SEBM025607

SHOP MANUAL

KOMATSU®

D31EX, PX-21

D37EX, PX-21

MACHINE MODEL	SERIAL No.
D31EX-21	**50001 and up**
D31PX-21	**50001 and up**
D37EX-21	**5001 and up**
D37PX-21	**5001 and up**

- This shop manual may contain attachments and optional equipment that are not available in your area. Please consult your local Komatsu distributor for those items you may require. Materials and specifications are subject to change without notice.

- D31, D37EX, PX-21 mount the SAA4D102E-2 engine.
  For details of the engine, see the 102-2 Series Engine Shop Manual.

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ELECTRIC WIRE CODE

In the wiring diagrams, various colors and symbols are employed to indicate the thickness of wires.
This wire code table will help you understand WIRING DIAGRAMS.
Example: 5WB indicates a cable having a nominal number 5 and white coating with black stripe.

CLASSIFICATION BY THICKNESS

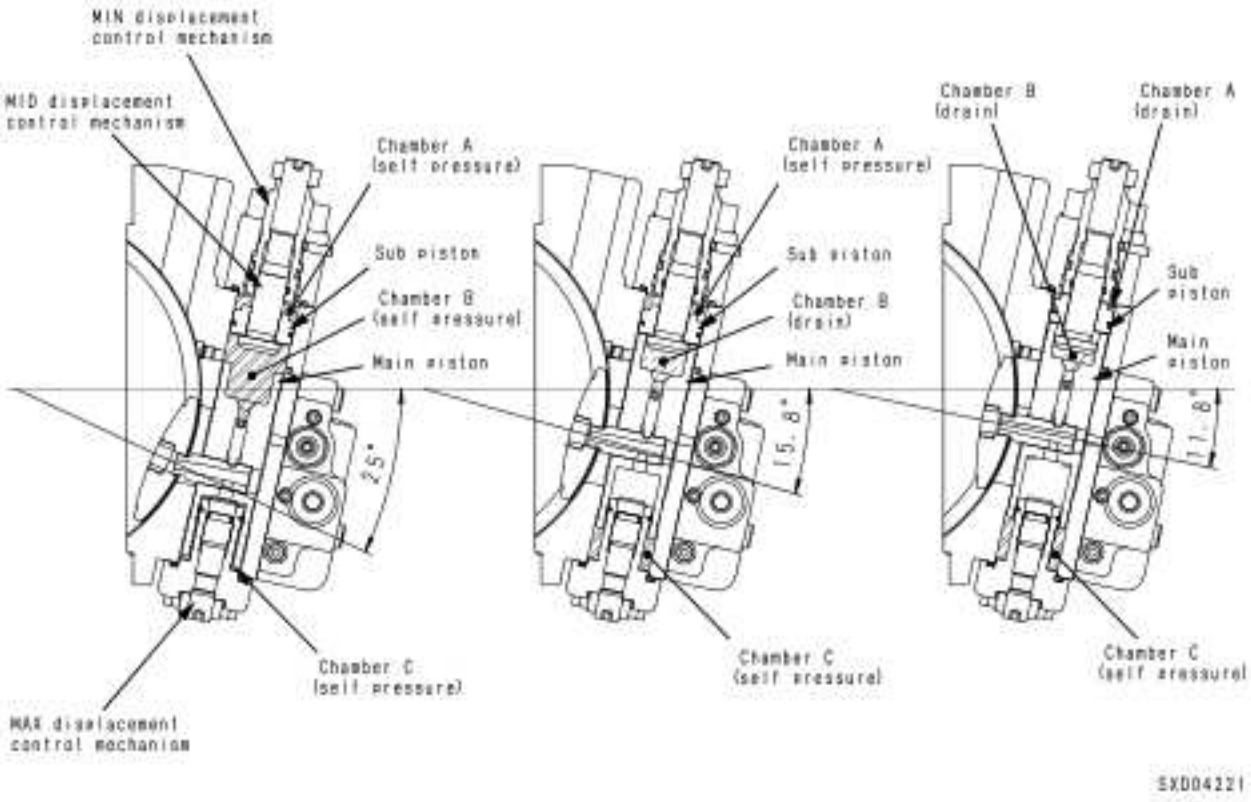
Norminal number	Copper wire			Cable O.D. (mm)	Current rating (A)	Applicable circuit
	Number of strands	Dia. of strands (mm^2)	Cross section (mm^2)			
0.85	11	0.32	0.88	2.4	12	Starting, lighting, signal etc.
2	26	0.32	2.09	3.1	20	Lighting, signal etc.
5	65	0.32	5.23	4.6	37	Charging and signal
15	84	0.45	13.36	7.0	59	Starting (Glow plug)
40	85	0.80	42.73	11.4	135	Starting
60	127	0.80	63.84	13.6	178	Starting
100	217	0.80	109.1	17.6	230	Starting

