SECTION 4 ELECTRICAL SYSTEM

Group 1 Component Location 4-1
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Group 3 Electrical Component Specification 4-23
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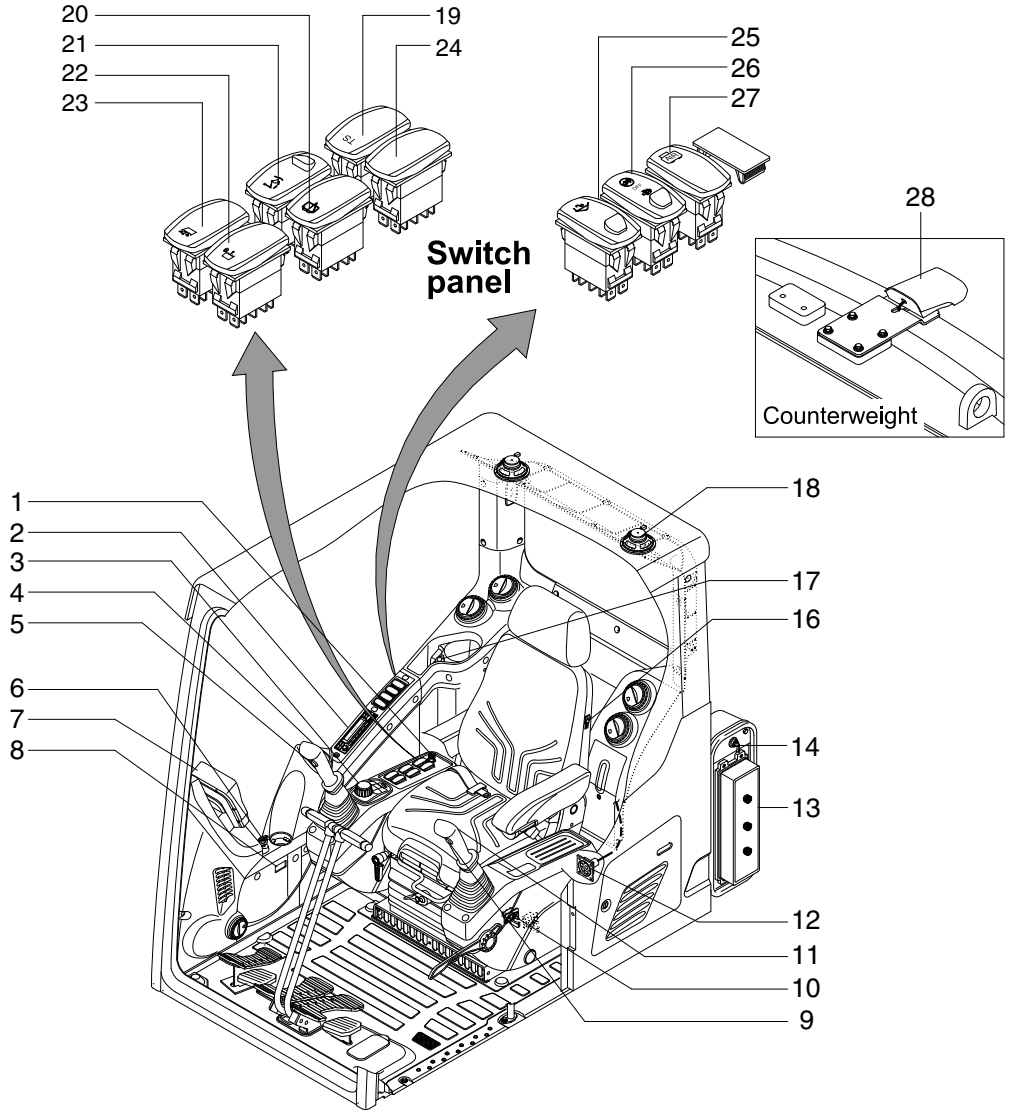
GROUP 1 COMPONENT LOCATION

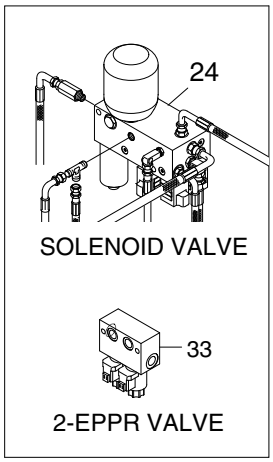
1. LOCATION 1

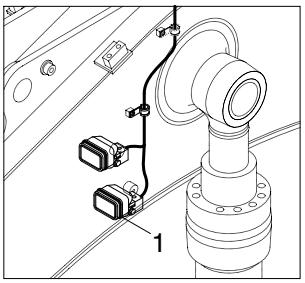


480A4EL01

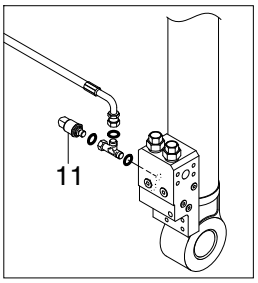
1	Cigar lighter	10	Emergency engine stop switch	20	Lower wiper & washer switch
2	Radio & USB player	11	One touch decel switch	21	Boom floating switch
3	Jod dial module	12	RS232 & J1939 service socket	22	Swing lock switch
4	Horn switch	13	Fuse & relay box	23	Free/fine swing switch
5	Cluster	14	Master switch	24	Option attach switch (opt)
6	Breaker operation switch	16	Seat heater switch	25	Quick clamp switch
7	Starting switch	17	Service socket	26	Exhaust system cleaning switch
8	Service meter	18	Speaker	27	Air compressor switch
9	Power max switch	19	Travel straight switch	28	Rear view camera

2. LOCATION 2

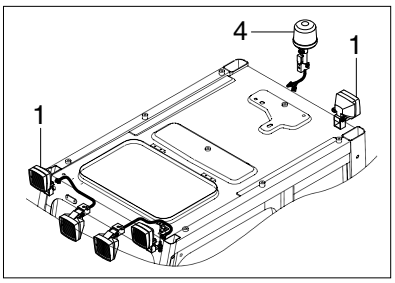




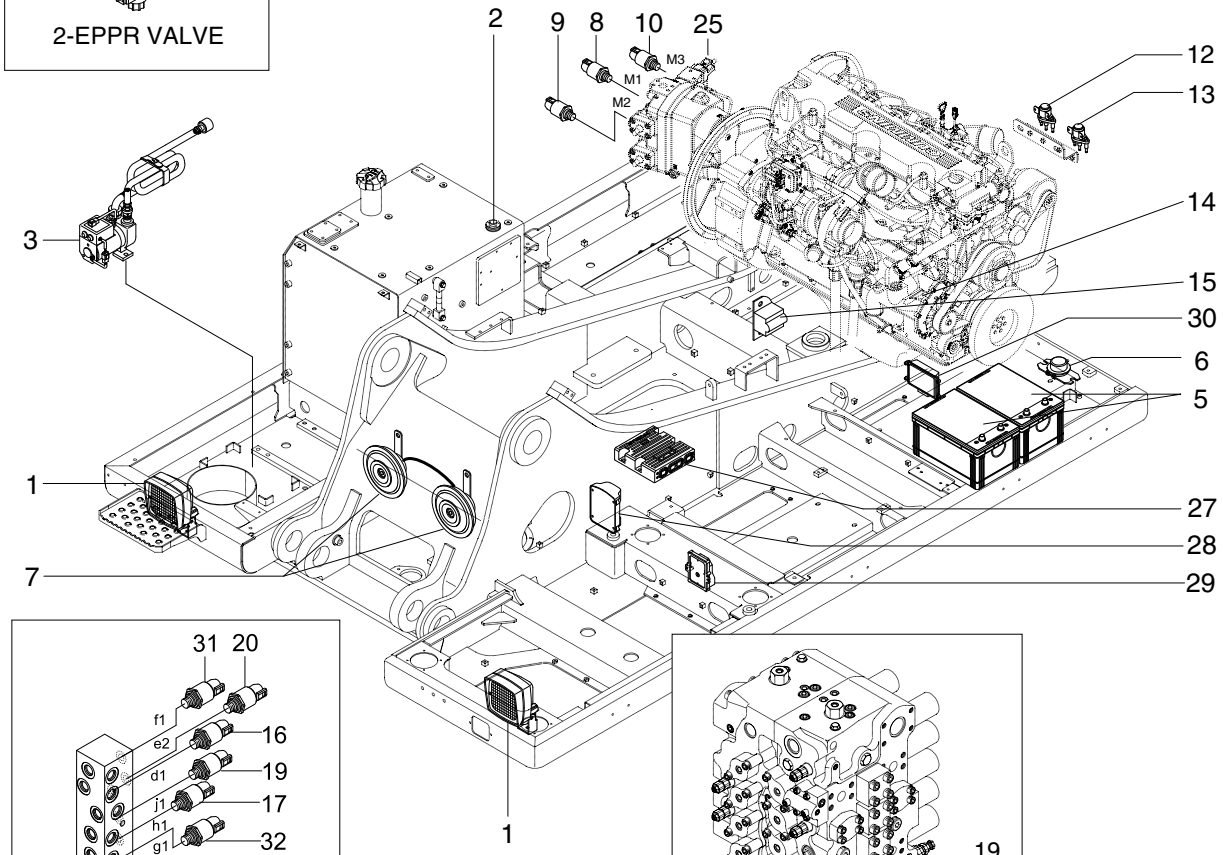
BOOM

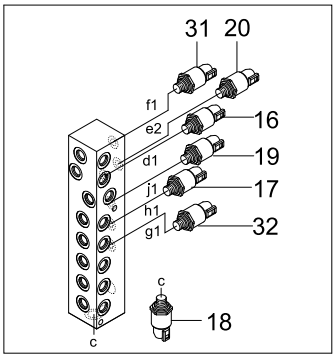


BOOM SAFETY VALVE

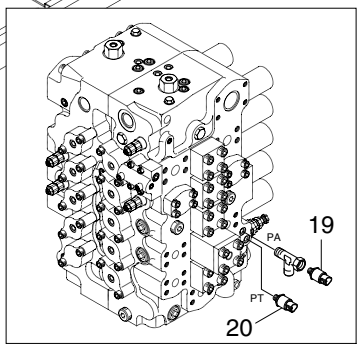


CAB





TERMINAL BLOCK



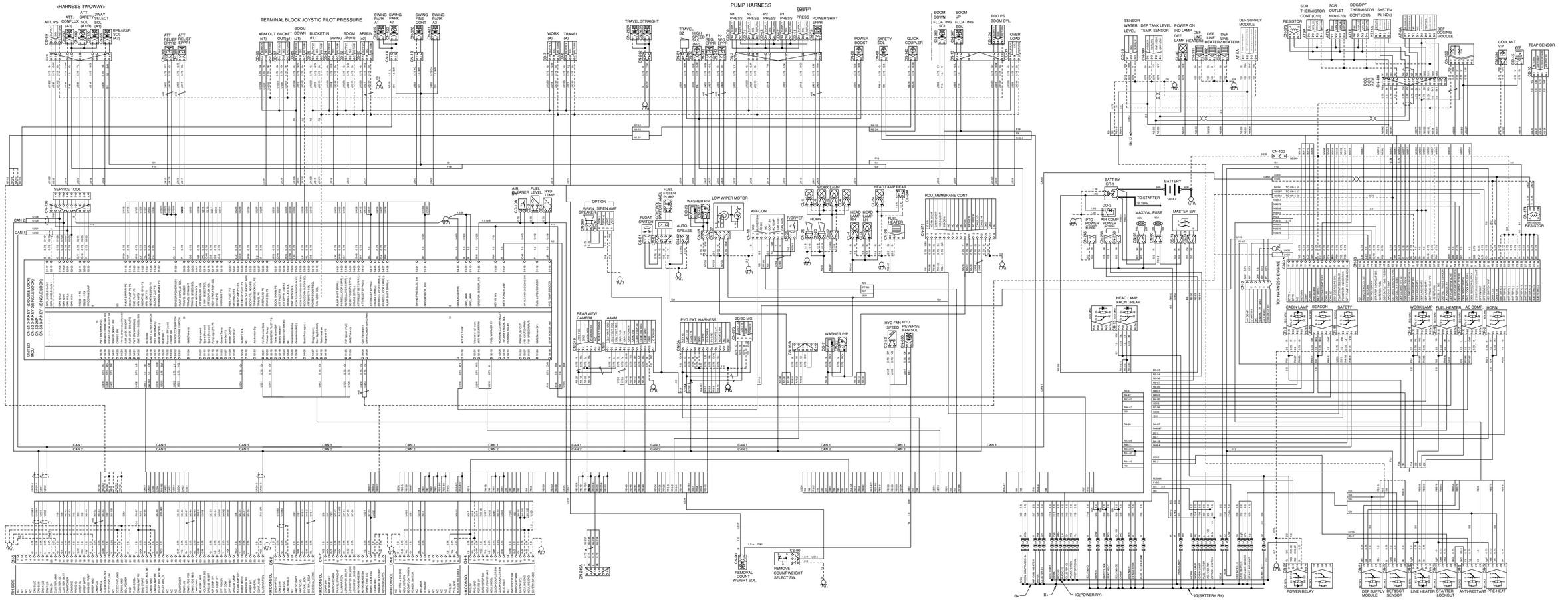
MAIN CONTROL VALVE

480A4EL02A

1	Lamp	12	Start relay	24	4 cartridge valve
2	Fuel sender	13	Heater relay	25	Pump EPPR valve
3	Fuel filler pump	14	Alternator	27	United MCU
4	Beacon lamp	15	Travel alarm buzzer	28	RMCU assy
5	Battery	16	Arm in pressure sensor	29	RDU assy
6	Battery relay	17	Boom up pressure sensor	30	View controller
7	Horn	18	Swing pressure sensor	31	Bucket in pressure sensor
8	A1 pump pressure sensor	19	Boom down pressure sensor	32	Bucket out pressure sensor
9	A2 pump pressure sensor	20	Arm out pressure sensor	33	2 EPPR cartridge valve
10	EPPR pressure sensor	21	Attach pressure sensor		
11	Overload pressure sensor	22	Travel pressure sensor		

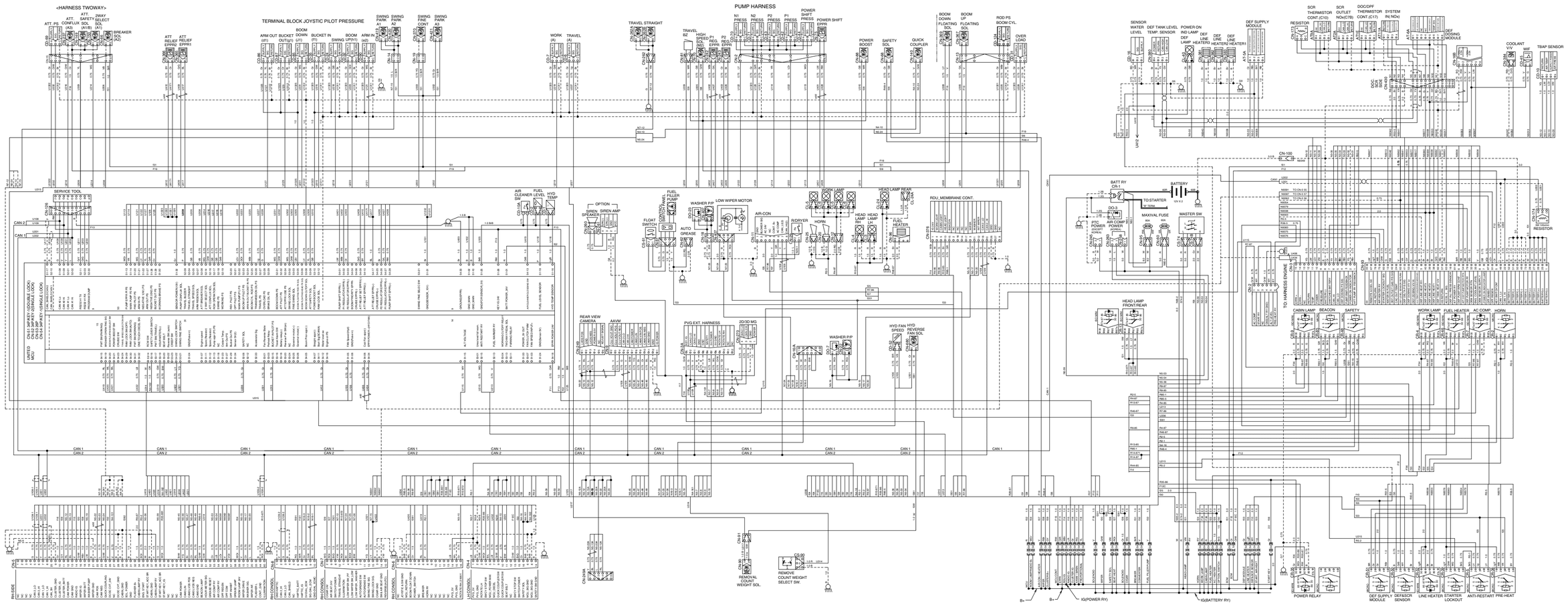
· ELECTRICAL CIRCUIT (1/4)

- MACHINE SERIAL NO.
  HX480A L : -#00002
  HX520A L : -#00002



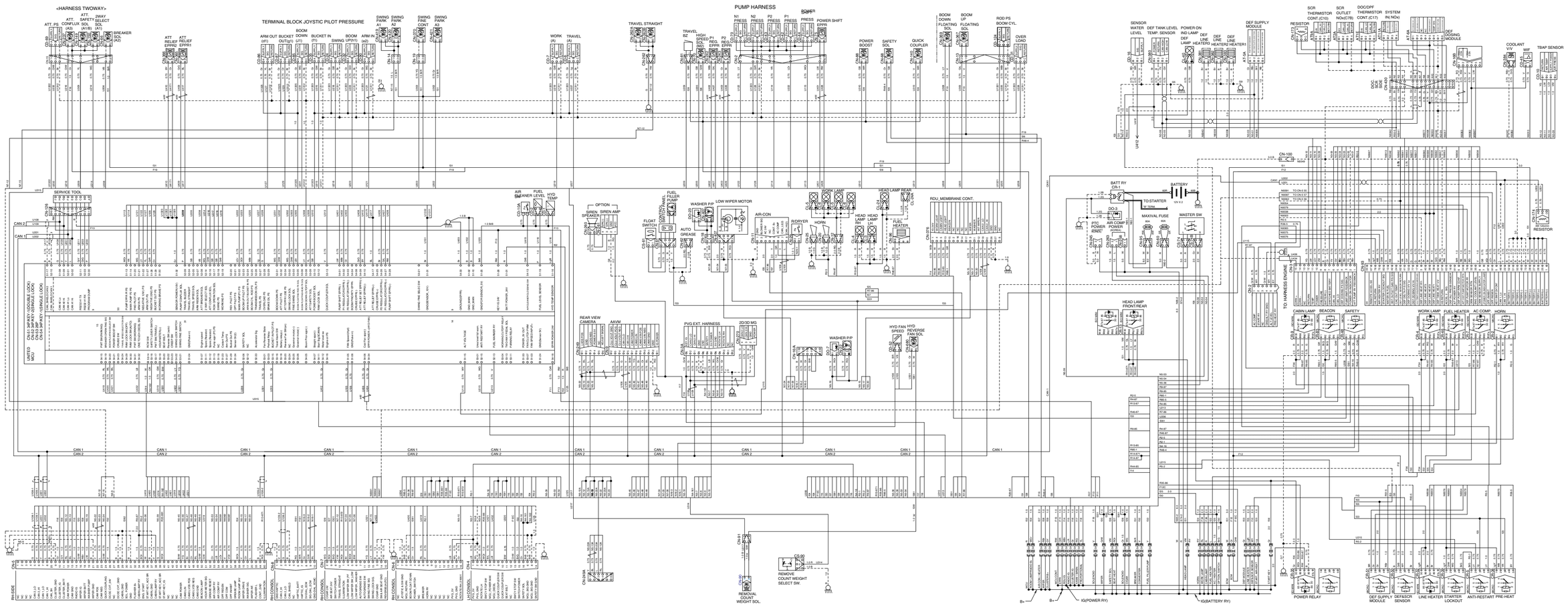
20KB-93201-00

- MACHINE SERIAL NO.
  HX480A L : #00003-#00061
  HX520A L : #00003-#00099

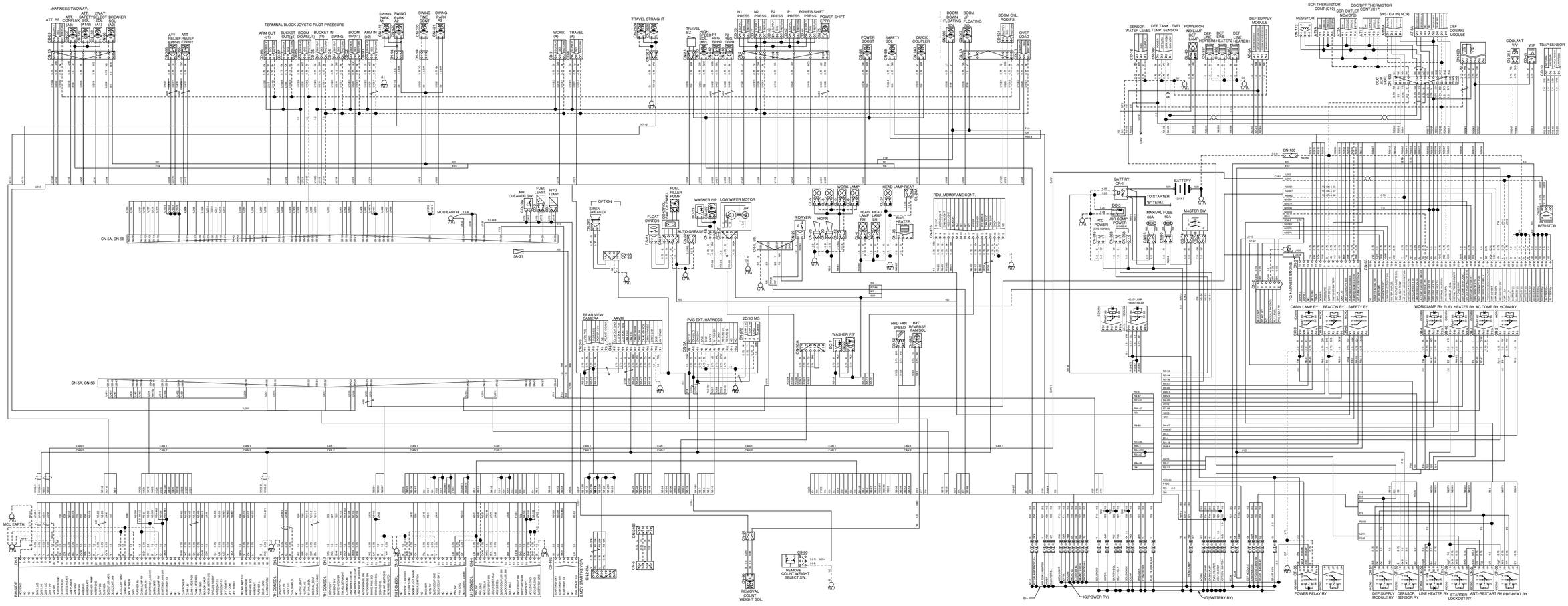


20KB-93202-00

- MACHINE SERIAL NO.
  HX480A L : #00062-#00107
  HX520A L : #00100-#00173

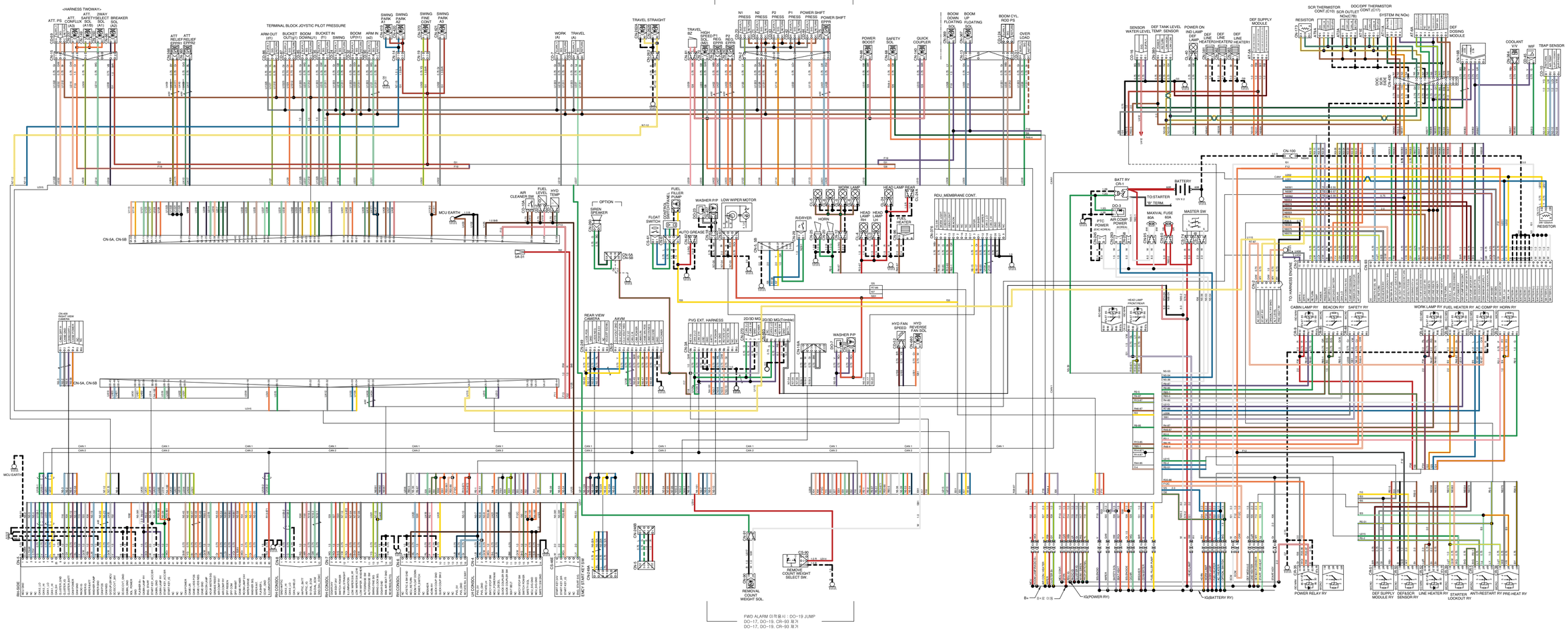


- MACHINE SERIAL NO.
  HX480A L : #00108-
  HX520A L : #00174-



20KB-93204-01

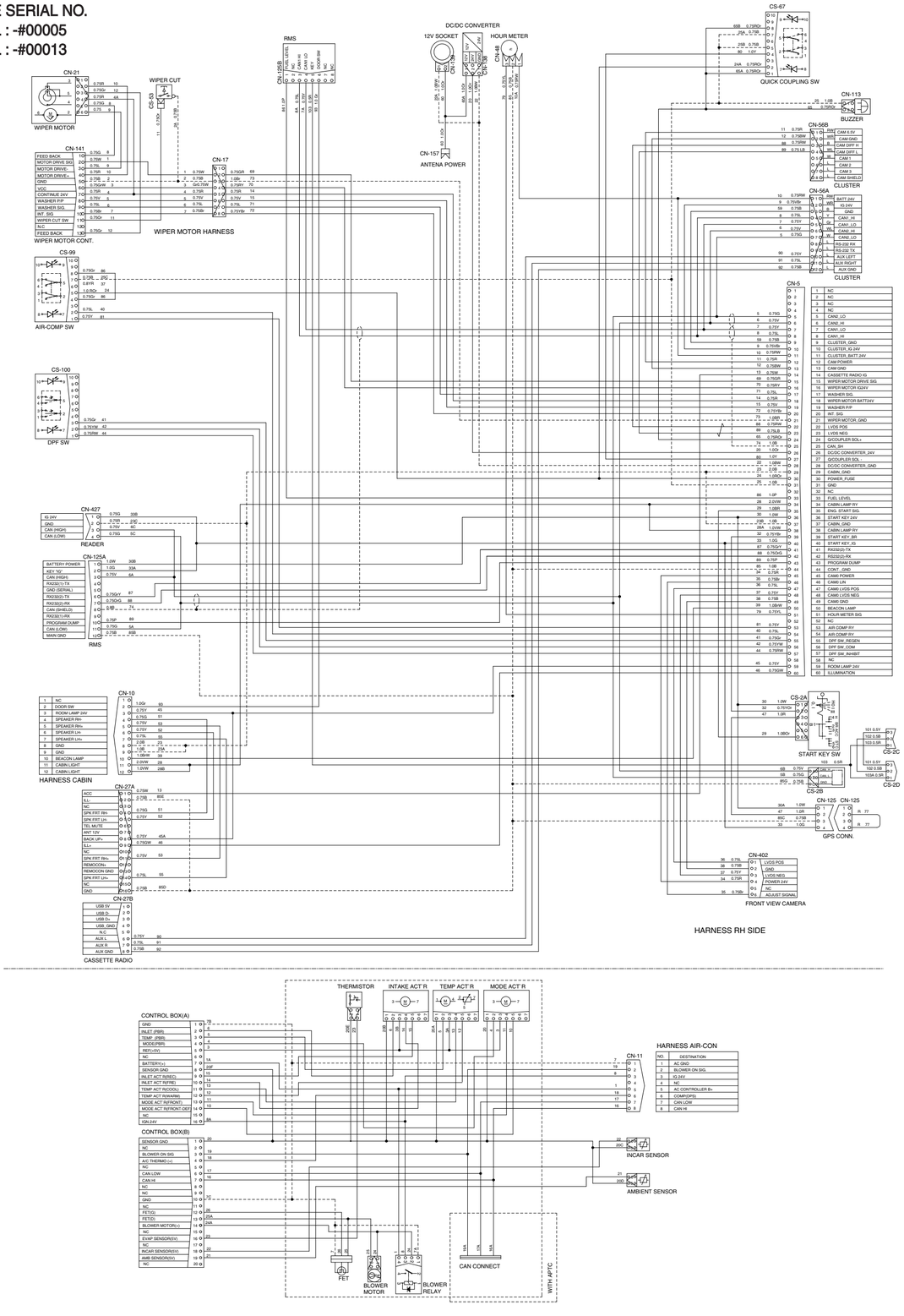
- MACHINE SERIAL NO. : CURRENT

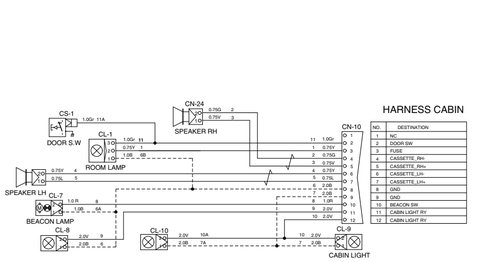


20KB-93205-00

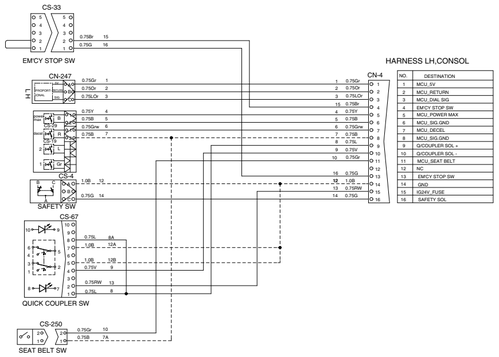
· ELECTRICAL CIRCUIT (2/4)

