

CLINCHER[®]

TECHNICAL MANUAL

RP7012-01

12-1/4" (31.1cm) 105K ft-lbs
Continuously Rotating Bucking Unit

- Specifications
- Operation
- Maintenance
- Assemblies



(RP7018 shown)

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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:

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:

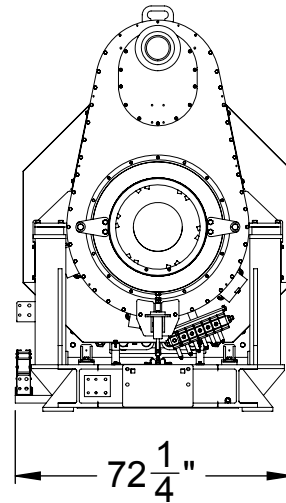
1. Remove dies and inspect jaw retainer bolt torque. Torque should be set to 180 ft-lbs.

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.):	3,000 lbs.

Bucking Unit:

Max. Torque:	105,000 ft-lbs
Handle Length:	30"
Overall Length:	191 $\frac{1}{4}$ "
Overall Width:	72 $\frac{1}{4}$ "
Overall Height:	105 $\frac{1}{2}$ "
Weight (approx.):	18,000 lbs.

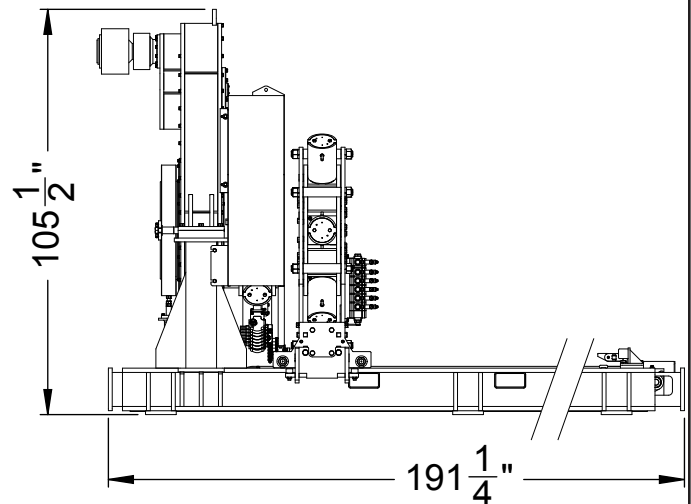
* Specs may vary

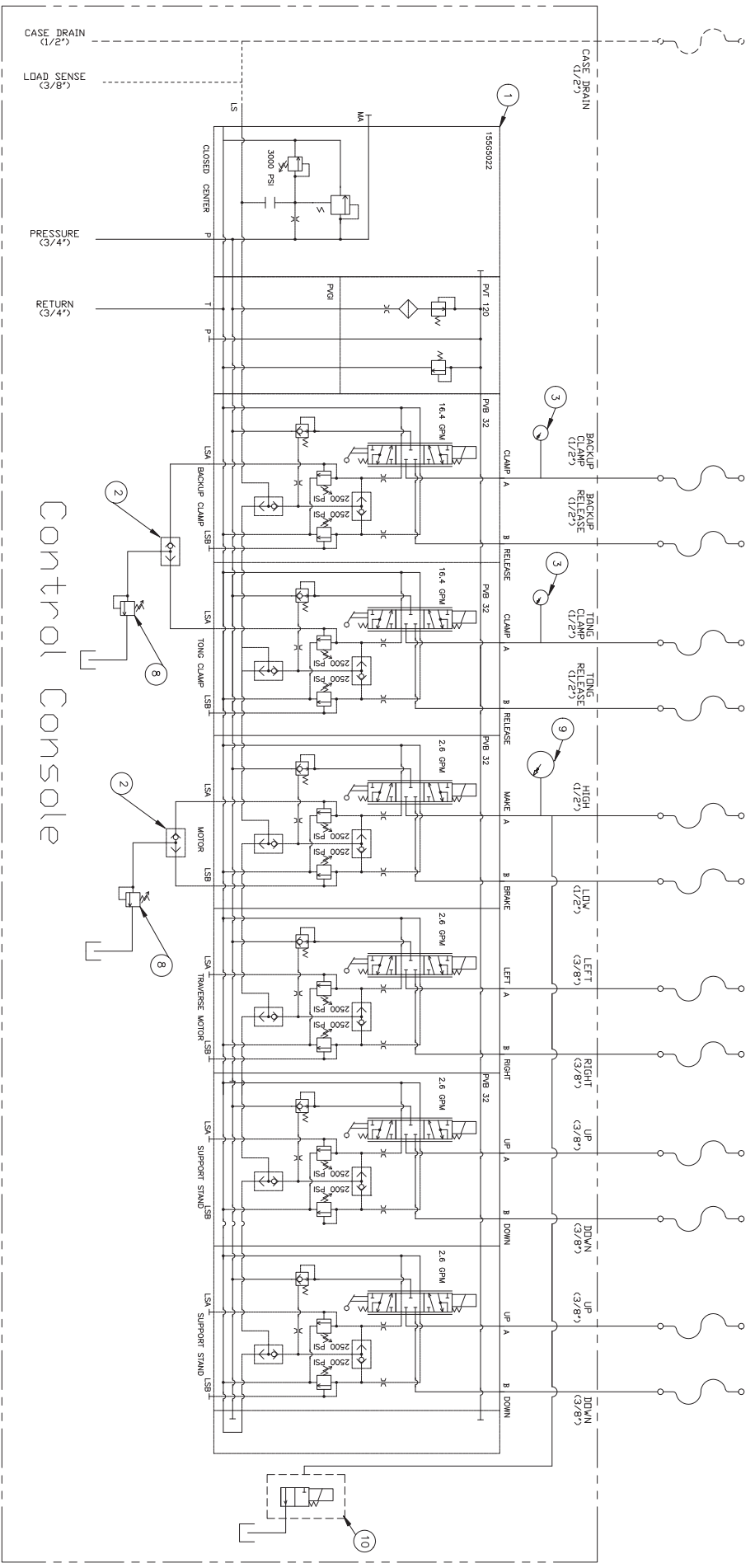
CHUCKING CAPACITIES

3 $\frac{1}{2}$ " to 12 $\frac{1}{4}$ " Diameter

TORQUE CAPACITY

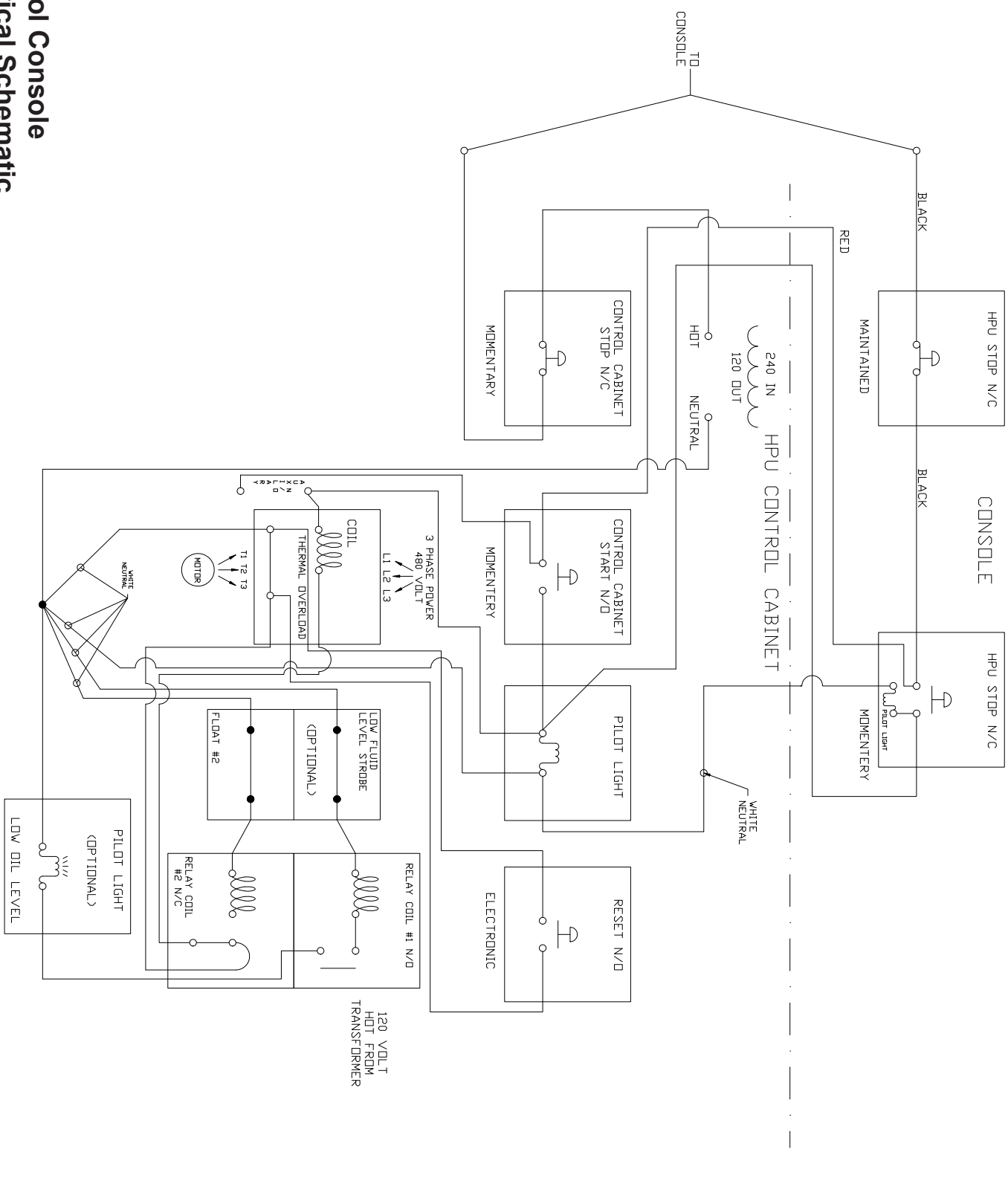
Make-up 105,000 foot pounds / Break-out 105,000 foot pounds





