

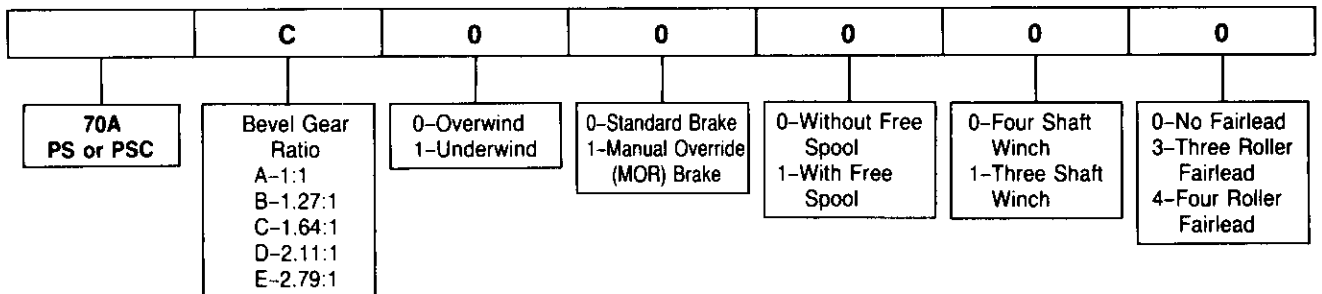
CARCO®

INSTALLATION AND PARTS MANUAL MODEL 70A PS FOR KOMATSU D65A, E & PX-12

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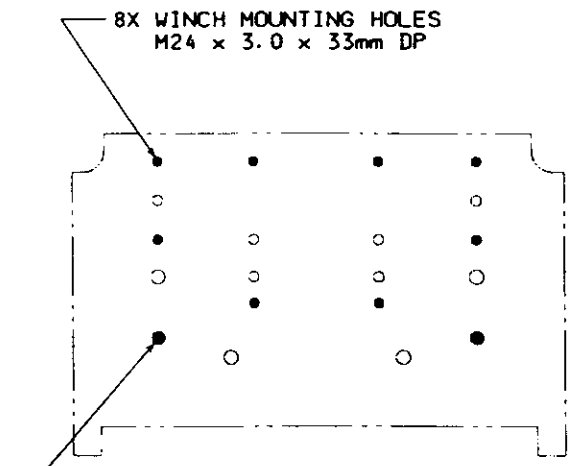
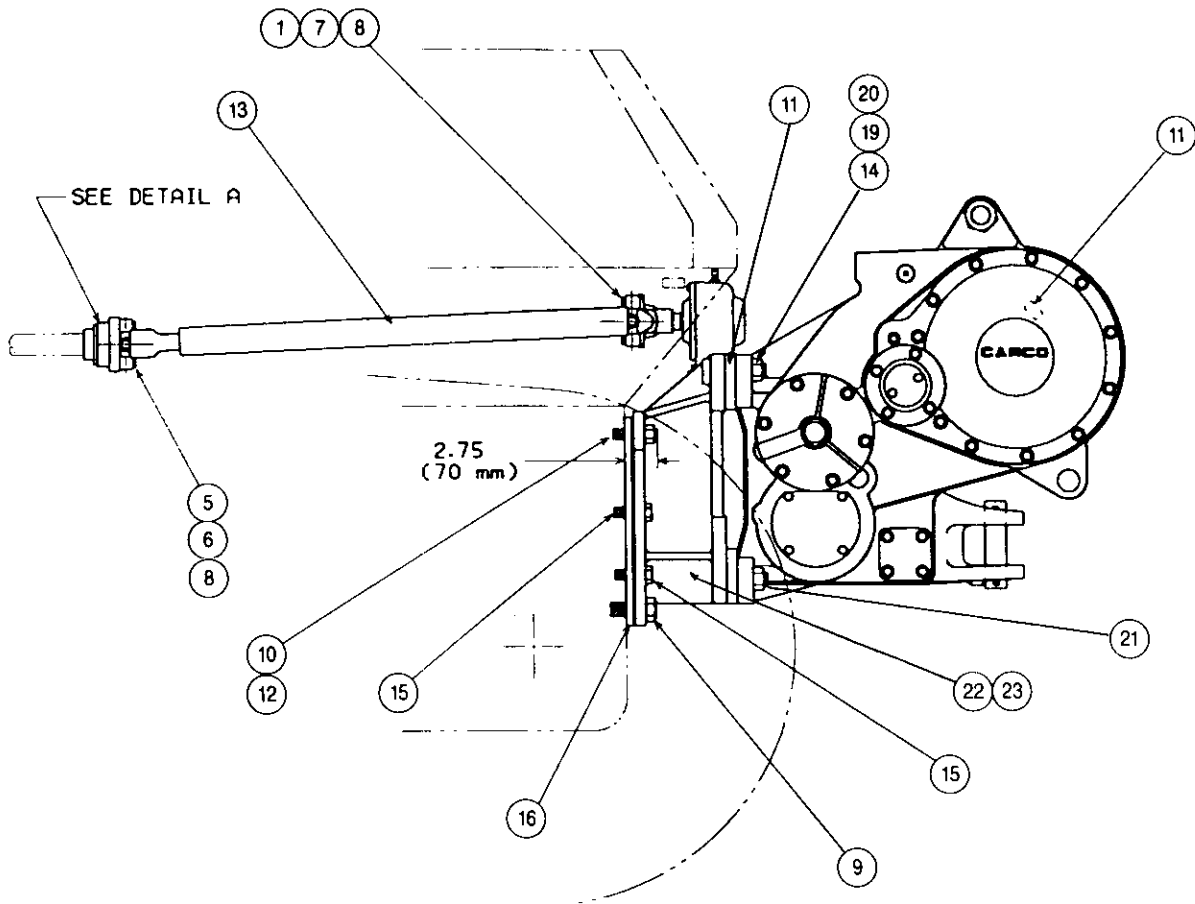
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MODEL

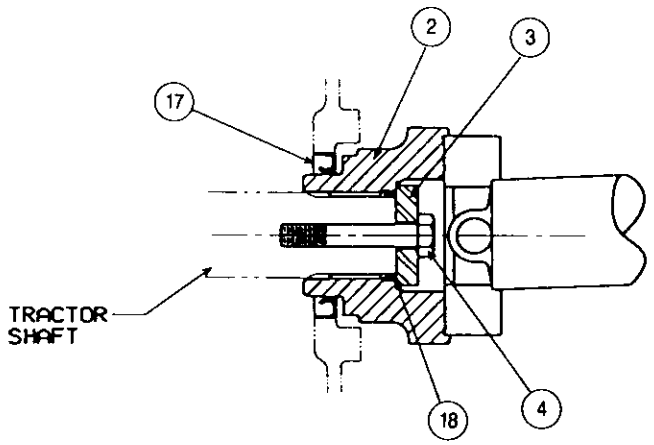


PACCAR WINCH DIVISIONS

**MODEL 70A
MOUNTING GROUP
KOMATSU D65A, E & PX-12**



VIEW OF TRACTOR REAR MOUNTING FACE



DETAIL A

MOUNTING INSTRUCTIONS

1. Remove all paint, dirt and oil from the mounting surfaces of the winch case, tractor, adapter brackets and spacers. The mounting surfaces must be clean and dry to provide a secure mount and resist movement while in use.
2. Remove the transmission cover from the rear of the tractor. The cover may be modified for clearance with the winch and reinstalled after the winch installation is completed.
3. If the tractor is equipped with a ripper circuit, remove the ripper supply tubes and cap the ports at the control valve. Remove the ripper joystick control valve from the console and cap the lines as directed in the tractor service manual.
4. Install the coupling, item 2, onto the tractor accessory drive shaft as directed in the tractor service manual. Refer to detail A.
5. Install the driveline assembly, item 13, onto the drive coupling, item 2. Be certain to remove all paint, oil or rust from the mating surfaces of the u-joint and yoke that may lead to loosening of the connection. Apply Loctite 242 to capscrews, item 5, and install with washers, item 6. Tighten the capscrews, item 5, to 44 lb.·ft. (60 N·m) torque.
6. Inspect the tapped holes in the rear face of the tractor. Make certain the threads are clean of rust and paint and that the thread depth will accommodate full engagement of the mounting fasteners.
7. Apply Loctite 271 to the clean, dry threads of studs, item 12. Install the studs into the tractor to a height of 2.75 in. (70 mm) as shown.
8. Apply Loctite 271 to the clean, dry threads of studs, item 14, and capscrews, item 21. Install the studs into the adapters, items 22 & 23, fully until the threads bottom out in the adapters.
9. Install spacers, item 11 between the adapters, items 22 & 23, and the winch. Tighten the nuts, item 20, and capscrews, item 21 only snug at this time. Some slight movement of the adapters may be necessary when installing the winch with adapters onto the tractor.
10. Place one spacer bar, item 16, onto each stud on the rear face of the tractor. Install the winch onto the studs while guiding control cables into position under the right hand console. Apply Loctite 271 to the clean, dry threads of nuts, item 10, and capscrews, items 9 & 15. Tighten the 24 mm fasteners to 650 lb.·ft. (880 N·m); 33 mm fasteners to 1200 lb.·ft. (1630 N·m) torque.
11. Tighten nuts, item 20, to 980 lb.·ft. (1300 N·m) torque. Tighten capscrews, item 21, to 680 lb.·ft. (900 N·m) torque.
12. Install the driveline assembly onto the winch gearbox yoke. Align driveline ends to assure bearing crosses are in phase. Be certain to remove all paint, oil and rust from the mating surfaces of the u-joint and yoke that may lead to loosening of the connection. Apply Loctite 242 to capscrews, item 7, and install with washers, item 1. Tighten the capscrews, item 7, to 38 lb.·ft. (52 N·m) torque.
13. Check oil level in adapter gearbox and fill to level plug with SAE 90, GL5 gear oil. Oil capacity of gearbox is 1.8 qt. (1.7 l).
14. Fill winch to sight glass level plug with recommended oil. Oil capacity of winch case is 78 qt. (74 l).

⚠ WARNING

Winch and mounting adapters weighs approximately 2800 lb. (1270 kg) without wire rope (cable) or oil. Make certain lifting equipment has adequate capacity. Attempting to lift the winch with inadequate equipment may result in personal injury or property damage.

ITEM	PART NO.	DESCRIPTION	QTY.
1	18003	LOCKWASHER (3/8)	4
2	29667	COUPLING	1
3	29671	HOLDER	1
4	29670	CAPSCREW, HEX METRIC-SPL.	1
5	69773	CAPSCREW, HEX (HM10-1.5 × 50 mm)	4
6	70953	WASHER, SPL.	4
7	32268	CAPSCREW, HEX (3/8-24 × 1 3/4)	4
8	101947	U-JOINT ASSEMBLY	2
9	31822	CAPSCREW, HEX METRIC-SPL.	2
10	70184	NUT, HEX (M24-3)	4
11	69053	SPACER	4
12	69788	STUD (M24-3)	4
13	29665	DRIVELINE ASSEMBLY	1
14	29912	STUD (1 1/8 - 7 × 5 G8)	4
15	70181	CAPSCREW (M24-3 × 80 mm)	4
16	29666	SPACER	4
17	29668	SEAL	1
18	29669	O-RING	1
19	27803	WASHER (1 1/8 HARDENED)	4
20	70768	NUT, HEX (1 1/8 - 7)	4
21	31037	CAPSCREW, HEX (1-8 × 3 1/2 G8)	4
22	27772	ADAPTER, LH	1
23	27773	ADAPTER, RH	1

**MODEL 70A PS
CONTROL GROUP
KOMATSU D65A, E & PX-12**

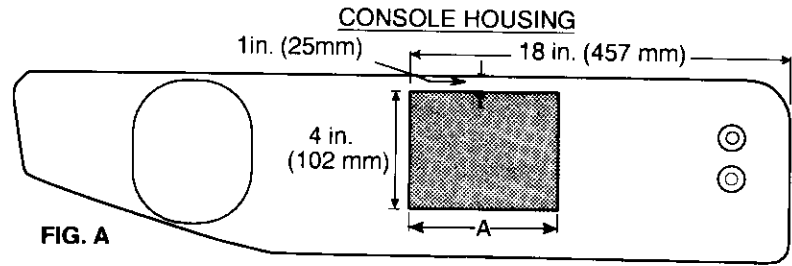


FIG. A

DIMENSION A = 5.75 in. (146 mm) with Freespool
4.125 in. (105 mm) without Freespool

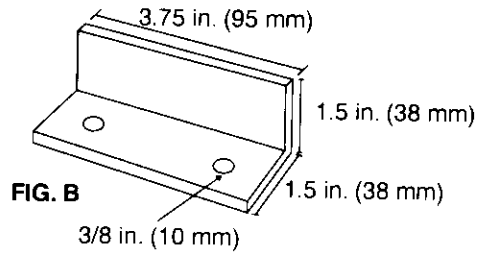
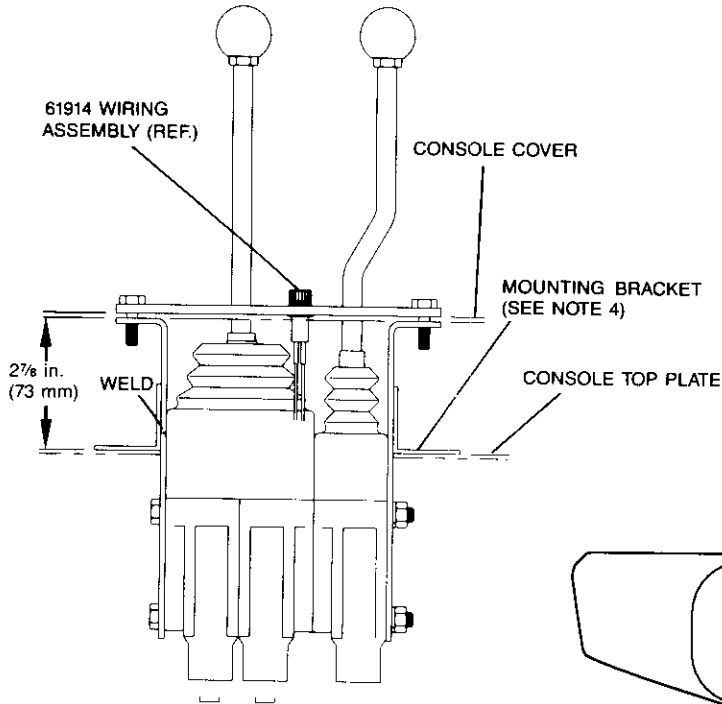


