

KOBELCO

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S5 YN23_{17E}

SHOP MANUAL **SK200**(LC)-6E **SK210**(LC)-6E(S) **SK210**NLC-6ES

ELECTRIC SYSTEM

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YN23

KOBELCO CONSTRUCTION MACHINERY CO., LTD.

Applicable Machines
YN10-38001~
YQ10-05501~

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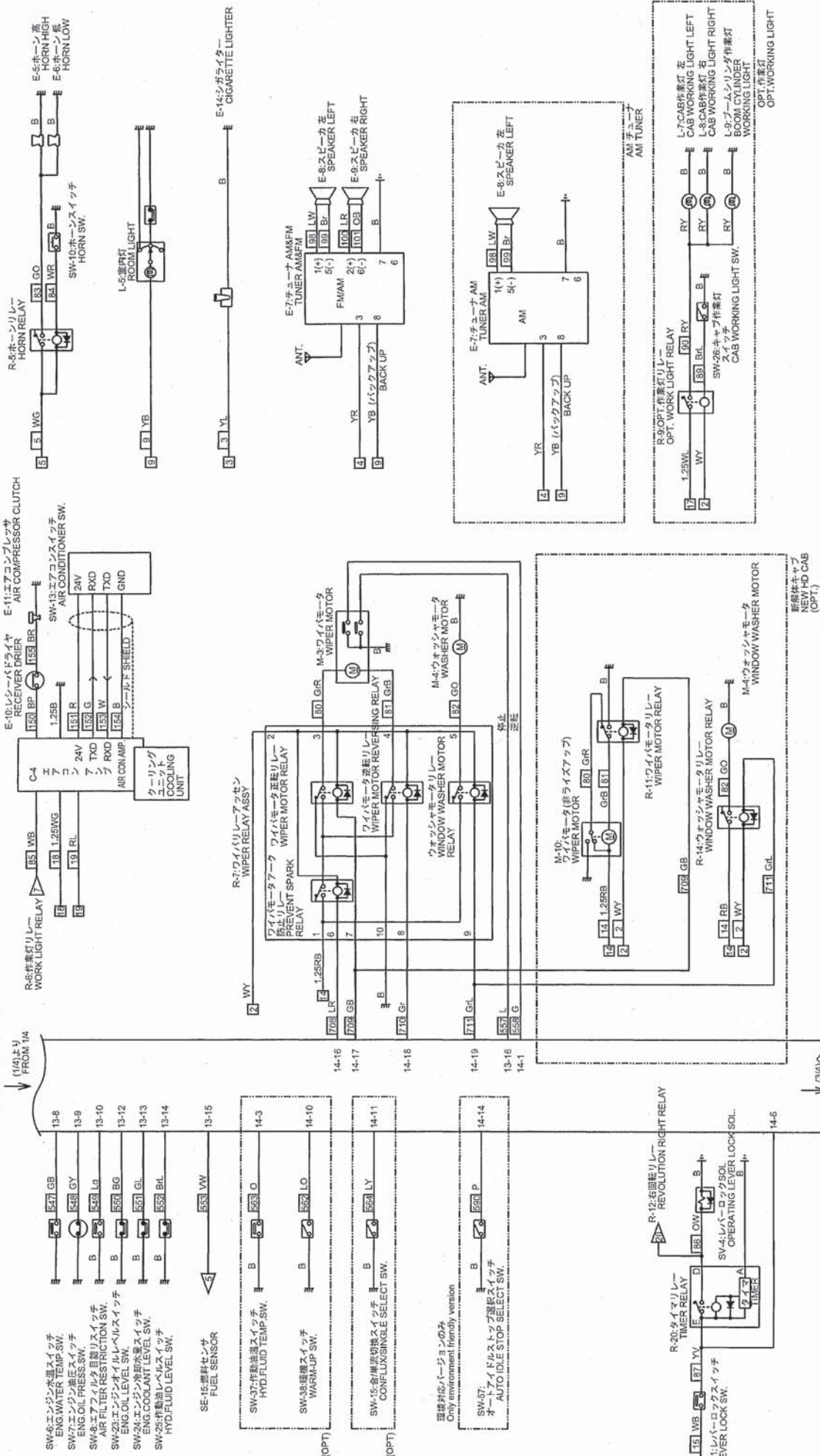
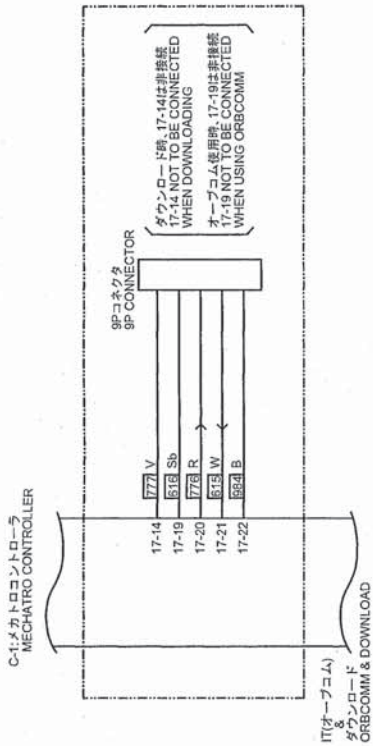
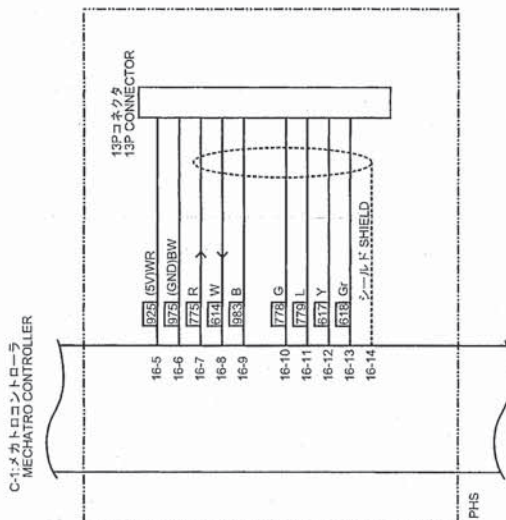
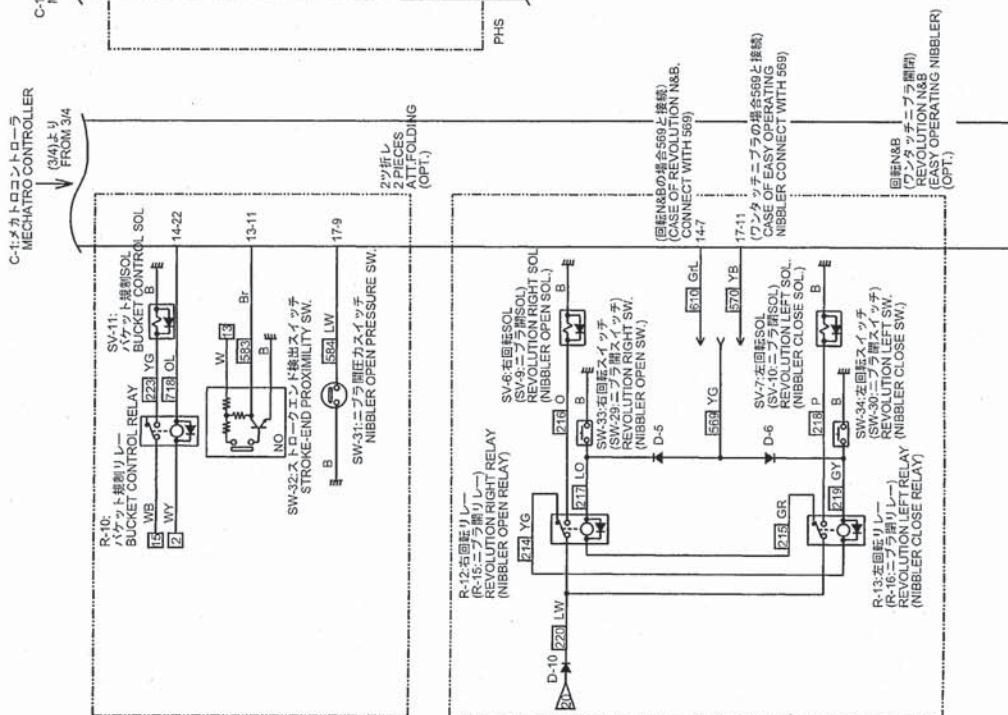


Fig.1A (2/4)



TO 4/4
(4/4)✓



注記:

1.使用する電線は、

- 1) 0.75Sq, 1.25SqをAVSS線、もしくはAVX線
- 2) 2Sq, 5SqをAVS線
- 3) その他はAV線とする。

2.指示なき電線サイズは0.75Sqとする。

- 3.電線色の図示なき接地は機器ケースで接地する。
- 4.回路図において口で囲まれた数字は線番を示す。

NOTES

1. Wires used to be

- 1) "AVSS" or "AVX" for 0.75mm² and 1.25mm².
- 2) "AVS" for 2mm², 5mm².
- 3) "AV" for others.

2. Wires to be 0.75mm² unless otherwise specified.

3. Grounding for which wire color is not shown to be performed with component case.

4. Number in square shows line No.

配線色例 EXAMPLE OF WIRE COLOR



配線色別表 WIRE COLOR CODING TABLE

符号 Sign	色 Color	符号 Sign	色 Color	符号 Sign	色 Color
B	黒 Black	W	白 White	Br	茶 Brown
G	緑 Green	Y	黄 Yellow	V	紫 Violet
L	青 Blue	P	ピンク Pink	Lg	若葉 Light Green
R	赤 Red	O	オレンジ Orange	Gr	灰 Gray
				Sb	空 Sky Blue

Fig. 1A (4/4) [ASIA, OCEANIA]

