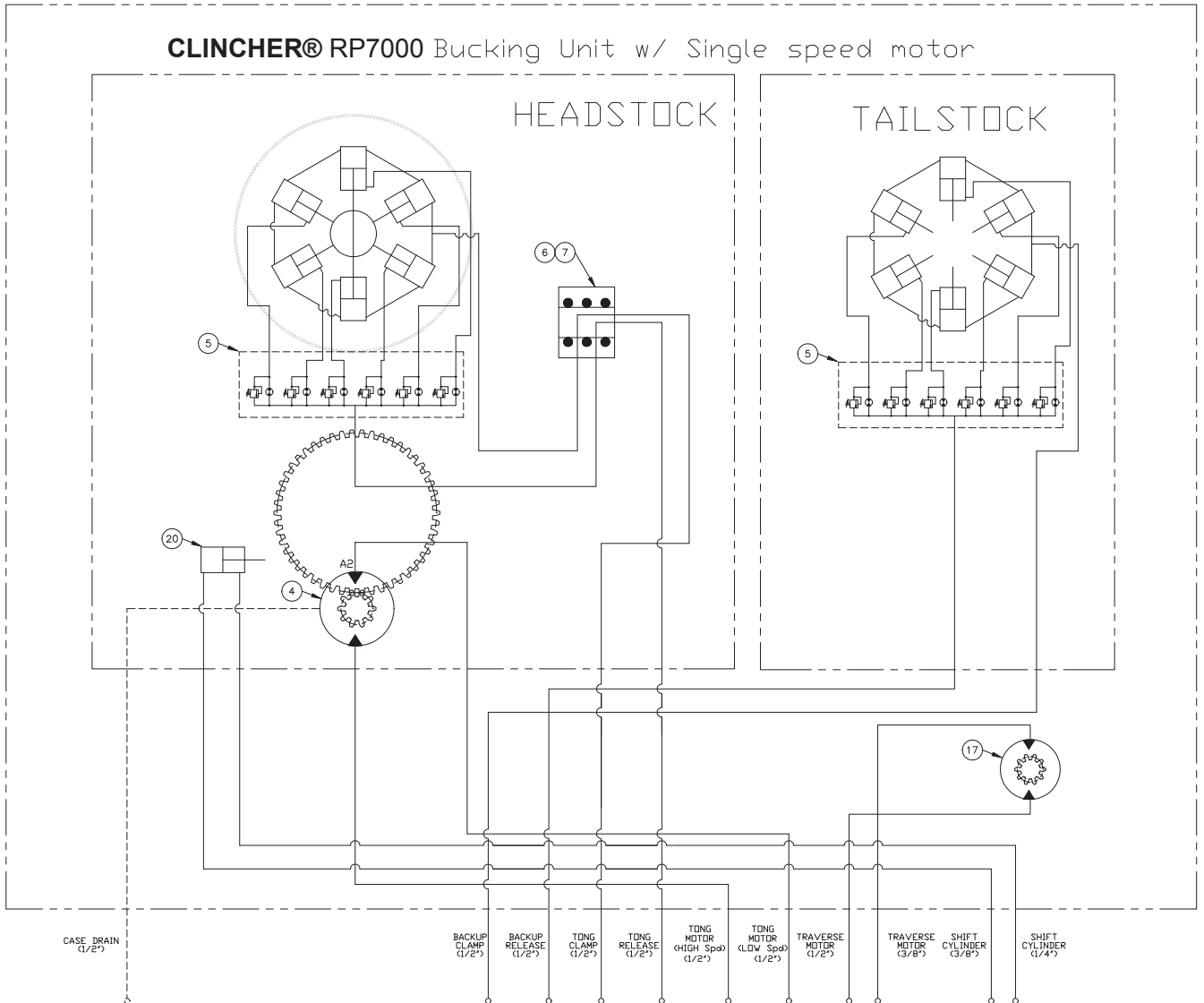
Type	High Temp MP	Type	N/A
NLGI Consistency Grade	1	NLGI Consistency Grade	2
Color	Medium Green	Color	Blue
Lithium Complex Soap, wt%	Non Soap	Lithium Complex Soap, wt%	14
Serv. Temperature	0 Deg. F – 450 Deg. F	Serv. Temperature	N/A
Base Oil Viscosity: @ 100° F @ 200° F	1300 SUS 89 SUS	Base Oil Viscosity: @ 40°C, cSt @ 100°C, cSt	150 14.5
Viscosity Index	77	Viscosity Index	N/A
Penetration, dmm Worked ASTM D 217	325-340	Penetration, dmm Worked, 60X ASTM D 217	280
Dropping Point, °F ASTM D 566	500 ±	Dropping Point, °F ASTM D 2265	450+
Rust Protection, 5% SSW	N/A	Rust Protection, 5% SSW ASTM D 5969	Pass
Water Washout %wt loss @ 175°F	N/A	Water Washout %wt loss @ 175°F ASTM D 1264	6.8
Timken, OK Load, lbs	50	Timken, OK Load, lbs ASTM D 2509	45
Bomb Oxidation 100 hrs @ 210°F, psi drop	N/A	Bomb Oxidation 100 hrs @ 210°F, psi drop ASTM D 942	5 max
Applications	High & Low Speed Bearings, Wheel Bearings, Pumps, Gears, Lubrication	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:***

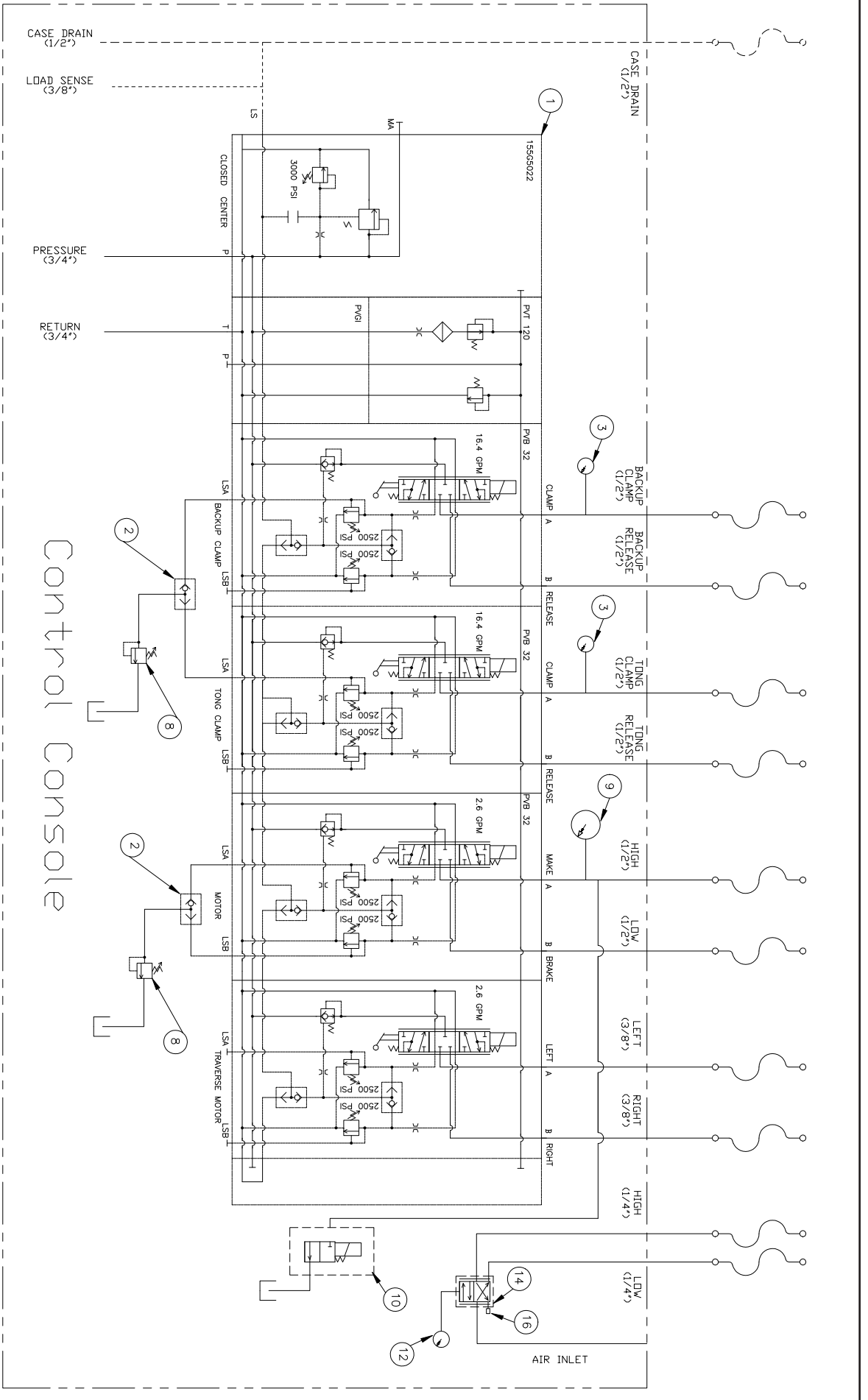
Humble Hydraulic H	68
ISO Viscosity Grade	68
Base Oil Viscosity: cSt @ 40°C @ 100°C	65.0 8.5
Viscosity Index – ASTM D 2270	95
Pour Point – ASTM D 97	-9
Flash Point – ASTM D 92 C(°F)	222 (432)
Demulsibility – ASTM D 1401	41/39/0 (20)
Vickers 104C (IP281)	Pass
Vickers M-2950-S	Quality Level
Vickers I-286-S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

# Bucking Unit Hydraulic Schematic

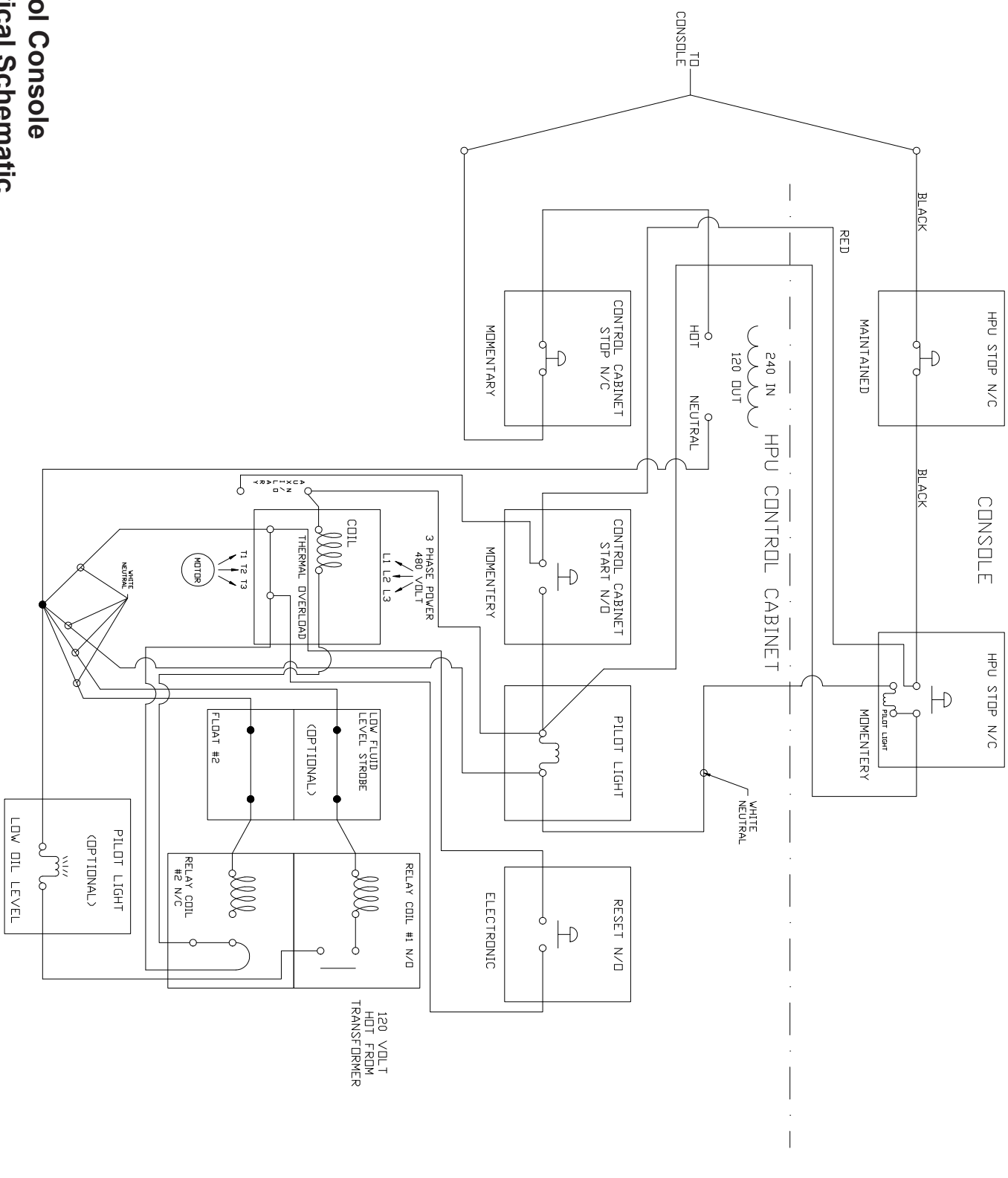
ITEM NO.	QTY.	DESCRIPTION	PART NUMBER
1	3	PVG 32 VALVE CONTROLS	157BXXXX
2	2	SHUTTLE VALVE	LSV1-6T-N
4	1	HYDRAULIC MOTOR, SINGLE	235-6500
5	2	FLOW DIVIDER	330-6500
6	1	HYDRAULIC SWIVEL	228-6500-165
7	3	ROTARY SEALS (3 PCS = 1 SET)	238-6500
8	2	RELIEF VALVE	RIE02-2512-A1
9	1	6" PRESSURE GAUGE, 0-3000	132-6500
10	1	DUMP VALVE SOLENOID VALVE NOR. CLOSED	148-6500
12	1	AIR PRESSURE GAUGE	149-6500
14	1	AIR VALVE	146-6500
16	1	AIR MUFFLER	147-6500
17	1	TRAVERSE MOTOR	143-6500
20	1	AIR CYLINDER	234-6500
21	8	CLAMP CYLINDER	400-3000-1