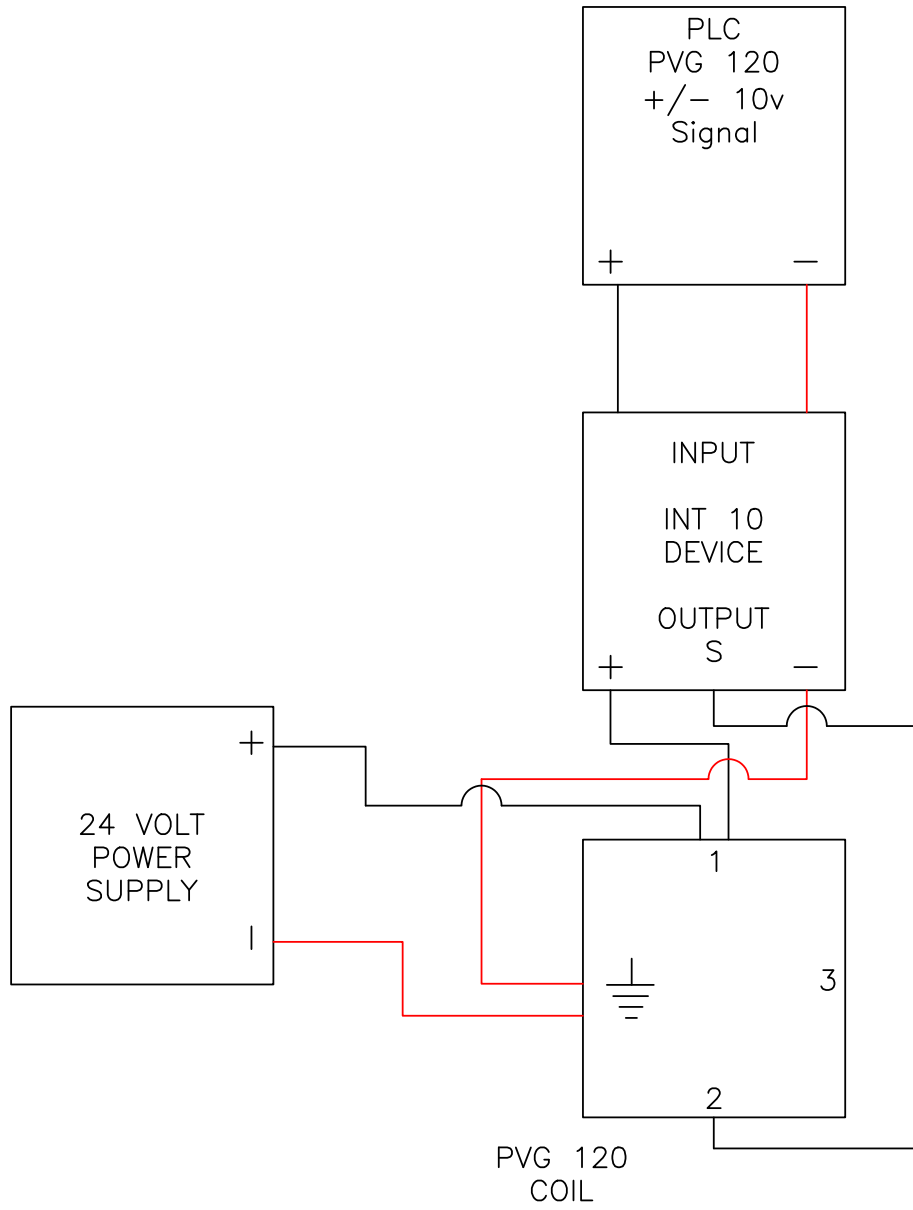
Control Console

Control Console Hydraulic Schematic

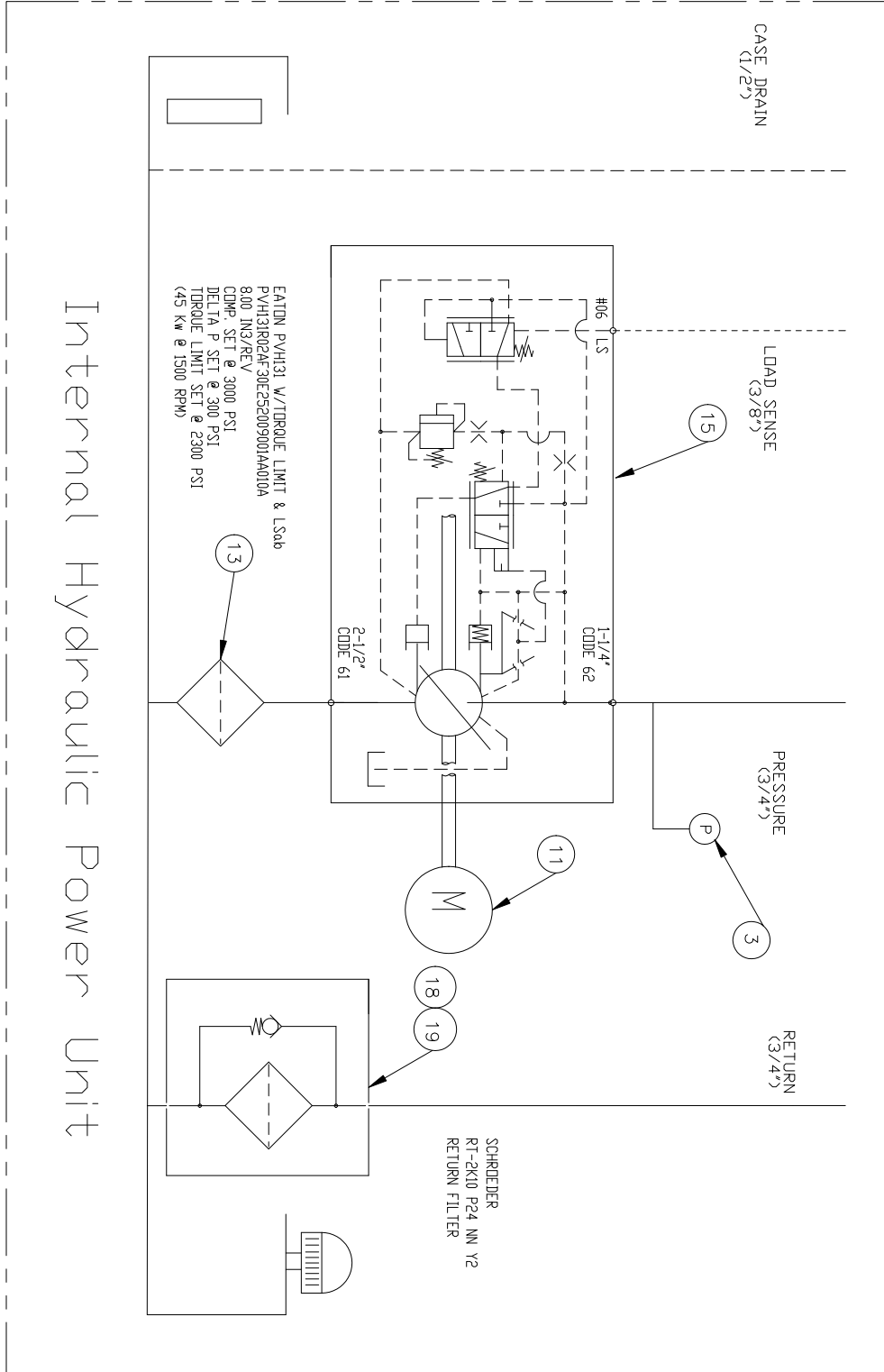


**Control Console
Electrical Schematic**

Electric Proportional Schematic

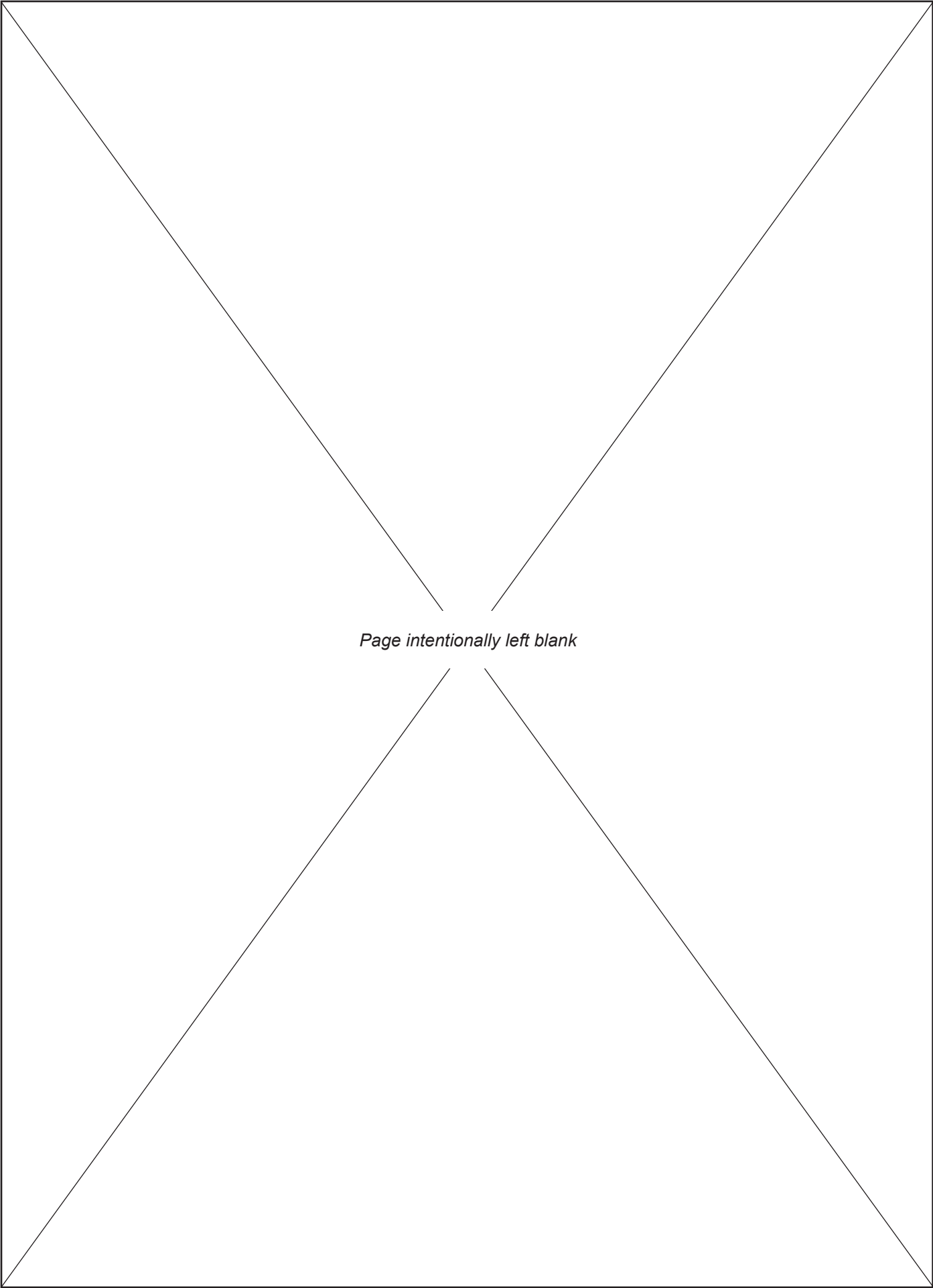


ITEM NO.	QTY.	DESCRIPTION	PART NUMBER	LOCATION
3	2	2-1/2" PRESSURE GAUGE, 0-3000	133-6500	CONSOLE/POWER UNIT
11	1	ELECTRIC MOTOR	121-6500	CONSOLE/POWER UNIT
13	1	SUCTION STRAINER	144-6500	CONSOLE/POWER UNIT
15	1	HYDRAULIC PUMP	145-6500	CONSOLE/POWER UNIT
18	1	FILTER HEAD	138-6500	CONSOLE/POWER UNIT
19	1	FILTER ELEMENT	139-6500	CONSOLE/POWER UNIT



Internal Hydraulic Power Unit

Power Unit Hydraulic Schematic

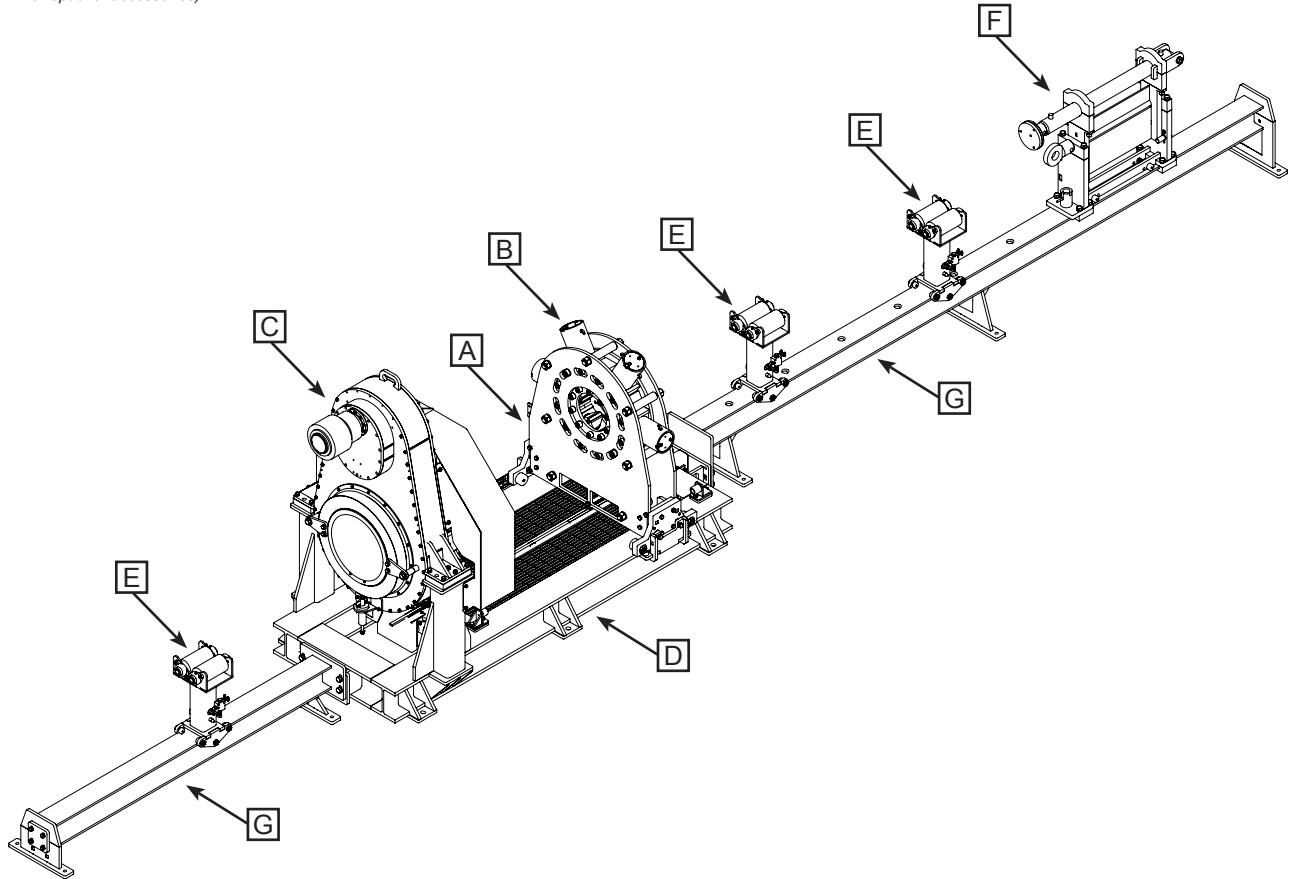


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CLINCHER® RP7012-01

Continuously Rotating Bucking Unit

(Shown with optional accessories)

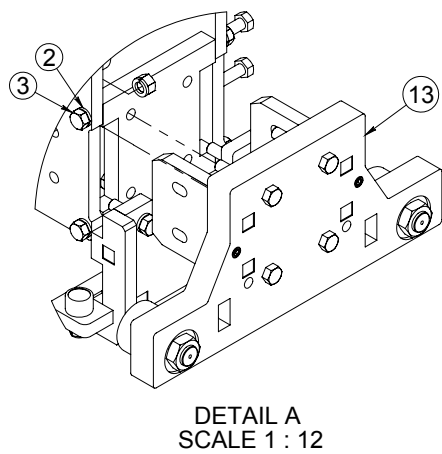
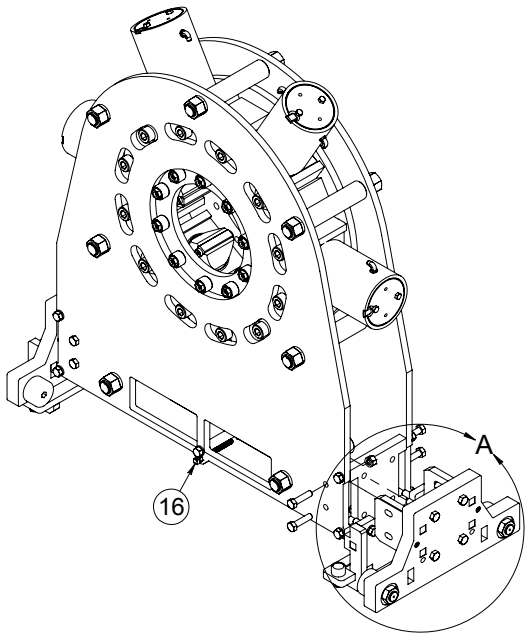
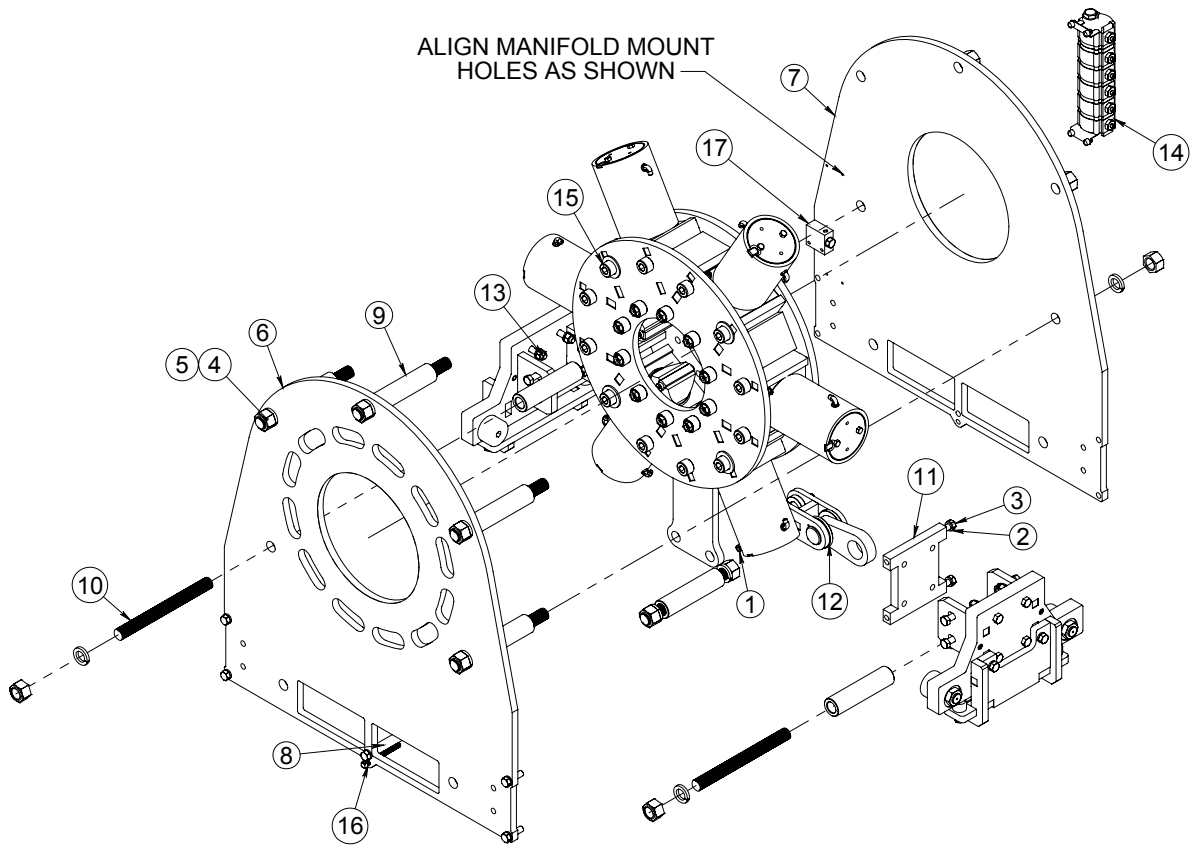


