

INSTALLATION AND PARTS MANUAL

MODEL PA56 WITH ELECTRONIC CONTROLS

FOR D6R & D6R SERIES II PS TRACTORS

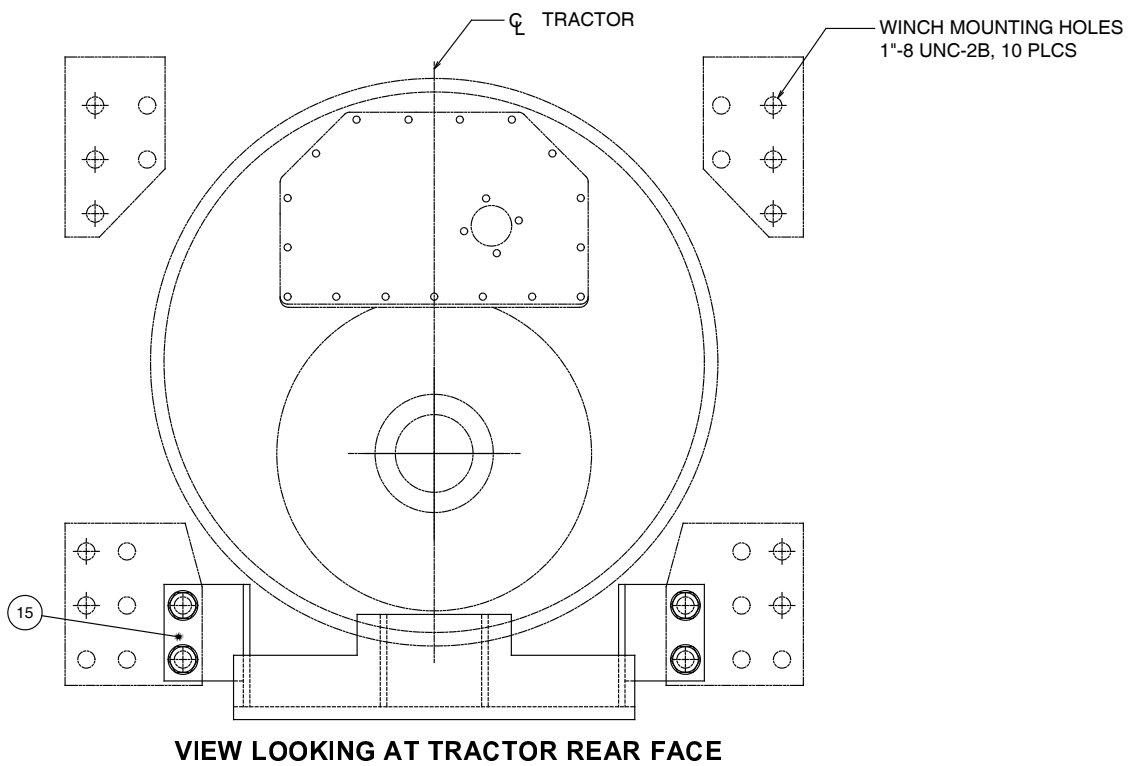
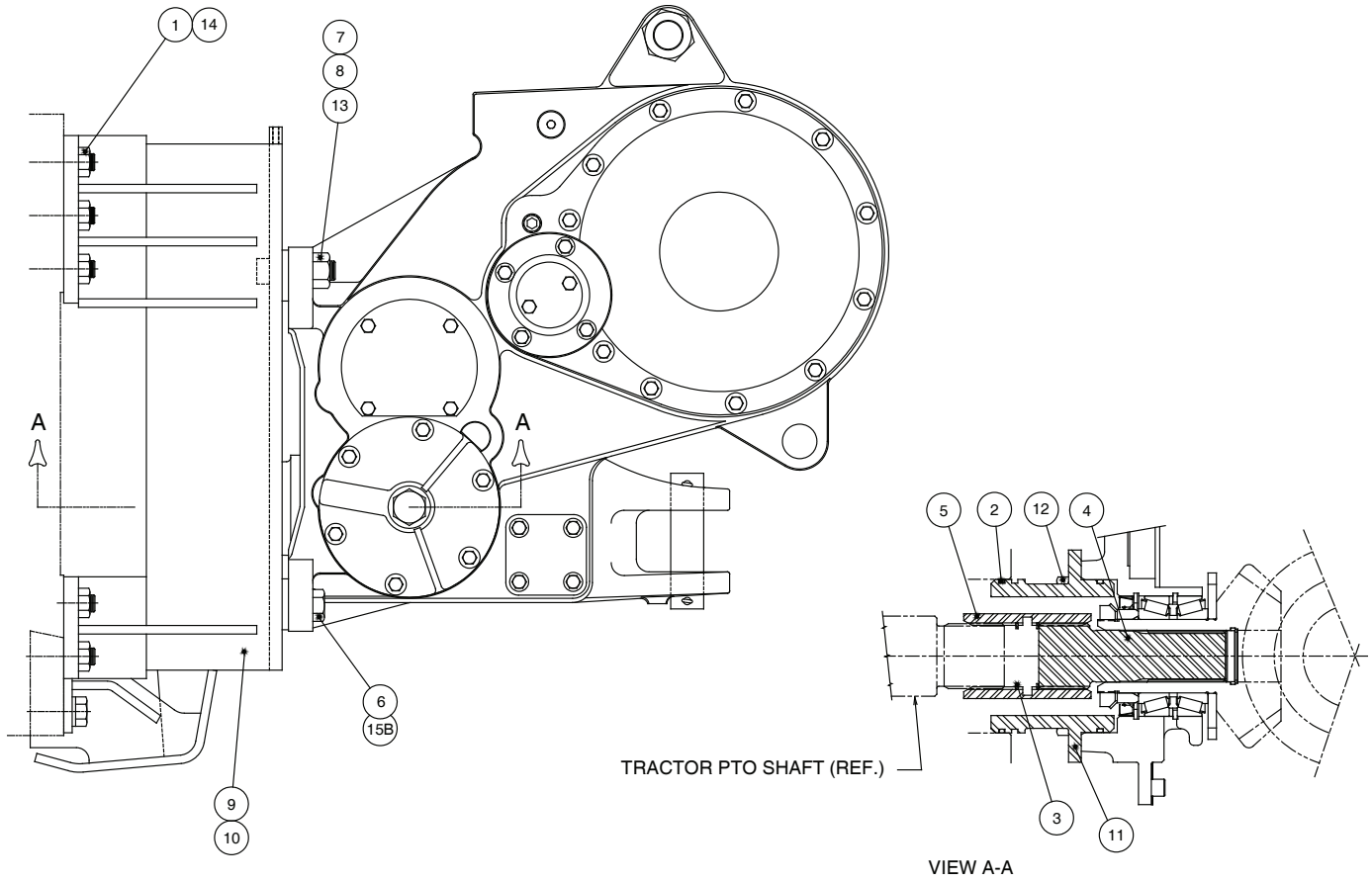
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MODEL NUMBER DESCRIPTION

PA56	B	0	0	1	0	0	E
Basic Winch Model	Bevel Gear Ratio B-1.27:1 E-2.78:1	0-Overwind	0-Standard Brake	1-With Freespool	0-Four Shaft Winch	0-No Fairlead 3-3 Roller Fairlead 4-4 Roller Fairlead	E-Electronic Control

**PA56
MOUNTING GROUP
D6R PS**



MOUNTING GROUP INSTRUCTIONS

1. PTO rotation is counterclockwise (CCW) as viewed from the rear of the tractor.
2. Remove and discard the tractor PTO cover.
3. Remove paint, dirt, rust and grease from mounting surfaces of tractor, winch and winch adapters.
4. Coat splines of PTO shaft (4), with multi-purpose grease and install into bevel pinion gear of winch.
5. Install retaining rings (3), in coupling (5). Place coupling over PTO shaft with bevel end away from winch.
6. Install O-rings (2), onto PTO pilot (11).
NOTE: As the same PTO pilot may be used on several adaptations, usually only one O-ring groove will engage and seal in the tractor PTO opening.
7. Remove winch top cover to gain access to the bevel gears.

⚠ WARNING ⚠

Winch weighs approximately 2500 lb (1134 kg) without oil, cable or tractor adapters. Make certain lifting equipment has adequate capacity to eliminate the possibility of damage or injury. Attempting to lift the winch with inadequate equipment may result in personal injury or property damage.

8. Apply Loctite 271, 277 or equivalent to threads and install studs (8) into winch adapter to a height of 2-1/2 in. (64 mm).
9. Apply Loctite 271, 277 or equivalent to threads and install studs (1) into rear face of tractor to a height of 1.80 in. (46 mm).

10. Apply Loctite 242, 243 or equivalent to the threads of capscrews (6), and studs (8), then install the winch adapter brackets onto the winch. At this time, only tighten the capscrews (6), and nuts (7), to approximately 50 lb•ft (68 N•m).
11. Apply general purpose grease to the PTO pilot o-ring. Lift winch into position and install onto rear of tractor taking care to guide the PTO shaft/coupling onto the tractor PTO shaft. It may be necessary to rotate the winch bevel pinion gear to align the winch shaft with the tractor shaft. Keep the winch in a level position to avoid binding of the PTO shafts.
12. Apply Loctite 242, 243 or equivalent to studs (8) and tighten nuts (7) to 600 lb.ft. (815 N•m) torque. Tighten capscrews (6) to 680 lb•ft (920 N•m) torque. If torque wrench adapters are not available for tightening the nuts (7), they may be tightened as follows: Tighten nut with a hand wrench to approximately 100 lb.ft. (136 N•m) torque to remove all looseness from assembly. Mark the position of a wrench flat on each nut, then tighten each nut one (1) additional wrench flat. Tighten nuts (14) to 660 lb.ft. (900 N•m) torque.

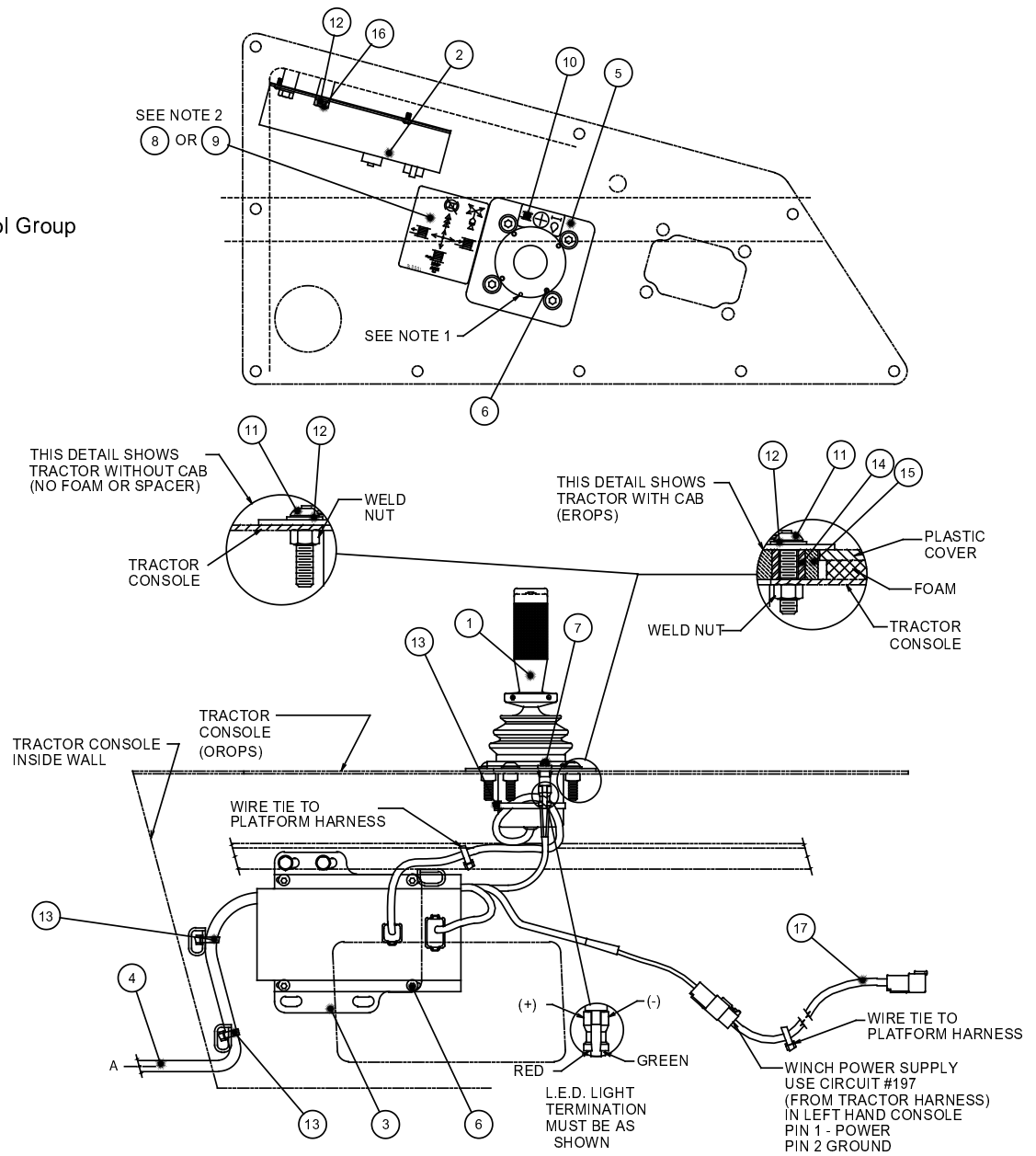
⚠ WARNING ⚠

DO NOT start the tractor engine until the winch has been filled to the proper level with the recommended oil. Bearing and gear damage may result if the tractor is run without oil in the winch.

ITEM	PART NO	DESCRIPTION	QTY.
1	119-0171	STUD (1 - 8 X 3-1/4 G8)	10
2	8S-5654	O-RING	2
3	002-3455	RETAINING RING	2
4	118-6595	PTO SHAFT	1
5	118-5863	COUPLING	1
6	7X-0406	CAPSCREW, HEX HEAD (1 - 8 X 3 G8 Z)	4
7	4J-5977	NUT, HEX (1-1/8 - 7)	4
8	133-9224	STUD (1-1/8 - 7 X 4-3/4)	4
9	118-6929	ADAPTER, RH	1
10	118-6930	ADAPTER, LH	1
11	118-6537	PILOT, PTO	1
12	5P-2228	CAPSCREW, HEX HEAD (1/2 - 13 X 1 G8 Z)	4
13	7X-0531	WASHER, HARDENED (1-1/8)	4
14	6V-8190	NUT, HEX (1 - 8)	10
15	3W-1356	ECOLOGY DRAIN GROUP (INCLUDES ITEMS 15A, B & C)	1
15A	3W-1357	GUARD	1
15B	8T-5361	WASHER, HARDENED (1)	8
15C	7X-0400	CAPSCREW, HEX HEAD (1 - 8 X 1-1/2 G8 Z)	4

**PA56
CONTROL GROUP
D6R PS**

D6R Series II Control Group
on Page 7.