# Control Console Hydraulic Schematic

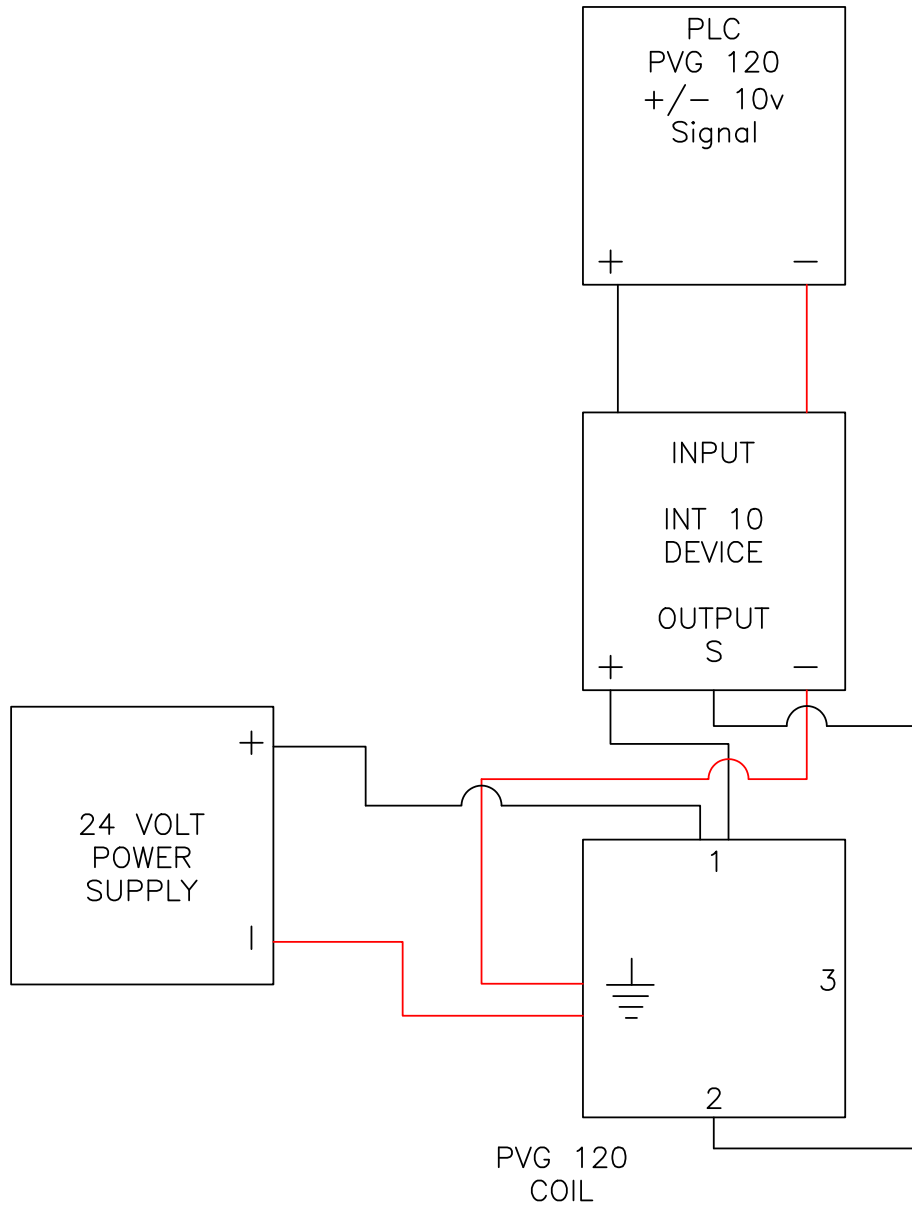




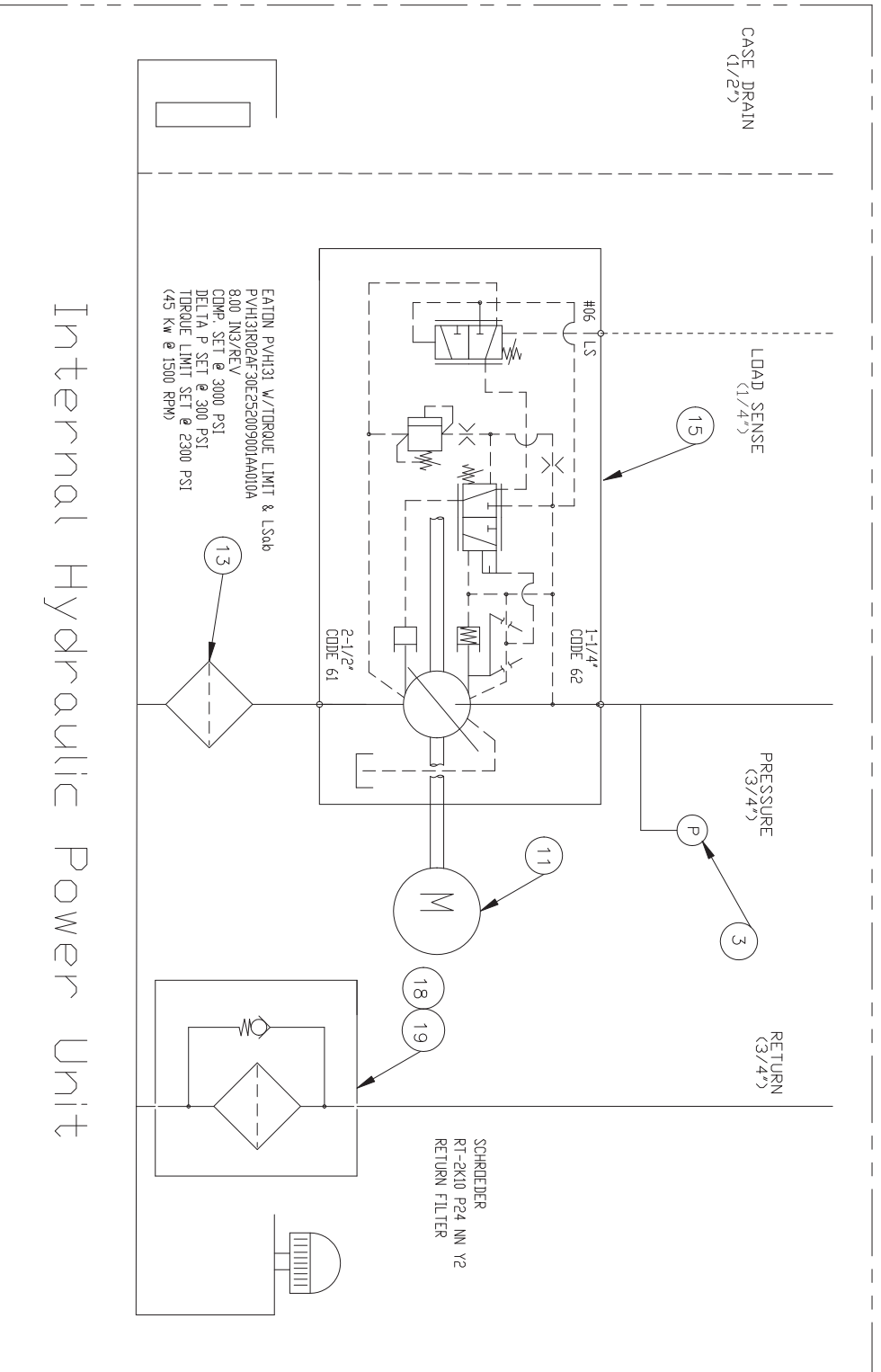


**Control Console**  
**Electrical Schematic**

# Electric Proportional Schematic

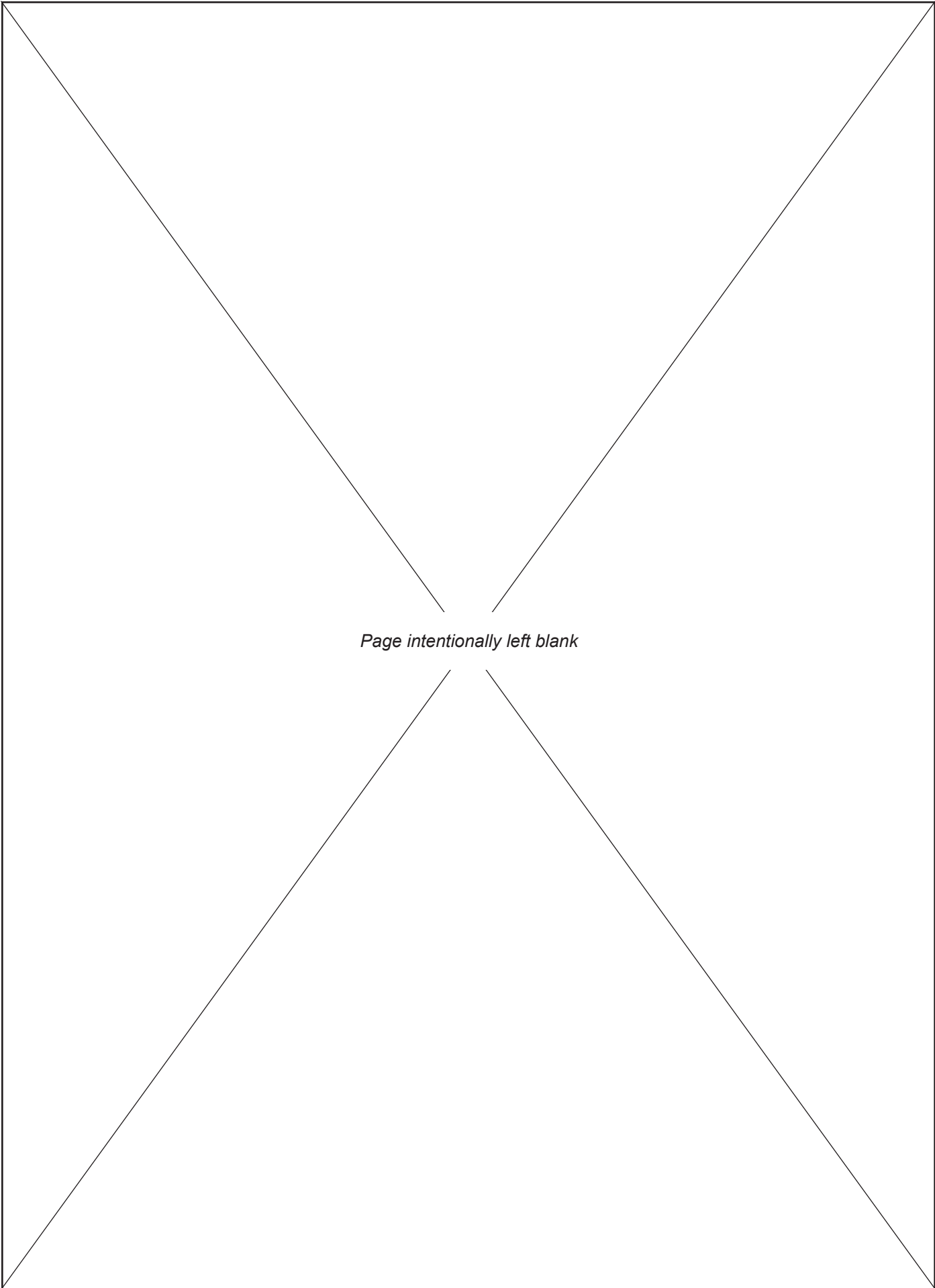


ITEM NO.	QTY.	DESCRIPTION	PART NUMBER	LOCATION
3	2	2-1/2" PRESSURE GAUGE, 0-3000	133-6500	CONSOLE/POWER UNIT
11	1	ELECTRIC MOTOR	PU5060-S1	CONSOLE/POWER UNIT
13	1	SUCTION STRAINER	SS-2-100-3	CONSOLE/POWER UNIT
15	1	HYDRAULIC PUMP	7003638	CONSOLE/POWER UNIT
18	1	FILTER HEAD	P563268	CONSOLE/POWER UNIT
19	1	FILTER ELEMENT	P562207	CONSOLE/POWER UNIT



Internal Hydraulic Power Unit

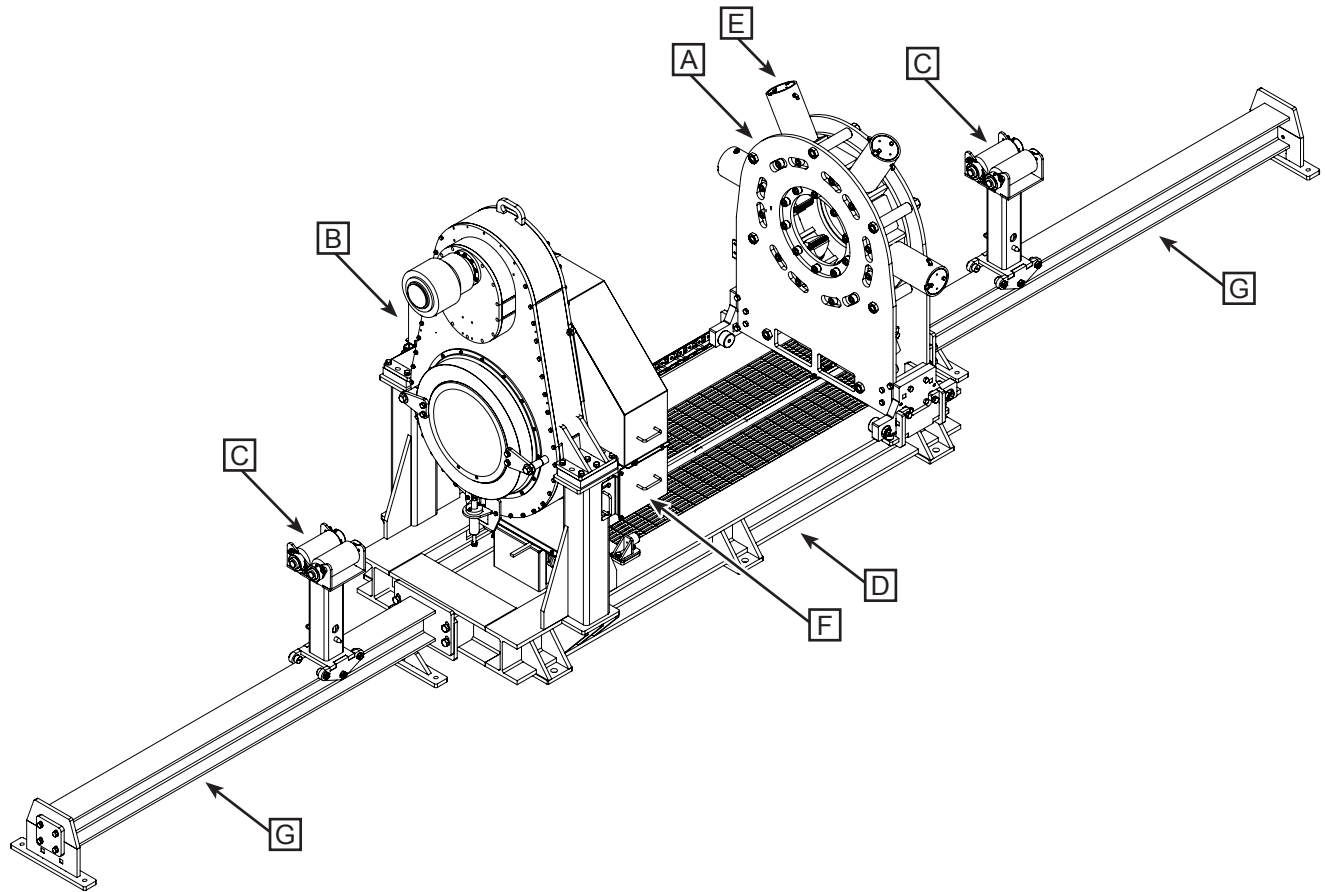
**Power Unit Hydraulic Schematic**



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# CLINCHER® RP7018

Continuously Rotating Bucking Unit  
(shown with accessories)

