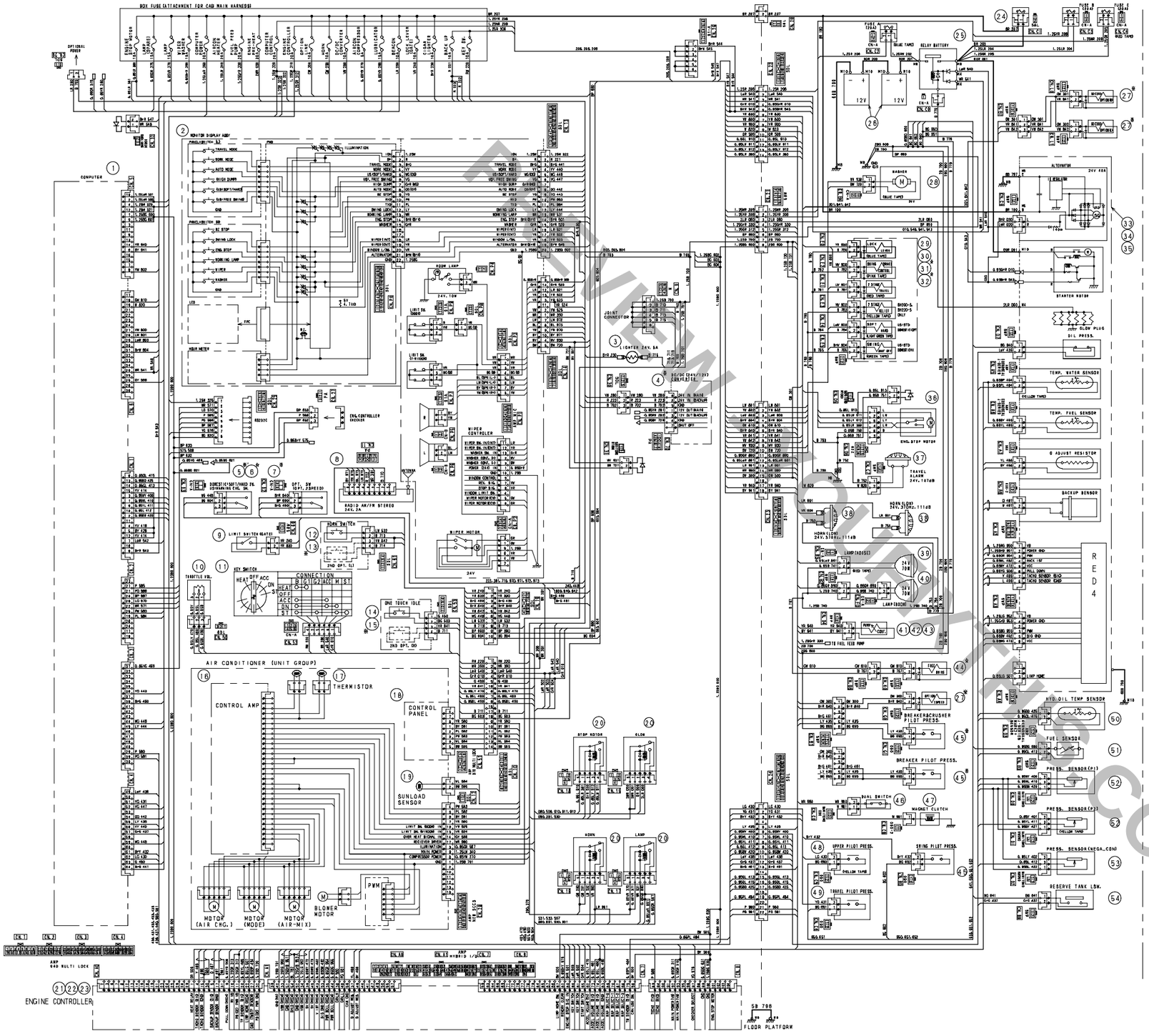
ELECTRIC CIRCUIT DIAGRAM



NO	NAME	NOTE	QTY
	CONT:SPL コントローラ 組み込		1
	MONITOR モニター ディスプレイ ASSY(標定)		1
	LIGHTER:CIGAR ライタシガー		1
※	CONVERTER:DC-DC コンバータ:DC-DC		1
※	SWITCH:SPL スイッチ ロック(ソフト/ハード切換)		1
☆	SWITCH:SPL スイッチ ロック(警報装置)		1
※	SWITCH:SPL スイッチ ロック(ブレーカ&補助機)		1
	RADIO SET ラジオセット AM/FM ステレオ		1
	SWITCH:LIMIT スイッチ:リミット		1
	SWITCH:SPL スイッチ スロットル		1
	SWITCH:STARTER スイッチ:スタータ ASSY		1
	KNOB ノブ (A)		1
※	KNOB ノブ (クスイッチ付き)		1
	KNOB ノブ (B)		1
※	KNOB ノブ (クスイッチ付き)		1
	ユニット エアコン		1
	SENSOR:SPL センサ 各種		1
	PANEL:CONTROL パネル:コントロール		1
	SENSOR:SPL センサ 各種		1
	RELAY:SPL リレー (エンジンオーバー)		4
	CONT:SPL ENGINE コントローラ:エンジン	SH120-3	1
	CONT:SPL ENGINE コントローラ:エンジン	SH200-3	1
	CONT:SPL ENGINE コントローラ:エンジン	SH220-3	1
	FUSE ヒューズ (セーフティリンク)		1
	RELAY:BATTERY リレー:バッテリ		1
	BATTERY バッテリ 組み込		2
※	VALVE:SOLENOID バルブ:ソレノイド	※ 3	3
	TANK:WASHER タンク:ウォッシャ		1
	VALVE:SOLENOID バルブ:ソレノイド (3ポ)	SH120-3	1
	VALVE:SOLENOID バルブ:ソレノイド (2ポ)	SH220-3	1
★	VALVE:SOLENOID バルブ:ソレノイド (2ポ)	7650D	1
☆	VALVE:SOLENOID バルブ:ソレノイド (2ポ)	7800D	1
	ENGINE:DIESEL エンジン:ディーゼル (水冷)	SH120-3	1
	ENGINE:DIESEL エンジン:ディーゼル (水冷)	SH200-3	1
	ENGINE:DIESEL エンジン:ディーゼル (水冷)	SH220-3	1
	MOTOR:STOP モータ:ストップ		1
	ALARM:SPL アラーム:各種		1
	HORN ホーン 電気 (LOW)		2
	LAMP:WORKING ライト:ワーキング 24V X 70W		1
	LAMP:WORKING ライト:ワーキング		1
	PUMP:HYD. ポンプ:油圧	SH120-3	1
	PUMP:HYD. ポンプ:油圧	SH200-3	1
※	PUMP:HYD. ポンプ:油圧	SH220-3	1
※	VALVE:SOLENOID バルブ:ソレノイド		1
	SWITCH:PRESS. スイッチ:プレッシャ	STD 1 ※ 1	2
	RECTIFIER:DRIER レクチファイドライア		1
	COMPRESSOR コンプレッサ エアコン		1
	SWITCH:PRESS. スイッチ:プレッシャ		1
	SWITCH:PRESS. スイッチ:プレッシャ		1
	SENSOR:THERMO センサ:サーモ		1
	SENSOR:FUEL センサ:フューエル		1
	SENSOR:PRESS. センサ:プレッシャ (SOMPA)		2
	SENSOR:PRESS. センサ:プレッシャ (SMPA)		1
	SWITCH:LEVEL スイッチ:レベル		1

