takeuchi

The Power of Product and Support

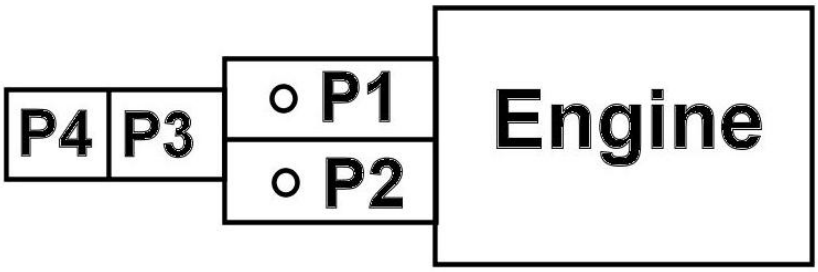
200 Series Service Training

2009-2010

200 SERIES AND TIER III COMPLIANT MACHINES

1	TB228
2	TB235
3	TB250
4	TB175
5	TB1140
6	TB138FR
7	TB153FR
8	TB180FR
9	TL220
10	TL230
11	TL240
12	TL250
13	14 PIN CONNECTOR
14	TL ENGINE CODES
15	A/C CHARGE

TB228



P1	Left Travel, Arm, Swing and First Auxiliary	7.98 GPM
P2	Right Travel, Boom and Bucket	7.98 GPM
P3	Slew, Dozer Blade and Second Auxiliary	5.39 GPM
P4	Pilot Pressure	2.85 GPM

Pump P1

Left Travel	3045 PSI	Test Port P1
Arm	3045 PSI	Test Port P1
Swing	3045 PSI	Test Port P1
First Auxiliary	3045 PSI	Test Port P1

Pump P2

Right Travel	3045 PSI	Test Port P2
Boom	3045 PSI	Test Port P2
Bucket	3045 PSI	Test Port P2

Pump P3

Slew	2842 PSI	Test Port P3
Bucket	2842 PSI	Test Port P3
Second Auxiliary	2842 PSI	Test Port P3

Pump P4

Pilot Pressure	493 PSI	Test Port P4

Methods for inspecting performance

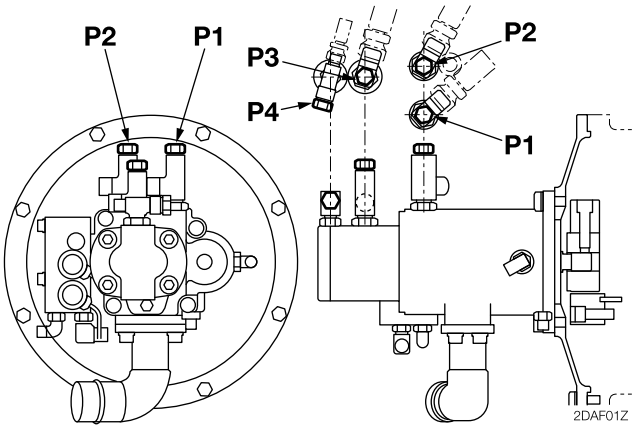
Hydraulic oil pressure (Main relief valve set pressure)

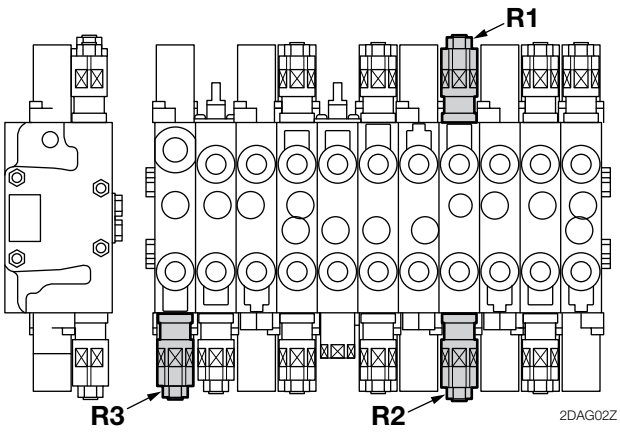
Boom, Arm, Dozer Blade

Measuring Method

- Engine: Maximum R. P. M.
- Hydraulic oil temp.: 50~60°C
- Mount the pressure gauge on the pressure detection port, operate the desired hydraulic circuit and measure the relief pressure.

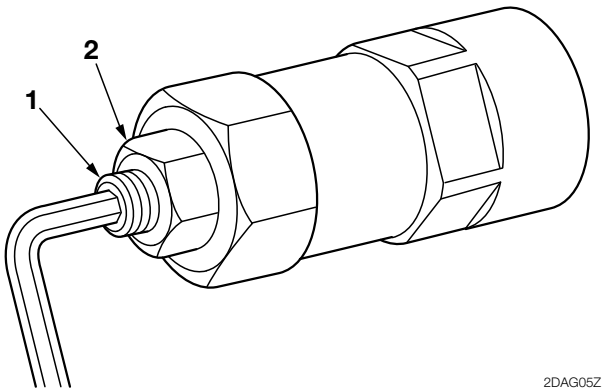
Circuit	Relief valve	Pressure detection port	
		Port location	Size
Arm	R2	P1	G1/4
Boom	R1	P2	
Blade	R3	P3	





Adjusting method

1. Loosen the locknut (2), and turn the setscrew (1) to adjust the set pressure.
   - To increase the set pressure, turn the setscrew clockwise.
   - To decrease the set pressure, turn the setscrew counterclockwise.
2. Upon completion of the adjustment, tighten the lock nut (2) by holding the setscrew (1) to prevent it from turning.
3. Operate the relief valve again to confirm that the newly set pressure is stabilized.

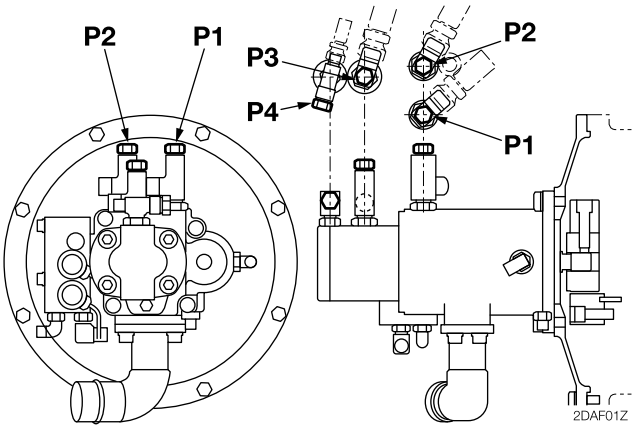


Hydraulic oil pressure (Slewing relief valve set pressure)

Measuring method

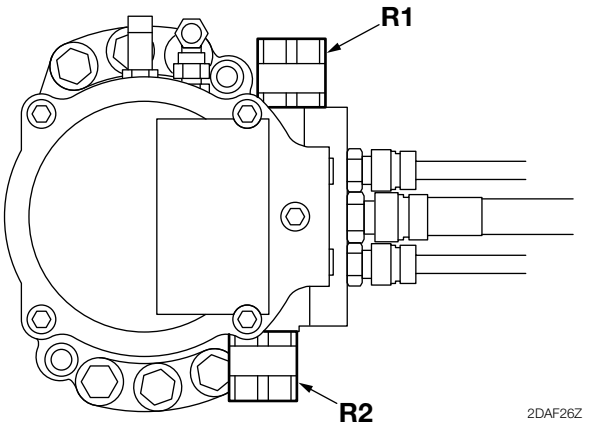
- Engine: Maximum R. P. M.
- Hydraulic oil temp.: 50~60°C
- Mount the pressure gauge on the pressure detection port and set a solid obstacle so that the upperstructure cannot slew in the direction to be measured. Next, operate the circuit to be measured and measure the relief pressure.

Circuit	Relief valve	Pressure detection port	
		Port location	Size
Right slew	R1	P3	G1/4
Left slew	R2		



Adjusting method

It is not possible to adjust the set pressure with the relief valve on the slew motor. If adjustment is required, replace the relief valve assembly.

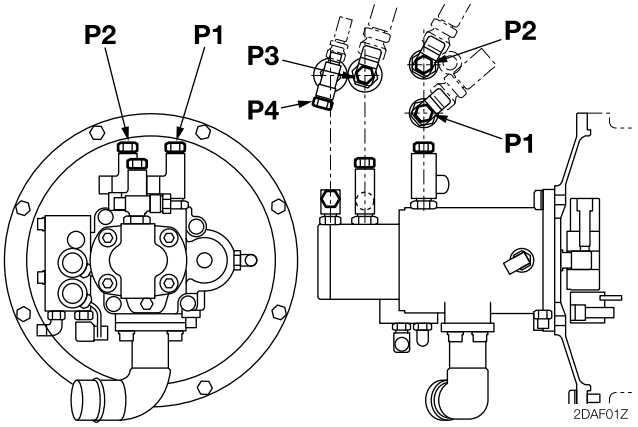


Hydraulic oil pressure (Pilot pressure)

Measuring method

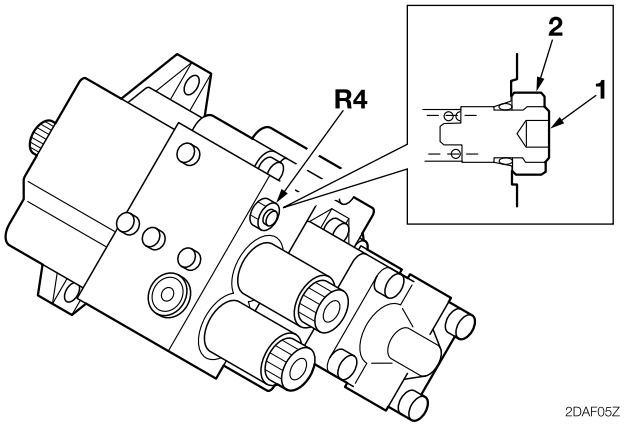
- Engine: Maximum R. P. M.
- Hydraulic oil temp.: 50~60°C
- Mount pressure gauge on the pressure detection port and measure the pilot relief pressure.

Relief valve	Pressure detection port	
	Port location	Size
R4	P4	G1/4



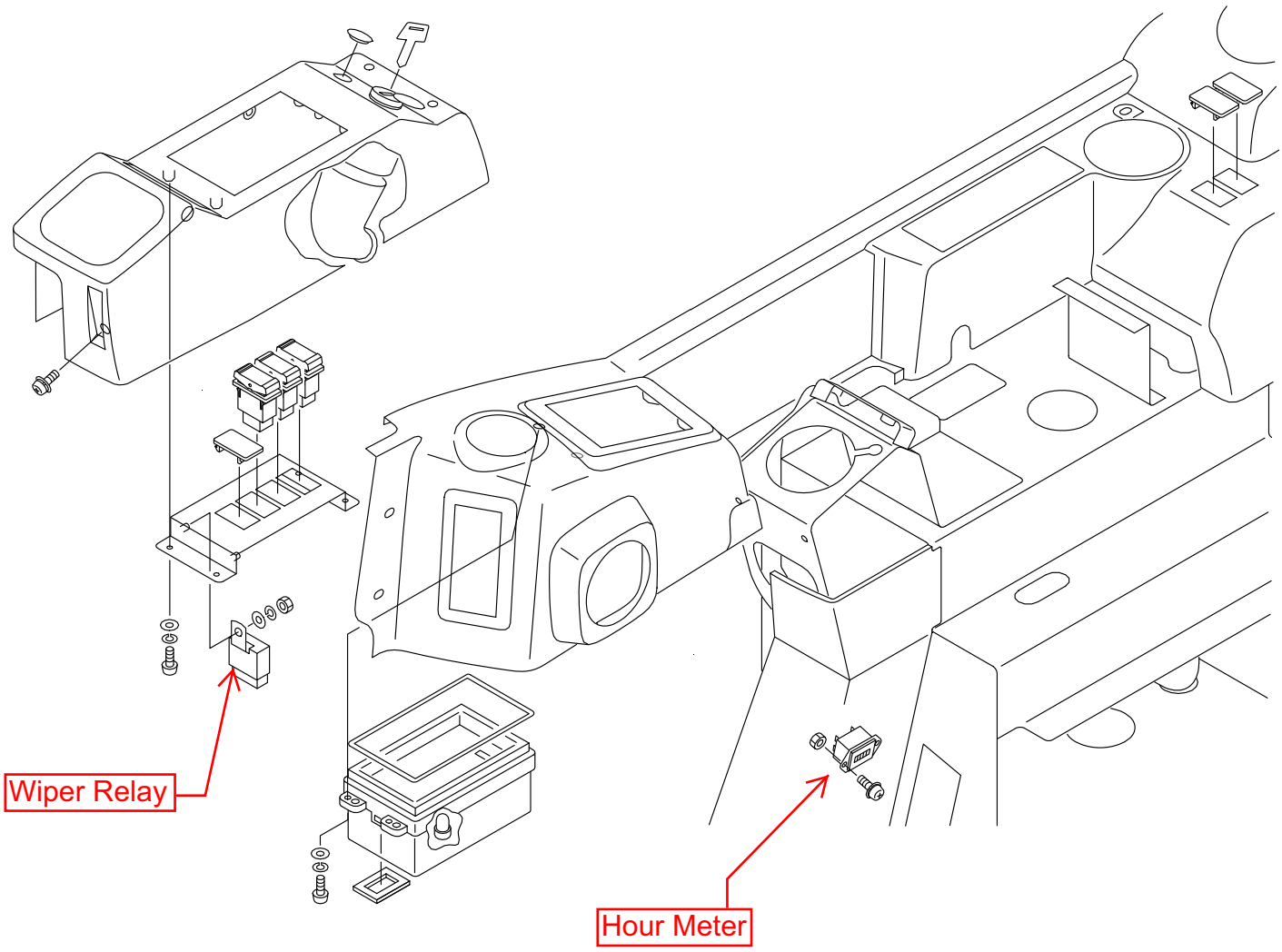
Adjusting Method

1. Loosen the locknut (2), and turn the setscrew (1) to adjust the set pressure.
   - To increase the set pressure, turn the setscrew clockwise.
   - To decrease the set pressure, turn the setscrew counterclockwise.
2. Upon completion of the adjustment, tighten the lock nut (2) by holding the setscrew (1) to prevent it from turning.
3. Operate the relief valve again to confirm that the newly set pressure is stabilized.