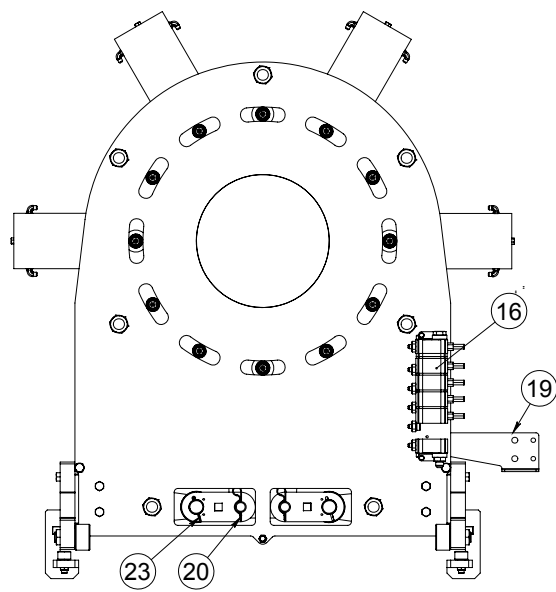
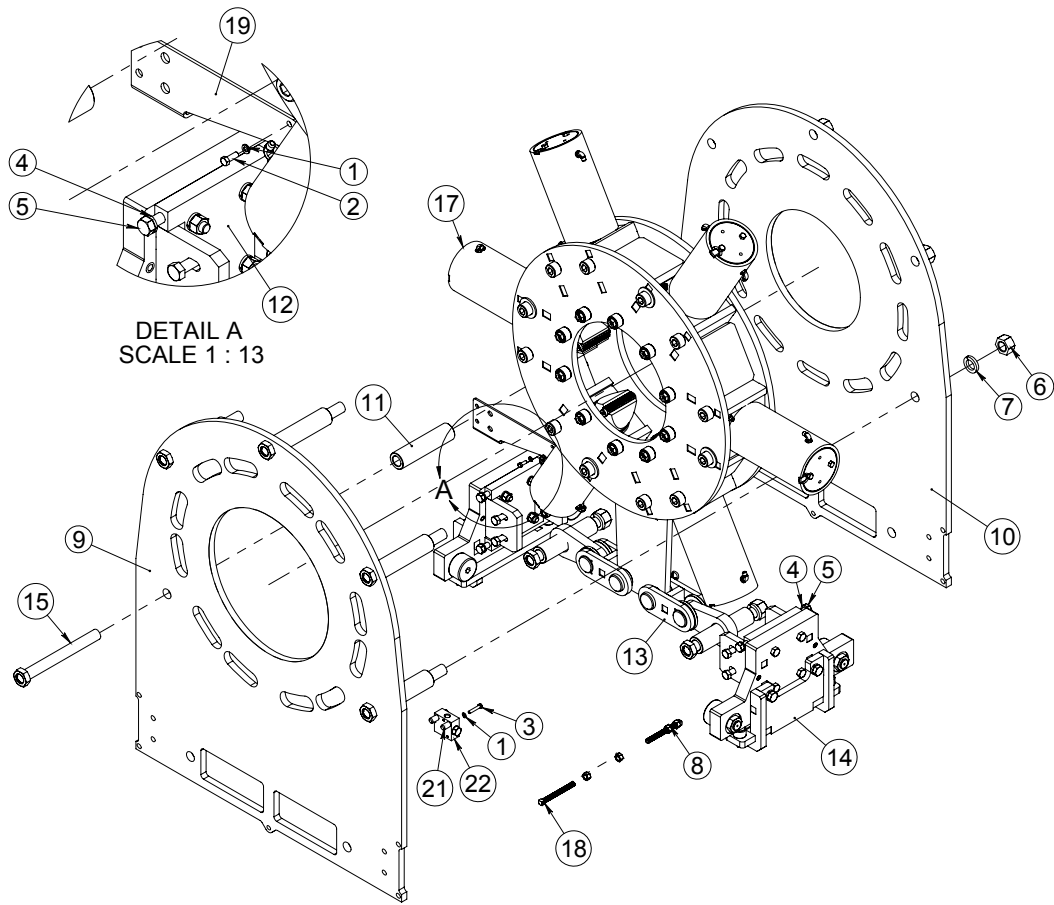


<b>A</b>	Tailstock Assembly -----	12
	Load Cell Bracket Assembly -----	15
	Roller Assembly -----	16
	Tailstock Vise Assembly -----	18
<b>B</b>	Headstock Assembly -----	19
	Inverted Tong Assembly -----	20
	Swivel Support Assembly -----	22
	Pinion Sprocket Assembly -----	24
	Drive Gear Assembly -----	26
	Swivel Keeper Assembly -----	28
	Headstock Vise/Hub Assembly -----	29
<b>C</b>	Support Stand Assembly -----	30
<b>D</b>	12ft. Skid Assembly -----	32
<b>E</b>	Clamp Cylinder Assembly -----	34
<b>F</b>	Rotating Head Guard Assembly -----	36
<b>G</b>	10ft. Extension Beam Assembly -----	38
	20ft. Extension Beam Assembly -----	39
	Control Console / Power Unit Assembly -----	40

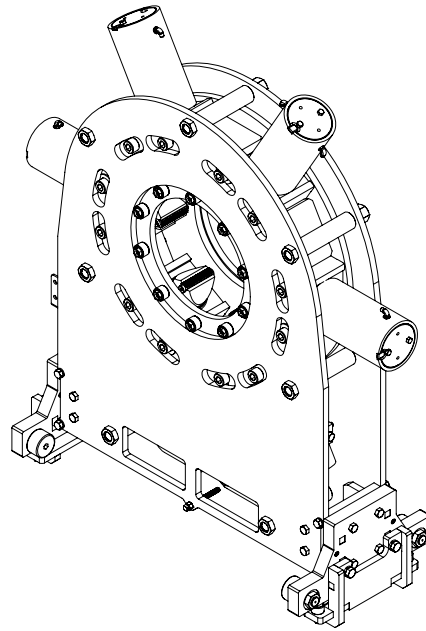
Notice: All drawings contained in this manual are the property of McCoy Drilling & Completions and are considered confidential. This information may not be used, disclosed, copied, or reproduced in any form, without the express written consent of McCoy Drilling & Completions.

For third party component documentation used within this unit, please contact McCoy Drilling & Completions.

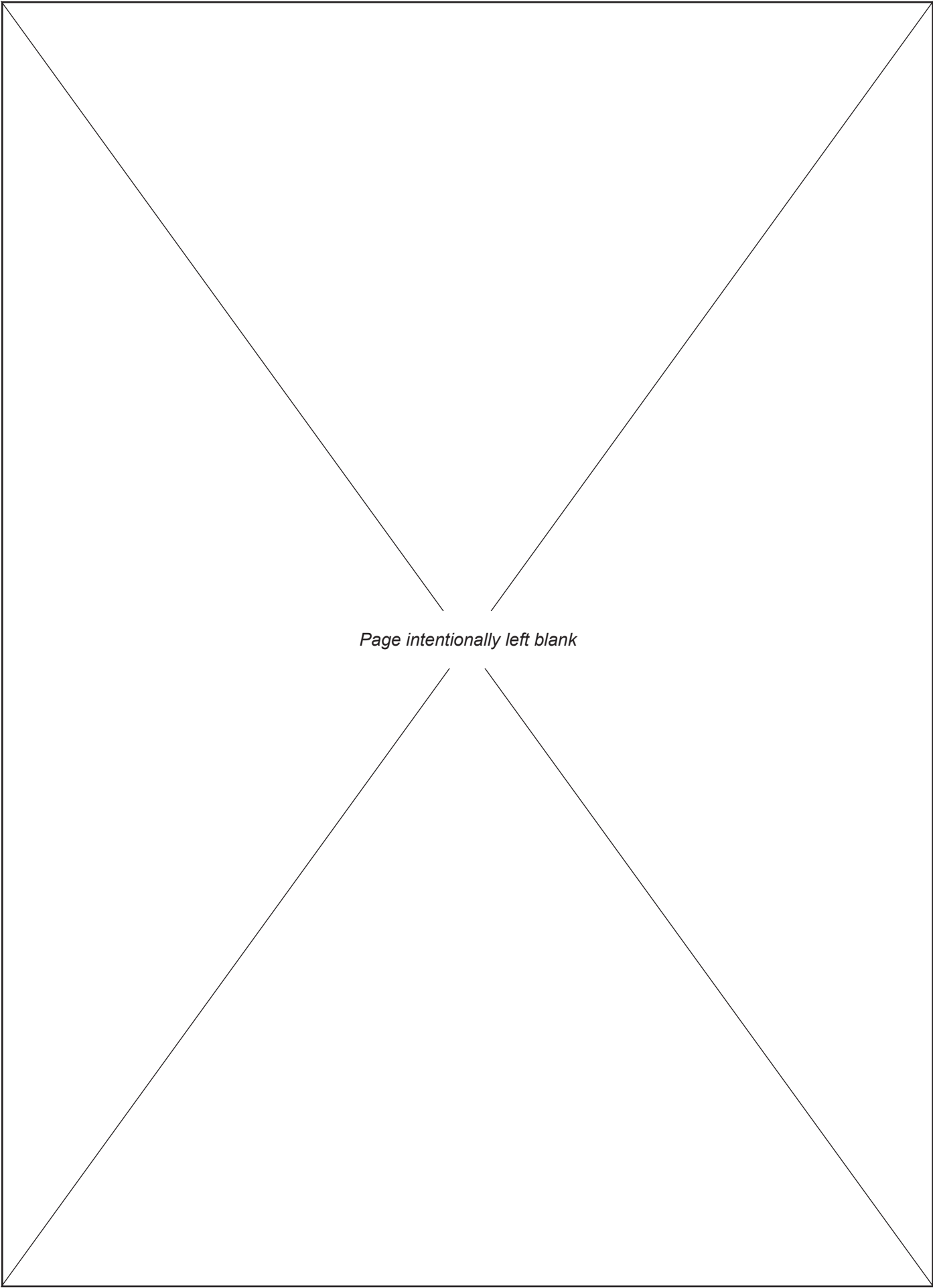
# 300-7018-01 Tailstock Assembly



**300-7018-01**  
**Tailstock Assembly**



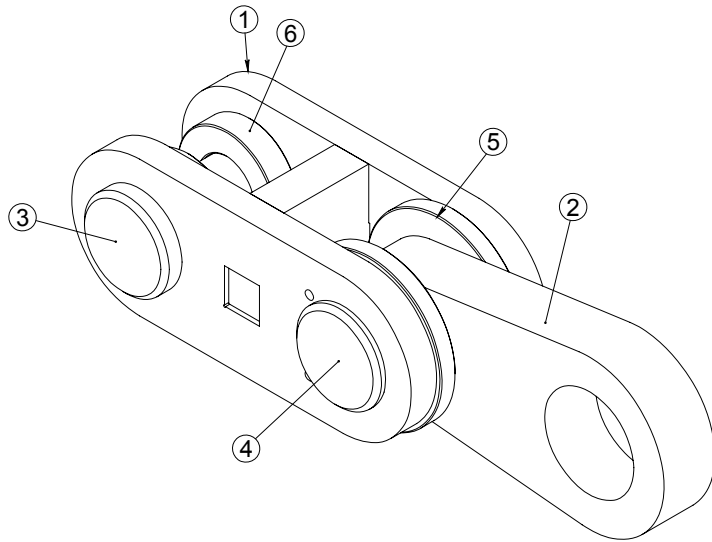
Item #	Qty.	Part Number	Part Name
1	4	1027	WASHER, LOCK 3/8"
2	2	1047	3/8"-16 X 1" HHCS
3	2	1050	HHCS 3/8"-16 X 2"
4	8	1171	3/4" LOCKWASHER
5	8	1183	3/4"-10 x 2 1/2 HHCS
6	7	1187	1 1/2-6 HEX NUT
7	7	1223	1 1/2" LOCKWASHER
8	4	194	5/8-11 NC NUT (194)
9	1	300-7018-01S1	INNER TAILSTOCK HOUSING PLATE
10	1	300-7018-01S2	OUTER TAILSTOCK HOUSING PLATE
11	7	300-7022-S3	TAILSTOCK SPACER
12	2	301-7012	SPACER PLATE, TAILSTOCK
13	2	309-7000-1	LOAD CELL BRACKET ASSEMBLY
14	2	310-7012	ROLLER ASSEMBLY
15	7	311-7018	TAILSTOCK SPACER BOLT WELDMENT
16	1	330-3500	DELTA POWER 6 PORT FLOW DIVIDER
17	1	350-7018-1	TAILSTOCK VISE ASSEMBLY
18	2	507A-3000	CHAIN ATTACHMENT
19	1	518-6000	BULKHEAD PLATE
20	2	6009	HAIRPIN COTTER PIN 0.243 F/1 1/8-1 1/2
21	2	73179	VALVE LEG
22	1	BUC5524	PILOT OPERATOR CHECK VALVE
23	2	PH-PIN 3	COTTER PIN 1/4 X 1 1/2



