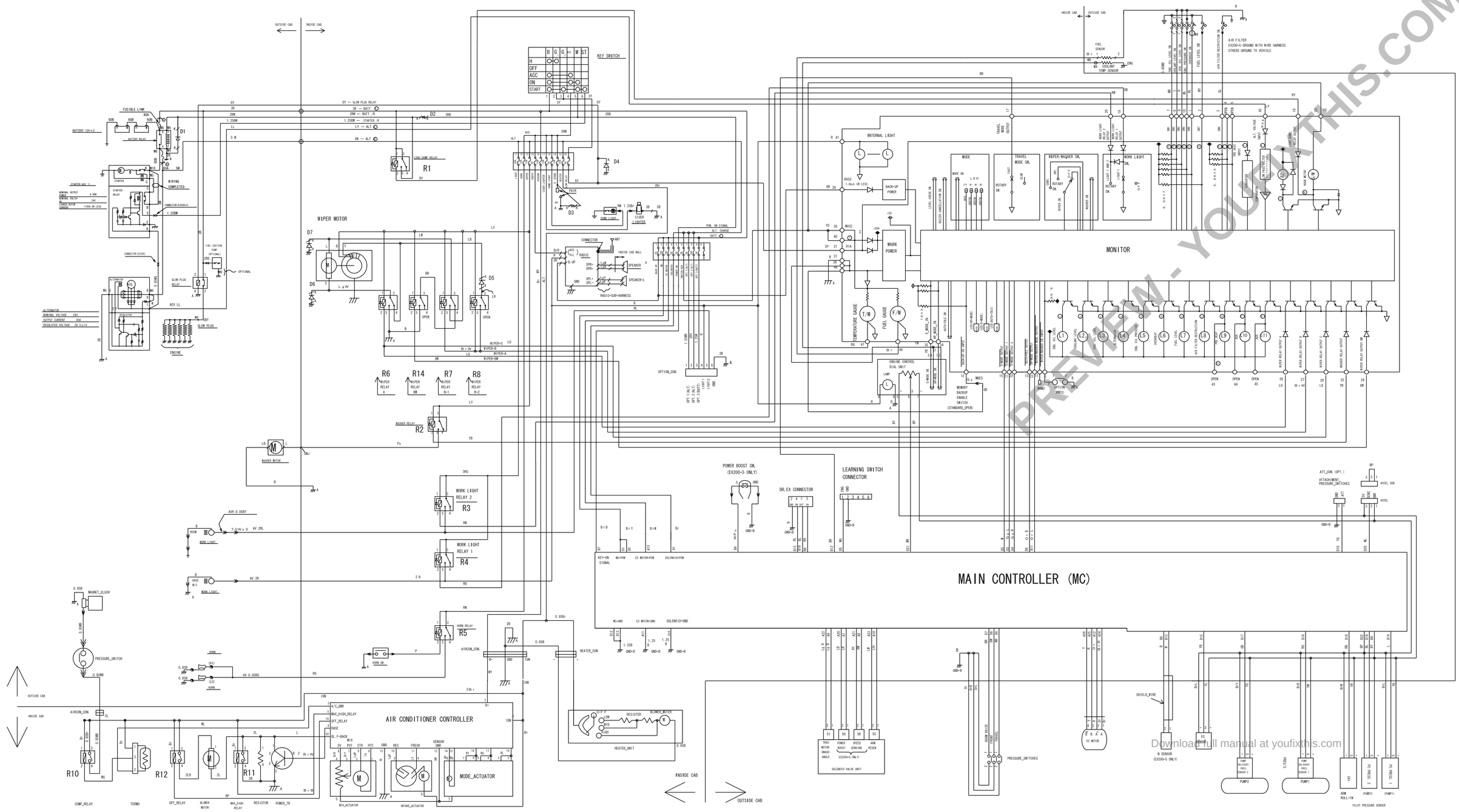
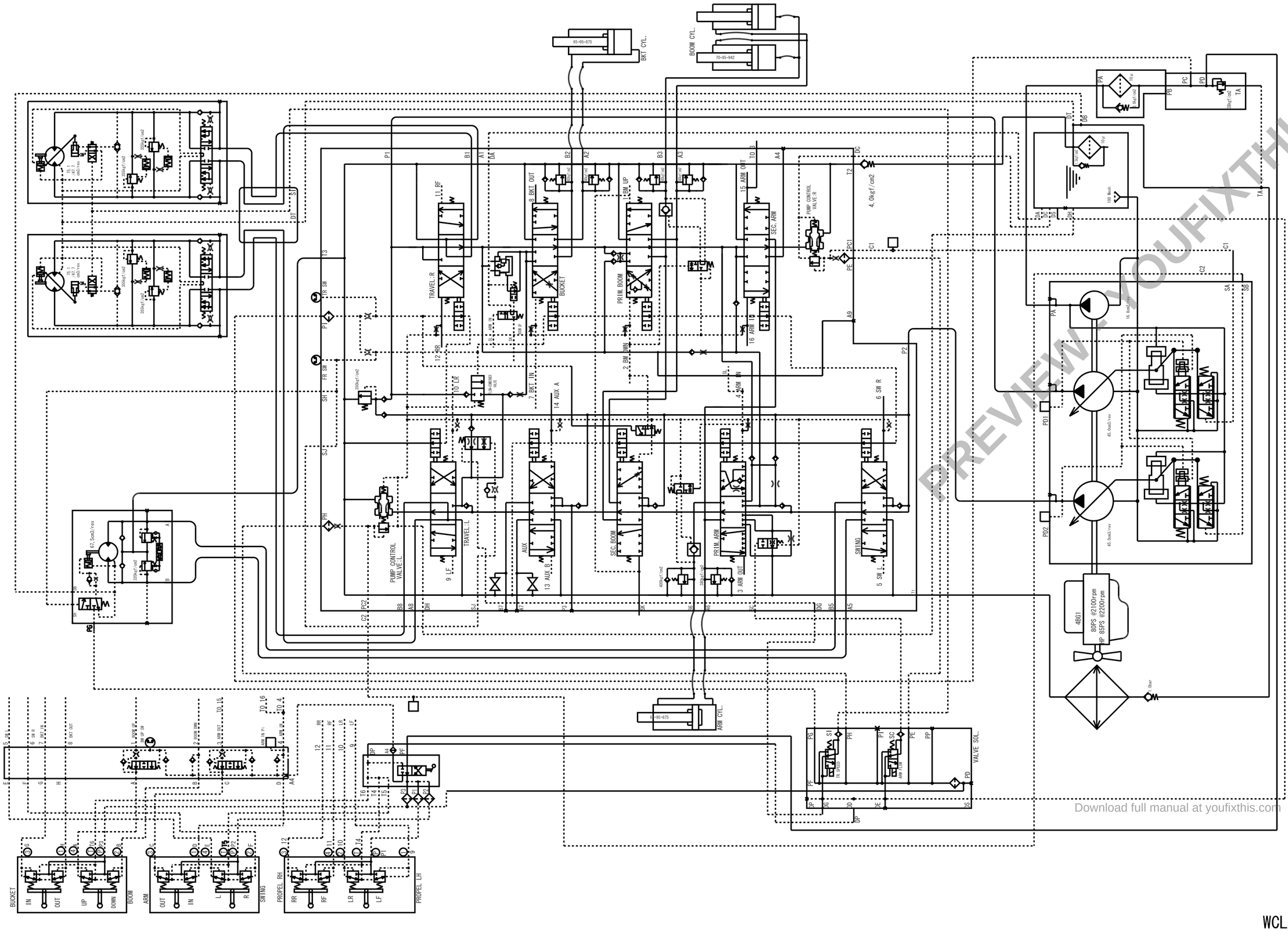
EX100-5 ELECTRICAL CIRCUIT



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EX100-5/EX100M-5 HYDRAULIC CIRCUIT DIAGRAM

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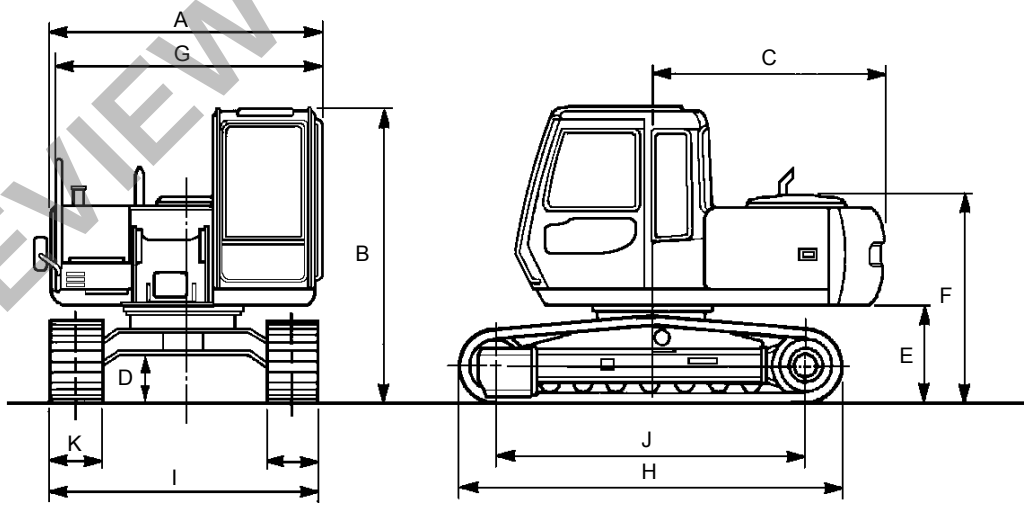
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SPECIFICATIONS

Model		Std.	
		EX100-5	EX100M-5
Arm Length	-	2.26 m Arm	
Bucket Capacity (Heaped)	m^3	0.45: PCSA (0.40: CECE)	
Operating Weight	kg	10700	12400
Base Machine Dry Weight	kg	8500	10200
Engine	-	ISUZU A-4BG1 59 kW/2100 min^{-1} (80 PS/2100 rpm) * 60 kW/2200 min^{-1} (82 PS/2200 rpm)	
A : Overall Width (Excluding Rearview Mirrors)	mm	2500	2740
B : Cab Height	mm	2720	1930
C : Rear End Swing Radius	mm	2130	
D : Minimum Ground Clearance	mm	**440	**595
E : Counterweight Clearance	mm	**890	**1090
F : Engine Cover Height	mm	1920	2120
G : Overall Width of Upperstructure	mm	2460	
H : Undercarriage Length	mm	3340	3760
I : Undercarriage Width	mm	2490	2740
J : Sprocket Center to Idler Center	mm	2620	2900
K : Track Shoe Width	mm	500 (Iron Crawler)	700 (Iron Crawler)
Ground Pressure	kPa (kgf/cm^2)	370 (0.38)	270 (0.28)
Swing Speed	min^{-1}	13.5	
Travel Speed (fast/slow)	km/h	5.5/3.5	4.4/2.7
Gradeability	deg. (%)	350 (70)	

*NOTE: HP mode values indicated with * mark. The dimensions indicated with ** mark do not include the height of the shoe lug.*



M155-11-001

Base Machine Dimensions

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INTRODUCTION

Each troubleshooting section group is presented in an orderly fashion so as to make the inspecting and troubleshooting procedures easy to follow. Use the troubleshooting section to guide you in locating the source of any problems that may arise.