A	Tail Stock Assembly -----	12
	Roller Assembly -----	14
	Flow Divider Assembly -----	16
	Tail Stock Vise Assembly -----	18
B	Clamp Cylinder Assembly -----	20
C	Head Stock / Vise Assembly -----	23
	Tong Assembly -----	24
	Swivel Support Assembly -----	26
	Swivel Keeper Assembly -----	27
	Pinion Sprocket Assembly -----	28
	Drive Gear Assembly -----	30
	Vise/Hub Assembly -----	32
	Rotating Head Guard Assembly -----	34
D	15' Skid Assembly -----	35
	Idler Sprocket Assembly -----	36
E	Support Stand Assembly -----	37
F	Push Pull Assembly -----	38
G	Extension Beam Assembly (various styles) -----	40 - 42
	Control Console / Power Unit Assembly -----	43

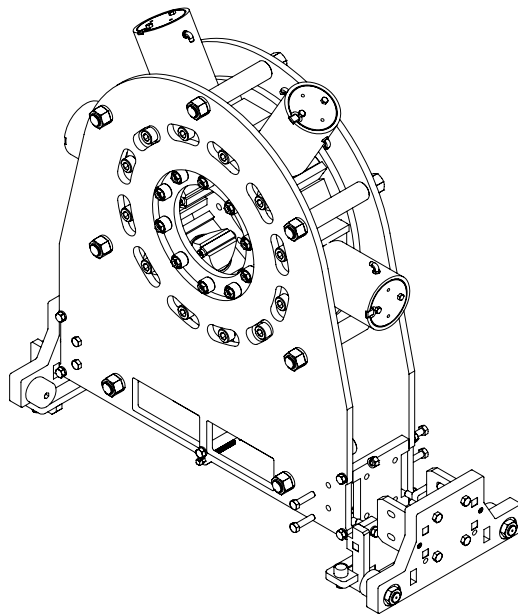
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For third party component documentation used within this unit, please contact McCoy Drilling & Completions.

300-7012
Tail Stock Assembly

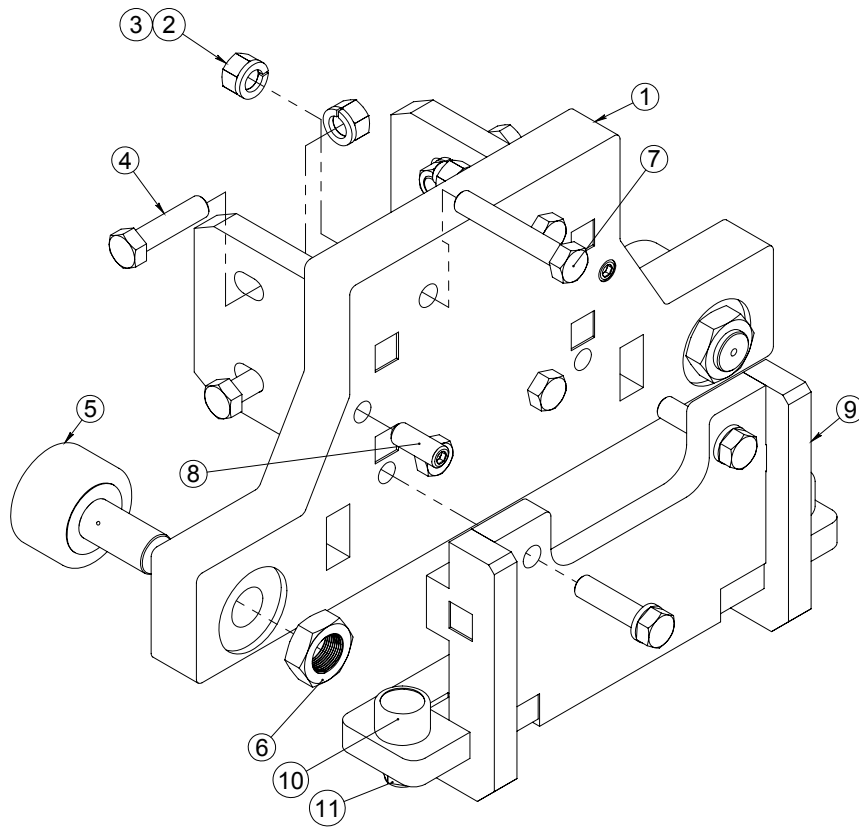


300-7012
Tail Stock Assembly

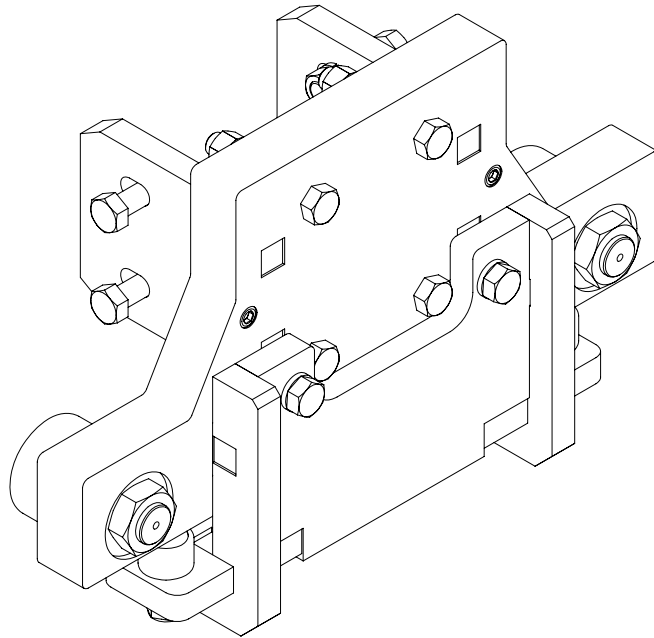


Item #	Qty.	Part Number	Part Name
1	4	1101	NUT, HEX, 1/2-13
2	10	1171	3/4" LOCKWASHER
3	10	1183	3/4"-10 x 2 1/2 HHCS
4	14	1187	1 1/2-6 HEX NUT
5	14	1223	1 1/2" LOCKWASHER
6	1	300-7012-S1	INNER HOUSING PLATE
7	1	300-7012-S2	OUTER HOUSING PLATE
8	1	300-7012-S3	TAILSTOCK SPACER (SMALL)
9	7	300-7022-S3	TAILSTOCK SPACER
10	7	300-7022-S4	1-1/2"-6 ALL THREAD ROD
11	2	301-7012	SPACER PLATE, TAILSTOCK
12	2	309-7000-1	LOAD CELL BRACKET ASSEMBLY
13	2	310-7012	ROLLER ASSEMBLY
14	1	330-3500	DELTA POWER 6 PORT FLOW DIVIDER
15	1	350-7012-1	12-3/4" TAILSTOCK VISE ASSEMBLY
16	2	507A-3000	CHAIN ATTACHMENT
17	1	BUC5524	PILOT OPERATOR CHECK VALVE

310-7012
Roller Assembly

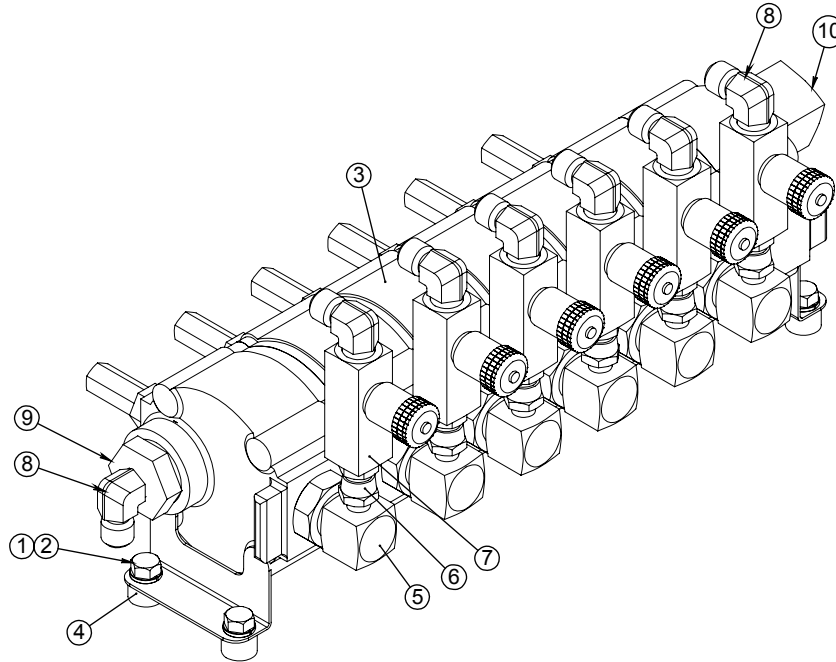


310-7012
Roller Assembly



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

330-3500 Flow Divider Assembly

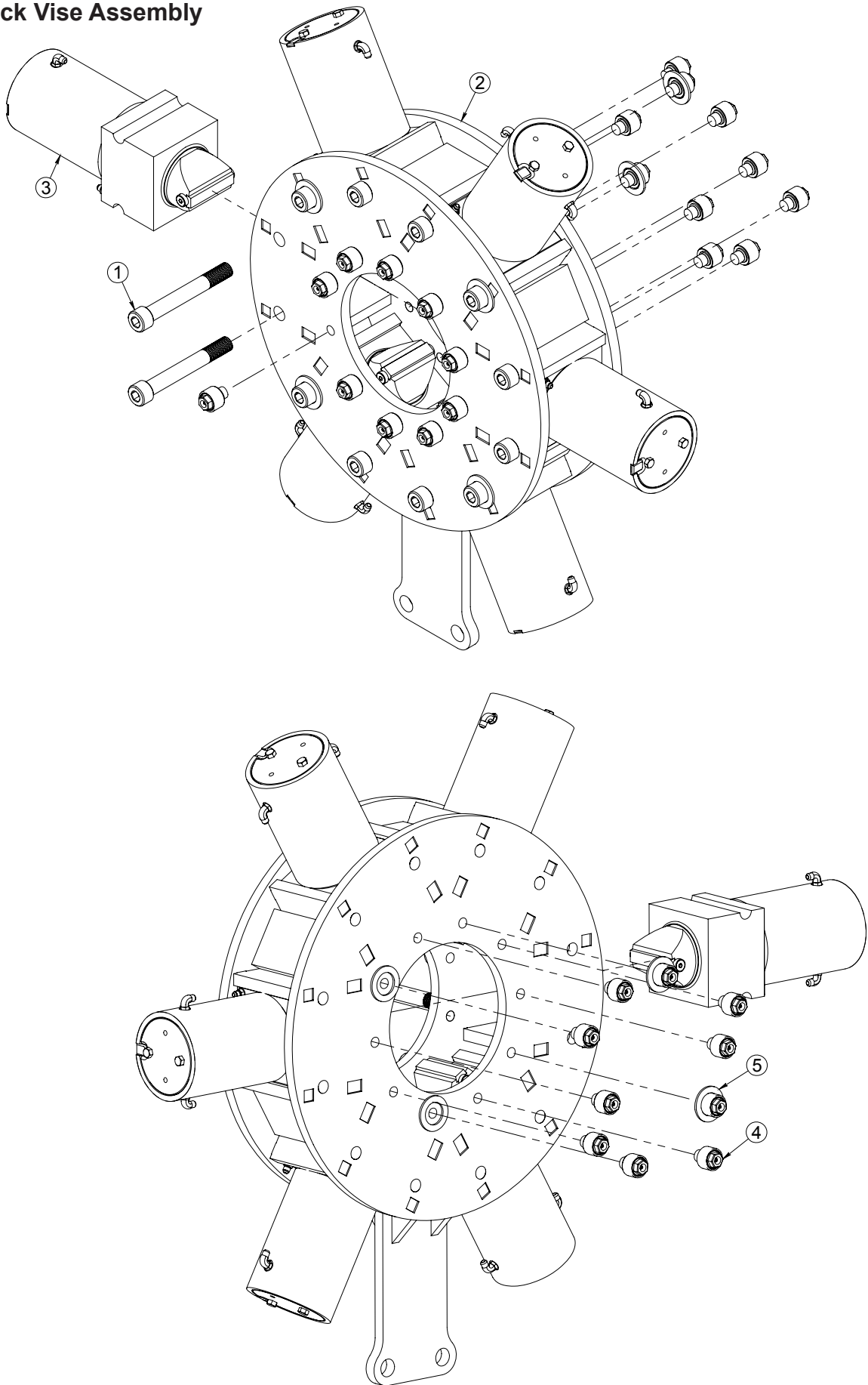


ITEM	QTY	P/N	DESCRIPTION
1	4	1027	LOCKWASHER 3/8" GR8
2	4	1046	HHCS 3/8"-16 X 3/4" GR8
3	1	RP14S3500-1001-S1	DELTA FLOW DIVIDER
4	4	BUC4085-S7	BUC4000 B/U VALVE LEG
5	6	6801-06-12	3/8" MJIC X 3/4" MORING X 90 DEGREE
6	6	6-6F6X-S	3/8 MNPT X 3/8 FJIC SWIVEL ADAPTER
7	6	1800	PARKER FLOW CONTROL F600S 3/8" MNPT
8	7	1577-A	3/8 MNPT X MJIC FORGED 90
9	1	6405-16-6-0	1"M-ORING BOSS X 3/8 FNPT
10	1	RP6801-NWO-08-16	1" MORB X 1/2" MJIC 90 DEG

