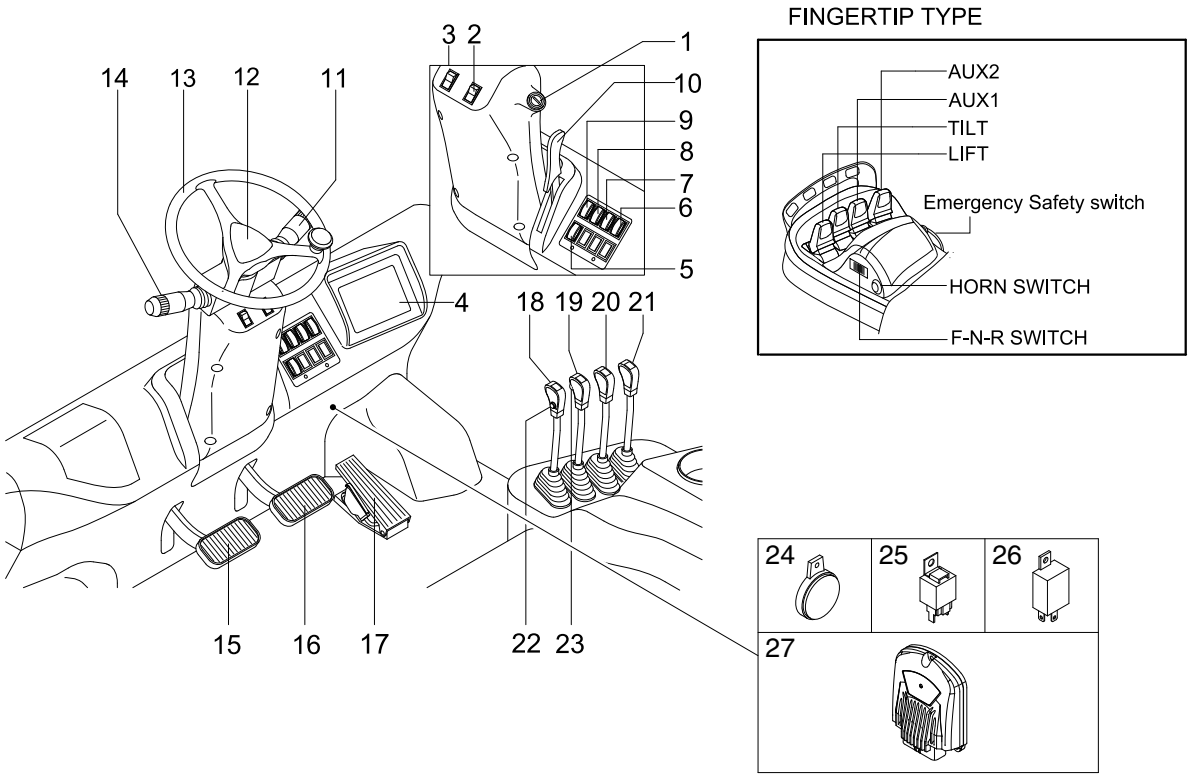
SECTION 7 ELECTRICAL SYSTEM

Group 1 Component location 7-1
Group 2 Electrical circuit 7-3
Group 3 Component specification 7-23
Group 4 Connector destination 7-24
Group 5 Troubleshooting 7-32

GROUP 1 COMPONENT LOCATION

1. LOCATION 1

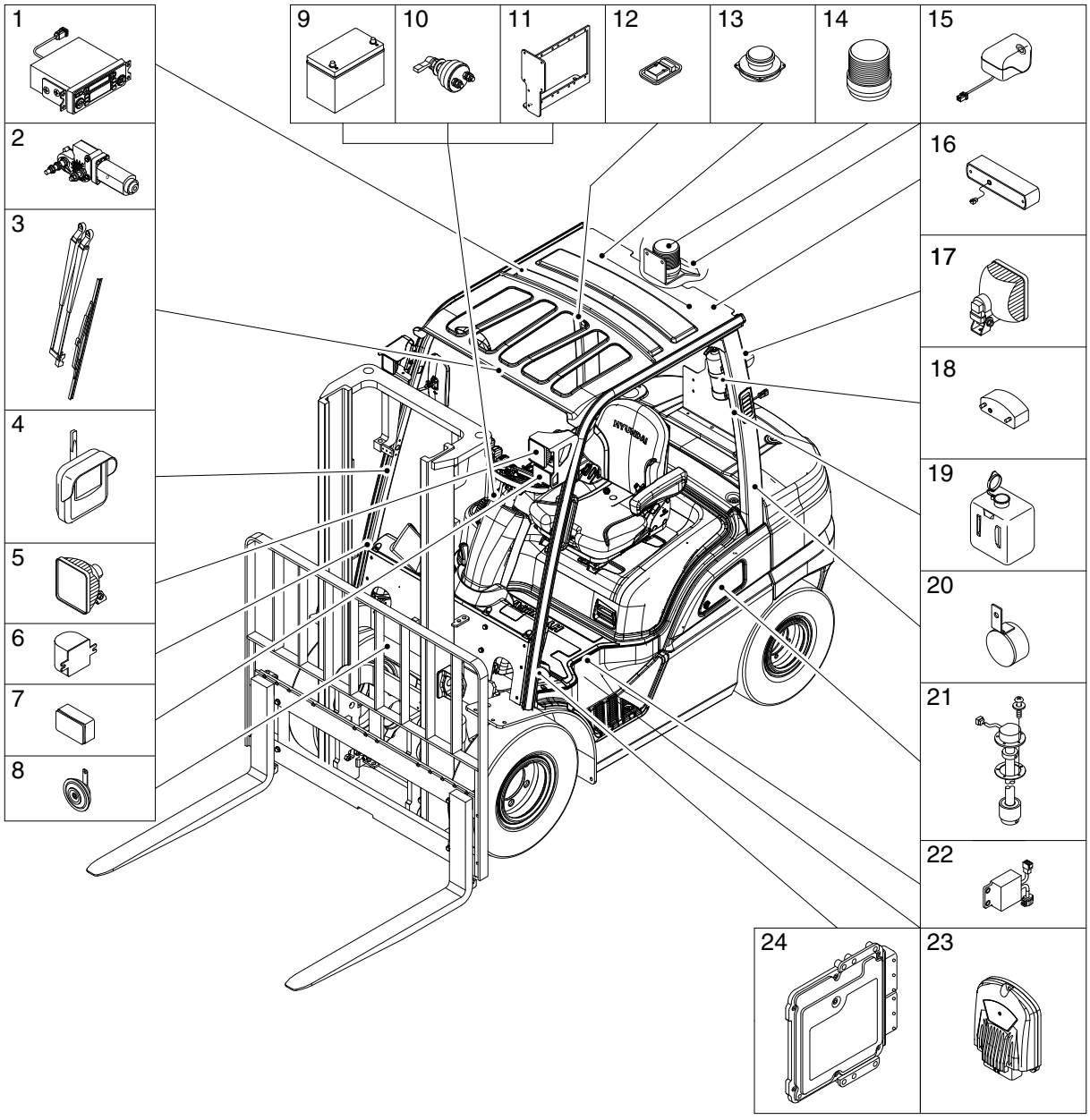


25D9V7ES08

1	Start switch	10	Steering wheel lock lever	19	Tilt lever
2	Parking brake switch	11	Turn signal switch	20	Attach lever 1 (opt)
3	Hazard lamp switch (opt)	12	Horn button	21	Attach lever 2 (opt)
4	Cluster	13	Steering wheel	22	FNR and horn switch (opt)
5	DPF Regeneration switch	14	Forward-reverse lever	23	Auto tilt leveling switch (opt)
6	Front wiper/washer switch (opt)	15	Inching pedal	24	Warning buzzer
7	Beacon switch (opt)	16	Brake pedal	25	Power relay
8	Main light switch	17	Accelerator pedal	26	Flasher unit
9	Engine mode switch	18	Lift lever	27	TCU

△Familiarize yourself with the controls and follow safe operating procedures.