The troubleshooting section consists of 6 groups: the component layout, the troubleshooting A (using fault codes), troubleshooting B (starting with symptoms), troubleshooting C (gauges and indicators), the electrical system inspection procedures, and harness check groups.

- Component Layout Diagrams

- Troubleshooting A (using fault codes)
  Use these charts when the self-diagnosing function of Dr.EX shows any fault codes.
  (The controller automatically diagnoses and memorizes malfunctions that have occurred in the signal sending system.)

  Example: Fault Code 01 ··· EC Sensor Failure

- Troubleshooting B (starting with symptoms)
  Use these charts when the machine is exhibiting trouble and when Dr.EX does not indicate any fault codes.

  Example: Even if engine control dial is operated, engine speed does not change.

- Troubleshooting C (Gauges and indicators)
  Use these charts when any gauges or indicators malfunction.

  Example: The fuel gauge does not operate.

- Electrical System Inspection Procedure
  Refer to this group for precautions and inspection procedures of the electrical system when or before performing inspections on the electrical system.

  Example: Fuse Inspection

- Harness Check
  Refer to this group for information about the test harnesses.

  Example: ST 7129

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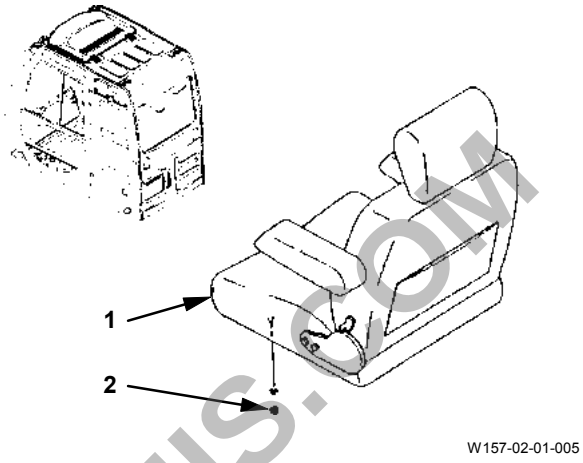
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REMOVE AND INSTALL CAB

Removal

1. Remove nuts (2) and seat (1).

   : 13 mm



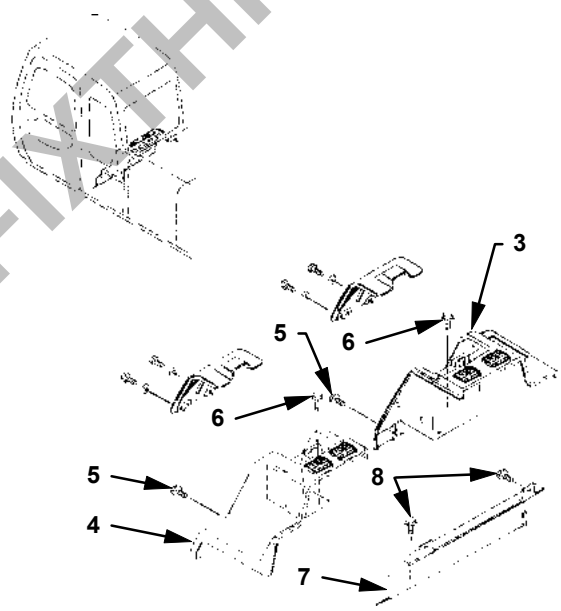
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2. Loosen bolts (5) behind the cab and bolts (6) in rear boxes (3 and 4).
   Remove rear boxes (3 and 4).

   : 13 mm

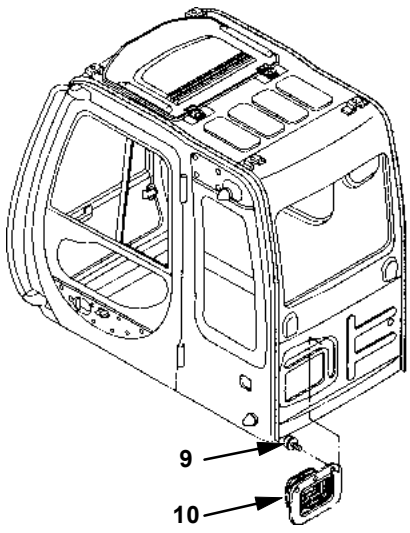
3. Loosen bolts (8) to remove rear box under cover (7).

   : 13 mm



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4. Loosen screw (9) to remove duct (10) from the cab.