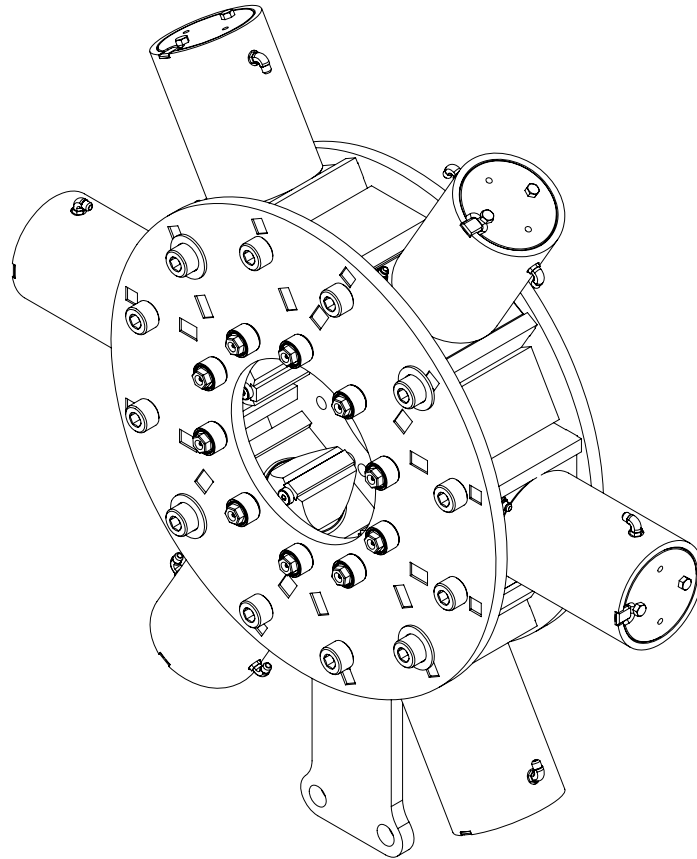


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350-7012-1
Tail Stock Vise Assembly

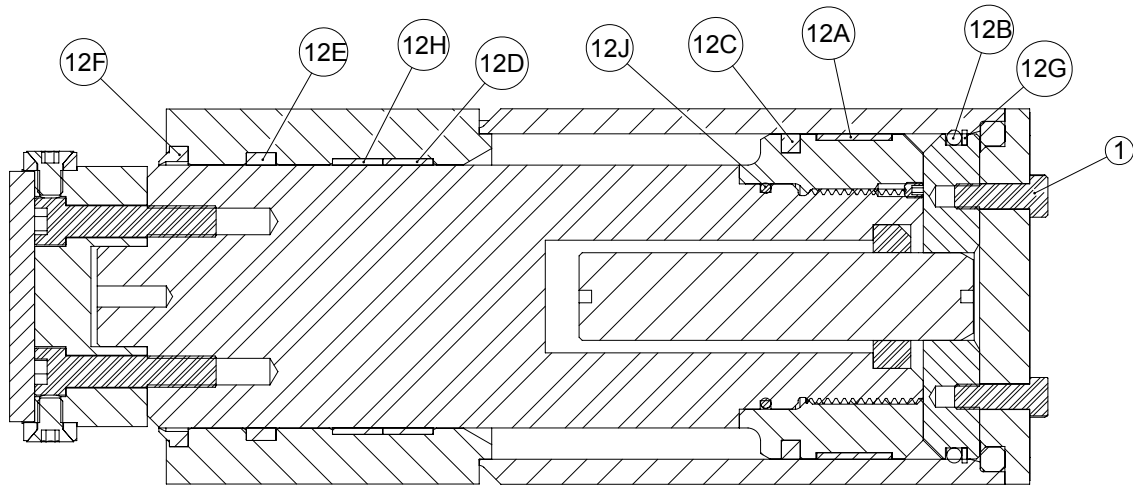


350-7012-1
Tail Stock Vise Assembly

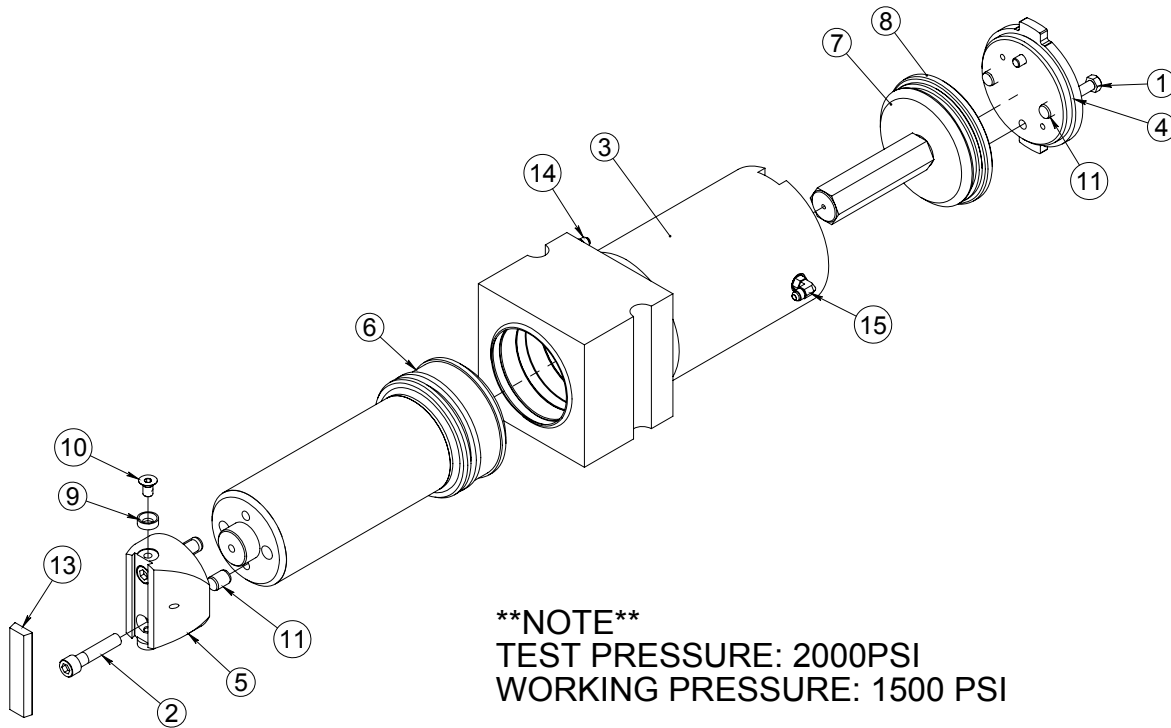


Item #	Qty.	Part Number	Part Name
1	12	222-7022	MODIFIED BOLT.
2	1	350-7012	12" TAILSTOCK WELDMENT F/ RP7000
3	6	400-3000-1	CLAMP CYLINDER ASSEMBLY
4	20	BUCS11825-02	CAM FOLLOWER ASSEMBLY
5	8	BUCS11836	TEFLON SPACER

400-3000-1
Clamp Cylinder Assembly

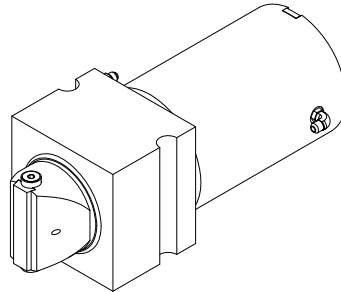


SECTION A-A
SCALE 1 : 4



****NOTE****
TEST PRESSURE: 2000PSI
WORKING PRESSURE: 1500 PSI

400-3000-1
Clamp Cylinder Assembly



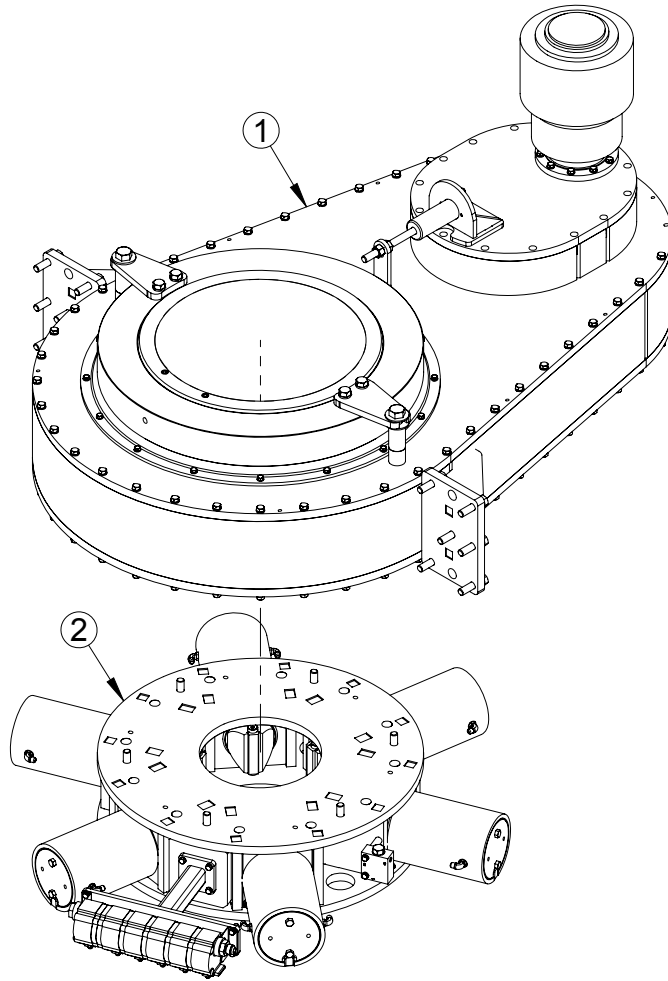
Item #	Qty.	Part Number	Part Name
1	2	1112	1/2"-13 x 1 1/2" HHCS
2	2	260	5/8-11 x 3 SHCS
3	1	400-3000	CYLINDER BLOCK HOUSING WELDMENT
4	1	401-3000-02	END PLATE
5	1	402-3000	STANDARD JAW HOLDER
6	1	403A-3000-2	PISTON ASSEMBLY
7	1	404-3000	SEAL PLATE WELDMENT
8	1	405-3000	SPLIT RING
9	2	408-3000	1/2" WASHER
10	2	91253B	SHCS Flat 1/2"-13 x 7/8"
11	4	400-3001	DOWEL PIN, 3/4" X 1" LG
12	1	400C-3000	SEAL KIT
13	1	DTI1602	1.250W X .500T X 5.000L
14	1	1717	3/8 MJIC X O-RING BOSS ADAPTER STRAIGHT
15	2	1687	3/8" O-RING x 3/8" MJIC ELBOW

SEALS KIT		
12A	W65001500	WEAR BAND
12B	BN70437	O-RING
12C	PS1800-104	PISTON SEAL
12D	W55001000	WEAR BAND
12E	2500-5250-562	ROD SEAL
12F	D-5250	WIPER SEAL
12G	8-436	O-RING BACK UP
12H	W55001000	WEAR BAND
12J	2-346	O-RING



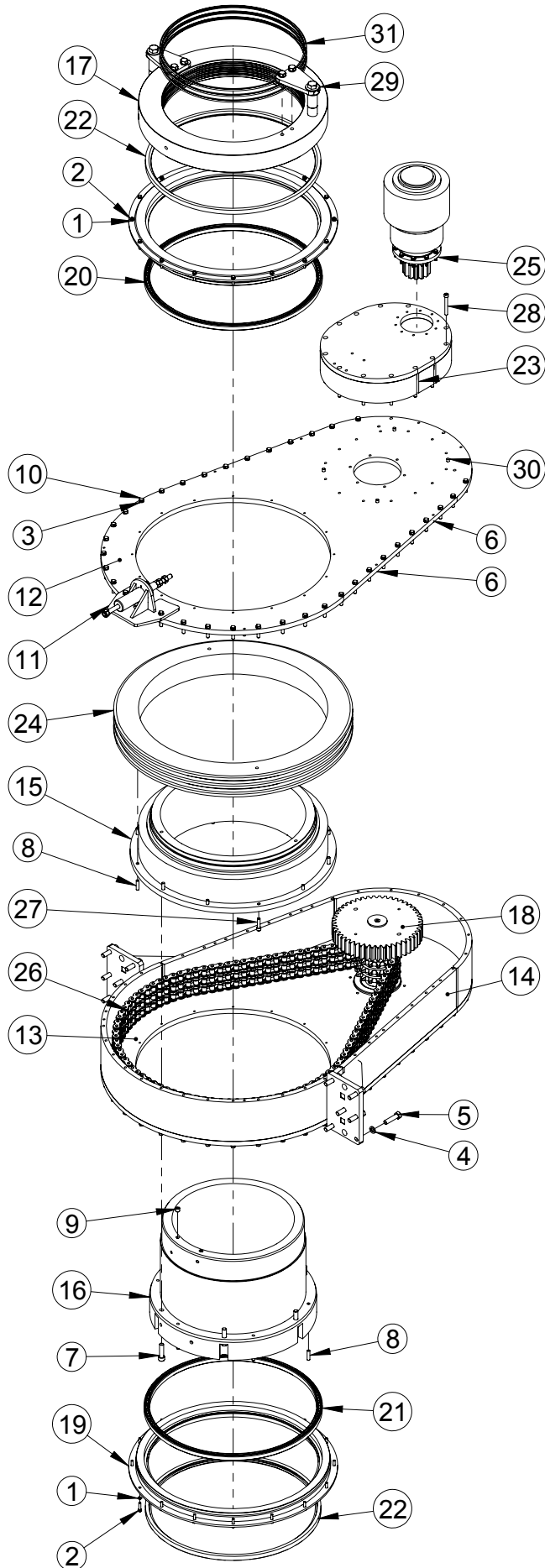
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200-7012-1
Head Stock / Vise Assembly