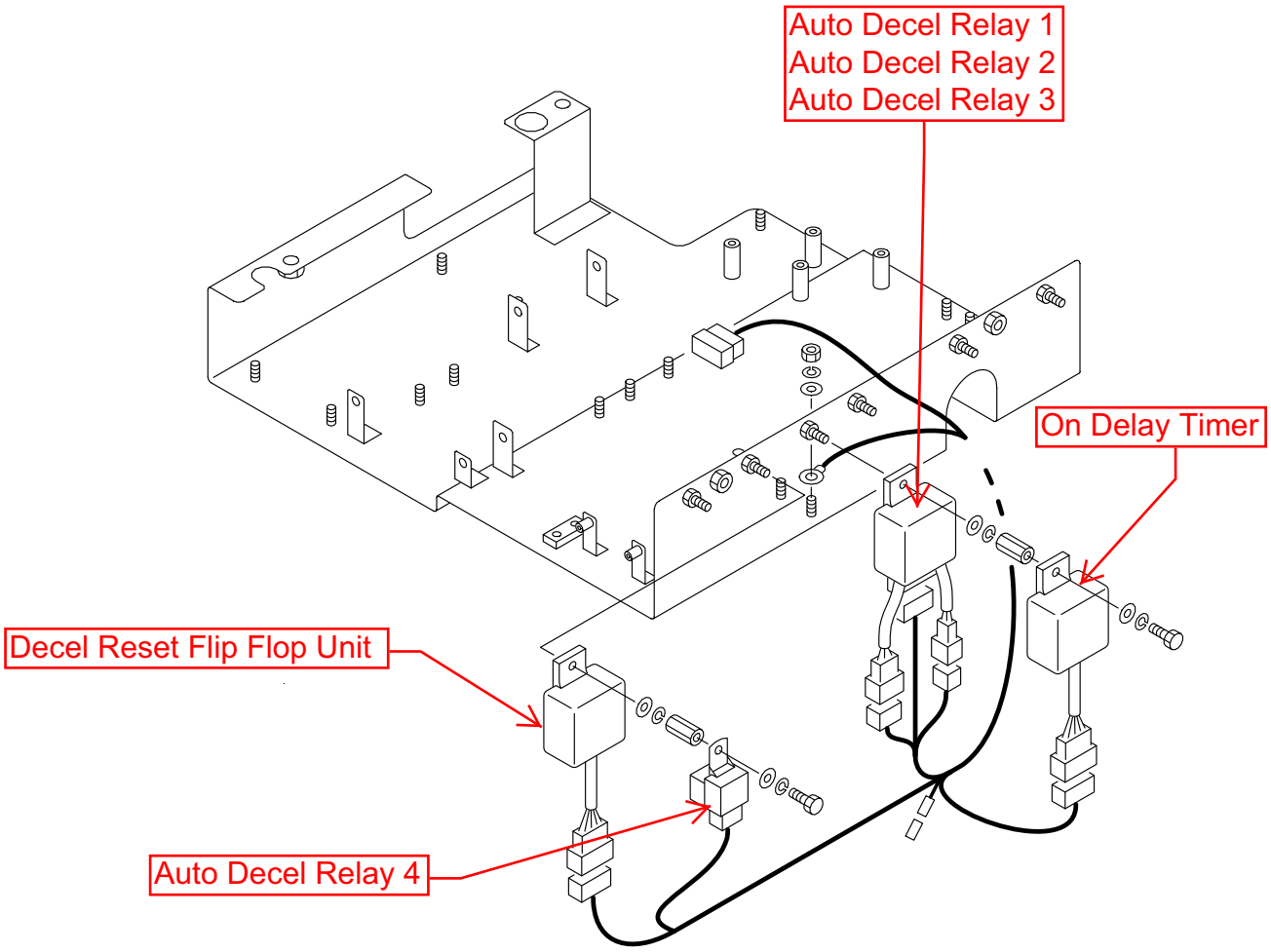
TB228 S/N 122800001-

CONTROL BOX; R.H. (cab)

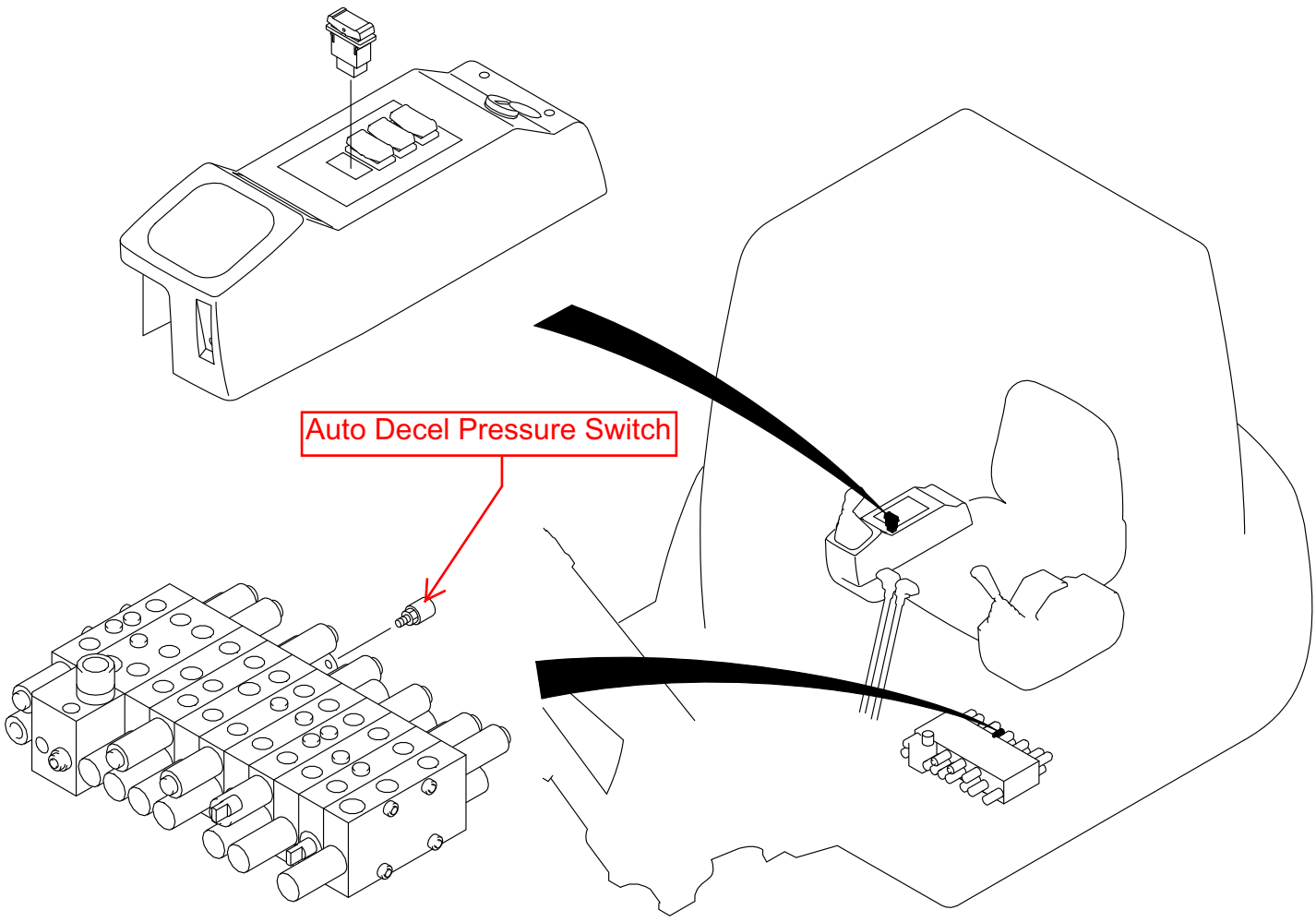


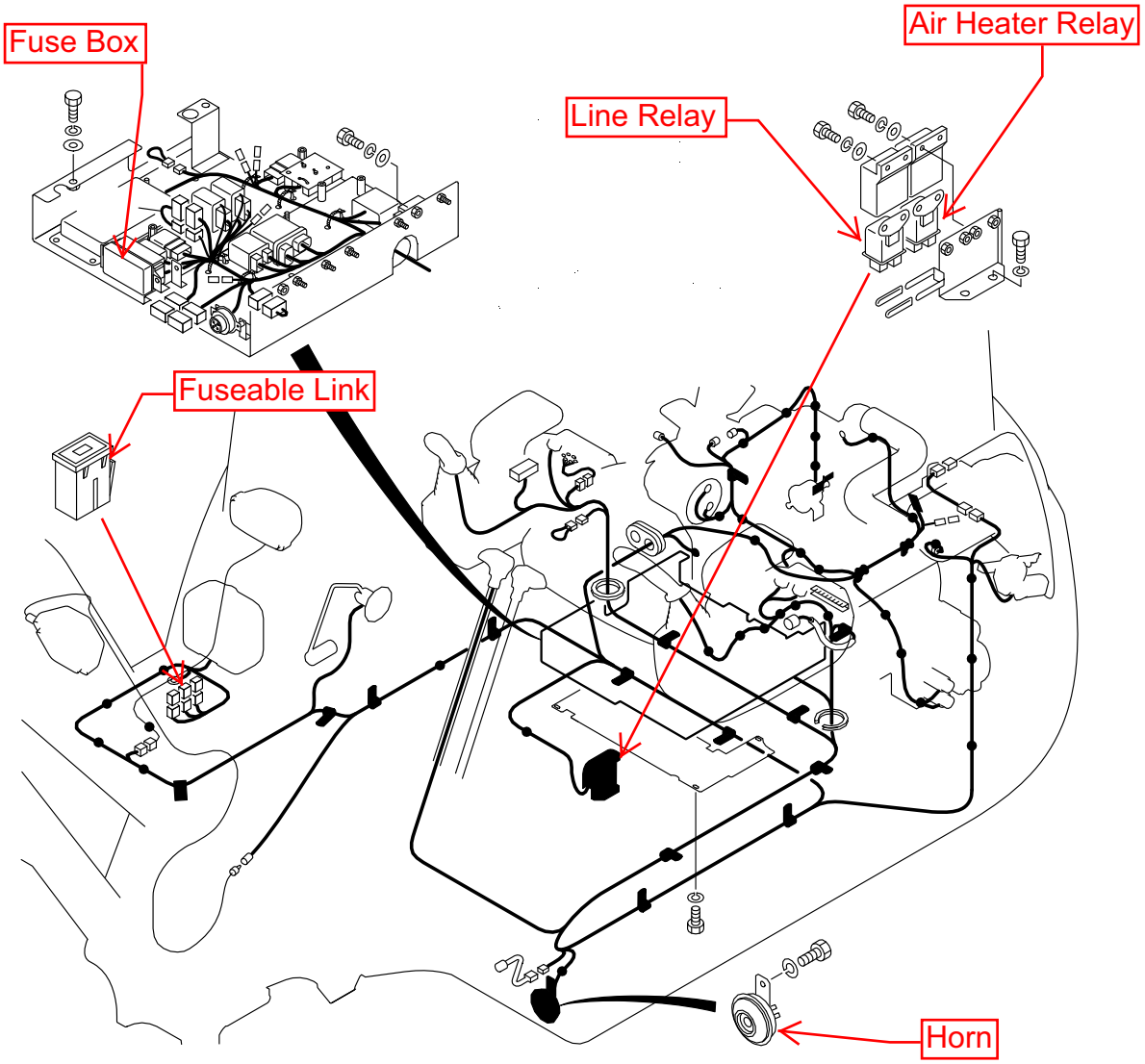
TB228 S/N 122800001-

CONTROL UNIT (auto decel.)