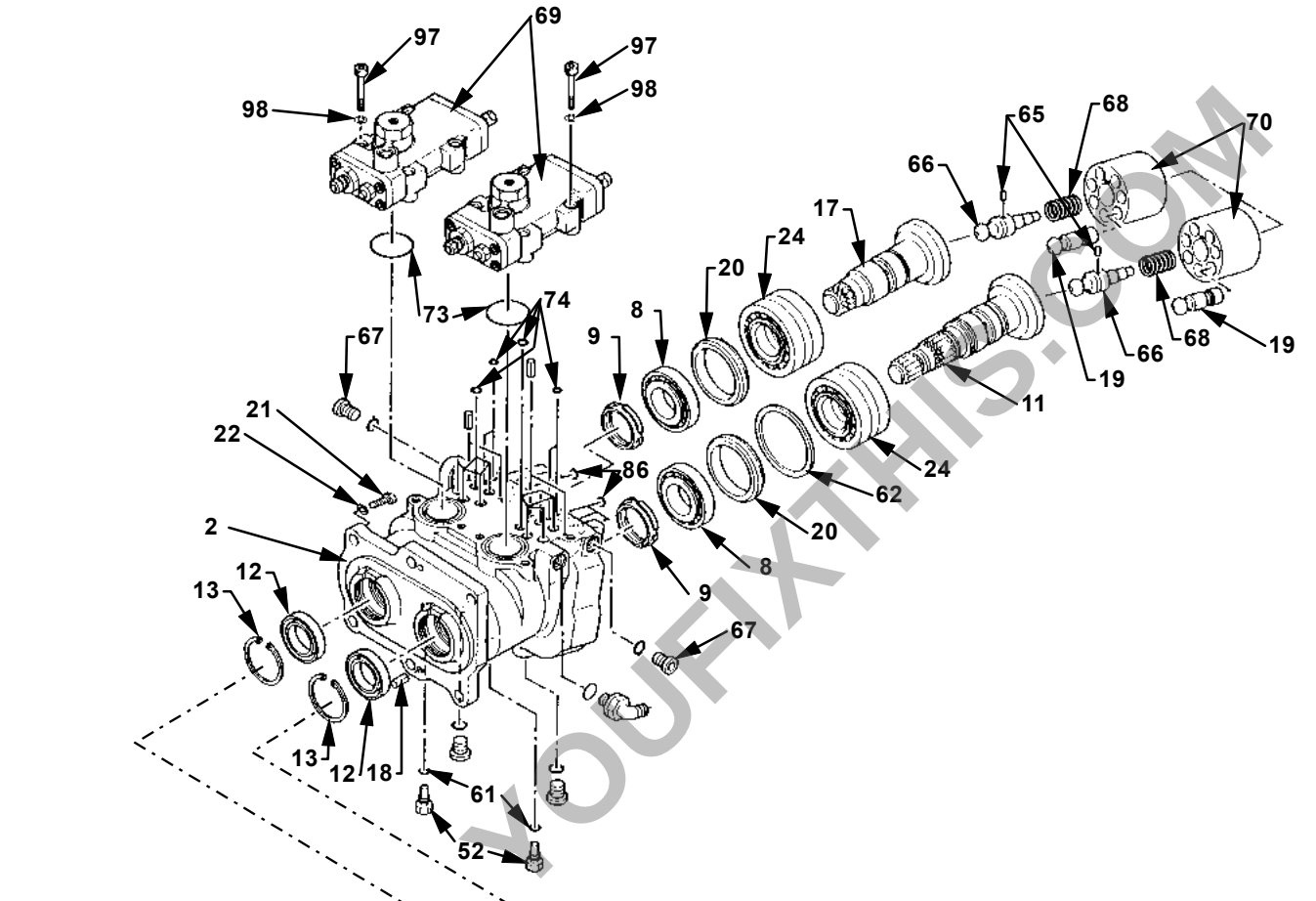


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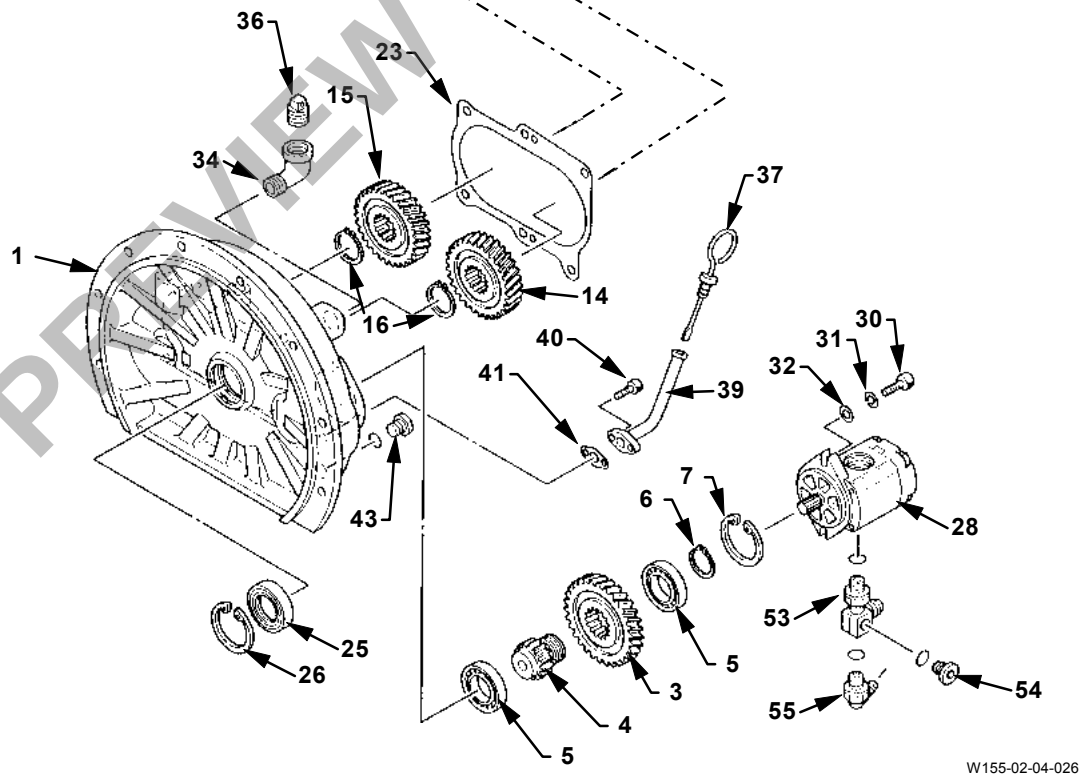
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DISASSEMBLE PUMP DEVICE



W155-02-04-025



W155-02-04-026

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TIGHTENING TORQUE SPECIFICATIONS

No.	Descriptions	Bolt Dia mm	Q'ty	Wrench Size mm	Torque N·m	Torque kgf·m	Torque lbf·ft
1	Engine cushion rubber mounting bolt	14	4	22	137	14	101
	Engine cushion rubber mounting nut	16	2	24	235	24	174
2	Engine bracket mounting bolt	10	7	17	49	5	36
	Engine bracket mounting nut	10	1	17	49	5	36
3	Hydraulic oil tank mounting bolt	16	4	24	205	21	152
4	Fuel tank mounting bolt	16	4	24	205	21	152
5	ORS fittings for hydraulic hoses and piping			19	29.5	3	22
				22	39	4	29
				27	93	9.5	69
				32	137	14	101
		*1-3/16"-12		36	175	18	130
		*1-7/16"-12		41	205	21	152
6	Pump device mounting bolt	10	8	17	49	5	36
7	Control valve mounting bolt	14	6	22	137	14	101
8	Control valve bracket mounting bolt	16	4	19	88	9	65
9	Swing device mounting bolt	20	10	30	540	55	400
10	Battery mounting nut	10	2	17	19.5	2	15
11	Cab mounting nut	16	4	24	205	21	152
12	Swing bearing mounting bolt to upperstructure	18	30	27	390	40	290
	Swing bearing mounting bolt to undercarriage	16	36	24	265	27	195
13	Travel device mounting bolt (EX100-5)	16	28	24	300	31	224
	Travel device mounting bolt (EX100M-5)		32				
	Travel device cover mounting bolt (EX100-5)	14	4	22	175	18	130
	Travel device cover mounting bolt (EX100M-5)		6				
14	Sprocket mounting bolt (EX100-5)	16	32	24	265	27	195
	Sprocket mounting bolt (EX100M-5)		44				
15	Upper roller mounting bolt (EX100-5)	12	8	19	108	11	80
	Upper roller mounting bolt (EX100M-5)	16	16	24	265	27	195
16	Lower roller mounting bolt (EX100-5)	16	48	24	300	31	224
	Lower roller and Track guard mounting bolt (EX100M-5)	18	56	27	450	46	333
17	Track shoe mounting bolt (EX100-5)	16	328	24	410	42	304
	Track shoe mounting bolt (EX100M-5)		352				
18	Cover mounting bolt	6		10	9.8	1	7
		10		17	49	5	36
		12		19	88	9	65
19	Coupling and clamp of low pressure piping	8		13	10.3to1.26	1.05to1.26	8to16
		5		8	2.90	0.30	2
		6		10	4.40	0.45	3

*: UNF thread

NOTE: (1) Apply lubricant (e.g. white zinc B dissolved into spindle oil) to bolts and nuts to stabilize friction coefficient of them.

(2) Make sure bolt and nut threads are clean before installing.

(3) Apply Loctite to threads before installing and tightening swing bearing mounting bolts.

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RECOGNIZE SAFETY INFORMATION

- This is the **SAFETY ALERT SYMBOL**.
  - When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.
  - Follow recommended precautions and safe operating practices.



001-E01A-0688

SA-688

UNDERSTAND SIGNAL WORDS

- On machine safety signs, signal words designating the degree or level of hazard - DANGER, WARNING, or CAUTION - are used with the safety alert symbol.
  - **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
  - **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
  - **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
  - **DANGER or WARNING safety signs** are located near specific hazards. General precautions are listed on **CAUTION safety signs**.
  - Some safety signs don't use any of the designated signal words above after the safety alert symbol are occasionally used on this machine.
- **CAUTION** also calls attention to safety messages in this manual.
- To avoid confusing machine protection with personal safety messages, a signal word **IMPORTANT** indicates a situation which, if not avoided, could result in damage to the machine.
- ***NOTE*** indicates an additional explanation for an element of information.



SA-1223

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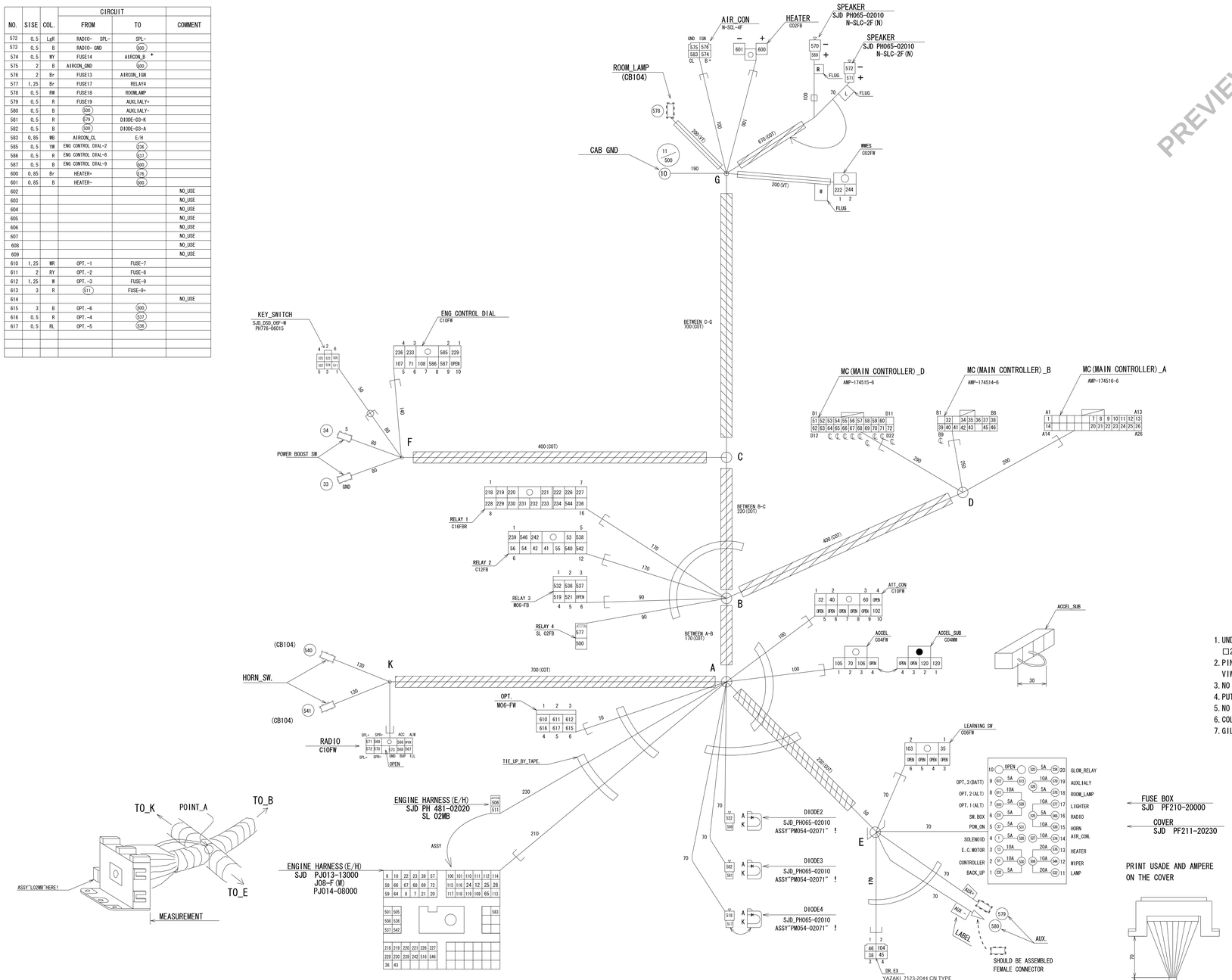
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EX100-5 CAB HARNESS