- MACHINE SERIAL NO.
  HX480A L : -#00005
  HX520A L : -#00013

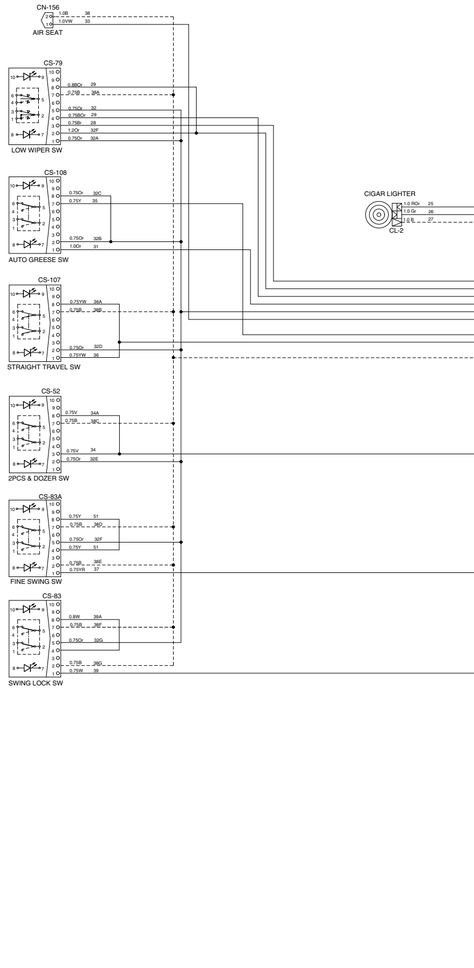




NO.	DESTINATION
1	NC
2	DOOR SW
3	FUSE
4	CASSETTE_RH-
5	CASSETTE_RH+
6	CASSETTE_LH-
7	CASSETTE_LH+
8	GND
9	GND
10	BEACON SW
11	CABIN LIGHT RY
12	CABIN LIGHT RY



NO.	DESTINATION
1	MCU_5V
2	MCU_RETURN
3	MCU_DIAL SIG
4	EMCY STOP SW
5	MCU_POWER MAX
6	MCU_SIG.GND
7	MCU_DICCEL
8	MCU_SIG.GND
9	G/COUPLER SOL+
10	G/COUPLER SOL-
11	MCU_SEAT BELT
12	NC
13	EMCY STOP SW
14	GND
15	IGN2V_FUSE
16	SAFETY SOL



NO.	DESTINATION
1	ILLUMINATION
2	CIGARLIGHT IGN1V
3	CIGARLIGHT_GND
4	WIPER_PI
5	SWITCH_Lo
6	SWITCH_WASHER TANK
7	AUTO GREESE RESET
8	SWITCH POWER
9	AIR SHEAT POWER
10	NC
11	AUTO GREESE LAMP
12	TRAVEL ST_SOL
13	FINE SWING SIG
14	GND
15	SWING LOCK SIG

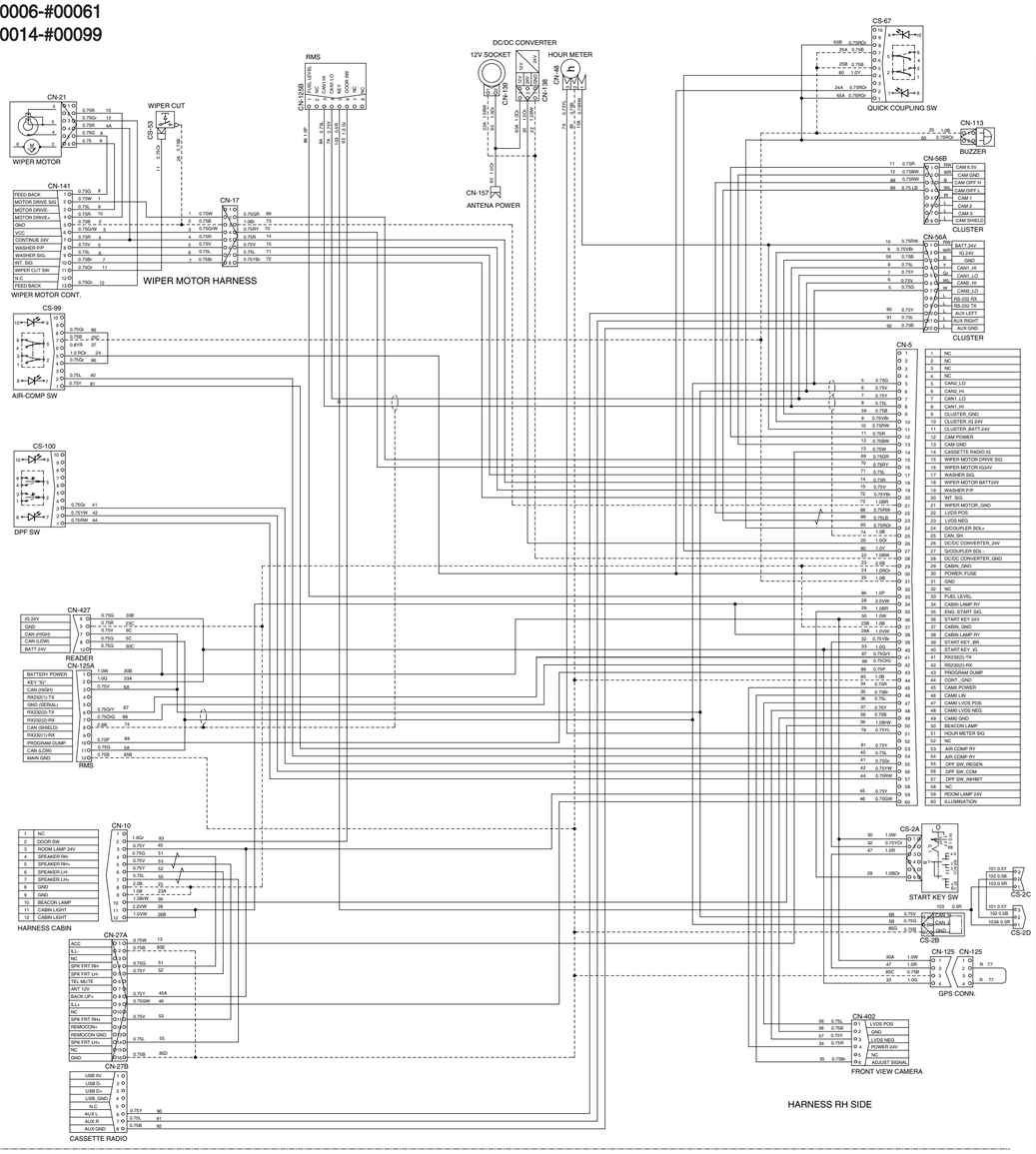
NO.	DESTINATION
1	GND
2	CAN_HI
3	CAN_LO
4	CAN_SHIELD
5	NC
6	POWER_BATT
7	POWER_IG
8	5V_ECM
9	SIG_ECM
10	GND_ECM

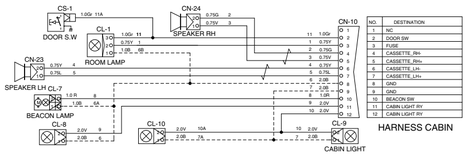
NO.	DESTINATION
1	RX232(2)-TX
2	MCU_GND
3	BOOM FLOAT DOWN SIG
4	IGN_24V
5	RX232(2)-RX
6	BREAKER
7	GND
8	HORN RY
9	NC
10	NC
11	NC
12	NC
13	PROGRAM DUMP
14	MCU_5V
15	MCU_SUPPLY GND
16	MCU_DIAL SIG

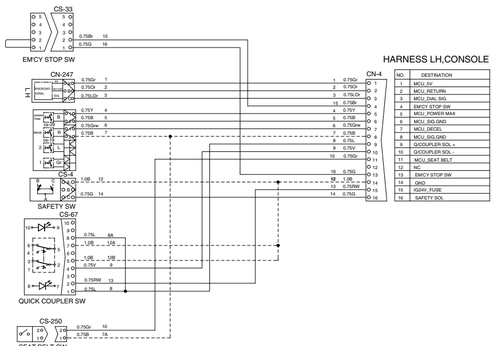
NO.	DESTINATION
1	AC GND
2	BLOWER ON SIG
3	IG 24V
4	NC
5	AC CONTROLLER B+
6	COMP(DIT3)
7	CAN LOW
8	CAN HI

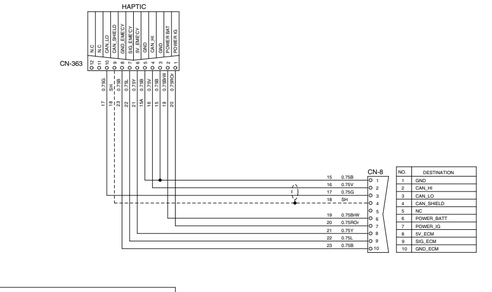
20KB-93101-01

- MACHINE SERIAL NO.
  HX480A L : #00006-#00061
  HX520A L : #00014-#00099



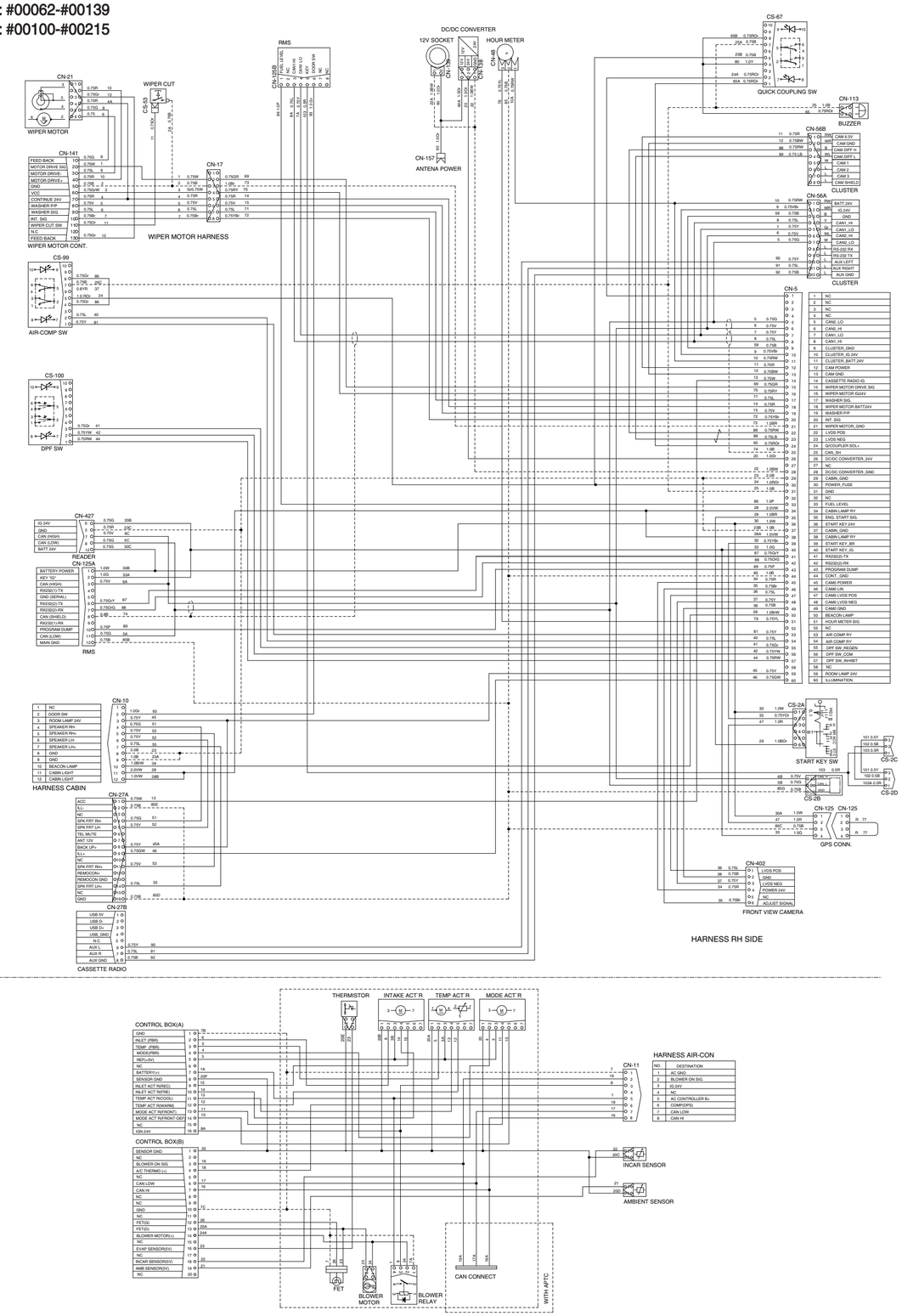






20KB-93102-00

- MACHINE SERIAL NO.
  HX480A L : #00062-#00139
  HX520A L : #00100-#00215



NO.	DESTINATION
1	NC
2	NC
3	NC
4	NC
5	CAN2_LO
6	CAN2_HI
7	CAN1_LO
8	CAN1_HI
9	CLUSTER_GND
10	CLUSTER_IG 24V
11	CLUSTER_BATT.24V
12	CAM POWER
13	CAM GND
14	CASSETTE RADIO IG
15	WIPER MOTOR DRIVE SIG
16	WIPER MOTOR 4S24V
17	WASHER SIG.
18	WIPER MOTOR BATT24V
19	WASHER P/P
20	INT. SIG
21	WIPER MOTOR_GND
22	LVDS POS
23	LVDS NEG
24	G/COUPLER SOL+
25	CAN_SH
26	DC/DC CONVERTER_24V
27	NC
28	DC/DC CONVERTER_GND
29	CABIN_GND
30	POWER_FUSE
31	GND
32	NC
33	FUEL LEVEL
34	CABIN LAMP RY
35	ENG. START SIG.
36	START KEY 24V
37	CABIN_GND
38	CABIN LAMP RY
39	START KEY_B/R
40	START KEY_IG
41	RX232(2)-TX
42	RS232(2)-RX
43	PROGRAM DUMP
44	CONT._GND
45	CAN0 POWER
46	CAN0 LIN
47	CAN0 LVDS POS
48	CAN0 LVDS NEG
49	CAN0 GND
50	BEACON LAMP
51	HOUR METER SIG
52	NC
53	AIR COMP RY
54	AIR COMP RY
55	DPF SW_REGEN
56	DPF SW_COM
57	DPF SW_INHIBIT
58	NC
59	ROOM LAMP 24V
60	ILLUMINATION

NO.	DESTINATION
1	NC
2	DOOR SW
3	FUSE
4	CASSETTE_RH+
5	CASSETTE_RH-
6	CASSETTE_LH-
7	CASSETTE_LH+
8	GND
9	GND
10	BEACON SW
11	CABIN LIGHT RY
12	CABIN LIGHT RY

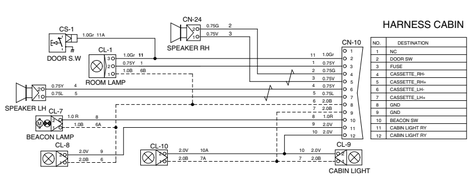
NO.	DESTINATION
1	NC
2	NC
3	NC
4	NC
5	CAN2_LO
6	CAN2_HI
7	CAN1_LO
8	CAN1_HI
9	CLUSTER_GND
10	CLUSTER_IG 24V
11	CLUSTER_BATT.24V
12	CAM POWER
13	CAM GND
14	CASSETTE RADIO IG
15	WIPER MOTOR DRIVE SIG
16	WIPER MOTOR 4S24V
17	WASHER SIG.
18	WIPER MOTOR BATT24V
19	WASHER P/P
20	INT. SIG
21	WIPER MOTOR_GND
22	LVDS POS
23	LVDS NEG
24	G/COUPLER SOL+
25	CAN_SH
26	DC/DC CONVERTER_24V
27	NC
28	DC/DC CONVERTER_GND
29	CABIN_GND
30	POWER_FUSE
31	GND
32	NC
33	FUEL LEVEL
34	CABIN LAMP RY
35	ENG. START SIG.
36	START KEY 24V
37	CABIN_GND
38	CABIN LAMP RY
39	START KEY_B/R
40	START KEY_IG
41	RX232(2)-TX
42	RS232(2)-RX
43	PROGRAM DUMP
44	CONT._GND
45	CAN0 POWER
46	CAN0 LIN
47	CAN0 LVDS POS
48	CAN0 LVDS NEG
49	CAN0 GND
50	BEACON LAMP
51	HOUR METER SIG
52	NC
53	AIR COMP RY
54	AIR COMP RY
55	DPF SW_REGEN
56	DPF SW_COM
57	DPF SW_INHIBIT
58	NC
59	ROOM LAMP 24V
60	ILLUMINATION

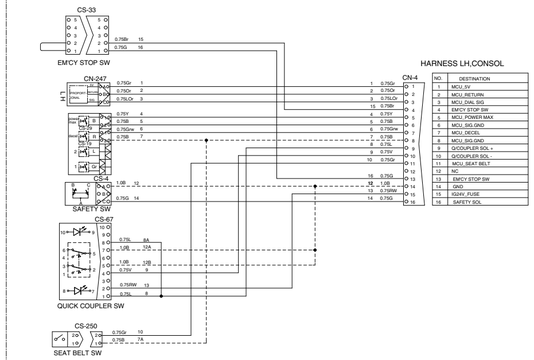
NO.	DESTINATION
1	NC
2	DOOR SW
3	SPEAKER RH+
4	SPEAKER RH-
5	SPEAKER LH-
6	SPEAKER LH+
7	GND
8	BEACON LAMP
9	CABIN LIGHT
10	CABIN LIGHT

NO.	DESTINATION
1	ACC
2	ILL-
3	NC
4	SPK FRT RH-
5	SPK FRT LH-
6	TEL MUTE
7	ANT 12V
8	BACK UP+
9	ILL+
10	NC
11	SPK FRT RH+
12	REMOCON+
13	REMOCON GND
14	SPK FRT LH+
15	NC
16	GND

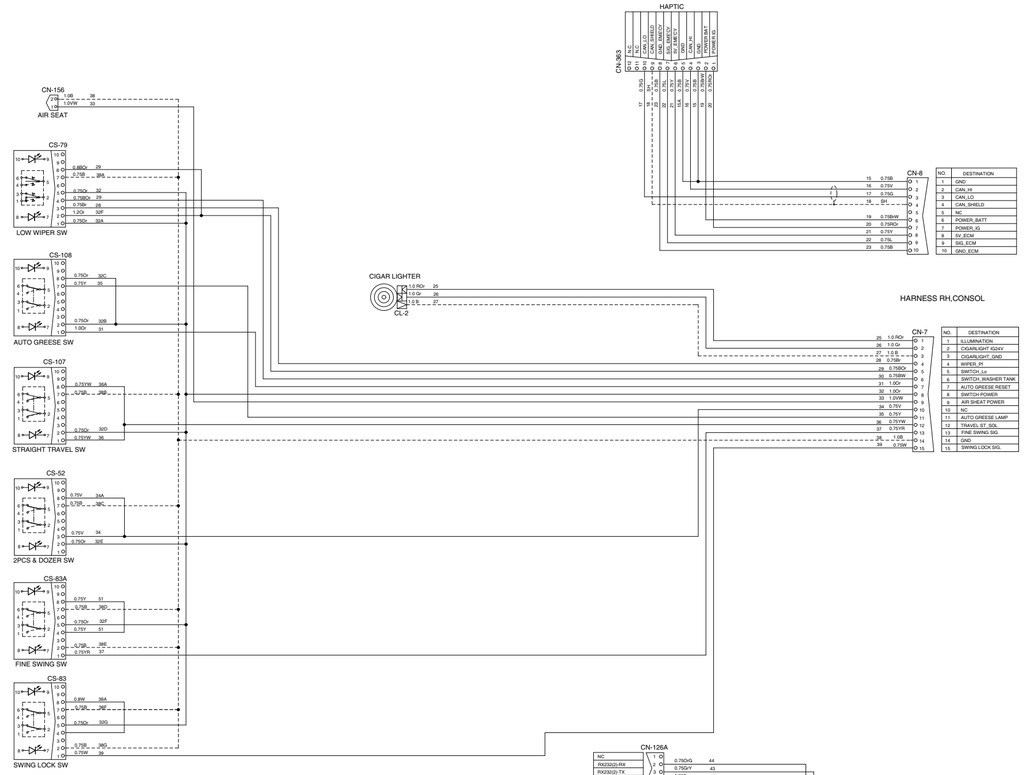
NO.	DESTINATION
1	USB 5V
2	USB D-
3	USB D+
4	USB_GND
5	N.C
6	AUX L
7	AUX R
8	AUX GND

NO.	DESTINATION
1	LVDS POS
2	GND
3	LVDS NEG
4	POWER 24V
5	NC
6	ADJUST SIGNAL





NO.	DESTINATION
1	MCU_5V
2	MCU_RETURN
3	MCU_DIAL SIG
4	EMCY STOP SW
5	MCU_POWER MAX
6	MCU_SIG.GND
7	MCU_DECEL
8	MCU_SIG.GND
9	G/COUPLER SOL+
10	G/COUPLER SOL-
11	MCU_SEAT BELT
12	NC
13	EMCY STOP SW
14	GND
15	IGAN_FUSE
16	SAFETY SOL



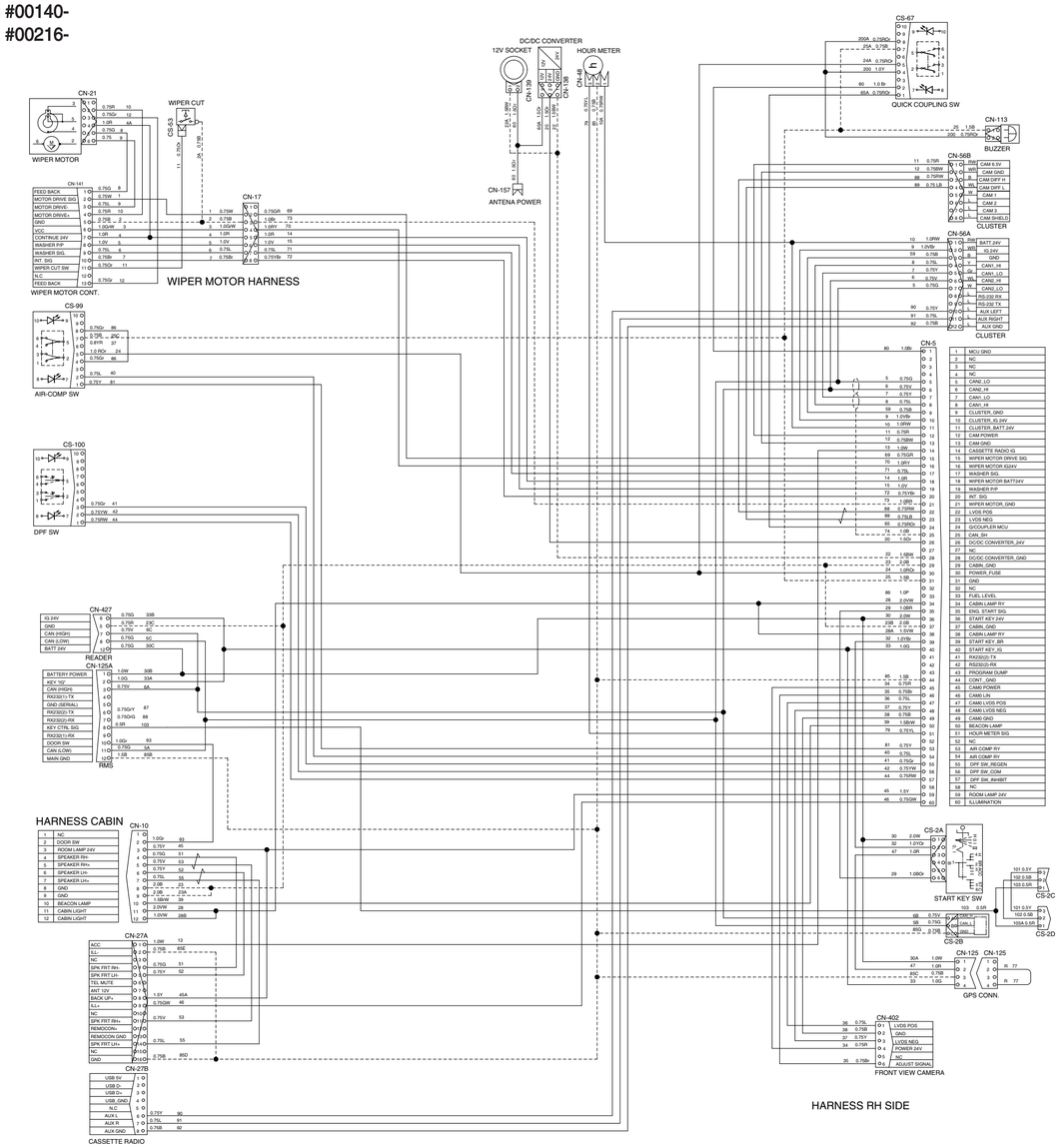
NO.	DESTINATION
1	GND
2	CAN_HI
3	CAN_LO
4	CAN_SHIELD
5	NC
6	POWER_BATT
7	POWER_IG
8	SIG_ECM
9	SIG_ECM
10	GND_ECM

NO.	DESTINATION
1	ILLUMINATION
2	CIGARLIGHT 4S24V
3	CIGARLIGHT_GND
4	WIPER_PI
5	SWITCH_1o
6	SWITCH_WASHER TANK
7	AUTO GREESE RESET
8	SWITCH POWER
9	AIR SHEAT POWER
10	NC
11	AUTO GREESE LAMP
12	TRAVEL ST_SOL
13	FINE SWING SIG
14	GND
15	SWING LOCK SIG

NO.	DESTINATION
1	RX232(2)-TX
2	MCU_GND
3	MCU_POWER SIG
4	IGN_24V
5	RX232(2)-RX
6	BREAKER
7	GND
8	HORN RY
9	NC
10	NC
11	NC
12	NC
13	PROGRAM DUMP
14	MCU_5V
15	MCU_SUPPLY GND
16	MCU_DIAL SIG

NO.	DESTINATION
1	AC GND
2	BLOWER ON SIG.
3	12.24V
4	NC
5	AC CONTROLLER B+
6	COMP(DPTI)
7	CAN LOW
8	CAN HI

- MACHINE SERIAL NO.
  HX480A L : #00140-
  HX520A L : #00216-



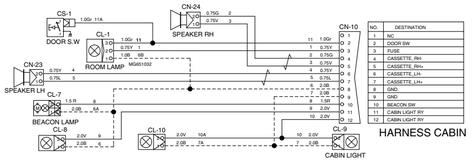
NO.	DESTINATION
1	NC
2	DOOR SW
3	ROOM LAMP 24V
4	SPEAKER RH+
5	SPEAKER LH-
6	SPEAKER LH+
7	SPEAKER RH-
8	GND
9	BEACON LAMP
10	CABIN LIGHT
11	CABIN LIGHT
12	NC

NO.	DESTINATION
1	CAM 4.5V
2	CAM GND
3	CAM OFF H
4	CAM OFF L
5	CAM 1
6	CAM 2
7	CAM 3
8	CAM SHIELD

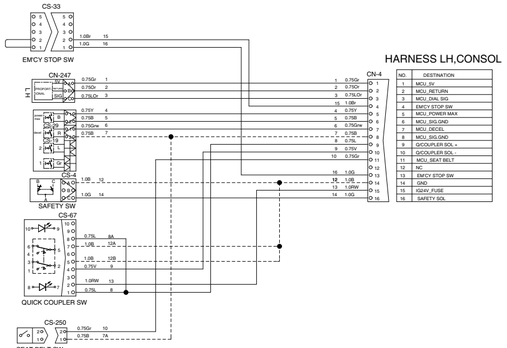
NO.	DESTINATION
1	BATT 24V
2	IG 24V
3	GND
4	CAN1_HI
5	CAN1_LO
6	CAN2_HI
7	CAN2_LO
8	RS-232 RX
9	RS-232 TX
10	AUX LEFT
11	AUX RIGHT
12	AUX GND

NO.	DESTINATION
1	MCU GND
2	NC
3	NC
4	NC
5	CAN2_LO
6	CAN2_HI
7	CAN1_LO
8	CAN1_HI
9	CLUSTER_GND
10	CLUSTER_IG 24V
11	CLUSTER_BATT 24V
12	CAM POWER
13	CAM GND
14	CASSETTE RADIO IG
15	WIPER MOTOR DRIVE SIG
16	WIPER MOTOR IG24V
17	WASHER SIG.
18	WIPER MOTOR BATT24V
19	WASHER P/P
20	INT. SIG
21	WIPER MOTOR_GND
22	LVDS POS
23	LVDS NEG
24	GCOUPLER MCU
25	CAN_SH
26	DC/DC CONVERTER_24V
27	NC
28	DC/DC CONVERTER_GND
29	CABIN_GND
30	POWER_FUSE
31	GND
32	NC
33	FUEL LEVEL
34	CABIN LAMP RY
35	ENG. START SIG.
36	START KEY 24V
37	CABIN_GND
38	CABIN LAMP RY
39	START KEY_BR
40	START KEY_IG
41	RX(232)-TX
42	RS(232)-RX
43	PROGRAM DUMP
44	CONT. GND
45	CAM0 POWER
46	CAM0 LIN
47	CAM0 LVDS POS
48	CAM0 LVDS NEG
49	CAM0 GND
50	BEACON LAMP
51	HOUR METER SIG
52	NC
53	AIR COMP RY
54	AIR COMP RY
55	DPF SW_REGEN
56	DPF SW_COM
57	DPF SW_INHIBIT
58	NC
59	ROOM LAMP 24V
60	ILLUMINATION