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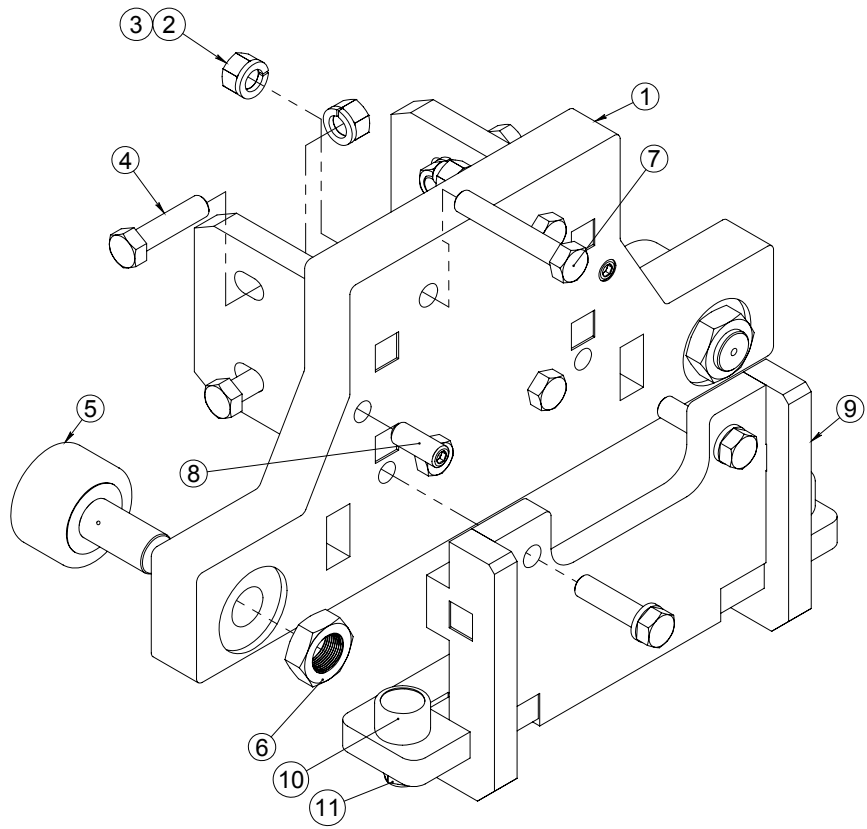


**309-7000-1**  
**Load Cell Bracket Assembly**

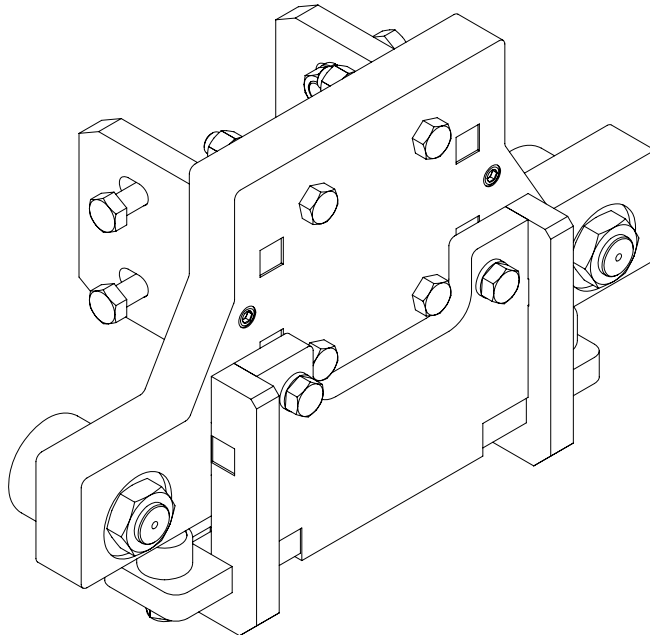


Item #	Qty.	Part Number	Part Name
1	1	309-7000	LOAD CELL BRACKET WELDMENT
2	1	309B-7000	LOAD CELL BRACKET #2
3	1	309D-7000	LOAD CELL LOCK PIN
4	1	303B-6500	LOAD CELL DEAD PIN
5	2	373-7000	LOAD CELL BRACKET WASHER
6	2	374-7000	LOAD CELL BRACKET WASHER#2

**310-7012**  
**Roller Assembly**

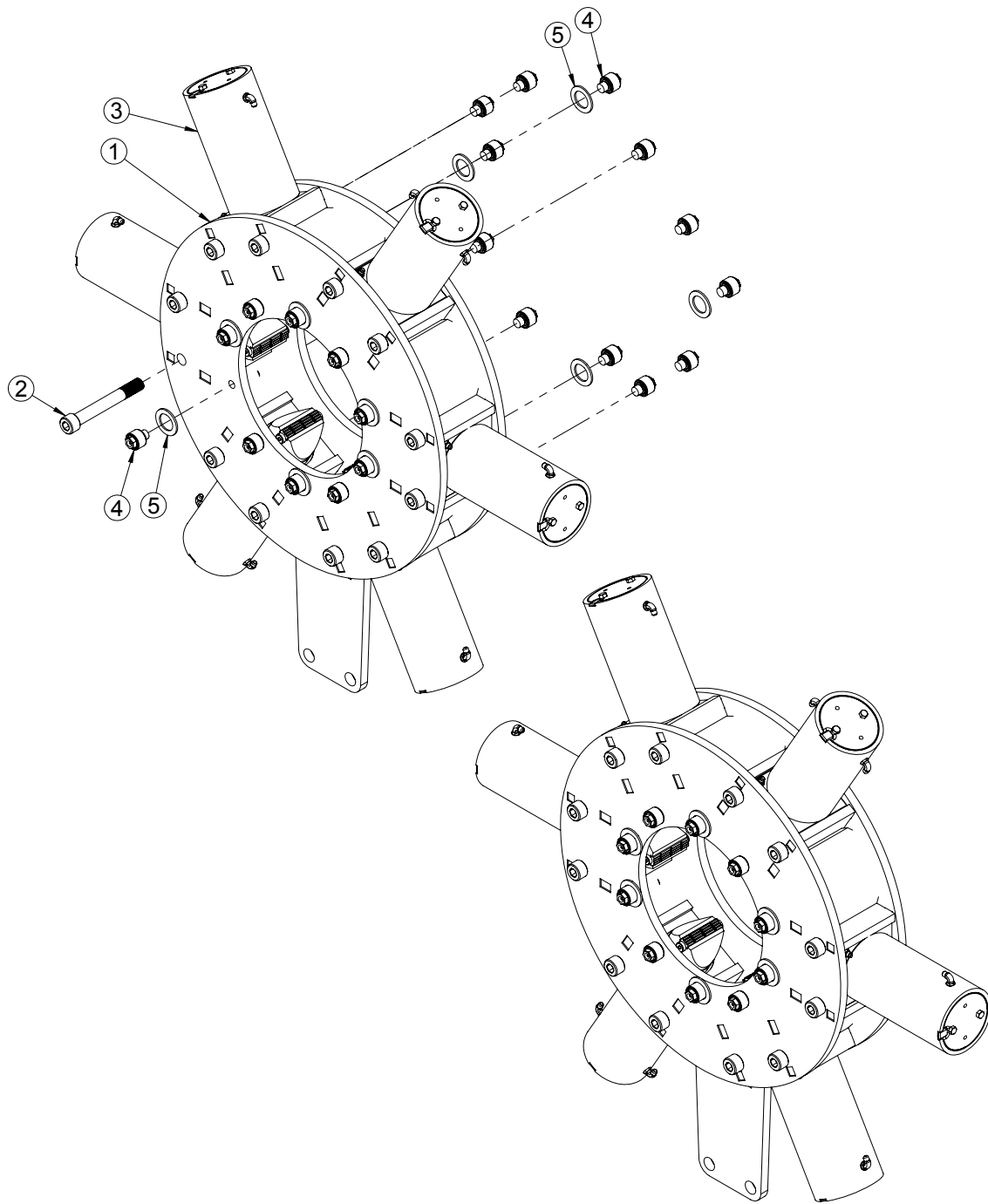


**310-7012**  
**Roller Assembly**



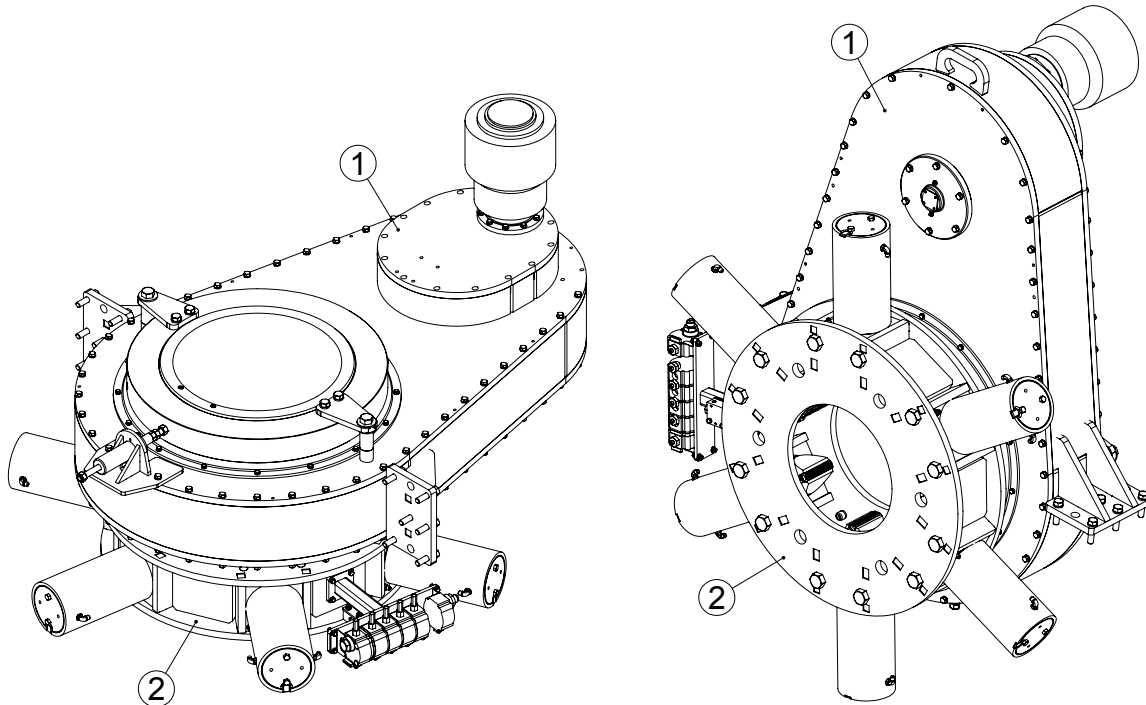
Item #	Qty.	Part Number	Part Name
1	1	370-7012	ROLLER WELDMENT
2	8	1176-A	3/4"-10 HEX NUT
3	10	1171	3/4" LOCKWASHER
4	6	1176	3/4"-10 X 3" HHCS
5	2	310I-7000	3 1/2" CAM FOLLOWER W/ 1 3/8" SHANK
6	2	1220	JAM NUT 1 3/8"-12
7	4	1202	3/4"-10 X 4 1/2" HHCS
8	2	284A	SET SCREW (3/4"-10)
9	1	320-7012	CLIP WELDMENT
10	2	310E-7000	1-3/4" CAM FOLLOWER
11	2	1167	3/4-10 NYLOCK HEX NUT

# 350-7018-1 Tailstock Vise Assembly



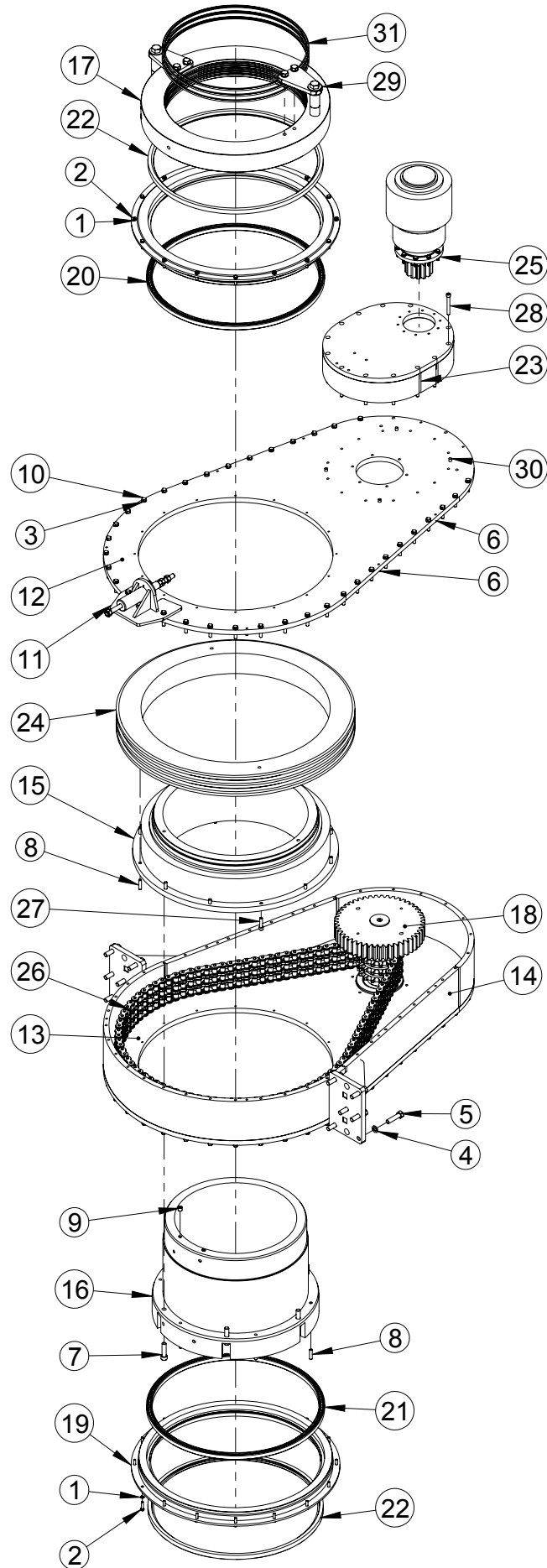
Item #	Qty.	Part Number	Part Name
1	1	350-7018	TAILSTOCK WELDMENT F/ RP7018
2	12	222-7022	MODIFIED BOLT.
3	6	400-7000-3	CLAMP CYLINDER ASSEMBLY
4	22	BUCS11825-02	CAM FOLLOWER ASSEMBLY
5	10	BUCS11836	TEFLON SPACER