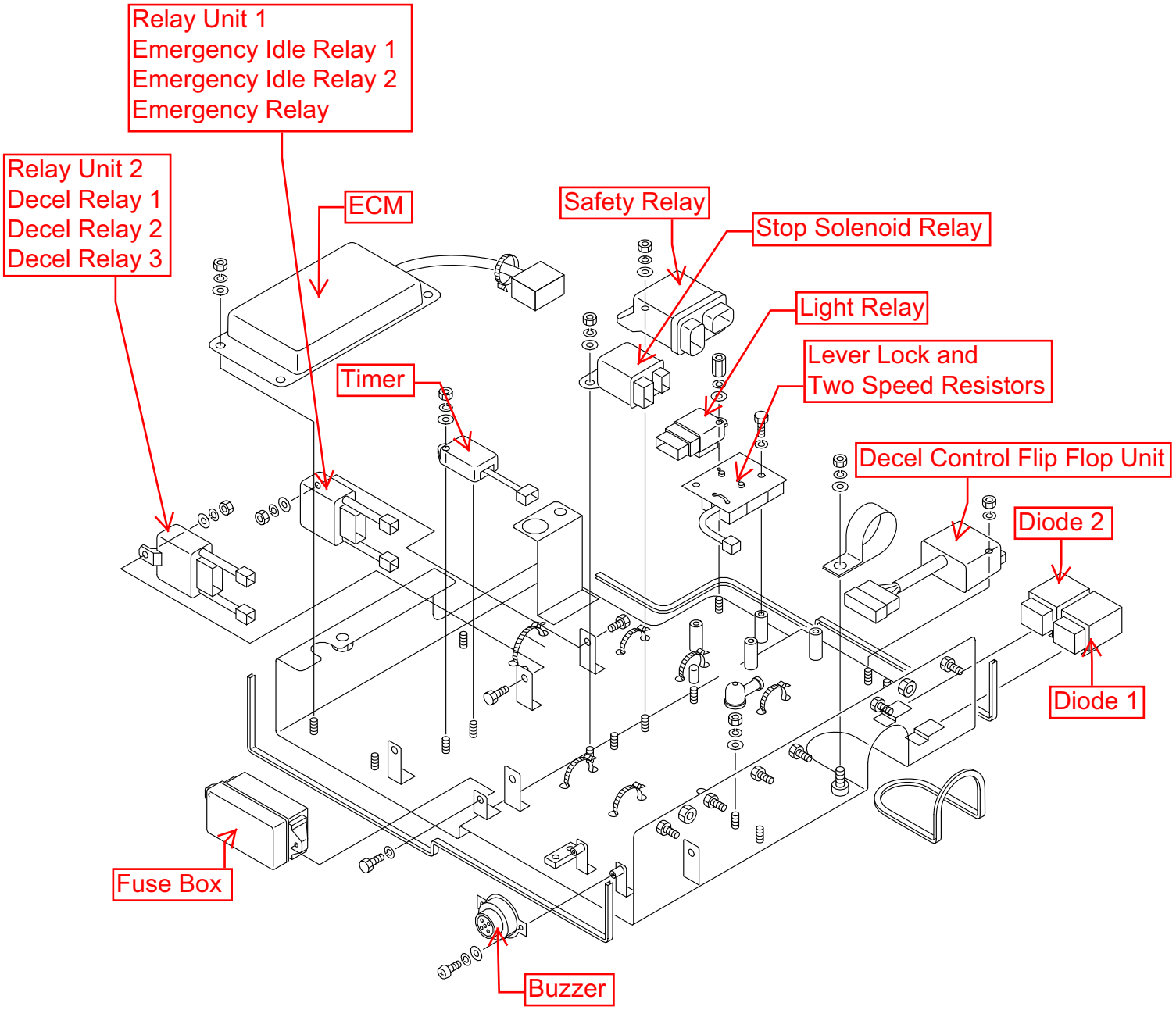


AUTO DECEL.

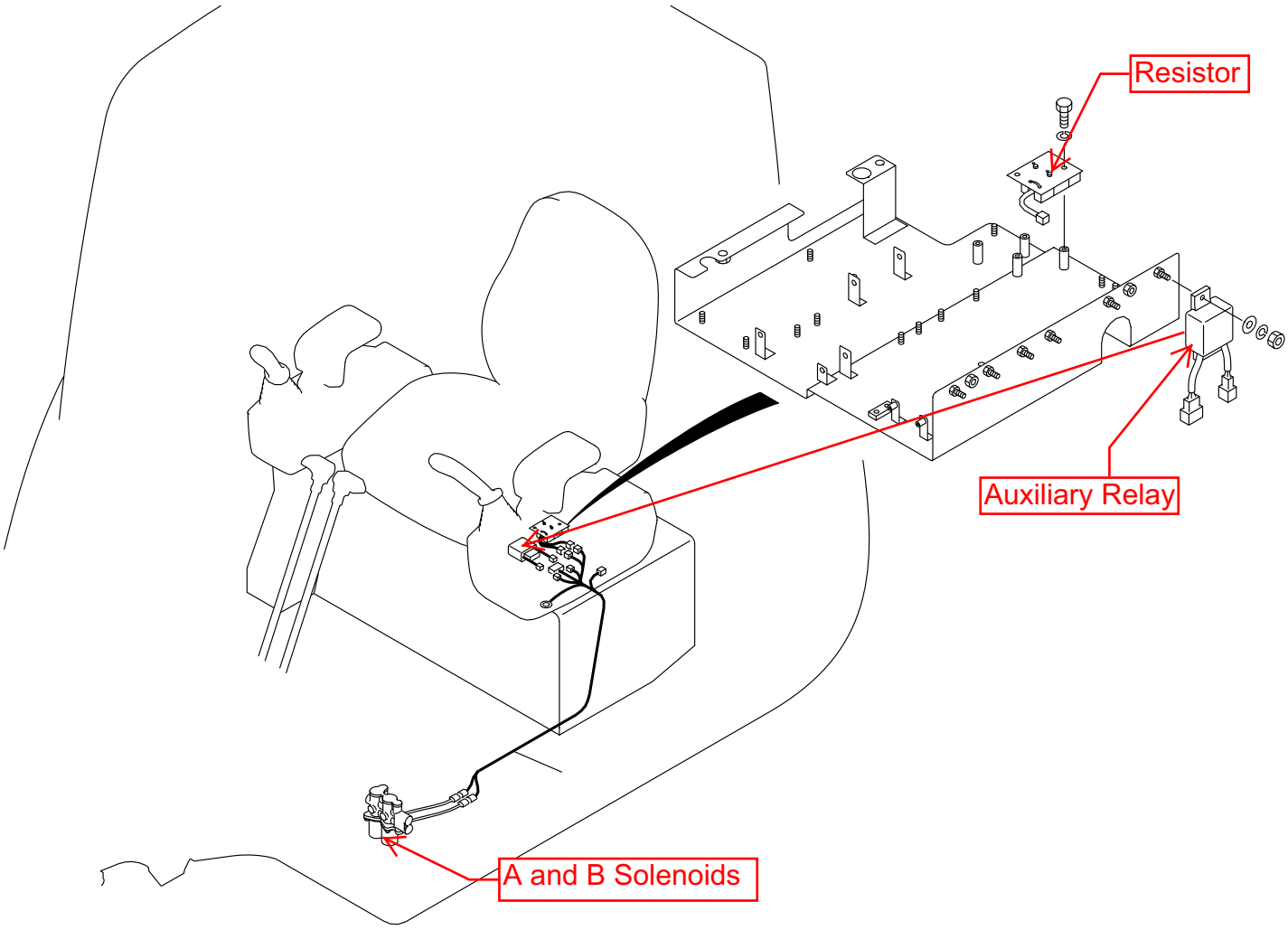



Fuse Box
Air Heater Relay
Line Relay
Fuseable Link
Horn

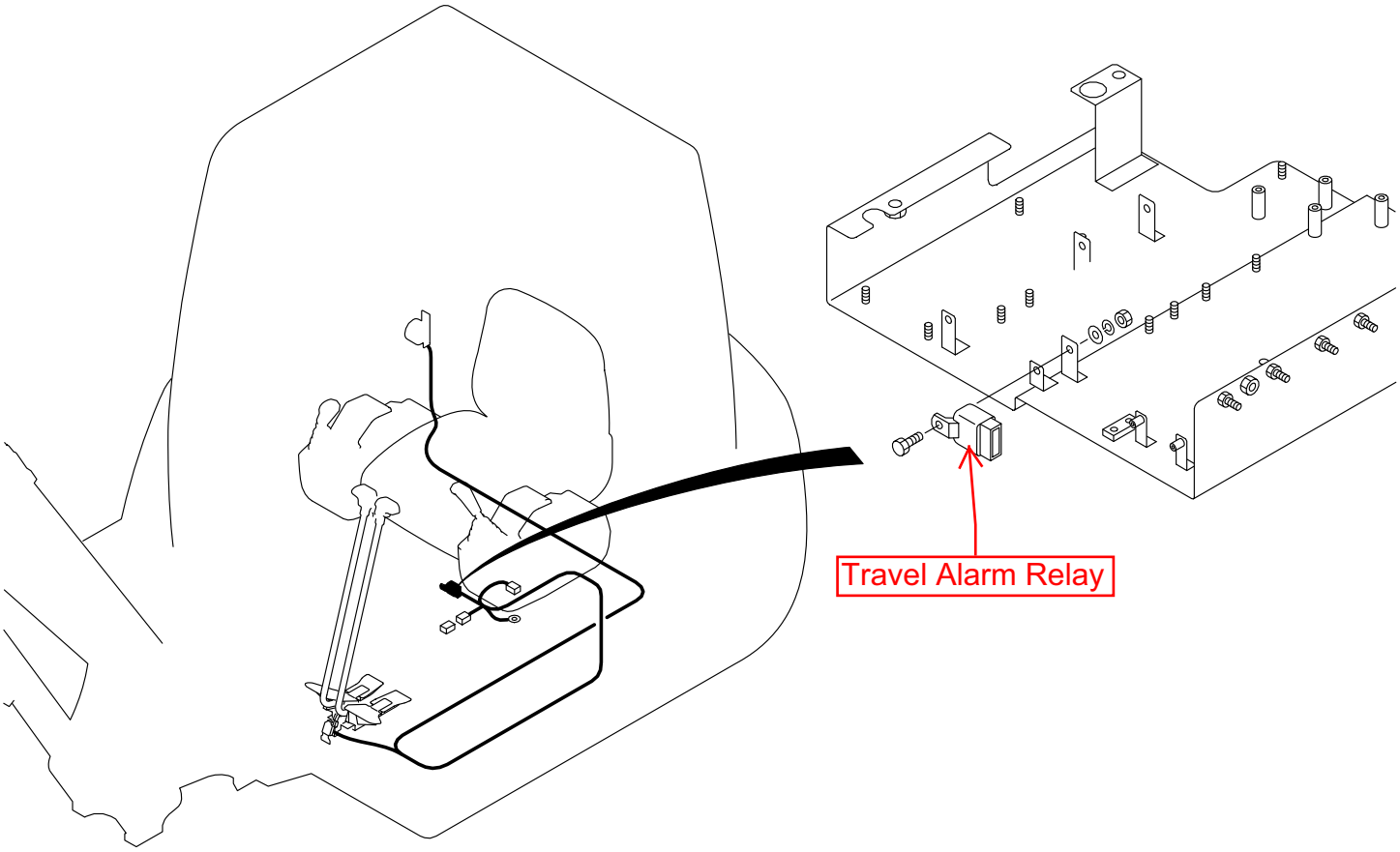
ELECTRICAL (2/2)



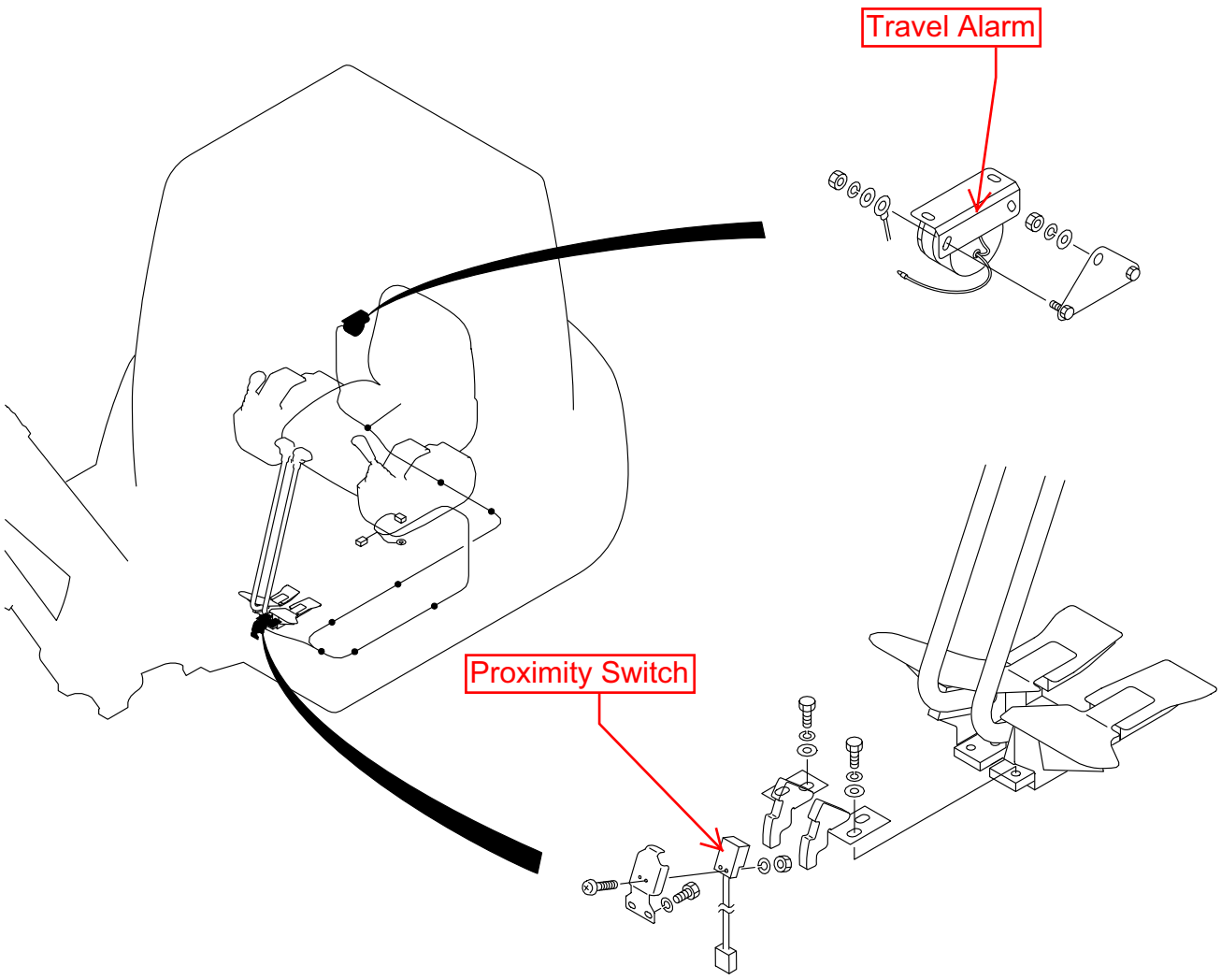
TB228 S/N 122800001-
CONTROL UNIT (1st aux. ON-OFF)