NO.	SISE	COL.	FROM	TO	COMMENT
1	0.5	Br	MC-A1	FUSE-4	
2					NO_USE
3					NO_USE
4					NO_USE
5					NO_USE
6					NO_USE
7	0.5	LR	MC-A7	E/H	
8	0.5	RW	MC-A8	E/H	
9	0.5	Lg B	MC-A9	E/H	
10	0.5	LOr	MC-A10	E/H	
11	1.25	B	MC-A11	CAB GND	
12	0.5	Or	MC-A12	E/H	
13	1.25	BrW	MC-A13	FUSE-3	
14	1.25	B	MC-A14	(11)	
15					NO_USE
16					NO_USE
17					NO_USE
18					NO_USE
19					NO_USE
20	0.5	LB	MC-A20	E/H	
21	0.5	RY	MC-A21	E/H	
22	0.5	LgR	MC-A22	E/H	
23	0.5	LW	MC-A23	E/H	
24	0.5	BrR	MC-A24	E/H	
25	0.5	R	MC-A25	E/H	
26	0.5	Y	MC-A26	E/H	
31					NO_USE
32	0.5	G	MC-B2	ATT-1	
33	0.5	B	POWER BOOST SW-GND	(11)	
34	0.5	WPu	MC-B4	POWER BOOST SW-S	
35	0.5	WG	MC-B5	LEARNING SW-1	
36	0.5	B	MC-B6	E/H	OUTER_OF_SHIELD
37	0.5	BrB	MC-B7	FUSE-5	
38	0.5	BG	MC-B8	Dr.EX-3	
39	0.5	BY	MC-B9	E/H	
40	0.5	GR	MC-B10	ATT-2	
41	0.5	OrL	MC-B11	RELAY2-9	
42	0.5	BR	MC-B12	RELAY2-8	
43	0.5	W	MC-B13	E/H	INTER_OF_SHIELD
44					NO_USE
45	0.5	RL	MC-B15	Dr.EX-4	
46	0.5	BL	MC-B16	Dr.EX-1	
51	1.25	BrY	MC-D1	FUSE-2	
52	1.25	BrY	MC-D2	(51)	
53	0.5	GyL	MC-D3	RELAY2-4	
54	0.5	GyR	MC-D4	RELAY2-7	
55	0.5	W	MC-D5	RELAY2-10	
56	0.5	OrB	MC-D6	RELAY2-6	
57	0.5	BR	MC-D7	E/H	
58	0.5	BW	MC-D8	E/H	
59	0.5	WB	MC-D9	E/H	
60	0.5	YG	MC-D10	ATT-3	
61					NO_USE
62	1.25	B	MC-D12	(11)	
63	1.25	B	MC-D13	(11)	
64	0.5	L	MC-D14	E/H	
65	0.5	YB	MC-D15	E/H	
66	0.5	RG	MC-D16	E/H	
67	0.5	GB	MC-D17	E/H	
68	0.5	RB	MC-D18	E/H	
69	0.5	BL	MC-D19	E/H	
70	0.5	WL	MC-D20	ACCEL-2	
71	0.5	WR	MC-D21	ENG CONTROL DIAL-6	
72	0.5	BP	MC-D22	E/H	
100	0.5	B	E/H	(11)	
101	0.5	B	E/H	(11)	
102	0.5	B	ATT-10	(11)	
103	0.5	B	LEARNING SW-2	(11)	
104	0.5	B	Dr.EX-2	(11)	
105	0.5	BP	ACCEL-1	(72)	
106	0.5	BY	ACCEL-3	(39)	
107	0.5	BY	ENG CONTROL DIAL-5	(39)	
108	0.5	BP	ENG CONTROL DIAL-7	(72)	
109	0.5	BY	E/H	(39)	
110	0.5	BY	E/H	(39)	
111	0.5	BY	E/H	(39)	
112	0.5	BY	E/H	(39)	
113	0.5	BP	E/H	(72)	
114	0.5	BP	E/H	(72)	
115	0.5	BP	E/H	(72)	
116	0.5	BP	E/H	(72)	
117	0.5	BY	E/H	(39)	
118	0.5	BP	E/H	(72)	
119	0.5	B	E/H	(11)	
120	0.5	BP	ACCEL_SUB-1	ACCEL_SUB-2	

NO.	SISE	COL.	CIRCUIT FROM	CIRCUIT TO	COMMENT
201					NO_USE
202					NO_USE
203					NO_USE
204					NO_USE
205					NO_USE
206					NO_USE
207					NO_USE
208					NO_USE
209					NO_USE
210					NO_USE
211					NO_USE
212					NO_USE
213					NO_USE
214					NO_USE
215					NO_USE
216					NO_USE
217					NO_USE
218	0.5	WR	RELAY1-1	E/H	
219	0.5	G	RELAY1-2	E/H	
220	0.5	L	RELAY1-3	E/H	
221	0.5	WB	RELAY1-4	E/H	
222	0.5	P	RELAY1-5	WWES-1	
225					NO_USE
226	0.5	GL	RELAY1-6	E/H	
227	0.5	WY	RELAY1-7	E/H	
228	0.5	RL	RELAY1-8	E/H	
229	0.5	YL	RELAY1-9	ENG CONTROL DIAL-1	
230	0.5	LY	RELAY1-10	E/H	
231	0.5	YG	RELAY1-11	FUSE-6	
232	0.5	GR	RELAY1-12	FUSE-1	
233	0.5	YR	RELAY1-13	ENG CONTROL DIAL-3	
234	0.5	GY	RELAY1-14	FUSE-20	
235					NO_USE
236	0.5	YW	RELAY1-16	ENG CONTROL DIAL-4	
237					NO_USE
238					NO_USE
239	0.5	Br	RELAY2-1	E/H	
240					NO_USE
241					NO_USE
242	0.5	RG	RELAY2-3	E/H	
243					NO_USE
244	0.5	B	WWES-2	(500)	
500	5	B	RELAY4	CAB GND	
501	3	B	E/H	(500)	
505	1.25	BW	E/H	KEY SW-6	
506	5	W	E/H	FUSE-11+	
508	2	RW	E/H	D2-K	
511	3	R	E/H	KEY SW-1	
516	0.5	GY	E/H	(234)	
517	0.5	GY	D10DE-D4-K	(234)	
518	0.5	B	D10DE-D4-A	(500)	
519	3	R	RELAY3-4	(511)	
520					NO_USE
521	2	RW	RELAY3-5	(508)	
522	3	RB	D2-A	KEY SW-5	
523	3	Y	KEY SW-2	FUSE_20+	
524	3	Y	KEY SW-3	(513)	
525	3	RW	KEY SW-4	FUSE 15 +	
526	3	RW	(525)	FUSE 18 +	
527	3	R	(511)	FUSE 14 +	
528	5	W	(506)	FUSE 4 +	
529	5	W	(506)	FUSE 6 +	
530	3	R	(511)	FUSE 1 +	
531	2	RB	(522)	FUSE 5 +	
532	3	RG	RELAY3-1	FUSE11	
533					NO_USE
534					NO_USE
535					NO_USE
536	2	RL	RELAY3-2	E/H	
537	2	R	RELAY3-3	E/H	
538	0.5	RW	RELAY2-5	FUSE15	
539				E/H	NO_USE
540	0.5	P	HORN_SW	RELAY2-11	
541	0.5	B	HORN_SW	(500)	
542	0.5	RG	RELAY2-12	E/H	
544	0.5	LY	FUSE12	RELAY1-15	
545					NO_USE
546	0.5	PU	RELAY2-2	E/H	
549					NO_USE
550					NO_USE
551					NO_USE
552					NO_USE
553					NO_USE
554					NO_USE
555					NO_USE
556					NO_USE
557					NO_USE
558					NO_USE
559					NO_USE
560					NO_USE
561					NO_USE
562					NO_USE
563					NO_USE
564					NO_USE
565					NO_USE
566	0.5	BrR	RADIO-ACC	FUSE16	
567	0.5	R	RADIO-ILL	(537)	
568	0.5	GR	RADIO-B.UP	(232)	
569	0.5	LgW	RADIO-SPR+	SPR+	
570	0.5	Lg B	RADIO-SPR-	SPR-	
571	0.5	Lg Y	RADIO-SPL+	SPL+	

NO.	SISE	COL.	CIRCUIT FROM	CIRCUIT TO	COMMENT
572	0.5	LgR	RADIO- SPL-	SPL-	
573	0.5	B	RADIO- GND	(500)	
574	0.5	WY	FUSE14	AIRCON_B +	
575	2	B	AIRCON_GND	(500)	
576	2	Br	FUSE13	AIRCON_IGN	
577	1.25	Br	FUSE17	RELAY4	
578	0.5	RW	FUSE18	ROOM_AMP	
579	0.5	R	FUSE19	AUDI,EALY+	
580	0.5	B	(500)	AUDI,EALY-	
581	0.5	R	(579)	D10DE-D3-K	
582	0.5	B	(500)	D10DE-D3-A	
583	0.85	WB	AIRCON_CL	E/H	
585	0.5	YW	ENG CONTROL DIAL-2	(236)	
586	0.5	R	ENG CONTROL DIAL-8	(537)	
587	0.5	B	ENG CONTROL DIAL-9	(500)	
600	0.85	Br	HEATER+	(576)	
601	0.85	B	HEATER-	(500)	
602					NO_USE
603					NO_USE
604					NO_USE
605					NO_USE
606					NO_USE
607					NO_USE
608					NO_USE
609					NO_USE
610	1.25	WR	OPT.-1	FUSE-7	
611	2	RY	OPT.-2	FUSE-8	
612	1.25	W	OPT.-3	FUSE-9	
613	3	R	(511)	FUSE-9+	
614					NO_USE
615	3	B	OPT.-6	(500)	
616	0.5	R	OPT.-4	(537)	
617	0.5	RL	OPT.-5	(538)	



1. UNDER □1.25 WIRE MAY BE CAVS WIRE, IF NO COMMENT.
   □2～5 WIRE MAY BE AVS WIRE.
2. PIN ARRANGE MENTS OF THIS DRAWING INDICATE VIWPOINTS FROM THE OTHER SIDE CONNECTORS.
3. NO ELECTRIC TURNING POINT MAY BE BETWEEN FC AND KA.
4. PUT THE PART No. LABEL ON THE HARNESS.
5. NO PLATE ON THE CB TYPE CONNECTORS.
6. COLOR SIGN DUE TO JASO D607.
7. GILT PINS MAY BE USED IN ◯ POINTS.