YN03Z00054P1

1B. ELECTRIC CIRCUIT DIAGRAM

KCME

Serial No. YN10-38001~
YQ10-05501~

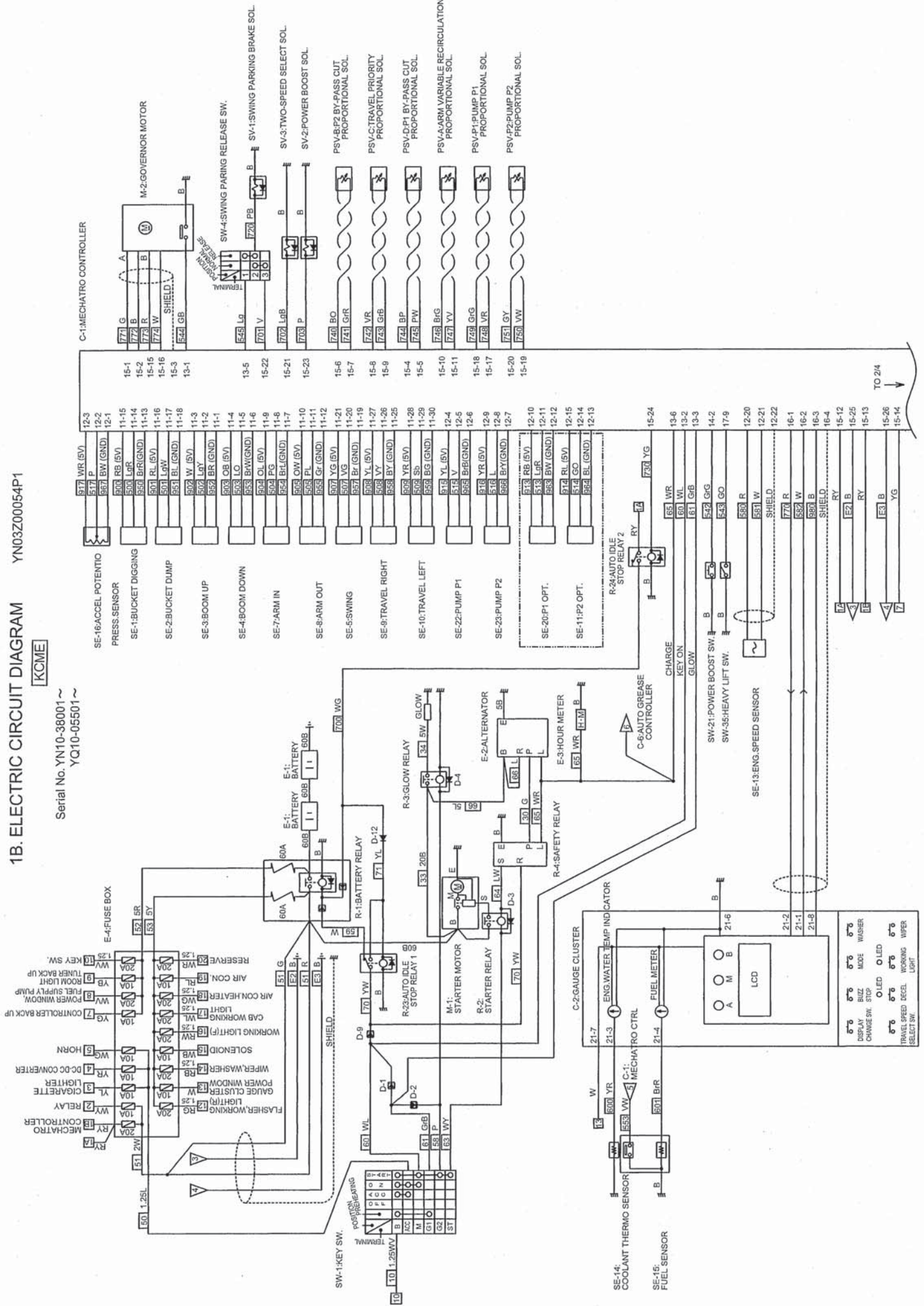


Fig.1B (1/4) KCME

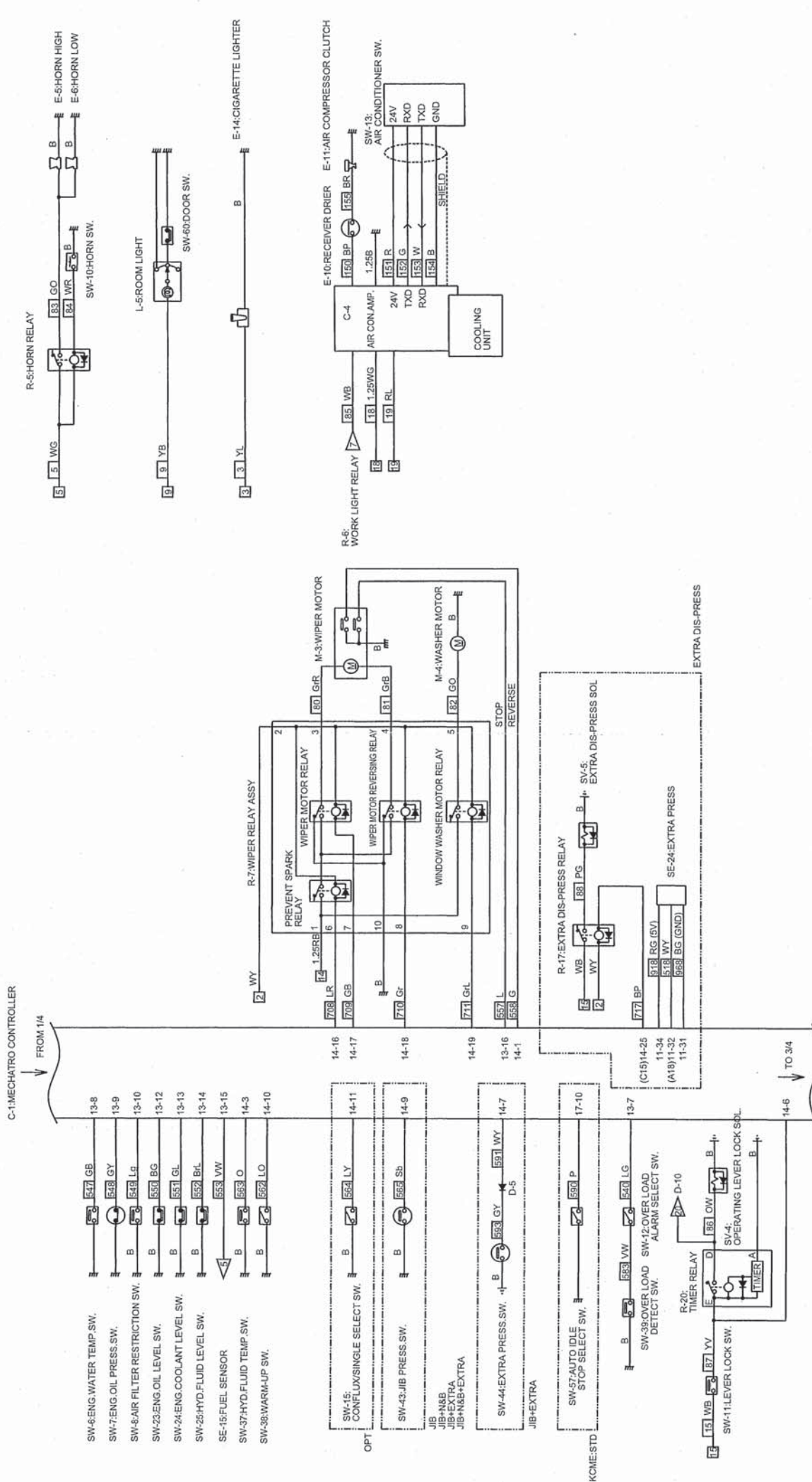


Fig.1B (2/4) KCME

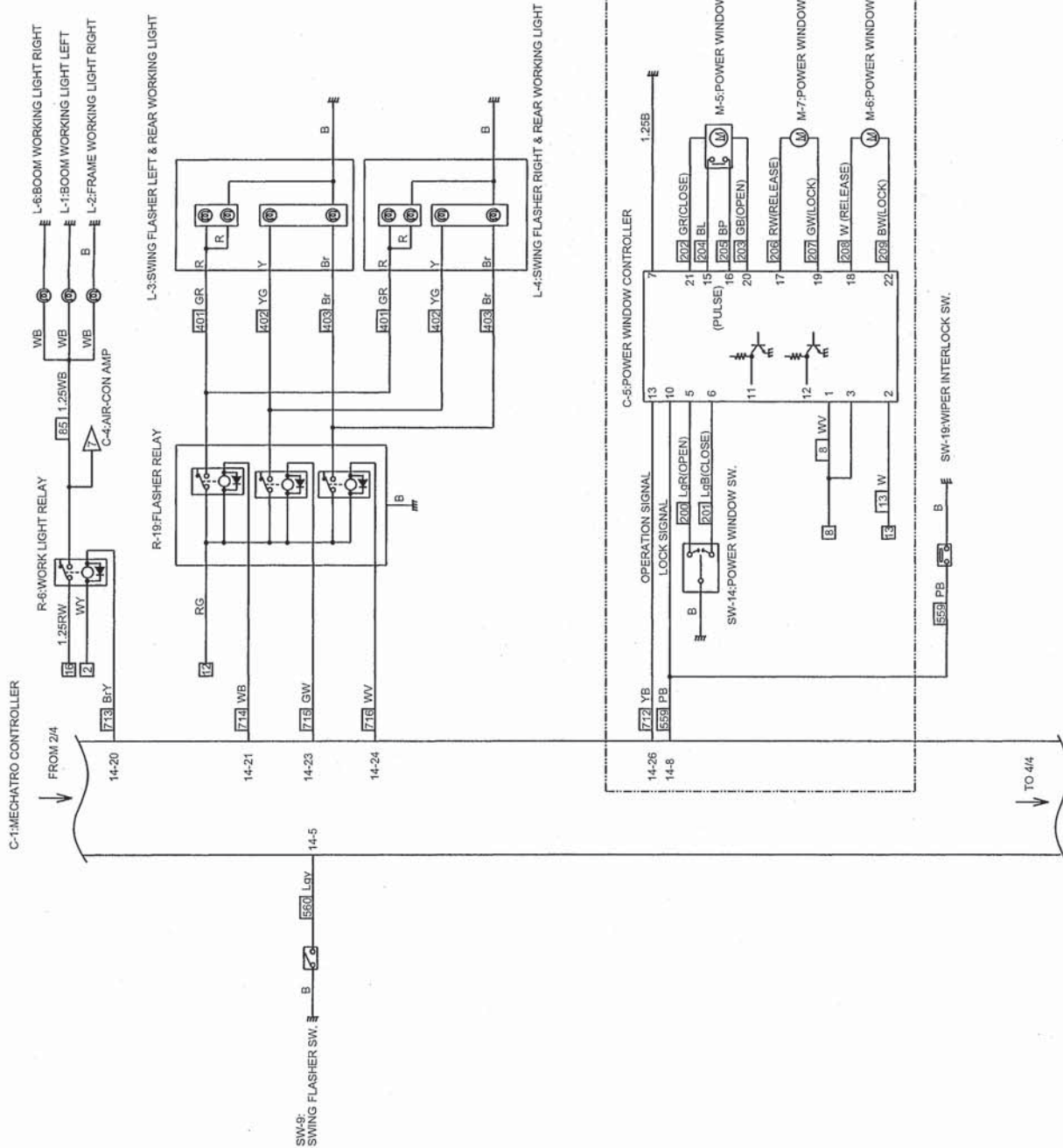


Fig.1B (3/4) KCME

2. ELECTRIC EQUIPMENT LIST

ASIA, OCEANIA

Note : 1. The part numbers and serial numbers of machine may be changed due to modification, so use only the numbers for references.