**200-7018-2**  
**Headstock Assembly**



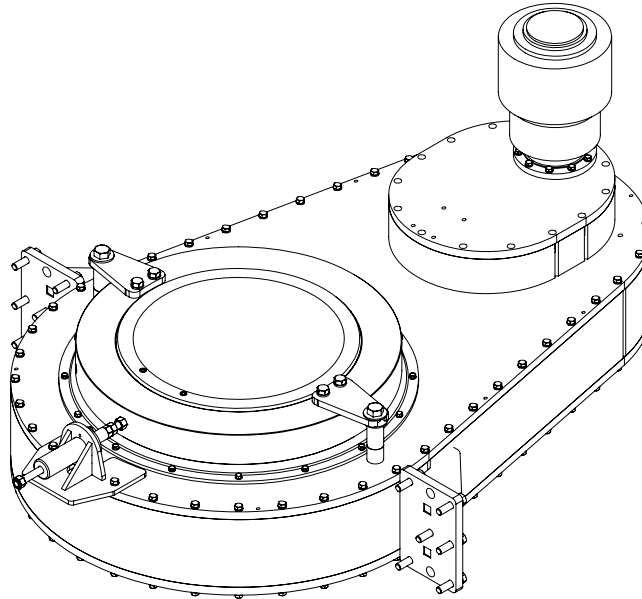
Item #	Qty.	Part Number	Part Name
1	1	200-7000-22B	INVERTED 22" TONG ASSEMBLY W/ SAI GEARBOX
2	1	240-7018-1	18" VISE/HUB ASSEMBLY

**200-7000-22B**  
**Inverted Tong Assembly**



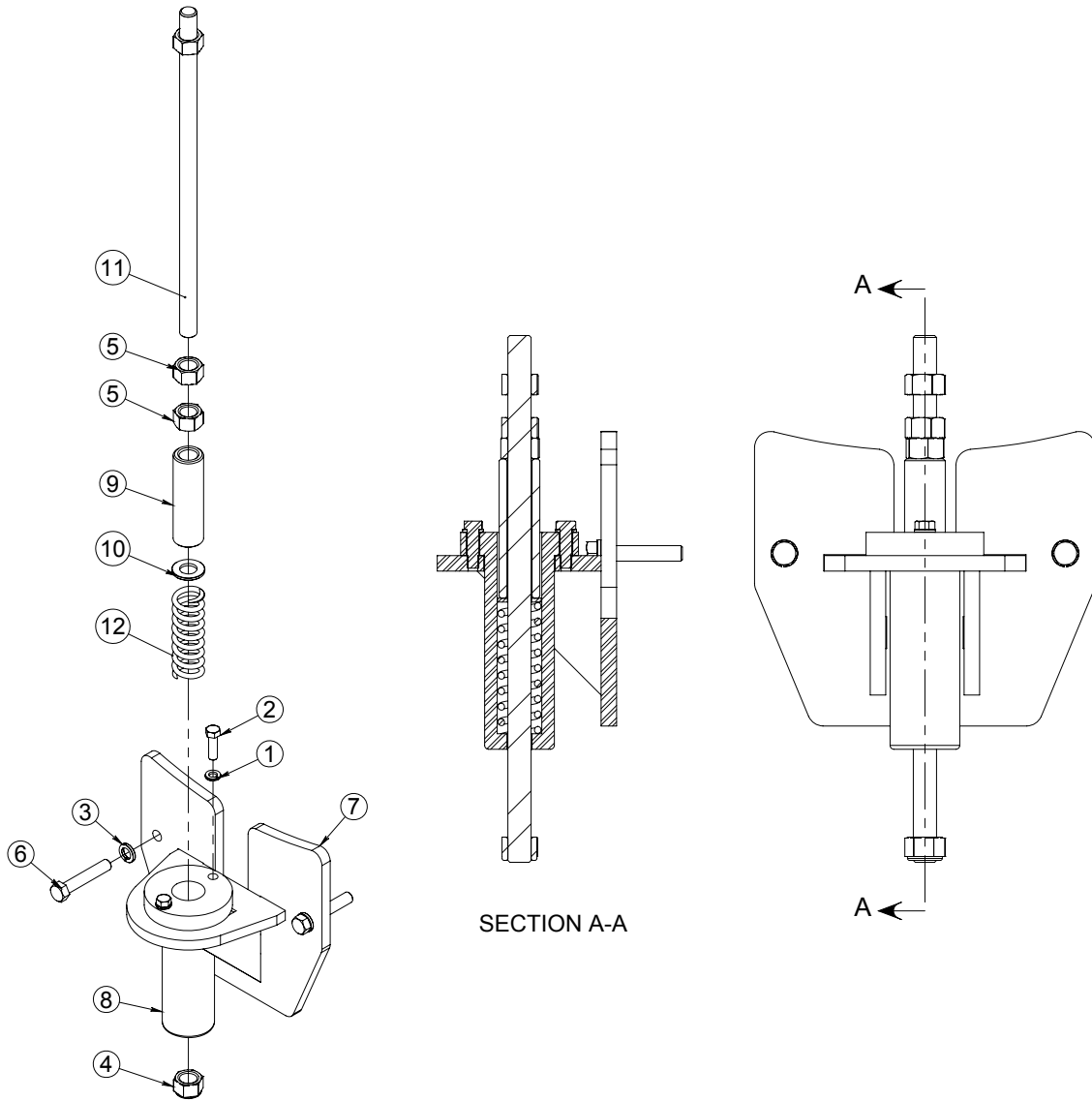
## 200-7000-22B

### Inverted Tong Assembly



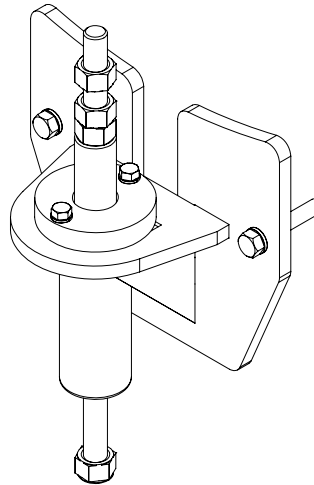
Item #	Qty.	Part Number	Part Name
1	32	1027	WASHER, LOCK 3/8"
2	32	1049	3/8"-16 X 1 1/2" HHCS
3	80	1103	1/2" LOCKWASHER
4	12	1171	3/4" LOCKWASHER
5	12	1176	3/4"-10 X 3" HHCS
6	16	1309	DOWELL PIN 3/8" x 1-1/4"
7	6	1325	3/4-10 x 2 3/4 SHCS
8	18	1333	DOWEL PIN 1/2" X 2"
9	4	1609	3/8" NPT PLUG
10	80	173	1/2"-13 x 2 1/4" HHCS
11	1	2000-7000-23	SWIVEL SUPPORT ASSEMBLY
12	1	200B-7000	TOP TONG PLATE
13	1	200C-7000	BOTTOM TONG PLATE
14	1	200D-7018	TONG CASE WELDMENT
15	1	202-7000-22	22" FINAL DRIVE
16	1	203-7000-22	22" HEADSTOCK INNER MANIFOLD
17	1	204-7000-23	RP7000 HYDRAULIC SWIVEL
18	1	207-7000-2	PINION SPROCKET ASSEMBLY
19	2	210-7000	HEADSTOCK BEARING CAP
20	1	210A-7000	30" FOUR CONTACT THIN SECTION BEARING
21	1	210B-7000	30" RADIAL CONTACT THIN SECTION BEARING
22	2	210C-7000	GARLOCK OIL SEAL (21238-4352)
23	1	211B-7000	MOTOR MOUNT WELDMENT
24	1	212-7000	BULL GEAR SPROCKET
25	1	235-7000-1	DRIVE GEAR ASSEMBLY
26	1	247-7000	COTTERED CHAIN W/ CONNECTING LINK, 20 FEET LONG
27	6	249	1/2"-13 X 2" SHCS
28	13	253	SHCS 1/2"-13 x 4"
29	2	2700-7000	SWIVEL KEEPER ASSY.
30	4	83669	1/2" X 1 1/2" DOWEL PIN
31	3	CB2221	SWIVEL SEAL

**2000-7000-23**  
**Swivel Support Assembly**



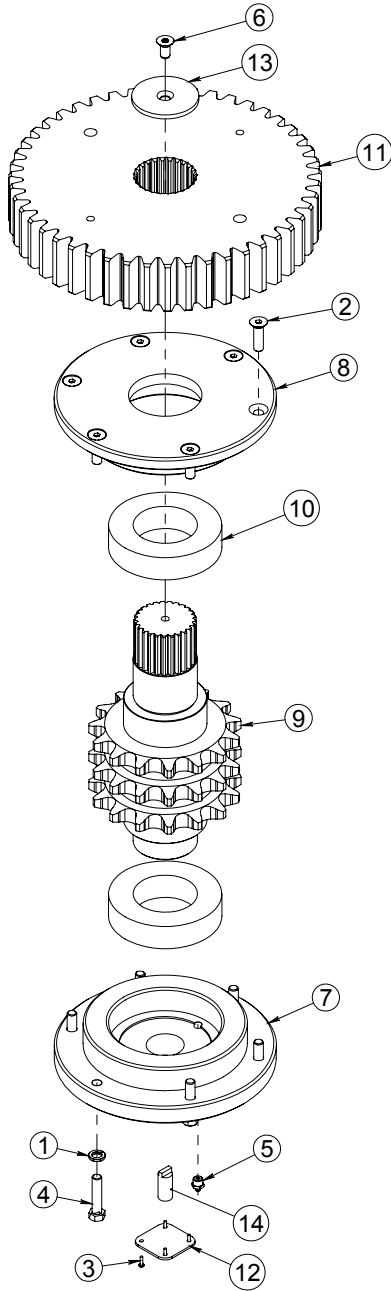


**200-7000-23**  
**Swivel Support Assembly**

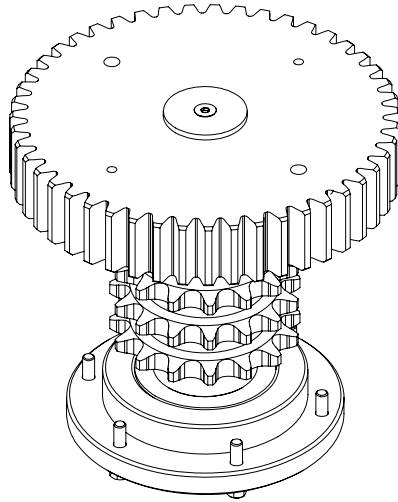


Item #	Qty.	Part Number	Part Name
1	2	1027	WASHER, LOCK 3/8"
2	2	1048	3/8"-16 X 1 1/4" HHCS
3	2	1103	1/2" LOCKWASHER
4	1	1167	3/4-10 NYLOCK HEX NUT
5	2	1176-A	3/4" GR. 8 NUT
6	2	175	1/2"-13 x 2 3/4" HHCS
7	1	2001-7000-23	SWIVEL SUPPORT WELDMENT
8	1	CB2322-01	SPRING TUBE
9	1	CB2324-01	LONG SPRING SPACER
10	1	CB2324	SPRING WASHER
11	1	CB2325-05	THREADED LIFTING ROD WELDMENT
12	1	CB2326	COMPRESSION SPRING

**207-7000-2**  
**Pinion Sprocket Assembly**

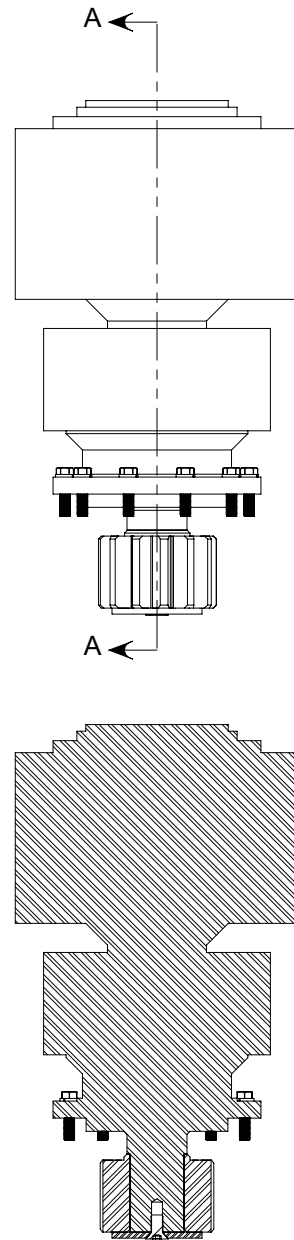
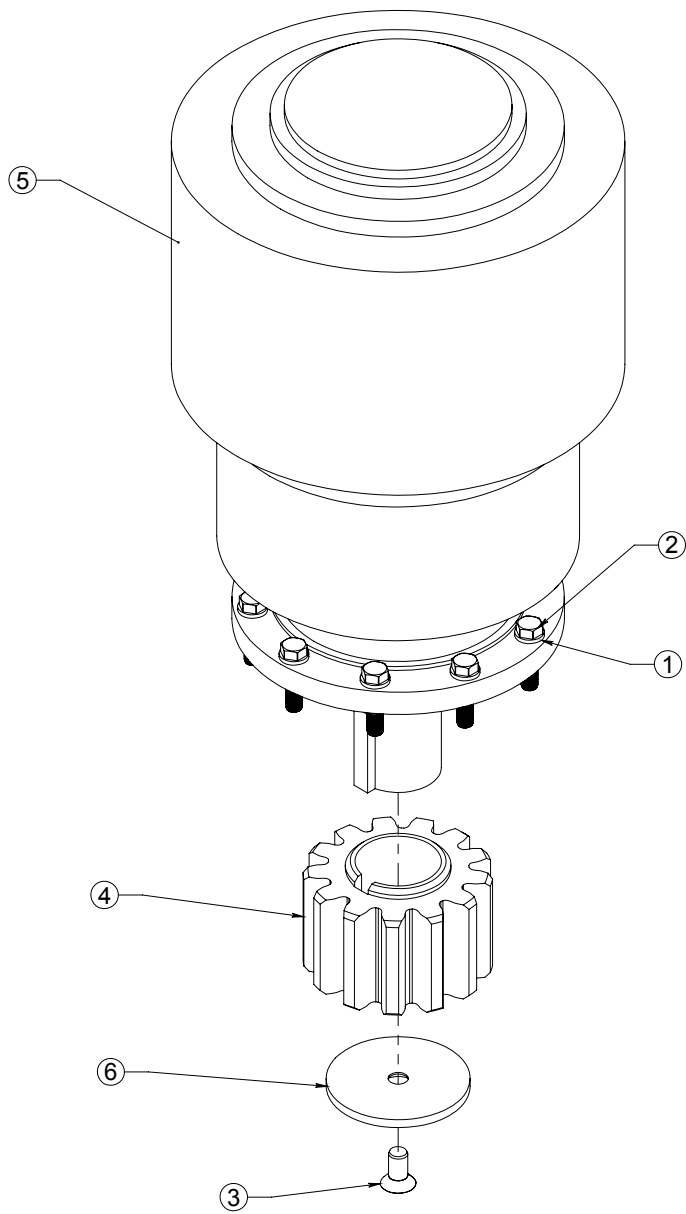


