

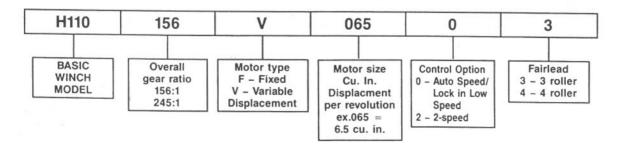
# PARTS & INSTALLATION INSTRUCTIONS MANUAL MODEL H110 FOR

# KOMATSU D65EX-12, PX-12

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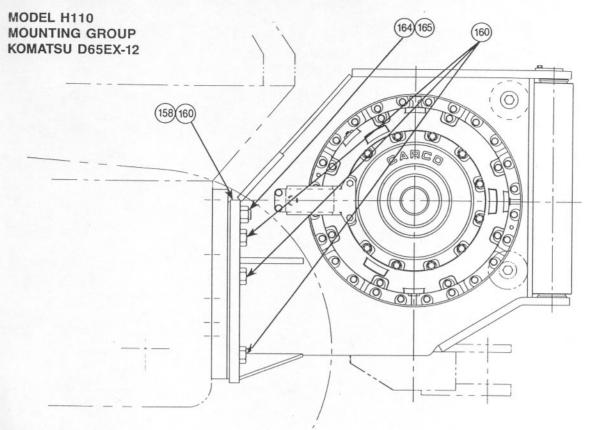
### MODEL NUMBER DESCRIPTION



# PACCAR WINCH DIVISIONS

P.O. BOX 547 • BROKEN ARROW, OK U.S.A. 74013 PHONE (918) 251-8511 • FAX (918) 258-4822





### **INSTRUCTIONS:**

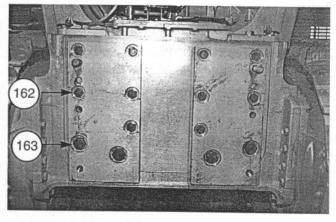
# **A** CAUTION

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

NOTE: Refer to the appropriate Komatsu service manuals for additional information regarding steps 1 & 2.

- Drain hydraulic oil into a suitable container. Recycle or dispose of drain oil in an environmentally responsible manner. Securely install hydraulic reservoir drain plug after oil has drained.
- Clean all paint, oil, grease, rust and dirt from the mounting surfaces of the winch adapter brackets and tractor.
- Install mounting plates, items 158 and 160, to tractor rear face utilizing fasteners, items 162 and 163;

coat fastener threads with Loc-tite 242 prior to installation. Torque M24 fasteners to 684 lb•ft (927 N•m) and M33 fasteners to 1630 lb•ft (2210 N•m).



- Remove ripper manifold and bracket from rear of tractor; install modified winch manifold and bracket, item 28 from hydraulic control group in its place. Reattach ripper hoses.
- Apply Loc-tite 271 to the threads and install studs, item 164, into the top mounting hole on each side of the tractor rear face.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
158	29910	MOUNTING PLATE, RH	1
160	29911	MOUNTING PLATE, LH	1
162	31809	CAPSCREW, METRIC (M24 × 3 × 60 HHCS) GD8	10
163	69779	CAPSCREW, METRIC (M33 × 3 × 68 HHCS) GD8	4
164	33458	STUD (1¼ - 7 × 1.92 BOTH ENDS) GD8	2
165	70176	NUT, HEX (11/4 - 7) GD8	2
166	69663	CAPSCREW (11/4 - 7 × 4) GD8	6

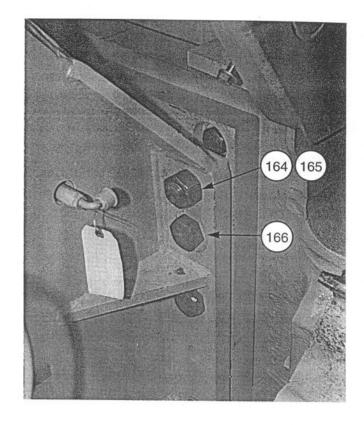
# **A WARNING**

Winch weighs approximately 4,050 lb. (1,890 kg) without wire rope and adapters. Make certain that lifting equipment has adequate capacity. Failure to use adequate lifting equipment may result in property damage, personal injury or death.

- 6. Install winch onto studs.
- Apply Loc-tite 242 to threads of mounting bolts, item 166, and nuts, item 165; torque to 1360 lb-ft (1844 N•m).

# **A** CAUTION

Fill winch to proper level with recommended oil <u>BEFORE</u> operating. Component damage may result if winch is operated without oil.



MODEL H110 HYDRAULIC CONTROL GROUP KOMATSU D65EX-12

PLEASE NOTE: Tractor must be equipped with Komatsu ripper control valve section and associated plumbing in order to install winch.

# **A** CAUTION

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

### **INSTRUCTIONS:**

**Note:** Refer to the appropriate Komatsu service manuals **for** additional information regarding steps 1, 2, 3, and 4.

- 1. Remove the operator's seat and cab floor plate, RH console side plates and top cover to gain access to hydraulic piping.
- 2. Install relief/anti-cavitation cartridge, item 13, in ripper section of control valve (Figure C). Install metric to JIC adapters, item 32, into end cap fittings of ripper section of control valve (Figure A).