Group	Code	NAME	PART No.	Group	Code	NAME	PART No.	Group	Code	NAME	PART No.
CONTROLLER	C-1	Mechatronic controller [OCEANIA]	YN22E00197F1	PROPORTIONAL SOLENOID VALVE	PSV-A	Arm variable recirculation propo. SOL.	YN35V00039F1	SOLENOID	SV-1	Swing parking brake SOL.	YN35V00039F1
	C-1	Mechatronic controller [ASIA]	YN22E00123F4		PSV-B	P2 bypass cut proportional SOL.	↑		SV-2	Power boost SOL.	↑
	C-2	Gauge cluster [ASIA]	YN59S00012F2		PSV-C	Travel priority proportional SOL.	↑		SV-3	Two-speed select SOL.	↑
	C-2	Gauge cluster [INDONESIA]	↑		PSV-D	P1 bypass cut proportional SOL.	↑		SV-4	Operating lever safety lock SOL.	↑
	C-2	Gauge cluster [THAI]	↑		PSV-P1	Pump P1 proportional SOL.	YN35V00041F1		SV-6	(Revolution right SOL.)	LE35V00001F2
	C-2	Gauge cluster [OCEANIA]	↑		PSV-P2	Pump P2 proportional SOL.	↑		SV-7	(Revolution left SOL.)	↑
DIODE	C-4	Air conditioner controller	YT20M00004S036	RELAY	R-1	Battery relay	YN24S00003F1	SWITCH	SV-9	(Nibbler open SOL.)	↑
	C-5				R-2	Starter relay	ME701597		SV-10	(Nibbler close SOL.)	
	C-6	(Auto grease controller)	2480P40		R-3	Glow relay	ME072890		SW-1	Key switch	YN50S00026F1
	D-1	Diode	YN02D01001P1		R-4	Safety relay	ME077148		SW-2	Two-speed select switch	YN03M01286S002
	D-2	Diode	2475R132		R-5	Horn relay	EN24S000008P1		SW-3	Swing parking release switch	YX50E00002F1
	D-3	Diode	↑		R-6	Working light relay	↑		SW-4	E/G water temp. switch	ME039860
ELECTRIC FITTINGS	D-4	Diode	YN02D01001P1	SENSOR	R-7	Wiper relay assy	YT24E00001F1		SW-5	E/G oil pressure switch	MC840219
	D-5	Diode	↑		R-8	(Travel alarm relay)	EN24S000008P1		SW-6	Air filter clogging switch	YR11P00008S005
	D-6	Diode	↑		R-9	(OPT. Working light relay)	↑		SW-7	(Swing flasher switch)	2479U1190F9
	D-9	Diode	↑		R-10	Wiper motor relay	EN24S000008P1		SW-8	Horn switch	YN50E00007P1
	D-10	Diode	↑		R-11	(Revolution right relay)	↑		SW-9	Operating lever safety lock switch	YN50S01001P1
	E-1	Battery	2484U173		R-12	(Revolution left relay)	↑		SW-10	Air conditioner switch	LC20M01013P1
LIGHT	E-2	Battery (OPT.3)	2484U175	SWITCH	R-13	(Revolution left relay)	↑		SW-11	(Conflux/single select switch)	2479U1190F32
	E-3	Hour meter	ME017614		R-14	Window washer motor relay	↑		SW-12		
	E-4	Fuse box	YN58S000006P1		R-15	(Nibbler open relay)	↑		SW-13		
	E-5	Horn (High)	CM53S00002F1		R-16	(Nibbler close relay)	↑		SW-14		
	E-6	Horn (Low)	CM53S00002F2		R-17	(Flasher relay)	YY24S000001P1		SW-15		
	E-7	Tuner AM/FM	Locally procured parts		R-19	Timer relay	YN25S00001P1		SW-16		
MOTOR	E-8	Speaker (LH)	YT54S000006P1	SENSOR	R-20	Auto idle stop relay 1	LC24S000001P1		SW-17		
	E-9	Speaker (RH)	↑		R-23	Auto idle stop relay 2	LC24S000001P1		SW-18		
	E-10	Receiver dryer	YT54S000002P1		R-24	Auto idle stop relay 2	LC24S000001P1		SW-19		
	E-11	A/C compressor	LC91V00001F1		SE-1	Pressure sensor : Bucket digging	YX52S000010P1		SW-20		
	E-12	(Travel alarm)	YN53S000002F1		SE-2	Pressure sensor : Bucket dump	↑		SW-21	Power boost switch	YN50E00007P1
	E-13	Cigarette lighter	2421R180F1		SE-3	Pressure sensor : Boom up	↑		SW-22	(Travel alarm switch)	2479U1190F16
MOTOR	E-14	Antenna	YT54S000018F1	SENSOR	SE-4	Pressure sensor : Boom down	↑		SW-23	E/G oil level switch	MC867765
	L-1	Boom working light (LH)	YW80S000001F1		SE-5	Pressure sensor : Swing	↑		SW-24	E/G coolant level switch	2479U203S6
	L-2	Deck working light	YN80S000010F2		SE-6	Pressure sensor : Arm in	↑		SW-25	Hyd. fluid level switch	YN52S00023P1
	L-3	(Swing flasher & working light L.)	YM80S00001F2		SE-7	Pressure sensor : Arm out	↑		SW-26	(Cab working light switch)	2479U1190F1
	L-4	(Swing flasher & working light R.)	YM80S000001F1		SE-8	Pressure sensor : Travel RH	↑		SW-27		
	L-5	Room light	YT80S000001P1		SE-9	Pressure sensor : Travel LH	↑		SW-28	(Nibbler open switch)	2406P5872
MOTOR	L-6			SENSOR	SE-10	Pressure sensor : P2 OPT.)	↑		SW-29	(Nibbler close switch)	↑
	L-7	(Cab working light LH)	YN80S000010F2		SE-11	(Pressure sensor : P2 OPT.)	↑		SW-30	(Revolution right switch)	YN03M01231P3
	L-8	(Cab working light RH)	↑		SE-12	E/G speed sensor	MC849577		SW-31	(Revolution left switch)	↑
	L-9	(Boom cylinder working light)	↑		SE-13	Coolant thermo sensor	YT52S00001P1		SW-32	Hyd. fluid temp. switch	2479R2348
	L-10				SE-14	Fuel sensor	YT52S00001F1		SW-33	Warm-up switch	2479U1190F31
	M-1	Starter motor	ME049303		SE-15	Accel potentiometer	YN52S000032P1		SW-34	Auto idle stop switch	YN50S01004D5
MOTOR	M-2	Governor motor	YN20S000002F1	MOTOR	SE-16	(Pressure sensor : P1 OPT.)	↑		SW-57	Door switch	YT50S00004P1
	M-3	Wiper motor	YT53C00004P1		SE-20	Pressure sensor : Pump P1	LC52S00012P1				
	M-4	Washer motor	YT53C00003S001		SE-23	Pressure sensor : Pump P2	↑				
	M-5										
	M-6										
	M-7										
MOTOR	M-8	(Grease motor)	24100N8530								

The instrument with which () stuck to the name shows an option.

2. ELECTRIC EQUIPMENT LIST

KCM/E

Note : 1. The part numbers and serial numbers of machine may be changed due to modification, so use only the numbers for references.

Group	Code	NAME	PART No.	Group	Code	NAME	PART No.	Group	Code	NAME	PART No.
CONTROLLER	C-1	Mechatronic controller	YN22E00153F2	MOTOR	M-1	Starter motor	ME049303	SOLENOID	SV-1	Swing parking brake SOL.	YN35V00039F1
	C-2	Gauge cluster	YN58S00012F1		M-2	Governor motor	YN20S00002F1		SV-2	Power boost SOL.	↑
	C-4	Air conditioner controller	YT20M00004S036		M-3	Wiper motor	YN53C000011P1		SV-3	Two-speed select SOL.	↑
	C-5	(Auto grease controller)	2480P40		M-4	Washer motor	YT53C00003S001		SV-4	Operating lever safety lock SOL.	↑
					M-5	Power window motor	YN02C01657F1		SV-5	(Extra drain pressure SOL.)	YN35V00010F2
					M-6	Power window lock motor LH	YN02C01384F6		SV-7		
DIODE	D-1	Diode	YN02D01001P1		M-7	Power window lock motor RH	YN02C01384F5		SV-9		
	D-2	Diode	↑		M-9	Fuel supply pump	YP22P00002F2		SV-10		
	D-3	Diode	2475R132						SW-1	Key switch	YN50S00026F1
	D-4	Diode	↑	SOLENOID VALVE	PSV-A	Arm variable recirculation propo. SOL.	YN35V00039F1		SW-2		
ELECTRIC FITTINGS	E-1	Battery	2484U175		PSV-B	P2 bypass cut proportional SOL.	↑		SW-3		
	E-2	Alternator	ME017614		PSV-C	Travel priority proportional SOL.	↑		SW-4	Swing parking release switch	YX50E00002F1
	E-3	Hour meter	YN58S00006P1		PSV-D	P1 bypass cut proportional SOL.	↑		SW-5		
	E-4	Fuse box	YN73E00016F1		PSV-P1	Pump P1 proportional SOL.	YN35V00041F1		SW-6	E/G water temp. switch	ME039860
	E-5	Horn (High)	CM53S00002F1		PSV-P2	Pump P2 proportional SOL.	↑		SW-7	E/G oil pressure switch	MC840219
	E-6	Horn (Low)	CM53S00002F2		R-1	Battery relay	YN24S000003F1		SW-8	Air filter clogging switch	YR11P00008S005
	E-7	Tuner AM/FM	Locally procured parts	RELAY	R-2	Starter relay	ME701597		SW-9	Swing flasher switch	2479U1190F9
	E-8	Speaker (LH)	YT54S00006P1		R-3	Glow relay	ME072890		SW-10	Horn switch	LF03M01005F3
	E-9	Speaker (RH)	YT54S00006P1		R-4	Safety relay	ME077148		SW-11	Operating lever safety lock switch	YN50S01001P1
	E-10	Receiver dryer	YT54S00002P1		R-5	Horn relay	EN24S000008P1		SW-12	Over load alarm select switch	2479U1190F33
	E-11	A/C compressor	LC91V00001F1		R-6	Working light relay	↑		SW-13	Air conditioner switch	LC20M01013P1
	E-12				R-7	Wiper relay assy	YT24E00001F1		SW-14	Power window switch	YN50S01005D2
ELECTRIC FITTINGS	E-13				R-8	Travel alarm relay	EN24S000008P1		SW-15	(Conflux/single select switch)	2479U1190F32
	E-14	Cigarette lighter	2421R180F1		R-9	Cab working light relay-1	↑		SW-16	E/G room light switch	YT50S00005F1
	E-22	DC-DC Converter	YT77S00001P1	SENSOR	R-10				SW-17		
	E-23	12V Socket	YN17M01136P1		R-11	Cab working light relay-2	EN24S000008P1		SW-18		
	E-A	Antenna	YT54S00018F1		R-12				SW-19	Wiper interlock switch	YN50E000006P1
					R-13				SW-20		
					R-14				SW-21	Power boost switch	LF03M01005F3
					R-15				SW-22	E/G oil level switch	MC867765
LIGHT	L-1	Boom working light (LH)	YW80S000001F1		R-17	(Extra drain pressure relay)	EN24S000008P1	SWITCH	SW-23	E/G oil level switch	MC867765
	L-2	Deck working light	YN80S000010F2		R-19	Flasher relay	YY24S000001P1		SW-24	E/G coolant level switch	2479U203S6
	L-3	Swing flasher & working light L.	YM80S00001F2		R-20	Timer relay	YN25S000001P1		SW-25	Hvd. fluid level switch	YN52S000023P1
	L-4	Swing flasher & working light R.	YM80S00001F1		R-23	Auto idle stop relay 1	LC24S000001P1		SW-26	Cab working light switch	2479U1190F1
	L-5	Room light	YT80S000001P1		R-24	Auto idle stop relay 2	LC24S000001P1		SW-27		
	L-6	Boom working light RH	YW80S00001F1		SE-1	Pressure sensor : Bucket digging	YX52S000010P1		SW-28		
	L-7	Cab working light LH	Locally procured parts		SE-2	Pressure sensor : Boom up	↑		SW-29		
	L-8	Cab working light RH	↑		SE-3	Pressure sensor : Boom up	↑		SW-30		
	L-9				SE-4	Pressure sensor : Boom down	↑		SW-33		
	L-10	Rotary light	Locally procured parts		SE-5	Pressure sensor : Swing	↑		SW-34		
	L-11	E/G room light Assy	4056R4F1		SE-7	Pressure sensor : Arm in	↑		SW-35	Heavy lift switch	2479U1190F13
	L-15	Cab working light front 3	Locally procured parts		SE-8	Pressure sensor : Arm out	↑		SW-36		
	L-16	Cab working light front 4	↑		SE-9	Pressure sensor : Travel RH	↑		SW-37	Hvd. fluid temp. switch	2479R2348
	L-17	Back light	↑		SE-10	Pressure sensor : Travel LH	↑		SW-38	Auto warm-up switch	2479U1190F31
	L-18	Cab working back light	↑		SE-11	(Pressure sensor : P2 OPT.)	↑		SW-39	Over load detect switch	Locally procured parts
					SE-13	E/G speed sensor	MC849577		SW-40	(Rotary light switch)	2479U1190F20
					SE-14	Coolant thermo sensor	↑		SW-43	(Jib pressure switch)	GB50S000049F2
					SE-15	Fuel sensor	YT52S000001P1		SW-44	(Extra pressure switch)	↑
					SE-16	Accel potentiometer	YN52S000032P1		SW-57	Auto idle stop switch	YN50S01004D5
					SE-20	(Pressure sensor : P1 OPT.)	↑		SW-60	Door switch	YT50S00004P1
					SE-22	Pressure sensor : Pump P1	YX52S000010P1				
					SE-23	Pressure sensor : Pump P2	LC52S000012P1				
					SE-24	(Pressure sensor : Extra press)	↑				