NOTES:

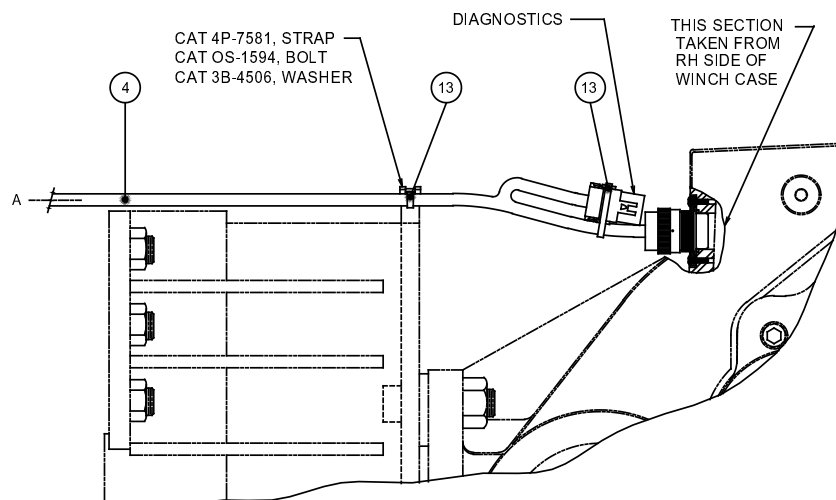
1. DRILL POINT IN DUAL AXIS CONTROLLER (ITEM 1) **MUST** BE LOCATED AS SHOWN.

2. CONTROL DECAL (ITEM 8) USAGE AS FOLLOWS:

WINCH WITHOUT FREESPOOL USES DECAL P/N 138-2454

WINCH WITH FREESPOOL USES DECAL P/N 138-2435

REFER TO WINCH MODEL CODE AND OPERATOR'S MANUAL FOR DETERMINATION OF SPECIFIC WINCH ASSEMBLY.



CONTROL INSTALLATION INSTRUCTIONS

⚠ CAUTION ⚠

Avoid routing the control cables near moving shafts or linkages, which may cause damage to the cables or restrict free movement of tractor components.

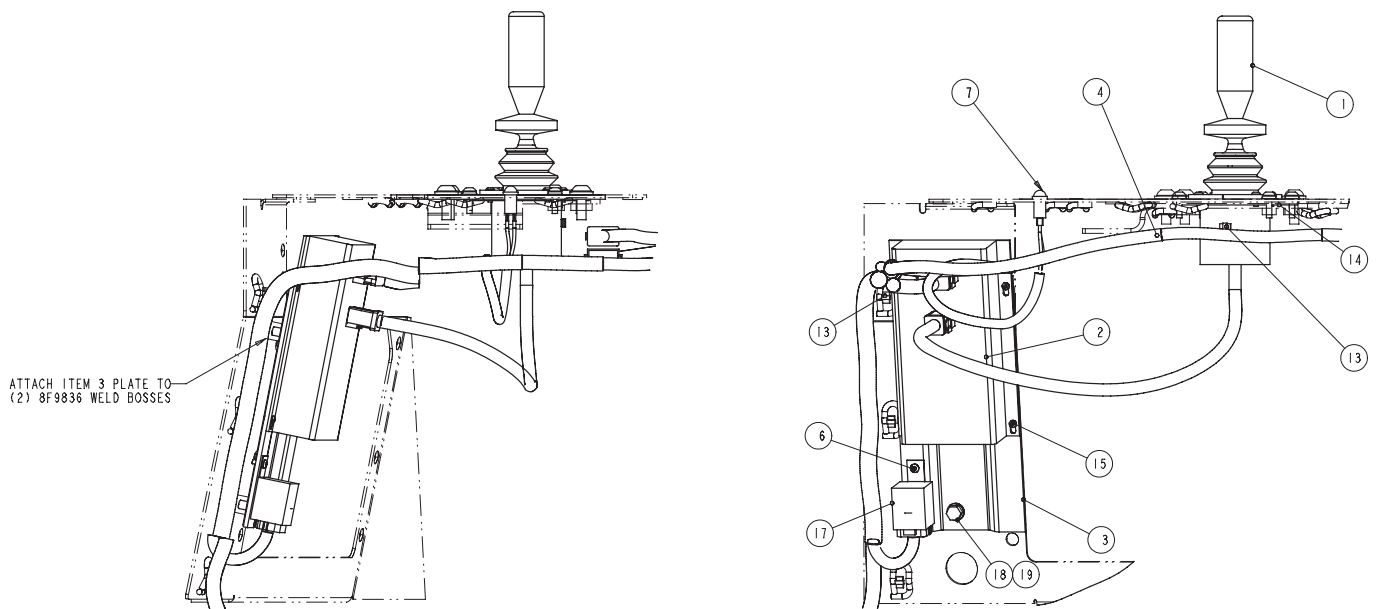
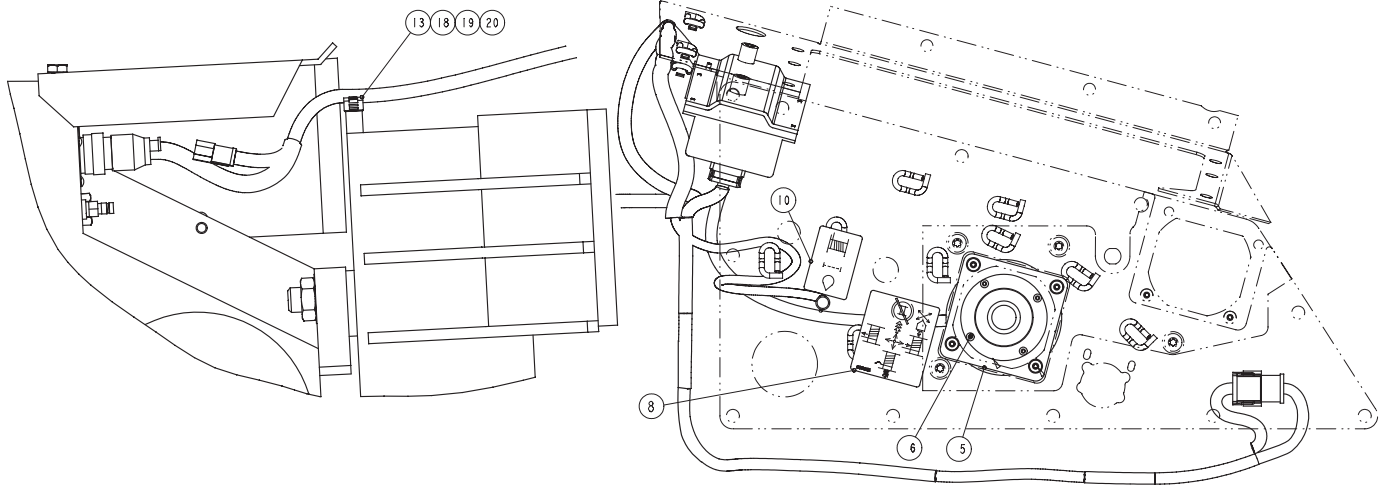
1. Attach dual axis controller (1), to controller mounting plate (5), with button head capscrews (6).
2. Remove RH tractor console.
3. Install control module (2), onto mounting plate (3), utilizing fasteners (6).
4. Install the control module and mounting plate on the RH console wall as shown, utilizing fasteners (12 and 16).
5. Install harness (4), in tractor as shown. Connect winch and control module ends of harness. Secure winch end of harness with strap, bolt, washer and wire tie strap (13), as shown. Secure harness at console wall with wire tie straps (13), as shown.
6. Install tractor console cover.
7. Attach dual axis controller and mounting plate to console cover with fasteners (11, 12 and 14). Note that spacer (14), is used only on cab equipped tractors.
8. Install decal (10), and indicator light (7), onto mounting plate.
9. Connect controller to control module and secure harness with wire tie straps (13).
10. Connect harness spade connectors to indicator light. Red wire must be connected to positive terminal of indicator light.
11. Insure tractor power is off. Connect harness to tractor power supply circuit 197.
12. Install correct decal (8 or 9) onto console cover.
13. Fill the winch to the proper level with recommended oil. Refer to the specifications found in the Operation and Preventive Maintenance Manual, publication SEBU7048 or Service Manual, publication SENR8463.
14. Start the tractor and operate the engine at low RPM for several minutes to allow the winch control system pressure to stabilize. Operate the winch in all functions as instructed in the Operation and Preventive Maintenance Manual, publication SEBU7048.

CONTROL GROUP PA56 WITH ELECTRONIC CONTROLS ON D6R

ITEM	PART NO	DESCRIPTION	QTY
1	163-3205	DUAL AXIS CONTROLLER	1
2	174-6251	CONTROL MODULE, EARLY DESIGN	1
	185-2054	CONTROL MODULE, CURRENT DESING	1
3	138-2426	MOUNTING PLATE	1
4	138-2427	WIRING HARNESS	1
5	147-2721	CONTROLLER MOUNTING PLATE	1
6	8T-9394	CAPSCREW, BUTTON HEAD (10 - 24 X 1/2)	8
7	138-2434	INDICATOR LIGHT	1
8	138-2435	DECAL, CONTROL WITH FREESPOOL*	1
9	138-2454	DECAL CONTROL WITHOUT FREESPOOL*	1
10	138-2441	DECAL, FILTER INDICATOR LIGHT	1
11	3E-8042	CAPSCREW, BUTTON HEAD (3/8 - 16 X 1-1/2)	4
12	8T-4896	WASHER, NARROW (3/8)	6
13	7K-1181	WIRE TIE STRAP	10
14	147-2722	SPACER (USED WITH CAB OPTION)	4
15	147-2726	GASKET (USED WITH CAB OPTION)	1
16	5M-3062	CAPSCREW, HEX HEAD	2
17	125-2000	WIRE HARNESS	1

*SELECT ONLY ONE CONTROL DECAL

**PA56
CONTROL GROUP
D6R SERIES II PS**



**PA56
CONTROL GROUP
D6R SERIES II PS**

These control installation instructions are provided as a general guide. Tractor options, application requirements or local regulations may require deviation from these recommendations. Stop engine, turn key switch and master power switch off.

1. Remove the right hand console cover as directed in the tractor service manual.

Install module mounting plate (3) onto inner wall of right hand console using capscrews and washers (18, 19). Install the control module (2) onto the mount plate (3) using screws (15). Install control relay (17) to mount plate with button head capscrew (6).


2. Install the winch controller (1) into the controller mounting plate (5) using button head capscrews (6). The small indentation made by a drill point found on the mounting flange of the controller must be installed at the twelve o'clock position, away from the operator. Install the controller sub-assembly into the console using the original button head capscrews supplied in Caterpillar group 167-1170. Install the operation decal (8) onto the console next to the controller.

3. Install the filter by-pass indicator light (7) into the tractor control console as shown. Install the filter indicator light decal (10) next to the indicator light.

Note: Make certain all wiring harness connector pins, plugs and sockets are clean. Pins must be straight to align with the respective socket. Dirty connectors and bent pins will prevent reliable operation of the winch.

4. Route the wiring harness (4) under the console and attach the spade connectors to the filter bypass indicator light (7) that has been installed in the control

console cover. The indicator light terminals are not polarity sensitive. Install the 12-pin Y connector of the winch harness into the tractor console wiring harness as shown. Install the 12-pin harness connection into the control module. Plug the harness into the control relay under the control module. Install the controller harness into the control module. Pass the harness back toward the winch. Secure the harness to appropriate tractor tie-offs (chain links) with wire ties (13). Install the harness into the winch receptacle. Secure the harness to the winch mounting bracket with wire tie (13) onto clip and fasteners (18, 19, 20).

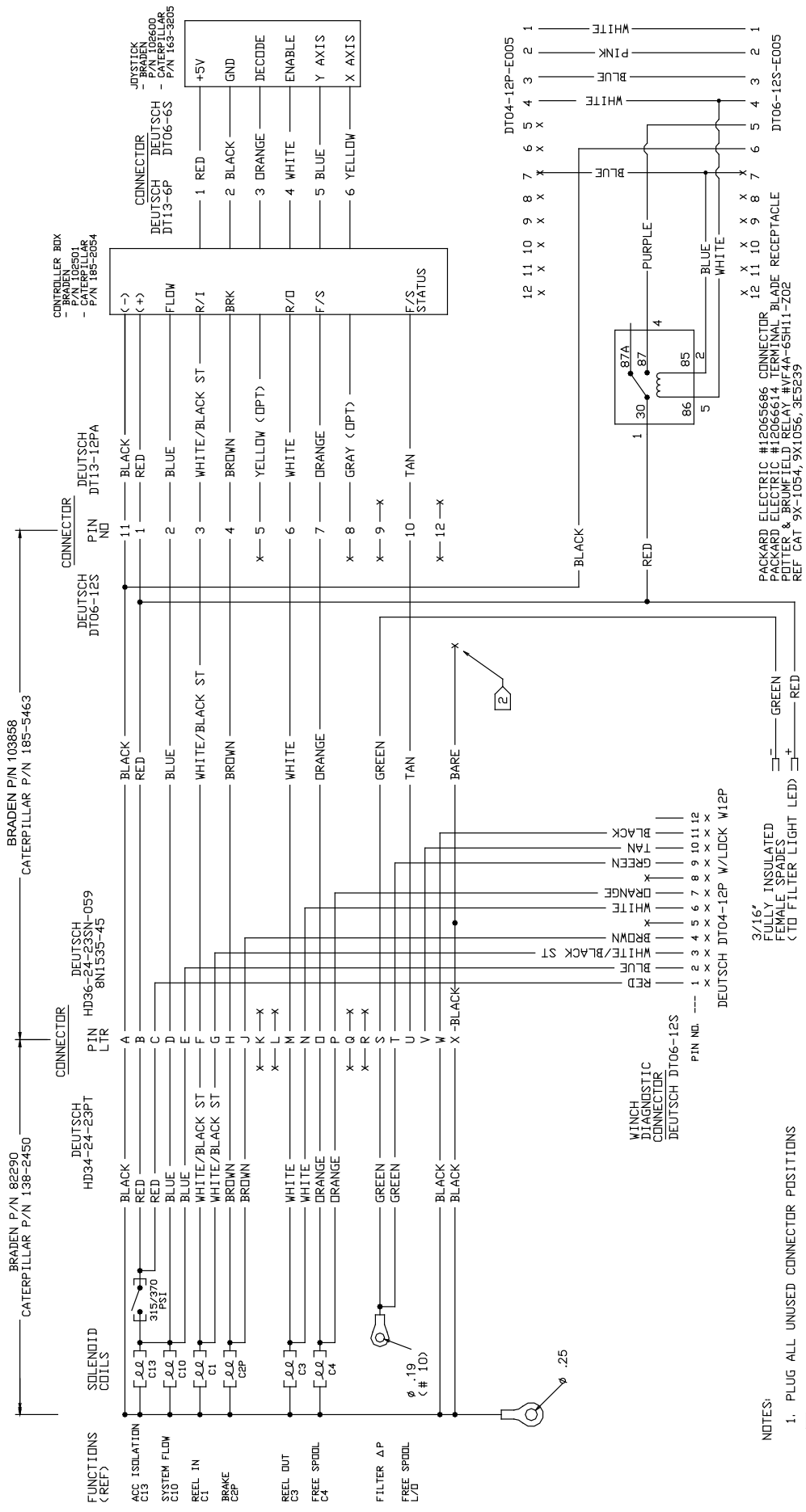


CAUTION

Bundle and restrain loose wires to prevent abrasion, short circuits and interference with tractor controls. Failure to properly route the harness may result in damage to the winch control system and tractor components. This damage may result in unreliable winch and tractor operation that may cause property damage, injury or death.