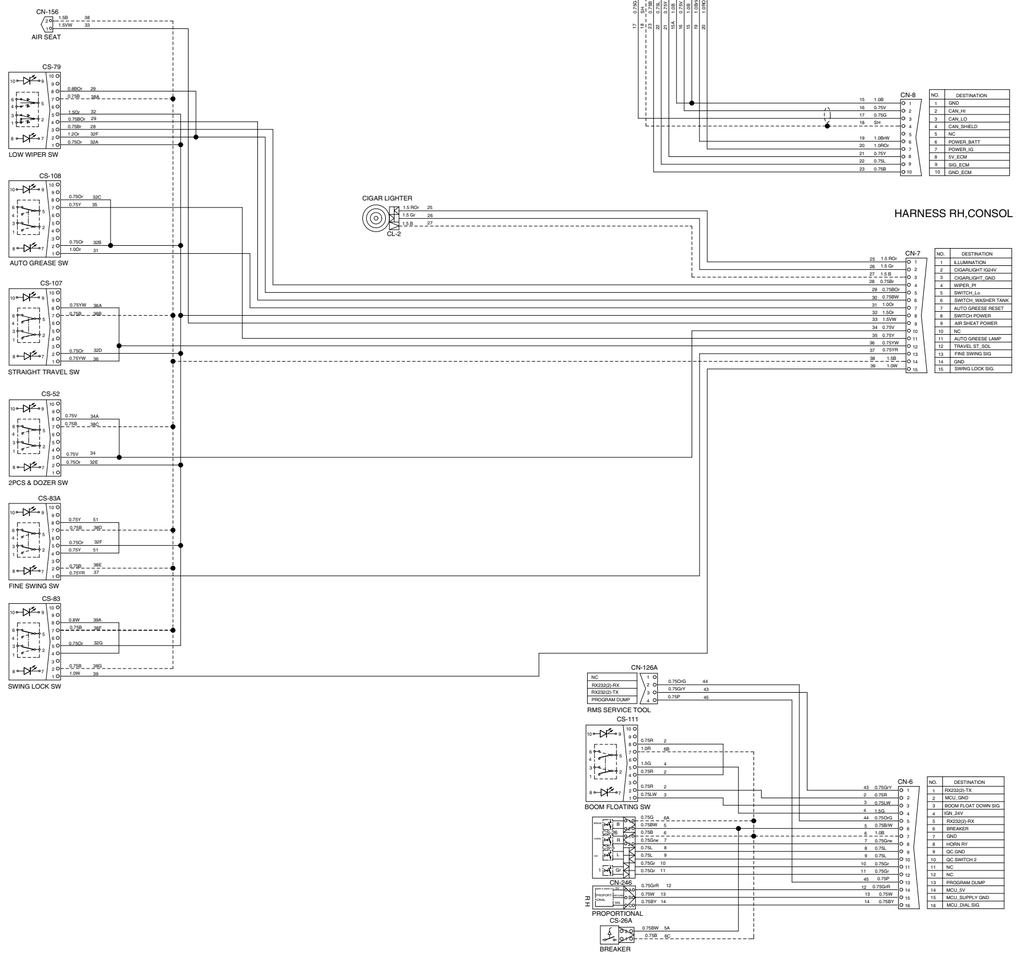
NO.	DESTINATION
1	AC GND
2	BLOWER ON SIG.
3	IG 24V
4	NC
5	AC CONTROLLER B+
6	COMP(CPS)
7	CAN LOW
8	CAN HI



NO.	DESTINATION
1	NC
2	DOOR SW
3	FUSE
4	CASSETTE_RH+
5	CASSETTE_RH-
6	CASSETTE_LH-
7	CASSETTE_LH+
8	GND
9	GND
10	BEACON SW
11	CABIN LIGHT RY
12	CABIN LIGHT RY



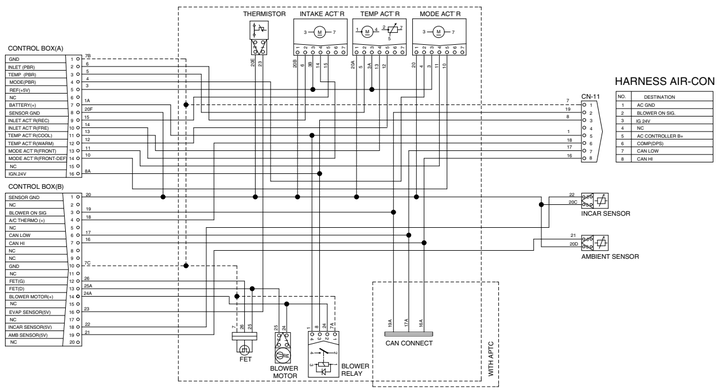
NO.	DESTINATION
1	MCU_5V
2	MCU_RETURN
3	MCU_CAN_SIG
4	EMCY STOP SW
5	MCU_POWER MAX
6	MCU_SIG.GND
7	MCU_DEGEL
8	MCU_SIG.GND
9	G/COUPLER SOL.+
10	G/COUPLER SOL.-
11	MCU_SEAT BELT
12	NC
13	EMCY STOP SW
14	GND
15	IG24V_FUSE
16	SAFETY SOL



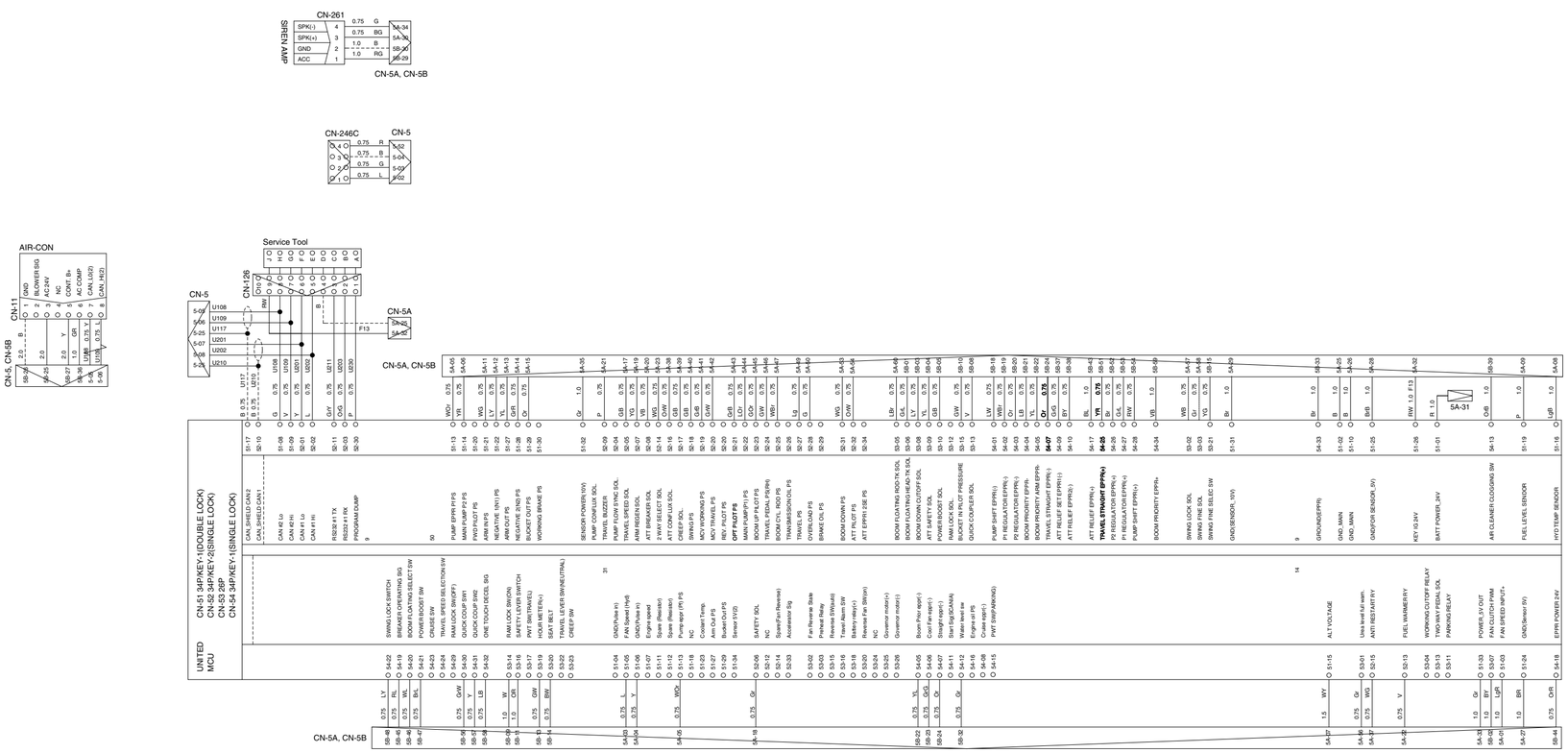
NO.	DESTINATION
1	GND
2	CAN_HI
3	CAN_LO
4	CAN_SHIELD
5	NC
6	POWER_BATT
7	POWER_IG
8	5V_ECM
9	SIG_ECM
10	GND_ECM

NO.	DESTINATION
1	ILLUMINATION
2	CIGARLIGHT IG24V
3	CIGARLIGHT_GND
4	WIPER_PI
5	SWITCH_Ls
6	SWITCH_WASHER TANK
7	AUTO GREESE RESET
8	SWITCH POWER
9	AIR SHEAT POWER
10	NC
11	AUTO GREESE LAMP
12	TRAVEL ST_SOL
13	FINE SWING SIG
14	GND
15	SWING LOCK SIG.

NO.	DESTINATION
1	RX(232)-TX
2	MCU_GND
3	BOOM FLOAT DOWN SIG
4	IG24_24V
5	RX(232)-RX
6	BREAKER
7	GND
8	HORN RY
9	QC GND
10	QC SWITCH 2
11	NC
12	NC
13	PROGRAM DUMP
14	MCU_5V
15	MCU_SUPPLY GND
16	MCU_CAN_SIG

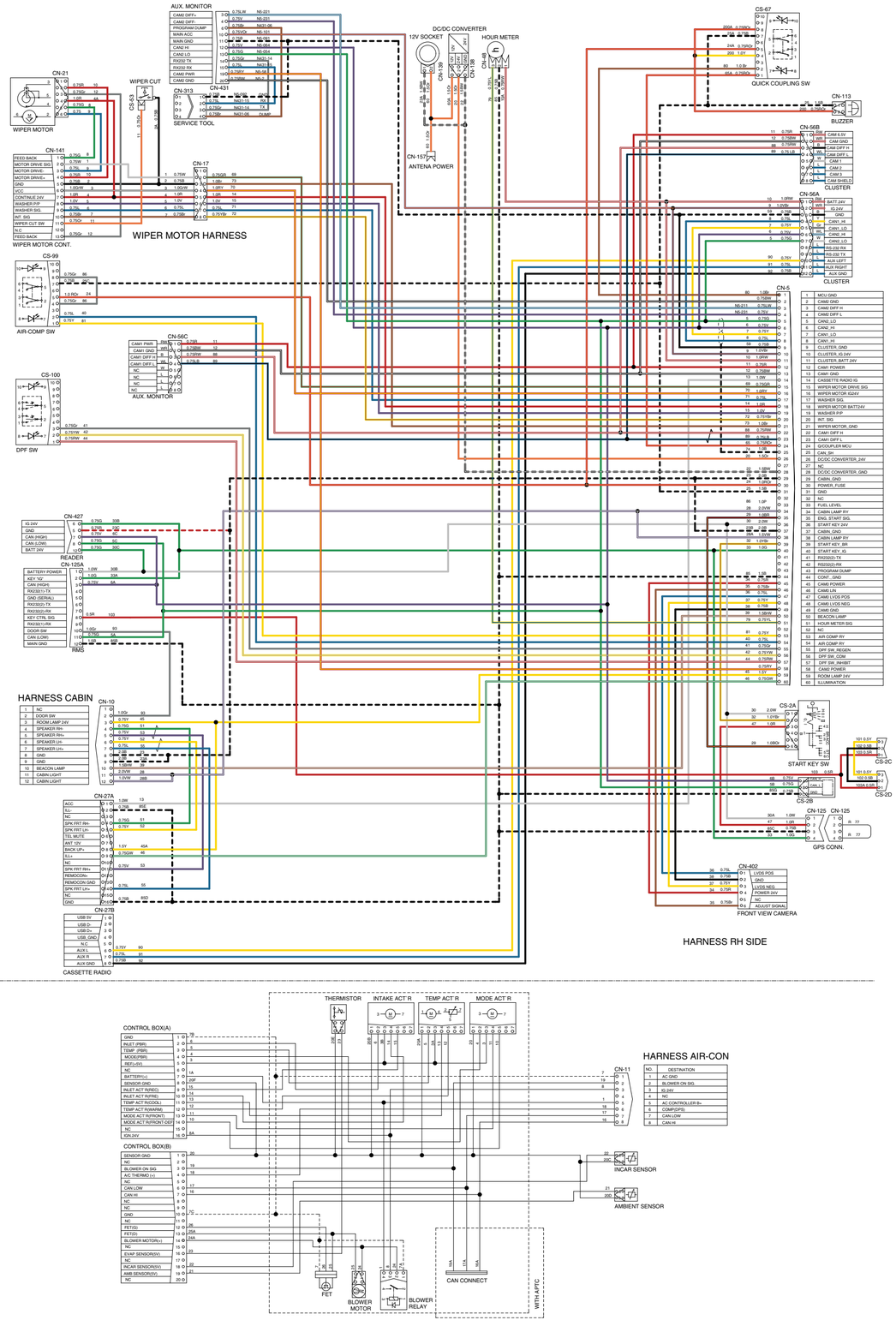


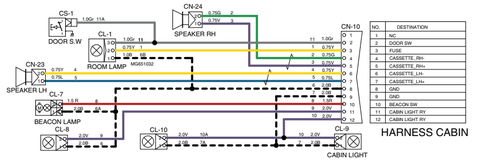
- MACHINE SERIAL NO.
  HX480A L : #00140-
  HX520A L : #00216-

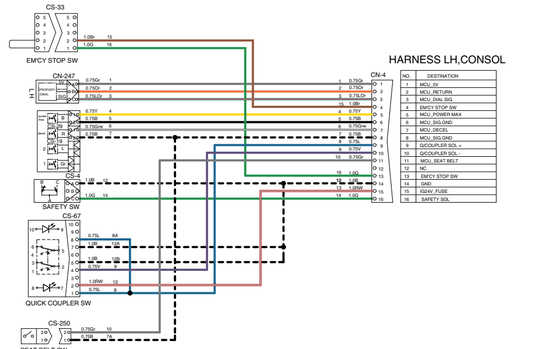


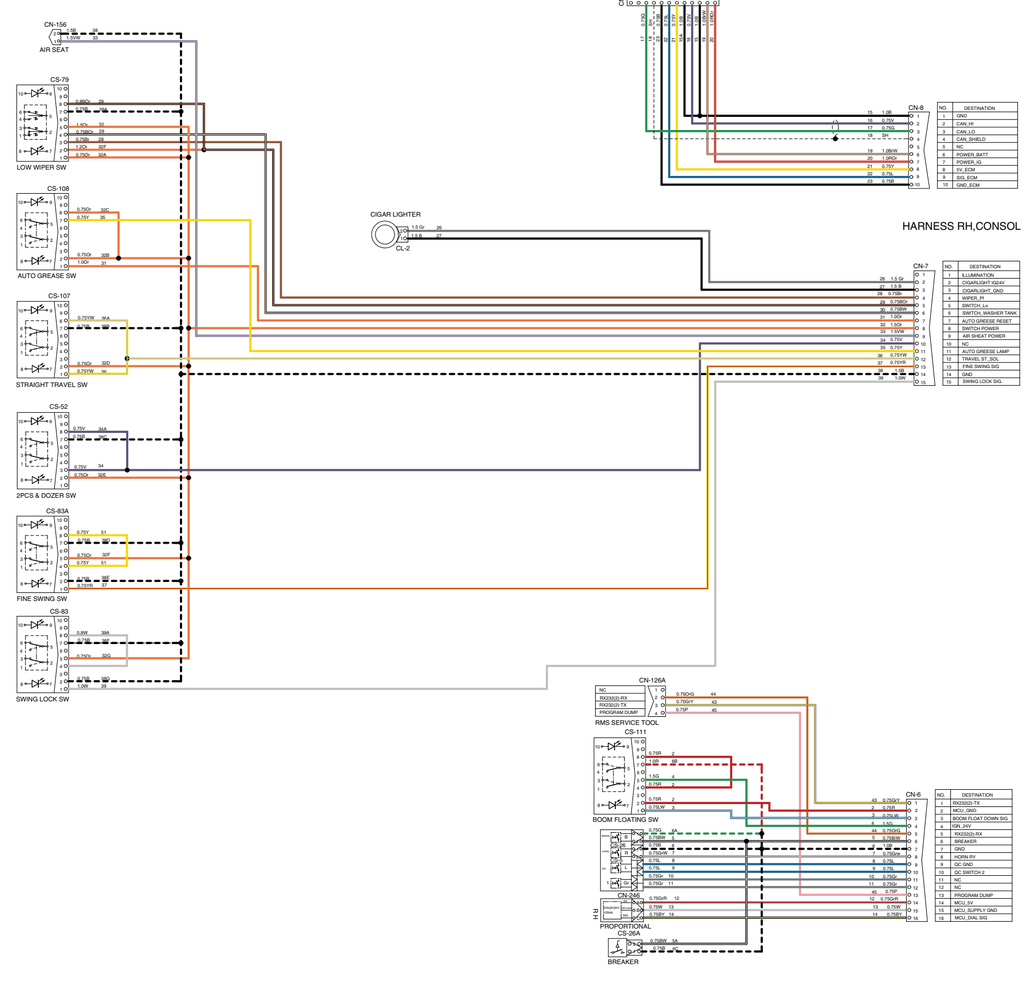
20KB-93104-00 2OF2

- MACHINE SERIAL NO. : CURRENT



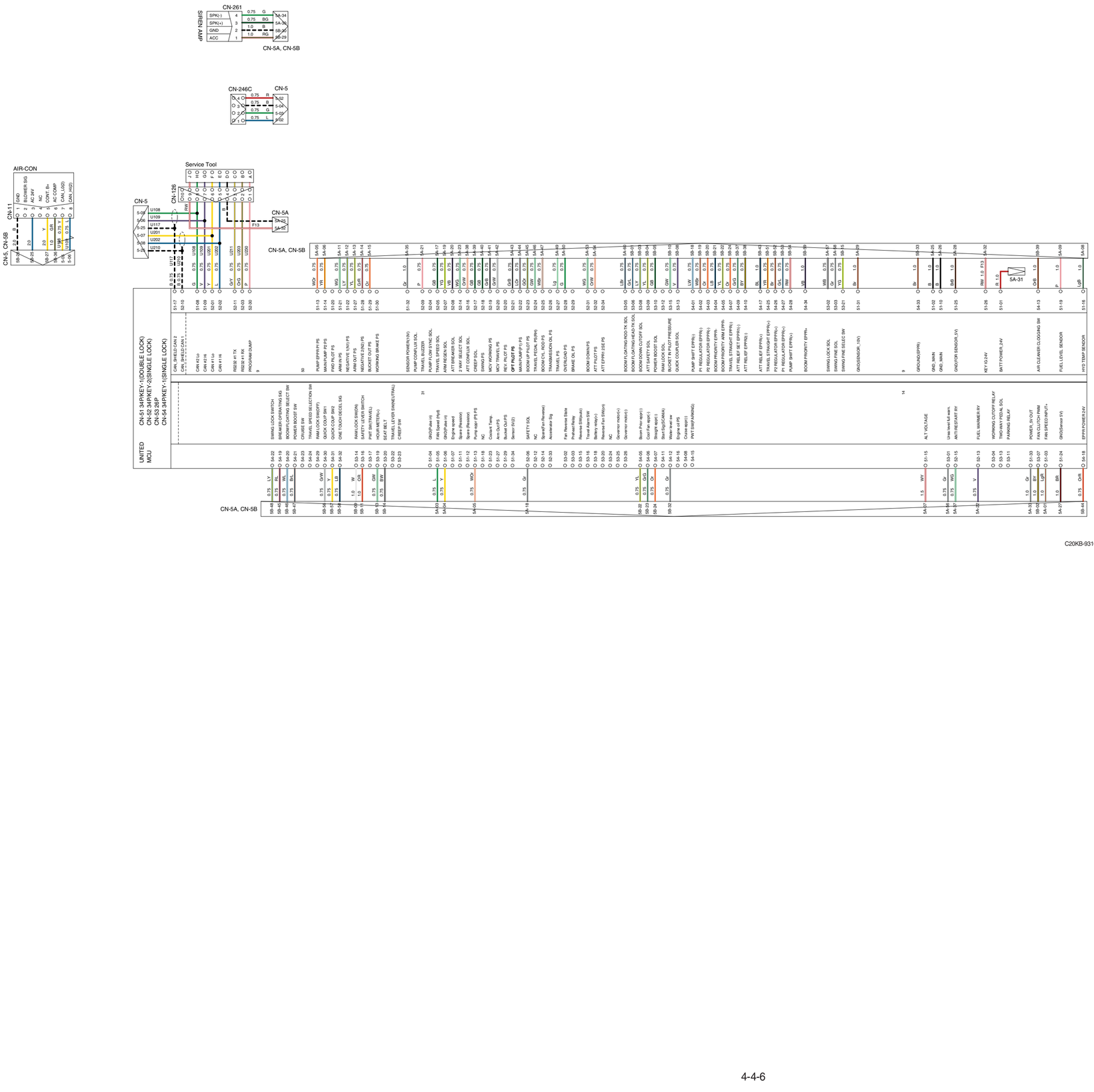






C20KB-93106-00 1OF2

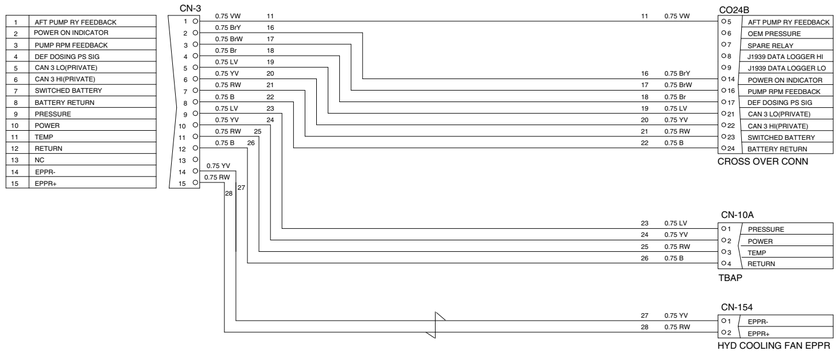
- MACHINE SERIAL NO. : CURRENT

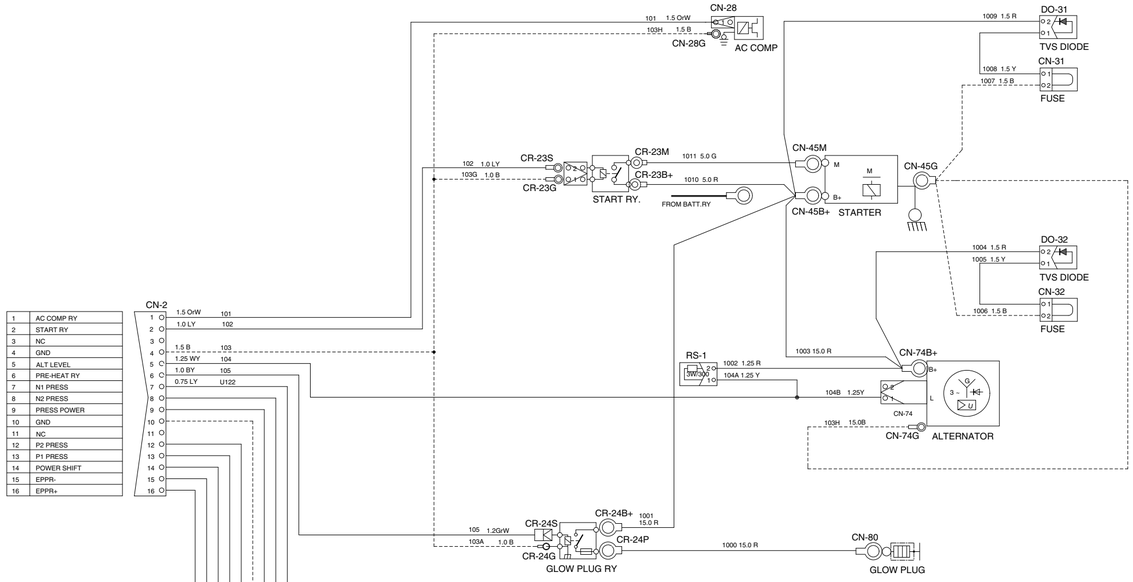


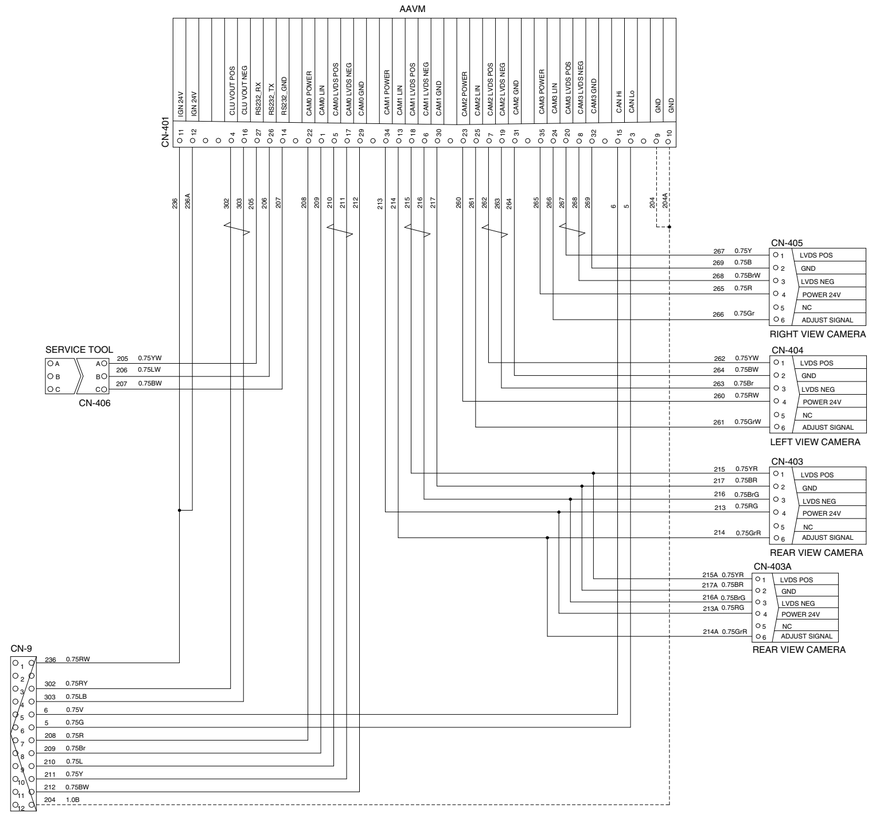
C20KB-93106-00 2OF2

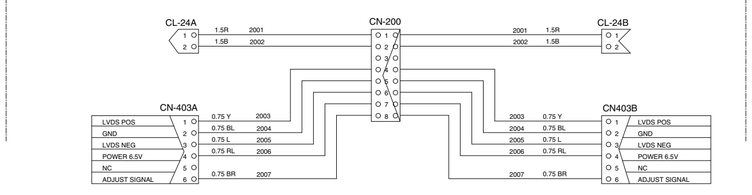
· ELECTRICAL CIRCUIT (3/4)

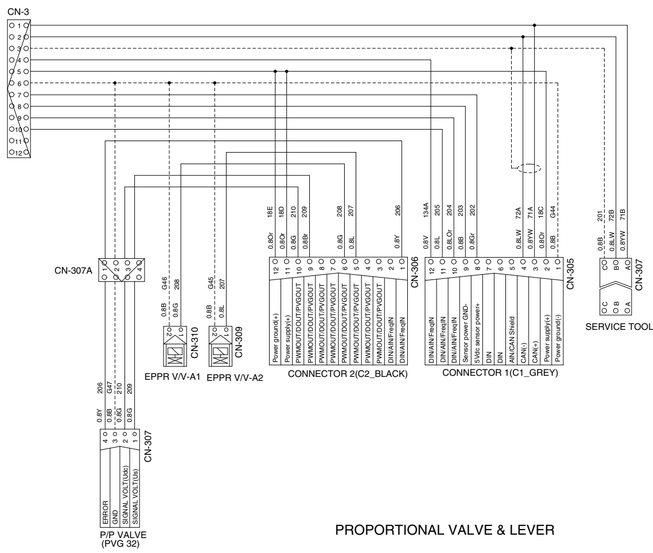
- MACHINE SERIAL NO.
  HX480A L : -#00002
  HX520A L : -#00002





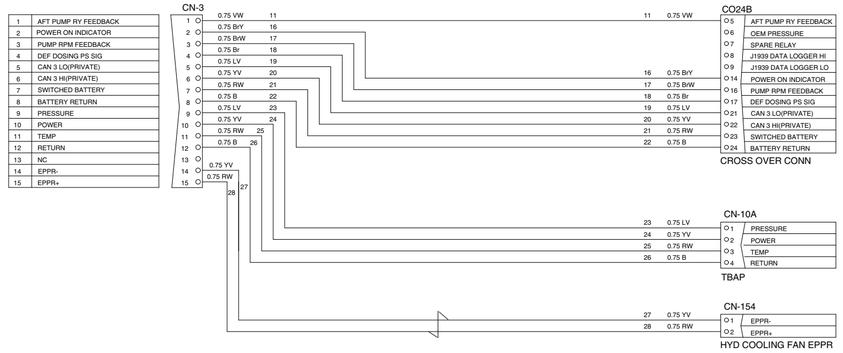


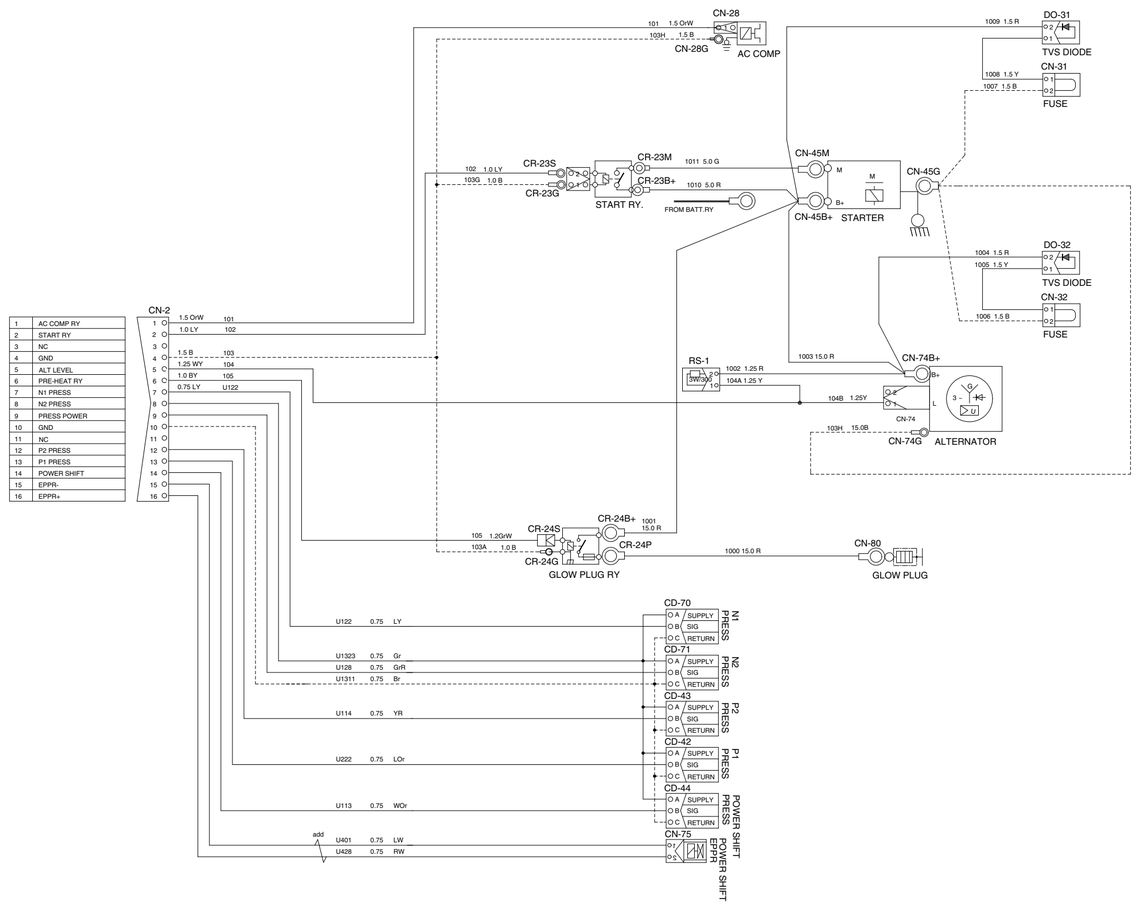


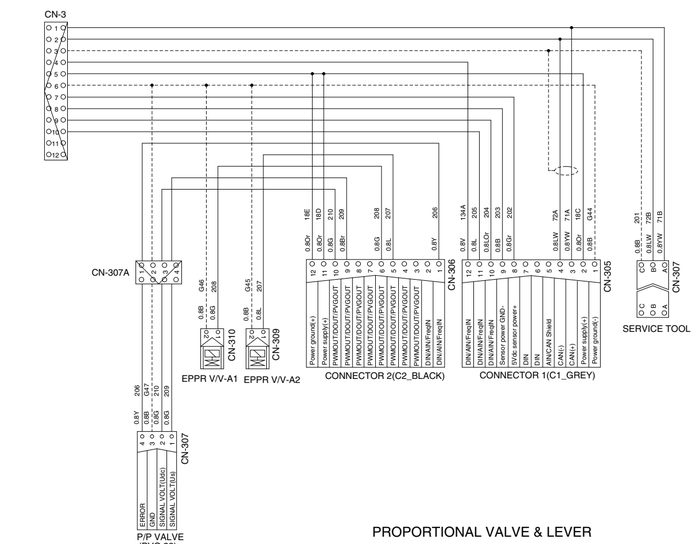


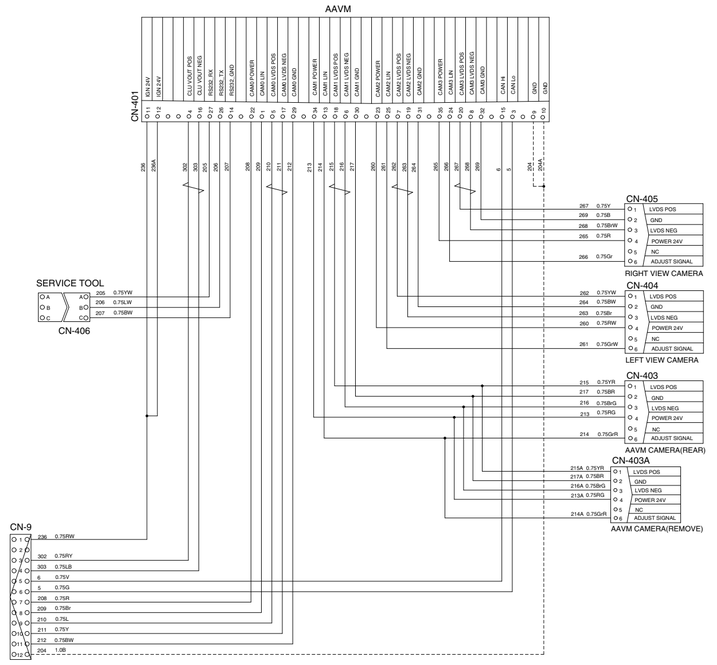
20KB-93301-01

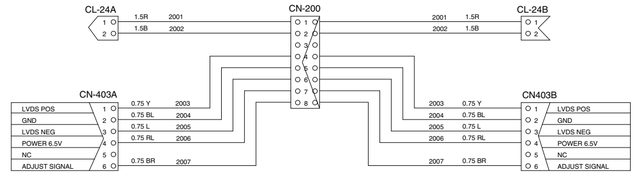
- MACHINE SERIAL NO.
  HX480A L : #00003-#00038
  HX520A L : #00003-#00072