The instrument with which () stuck to the name shows an option.

3. HARNESS

3.1 HARNESS LIST

Note : 1. The part numbers and serial numbers of machine may be changed due to modification, so use only the numbers for references.

DIVISION	POSITION	ITEM	DWG. No.		ASIA, OCEANIA	HARNESS				REMARKS
			NAME	KCME		NAME	ITEM	KCME	ITEM	
UPPER FRAME	3.3	OPERATORS CONTROLS		YN03M00081F2	YN03M00069F1					
	3.4	CONTROLLER ASSY		YY22E00185F1	YN22E00185F2 <u>ASIA</u> YN22E00185F7 <u>OCE</u>	Cab harness assy	3.4.25	YN14E00047F1	3.4.14	YN14E00046F1
		CONTROLLER INSTALL		YN22E00145F2	YN22E00140F3	Instrument panel harness	3.4.25-14	YN14E01089P1	3.4.14-1	YN14E01082P1
	3.5	INSTRUMENT PANEL ASSY		YN17M00030F3 YN17M00030F4	YN17M00030F5 <u>ASIA</u> YN17M00030F6 <u>ASIA</u> YN17M00030F7 YN17M00030F8 YN17M00030FD <u>OCE</u> YN17M00030FE <u>OCE</u>	(STD) (N&B) (INDONESIA STD) (THAILAND STD) (STD) (N&B)				
	3.6	UPPER ELEC ASSY		YN03E00010F2	YN03E00010F1					
	3.7	UPPER HARNESS ASSY		YN13E00081F1	YN13E00072F3 <u>OCE</u> YN13E00072F2 <u>ASIA</u>	Harness ; Upper Cable ; Battery Cable ; Battery relay Cable ; Ground Cable ; Starter Cable ; Frame GND Harness ; E/G room light Harness ; E/G sub	3.7.1B 3.7.2 3.7.3 3.7.4 3.7.5 3.7.6 3.7.19	YN13E01318P2 YN13E01053D2 2486R89D5 YN13E01118P1 YN13E01279P1 LE13E01006P1 YN13E01305D3 YN16E01021P1	3.7.1A	YN13E01299P2 <u>OCE</u> YN13E01325P2 <u>ASIA</u> — — — — —
	3.8	E/G HARNESS ASSY		YN16E00012F1	—		3.8.1			
	3.9	UNDER FLOOR HARNESS ASSY		YN13E00090F1	YN13E00085F1	Harness ; Under floor Harness ; Inst. panel (R) Harness ; Inst. panel (L) Cable ; Floor GND	3.9B.1 3.9B.2 3.9B.3 3.9A.10	YN13E01290P2 YN13E01319P1 YN13E01347P1 LE13E01005P1	3.9A.1 3.9A.2 3.9A.3 3.9A.10	YN13R01298P1 YN13E01276P1 YN13E01336P1 —
	3.10	CAB ASSY		YN02C00078F1	—	Harness ; Room lamp	3.10.62	YN02C01761P1		
CAB	3.11	CAB INSTALL		YN02C00019F1	—					
	3.11	CAB HARNESS ASSY		YN14E00037F2	YN14E00037F1	Harness ; Cab	3.11.7	YN14E01067P1	3.11.1	YN14E01050P1
BATTERY	3.12	BATTERY		2484U175	2484U173					
	3.12	BATTERY INSTALL		YN72E00005F1	—					
LIGHT INSTALL	3.13	3.13.1 DECK 3.13.2 CAB 3.13.3 C/W 3.13.4 BOOM		YN80E00012F1 YN80E00045F7 YM80E00003F1 LC80E00004F1	— — — YN80E00011F1	Harness ; Working light Harness ; Working light	3.13.2-13 3.13.2-15	YN02C01928P1 YN02C01973P1		— —
BOOM	3.14	BOOM HARNESS ASSY		YN15E00008F4	YN15E00003F3	Harness ; Boom light Harness ; Over load sw.	3.14.4B 3.14.5	YN15E01034P1 YY13E01072P1	3.14.4A	YN15E01013D2 —
FUEL	3.15	FUEL PUMP ASSY		YN22P00009F1	—					

3.2A HARNESS CONNECTION DRAWING

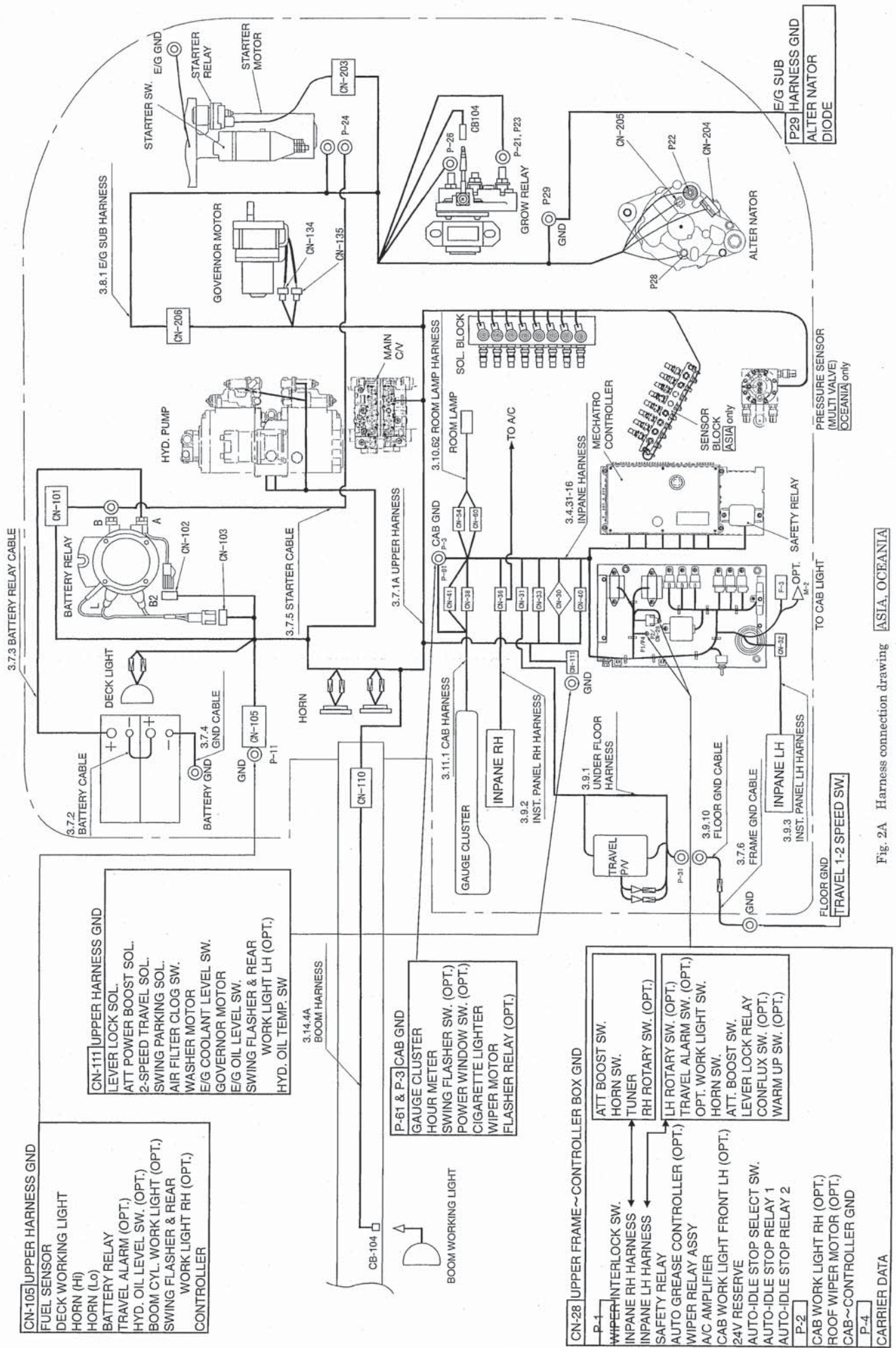


Fig. 2A Harness connection drawing

KCME

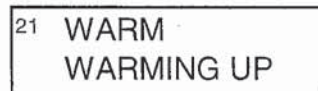
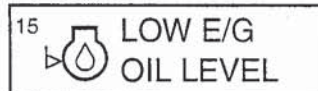
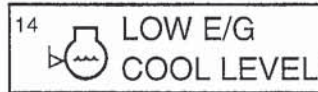
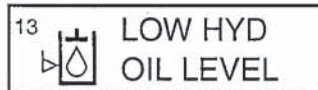
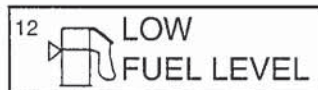
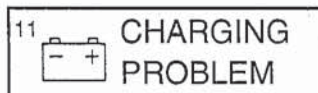
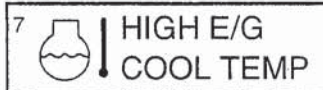
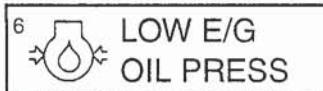
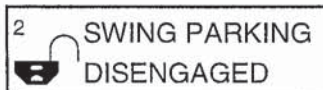