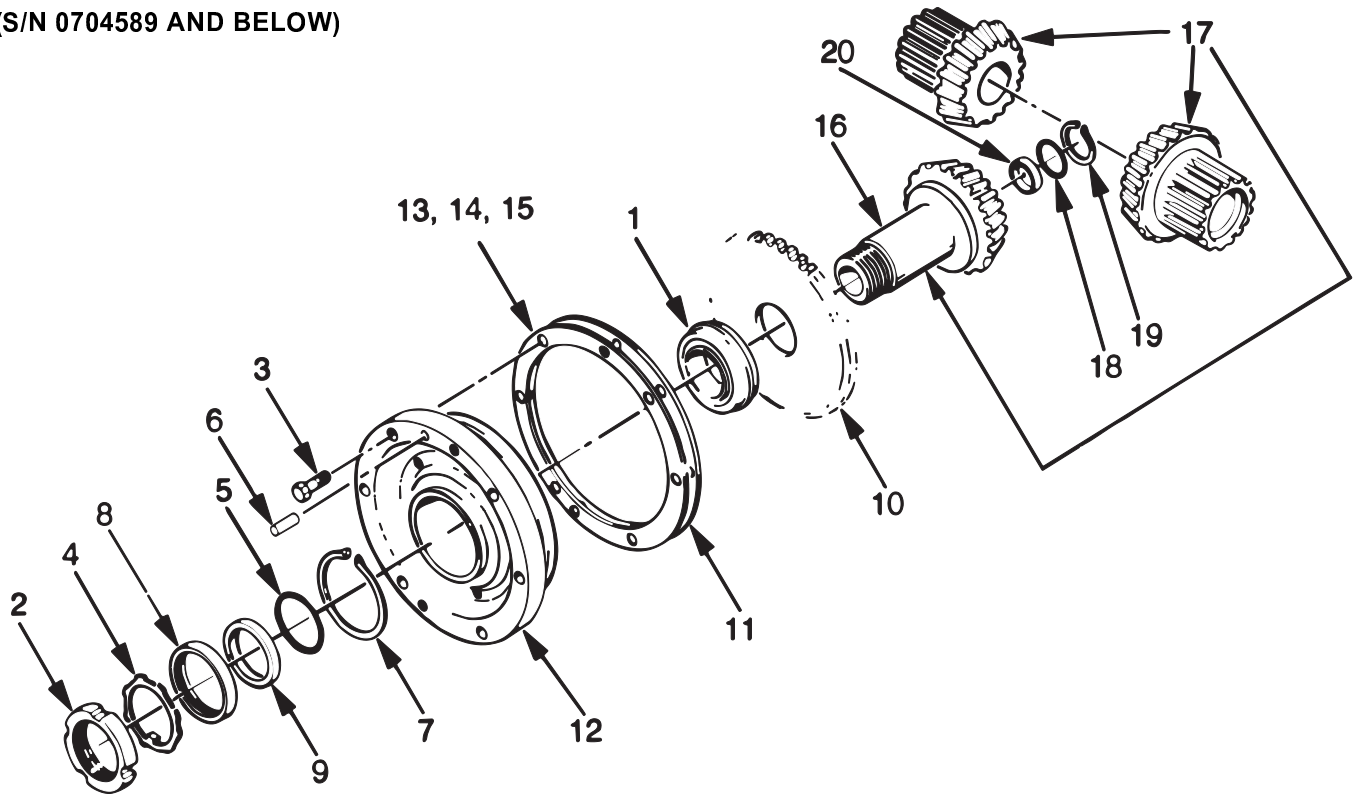
5. Install the tractor console cover onto the console.
6. Fill the winch to the proper level with recommended oil. Refer to the specifications found in the Operation and Preventive Maintenance Manual, publication SEBU7048 or Service Manual, publication SENR8463.
7. Start the tractor and operate the engine at low RPM for several minutes to allow the winch control system pressure to stabilize. Operate the winch in all functions as instructed in the Operation and Preventive Maintenance Manual, publication SEBU7048.

ITEM	PART NO.	DESCRIPTION	QTY.
1	163-3205	DUAL AXIS CONTROLLER	1
2	185-2054	CONTROL MODULE	1
3	177-7351	PLATE - CONTROL MOUNT	1
4	185-5463	WIRING HARNESS	1
5	166-4842	PLATE	1
6	8T-9394	CAPSCREW, BUTTON HEAD (#10 - 24 X 1/2 SS)	5
7	138-2434	INDICATOR LIGHT	1
8	138-2435	DECAL, CONTROL	1
10	173-8938	DECAL, FILTER	1
13	7K-1181	WIRE TIE	8
14	166-4841	BOOT	1
15	6V-1232	CAPSCREW, BUTTON HEAD (#8 - 32 X 3/8)	4
17	3E-5239	RELAY	1
18	5M-3062	CAPSCREW (3/8 -16 X 3/4 G8 Z)	3
19	8T-4896	WASHER	3
20	4P-7581	CLIP	1



- NOTES:**
1. PLUG ALL UNUSED CONNECTOR POSITIONS
 2. SHIELDING AND BARE DRAIN WIRE CONNECTS ONLY AT TERMINAL 'X' (VIA 'S' BLACK WIRE). DO NOT CONNECT TO DT06-12S CONNECTOR.

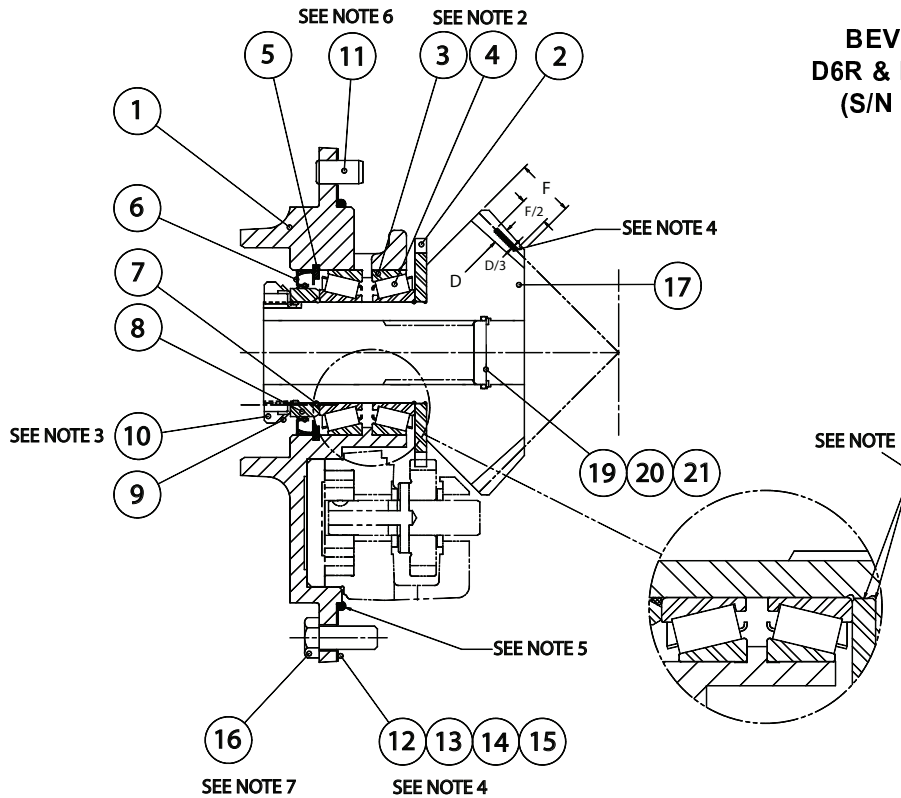
PA56
 BEVEL GEAR GROUP
 D6R & D6R SERIES II PS
 (S/N 0704589 AND BELOW)



ITEM	PART NO.	DESCRIPTION	QTY.
1	119-2141	BEARING ASSEMBLY	1
2	119-1617	BEARING LOCKNUT	1
3	8T-8917	CAPSCREW, HEX HEAD (1/2 - 13 X 1-1/4 G8 Z)	6
4	119-1618	BEARING LOCKWASHER	1
5	118-5804	O-RING	1
6	123-4403	DOWEL PIN	1
7	119-2157	RETAINING RING	1
8	120-7638	OIL SEAL	1
9	118-8381	SEAL SPACER SLEEVE	1
10	118-6589	PUMP DRIVE PINION	1
11	118-5854	SHIM GASKET	1
12	118-7222	BEVEL PINION CARRIER	1
13	118-5855	SHIM .005 in. (.13 mm)	2-AR
14	118-5856	SHIM .007 in. (.18 mm)	2-AR
15	118-5857	SHIM .020 in. (.51 mm)	2-AR
16	118-7219	BEVEL PINION - 26T (B RATIO) STANDARD SPEED	1
	118-7218	BEVEL PINION - 14T (E RATIO) SLOW SPEED	1
17	119-2217	BEVEL GEAR SET - 33/26T (B RATIO)* STANDARD SPEED	1
	119-2213	BEVEL GEAR SET - 39/14T (E RATIO)* SLOW SPEED	1
18	6F-0249	O-RING - (B RATIO ONLY)	1
19	1J-6473	RETAINING RING - (B RATIO ONLY)	1
20	119-2191	PLUG, BEVEL PINION - (B RATIO ONLY)	1

* Bevel Gear Set includes one Bevel Pinion and two Bevel Gears.

**PA56
BEVEL GEAR GROUP
D6R & D6R SERIES II PS
(S/N 0704590 AND UP)**



NOTES:

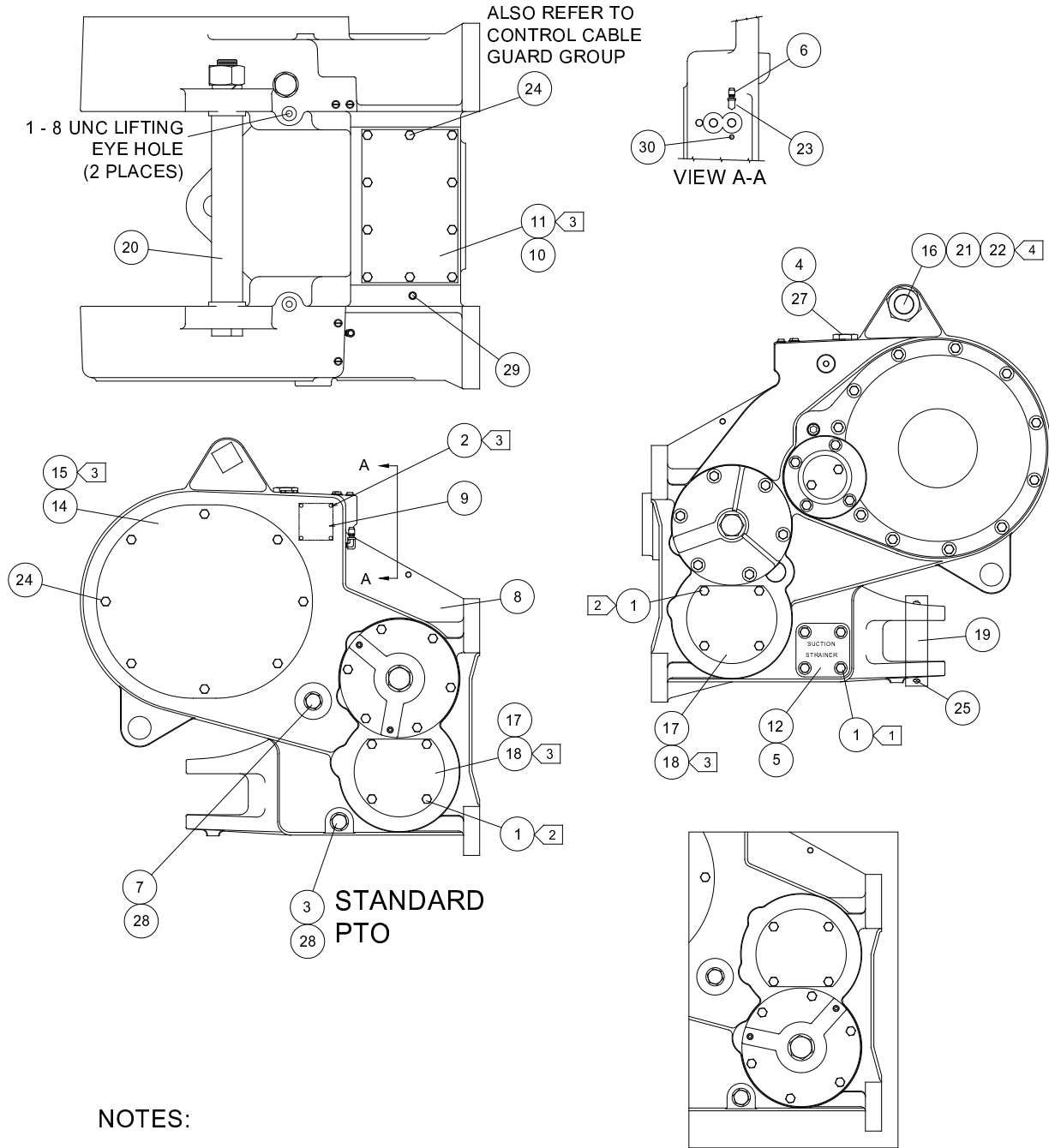
1. Clean bevel and pump pinions with Loctite solvent. Verify press fit before assembly. Apply Loctite 609 or equal to surfaces indicated in Detail A. Press pump drive pinion, item 2, onto bevel pinion and seat securely against shoulder. Allow proper cure time for Loctite before usage.
2. Apply a thin coat of multi-purpose grease to rollers. Do not pack solid.
3. Tighten nut to ensure parts are fully seated. Loosen nut to set the rolling torque of 10 lb-in (1.1 N-m). Pinion must turn smoothly by hand.
4. Shim as required for tooth contact pattern as shown. The pattern height

- should be about 1/3 the whole depth, located midway between tip and root. It should be about 1/2 the face width shifted toward the toe. Set the backlash to .004 to .012 in. (.10 - .30 mm).
5. Apply approximately 3/16" (5 mm) bead of silastic sealant (RTV 732) to pilot diameter as indicated.
6. Clean with Loctite solvent and apply Loctite 242 to dowel pin and insert into winch case.
7. Clean with Loctite solvent and apply Loctite 242 to threads. Torque to 75 to 83 ft-lb (102 - 113 N-m).