色記号表
TABLE OF COLOR SYMBOLS

記号 SYMBOL	色 COLOR	記号 SYMBOL	色 COLOR
B	黒 BLACK	R	赤 RED
W	白 WHITE	Y	黄 YELLOW
Br	茶 BROWN	Lg	淡緑 LIGHT GREEN
P	桃 PINK	Sb	空色 SKY BLUE
V	紫 VIOLET	L	青 BLUE
G	緑 GREEN	Gr	灰 GRAY
O	橙 ORANGE		

☆印は 色々の電線下地に 色のストライプを表す。
例) BR:茶の下地に 白のストライプ。
☆印は 電線下地に 色のストライプを表す。
例) BR:茶の下地に 白のストライプ。
※印 NEARS CABLE COLOR & STRIPES BY MFR.
☆印 THE WIRING COLOR WITH THE WHITE STRIPES BY MFR.

注釈/NOTES
1) 本回路図は、SH120-3、SH200-3、SH220-3に共包する。
THIS CIRCIT IS WRITTEN FOR SH120-3,SH200-3,SH220-3.
2) 印は、オプション部品を示す
※ IS OPTIONAL PART.
2) ※ は、オプション部品 (国内一般輸出のみ) を示す。
※ IS OPTIONAL PART ONLY FOR DOMESTIC.
3) ★は、北米向 (LBCE) のみで使用される部品である。
PART WITH ★ MARK IS USED AT THE MACHINE FOR NORTH AMERICA (LBCE).
4) 国内におけるアース記号及び配線交差部は下記の通りである。
EARTH LINE SYMBOLS AND CROSS POINT OF LINES IN THIS DRAWING SHOWS THE FOLLOWING.
本線 GROUND LINE / ボディーアース BODY EARTH / 接続する CONNECTED / 接続しない NOT CONNECTED
5) 配線図上の記号は電線色を示しまた記号前に付記した数値は回路番号 及び電線の断面積を示す。 最小0.85は0.5sqである。
THE SYMBOL AT EACH LINE SHOWS COLOR OF CABLE AND THE FIGURE BEFORE THE SYMBOL SHOWS THE CIRCUIT No. AND THE AREA OF CABLE. THE AREA OF CABLE NOT INDICATED IS 0.5 mm².
例 EX. 断面積 AREA 色 COLOR 回路番号 CIRCUIT NO.
80 B 001
6) コネクタ表示は下記の通りである。
THE SYMBOL OF CONNECTOR IN THIS DRAWING SHOWS THE FOLLOWING.
ソケット SOCKET TERMINAL
ピン PIN TERMINAL
コネクタ CONNECTOR
コネクタNo. CONNECTOR NO.

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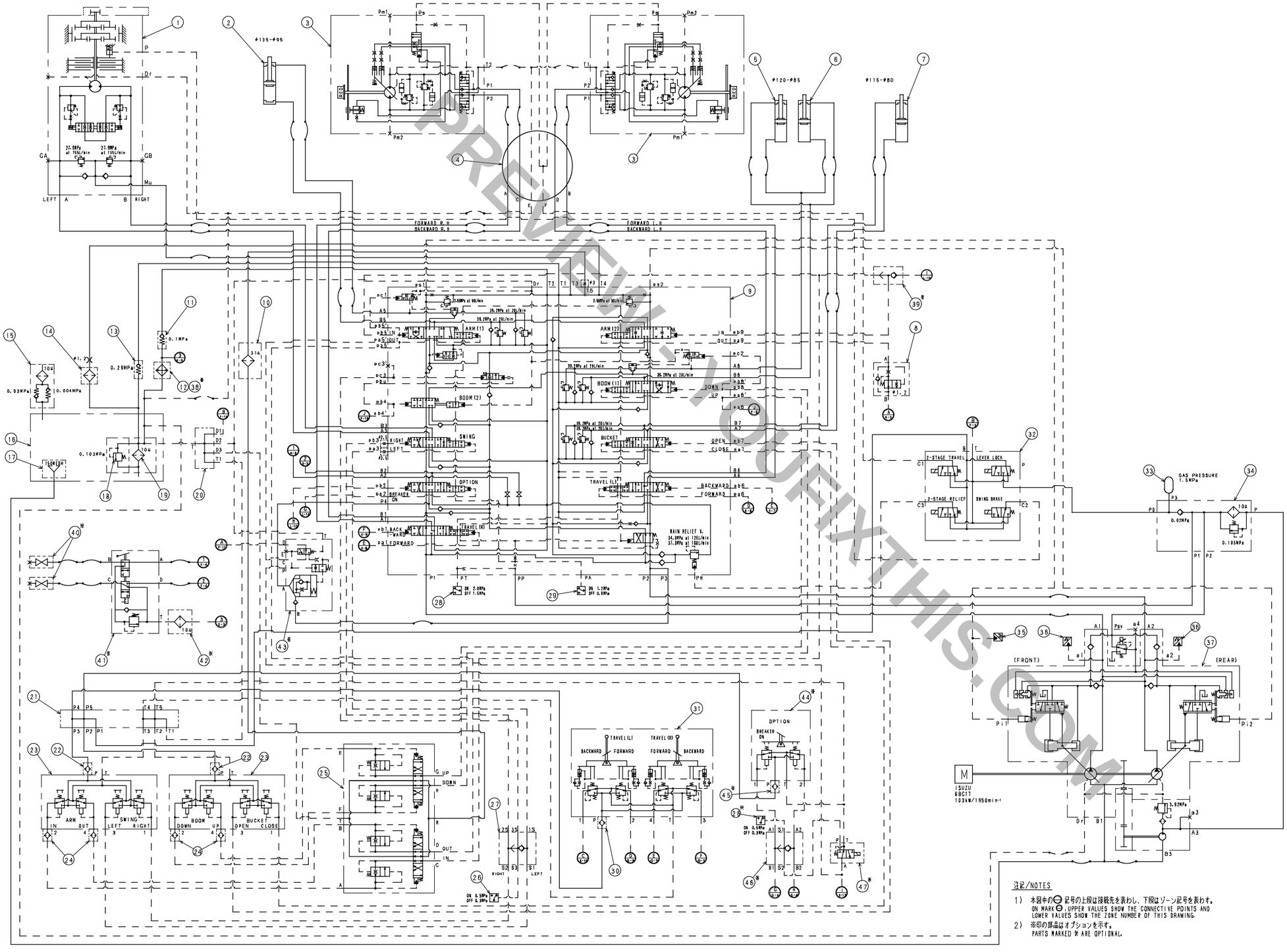
Hydraulic Circuit Diagram (SH200－3)