**207-7000-2**  
**Pinion Sprocket Assembly**



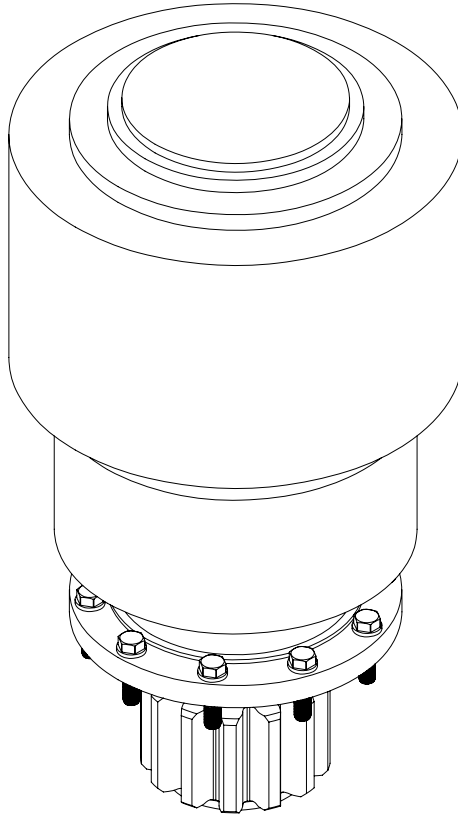
Item #	Qty.	Part Number	Part Name
1	6	1103	1/2" LOCKWASHER
2	6	1132-B	SCHCS 1/2"-13 X 1 3/4"
3	4	1276-B	#6-32 X 3/8" MACHINE SCREW
4	6	173	1/2"-13 x 2 1/4" HHCS
5	2	1771	1/4" NPT GREASE ZERT
6	1	1772	SHCS Flat 1/2"-13 x 1"
7	1	206A-7000-01	HEADSTOCK BEARING CAP
8	1	208-7000	HEADSTOCK TOP BEARING CAP
9	1	209-7000-01	PINION SPROCKET
10	2	209-7000-1	PINION SPROCKET BEARING
11	1	209B-7000	HIGH PINION GEAR
12	1	40034	COVER PLATE
13	1	507D-7000	DRIVE GEAR RETAINER
14	1	82113	ENCODER COUPLING

**235-7000-1**  
**Drive Gear Assembly**



SECTION A-A  
SCALE 1 : 8

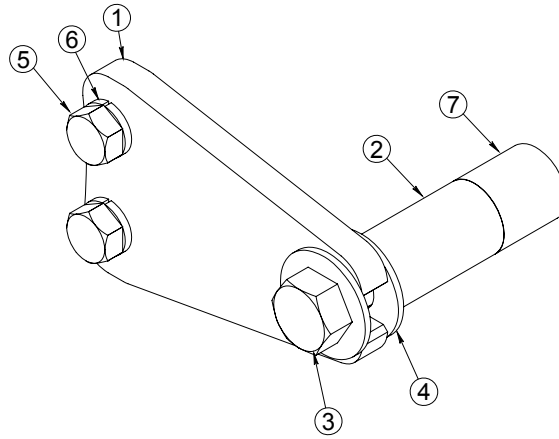
**235-7000-1**  
**Drive Gear Assembly**



Item #	Qty.	Part Number	Part Name
1	10	1081	7/16" LOCKWASHER
2	10	1085-A	HHCS 7/16"-20
3	1	1132-C	SHCS Flat 1/2"-20 x 1"
4	1	209C-7000	MOTOR DRIVE GEAR
5	1	235-7000	HYDRAULIC MOTOR
6	1	507D-7000	DRIVE GEAR RETAINER

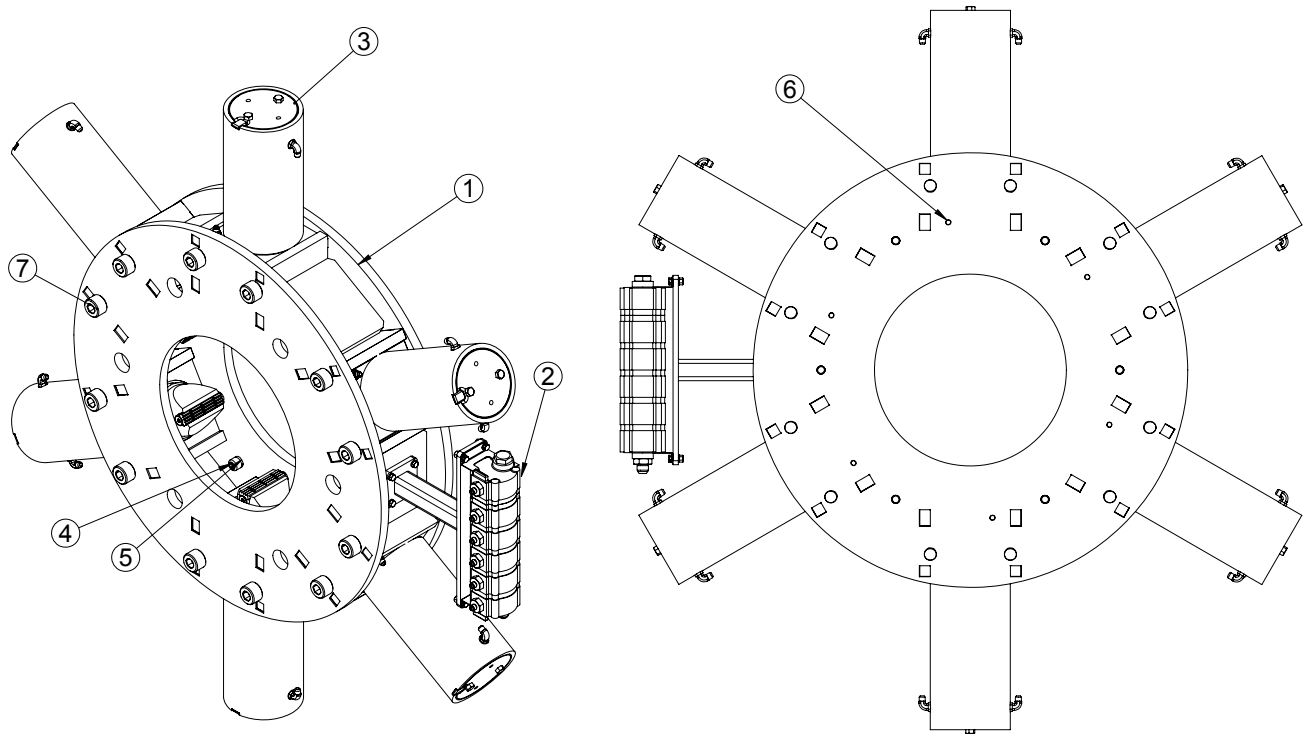
# 2700-7000

## Swivel Keeper Assembly



Item #	Qty.	Part Number	Part Name
1	1	2701-7000	BOLT-ON SWIVEL KEEPER
2	1	2702-7000	SWIVEL SPACER TUBE
3	1	74073	1"-8 X 6" HHCS
4	2	1249	1" FLAT WASHER
5	2	1173	3/4"-10 x 1 3/4" HHCS
6	2	1171	3/4" LOCKWASHER
7	1	2753A-7000	ANCHOR FOR SWIVEL KEEPER ASSY.

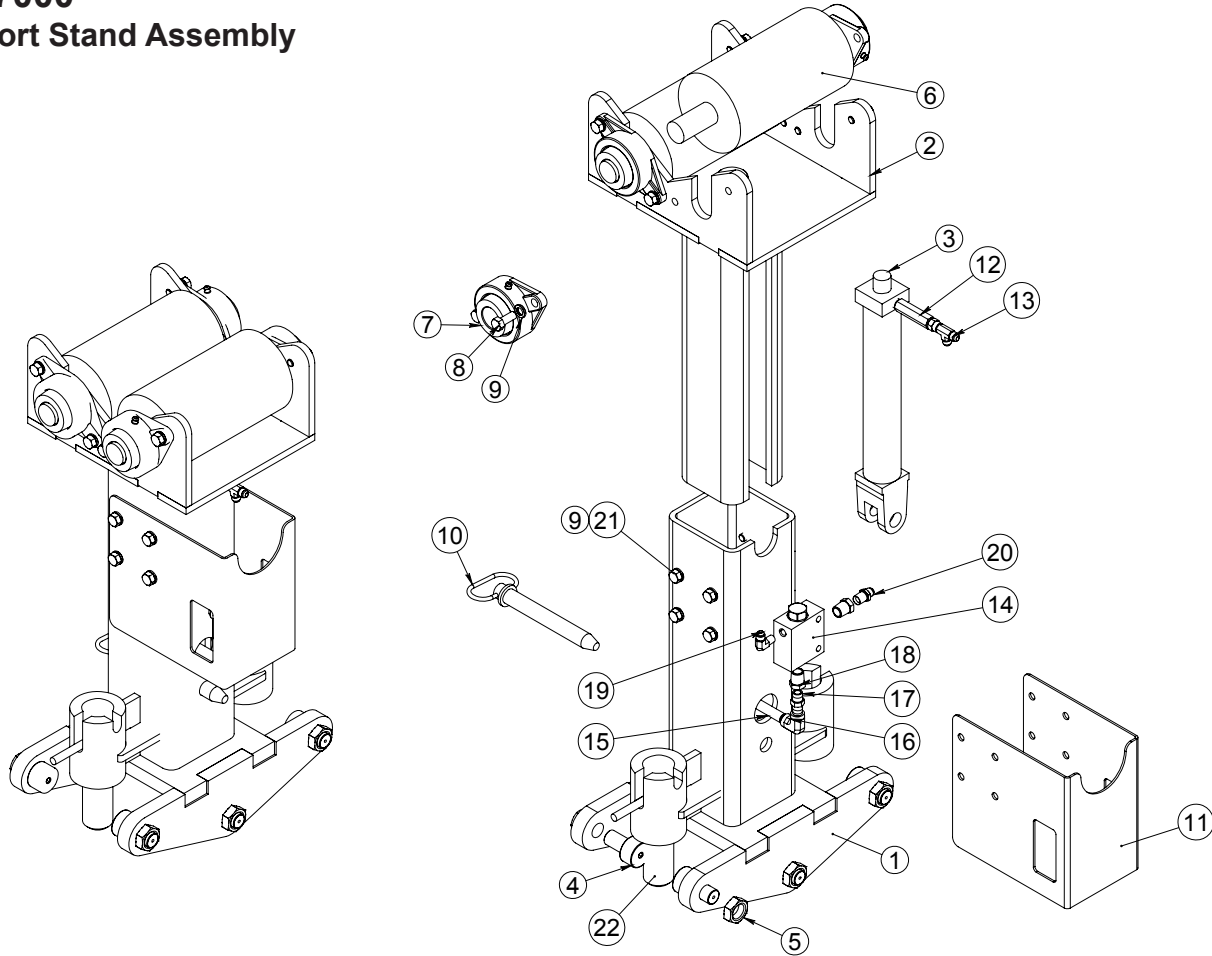
**240-7018-1**  
**Headstock Vise/Hub Assembly**



Item #	Qty.	Part Number	Part Name
1	1	240-7018	18" HEADSTOCK VISE WELDMENT
2	1	253-7000-1	FLOW DIVIDER MOUNT ASSEMBLY
3	6	400-7000-3	CLAMP CYLINDER ASSEMBLY
4	6	1277	3/4-10 x 2 1/4 SHCS
5	6	1170-A	3/4 HI COLLAR LW
6	6	83669	1/2" X 1 1/2" DOWEL PIN
7	12	222-7018	MODIFIED BOLT.

# 900-7000

## Support Stand Assembly



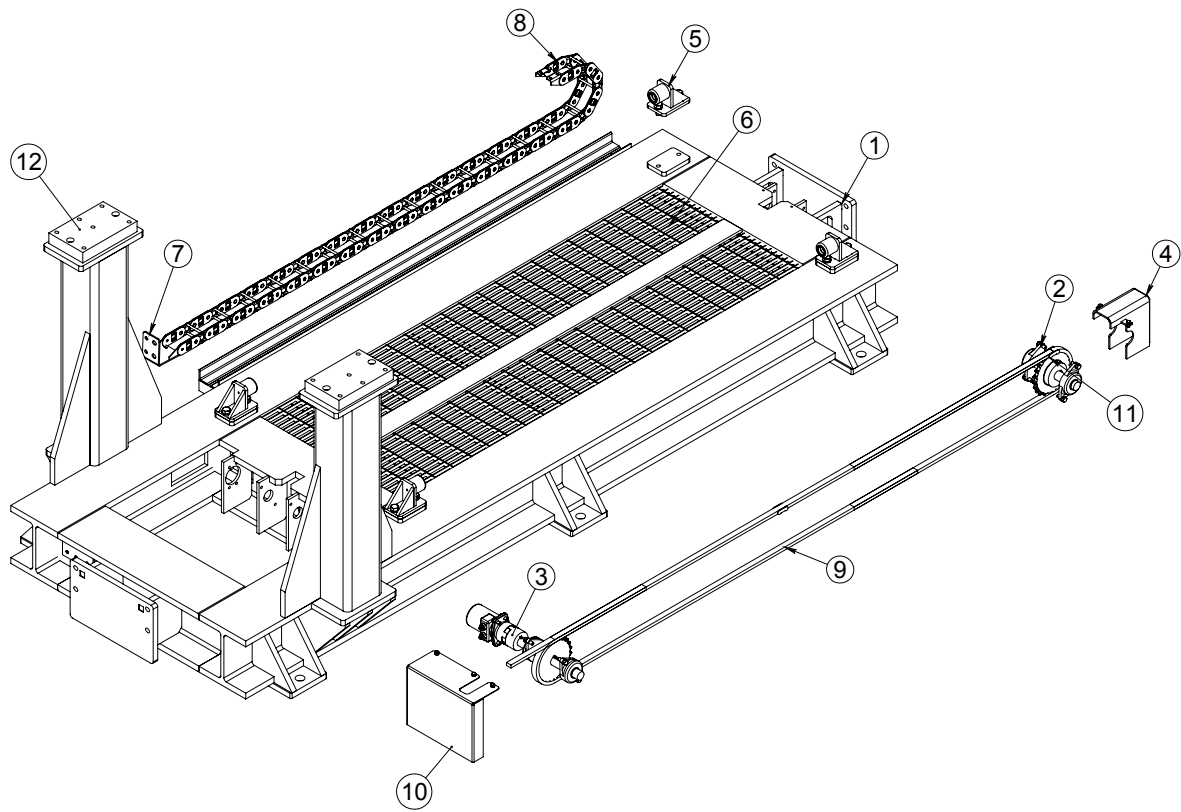
Item #	Qty.	Part Number	Part Name
1	1	902-7000	BOTTOM SUPPORT WELDMENT
2	1	901-7000	TOP SUPPORT WELDMENT
3	1	901D-7000	2" BORE CHIEF CYLINDER 10" STROKE (216-677)
4	6	902D-3000-1	1 3/4" CAM FOLLOWER W/ 1" STUD
5	6	1323	1-14 NYLOCK JAM NUT (1323)
6	2	901A-3000-1	RED ROLLER
7	4	508-3000	1 1/2" SUPPORT STAND BEARING
8	8	1111	1/2"-13 x 1 1/4" HHCS
9	16	1103	1/2" LOCKWASHER
10	1	902B-3000-1	1" X 7 3/4" HITCH PIN
11	1	905-3000	SUPPORT STAND VALVE COVER
12	1	2404-LL-06-06	3/8" MJIC X 3/8" MNPT ST. EXTRA LONG
13	1	6 R6X-S	3/8" FJIC X 3/8" MJIC RUN TEE
14	1	BUC5524	PILOT OPERATOR CHECK VALVE
15	1	1488	3/8" X 4-1/2" PIPE NIPPLE
16	1	1580	90 3/8" F X F NPT
17	1	1457	3/8" HEX NIPPLE
18	2	1491	REDUCER BUSHING 1/2" X 3/8"
19	1	1576-A	1/4" MNPT x 3/8" MJIC ELBOW
20	1	1570	3/8" MNPT X 3/8" MJIC STRAIGHT
21	8	1110	1/2"-13 x 1" HHCS
22	1	9112-7000-01	LOCKING PIN WELDMENT