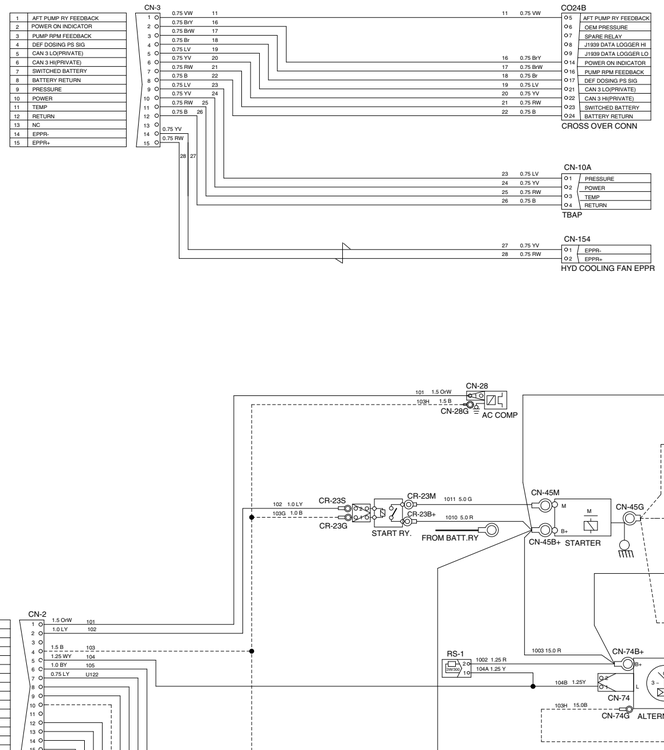


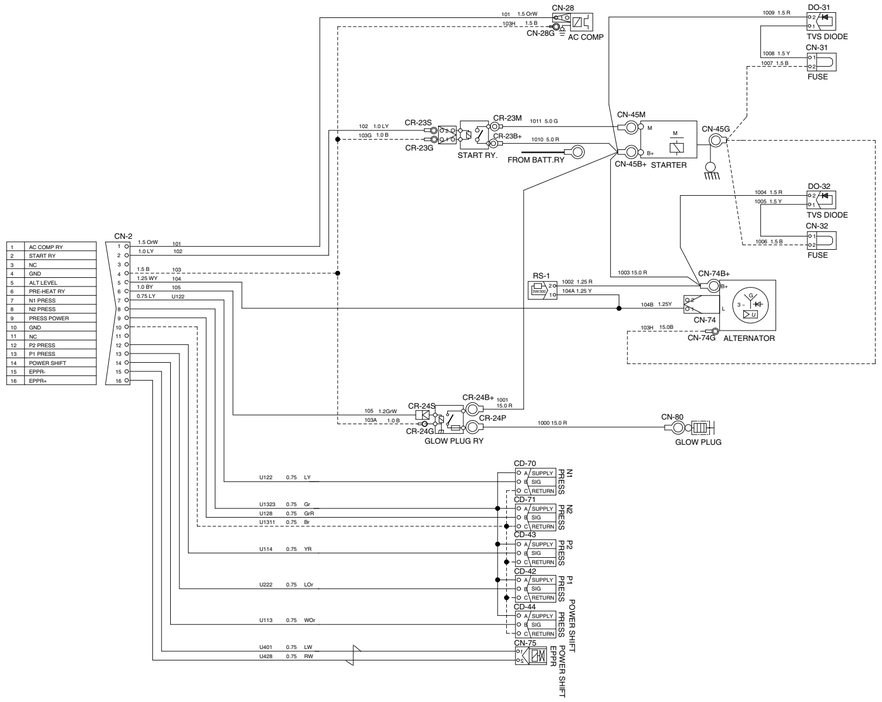




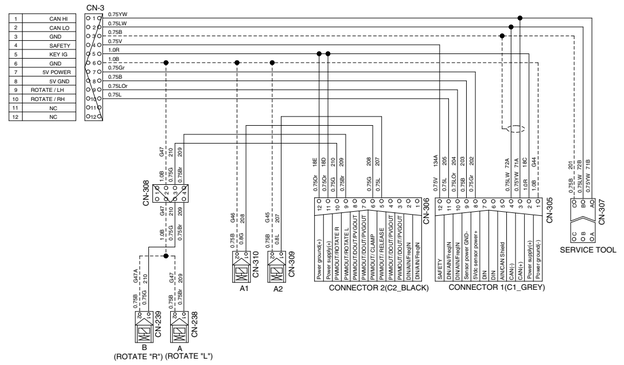
20KB-93302-00

- MACHINE SERIAL NO.
  HX480A L : #00039-
  HX520A L : #00073-

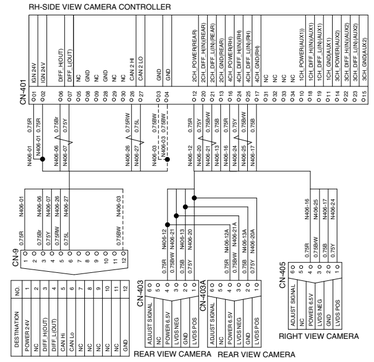




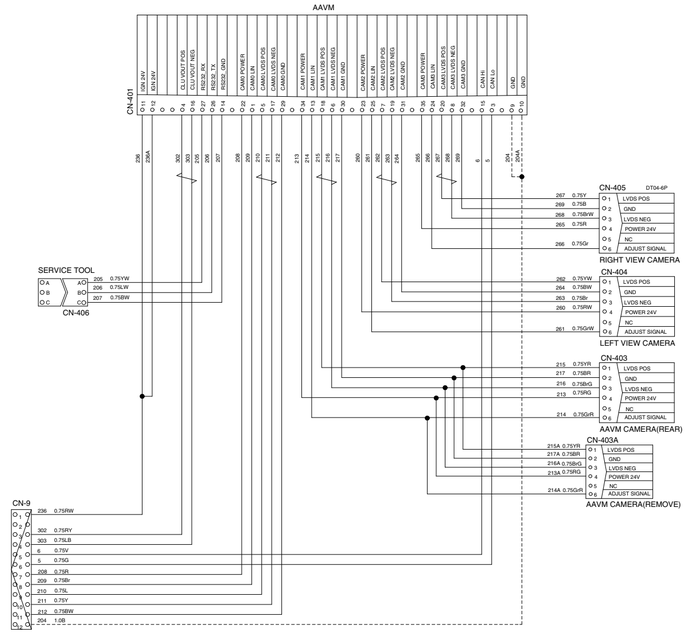
E/G HARNESS



PROPORTIONAL VALVE & LEVER

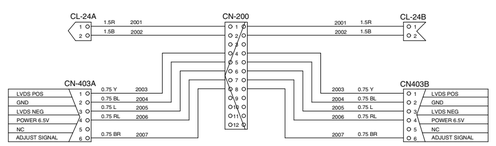


RH-SIDE VIEW CAMERA SYSTEM

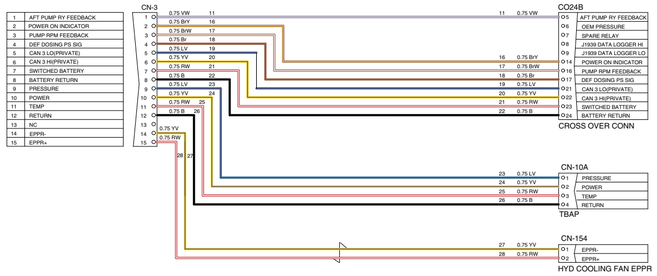


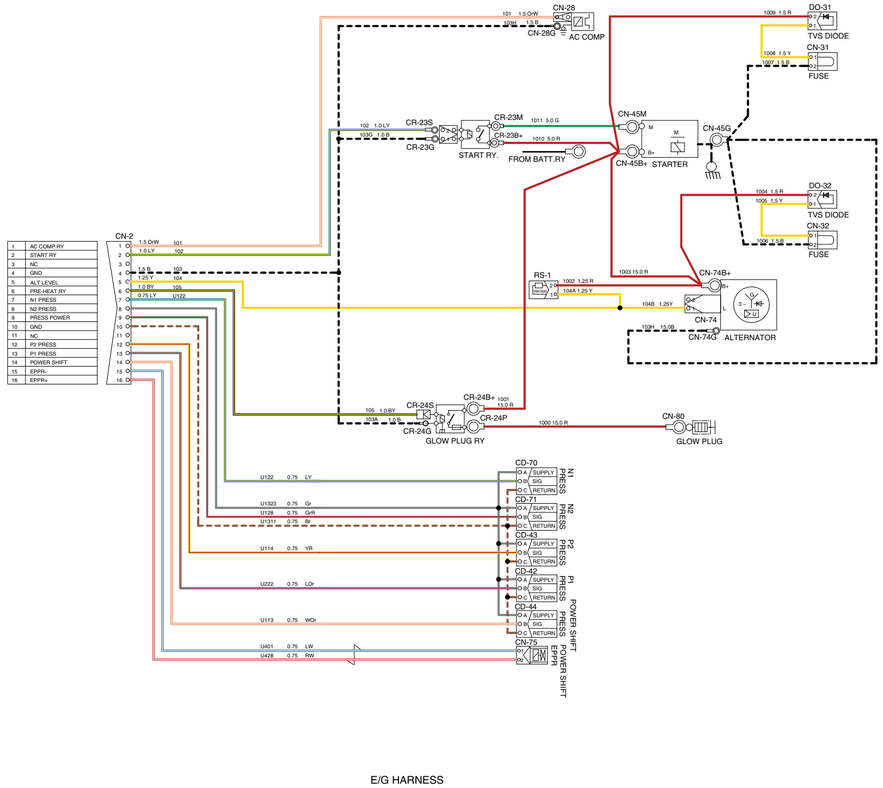
AAVM HARNESS

REMOVEABLE COUNTER WEIGHT

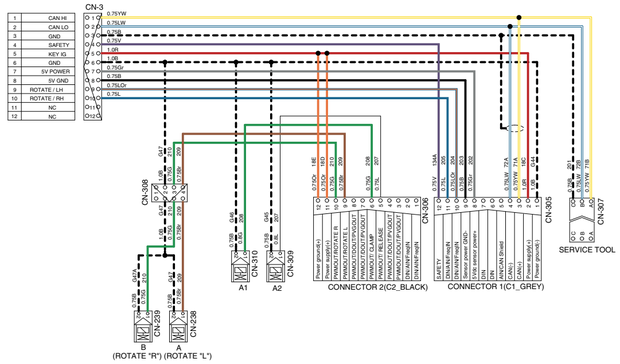


- MACHINE SERIAL NO. : CURRENT

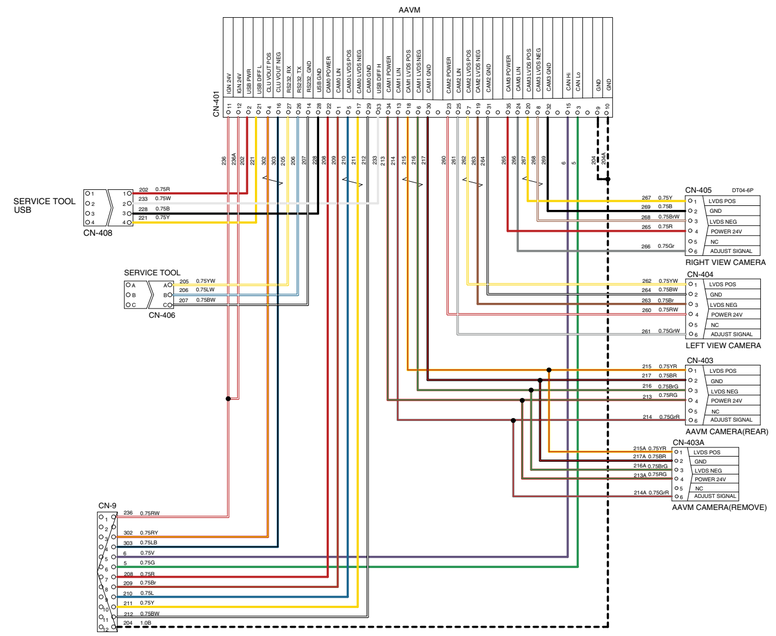




E/G HARNESS

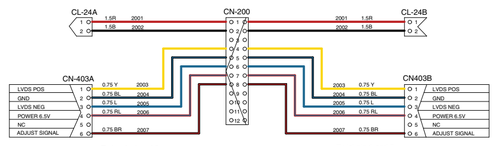


PROPORTIONAL VALVE & LEVER



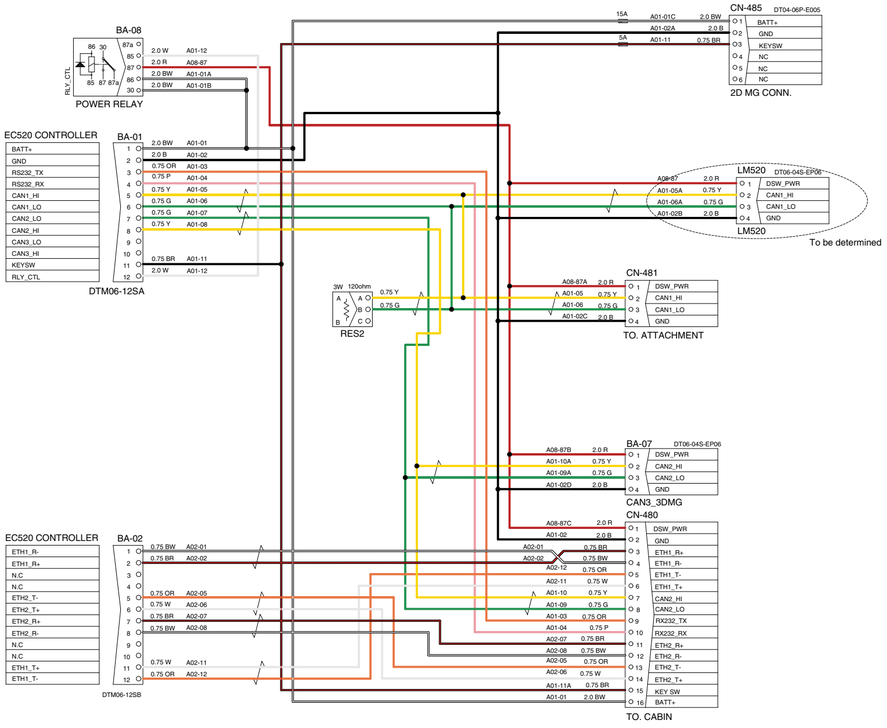
AAVM HARNESS

REMOVEABLE COUNTER WEIGHT



C20KB-93304-00

· ELECTRICAL CIRCUIT (4/4, OPTION : 2D MG)



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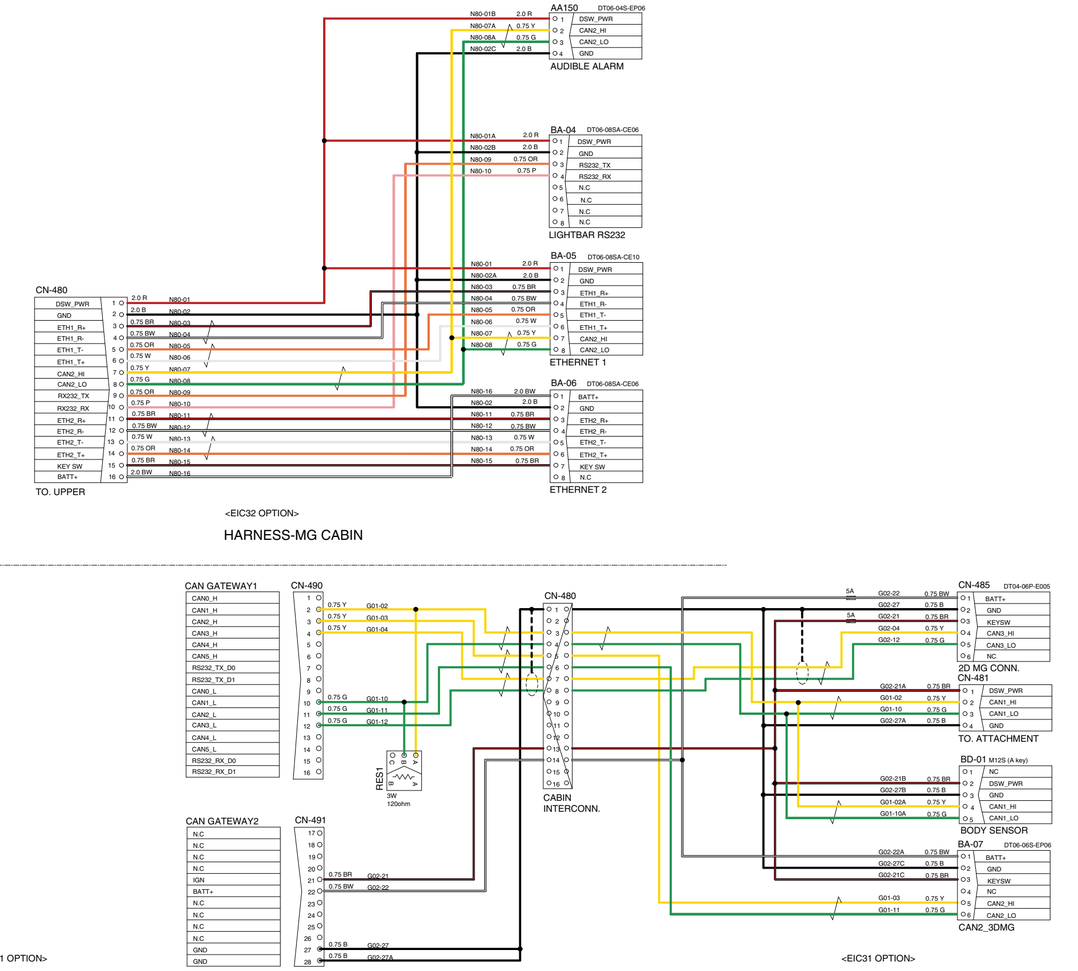
HARNESS-MG UPPER



<EIC32 OPTION>

HARNESS-MG CABIN

<EIC31 OPTION>

HARNESS-MG CABIN

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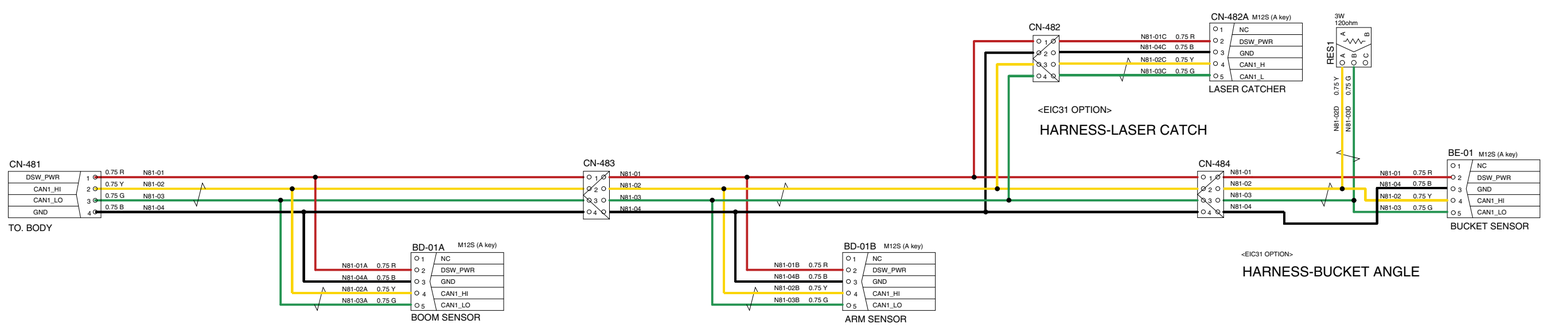
HARNESS-MG UPPER



<EIC31 OPTION>

HARNESS-BOOM ANGLE

<EIC31 OPTION>

HARNESS-ARM ANGLE

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HARNESS-LASER CATCH

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HARNESS-BUCKET ANGLE

C20K4-94311-00

MEMORANDUM

1. POWER CIRCUIT

The negative terminal of battery is grounded to the machine chassis directly.
When the start switch is in the OFF position, the current flows from the positive battery terminal as shown below.

1) OPERATING FLOW

Battery → Battery relay [CR-1] → Maxival fuse [CN-60] → Master switch [CS-74]

- → Fuse box [No.1] → Engine ECM [CN-93 (1, 25, 26, 27, 28)]
- → Fuse box [No.2] → United MCU [CN-51 (01)]
- → Fuse box [No.3]
  - → DEF supply module [CR-51 (3)]
  - → DEF lamp [CL-40 (1)]
- → Fuse box [No.4] → I/conn [CN-5 (59)]
  - → I/conn [CN-10 (3)] → Room lamp [CL-1 (2)]
    - → Door switch [CS-1]
    - → I/conn [CN-10 (2)] → RMS [CN-125B (6)]
  - → Radio & USB player [CN-27A (8)]
- → Fuse box [No.5] → Line heater [CR-52 (30, 86)]
- → Fuse box [No.6]
  - → Master switch [CS-74B] → I/conn [CN-5 (36)]
    - → Start switch [CS-2A (1)]
    - → RMS [CN-125A (1)]
    - → GPS connection [CN-125 (1)]
  - → Power relay [CR-35 (30)]
- → Fuse box [No.7] → I/conn [CN-11 (5)]
  - → AC & Heater controller box A (7)
  - → Blower relay (4)
- → Fuse box [No.8] → I/conn [CN-5 (18)] → I/conn [CN-17 (5)]
  - → Wiper motor controller [CN-141 (7)]
  - → Wiper motor [CN-21 (4)]
- → Fuse box [No.9]
  - → I/conn [CN-5 (11)]
    - → Cluster [CN -56A (1)]
    - → Hour meter [CN-48 (1)]
  - → I/conn [CN-8 (6)] → Jog dial module [CN-363 (2)]
- → Fuse box [No.10] → DEF & SCR sensor [CR-50 (3)]
- → Fuse box [No.11] → United MCU [CN-54 (18)]

※ I/conn : Intermediate connector

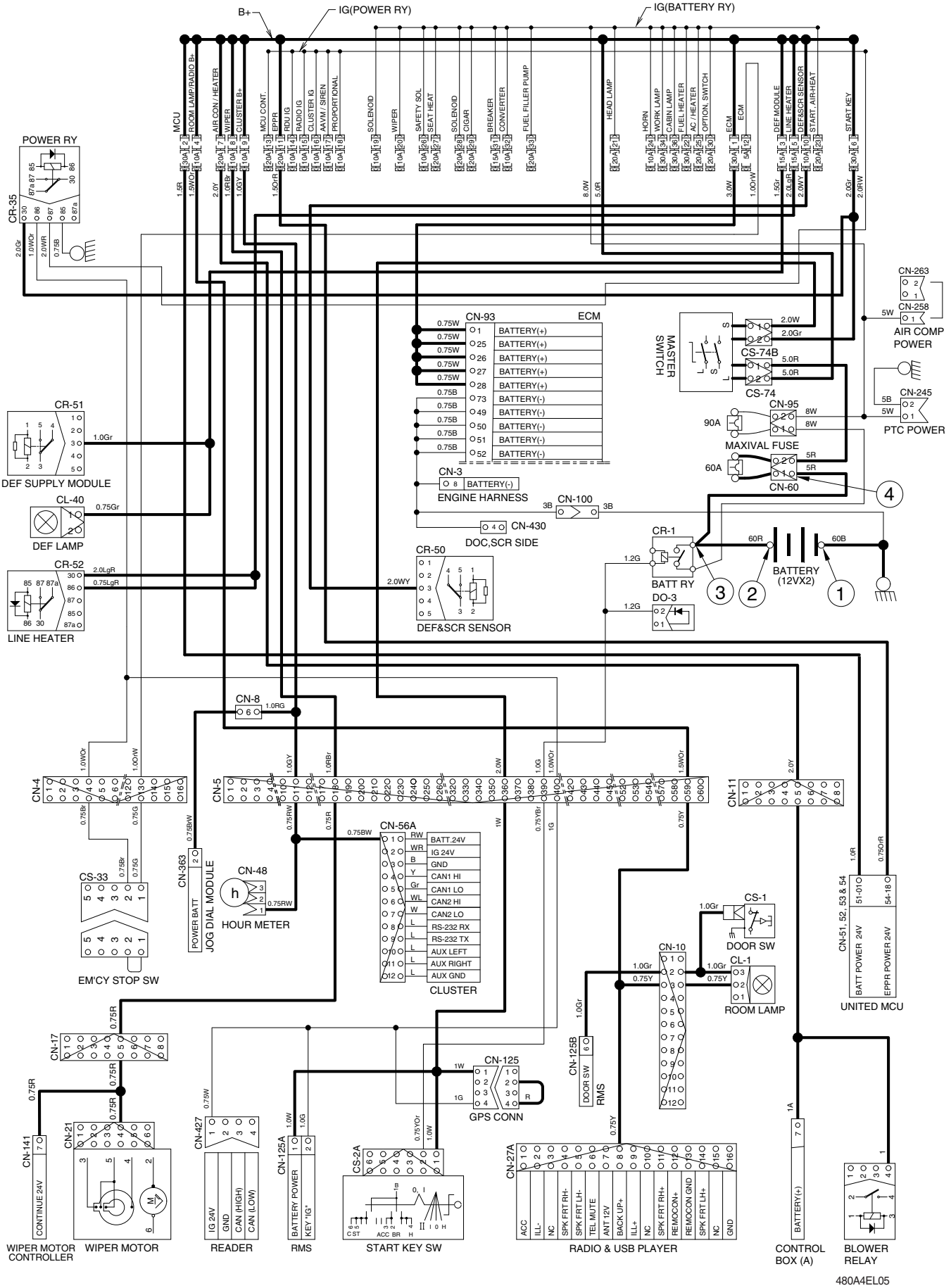
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	OFF	① - GND (battery 1EA)	10~12.5V
		② - GND (battery 2EA)	20~25V
		③ - GND (battery relay)	20~25V
		④ - GND (maxival fuse)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

POWER CIRCUIT



※ The circuit diagram may differ from the equipment, so please check before a repair.