FIG. B

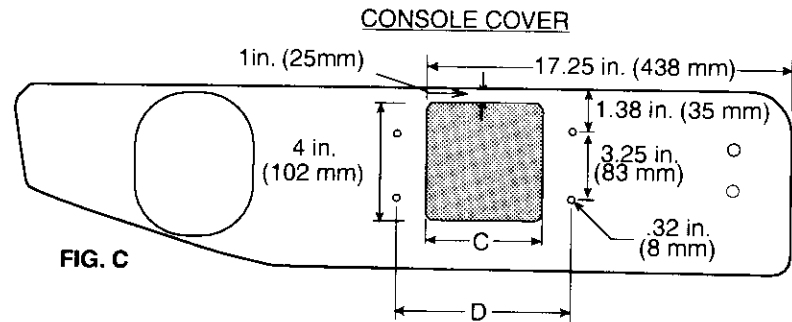
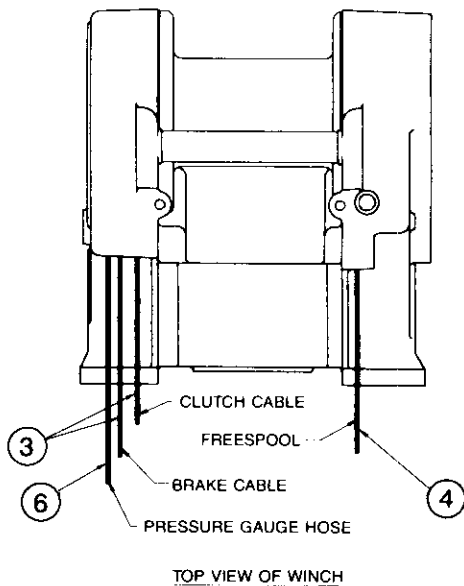


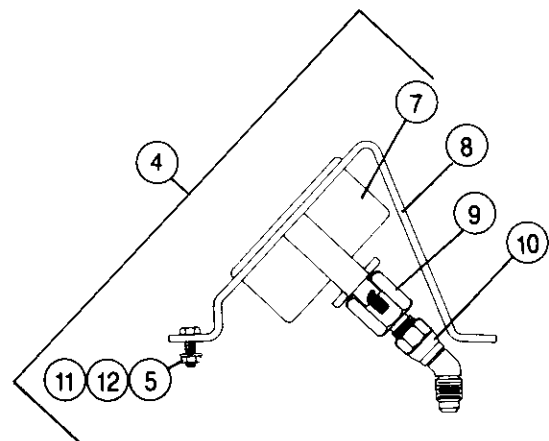
FIG. C

DIMENSION C - 4.75 in. (120 mm) with Freespool
3.25 in. (83 mm) without Freespool

D - 6.625 in. (168 mm) with Freespool
5.00 in. (127 mm) without Freespool



TOP VIEW OF WINCH



CONTROL INSTALLATION INSTRUCTIONS

Note: These instructions are provided as a general guide. Tractor options, special application requirements or local regulations may require deviation from these recommendations.

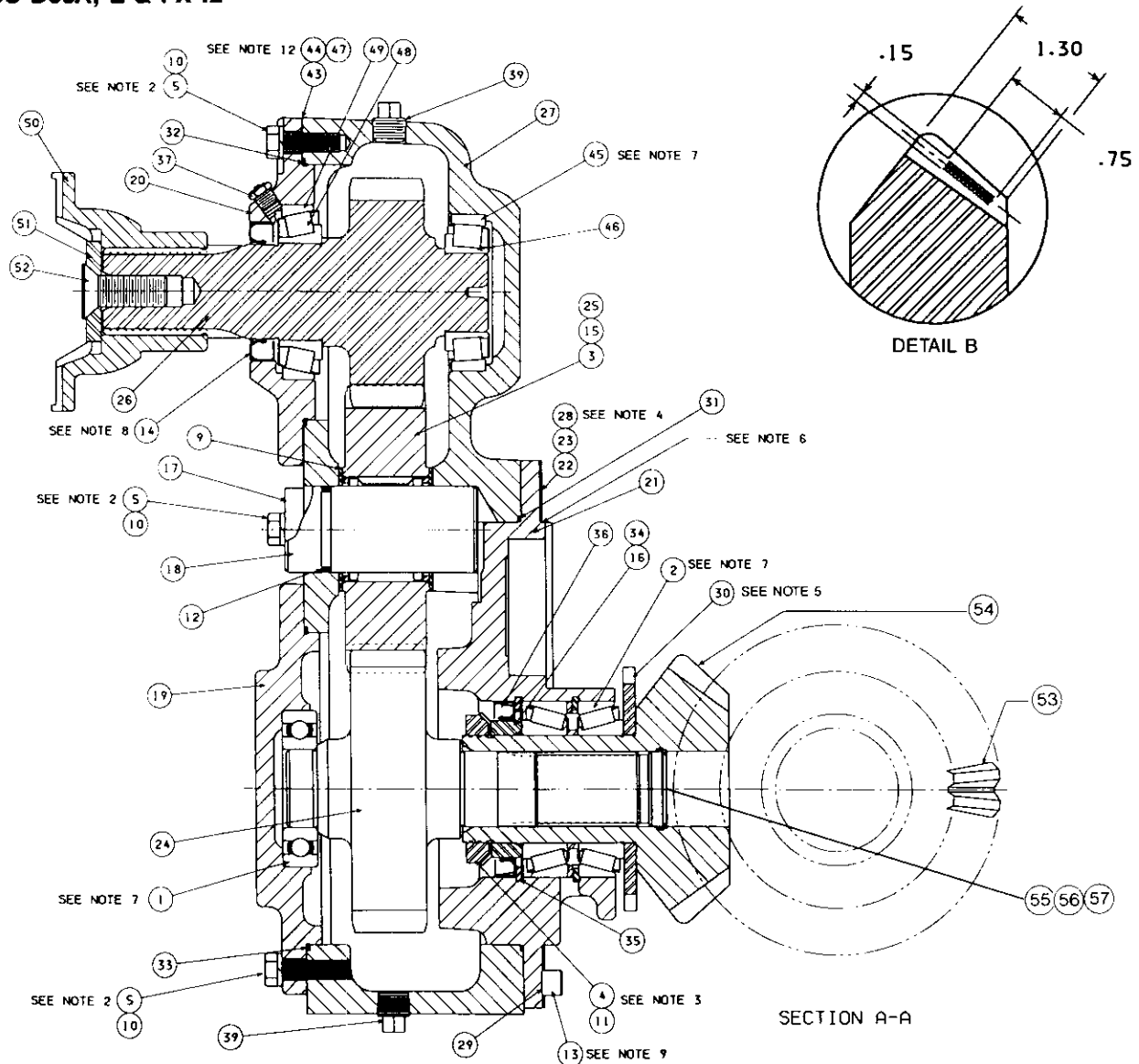
1. Remove the armrest, console cover and side plates from the tractor right hand console.
2. If the tractor is equipped with a ripper control circuit, remove the joystick control valve and piping from the console. Cap the opened lines as recommended in the tractor service manual.
3. Remove the shaded area from the top plate of the right hand console housing as shown in figure A. Grind smooth and repaint rough areas as required.
4. From a piece of approximately $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$ in. angle iron, fabricate two small mounting brackets as in figure B. The brackets must be able to bolt to the top plate of the console housing. Weld the fabricated mounting brackets to the side of the control stand kit such that the top of the control stand bracket is $2\frac{7}{8}$ in. (73 mm) from the bottom of the angle bracket. The $2\frac{7}{8}$ in. (73 mm) dimension is the clearance from the top of the console cover to the top plate of the console housing.
5. Carefully route the control cables, filter light wiring assembly and pressure gauge hose (if equipped) from the winch to the underside of the right hand console. Pass the control cables up through the console top plate and install them into the control lever assembly. Refer to the Model 70A service manual, PC-137 for installation and adjustment procedures.
6. Bolt the control lever assembly to the top plate of the console housing. Remove the gate plate from the top of the control lever assembly. Modify the console cover as shown in figure C. Install the console cover onto the console housing and control lever assembly.
7. Install the filter indicator light wiring assembly into the gate plate. The free end of the indicator light wiring harness must be supplied 24 volt DC. The circuit is grounded through the filter bypass sending unit in the winch. Restrain the control cables, light wire and gauge hose with plastic tie straps as required to prevent chafing.
8. Install the gate plate onto the console cover using the original fasteners that held the gate plate onto the control lever assembly.
9. Mount the pressure gauge in clear view of the operator.
10. If the winch is equipped with the optional Manual Override (MOR) brake system, please refer to pages 14-15 for piping instructions when installing the control valve.
11. Verify proper control cable adjustment by following the instructions found on pages 8-10 of the Operators Manual, PC-104.

⚠ CAUTION

Avoid routing cables near moving shafts or linkage that may cause damage to cables or restrict free movement of tractor components.

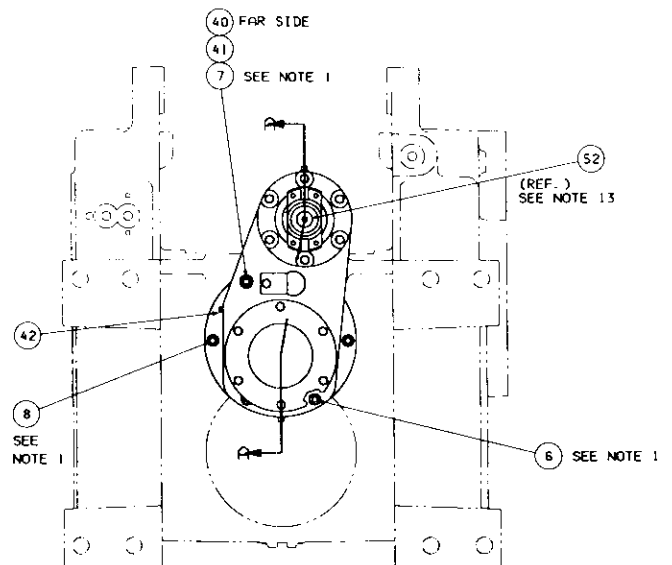
ITEM	PART NO.	DESCRIPTION	QTY.
1	69667	CONTROL STAND - WITH FREESPOOL (SHOWN)	1
	81965	CONTROL STAND - WITHOUT FREESPOOL	1
2	69799	CONTROL CABLE, FS 96 in. (2438 mm)	1
3	69800	CONTROL CABLE, PS & BRK 90 in. (2286 mm)	2
4	62058	PRESSURE GAUGE KIT (INCLUDES ITEMS 5-12)	1
5	69644	NUT, HEX ($\frac{5}{16}$ - 18)	2
6	34196	HOSE	1
7	27673	PRESSURE GAUGE	1
8	27651	BRACKET	1
9	27652	ADAPTER ($\frac{1}{4}$ NPT - 4)	1
10	70122	UNION, 45° (-4)	1
11	27683	CAPSCREW, HEX HEAD ($\frac{5}{16}$ - 18 \times $1\frac{1}{4}$)	2
12	69640	WASHER ($\frac{5}{16}$)	2

**MODEL 70A PS
MOUNTING GROUP
KOMATSU D65A, E & PX-12**



NOTES:

1. APPLY "LOCTITE 242" TO CLEAN DRY THREADS AND TORQUE TO 60 FT-LBS.
2. APPLY "LOCTITE 242" TO CLEAN DRY THREADS AND TORQUE FASTENERS TO 25 FT-LBS.
3. TORQUE BEARING LOCKNUT, ITEM 4, TO 150 FT-LBS., PINION TO TURN SMOOTH BY HAND, 30 in/lbs MAX ON NEW ASSEMBLY.
4. SHIM AS REQUIRED FOR TOOTH CONTACT PATTERN PER DETAIL B WITH .004 TO .012 BACKLASH WITH BEVEL PINION HELD AXIALLY TOWARD CARRIER, ITEM 21, TO TAKE UP ALL AXIAL CLEARANCE IN BEARING ASSEMBLY, ITEM 2.
5. APPLY "LOCTITE 601" TO BORE OF PUMP PINION, ITEM 30, AND BEVEL PINION SHOULDER. PRESS PUMP PINION ONTO BEVEL PINION AND SEAT SECURELY AGAINST SHOULDER. ALLOW PROPER SET-UP TIME BEFORE USAGE.
6. APPLY APPROX. $\frac{3}{16}$ " BEAD OF SILASTIC SEALANT (RTV 732) TO PILOT.
7. APPLY THIN COATING OF MULTIPURPOSE CALCIUM OR LITHIUM BASED MEDIUM GREASE. DO NOT PACK SOLID.
8. INSTALL SEAL, ITEM 14, WITH CLOSED SIDE FLUSH WITH OUTBOARD FACE OF CAP, ITEM 20.
9. APPLY "LOCTITE 242" TO CLEAN, DRY DOWEL PIN, ITEM 13, AND INSERT IN CASE.
10. APPLY PIPE THREAD SEALANT TO FITTINGS, ITEMS 37, 38, 39 & 42.
11. ENGINEERING APPROVAL REQUIRED FOR SEALANT SUBSTITUTIONS.
12. USE SHIMS, ITEMS 43, 44 & 47, UNDER GEARING CAP, ITEM 20, AS REQUIRED TO PROVIDE .004-.006 (.102-.152 mm) BEARING END PLAY. INSTALL CAP WITHOUT SHIMS. APPLY FIRM HAND PRESSURE AGAINST CAP. DETERMINE GAP BETWEEN CAP AND GEARBOX BY AVERAGING 3 MEASUREMENTS APPROXIMATELY EQUALLY SPACED. INSTALL SHIMS TO EQUAL GAP PLUS .010 (.254 mm).
13. APPLY "LOCTITE 242" TO CLEAN DRY THREADS AND TORQUE TO 140 FT-LBS.