Fig. 2B Harness connection drawing

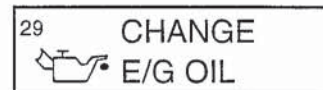
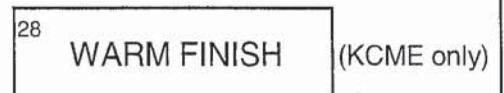
The functions displayed on the multidisplay are classified roughly into the following 9 types.

1. Clock display After the engine starts, "OK" is displayed on the multidisplay. (In normal condition)
- ※ 2. CPU error display Display the error of the mechatro controller, etc.
- ※ 3. Self-diagnosis display Displays the failure of the I/O system of the mechatro controller such as the low pressure sensor, governor motor, proportional valve, solenoid valve, etc. (31 items)
4. Service diagnosis display Displays the information output by the mechatro controller such as the pressure sensor detection, proportional valve, solenoid valve, etc. (23 items)
5. Trouble history display Stores and displays the contents of the troubles detected through the mechatro self diagnosis.
6. Mechatro A adjustment display Displays it by procedure during the mechatro A adjustment.
7. E/G oil supply cumulative (integrated) time .. Displays the E/G oil supply cumulative time and E/G speed (rpm) list.
1. E/G oil 2. Fuel filter 3. Hyd. oil filter 4. Hyd. oil
But E/G speed is also displayed by service diagnosis.
8. Warning displays In case the self diagnosis (※) is normal but the machine is faulty, or if the machine condition must be notified to the operator, the below items are indicated each time it is necessary.
9. Auto warming function If the key is turned ON with the WARM switch on, Auto Warming of E/G and hydraulic oil are displayed.

Warning displays item



No.1
MAIN CONT. P/N
STARTER CHG
PROGRAM VER.
VER 4.00



- The buzzer sounds on display # 2, #5, #6, #7 and #28 .

Supplementary explanation :

In the case of #5 and #6, the buzzer is not stopped even if the buzzer stop switch is pushed.

In the case of #7, the buzzer is stopped if the buzzer stop switch is pressed.

In the case of #2 and #28, the buzzer stops five seconds later automatically.

(KCME only)

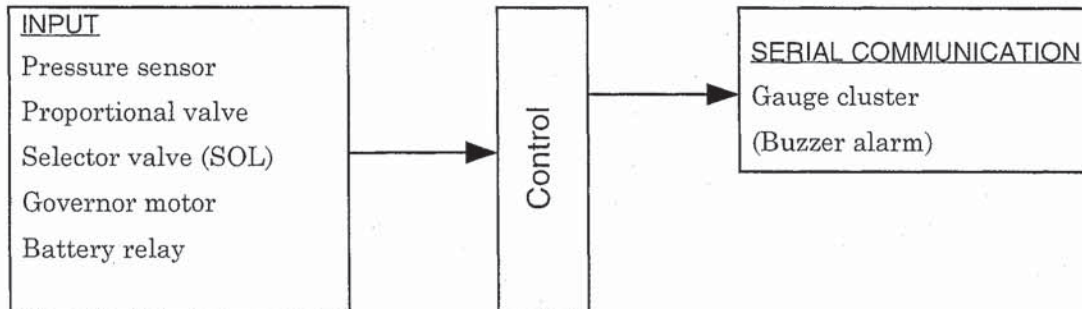
When the number of starting up of starter reaches set value, and each time the starter key is turned on, this No. 1 display is always flashed for 10 seconds.

2.2 SELF DIAGNOSIS DISPLAY FUNCTION

(1) Summary

It performs self diagnosis of control inputs and outputs of pressure sensors and proportional valves while the machine is in operation. Errors coming out of the self diagnosis are displayed on the multi display of the gauge cluster. Regarding the connector numbers and the pin numbers, refer to the C-1 Mechatro Controller which describes later. Wire numbers and colors may be confirmed on the electric circuit diagram or on the harnesses diagram.

(2) I/O configuration



(3) Self diagnosis display item

No.	Contents	Display of monitor	No.	Contents	Display of monitor
1	Mechatro controller fail	1. CPU MECHATRO CONT. FAIL	17	P1 bypass cut propo-valve fail	D-1 P1 BYPASS PROPO-VALVE
2	Gauge cluster→Mechatro controller communication failure	I-1 RECEIVE ERROR	18	P2 bypass cut propo-valve fail	D-2 P2 BYPASS PROPO-VALVE
3	Battery relay fail	I-2 BAT. RELAY	19	Travel priority propo-valve fail	D-3 TRAVEL PROPO-VALVE
4	ROM data	A-1 CPU ROM DATA FAILURE	20	Arm variable recirculation propo-valve fail	D-6 RECIRCULAT PROPO-VALVE
5	Mechatro set error	A-2 CPU MECHATRO SET ERROR	21	P1 pump proportional valve fail	E-1 PUMP P1 PROPO-VALVE
6	Boom raising pressue sensor fail	B-1 BOOM RAISE SENSOR	22	P2 pump proportional valve fail	E-2 PUMP P2 PROPO-VALVE
7	Boom lowering pressue sensor fail	B-2 BOOM LOWER SENSOR	23	Power up solenoid valve fail	F-1 POWER BOOST SOLENOID
8	Arm in pressure sensor fail	B-3 ARM IN SENSOR	24	Travel 2-speed solenoid valve fail	F-3 TWO-SPEED SOLENOID
9	Arm out pressure sensor fail	B-4 ARM OUT SENSOR	25	Swing parking solenoid valve fail	F-2 SWING BRAKE SOLENOID
10	Bucket digging pressure sensor fail	B-5 BUCKET DIG SENSOR	26	Governor motor current fail	G-1 STEP MOTOR CURRENT-NG
11	Bucket dump pressure sensor fail	B-6 BUCKET DUNP SENSOR	27	Governor motor starting point indexing fail	G-2 STEP MOTOR S/PT. ERROR
12	Swing pressure sensor fail	B-7 SWING (R) SENSOR	28	E/G speed sensor fail	G-3 E/G REV. SENSOR
13	Travel right pressure sensor fail	B-9 TRAVEL (R) SENSOR	29	Accel potentio meter fail	H-1 ACCELERATR POTENTIO
14	Travel left pressure sensor fail	B-10 TRAVEL (L) SENSOR	30	Hydraulic pressure release stand by	32 DRAINING HYD. PRESS
15	P1 pump pressure sensor fail	C-1 PUMP P1 SENSOR	31	Hydraulic pressure release fail	33 FAIL DRAIN HYD. PRESS
16	P2 pump pressure sensor fail	C-2 PUMP P2 SENSOR			

2.3 SERVICE DIAGNOSIS

The present service diagnosis in 23 items is displayed on the multidisplay according to the data received from the mechatro controller.

How to display

- 1) Keep the buzzer stop switch pressing, turn the starter switch "ON" and starts the engine.
- 2) The 1st item Parts No. of Mechatro controller and the program version are displayed.

(Example)

No.1
MAIN CONTROLLER P/No.
YN22E00123F3
PROGRAM VERSION
VER 1.00

- 3)  Each time the screen change switch on the gauge cluster is pressed, the number runs like No.2, No.3 ... in order.
- 4)  Each time the buzzer stop switch on the switch panel is pressed, the number returns like No.25, No.24 ... in order.
- 5) The display disappears only when the starter switch is turned OFF.

Service diagnosis indication

No.	DISPLAY	REMARKS	No.	DISPLAY	REMARKS
1	No.1 MAIN CONT.P/No. YN22E00123F3 <u>ASIA, OCE</u> YN22E00153F1 <u>KCME</u> PROGRAM VER VER <u>10.00</u> VER <u>01.00</u>	P/No. indication Version indication <u>ASIA, OCE</u> <u>KCME</u>	6	No.6 SOL. VALVE F-3 1/2-TRAVEL COMP. <u>OFF</u> MEAS. <u>OFF</u> SWITCH <u>OFF</u>	ON/OFF indication ON/OFF indication ON/OFF indication
2	No.2 E/G SET <u>2220</u> MEAS <u>2050</u> E/G PRS. <u>LIVE</u> KPSS SW <u>M</u>	No load set rpm Actual rpm LIVE/DEAD indication A / M / B indication	7	No.7 SOL. VALVE F-1 POWER UP COMP. <u>OFF</u> MEAS. <u>OFF</u> SWITCH <u>OFF</u>	ON/OFF indication ON/OFF indication ON/OFF indication
3	No.3 H-1 ACCEL VOLT. <u>4.9V</u> POS. <u>100%</u> MOTOR STEP <u>420</u> POS. <u>100%</u>	Potential voltage Voltage position No of motor steps Step position	8	No.8 RELAY I-2 BAT. RELAY COMP. <u>ON</u> MEAS. <u>ON</u> KEY SWITCH <u>ON</u>	Sensor voltage / Pressure converted value Sensor voltage / Pressure converted value
4	No.4 GOVERNOR MOTOR G-1 COIL A <u>1.0A</u> G-1 COIL B <u>1.0A</u> G-2 LIMIT <u>OFF</u>	A phase current B phase current ON/OFF indication	9	No.9 PRESS. SENSOR B-1 BOOM RAISE <u>4.5V</u> <u>3.0M</u> B-2 BOOM LOWER <u>4.5V</u> <u>3.0M</u>	Sensor voltage / Pressure converted value Sensor voltage / Pressure converted value
5	No.5 SOL. VALVE F-2 SWING-BRAKE COMP. <u>ON</u> MEAS. <u>ON</u> RELEASE SW <u>OFF</u>	ON/OFF indication ON/OFF indication ON/OFF indication	10	No.10 PRESS. SENSOR B-3 ARM OUT <u>4.5V</u> <u>3.0M</u> B-4 ARM IN. <u>4.5V</u> <u>3.0M</u>	Sensor voltage / Pressure converted value Sensor voltage / Pressure converted value

Note : The examples of displays are in the M mode with the engine at Hi and with the operating lever to full stroke.

