

INSTALLATION AND PARTS MANUAL

MODEL PA110VS

FOR D9R TRACTORS WITH DIFFERENTIAL STEER

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MODEL NUMBER DESCRIPTION

PA110VS	245	V	65/33	3
Basic Winch Model	Overall Gear Ratio 245:1	Motor Type V - Variable Displacement	Motor Size Cu. In. Displacement per revolution 6.5 cu in. (High) 3.3 cu in. (Low)	Fairlead 3 - 3 roller 4 - 4 roller

**MODEL PA110VS
MOUNTING GROUP
CATERPILLAR D9R**

FOREWORD

This manual includes parts listings and installation information for the PA110VS winch for use on the CATERPILLAR D9R tractor.

Continuing product improvement may cause changes in your PACCAR built winch, which may not be included in this manual. If a question arises regarding your winch or this manual, contact your nearest CAT dealer, or the PACCAR WINCH DIVISION PRODUCT SUPPORT DEPARTMENT at 1-918-251-8511, Monday – Friday, 0800 hrs – 1630 hrs CST, or by fax at 1-918-259-1575. Please provide the complete winch MODEL number and SERIAL number when making inquiries.

INSTRUCTIONS

NOTE: Refer to the appropriate Caterpillar service manuals for additional information regarding service procedures to the tractor.

To prepare the tractor for service, lower the blade to the ground. Turn the engine off and relieve any oil pressure in all tractor circuits as required. Relieve oil pressure in the hydraulic reservoir by opening the fill cap. Turn the tractor master electrical switch off.

1. Drain the tractor hydraulic oil into a suitable container. Recycle or dispose of used oil in an environmentally responsible manner. Securely install the hydraulic reservoir drain plug after draining.
2. Remove and discard the ripper hose junction block (if so equipped) from the rear of the tractor.
3. Clean all paint, oil, grease, rust and dirt from the mounting surfaces of the winch adapter brackets, counterweights and tractor rear face.
4. Install mounting plate, item 1, to Caterpillar counterweight (P/N 1Q-3267) with fasteners, items 3, 10 and 11. Coat the threads with Loctite 242, or equivalent, and torque to 1360 lb•ft (1840 N•m).

5. Install mounting plate and counterweight to winch mounting face with fasteners, item 4. Coat threads with Loctite 242, or equivalent, and torque to 1360 lb•ft (1840 N•m).
6. Install studs, items 2 and 5, into tractor mounting holes. Coat threads with Loctite 242, or equivalent, at installation.

⚠ WARNING ⚠

Winch and counterweight weigh approximately 13,200 lb (5990 kg). Make certain that lifting equipment has adequate capacity. Failure to use adequate lifting equipment may result in property damage, personal injury or death.

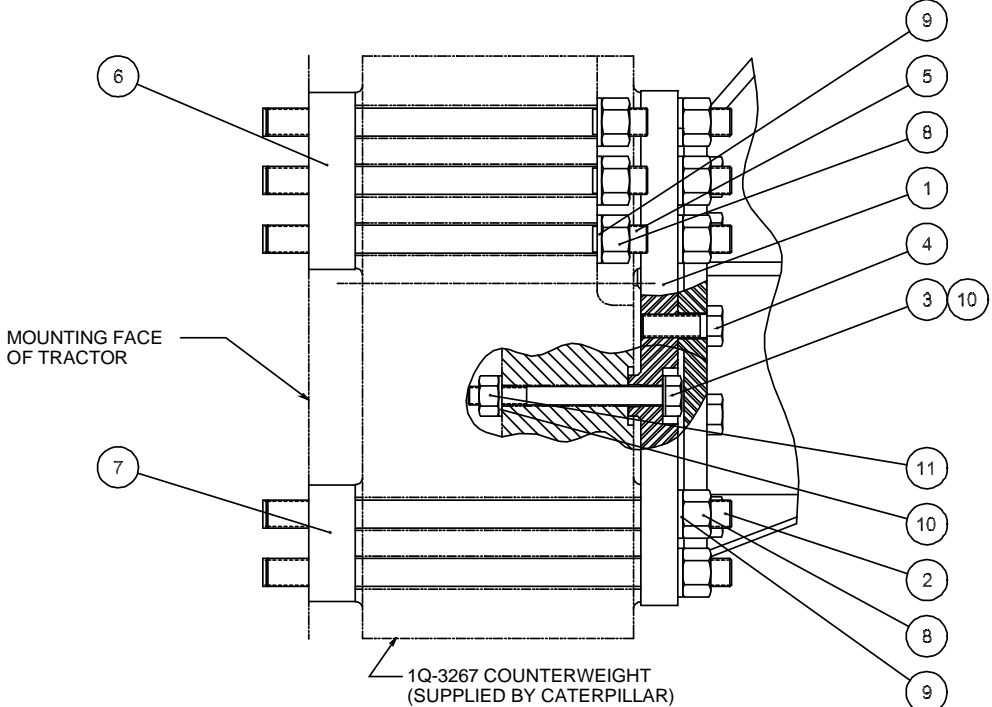
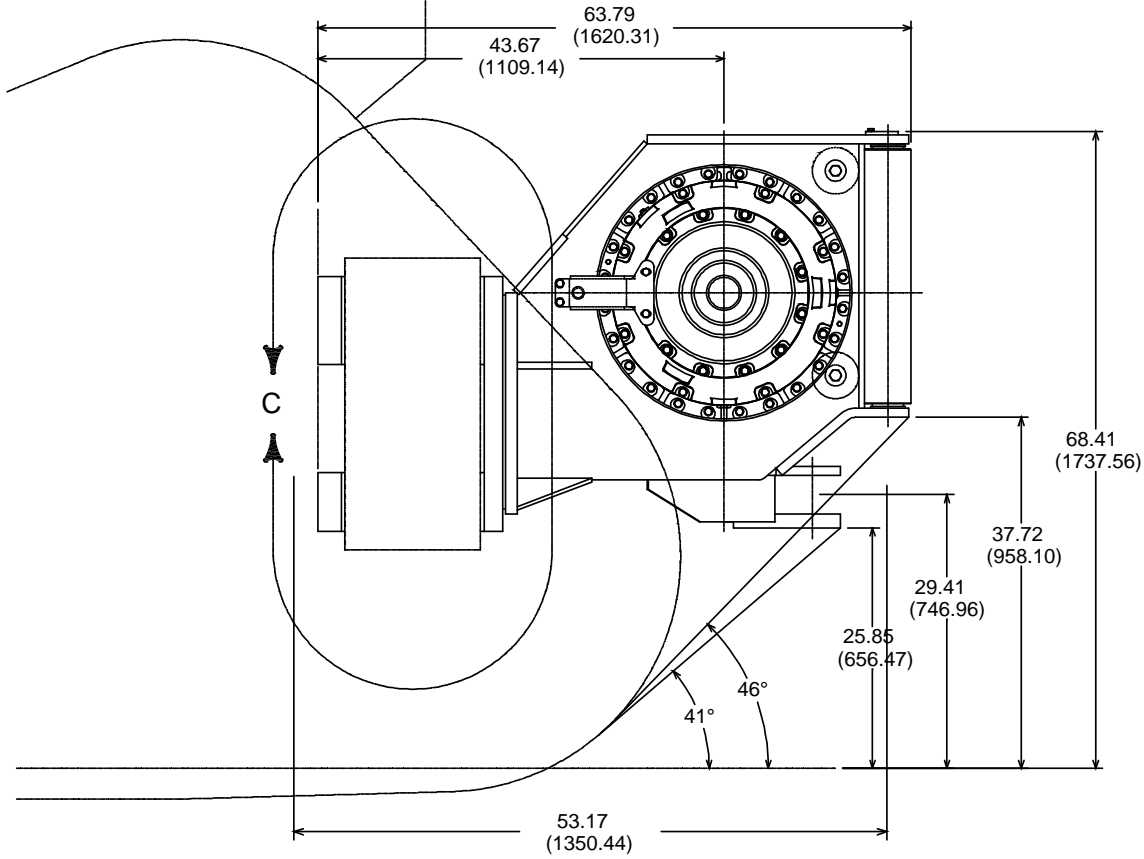
7. Install spacers, items 6 and 7, on tractor. Install winch and counterweight to tractor with fasteners, items 8 and 9. Coat threads with Loctite 271, or equivalent, and torque to 1500 lb•ft (2030 N•m).

⚠ CAUTION ⚠

Fill winch with to proper level with recommended oil BEFORE operating. Component damage may occur if winch is operated without oil.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	126-0873	MOUNTING PLATE	1
2	126-2862	STUD (1 1/2 - 6 X 25)	10
3	7X-0419	CAPSCREW (1 - 8 X 10)	8
4	2B-1955	CAPSCREW, HEX HEAD (1 1/4 - 7 X 3 1/2 G8)	10
5	126-0863	STUD (1 1/2 - 6 X 20 1/2)	6
6	126-0861	SPACER	2
7	126-0859	SPACER	2
8	7X-0452	NUT, HEX (1 1/2 - 6)	16
9	3S-6162	WASHER, HARDENED (1 1/2)	16
10	8T-5361	WASHER, HARDENED (1)	8
11	6V-8190	NUT, HEX FULL (1)	8

**MODEL PA110VS
MOUNTING GROUP
CATERPILLAR D9R**



DETAIL C

**MODEL PA110VS
HYDRAULIC CONTROL GROUP
CATERPILLAR D9R**

INSTRUCTIONS

⚠ CAUTION ⚠

Cleanliness is of utmost importance when working on hydraulic equipment. Contamination may cause damage to close tolerance components which may result in erratic operation and reduced service life.

NOTE: Refer to appropriate Caterpillar service manuals for additional information regarding service procedures to the tractor.

To prepare the tractor for service, lower the blade to the ground. Turn the engine off and relieve any oil pressure in all tractor circuits as required. Relieve oil pressure in the hydraulic reservoir by opening the fill cap. Turn the tractor master electrical switch off.

Remove the operator's seat, cab floor plate and RH console top and side cover plates to gain access to hydraulic plumbing.

Pre-assemble fittings to the logic valve assembly, item 4, as shown on page 6.

Mount the logic block valve assembly to the logic block bracket, item 42, using fasteners, items 25 and 57. Torque fasteners to 33 lb•ft (45 N•m).

Pre-assemble fittings to joystick valve assembly, item 1, as shown on page 5.

Attach joystick assembly to new RH console top cover, item 47, with fasteners, items 49 and 57. Refer to page 9 for proper orientation.

Attach manifold, item 33, to manifold mount, item 24, using fasteners, items 57 and 78. Torque bolts to 33 lb•ft (45 N•m).

Attach manifold / manifold mount assembly to the lower surface of the tractor fuel tank with fasteners, items 78 and 57. Torque bolts to 33 lb•ft (45 N•m).

Install MOTOR SHIFT hose, item 41, to -4 elbow in "X" port on the forward side of the winch motor. Connect opposite end to the logic valve "X" port.

Install MOTOR DRAIN hose, item 8, to the -8 elbow on the top side of the winch motor. Connect opposite end to one of the -8 "T" ports on the logic valve.

Remove and discard shipping cover and capscrews from

top motor port. Install REEL-OUT hose, item 38, to this port and to the inboard manifold port, utilizing split flange halves, item 40, D-rings, item 54, and fasteners, items 53 77 and 79. Torque bolts to 50 lb•ft (70 N•m).

Install REEL-IN hose, item 39, to port in brake valve on bottom motor port, utilizing adapter, item 45. Attach opposite end to outboard manifold port utilizing split flange halves, item 37, O-ring, item 55, and fasteners, items 56 and 57. Torque bolts to 33 lb•ft (45 N•m).

Install REEL-IN and REEL-OUT hoses, item 30, to the forward face of the manifold utilizing split flange halves, item 37, O-rings, item 55, and fasteners, items 56 and 57. REEL-IN hose should be installed at the outboard port. Attach the opposite ends of the hoses to the winch section of the tractor stack valve – REEL-IN hose to the lower port – utilizing existing split flange halves and fasteners, and new O-rings, item 55. Torque bolts to 33 lb•ft (45 N•m).

Attach -6 adapters, items 13 and 17, to the wet end caps in the winch section of the stack valve. Elbow, item 13, should be installed to the lower wet end cap.

Attach the REEL-IN hose, item 28, to the straight adapter in the upper wet end cap of the stack valve. Attach the opposite end of the hose to the adapter at port 1 on the joystick.

Attach the REEL-OUT hose, item 29, to the elbow in the lower wet end cap of the stack valve. Attach the opposite end of the hose to the adapter at port 3 on the joystick.

Attach the PRESSURE hose, item 18, between the logic valve "J" port and port "P" on the joystick.

Attach the RETURN hose, item 18, between the logic valve "T" (-6 size) port and port "T" on the joystick.

Attach the DRUM CLUTCH RELEASE hose, item 27, between the elbow located on the RH side of the winch case and port 4 of the joystick.