NO	PARTS NAME	NOTE	Q'TY
1	RED. GEAR:SWING ASSY 高速機:減速 組立		1
2	CYL.:ARM シリンダ:アーム(EMS)		1
3	MOTOR:TRACTION UNIT モータ:走行 ユニット		2
4	JOINT:CTR ジョイント:センタ 組立		1
5	CYL.:BOOM(L) シリンダ:ブーム(EMS,左)		1
6	CYL.:BOOM(R) シリンダ:ブーム(EMS,右)		1
7	CYL.:BUCKET シリンダ:バケット(EMS)		1
8	VALVE:CUSHION バルブ:クッション		1
9	VALVE:CONTROL バルブ:コントロール		1
10	FILTER:LINE フィルタ:ライン		1
11	VALVE:CHECK バルブ:チェック		1
12	RADIATOR ラジエータ(機器)		1
13	VALVE:CHECK バルブ:チェック		1
14	FILTER:SPL フィルタ:2フロン		1
15	BREATHER:AIR ブリーザ:エア		1
16	TANK:SUMP DELIVERY SPEC. タンク:サンプ 組合せ部分		1
17	STRAINER ストレーナ:サクション		1
18	VALVE:RELIEF バルブ:リリーフ		1
19	FILTER:RETURN フィルタ:リターン		1
20	MANIFOLD マニホールド		1
21	MANIFOLD マニホールド		1
22	ADAPTER:HOSE アダプタ:ホース (フィルタ付)		2
23	VALVE:REMOTE CONT バルブ:リモコン		2
24	ADAPTER:HOSE アダプタ:ホース (フィルタ付)		4
25	VALVE:SPL バルブ:クッション(ヒート回復付)		1
26	SWITCH:PRESS. スイッチ:プレッシャ	STD 1 ※ 1	2
27	VALVE:SHUTTLE バルブ:シャットル		1
28	SWITCH:PRESS. スイッチ:プレッシャ		1
29	SWITCH:PRESS. スイッチ:プレッシャ		1
30	NIPPLE ニップル (フィルタ付)		1
31	VALVE:REMOTE CONT バルブ:リモコン		1
32	VALVE:SOLENOID バルブ:ソレノイド(4重)		1
33	ACCUMLATOR アキュムレータ		1
34	MANIFOLD マニホールド(フィルタ付)		1
35	SENSOR:PRESS. センサ:プレッシャ		1
36	SENSOR:PRESS. センサ:プレッシャ		2
37	PUMP:HYD ポンプ:油圧		1
※ 38	RADIATOR ラジエータ(スイングアウト)		1
※ 39	VALVE:SHUTTLE バルブ:シャットル		1
※ 40	VALVE:STOP バルブ:ストップ		2
※ 41	VALVE:DIRECTION バルブ:ディレクション		1
※ 42	FILTER:LINE フィルタ:ライン		1
※ 43	VALVE:HOLDING バルブ:ホールディング		1
※ 44	VALVE:REMOTE CONT バルブ:リモコン		1
※ 45	ADAPTER:HOSE アダプタ:ホース (フィルタ付)		1
※ 46	VALVE:SHUTTLE バルブ:シャットル		1
※ 47	VALVE:SOLENOID バルブ:ソレノイド		1

注記/NOTES

1) 本図中の⊖記号の上段は接続先を表わし、下段はゾーン記号を表わす。
ON MARK ⊖, UPPER VALUES SHOW THE CONNECTIVE POINTS AND LOWER VALUES SHOW THE ZONE NUMBER OF THIS DRAWING.

2) ※印の部品はオプションを示す。
PARTS MARKED ※ ARE OPTIONAL.

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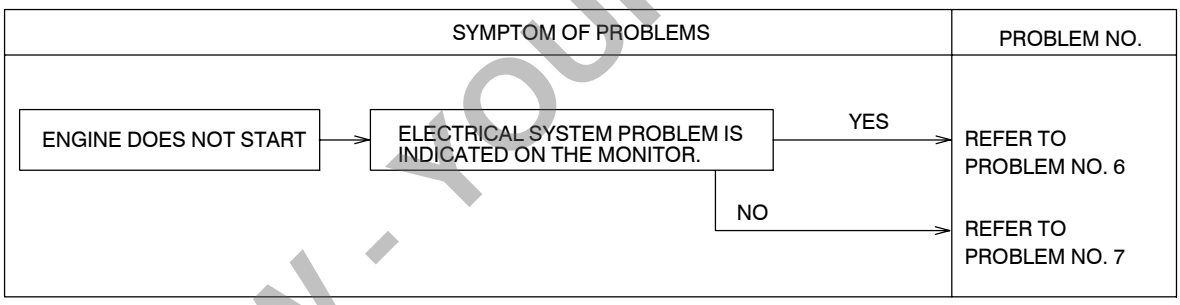
(1) The followings explain how to troubleshoot when message does not go away even though an appropriate procedure was performed according to the check point on the message.

Message Display	Symptom of problem	Problem No.
FUEL REFILL	Message remains even after refilling fuel.	1
REFILL COOLANT	Message remains even after refilling coolant.	2
LOW OIL PRESSURE	Message remains even after refilling the engine oil correctly.	3
OVER HEAT	Message remains even the hydraulic oil temperature is 84°C or less, and engine coolant temperature is 92°C or less.	4
BATTERY CHARGE	Message does not go away.	5
ELECTRICAL SYSTEM PROBLEM	Message does not go away.	6

(2) The followings explain how to troubleshoot when the machine does not function normally without message being displayed on the screen.