No.	DISPLAY	REMARKS	No.	DISPLAY	REMARKS
11	No.11 PRESS. SENSOR B-5 BUCKET DIG <u>4.5V</u> <u>3.0M</u> B-6 BUCKET DUNP <u>45V</u> <u>3.0M</u>	Sensor voltage / Pressure converted value Sensor voltage / Pressure converted value	20	No.22 PROPO-VALVE D-3 S-TRAVEL COMP. <u>513mA</u> <u>1.6M</u> MEAS. <u>508mA</u> <u>1.6M</u> DRAIN PRES. <u>700mA</u> <u>3.0M</u>	Command current / Pressure converted value Feedback current / Pressure converted value (Arm in relief)
12	No.12 PRESS. SENSOR B-7 SWING (R) <u>4.5V</u> <u>3.0M</u> B-8 SWING (L) <u>0V</u> <u>3.0M</u>	Sensor voltage / Pressure converted value Sensor voltage / Pressure converted value	21	No.23 PROPO-VALVE D-6 A-RECIRCULAT COMP. <u>538mA</u> <u>1.8M</u> MEAS. <u>533mA</u> <u>1.8M</u>	Command current / Pressure converted value Feedback current / Pressure converted value (Arm in at no load)
13	No.13 PRESS. SENSOR B-9 TRAVEL (R) <u>4.5V</u> <u>3.0M</u> B-10 TRAVEL (L) <u>4.5V</u> <u>3.0M</u>	Sensor voltage / Pressure converted value Sensor voltage / Pressure converted value	22	No.24 PROPO-VALVE E-1 P1 PUMP COMP. <u>750mA</u> <u>2.9M</u> MEAS. <u>745mA</u> <u>2.9M</u> POWER SHIFT <u>0mA</u>	Command current / Pressure converted value Feedback current / Pressure converted value
14	No.14 PRESS. SENSOR C-1 PUMP P1 <u>3.3V</u> <u>3.5M</u> C-2 PUMP P2 <u>3.3V</u> <u>3.5M</u>	Sensor voltage / Pressure converted value Sensor voltage / Pressure converted value	23	No.25 PROPO-VALVE E-2 P2 PUMP COMP. <u>750mA</u> <u>2.9M</u> MEAS. <u>745mA</u> <u>2.9M</u> POWER SHIFT <u>0mA</u>	Command current / Pressure converted value Feedback current / Pressure converted value
15	No.15 PRESS. SENSOR B-16 P1 OPT. <u>4.5V</u> <u>3.0M</u> B-17 P2 OPT. <u>4.5V</u> <u>3.0M</u>	Sensor voltage / Pressure converted value Sensor voltage / Pressure converted value	24	No.39 MECHATRO ADJT. CONT. SW <u>TEST</u> CONT. VOL <u>100%</u> PROG. SW <u>OFF</u>	RUN/TEST indication Inner trimmer ON/OFF indication
18	No.20 PROPO-VALVE D-1 P1 CUT COMP. <u>706mA</u> <u>2.7M</u> MEAS. <u>701mA</u> <u>2.7M</u>	Command current / Pressure converted value Feedback current / Pressure converted value (Arm out relief)	25	No.40 RELEASE SW KPSS <u>OFF</u> SWING BRAKE <u>OFF</u>	ON/OFF indication ON/OFF indication
19	No.21 PROPO-VALVE D-2 P2 CUT COMP. <u>706mA</u> <u>2.7M</u> MEAS. <u>701mA</u> <u>2.7M</u>	Command current / Pressure converted value Feedback current / Pressure converted value (Boom up relief)			

2.4 TROUBLE HISTORY DIAGNOSIS

The error item detected by the self-diagnosis is stored in the mechatro controller as a history and is displayed on the multidisplay.

(1) How to display

- 1) Turn the starter switch [ON].
- 2) Press the buzzer stop switch 5 times in sequence for 10 seconds.

(Example)

CONTENTS	DISPLAY
No errors	NO ERROR
Error detected in the past	00025H B-10 TRAVEL LEFT D-2 P2 BYPASS CUT F-3 TRAVEL 1.2-SPEED

3) Transmits the error data (one or many) and hour meter to the gauge cluster.

- Hour meter and 3 error data are displayed on the screen.
- If three error data or more exist, display the data three by three in order for every 5 seconds.

4) Scrolling pages (Item number)

- The item number increases each time the work mode select switch is pushed.
- The item number decreases each time the buzzer stop switch is pushed.

Note :

The system stores all error items at each hour meter reading. To check error items at different hour meter readings, push the work mode select switch or the buzzer stop switch.

5) To erase the display, turn the starter switch to [OFF] .

(2) How to cancel the contents of the trouble history

- 1) Display the trouble history mode.
- 2) Press the work mode select switch and the buzzer stop switch for 10 seconds or more concurrently.
- 3) When the erasing is completed, the "NO ERROR" is displayed.
- 4) Turn the starter switch [OFF] .

Note :

All the stored items are erased.

It is impossible to erase data partially.

(3) Contents of the trouble history

Symbol	Display	
A	Controller relation	A-1 ROM DATA FAILURE
		A-2 MECHATRO SET ERROR
B	Low pressure sensor	B-1 BOOM RAISE SENSOR
		B-2 BOOM LOWER SENSOR
		B-3 ARM OUT SENSOR
		B-4 ARM IN SENSOR
		B-5 BUCKET DIG SENSOR
		B-6 BUCKET DUMP SENSOR
		B-7 SWING (R) SENSOR
		B-9 TRAVEL (R) SENSOR
		B-10 TRAVEL (L) SENSOR
C	High pressure sensor (Hydraulic pump)	C-1 PUMP P1 SENSOR
		C-2 PUMP P2 SENSOR
D	Proportional valve (Control valve)	D-1 P1 BYPASS PROPO-VALV
		D-2 P2 BYPASS PROPO-VALV
		D-3 TRAVEL PROPO-VALV
		D-6 RECIRCULAT PROPO-VALV
E	Portional valve (Hydraulic pump)	E-1 PUMP P1 PORPO-VALV
		E-2 PUMP P2 PORPO-VALV
F	Solenoid valve	F-1 POWER BOOST SOLENOID
		F-2 SWING BRAKE SOLENOID
		F-3 TWO-SPEED SOLENOID
G	E/G Accessory	G-1 STEP MOTOR CURRENT-NG
		G-2 STEP MOTOR S/PT. ERROR
		G-3 E/G REV. SENSOR
		G-4 E/G COOL.
		G-5 E/G OIL PRS
H	Potential relation	H-1 ACCELERATR POTENTIO
I		I-1 RECEIVE ERROR
		I-2 BAT. RELAY
		MONITOR SYSTEM OK

2.5 HOW TO CORRECT THE CUMULATIVE TIME

(1) The method of cumulative time indication change is described on page 12.

(2) Corrective action

For example, correction method of engine oil supply cumulative time is described in following.

Proce- dure	Operating procedure	Display on multidisplay
A	Turn the starter switch on.	(Normal) O K is displayed, and after 5 seconds display changes to clock.
B	Press the gauge cluster screen change switch once, and the E/G speed (rpm) is displayed.	10 : 05 → Press once → 2220RPM
C	Press once more, and the engine oil supply cumulative time screen is displayed.	E/G speed is displayed 2220RPM → Press once → 100Hr AFT E/G OIL CH
D	Press the screen change switch and release in the range of 5 to 10 seconds, it returns to the correction mode.	100Hr AFT E/G OIL CH → 100Hr AFT FUEL FIL CH → 100Hr AFT E/G OIL CH
E	Press the work mode selector switch and the cumulative time increases. (once 1 Hr)	100Hr AFT E/G OIL CH → Cumulative time increases → 101Hr AFT E/G OIL CH
F	Press the Buzzer stop switch, the cumulative time decreases. (once 1 Hr)	100Hr AFT E/G OIL CH → Cumulative time decreases → 99Hr AFT E/G OIL CH
G	Press the gauge cluster screen change switch once, the correcting time is stored, and exits from the correction mode and "Fuel filter supply cumulative time" is displayed to complete the correction.	99Hr AFT E/G OIL CH → Complete the correction → 100Hr AFT FUEL FIL CH

Notes :

1. Press screen change switch on the procedure D or later once, and the status is stored and the correction is finished.
2. When altering the accumulated elapsed time of fuel filter, hydraulic oil filter and hydraulic oil respectively, press the screen change switch and display the accumulated time screen corresponding to items required to be altered, then repeat the procedures D to G.
3. The engine oil change time is displayed by 500 hours for warning on the display, but no buzzer sounds.
4. For fuel filter, hydraulic oil filter and hydraulic oil, press the screen change switch, and the "Hours elapsed after change" is displayed on the display, but no warning displays and no buzzer sounds.
5. The display time is 4 digits for hydraulic oil, and 3 digits for others.

※ The display time can be returned to zero by simultaneously pressing "MODE" selector switch and "Buzzer stop" buzzer stop switch.

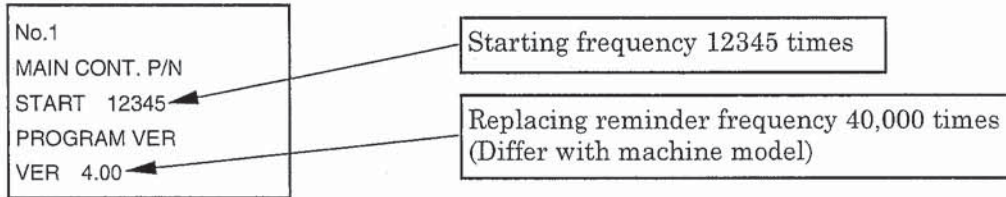
2.6 ENGINE STARTING FREQUENCY DISPLAY FUNCTION

Since it is supposed that the engine starting frequency increases because of adoption of auto idling stop function, the engine starting frequency can be indicated on multidisplay as a guide for maintenance of starter motor.

(1) How to display engine-starting frequency

- 1) Switch auto idling stop selector switch on.
- 2) While keeping buzzer stop switch pressed, switch starter switch on.
(Display service diagnosis.)
- 3) Press screen change switch in the condition the initial main controller parts number is displayed and the following screen is displayed.

(Ex.)