Install hydraulic tee, item 64, between existing tee and pump pressure discharge hose (port HA) on stack valve manifold (Cat P/N 6E4138).

Attach pressure hose, item 14, to tee at stack valve manifold pump pressure discharge port. Attach opposite end to port "P" on logic valve.

Disconnect tractor implement pump case drain hose (Cat P/N 1104378) at fitting stack. Install tee, item 11, between remaining fittings and pump case drain hose.

**MODEL PA110VS
HYDRAULIC CONTROL GROUP
CATERPILLAR D9R**

Install reducer, item 12, and elbow, item 9, to branch of tee.

Attach RETURN hose, item 10, between elbow, item 11, and elbow, item 9, at logic valve "T" port (-8 size).

Attach the electrical harness, item 52, to the toggle switch, indicator light and joystick, and to the pin puller switch connector on the tractor RH console harness. See page 7 for electrical schematic.

Route and bundle hoses and electrical harness approximately as shown, and tie down utilizing clips and fasteners as specified.

Check all hydraulic connections for tightness. Make certain all hoses and wires are routed and secured to prevent chafing.

Attach the console cover to the RH platform tower using existing hardware. Reinstall the dozer blade controller, all other previously removed cover plates, and the operator's seat.

Carefully install the winch control decal, item 80, to the

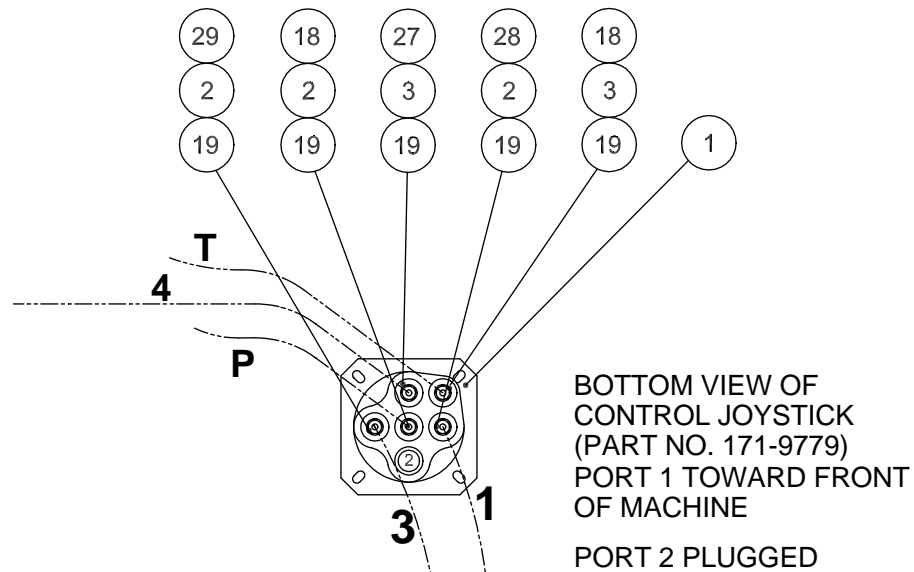
console cover as shown on page 9.

Turn on the tractor master switch. Turn the starter key switch on – **DO NOT START ENGINE**. Pressing the winch control rocker switch should cause the indicator lamp and solenoid valve to activate. Pull the toggle switch upward and move to enable hydraulics to the winch. The disable solenoid should activate. Leave the switch in the disable position when the winch is not in use.

Fill the tractor hydraulic reservoir to the proper level. Refer to the Caterpillar oil specs. Fill winch to proper level with recommended gear oil.

Start the engine and operate at low idle to purge air from the lines. Operate the winch in all functions and refill the hydraulic reservoir as required. Check for any leaks and correct as required. If the winch REEL-IN and REEL-OUT functions at the joystick do not match drum rotation, reverse the hoses at joystick ports 1 and 3.

Record winch and tractor serial numbers on delivery report form(s). Conduct winch operator training as required.



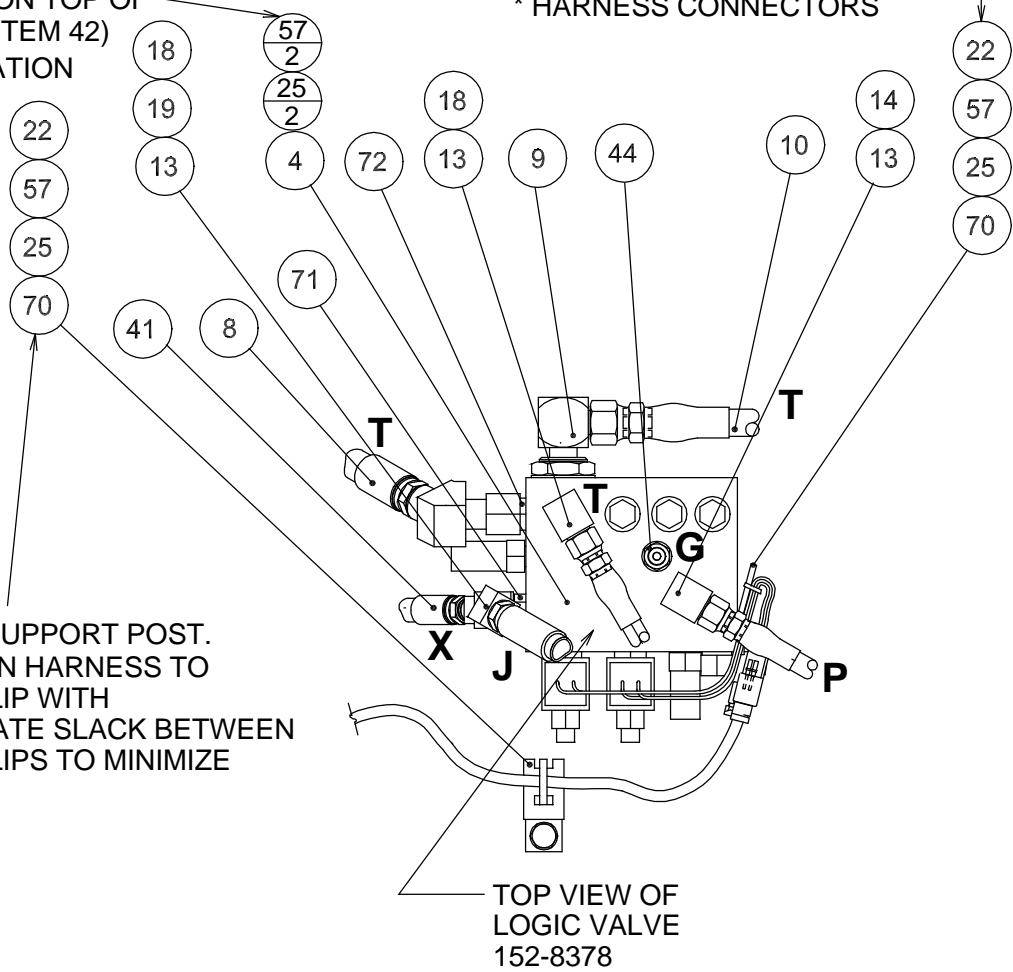
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	171-9779	CONTROL JOYSTICK AS.	1
2	148-8338	ADAPTER, STR., -6 ORB/ORFS	3
3	164-9689	ADAPTER, XX-LONG STR., -6 ORB/ORFS	2
18	091-9956	HOSE AS., -6 X 32.50 in. (826 mm)	2
19	148-8371	ELBOW, 45° SWIVEL, -6 ORFS	6
27	154-3748	HOSE AS., -6 X 86.50 in. (2197 mm)	1
28	71-5487	HOSE AS., -6 X 21 in. (533 mm)	1
29	8W-9337	HOSE AS., -6 X 46 in. (1168 mm)	1

**MODEL PA110VS
HYDRAULIC CONTROL GROUP
CATERPILLAR D9R**

MOUNTED ON TOP OF
BRACKET (ITEM 42)
IN ORIENTATION
SHOWN

STRAP TO LADDER CLIP (ITEM 70)
* SOLENOID PIGTAILS
* EXTRA HARNESS (101300)
* HARNESS CONNECTORS

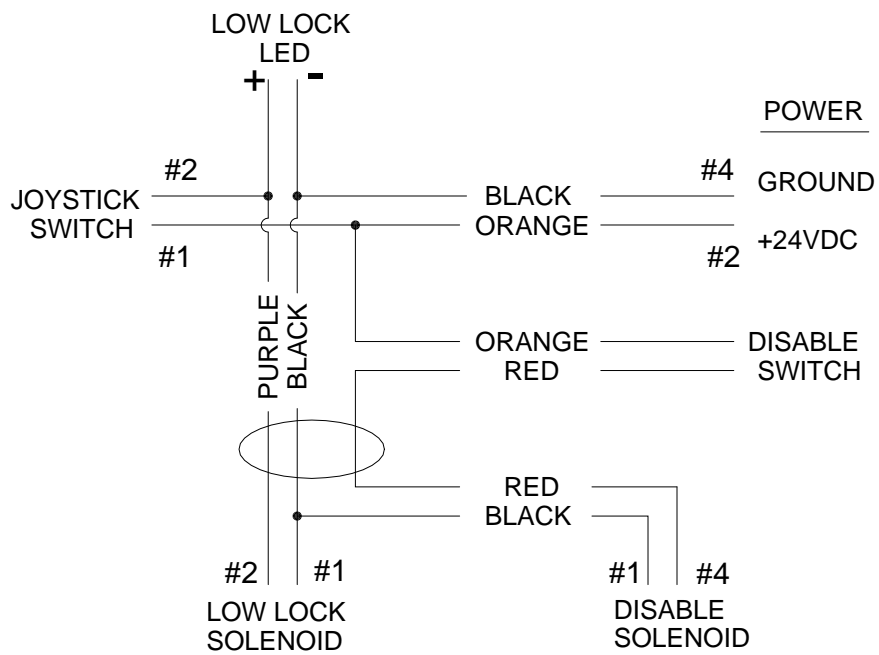
TO ROPS SUPPORT POST.
STRAP MAIN HARNESS TO
LADDER CLIP WITH
APPROPRIATE SLACK BETWEEN
LADDER CLIPS TO MINIMIZE
FATIGUE.