1. Engine control related



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Machine Body Specification

	SH200–3	SH220–3
1. Main characteristics:		
Model name	SH200−3 Hydraulic Excavator	SH220−3 Hydraulic Excavator
Operating weight	19,100 kg	22,700 kg
Engine output	103 kw / 1,950 min $^{-1}$	121 kw / 2,150 min $^{-1}$
Bucket capacity	Heaped 0.80 m ^{3}	Heaped 1.00 m ^{3}
	Leveled 0.57 m ^{3}	Leveled 0.73 m ^{3}
2. Performances		
Standard loading	10.3 kN	13.1 kN
Swing speed	11.9 min $^{-1}$	10.4 min $^{-1}$
Travel speed	I Speed 3.3 km/h	I Speed 3.4 km/h
	II Speed 5.5 km/h	II Speed 5.5 km/h
Maximum traction force	183 kN	191 kN
Grade ability	70 % (35 °)	70 % (35 °)
Ground pressure	43 kPa (600 mm Grouser shoe)	50 kPa (600 mm Grouser shoe)
	38 kPa (700 mm Grouser shoe)	43 kPa (700 mm Grouser shoe)
3. Complete machine dimensions	Standard arm (3.0 m arm)	Standard arm (3.1 m arm)
Length	9,390 mm	9,880 mm
Width	2,800 mm	2,990 mm
Height	2,910 mm	3,080 mm
4. Machine body dimensions		
Machine body length	4,810 mm	5,030 mm
Machine body width	2,800 mm	2,990 mm
Upper swing body width cab width	2,750 mm	2,750 mm
Machine body height	1,000 mm	1,000 mm
Rear end swing	2,880 mm	2,950 mm
Tail end radius	2750 mm	2,910 mm
Rear end distance of swing body	2,720 mm	2,900 mm
Lower face height of swing body end	1,040 mm	1,100 mm
Center distance between tumblers of tumbler	3,370 mm	3,460 mm
Overall crawler length	4,170 mm	4,260 mm
Maximum crawler width	2,800 mm	2,990 mm
Center distance of crawler	2,200 mm	2,390 mm
Width of track shoe	600 mm (Optional: 700 mm)	600 mm (Optional: 700 mm)
Minimum ground height	460 mm (to the bottom face of lower frame)	460 mm (to the bottom face of lower frame)

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1. Pressure Measurement

A. Basic Condition

Model / Condition	SH200−3	SH220−3
Operation mode	S Mode	
Oil temperature	45～55℃	
No load engine revolutions	1800±10	2000±10

B. Set Values

The values below are measured values on an actual machine and not standard values.

		Relief valve Unit set pressure	Values measured on actual machine	Measuring methods
Main relief pressure	Standard	34.3 Mpa at 126L/min (350 kgf/cm^2)	34.3±0.3 Mpa (350±3 kgf/cm^2)	Arm relief
	Increased pressure	37.3 Mpa at 108L/min (380 kgf/cm^2)	37.3±0.3 Mpa (380±3 kgf/cm^2)	Arm relief
Boom port relief	Up	39.2 Mpa at 20L/min (400 kgf/cm^2)	39.5±0.5 Mpa (403±5 kgf/cm^2)	Fasten the main relief up to 180 ° + Boom Up/Down relief
	Down	39.2 Mpa at 20L/min (400 kgf/cm^2)	↑	↑ + Boom down relief
Arm In/Out port relief		39.2 Mpa at 20L/min (400 kgf/cm^2)	↑	↑ + Arm relief
Bucket Open/Close port relief		39.2 Mpa at 20L/min (400 kgf/cm^2)	↑	↑ + Bucket relief
Swing relief	SH200−3	27.9 Mpa at 155L/min (285 kgf/cm^2)	29.1±0.4 Mpa (297±4 kgf/cm^2)	Swing relief
	SH220−3	28.9 Mpa at 182L/min (295 kgf/cm^2)	30.1±0.4 Mpa (309±4 kgf/cm^2)	↑
Pilot relief		3.9 Mpa (40 kgf/cm^2)	3.9±0.1 Mpa (40±1 kgf/cm^2)	Lever neutral

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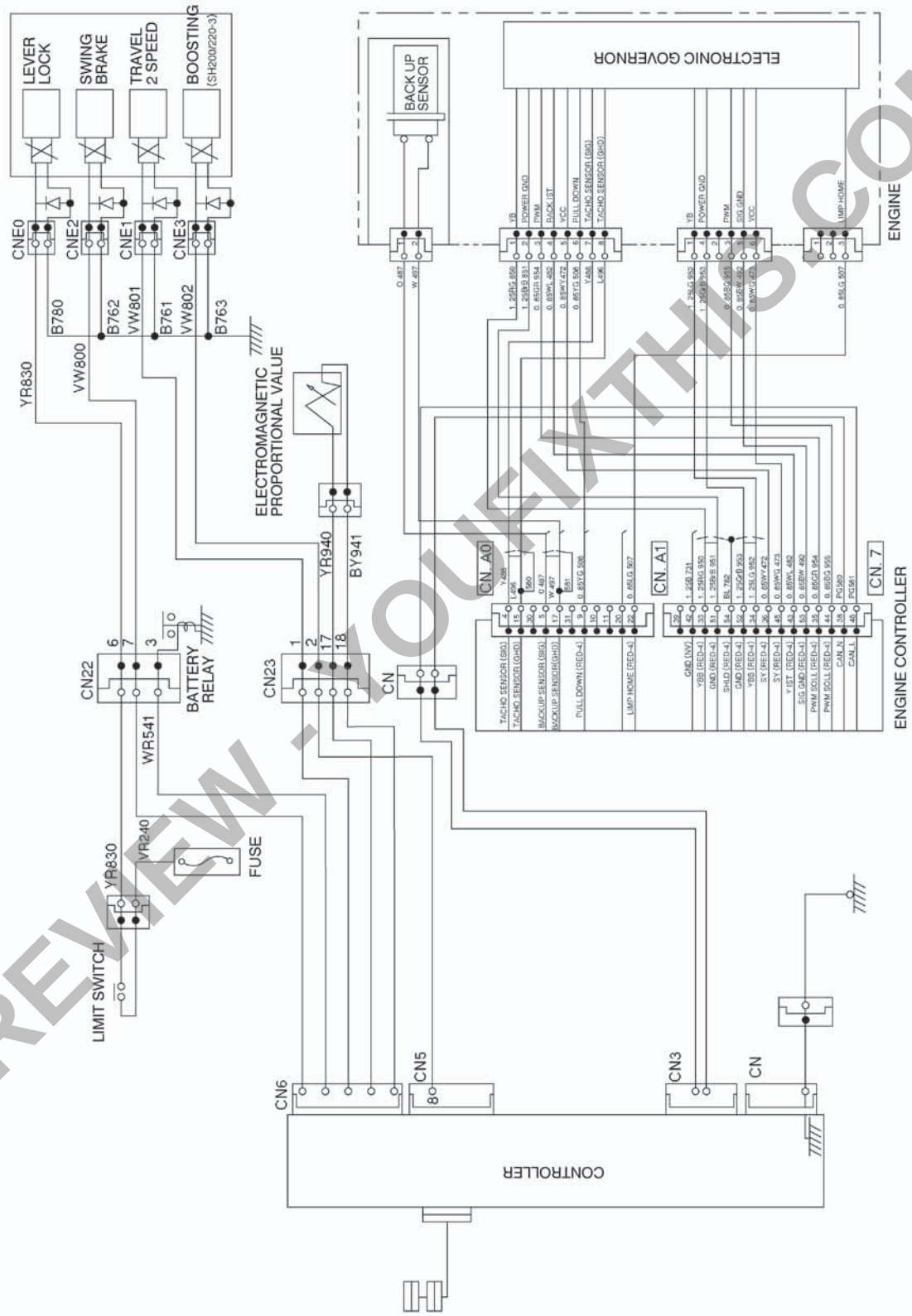
Electrical Problems