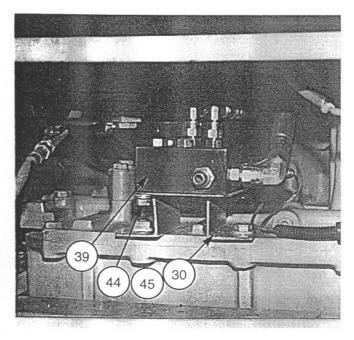


PHOTO 1

 Remove Komatsu ripper joystick and associated plumbing, (see Figure A). Use Komatsu plug, item 43, in hydraulic tank.

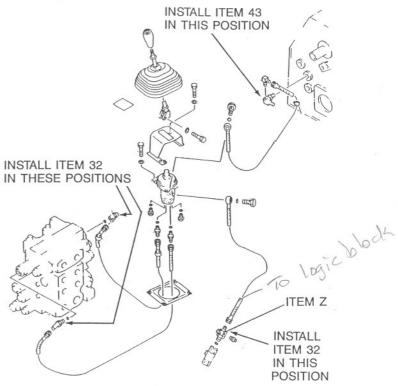


FIGURE A

- 4. Remove hose from tee fitting to ripper joystick, item Z from figure A; install fitting, item 32.
- 5. Install tee, item 38, at tractor filter between hose at filter base and filter canister (see figure B).

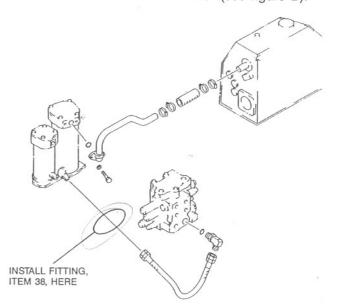
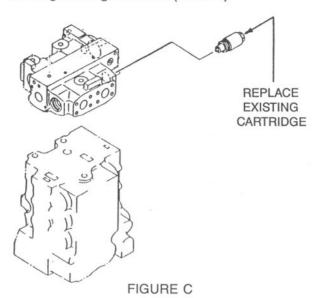


FIGURE B

- 6. Install fittings in logic block, item 34, as follows (also refer to figure 1, page 6):
  - Port J: -6 ORB to -6 JIC adapter, item 4 -6 to -6 JIC 90 union, item 12
  - Port T: -6 ORB to -6 JIC adapter, item 4 -6 to -6 JIC elbow, item 3
  - Port P: -6 ORB to -6 JIC 90 adapter, item 23
  - Port T: -6 JIC to -8 ORB 90 adapter, item 31
  - Port X: -6 ORB to -4 JIC straight adapter, item 5

7. Attach logic block, item 39, to bracket, item 30 with fasteners, items 44 and 45. Attach bracket to tractor utilizing existing fasteners (Photo 1).



- 8. Install four -6 ORB to -6 JIC hose adapters, item 4, into joystick, item 8, valve ports 1, 3, 4, and T, and one long straight -6 ORB to -6 JIC adapter, item 10, into the center P port; also install a 45 elbow, item 11 in port 1. Port 2 is plugged. Refer to figure 2 on page 6. Also install -6 JIC to -4 JIC reducers, item 33, at ports 1 and 3.
- Install joystick to console with mounting plate, item 29, utilizing fasteners, items 1 and 2, for attachment of joystick to mounting plate and existing fasteners for attachment of mounting plate to console (Photo 2).

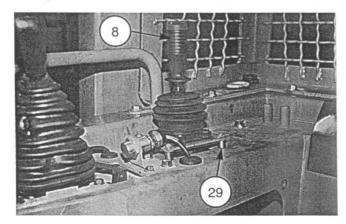
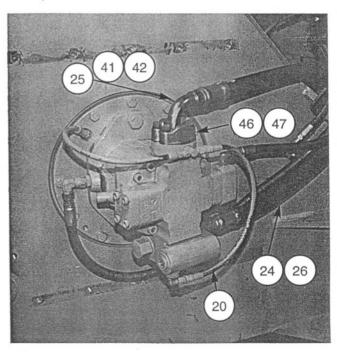


PHOTO 2

10. Center the winch instruction plate, item 14, over ripper control opening in console cover and install with fasteners, items 2 and 36. Install indicator lamp, item 9, note that a clearance hole for the lamp in the console cover will be required.

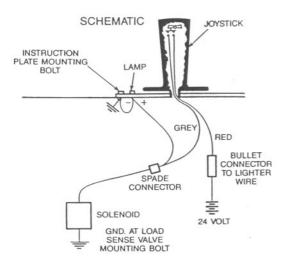
- 11. Install hoses as follows:
  - Item 16 (-4 JIC to -4 JIC 26 in.) from joystick port 1 to haul-in port on ripper section of control valve.
  - Item 16 (-4 JIC to -4 JIC 26 in.) from joystick port 3 to pay-out port on ripper section of control valve.
  - Item 17 (-4 JIC to -4 JIC 54 in.) from logic block port X to winch motor X port.
  - Item 18 (-6 JIC to -6 JIC 66 in.) from joystick port P to logic block port J.
  - Item 18 (-6 JIC to -6 JIC 66 in.) from joystick port T to logic block port T.
  - Item 22 (-6 JIC to -6 JIC 90 in.) from joystick port 4 to drum clutch release line.
  - Item 20 (-8 JIC to -8 JIC 75 in.) from logic block port T to front motor drain on winch.
  - Item 21 (-8 JIC to -8 JIC 57 in.) from logic block port T to tee at tractor filter installed in step 5.
- Install hoses from bracket, item 28, to winch motor: Item 25 (27 in. hose) to pay-out (top) motor port and item 24 (30 in. hose) to haul-in (bottom) port of motor. Utilize adapters, items 26, 41, and 42 (Photo 3).