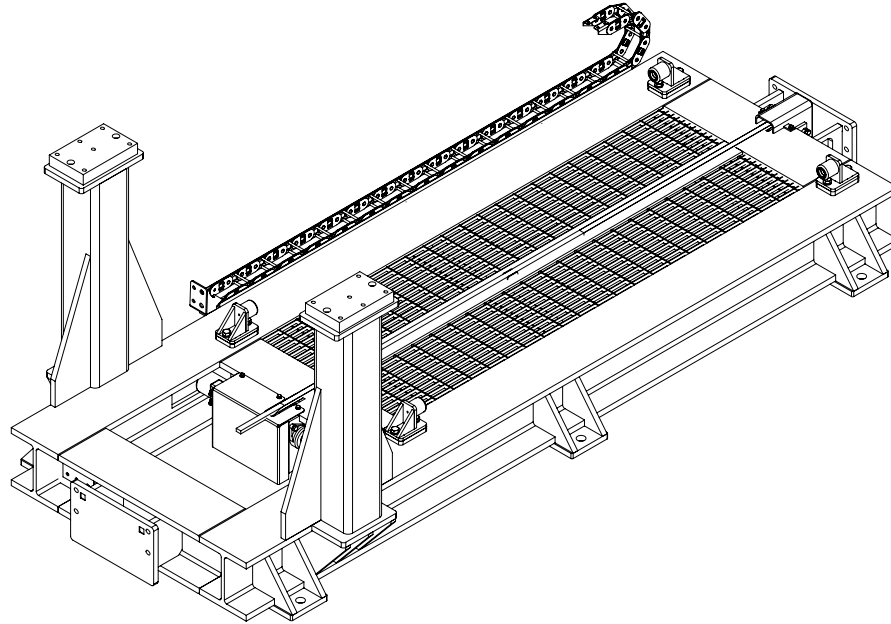


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**500-7018-12**  
**12ft. Skid Assembly**

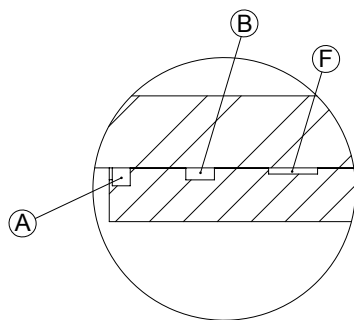
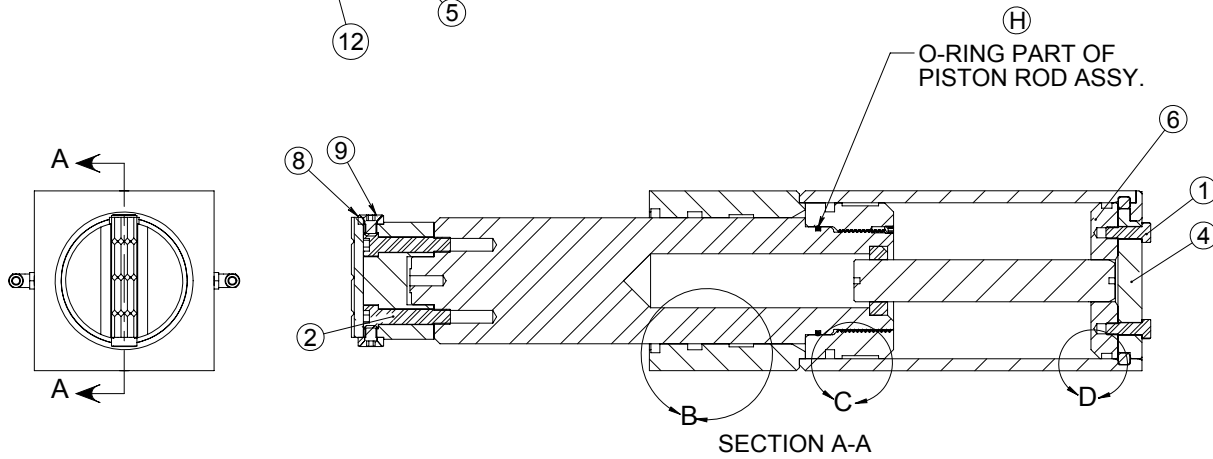
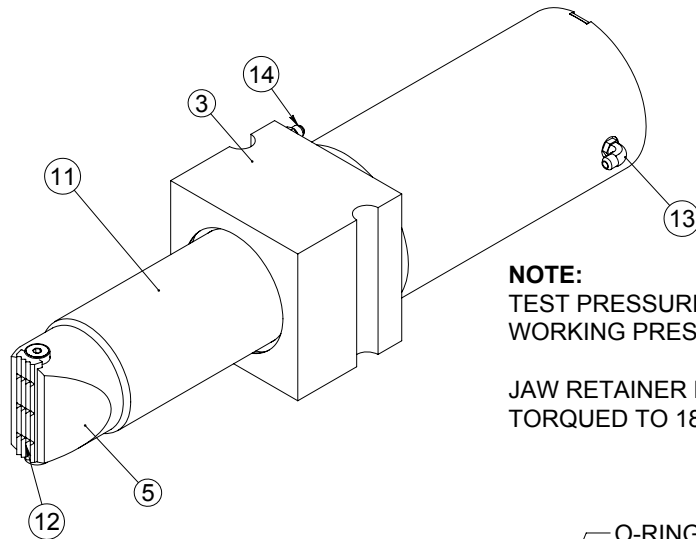


**500-7018-12**  
**12ft. Skid Assembly**

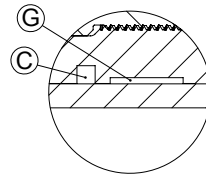


Item #	Qty.	Part Number	Part Name
1	1	500A-7018-12	12' SKID WELDMENT F/ 18" BORE BREAKOUT UNIT
2	1	508-3000-1	IDLER SPROCKET ASSEMBLY
3	1	509-3000-1	DRIVE SPROCKET ASSEMBLY
4	1	515-7000-1	SPROCKET COVER ASSEMBLY
5	4	540-3000	BUMPER STOP ASSEMBLY
6	2	552A-7000-01	89-1/8" x 13-5/8" x 1" GRATING
7	1	522-6000	FIXED BULKHEAD PLATE
8	1	550C-3000-02	HOSE CARRIER
9	3	556-7000	10' TRAVEL CHAIN
10	1	571-7000-01	DRIVE SPROCKET COVER ASSEMBLY
11	2	80CL	MASTERLINK 80C/L
12	2	CB11001-01-S5	WELDMENT #5

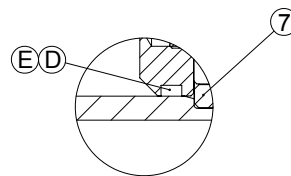
**400-7000-3**  
**Clamp Cylinder Assembly**



DETAIL B  
 SCALE 1 : 4



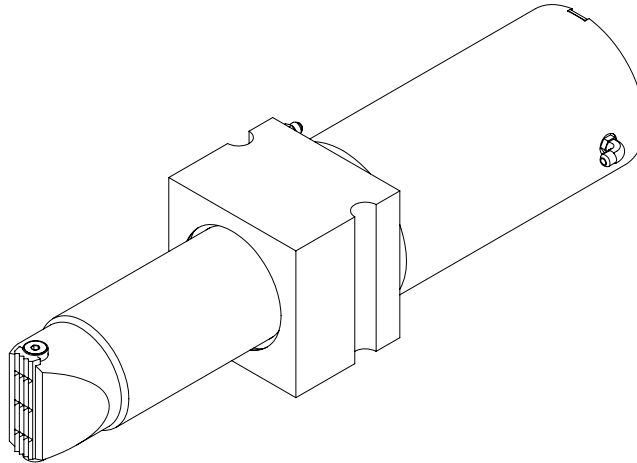
DETAIL C  
 SCALE 1 : 4



DETAIL D  
 SCALE 1 : 4

## 400-7000-3

### Clamp Cylinder Assembly

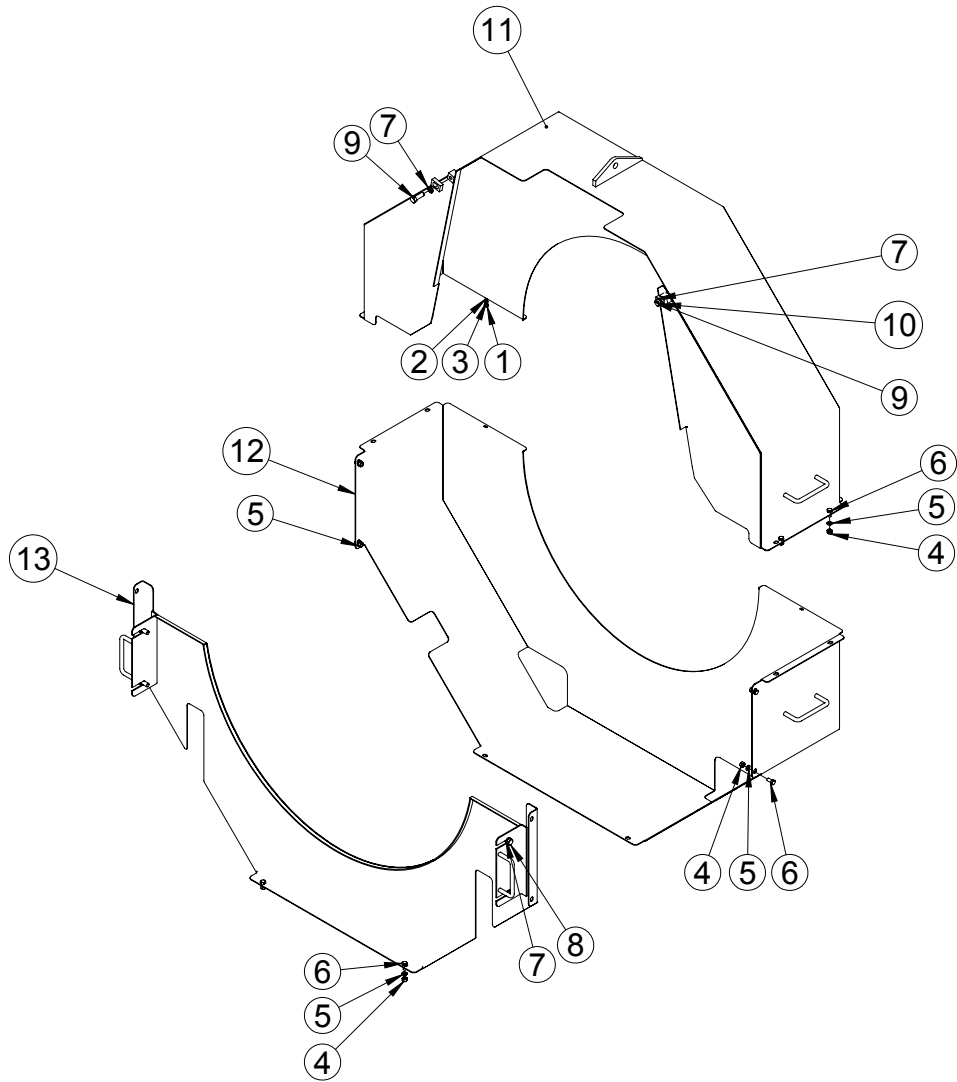


Item #	Qty.	Part Number	Part Name
1	2	1112	1/2"-13 x 1 1/2" HHCS
2	2	260	5/8-11 x 2 SHCS
3	1	400-7018	CYLINDER BLOCK HOUSING WELDMENT F/ 18"
4	1	401-3000-1	END PLATE WELDMENDT
5	1	402-7018	18" JAW HOLDER FOR BAKER
6	1	404-7000	SEAL PLATE WELDMENT
7	1	405-3000	SPLIT RING
8	2	408-3000	3/8" WASHER
9	2	91253B	SHCS Flat 1/2"-13 x 7/8"
10	1	400C-3000	SEALS KIT
11	1	403-7018	PISTON/ROD ASSEMBLY
12	1		DOVETAIL STRIP DIE (SEE DIE SELECTION CHART)
13	2	6 C5OX	#6 SAE MALE X #6 JIC MALE X 90 DEG
14	1	6 F5OX	3/8 FJIC X FORB STRAIGHT

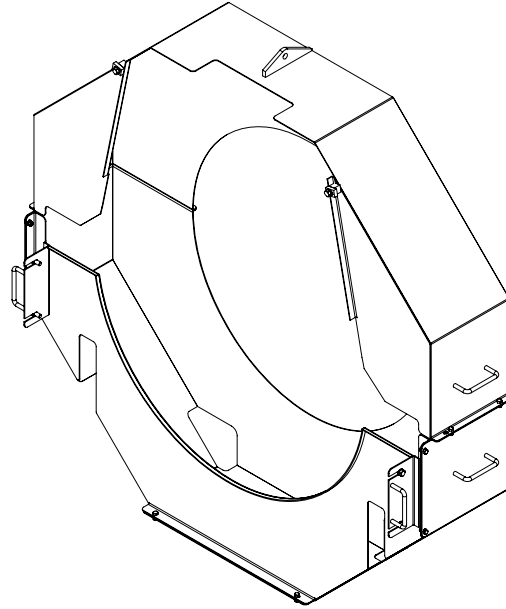
#### 400C-3000 SEALS KIT

Item	Qty.	Part Number	Part Name
A	1	D5250	ROD WIPER
B	1	25005250-562	POLYPACK
C	1	PS1800-104	PISTON SEAL
D	1	2-437	6" ID O-RING
E	1	8-437	BACK UP RING
F	1	W55001000	5 1/2" OD WEARBAND
G	1	W65001500	6 1/2" OD WEARBAND
H	1	2-345	4" ID O-RING