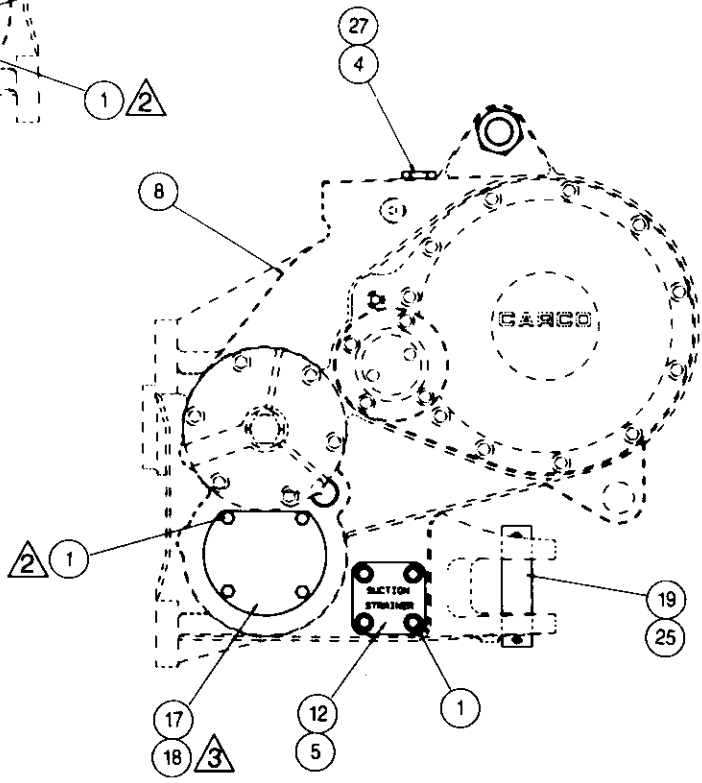
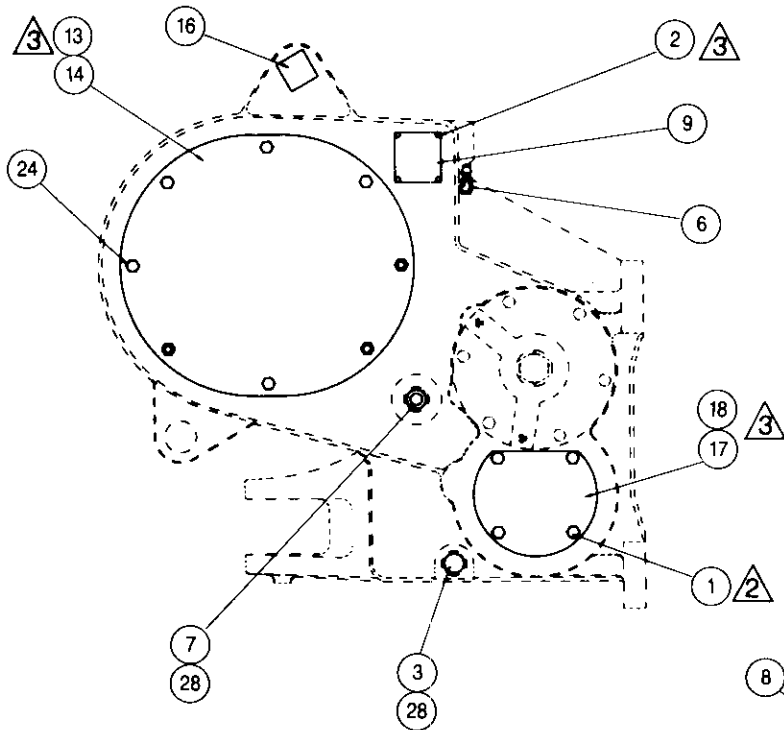
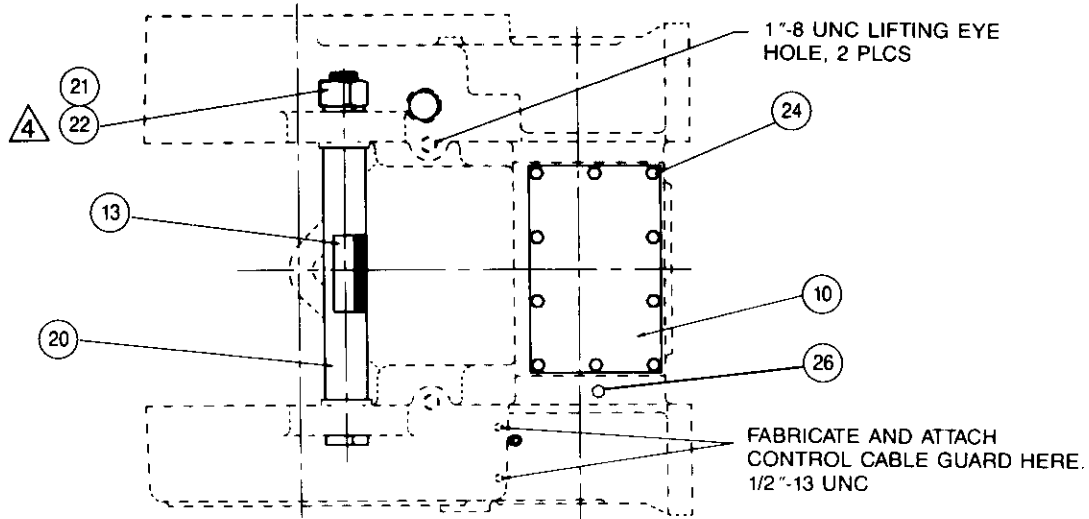
**MODEL 70A PS
MOUNTING GROUP
KOMATSU D65A, E & PX-12**

ITEM	PART NO.	DESCRIPTION	QTY.
1	78337	BALL BEARING	1
2	70077	ROLLER BEARING	1
3	70648	NEEDLE BEARING	1
4	24816	LOCKNUT, BEARING	1
5	27992	CAPSCREW, HEX HEAD (3/8 - 16 NC x 1 G5-SS)	13
6	73454	CAPSCREW, SOCKET HEAD (1/2 - 13 NC x 5 G8)	2
7	23445	CAPSCREW, SOCKET HEAD (1/2 - 13 NC x 5 1/2 G8)	1
8	72845	CAPSCREW, SOCKET HEAD (1/2 - 13 NC x 2 1/4 G8)	2
9	24581	THRUST WASHER	2
10	18003	LOCKWASHER (3/8)	13
11	11418	LOCKWASHER	1
12	13838	O-RING	1
13	22828	DOWEL PIN	1
14	70169	OIL SEAL, USE W/PINION 28930 ONLY	1
	29979	OIL SEAL, USE W/PINION 29976 ONLY	1
15	69582	BEARING SPACER	2
16	70382	SEAL SPACER	1
17	69583	PIN RETAINER	1
18	69584	IDLER PIN	1
19	27985	BEARING CAP, DRIVE PINION	1
20	27984	BEARING CAP, USE W/PINION 28930 ONLY	1
	29977	BEARING CAP, USE W/PINION 29976 ONLY	1
21	69961	CARRIER, BEVEL PINION	1
22	69826	SHIM, .020 in. (.51 mm)	2-AR
23	69827	SHIM, .007 in. (.18 mm)	2-AR
24	28820	PINION SHAFT	1
25	69938	IDLER PINION	1
26	28930	INPUT PINION, PRIOR TO S/N 9402142	1
	29976	INPUT PINION S/N 9402142 & UP	1
27	27976	GEAR BOX HOUSING	1
28	69945	SHIM, .005 in. (.13 mm)	2-AR
29	69946	SHIM GASKET	1
30	69947	PUMP DRIVE PINION	1
31	27988	O-RING	1
32	70138	O-RING	1
33	27987	O-RING	1
34	74992	O-RING	1
35	70163	RETAINING RING	1
36	28732	OIL SEAL	1
37	10074	RELIEF VALVE	1
39	23377	PLUG (3/8 - 18 NPTF)	2
40	22454	O-RING	1
41	72144	SEALING WASHER	1
42	18009	PIPE PLUG (1/8 - 27 NPTF)	1
43	28916	SHIM, .005 in. (.13 mm)	4-AR
44	28917	SHIM, .007 in. (.18 mm)	3-AR
45	28923	BEARING CUP	1
46	28922	BEARING CONE	1
47	28918	SHIM, .020 in. (.51 mm)	1
48	28922	BEARING CONE, USE W/PINION 28930 ONLY	1
	29981	BEARING CONE, USE W/PINION 29976 ONLY	1
49	28923	BEARING CUP, USE W/PINION 28930 ONLY	1
	29980	BEARING CUP, USE W/PINION 29976 ONLY	1
50	69500	YOKE, USE W/PINION 28930 ONLY	1
	29978	YOKE, USE W/PINION 29976 ONLY	1
51	32083	RETAINING RING, USE W/PINION 28930	1
	29991	RETAINER WASHER, USE W/PINION 29976 ONLY	1
52	100703	CAPSCREW, SOC. FLAT HEAD (5/8-11 x 1 1/4 GD8) USE W/PINION 29976 ONLY	1
53	29075	BEVEL GEAR SET, STANDARD SPEED, 33/26, INCLUDES PINION	1
	29077	BEVEL GEAR SET, SLOW SPEED, 38/18, INCLUDES PINION	1
54	69824	BEVEL PINION, STANDARD SPEED, 26T	1
	69822	BEVEL PINION, SLOW SPEED, 18T	1
55	69813	O-RING	1
56	70162	RETAINING RING	1
57	70626	PLUG, BEVEL PINION	1

SS = SELF SEALING AR = AS REQUIRED

NOTE: If repairing a BEVEL GEAR GROUP on a winch prior to S/N 9402142 that requires a new input pinion shaft, item 26, order product improvement kit P/N 62466. This kit provides a larger diameter splined shaft on the pinion shaft, item 26, for improved shaft and yoke service life. Kit P/N 62466, includes items 14, 20, 22, 23, 26, 28, 32, 37, 43-52.

WINCH CASE & COVERS



NOTES:

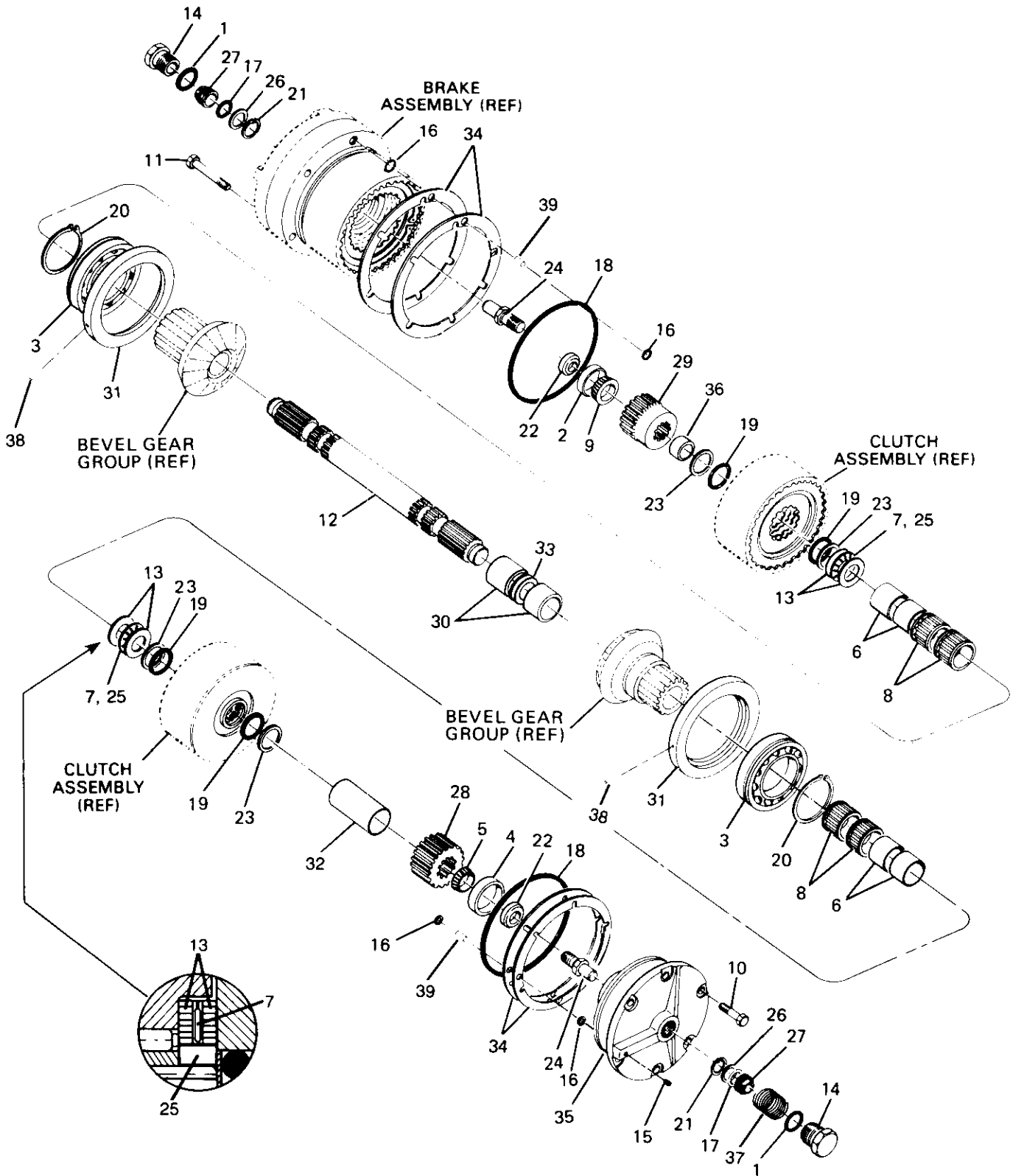
- 2** TIGHTEN FASTENERS TO 75 LB-FT (102 N·m) TORQUE.
- 3** APPLY "RTV 732" SILASTIC SEALANT TO BOTH SIDES OF GASKETS (ITEMS 11, 15 & 18) AND DRIVE SCREWS (ITEM 2).
- 4** TIGHTEN HEX NUT (ITEM 22) UNTIL LOCKWASHER (ITEM 21) IS FLATTENED AND THEN TURN ONE FLAT.

WINCH CASE & COVERS

ITEM	PART NO.	DESCRIPTION	QTY
1	22697	CAPSCREW, HEX HEAD (1/2 - 13 NC x 1 G5)	12
2	70053	DRIVE SCREW	4
3	70118	PLUG, DRAIN (MAY BE SUBSTITUTED FOR ITEM 7)	1
4	29825	PLUG, OIL FILL (INCLUDES ITEM 27)	1
5	22586	O-RING	2
6	11106	VENT PLUG	1
7	70193	SIGHT GAUGE (INCLUDES ITEM 28)	1
8	27752	WINCH CASE - STANDARD PTO - SHOWN	1
9	100268	SERIAL NUMBER DATA PLATE	1
10	27805	COVER, TOP ACCESS	1
11	27806	GASKET	1
12	70305	STRAINER COVER	1
13	100496	CAUTION LABEL	1
14	69951	COVER, SIDE ACCESS	1
15	69950	GASKET	1
16	28772	TIE BOLT	1
17	27807	COVER, LOWER ACCESS	2
18	27808	GASKET	2
19	36618	DRAW BAR PIN	1
20	27804	SPACER TUBE	1
21	27666	LOCKWASHER (1 3/4)	1
22	27655	NUT, HEX HEAD (1 3/4 NC)	1
23	13708	ELBOW (ONE ON INSIDE)	2
24	27745	CAPSCREW, HEX HEAD (1/2 - 13 NC x 1 G5 SS)*	15
25	70148	COTTER PIN (3/8 x 3 in.)	2
26	70191	PLUG (3/8 NPT SQHD)	1
27	31608	O-RING - FOR OIL FILL PLUG	1
28	31607	O-RING - FOR OIL LEVEL & DRAIN PLUG	2