РНОТО 3

13. Insure that the tractor master switch is in the OFF position. Locate a suitable 24 velt wire in the RH console which is switchable with the ignition key. Utilizing 14 to 16 guage wire, produce the circuit shown in the schematic below.

### MODEL H110 HYDRAULIC CONTROL GROUP KOMATSU D65EX-12



14. Turn on the tractor master switch. Turn the starter key switch on (DO NOT START ENGINE). Pressing the rocker switch should cause the indicator lamp and the solenoid valve to activate.

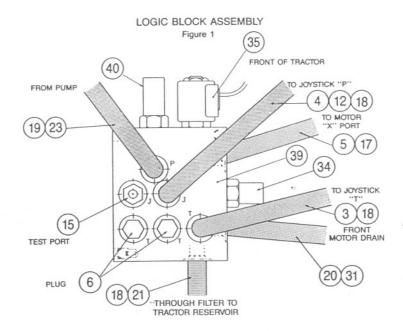
- Check all hydraulic connections for tightness. Make certain all hoses and wires are routed and secured to avoid chaffing.
- Fill the hydraulic reservoir to the proper level with recommended oil. Refer to Komatsu oil specifications.
- 17. Start the engine and operate at low throttle to purge air from lines. Operate winch in all functions and refill hydraulic reservoir as required. Check for leaks and take corrective action as required.

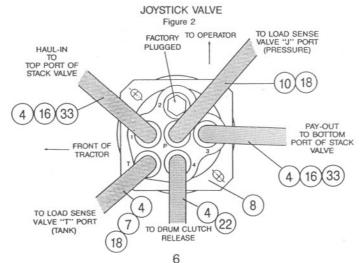
Note: If haul-in and pay-out functions are reversed, the joystick pilot lines may be reversed at ports 1 and 3.

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

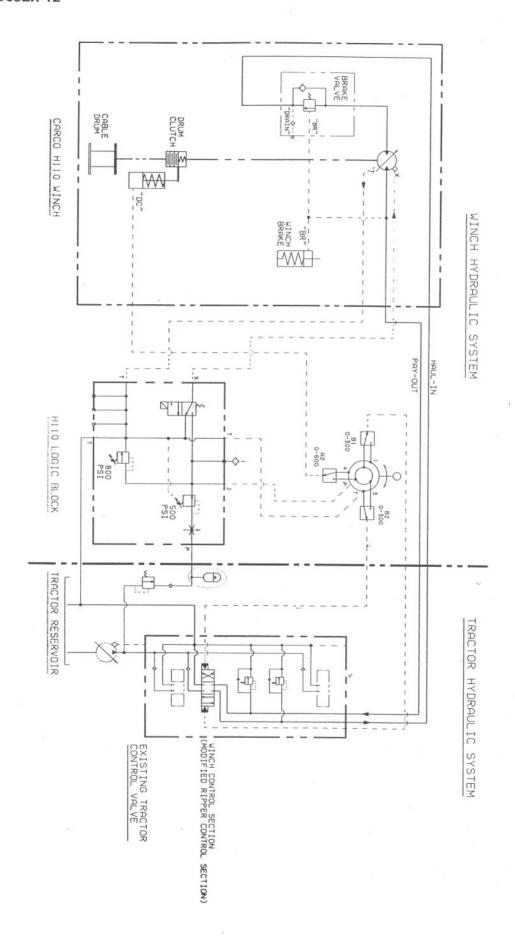
# **A** CAUTION

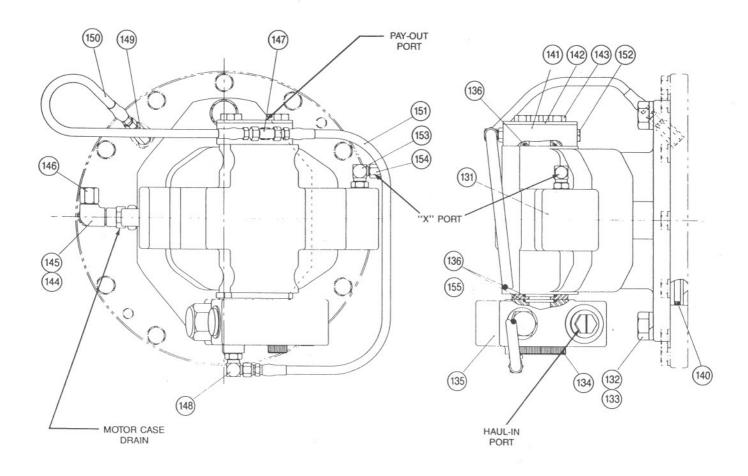
Fill winch to proper level with recommended oil <u>BEFORE</u> operating. Component damage may result if winch is operated without oil.