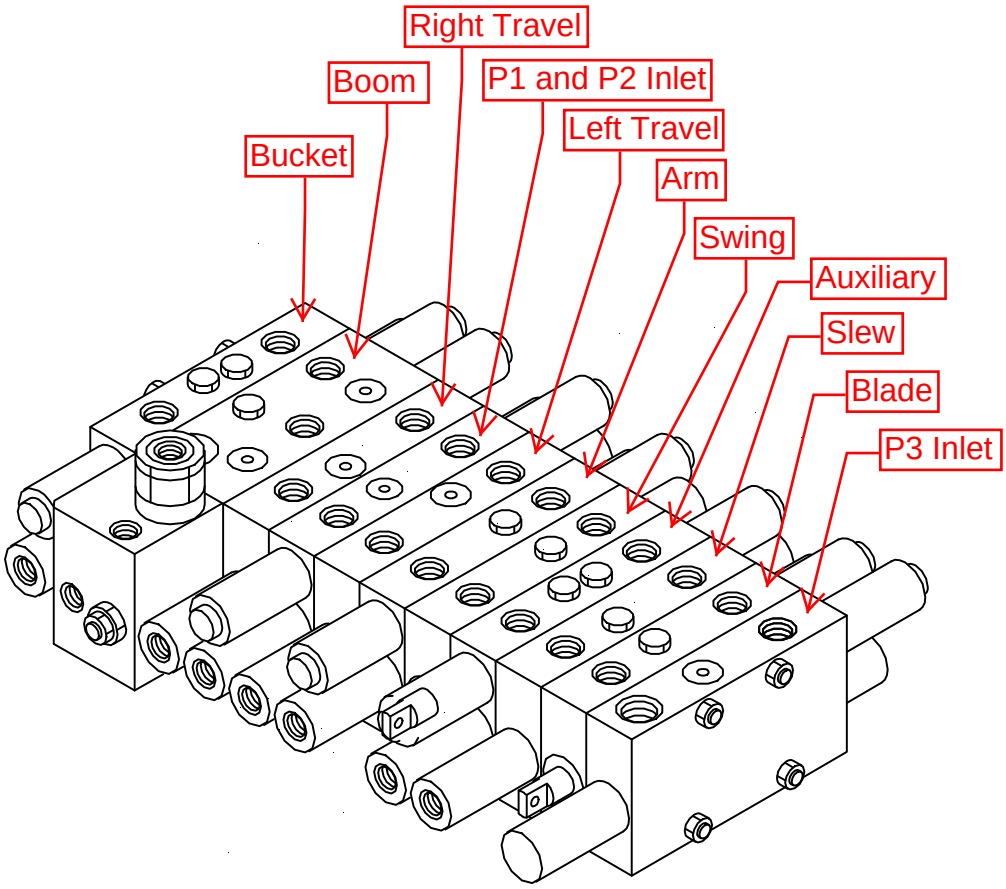
TB228 S/N 122800001-
CONTROL UNIT (travel alarm)



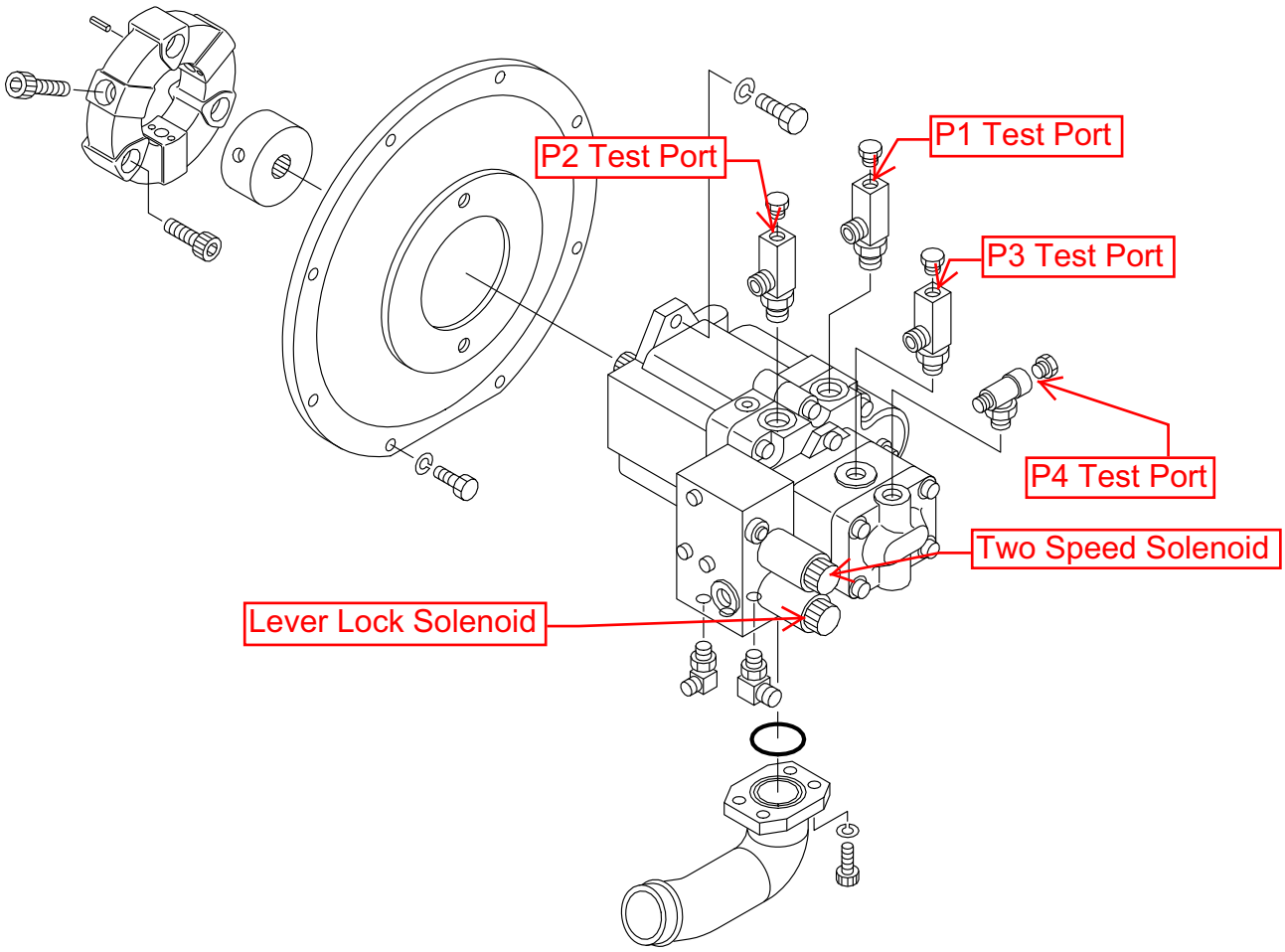
TB228 S/N 122800001-
TRAVEL ALARM



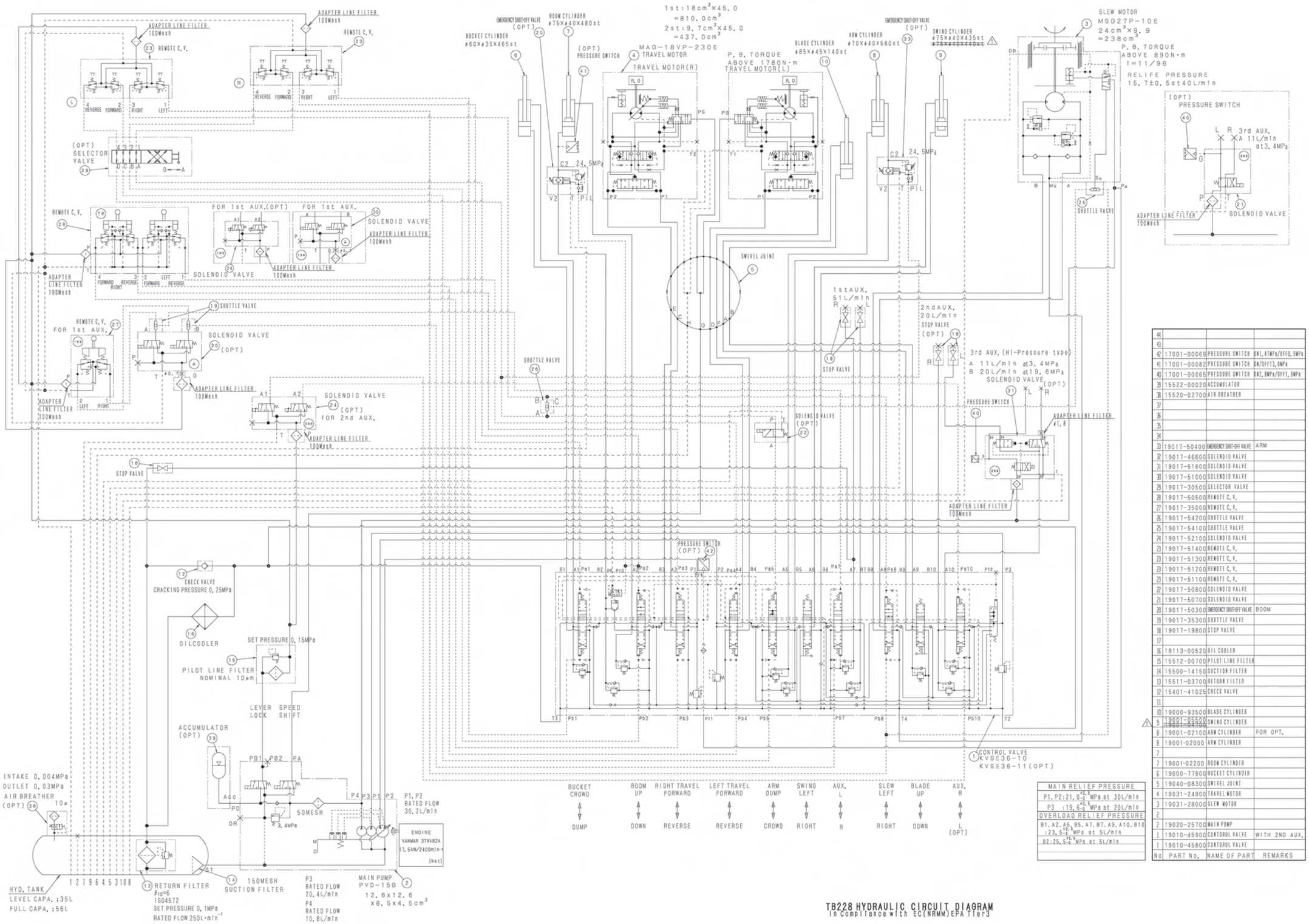
VALVE & ACCESSORIES



PUMP DRIVE


P2 Test Port
P1 Test Port
P3 Test Port
P4 Test Port
Two Speed Solenoid
Lever Lock Solenoid