*SS = SELF SEALING MATERIAL PREAPPLIED TO THREADS

CLUTCH SHAFT GROUP



CLUTCH SHAFT GROUP

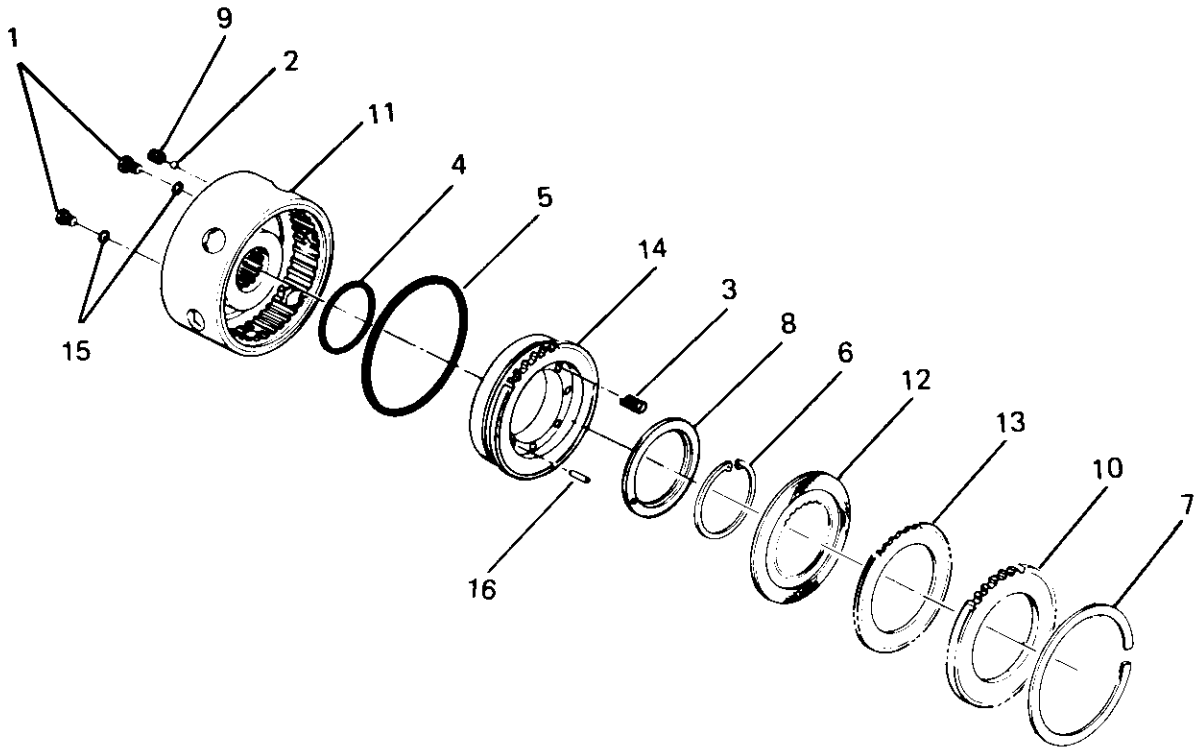
ITEM	PART NO.	DESCRIPTION	QTY
1	31608	O-RING (PART OF ITEM 14)	2
2	18049	BEARING CUP	1
3	70073	BALL BEARING — STD PTO	2
4	70075	BEARING CUP	1
5	70076	BEARING CONE	1
6	70083	NEEDLE BEARING — INNER RACE	4
7	11891	THRUST BEARING	2
8	70084	NEEDLE BEARING	4
9	18048	BEARING CONE	1
10	22697	CAPSCREW, HEX HEAD (1/2 - 13 NC x 1 G5)	6
11	24710	CAPSCREW, HEX HEAD (1/2 - 13 NC x 3 G5)	6
12	69997	CLUTCH SHAFT — 4 SHAFT WINCH	1
13	11892	THRUST BEARING RACE	4
14	29825	PLUG (CONTAINS ITEM 1)	2
15	70120	PLUG (1/4 NPT) EARLY	1
	26686	PLUG, HEX (-6 ORB) CURRENT	1
16	72097	O-RING	8
17	18170	O-RING	2
18	21833	O-RING	2
19	25023	O-RING	4
20	70158	RETAINING RING	2
21	70160	RETAINING RING	2
22	70361	BEARING RETAINER	2
23	25024	BACK-UP RING	4
24	101198	ROTARY SEAL SHAFT*	2
25	70379	THRUST BEARING SPACER	2
26	70333	BACK-UP WASHER	2
27	70334	ROTARY SEAL	2
28	69991	PINION GEAR — 18 TEETH - 4 SHAFT WINCH	1
29	70292	BRAKE HUB	1
30	69690	BEVEL GEAR SPACER	2
31	70376	BEARING CARRIER	2
32	69983	PINION SPACER — 4 SHAFT WINCH	1
33	70247	SHIM SET	1
34	27844	SHIM .005 in. (.13 mm)	AR
	27845	SHIM .007 in. (.18 mm)	AR
	27846	SHIM .020 in. (.51 mm)	AR
35	100971	CLUTCH SHAFT BRG. CARRIER — 4 SHAFT WINCH	1
36	69045	BRAKE HUB SPACER	1
37	70332	SPRING**	1
38	75267	ROLLPIN	2
39	70358	SLEEVE	4

AR — AS REQUIRED

*ROTARY SEAL SHAFT 70364 REPLACED BY 101198. REFER TO SERVICE BULLETIN 102.

**SPRING 70332 NOT USED. S/N 9400001 AND UP.

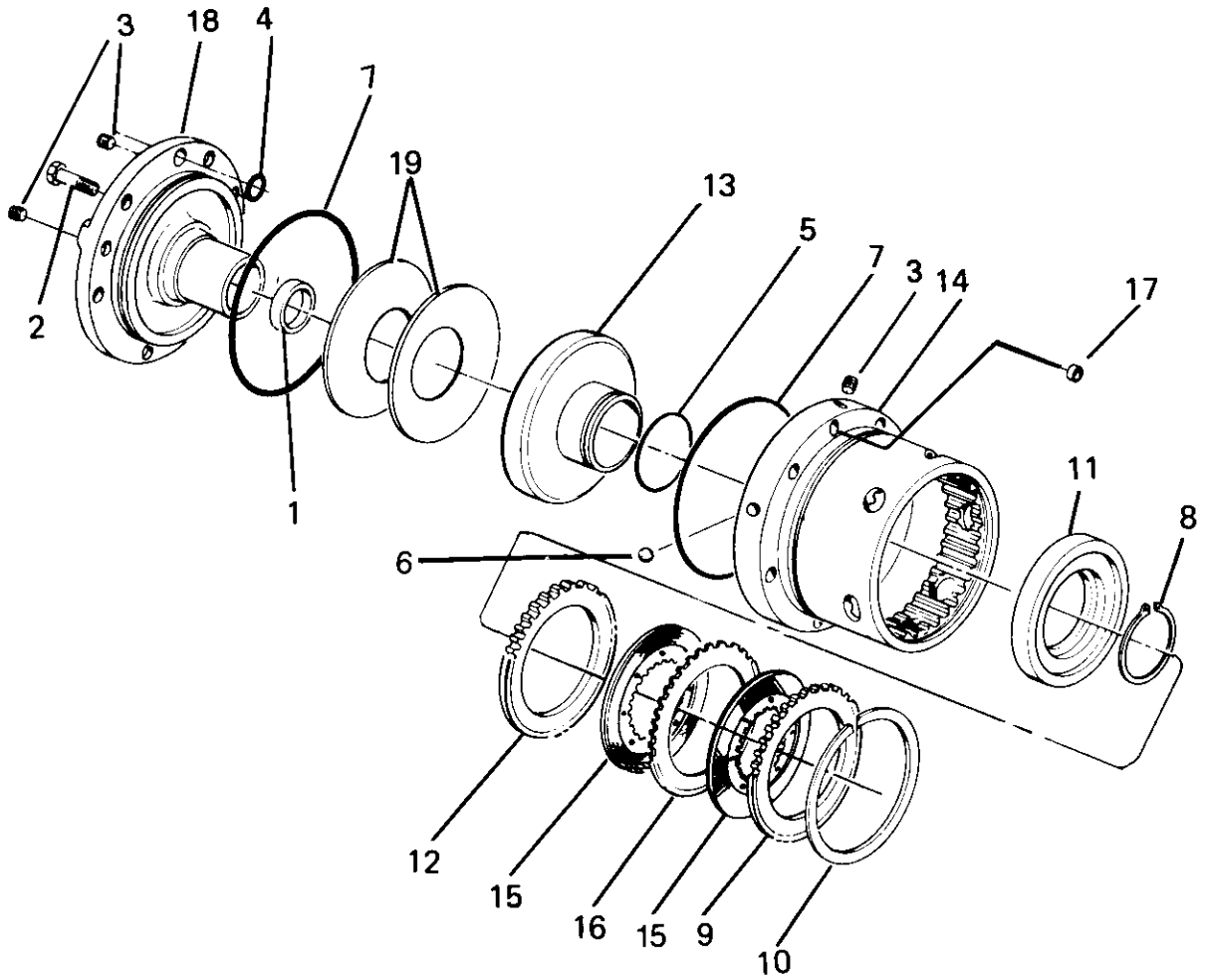
CLUTCH ASSEMBLY



ITEM	PART NO.	DESCRIPTION	QTY
—	81968	CLUTCH ASSEMBLY — INCLUDES ITEMS 1-16	
1	70177	PLUG, O-RING FLUSH — INCLUDES ITEM 15	2
2	70126	STEEL BALL	1
3	70130	SPRING	8
4	77367	O-RING	1
5	22357	O-RING	1
6	70170	RETAINING RING	1
7	26147	RETAINING RING	1
8	70328	SPRING RETAINER	1
9	70241	CHECK VALVE SEAT	1
10	26755	PRESSURE PLATE	1
11	28866*	CLUTCH HOUSING	1
12	70636	DISC — FRICTION, BRONZE	5
13	27861	DISC — STEEL .093 in. (2.36 mm)	4
14	70306	CLUTCH PISTON	1
15	70724	O-RING	2
16	70862	PIN	1

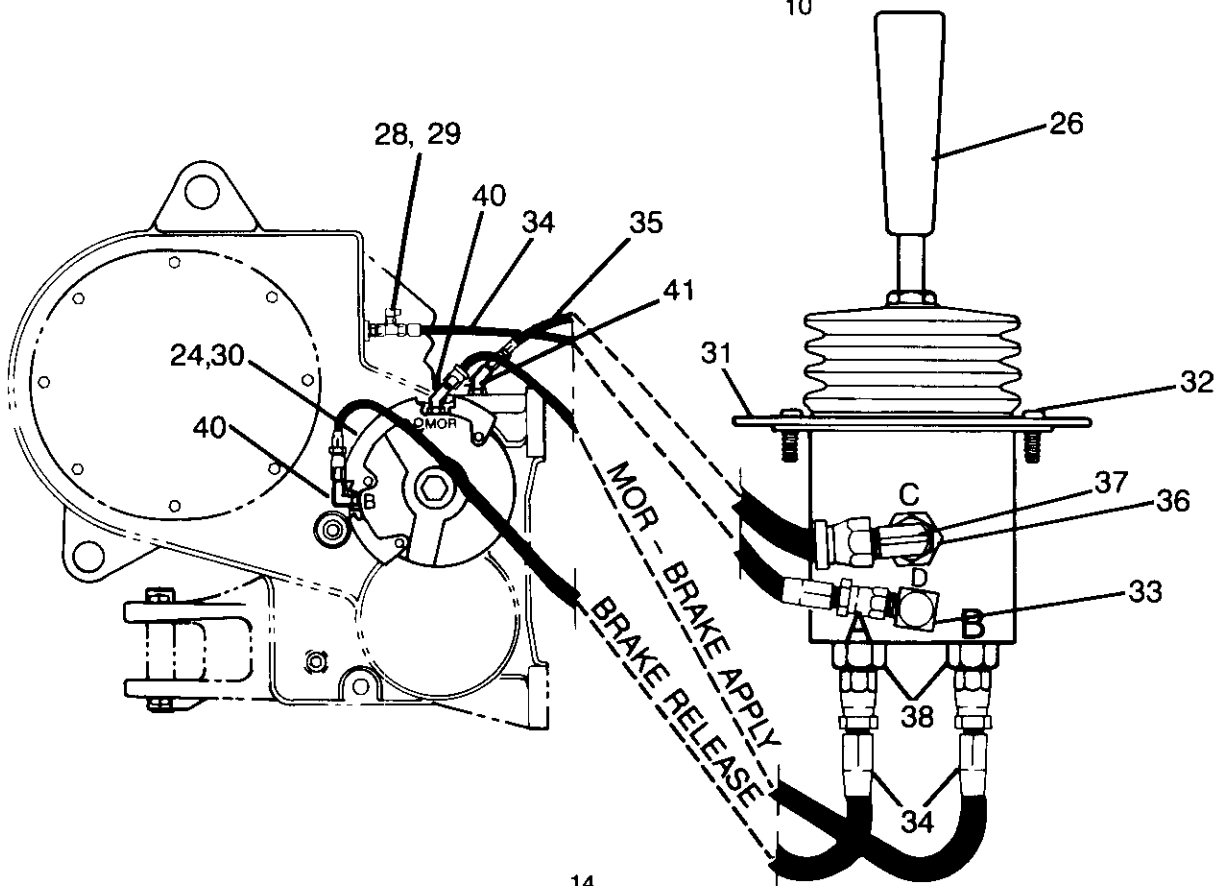
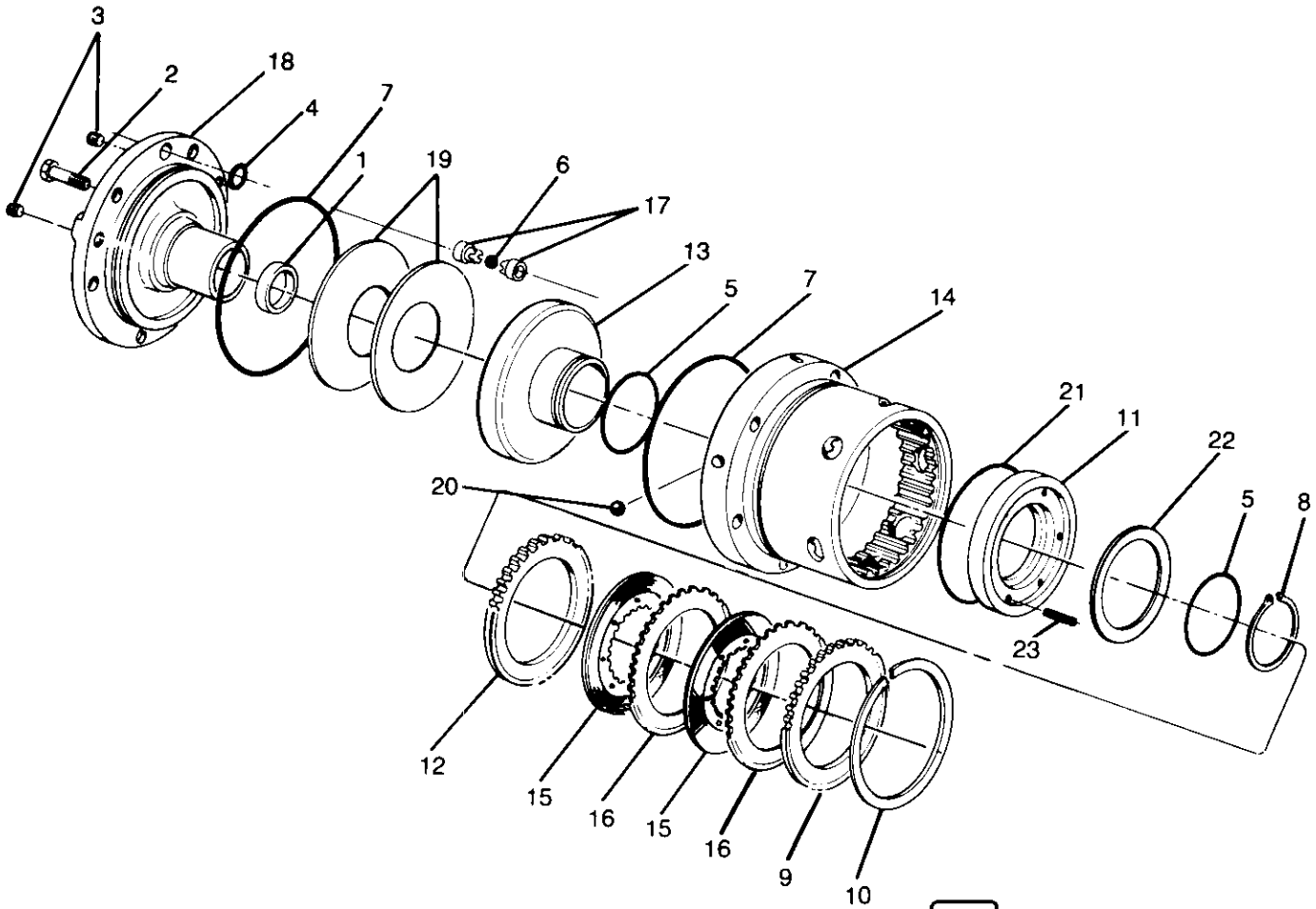
*Part No. 28866 includes Housing 70299 with two (2) steel balls 70126 driven into drilled passages.