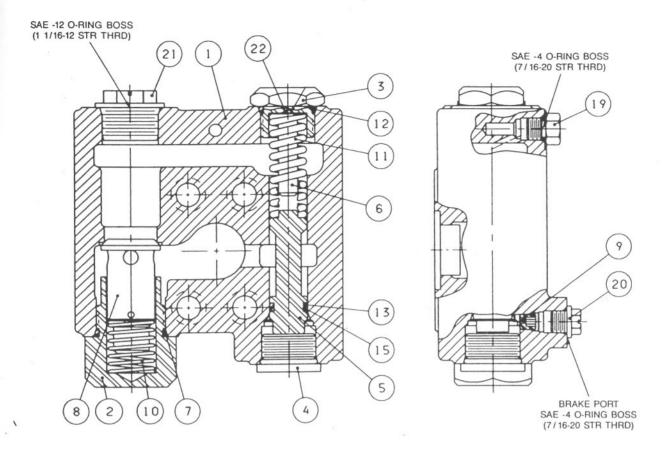


ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	11759	CAPSCREW, HEX HEAD (1/4 – 20 × 1 G5)	4
2	11761	NUT, HEX (1/4 – 20)	8
3	25856	ELBOW, 90° -6 -6 JIC	2
4	25863	ADAPTER, -6 ORB TO -6 JIC	7
5	31284	ADAPTER, -6 ORB TO -4 JIC	1
6	26686	PLUG, –6 ORB	2
7	29870	DISCONNECT, FEMALE	4
	29809	JOYSTICK VALVE ASSEMBLY	1
8	40168	ROCKER SWITCH/SWITCH COVER BOOT FOR 29809	1
	40170	BOOT, HANDLE FOR 29809	1
	40169	HANDLE ASSEMBLY FOR 29809	1
9	29846	INDICATOR LAMP, GREEN LED	1
10	29847	ADAPTER, LONG, STRAIGHT, -6 JIC	1
11	27149	ELBOW, 45°, -6 -6 JIC	1
12	31426	UNION, 90°, -6 -6 JIC	1
13	40035	VALVE ASSEMBLY	1
14	40018	INSTRUCTION PLATE	1
15	40034	ADAPTER, QUICK DISCONNECT	1
16	100077	HOSE ASSEMBLY, -4 -4 JIC, 26 in. (660 mm)	2
17	100076	HOSE ASSEMBLY, -4 -4 JIC, 54 in. (1372 mm)	1
18	40028	HOSE ASSEMBLY, -6 -6 JIC, 66 in. (1677 mm)	2
19	26411	HOSE ASSEMBLY, -6 -6 JIC, 39.75 in. (1010 mm)	1
20	40029	HOSE ASSEMBLY, -8 -8 JIC, 75 in. (1905 mm)	1
21	40030	HOSE ASSEMBLY, -8 -8 JIC, 57 in. (1448 mm)	1
22	40031	HOSE ASSEMBLY, -6 -6 JIC, 90 in. (2286 mm)	1
23	40107	ELBOW, 90° -6 -6 JIC	- 3
24	40145	HOSE ASSEMBLY	1
25	40146	HOSE ASSEMBLY	1
26	40140	ADAPTER, STRAIGHT 100788	1
27	40147	ELBOW, 45°	
28	40134	MANIFOLD & BRACKET	1
29		CONTROLLER MOUNTING PLATE	1
	40133		1
30	40135	VALVE BRACKET	1
31	70100	ADAPTER, -8 JIC, LOGIC BLOCK T PORTS	3
32	100070	ADAPTER, METRIC TO -4 JIC	3
33	27452	REDUCER ADAPTER, -6 TO -4 JIC	3
34	29853	PRESSURE REDUCING VALVE ASSEMBLY	1
0.2022	29874	SEAL KIT FOR 29853	1
05	29820	SOLENOID VALVE CARTRIDGE ASSEMBLY	1
35	29821	SEAL KIT FOR 29820	1
	29822	SOLENOID COIL FOR 29820	1
36	40240	CAPSCREW, BUTTON HEAD (% NC × 1 G5)	1
37	70124	ELBOW, -8 JIC	1
38	100181	FITTING, METRIC TO -8 JIC TEE AVIA	1
39	82139	LOGIC BLOCK ASSEMBLY (INCLUDES ITEMS 34, 35, & 40)	1
40	29851	RELIEF VALVE CARTRIDGE	1
41	100180	ELBOW, 90° –12 –16 JIC SWIVEL	1
42	100179	ELBOW, 90° -12 ORB TO -16 JIC	1
43	100182	PLUG	1
4.4	11750	CAPSCREW, HEX HEAD (5/16 – 18 × 1 G5) 22693	2
44			
45	14024	LOCKWASHER (5/16) /8003	2