2. STARTING CIRCUIT

1) OPERATING FLOW

Battery (+) terminal → Battery relay [CR-1] → Maxival fuse [CN-60] → Master switch [CS-74]
→ Fuse box [No.6] → Master switch [CS-74B] → I/conn [CN-5 (36)] → Start switch [CS-2A (1)]
→ Power relay [CR-35 (30)]

(1) When start switch is in ON position

→ Start switch ON [CS-2A (2)] → I/conn [CN-5 (39)]
→ Battery relay [CR-1] → Battery relay operating (all power is supplied with the electric component)
→ Start switch ON [CS-2A (3)] → GPS conn [CN-125 (2) → (4)
→ I/conn [CN-5 (40)] → Power relay [CR-35 (86) → (87)]
→ Fuse box [IG (power relay)]
→ I/conn [CN-4 (4)]
→ Emergency engine stop sw [CS-33 (2)→(1)]
→ I/conn [CN-4 (13)] → Fuse box [No. 12]
→ Engine ECM [CN-93 (5)]
→ Reader [CN-427 (1)]
→ RMS [CN-125A (2)]

(2) When start switch is in START position

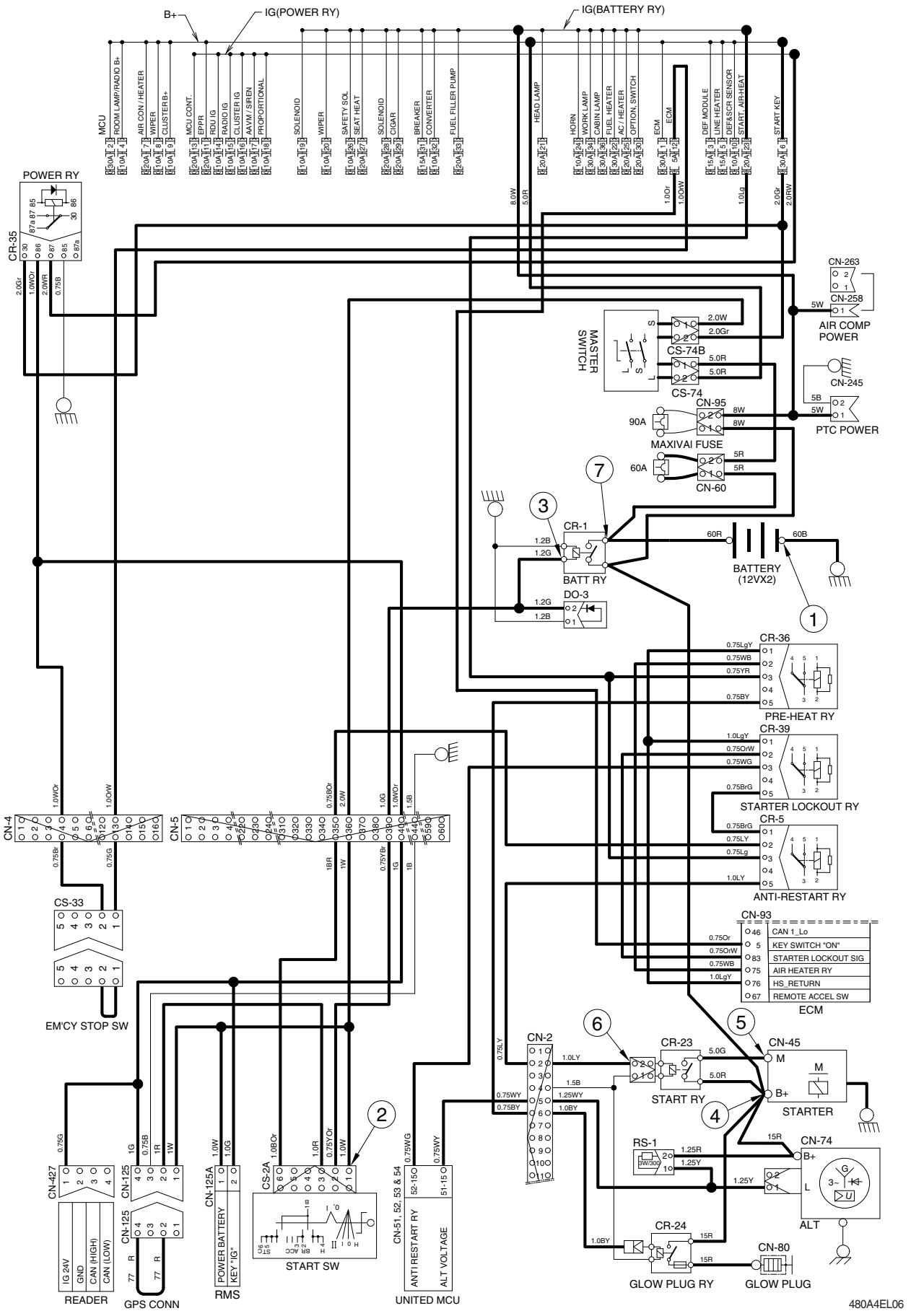
Start switch START [CS-2A (6)] → I/conn [CN-5 (35)] → Anti-restart relay [CR-5 (2) → (5)]
→ I/conn [CN-2 (2)] → Start relay [CR-23 (2)] → Starter motor operating

2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	START	① - GND (battery) ② - GND (start switch) ③ - GND (battery relay M4) ④ - GND (starter B^+) ⑤ - GND (starter M) ⑥ - GND (start relay) ⑦ - GND (battery relay M8)	20~25V

※ The circuit diagram may differ from the equipment, so please check before a repair.

STARTING CIRCUIT



※ The circuit diagram may differ from the equipment, so please check before a repair.

3. CHARGING CIRCUIT

When the starter is activated and the engine is started, the operator releases the start switch to the ON position.

Charging current generated by operating alternator flows into the battery through the battery relay [CR-1].

The current also flows from alternator to each electrical component and controller through the fuse box.

1) OPERATING FLOW

(1) Warning flow

Alternator "L" terminal → I/conn [CN-2 (5)] → United MCU alternator voltage [CN-51 (15)]
→ Cluster charging warning lamp (Via CAN interface)

(2) Charging flow

Alternator "B^+" terminal → Starter [CN-45 (B^+)] → Battery relay (CR-1)
- → Battery (+) terminal
- → Maxival fuse [CN-60] → Master switch [CS-74] → Fuse box [B^+]
- → Maxival fuse [CN-95] → Fuse box [IG, battery] → Power relay [CR-35 (30)→(87)]
  → Fuse box [IG, power]

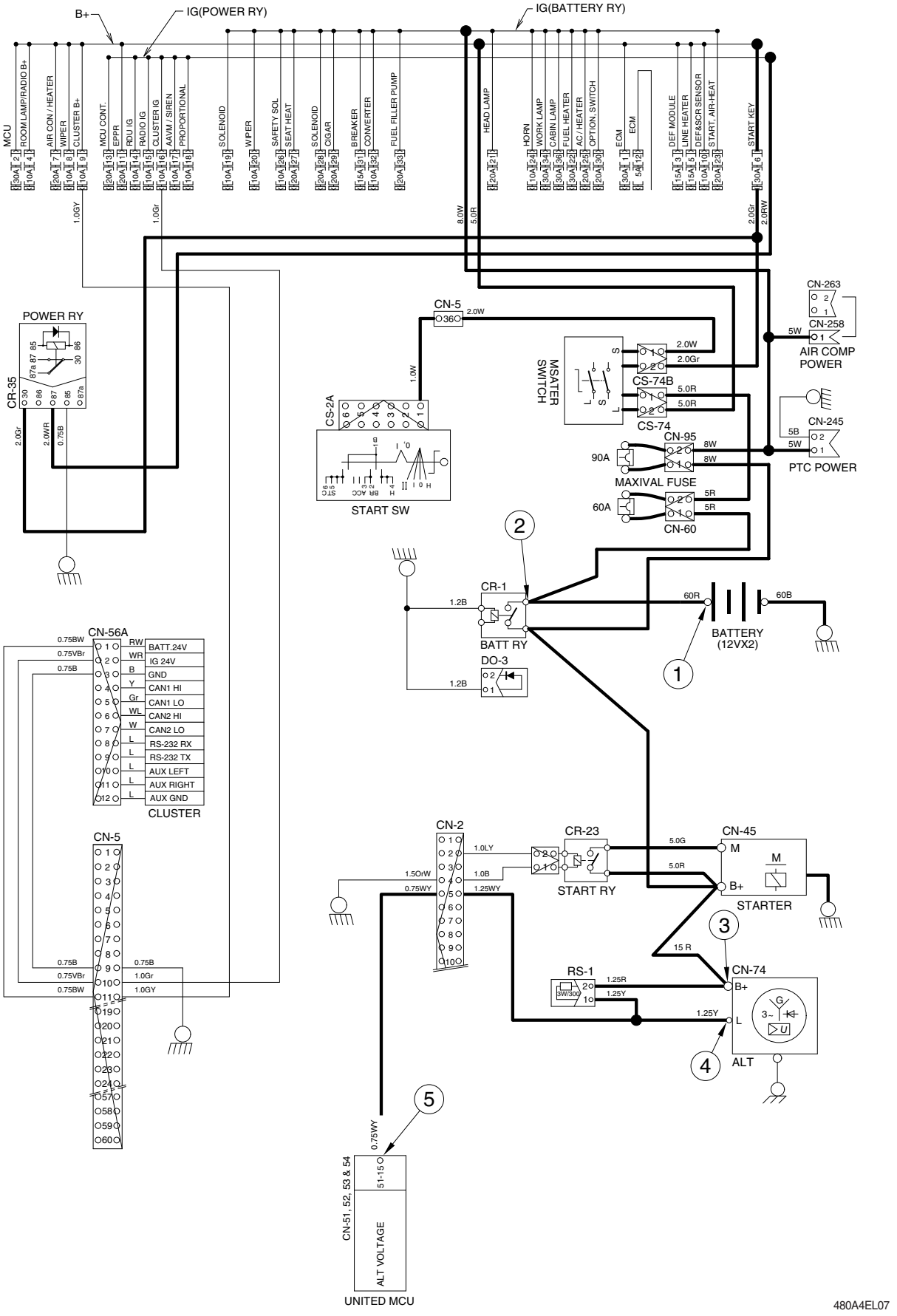
2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	ON	① - GND (battery voltage) ② - GND (battery relay) ③ - GND (alternator B^+ terminal) ④ - GND (alternator L terminal) ⑤ - GND (United MCU)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

CHARGING CIRCUIT



※ The circuit diagram may differ from the equipment, so please check before a repair.

4. HEAD AND WORK LIGHT CIRCUIT

1) OPERATING FLOW

Fuse box (No.21) → Head light relay [CR-13 (30, 86)]
Fuse box (No.34) → Work light relay [CR-4 (30, 86)]
Fuse box (No.14) → RDU membrane controller [CR-376 (1)]

(1) Head light switch ON

Head light switch ON [CN-376 (13)] → Head light relay [CR-13 (85) → (87)]
→ Head light ON [CL-3 (1), CL-4 (1), CL-24 (1), CL-24A (1)]
→ I/conn [CN-7 (1)] → Cigar lighter [CL-2]
→ I/conn [CN-5 (60)] → Radio & USB player illumination ON [CN-27A (9)]

(2) Work light switch ON

Work light switch ON [CN-376 (4)] → Work light relay [CR-4 (85) → (87)]
→ I/conn [CN-12 (1)] → Work light ON [CL-5 (1), CL-6 (1)

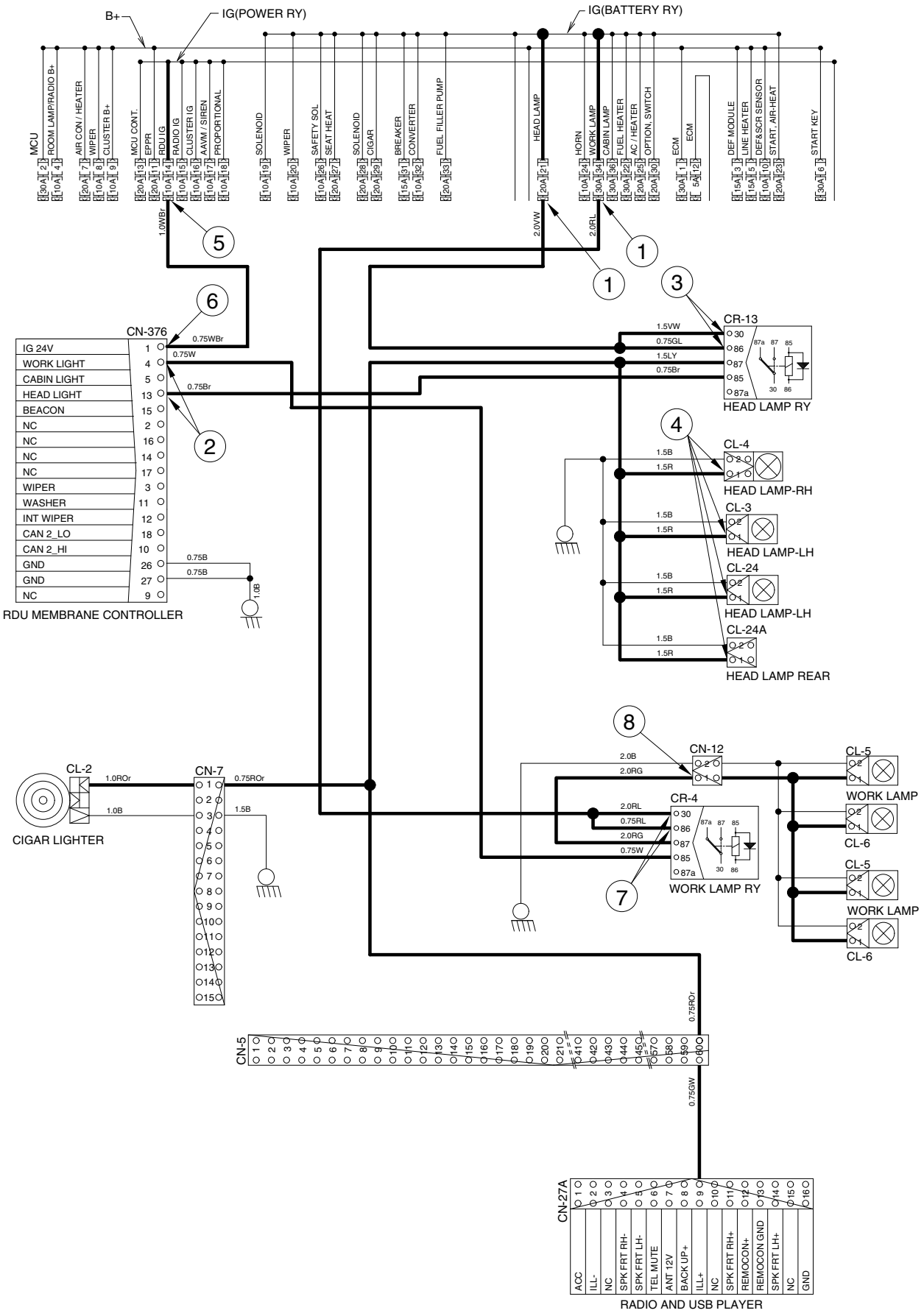
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (switch power output) ③ - GND (head light relay) ④ - GND (head light) ⑤ - GND (fuse box) ⑥ - GND (switch power input) ⑦ - GND (work light relay) ⑧ - GND (work light)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

HEAD AND WORK LIGHT CIRCUIT



480A4EL08

※ The circuit diagram may differ from the equipment, so please check before a repair.

5. BEACON LAMP AND CAB LIGHT CIRCUIT

1) OPERATING FLOW

Fuse box (No.30) → Beacon lamp relay [CR-85 (2, 3)]
Fuse box (No.36) → Cab light relay [CR-9 (30, 86)]
Fuse box (No.14) → RDU membrane controller [CN-376 (1)]

(1) Beacon lamp switch ON

Beacon lamp switch ON [CN-376 (15)] → Beacon lamp relay [CR-85 (1)→ (5)]
→ I/conn [CN-5 (50)] → I/conn [CN-10 (10)] → Beacon lamp ON [CL-7 (2)]

(2) Cab light switch ON

Cab light switch ON [CN-376 (5)] → Cab lamp relay [CR-9 (85) → (87)]
→ I/conn [CN-5 (34, 38)] → I/conn [CN-10 (11)] → Cab light ON [CL-8 (2)]
→ I/conn [CN-10 (12)] → Cab light ON [CL-9 (2), CL-10 (2)]

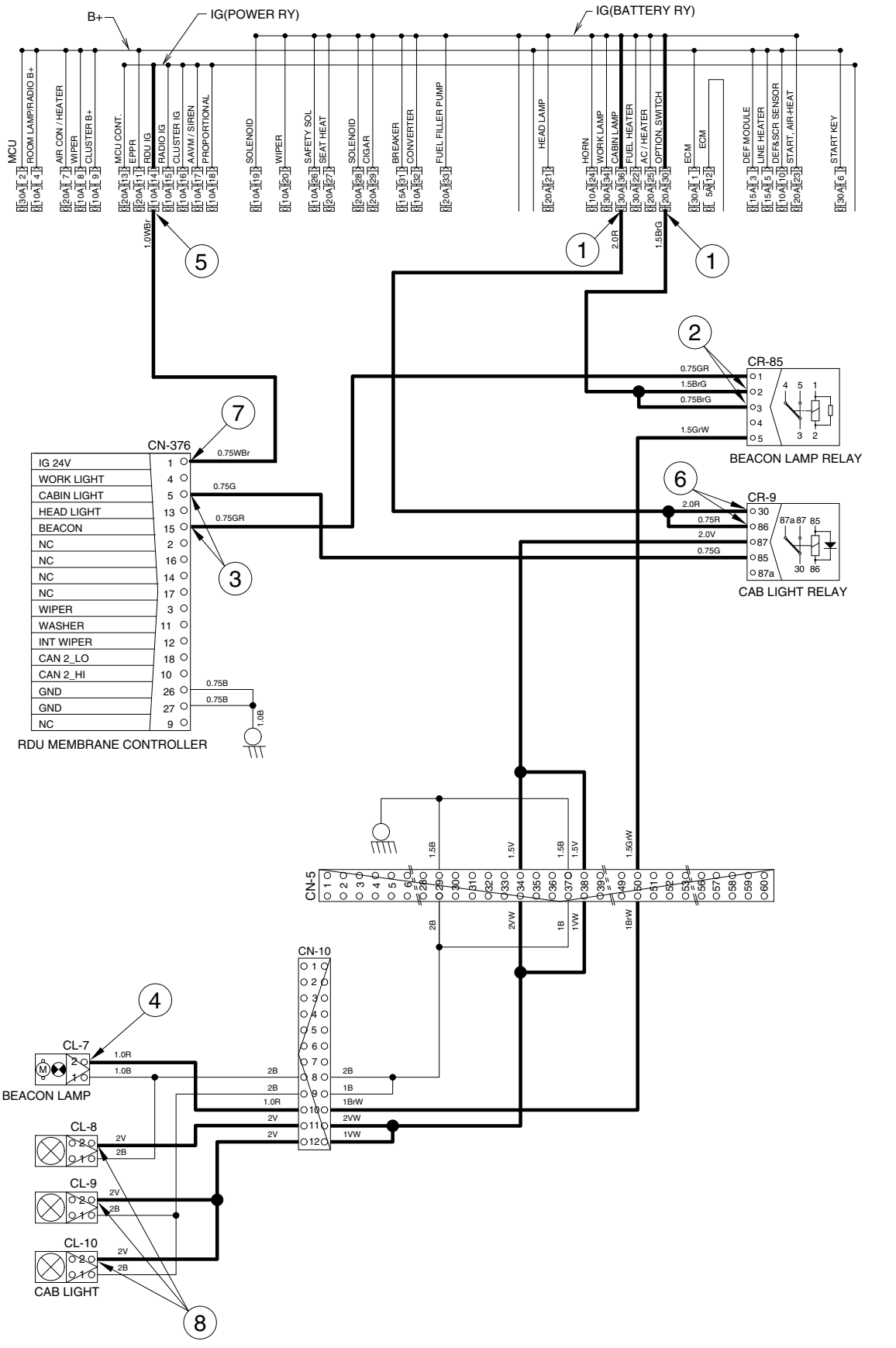
2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (beacon lamp relay) ③ - GND (switch power output) ④ - GND (beacon lamp) ⑤ - GND (fuse box) ⑥ - GND (cabin light relay) ⑦ - GND (switch power input) ⑧ - GND (cab light)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

BEACON LAMP AND CAB LIGHT CIRCUIT



480A4EL09

※ The circuit diagram may differ from the equipment, so please check before a repair.

6. WIPER AND WASHER CIRCUIT

1) OPERATING FLOW

(1) Start switch ON

Fuse box (No.14) → RDU membrance controller [CN-376 (1)]

Fuse box (No.8) → I/conn [CN-5 (18)] → I/conn [CN-17 (5)] → Wiper motor controller [CN-141 (7)]
→ Wiper motor [CN-21 (4)]

Fuse box (No.20) → I/conn [CN-5 (16)] → I/conn [CN-17 (4)] → Wiper motor controller [CN-141 (6)]
→ Low wiper motor [CN-407 (3)]
→ Washer pump [CN-22 (2)]

(2) Wiper switch ON (Intermittent)

Wiper switch ON [CN-376 (12)] → I/conn [CN-5 (20)] → I/conn [CN-17 (8)]
→ Wiper motor controller [CN-141 (10)→(3)] → Wiper motor [CN-21 (6)] → Intermittently operating

(3) Wiper switch ON (continual)

Wiper switch ON [CN-376 (3)] → I/conn[CN-5 (15)] → I/conn[CN-17 (2)]
→ Wiper motor controller [CN-141 (2) → (4)] → Wiper motor [CN-21 (2)] → Continual operating

(4) Washer switch ON

Washer switch ON [CN-376 (11)] → I/conn [CN-5 (17)] → I/conn [CN-17 (7)]
→ Wiper motor controller [CN-141 (9) → (8)] → I/conn [CN-17 (6)] → I/conn [CN-5 (19)]
→ Washer pump [CN-22 (1)] → Washer operating

Wiper switch ON [CN-376 (3)] → I/conn[CN-5 (15)] → I/conn[CN-17 (2)]
→ Wiper motor controller [CN-141 (2) → (4)] → Wiper motor [CN-21 (2)] → Continual operating

(5) Auto parking (when switch OFF)

Switch OFF [CN-376 (3, 12)] → Wiper motor parking position by wiper motor controller

2) OPERATING FLOW (LOW WIPER)

(1) Start switch ON

Fuse box (No. 30) → I/conn [CN-7 (8)] → Low wiper switch [CS-79 (1, 5)]

(2) Wiper switch ON (1st)

Wiper switch ON [CS-79 (1 → 2)] → I/conn [CN-7 (5)] → Wiper motor [CN-407 (4)] → Wiper operating

(3) Wiper switch ON (2nd)

Wiper switch ON [CS-79 (5 → 4)] → I/conn [CN-7 (6)] → I/conn [CN-18 (2)] → Washer pump [CN-407 (2)]
→ Washer operating

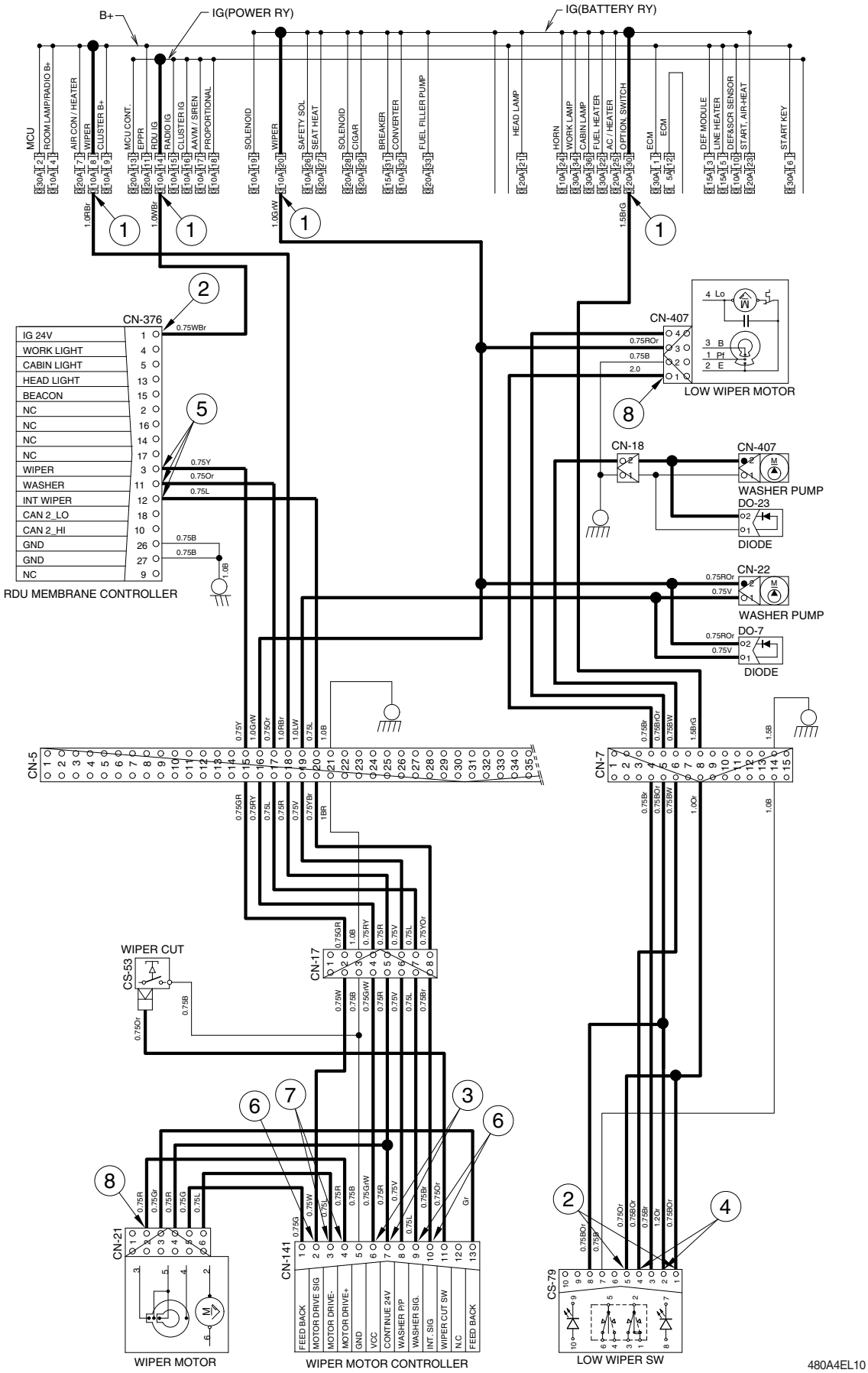
3) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (switch power input) ③ - GND (wiper power input) ④ - GND (switch power output)	20~25V
		⑤ - GND (switch power output) ⑥ - GND (wiper switch power input)	0 ~ 5V
		⑦ - GND (wiper power output)	24V
		⑧ - GND (wiper motor)	0 or 24V

※ GND : Ground

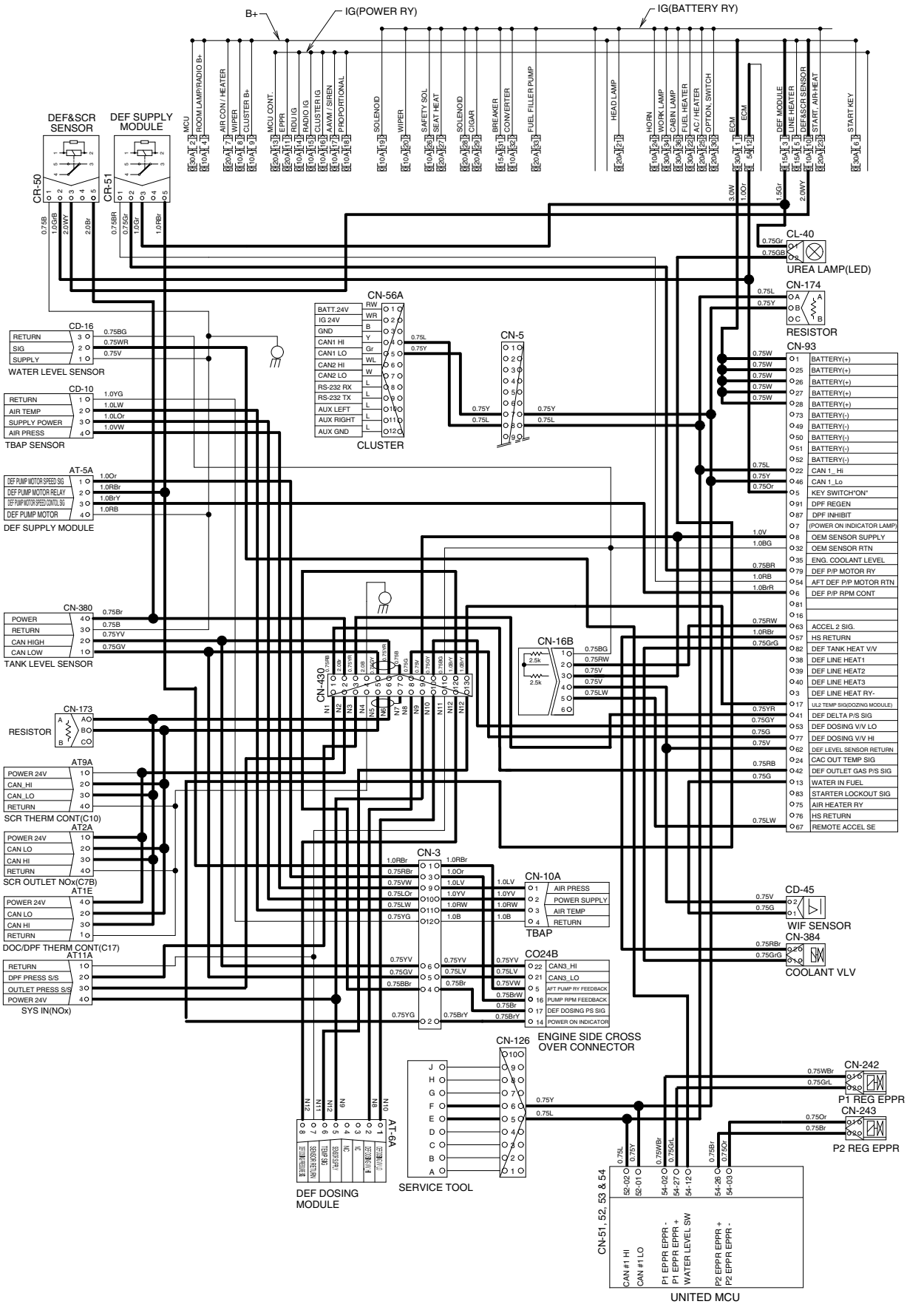
※ The circuit diagram may differ from the equipment, so please check before a repair.

WIPER AND WASHER CIRCUIT



※ The circuit diagram may differ from the equipment, so please check before a repair.