FUSE BOX
SJD PF210-20000

COVER
SJD PF211-20230

PRINT USADE AND AMPERE
ON THE COVER

ASSY 5A, 5A, AND 20A, FUSE
ON THE INSIDE OF FUSE BOX COVER

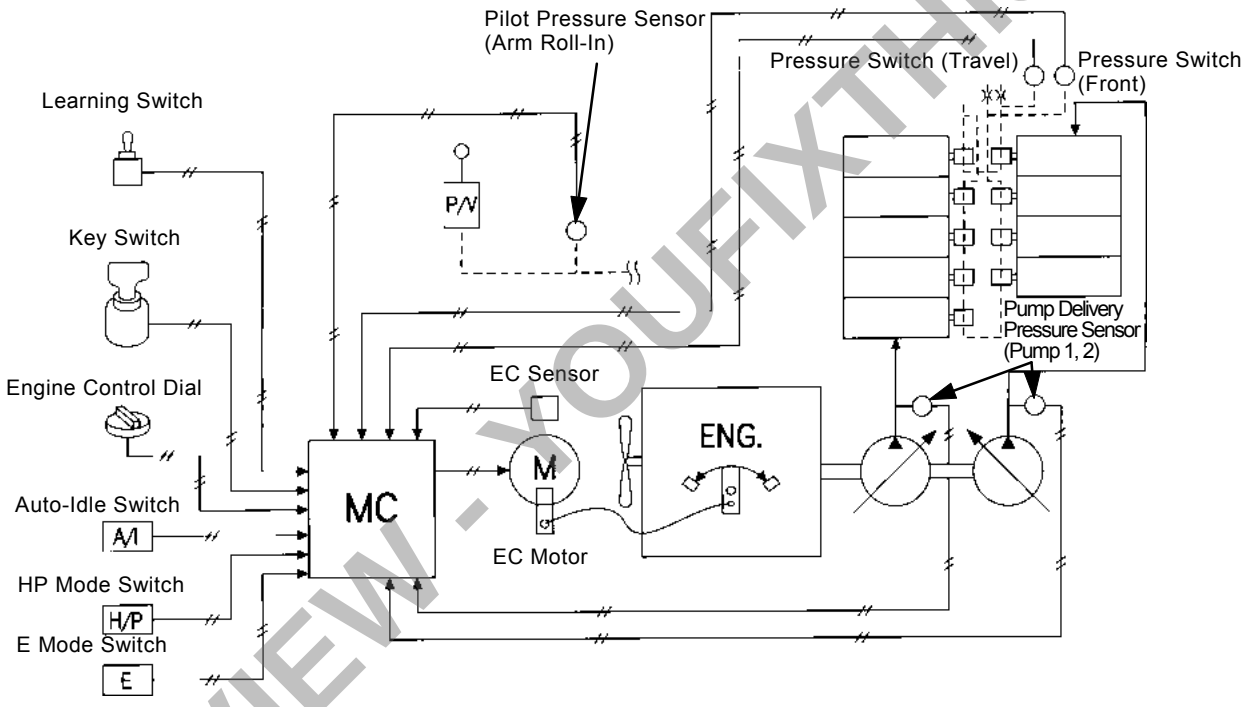
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ENGINE CONTROL

The engine control system has the following control functions:

- Normal Control
- HP Mode Control
- E Mode Control
- Auto-Idle Control
- Engine Learning Control

Layout of Engine Control System



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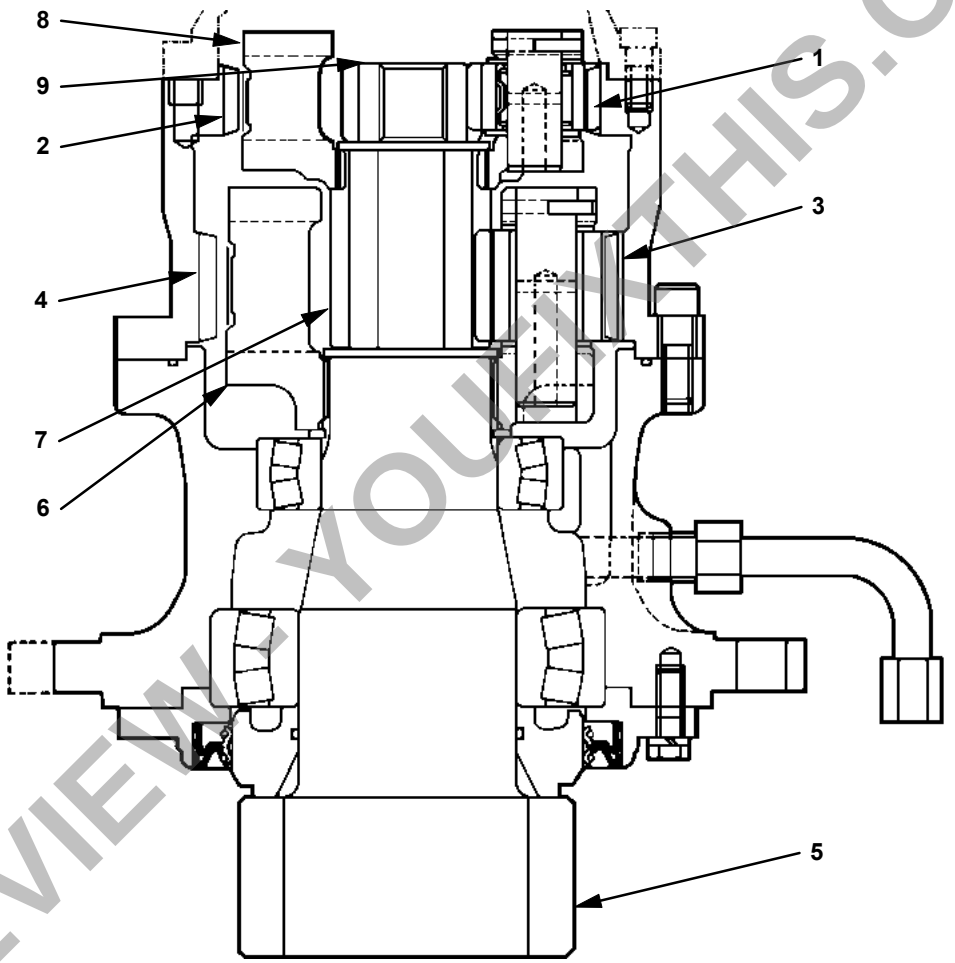
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SWING REDUCTION GEAR

The swing reduction gear is a two-stage planetary gear type. Ring gears (2 and 4) in the first and second stages are provided on the inside of the housing.
The housing is bolted to the main frame so that ring gears (2 and 4) are held stationary.
The motor output shaft of the swing motor drives first stage sun gear (9).

Then, rotary power is transmitted to second stage sun gear (7) via first stage planetary gear (1) and first stage carrier (8). Second stage sun gear (7) rotates shaft (5) via second stage planetary gear (3) and carrier (6).
As shaft (5) meshes with the internal gear of the swing bearing bolted to the undercarriage, the upperstructure is rotated.



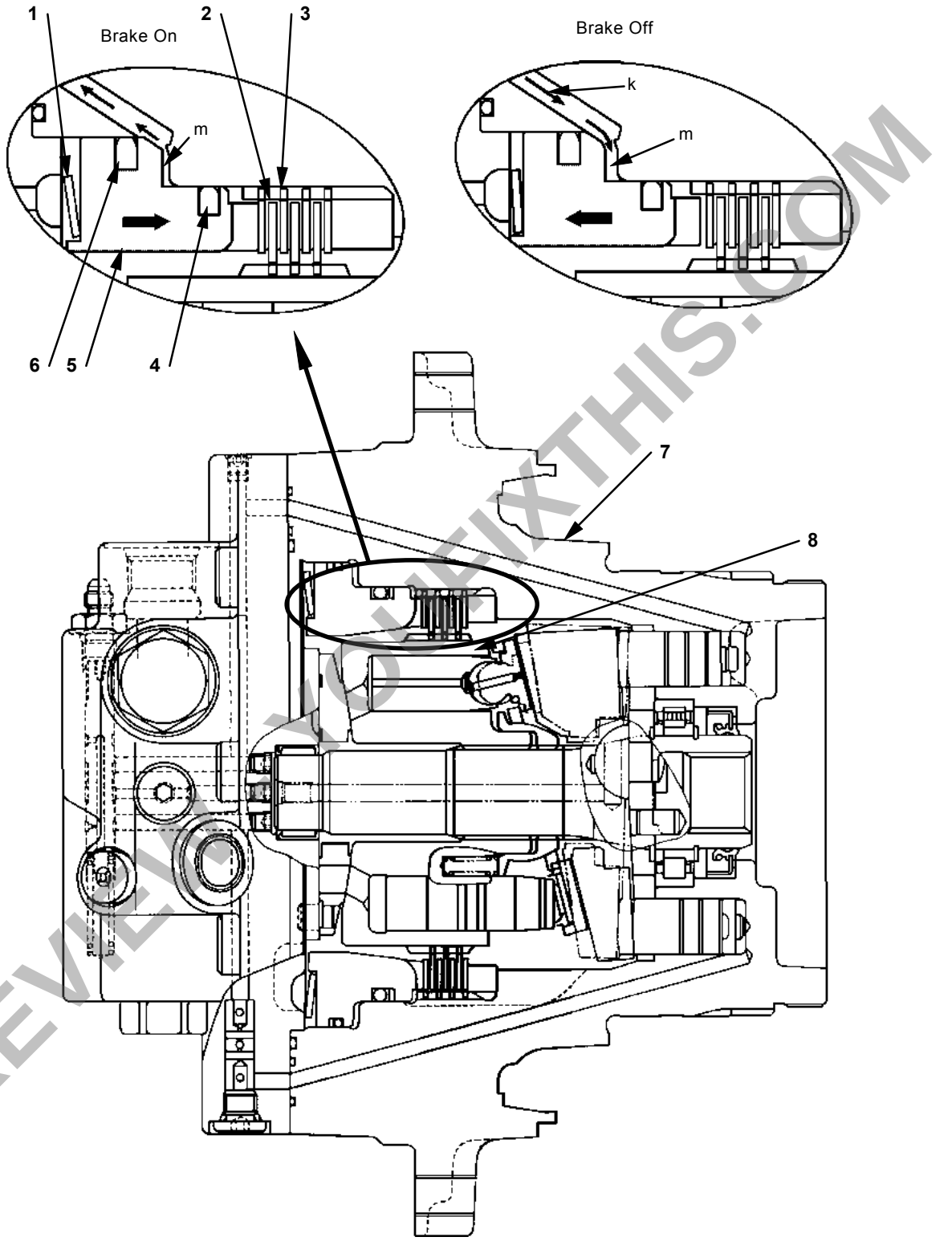
W155-02-06-003

1 - First Stage Planetary Gear
2 - First Stage Ring Gear
3 - Second Stage Planetary Gear
4 - Second Stage Ring Gear
5 - Shaft (Output Shaft)
6 - Second Stage Carrier
7 - Second Stage Sun Gear
8 - First Stage Carrier
9 - First Stage Sun gear

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EX100



T155-03-02-009

1 - Disc Spring
2 - Friction Plate
3 - Plate
4 - Seal
5 - Brake Piston
6 - Seal
7 - Housing (Travel Motor)
8 - Rotor

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MAIN PUMP FLOW TEST

- Hydraulic P-Q control (Torque Adjustment)

Summary:
To check the main pump performance, measure the pump flow rate by connecting a portable tester at the delivery port of the main pump of which the flow rate is to be measured. Dr.EX or a pressure gauge are used for pressure reading purpose in the measurement.