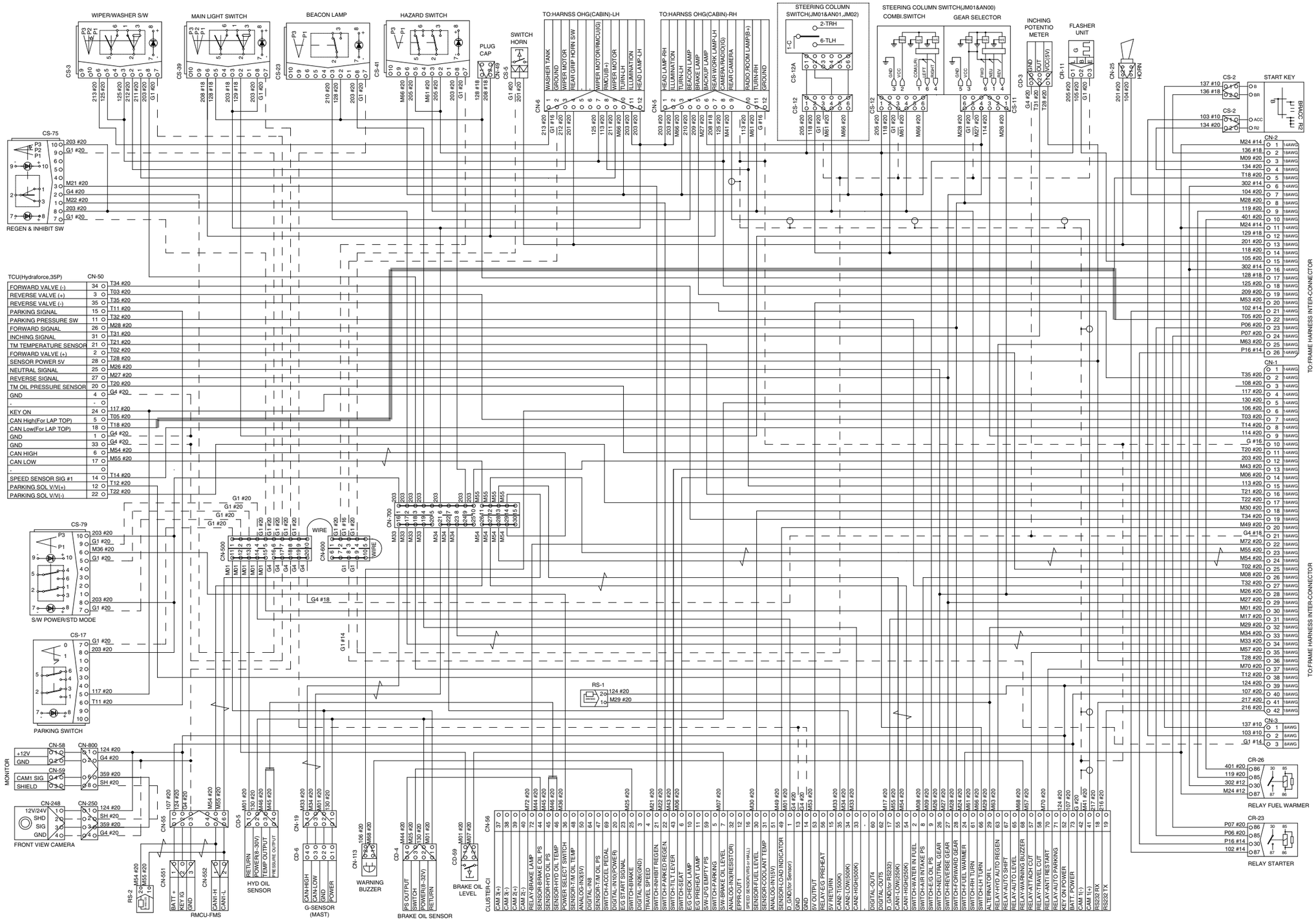
2. LOCATION 2



25D9V7ES01

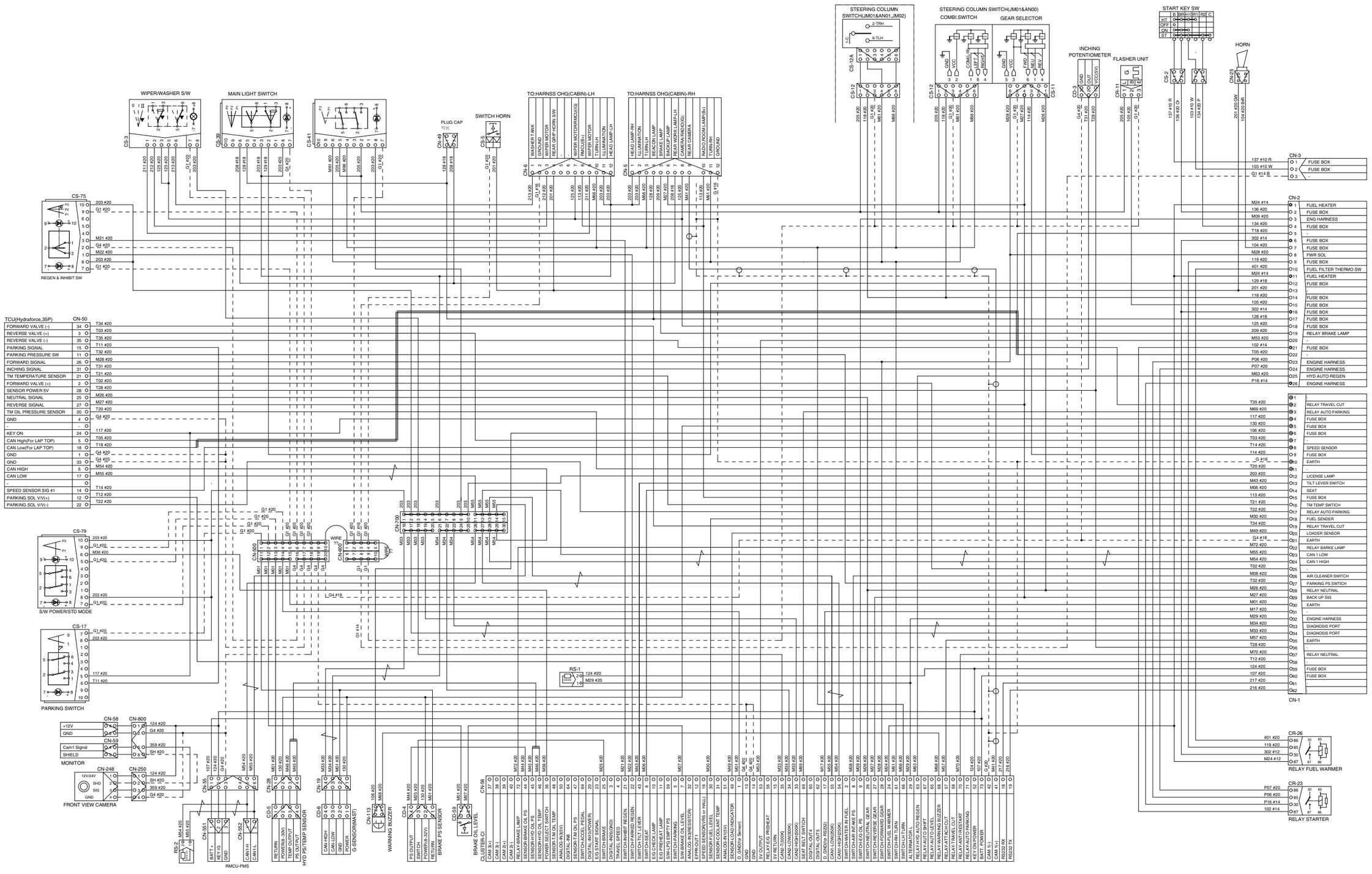
1	Radio&USB player (opt)	9	Battery	17	Work lamp (opt)
2	Wiper motor (opt)	10	Master switch (opt)	18	Licence lamp (opt)
3	Wiper arm&blade (opt)	11	Fuse&Relay box	19	Washer tank (opt)
4	Monitor (opt)	12	Room lamp (opt)	20	Back buzzer (opt)
5	Head lamp	13	Speaker (opt)	21	Fuel sender
6	Angle sensor (opt)	14	Beacon lamp (opt)	22	FNR controller (opt)
7	Turn signal lamp	15	Rear camera (opt)	23	Fingertip controller (opt)
8	Horn	16	Rear combination lamp	24	ECU

· ELECTRICAL CIRCUIT (1/8, DASHBOARD, 25D-9V : -#0023, 30D-9V : -#0019, 35DN-9V : -#0029)



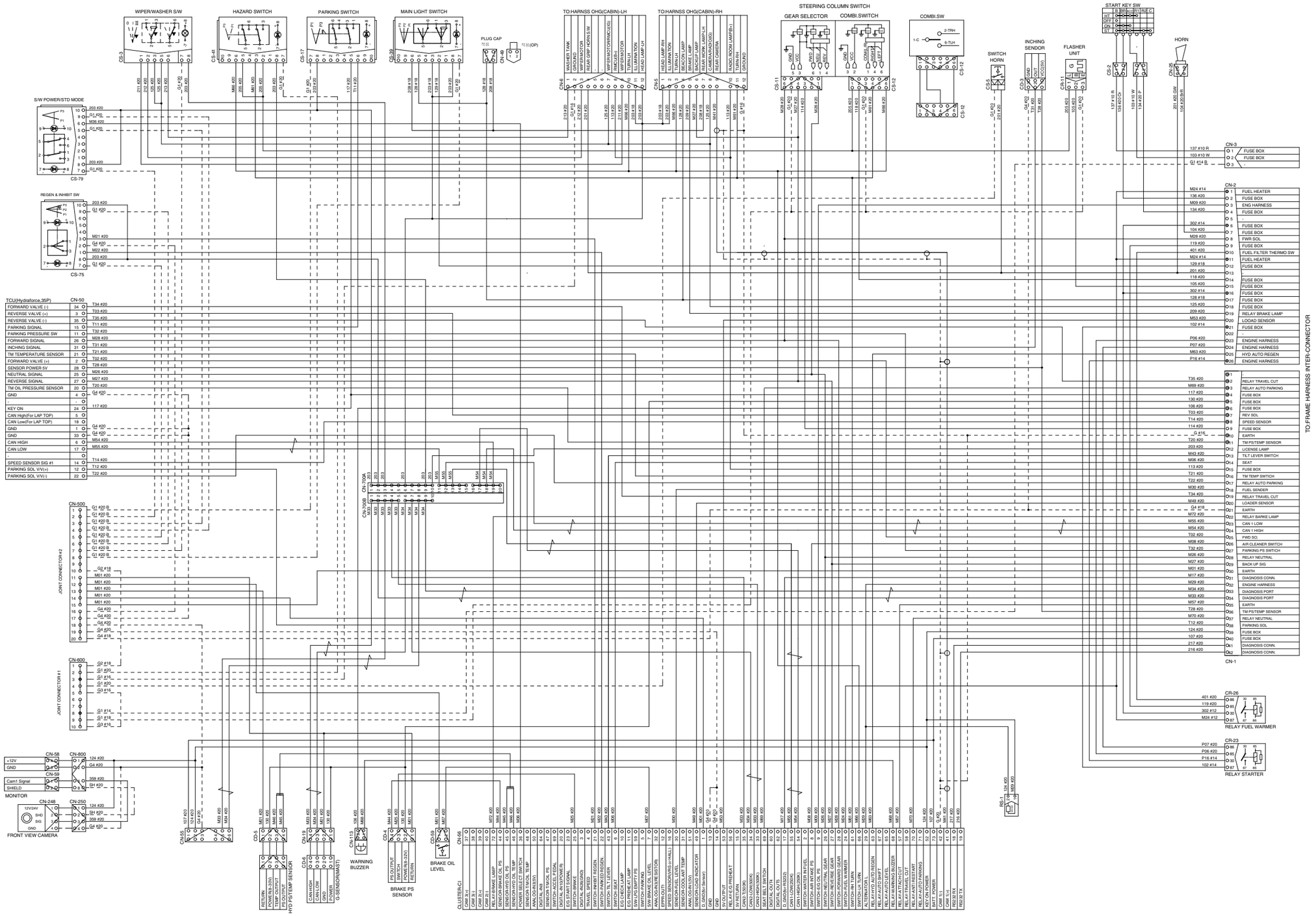
26HN-60013-00

· ELECTRICAL CIRCUIT (1/8, DASHBOARD, 25D-9V : #0024-#0258, 30D-9V : #0020-#0538, 35DN-9V : #0030-#0255)

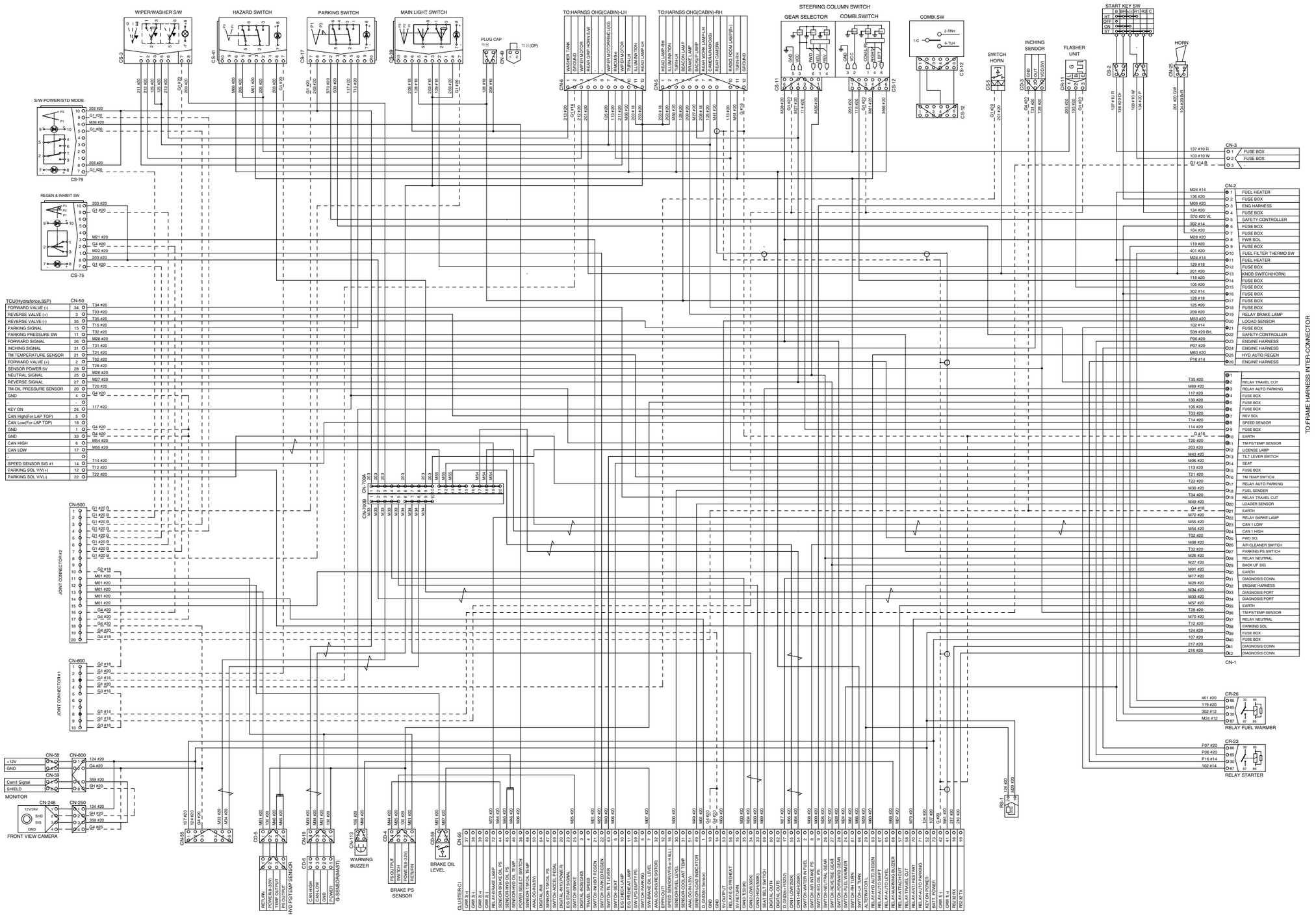


26HN-60014-00

· ELECTRICAL CIRCUIT (1/8, DASHBOARD, 25D-9V : #0259-#0700, 30D-9V : #0539-#2116, 35DN-9V : #0256-#0752)

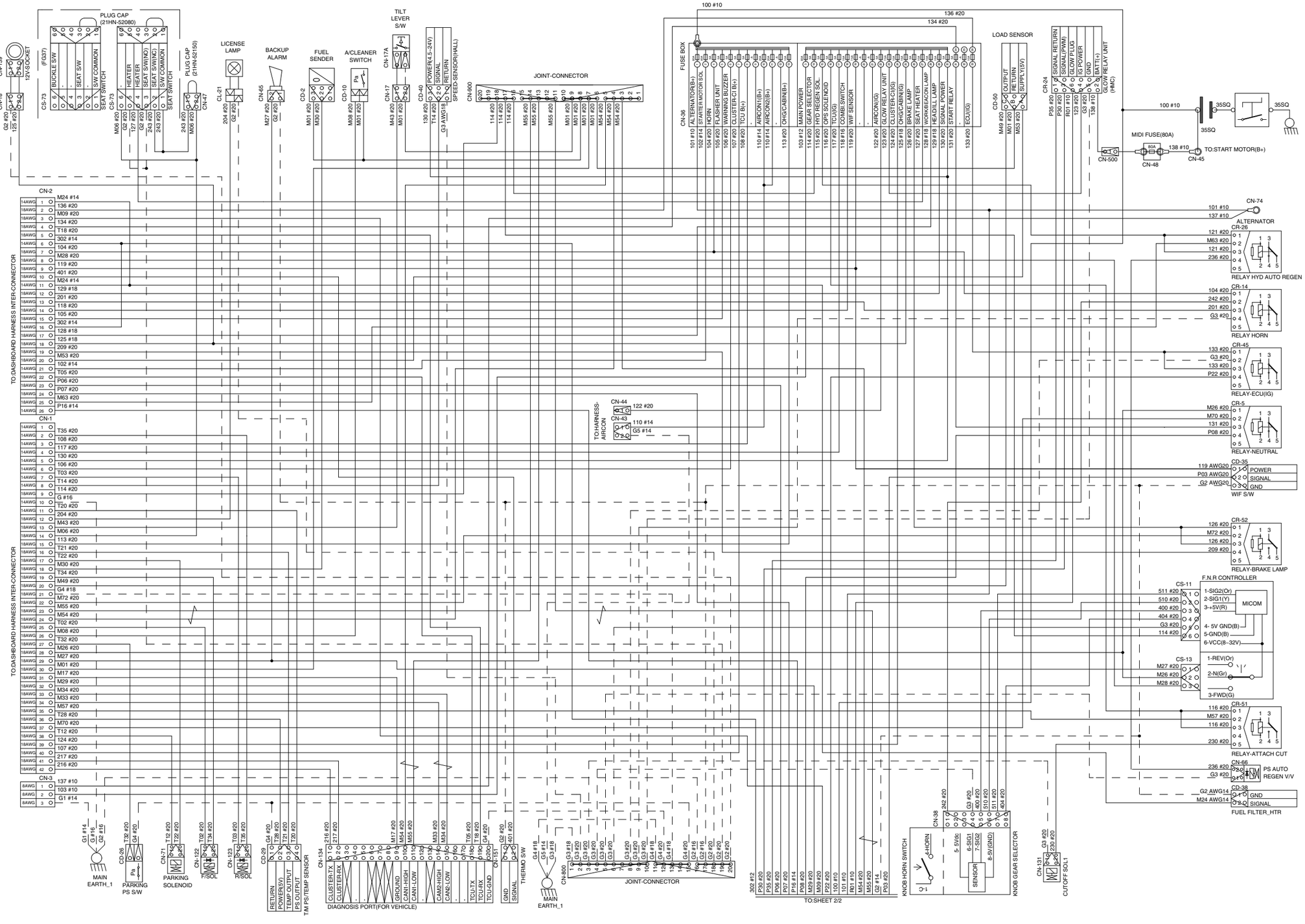


· ELECTRICAL CIRCUIT (1/8, DASHBOARD, 25D-9V : #0701-, 30D-9V : #2117-, 35DN-9V : #0753-)