Problem symptom (Problem No.6)

· Message does not go away



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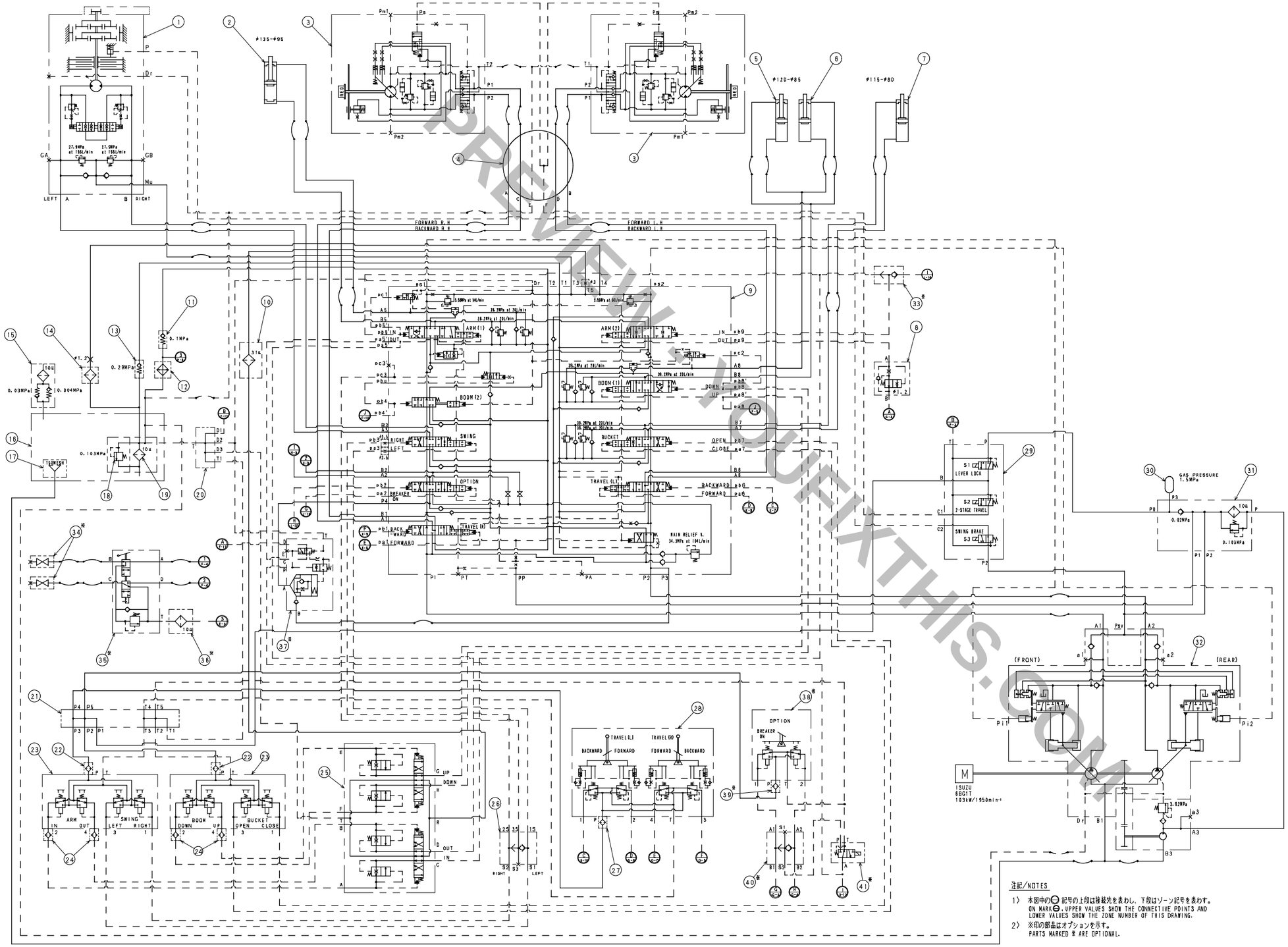
Hydraulic Circuit Diagram (SH200GT− 3)