CLASSIFICATION BY COLOR AND CODE

Priority	Classification \ Circuits		Charging	Ground	Starting	Lighting	Instrument	Signal	Other
1	Primary	Code	W	B	B	R	Y	G	L
		Color	White	Black	Black	Red	Yellow	Green	Blue
2	Auxiliary	Code	WR	—	BW	RW	YR	GW	LW
		Color	White & Red	—	White & Black	Red & White	Rellow & Red	Green & White	Blue & White
3		Code	WB	—	BY	RB	YB	GR	LR
		Color	White & Black	—	Black & Yellow	Red & Black	Yellow & Black	Green & Red	Blue & Yellow
4		Code	WL	—	BR	RY	YG	GY	LY
		Color	White & Blue	—	Black & Red	Red & Yellow	Yellow & Green	Green & Yellow	Blue & Yellow
5		Code	WG	—	—	RG	YL	GB	LB
		Color	White & Green	—	—	Red & Green	Yellow & Blue	Green & Black	Blue & Black
6		Code	—	—	—	RL	YW	GL	—
		Color	—	—	—	Red & Blue	Yellow & White	Green & Blue	—

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4. Changing capacity of 3rd speed motor



	Motor capacity MAX (1st)	Motor capacity MID (2nd)	Motor capacity MIN (3rd)
Chamber A	ON	ON	OFF
Chamber B	ON	OFF	OFF
Chamber C	ON	ON	ON