BRAKE ASSEMBLY - STANDARD



ITEM	PART NO.	DESCRIPTION	QTY.
—	81960	BRAKE ASSEMBLY, STD — INCLUDES ITEMS 1-20	
1	18049	BEARING CUP	1
2	21961	CAPSCREW, HEX HEAD (3/8 - 16 NC x 1 G5)	2
3	70120	PLUG, HEX SOCKET (1/4 NPT) EARLY	2
	26686	PLUG, HEX (-6 ORB) CURRENT	2
4	22454	O-RING	3
5	10330	O-RING	1
6	70126	STEEL BALL (1/4 in., PRESSED & STAKED INTO HOUSING)	1
7	22358	O-RING	2
8	69807	RETAINING RING	1
9	26755	PRESSURE PLATE — OUTER	1
10	26147	RETAINING RING	1
11	69976	PISTON RETAINER	1
12	70293	PRESSURE PLATE — INNER	1
13	69921	BRAKE PISTON	1
14	101885	BRAKE HOUSING (REQUIRES 1 OF ITEM 6) CURRENT	1
15	70636	DISC — FRICTION BRONZE	8
16	27861	DISC STEEL — .093 in. (2.36 mm)	7
17	27843	INSERT (NOT USED ON CURRENT HOUSING W/ORB PLUG)	1
18	100973	BRAKE CARRIER (CURRENT, REQUIRES 2 ORB PLUGS, 3)	1
19	70255	BRAKE SPRING	2

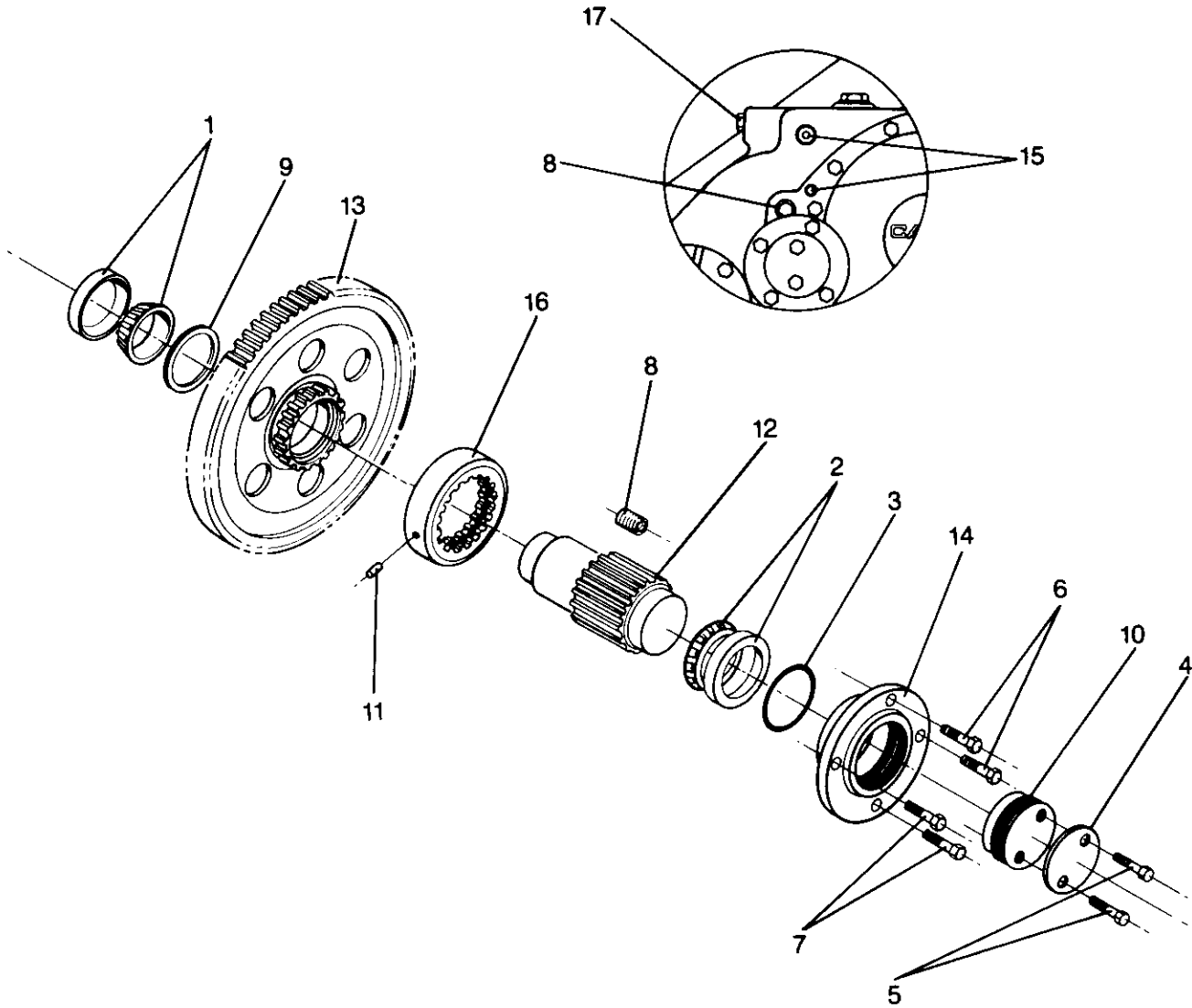
**MANUAL OVERRIDE (MOR)
BRAKE ASSEMBLY**



**MANUAL OVERRIDE (MOR)
BRAKE ASSEMBLY**

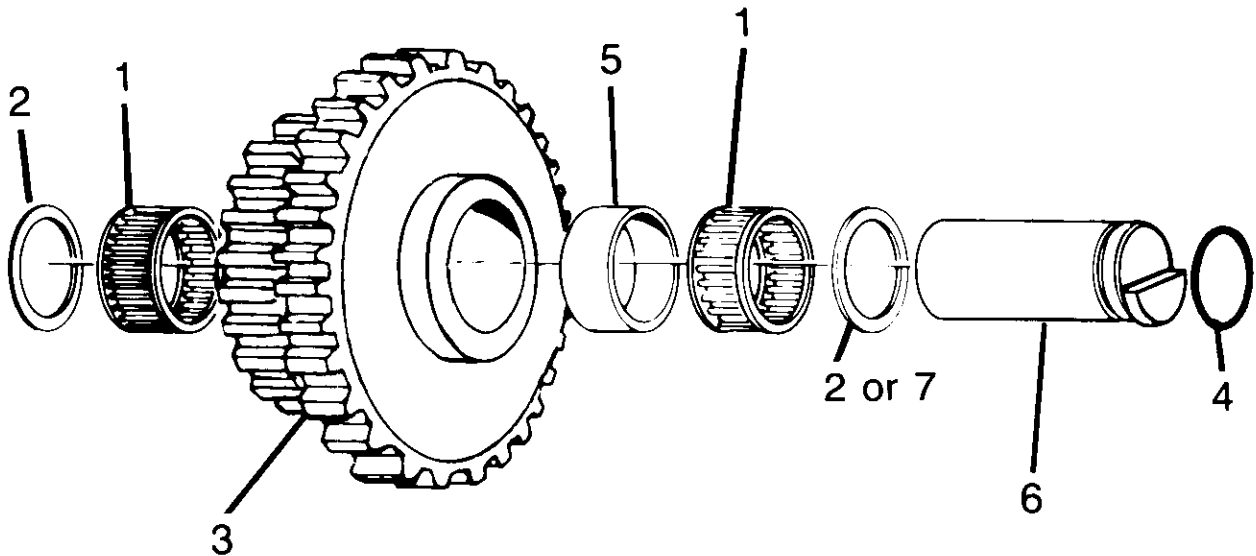
ITEM	PART NO.	DESCRIPTION	QTY
—	81961	BRAKE ASSEMBLY, MOR — INCLUDES ITEMS 1-23	
1	18049	BEARING CUP	1
2	21961	CAPSCREW, HEX HEAD	2
3	70120	PLUG, HEX SOCKET (¼ NPT) EARLY	2
	26686	PLUG, HEX (-6 ORB) CURRENT	2
4	22454	O-RING	3
5	10330	O-RING	2
6	24428	STEEL BALL (¾)	1
7	22358	O-RING	2
8	69807	RETAINING RING	1
9	26755	PRESSURE PLATE — OUTER	1
10	26147	RETAINING RING	1
11	69925	OVERRIDE PISTON	1
12	70293	PRESSURE PLATE — INNER	1
13	69921	BRAKE PISTON	1
14	27841	BRAKE HOUSING	1
15	70636	DISC — FRICTION BRONZE	8
16	27861	DISC — STEEL - .093 in. (2.36 mm)	7
17	27842	BALL GUIDE	2
18	100973	BEARING CARRIER	1
19	70255	BRAKE SPRING	2
20	70126	STEEL BALL (¼)	2
21	10450	O-RING	1
22	69924	SPRING RETAINER	1
23	69627	SPRING	6
24	69317	HOSE GUARD	1
25	69511	CONTROL VALVE (DOES NOT INCLUDE HANDLE)	1
26	26691	HANDLE	1
28	26002	SWIVEL TEE	1
29	26140	UNION 90° - 4	1
30	11073	WASHER	4
31	69513	DATA PLATE	1
32	11047	CAPSCREW, HEX HEAD	2
33	25131	ELBOW — 90° VALVE D PORT	1
34	70194	HOSE ASSEMBLY — PRESSURE	3
35	69499	HOSE ASSEMBLY — DRAIN	1
36	26891	ADAPTER VALVE C PORT	1
37	31426	UNION, 90° MALE VALVE C PORT	1
38	31284	ADAPTER	2
40	31341	ELBOW, 90° ¼ NPT - 4	2
41	31335	ELBOW, 45° ¾ NPT - 6	1

**IDLER SHAFT GROUP
WITHOUT FREESPOOL**



ITEM	PART NO.	DESCRIPTION	QTY.
1	69013	BEARING ASSEMBLY — INNER	1
2	69014	BEARING ASSEMBLY — OUTER	1
3	25880	O-RING	1
4	69655	LOCK PLATE	1
5	22729	CAPSCREW, HEX HEAD (1/2 - 13 x 3/4 G5)	2
6	13938	CAPSCREW, HEX HEAD (1/2 - 13 x 1 1/4 G5)	2
7	13421	CAPSCREW, HEX HEAD (1/2 - 13 x 2 G5)	2
8	27216	PLUG, SOCKET HEAD	1
9	11892	THRUST WASHER	1
10	69592	ADJUSTER	1
11	11836	ROLLPIN	1
12	69984	PINION, SECOND REDUCTION	1
13	27320	GEAR, FIRST REDUCTION	1
14	69974	CARRIER, IDLER SHAFT	1
15	25915	SCREW, SOCKET HEAD	2
16	69977	COLLAR	1
17	69782	CAPSCREW HEX HEAD (3/4 - 16 x 1 1/4 G5)	1

FOURTH SHAFT GROUP



FOR WINCH SERIAL NO. 9002141 TO 9002160 AND 9004003 AND UP.

ITEM	PART NO.	DESCRIPTION	QTY
1	70648	ROLLER BEARING	2
2	24581	THRUST WASHER .062 in. (1.58 mm)	1
3	28925	CLUSTER GEAR 37/17 TEETH	1
4	13838	O-RING	1
5	28926	SPACER	1
6	69673	COUNTERSHAFT PIN	1
7	28924	THRUST WASHER .217 in. (5.5 mm)	1

FOR WINCH SERIAL NO. BUILT PRIOR TO 9004003, EXCEPT 9002141 TO 9002160.

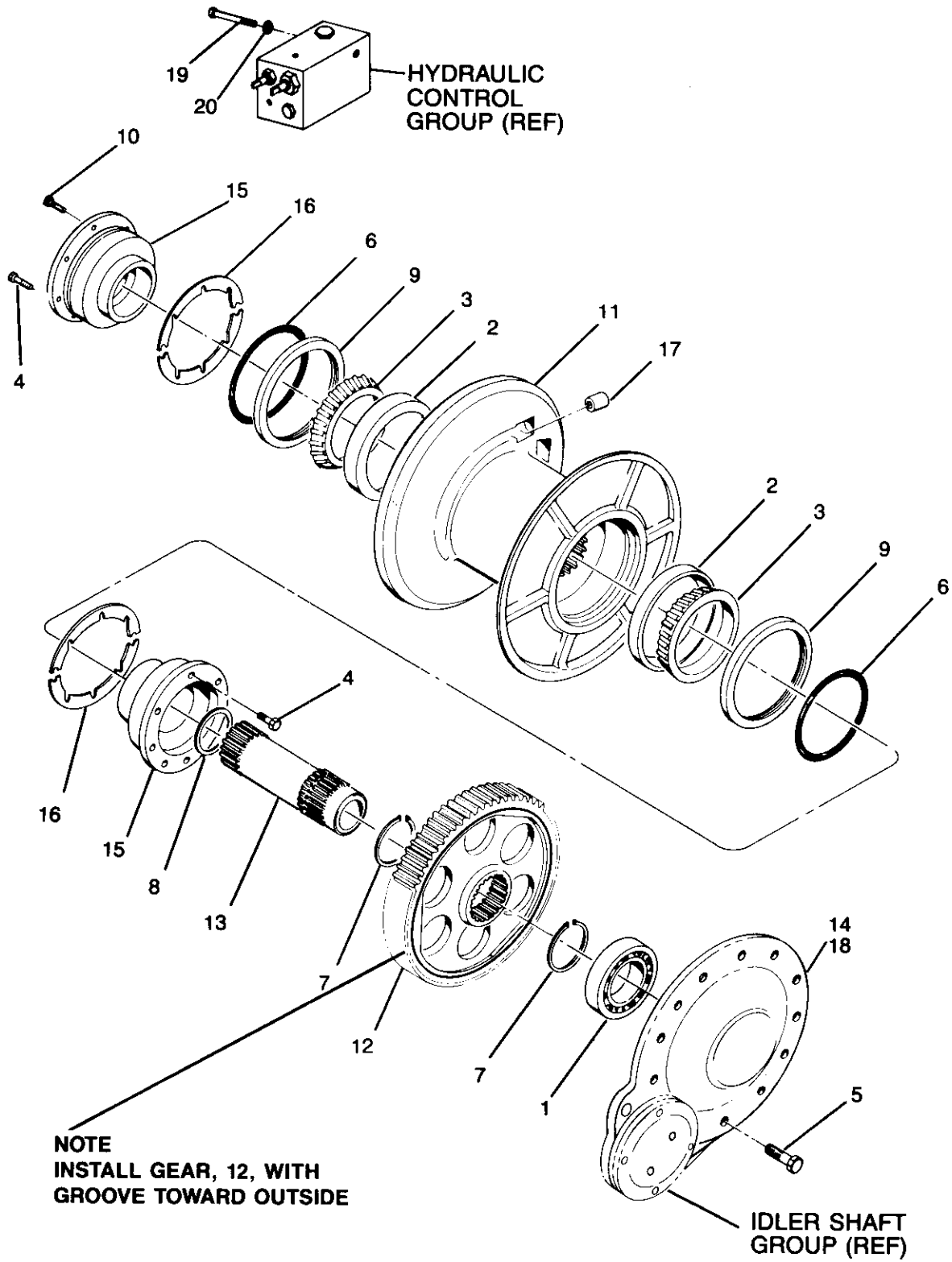
ITEM	PART NO.	DESCRIPTION	QTY
1	70648	ROLLER BEARING	2
2	24581	THRUST WASHER .062 in. (1.58 mm)	2
3	69985	CLUSTER GEAR 37/17 TEETH **	1
4	13838	O-RING	1
5	70342	SPACER	1
6	69673	COUNTERSHAFT PIN	1

**IF REPLACING CLUSTER GEAR 69985 ON EARLY MODEL 70 or 70A, ORDER QTY. 1 OF 28925 CLUSTER GEAR, QTY. 1 OF 28926 SPACER AND QTY. 1 OF 28924 THRUST WASHER.