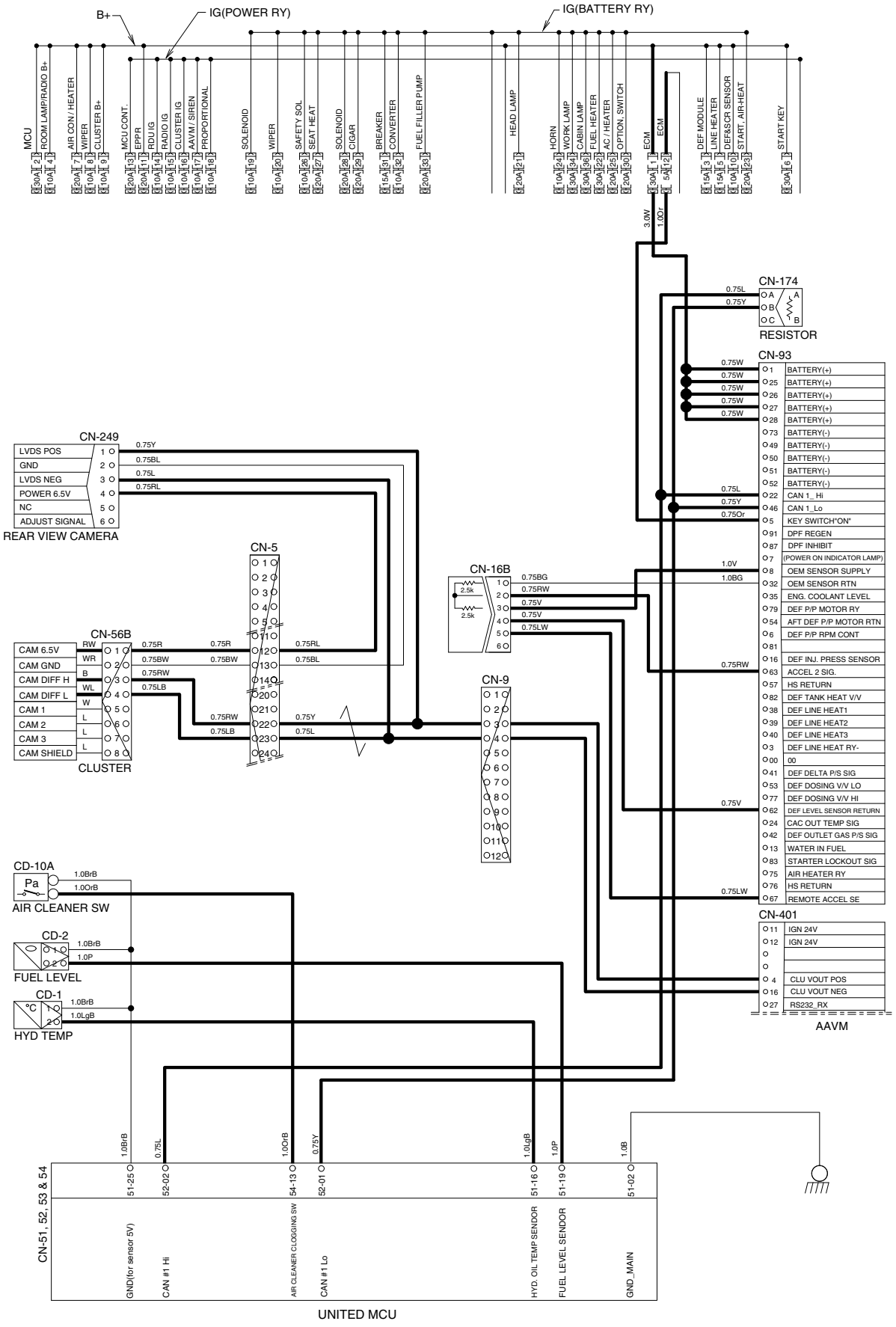
CONTROLLER CIRCUIT



480A4EL11

※ The circuit diagram may differ from the equipment, so please check before a repair.

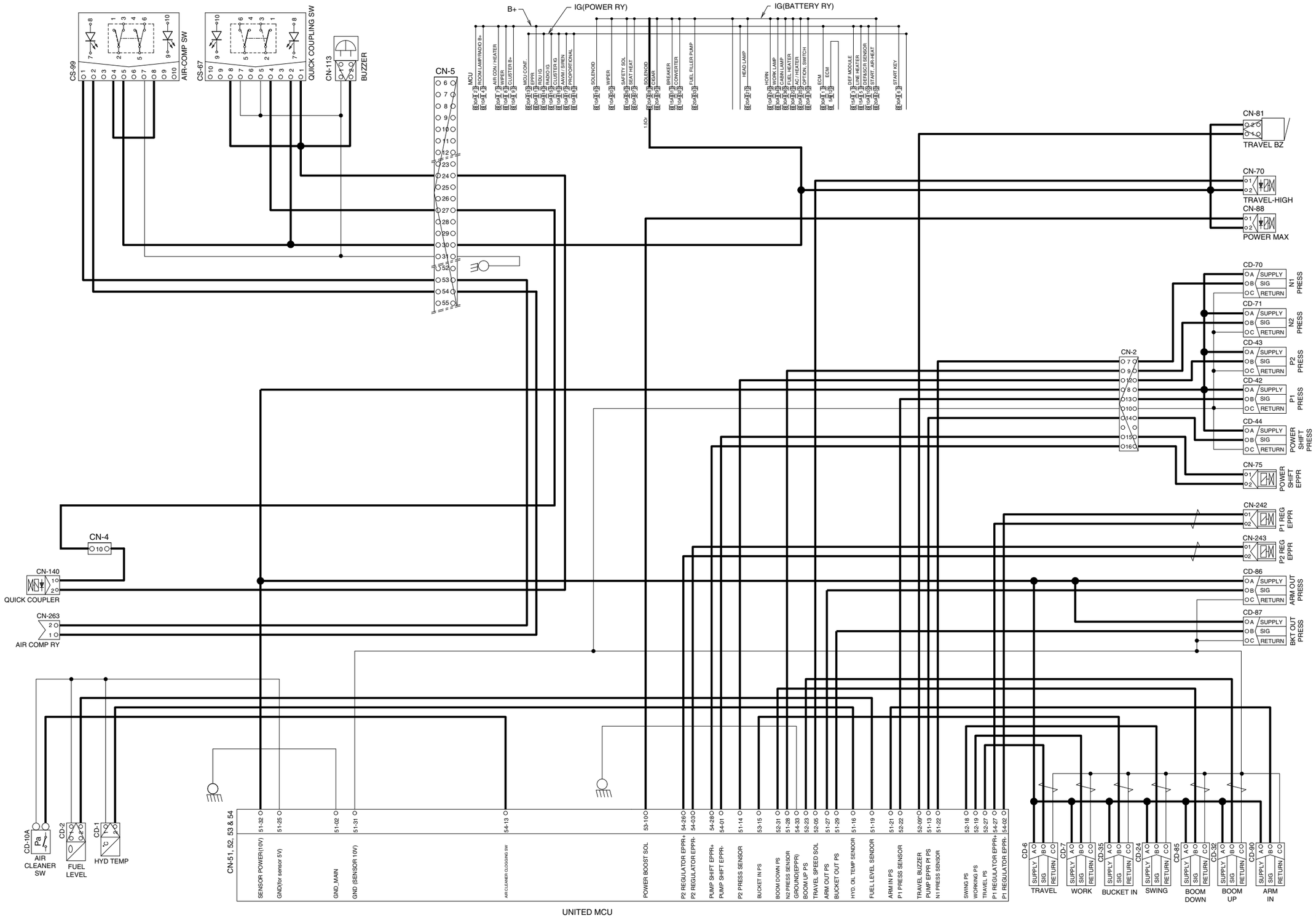
MONITORING CIRCUIT



480A4EL12

※ The circuit diagram may differ from the equipment, so please check before a repair.

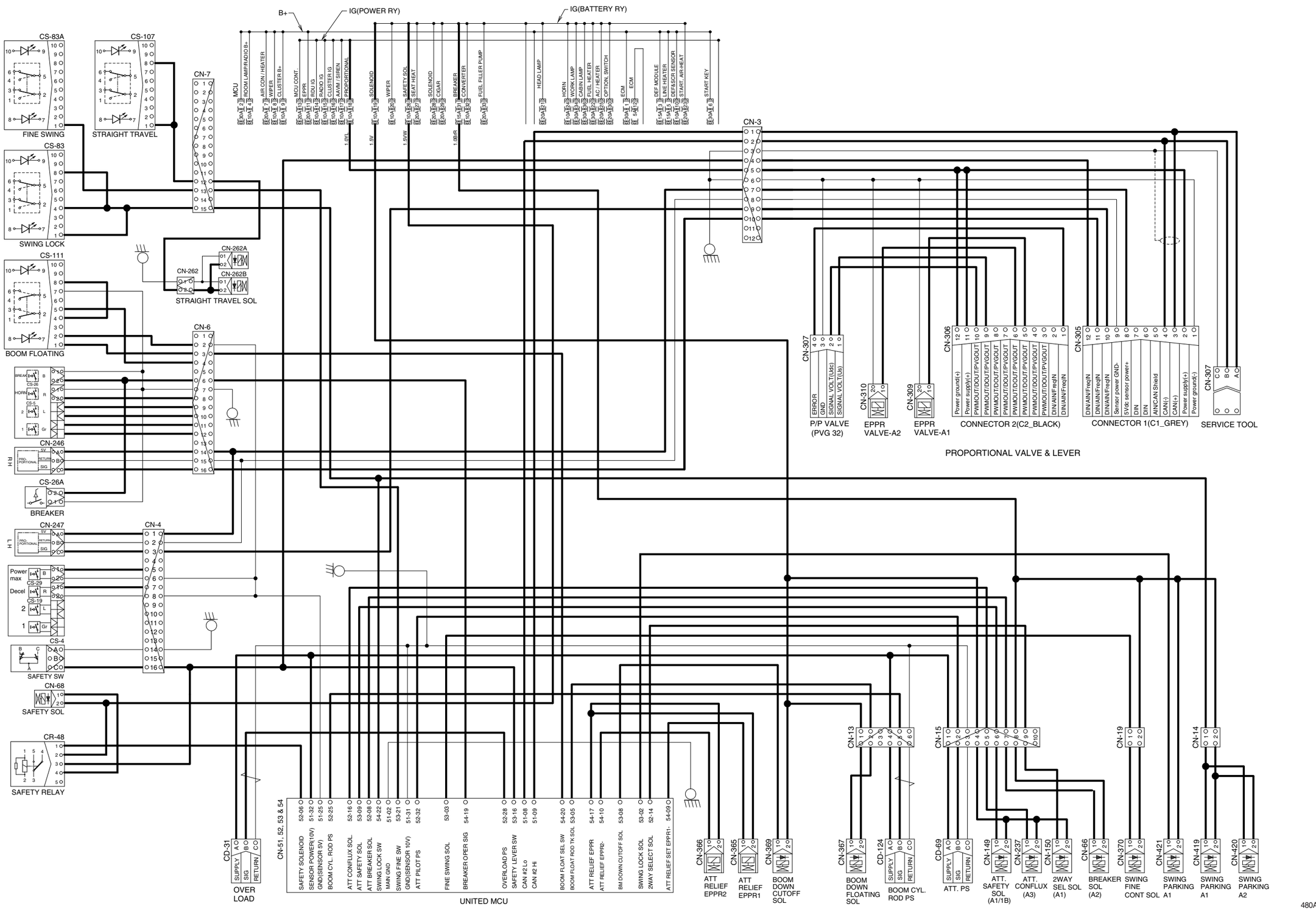
ELECTRIC CIRCUIT FOR HYDRAULIC (1/2)



480A4EL13

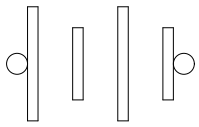
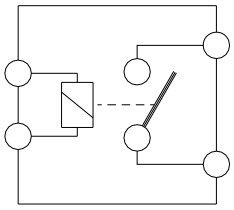
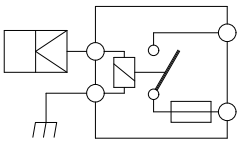
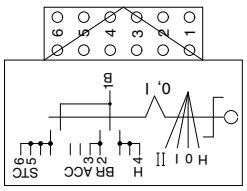
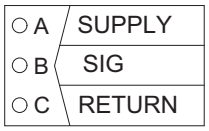
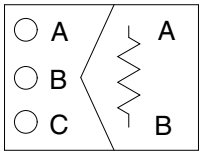
※ The circuit diagram may differ from the equipment, so please check before a repair.

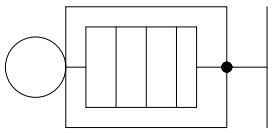
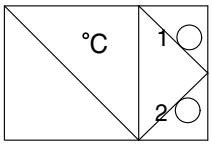
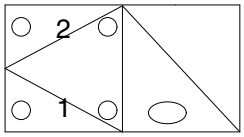
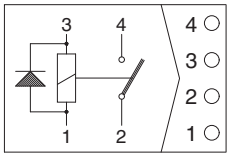
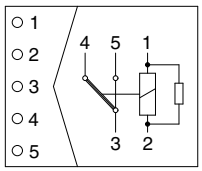
ELECTRIC CIRCUIT FOR HYDRAULIC (2/2)

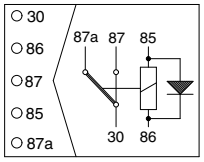
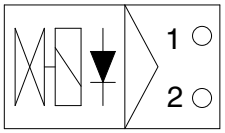
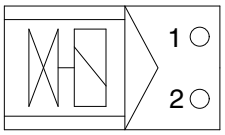
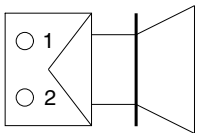
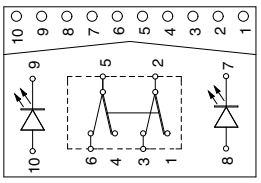
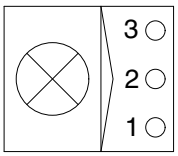


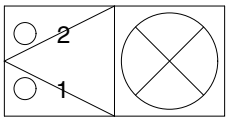
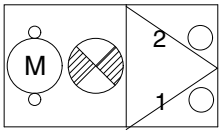
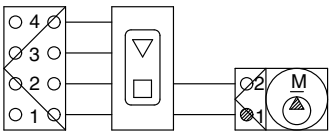
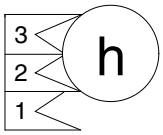
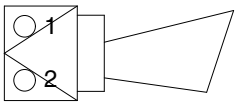
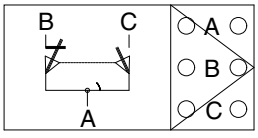
※ The circuit diagram may differ from the equipment, so please check before a repair.

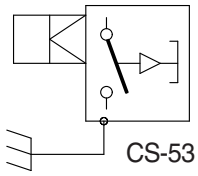
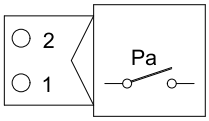
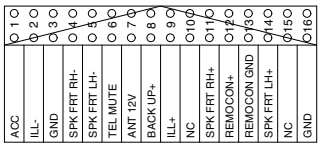
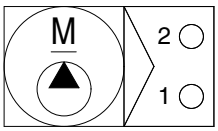
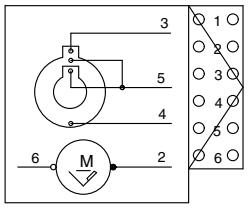
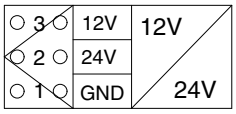
GROUP 3 ELECTRICAL COMPONENT SPECIFICATION

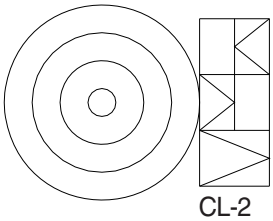
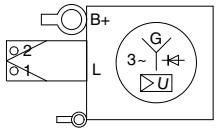
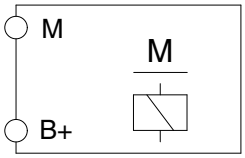
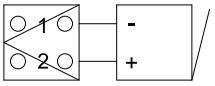
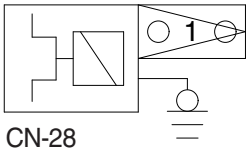
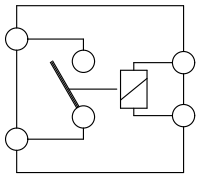
Part name	Symbol	Specifications	Check
Battery		12V × 160Ah (2EA)	※ Check specific gravity 1.280 over : Over charged 1.280 ~ 1.250 : Normal 1.250 below : Recharging
Battery relay	 CR-1	Rated load : 24V 100A (continuity) 1000A (30seconds)	※ Check coil resistance(M4 to M4) Normal : About 50Ω ※ Check contact Normal : ∞Ω
Glow plug relay	 CR-24	24V 200A	※ Check contact Normal : 0.942Ω (for terminal 1-GND)
Start key	 CS-2A	B-BR : 24V 1A B-ACC : 24V 10A B-ST : 24V 40A	※ Check contact OFF : ∞Ω (for each terminal) ON : 0Ω (for terminal 1-3 and 1-2) START : 0Ω (for terminal 1-6)
Pressure sensor	 CD-6 CD-7 CD-16 CD-24 CD-31 CD-32 CD-35 CD-42 CD-43 CD-44 CD-69 CD-70 CD-71 CD-85 CD-86 CD-87 CD-90 CD-124	8~30V	※ Check contact Normal : 0.1Ω
Resistor	 CN-173 CN-174	3W	※ Check resistance A-B : 120Ω

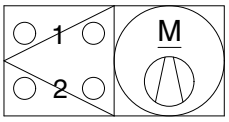
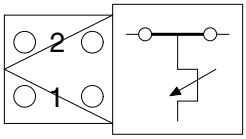
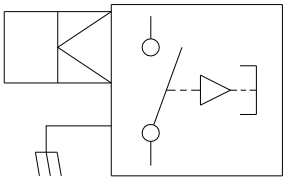
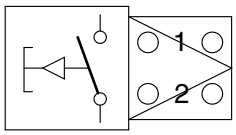
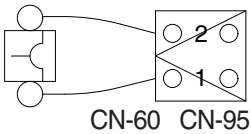
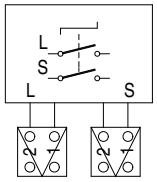
Part name	Symbol	Specifications	Check
Glow plug	 CN-80	24V 200A	※ Check resistance 0.25~0.12Ω
Temperature sensor (hydraulic)	 CD-1	-	※ Check resistance 50˚C : 804Ω 80˚C : 310Ω 100˚C : 180Ω
Fuel sender	 CD-2	-	※ Check resistance Full : 50Ω 6/12 : 350Ω 11/12 : 100Ω 5/12 : 400Ω 10/12 : 150Ω 4/12 : 450Ω 9/12 : 200Ω 3/12 : 500Ω 8/12 : 250Ω 2/12 : 550Ω 7/12 : 300Ω 1/12 : 600Ω Empty warning : 700Ω
Relay (air con blower)		24V 20A	※ Check resistance Normal : About 200Ω (for terminal 1-3) 0 Ω (for terminal 2-4)
Relay	 CR-2 CR-5 CR-36 CR-39 CR-48 CR-50 CR-51 CR-85	24V 16A	※ Check resistance Normal : About 160 Ω (for terminal 1-2) 0Ω (for terminal 3-4) ∞Ω (for terminal 3-5)

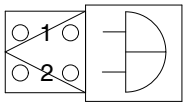
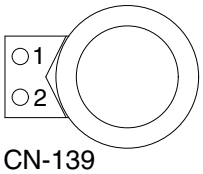
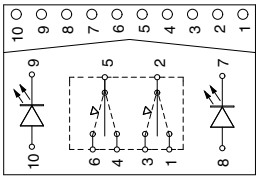
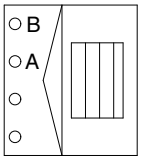
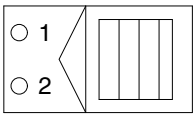
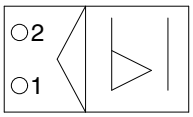
Part name	Symbol	Specifications	Check
Relay	 CR-4 CR-7 CR-9 CR-13 CR-35 CR-46 CR-52	24V 16A	※ Check resistance Normal : About 160 Ω (for terminal 85-86) 0 Ω (for terminal 30-87a) ∞ Ω (for terminal 30-87)
Solenoid valve	 CN-66 CN-68 CN-70 CN-88 CN-90 CN-135 CN-140 CN-149 CN-150 CN-237 CN-262A CN-262B CN-367 CN-369 CN-370 CN-419 CN-420 CN-421 CN-680	24V 1A	※ Check resistance Normal : 15~25 Ω (for terminal 1-2)
EPPR valve	 CN-75 CN-133 CN-154 CN-242 CN-243 CN-309 CN-310 CN-365 CN-366	700mA	※ Check resistance Normal : 15~25 Ω (for terminal 1-2)
Speaker	 CN-23(LH) CN-260 CN-24(RH)	20W	※ Check resistance Normal : A few Ω
Switch (locking type)	 CS-52 CS-67 CS-83 CS-83A CS-99 CS-107 CS-108 CS-111	24V 8A	※ Check contact Normal ON : ∞ Ω (for terminal 2-3, 5-6) 0 Ω (for terminal 2-1, 5-4) OFF : 0 Ω (for terminal 2-3, 5-6) ∞ Ω (for terminal 2-1, 5-4)
Room lamp	 CL-1	24V 10W	※ Check disconnection Normal : 1.0 Ω ON : 0 Ω (For terminal 1-2) ∞ Ω (For terminal 1-3) OFF : ∞ Ω (For terminal 1-2) 0 Ω (For terminal 1-3)

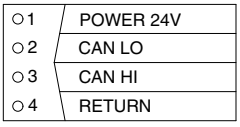
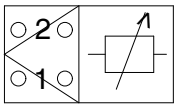
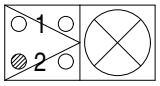
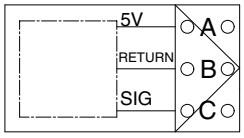
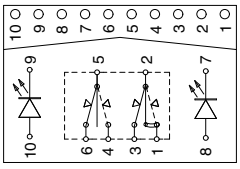
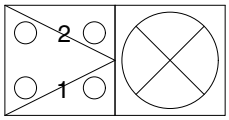
Part name	Symbol	Specifications	Check
Cab lamp	 CL-8 CL-9 CL-10	24V 65W (H3 Type)	※ Check disconnection Normal : 1.2Ω
Beacon lamp	 CL-7	24V 70W (H1 Type)	※ Check disconnection Normal : A few Ω
Fuel filler pump	 CN-61	24V 10A 35 ℓ /min	※ Check resistance Normal : 1.0Ω
Hour meter	 CN-48	16~32V	※ Check operation Supply power(24V) to terminal No.1 and connect terminal No.2 and ground
Horn	 CN-20 CN-25	DC22~28V 2A	※ Check operation Supply power(24V) to each terminal and connect ground.
Safety switch	 CS-4	24V 15A (N.C TYPE)	※ Check contact Normal : 0Ω (for terminal A-B) ∞Ω (for terminal A-C) Operating : ∞Ω (for terminal A-B) 0Ω (for terminal A-C)

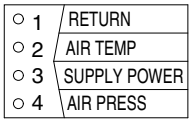
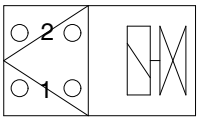
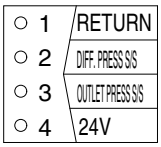
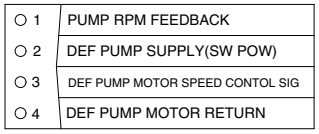
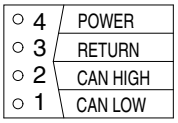
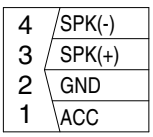
Part name	Symbol	Specifications	Check
Wiper cut switch		24V (N.O TYPE)	※ Check contact Normal : 0Ω(one pin to ground)
Receiver dryer	 CN-29	24V 2.5A (N.O TYPE)	※ Check contact Normal : ∞Ω
Radio & USB player	 CN-27A	24V 2A	※ Check voltage 20~25V (for terminal 1-3, 3-8)
Washer pump	 CN-22 CN-408	24V 3.8A	※ Check contact Normal : 10.7Ω(for terminal 1-2)
Wiper motor	 CN-21	24V 2A	※ Check disconnection Normal : 7Ω(for terminal 2-6)
DC/DC Converter	 CN-138	12V 3A	※ Check voltage 24V (for terminal 1-2) 12V (for terminal 1-3)

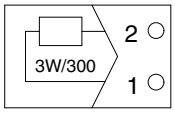
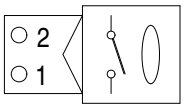
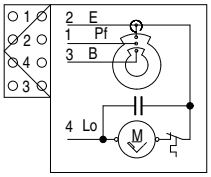
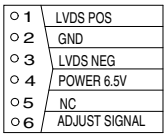
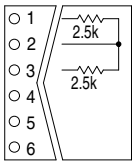
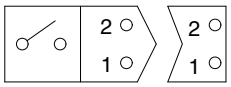
Part name	Symbol	Specifications	Check
Cigar lighter	 CL-2	24V 5A 1.4W	※ Check coil resistance Normal : About 1MΩ ※ Check contact Normal : ∞Ω Operating time : 5~15sec
Alternator	 CN-74	24V 110A	※ Check contact Normal : 0Ω (for terminal B^+-L) Normal : 24~27.5V
Starter	 CN-45	24V 7.5kW	※ Check contact Normal : 0.1Ω
Travel alarm	 CN-81	24V 0.5A	※ Check contact Normal : 5.2Ω
Aircon compressor	 CN-28	24V 79W	※ Check contact Normal : 13.4Ω
Start relay	 CR-23	24V 300A	※ Check contact Normal : 0.94Ω (for terminal 1-2)

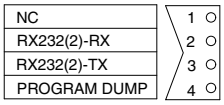
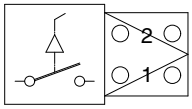
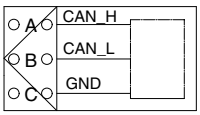
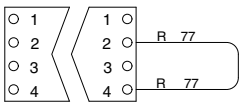
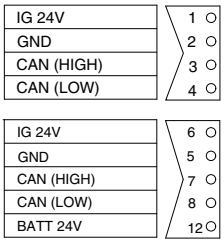
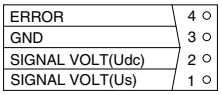
Part name	Symbol	Specifications	Check
Blower motor		24V 9.5A	※ Check resistance Normal : 2.5Ω (for terminal 1-2)
Thermistor (switch)		1˚C OFF 4˚C ON	※ Check resistance Normal : 0Ω (for terminal 1-2), the atmosphere temp : Over 4˚C
Door switch		24V 2W	※ Check resistance Normal : About 5MΩ
Switch (power max, one touch decel, horn, breaker)	 CS-5 CS-19 CS-26 CS-29	24V 6A	※ Check resistance Normal : ∞Ω
Maxival fuse	 CN-60 CN-95	60A (CN-60) 90A (CN-95)	※ Check disconnection Normal : 0Ω (connect ring terminal and check resist between terminal 1 and 2)
Master switch	 CS-74, CS-74B	6-36V	※ Check disconnection Normal : 0.1Ω

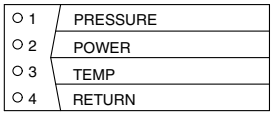
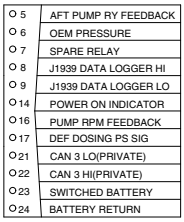
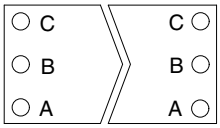
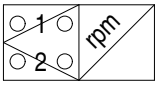
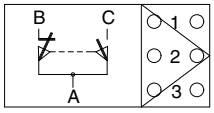
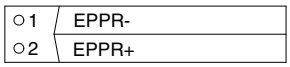
Part name	Symbol	Specifications	Check
Quick clamp buzzer	 CN-113	24V 200mA 107±4dB	
Socket	 CN-139	12V 10A	
Switch	 CS-100	24V 8A	※ Check contact Normal ON : 0Ω(for terminal 2-1, 2-3) OFF : ∞Ω(for terminal 2-1, 2-3)
Fuel heater	 CN-96	-	
DEF/AdBlue® line heater	 CN-381 CN-382 CN-383	-	
WIF sensor	 CD-45	-	

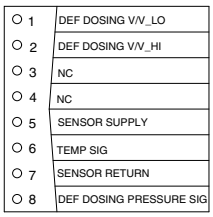
Part name	Symbol	Specifications	Check
DEF/AdBlue® sensor	 AT1E AT2A AT9A	-	
Temperature sensor (A/C)		-	
DEF/AdBlue® fill up warning lamp (LED)	 CL-40	-	
Proportional valve sensor	 CN-246 CN-247	-	
Switch	 CS-79	24V 8A	※ Check disconnection Normal ON 1st step : 0Ω (for terminal 1-2) 2nd step : 0Ω (for terminal 1-2, 4-5) OFF 0Ω (for terminal 2-3, 5-6)
Head lamp Work lamp	 CL-3 CL-4 CL-5 CL-6 CL-24 CL-24A	24V 65W (H3 Type)	※ Check disconnection Normal : 1.2 Ω

Part name	Symbol	Specifications	Check
TBAP sensor	 CD-10	-	
Coolant valve	 CN-384	-	
System in pressure sensor (NOx)	 AT11A	-	
DEF supply module	 AT-5A	-	
Tank level sensor	 CN-380	-	
Siren AMP	 CN-261	-	

Part name	Symbol	Specifications	Check
Resistor	 RS-1	3W	※ Check resistance Normal : 300Ω
Float switch	 CS-61	-	
Low wiper motor	 CN-407	-	
Camera (front, rear, side)	 CN-249 CN-402 CN-403 CN-403A CN-404 CN-405	-	
Resistor	 CN-16B	-	
Seat belt sw	 CS-250	-	

Part name	Symbol	Specifications	Check
RMS service tool	 CN-126A	-	
Breaker switch	 CS-26A	-	
Start button	 CS-2B	-	
GPS connector	 CN-125	-	
Reader	 CN-427	-	
Proportional valve	 CN-307	-	

Part name	Symbol	Specifications	Check
TBAP	 CN-10A	-	
Engine side cross over connector	 CO24B	-	
Service tool	 CN-307 CN-407	-	
Fan speed	 CD-52	-	
Remove count weight select SW	 CS-90	-	
Hydraulic cooling fan EPPR	 CN-154	-	