Preparation:
1. Properly shut down the engine. Press the air release valve on top of the hydraulic oil tank to release any remaining pressure. Connect a vacuum pump to the oil filler on the hydraulic oil tank.

NOTE: Operate the vacuum pump while connecting the portable tester to the main pump.

2. Disconnect hoses A or B. Install flange (6) (ST 6137), split flange C, and bolt D on the disconnected hose. Remove plug E and install adapter (10).

: 41 mm, 36 mm, 32 mm
: 10 mm

3. Install pipes (4) and (5), split flange C, bolt D, test hoses (3) and (12), block (7), portable tester (2), and adapters (8), (9), and (11). Do not connect the end of pipe (4) or (5) to the main pump which is not to be measured.
Instead, plug the pipe end by installing flange (6) (ST 6137) and split flange C with bolt D.
Straighten hose (3), which is connected to the plugged pipe (4) or (5), as much as possible, and secure the plugged pipe (4) or (5), to restrict any movement of hose (3).

: 41 mm :10 mm

4. Remove plug J from the main pump delivery port section. Connect adapter (13) and hose (14) to pump 1. Connect adapter (15) to pump 2. Connect pressure gauge (1) (ST 6941).

: 17 mm, 41 mm

: 6 mm, 10 mm

5. Disconnect the vacuum pump. Loosen plug K on the pump housing to bleed air from the pump until oil comes out of plug K clearance.
6. Connect a tachometer to the injection pipe. Fully open the loading valve on the portable tester.
7. Start the engine. Check the pressure gauge connection for any oil leakage. Connect the Dr. EX to the machine to monitor pressure.

Measurement:
1. Maintain the hydraulic oil temperature at 50±5 °C (122±9 °F).
2. Select the following switch positions:

Travel Mode Switch	Engine Control Dial	E Mode Switch	HP Mode Switch	Work Mode Switch	Auto-Idle Switch
Fast Mode	Fast Idle	OFF	OFF	General Purpose Mode	OFF

3. Adjust the main relief valve to obtain each specified pressure on the P-Q curve shown page T4-5-4.
4. Relieving arm roll-in circuit, gradually close the loading valve on the portable tester to obtain the specified pressure on the P-Q curve, and measure flow rate and engine speed. Repeat steps 3 and 4 for all specified pressure points on the P-Q curve.
5. Repeat the measurement three times and calculate the average values.

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(Blank)

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NO

Faulty blade main relief valve

YES

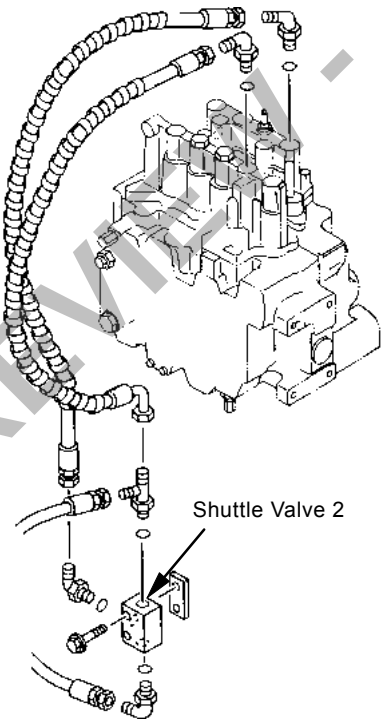
Check if overload relief valve is normal.

YES

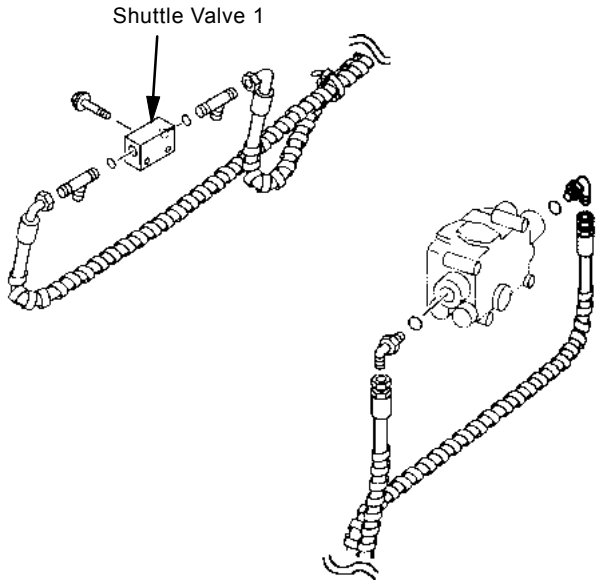
Faulty cylinder or blade control valve spool

NO

Faulty overload relief valve



T154-05-04-002



T154-05-04-003

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USE HANDHOLDS AND STEPS



SA-439

- Falling is one of the major causes of personal injury.
  - When you mounting and dismounting the machine, always face the machine and maintain a three-point contact with the steps and handrails.
  - Do not use any controls as hand-holds.
  - Never jump on or off the machine. Never mount or dismount a moving machine.
  - Be careful of slippery conditions on platforms, steps, and handrails when mounting and dismounting the machine.

008-E01B-0439

ADJUST THE OPERATOR'S SEAT



SA-378

- A poorly adjusted seat for either the operator or for the work at hand may quickly fatigue the operator leading to misoperations.
  - The seat should be adjusted whenever changing the operator for the machine.
  - The operator should be able to fully depress the pedals and to correctly operate the control levers with his back against the seat back.
  - If not, move the seat forward or backward, and check again.

009-E01A-0378

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7. Fill the hydraulic oil tank with hydraulic oil to the specified level.
   Run the engine at idle. Check hose connections for any oil leakage.



M104-07-021

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Disassemble Control Valve 3

- Be sure to thoroughly read “Precautions for Disassembly and Assembly” on page W1-1-1 before starting the disassembly work.

- **5-Spool Side Main Spools**

1. Loosen lock nut (23) and nut (24) to remove pipe (22) from pilot housing (40).

   : 14 mm

2. Loosen socket bolts (41) to separate pilot housing (40) from housing (42).

   : 6 mm

3. Remove spools (29), (34), (35), (36), and (37) from housing (42).

4. Secure spool (29) at the bottom (the two-face-chamfered part) in a vise. Remove bolt (25).

   : 17 mm

5. Remove seat (26), spring (27), and seat (28) from bolt (25).

6. Disassemble spools (34), (35), (36), and (37), referring to steps 4 and 5 above.

7. Remove plug (30) from spool (34). Then, remove spring (32) and valve (33).

   : 17 mm

- **Arm Anti-Drift Valve**

8. Remove body (14) from housing (42).

9. Remove spring (7) and check valve (10) from housing (42) using a magnet.

10. Remove plug (6) from body (14) using a pair of pliers.

NOTE: Place a piece of cloth over plug (6) before applying the pliers so as not to damage plug (6).

11. Remove spring (3), washer (2), and spool (1) from body (14).

- **Overload Relief Valve**

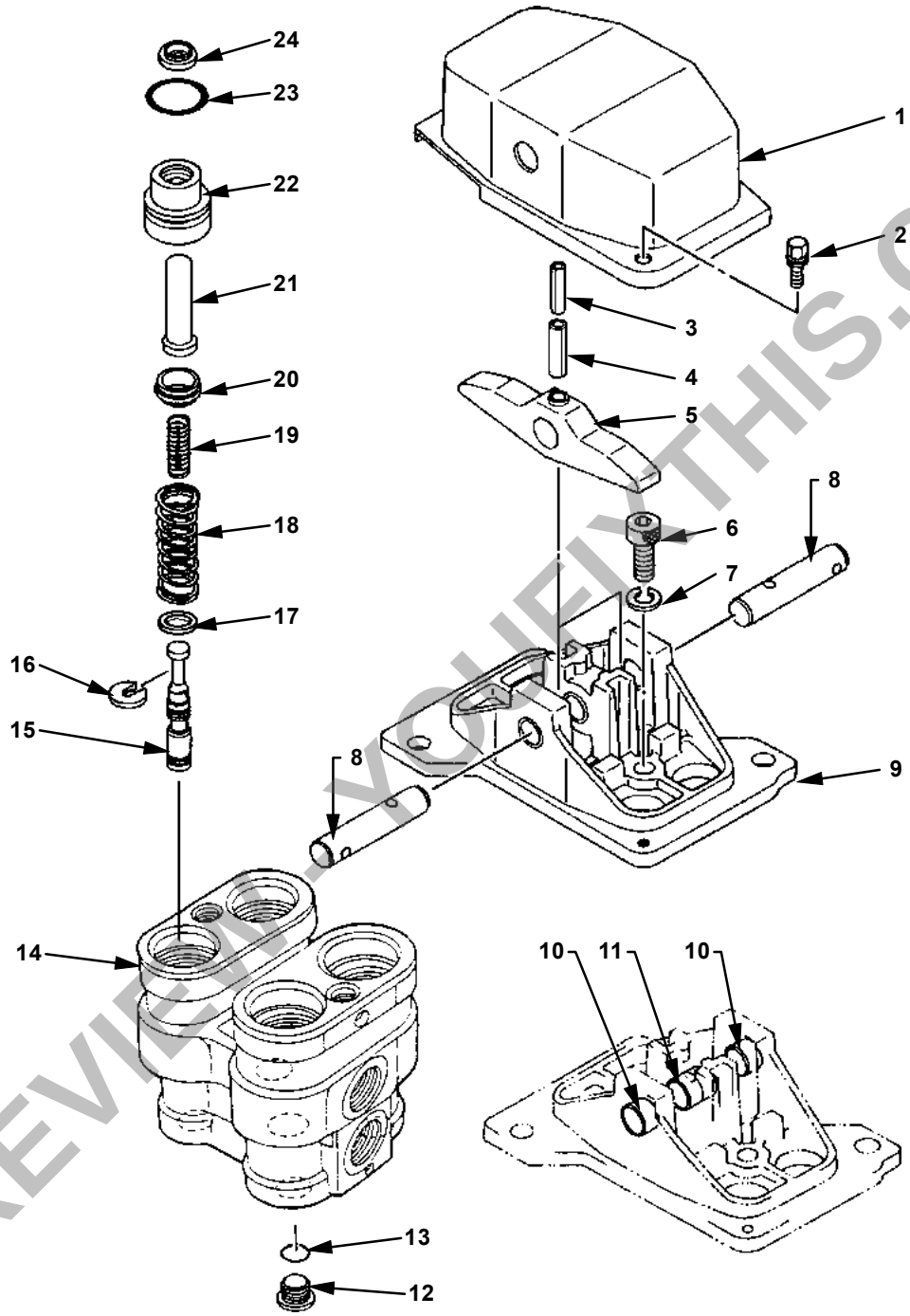
12. Remove overload relief valve (11) from housing (42).