Function

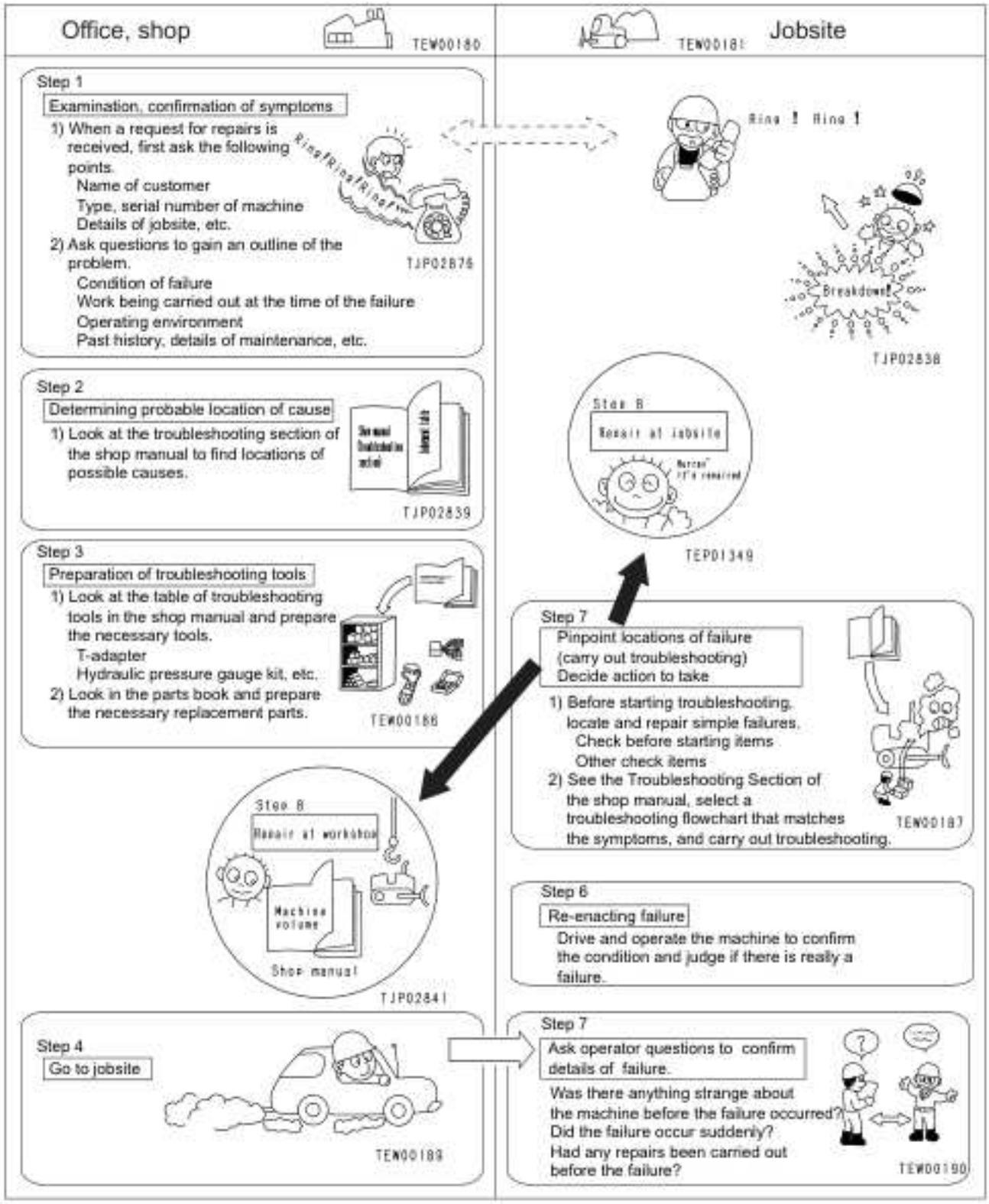
- As shown in the diagram above, when the main piston is at the lowest position, the motor capacity is MAX (1st speed).
- When the main piston is at the highest position, the motor capacity is MIN (3rd speed).
- When it is at the midpoint position, the motor capacity is MID (2nd speed). A sub piston is provided to produce the MID (2nd speed) motor capacity.

Operation

- The 3rd speed mechanism includes chamber **A**, chamber **B**, and chamber **C**. Each of these chambers has its high pressure (self pressure) turned ON (supplied) and OFF (drained) by the 3rd speed valve, and the main piston and sub piston are actuated.
- When the motor capacity is MAX (1st speed), high pressure (self pressure) is being supplied to all of chamber **A**, chamber **B**, and chamber **C**. However, the main piston is at the lowest position because the area on which the high pressure is acting in chamber **B** is larger than the area on which the high pressure is acting in chamber **C**. As a result, the combined force generates a force in the downward direction.
- The area on which the self pressure is acting in chamber **A** and chamber **B** of the sub piston is the same. However, the high pressure (self pressure) acting on chamber **A** is greater than the high pressure acting on chamber **B** (the pressure is lower than the self pressure for chamber **A** because the self pressure passes through a throttle), so the sub piston is pushed down.

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SEQUENCE OF EVENTS IN TROUBLESHOOTING



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ELECTRICAL CIRCUIT DIAGRAM (1/2)