Part name	Symbol	Specifications	Check
DEF dosing module	 AT-6A	-	

GROUP 4 CONNECTORS

1. CONNECTOR DESTINATION

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-2	AMP	16	I/conn (Frame harness-Engine harness)	1-368047-1	368050-1
CN-3	AMP	15	I/conn (Frame harness-Engine harness)	2-85262-1	368301-1
CN-3A	TE	12	I/conn (Frame harness-Pro vlv harness)	174661-2	368537-1
CN-4	TE	16	I/conn (Console harness LH-Frame harness)	368047-1	368050-1
CN-5	DEUTSCH	60	I/conn (Side harness RH-Frame harness)	DRB16-60SAE-L018	DRB12-60PAE-L018
CN-6	TE	16	I/conn (Console harness RH-Frame harness)	368047-1	368050-1
CN-7	TE	15	I/conn (Console harness RH-Frame harness)	2-85262-1	368301-1
CN-8	TE	10	I/conn (Console harness RH-Frame harness)	S816-010002	174657-2
CN-9	DEUTSCH	12	I/conn (Frame harness-AAVM harness)	DT06-12SA-P021	DT04-12PA-P021
CN-10	DEUTSCH	12	I/conn (Cab harness-Side harness RH)	DT06-12S-EP06	DT04-12PA-P021
CN-11	DEUTSCH	8	I/conn (Frame harness-Aircon harness)	DT06-8S-EP06	-
CN-12	DEUTSCH	2	I/conn (Frame harness-Boom wire harness)	DT06-2S-EP06	DT04-2P-E005
CN-13	AMP	6	I/conn (Frame harness-Boom floating)	174262-2	174264-2
CN-14	TE	2	I/conn (Frame harness-Swing parking control)	174352-2	174354-2
CN-15	TE	10	I/conn (Frame harness-Breaker sol)	174655-2	174657-2
CN-16	TE	6	Emergency engine start & speed control	174262-2	174264-2
CN-16B	TE	6	Emergency engine start	174262-2	21NB-10710
CN-17	AMP	8	I/conn (Side harness RH-Wiper harness)	S816-008002	S816-108002
CN-18	TE	2	I/conn (Frame harness-Low washer pump)	174352-2	174354-2
CN-19	DEUTSCH	2	I/conn (Frame harness-Swing fine harness)	DT06-2S-EP06	DT04-2P-E005
CN-20	DEUTSCH	2	Horn	DT06-2S-EP06	-
CN-21	AMP	6	Wiper motor	S810-006202	-
CN-22	KET	2	Washer pump	MG640605	-
CN-23	KET	2	Speaker-LH	MG610070	-
CN-24	KET	2	Speaker-RH	MG610070	-
CN-25	DEUTSCH	2	Horn	DT06-2S-EP06	-
CN-27A	KUM	16	Radio & USB player	PK145-16017	-
CN-27B	AMP	8	Radio & USB player	-	174984-2
CN-28	KET	2	Aircon compressor	PB625-01027	-
CN-28G	RING TERM	1	Aircon compressor ground	ST710286-2	-
CN-29	KET	2	Receiver dryer	MG640795	-
CN-31	AMP	2	Fuse	174352-2	-
CN-32	AMP	2	Fuse	174352-2	-
CN-36	-	-	Fuse & relay box	21Q7-10910	21WD-00240
CN-45B+	RING-TERM	1	Starter motor B^+	S820-406001	-
CN-45G	RING-TERM	1	Starter motor ground	S820-406001	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-48	KET	1	Hour meter	2-520193-2	-
CN-51	TE	34	United MCU	2-1437285-3	3-6437285-0
CN-52	TE	34	United MCU	4-1437290-1	6473427-1
CN-53	TE	26	United MCU	1473416-1	6473427-1
CN-54	TE	34	United MCU	4-1437290-0	6437288-1
CN-56A	AMP	12	Cluster	-	174663-2
CN-56B	AMP	8	Cluster	-	174984-2
CN-60	YAZAKI	2	Maxival fuse	MG630778-4	21K9-03270
CN-61	DEUTSCH	4	Fuel filler pump	DT06-4S-EP06	-
CN-62	DEUTSCH	2	Auto grease connector	DT06-2S-EP06	DT04-2P-E005
CN-62	DEUTSCH	2	I/conn (Auto grease harness-Frame harness)	DT06-2S	-
CN-62A	DEUTSCH	2	Auto grease	DT06-2S	-
CN-66	DEUTSCH	2	Breaker solenoid	DT06-2S-EP06	-
CN-68	DEUTSCH	2	Safety solenoid (A1)	DT06-2S-EP06	-
CN-70	DEUTSCH	2	Travel high solenoid (A4)	DT06-2S-EP06	-
CN-74	-	2	Alternator	1-967412-2	-
CN-74B+	RING-TERM	1	Alternator "B+" terminal	S820-408001	-
CN-74G	RING-TERM	1	Alternator ground	S820-412001	-
CN-75	AMP	2	Power shift EPPR	85202-1	-
CN-80	RING-TERM	1	Glow plug	S820-406001	-
CN-81	DEUTSCH	2	Travel buzzer solenoid	DT06-2S-EP06	-
CN-88	DEUTSCH	2	Power max solenoid (A2)	DT06-2S-EP06	-
CN-90	DEUTSCH	2	Removable CWT solenoid	DT06-2S-EP06	DT04-2P-E005
CN-93	DELPHI	96	ECM	13964572	-
CN-95	YAZAKI	2	Maxival fuse	MG630778	21K9-03270
CN-96	-	2	Fuel heater	15300027	-
CN-100	KET	1	ECM ground	MG640944-5	-
CN-113	KET	2	Buzzer	MG651205-5	-
CN-125	Econoseal J	4	GPS connector	S816-004002	S816-104002
CN-125A	DEUTSCH	12	RMS	DT06-12S-P021	DT04-12PA-P021
CN-125B	DEUTSCH	8	RMS	DT06-8S	DT04-8P
CN-126	AMP	10	Service tool	174655-2	S816-110002
CN-126A	DEUTSCH	4	RMS Service tool	DT06-4S	DT04-4P
CN-138	FASTEN	3	DC/DC Converter	S810-003202	-
CN-139	FASTEN	2	12V socket	172434-2	-
CN-140	DEUTSCH	2	Quick clamp solenoid	DT06-2S-EP06	DT04-2P-E005
CN-141	AMP	13	Wiper motor controller	172498-1	-
CN-149	DEUTSCH	2	Attach safety solenoid (A1)	DT06-2S-EP06	-
CN-150	DEUTSCH	2	2 way select solenoid (B)	DT06-2S-EP06	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-154	DEUTSCH	2	Hydraulic cooling fan	DT06-2S	-
CN-156	DEUTSCH	2	Seat heat	DT06-2S	DT04-2P
CN-157	AMP	1	Antena power	S822-014002	-
CN-173	DEUTSCH	3	Resistor	DT06-3S-EP06	-
CN-174	DEUTSCH	3	Resistor	DT06-3S-EP06	-
CN-200	DEUTSCH	8	Removable CWT main connector	-	DT04-8PD
CN-237	DEUTSCH	2	Attach conflux solenoid (A3)	DT06-2S-EP06	-
CN-242	DEUTSCH	2	P1 regulator EPPR	DT06-2S-EP06	-
CN-243	DEUTSCH	2	P2 regulator EPPR	DT06-2S-EP06	-
CN-245	KET	2	PTC power	MG620558	-
CN-246	DEUTSCH	3	Proportional valve-RH	DT06-3S	DT04-3P
CN-247	DEUTSCH	3	Proportional valve-LH	DT06-3S	DT04-3P
CN-249	DEUTSCH	6	Rear view camera	DT06-6S-EP06	DT04-6P-E005
CN-258	KET	1	Air compressor power	MG640944-5	MG650943-2
CN-260	AMP	2	Siren speak	174352-2	174354-2
CN-261	KET	4	Siren AMP	MG610047	MG620046
CN-262	DEUTSCH	2	I/conn (Frame harness - Straight travel solenoid harness)	DT06-2S-EP06	DT04-2P-E005
CN-262A	DEUTSCH	2	Travel solenoid 1 (A2)	DT06-2S-EP06	-
CN-262B	DEUTSCH	2	Travel solenoid 2 (A1)	DT06-2S-EP06	-
CN-263	DEUTSCH	2	Air compressor relay	DT06-2S-EP06	-
CN-305	DEUTSCH	12	Proportional-Connector-1	DTM06-12SA	-
CN-306	DEUTSCH	12	Proportional-Connector-2	DTM06-12SB	-
CN-307	DEUTSCH	3	Proportional-Service tool	DT06-3S-EP06	DT04-3P-E005
CN-307A	DEUTSCH	4	Proportional valve connector	DT06-4S	DT04-4P-E005
CN-308	AMP	4	Proportional-PVG32	2-967059-1	-
CN-309	DEUTSCH	2	Proportional-EPPR valve A2	DT06-2S-EP06	-
CN-310	DEUTSCH	2	Proportional-EPPR valve A1	DT06-2S-EP06	-
CN-363	AMP	12	Jog dial module	174045-2	-
CN-365	DEUTSCH	2	Attach relief EPPR valve1	DT06-2S-EP06	DT04-2P-E005
CN-366	DEUTSCH	2	Attach relief EPPR valve2	DT06-2S-EP06	DT04-2P-E005
CN-367	DEUTSCH	2	Boom up floating solenoid	DT06-2S-EP06	-
CN-369	DEUTSCH	2	Boom down floating solenoid	DT06-2S-EP06	-
CN-370	DEUTSCH	2	Swing fine control solenoid	DT06-2S-EP06	-
CN-376	TE	34	Membrane controller	4-1437290-1	-
CN-380	DEUTSCH	4	DEF/AdBlue® tank level sensor	DT06-4S-EP06	-
CN-381	DEUTSCH	2	DEF line heater 1	DT06-2S-EP06	-
CN-382	DEUTSCH	2	DEF line heater 2	DT06-2S-EP06	-
CN-383	DEUTSCH	2	DEF line heater 3	DT06-2S-EP06	-
CN-384	TE	2	Coolant valve	-	1-967325-3

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-401	TE	35	AAVM controller	776164-1	-
CN-402	DEUTSCH	6	Front view camera	DT06-6S-P021	DT04-6P-P021
CN-403	DEUTSCH	6	Rear view camera	DT06-6S-EP06	DT04-6P-P021
CN-403A	DEUTSCH	6	To removable CWT harness	DT06-6S-EP06	DT04-6P-EP04
CN-403B	DEUTSCH	6	Rear view camera	DT06-6S-EP06	DT04-6P-EP04
CN-404	DEUTSCH	6	LH view camera	DT06-6S-EP06	DT04-6P-EP14
CN-405	DEUTSCH	6	RH view camera	DT06-6S-EP06	DT04-6P-EP14
CN-406	DEUTSCH	3	Service tool	DT06-3S-EP06	DT04-3P-E005
CN-407	DEUTSCH	4	Low wiper motor	DT06-4S-EP06	DT04-4P-E005
CN-419	DEUTSCH	2	Swing parking-A1	DT06-2S-EP06	-
CN-420	DEUTSCH	2	Swing parking-A2	DT06-2S-EP06	-
CN-421	DEUTSCH	2	Swing parking-A3	DT06-2S-EP06	-
CN-427	MOLEX	4	Reader-RMS	039012040	026013096
		12		5557-12R	5559-12P
CN-430	TE	15	I/conn (Frame harness-Aftertreatment harness)	2-85262-1	368301-1
CN-680	DEUTSCH	15	Hydraulic reverse fan solenoid	DT06-2S-EP06	-
AT1E	TYCO	4	DOC/DPF thermistor	4-1418390-1	-
AT2A	TYCO	4	SCR Outlet Nox sensor	1-1418390-1	-
AT-5A	TYCO	4	SCR supply module	2-1418390-1	-
AT-6A	TYCO	8	DEF/AdBlue® dosing module	1-141-8479-1	-
AT9A	TYCO	4	SCR thermistor cont sensor	3-1418390-1	-
AT11A	FRAMATOME	4	System in NOx sensor	F715600	-
CO24B	-	24	Engine side cross over connector	PPI0000656	-
· Relay					
CR-1	RING-TERM	-	Battery relay	ST710289-2	-
CR-2	-	5	Horn relay	-	-
CR-4	-	5	Working lamp relay	-	-
CR-5	-	5	Anti restart relay	-	-
CR-7	-	5	Aircon compressor relay	-	-
CR-9	-	5	Cabin lamp relay	-	-
CR-13	-	5	Head lamp relay	-	-
CR-23	KET	2	Start relay	S814-002001	S814-102001
CR-23S	RING TERM	1	Start relay	ST710286-2	-
CR-24B$^+$	RING TERM	1	Preheat relay B$^+$	S820-406001	-
CR-24G	RING TERM	1	Preheat relay	ST710287-2	-
CR-24P	RING TERM	1	Preheat relay	S820-406001	-
CR-24S	RING TERM	1	Preheat relay	ST730018-3	-
CR-35	-	5	Power relay	-	-
CR-36	-	5	Preheat relay	-	-

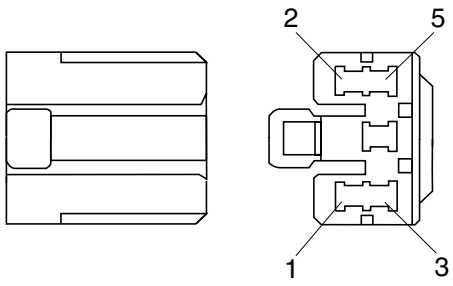
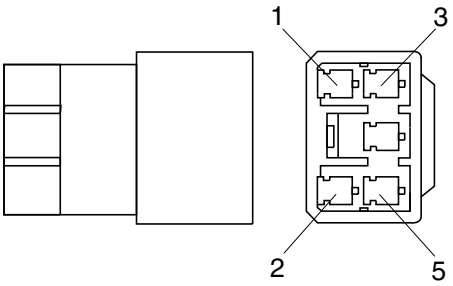
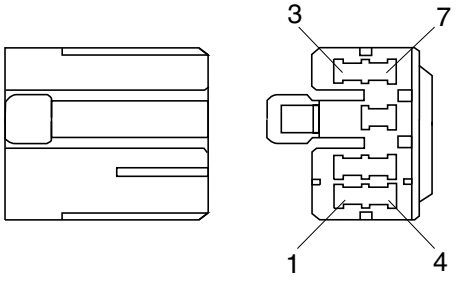
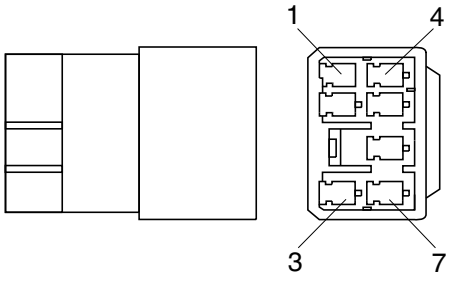
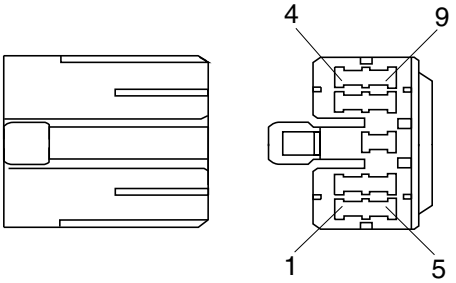
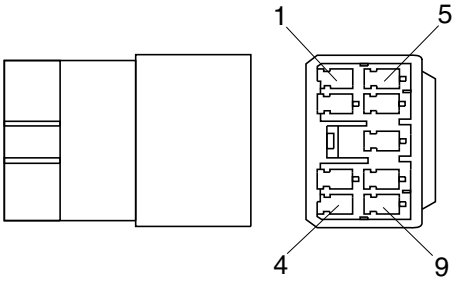
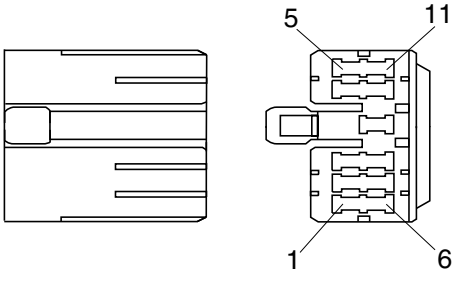
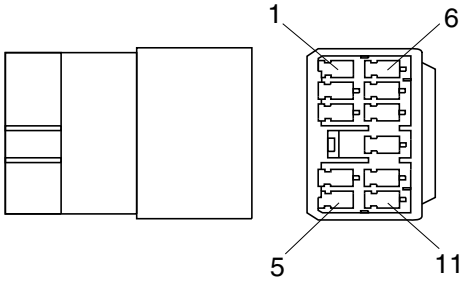
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CR-39	-	5	Starter lock out relay	-	-
CR-46	-	5	Fuel warmer relay	-	-
CR-48	-	5	Safety relay	-	-
CR-50	-	5	DEF&SCR sensor relay	-	-
CR-51	-	5	DEF/AdBlue® module relay	-	-
CR-52	-	5	Line heater relay	-	-
CR-85	-	5	Beacon lamp relay	-	-
· Switch					
CS-1	SHUR	1	Door switch	S822-014002	S822-114002
CS-2A	WP	6	Start switch	S814-006100	-
CS-2B	DEUTSCH	3	Start button	DT06-3S-EP06	DT04-3P-E005
CS-2C	KET	3	Button start	MG651032	-
CS-2D	KET	3	Button start key	-	MG641035
CS-4	DEUTSCH	3	Safety switch	DT06-3S	-
CS-5	DEUTSCH	2	Horn switch	-	DT04-2P
CS-19	DEUTSCH	2	One touch decel switch	-	DT04-2P
CS-26	DEUTSCH	2	Breaker switch	DT06-2S	-
CS-26A	AMP	2	Breaker pedal switch	S816-002002	S816-102002
CS-29	DEUTSCH	2	Power max switch	DT06-2S	-
CS-33	AMP	6	Emergency engine stop switch	S816-006002	S816-106002
CS-52	CARLING	10	2 Piece switch	VC2-01	-
CS-53	AMP	1	Wiper cut switch	S822-014002	-
CS-61	TE	2	Floating switch	174352-2	-
CS-67	CARLING	10	Quick clamp switch	VC2-01	-
CS-73	CARLING	10	Swing lock switch	VC2-01	-
CS-73A	CARLING	10	Swing fine switch	VC2-01	-
CS-74	KET	2	Master switch	MG610557-5	-
CS-74B	DEUTSCH	2	Master switch	DT06-2S-EP06	-
CS-79	CARLING	10	Lower wiper switch	VC2-01	-
CS-83	CARLING	10	Swing lock switch	VC2-01	-
CS-83A	CARLING	10	Fine swing switch	VC2-01	-
CS-90	TE	6	Removable CWT select switch	174262-2	174264-2
CS-99	CARLING	10	Air compressor switch	VC2-01	-
CS-100	CARLING	10	Exhaust system cleaning switch	VC2-01	-
CS-107	CARLING	10	Travel straight switch	VC2-01	-
CS-108	CARLING	10	Auto grease switch	VC2-01	-
CS-111	CARLING	10	Boom floating switch	VC2-01	-
CS-250	DEUTSCH	2	Seat switch	DT06-2S	-
· Light					

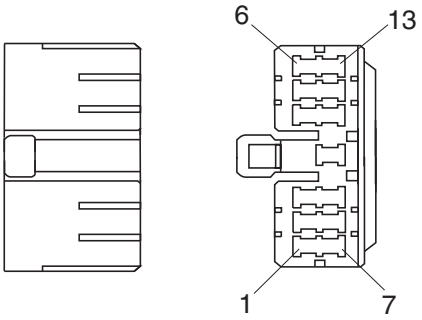
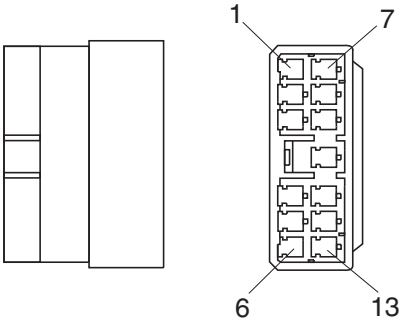
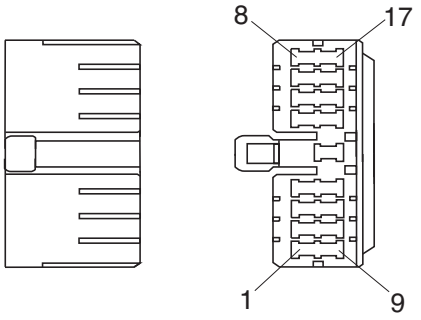
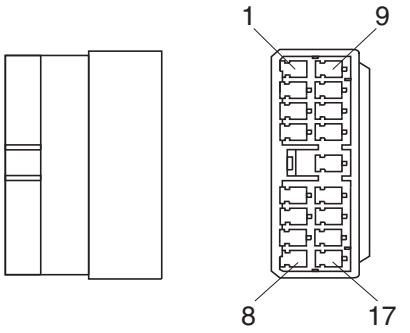
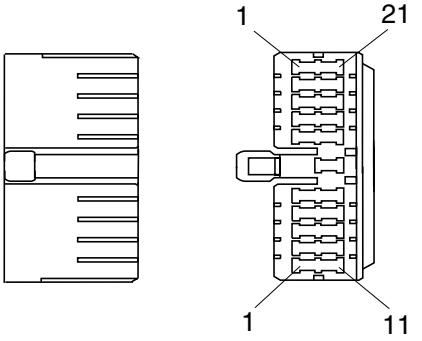
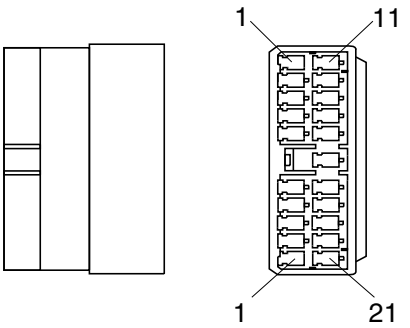
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CL-1	KET	3	Room lamp	MG651032	-
CL-2	AMP	1	Cigar lighter	S822-014002	S822-114002
				S822-014002	-
CL-3	DEUTSCH	2	Head lamp-LH	DT06-2S-EP06	-
CL-4	DEUTSCH	2	Head lamp-RH	DT06-2S-EP06	-
CL-5	DEUTSCH	2	Work lamp-LH	DT06-2S-EP06	DT04-2P
CL-6	DEUTSCH	2	Work lamp-RH	DT06-2S-EP06	DT04-2P
CL-7	DEUTSCH	2	Beacon lamp	DT06-2S-EP06	DT04-2P
CL-8	DEUTSCH	2	Cab lighter-LH	DT06-2S-EP06	DT04-2P
CL-9	DEUTSCH	2	Cab lighter-RH	DT06-2S-EP06	DT04-2P
CL-10	DEUTSCH	2	Cab lighter - RH	DT06-2S-EP06	DT04-2P
CL-24	DEUTSCH	2	Head lamp-rear	DT06-2S-EP06	DT04-2P-E005
CL-24A	DEUTSCH	2	Head lamp-rear	DT06-2S-EP06	DT04-2P-E005
CL-24B	DEUTSCH	2	Head lamp-rear (removable CWT)	DT06-2S-EP06	DT04-2P-E005
CL-36	DEUTSCH	2	Work lamp - LH	DT06-2S-EP06	-
CL-37	DEUTSCH	2	Work lamp - RH	DT06-2S-EP06	-
CL-40	DEUTSCH	2	DEF/AdBlue® lamp	DT06-2S-EP06	-
· Sensor, sendor					
CD-1	AMP	2	Hydraulic oil temp sender	85202-1	-
CD-2	DEUTSCH	2	Fuel sender	DT06-2S-EP06	-
CD-6	DEUTSCH	3	Travel pressure switch	DT06-3S-EP06	-
CD-7	DEUTSCH	3	Working pressure switch	DT06-3S-EP06	-
CD-10	SUMITOMO	4	TBAP sensor	6098-0144	-
CD-16	-	2	Water level sensor	E-5931	-
CD-24	DEUTSCH	3	Swing pressure sensor	DT06-3S-EP06	-
CD-31	DEUTSCH	3	Overload pressure sensor	DT06-3S-EP06	DT04-3P-E005
CD-32	DEUTSCH	3	Boom up pressure sensor	DT06-3S-EP06	-
CD-35	DEUTSCH	3	Bucket in pressure sensor	DT06-3S-EP06	-
CD-42	DEUTSCH	3	Pump pressure 1 (M1)	DT06-3S-EP06	-
CD-43	DEUTSCH	3	Pump pressure 2 (M2)	DT06-3S-EP06	-
CD-44	DEUTSCH	3	Power shift pressure 3 (M3)	DT06-3S-EP06	-
CD-45	DEUTSCH	2	WIF sensor	DT06-2S-EP06	-
CD-52	TE	2	Fan speed sensor	174352-2	-
CD-69	DEUTSCH	3	Attach pressure sensor	DT06-3S-EP06	-
CD-70	DEUTSCH	3	N1 pressure sensor (X1)	DT06-3S-EP06	-
CD-71	DEUTSCH	3	N2 pressure sensor (X2)	DT06-3S-EP06	-
CD-85	DEUTSCH	3	Boom down pressure sensor	DT06-3S-EP06	-
CD-86	DEUTSCH	3	Arm out pressure sensor	DT06-3S-EP06	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CD-87	DEUTSCH	3	Bucket out pressure sensor	DT06-3S-EP06	-
CD-90	DEUTSCH	3	Arm in pressure sensor	DT06-3S-EP06	-
CD-124	DEUTSCH	3	Boom cylinder rod pressure snensor	DT06-3S-EP06	-

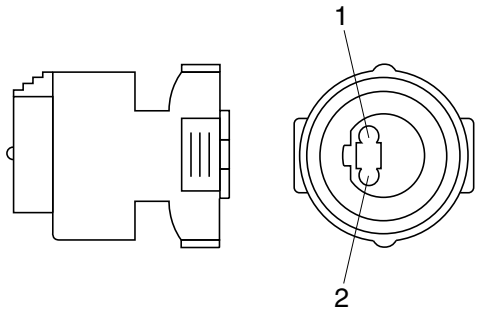
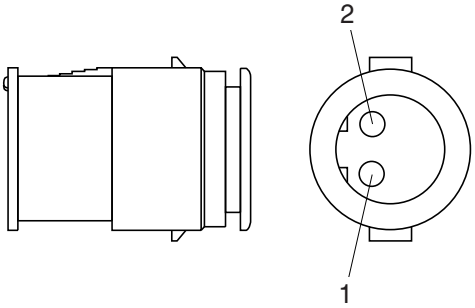
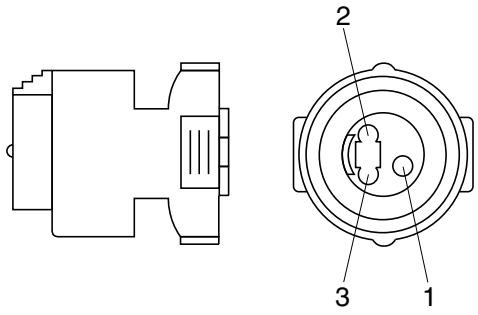
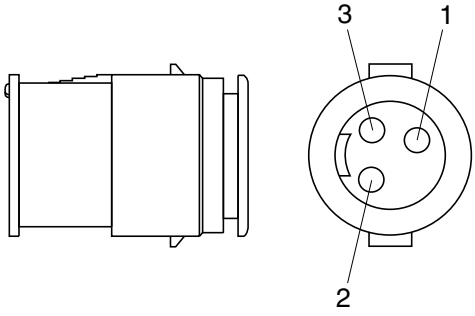
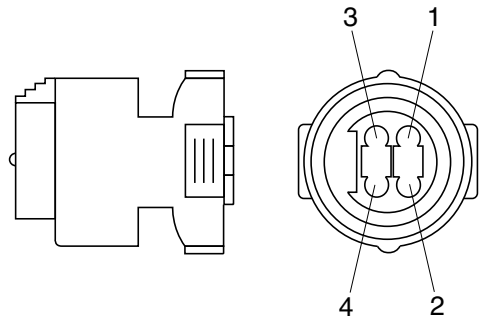
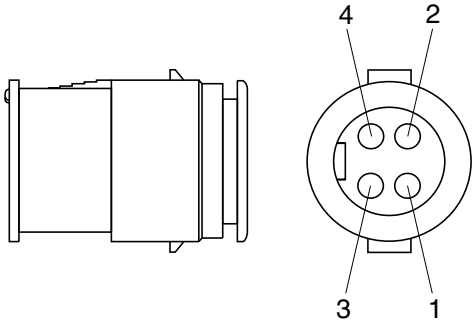
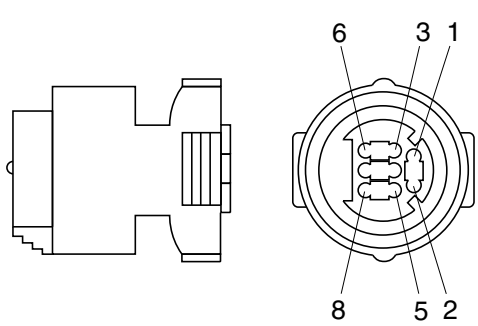
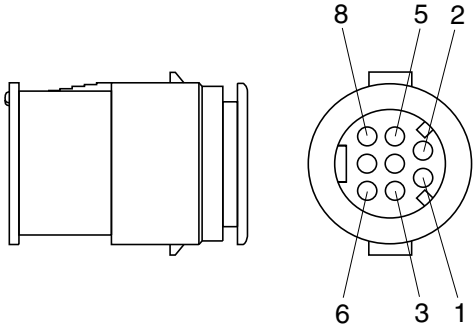
2. CONNECTION TABLE FOR CONNECTORS

1) PA TYPE CONNECTOR

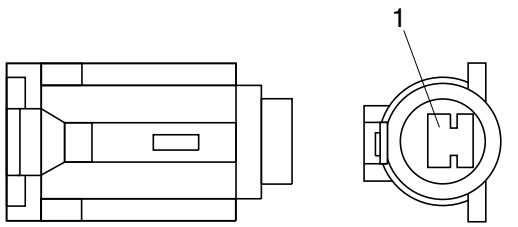
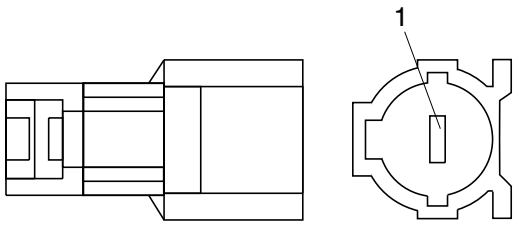
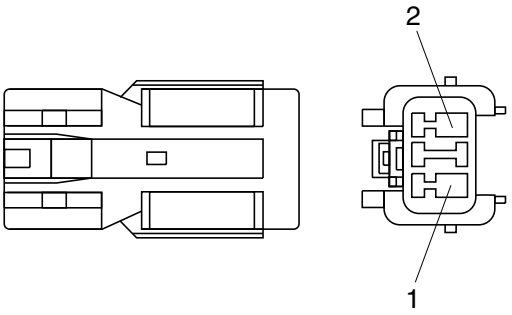
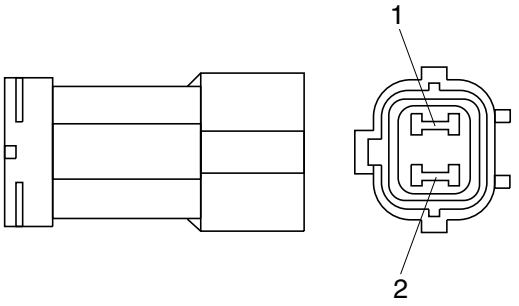
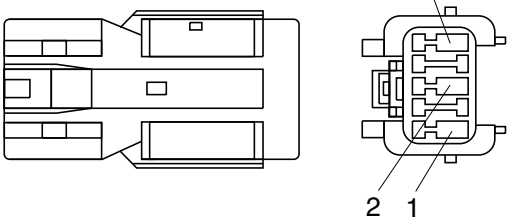
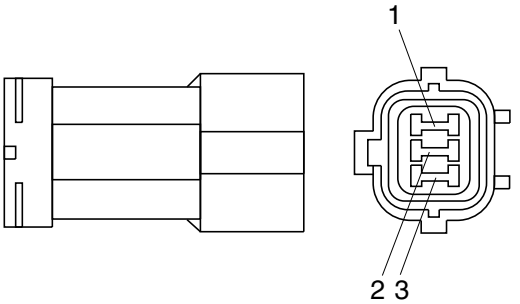
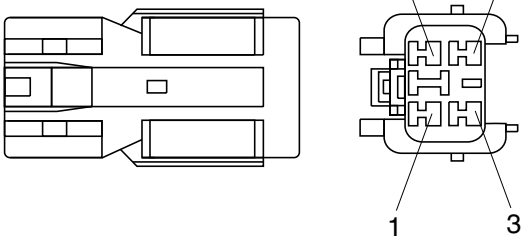
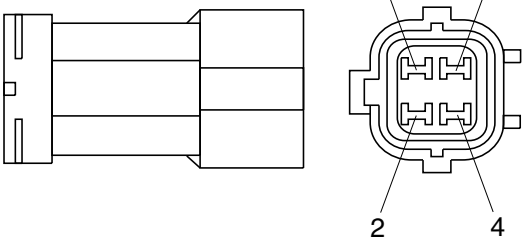
No. of pin	Receptacle connector (female)	Plug connector (male)
5	 S811-005002	 S811-105002
7	 S811-007002	 S811-107002
9	 S811-009002	 3S811-109002
11	 S811-011002	 S811-111002