    : 27 mm

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DISASSEMBLE TRAVEL PILOT VALVE



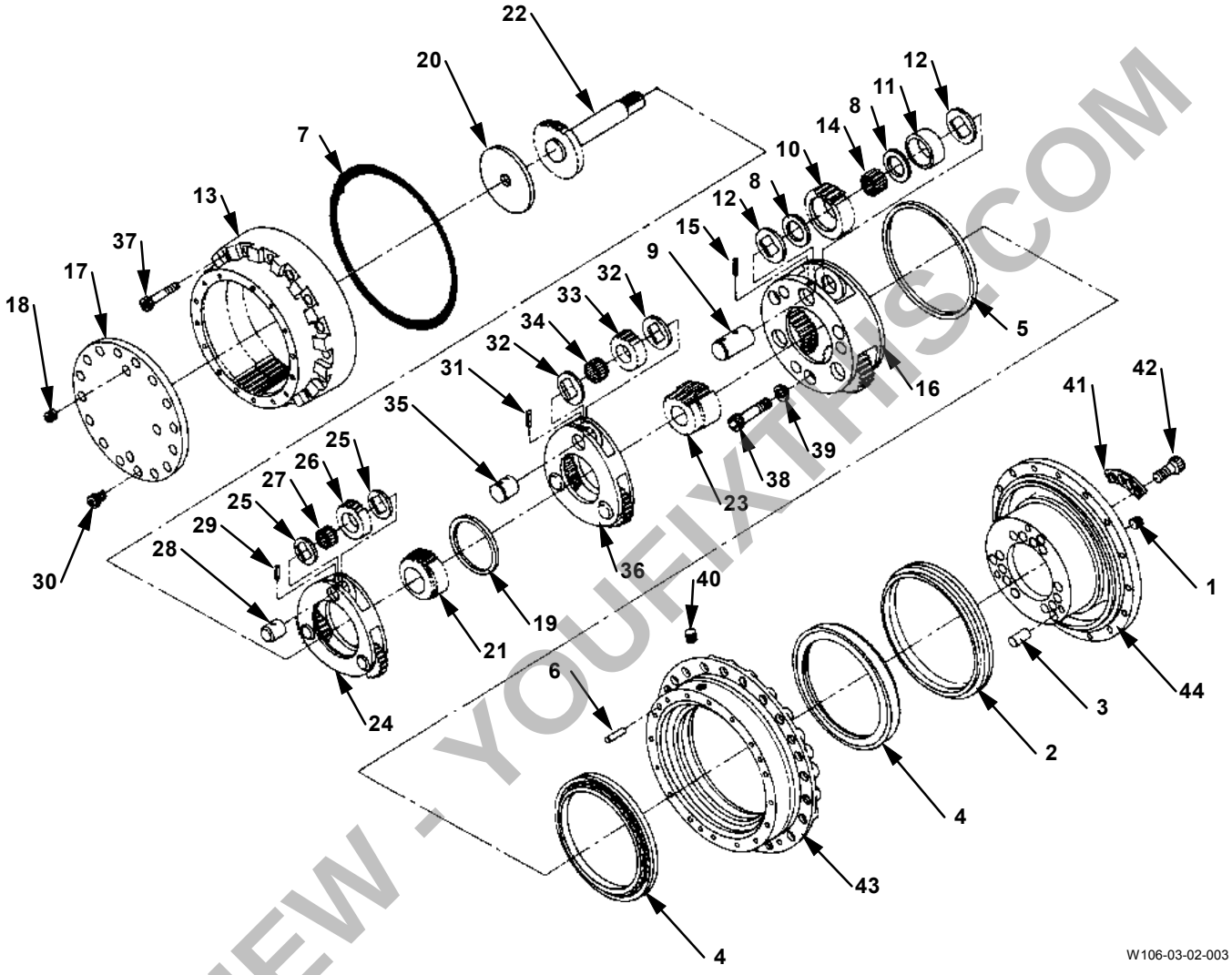
W157-02-07-012

1 - Cover
2 - Sems Bolt (2 Used)
3 - Spring Pin (2 Used)
4 - Spring Pin (2 Used)
5 - Cam (2 Used)
6 - Socket Bolt (2 Used)
7 - Spring Washer (2 Used)
8 - Pin (2 Used)
9 - Holder
10 - Bushing (2 Used)
11 - Bushing (2 Used)
12 - Plug
13 - O-Ring
14 - Casing
15 - Spool (4 Used)
16 - Piston (4 Used)
17 - Shim
18 - Return Spring (4 Used)
19 - Balance Spring (4 Used)
20 - Spring Guide (4 Used)
21 - Pusher (4 Used)
22 - Bushing (4 Used)
23 - O-Ring (4 Used)
24 - Oil seal (4 Used)

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DISASSEMBLE TRAVEL DEVICE (EX100M-5)



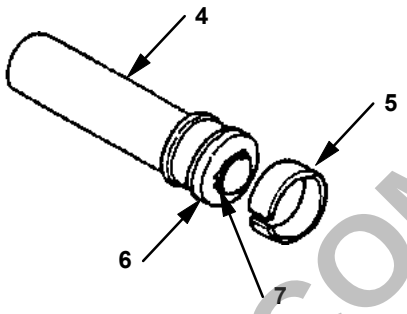
1 - Plug
2 - Floating Seal
3 - Pin (3 Used)
4 - Bearing (2 Used)
5 - Shim
6 - Pin (3 Used)
7 - O-Ring
8 - Collar (6 Used)
9 - Pin (3 Used)
10 - Third Stage Planetary Gear (3 Used)
11 - Bushing (3 Used)
12 - Thrust Washer (6 Used)
13 - Ring Gear
14 - Roller (51 Used)
15 - Spring Pin (3 Used)
16 - Third Stage Carrier
17 - Cover
18 - Plug (3 Used)
19 - Thrust Plate
20 - Thrust Plate
21 - Second Stage Sun Gear
22 - Shaft
23 - Third Stage Sun Gear
24 - First Stage Carrier
25 - Thrust Washer (6 Used)
26 - First Stage Planetary Gear (3 Used)
27 - Needle Bearing (3 Used)
28 - Pin (3 Used)
29 - Spring Pin (3 Used)
30 - Socket Bolt (16 Used)
31 - Spring Pin (3 Used)
32 - Thrust Washer (6 Used)
33 - Second Stage Planetary Gear (3 Used)
34 - Needle Bearing (3 Used)
35 - Pin (3 Used)
36 - Second Stage Carrier
37 - Socket Bolt (16 Used)
38 - Socket Bolt (16 Used)
39 - Spring Washer (3 Used)
40 - Plug
41 - Plate (3 Used)
42 - Socket Bolt (12 Used)
43 - Housing
44 - Drum

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15. Remove rod (8) and O-ring (9) from cylinder (10).

16. Remove wear ring (5), retaining ring (7) and U-ring (6) from piston rod (4).



W105-03-04-023

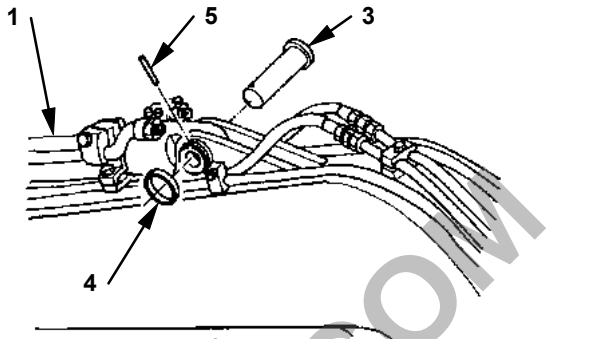
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Install Arm Cylinder

CAUTION: Arm cylinder weight: 123 kg (271 lb)

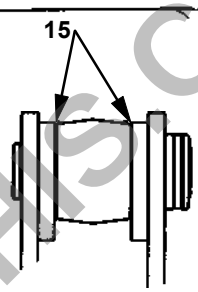
1. Use a crane to install arm cylinder (1) to the boom bracket.



W102-04-02-017

2. Install thrust plate (15) and pin (3). Then, install pin (3), stopper pin (5), and ring (4).





W157-04-01-013

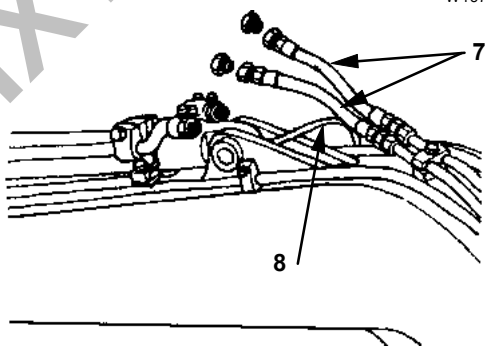
3. Attach lubricant supply pipe (8) and arm cylinder hoses (7).

: 19 mm

: 29 N·m (3 kgf·m, 22 lbf·ft)

: 36 mm

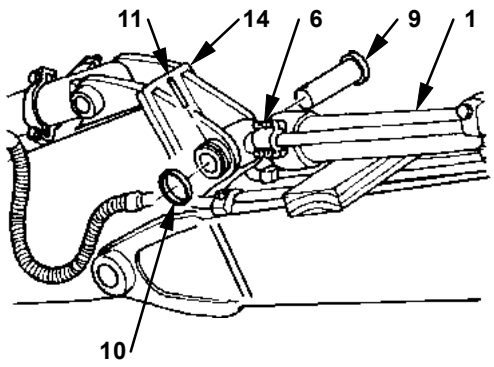
: 175 N·m (18 kgf·m, 130 lbf·ft)



W102-04-02-014

NOTE: Fill hydraulic oil tank with hydraulic oil to the specified level.
Run the engine at idle. Check hose connections for any oil leakage.