TCU(Hydraforce,35P)	CN-50	
FORWARD VALVE (-)	34	T34 #20
REVERSE VALVE (+)	3	T03 #20
REVERSE VALVE (-)	35	T35 #20
PARKING SIGNAL	15	T15 #20
PARKING PRESSURE SW	11	T32 #20
FORWARD SIGNAL	26	M28 #20
INCHING SIGNAL	31	T31 #20
TM TEMPERATURE SENSOR	21	T21 #20
FORWARD VALVE (+)	2	T02 #20
SENSOR POWER 5V	28	T28 #20
NEUTRAL SIGNAL	25	M26 #20
REVERSE SIGNAL	27	M27 #20
TM OIL PRESSURE SENSOR	20	T20 #20
GND	4	G4 #20
	0	117 #20
KEY ON	24	
CAN High(For LAP TOP)	5	
CAN Low(For LAP TOP)	18	
GND	1	G4 #20
GND	33	G4 #20
CAN HIGH	6	M54 #20
CAN LOW	17	M55 #20
	0	T14 #20
SPEED SENSOR SIG #1	14	T12 #20
PARKING SOL	12	T22 #20
PARKING SOL V(V(-)	22	

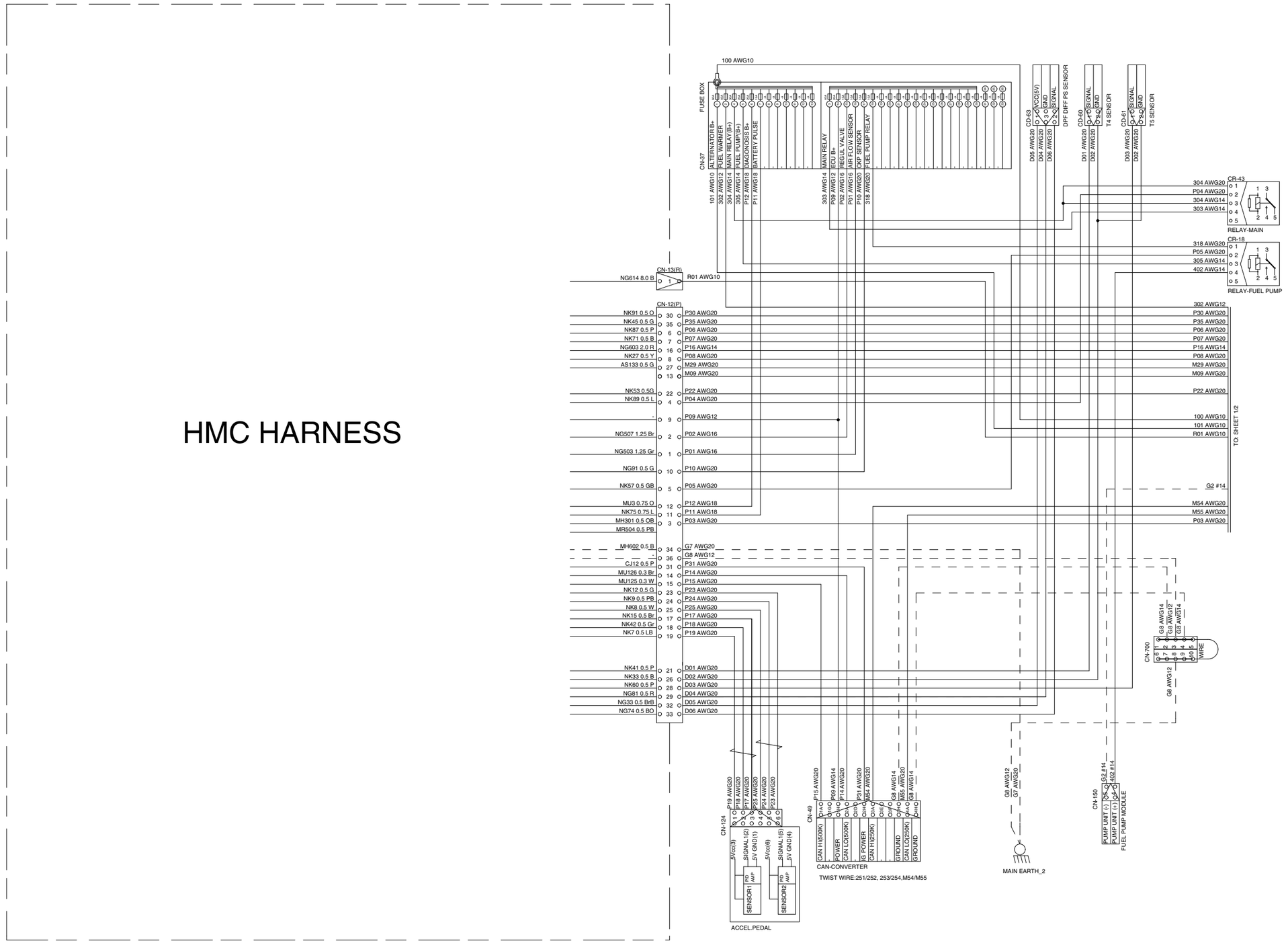
· ELECTRICAL CIRCUIT (2/8, FRAME 1 OF 2, 25D-9V : -#0064, 30D-9V : -#0050, 35DN-9V : -#0088)



26HN-60023-00 1OF2

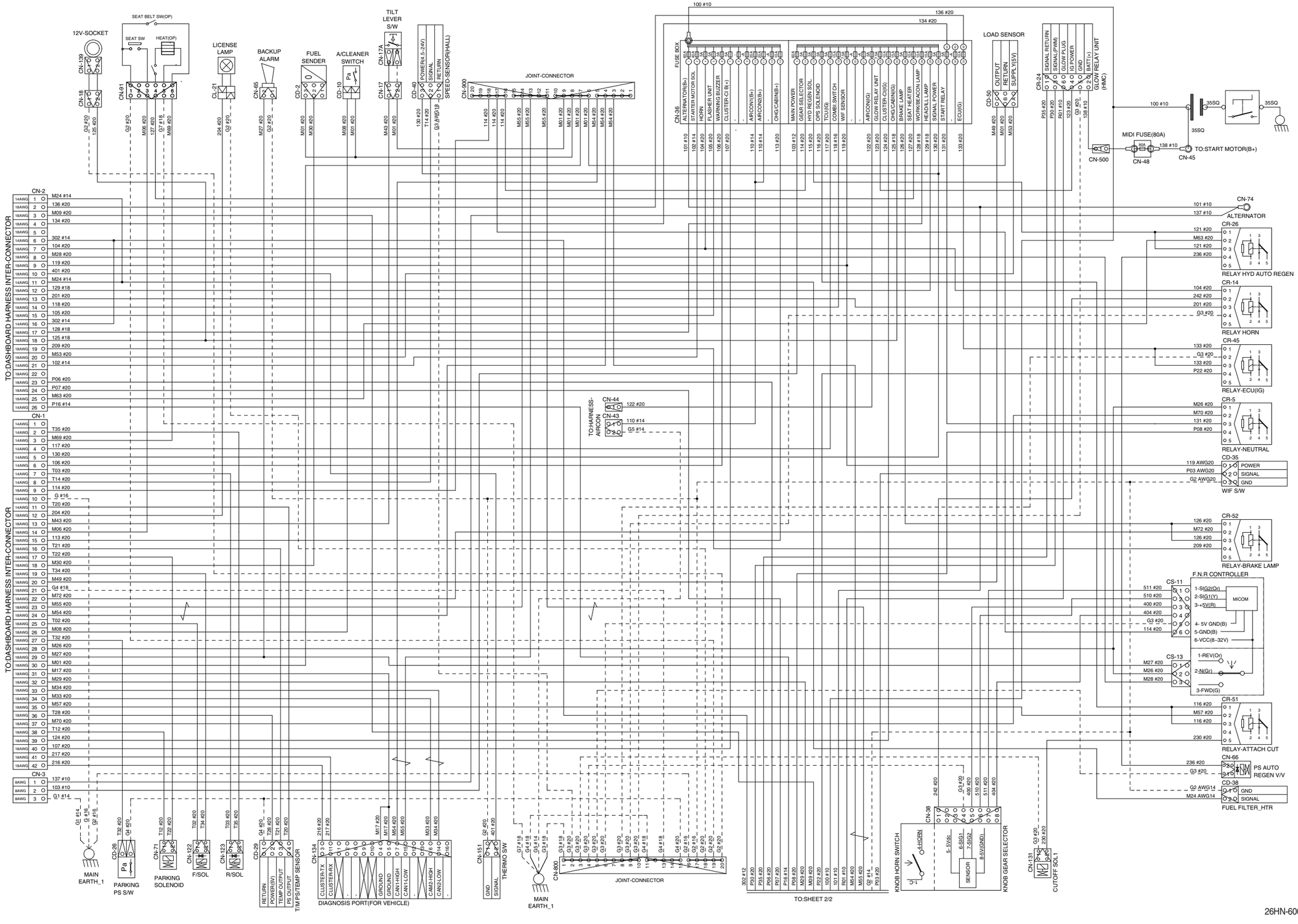
· ELECTRICAL CIRCUIT (3/8, FRAME 2 OF 2, 25D-9V : -#0064, 30D-9V : -#0050, 35DN-9V : -#0088)

HMC HARNESS



26HN-60023-00 2OF2

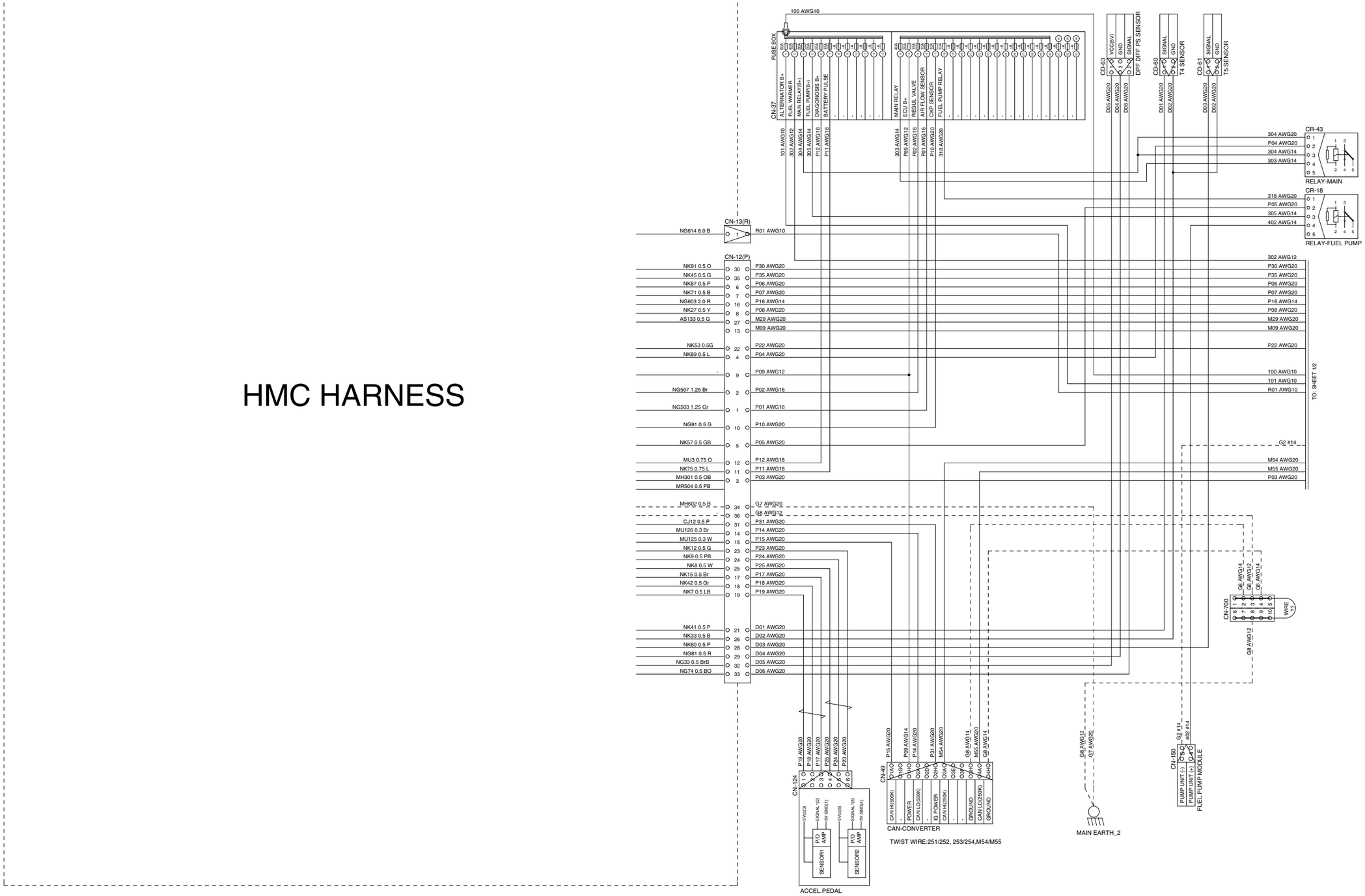
· ELECTRICAL CIRCUIT (2/8, FRAME 1 OF 2, 25D-9V : #0065-#0258, 30D-9V : #0051-#0538, 35DN-9V : #0089-#0255)