HYDRAULIC CIRCUIT DIAGRAM

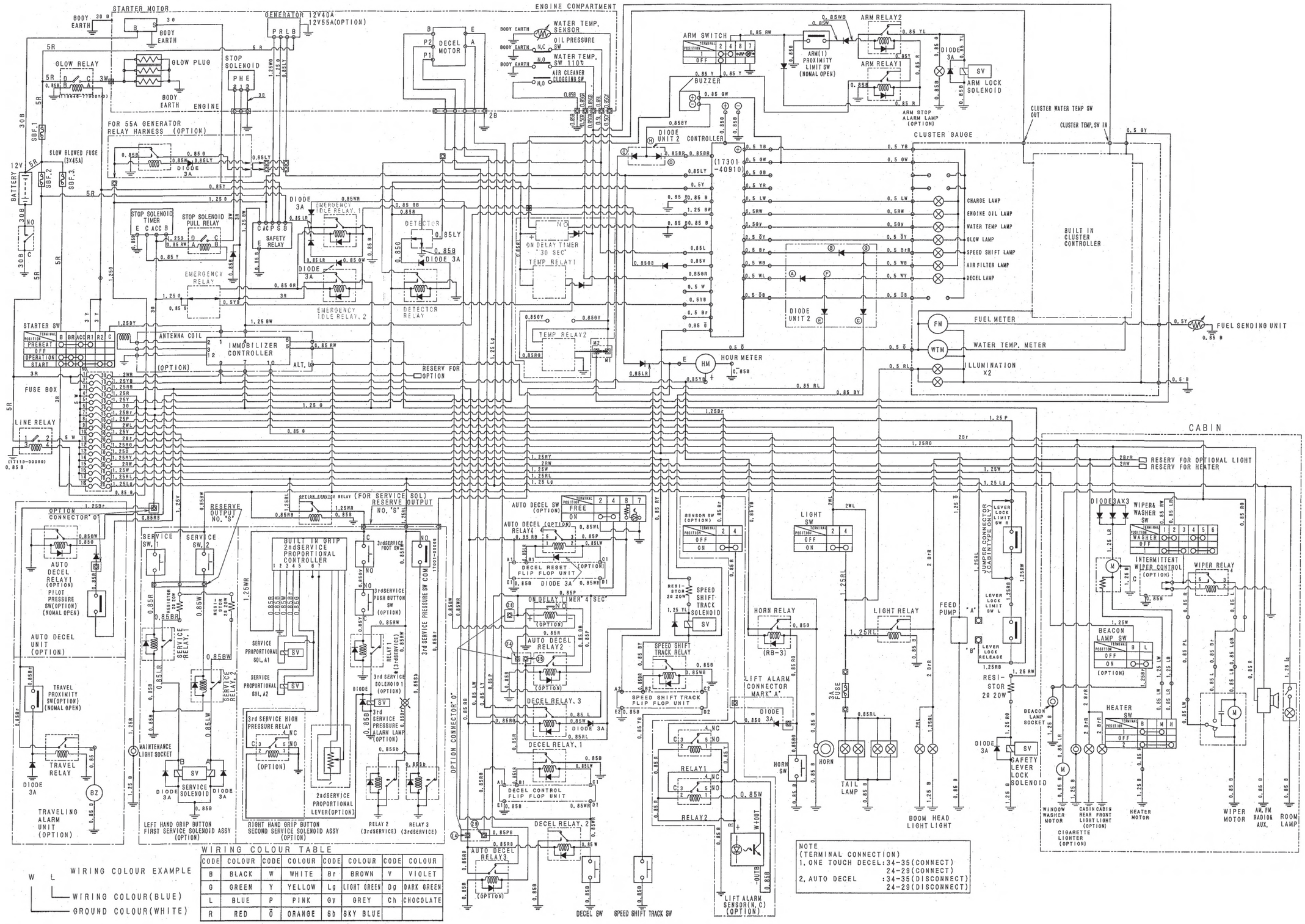


MAIN RELIEF PRESSURE
P1, P2:21.0 +2.5 -5 MPa at 30L/min
P3 :19.6 +2.5 -5 MPa at 20L/min
OVERLOAD RELIEF PRESSURE
B1, A2, A5, B5, A7, B7, A9, A10, B10 :23.5 +2.5 -5 MPa at 5L/min
B2:25.5 +2.5 -5 MPa at 5L/min

No	PART No.	NAME OF PART	REMARKS
44			
43			
42	17001-00065	PRESSURE SWITCH	ON1.47MPa/OFF0.5MPa
41	17001-00082	PRESSURE SWITCH	ON/OFF13.0MPa
40	17001-00065	PRESSURE SWITCH	ON2.9MPa/OFF1.5MPa
39	15522-00020	ACCUMULATOR	
38	15520-02700	AIR BREATHER	
37			
36			
35			
34			
33	19017-50400	EMERGENCY SHUT-OFF VALVE	ARM
32	19017-46600	SOLENOID VALVE	
31	19017-51600	SOLENOID VALVE	
30	19017-51000	SOLENOID VALVE	
29	19017-30500	SELECTOR VALVE	
28	19017-50500	REMOTE C.V.	
27	19017-35000	REMOTE C.V.	
26	19017-54200	SHUTTLE VALVE	
25	19017-54100	SHUTTLE VALVE	
24	19017-52100	SOLENOID VALVE	
23	19017-51400	REMOTE C.V.	
23	19017-51300	REMOTE C.V.	
23	19017-51200	REMOTE C.V.	
23	19017-51100	REMOTE C.V.	
22	19017-50800	SOLENOID VALVE	
21	19017-50700	SOLENOID VALVE	
20	19017-50300	EMERGENCY SHUT-OFF VALVE	BOOM
19	19017-35300	SHUTTLE VALVE	
18	19017-19800	STOP VALVE	
17			
16	19113-00520	OIL COOLER	
15	15512-00700	PILOT LINE FILTER	
14	15500-14150	SUCTION FILTER	
13	15511-03700	RETURN FILTER	
12	15401-41025	CHECK VALVE	
11			
10	19000-93500	BLADE CYLINDER	
⚠9	~~19001-03500~~ 19001-03500	SWING CYLINDER	
8	19001-02100	ARM CYLINDER	FOR OPT.
8	19001-02000	ARM CYLINDER	
7			
7	19001-02200	BOOM CYLINDER	
6	19000-77800	BUCKET CYLINDER	
5	19040-08300	SWIVEL JOINT	
4	19031-24900	TRAVEL MOTOR	
3	19031-28000	SLEW MOTOR	
2			
2	19020-25700	MAIN PUMP	
1	19010-45900	CONTROL VALVE	WITH 2ND AUX.
1	19010-45800	CONTROL VALVE	

TB228 HYDRAULIC CIRCUIT DIAGRAM
In Compliance with EC(NRMM)EPA Tier3

ELECTRICAL WIRING DIAGRAM



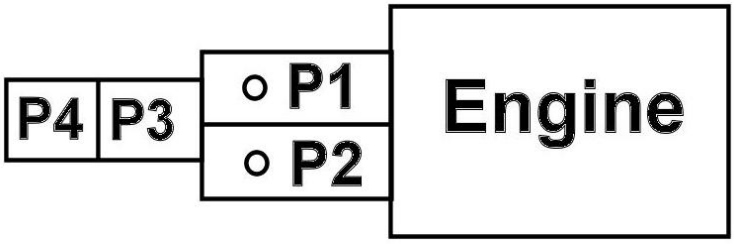
WIRING COLOUR TABLE

CODE	COLOUR	CODE	COLOUR	CODE	COLOUR	CODE	COLOUR
B	BLACK	W	WHITE	Br	BROWN	V	VIOLET
G	GREEN	Y	YELLOW	Lg	LIGHT GREEN	Dg	DARK GREEN
L	BLUE	P	PINK	Gy	GREY	Ch	CHOCOLATE
R	RED	O	ORANGE	Sb	SKY BLUE		

W L
WIRING COLOUR EXAMPLE
WIRING COLOUR(BLUE)
GROUND COLOUR(WHITE)

NOTE
(TERMINAL CONNECTION)
1, ONE TOUCH DECEL: 34-35(CONNECT)
24-29(CONNECT)
2, AUTO DECEL : 34-35(DISCONNECT)
24-29(DISCONNECT)

TB235



P1	Left Travel, Arm, Swing and First Auxiliary	10.3 GPM
P2	Right Travel, Boom and Bucket	10.3 GPM
P3	Slew, Dozer Blade and Second Auxiliary	6.00 GPM
P4	Pilot Pressure	2.85 GPM

Pump P1

Left Travel	3045 PSI	Test Port P1
Arm	3045 PSI	Test Port P1
Swing	3045 PSI	Test Port P1
First Auxiliary	3045 PSI	Test Port P1

Pump P2

Right Travel	3045 PSI	Test Port P2
Boom	3045 PSI	Test Port P2
Bucket	3045 PSI	Test Port P2

Pump P3

Slew	2842 PSI	Test Port P3
Bucket	2842 PSI	Test Port P3
Second Auxiliary	2842 PSI	Test Port P3

Pump P4

Pilot Pressure	493 PSI	Test Port P4

Methods for inspecting performance

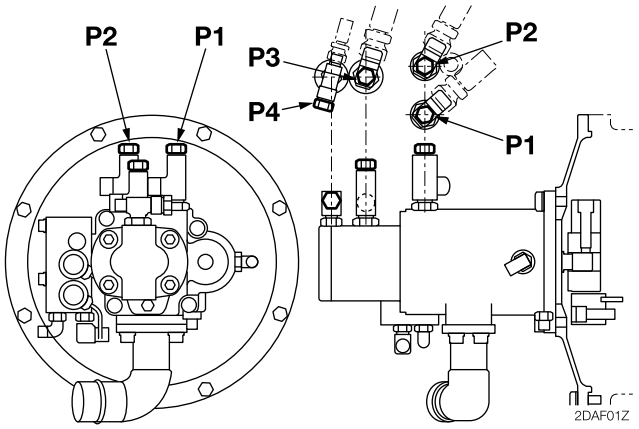
Hydraulic oil pressure (Main relief valve set pressure)

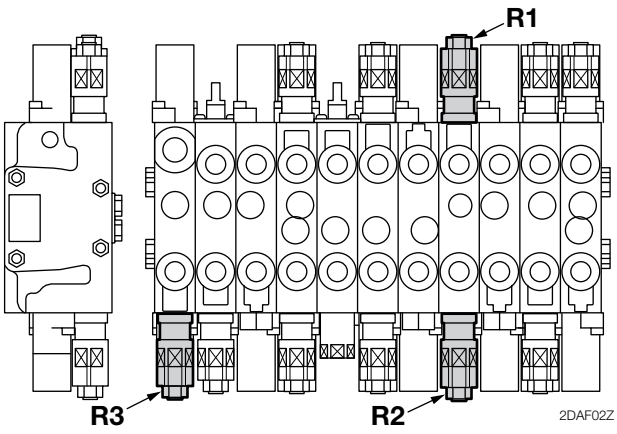
Boom, Arm, Dozer Blade

Measuring Method

- Engine: Maximum R. P. M.
- Hydraulic oil temp.: 50~60°C
- Mount the pressure gauge on the pressure detection port, operate the desired hydraulic circuit and measure the relief pressure.

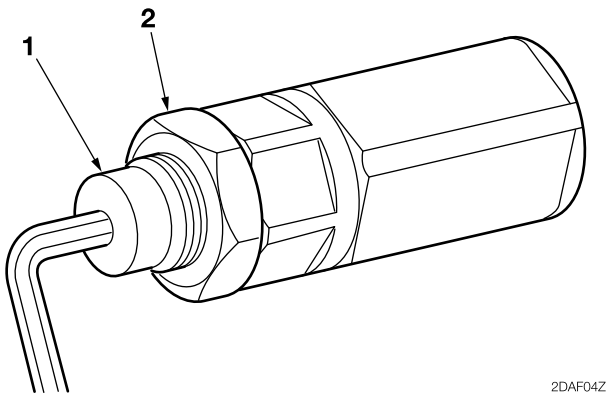
Circuit	Relief valve	Pressure detection port	
		Port location	Size
Arm	R1	P1	G1/1
Boom	R2	P2	
Blade	R3	P3	





Adjusting method

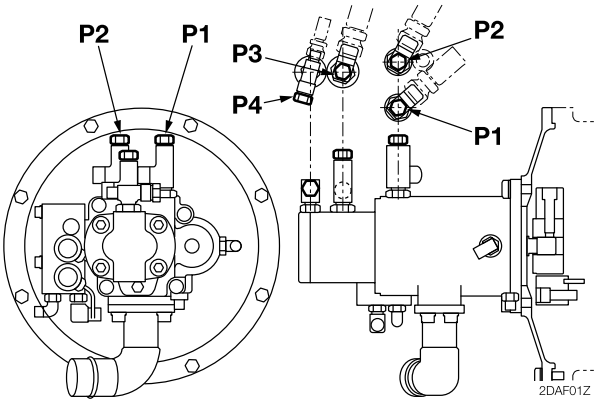
1. Loosen the locknut (2), and turn the setscrew (1) to adjust the set pressure.
   - To increase the set pressure, turn the setscrew clockwise.
   - To decrease the set pressure, turn the setscrew counterclockwise.
2. Upon completion of the adjustment, tighten the lock nut (2) by holding the setscrew (1) to prevent it from turning.
3. Operate the relief valve again to confirm that the newly set pressure is stabilized.



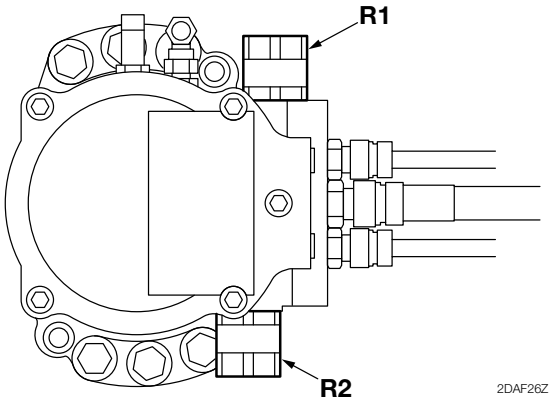
Hydraulic oil pressure (Slewing relief valve set pressure)
Measuring method

- Engine: Maximum R. P. M.
- Hydraulic oil temp.: 50~60°C
- Mount the pressure gauge on the pressure detection port and set a solid obstacle so that the upperstructure cannot slew in the direction to be measured. Next, operate the circuit to be measured and measure the relief pressure.