**IDLER SHAFT GROUP
WITH FREESPOOL**

ITEM	PART NO.	DESCRIPTION	QTY.
1	69013	BEARING ASSEMBLY — INNER	1
2	69014	BEARING ASSEMBLY — OUTER	1
3	25880	O-RING	1
4	69655	LOCK PLATE	1
5	22729	CAPSCREW, HEX HEAD (1/2 - 13 x 3/4 G5)	2
6	13938	CAPSCREW, HEX HEAD (1/2 - 13 x 1 1/4 G5)	2
7	13421	CAPSCREW, HEX HEAD (1/2 - 13 x 2 G5)	2
8	27216	PLUG, SOCKET HEAD	1
9	11892	THRUST WASHER	1
10	69592	ADJUSTER	1
11	70349	BUSHING	1
12	69984	PINION, SECOND REDUCTION	1
13	101055	GEAR, FIRST REDUCTION	1
14	69974	CARRIER, IDLER SHAFT	1
15	70166	SHOULDER SCREW	1
16	70861	COTTER PIN	2
17	70136	BALL PLUNGER	2
18	18004	JAM NUT	2
19	70370	ROD END	2
20	69653	RETAINING RING	2
21	81921	SHIFT RAIL, INCLUDES ITEM 33	1
22	70348	YOKE	1
23	11059	JAM NUT	1
24	69263	SHIFT COLLAR	1
25	70652	CABLE CONNECTOR	1
26	69262	BELLCRANK WELDMENT	1
27	21961	CAPSCREW, HEX HEAD (3/8 - 16 x 1 G5)	2
28	11073	WASHER (1/2)	1
29	69979	COLLAR	1
30	69978	PIN	1
31	21119	O-RING	1
32	69963	CONTROL CABLE ADJUSTER	1
33	27475	NYLON PELLET	1
34	18003	LOCKWASHER (3/8)	2

CABLE DRUM GROUP



CABLE DRUM GROUP

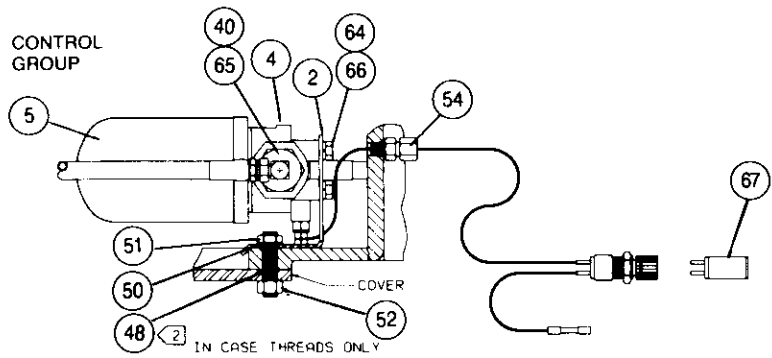
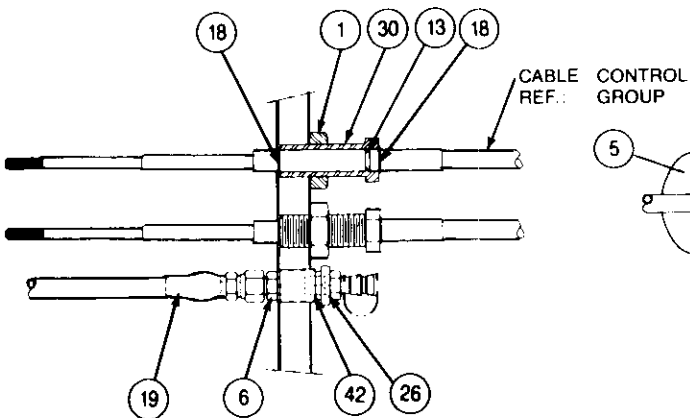
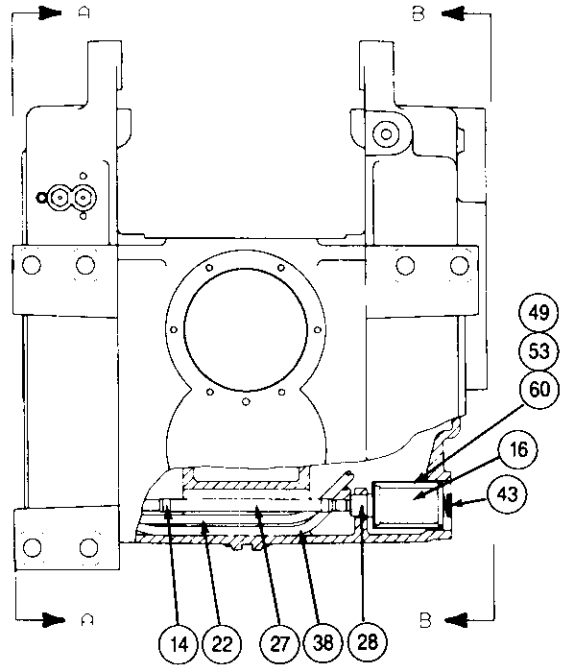
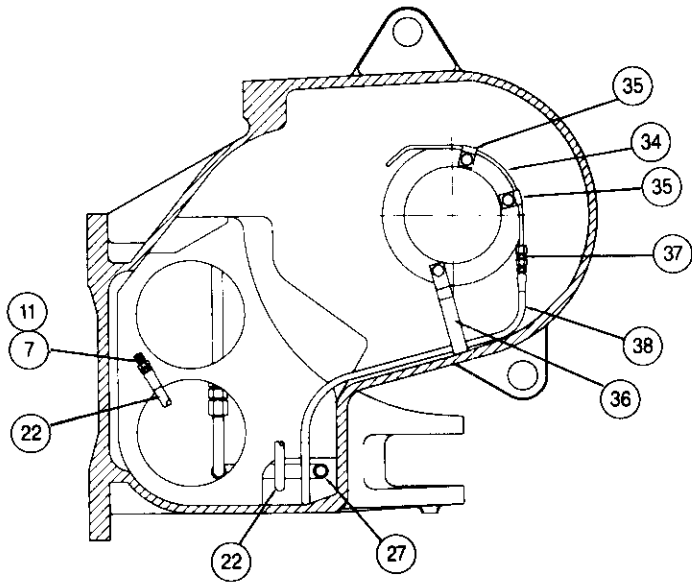
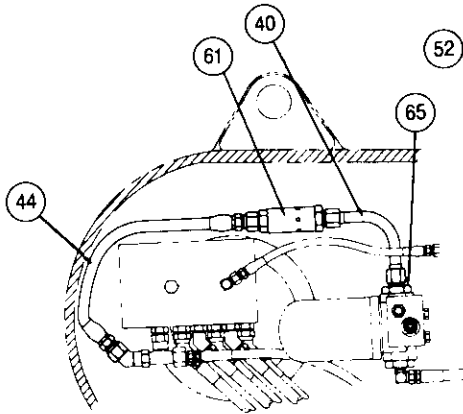
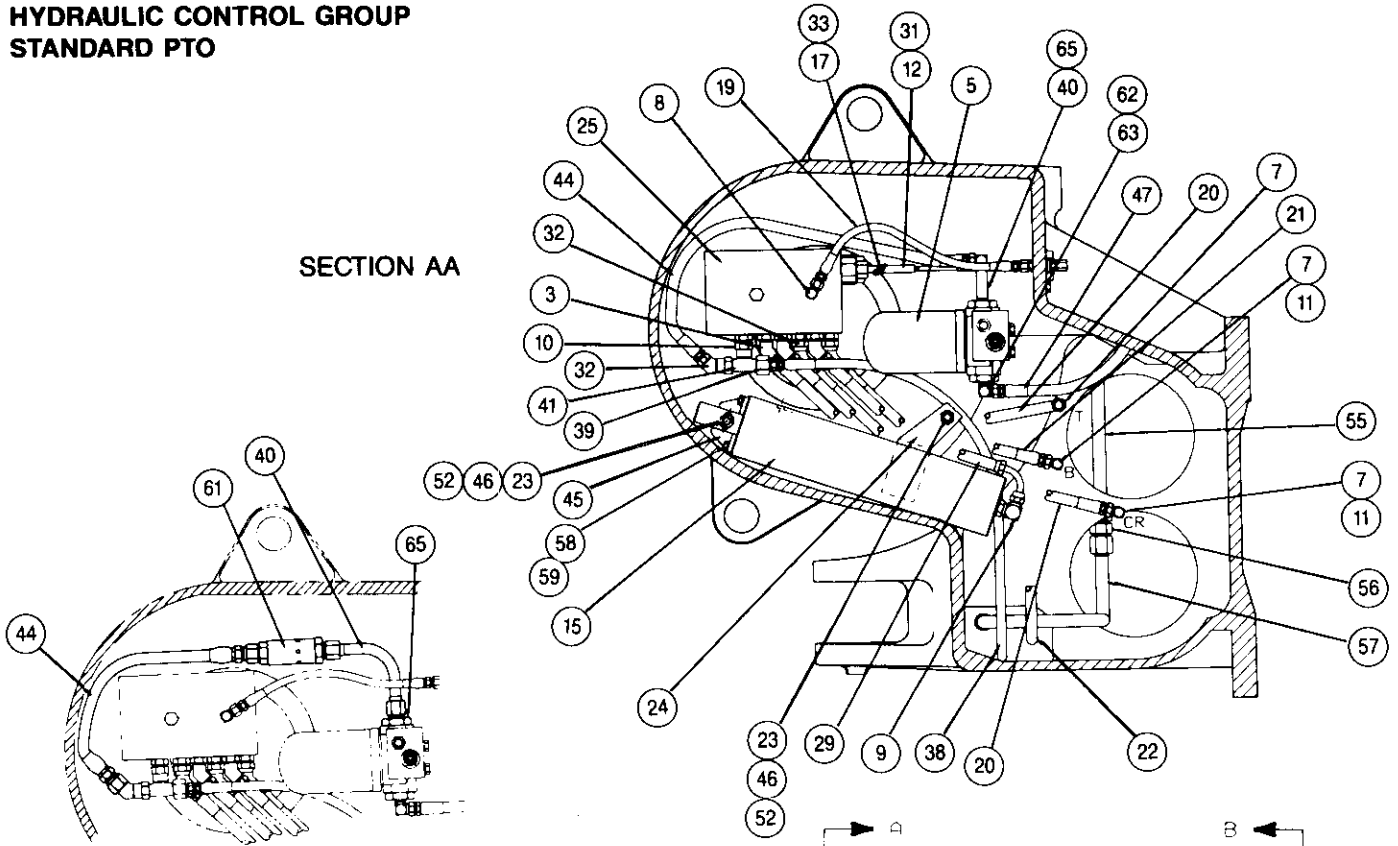
CABLE DRUM GROUP

ITEM	PART NO.	DESCRIPTION	QTY.
1	70070	BALL BEARING	1
2	70078	BEARING CUP	2
3	70079	BEARING CONE	2
4	27745	CAPSCREW, HEX HEAD (1/2 - 13 x 1 G5 - SS)	10
5	13938	CAPSCREW, HEX HEAD (1/2 - 13 x 1/4 G5)	11
6	70140	O-RING	2
7	70513	RETAINING RING	2
8	70164	RETAINING RING	1
9	70167	OIL SEAL	2
10	27743	CAPSCREW, SOCKET HEAD (1/2 - 13 x 1 G8 - SS)	1
11	69998	CABLE DRUM, STANDARD CAST IRON	1
	29019	CABLE DRUM, HEAVY DUTY CAST STEEL	1
12	68863	GEAR, 2ND REDUCTION	1
13	69988	SHAFT, 2ND REDUCTION	1
14	28954	BEARING CARRIER, COVER	1
15	27311	BEARING CARRIER, DRUM	2
16	70264	SHIM SET (1 pair ea., .005 in., .007 in., .020 in., .13 mm, .18 mm, .5 mm)	1-2
17	29425	FERRULE — 7/8 in. x (22 mm) WIRE ROPE	1
	29426	FERRULE — 1 in. x (26 mm) WIRE ROPE — STD.	1
18	—	NO GASKET, USE DOW RTV 732 OR EQUIVALENT	—
19	27744	CAPSCREW, HEX HEAD (1/2 - 13 x 5 G5 - SS)	1
20	11073	WASHER (1/2)	1