NO	PARTS NAME	NOTE	QTY
	REG. GEAR:SWING ASSY		
1	ﾚｷﾞｭﾚｰﾀ ｾｯﾄ		1
	CYL.:ARM		
2	ｼﾘﾝﾀﾞ:ｱｰﾑ(EMS)		1
	MOTOR:TRACTION UNIT		
3	ﾓｰﾀ:ｽﾗｲﾄﾞ ﾕﾆｯﾄ		2
	JOINT:CTR		
4	ｼﾞｮｲﾝﾄ:ｾﾝﾀｰ ﾎﾞﾃﾞｨ		1
	CYL.:BOOM(1)		
5	ｼﾘﾝﾀﾞ:ﾌﾞｰﾑ(ｲﾁ)(EMS,ﾀｲ)		1
	CYL.:BOOM(2)		
6	ｼﾘﾝﾀﾞ:ﾌﾞｰﾑ(ﾆ)(EMS,ﾀｲ)		1
	CYL.:BUCKET		
7	ｼﾘﾝﾀﾞ:ﾊﾞｹｯﾄ(EMS)		1
	VALVE:CUSHION		
8	ﾊﾞﾙﾌﾞ:ｸｯｼｮﾝ		1
	VALVE:CONTROL		
9	ﾊﾞﾙﾌﾞ:ｺﾝﾄﾛｰﾙ		1
	FILTER:LINE		
10	ﾌｨﾙﾀ:ﾗｲﾝ		1
	VALVE:CHECK		
11	ﾊﾞﾙﾌﾞ:ﾁｪｯｸ		1
	RADIATOR		
12	ﾗｼﾞｴｰﾀ(ｵｲﾙ)		1
	VALVE:CHECK		
13	ﾊﾞﾙﾌﾞ:ﾁｪｯｸ		1
	FILTER:SPL		
14	ﾌｨﾙﾀ:ｽﾌﾟﾗｲ		1
	BREATHER:AIR		
15	ﾌﾞﾘｰﾀ:ｴｱｰ		1
	TANK:SUPP DELIVERY SPEC.		
16	ﾀﾝｸ:ｻﾌﾟﾗｲ ﾃﾞﾘﾊﾞﾘｰ ｾｲﾖｳ		1
	STRAINER		
17	ｽﾄﾚｰﾅ:ｽｸﾘｰﾝ		1
	VALVE:RELIEF		
18	ﾊﾞﾙﾌﾞ:ﾘﾘｰﾌ		1
	FILTER:RETURN		
19	ﾌｨﾙﾀ:ﾘﾀｰﾝ		1
	MANIFOLD		
20	ﾏﾆﾎｰﾙﾄﾞ		1
	MANIFOLD		
21	ﾏﾆﾎｰﾙﾄﾞ		1
	ADAPTER:HOSE		
22	ｱﾀﾞﾌﾟﾀ:ﾎｰｽ 12(ｶﾀﾒ)		2
	VALVE:REMOTE CONT		
23	ﾊﾞﾙﾌﾞ:ﾘﾓｰﾄ		2
	ADAPTER:HOSE		
24	ｱﾀﾞﾌﾟﾀ:ﾎｰｽ 12(ｶﾀﾒ)		4
	VALVE:SPL		
25	ﾊﾞﾙﾌﾞ:ｽﾌﾟﾗｲ(ﾋｰﾀｰ ﾂｷ)		1
	VALVE:SHUTTLE		
26	ﾊﾞﾙﾌﾞ:ｼｬｰﾄﾙ		1
	NIPPLE		
27	ﾆｯﾌﾟﾙ 12(ｶﾀﾒ)		1
	VALVE:REMOTE CONT		
28	ﾊﾞﾙﾌﾞ:ﾘﾓｰﾄ		1
	VALVE:SOLENOID		
29	ﾊﾞﾙﾌﾞ:ｿﾚﾉｲﾄﾞ(13ﾎﾟｰﾄ)		1
	ACCUMULATOR		
30	ｱｷｭﾑﾚｰﾀ		1
	MANIFOLD		
31	ﾏﾆﾎｰﾙﾄﾞ 17(ｶﾀﾒ)		1
	PUMP:HYD		
32	ﾎﾟﾝﾌﾟ:ﾊｲﾄﾞﾛ		1
※	VALVE:SHUTTLE		
33	ﾊﾞﾙﾌﾞ:ｼｬｰﾄﾙ		1
※	VALVE:STOP		
34	ﾊﾞﾙﾌﾞ:ｽﾄｯﾌﾟ		2
※	VALVE:DIRECTION		
35	ﾊﾞﾙﾌﾞ:ﾌﾛｰｺﾝﾄﾛｰﾙ		1
※	FILTER:LINE		
36	ﾌｨﾙﾀ:ﾗｲﾝ		1
※	VALVE:HOLDING		
37	ﾊﾞﾙﾌﾞ:ﾎｰﾙﾃﾞｨﾝｸﾞ		1
※	VALVE:REMOTE CONT		
38	ﾊﾞﾙﾌﾞ:ﾘﾓｰﾄ		1
※	ADAPTER:HOSE		
39	ｱﾀﾞﾌﾟﾀ:ﾎｰｽ 12(ｶﾀﾒ)		1
※	VALVE:SHUTTLE		
40	ﾊﾞﾙﾌﾞ:ｼｬｰﾄﾙ		1
※	VALVE:SOLENOID		
41	ﾊﾞﾙﾌﾞ:ｿﾚﾉｲﾄﾞ		1

注記/NOTES

1) 本図中の⊖記号の上段は接続先を表わし，下段はゾーン記号を表わす。
ON MARK⊖, UPPER VALUES SHOW THE CONNECTIVE POINTS AND LOWER VALUES SHOW THE ZONE NUMBER OF THIS DRAWING.

2) ※印の部品はオプションを示す。
PARTS MARKED * ARE OPTIONAL.

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Inspections Prior to Troubleshooting

Item	Criterion	Procedure
CHECK ITEMS FOR OPERATION		
LUBRICANTS / COOLANT		
1. Check the fuel level	–	Refill with oil
2. Check the contaminant in the fuel	–	Clean and drain
3. Check the oil level	–	Refill
4. Check the oil strainer	–	Clean and drain
5. Check lubrication on each reduction gear	–	Add oil
6. Check the engine oil level (Oil level in pan)	–	Add oil
7. Check the coolant level	–	Add coolant
8. Check for clogging on the dust indicator	–	Clean or replace
ELECTRICAL DEVICES		
9. Check if the wires on the battery terminals are loosen or corroded.	–	Tightening or replacement
10. Check if the wiring on the alternator terminals are loosen or corroded.	–	Tightening or replacement
11. Check if the wiring on the starter terminals are loosen or corroded.	–	Tightening or replacement
OTHER CHECK ITEMS		
HYDRA / MACHINE		
12. Check for abnormal noise and odor	–	Repair
13. Check for oil leaking	–	Repair
14. Perform air bleeding	–	Air bleeding
ELECTRICAL SYSTEM / DEVICES		
15. Check battery voltage (after engine stops.)	23～36V	Replace
16. Check the battery liquid level	–	Refill or replace
17. Check for color change, burning, and sheath peeling on the wires	–	Replace
18. Check for disconnection of wire clamps, hanging wires	–	Repair
19. Check for water drop on the wiring. (Watch out for leaking water drop onto the connectors and terminals.)	–	Disconnect and dry out the connectors in case of water leak on connectors.
20. Check fuse for breaking or corrosion	–	Replace
21. Check alternator voltage (with running engine 1/2 throttle or more). (In case of battery charge shortage, voltage becomes about 25 V soon after engine running.)	27.5～29.5V	Replace
22. Check the sound from battery relay (When turning ON / OFF starter SW.)	–	Replace

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	SH200–3	SH220–3
5. Engine		
Name	ISUZU BB–6BG1T	ISUZU BB–6BG1T
Type	4–cycle water cooled,overhead valve,stralght,direct injection (electronic controlled type) engine with exhaust turbo–charger	4–cycle water cooled,overhead valve,stralght,direct injection (electronic controlled type) engine with exhaust turbo–charger
No. of cylinders–bore × stroke	6–105 mm×125 mm	6–105 mm×125 mm
Cylinder displacement	6,494 mL	6,494 mL
Maximum torque	532 N·m / 1,600 min^{-1}	562 N·m / 1,800 min^{-1}
Fuel consumption rate	243 g/kW·h or less	250 g/kW·h or less
Starter	24 V 4.5 kW	24 V 4.5 kW
Charging and generating system	24 V 40 A AC system	24 V 40 A AC system
Battery	2 12 V 120 Ah	2 12 V 120 Ah
6. Hydraulic device		
Hydraulic pump driving type	Engine direct–coupled (no transmission)	Engine direct–coupled (no tansmission)
Hydraulic pump		
Model	Double variable displacement type piston pump 1	Double variable displacement type piston pump 1
	Gear pump 1	Gear pump 1
Discharge volume	Piston pump 2×201 L / min	Piston pump 2 × 212 L / min
	Gear pump 20 L / min	Gear pump 22 L / min
Pump control method	Simultaneous total output horsepower control	Simultaneous total output horsepower control
Set pressure of main relief valve	34.3 MPa (Boosting 37.3 MPa)	34.3 MPa (Boosting 37.3 MPa)
Set pressure of over-load relief valve	39.2 MPa	39.2 MPa
7. Control valve		
Model	Quadruple–spool	Quadruple–spool
	Integrated type 1	Integrated type 1
	Quintuple–spool	Quintuple–spool
Operation method	Hydraulic pilot type:For travel, swing and operating machine	Hydraulic pilot type:For travel, swing and operating machine
8. Cooling system		
Fan type	Suction type	Suction type
Radiator	Pressure type	Pressure type
Oil cooler		
Cooling method	Air–cooling	Air–cooling
Radiation space	13.2 m^2	15.1 m^2