Circuit	Relief valve	Pressure detection port	
		Port location	Size
Right slew	R1	P3	G1/4
Left slew	R2		



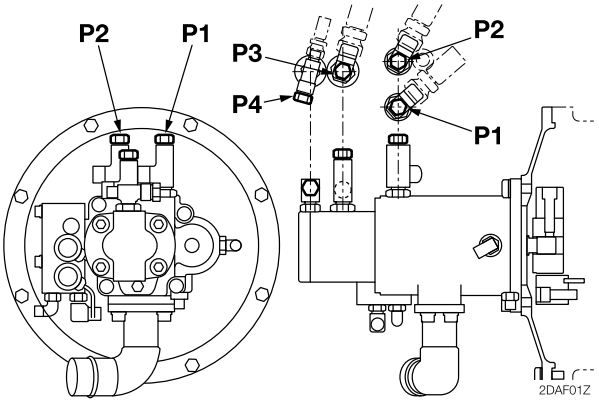
Adjusting method
It is not possible to adjust the set pressure with the relief valve on the slew motor. If adjustment is required, replace the relief valve assembly.



Hydraulic oil pressure (Pilot pressure)
Measuring method

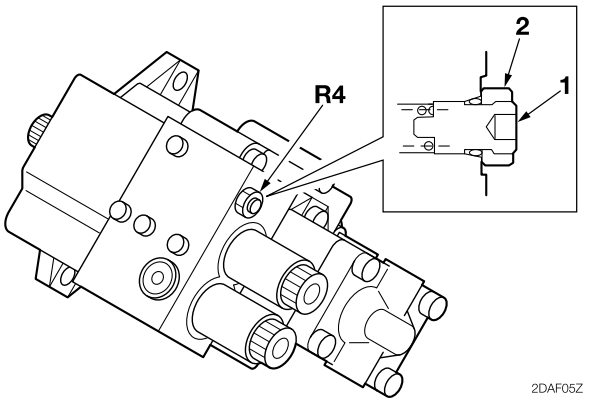
- Engine: Maximum R. P. M.
- Hydraulic oil temp.: 50~60˚C
- Mount pressure gauge on the pressure detection port and measure the pilot relief pressure.

Relief valve	Pressure detection port	
	Port location	Size
R4	P4	G1/4

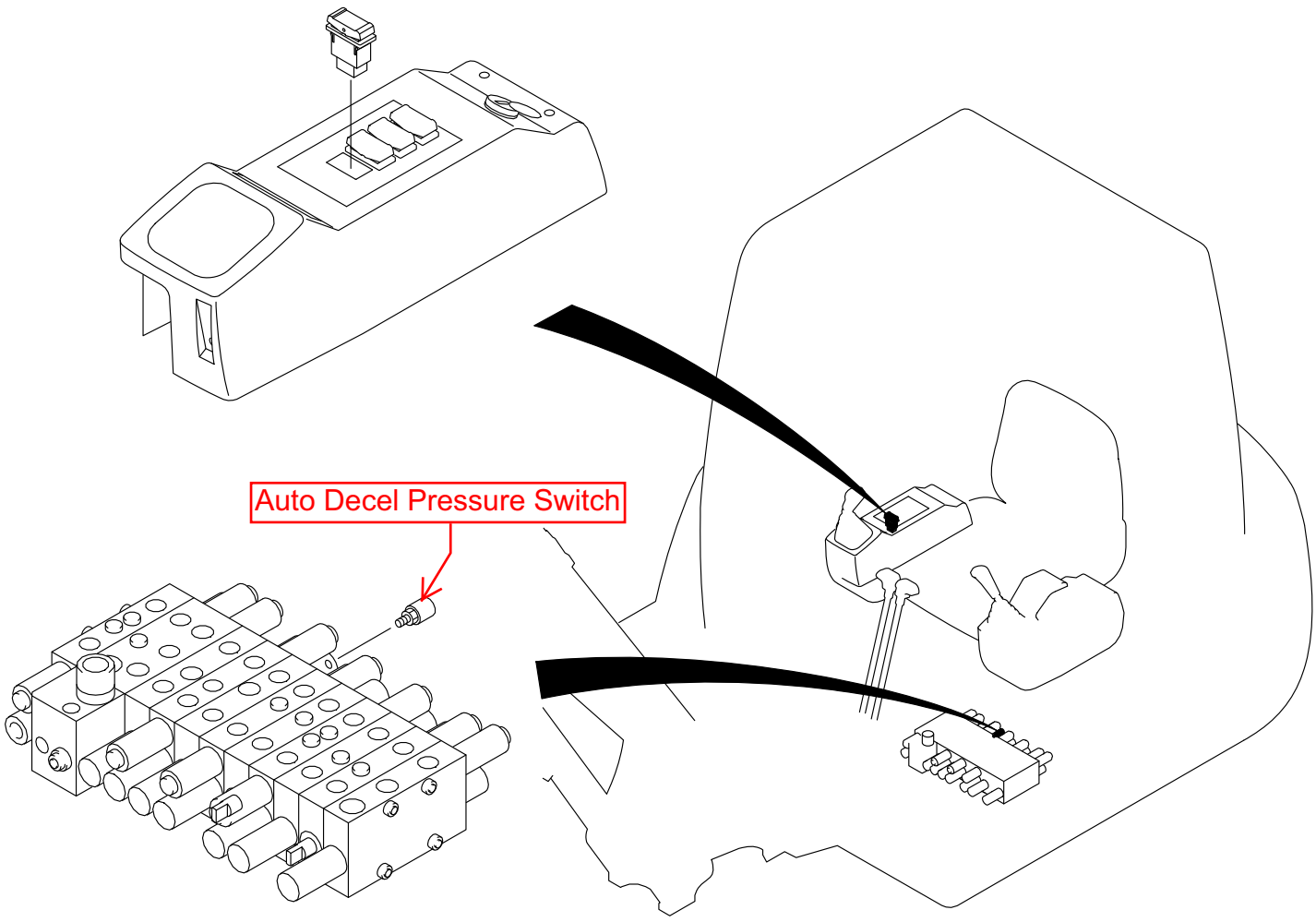


Adjusting Method

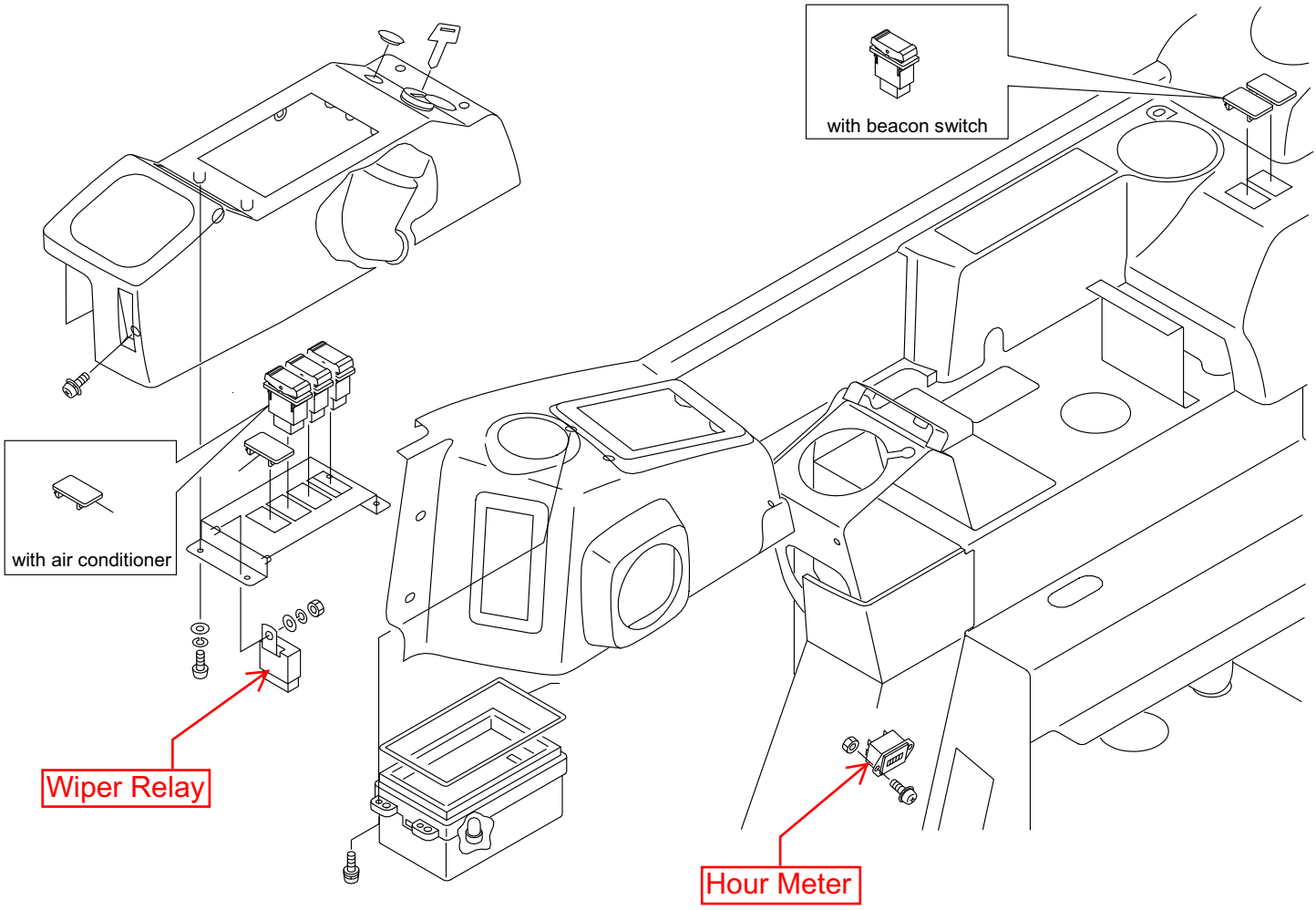
1. Loosen the locknut (2), and turn the setscrew (1) to adjust the set pressure.
   - To increase the set pressure, turn the setscrew clockwise.
   - To decrease the set pressure, turn the setscrew counterclockwise.
2. Upon completion of the adjustment, tighten the lock nut (2) by holding the setscrew (1) to prevent it from turning.
3. Operate the relief valve again to confirm that the newly set pressure is stabilized.



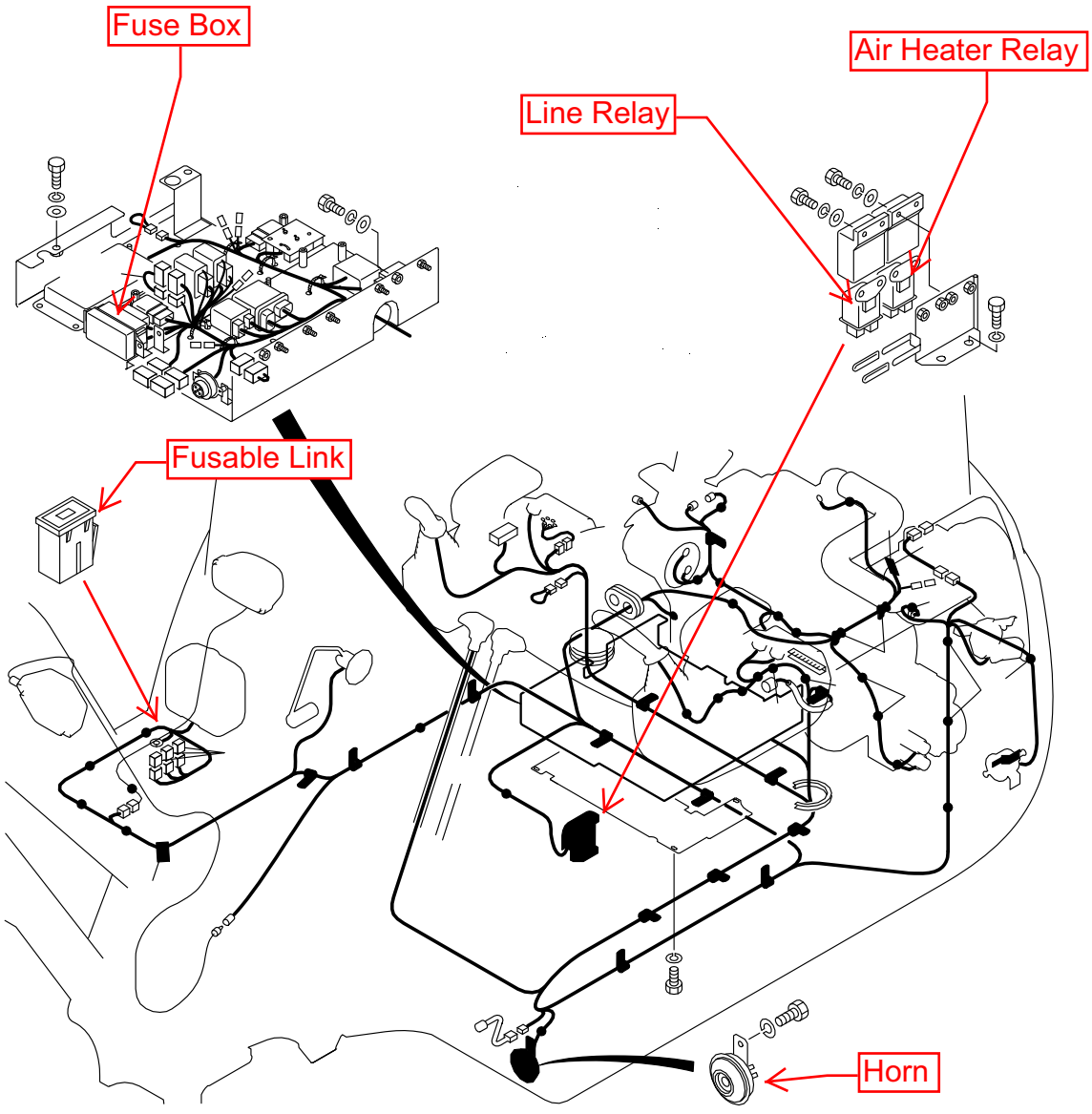
AUTO DECEL.