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	317-7551	BEVEL PINION CARRIER	1
2	118-6589	PUMP PINION	1
3	7K-5448	BEARING CUP	2
4	7K-5449	BEARING CONE	2
5	119-2157	RETAINING RING	1
6	120-7638	OIL SEAL	1
7	118-5804	O-RING	1
8	118-8381	SEAL SPACER	1
9	119-1618	BEARING LOCKWASHER	1
10	119-1617	BEARING LOCKNUT	1
11	123-4403	DOWEL PIN	1
12	118-5854	SHIM GASKET	1
13	118-5855	SHIM, .005 in. (.13 mm)	2-AR
14	118-5856	SHIM, .007 in. (.18 mm)	2-AR
15	118-5857	SHIM, .020 in. (.51 mm)	2-AR
16	8T-8917	CAPSCREW, HEX HD (1/2 - 13 X 1 1/4 in. G8, Z)	6
17	118-7219	BEVEL PINION - 26T (B RATIO)	1
	118-7218	BEVEL PINION - 14T (E RATIO)	1
18	119-2217	BEVEL GEAR SET - 33/26T (B RATIO)* (NOT SHOWN)	1
	119-2213	BEVEL GEAR SET - 39/14T (E RATIO)* (NOT SHOWN)	1
19	6F-0249	O-RING (USED ON B RATIO ONLY)	1
20	1J-6473	RETAINING RING (USED ON B RATIO ONLY)	1
21	119-2191	BEVEL PINION PLUG (USED ON B RATIO ONLY)	1

* Bevel Gear Set includes one Bevel Pinion and two Bevel Gears

WINCH CASE AND COVERS



NOTES:

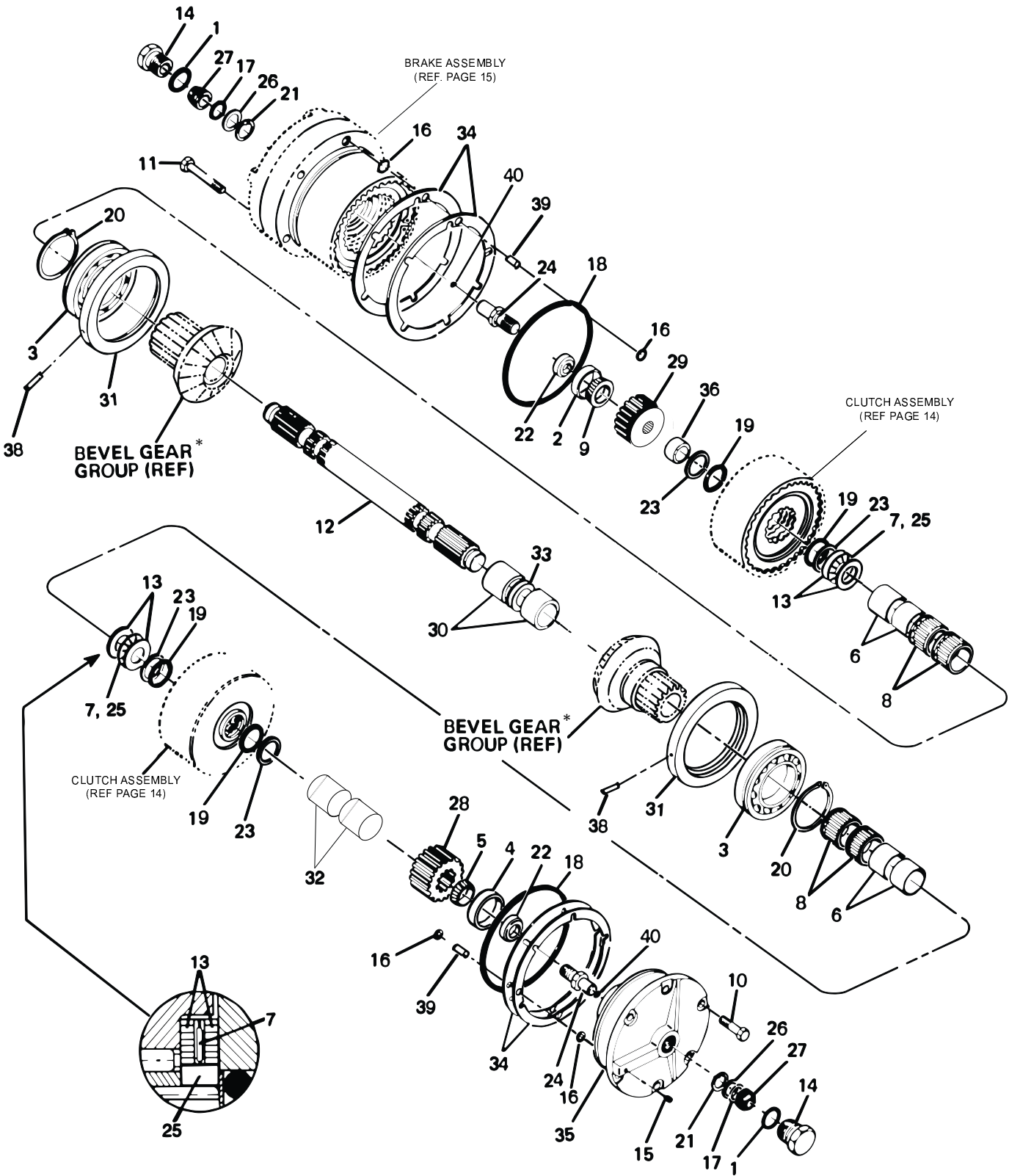
- 1 APPLY "FEL-PRO C648F SEALANT" TO BOLTS TO PREVENT THREAD CORROSION.
- 2 TIGHTEN FASTENERS TO 75 LB•FT (10.4 Kg•M) TORQUE.
- 3 APPLY "RTV 732" SILASTIC SEALANT TO BOTH SIDES OF GASKETS (11, 15 & 18) AND DRIVE SCREWS (2).
- 4 TIGHTEN HEX NUT (22) UNTIL LOCKWASHER (21) IS FLATTENED AND THEN TURN ONE FLAT.

WINCH CASE AND COVERS

ITEM	PART NO.	DESCRIPTION	QTY.
1	5P-2228	CAPSCREW, HEX HEAD (1/2-13 X 1 G8 Z)	12
2	7H-4543	DRIVE SCREW	4
3	5P-9436	PLUG, DRAIN (MAY BE SUBSTITUTED FOR ITEM 7)	1
4	5P-1403	PLUG, OIL FILL (INCLUDES ITEM 27)	1
5	6L-9965	O-RING	2
6	5F-5434	VENT PLUG	1
7	118-5783	SIGHT GAUGE (INCLUDES ITEM 28)	1
8	118-6972	WINCH CASE - LOW PTO	1
9	123-4417	SERIAL NUMBER DATA PLATE	1
10	118-6598	COVER, TOP ACCESS	1
11	118-6316	GASKET	1
12	120-7541	STRAINER COVER	1
14	118-6588	COVER, SIDE ACCESS	1
15	120-7543	GASKET	1
16	118-6298	TIE BOLT	1
17	118-6597	COVER, LOWER ACCESS	2
18	118-6317	GASKET	2
19	118-8382	DRAW BAR PIN	1
20	118-6314	SPACER TUBE	1
21	119-1623	LOCKWASHER (1 3/4)	1
22	2B-2673	NUT, HEX HEAD (1 3/4 NC)	2
23	3B-8822	ELBOW	2
24	6K-7917	CAPSCREW, HEX HEAD (1/2-13 X 1) SS*	15
25	3B-5320	COTTER PIN (3/8 X 3 IN.)	2
27	6V-5065	O-RING - FOR OIL FILL PLUG	1
28	9X-4609	O-RING - FOR OIL DRAIN & LEVEL PLUG	2
29	2B-7457	PLUG (3/8 NPT SQ HD)	1
30	5M-6214	PLUG (1/8 NPT)	1

*SS = SELF-SEALING MATERIAL PREAPPLIED TO THREADS

CLUTCH SHAFT GROUP



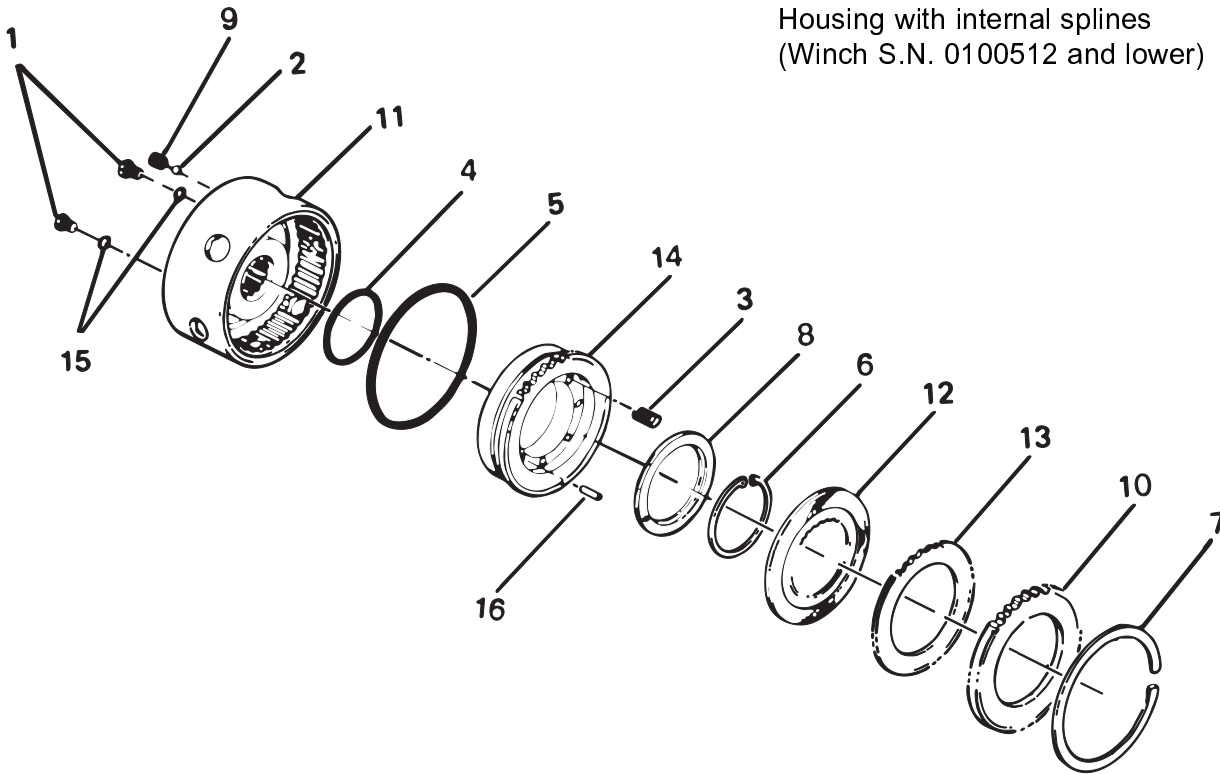
CLUTCH SHAFT GROUP

ITEM	PART NO.	DESCRIPTION	QTY.
1	6V-5065	O-RING (PART OF ITEM 14)	2
2	009-3691	BEARING CUP	1
3	119-2139	BALL BEARING w/SHIELD	2
4	119-2140	BEARING CUP	1
5	120-7635	BEARING CONE	1
6	119-2206	NEEDLE BEARING - INNER RACE	4
7	124-0493	THRUST BEARING	2
8	119-2208	NEEDLE BEARING	4
9	009-3690	BEARING CONE	1
10	5P-2228	CAPSCREW, HEX HEAD (1/2 - 13 X 1 G8 Z)	6
11	7X-0326	CAPSCREW, HEX HEAD (1/2 - 13 X 3 G8 Z)	6
12	118-7225	CLUTCH SHAFT - 4 SHAFT	1
13	120-7633	THRUST BEARING RACE	4
14	5P-1403	PLUG (CONTAINS ITEM 1)	2
15	148-8407	PLUG, -6 ORB HEX (CURRENT)	1
16	8M-4437	O-RING	8
17	120-7629	O-RING	2
18	119-1590	O-RING	2
19	119-1549	O-RING	4
20	119-1616	RETAINING RING	2
21	2D-6398	RETAINING RING	2
22	119-2171	BEARING RETAINER	2
23	119-1550	BACK-UP RING	4
24	147-2728	ROTARY SEAL SHAFT	2
25	217-8445	THRUST BEARING SPACER	2
26	119-1628	BACK-UP WASHER	2
27	119-2193	ROTARY SEAL	2
28	118-6582	PINION GEAR - 18 TEETH - 4 SHAFT	1
29	118-6568	BRAKE HUB	1
30	118-5858	BEVEL GEAR SPACER	2
31	118-5844	BEARING CARRIER	2
32	217-8444	PINION SPACER - 4 SHAFT	2
33	118-5848	SHIM SET	1
34	118-6647	SHIM, .005 in. (.13 mm)	2-AR
	118-6599	SHIM, .007 in. (.18 mm)	2-AR
	118-6600	SHIM, .020 in. (.51 mm)	2-AR
35	118-6951	CLUTCH SHAFT BEARING CARRIER - 4 SHAFT	1
36	217-8444	BRAKE HUB SPACER	1
38	4H-1440	ROLLPIN	2
39	120-7663	SLEEVE	4
40	140-1197	ORIFICE PLUG	2

AR = AS REQUIRED

CLUTCH ASSEMBLY (SPLINED HOUSING)

Housing with internal splines
(Winch S.N. 0100512 and lower)

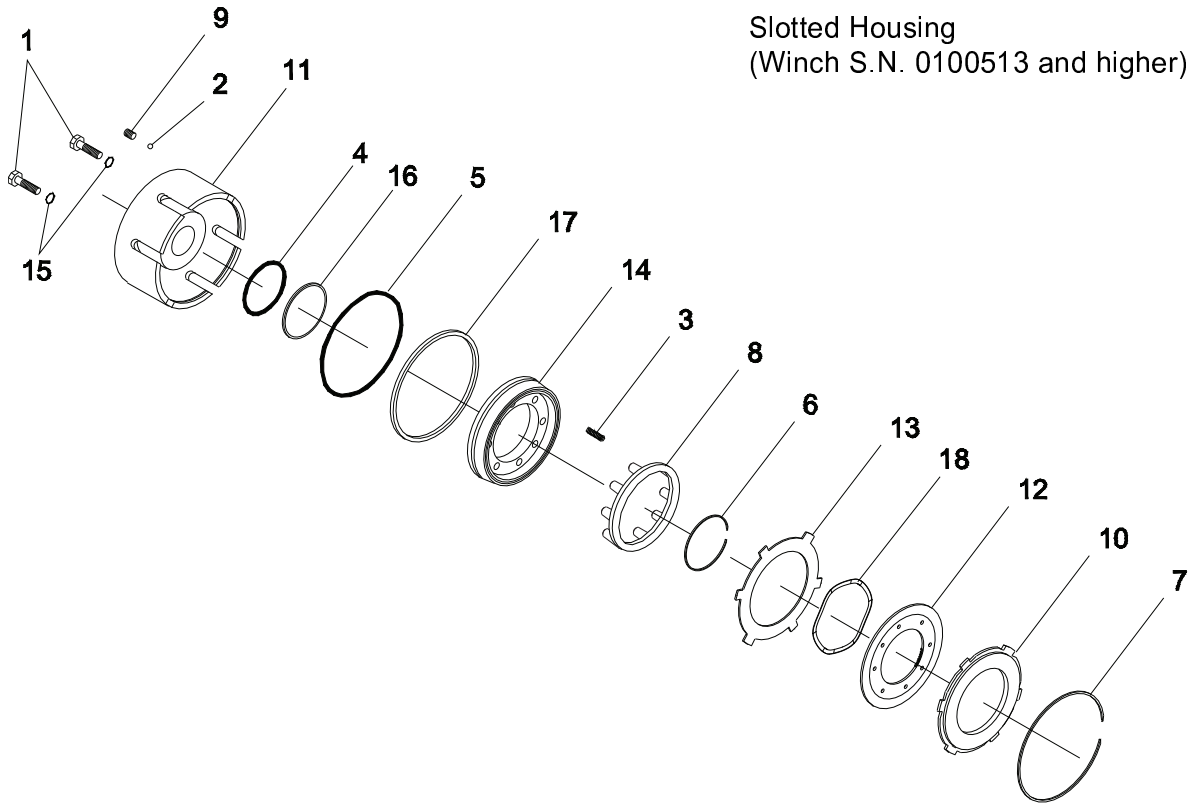


ITEM	PART NO.	DESCRIPTION	QTY.
-	118-7210	CLUTCH ASSEMBLY - INCLUDES 1 - 16	
1	9S-8007	PLUG (-3 ORB)	2
2	3Y-9267	STEEL CHECK BALL (.25 in.)	1
3	118-5851	SPRING	8
4	1H-8128	O-RING	1
5	120-7669	O-RING	1
6	119-2195	RETAINING RING	1
7	119-1534	RETAINING RING	1
8	118-6566	SPRING RETAINER	1
9	118-5849	CHECK VALVE SEAT	1
10	118-6323	PRESSURE PLATE	1
11	118-8385	CLUTCH HOUSING *	1
12	118-6547	DISC - FRICTION, BRONZE	5
13	118-6302	DISC - STEEL .093 in. (2.36 mm)	4
14	118-6594	CLUTCH PISTON	1
15	119-2189	O-RING	2
16	5H-3182	PIN	1

* 118-8385 includes a basic housing with two (2) steel balls 3Y-9267 driven into cross-drilled passages.

* 161-6435 Friction disc interchangeable with 118-6547. Use all of one part number.