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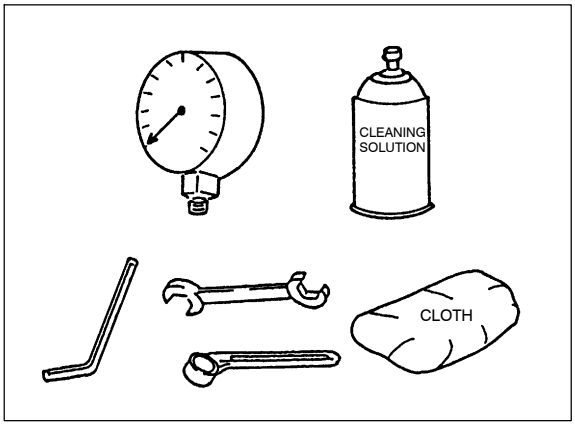
D. Preparation for Pressure Measurement

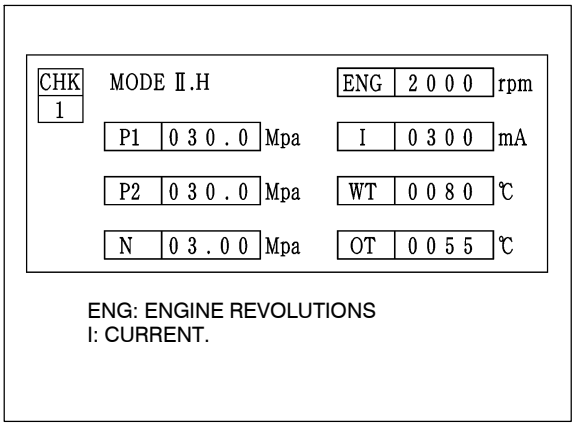


1. Required Items for Preparation

a. Pressure gauge — For 9.8 MPa (100 kgf/cm^2) use

b. Tools — Ring spanner 17 mm
Hexagon wrench 6 mm

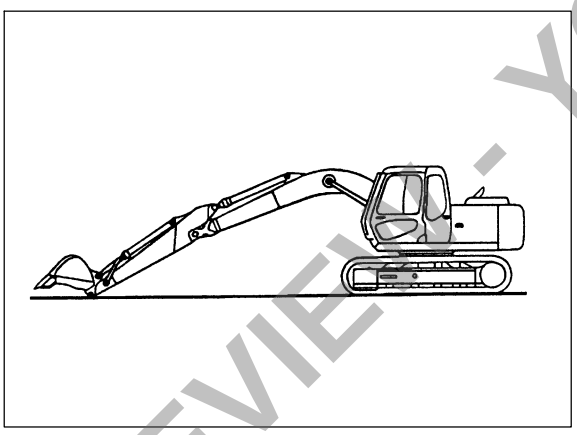
c. Others — Cloth, cleaning solution



2. Monitor Check

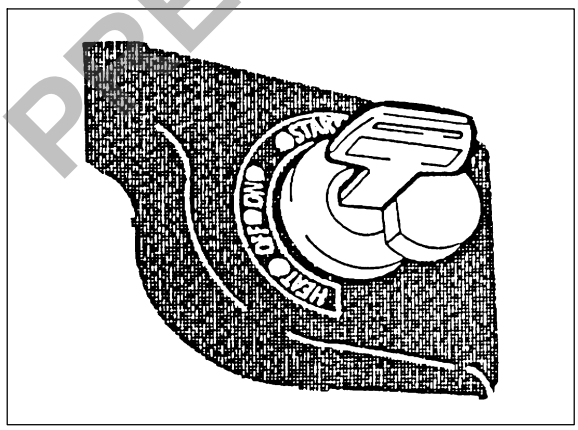
・In the Service Check, make sure the engine maximum revolutions with no load and the input electric current value of the pump in S mode.

	Engine Max. Rev.	S Mode current value
SH200−3	1800±10min^{-1}	292mA
SH220−3	2000±10min^{-1}	307mA



3. Machine Positioning

・Position the machine on a firm, level ground, lower the boom until the arm end touches the ground, with the bucket cylinder out until stroke end, and arm cylinder out until stroke end.



4. Pressure Relief in Circuit

・Turn the engine OFF and confirm the engine has stopped. Turn the key ON again.

Note: Do not start the engine.

・Operate each lever more than 10 times and make sure that the attachments do not move. Then, turn the key OFF.