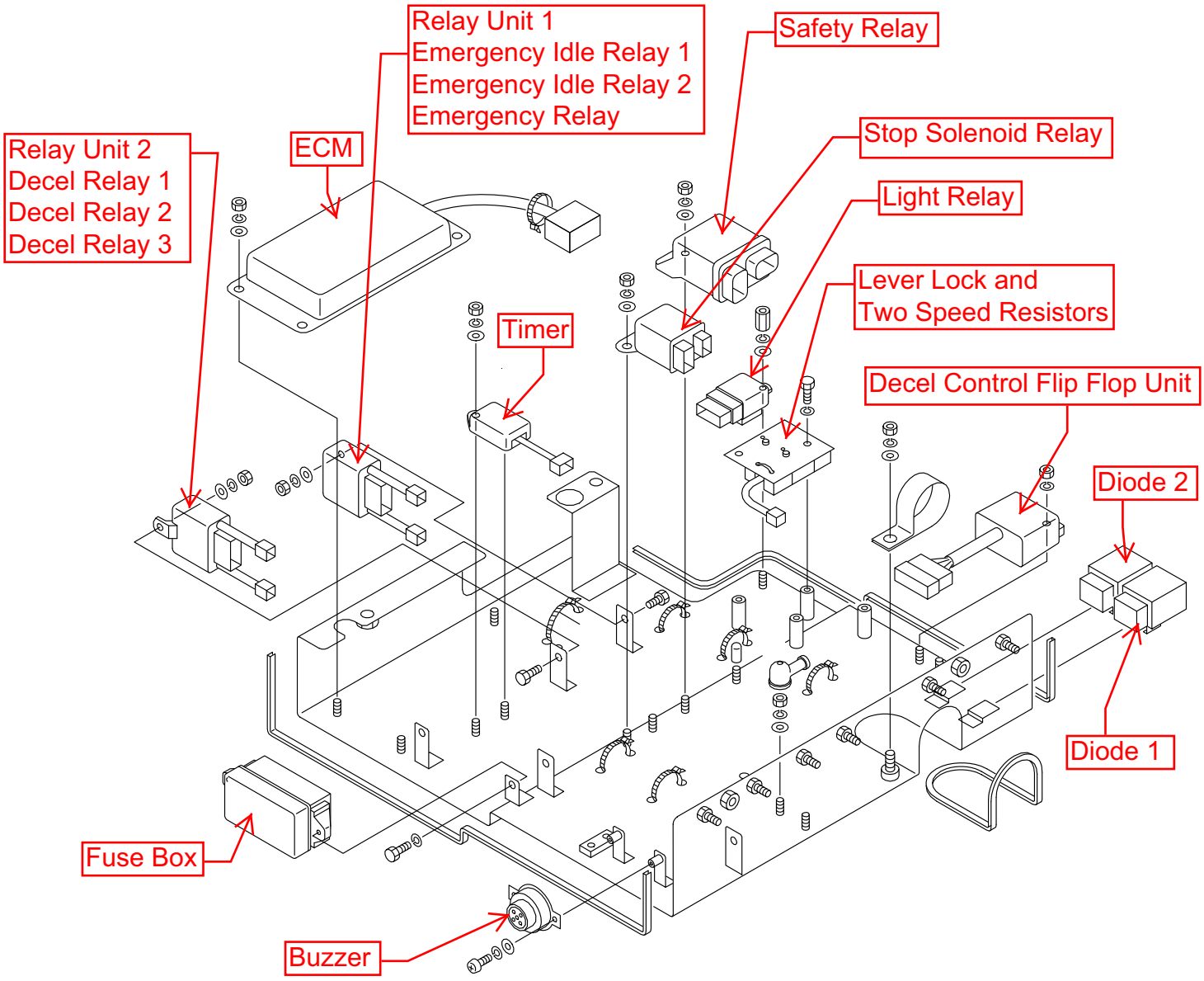
TB235 S/N 123500001-
CONTROL BOX; R.H. (cab)



ELECTRICAL (1/2)

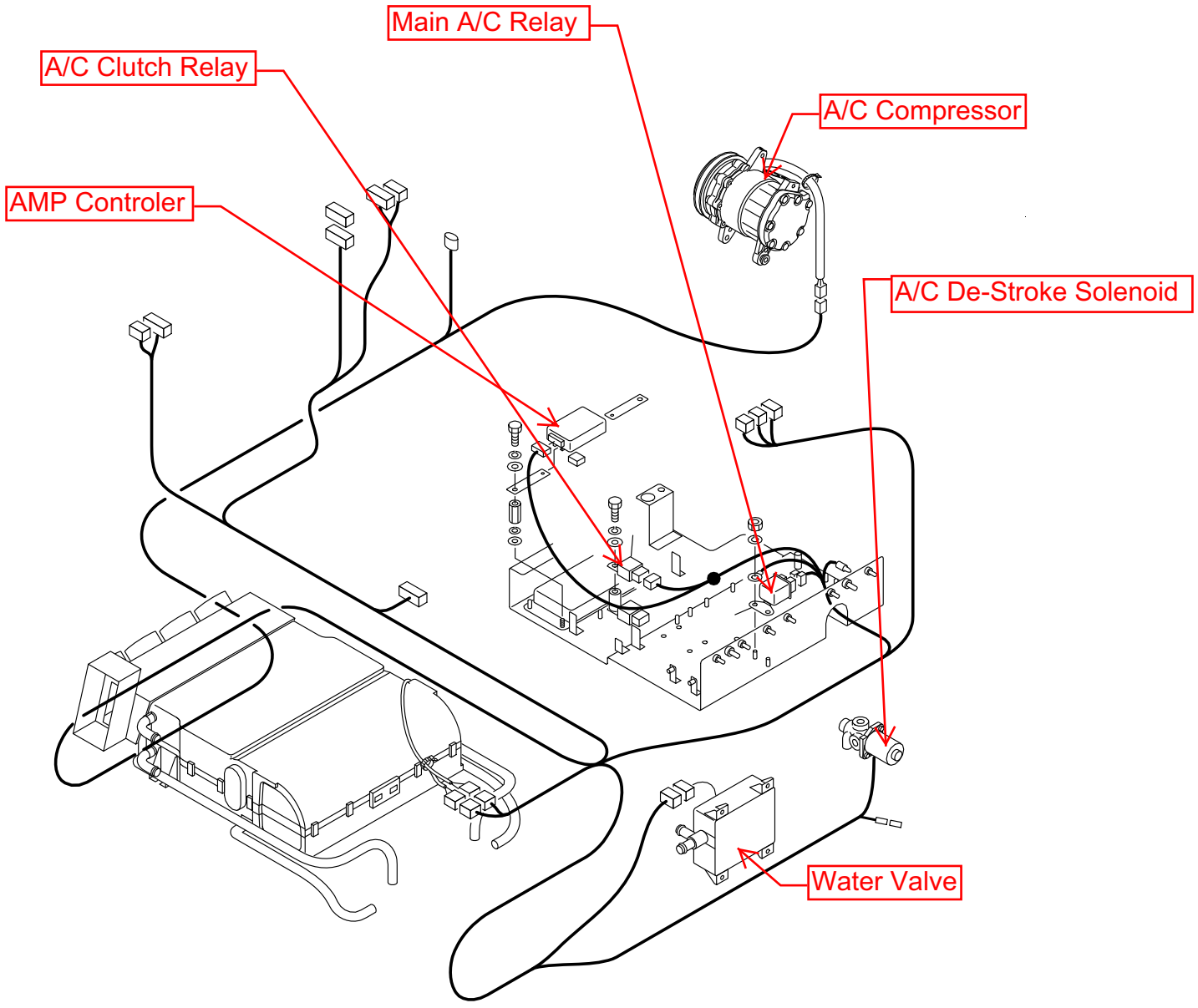


ELECTRICAL (2/2)



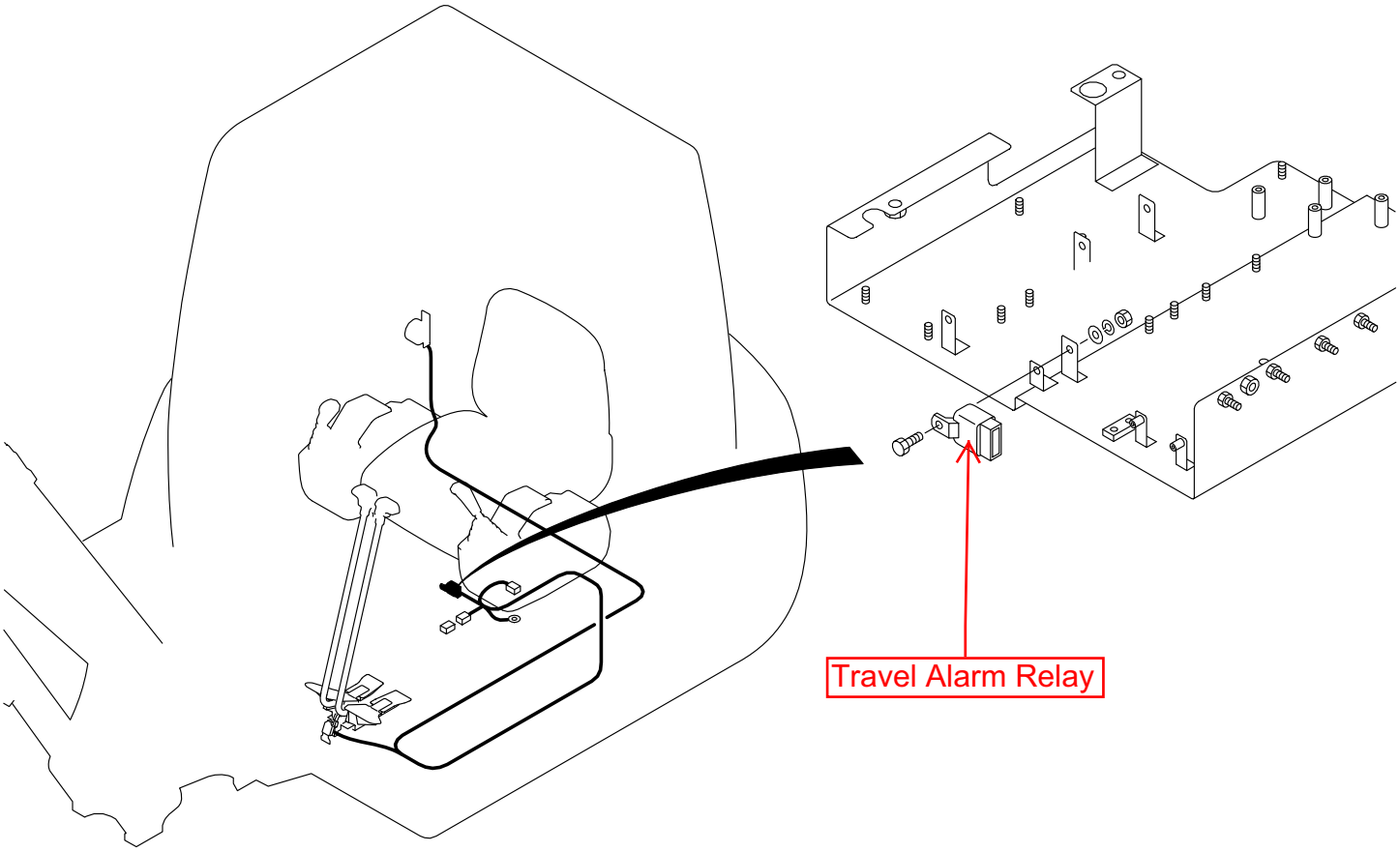
TB235 S/N 123500001-

CONTROL UNIT (air conditioner)