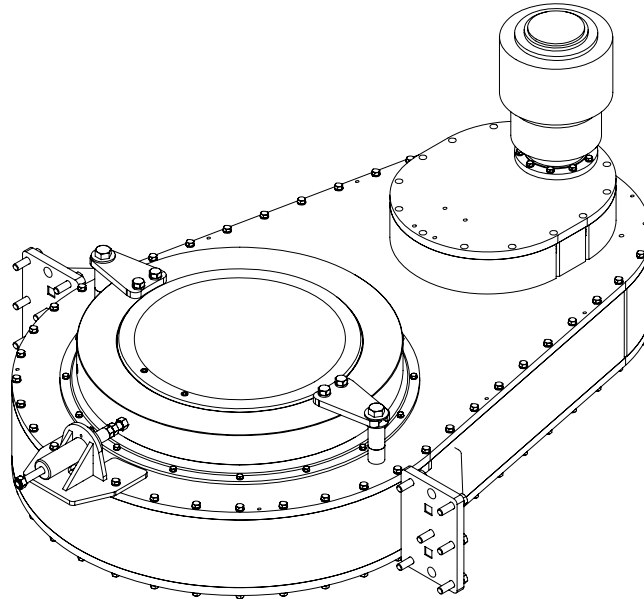


Item #	Qty.	Part Number	Part Name
1	1	200-7000-22B	INVERTED 22" TONG ASSEMBLY W/ SAI GEARBOX
2	1	240-7012-1	12-3/4" VISE/HUB ASSEMBLY

200-7000-22B
Tong Assembly

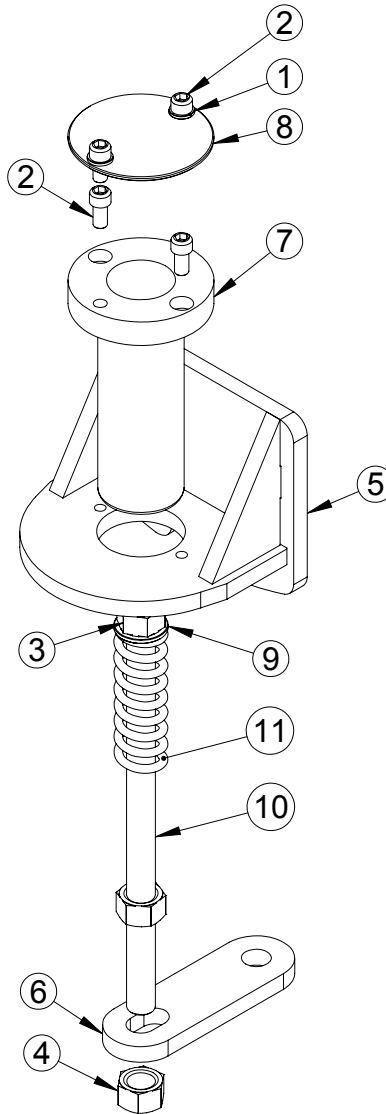


200-7000-22B
Tong Assembly



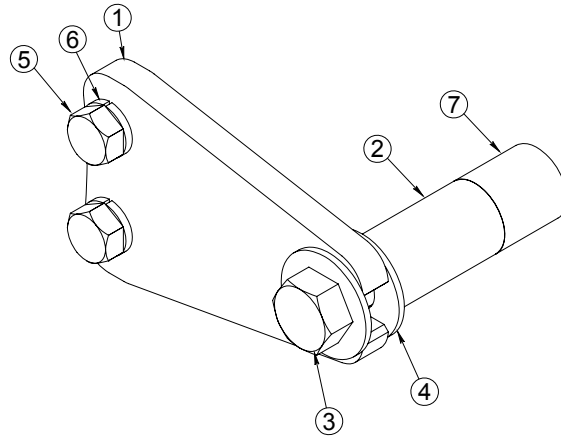
Item #	Qty.	Part Number	Part Name
1	32	1027	WASHER, LOCK 3/8"
2	32	1049	3/8"-16 X 1 1/2" HHCS
3	80	1103	1/2" LOCKWASHER
4	12	1171	3/4" LOCKWASHER
5	12	1176	3/4"-10 X 3" HHCS
6	16	1309	DOWEL PIN 3/8" x 1-1/4"
7	6	1325	3/4-10 x 2 3/4 SHCS
8	18	1333	DOWEL PIN 1/2" X 2"
9	4	1609	3/8" NPT PLUG
10	80	173	1/2"-13 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

2000-7000-01
Swivel Support Assembly



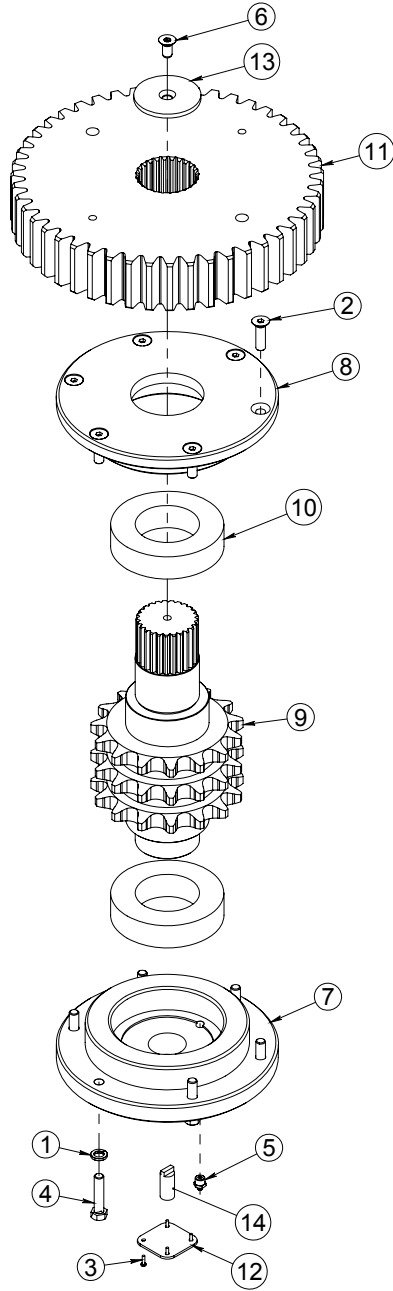
Item #	Qty.	Part Number	Part Name
1	2	1027	WASHER, LOCK 3/8"
2	4	1040-A	3/8-16 x 3/4 SHCS
3	1	1167	3/4-10 NYLOCK HEX NUT
4	1	1176-A	3/4" GR. 8 NUT
5	1	2001-7000-01	HANGER WELDMENT
6	1	2002-7000-01	HANGER LINKAGE PLATE
7	1	CB2322	SPRING TUBE
8	1	CB2323	SPRING COVER
9	1	CB2324	SPRING WASHER
10	1	CB2325	THREADED LIFTING ROD WELDMENT
11	1	CB2326	COMPRESSION SPRING

2700-7000
Swivel Keeper Assembly

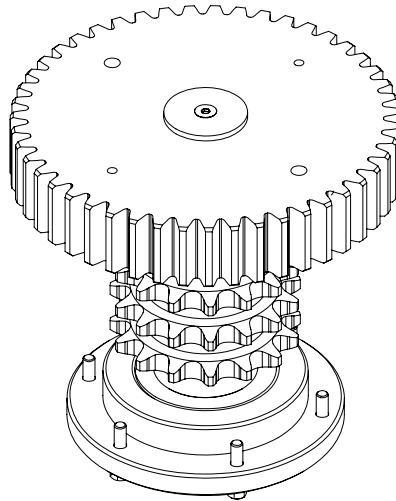


Item #	Qty.	Part Number	Part Name
1	1	2701-7000	BOLT-ON SWIVEL KEEPER
2	1	2702-7000	SWIVEL SPACER TUBE
3	1	74073	1"-8 X 6" HHCS
4	2	1249	1" FLAT WASHER
5	2	1173	3/4"-10 x 1 3/4" HHCS
6	2	1171	3/4" LOCKWASHER
7	1	2753A-7000	ANCHOR FOR SWIVEL KEEPER ASSY.

207-7000-2 Pinion Sprocket Assembly

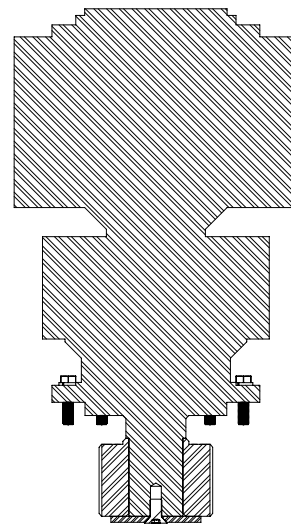
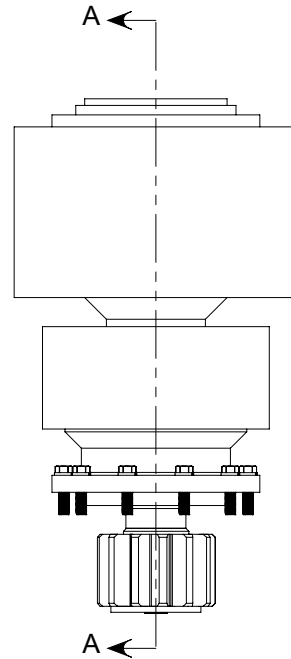
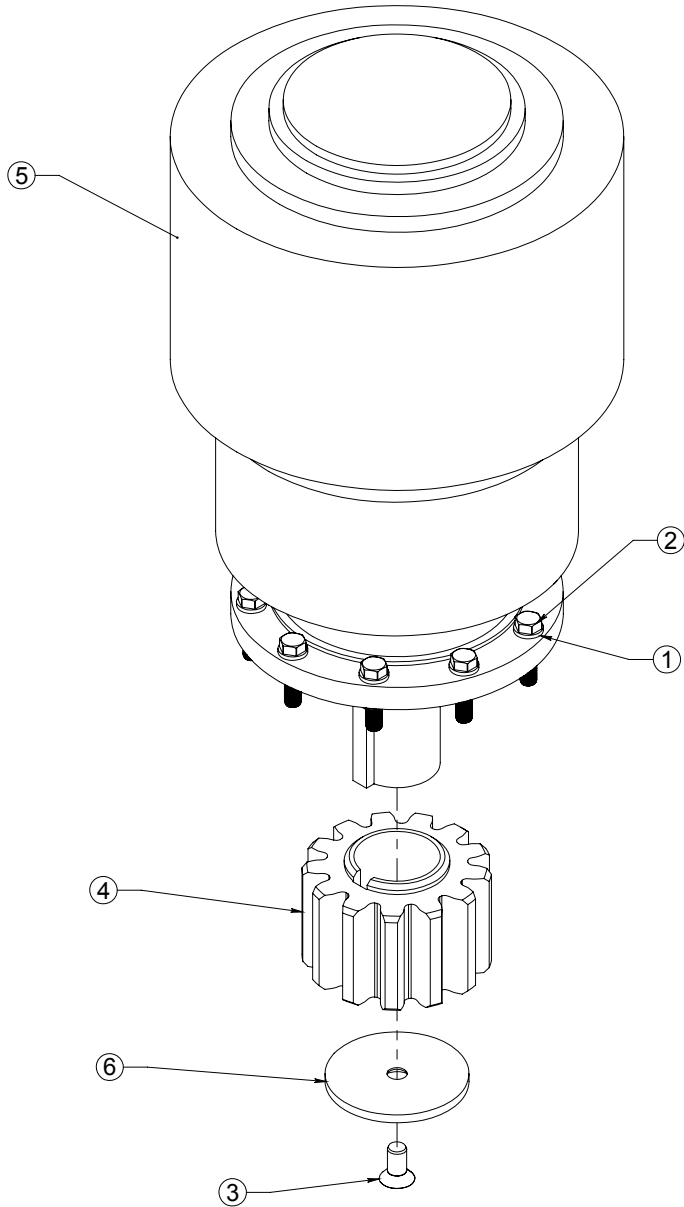


207-7000-2
Pinion Sprocket Assembly



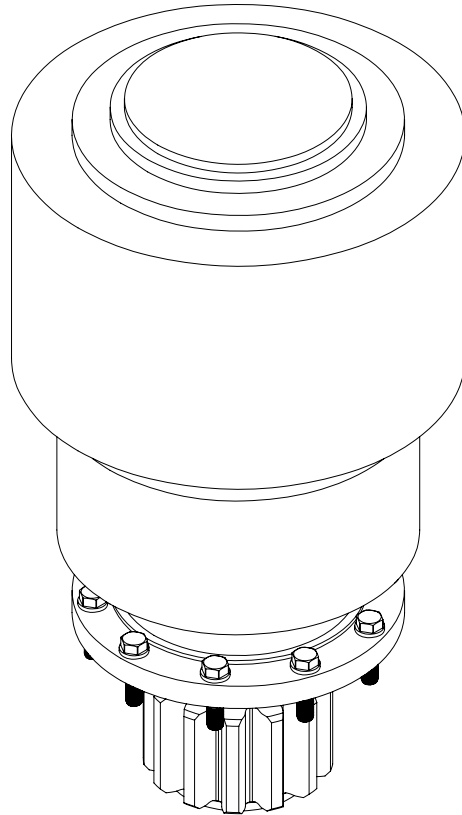
Item #	Qty.	Part Number	Part Name
1	6	1103	1/2" LOCKWASHER
2	6	1132-B	SCHCS 1/2"-13 X 1 3/4"
3	4	1276-B	#6-32 X 3/8" MACHINE SCREW
4	6	173	1/2"-13 x 2 1/4" HHCS
5	2	1771	1/4" NPT GREASE ZERT
6	1	1772	SHCS Flat 1/2"-13 x 1"
7	1	206A-7000-01	HEADSTOCK BEARING CAP
8	1	208-7000	HEADSTOCK TOP BEARING CAP
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