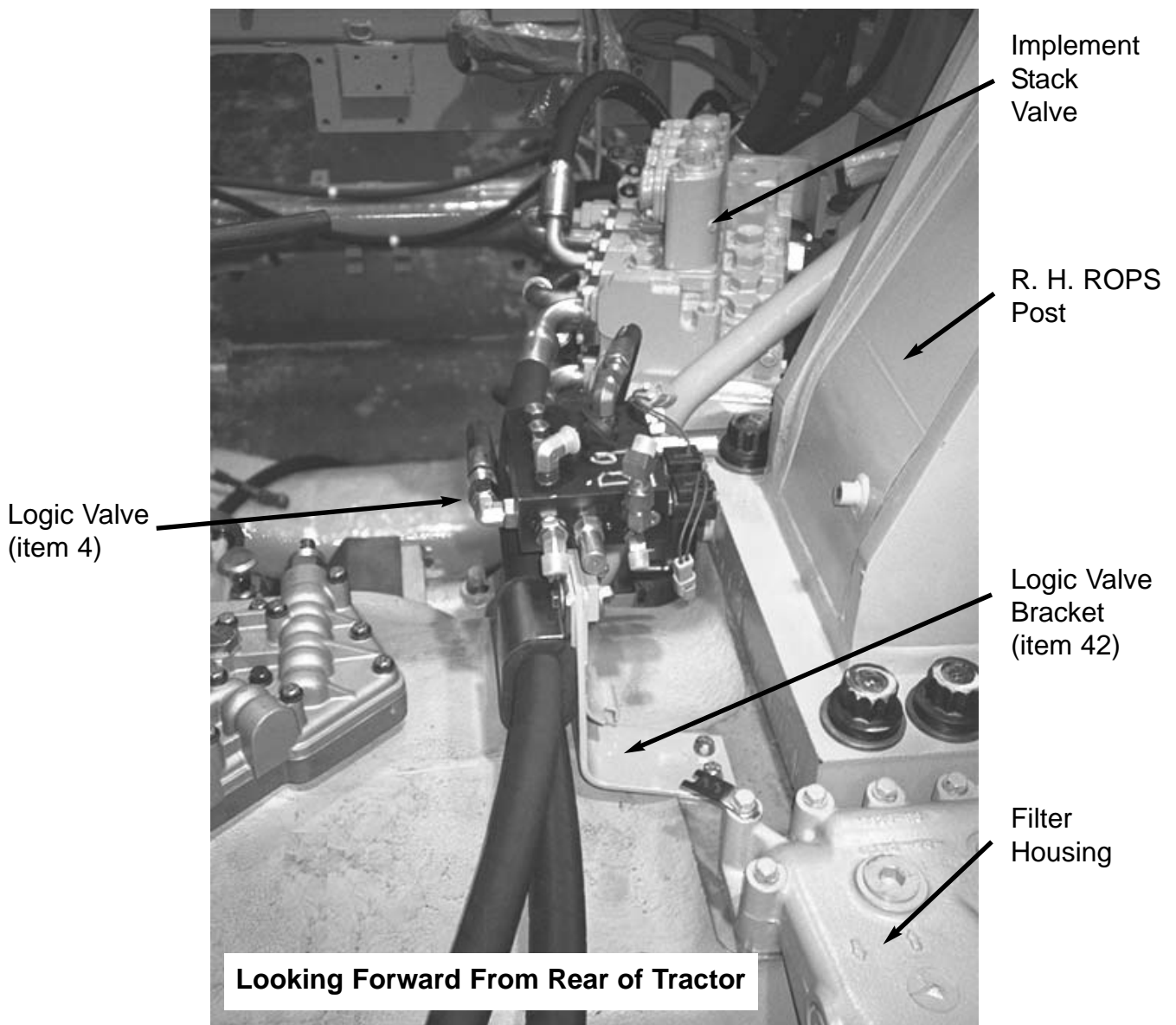
TOP VIEW OF
LOGIC VALVE
152-8378

ITEM NO.	PART NO.	DESCRIPTION	QTY.
4	152-8377	LOGIC VALVE AS.	1
8	175-0059	HOSE AS., -8 X 67.50 in. (1715 mm)	1
9	148-8364	ELBOW, 90°, -8 ORB/ORFS	2
10	145-6130	HOSE AS., -8 X 47 in. (1194 mm)	1
13	148-8378	ELBOW, 90°, -6 ORB/ORFS	4
14	8W-4200	HOSE AS., -6 X 40 in. (1016 mm)	1
18	091-9956	HOSE AS., -6 X 32.50 in. (826 mm)	2
19	148-8371	ELBOW, 45° SWIVEL, -6 ORFS	6
22	7K-1181	TIE STRAP	12
25	5M-3062	CAPSCREW, HEX HD (3/8 NC X 3/4)	6
41	145-7357	HOSE AS., -4 X 63 in. (1600 mm)	1
44	112-8732	ADAPTER, QUICK DISCONNECT	1
57	8T-4896	WASHER, HARD (3/8)	29
70	4P-8134	CLIP	2
71	148-8385	ELBOW, 45°, -4 ORB / -4 ORFS	1
72	148-8354	ELBOW, 45°, -8 ORB/ORFS	1

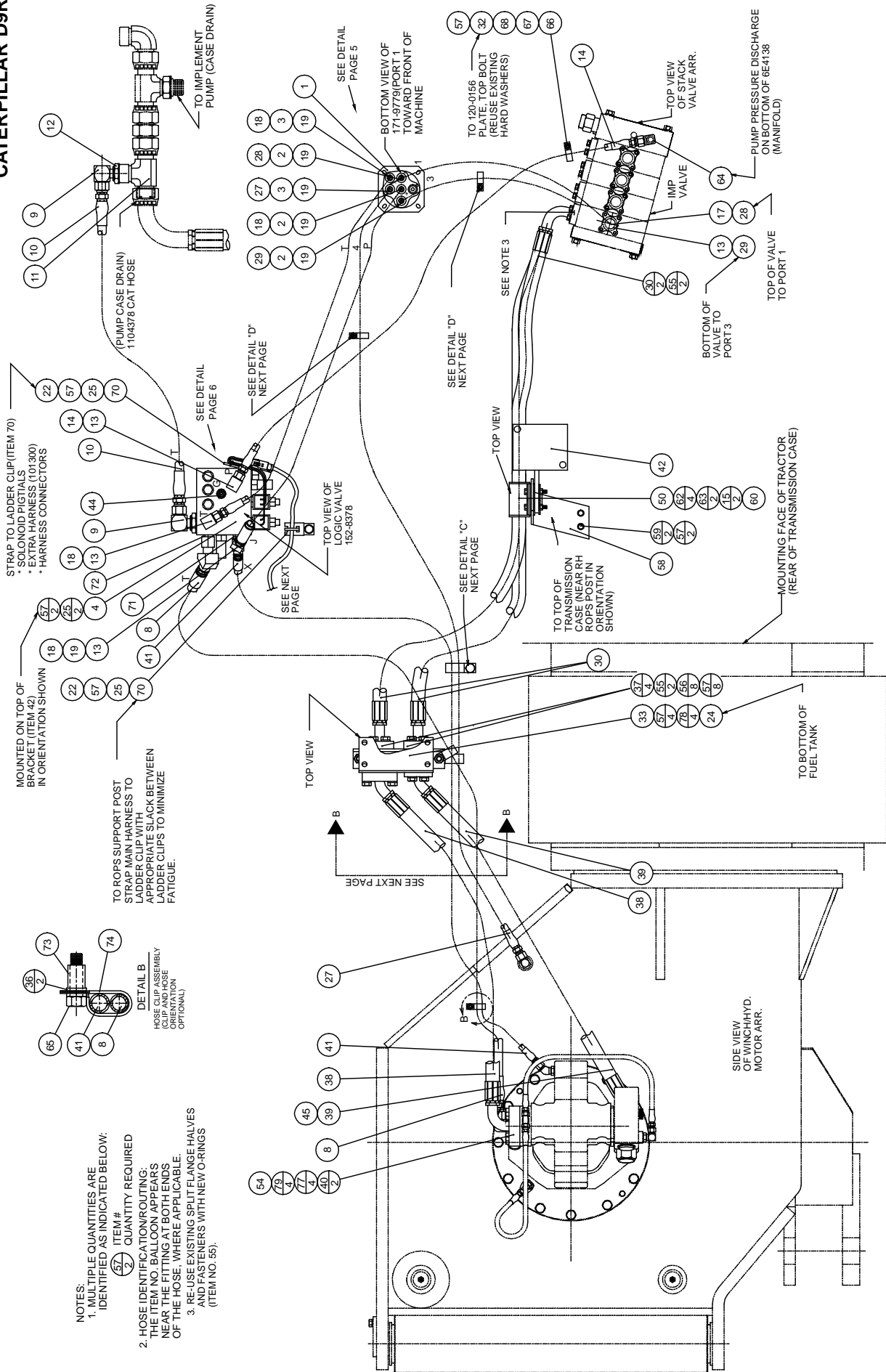
**MODEL PA110VS
HYDRAULIC CONTROL GROUP
CATERPILLAR D9R**



Electrical Schematic

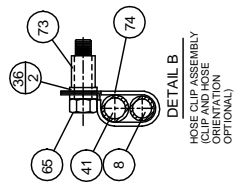


MODEL PA110VS HYDRAULIC CONTROL GROUP CATERPILLAR D9R



- NOTES:
1. MULTIPLE QUANTITIES ARE IDENTIFIED AS INDICATED BELOW:

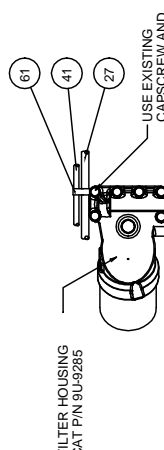
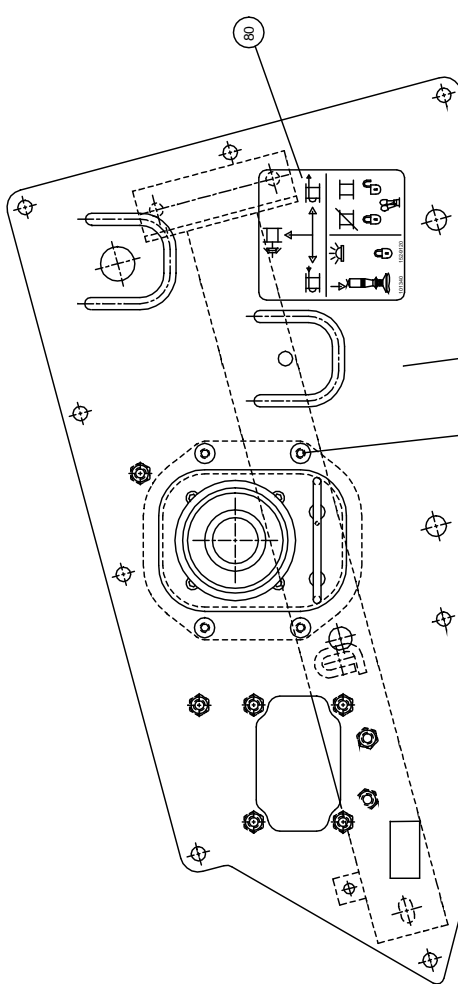
ITEM #	QUANTITY REQUIRED
57	2
 2. HOSE IDENTIFICATION/ROUTING: THE ITEM NO. BEHIND APPEARS NEAR THE FITTING ON BOTH ENDS OF THE HOSE, WHERE APPLICABLE.
 3. RE-USE EXISTING SPLIT FLANGE HALVES AND FASTENERS WITH NEW O-RINGS (ITEM NO. 59).



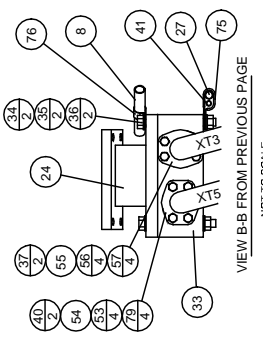
MODEL PA110VS HYDRAULIC CONTROL GROUP CATERPILLAR D9R

NOTES:

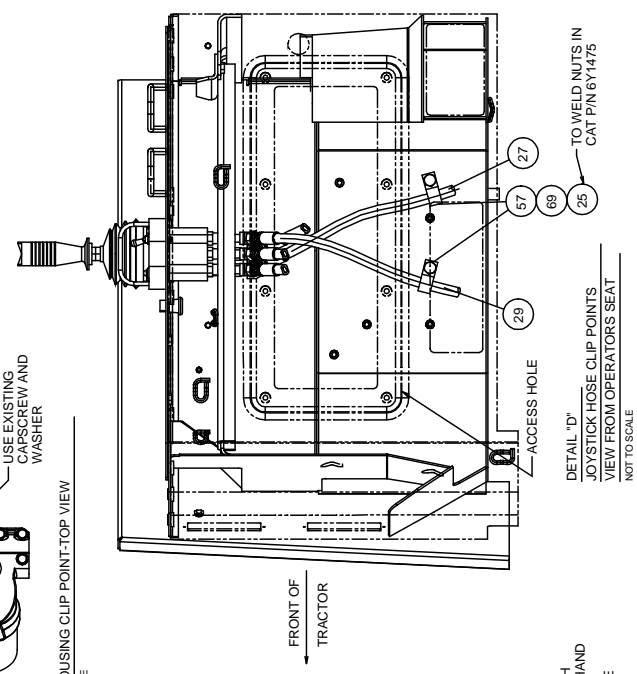
1. RUN BREAKOUT TO LOW LOCK LAMP AND SWITCH PIGTAIL OVER TOP (SMOOTH SIDE) OF CHANNEL, THEN STRAP (USING ITEM 22)
 - DISABLE SWITCH BREAKOUT
 - LOW LOCK LAMP BREAKOUT
 - 2 PIN DT CONNECTOR TO SWITCH CONSOLE HARNESS
 - 4 PIN DT CONNECTOR TO RIGHTHAND MAIN WINCH HARNESS
 ALL TO THE WELD LINK ON THE INSIDE OF THE CHANNEL.
2. DECAL, ITEM 80, TO BE CLEARLY VISIBLE AND ORIENTED AS SHOWN.
3. REMOVE 3 WIRE CONNECTOR FROM TRACTOR PIN PULLER HARNESS 163-5404 F-C7 AND INSTALL NEW CONNECTOR SUPPLIED ON 171-9781 WIRING HARNESS. DISCARD SEALING PLUGS.