**3000-7000-4**  
**Rotating Head Guard Assembly**

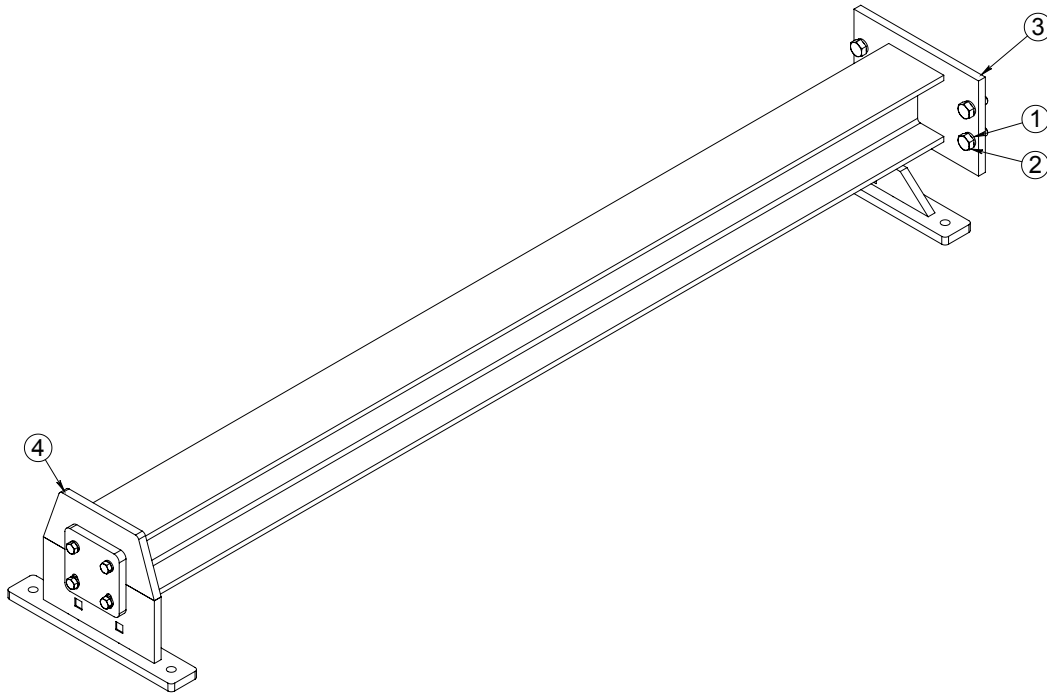


**3000-7000-4**  
**Rotating Head Guard Assembly**



Item #	Qty.	Part Number	Part Name
1	2	100	1/4"-20 HEX NUT GR8
2	2	1008-B3	1/4"-20 X 1/2" HHCS
3	2	101	1/4" LOCKWASHER
4	10	1024	3/8-16 NUT (1024)
5	10	1027	WASHER, LOCK 3/8"
6	10	1046	HHCS 3/8-16 X 3/4
7	6	1103	1/2" LOCKWASHER
8	4	1110	1/2"-13 x 1" HHCS
9	2	1112	1/2"-13 x 1 1/2" HHCS
10	2	3105-6500	1/2" MOUNT TAB
11	1	3110-7000-03	TOP HEAD GUARD WELDMENT
12	1	3111-7000-03	BOTTOM HEAD GUARD WELDMENT
13	1	3112-7000-03	REAR COVER WELDMENT

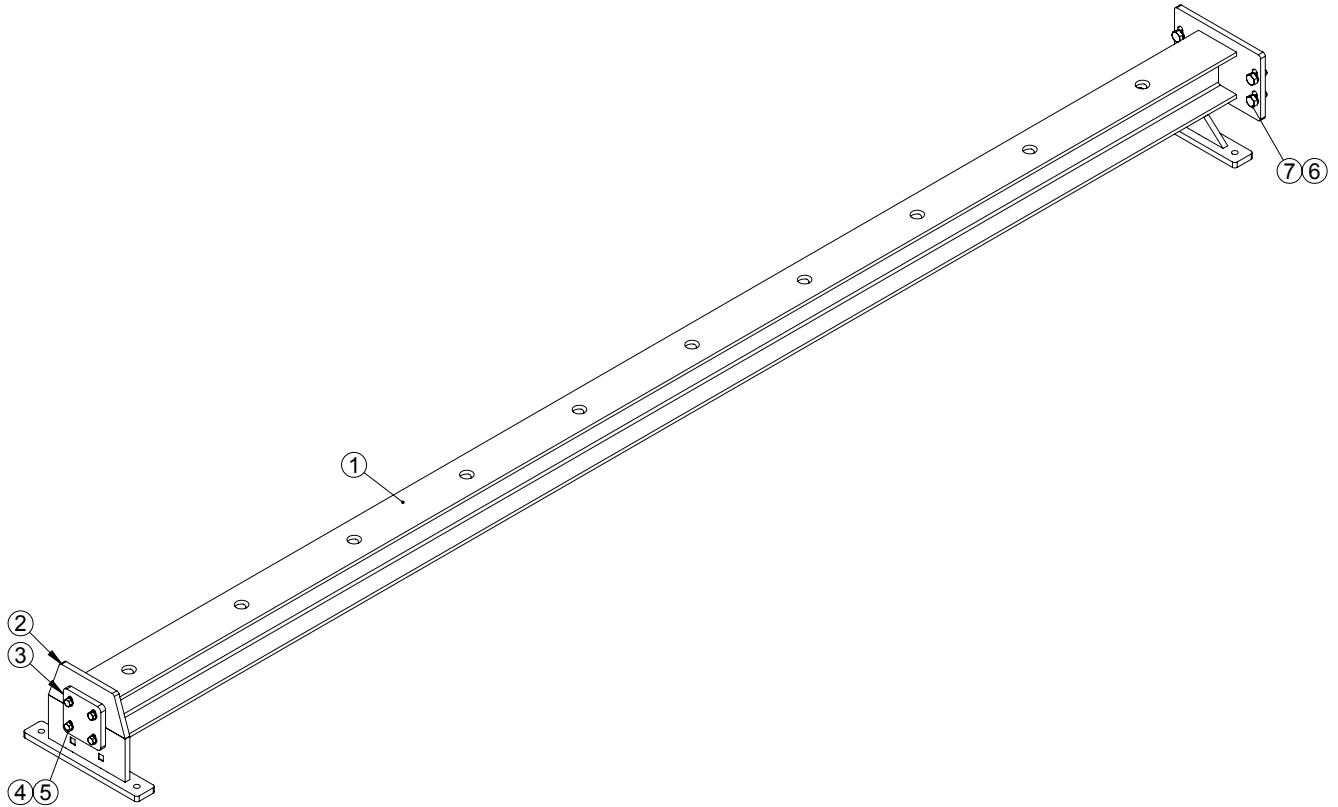
**1300-7000-1**  
**10ft. Extension Beam Assembly**



Item #	Qty.	Part Number	Part Name
1	4	1218	1" LW
2	4	1264	1"-13 X 2.5" HHCS
3	1	1300-7000	10 FEET EXTENSION BEAM WELDMENT
4	1	1303-7000	EXTENSION BEAM END PLATE ASSEMBLY



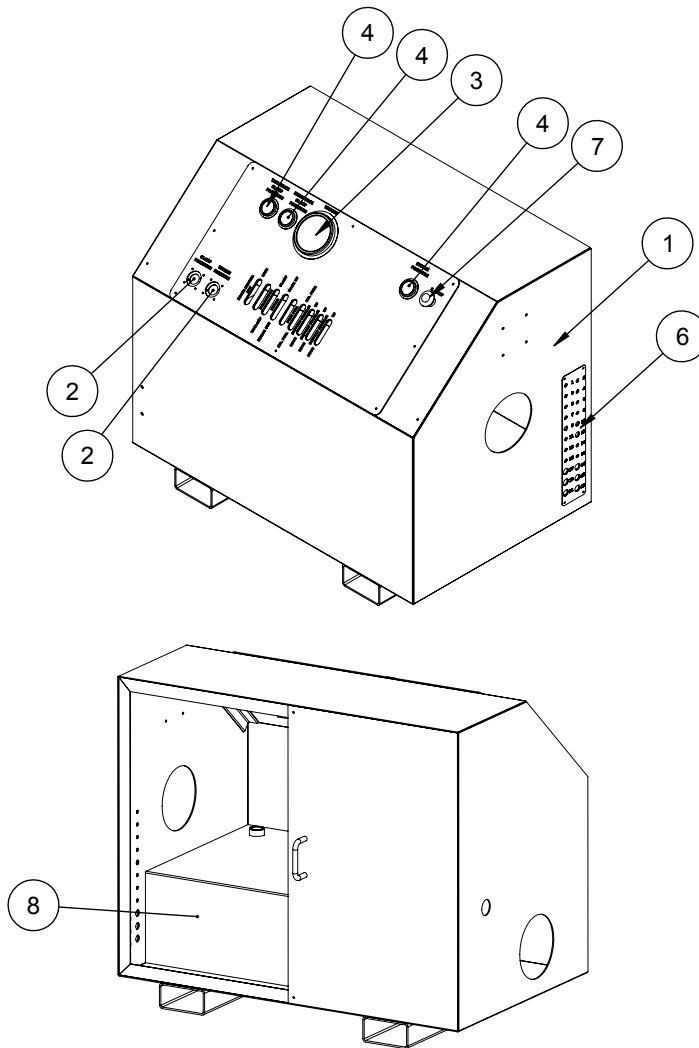
**1300-7000-1-02**  
**20ft. Extension Beam Assembly**



Item #	Qty.	Part Number	Part Name
1	1	1300-7000-02	20 FEET EXTENSION BEAM WELDMENT
2	1	1303A-7000	EXTENSION BEAM END PLATE
3	1	1303B-7000	EXTENSION BEAM BOLT PLATE A36
4	4	1171	3/4" LOCKWASHER
5	4	1174	3/4"-10 X 2 1/4" HHCS
6	4	1218	1" LW
7	4	1264	1"-13 X 2.5" HHCS

# RP5047

## Control Console / Power Unit Assembly



Item #	Qty.	Part Number	Part Name
1	1	100-6500	CONSOLE WELDMENT
2	2	130-6500	PRESSURE CONTROL VALVE
3	1	132-6500	0-1000 PSI GAUGE
4	3	133-6500	0-3000 PSI GAUGE
5	1	150-7000-16	TOP COVER PLATE
6	1	152-6500	BULKHEAD COVER
7	1		STOP BUTTON
8	1		ELECTRIC POWER UNIT

# TROUBLE SHOOTING

## HYDRAULIC SYSTEM

### Hydraulic Pump Making Excessive Noise:

<u>Problem</u>	<u>Solution</u>
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 in-stalled for operation.
G) Increased friction	Make sure pump has been assembled using correct torque valves.
H) Damaged or worn relief valve	Replace relief valve.
I) Damaged or worn check valve	Replace check valve.
J) Restricted discharge	Check to make sure relief valve is set to proper pressure.
K) Valve system restricted	Inspect and repair or replace defective parts, check system for contamination.
L) High operating temp	Check for low hydraulic oil level, inspect and replace dirty oil filters, check for restrictions to return circuit

### Excessive Wear to Hydraulic Components:

<u>Problem</u>	<u>Solution</u>
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.

# TROUBLE SHOOTING

## HYDRAULIC TONG SECTION

### Problem

- A) Shortened bearing life

### Solution

Check alignment, insure proper lubrication to non-sealed bearings.

### Slow Tong Speed:

### Problem

- A) Restricted supply line
- B) Low fluid level
- C) Air leak
- D) Pump speed insufficient
- E) Damaged or worn equipment
- F) Pump not primed
- G) Low or no flow from supply line

### Solution

Verify proper hi/low speed setting. Clear supply line and check intake on reservoir.

Add fluid to proper volume.

Locate and repair leak.

Assure proper pump speed for application.

Isolate pump and check pressure to determine whether motor or pump is defective. Repair or replace defective part.

Check fluid viscosity and restrictions of intake line. Replace fluid if inadequate for operating temperature.

Check to assure couplings are securely fastened.

### Insufficient Torque:

### Problem

- A) Relief valve malfunctioning
- B) Damaged or worn pump parts
- C) Slow pump speed
- D) Improper system fluid
- E) Directional control valve set improperly
- F) Damage to motor
- G) Restriction of supply line, excessive back pressure
- H) Defective gauge or load cell

### Solution

Relief set too low, broken valve spring, contamination or defective seals.

Inspect, repair or replace.

Assure proper pump speed for application.

Check fluid viscosity and replace fluid if inadequate for operating temperature.

Check relief and directional control valve. Neutral should return slightly to reservoir.

Inspect, repair or replace.

Check to assure couplings are securely fastened.

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:

<u>Problem</u>	<u>Solution</u>
A) Jaws move out from neutral, but fail to penetrate	Inspect size of both the die holder and dies. Verify range at console and replace with dies compatible with tubular range.
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	Confirm system pressure is adequate to unlock valve. 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	Repair or replace motor. Verify case drain is open to reservoir.
H) Clamping cylinders are not synchronized	Resync by fully retracting and extending through several cycles. Inspect damaged lines & fittings, check for other restrictions. Individually check each cylinder for fluid leakage. Replace flow divider.

## HYDRAULIC BACKUP SYSTEM

### Backup Fails to Hold Tubular:

<u>Problem</u>	<u>Solution</u>
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.

# TROUBLESHOOTING

## Problem

## Solution

I) Excessive hydraulic leaks

The presence of some hydraulic oil on hydraulic cylinder rods and swivels is expected and required to lubricate rod seals. Continuous dripping or stream indicates a failure. If failure is suspected, replace all cylinder seals.

J) Die insert slippage and breakage

Ensure clamping pressure is adequate. Ensure holder and dies are appropriate for pipe size. Ensure dies are aligned with pipe centerline. Ensure dies are not gripping on tooljoint hardbanding.



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