SS - SELF SEALING

**HYDRAULIC CONTROL GROUP
STANDARD PTO**

SECTION AA



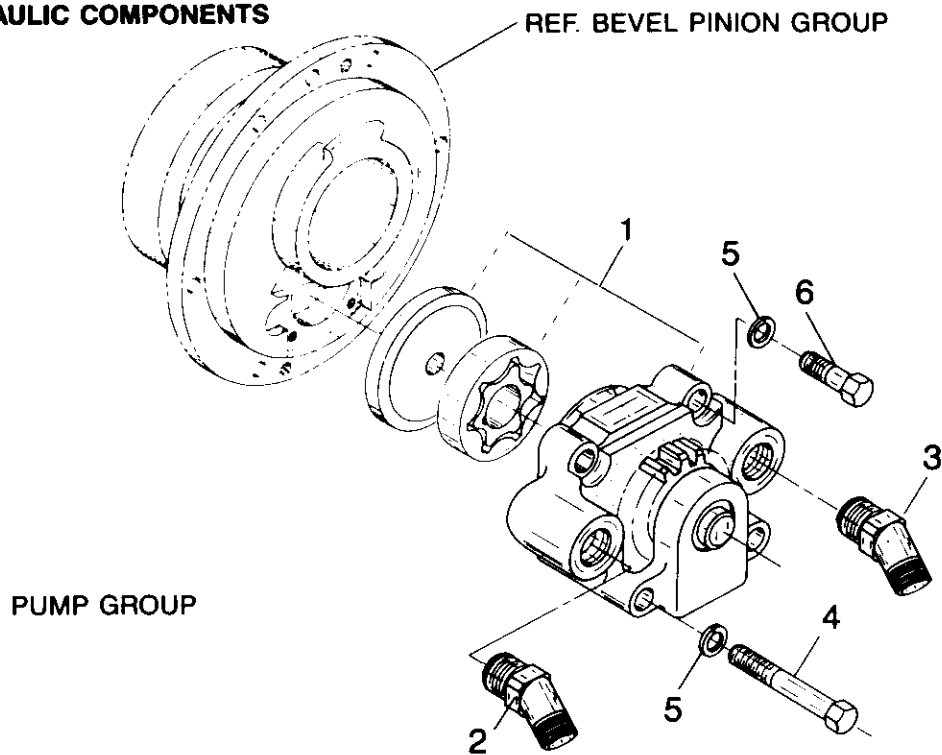
**HYDRAULIC CONTROL GROUP
STANDARD PTO**

ITEM	PART NO.	DESCRIPTION	QTY.
1	11059	JAM NUT	2
2	27741	FILTER BRACKET	1
3	69605	ELBOW (45° - 8) VALVE PORTS A, B	2
4	27390	FILTER HEAD	1
5	27389	FILTER ELEMENT	1
6	21219	ADAPTER (1/8 NPT - 4)	1
7	70106	ADAPTER (- 8)	4
8	25131	ELBOW - 90° - 4 VALVE PORT G	1
9	70109	ELBOW, 90° (- 8 ORB - 8 JIC)	1
10	70100	ADAPTER VALVE PORTS P, T, C1, C2	4
11	29046	ADAPTER (90° - 8)	3
12	69771	CLEVIS YOKE	2
13	21119	O-RING	2
14	30997	CLAMP, SUCTION HOSE	1
15	81959	ACCUMULATOR ASSEMBLY - SPRING TYPE (REF. PG. 24)	1
16	70189	SUCTION STRAINER	1
17	69313	CLEVIS PIN	2
18	69653	RETAINING RING	4
19	25750	HOSE - VALVE TO GAUGE PORT	1
20	70272	HOSE - 24 in. (610 mm) VALVE TO T, CR	2
21	69526	HOSE - 18 in. (457 mm) VALVE TO B	1
22	27989	HOSE - 50 in. (1,270 mm) VALVE TO CL	1
23	11026	LOCKWASHER (1/2)	2
24	27848	ACCUMULATOR CLAMP BRACKET	1
25	27689	CONTROL VALVE ASSEMBLY (REF. PG. 25)	1
26	100267	QUICK DISCONNECT	1
27	27981	SUCTION HOSE ASSEMBLY	1
28	69051	CONNECTOR	1
29	27982	HOSE - 16 in. (406 mm) VALVE TO ACCUMULATOR	1
30	69963	ADJUSTER, CONTROL CABLE	2
31	13468	JAM NUT (1/4 - 28)	2
32	69516	ADAPTER (45° - 8) VALVE PORTS P, T, C1, C2	3
33	69312	HITCH PIN	2
34	68996	LUBE TUBE	1
35	68994	CLAMP, LUBE TUBE	2

ITEM	PART NO.	DESCRIPTION	QTY.
36	68995	CLAMP, LUBE TUBE	1
37	25891	UNION (- 4)	1
38	25893	HOSE, LUBRICATION	1
39	27396	REDUCER (8 - 4) VALVE PORT P	1
40	27392	ELBOW 90° XLG (1/2 NPT - 8)	1
	29335	TUBE ASSEMBLY - FLOW CONTROL*	1
41	76610	TEE, SWIVEL - 8 VALVE PORT P	1
42	10266	SLEEVE (FOR USE WITH QD ITEM 26)	1
43	26005	SPRING	1
44	27983	HOSE - 26 in. (660 mm) FLTR TO VALVE W/O FLO CTL	1
	27979	HOSE - 17 in. (432 mm) FLOW CONTROL TO VALVE*	1
45	27847	ACCUMULATOR MOUNTING ANGLE	1
46	27849	STUD (1/2 - 13 x 2 3/4)	2
47	27979	HOSE - 17 in. (432 mm) PUMP TO FILTER	1
48	27081	STUD (1/2 - 13 NC x 2 1/4)	1
49	29020	SUCTION STRAINER SHIELD	1
50	12781	LOCKWASHER, SHAKEPROOF (1/2)	1
51	23583	JAM NUT (1/2 - 13)	1
52	11788	HEX NUT (1/2 - 13)	5
53	29021	SEAL RING .25 in. (6.4 mm) THICK	1
54	61914	WIRING ASSEMBLY - INCLUDES ITEM 67	1
55	27977	UPPER SUCTION TUBE	1
56	27990	UNION, TUBING	1
57	27978	LOWER SUCTION TUBE	1
58	11766	CAPSCREW, HEX HEAD (5/16 - 18 x 7/8 G5)	2
59	11024	LOCKWASHER (5/16)	2
60	29023	SEAL RING .06 in. (1.5 mm) THICK	1-2
61	29334	FLOW CONTROL VALVE*	1
62	31347	ELBOW, 90° (1/2 NPT - 8)	1
63	27397	ADAPTER (1/2 NPT)	1
64	18003	LOCKWASHER (3/8)	2
65	27397	ADAPTER - 1/2 NPT USED W/O FLO CTL	1
	29352	ADAPTER - 8 USED WITH FLO CTL*	1
66	22693	CAPSCREW, HEX HEAD (3/8 - 16 x 3/4 G5)	2
67	27091	INDICATOR LAMP	1

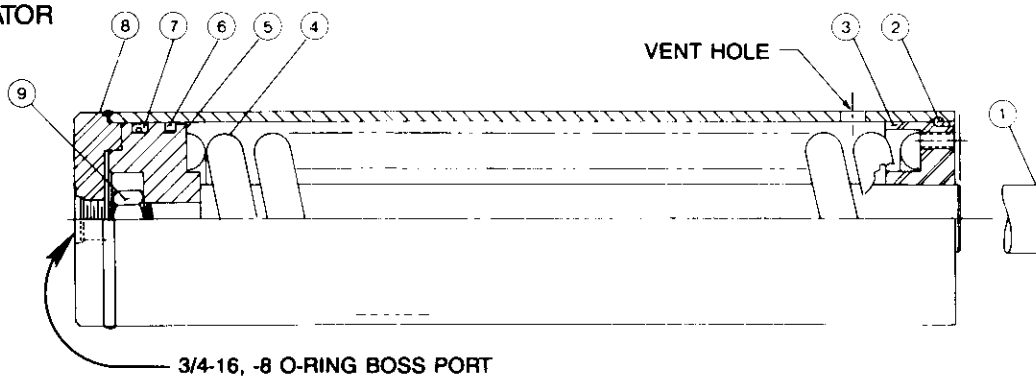
*FLOW CONTROL VALVE USED IN S/N 9200557 AND LATER

HYDRAULIC COMPONENTS



ITEM	PART NO.	DESCRIPTION	QTY
1	68772	PUMP ASSEMBLY	1
2	26752	ELBOW, 45° — 8 PRESSURE SIDE	1
3	27991	ELBOW, 45° SUCTION — STD PTO	1
4	27997	CAPSCREW, HEX HEAD (1/4 - 20 x 3 G8)	2
5	11015	LOCKWASHER (1/4)	4
6	27996	CAPSCREW, HEX HEAD (1/4 - 20 x 1 1/2 G8)	2

ACCUMULATOR ASSEMBLY



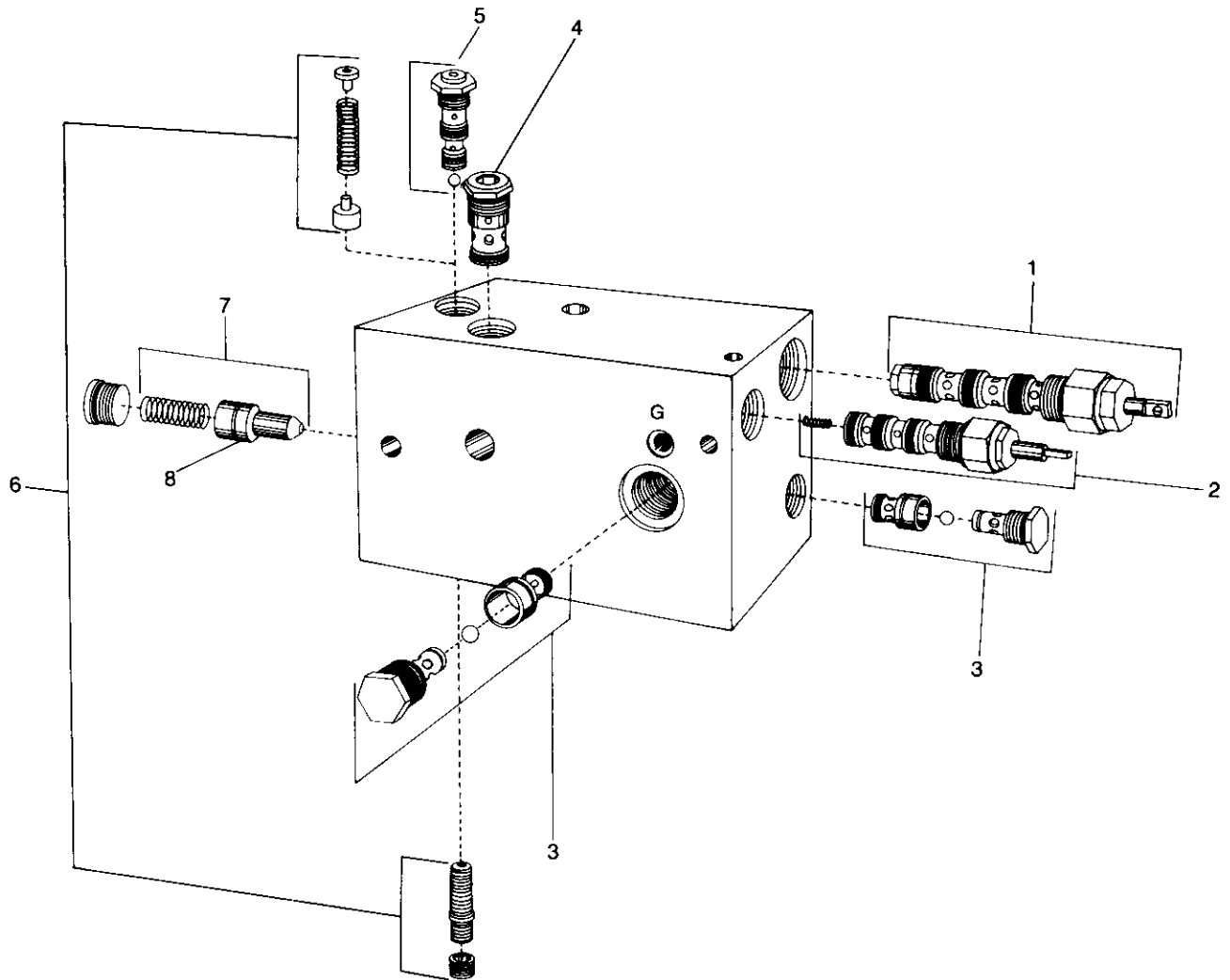
ITEM	PART NO.	DESCRIPTION	QTY
1	NSS	ROD	1
2	27836	RETAINING RING	1
3	NSS	ROD GUIDE	1
4	NSS	SPRING	1
5	NSS	PISTON	1
6	27833	CAST IRON PISTON RING	1
7	27832	SEAL ASSEMBLY	1
8	NSS	TUBE ASSEMBLY	1
9	NSS	NUT	1
—	62131	SEAL KIT (CONTAINS ITEMS 2, 6 & 7)	

NSS — Not Serviced Separately.

⚠ DANGER

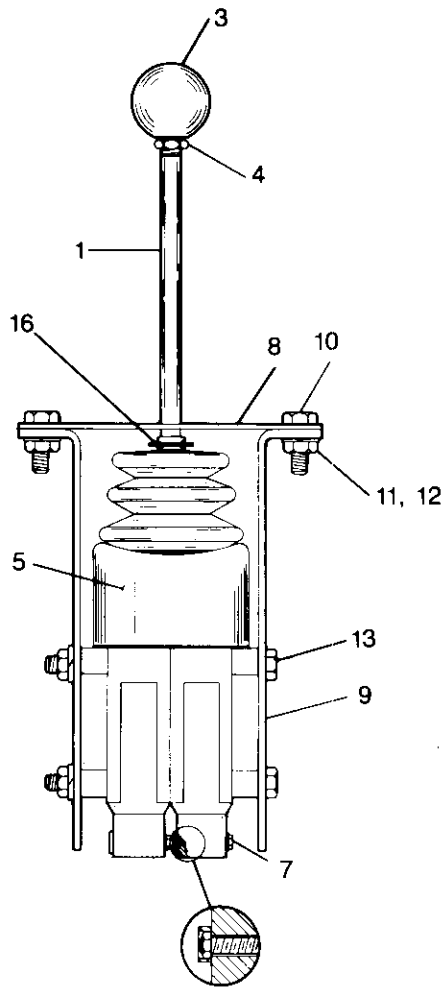
2,000 LB. (900 Kg) SPRING PRELOAD — USE PRESS FOR DISASSEMBLY PER SERVICE INSTRUCTIONS IN SERVICE BULLETIN 95. PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH MAY RESULT IF ROD GUIDE REMOVAL IS ATTEMPTED WITHOUT A PRESS.