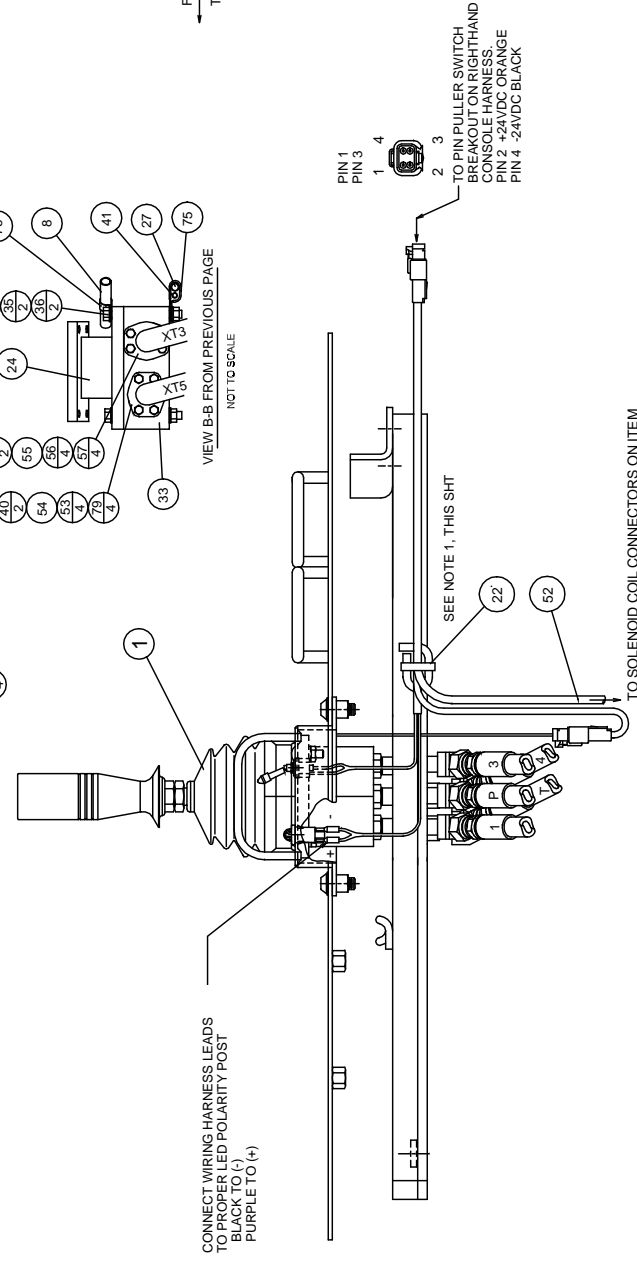
DETAIL C
FILTER HOUSING CLIP POINT-TOP VIEW
NOT TO SCALE



CONNECT WIRING HARNESS LEADS TO PROPER LED POLARITY POST
BLACK TO (-)
PURPLE TO (+)



DETAIL D:
JOYSTICK HOSE CLIP POINTS
VIEW FROM OPERATORS SEAT
NOT TO SCALE



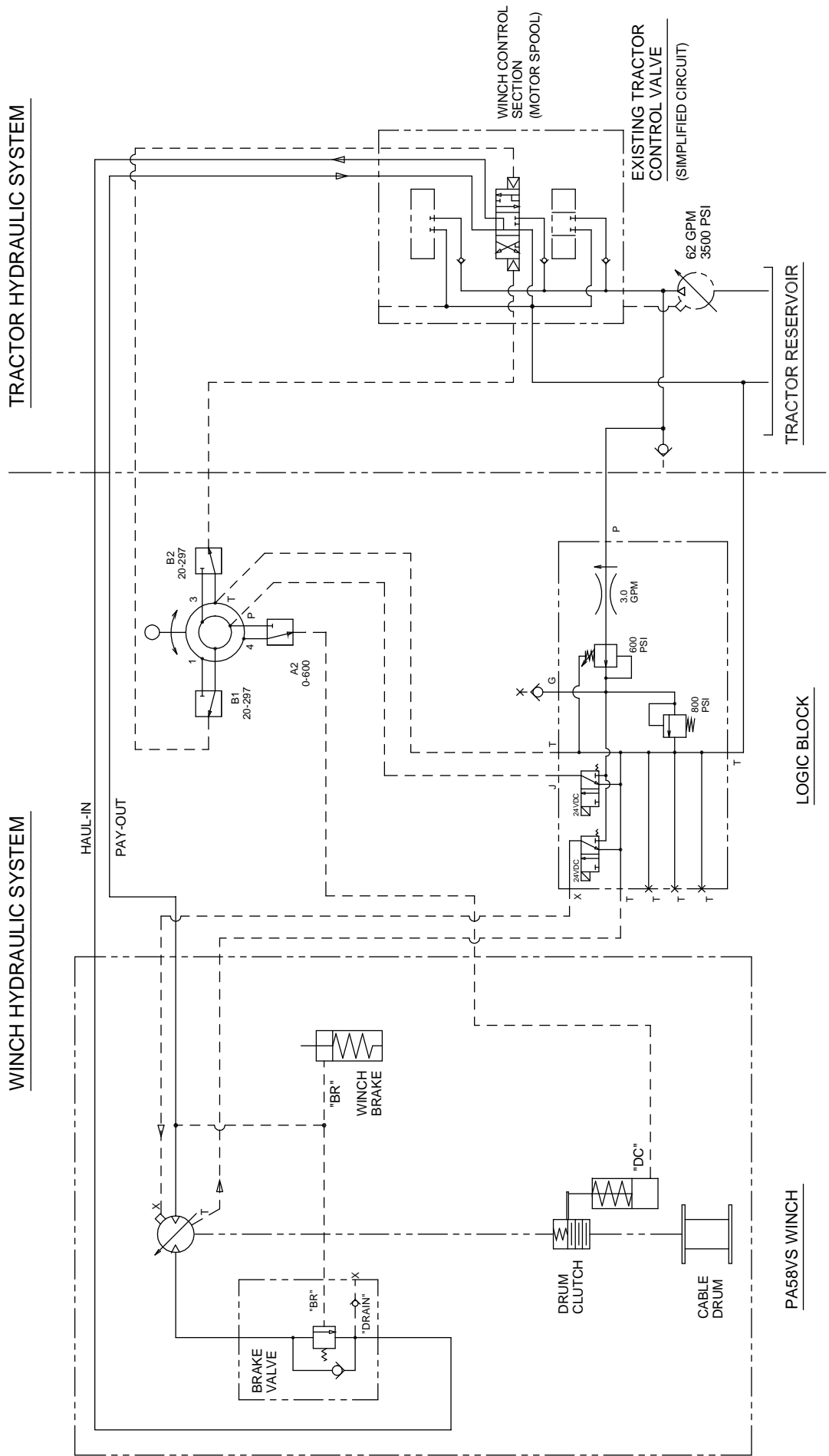
TO PIN PULLER SWITCH
BREAKOUT ON RIGHTHAND
CONSOLE HARNESS.
PIN 2 +24VDC ORANGE
PIN 4 -24VDC BLACK

TO SOLENOID COIL CONNECTORS ON ITEM
NO. 4 ON PREVIOUS PAGE.
SECURE AS NEEDED WITH TIE WRAP (ITEM 22).

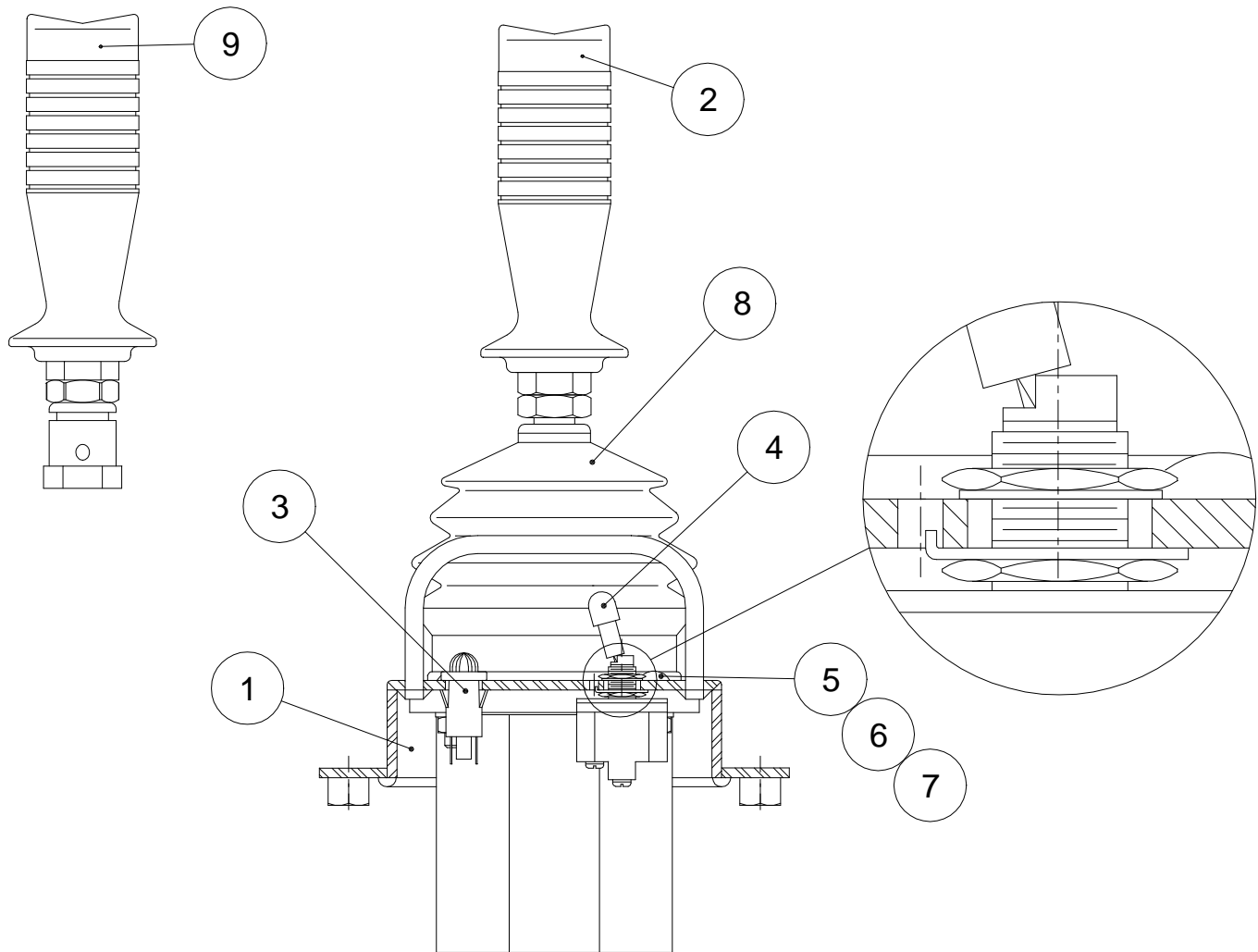
**MODEL PA110VS
HYDRAULIC CONTROL GROUP
CATERPILLAR D9R**

ITEM NO.	PART NO.	DESCRIPTION	QTY.
8	175-0059	HOSE AS., -8 X 67.50 in. (1715 mm)	1
9	148-8364	ELBOW, 90°, -8 ORB/ORFS	2
10	145-6130	HOSE AS., -8 X 47 in. (1194 mm)	1
11	126-0862	TEE	1
12	148-8306	REDUCER, -16/-8 ORB	1
13	148-8378	ELBOW, 90°, -6 ORB/ORFS	4
14	8W-4200	HOSE AS., -6 X 40 in. (1016 mm)	1
15	6V-8801	NUT, HEX (3/8 NC, GD8)	2
17	148-8336	ADAPTER, LONG STR., -6 ORB/ORFS	1
24	126-0866	MANIFOLD MOUNT	1
27	154-3748	HOSE AS., -6 X 86.50 in. (2197 mm)	1
28	7I-5487	HOSE AS., -6 X 21 in. (533 mm)	1
29	8W-9337	HOSE AS., -6 X 46 in. (1168 mm)	1
30	8E-7882	HOSE AS., -16 CODE 61 X 44 in. (1118 mm)	2
32	4L-9337	CAPSCREW, HEX HD (3/8 NC X 1-1/2)	5
33	152-9099	MANIFOLD	1
36	8T-4223	WASHER, HARD (1/2)	4
37	1P-4577	SPLIT FLANGE HALF (-16 CAT, XT3)	6
38	172-1676	HOSE AS., -16 XT5 X 45.25 in. (1149 mm)	1
39	126-8747	HOSE AS., -16 XT3 X 43.88 in. (1115 mm)	1
40	1P-5766	SPLIT FLANGE HALF (-16 CAT, XT5)	4
41	145-7357	HOSE AS., -4 X 63 in. (1600 mm)	1
42	191-1442	BRACKET, LOGIC VALVE	1
45	148-8317	ADAPTER, -12 ORB / -16 ORFS	1
50	7G-5985	CLIP	1
52	171-9781	WIRING HARNESS	1
53	8C-6877	CAPSCREW, HEX HD (7/16 NC X 1 3/4)	4
54	1P-3703	D-RING (CAT -16)	2
55	4J-0520	O-RING	5
56	5S-7382	CAPSCREW, HEX HD (3/8 NC X 1-3/8)	12
57	8T-4896	WASHER, HARD (3/8)	29
58	8E-7881	BRACKET AS.	1
59	4L-6454	CAPSCREW, HEX HD (3/8 NC X 1 in.)	2
60	7G-5986	GROMMET	1
62	7X-0578	WASHER, HARD (3/8)	4
63	5S-7383	CAPSCREW, HEX HD (3/8 NC X 1-3/4)	2
64	148-8433	TEE, -6 ORFS	1
65	8T-4835	CAPSCREW, HEX HD (1/2 NC X 2 in.)	1
66	5P-7462	CLIP	1
67	5P-7463	CLIP	1
68	6V-0683	GROMMET	1
73	9B-0523	SPACER	1
74	6D-7573	CLIP	1
77	7X-0314	CAPSCREW, HEX HD (7/16 NC X 3)	4
78	9B-7237	CAPSCREW, HEX HD (3/8 NC X 1-1/4)	4
79	8T-5360	WASHER, HARD (7/16)	8
80	152-9120	DECAL	1