26HN-60024-00 1OF2

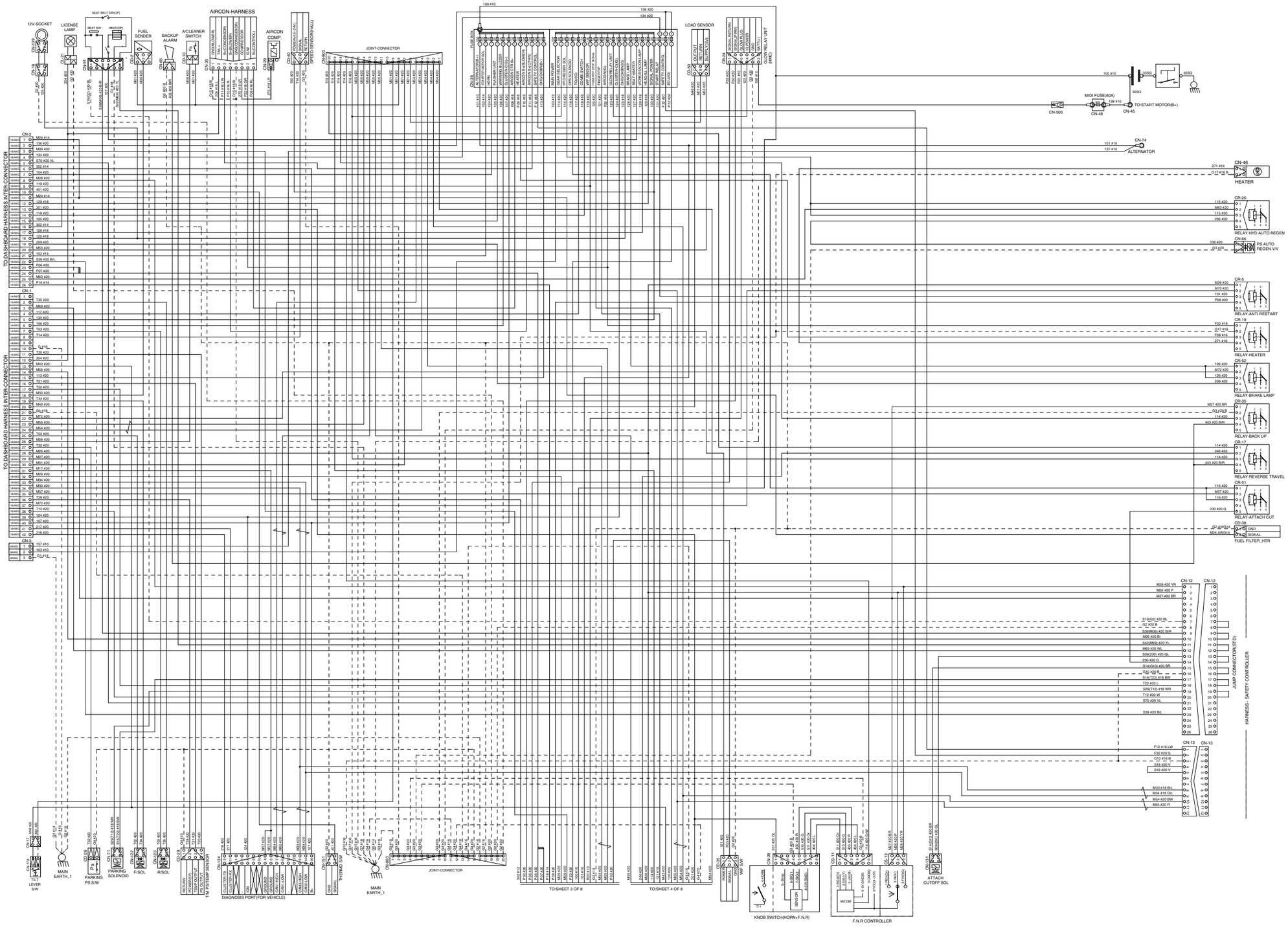
· ELECTRICAL CIRCUIT (3/8, FRAME 2 OF 2, 25D-9V : #0065-#0258, 30D-9V : #0051-#0538, 35DN-9V : #0089-#0255)

HMC HARNESS



26HN-60024-00 2OF2

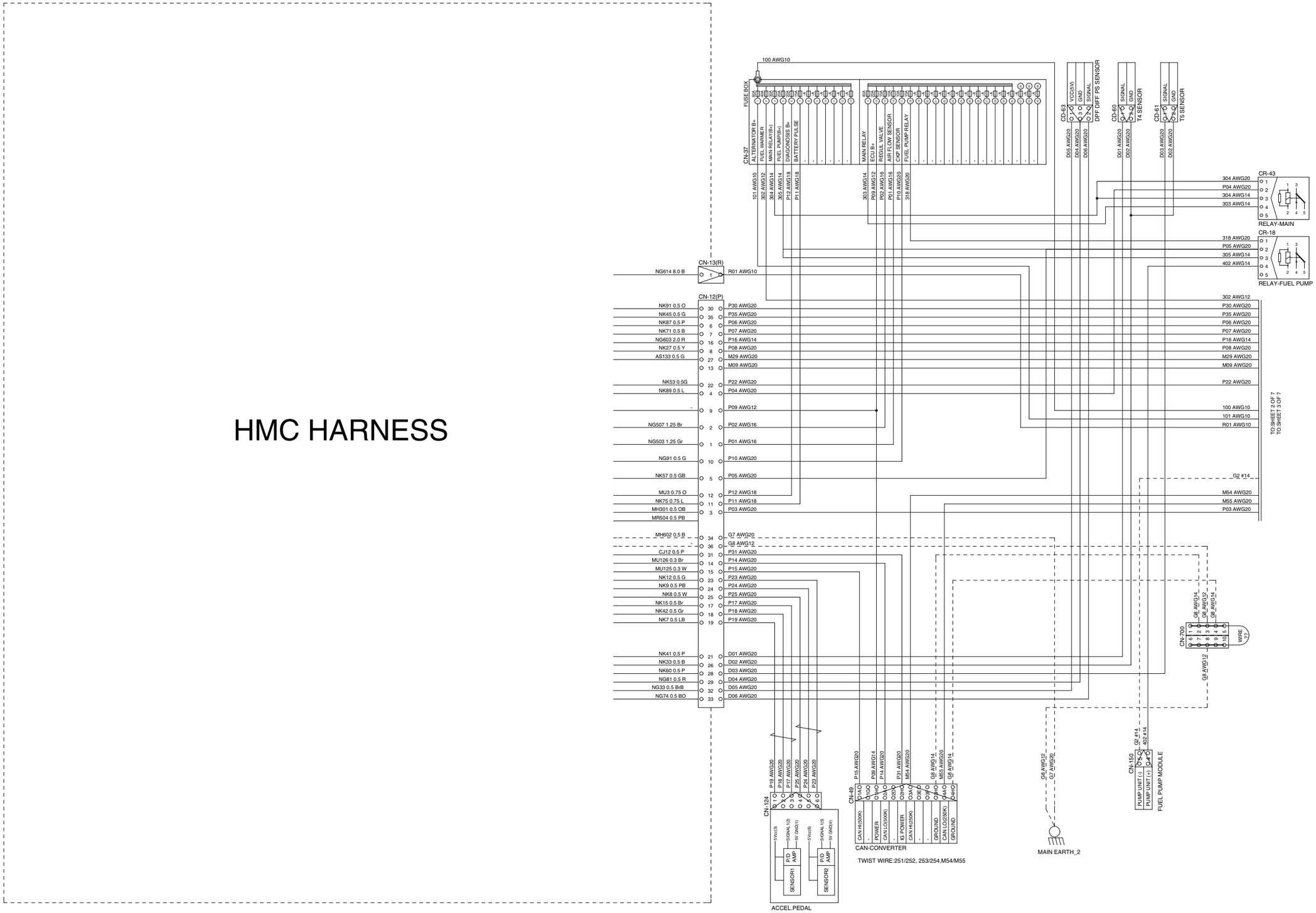
· ELECTRICAL CIRCUIT (2/8, FRAME 1 OF 2, 25D-9V : #0259-#0700, 30D-9V : #0539-#2116, 35DN-9V : #0256-#0752)



26HN-05601-00 2OF7

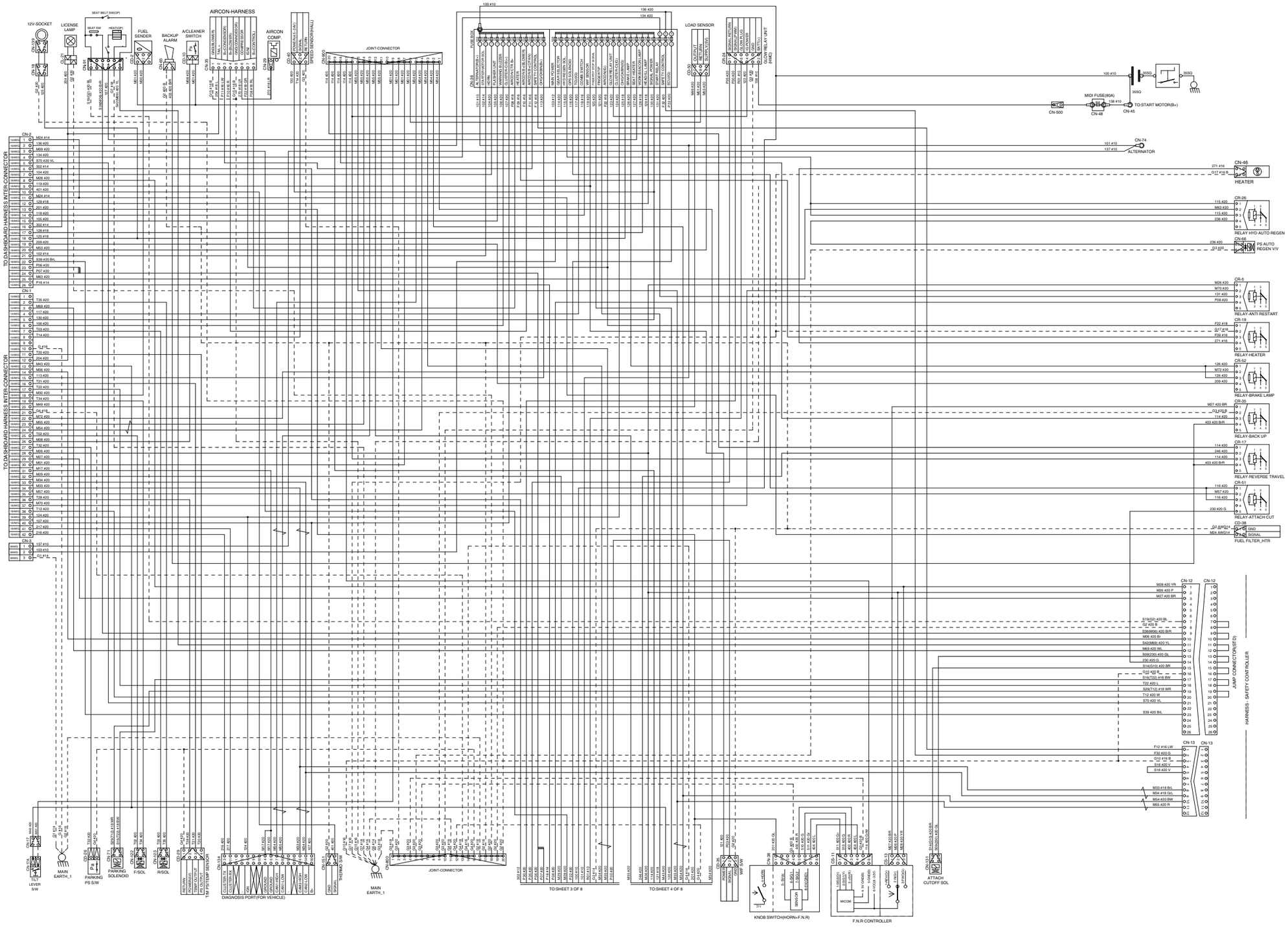
· ELECTRICAL CIRCUIT (3/8, FRAME 2 OF 2, 25D-9V : #0259-#0700, 30D-9V : #0539-#2116, 35DN-9V : #0256-#0752)