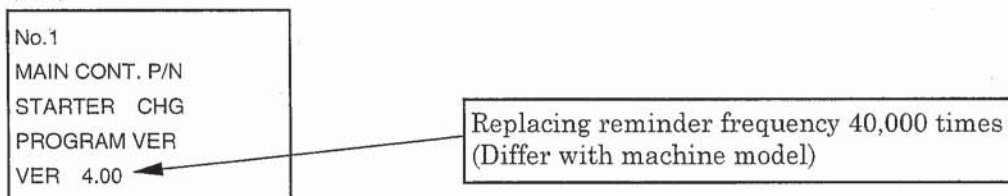
(2) How to correct the value of engine starting frequency

Set starting frequency to zero when starter was replaced, and reset starter frequency to the value set before replacing controller.

In the engine condition shown in Item (1)-3).

- 4) Press screen change switch for 5 seconds or more and release it, and "Reset" mode is displayed.
- 5) Press work mode selector switch, and starting frequency increases. (By 100 times. By 1000 times while keeping it pressed)
- 6) Press buzzer stop switch, and starting frequency decreases. (By 100 times. By 1000 times while keeping it pressed)
- 7) Press screen change switch after setting starting frequency to the desired value, and the desired value is memorized (stored).
- (3) Warning contents when starting frequency was reached to the replacing reminder frequency.
Each time starter switch is switched on; the following screen is displayed and flickers on cluster gauge for 10 seconds.
In this case, overhaul or replace the starter.

(Ex.)



2.7 CONTRAST OF DISPLAY ADJUSTING PROCEDURE

If buzzer stop switch and mode switch are pressed at the same time for 5 to 10 seconds, the contrast adjusting mode is appeared and the contrast of display becomes adjustable, but except the following conditions.

- Under (Adjustment) and (Service diagnosis)
- Under (Language change mode)

(1) Contrast enhancement

Press the mode switch : LCD indication is enhanced.
Press the buzzer stop switch : LCD indication becomes dim.

(2) Contrast complete

Press the screen change switch, consequently the mode is set for required contrast level.

22 : 00
CONTRAST 50

2.8 LANGUAGE OF DISPLAY CHANGING PROCEDURE

When the starter switch is turned ON, during the screen change switch is pressed, the language display becomes changeable.

- (1) Language selection Whenever buzzer stop switch or mode switch is pressed, the set of language is changed, and the capital alphabet according to the language is indicated on LCD display.

LCD display rotation

Mode switch

→ J-E-EA-T-I-F-S-EU-G-C ←

Buzzer stop switch

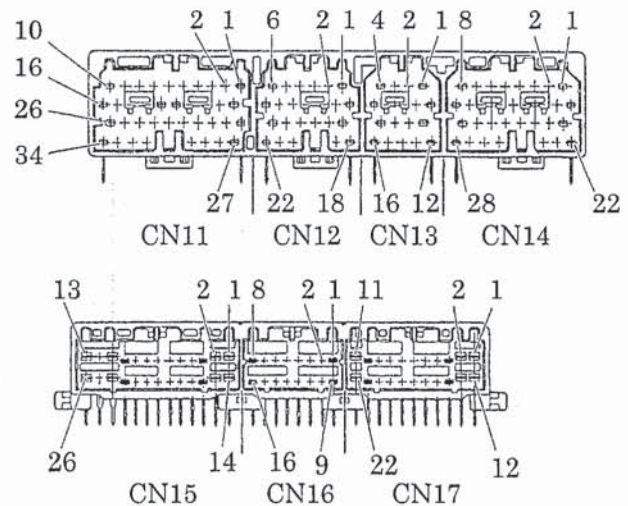
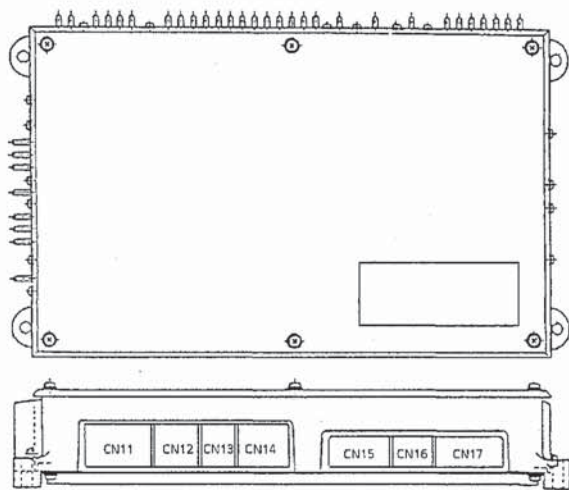
- (2) Language complete On condition that the required language is indicated on the display, press the screen change switch, consequently the language is fixed and display returns to normal indication (All LCD are lit.)
(The required language is stored.)

Japanese	J	French	F
English	E	Spanish	S
English(North American)	EA	EU	EU
Thai	T	German	G
Indonesian	I	Chinese	C

2.9 MECHATRO CONTROL EQUIPMENT

(1) C-1 Mechatro controller

1) Outside view



2) List of connectors

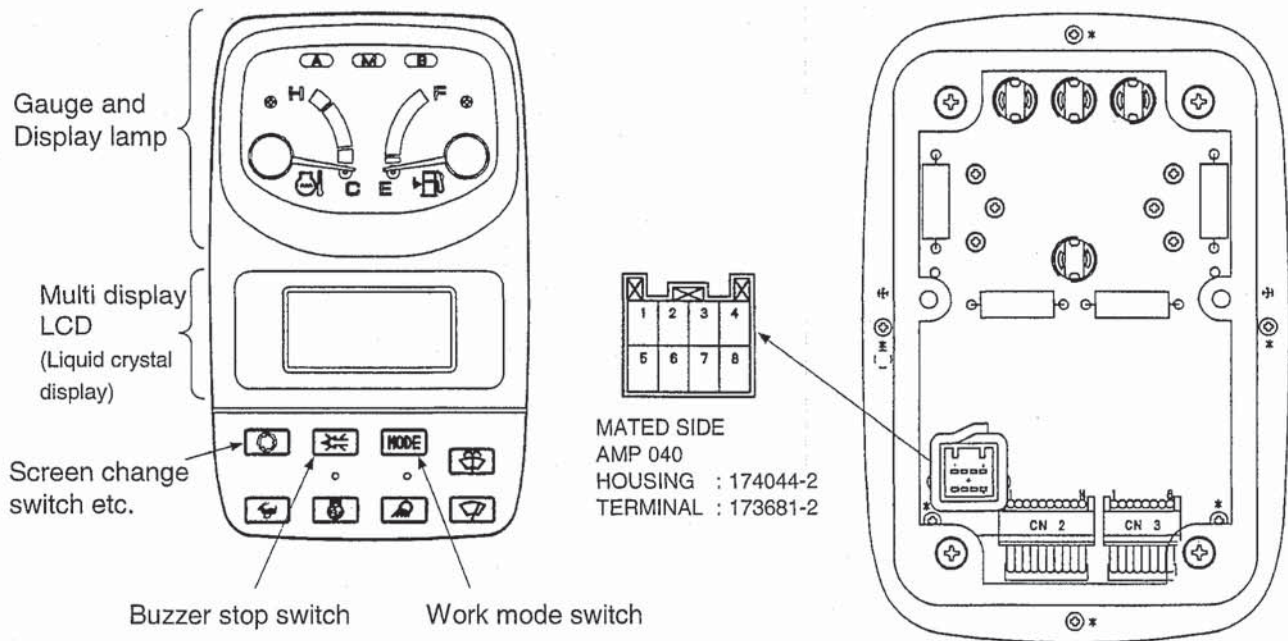
Connector No.	Pin No.	Port name	Specification	IN/OUT PUT	Signal level
CN11	1	0VA	Boom raise pressure sensor	IN	Ground 0V
	2	A1		IN	0.5~4.5V
	3	5VA		IN	Power source 5V
	4	5VA	Boom lower pressure sensor	IN	Power source 5V
	5	A2		IN	0.5~4.5V
	6	0VA		IN	Ground 0V
	7	0VA	Arm in pressure sensor	IN	Ground 0V
	8	A3		IN	0.5~4.5V
	9	5VA		IN	Power source 5V
	10	5VA	Arm out pressure sensor	IN	Power source 5V
	11	A4		IN	0.5~4.5V
	12	0VA		IN	Ground 0V
	13	0VA	Bucket digging pressure sensor	IN	Ground 0V
	14	A5		IN	0.5~4.5V
	15	5VA		IN	Power source 5V
	16	5VA	Bucket dump pressure sensor	IN	Power source 5V
	17	A6		IN	0.5~4.5V
	18	0VA		IN	Ground 0V
	19	0VA	Swing pressure sensor	IN	Ground 0V
	20	A7		IN	0.5~4.5V
	21	5VA		IN	Power source 5V
	22	E2		IN	Constant current circuit
	23	A8		IN	0~32V
	24	B37		IN	+24V/OPEN
	25	0VA	Travel right pressure sensor	IN	Ground 0V
	26	A9		IN	0.5~4.5V
	27	5VA		IN	Power source 5V
	28	5VA	Travel left pressure sensor	IN	Power source 5V
	29	A10		IN	0.5~4.5V
	30	0VA		IN	Ground 0V
	31	0VA	Accel potentio	IN	Ground 0V
	32	A18		IN	0.5~4.5V
	33	A19		IN	0.5~4.5V
	34	5VA		IN	Power source 5V

Connector No.	Pin No.	Port name	Specification	IN/OUT PUT	Signal level
CN12	1	0VA	Accel potentio meter	IN	Ground 0V
	2	A11		IN	0.5~4.5V
	3	5VA		IN	Power source 5V
	4	5VA	P1 pump pressure sensor	IN	Power source 5V
	5	A12		IN	0.5~4.5V
	6	0VA		IN	Ground 0V
	7	0VA	P2 pump pressure sensor	IN	Ground 0V
	8	A13		IN	0.5~4.5V
	9	5VA		IN	Power source 5V
	10	5VA	(P1 OPT. pressure sensor)	IN	Power source 5V
	11	A14		IN	0.5~4.5V
	12	0VA		IN	Ground 0V
	13	0VA	(P2 OPT. pressure sensor)	IN	Ground 0V
	14	A15		IN	0.5~4.5V
	15	5VA		IN	Power source 5V
	16	5VA	(Boom rod potentio)	IN	Power source 5V
	17	A21	(RH, LH incline potentio)	IN	0.5~4.5V
	18	A22	(Back & Forth potentio)	IN	0.5~4.5V
	19	0VA	(Boom rod potentio)	IN	Ground 0V
	20	E1	Engine revolution sensor	IN	3.0~20Vp-p
	21	0VD		OUT	GND
	22	SHG			Shield
CN13	1	B1	Accel motor straight limit sw.	IN	GND / OPEN
	2	B2	Key SW. (ON)	IN	+24V / OPEN
	3	B3	Key SW. (GLOW)	IN	+24V / OPEN
	4	B4	Travel 1,2 speed	IN	GND / OPEN
	5	B5	Swing P/B release	IN	GND / OPEN
	6	B6	Alternator	IN	~12V/12V~
	7	B7	(High reach crane)	IN	GND / OPEN
	8	B8	E/G coolant limit SW.	IN	GND / OPEN
	9	B9	E/G oil limit SW.	IN	GND / OPEN
	10	B10	Air filter limit SW.	IN	GND / OPEN
	11	B11	(Stroke end detect SW.)	IN	GND / OPEN
	12	B12	E/G oil level	IN	GND / OPEN
	13	B13	E/G coolant level	IN	GND / OPEN
	14	B14	Hyd. oil level	IN	GND / OPEN
	15	B15	Fuel level	IN	670/1140(Ω)
	16	B16	Wiper rise-up limit	IN	GND / OPEN