CONTROL VALVE ASSEMBLY
27689

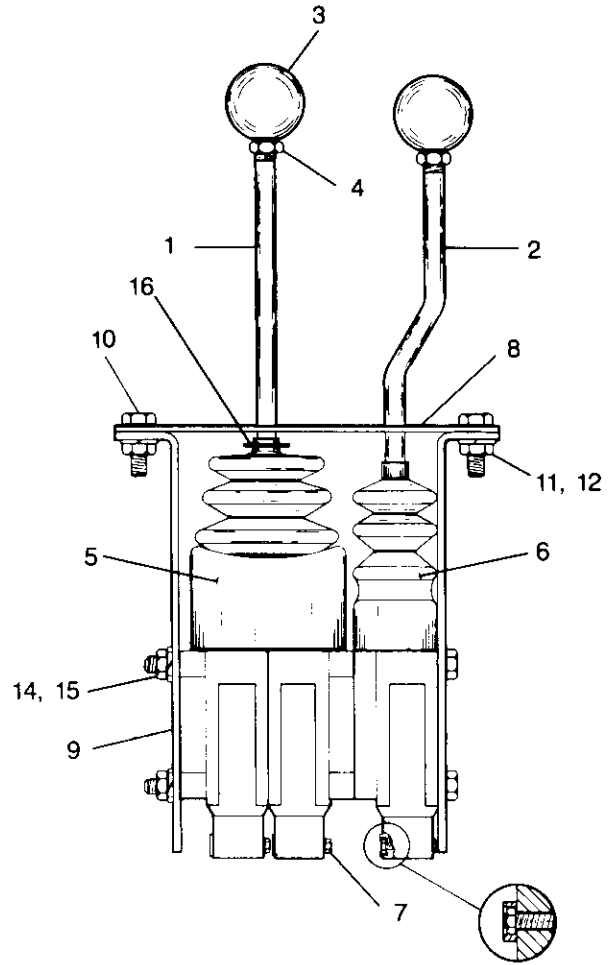


ITEM	PART NO.	DESCRIPTION	QTY.
1	26712	DIRECTIONAL CONTROL CARTRIDGE	1
	61838	SEAL KIT FOR ITEM 1	1
2	26713	BRAKE CONTROL CARTRIDGE	1
	61839	SEAL KIT FOR ITEM 2	1
3	26715	SHUTTLE VALVE ASSEMBLY	2
	61841	SEAL KIT FOR ITEM 3	2
4	27672	CHECK VALVE CARTRIDGE	1
	61840	SEAL KIT FOR ITEM 4	1
5	26716	DIFFERENTIAL UNLOADING PILOT VALVE CARTRIDGE	1
	61842	SEAL KIT FOR ITEM 5	1
6	62063	DIF. UNLOADING VALVE REPAIR KIT, INCLUDES ITEM 5	5
7	62062	UNLOADING POPPET ASSEMBLY	1
8	22454	O-RING	1

CONTROL STAND



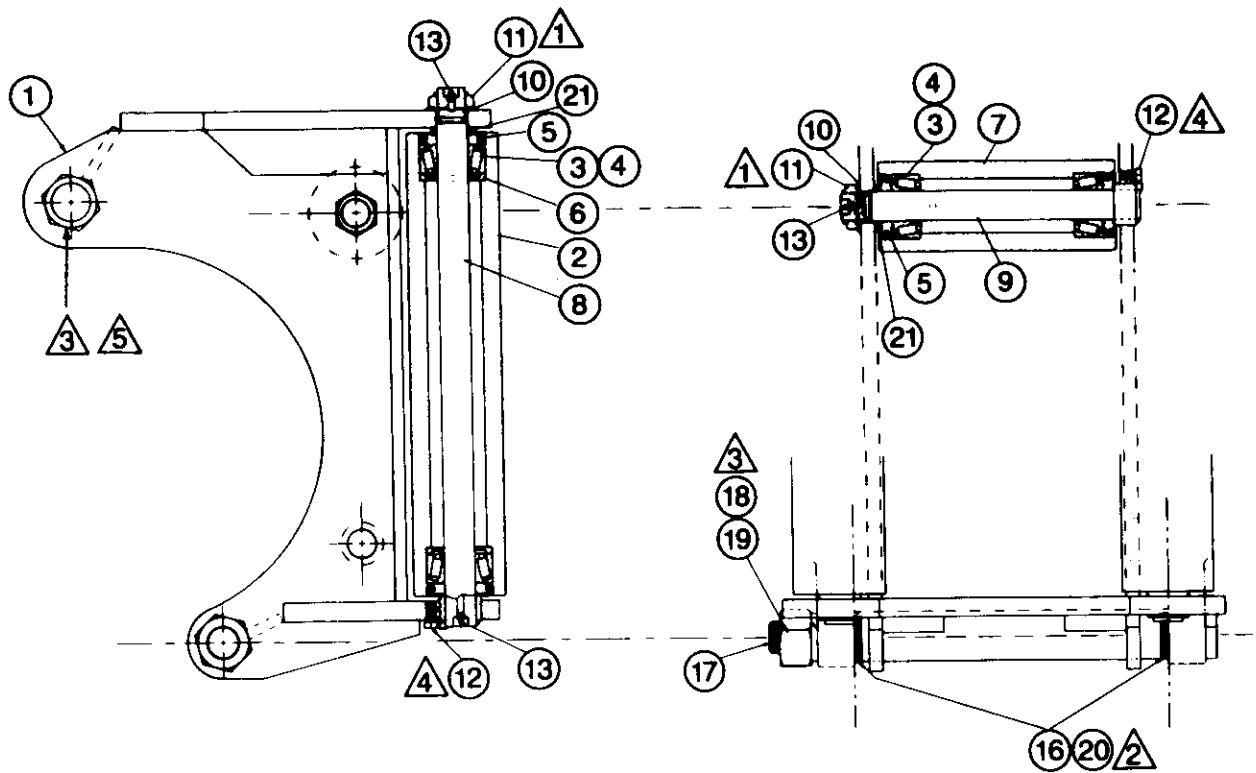
**CONTROL STAND KIT
81965 WITHOUT FREESPOOL**



**CONTROL STAND KIT
69667 WITH FREESPOOL**

ITEM	PART NO.	DESCRIPTION	QTY.
	81965	CONTROL STAND KIT WITHOUT FREESPOOL	
	69667	CONTROL STAND KIT WITH FREESPOOL	
1	27393	CONTROL ASSEMBLY — POWER SHIFT (CONTAINS CONTROL PLUS ITEMS 3, 4, 5 & 7)	1
2	69444	CONTROL ASSEMBLY — FREESPOOL (CONTAINS CONTROL PLUS ITEMS 3, 4, 6 & 7)	1
3	26696	KNOB	1-2
4	12793	JAM NUT	1-2
5	26697	BOOT — FOR ITEM 1	1
6	26698	BOOT — FOR ITEM 2	1
7	—	CAPSCREW — CABLE LOCK (10-32 UNF × 1 ³ / ₁₆)	2-3
8	69893	GATE PLATE, WITH F.S.	1
	27865	GATE PLATE, WITHOUT F.S.	1
9	69891	CONTROL STAND BRACKET	2
10	69643	CAPSCREW, HEX HEAD (1/4 - 20 × 3/4 G5)	4
11	23195	LOCKWASHER (1/4)	4
12	69645	NUT, HEX (1/4 - 20)	4
13	69642	CAPSCREW, HEX HEAD (5/16 - 18 × 5 1/2 G5)	3
	27878	CAPSCREW, HEX HEAD (5/16 - 18 × 4 G5)	3
14	69640	LOCKWASHER (5/16)	3
15	69644	NUT, HEX (5/16 - 18)	3
16	32489	TIE STRAP	1

FAIRLEAD ASSEMBLY



NOTES:

- 1 WHILE TURNING ROLLER, TIGHTEN NUT. WHEN ROLLER WILL TURN NO LONGER, BACK NUT OFF 1/8 TURN.
- 2 SHIM BOTH SIDES AS REQUIRED TO REDUCE END PLAY TO LESS THAN .030 in. (.8 mm).
- 3 TIGHTEN UNTIL WASHER IS FLATTENED. THEN TURN 1 FLAT.
- 4 APPLY "LOCTITE 242" AND INSTALL WITH FLAT TANGENT TO HOLE PRIOR TO INSTALLATION OF SHAFT.
- 5 WHEN INSTALLING FAIRLEAD ON WINCH IN FIELD, REMOVE ORIGINAL CABLE GUARD SPACER TUBE AND REUSE UPPER TIE BOLT 28772, LOCKWASHER 27666 AND NUT 27655.

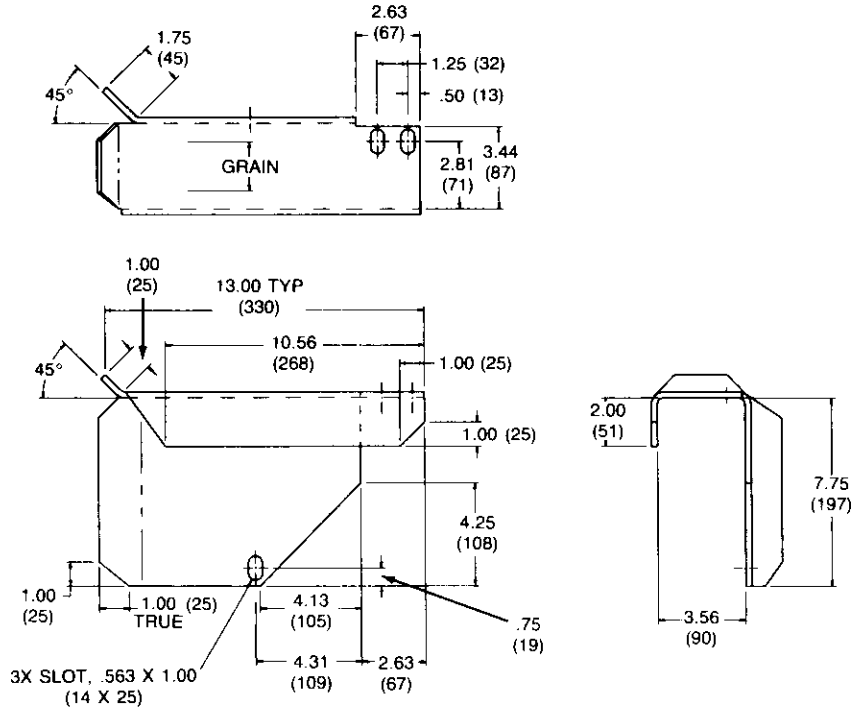
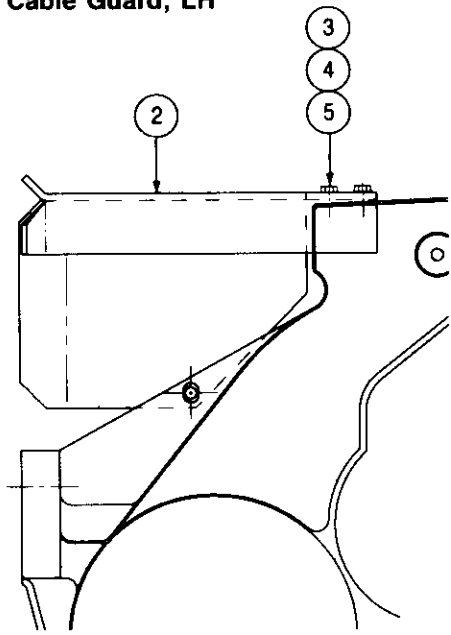
ITEM	PART NO.	DESCRIPTION	QUANTITY	
			3 ROLLER	4 ROLLER
	81970	3 ROLLER FAIRLEAD ASSEMBLY		
	81971	4 ROLLER FAIRLEAD ASSEMBLY		
1	27817	FAIRLEAD FRAME	1	1
2	36788	ROLLER — VERTICAL	2	2
3	70833	BEARING CONE	6	8
4	70834	BEARING CUP	6	8
5	70864	DUST GUARD ASSEMBLY	6	8
6	70865	GREASE RETAINER	4	4
7	27886	ROLLER — HORIZONTAL	1	2
8	36797	SHAFT — VERTICAL	2	2
9	27901	SHAFT — HORIZONTAL	1	2
10	70850	WASHER	3	4
11	70863	LOCK NUT	3	4
12	22729	CAPSCREW, HEXHEAD (1/2 NC x 3/4 GD5)	3	4
13	18047	GREASE FITTING	5	6
16	24912	SHIM .030 in. (.8 mm)	4-AR	4-AR
17	28772	TIE BOLT	1	1
18	27666	LOCK WASHER	1	1
19	27655	NUT, HEX HEAD	1	1
20	25590	SHIM .125 in. (3.18 mm)	6-AR	6-AR
21	70880	SPACER	3	4
*	82751	4TH ROLLER KIT INCLUDES 3-5, 7, 9-13 & 21	1	—

**CONTROL CABLE
GUARD GROUP**

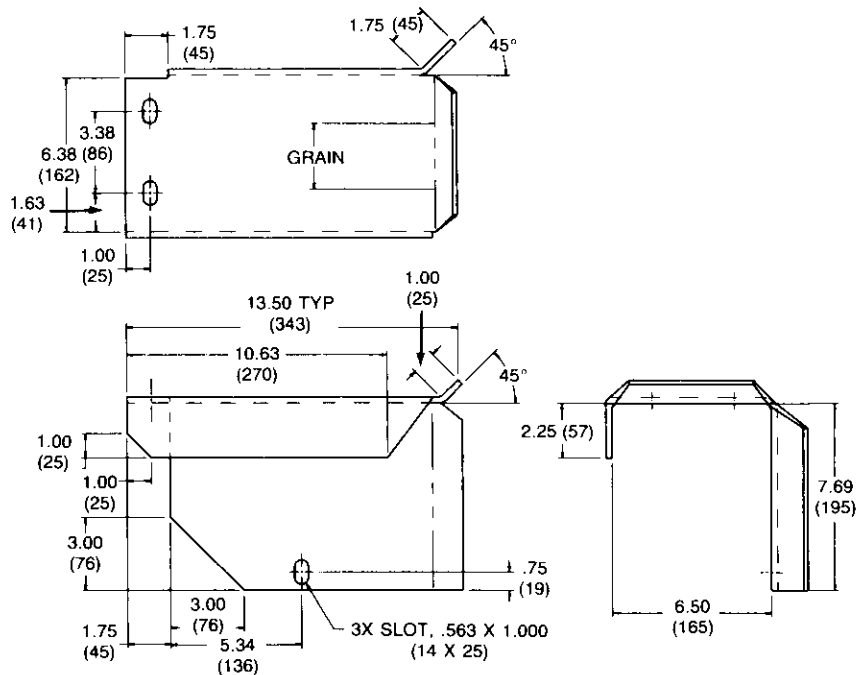
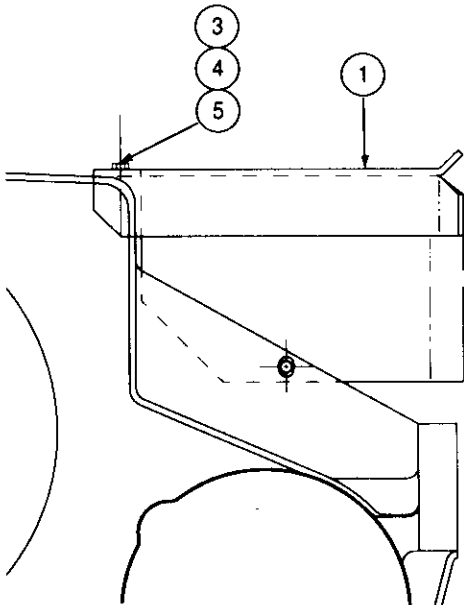
Material: Plate .25 in. (6 mm) thick, hot rolled, descaled,
ASTM A36 or AISI 1015.

Bend Radii: .25 in. (6 mm) minimum, corner notches
at bend lines to be 60°-90°.

Cable Guard, LH



Cable Guard, RH



ITEM	PART NO.	DESCRIPTION	QTY.
1	100173	CABLE GUARD, RH	1
2	100174	CABLE GUARD, LH	1
3	22697	CAPSCREW, HEX HEAD (1/2 - 13 x 1)	6
4	11026	LOCKWASHER (1/2)	6
5	11073	WASHER (1/2)	6

Cable Guard Kit 62564, contains items 1-5 above.