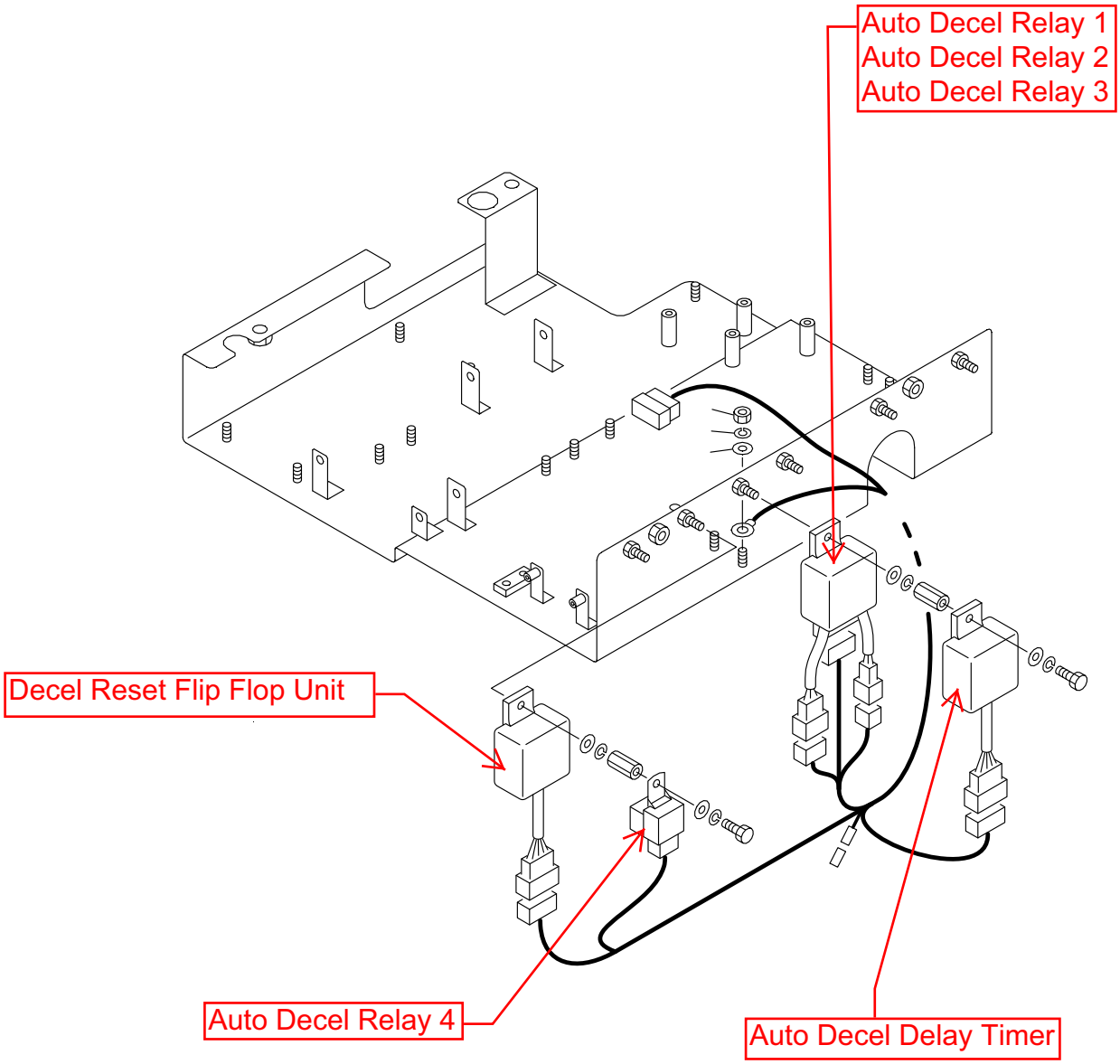


TB235 S/N 123500001-

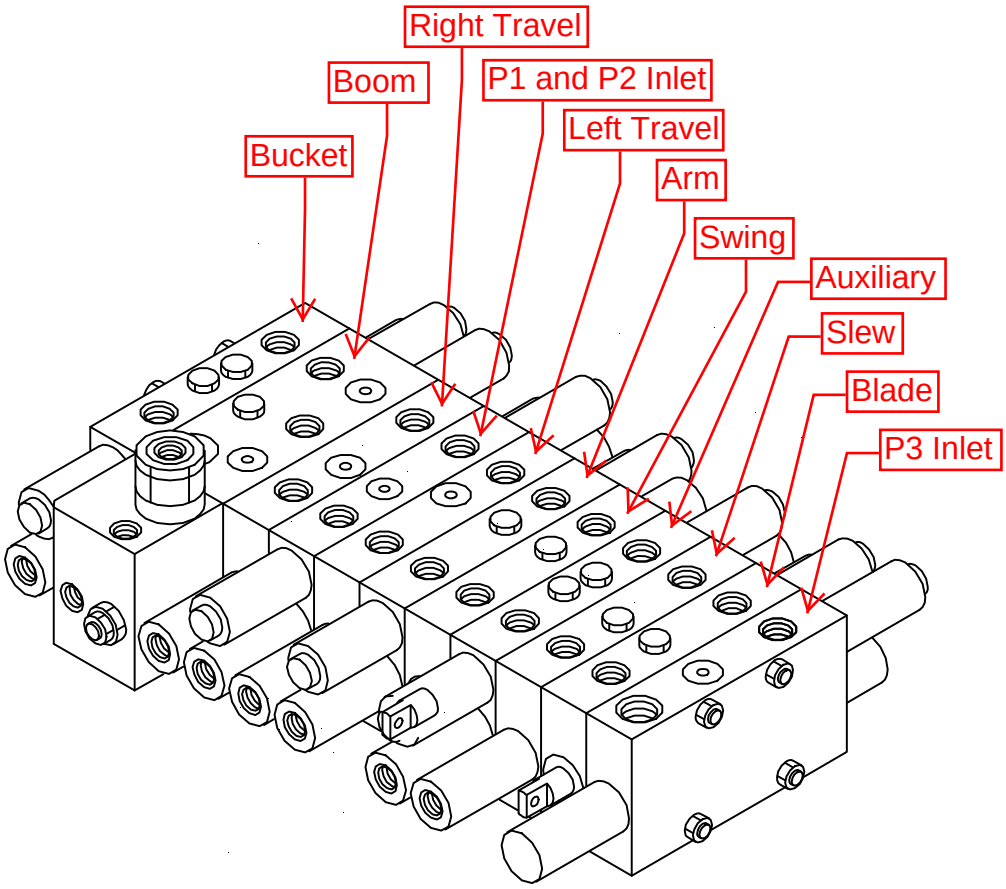
CONTROL UNIT (travel alarm)



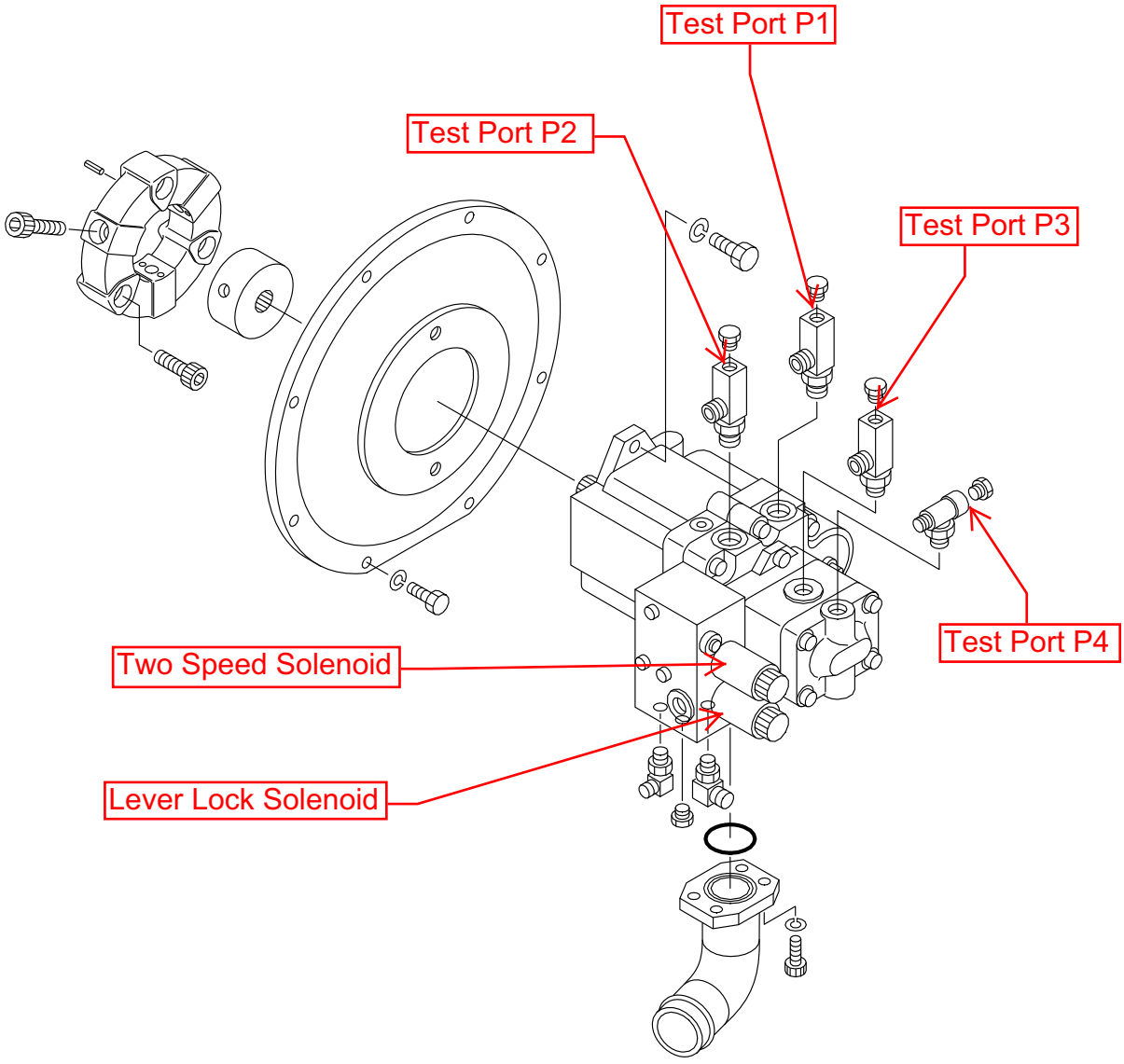
CONTROL UNIT (auto decel.)



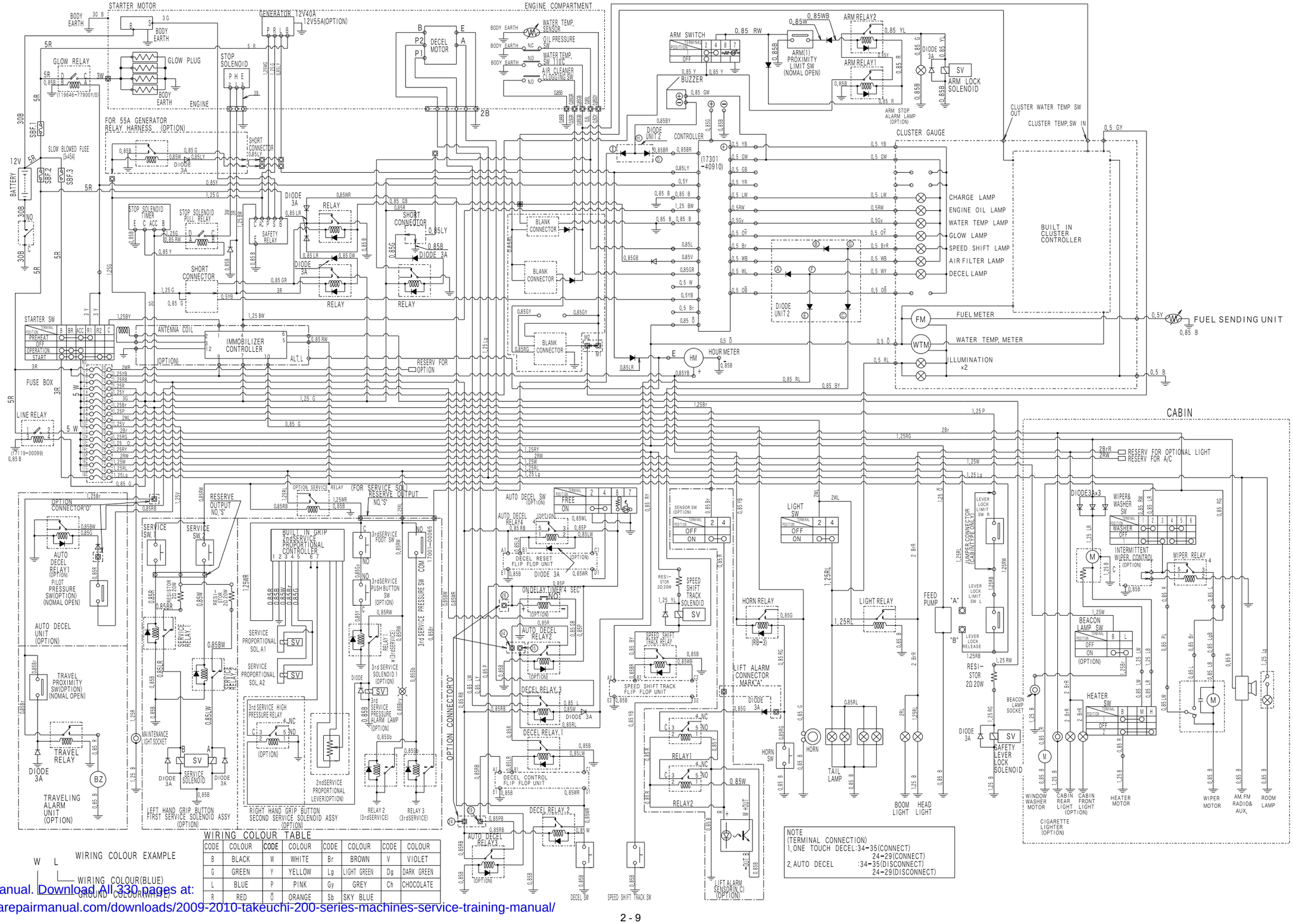
VALVE & ACCESSORIES



PUMP DRIVE


Test Port P1
Test Port P2
Test Port P3
Test Port P4
Two Speed Solenoid
Lever Lock Solenoid

ELECTRICAL WIRING DIAGRAM



WIRING COLOUR TABLE

CODE	COLOUR	CODE	COLOUR	CODE	COLOUR	CODE	COLOUR
B	BLACK	W	WHITE	Br	BROWN	V	VIOLET
G	GREEN	Y	YELLOW	Lg	LIGHT GREEN	Dg	DARK GREEN
L	BLUE	P	PINK	Gy	GREY	Ch	CHOCOLATE
R	RED	Õ	ORANGE	Sb	SKY BLUE		

WIRING COLOUR EXAMPLE

W L

WIRING COLOUR(BLUE)

GROUND COLOUR(WHITE)