**MODEL PA110VS
HYDRAULIC SCHEMATIC
CATERPILLAR D9R**

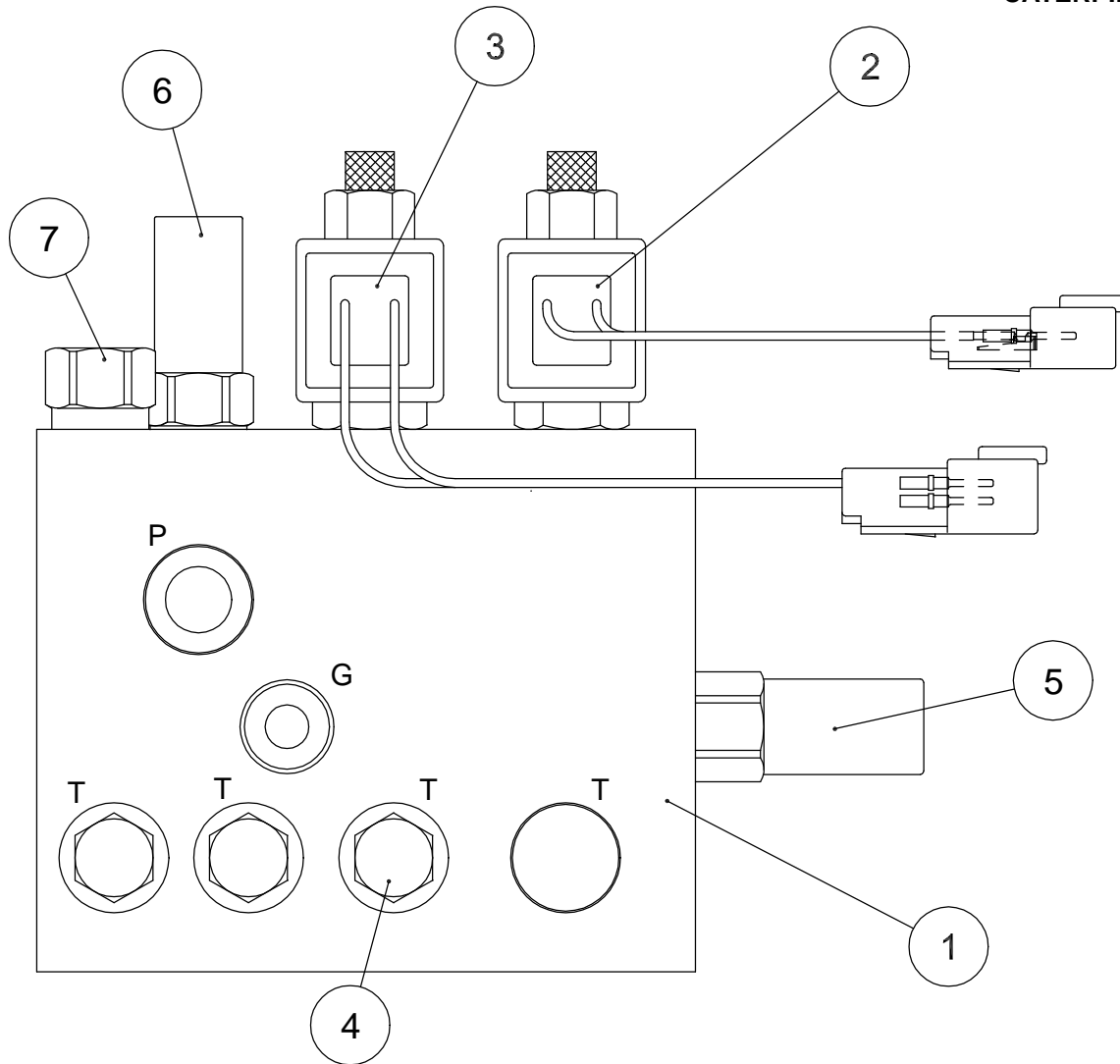


**MODEL PA110VS
CONTROL JOYSTICK ASSEMBLY
CATERPILLAR D9R**



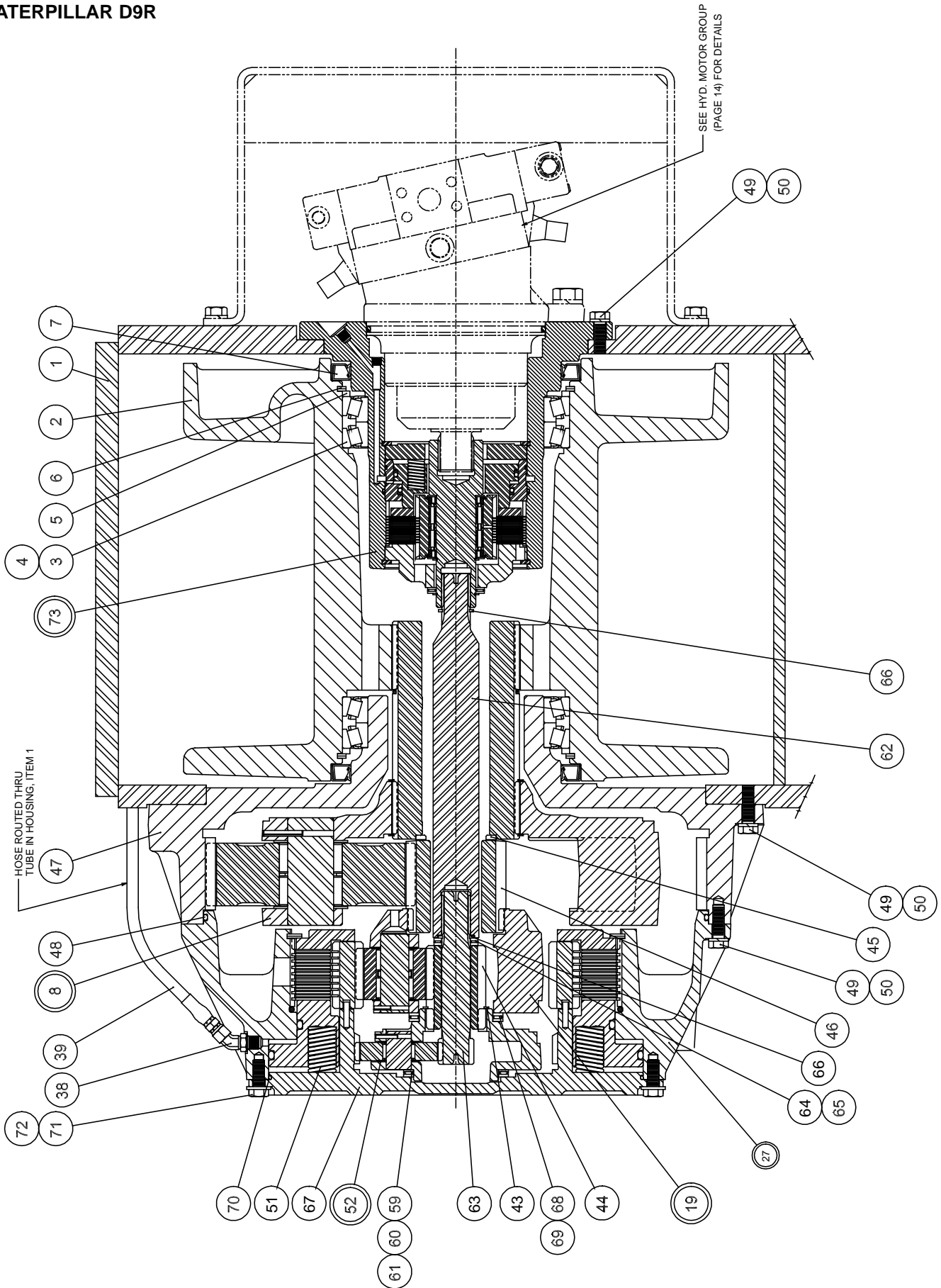
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	190-3810	JOYSTICK TO CONSOLE ADAPTER	1
2	126-3601	JOYSTICK AS. WITH TERMINATION	1
3	126-0810	INDICATOR LIGHT	1
4	7N-2353	SWITCH	1
5	123-4435	CAPSCREW, BUTTON HEAD	4
6	123-4437	LOCKWASHER, PLATED	4
7	6V-8185	NUT, HEX	4
8	130-7444	RUBBER BOOT	1
9	130-7443	HANDLE AS. W/SWITCH & COVER	1

**MODEL PA110VS
LOGIC VALVE ASSEMBLY
CATERPILLAR D9R**



ITEM NO.	PART NO.	DESCRIPTION	QT
-----	152-8377	LOGIC VALVE ASSEMBLY	1
1	152-8378	VALVE BODY	1
2	152-9095	SOLENOID VALVE AND TERMINATION ASSEMBLY - LOW RANGE LOCK	1
	126-0858	SOLENOID VALVE CARTRIDGE ASSEMBLY	2
	127-1955	SEAL KIT (FOR 126-0858 SOLENOID)	2
	126-3900	COIL (FOR 126-0858 SOLENOID)	2
3	152-9106	SOLENOID VALVE AND TERMINATION ASSEMBLY - DISABLE	1
	-----	(SEE ITEM 2 FOR SOLENOID REPLACEMENT PARTS)	--
4	148-8407	PLUG, -6 ORB	3
5	126-0813	RELIEF VALVE CARTRIDGE, 800 PSI	1
	171-7268	SEAL KIT (FOR 126-0813 VALVE)	1
6	127-1956	PRESSURE REDUCING VALVE ASSEMBLY	1
	125-3325	SEAL KIT (FOR 127-1956 VALVE)	1
7	171-7271	FLOW CONTROL VALVE ASSEMBLY	1
	126-0868	SEAL KIT (FOR 171-7271 VALVE)	1

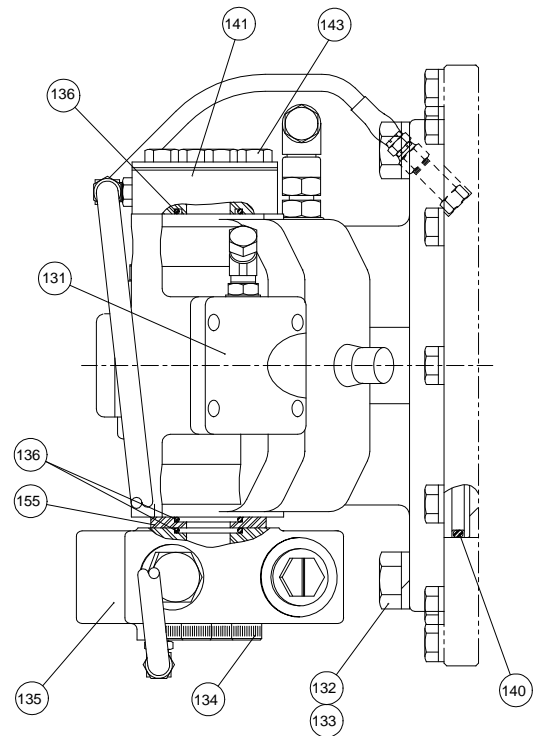
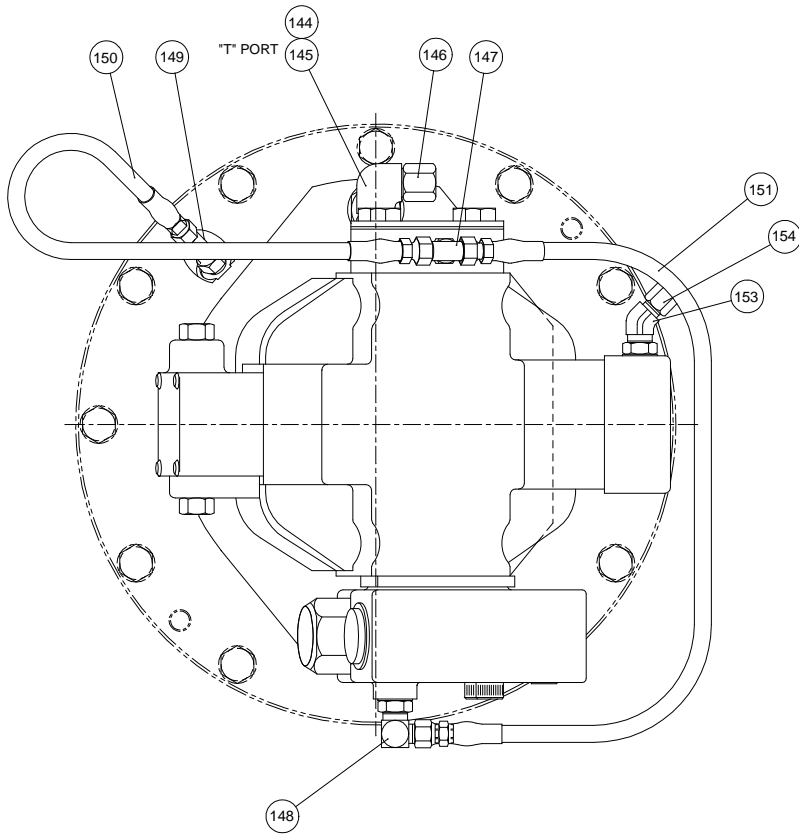
**MODEL PA110VS
WINCH GROUP
CATERPILLAR D9R**