HMC HARNESS



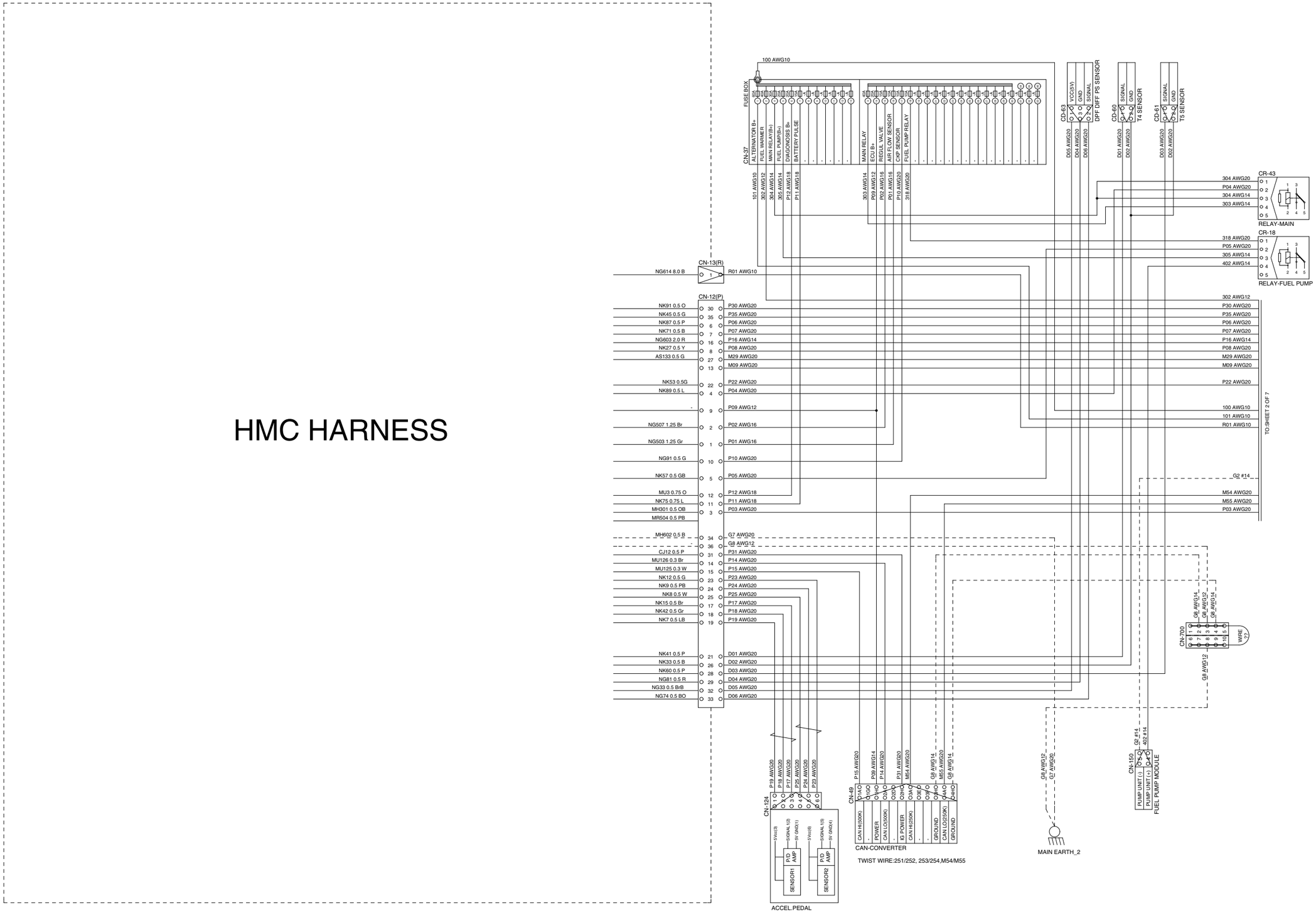
26HN-05601-00 4OF7

· ELECTRICAL CIRCUIT (2/8, FRAME 1 OF 3, 25D-9V : #0701-, 30D-9V : #2117-, 35DN-9V : #0753-)



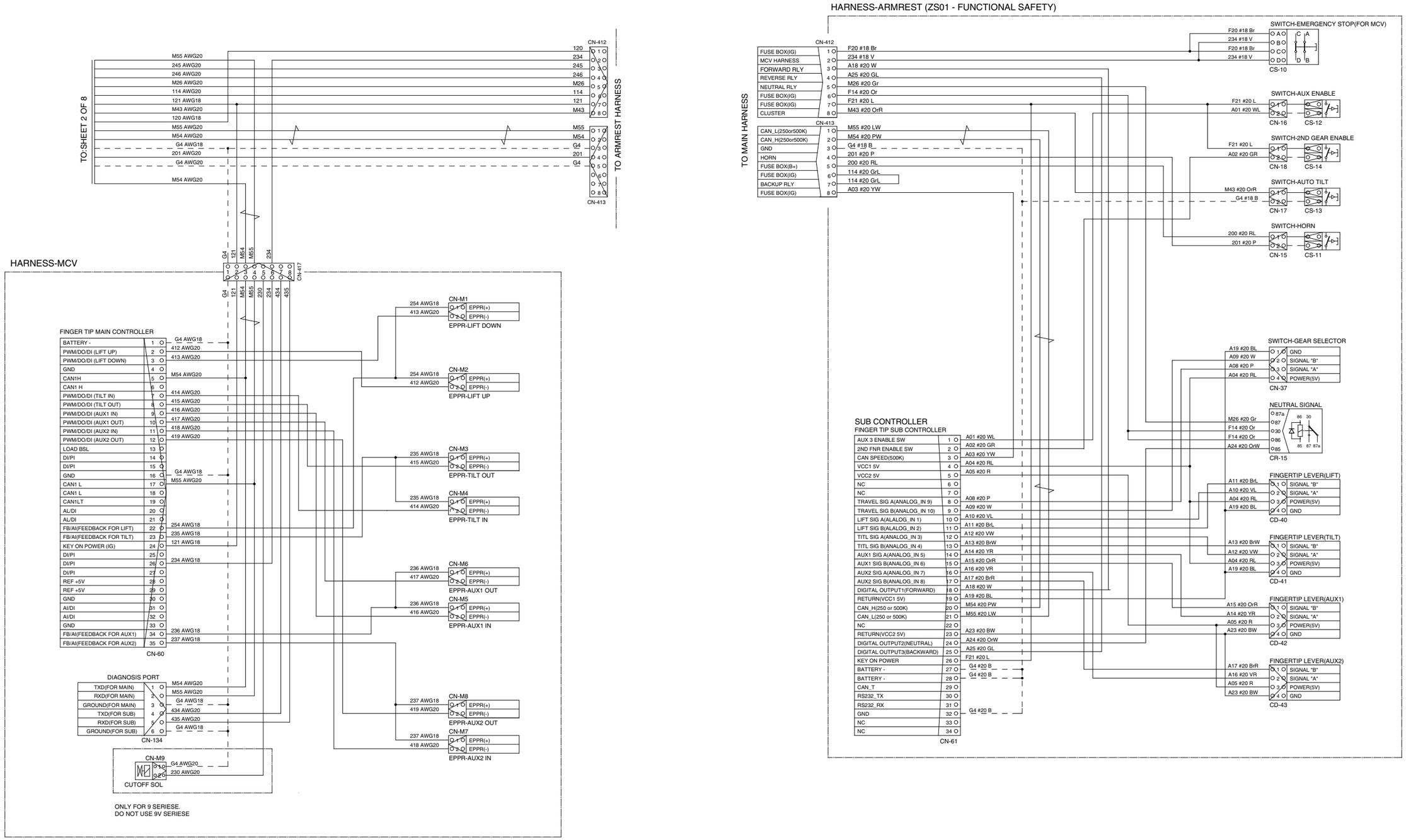
· ELECTRICAL CIRCUIT (3/8, FRAME 2 OF 3, 25D-9V : #0701-, 30D-9V : #2117-, 35DN-9V : #0753-)

HMC HARNESS



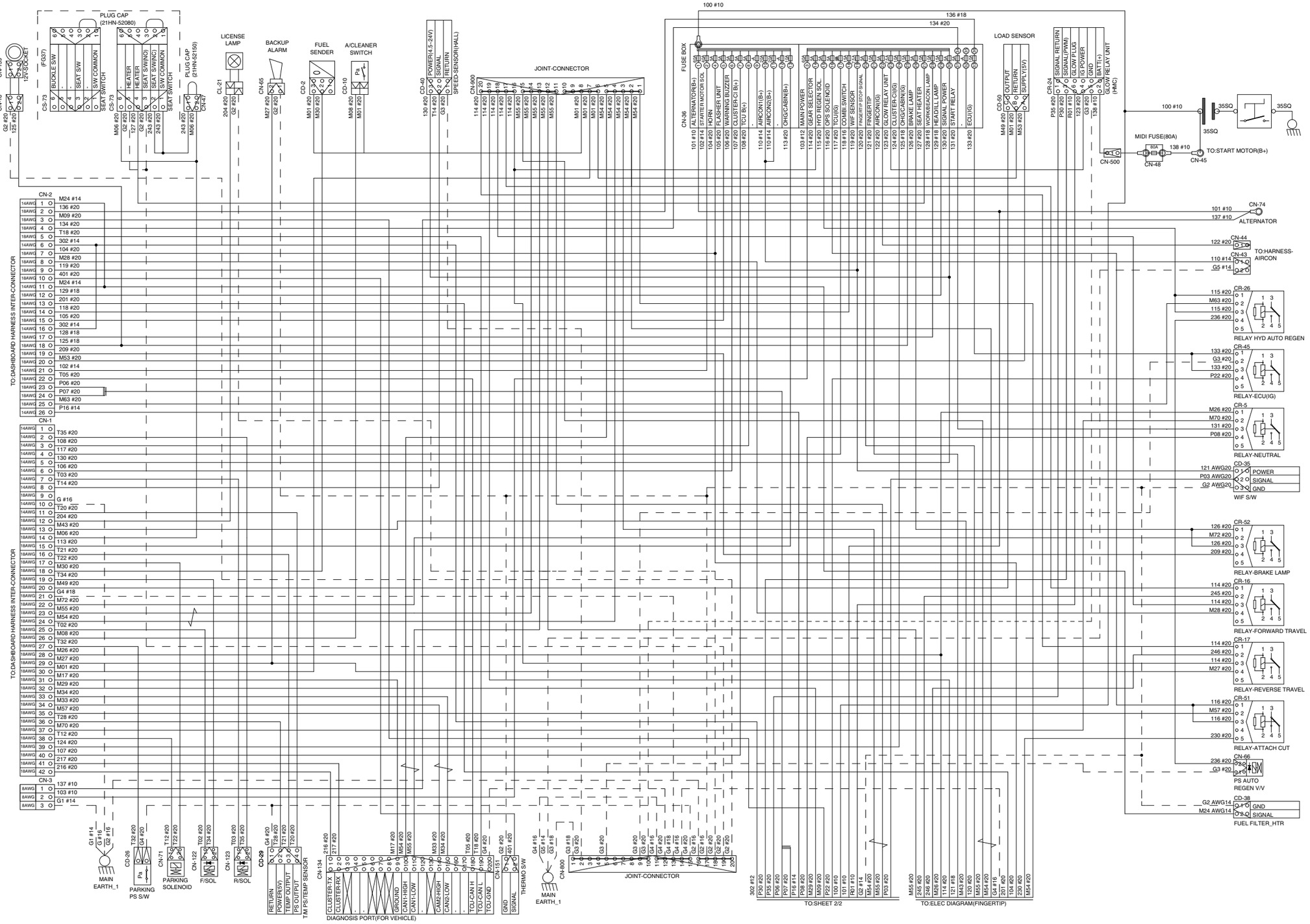
26HN-05602-00 3OF8

· ELECTRICAL CIRCUIT (3/8, FRAME 3 OF 3, 25D-9V : #0701-, 30D-9V : #2117-, 35DN-9V : #0753-)



26HN-05602-00 4OF8

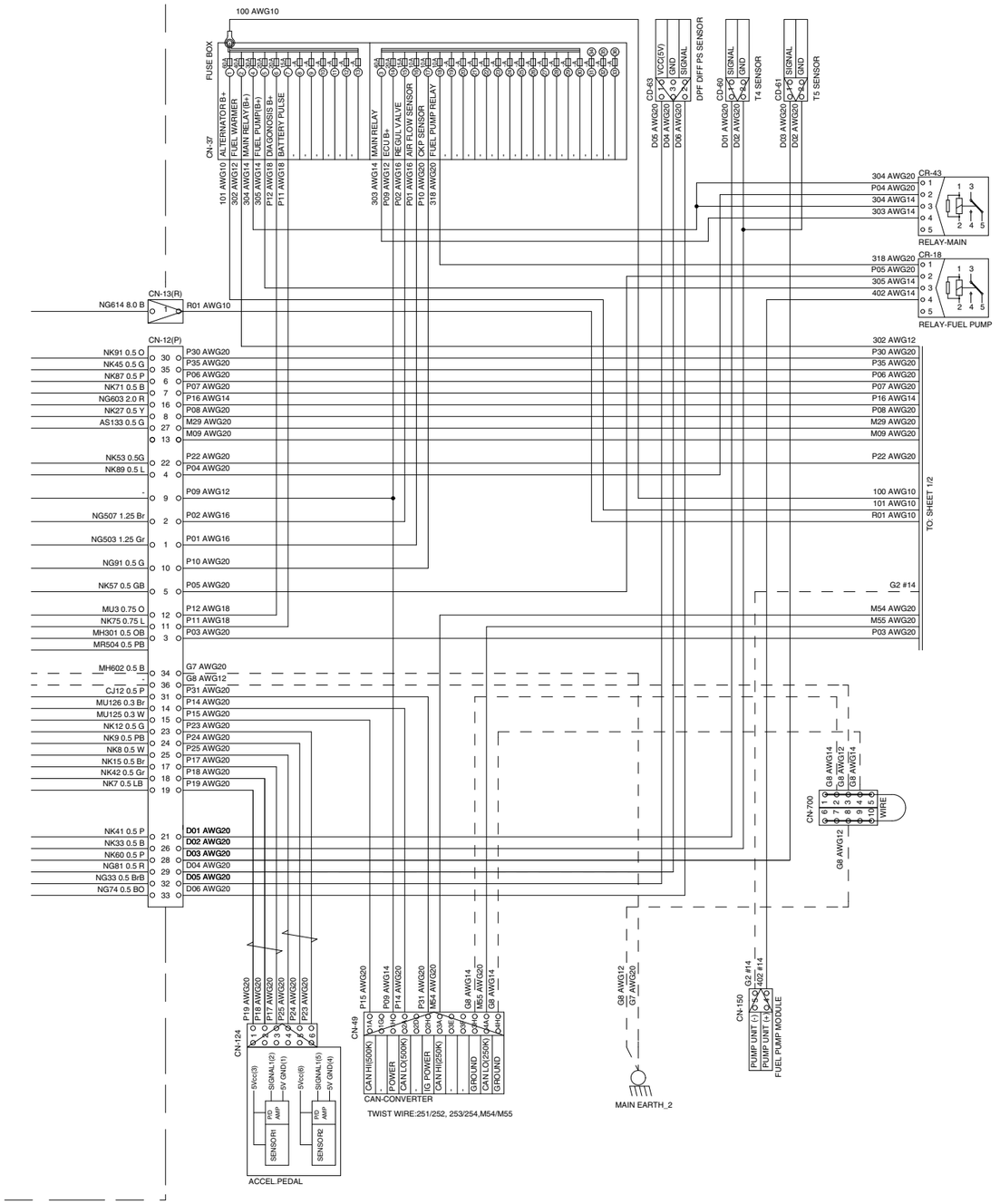
· ELECTRICAL CIRCUIT (4/8, FRAME-FINGERTIP 1 OF 2, 25D-9V : -#0064, 30D-9V : -#0050, 35DN-9V : -#0088)