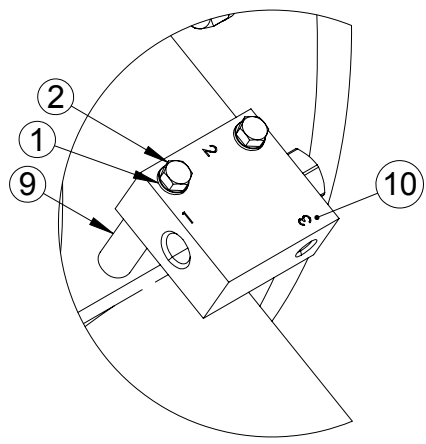
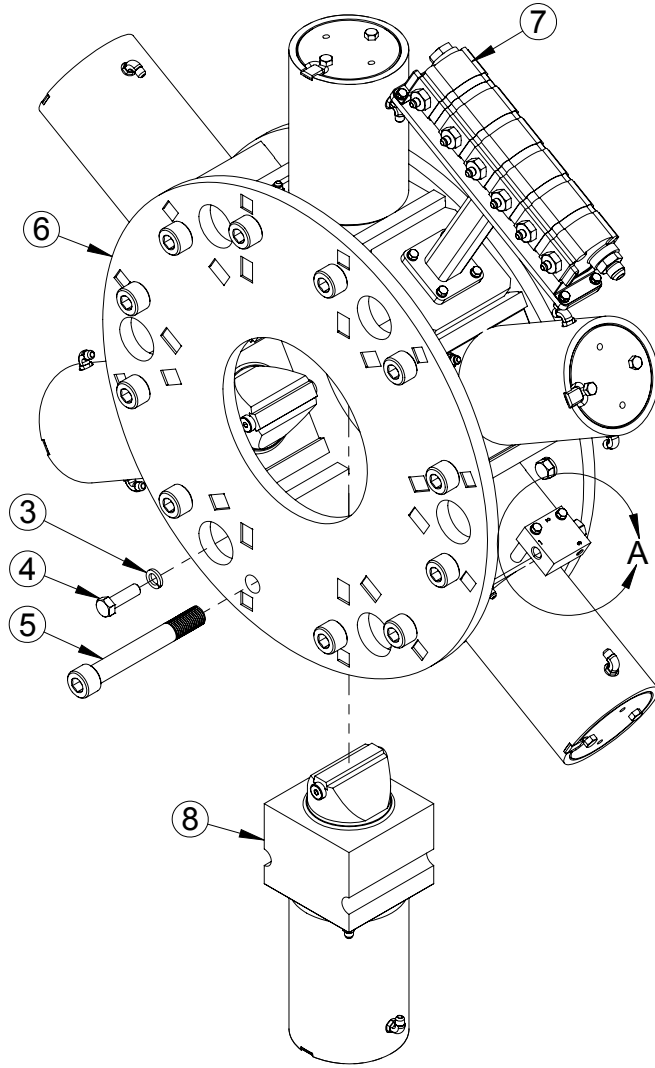
SECTION A-A
SCALE 1 : 8

235-7000-1
Drive Gear Assembly



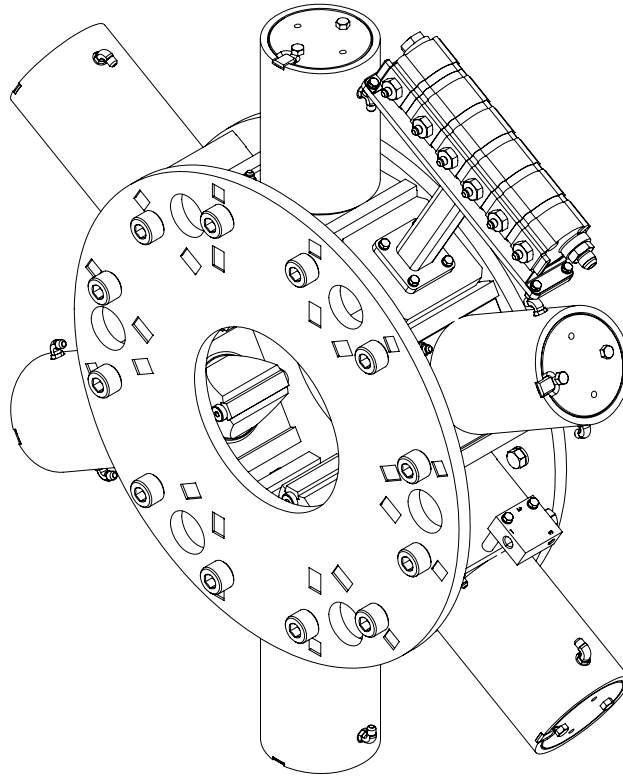
Item #	Qty.	Part Number	Part Name
1	10	1081	7/16" LOCKWASHER
2	10	1085-A	HHCS 7/16"-20
3	1	1132-C	SHCS Flat 1/2"-20 x 1"
4	1	209C-7000	MOTOR DRIVE GEAR
5	1	235-7000	HYDRAULIC MOTOR
6	1	507D-7000	DRIVE GEAR RETAINER

240-7012-1
Vise/Hub Assembly



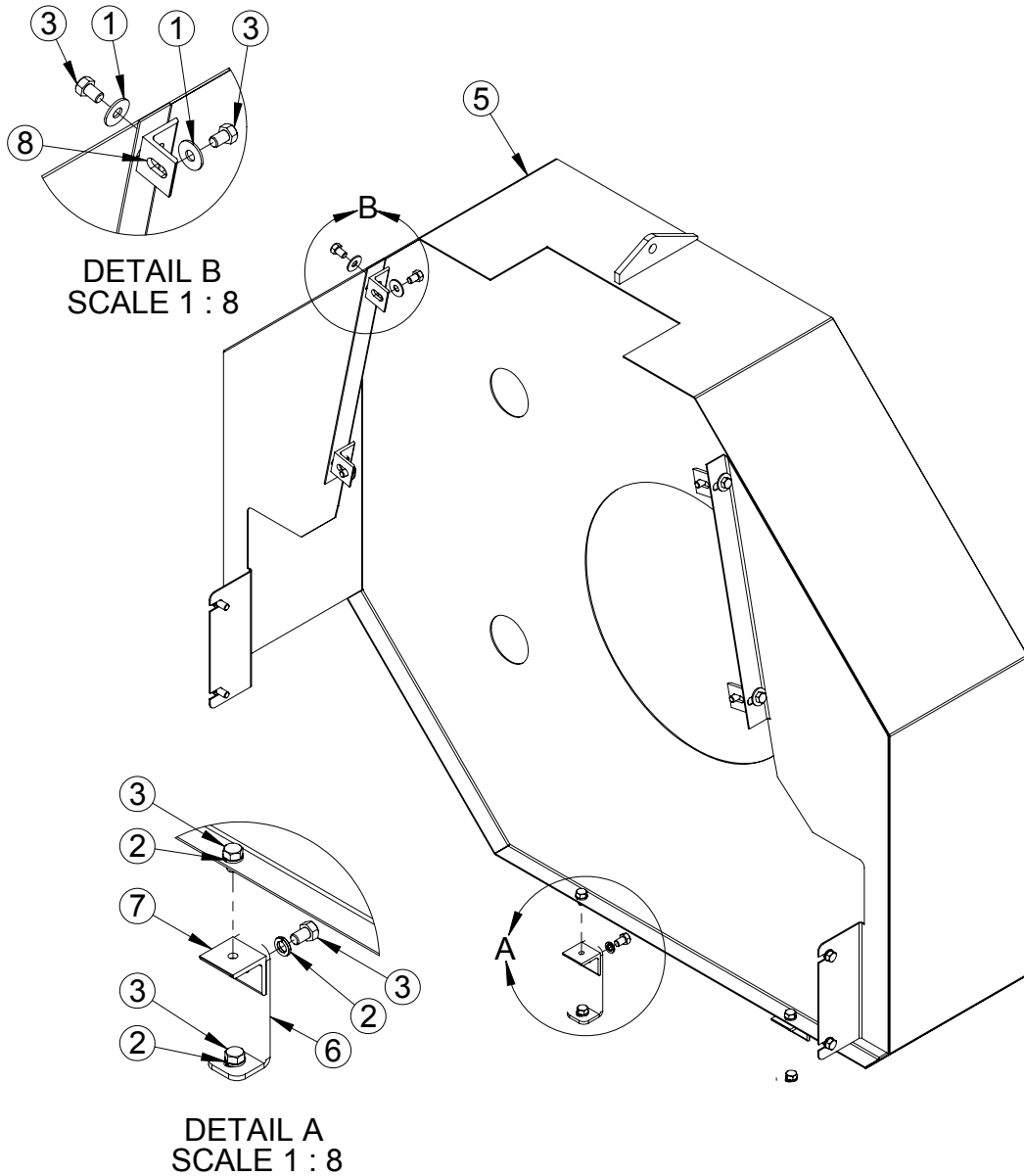
DETAIL A
SCALE 1 : 4

240-7012-1
Vise/Hub Assembly



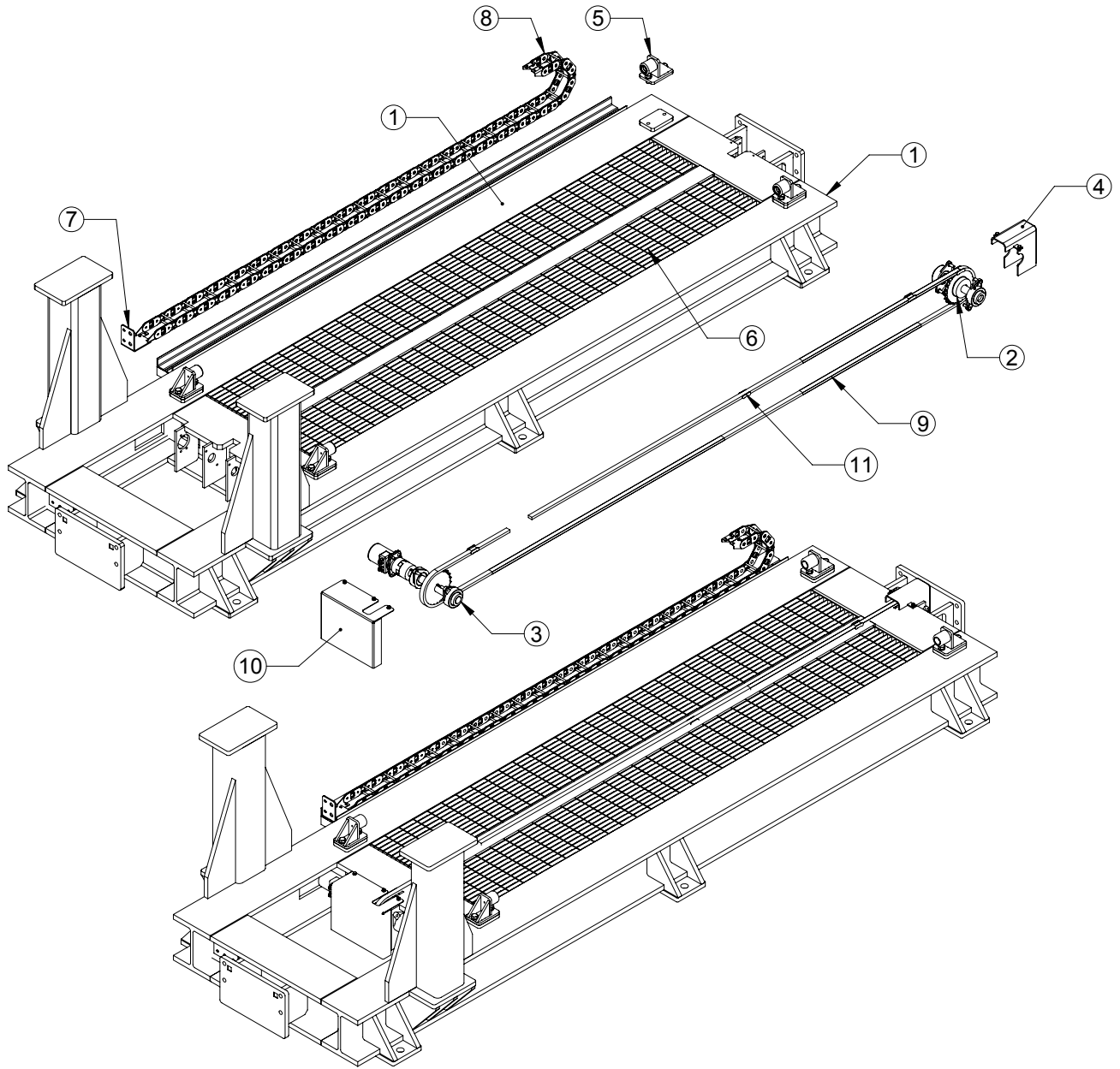
Item #	Qty.	Part Number	Part Name
1	2	1027	WASHER, LOCK 3/8"
2	2	1050	HHCS 3/8"-16 X 2"
3	6	1171	3/4" LOCKWASHER
4	6	1183	3/4"-10 x 2 1/2 HHCS
5	12	222-7022	MODIFIED BOLT.
6	1	240-7012	12-3/4" HEADSTOCK VISE WELDMENT
7	1	253-7000-1	FLOW DIVIDER MOUNT ASSEMBLY
8	6	400-3000-1	CLAMP CYLINDER ASSEMBLY
9	2	73180	VALVE LEG, 2" LONG
10	1	BUC5524	PILOT OPERATOR CHECK VALVE

3000-7000-3
Rotating Head Guard Assembly



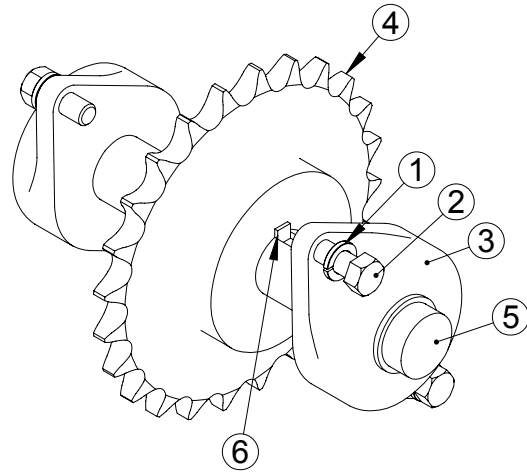
Item #	Qty.	Part Number	Part Name
1	8	1102	1/2" FLAT WASHER
2	10	1103	1/2" LOCKWASHER
3	14	1109	1/2"-13 x 1" HHCS
4	4	1110	1/2"-13 x 1" HHCS
5	1	3110-7000-02	ROTATING HEAD GUARD WELDMENT
6	2	3120-7000-S1	BOTTOM MOUNT BRACKET
7	2	3120-7000-S2	L BRACKET
8	4	3120-7000-S3	TONG COVER MOUNT