Connector No.	Pin No.	Port name	Specification	IN/OUT PUT	Signal level	Connector No.	Pin No.	Port name	Specification	IN/OUT PUT	Signal level
CN14	1	B17	Wiper reverse limit	IN	GND / OPEN	CN16	1	TXD1	Cluster TXD	OUT	TTL level communication
	2	B18	ATT boost	IN	GND / OPEN		2	RXD1	Cluster RXD	IN	TTL level communication
	3	B20	(Hyd. oil temp. limit)	IN	GND / OPEN		3	0VD	Cluster		GND
	4	B21	(Travel alarm SW.)	IN	GND / OPEN		4	SHG			Shield
	5	B22	(Swing flahser SW.)	IN	GND / OPEN		5	PHS	PHS power +8		3.6~8V 300mA
	6	B23	Lever lock SW.	IN	+24V / OPEN		6	PHS	PHS power 0		0(V) Oil level sensor GND
	7	B24	(Rotation N&B SW.)	IN	GND / OPEN		7	TXD2	PHS		RS-232C communication
	8	B25	(P/W SW.)	IN	670 Ω / 1140 Ω		8	RXD2			RS-232C communication
	9	B26		IN	GND / OPEN		9	0VD			GND
	10	B27	(Warming up SW.)	IN	GND / OPEN		10	PHS	PHS control 1(CI)	IN	RS-232C communication (Calling detect)
	11	B28	(Conflux / single flow)	IN	GND / OPEN		11	PHS	PHS control 2(CS)	IN	RS-232C communication (Transmittable)
	12	B29		IN	+24V / OPEN		12	PHS	PHS control 3(RS)	OUT	RS-232C communication (Transmit required)
	13	B33		IN	+24V / OPEN		13	PHS	PHS control 4(ER)	OUT	RS-232C communication (Data terminal ready)
	14	B34	Auto idle stop select SW.	IN	GND / OPEN		14	SHG	PHS		Shield
	15	B35		IN	GND / OPEN		15	H2			0~4.5V
	16	C1	Wiper spark relay	OUT	GND / OPEN 70mA		16	0VA			GND
	17	C2	Wiper forward relay	OUT	GND / OPEN 70mA	CN17	1	0VA			Ground 0V
	18	C3	Wiper reverse relay	OUT	GND / OPEN 70mA		2	A16			0.5~4.5V
	19	C4	Washer motor relay	OUT	GND / OPEN 70mA		3	5VA			Power source 5V
	20	C5	Front work light relay	OUT	GND / OPEN 70mA		4	5VA			Power source 5V
	21	C6	Rear work light relay	OUT	GND / OPEN 70mA		5	A17			0.5~4.5V
	22	C11	(Bucket limiter)	OUT	GND / OPEN 70mA		6	A20			0.5~4.5V
	23	C13	(Swing flahser relay)	OUT	GND / OPEN 70mA		7	A23			0.5~4.5V
	24	C14		OUT	GND / OPEN 70mA		8	0VA			Ground 0V
	25	C15	(Travel alarm relay)	OUT	GND / OPEN 70mA		9	B19	(Nibbler open select)		GND / OPEN
	26	C16	Wiper SW.	OUT	GND / OPEN 70mA		10	B30			GND / OPEN
	27	H1			0~4.5V		11	B31	(One-touch nibbler SW.)		GND / OPEN
	28	0VA		IN	Signal GND		12	B32			GND / OPEN
CN15	1	F1	Governor motor A phase	OUT	24V 1.5A		13	B36			GND / OPEN
	2	F1X		OUT	24V 1.5A		14	C12	(Orbcomm power)		GND / OPEN 70mA
	3	SHG	Shield ground		Shield		15	D7		OUT	+0~800mA
	4	D1	P1 bypass cut	OUT	0~800mA		16	D7X		OUT	-0~800mA
	5	D1X	proportional valve D	OUT	0~800mA		17	D8		OUT	+0~800mA
	6	D2	P2 bypass cut	OUT	0~800mA		18	D8X		OUT	-0~800mA
	7	D2X	proportional valve B	OUT	0~800mA		19	DL	Down load change SW.	OUT	GND / OPEN
	8	D3	Travel straight proportional valve C	OUT	0~800mA		20	TXD4			RS-232C communication
	9	D3X		OUT	0~800mA		21	RXD4			RS-232C communication
	10	D4	Arm variable recirculation	OUT	0~800mA		22	0VD		OUT	GND
	11	D4X	proportional valve A	OUT	0~800mA	CN17					
	12	24VP	Power supply + 24V		20~32V						
	13	24VP			20~32V						
	14	VBATT	Battery back up		20~32V						
	15	F2	Governor motor B phase	OUT	24V 1.5A						
	16	F2X		OUT	24V 1.5A						
	17	D5	P1 pump proportional valve (P1)	OUT	0~800mA						
	18	D5X		OUT	0~800mA						
	19	D6	P2 pump proportional valve (P2)	OUT	0~800mA						
	20	D6X		OUT	0~800mA						
	21	C7	Travel 1,2-speed selector valve 2 speed/1 speed	OUT	+24V / OPEN						
	22	C8	Swing parking selector valve @Release	OUT	+24V / OPEN						
	23	C9	ATT boost pressure solenoid valve	OUT	+24V / OPEN						
	24	C10	Auto idle stop relay	OUT	+24V / OPEN						
	25	0VP	Power supply (GND)		Power input 0V						
	26	0VP			Power input 0V						

(2) Gauge cluster (symbol C-2)

1) General view



2) Connector CN-600

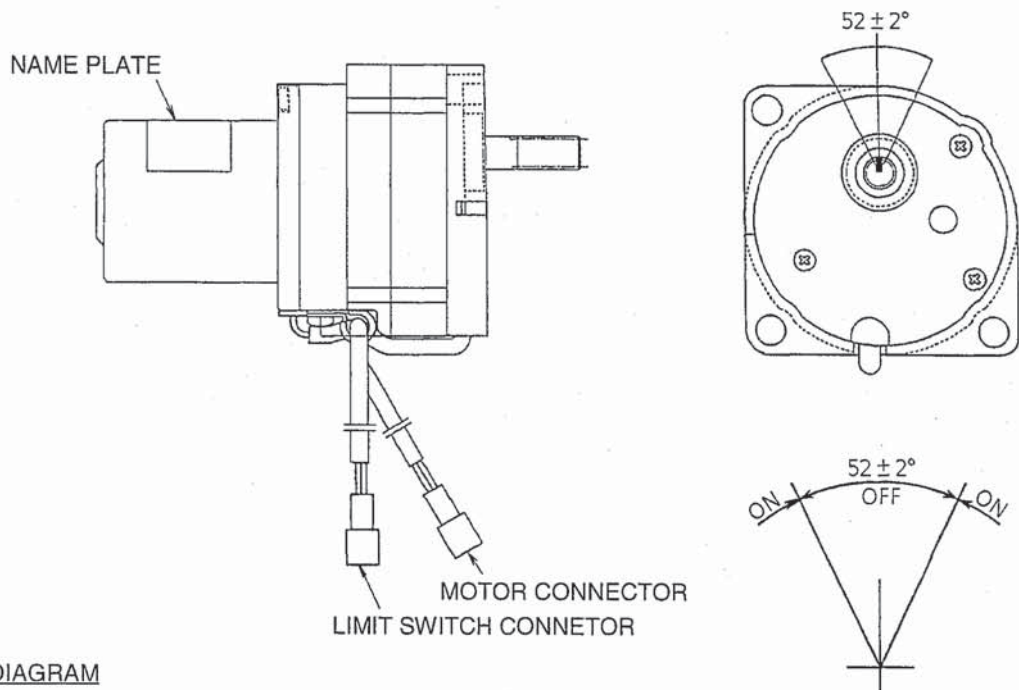
No.	Item name	No.	Item name
1	Fuel sensor	5	GND
2	Engine water temp. sensor	6	Source (+24V)
3	RXD 1 (Serial communication)	7	GND
4	TXD 1 (Serial communication)	8	(None)

3) Function

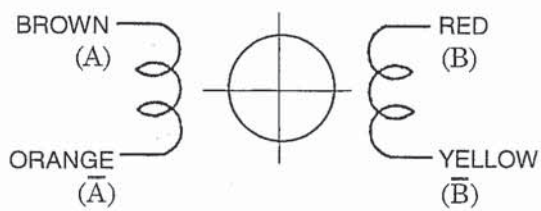
- ① It processes signals by communication between the gauge cluster and the mechatro controller, displays them in lamps, displays them in LCDs and actuates the buzzer.
- ② It puts out coolant temperature signals, fuel level signals and panel switch signals to the mechatro controller through the communication port.
- ③ Summary of display and drive item

No.	Item	Remarks
1	Monitar display	LCD dot 128×55
2	Gauge display (Coolant temp., Fuel level)	Tolerance coil type
3	Mode display (A · M · B)	Lamp (1.4W)
4	Buzzer	Piezo-electricity type
5	Screen change switch	
6	Buzzer stop switch	
7	Work mode select switch	
8	Back light	For gauge Lamp (2W)
		For SW, LCD LED

(3) Governor motor(Symbol M-2)

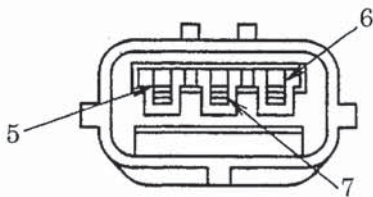


CONNECTION DIAGRAM



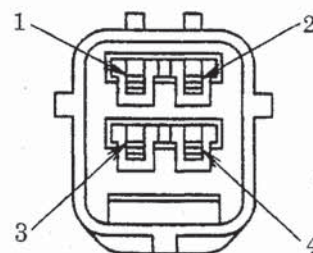
LIMIT SWITCH MOTION RANGE

LIMIT SWITCH CONNECTOR WIRE TABLE



No.	Wire color	Connection
5	White	COM
6	Red	NO
7	Yellow	NC

MOTOR CONNECTOR WIRE TABLE



No.	Wire color	Connection
1	Brown	A
2	Orange	$\bar{A}$
3	Red	B
4	Yellow	$\bar{B}$