**MODEL PA110VS
WINCH GROUP
CATERPILLAR D9R**

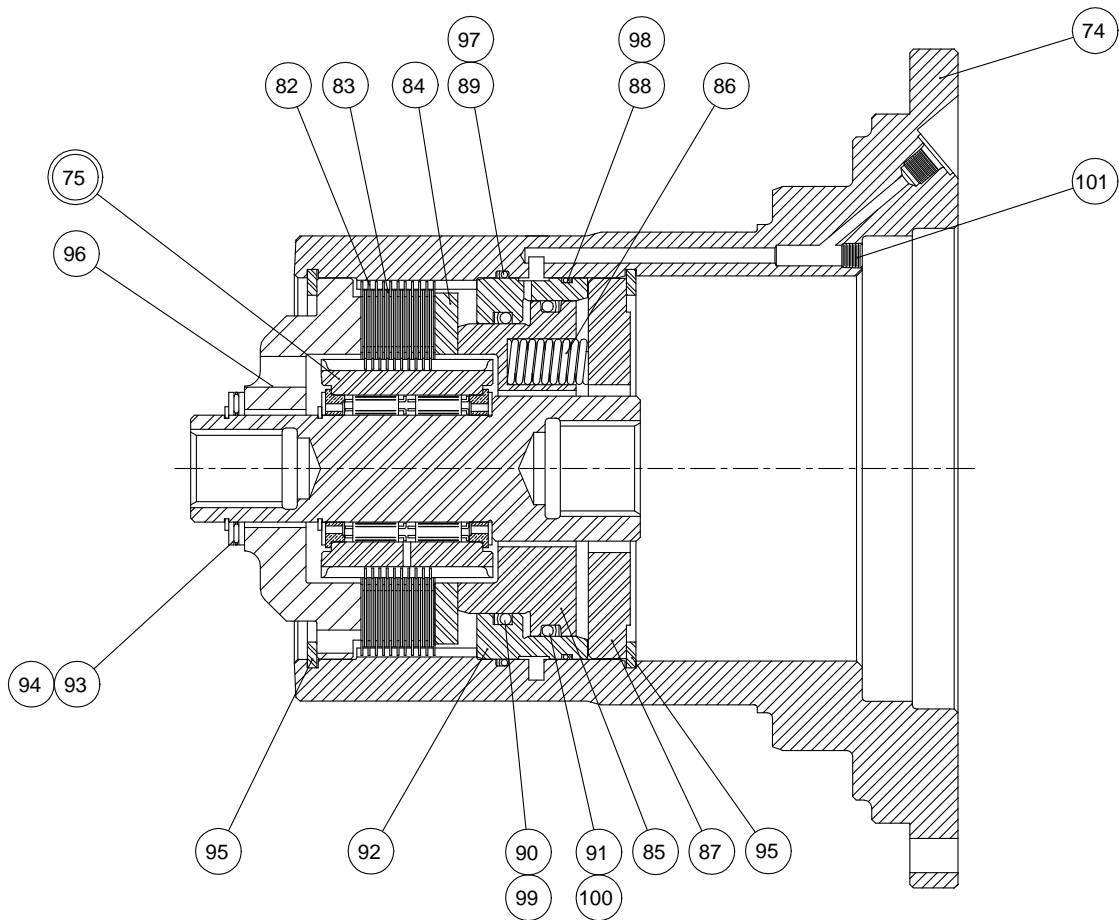
ITEM	PART NO.	DESCRIPTION	QTY.
1	126-2470	WINCH HOUSING	1
2	126-7137	CABLE DRUM	1
3	126-0771	BEARING CONE	4
4	126-0775	BEARING CUP	4
5	126-0774	SPACER RING	2
6	126-0773	RETAINING RING	2
7	126-0772	OIL SEAL	2
8	126-7136	OUTPUT PLANET CARRIER ASSEMBLY - SEE PAGE 18	1
19	126-2860	SECONDARY PLANET CARRIER ASSEMBLY - SEE PG. 18	1
27	---	DRUM CLUTCH ASSEMBLY - SEE PAGE 19	1
38	148-8353	ELBOW, 45, -6 ORB TO -6 ORFS - DRUM CLUTCH PORT	1
39	169-4018	HOSE, -6 ORFS, 34 IN. (864 MM) DRUM CLUTCH RELEASE	1
43	8C-3232	RETAINING RING	1
44	126-0841	SECONDARY SUN GEAR	1
45	126-0781	THRUST WASHER	1
46	126-0840	OUTPUT SUN GEAR	1
47	126-0854	OUTPUT RING GEAR	1
48	4H-6730	O-RING	1
49	5P-2566	CAPSCREW, HEX HEAD (1/2-13 X 1 1/2 PLTD.)	46
50	8T-4223	WASHER (1/2 PLTD.)	46
51	126-0780	SPRING	20
52	126-2861	PRIMARY PLANET CARRIER ASSEMBLY - SEE PG. 17	1
59	126-0793	THRUST BEARING RACE-.125 IN. (3.17mm) OUTER	1
60	126-0792	THRUST BEARING	1
61	126-2462	THRUST BEARING RACE-.062 IN. (1.58mm) INNER	1
62	126-0851	INTERMEDIATE SHAFT	1
63	126-0839	PRIMARY SUN GEAR SHAFT	1
64	126-0791	THRUST BEARING RACE - .125 IN. (3.17mm)	2
65	126-0790	THRUST BEARING	1
66	126-0797	RETAINING RING	2
67	126-0850	PRIMARY PLANET RING GEAR/ COVER - includes 8 dowel pins	1
68	126-2465	THRUST BEARING RACE	2
69	126-0795	THRUST BEARING	1
70	7S-8561	O-RING	1
71	8T-8917	CAPSCREW, HEX HEAD (1/2-13 X 1 1/4 PLTD.)	10
72	8T-4223	WASHER, HARDENED (1/2 PLTD.)	10
73	140-7268	BRAKE HOUSING ASSEMBLY - SEE PAGE 15	1

**MODEL PA110VS
MOTOR GROUP
CATERPILLAR D9R**



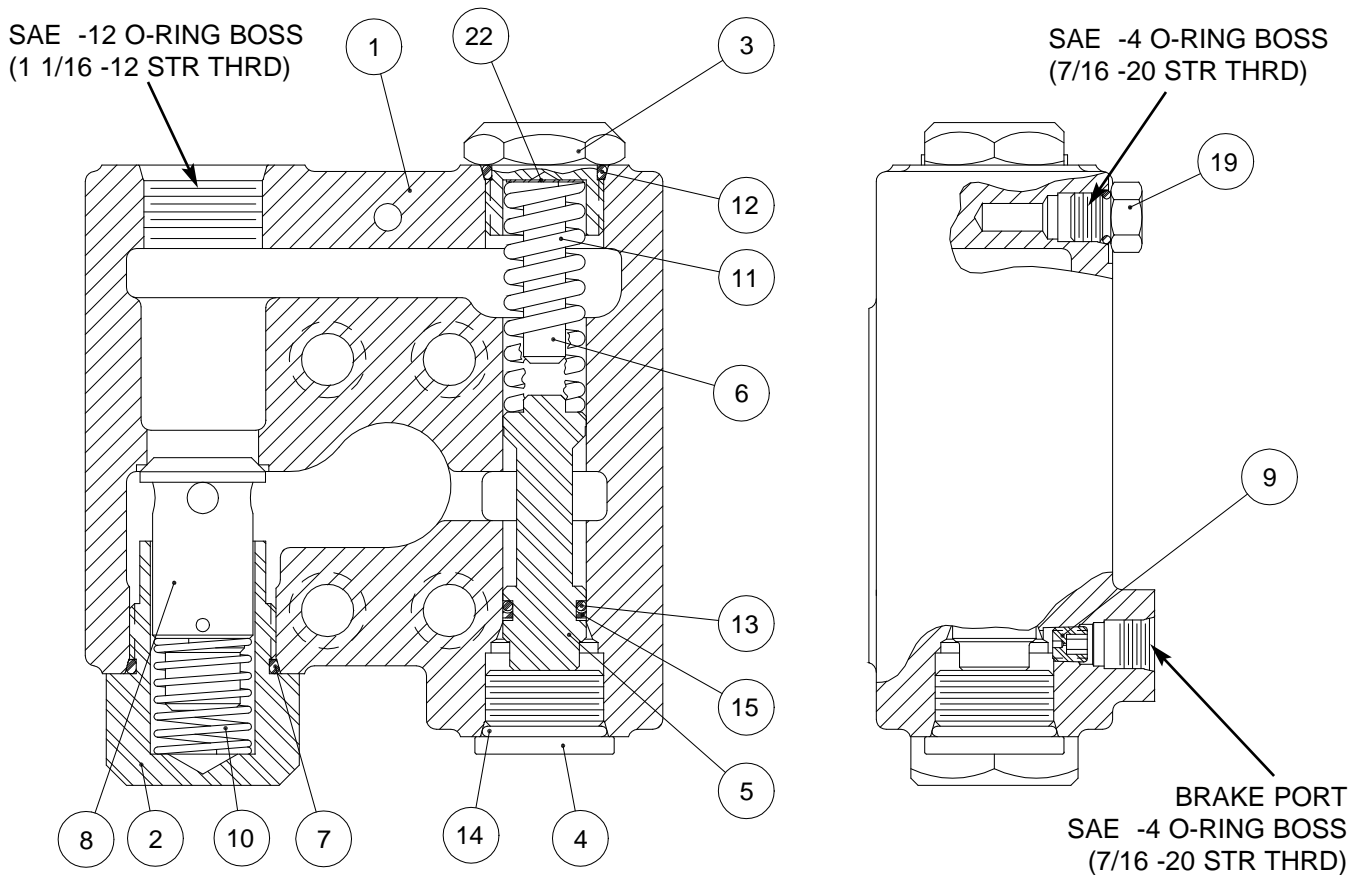
ITEM NO.	PART NO.	DESCRIPTION	QTY.
131	158-6534	HYD MOTOR, 3.34 CID / 3100 PSI	1
132	8T-9398	CAPSCREW, HEX HD (3/4 NC X 1-3/4)	2
133	8T-4994	WASHER, HARD (3/4)	2
134	3J-4567	CAPSCREW, HEX SOCKET HD (7/16 NC X 3 in.)	4
135	126-2864	BRAKE VALVE AS. (SEE PAGE 16)	1
136	4F-7391	O-RING	3
140	119-1586	O-RING	1
141	126-0824	ADAPTER BLOCK	1
144	8T-7490	ADAPTER, -8 / M18 METRIC	1
145	148-8370	ELBOW, 90°, -8 ORB SWIV. / -8 ORFS	1
146	6V-9830	CAP, -8	1
147	6V-8773	TEE, -4 ORB / -4 ORFS	1
148	148-8369	ELBOW, 90°, -4 ORB/ORFS	1
149	6V-9010	ADAPTER, STR. LONG, -4 ORB/ORFS	1
150	152-8368	HOSE AS., -4 X 14 in. (356 mm)	1
151	152-8369	HOSE AS., -4 X 20 in. (508 mm)	1
153	150-3033	ELBOW, 45°, -6 ORB / -4 ORFS	1
154	6V-9828	CAP, -4	1
155	126-0837	SPACER	1

**MODEL PA110VS
BRAKE HOUSING ASSEMBLY
CATERPILLAR D9R**



ITEM	PART NO.	DESCRIPTION	QTY.
74	126-2469	BRAKE HOUSING	1
75	126-2863	BRAKE CLUTCH ASSEMBLY - SEE PAGE 17	1
82	126-0827	DISC - STEEL DIVIDER	11
83	126-0828	DISC - FRICTION	10
84	126-0800	SPACER - BRAKE DISC	1
85	126-0829	BRAKE PISTON	1
86	126-0798	SPRING	13
87	126-0830	SPRING RETAINER	1
88	5P-3864	O-RING	1
89	8M-4704	O-RING	1
90	1P-9005	O-RING	1
91	8J-1688	O-RING	1
92	126-0826	BRAKE CYLINDER	1
93	126-2457	THRUST BEARING RACE	2
94	126-0808	THRUST BEARING	1
95	126-0807	RETAINING RING	2
96	126-0825	BRAKE RETAINER	1
97	126-3167	BACK-UP RING	1
98	126-3168	BACK-UP RING	1
99	126-3169	BACK-UP RING	1
100	126-3170	BACK-UP RING	1
101	096-5971	PIPE PLUG (1/8 NPT)	1

**MODEL PA110VS
BRAKE VALVE ASSEMBLY
CATERPILLAR D9R**



ASSEMBLY INSTRUCTIONS

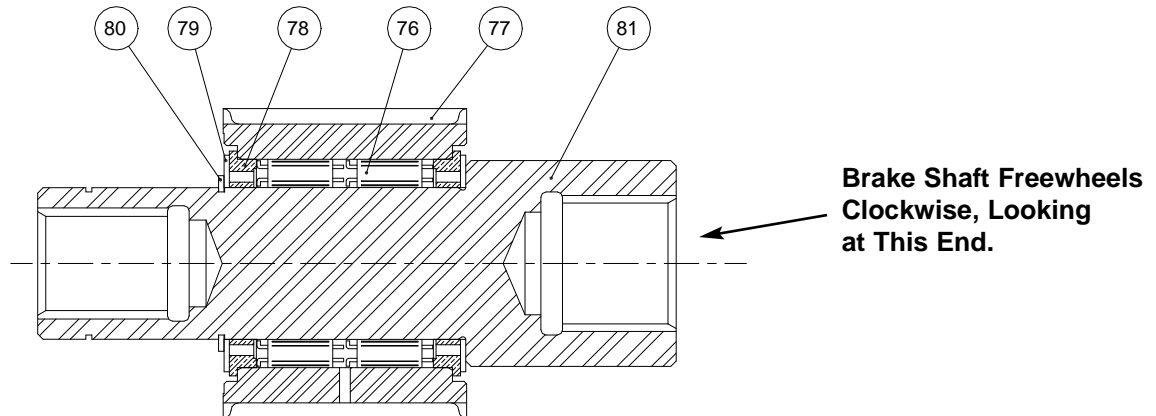
1. Tighten plug, item 19, to 25 lb•ft (34 N•m) torque.
2. Tighten plugs, items 2, 3, and 4, to 40 lb•ft (54 N•m) torque.