26HN-60123-00 1OF2

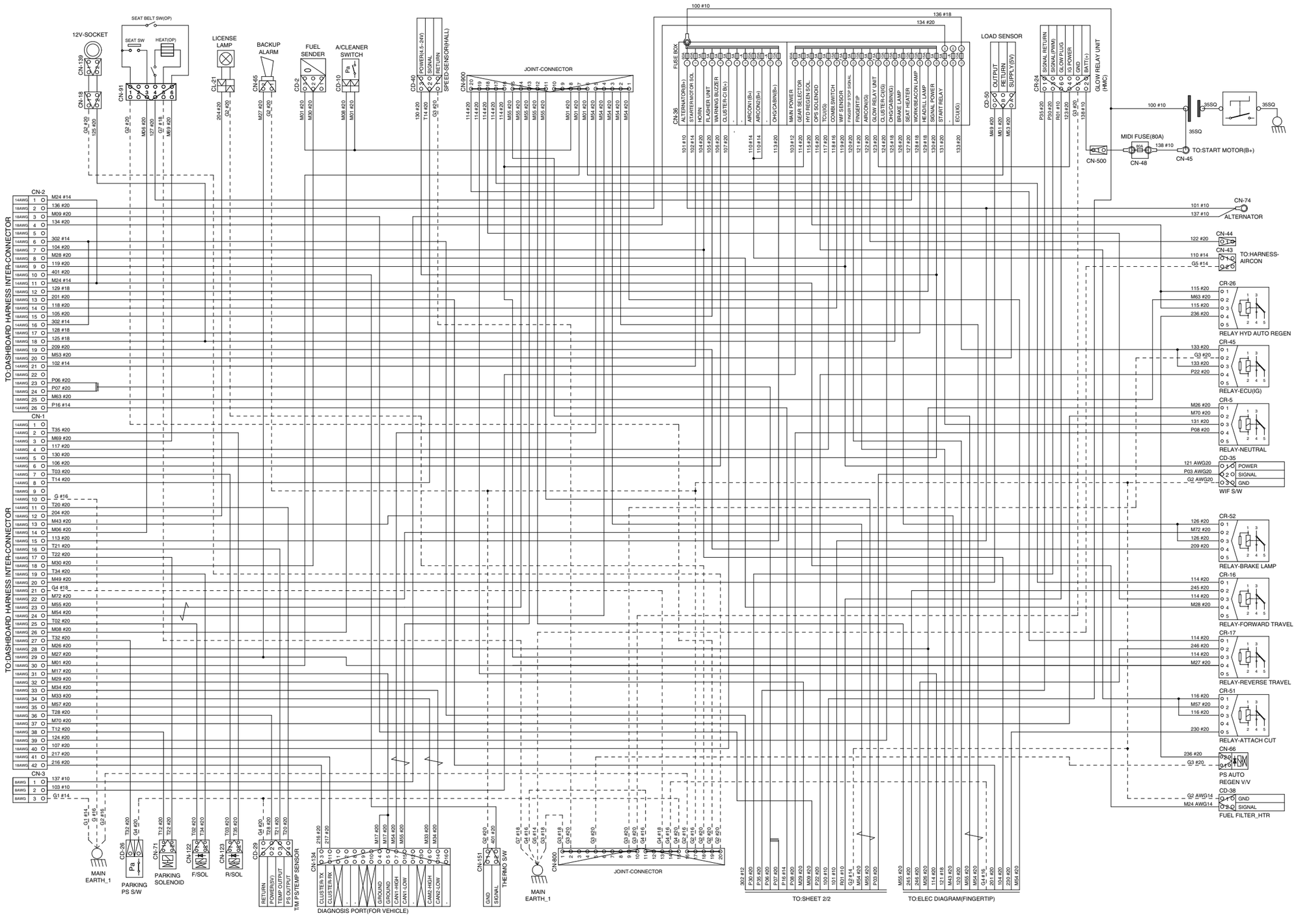
· ELECTRICAL CIRCUIT (5/8, FRAME-FINGERTIP 2 OF 2, 25D-9V : -#0064, 30D-9V : -#0050, 35DN-9V : -#0088)

HMC HARNESS



26HN-60123-00 2OF2

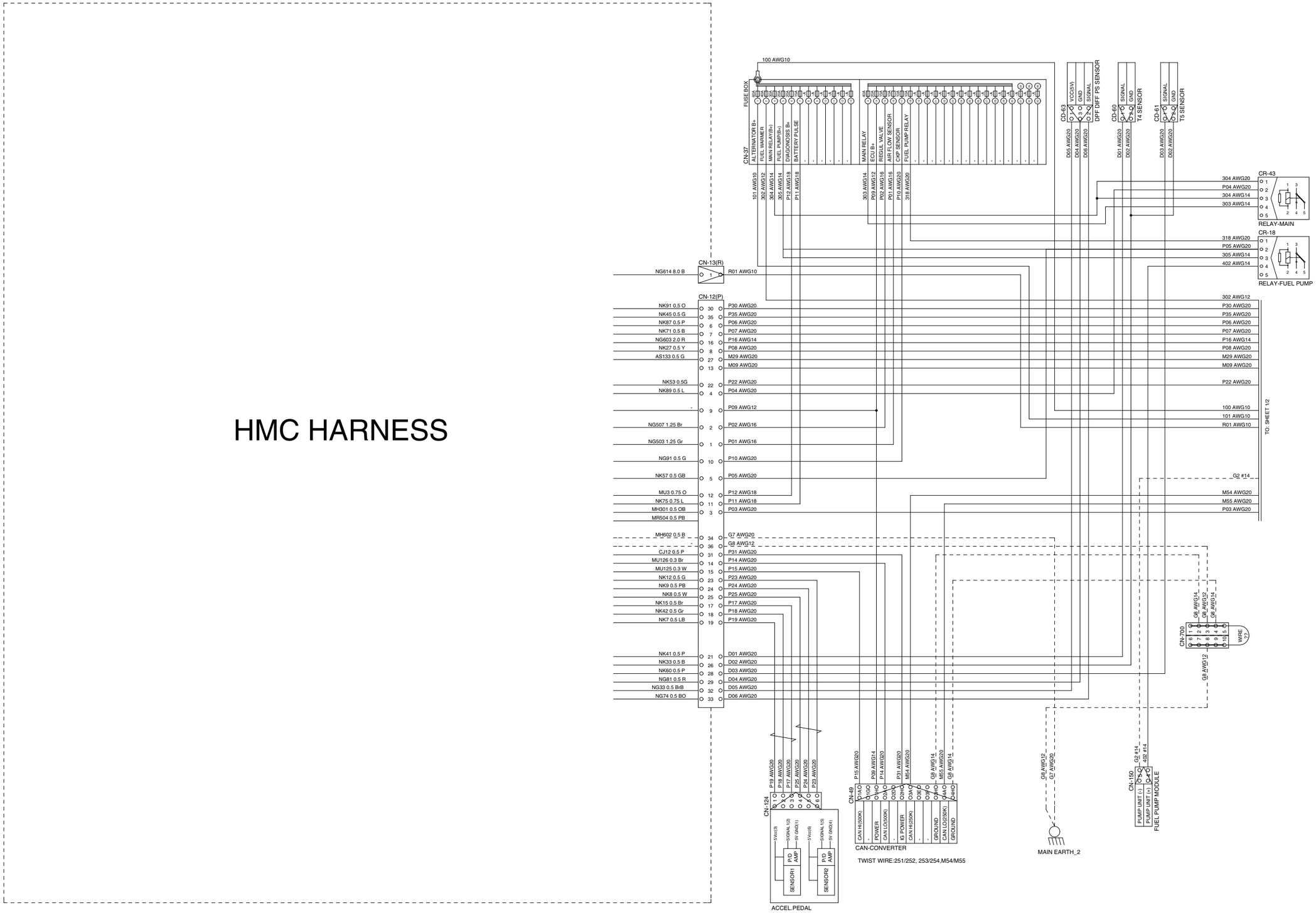
· ELECTRICAL CIRCUIT (4/8, FRAME-FINGERTIP 1 OF 2, 25D-9V : #0065-#0258, 30D-9V : #0051-#0538, 35DN-9V : #0089-#0255)



26HN-60124-00 1OF2

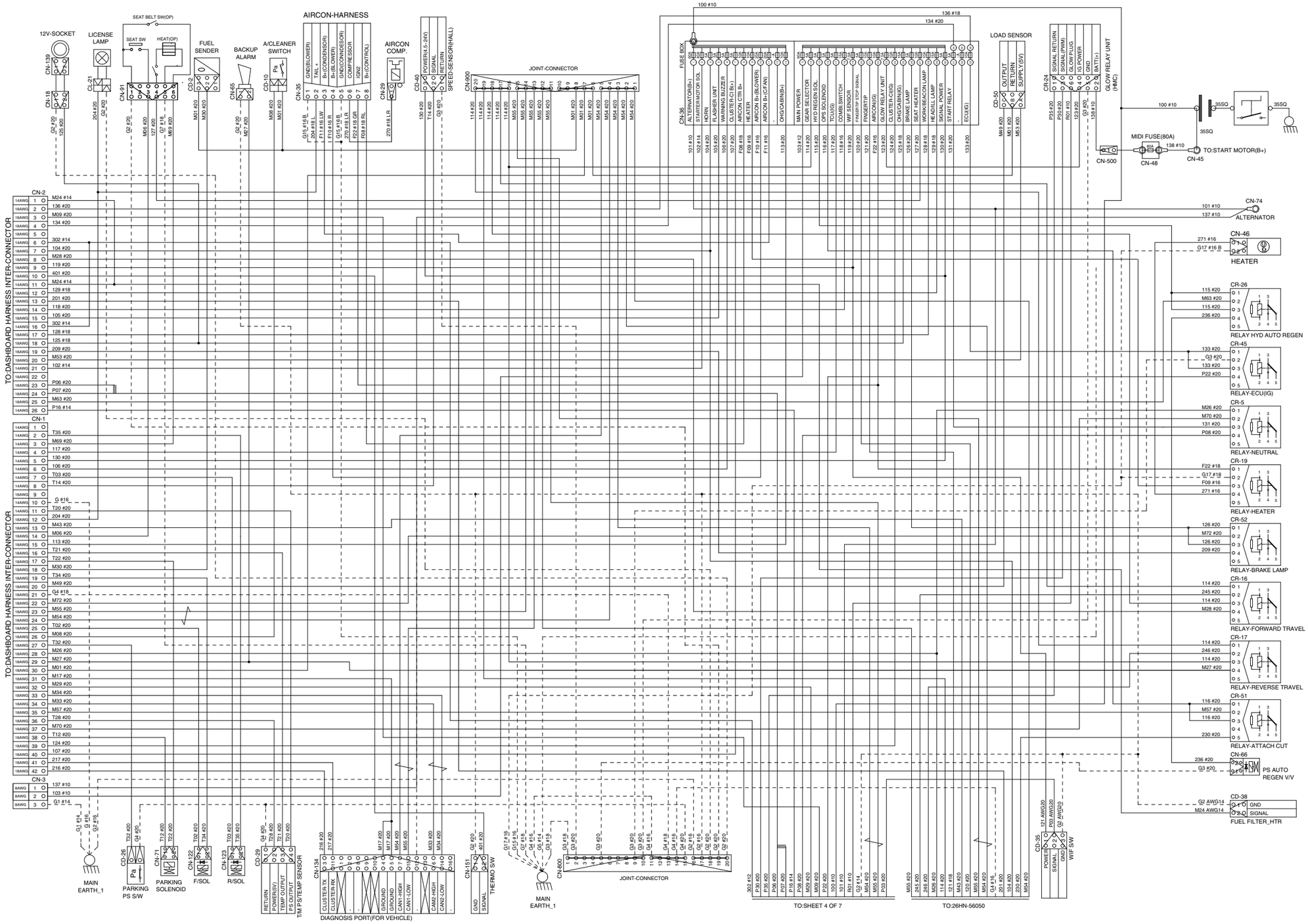
· ELECTRICAL CIRCUIT (5/8, FRAME-FINGERTIP 2 OF 2, 25D-9V : #0065-#0258, 30D-9V : #0051-#0538, 35DN-9V : #0089-#0255)