CLUTCH ASSEMBLY (SLOTTED HOUSING)

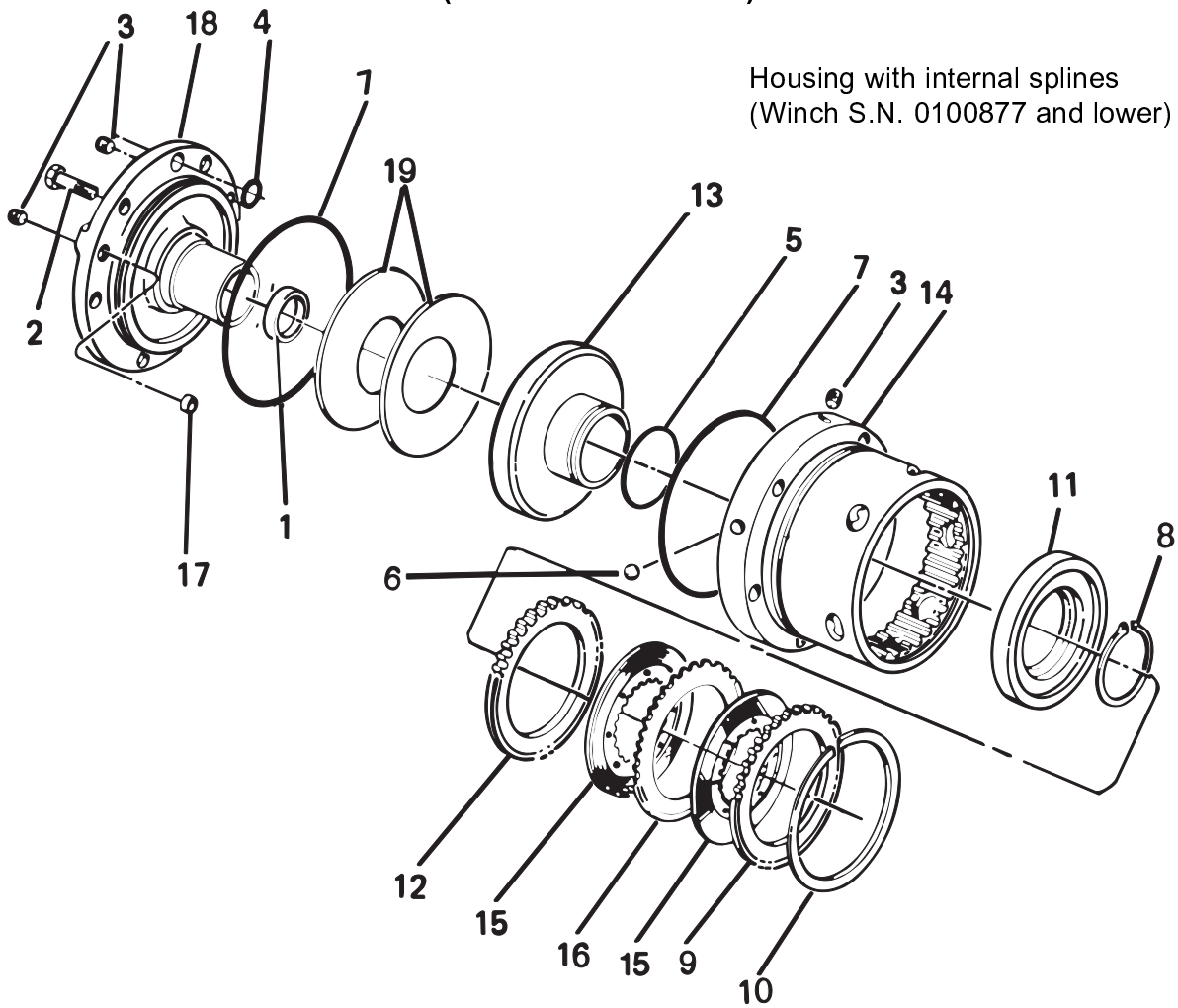


ITEM	PART NO.	DESCRIPTION	QTY.
-	211-1631	CLUTCH ASSEMBLY - INCLUDES 1 - 18	
1	183-7263	PLUG (-4 ORB)	2
2	3Y-9267	STEEL CHECK BALL (.25 in.)	1
3	211-1640	SPRING	8
4	1H-6227	O-RING	1
5	9F-1399	O-RING	1
6	119-2195	RETAINING RING	1
7	211-1634	RETAINING RING	1
8	295-1797	SPRING RETAINER	1
9	118-5849	CHECK VALVE SEAT	1
10	211-1641	PRESSURE PLATE	1
11	211-1639	CLUTCH HOUSING *	1
12	161-6435	DISC - FRICTION	5
13	161-6434	DISC - STEEL .104 in. (2.64 mm)	5
14	161-6439	CLUTCH PISTON	1
15	3J-7354	O-RING	2
16	162-2753	BACKUP RING	1
17	162-2754	BACKUP RING	1
18	231-2245	WAVE SPRING	4

* Item 11 includes a basic housing with two (2) steel balls 3Y-9267 driven into cross-drilled passages.

** Item 12 Friction Disc, 161-6435 interchangeable with 118-6547. Use all of one part number.

BRAKE ASSEMBLY (SPLINED HOUSING)



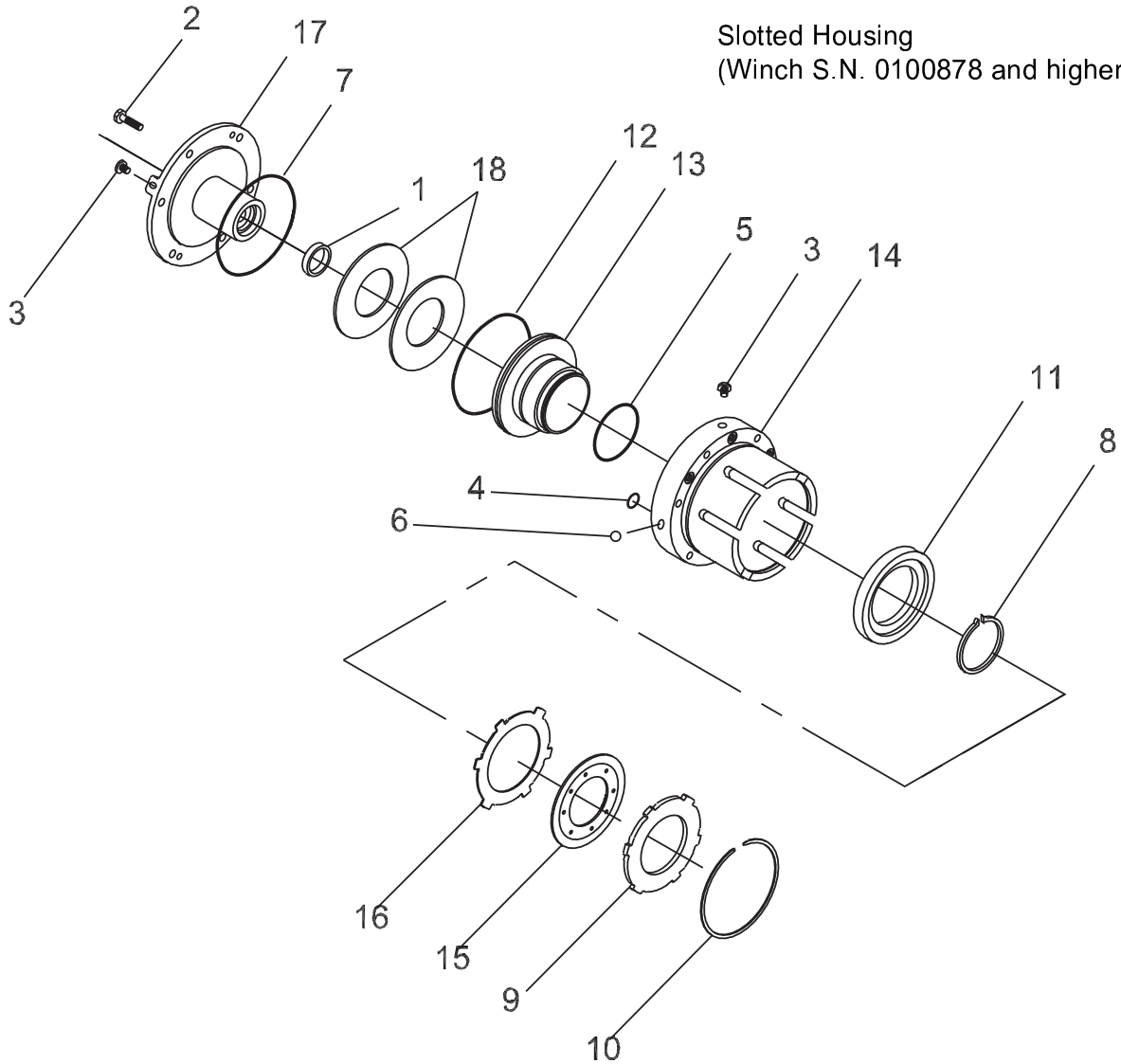
ITEM	PART NO.	DESCRIPTION	QTY.
-	120-7698	BRAKE ASSEMBLY, STD - INCLUDES 1 - 20	
1	009-3691	BEARING CUP	1
2	4L-6454	CAPSCREW, HEX HEAD (3/8 - 16 X 1)	2
3	102-0883	PLUG, HEX SOCKET (1/4 NPT - EARLY)*	4
	148-8407	PLUG, HEX HEAD (-6 ORB - CURRENT)*	3
4	119-1577	O-RING	3
5	4S-5898	O-RING	1
6	3Y-9267	STEEL BALL	2
7	119-1586	O-RING	2
8	123-4415	RETAINING RING	1
9	118-6323	PRESSURE PLATE	1
10	119-1534	RETAINING RING	1
11	118-6587	PISTON RETAINER	1
12	118-5846	PRESSURE PLATE - INNER	1
13	118-6593	BRAKE PISTON	1
14	118-6949	BRAKE HOUSING - CURRENT (REQUIRES 1 OF ITEM 6)	1
15	118-6547	DISC - FRICTION - BRONZE	8
16	118-6302	DISC - STEEL - .093 in. (2.36 mm)	7
17	118-0550	INSERT - NOT USED IN CURRENT HOUSING	1
18	118-7223	BRAKE CARRIER	1
19	119-2167	BRAKE SPRING	2

*Current brake housing may be visually distinguished from the early design by locating the -6 ORB plug at the "B" brake pressure port. The early design used a hex-socket head, 1/4 NPT plug.

* 161-6435 Friction Disc interchangeable with 118-6547. Use all of one part number.

BRAKE ASSEMBLY (SLOTTED HOUSING)

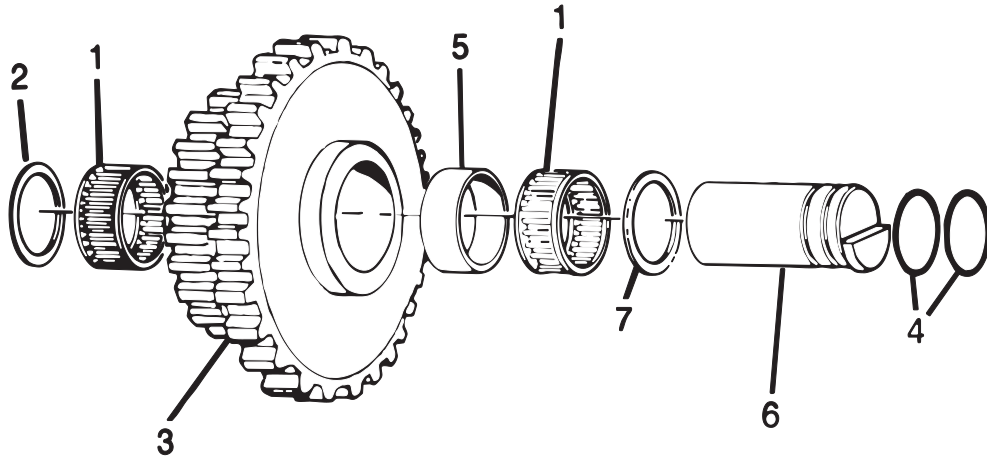
Slotted Housing
(Winch S.N. 0100878 and higher)



ITEM	PART NO.	DESCRIPTION	QTY.
-	211-1630	BRAKE ASSEMBLY, STD - INCLUDES 1 - 20	
1	009-3691	BEARING CUP	1
2	4L-6454	CAPSCREW, HEX HEAD (3/8 - 16 X 1 GD 8 Z)	2
3	148-8407	PLUG, HEX SOCKET (-6 ORB)	3
4	119-1577	O-RING	3
5	5F-3144	O-RING	1
6	3Y-9267	STEEL BALL (PRESSED INTO HOUSING)	1
7	119-1586	O-RING	1
8	123-4415	RETAINING RING	1
9	211-1638	PRESSURE PLATE	1
10	211-1634	RETAINING RING	1
11	211-1632	PRESSURE PLATE	1
12	1S-6119	O-RING	1
13	211-1633	BRAKE PISTON	1
14	211-1637	BRAKE HOUSING - CURRENT (REQUIRES 1 OF ITEM 6)	1
15	161-6435	DISC - FRICTION - BRONZE	8
16	161-6434	DISC - STEEL - .104 in. (2.64 mm)	8
17	211-1636	BRAKE CARRIER	1
18	119-2167	BRAKE SPRING	2

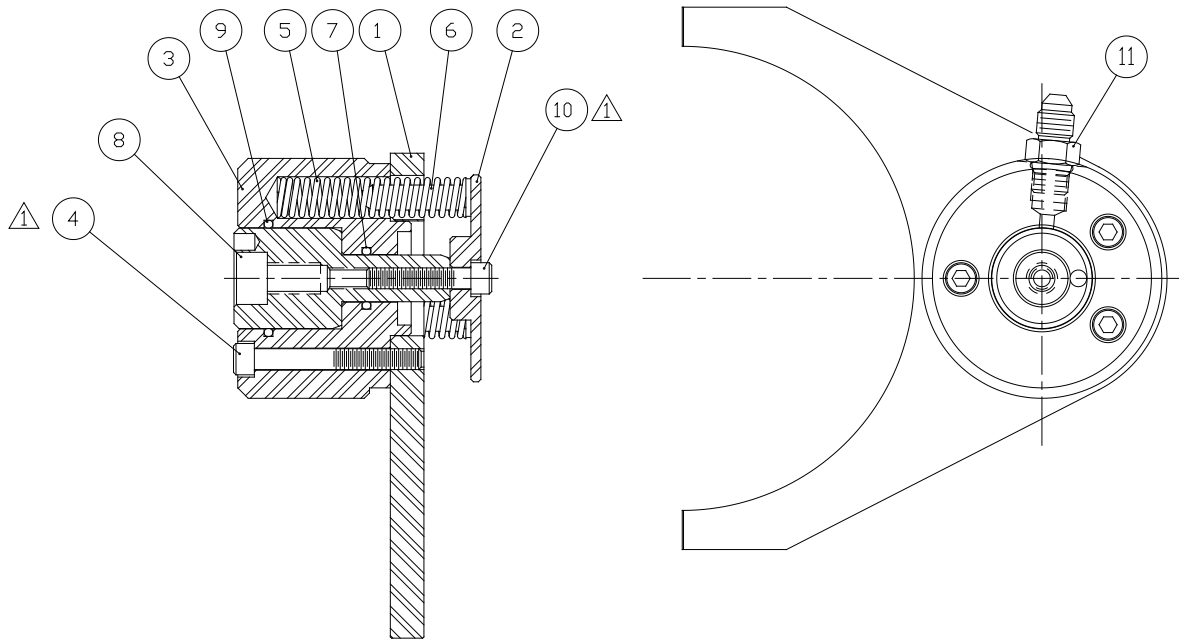
* 161-6435 Friction Disc interchangeable with 118-6547. Use all of one part number.