500-7012-15
15' Skid Assembly



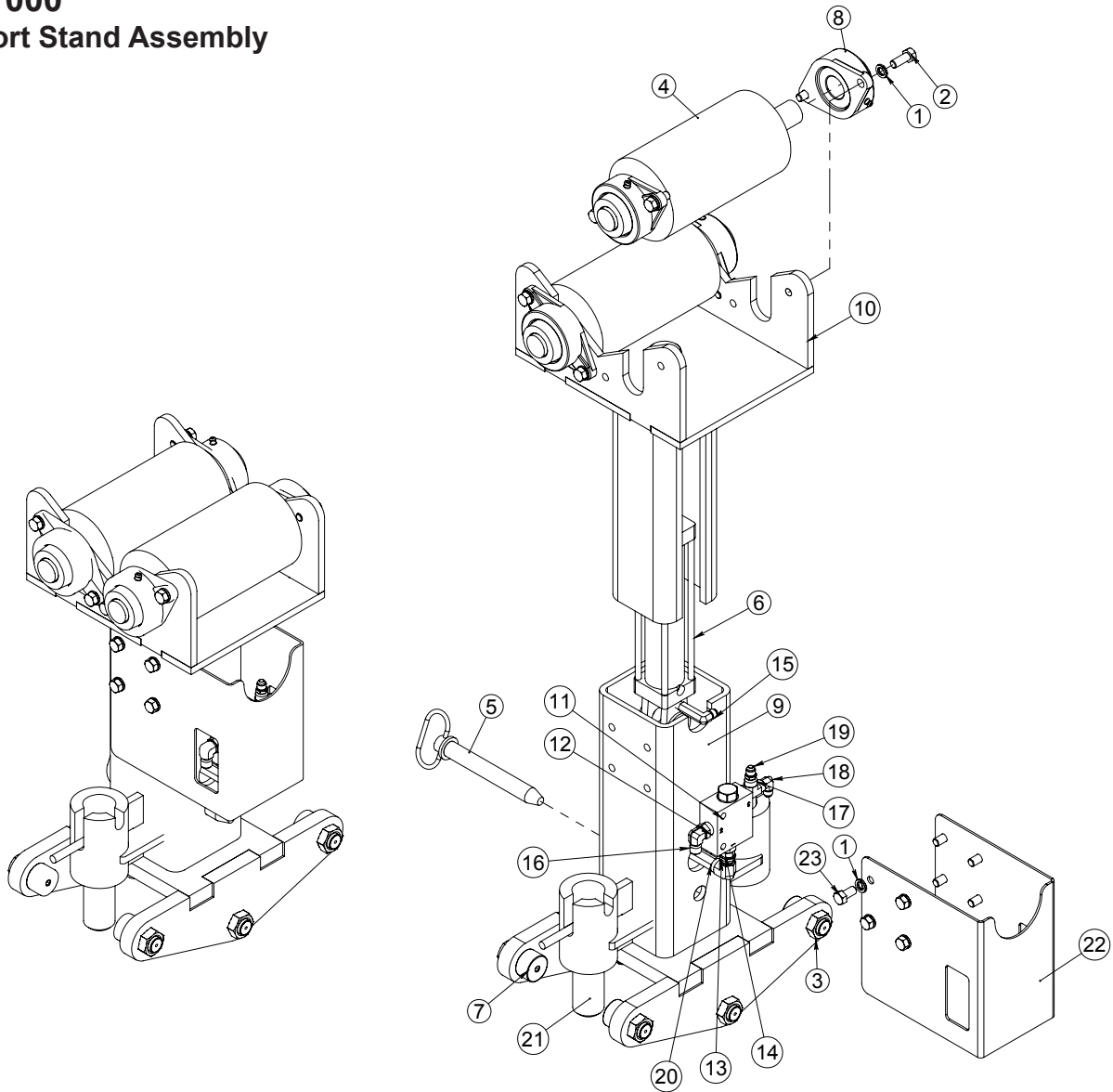
Item #	Qty.	Part Number	Part Name
1	1	500A-7012-15	15' SKID WELDMENT F/ 22" BORE BREAKOUT UNIT
2	1	508-3000-1	IDLER SPROCKET ASSEMBLY
3	1	509-3000-1	DRIVE SPROCKET ASSEMBLY
4	1	515-7000-1	SPROCKET COVER ASSEMBLY
5	4	540-3000	BUMPER STOP ASSEMBLY
6	2	552A-7000-03	124-3/16" x 13-5/8" x 1" GRATING
7	1	522-6000	FIXED BULKHEAD PLATE
8	1	550C-3000-06	HOSE CARRIER
9	4	556-7000	10' TRAVEL CHAIN
10	1	571-7000-01	DRIVE SPROCKET COVER ASSEMBLY
11	4	80CL	MASTERLINK 80C/L

508-3000-1
Idler Sprocket Assembly



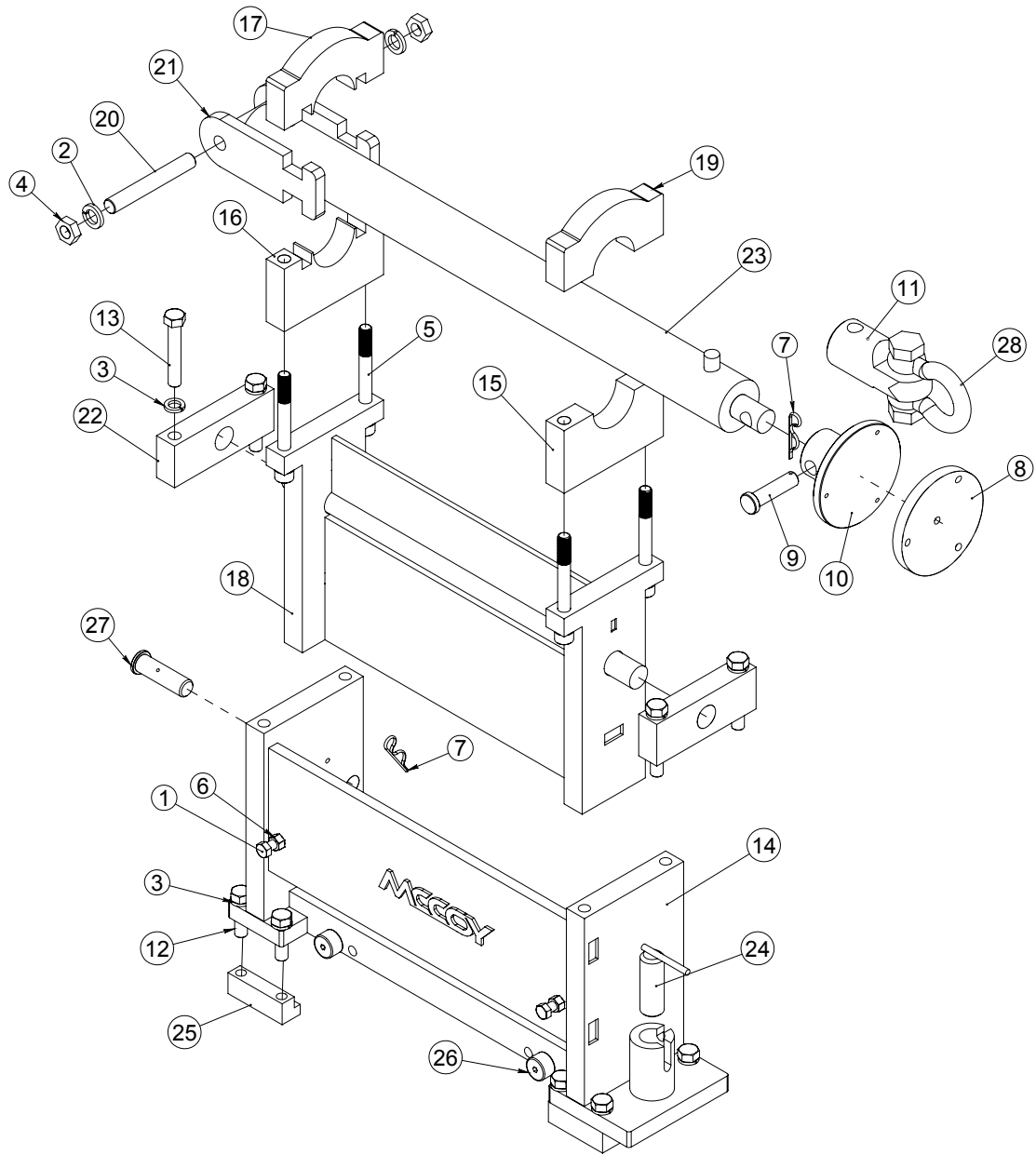
Item #	Qty.	Part Number	Part Name
1	4	1103	1/2" LOCKWASHER
2	4	1111	1/2"-13 x 1 1/4" HHCS
3	2	508-3000	1 1/2" BEARING
4	1	509-3000	TRAVEL SPROCKET
5	1	510B-3000	TRAVEL SPROCKET SHORT SHAFT
6	1	510C-3000	TRAVERSE SPROCKET KEY

930-7000 Support Stand Assembly

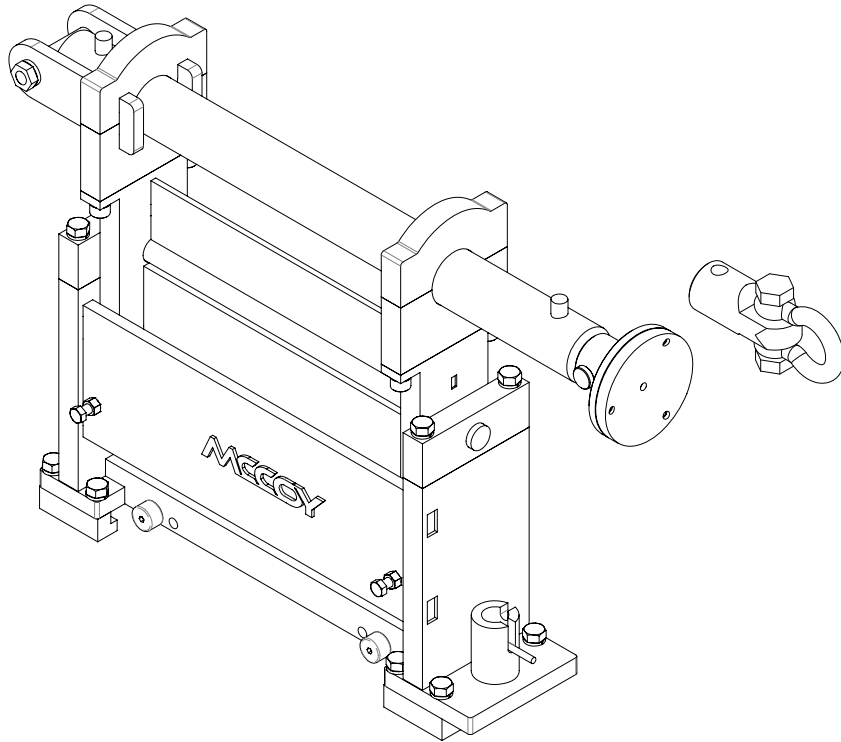


Item #	Qty.	Part Number	Part Name
1	16	1103	1/2" LOCKWASHER
2	8	1111	1/2"-13 x 1 1/4" HHCS
3	6	1323	1-14 NYLOCK JAM NUT (1323)
4	2	901A-3000-1	RED ROLLER
5	1	902B-3000-1	1" X 7 3/4" HITCH PIN
6	1	901D-3000-2	2" BORE CYLINDER WITH 8" STROKE
7	7	902D-3000-1	1 3/4" CAM FOLLOWER W/ 1" STUD
8	4	508-3000	1 1/2" SUPPORT STAND BEARING
9	1	940-7000	BOTTOM SECTION WELDMENT
10	1	950-7000	TOP SECTION WELDMENT
11	1	BUC5524	PILOT OPERATOR CHECK VALVE
12	2	1491	REDUCER BUSHING 1/2" X 3/8"
13	1	1579-A	3/8" FNPT X FNPT 90 (SWIVEL)
14	1	1457	3/8" HEX NIPPLE
15	1	2501-LL-06-06	3/8" MNPT X MJIC X-LONG 90 DEG
16	1	1577-A	90 3/8" MNPT X 3/8" MJIC
17	1	1594	1/4" RUN TEE
18	1	1576-A	1/4" MNPT x 3/8" MJIC ELBOW
19	1	1559	1/4" MNPT X 3/8" MJIC STRAIGHT
20	1	2404-LL-06-06	3/8" MJIC X 3/8" MNPT ST. EXTRA LONG
21	1	9112-7000-01	LOCKING PIN WELDMENT
22	1	905-3000	SUPORT STAND VALVE COVER
23	8	1110	1/2"-13 x 1" HHCS