ITEM NO.	PART NO.	DESCRIPTION	QTY.
131	100065	HYDRAULIC MOTOR	1
132	31033	CAPSCREW, HEX HEAD (¾ - 10 × 1¾ G8)	2
133	13435	LOCKWASHER (¾)	2
134	29399	CAPSCREW, SOCKET HEAD (7/16 - 14 × 23/4 GD8)	4
135	82133	BRAKE VALVE ASSEMBLY (REFER TO PAGE 10)	1
136	25366	O-RING	3
138	29290	CAPSCREW, HEX HEAD (1/2 - 13 × 11/2 GD8)	11
139	11026	LOCKWASHER (1/2)	11
140	22358	O-RING, MOTOR PILOT	1
141	29395	ADAPTER BLOCK - PAY-OUT PORT	1
142	29679	SHIPPING COVER	1
143	22695	CAPSCREW, HEX HEAD (1/16 - 14 × 13/4 GD5)	4
144	29611	ADAPTER STRAIGHT - 10 TO - 18	1
145	29046	ELBOW, SWIVEL, 90° - 8	1
146	29908	SHIPPING CAP – 8	1
147	25554	TEE - 4	1
148	25302	ELBOW - 4	1
149	29720	ADAPTER – 4, EXTRA LONG	1
150	25935	HOSE - 14 in. (356 mm) PAY-OUT PORT TO BRAKE PORT	1
151	25952	HOSE - 20 in. (508 mm) PAY-OUT PORT TO BRAKE VALVE "BR" PORT	1
152	27675	PLUG – 4 ORB	1
153	25131	ELBOW - 6 - 4 ORB, MOTOR × PORT	1
154	70182	SHIPPING CAP – 4	1
155	40064	SPACER	1

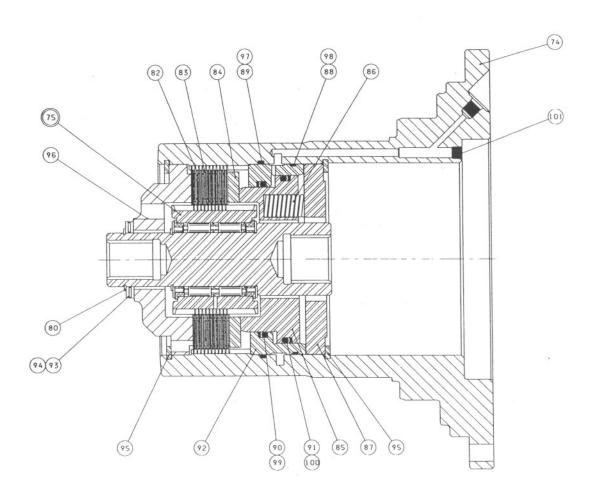


## **ASSEMBLY INSTRUCTIONS:**

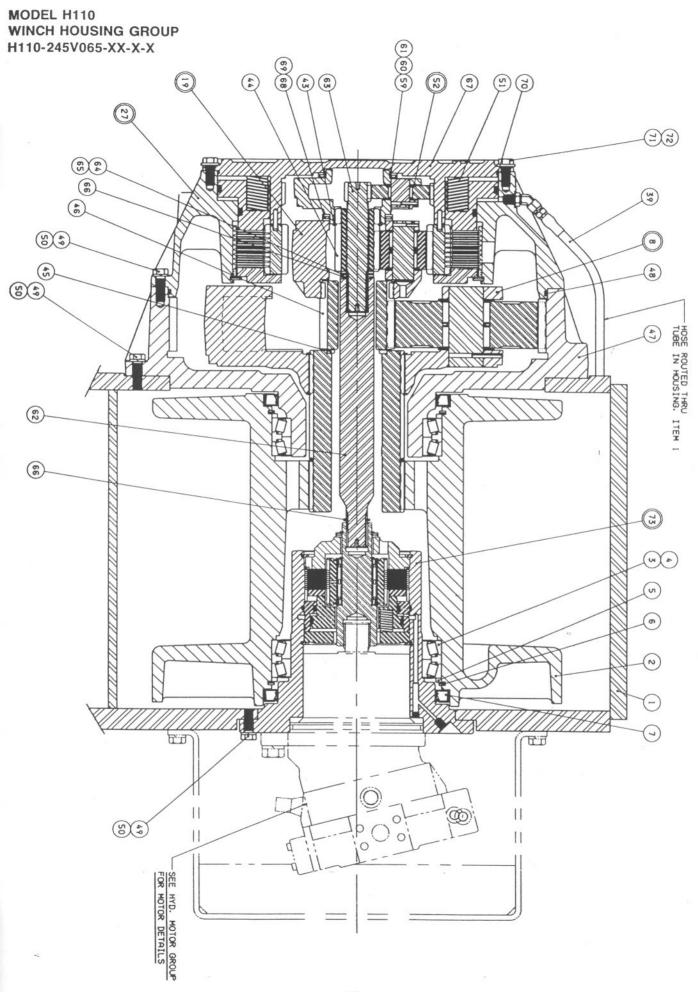
- 1. Tighten plug, item 19, to 25 lb ft (34 N·m) torque.
- 2. Tighten plugs, items 2, 3 & 4, to 40 lb•ft (54 N•m) torque.