ITEM	PART NO.	DESCRIPTION	QTY.
	126-2864	BRAKE VALVE ASSEMBLY	1
1	NSS	BRAKE VALVE HOUSING	1
2	126-0816	RELIEF VALVE RETAINER	1
3	126-0815	SPRING RETAINER	1
4	9S-8008	PLUG	1
5	NSS	MAIN SPOOL	1
6	126-2454	SPOOL STOP	1
7	7M-8485	O-RING	1
8	126-3182	CHECK POPPET/RELIEF VALVE 6000 PSI (41,400 kPa)	1
9	126-2453	PILOT ORIFICE	1
10	126-0817	CHECK VALVE SPRING	1
11	126-0820	MAIN SPOOL SPRING	1
12	3D-2824	O-RING	2
13	4J-5268	O-RING	1
14	6V-8397	O-RING	1
15	126-3349	BACK-UP RING	1
19	155-3624	PLUG, -4 ORFS	1
22	8J-7269	SHIM, MAIN SPOOL SPRING	AR

NSS - NOT SERVICED SEPARATELY

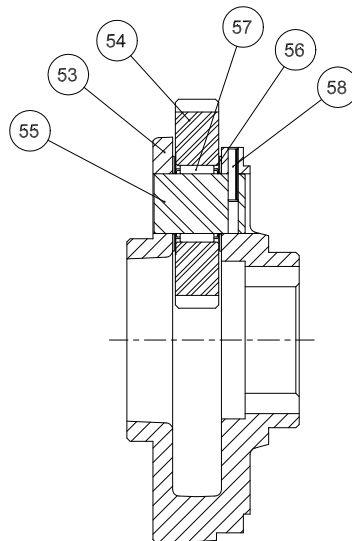
AR - AS REQUIRED

**MODEL PA110VS
OVER-RUNNING BRAKE CLUTCH ASSEMBLY
CATERPILLAR D9R**



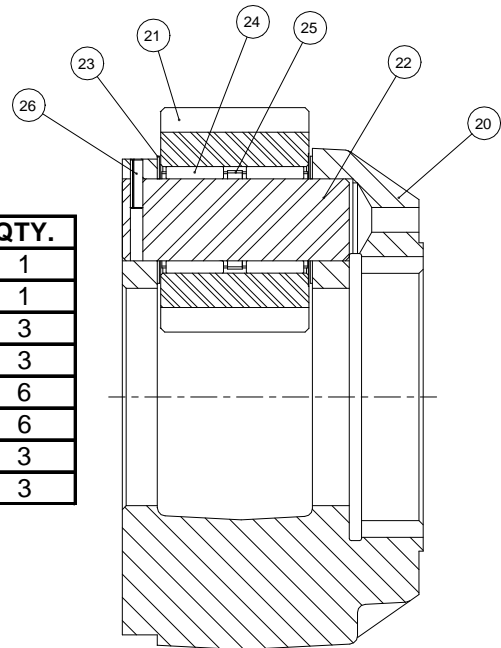
ITEM	PART NO.	DESCRIPTION	QTY.
	126-2863	BRAKE CLUTCH ASSEMBLY	1
76	126-0804	SPRAG CLUTCH	2
77	126-0832	OUTER BRAKE RACE	1
78	126-0802	SPRAG BEARING - BRONZE ALLOY	2
79	126-1572	THRUST WASHER	2
80	6V-7700	RETAINING RING	1
81	126-0831	BRAKE SHAFT - METRIC - REXROTH	1

PRIMARY PLANET ASSEMBLY



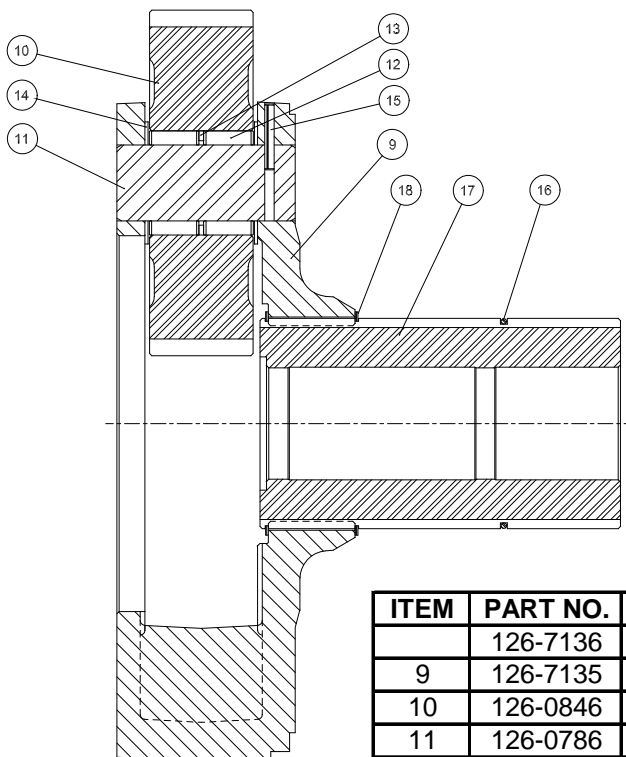
ITEM	PART NO.	DESCRIPTION	QTY.
	126-2861	PRIMARY PLANET CARRIER ASSEMBLY	1
53	126-0852	PRIMARY PLANET CARRIER	1
54	126-0838	PRIMARY PLANET GEAR	3
55	126-0789	PRIMARY PLANET GEAR SHAFT	3
56	126-0788	THRUST BEARING	6
57	126-2464	ROLLER BEARING	3
59	6H-3956	SPIROL PIN	3

**MODEL PA110VS
SECONDARY PLANET ASSEMBLY
CATERPILLAR D9R**



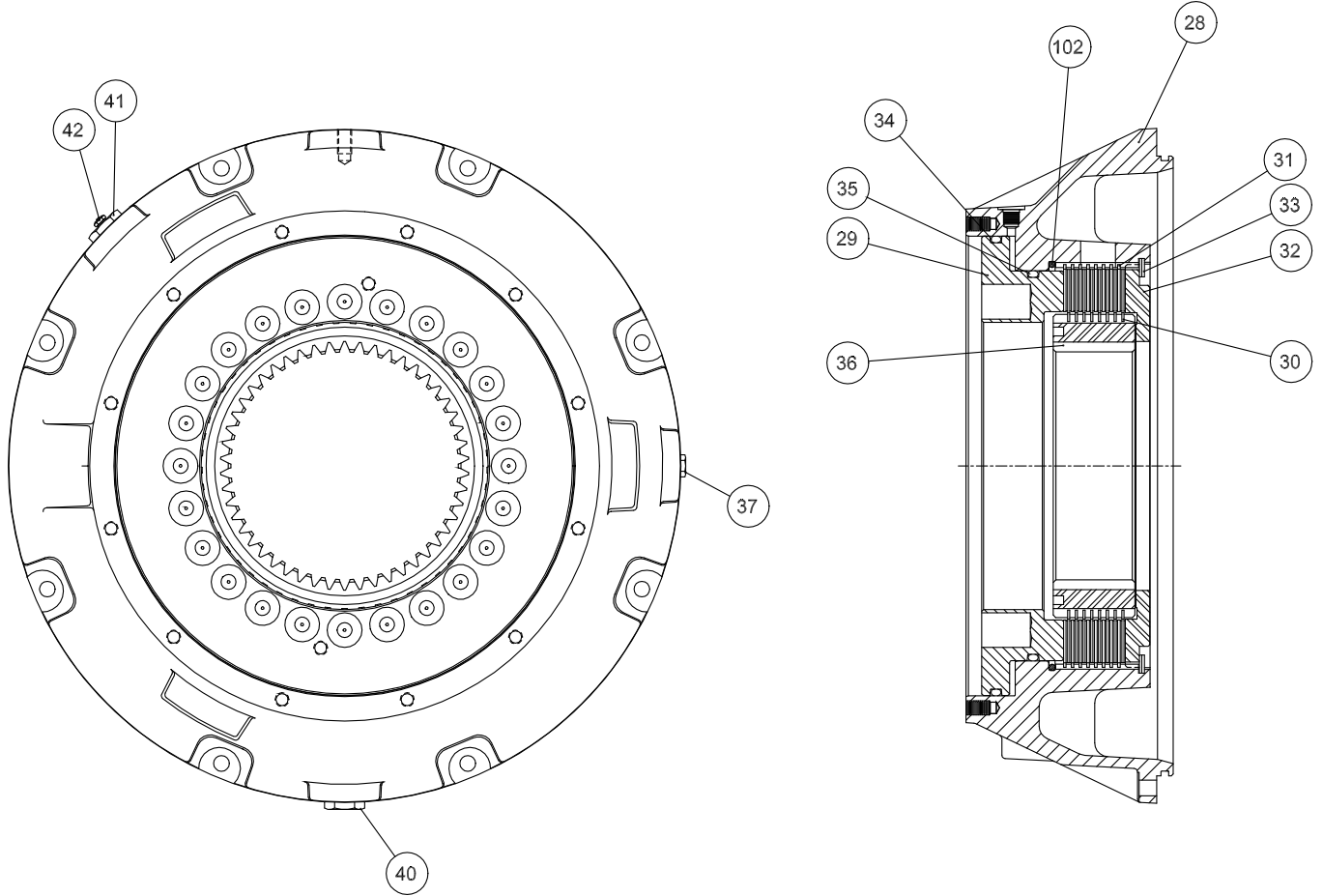
ITEM	PART NO.	DESCRIPTION	QTY.
	126-2860	SECONDARY PLANET CARRIER ASSEMBLY	1
20	126-0857	SECONDARY PLANET CARRIER	1
21	126-0845	SECONDARY PLANET GEAR	3
22	126-0787	SECONDARY PLANET GEAR SHAFT	3
23	126-2460	THRUST WASHER	6
24	126-2459	ROLLER BEARING	6
25	126-0823	BEARING SPACER	3
26	126-0822	SPIROL PIN	3