9000-7000
Push Pull Assembly

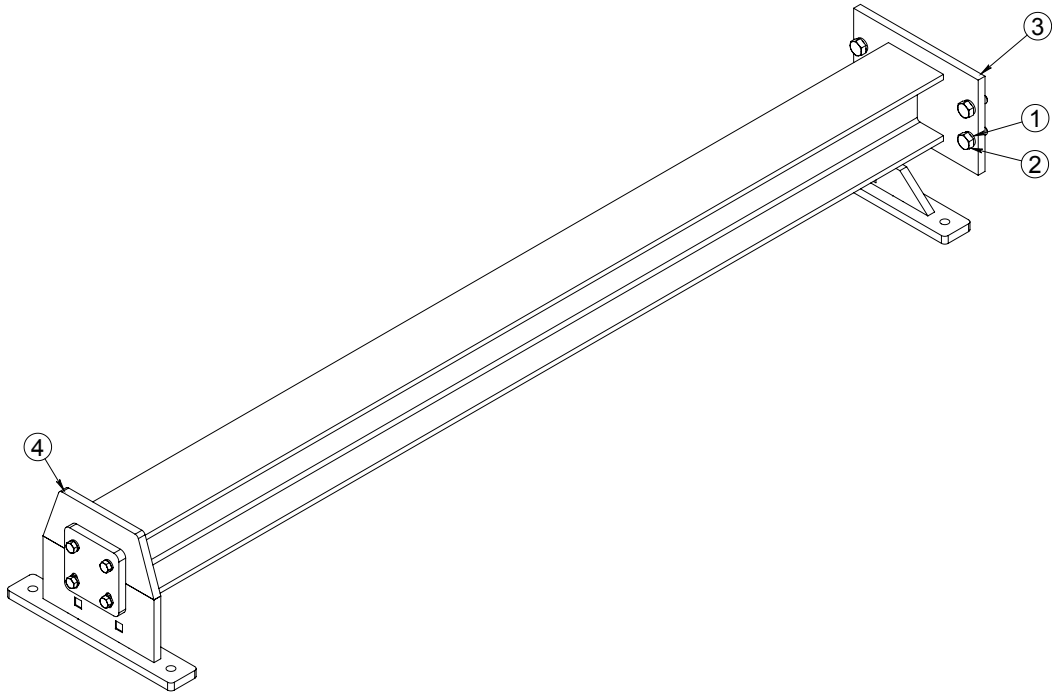


**9000-7000
Push Pull Assembly**



Item #	Qty.	Part Number	Part Name
1	2	1176	3/4"-10 X 3" HHCS
2	2	1216	1 1/4" LW
3	16	1218	1" LW
4	2	1268	1 1/4-7 HEX NUT
5	4	1851	SHCS 1"-8 X 9"
6	2	1176-A	3/4"-10 HEX NUT
7	2	6009	HAIRPIN COTTER PIN 0.243 F/1 1/8-1 1/2
8	1	606-7000	COVER TORQUE MACH
9	1	607A-6500	PUSH PULL COVER PIN
10	1	607-7000	PUSH PULL COVER WELDMENT
11	1	608-7000-01	PULL RING
12	8	74072	1"-8 X 3 1/2" HHCS
13	4	74073	1"-8 X 6" HHCS
14	1	9001-7000-02	BASE WELDMENT
15	1	9001B-4000	CYLINDER LOWER CLAMP 6" TALL
16	1	9001C-4000	CYLINDER LOWER CLAMP 6" TALL WITH SLOT.
17	1	9002-4000	CYLINDER UPPER CLAMP (PUZZLED)
18	1	9002-7000	TOP SECTION WELDMENT
19	1	9002A-4000	CYLINDER UPPER CLAMP
20	1	9003-4000	1.25"-7 THREADED ROD
21	2	9004-4000	FISHEYE CYLINDER CLEVIS
22	2	9041-7000	PUSH PULL PLATE#4
23	1	9071-7000	4" BORE HYDRAULIC CYLINDER
24	1	9112-7000	LOCKING PIN WELDMENT
25	4	9121-7000	PUSH PULL FEET
26	4	9171-7000-01	2" PUSH PULL CAM FOLLOWER ASSEMBLY
27	1	9181-7000	TILT PIN
28	1	1250SHACKLE	1 1/4" 12 TON BOLT TYPE SHACKLE

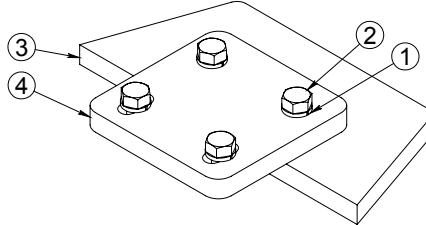
1300-7000-1
10' Extension Beam Assembly



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

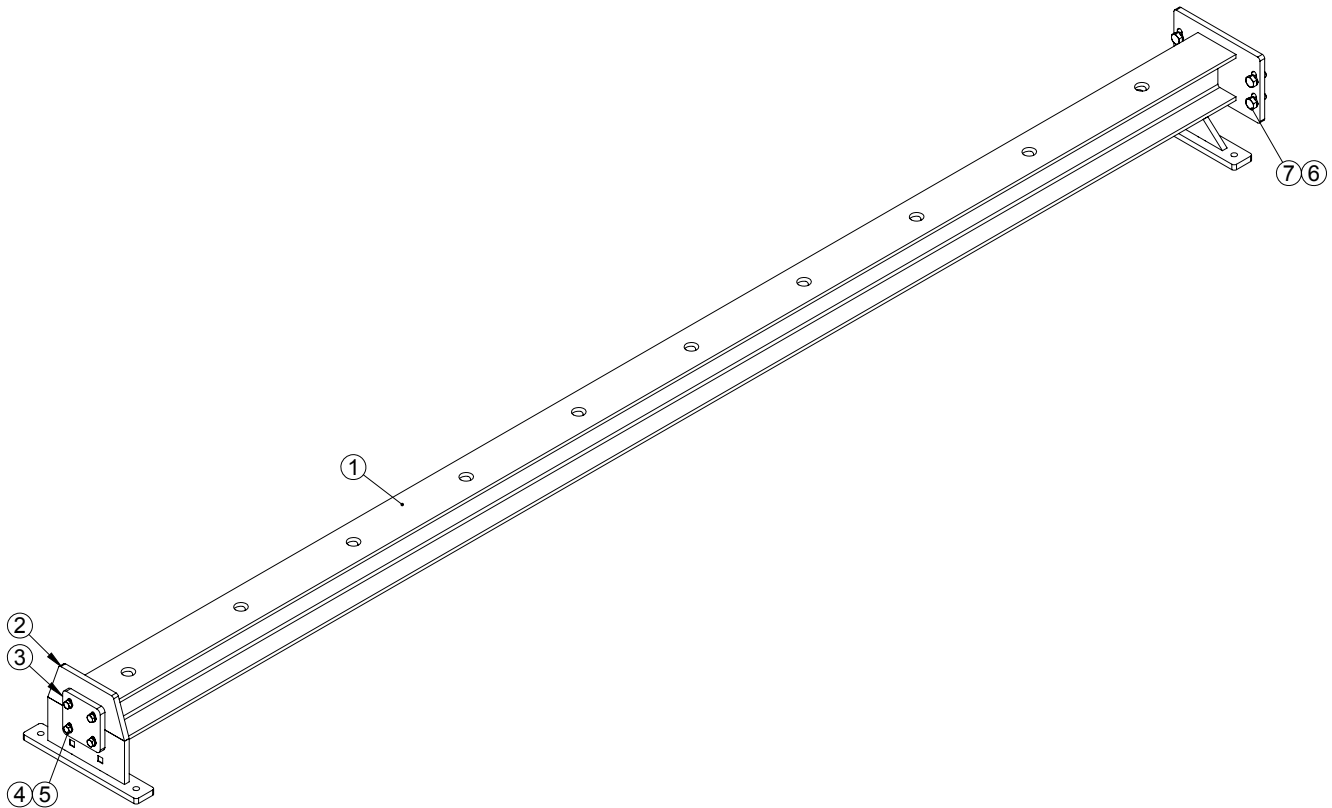
1303-7000

Extension Beam End Plate Assembly



Item #	Qty.	Part Number	Part Name
1	4	1171	3/4" LOCKWASHER
2	4	1174	3/4"-10 X 2 1/4" HHCS
3	1	1303A-7000	EXTENSION BEAM END PLATE
4	1	1303B-7000	EXTENSION BEAM BOLT PLATE A36

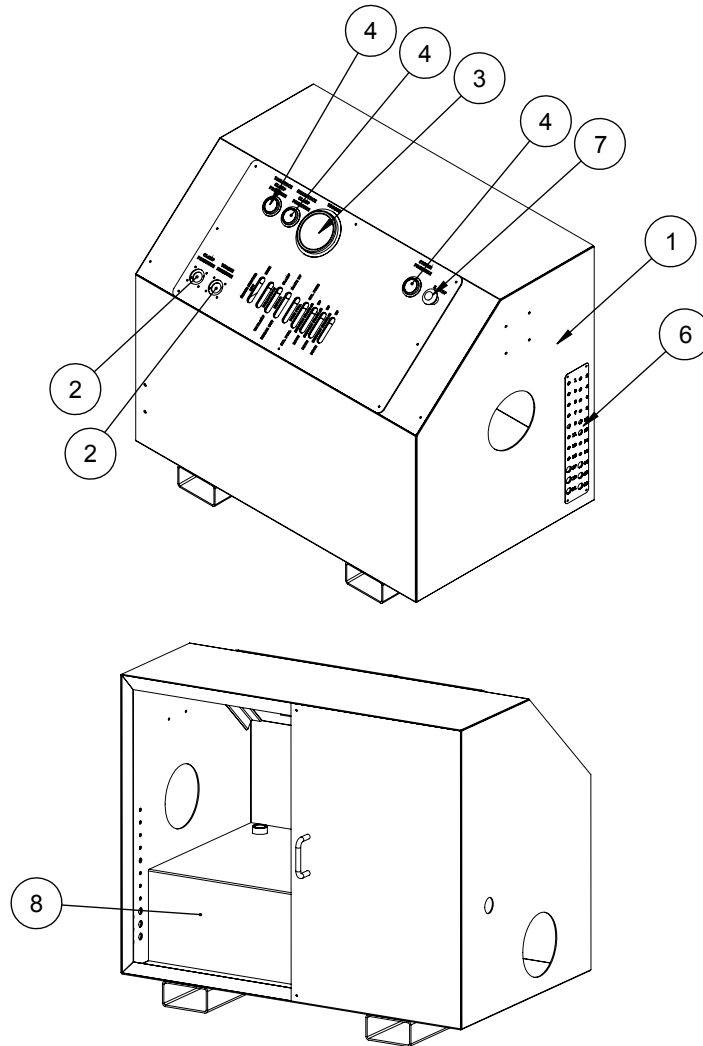
1300-7000-1-02
20' Extension Beam Assembly



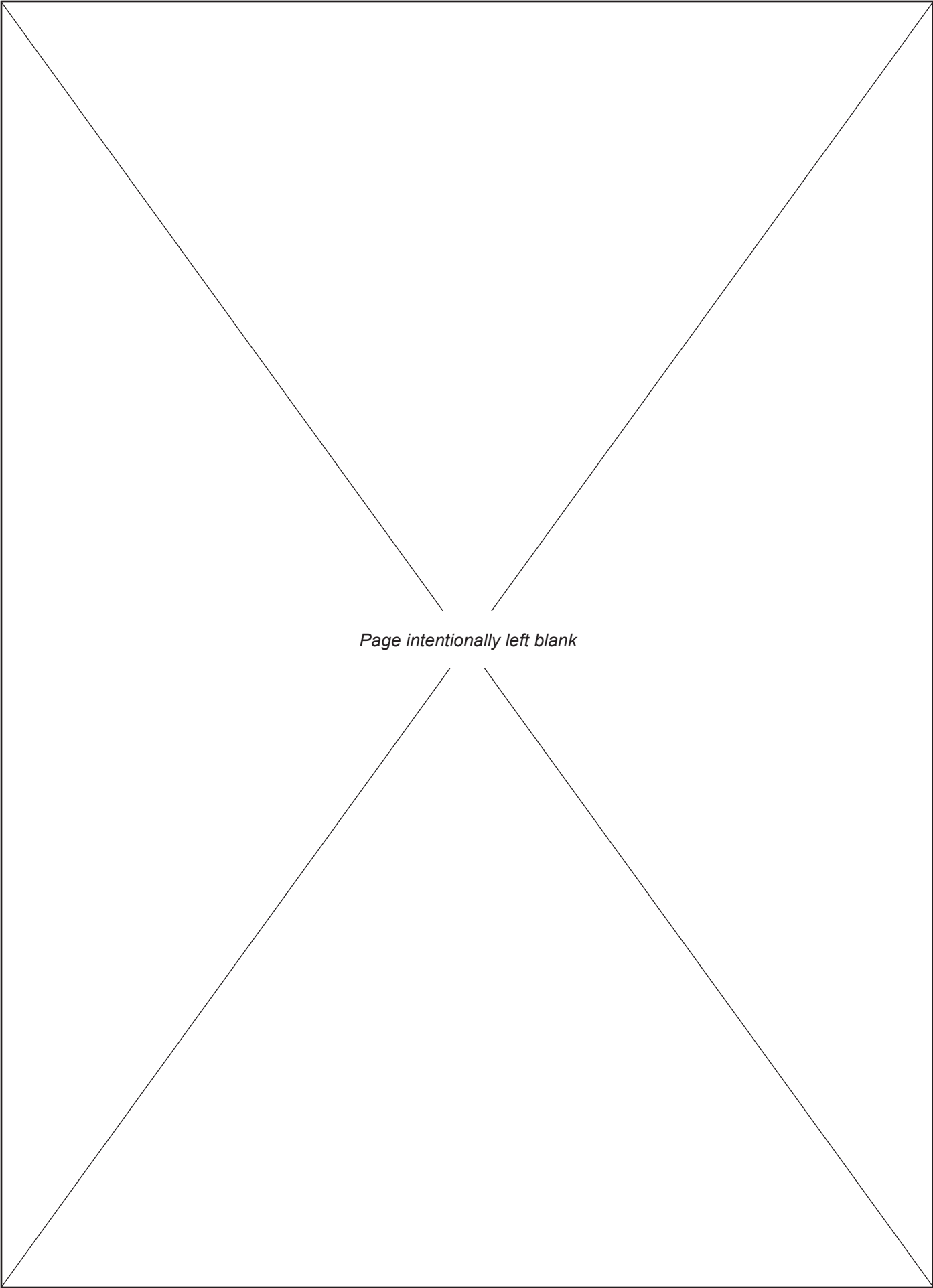
Item #	Qty.	Part Number	Part Name
1	1	1300-7000-02	20 FEET EXTENSION BEAM WELDMENT
2	1	1303A-7000	EXTENSION BEAM END PLATE
3	1	1303B-7000	EXTENSION BEAM BOLT PLATE A36
4	4	1171	3/4" LOCKWASHER
5	4	1174	3/4"-10 X 2 1/4" HHCS
6	4	1218	1" LW
7	4	1264	1"-13 X 2.5" HHCS

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



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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

Solution

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

- B) Low fluid level

Add fluid to proper volume.

- C) Air leak

Locate and repair leak.

- D) Pump speed insufficient

Assure proper pump speed for application.

- E) Damaged or worn equipment

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

- F) Pump not primed

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

- G) Low or no flow from supply line

Check to assure couplings are securely fastened.

Insufficient Torque:

Problem

- A) Relief valve malfunctioning

Solution

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:

<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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