ITEM NO.	PART NO.	DESCRIPTION	QT
	82133	BRAKE VALVE ASSEMBLY	"/
1	NSS	BRAKE VALVE HOUSING	1
2	29609	RELIEF VALVE RETAINER	1
3	24183	SPRING RETAINER	1
4	22450	PLUG	1
5	NSS	MAIN SPOOL	1
6	NSS	DAMPER PISTON	1
7	24186	O-RING	1
8	82132	CHECK POPPET/RELIEF VALVE 6000 psi (41,400 kPa)	1
9	24200	PILOT ORIFICE	1
10	24190	CHECK POPPET SPRING	. 1
11	24192	SPOOL SPRING	1
12	23601	O-RING	1
13	24193	O-RING	1
14	24194	O-RING	1
15	24195	BACK-UP RING	1
16	24196	BACK-UP RING	1
19	25663	PLUG - 4	1
20	25403	SHIPPING PLUG	1
- 21	75288	SHIPPING PLUG	1
22	25661	SHIM, MAIN SPOOL SPRING	AF

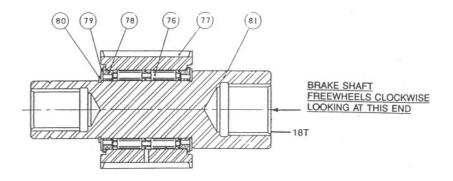
NSS - NOT SERVICED SEPARATELY AR - AS REQUIRED



ITEM NO.	PART NO.	DESCRIPTION	QTY.
74	29342	BRAKE HOUSING	1
75	82138	OVERRUNNING BRAKE CLUTCH ASSEMBLY - REFER TO PAGE 14	1
80	12034	RETAINING RING	1
82	24490	DISC - STEEL	11
83	25530	DISC - FRICTION	10
84	24489	SPACER	. 1
85	29274	BRAKE PISTON	1
86	29301	SPRING	13
87	29344	SPRING RETAINER	1
88	27987	O-RING	1
89	10450	O-RING	1
90	72924	O-RING	1
91	29302	O-RING	1
92	29275	BRAKE CYLINDER	1
93	25760	THRUST BEARING RACE	2
94	29286	THRUST BEARING	1
95	21038	RETAINING RING	2
96	29345	BRAKE RETAINER	1
97	28828	BACK-UP RING	1
98	29368	BACK-UP RING	1
99	29369	BACK-UP RING	1
100	29370	BACK-UP RING	1
101	22374	PIPE PLUG (1/8 NPT)	1



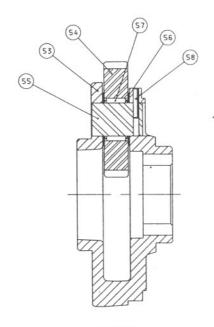
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	40207	WINCH HOUSING	. 1
2	29258	CABLE DRUM	1
3	29277	BEARING CONE	4
4	29278	BEARING CUP	4
5	29279	SPACER RING	2
6	29280	RETAINING RING	2
7	29281	OIL SEAL	2
8	82074	OUTPUT PLANET CARRIER ASSEMBLY (REFER TO PAGE 16)	1
19	82071	SECONDARY PLANET CARRIER ASSEMBLY (REFER TO PAGE 15)	1
27	82072	DRUM CLUTCH ASSEMBLY (REFER TO PAGE 17)	1
39	29648	HOSE - 34.5 in. (876 mm) DRUM CLUTCH RELEASE	1
43	13031	RETAINING RING	1
44	29293	SECONDARY SUN GEAR	1
45	29294	THRUST WASHER	1
46	29269	OUTPUT SUN GEAR	1
47	29336	OUTPUT RING GEAR	1
48	29296	O-RING	1
49	29290	CAPSCREW, HEX HEAD (1/2 - 13 × 11/2 G8)	46
50	11026	LOCKWASHER (1/2)	46
51	29305	SPRING	20
52	82130	PRIMARY PLANET CARRIER ASSEMBLY (REFER TO PAGE 14)	1
59	75024	THRUST BEARING RACE125 in. (3.17 mm) THICK, OUTER POSITION	1
60	18058	THRUST BEARING	1
61	26291	THRUST BEARING RACE062 in. (1.58 mm) THICK	1
62	29708	PRIMARY SUN GEAR INTERMEDIATE SHAFT	1
63	29763	PRIMARY SUN GEAR	1
64	73294	THRUST BEARING RACE125 in. (3.17 mm) THICK	2
65	24305	THRUST BEARING	1
66	29287	RETAINING RING	2
67	29764	PRIMARY PLANET RING GEAR/COVER 4.84:1	1
68	24485	THRUST BEARING RACE125 in. (3.17 mm) THICK	2
69	29559	THRUST BEARING	1
70	78307	O-RING	1
71	70793	CAPSCREW, HEX HEAD (1/2 - 13 × 11/4 G8)	10
72	27248	WASHER, HARDENED (1/2)	10
73	82137	BRAKE HOUSING ASSEMBLY (REFER TO PAGE 11)	1