Maintenannce

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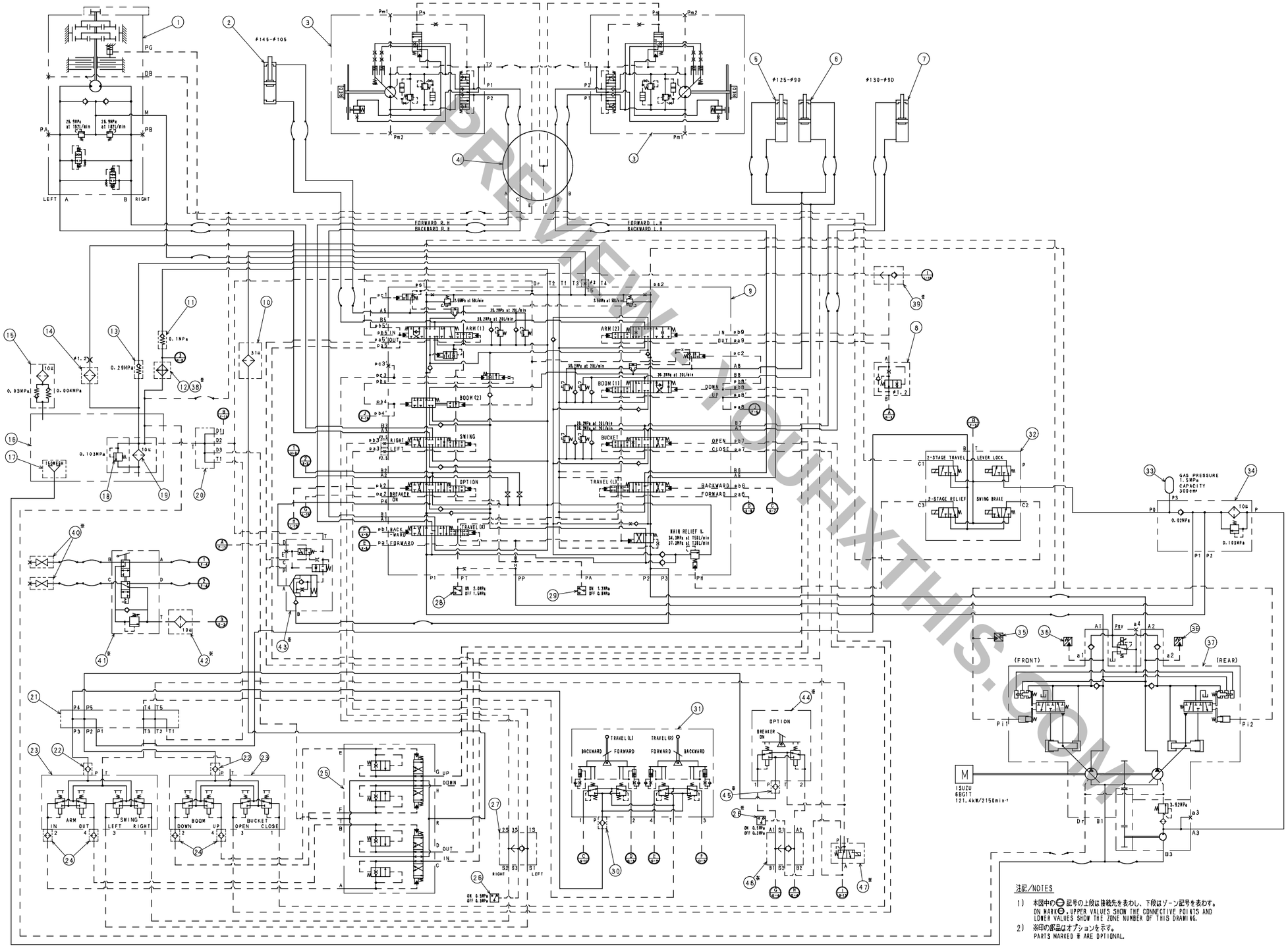
Hydraulic Circuit Diagram (SH220– 3)



NO	PARTS NAME	NOTE	Q'TY
	RED. GEAR:SWING ASSY		
1	CYL.:ARM		1
2	CYL.:ARM(EMS)		1
3	MOTOR:TRACTION UNIT		2
4	JOINT:CTR		1
5	CYL.:BOOM(L)		1
6	CYL.:BOOM(R)		1
7	CYL.:BUCKET		1
8	VALVE:CUSHION		1
9	VALVE:CONTROL		1
10	FILTER:LINE		1
11	VALVE:CHECK		1
12	RADIATOR		1
13	VALVE:CHECK		1
14	FILTER:SPL		1
15	BREATHER:AIR		1
16	TANK:SUPPLY DELIVERY SPEC.		1
17	STRAINER		1
18	VALVE:RELIEF		1
19	FILTER:RETURN		1
20	MANIFOLD		1
21	MANIFOLD		1
22	ADAPTER:HOSE		2
23	VALVE:REMOTE CONT		2
24	ADAPTER:HOSE		4
25	VALVE:SPL		1
26	SWITCH:PRESS.	STD 1 ※1 1	2
27	VALVE:BUTTLE		1
28	SWITCH:PRESS.		1
29	SWITCH:PRESS.		1
30	NIPPLE		1
31	VALVE:REMOTE CONT		1
32	VALVE:SOLENOID		1
33	ACCUMULATOR		1
34	MANIFOLD		1
35	SENSOR:PRESS.		1
36	SENSOR:PRESS.		2
37	PUMP:HYD		1
※ 38	RADIATOR		1
※ 39	VALVE:SHUTTLE		1
※ 40	VALVE:STOP		2
※ 41	VALVE:DIRECTION		1
※ 42	FILTER:LINE		1
※ 43	VALVE:HOLDING		1
※ 44	VALVE:REMOTE CONT		1
※ 45	ADAPTER:HOSE		1
※ 46	VALVE:SHUTTLE		1
※ 47	VALVE:SOLENOID		1

注記/NOTES

1) 本図中の㊀記号の上段は接続先を表わし、下段はゾーン記号を表わす。
ON MARK㊀, UPPER VALUES SHOW THE CONNECTIVE POINTS AND LOWER VALUES SHOW THE ZONE NUMBER OF THIS DRAWING.

2) ※印の部品はオプションを示す。
PARTS MARKED ※ ARE OPTIONAL.

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Procedure of Troubleshooting



① When a user contacts for repairs or troubles, the following information are essential to ask.

a. User name

b. Machine model,Serial No.

c. Working site, etc.

Faulty monitor display?

① Message related
② Bar graph related

Faulty smooth operation?

① Engine related
② About smooth operation

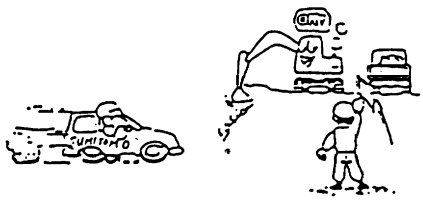
②Understand the trouble summary during the communication with the user.

a. Situations of problems

b. Specific description of working condition when problem occurred

c. Working environment

d. Repair history, maintenance description.



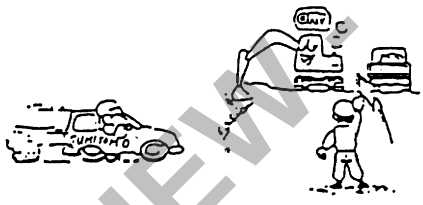
③ Prepare required tools.

Crimp pliers (for plug terminal, for round shape terminal)

Nipper

Plug terminal (For connection)*

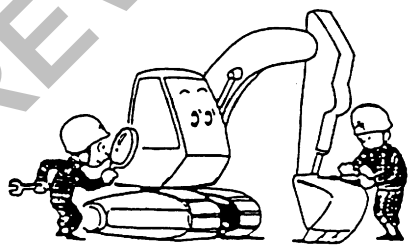
* AJ wires containing pins for connectors



④ Go straight to the working site, check the problem reproduction and self−test display.

a. Operate each working function to examine the problems.

b. Check the self−test display.



⑤ After reviewing the results of inspections prior to troubleshooting, identify the problems and conduct temporary repairs.

a. Check items for starting operation

b. Other check items

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