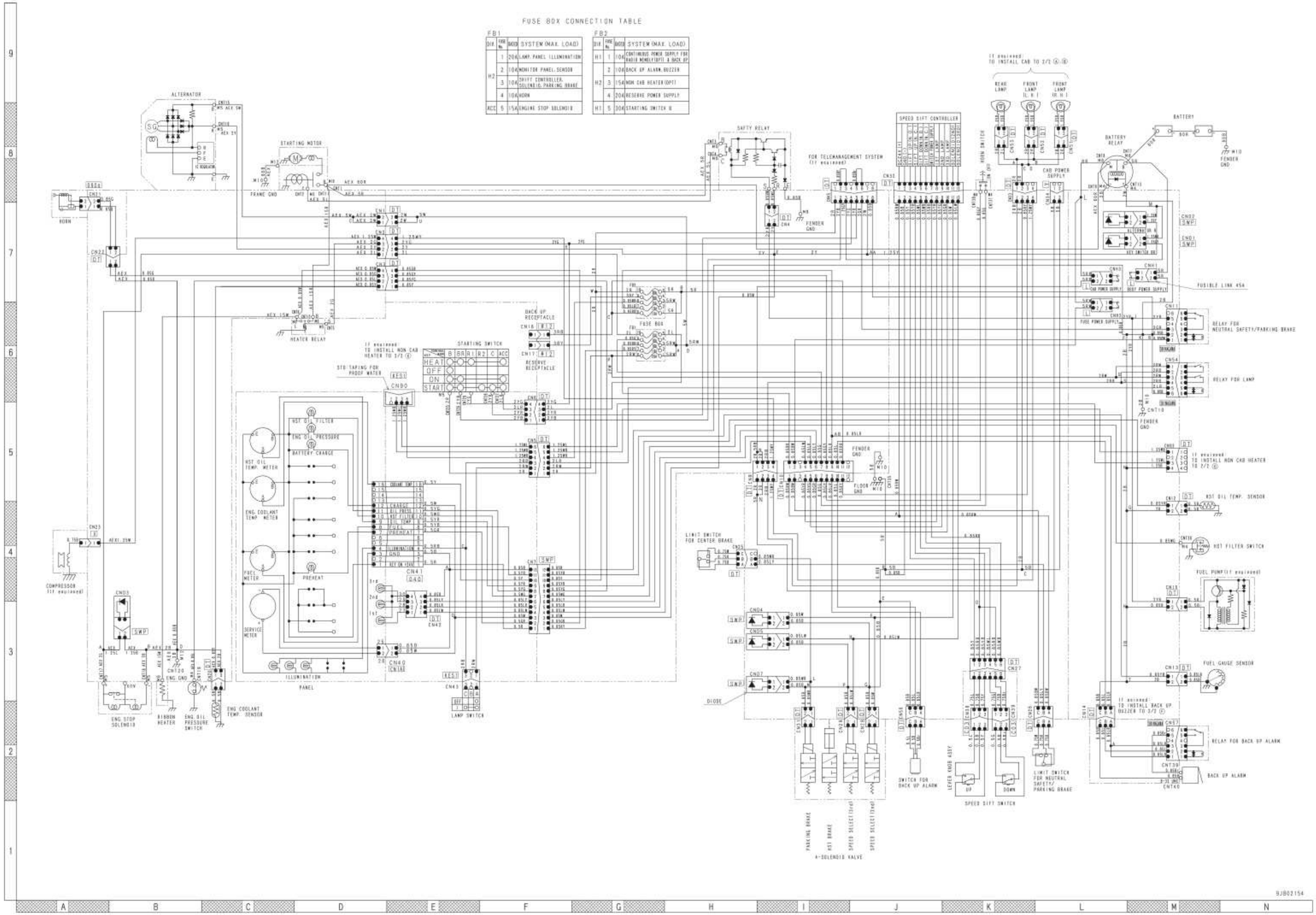
FUSE BOX CONNECTION TABLE

FB1

DIA	FUSE No.	RATED	SYSTEM (MAX. LOAD)
H2	1	20A	LAMP, PANEL ILLUMINATION
	2	10A	MONITOR PANEL, SENSOR
	3	10A	SHIFT CONTROLLER, SOLENOID, PARKING BRAKE
	4	10A	HORN
ACC	5	15A	ENGINE STOP SOLENOID

FB2

DIA	FUSE No.	RATED	SYSTEM (MAX. LOAD)
H1	1	10A	CONTINUOUS POWER SUPPLY FOR RADIO MEMORY(OPT) & BACK UP
	2	10A	BACK UP ALARM, BUZZER
H2	3	15A	NON CAB HEATER (OPT)
	4	20A	RESERVE POWER SUPPLY
H1	5	30A	STARTING SWITCH B



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