82138

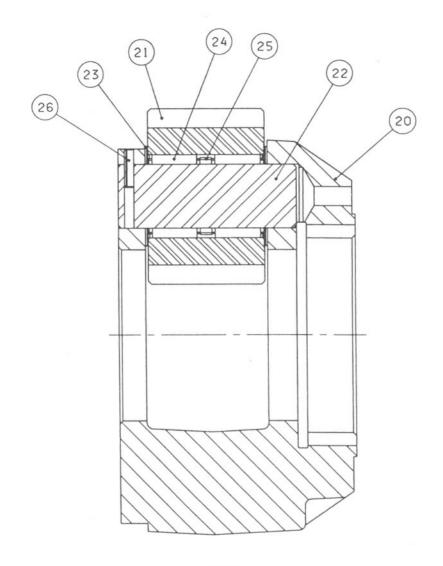
ITEM NO.	PART NO.	DESCRIPTION	QTY.
	82138	BRAKE CLUTCH ASSEMBLY	1
76	24839	SPRAG CLUTCH	2
77	29283	OUTER BRAKE RACE	, 1
78	27684	SPRAG BEARING – BRONZE ALLOY	2
79	24581	THRUST WASHER	2
80	12034	RETAINING RING	1
81	29829	BRAKE SHAFT - METRIC - REXROTH	1

## MODEL H110 PRIMARY PLANET ASSEMBLY



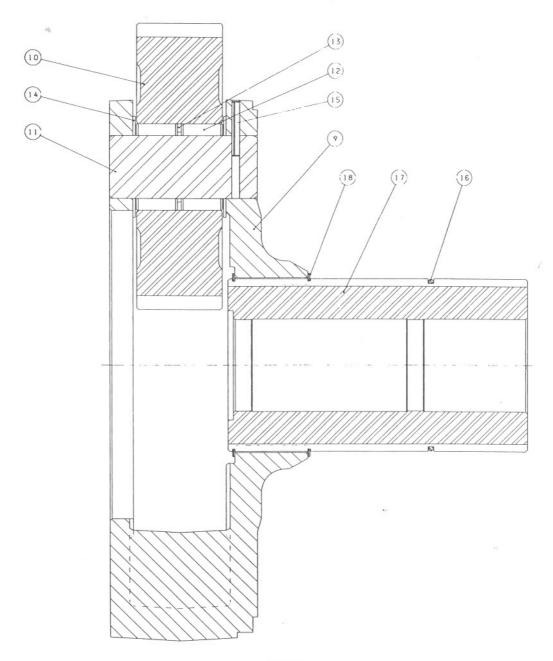
82130

ITEM NO.	PART NO.	DESCRIPTION	QTY.
52	82130	PRIMARY PLANET CARRIER ASSEMBLY - USED IN 245:1	1
53	29761	PRIMARY PLANET CARRIER - USED IN 245:1	1
54	29762	PRIMARY PLANET GEAR - 36T USED IN 245:1	3
55	26294	PRIMARY PLANET GEAR SHAFT	3
56	24479	THRUST WASHER	6
57	24480	ROLLER BEARING	3
58	21058	ROLL PIN - USED IN 245:1	3



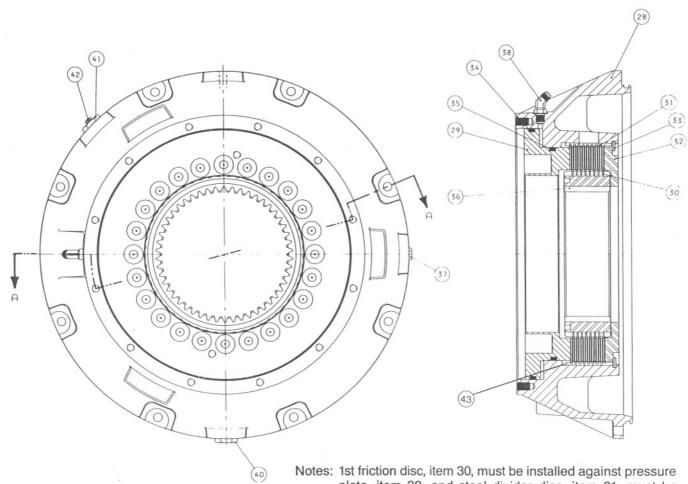
82071

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	82071	SECONDARY PLANET CARRIER ASSEMBLY	1
20	29339	SECONDARY PLANET CARRIER	1
21	25288	SECONDARY PLANET GEAR, 18T	3
22	29364	SECONDARY PLANET GEAR SHAFT	3
23	11932	THRUST WASHER	6
24	25292	ROLLER BEARING	6
25	25290	BEARING SPACER	3
26	24113	ROLL PIN	3