HMC HARNESS



26HN-60124-00 2OF2

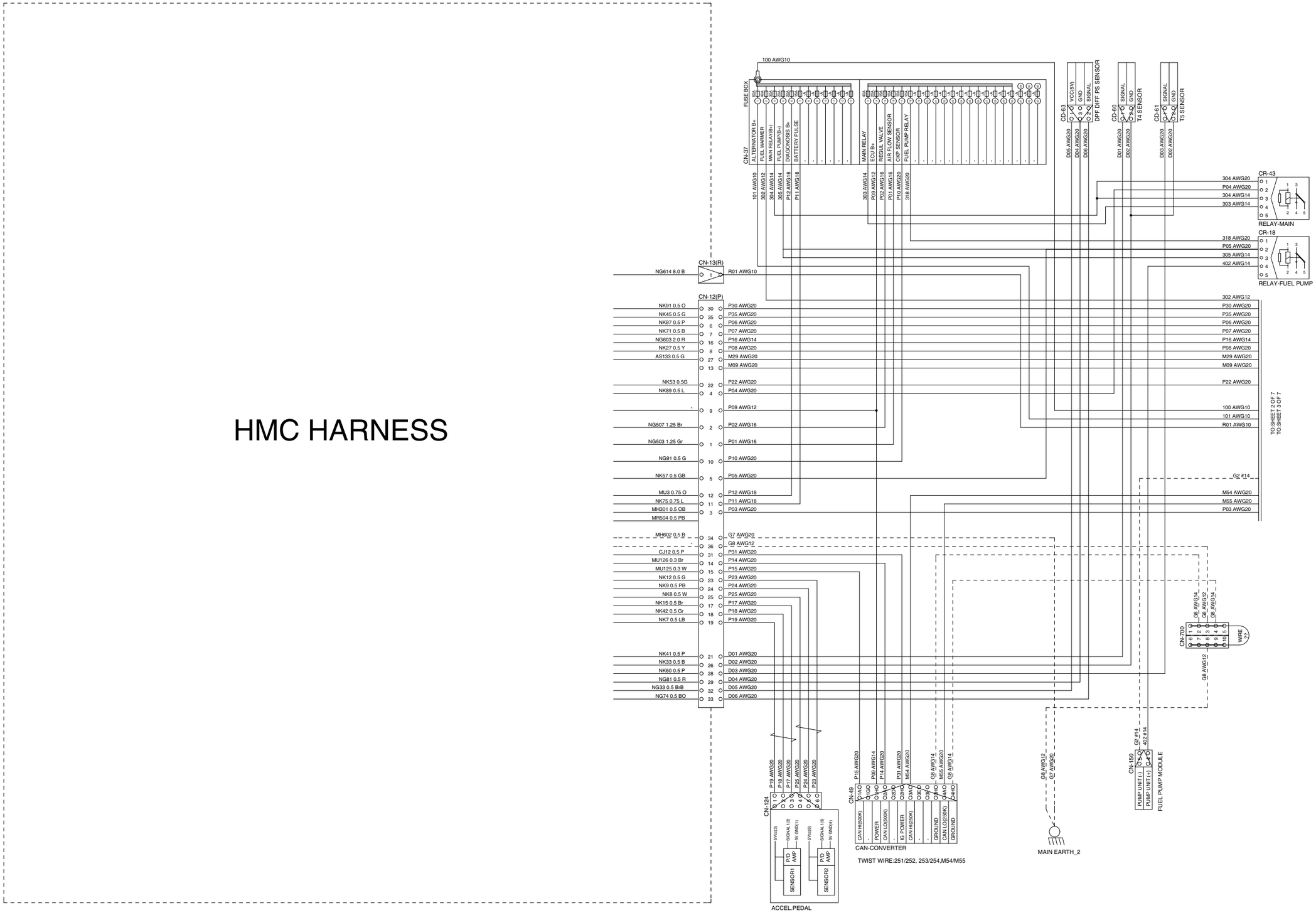
· ELECTRICAL CIRCUIT (4/8, FRAME-FINGERTIP 1 OF 2, 25D-9V : #0259-#0700, 30D-9V : #0539-#2116, 35DN-9V : #0256-#0752)



26HN-05601-00 3OF7

· ELECTRICAL CIRCUIT (5/8, FRAME-FINGERTIP 2 OF 2, 25D-9V : #0259-#0700, 30D-9V : #0539-#2116, 35DN-9V : #0256-#0752)

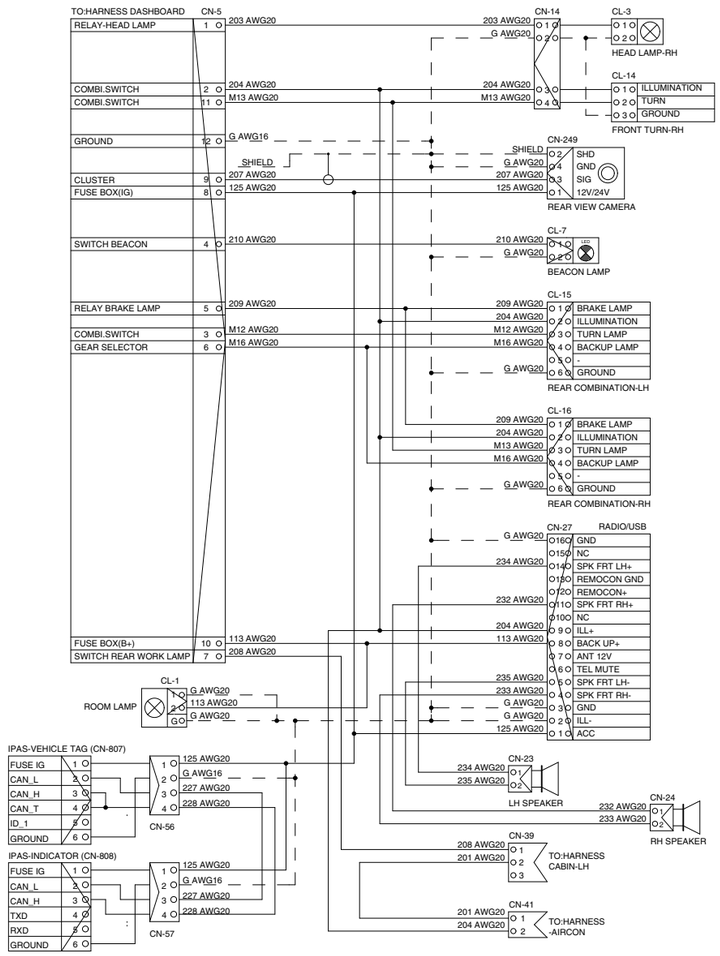
HMC HARNESS



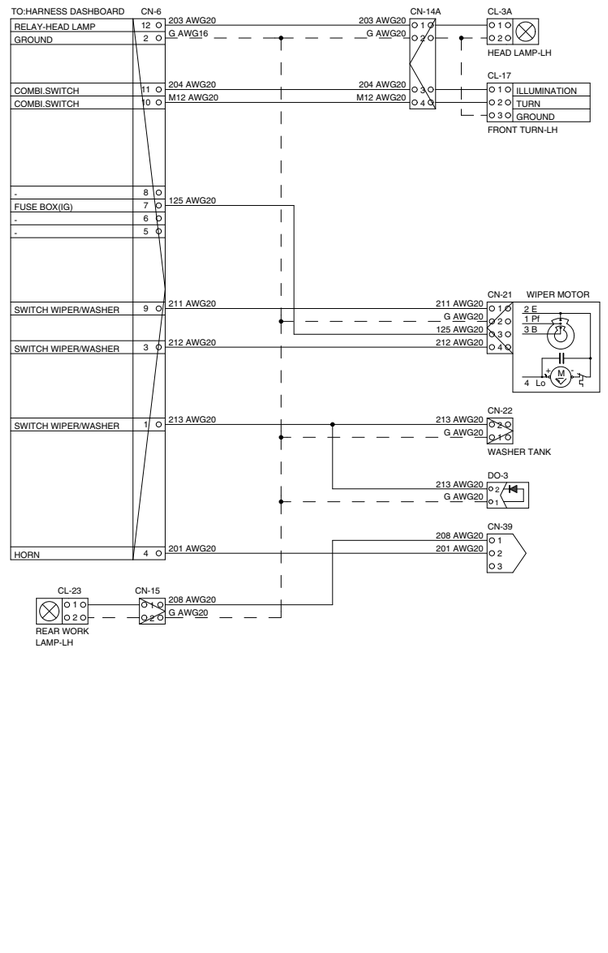
26HN-05601-00 4OF7

· ELECTRICAL CIRCUIT (6/8, CABIN WITH AIRCON, 25D-9V : -#0258, 30D-9V : -#0538, 35DN-9V : -#0255)

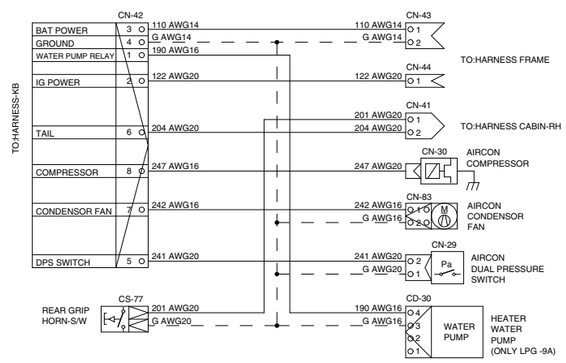
*ELEC.DIAGRAM OF HARNESS CABIN-RH



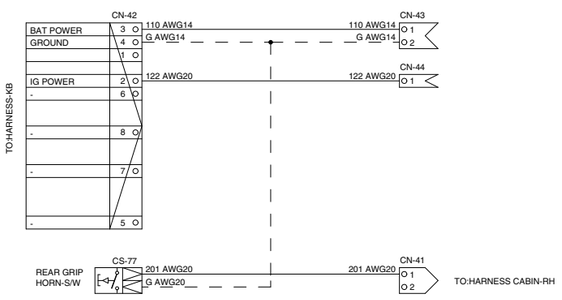
*ELEC.DIAGRAM OF HARNESS CABIN-LH



*ELEC.DIAGRAM OF HARNESS-AIRCON(AIRCON+HEATER)



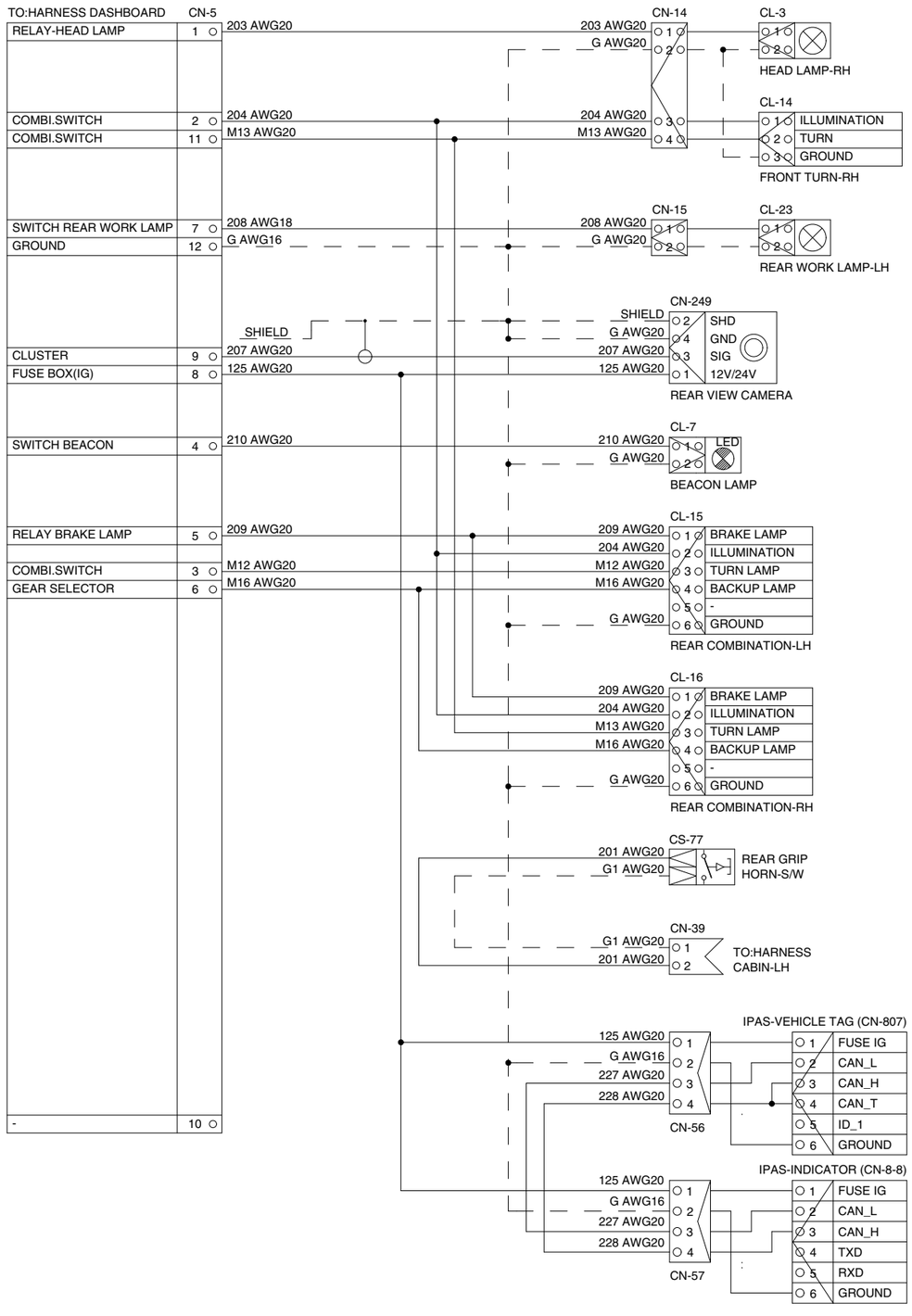
*ELEC.DIAGRAM OF HARNESS-HEATER(HEATER ONLY)