FOURTH SHAFT GROUP



ITEM	PART NO.	DESCRIPTION	QTY.
1	119-2173	ROLLER BEARING	2
2	119-1572	THRUST WASHER - .062 in. (1.58 mm)	1
3	118-6651	CLUSTER GEAR 37/17 TEETH	1
4	8M-4986	O-RING	2
5	118-6297	SPACER	1
6	118-6533	COUNTERSHAFT PIN	1
7	118-6287	THRUST WASHER - .217 in. (5.5 mm)	1

FREESPOOL CYLINDER ASSEMBLY

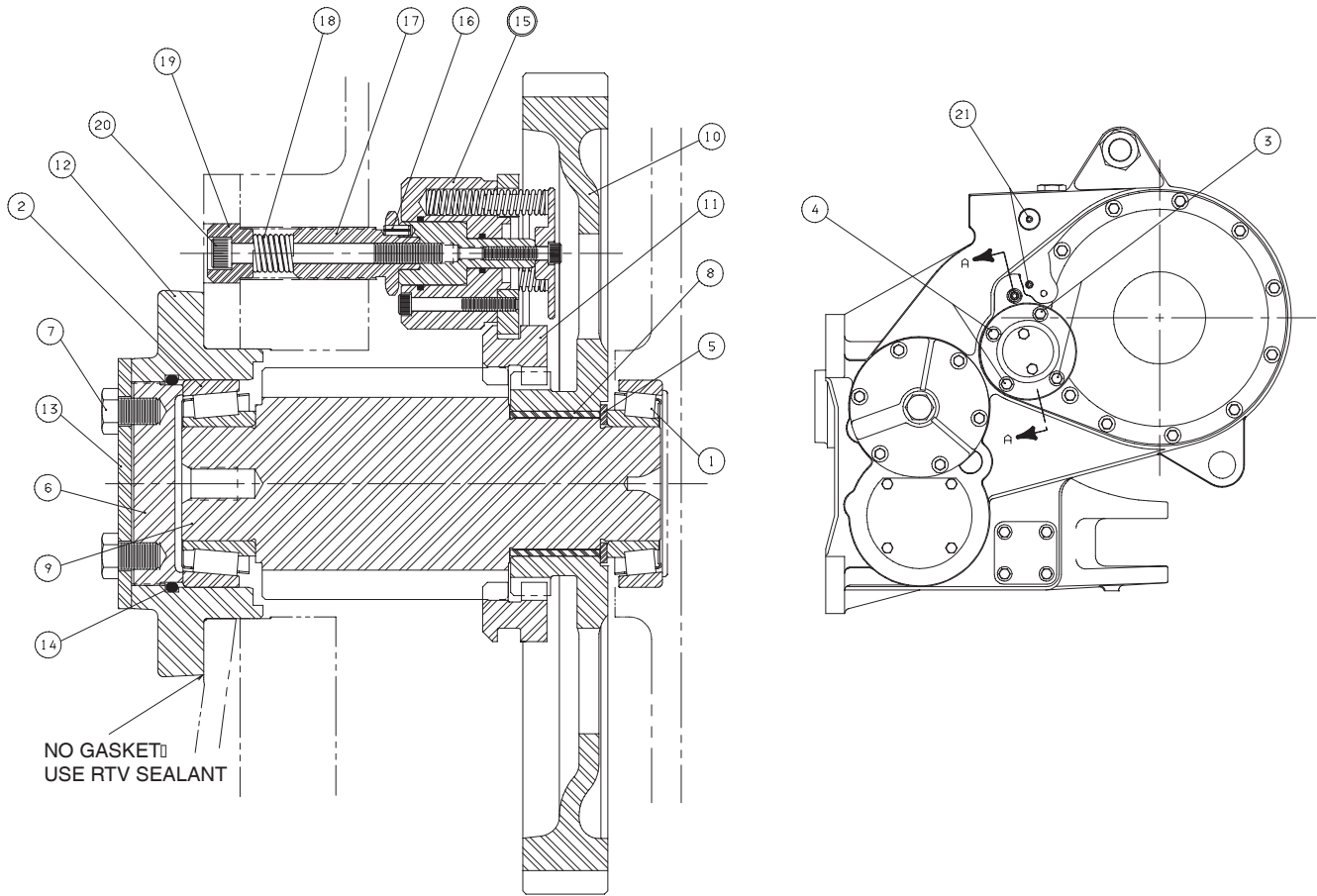


NOTE:

- ⏏ APPLY LOCTITE 242 OR 243 TO CLEAN DRY THREADS OF ITEMS 4 & 10 AND TIGHTEN TO 13 LB•FT (18 N•m)

ITEM	PART NO.	DESCRIPTION	QTY.
-	138-2412	FREESPOOL CYLINDER ASSEMBLY	1
1	138-2413	YOKE	1
2	138-2414	CYLINDER RETAINER	1
3	138-2415	FREESPOOL CYLINDER	1
4	6L-1596	CAPSCREW, SOC. HEAD (1/4 - 20 x 2 GD 8 Z)	3
5	138-2416	SPRING	3
6	138-2417	SPRING GUIDE	3
7	8M-4437	O-RING	1
8	138-2418	CYLINDER ROD	1
9	3S-9233	O-RING	1
10	4L-7124	CAPSCREW, SOC. HEAD (1/4 - 20 x 1 1/4 GD 8 Z)	1
11	3J-7352	ADAPTER	1

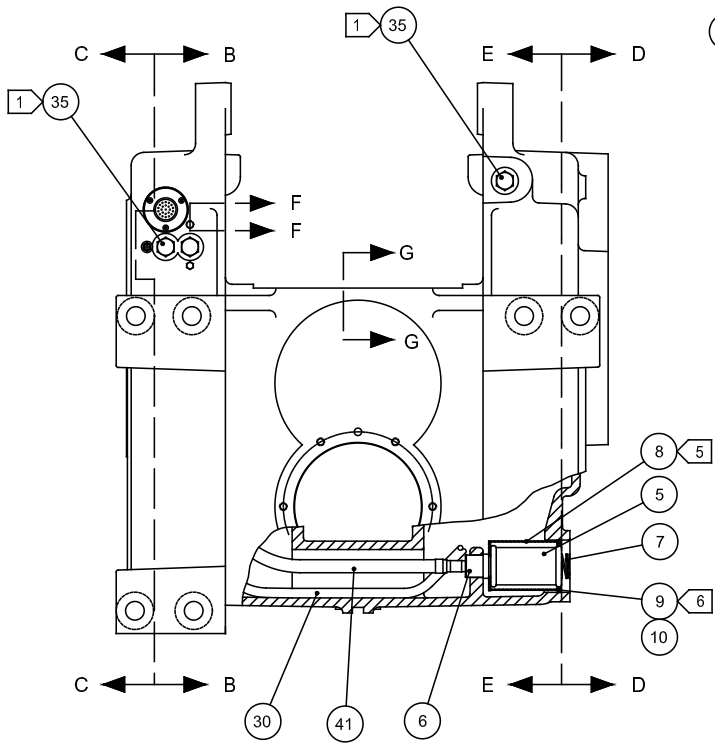
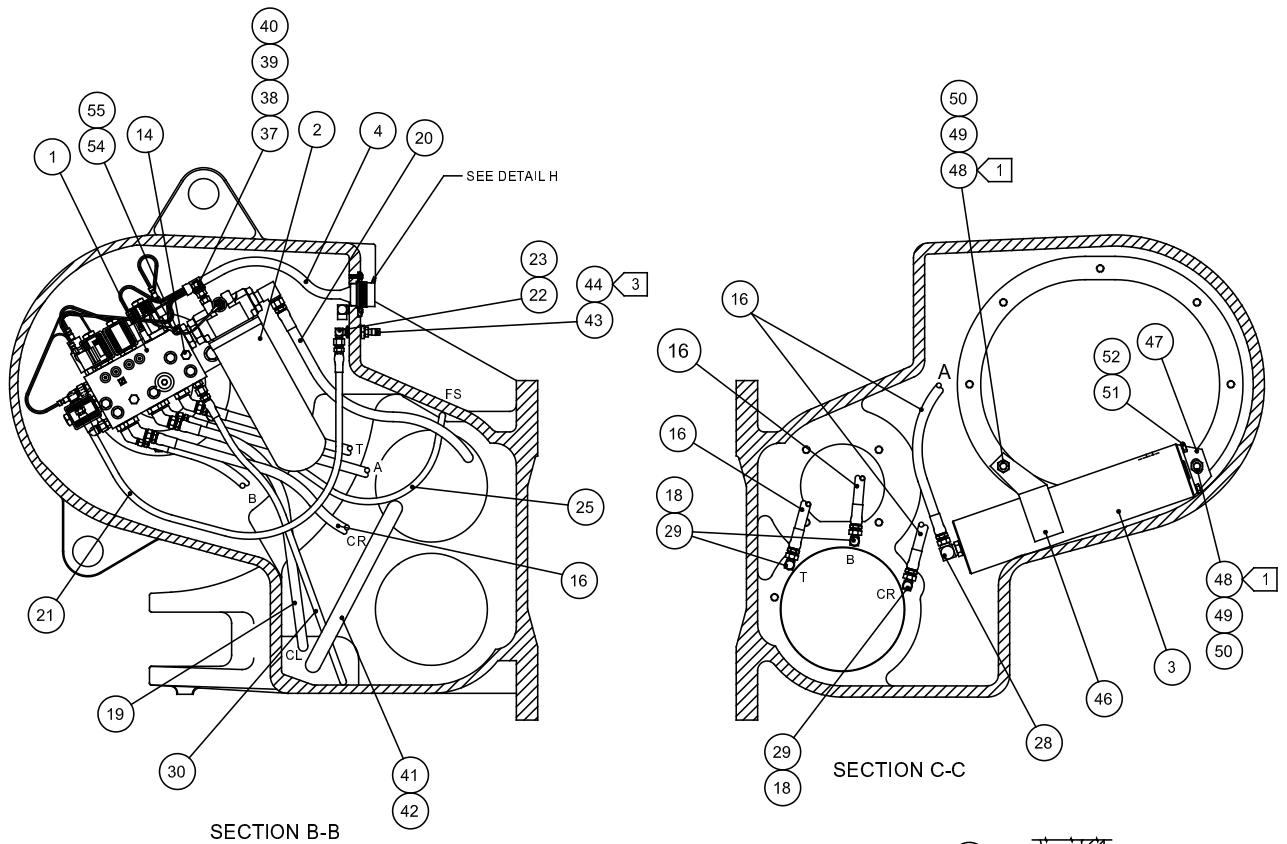
IDLER SHAFT GROUP WITH FREESPOOL



ITEM	PART NO.	DESCRIPTION	QTY.
1	119-0160	BEARING ASSEMBLY	1
2	114-5870	BEARING ASSEMBLY	1
3	8T-8917	CAPSCREW, HEX HEAD (1/2 - 13 x 1-1/4 GD 8 Z)	2
4	1A-1460	CAPSCREW, HEX HEAD (1/2 - 13 x 2 GD 8 Z)	2
5	120-7633	THRUST WASHER	1
6	118-6535	ADJUSTER	1
7	8T-9383	CAPSCREW (1/2 - 13 x 3/4 GD 8 Z)	2
8	119-2170	BUSHING	1
9	118-6584	SECOND REDUCTION PINION	1
10	118-7224	FIRST REDUCTION GEAR	1
11	118-6585	CLUTCH COLLAR	1
12	118-6917	CARRIER	1
13	118-5859	LOCK PLATE	1
14	119-1547	O-RING	1
15	138-2412	FREESPOOL CYLINDER ASSEMBLY	1
16	5H-8985	ROLL PIN	1
17	138-2419	CYLINDER STUD	1
18	138-2420	SPRING	1
19	138-2421	BOLT RETAINER	1
20	102309 *	CAPSCREW, SOCKET HEAD (3/8 - 16 x 4-1/4 GD 8 Z)	1
21	064-1609	SCREW, SOCKET HEAD (1/2 - 20 x 1)	2

* PACCAR Winch Division part number. Caterpillar part number was not available at time of printing.

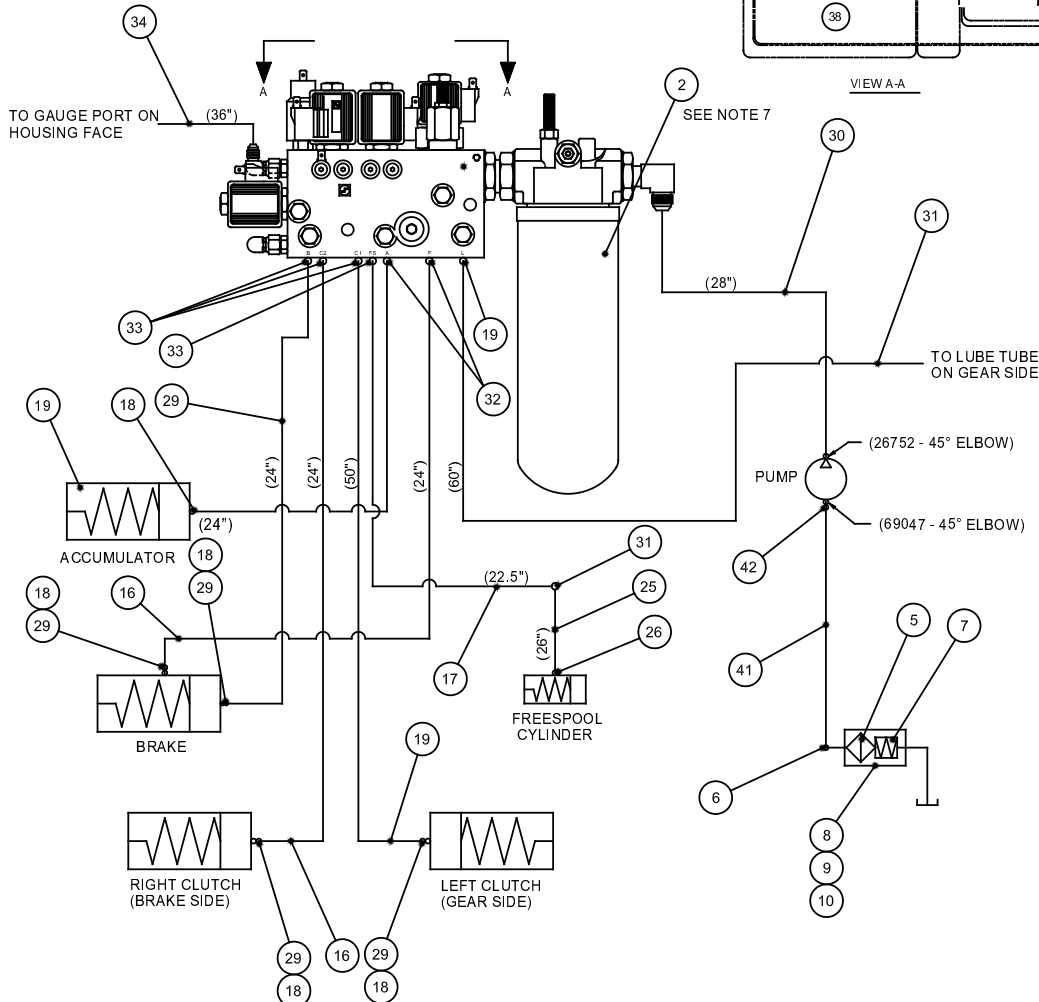
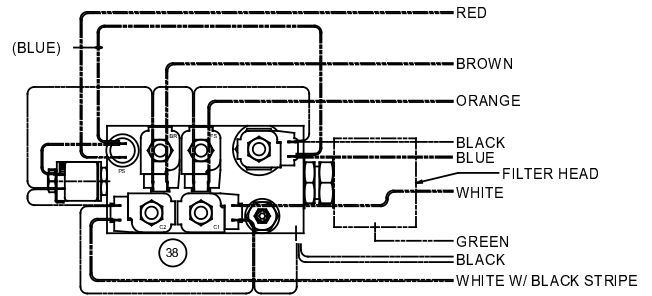
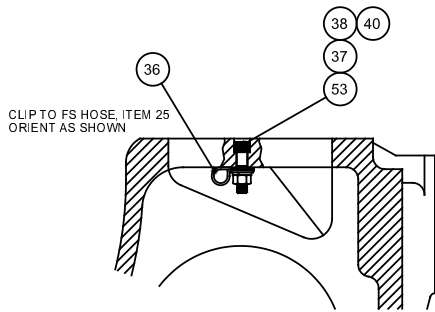
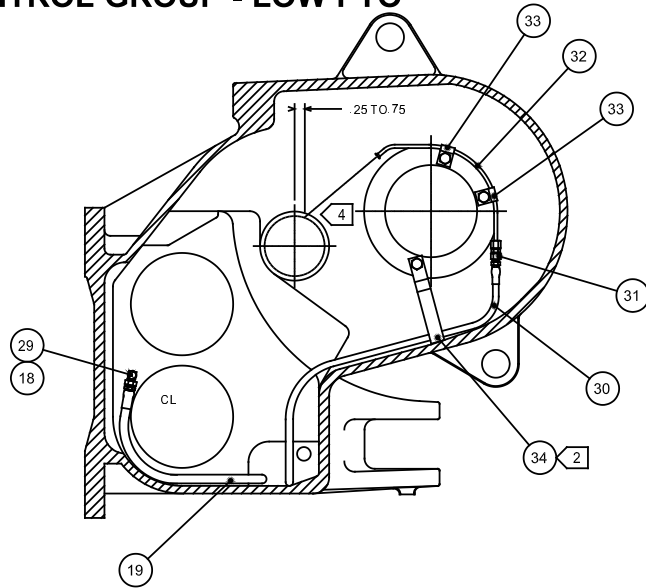
HYDRAULIC CONTROL GROUP - LOW PTO