4. Remove wire (6) from arm cylinder (1).
Slightly hoist arm cylinder (1) and align the arm cylinder rod with arm (14).

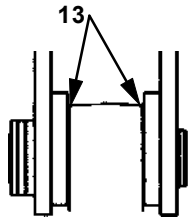


W157-04-02-001

NOTE: For easy alignment, start the engine and use the arm control lever.

5. Install thrust plate (13) and pin (9). Then, install pin (9), stopper pin (11), and ring (10).

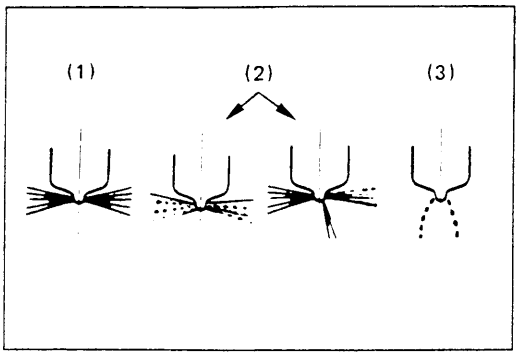




IMPORTANT: Bleed air from hydraulic circuit.

W157-04-01-014

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Spray Condition Check (During Injection Nozzle Tester Operation)

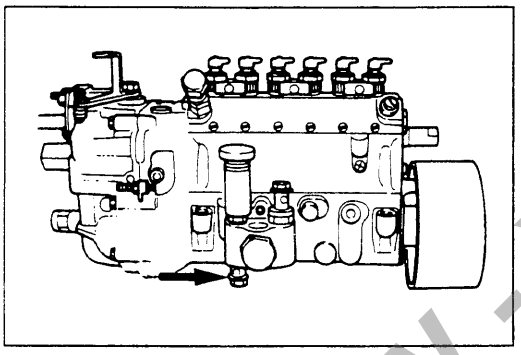
1. Tighten the cap nut.
2. Check the injection nozzle starting pressure.
3. Check the injection nozzle spray condition.

Operate the injection nozzle tester hand lever 4 to 6 times a second while looking for abnormal injection nozzle spray conditions.
Refer to the illustration for different spray conditions.

(1) Good

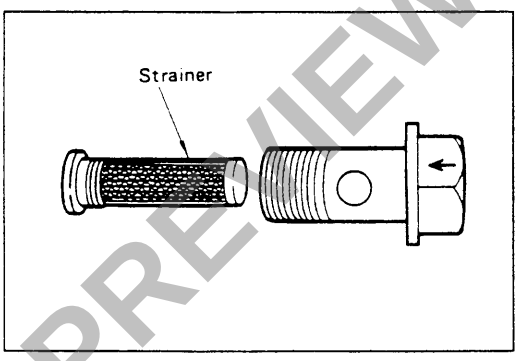
(2) Bad (Restrictions in orifice)

(3) Bad (Dripping)



Feed Pump Strainer

1. Remove the joint bolt.
2. Use a screwdriver to remove the strainer.
3. Wash the strainer in clean diesel fuel.



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Judgement

1. Wait for thirty to forty seconds.

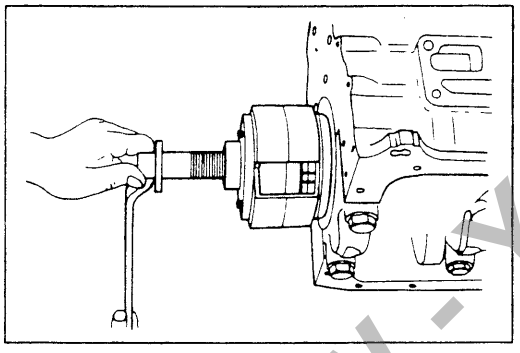
   If there is no discoloration after thirty or forty seconds, the crankshaft is usable.

   If discoloration appears (the surface being tested will become the color of copper), the crankshaft must be replaced.

2. Clean the surface being tested with clean water of steam immediately after completing the test.

Note:

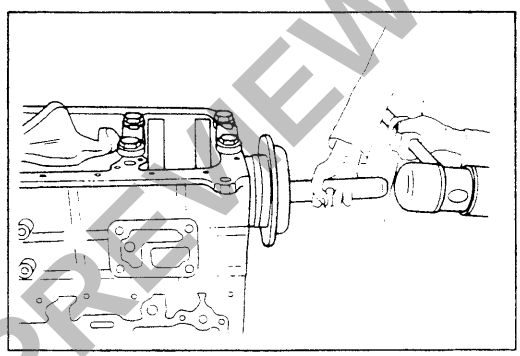
The ammonium cuprous chloride solution is highly corrosive. Because of this, it is imperative that the surfaces being tested be cleaned immediately after completing the test.



Oil Seal Wear Ring Replacement

Removal

Use the oil seal wear ring remover to remove the oil seal wear ring from the crankshaft front end.
Oil Seal Wear Ring Remover: 1-85210-056-0



Installation

Use a brass bar and a hammer to drive the oil seal wear ring into place.

Oil Seal Wear Ring Installer: 1-85220-031-0

Crankshaft Gear Inspection

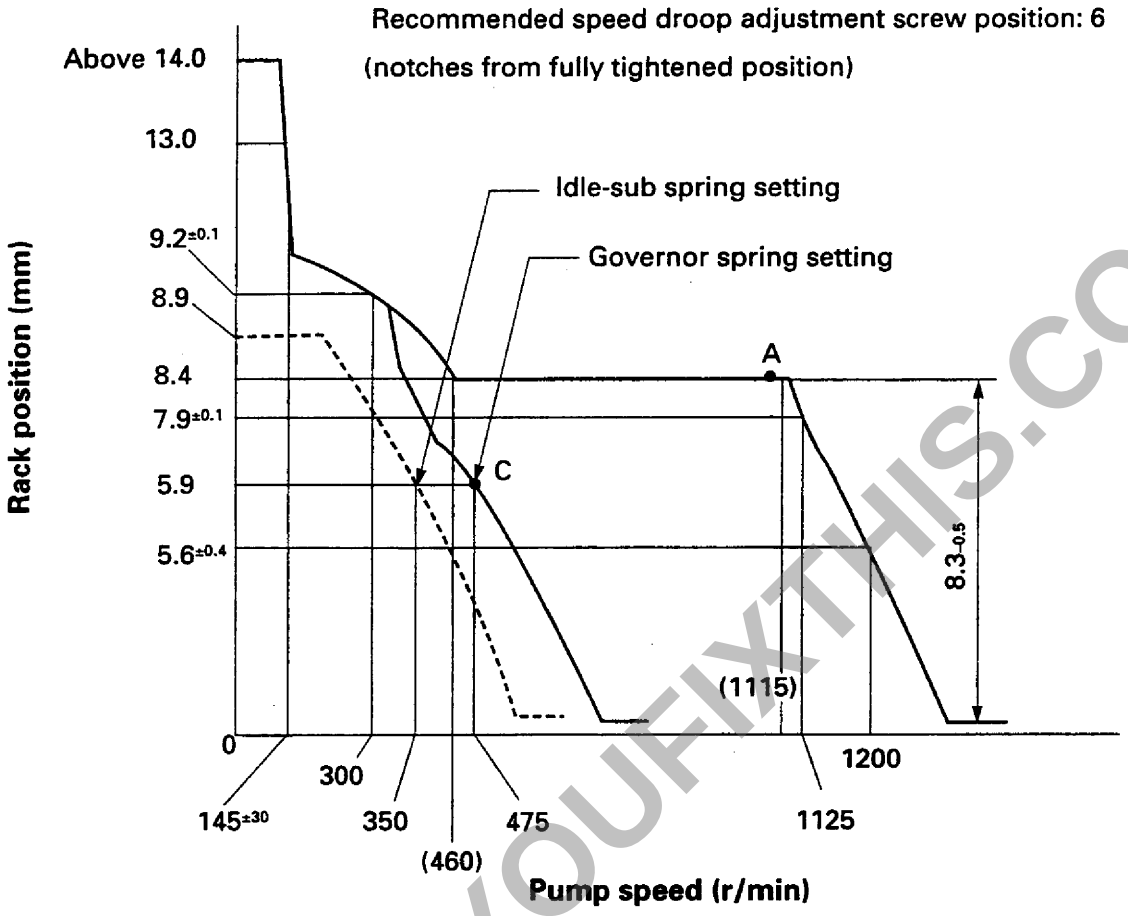
Visually inspect the crankshaft gear.

Replace the crankshaft gear if excessive wear or damage is discovered.

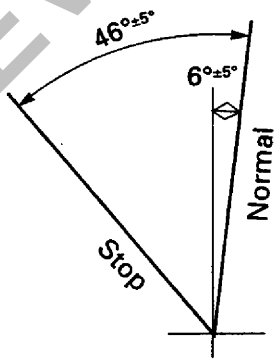
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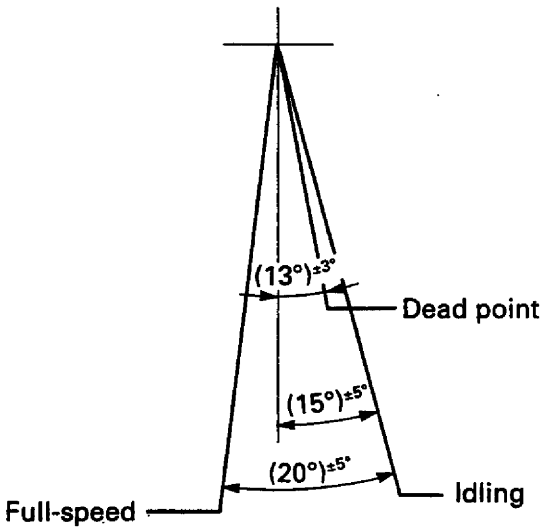
3. Governor adjustment



Stop lever angle



Speed control lever angle



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