OUTPUT PLANET ASSEMBLY



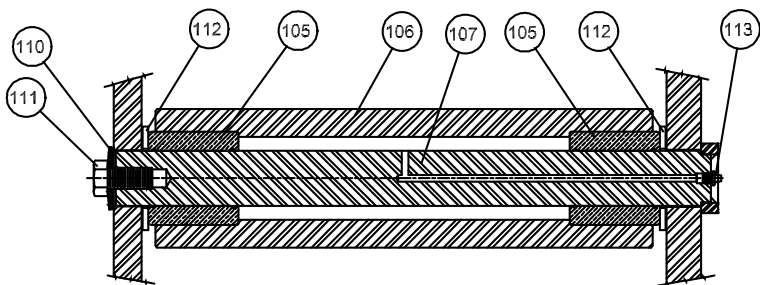
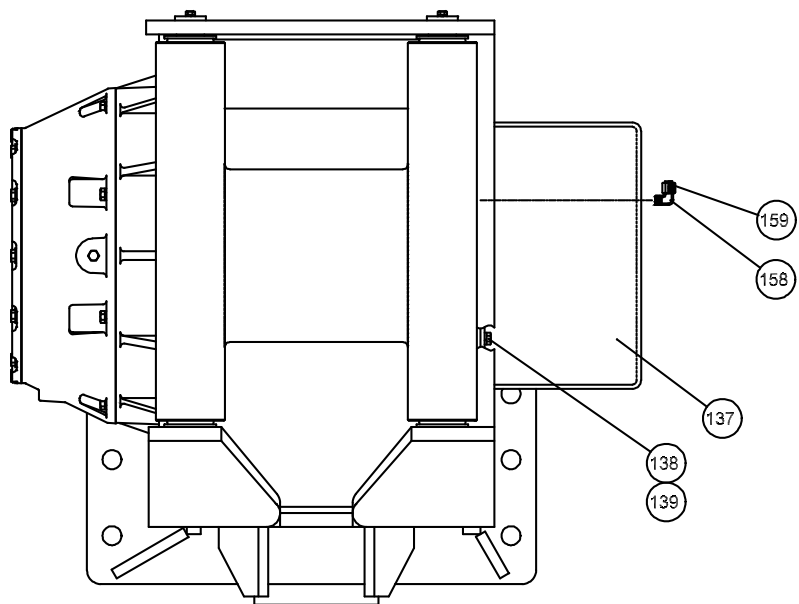
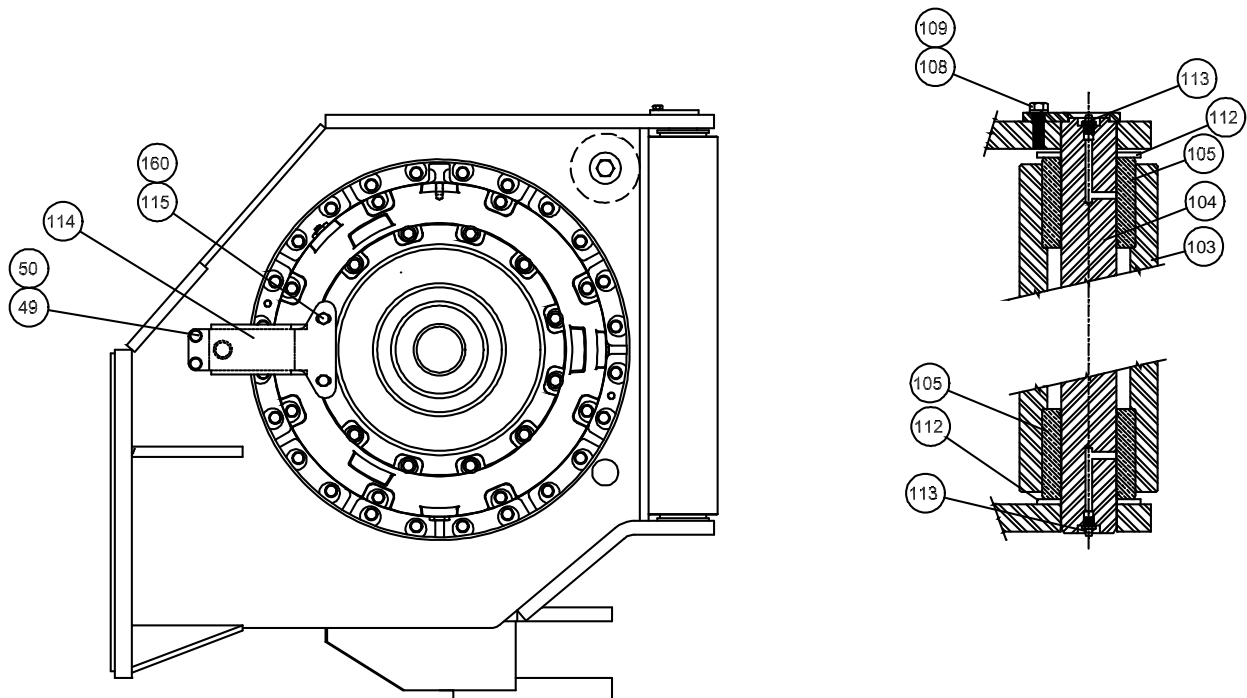
ITEM	PART NO.	DESCRIPTION	QTY.
	126-7136	OUTPUT PLANET CARRIER ASSEMBLY	1
9	126-7135	OUTPUT PLANET CARRIER	1
10	126-0846	OUTPUT PLANET GEAR	3
11	126-0786	OUTPUT PLANET SHAFT	3
12	126-0785	ROLLER	120
13	126-0779	BEARING SPACER	3
14	126-0784	THRUST WASHER	6
15	4H-4737	ROLL PIN	3
16	126-0783	RETAINING RING	1
17	126-0847	DRUM DRIVE SHAFT	1
18	126-0782	RETAINING RING	2

**MODEL PA110VS
DRUM CLUTCH ASSEMBLY
CATERPILLAR D9R**



ITEM	PART NO.	DESCRIPTION	QTY.
28	126-0856	CLUTCH HOUSING	1
29	126-0855	CLUTCH PISTON	1
30	126-0844	DISC - FRICTION	8
31	126-2466	DISC - STEEL DIVIDER	8
32	126-0843	PRESSURE PLATE	1
33	126-0821	RETAINING RING	1
34	6v-5862	O-RING	1
35	5p-9217	O-RING	1
36	126-0842	CLUTCH HUB	1
37	148-8407	PLUG - OIL LEVEL	1
40	126-0778	PLUG - OIL DRAIN - MAGNETIC	1
41	126-3230	PLUG - FILL	1
42	126-0776	PLUG - VENT RELIEF	1
102	140-7271	SPACER RING	1

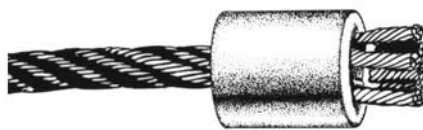
**MODEL PA110VS
COVERS AND FAIRLEAD GROUP
CATERPILLAR D9R**



**MODEL PA110VS
COVERS AND FAIRLEAD GROUP
CATERPILLAR D9R**

ITEM	PART NO.	DESCRIPTION	QTY.	
			3 ROLLER	4 ROLLER
49	5P-2566	CAPSCREW, HEX HEAD (1/2-13 X 1 1/2 PLTD.)	2	2
50	8T-4223	WASHER (1/2 PLTD.)	2	2
103	126-0836	ROLLER, VERTICAL (30.44 IN.)	2	2
104	126-0835	ROLLER SHAFT, VERTICAL	2	2
105	126-0794	ROLLER BUSHING	6	8
106	126-0834	ROLLER, HORIZONTAL	1	2
107	126-0833	ROLLER SHAFT, HORIZONTAL	1	2
108	4L-6454	CAPSCREW, HEX HEAD (3/8-16 X 1 PLTD.)	2	2
109	8T-4896	WASHER, HARDENED (3/8 PLTD.)	2	2
110	126-2452	SPRING WASHER	1	2
111	7X-0365	CAPSCREW, HEX HEAD (3/4-10 X 1 /12 PLTD.)	1	2
112	126-0806	WASHER,ROLLER	6	8
113	3B-8489	GREASE FITTING	5	6
114	126-0853	HOSE GUARD	1	1
115	8T-4835	CAPSCREW, HEX HEAD (1/2-13 X 2 PLTD.)	2	2
137	126-0848	MOTOR COVER	1	1
138	5P-2566	CAPSCREW, HEX HEAD (1/2-13 X 1 1/2 PLTD.)	11	11
139	8T-4223	WASHER (1/2 PLTD.)	11	11
156	123-4417	S/N DATA PLATE - CARCO (NOT SHOWN)	1	1
157	7H-4543	DRIVE SCREW (NOT SHOWN)	4	4
158	6V-9807	UNION, 90, -6 ORFS TO -6 ORFS	1	1
159	6V-9829	CAP, -6 ORFS	1	1
160	5P-1076	WASHER, HARDENED (1/2 PLTD.)	2	2
161	126-0860	DRAW BAR PIN (NOT SHOWN)	1	1
162	3B-5320	COTTER PIN (3/8 X 3) (NOT SHOWN)	2	2
---	171-7267	FOURTH ROLLER KIT (INCLUDES ITEMS 105, 106, 107, 110, 111, 112, 113)	----	----

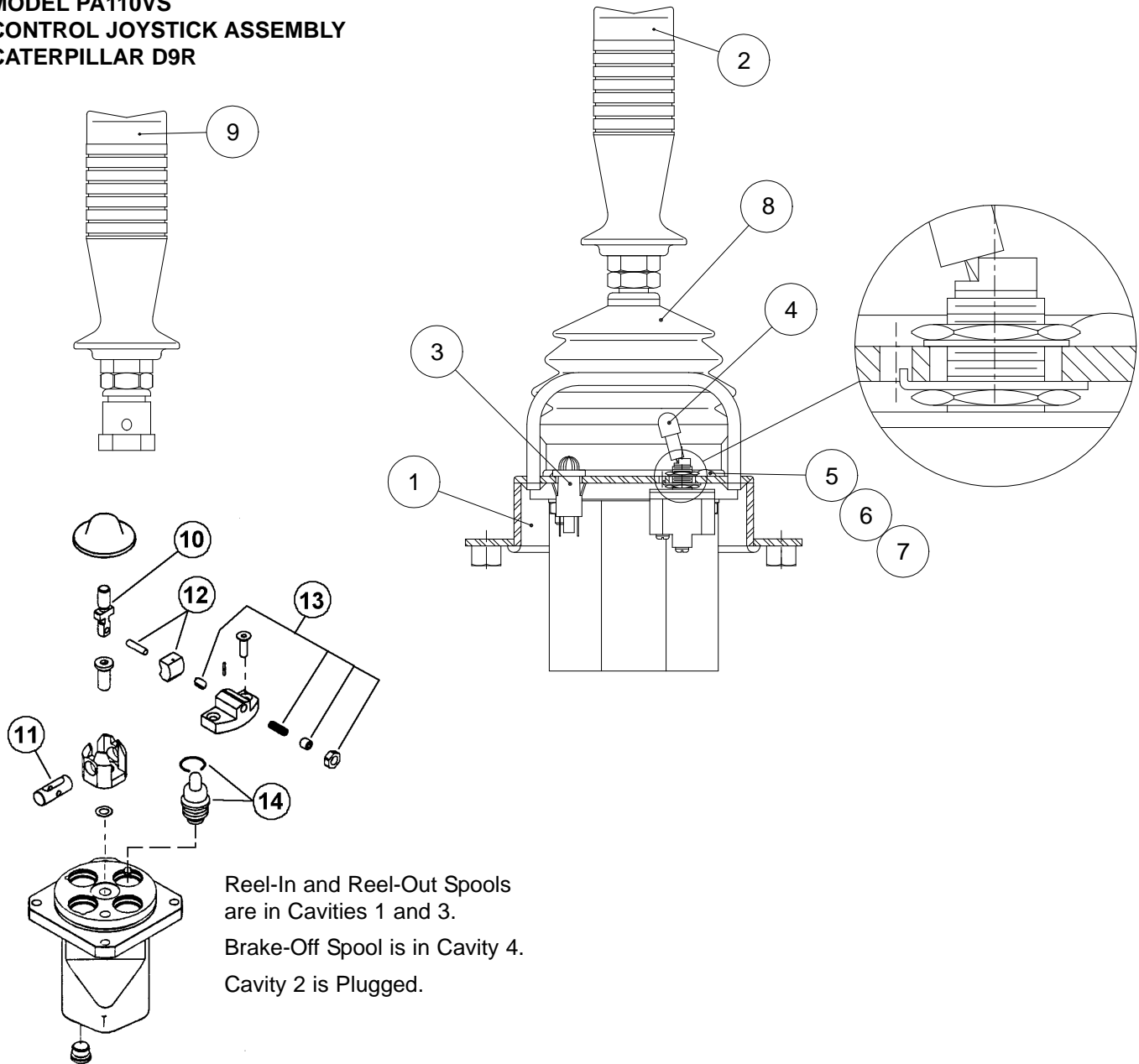
CABLE FERRULES



---	29427	FERRULE - 1 IN. (25 mm)
---	131-7403	FERRULE - 1 1/8 (27 mm)
---	131-7404	FERRULE - 1 1/4 (32 mm)

FERRULES FOR USE WITH STANDARD 6 STRAND, IWRC WIRE ROPE ONLY

**MODEL PA110VS
CONTROL JOYSTICK ASSEMBLY
CATERPILLAR D9R**



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	190-3810	JOYSTICK TO CONSOLE ADAPTER	1
2	126-3601	JOYSTICK AS. WITH TERMINATION	1
3	126-0810	INDICATOR LIGHT	1
4	7N-2353	SWITCH	1
5	123-4435	CAPSCREW, BUTTON HEAD	4
6	123-4437	LOCKWASHER, PLATED	4
7	6V-8185	NUT, HEX	4
8	130-7444	RUBBER BOOT	1
9	130-7443	HANDLE AS. W/SWITCH & COVER	1
10		LINK	1
11		PIVOT PIN	1
12		DETENT STOP KIT	1
13		DETENT KIT	1
14		SPOOL KIT (BRAKE OFF)	1
		SPOOL KIT (REEL-OUT/REEL-IN)	2