NOTES:

- ① Apply "Loctite 242" to clean dry threads.
- ② Trim clamp end a minimum amount to clear bottom of case wall so clamp cannot rotate out of position.
- ③ Apply "Loctite 609" to external threads.
- ④ Bend lubrication tube (item 34) as required to direct oil stream as indicated in section E-E.
- ⑤ Install strainer shield (item 49) with open side facing downward.
- ⑥ Measure from strainer shield to cover mounting surface. If distance is .720 in. - .783 in. (18.3 - 19.9 mm), add one seal (item 57) outboard of seal (item 49). If distance is greater than .783 in. (19.9 mm), add two seals (item 57)
- ⑦ Torque filter element (item 5) to 15 - 20 lb•ft (20 - 27 N•m).

HYDRAULIC CONTROL GROUP - LOW PTO



HYDRAULIC CONTROL GROUP - LOW PTO

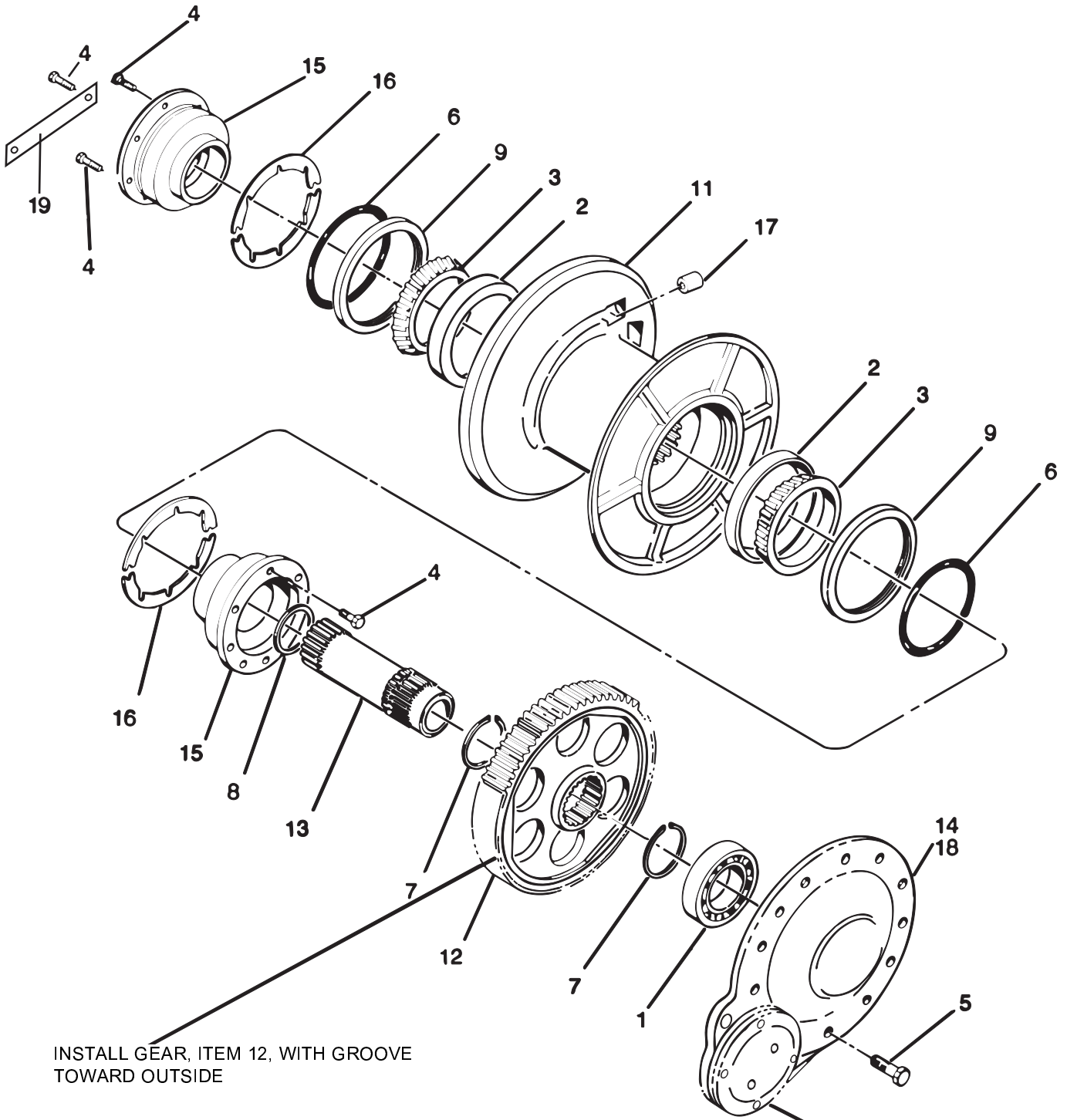
ITEM	PART NO.	DESCRIPTION	QTY.
1	174-0334	CONTROL VALVE (SEE CONTROL VALVE ASSEMBLY, PG. 19)	1
2	1G-8878	FILTER ELEMENT	1
3	118-7012	ACCUMULATOR (REFER TO ACCUMULATOR ASSEMBLY)	1
4	381-7641	WIRING HARNESS	1
5	119-2164	STRAINER	1
6	118-6265	CONNECTOR	1
7	119-1535	COMPRESSION SPRING	1
8	118-6283	STRAINER SHIELD	1
9	118-6284	SEAL RING, .25 in. (6.4 mm)	1
10	118-6286	SEAL RING, .06 in. (1.5 mm)	1-2 AR
11	8M-4986	O-RING	1
12	138-2406	RETAINER FLANGE	1
13	138-2407	MACHINE SCREW, BUTTON SOC. HEAD (#10 - 3/4)	3
14	7X-0292	CAPSCREW, HEX HEAD (3/8 - 16 X 4 1/2 G8 Z)	2
15	030-7943	ELBOW, 45° ORB -8	5
16	119-0115	HOSE, -8, 24 in. (610 mm) B, F, CR, A	4
17	129-8701	HOSE, -4, 22.5 in. (572 mm) F/S	1
18	061-9463	ADAPTER 1/4 NPT -8	4
19	119-0120	HOSE, -8, 50 in. (1270 mm) CL	1
20	138-2408	HOSE, -8, 29 in. (737 mm) PUMP TO FILTER	1
21	138-2430	HOSE, -4, 36 in. (914 mm) GAUGE	1
22	7K-9197	ELBOW, 90° -4, GAUGE PORT	1
23	8L-6557	ADAPTER, -4	1
24	030-7941	ELBOW, 45° -4	1
25	173-8348	HOSE, -4, 26 in. (660 mm) F/S	1
26	3J-7352	ADAPTER, ORB -4	2
28	030-7948	ELBOW, 90° ORB -8	1
29	8M-0547	ELBOW, 90° -8	4
30	119-0122	HOSE, -4, 60 in. (1524 mm) LUBRICATION	1
31	3J-7355	UNION, -4	2
32	138-2409	LUBRICATION TUBE	1
33	119-0161	CLAMP	2
34	118-6270	CLAMP	1
35	2H-3740	CAPSCREW, HEX HEAD (3/4 - 10 X 1 1/4 G8 Z)	3
36	138-2432	HOSE CLAMP	1
37	9S-8752	NUT, HEX (3/8 - 16)	3
38	4B-4278	WASHER (3/8)	3
39	4K-8864	HOSE CLAMP	1
40	3B-4506	LOCKWASHER (3/8)	2
41	118-6264	SUCTION HOSE	1
42	9M-7958	CLAMP	1
43	158-6530	QUICK DISCONNECT, GAUGE PORT	1
44	127-7025	SLEEVE, GAUGE PORT	1
45	3B-8822	ELBOW, 90° (1/8 NPT) VENT PORT, INSIDE	1
46	118-6313	ACCUMULATOR BRACKET	1
47	118-6308	MOUNTING ANGLE	1
48	119-0549	STUD (1/2 -13 X2 3/4)	2
49	6V-8188	NUT, HEX (1/2 - 13)	2
50	8T-4223	LOCKWASHER (1/2)	2
51	8T-9043	CAPSCREW, HEX HEAD (5/16 - 18 X 7/8 G8 Z)	2
52	3B-4505	LOCKWASHER (5/16)	2
53	0S-1591	CAPSCREW, SOC. HEAD (3/8 - 16 X 1 1/2 G8)	1
54	0S-1614	CAPSCREW, HEX HEAD (1/4 - 20 X 1/2 G8 Z)	1
55	3B-4504	LOCKWASHER (1/4)	1

AR - AS REQUIRED

* 138-2405 has blue and black wires to attach to accumulator isolator solenoid on valve 174-0333. These two wires not used on earlier valve 138-2403 without the accumulator isolator solenoid.

** If replacing early control valve 138-2403 that does not have the accumulator isolator solenoid, you must order new harness 138-2405 that has the additional blue and black wires for the new valve, 174-0333.

CABLE DRUM GROUP



INSTALL GEAR, ITEM 12, WITH GROOVE TOWARD OUTSIDE

REFER TO IDLER SHAFT GROUP

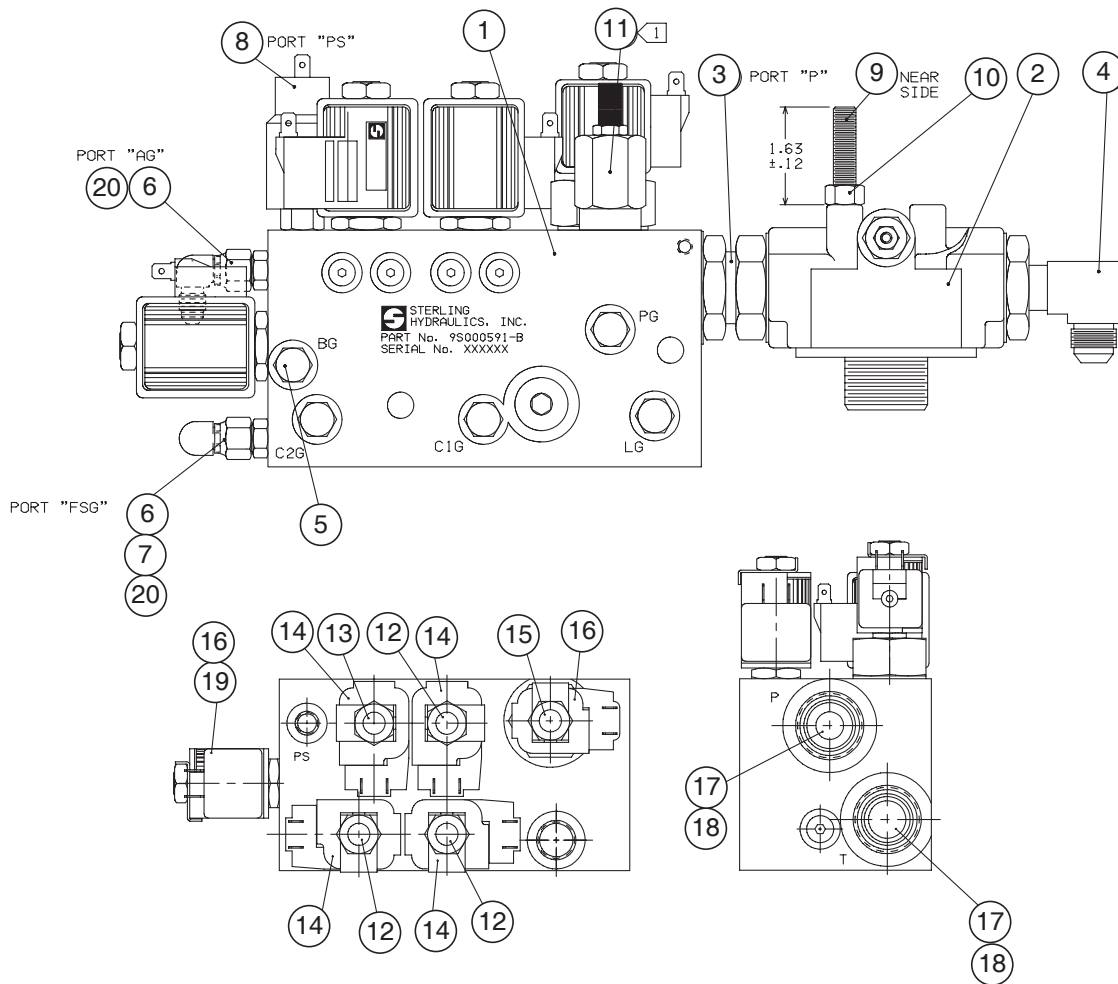
CABLE DRUM GROUP

ITEM	PART NO.	DESCRIPTION	QTY.
			ELECTRONIC CONTROLS
1	8M-2031	BALL BEARING	1
2	4F-2041	BEARING CUP	2
3	5P-3236	BEARING CONE	2
4	6K-7917	CAPSCREW, HEX HEAD (1/2 - 13 X 1 G5 SS)	12
5	5P-2566	CAPSCREW, HEX HEAD (1/2 - 13 X 1 1/2 G8 Z)	11
6	1S-6119	O-RING	2
7	123-4416	RETAINING RING, EXTERNAL	2
8	7M-2275	RETAINING RING, INTERNAL	1
9	118-5866	OIL SEAL	2
11	118-7229	CABLE DRUM	1
12	118-7215	SECOND REDUCTION GEAR	1
13	118-6583	SECOND REDUCTION GEAR SHAFT	1
14	118-6968	BEARING CARRIER, COVER	1
15	118-6975	BEARING CARRIER, DRUM	2
16	118-5847	SHIM SET (1 pair each, .005, .007, .020 in. (.13, .18, .51 mm))	1-2 AR
17	118-6273	FERRULE - 3/4 IN. (19 mm) WIRE ROPE	1
	118-6275	FERRULE - 7/8 IN. (22 mm) WIRE ROPE	1
	118-6276	FERRULE - 1 IN. (25 mm) WIRE ROPE	1
18	-----	NO GASKET, USE DOW RTV 732 OR EQUIVALENT	--
19	138-2400	VALVE MOUNTING PLATE	1