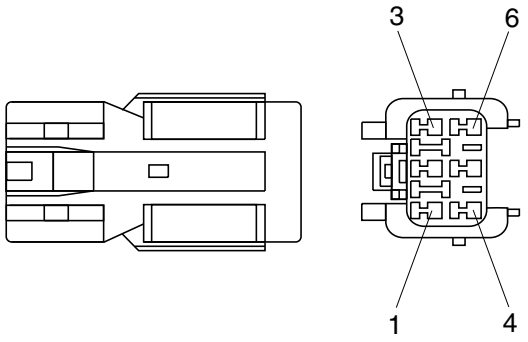
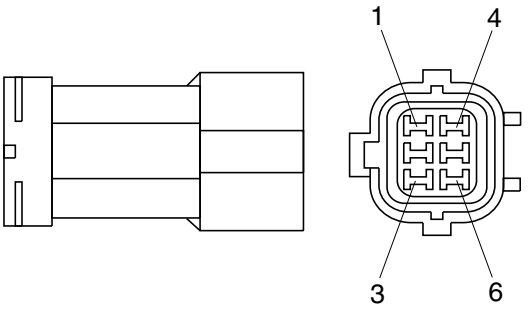
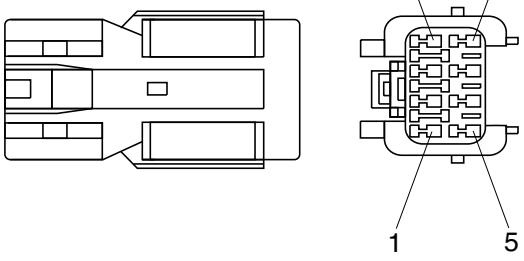
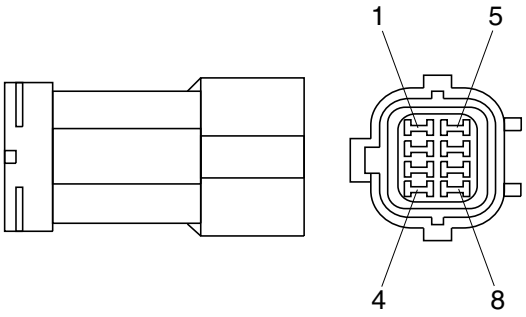
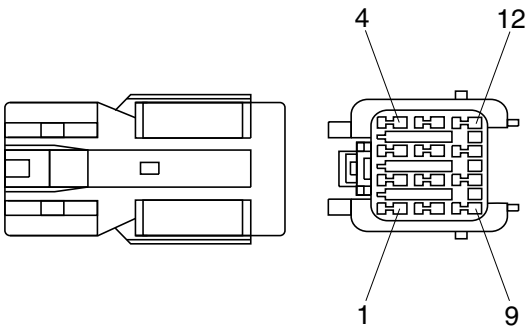
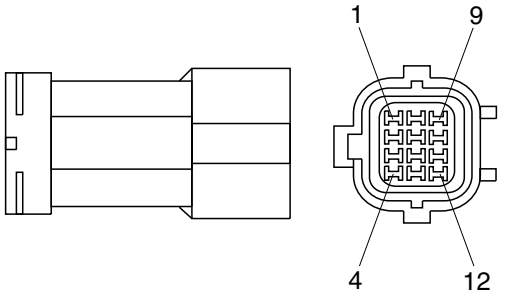
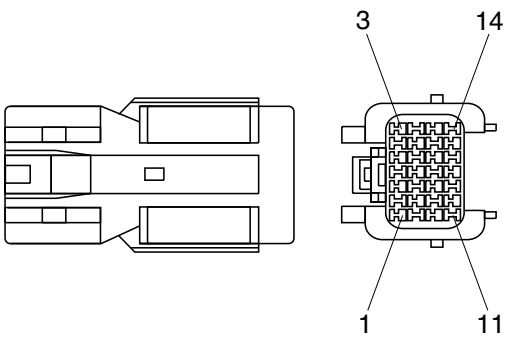
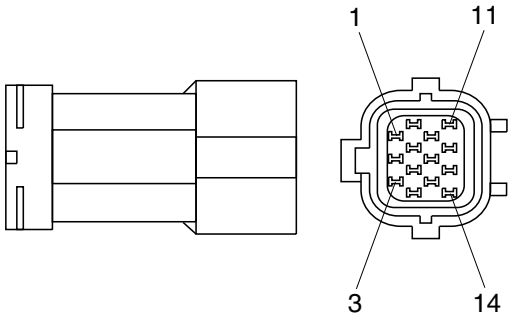
No. of pin	Receptacle connector (female)	Plug connector (male)
13	 S811-013002	 S811-113002
17	 S811-017002	 S811-117002
21	 S811-021002	 S811-121002

2) J TYPE CONNECTOR

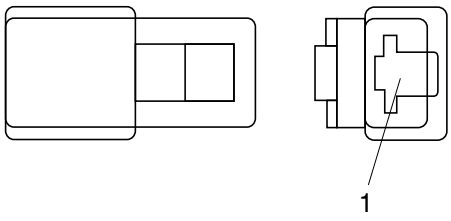
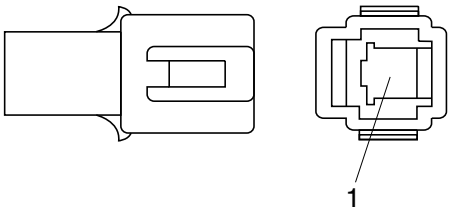
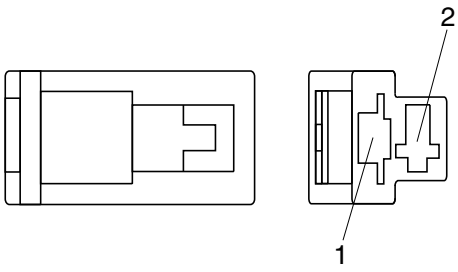
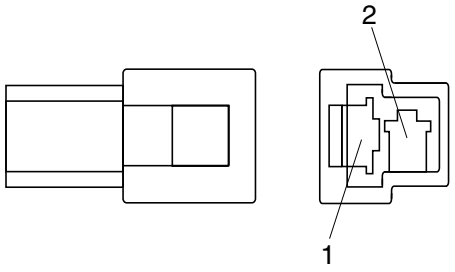
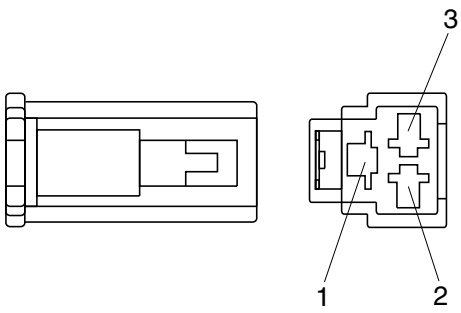
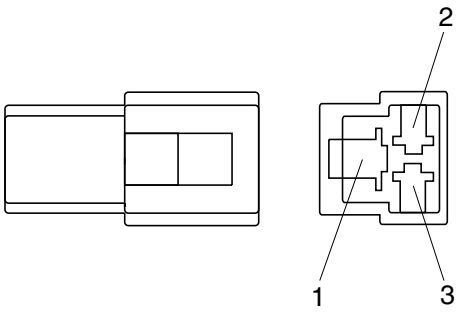
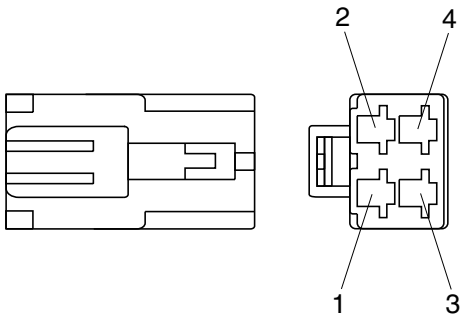
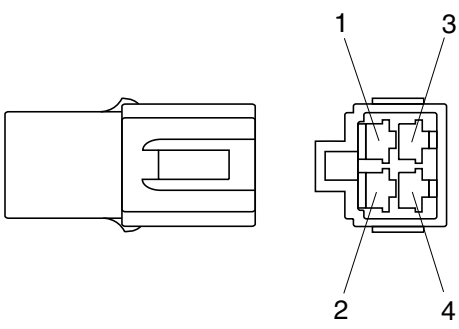
No. of pin	Receptacle connector (female)	Plug connector (male)
2	 S816-002001	 S816-102001
3	 S816-003001	 S816-103001
4	 S816-004001	 S816-104001
8	 S816-008001	 S816-108001

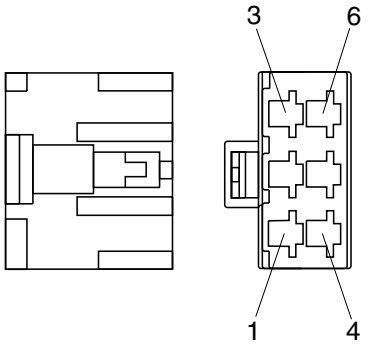
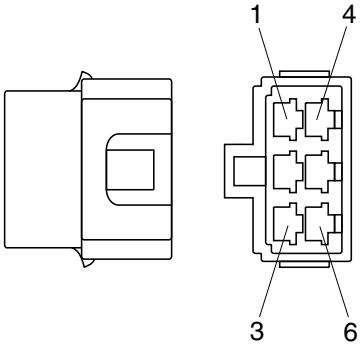
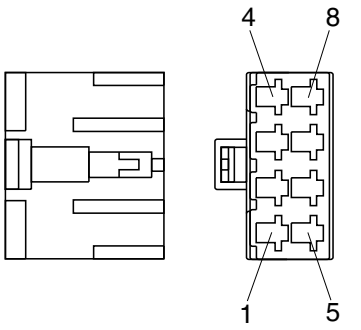
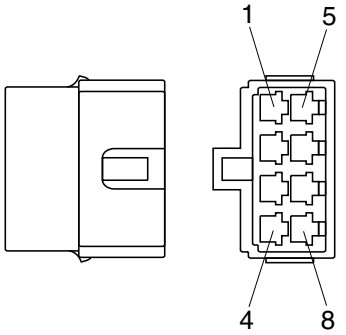
3) SWP TYPE CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
1	 S814-001000	 S814-101000
2	 S814-002000	 S814-102000
3	 S814-003000	 S814-103000
4	 S814-004000	 S814-104000

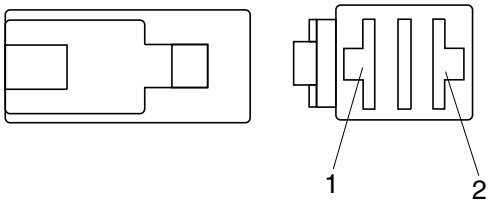
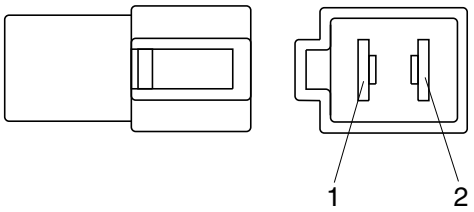
No. of pin	Receptacle connector (female)	Plug connector (male)
6	 S814-006000	 S814-106000
8	 S814-008000	 S814-108000
12	 S814-012000	 S814-112000
14	 S814-014000	 S814-114000

4) CN TYPE CONNECTOR

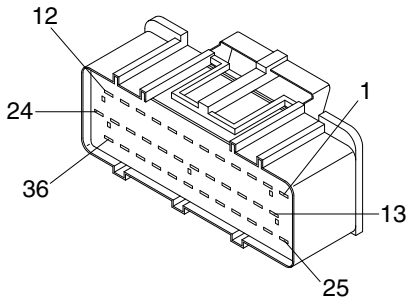
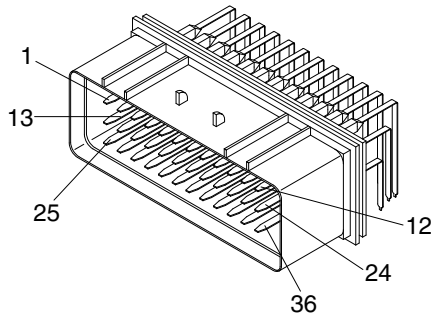
No. of pin	Receptacle connector (female)	Plug connector (male)
1	 S810-001202	 S810-101202
2	 S810-002202	 S810-102202
3	 S810-003202	 S810-103202
4	 S810-004202	 S810-104202

No. of pin	Receptacle connector (female)	Plug connector (male)
6	 S810-006202	 S810-106202
8	 S810-008202	 S810-108202

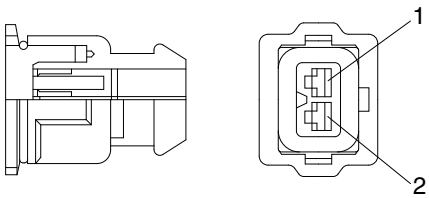
5) 375 FASTEN TYPE CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 S810-002402	 S810-102402

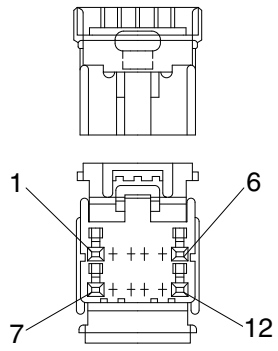
6) AMP ECONOSEAL CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
36	 344111-1	 344108-1

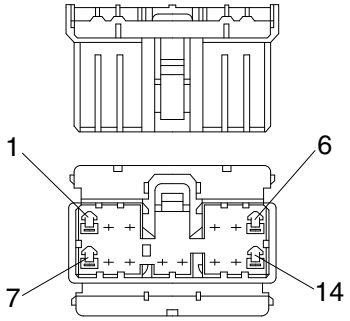
7) AMP TIMER CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 85202-1	

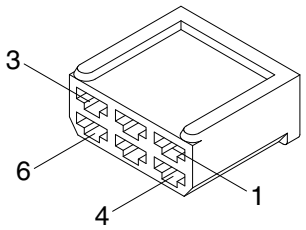
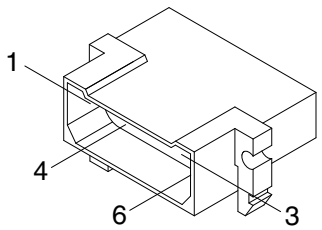
8) AMP 040 MULTILOCK CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
12	 174045-2	

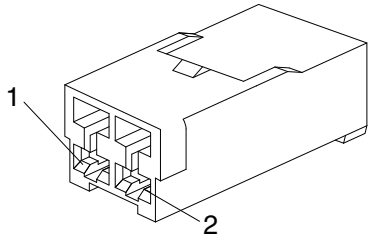
9) AMP 070 MULTILOCK CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
14	 173852	

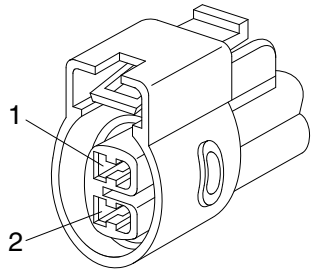
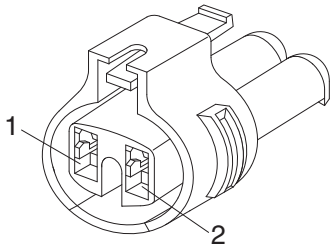
10) AMP FASTIN - FASTON CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
6	 925276-0	 480003-9

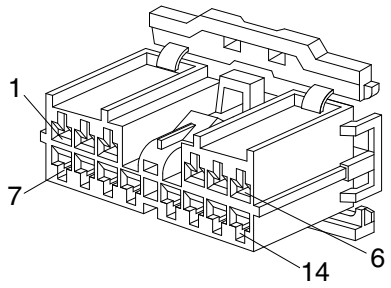
11) KET 090 CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 MG610070	

12) KET 090 WP CONNECTORS

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 MG640605	
2	 MG640795	

13) KET SDL CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
14	 MG610406	

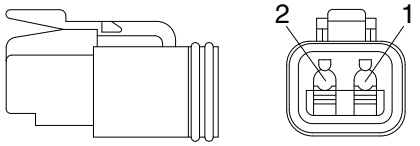
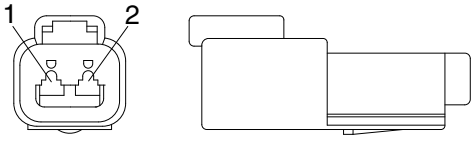
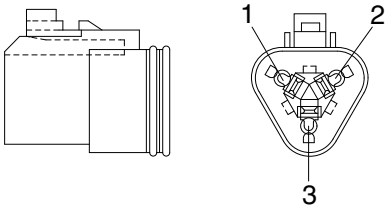
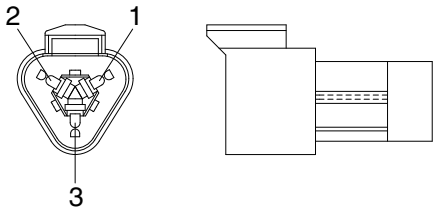
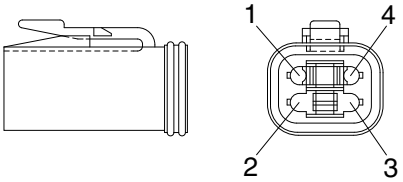
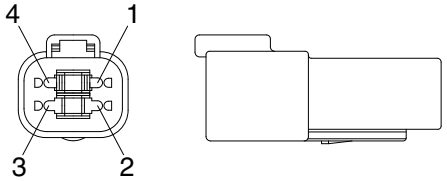
14) DEUTSCH DT CONNECTORS

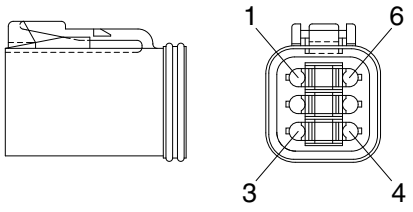
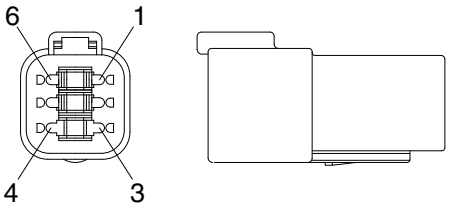
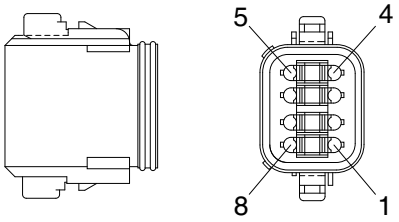
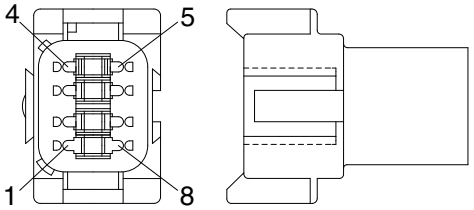
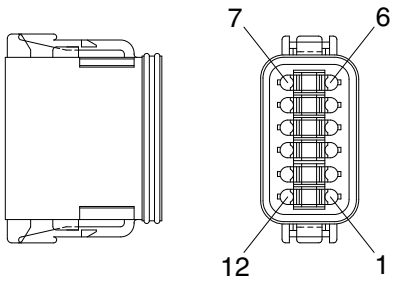
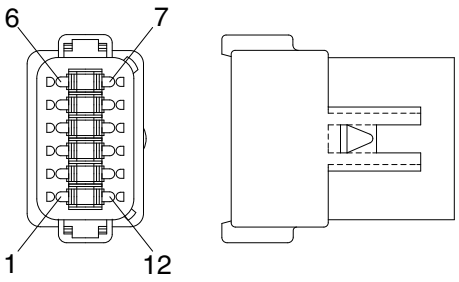
DT 06 - 3S - ★★★★

- Modifications (see below)
- Number of contacts (P : Pin, S : Socket)
- 06 : Receptacle, 04 : Plug
- Deutsch connectors

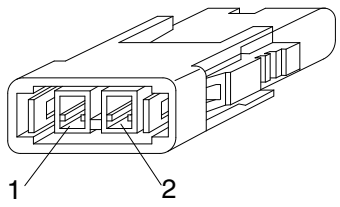
※ Modification

E003 : Standard end cap - gray
E004 : Color of connector to be black
E005 : Combination - E004 & E003
EP04 : End cap
EP06 : Combination P012 & EP04
P012 : Front seal enhancement - connectors color to black for 2, 3, 4 & 6pin

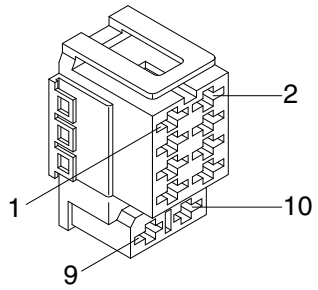
No. of pin	Receptacle connector (female)	Plug connector (male)
2	 DT06-2S	 DT04-2P
3	 DT06-3S	 DT04-3P
4	 DT06-4S	 DT04-4P

No. of pin	Receptacle connector (female)	Plug connector (male)
6	 DT06-6S	 DT04-6P
8	 DT06-8S	 DT04-8P
12	 DT06-12S	 DT04-12P

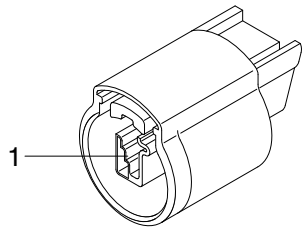
15) MOLEX 2CKTS CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 35215-0200	

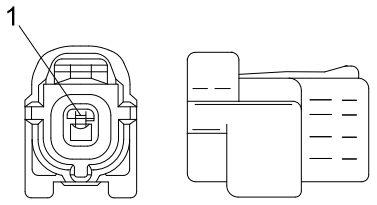
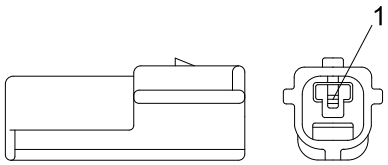
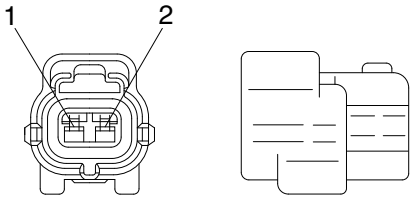
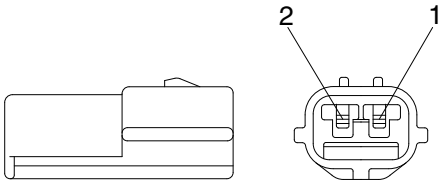
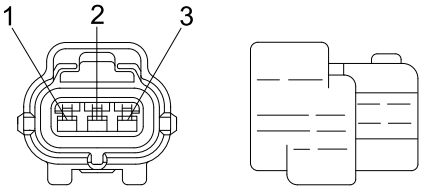
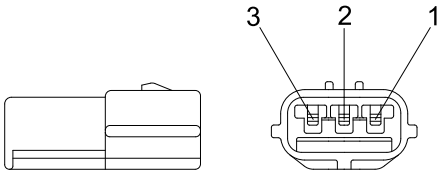
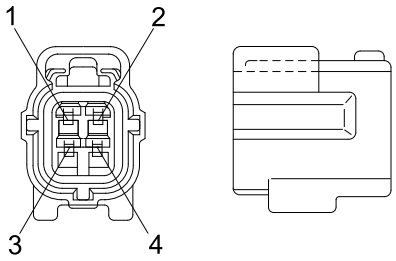
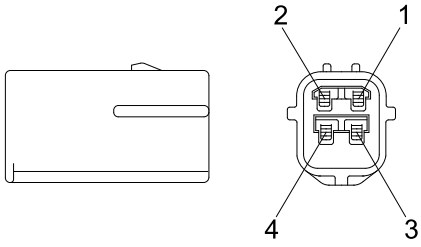
16) ITT SWF CONNECTOR

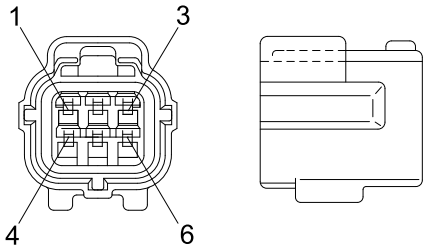
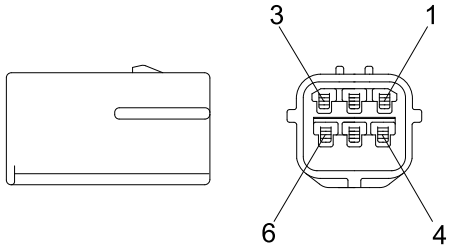
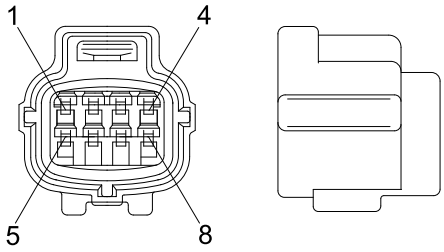
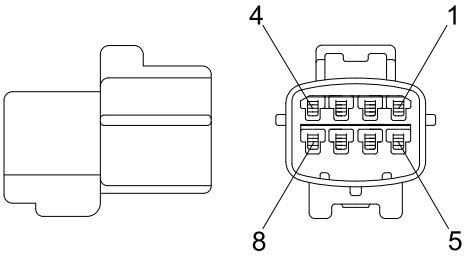
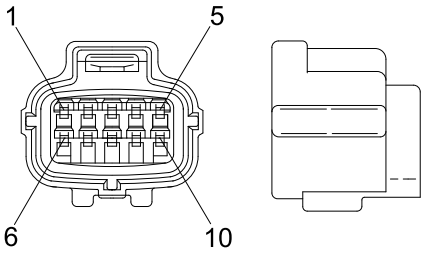
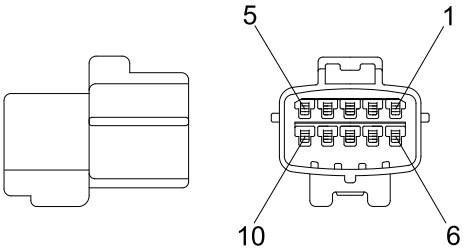
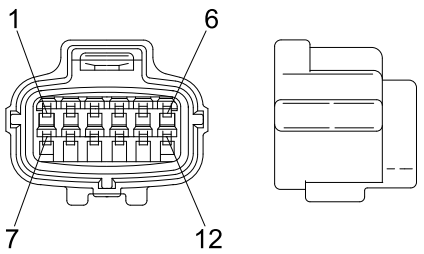
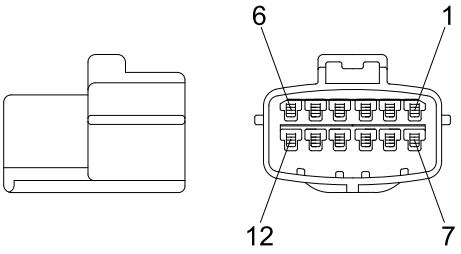
No. of pin	Receptacle connector (female)	Plug connector (male)
10	 SWF593757	

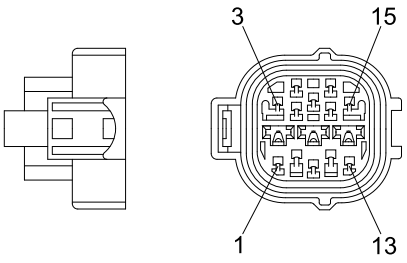
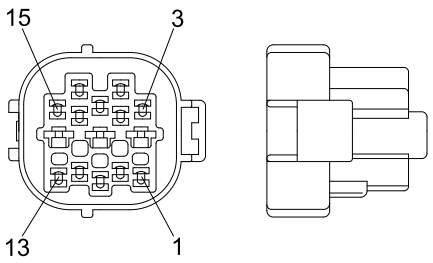
17) MWP NMWP CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
1	 NMWP01F-B	

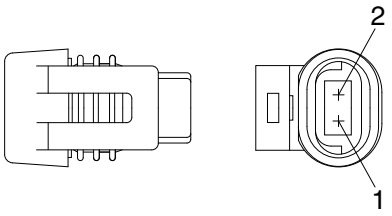
18) ECONOSEAL J TYPE CONNECTORS

No. of pin	Receptacle connector (female)	Plug connector (male)
1	 S816-001002	 S816-101002
2	 S816-002002	 S816-102002
3	 S816-003002	 S816-103002
4	 S816-004002	 S816-104002

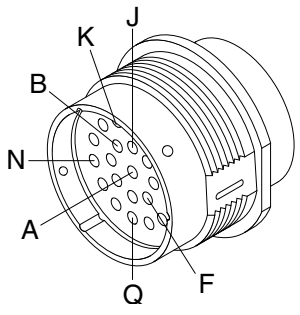
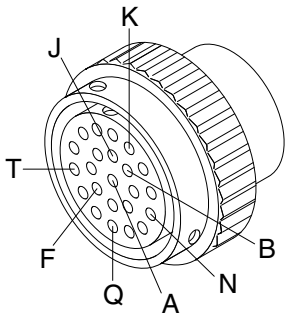
No. of pin	Receptacle connector (female)	Plug connector (male)
6	 S816-006002	 S816-106002
8	 S816-008002	 S816-108002
10	 S816-010002	 S816-110002
12	 S816-012002	 S816-112002

No. of pin	Receptacle connector (female)	Plug connector (male)
15	 368301-1	 2-85262-1

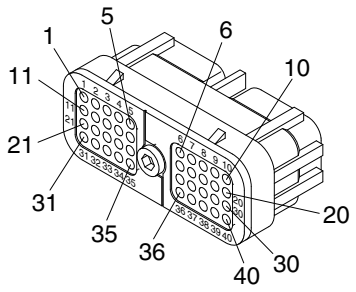
19) METRI-PACK TYPE CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
2	 12040753	

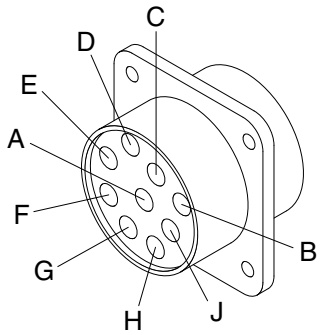
20) DEUTSCH HD30 CONNECTOR

No. of pin	Receptacle connector (female)	Plug connector (male)
23	 HD36-24-23SN	 HD34-24-23PN

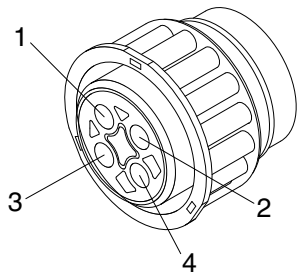
21) DEUTSCH MCU CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
40	 DRC26-40SA/B	

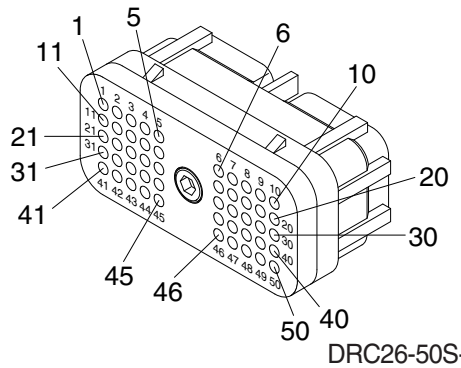
22) DEUTSCH SERVICE TOOL CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
9	 HD10-9-96P	

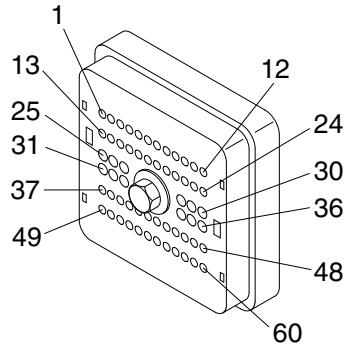
23) AMP FUEL WARMER CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
4	 2-967325-3	

24) DEUTSCH ENGINE ECM CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
50	 DRC26-50S-04	

25) DEUTSCH INTERMEDIATE CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
60	 DRB16-60SAE-L018	