82074

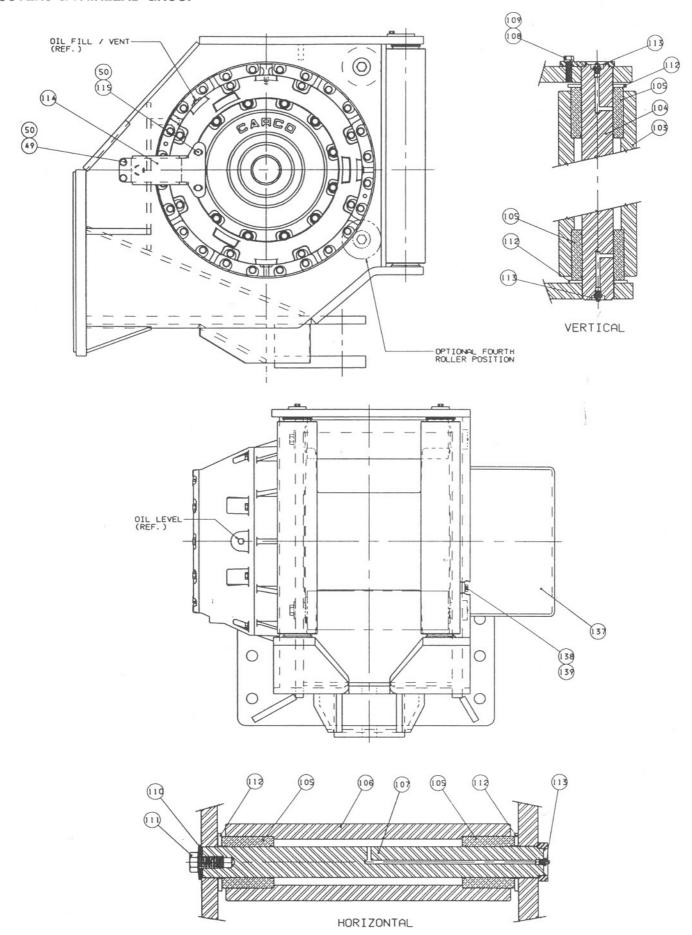
ITEM NO.	PART NO.	DESCRIPTION	QTY.
	82074	OUTPUT PLANET CARRIER ASSEMBLY	1
9	29348	OUTPUT PLANET CARRIER	1
10	29266	OUTPUT PLANET GEAR, 43T	3
11	29262	OUTPUT PLANET GEAR SHAFT	3
12	27911	BEARING ROLLER (LOOSE)	120
13	29299	BEARING SPACER	3
14	29300	THRUST WASHER	6
15	13028	ROLL PIN	3
16	29291	RETAINING RING	1
17	29322	DRUM DRIVE SHAFT	1
18	29349	RETAINING RING	2



Notes: 1st friction disc, item 30, must be installed against pressure plate, item 32, and steel divider disc, item 31, must be installed against brake piston.

Do not allow outer steel divider disc, item 31, to get caught in the spline relief groove when installing the piston, item 29.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
27	82072	DRUM CLUTCH ASSEMBLY	1
28	29340	DRUM CLUTCH HOUSING	1
29	29309	CLUTCH PISTON	1
30	72180	DISC - FRICTION	8
31	72204	DISC - STEEL DIVIDER	8
32	29292	PRESSURE PLATE	1
33	29303	RETAINING RING	1
34	24592	O-RING	1
35	29304	O-RING	1
36	29246	CLUTCH HUB/RING GEAR	1
37	26686	PLUG – OIL LEVEL	1
38	25868	ELBOW – 6 45°	1
40	70118	PLUG - OIL DRAIN	1
41	29678	PLUG – OIL FILL	1
42	10074	VENT PLUG	1
43	100135	SPACER RING	



ITEM NO.	PART NO.	DESCRIPTION	QTY.	
			3 ROLLER	4 ROLLER
49	29290	CAPSCREW (½ - 13 × 1½ G8)	46	46
50	11026	LOCKWASHER (1/2)	57	57
103	29310	ROLLER - VERTICAL (EARLY 33.56 in. LONG)	2	2
	40208	ROLLER - VERTICAL (LATE 27.31 in. LONG)	_	_
104	29311	ROLLER SHAFT - VERTICAL (EARLY 36.69 in. LONG)	2	2
	40209	ROLLER SHAFT - VERTICAL (LATE 30.44 in. LONG)	2	_
105	29314	ROLLER BUSHING	6	8
106	29315	ROLLER - HORIZONTAL	1	2
107	29316	ROLLER SHAFT – HORIZONTAL	1	2
108	21961	CAPSCREW, HEX HEAD (% - 16 × 1 G5)	2	2
109	18003	LOCKWASHER (%)	2	2
110	29680	SPRING WASHER	1	2
111	31032	CAPSCREW	1	2
112	29742	WASHER - ROLLER	6	8
113	18047	GREASE FITTING	5	6
114	29792	HOSE GUARD	1	1
115	29855	CAPSCREW, HEX HEAD (1/2 - 13 × 2 G8)	2	2
137	29682	MOTOR COVER	1	1
138	29290	CAPSCREW, HEX HEAD (1/2 - 13 × 11/2 G8)	11	11
_	62474	FOURTH ROLLER KIT, INCLUDES ITEMS 105, 106, 107, 110, 111, 112, 113		
_	29427	CABLE FERRULE 1 in. (25 mm)	1	
_	29428	CABLE FERRULE 1-1/8 in. (28 mm)	1	
-	29429	CABLE FERRULE 1-1/4 in. (32 mm)	1	