AR - AS REQUIRED

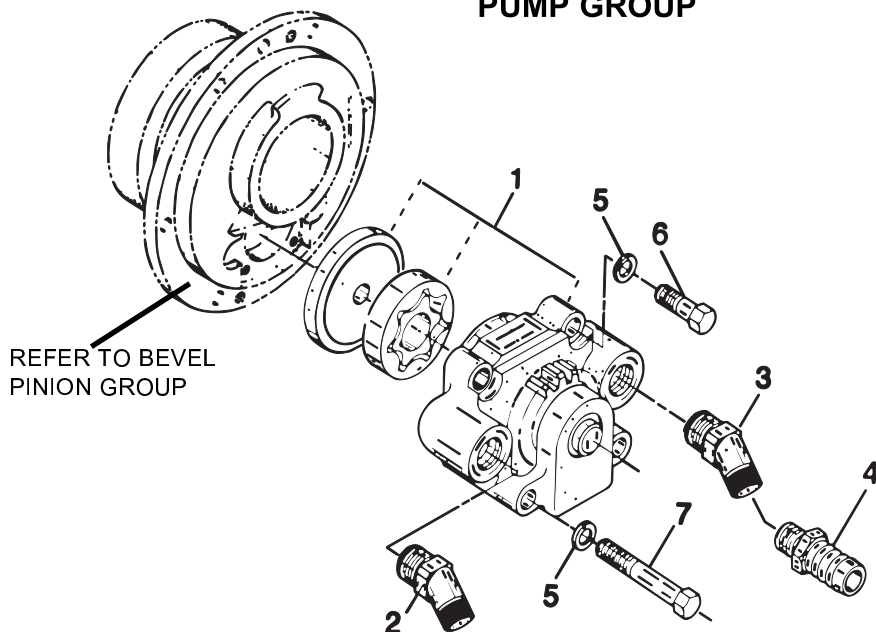
SS - SELF SEALING

CONTROL VALVE ASSEMBLY



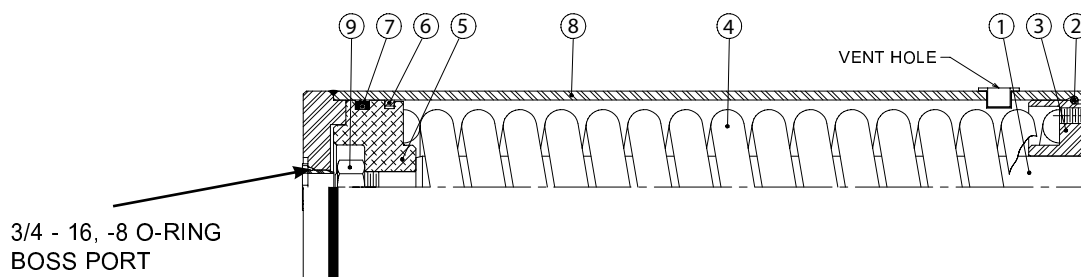
ITEM	PART NO	DESCRIPTION	QTY
1	174-0333	CONTROL VALVE - INCLUDES 12-19 & HOUSING	1
2	118-6321	FILTER HEAD	1
3	138-2437	UNION	1
4	138-2438	ELBOW, 90° -8	1
5	155-3624	HEX HEAD PLUG (-4 ORB)	5
6	3J-7352	ADAPTER, -4 ORB	2
7	9L-8493	CAP, -4	1
8	317-7553	PRESSURE SWITCH	1
9	1J-8668	STUD (3/8 - 16 X 2)	1
10	9S-8752	NUT-HEX (3/8)	2
11	140-1183	RELIEF VALVE	1
	294-7612	SEAL KIT	1
12	140-1176	SOLENOID VALVE, CLUTCH & F/S - W/O COIL	3
	294-7611	SEAL KIT	1
13	140-1178	PROPORTIONAL BRAKE SOLENOID VALVE - W/O COIL	1
	140-1177	SEAL KIT	1
14	140-1179	COIL FOR 12 & 13	4
15	140-1180	MAIN PRES. SOLENOID VALVE - W/O COIL	1
	140-1181	SEAL KIT	1
16	140-1182	COIL FOR 15 & 19	2
17	140-1195	CHECK VALVE	2
	140-1194	SEAL KIT	2
18	2U-7353	CHECK VALVE RETAINER	2
19	174-0701	SOLENOID VALVE, ACCUMULATOR, ISOLATOR - W/O COIL	1
	300-3575	SEAL KIT FOR 19	1
20	7K-9197	ELBOW, 90° -4	2
21	174-0334	CONTROL VALVE ASSEMBLY - ALL ITEMS ABOVE	1

PUMP GROUP



ITEM	PART NO.	DESCRIPTION	QTY
1	118-6979	PUMP ASSEMBLY	1
2	123-4411	ELBOW, 45° -8 PRESSURE SIDE	1
3	031-6303	ELBOW, 45° SUCTION	1
5	3B-4504	LOCKWASHER (1/4)	4
6	4M-5282	CAPSCREW, HEX HEAD (1/4 - 20 X 1 1/2 G8)	2
7	7X-0266	CAPSCREW, HEX HEAD (1/4 - 20 X 3 G8)	2

ACCUMULATOR ASSEMBLY - 118-7012



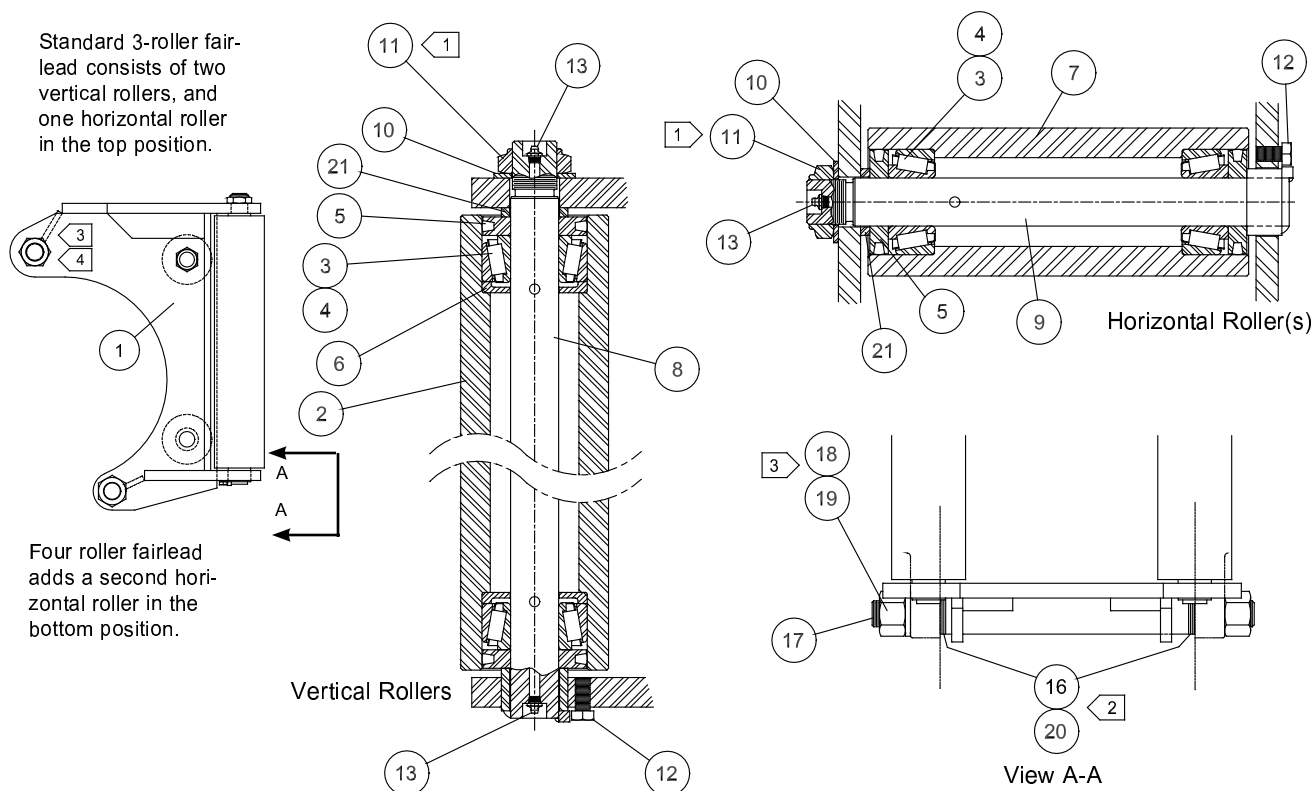
⚠ WARNING ⚠

! DANGER - 2,000 LB (900 KG) SPRING PRELOAD !
 USE PRESS FOR DISASSEMBLY PER SERVICE INSTRUCTIONS.
 SEVERE PERSONAL INJURY OR DEATH MAY RESULT IF ROD
 GUIDE REMOVAL IS ATTEMPTED WITHOUT A PRESS.

ITEM	PART NO.	DESCRIPTION	QTY
1	NSS	ROD	1
2	096-8139	RETAINING RING	1
3	NSS	ROD GUIDE	1
4	NSS	SPRING	1
5	NSS	PISTON	1
6	119-0554	CAST IRON PISTON RING	1
7		SEAL (PACCAR P/N 107956)	1
8	NSS	BARREL ASSEMBLY	1
9		NUT (PACCAR P/N 22702)	1
-	123-4413	SEAL KIT (CONTAINS 2, 6 & 7)	

NSS = Not Serviced Separately

FAIRLEAD ASSEMBLY



NOTES:

- ① WHILE TURNING ROLLER, TIGHTEN NUT. WHEN ROLLER WILL NO LONGER TURN, BACK OFF NUT 1/8 TURN.
- ② SHIM BOTH SIDES AS REQUIRED TO REDUCE END PLAY TO LESS THAN 0.030 in. (0.8 mm).
- ③ TIGHTEN NUT TO 200 - 300 LB•FT (271 - 407 N•m) TORQUE.
- ④ WHEN INSTALLING FAIRLEAD ON WINCH IN FIELD, REMOVE ORIGINAL CABLE GUARD SPACER TUBE AND RE-USE UPPER TIE BOLT (118-6298), LOCKWASHER (119-1623) AND NUT (2B-2673).

THOROUGHLY PACK ALL FAIRLEAD BEARINGS WITH MULTI-PURPOSE GREASE ON ASSEMBLY.

ITEM	PART NO.	DESCRIPTION	QUANTITY	
			3 ROLLER	4 ROLLER
	118-7211	3 ROLLER FAIRLEAD ASSEMBLY		
	118-7213	4 ROLLER FAIRLEAD ASSEMBLY		
1	118-6935	FAIRLEAD FRAME	1	1
2	118-6649	ROLLER - VERTICAL	2	2
3	119-2174	BEARING CONE	6	8
4	3K-3963	BEARING CUP	6	8
5	118-5803	DUST GUARD ASSEMBLY	6	8
6	119-2186	GREASE RETAINER	4	4
7	124-0763	ROLLER - HORIZONTAL	1	2
8	118-6648	SHAFT - VERTICAL	2	2
9	118-6604	SHAFT - HORIZONTAL	1	2
10	119-2211	WASHER	3	4
11	5M-6667	LOCK NUT	3	4
12	8T-9383	CAPSCREW, HEX HEAD (1/2 - 13 X 3/4)	3	4
13	3B-8489	GREASE FITTING	5	6
16	120-7634	WASHER - .030 in. (.8 mm)	5	6
17	118-6298	TIE BOLT	1	1
18	119-1623	LOCK WASHER (1 3/4)	1	1
19	2B-2673	NUT, HEX (1 3/4 - 5)	1	1
20	123-4410	SHIM - .125 in. (3.18 mm)	6-AR	6-AR
21	120-7536	SPACER	3	4
	174-4770	4th ROLLER KIT (CONTAINS ONE EACH 7, 9, 10, 11, 12, 13, 21 AND TWO EACH 3, 4 & 5)	1	-

AR - AS REQUIRED

CONTROL CABLE GUARD GROUP

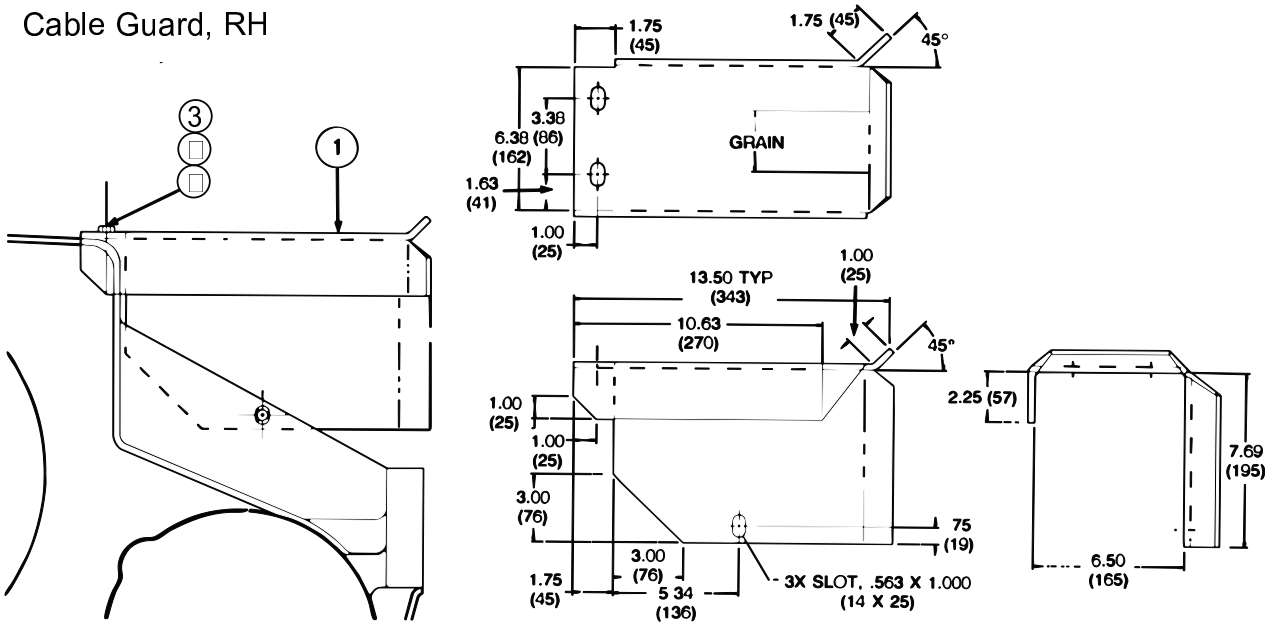
Material:

0.25 in. (6 mm) thick, hot rolled, descaled plate. ASTM A36 or AISI 1015.

Bend Radii:

0.25 in. (6 mm) minimum, corner notches at bend lines to be 60° to 90°.

Cable Guard, RH



ITEM	PART NO.	DESCRIPTION	QTY.
1	128-1999	CABLE GUARD, RH	1
3	5P-2228	CAPSCREW, HEX HEAD (1/2 -13 X 1 G8 Z)	3
5	5P-1076	WASHER (1/2 HARDENED)	3

* RH Cable Guard included with winch.