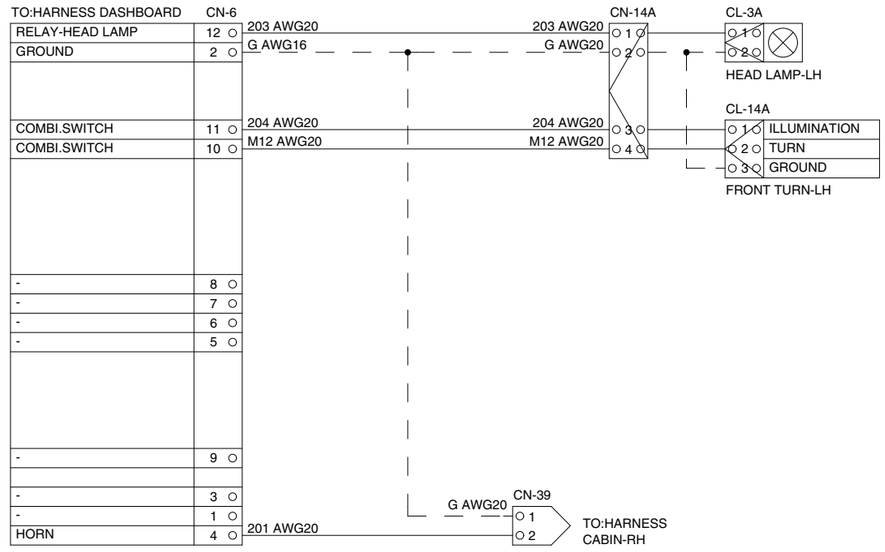
21HN-40082-00

· ELECTRICAL CIRCUIT (7/8, OVERHEAD GUARD, 25D-9V : -#0258, 30D-9V : -#0538, 35DN-9V : -#0255)

*ELEC.DIAGRAM OF HARNESS OHG-RH



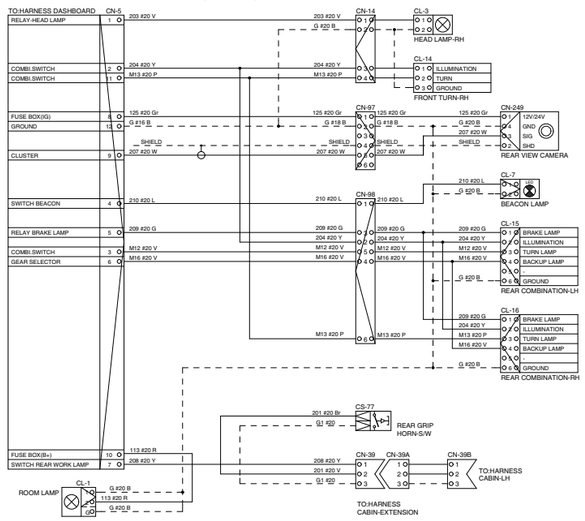
*ELEC.DIAGRAM OF HARNESS OHG-LH



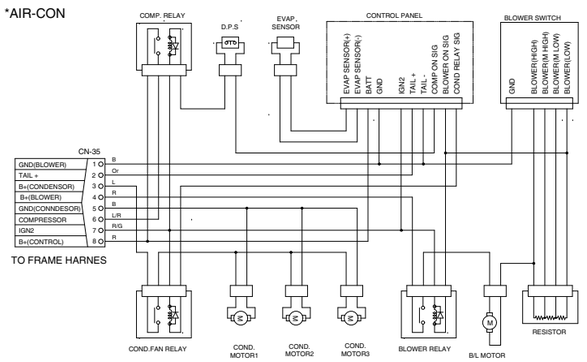
21HN-50044-00

· ELECTRICAL CIRCUIT (6~7/8, CABIN, OVERHEAD GUARD, 25D-9V : #0259-#0700, 30D-9V : #0539-#2116, 35DN-9V : #0256-#0752)

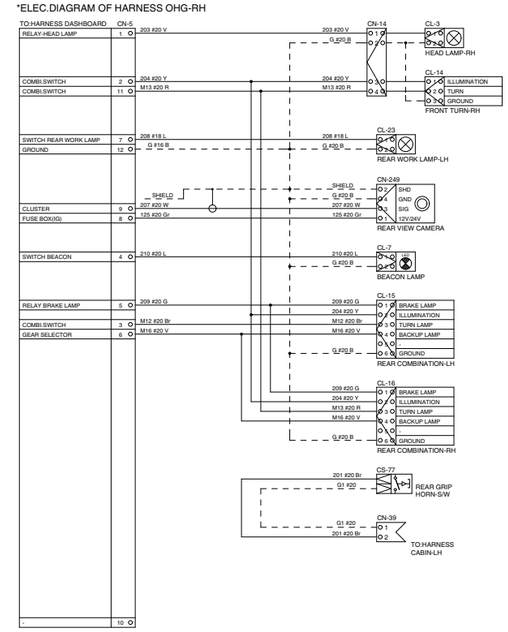
*ELEC.DIAGRAM OF HARNESS CABIN-RH(w AIRCON)



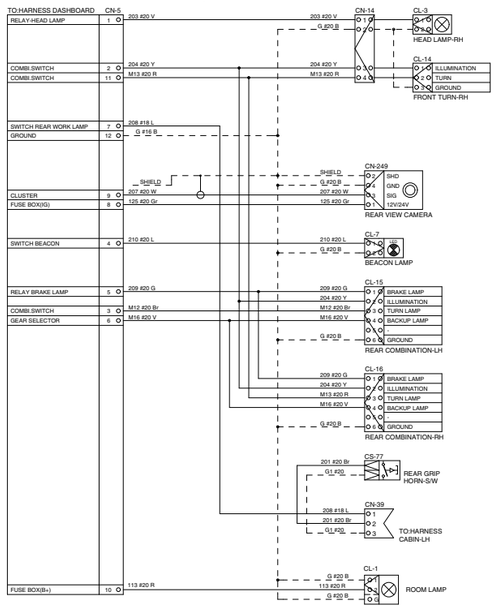
*AIR-CON



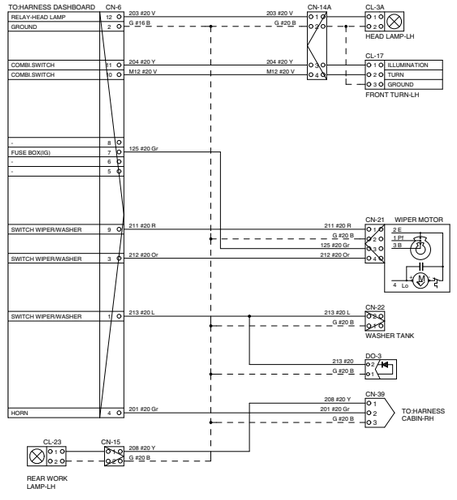
*ELEC.DIAGRAM OF HARNESS OHG-RH



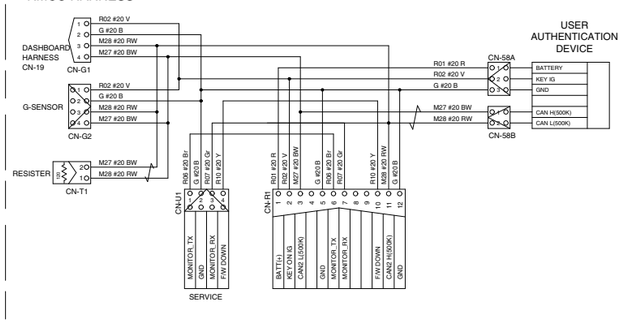
*ELEC.DIAGRAM OF HARNESS CABIN-RH(PARTIAL, w/o AIRCON)



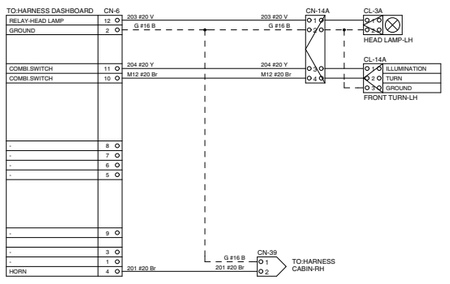
*ELEC.DIAGRAM OF HARNESS CABIN-LH



* RMCU HARNESS



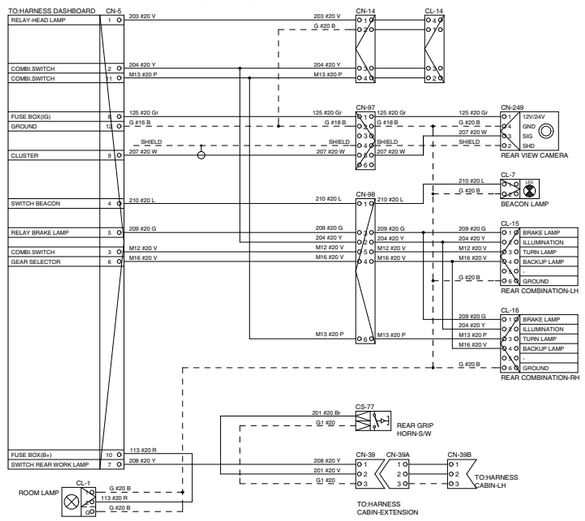
*ELEC.DIAGRAM OF HARNESS OHG-LH



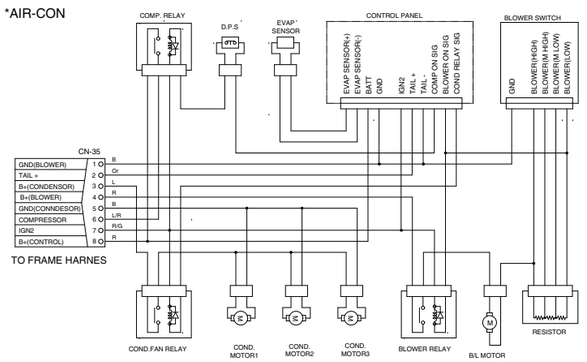
21HN-04100-00

· ELECTRICAL CIRCUIT (6~7/8, CABIN, OVERHEAD GUARD, 25D-9V : #0701-, 30D-9V : #2117-, 35DN-9V : #0753-)

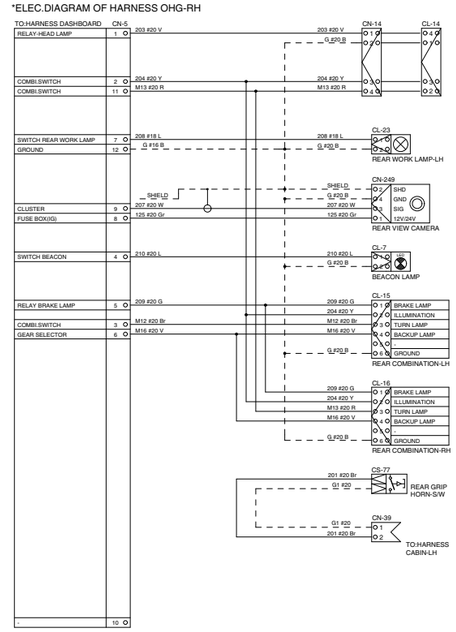
*ELEC.DIAGRAM OF HARNESS CABIN-RH(w AIRCON)



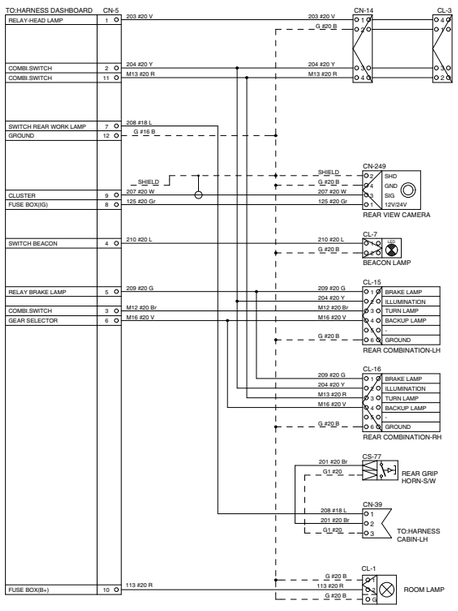
*AIR-CON



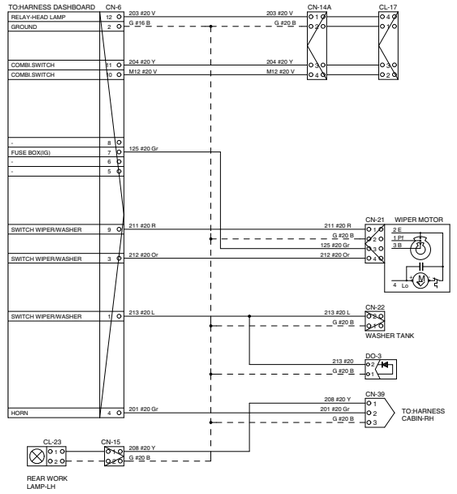
*ELEC.DIAGRAM OF HARNESS OHG-RH



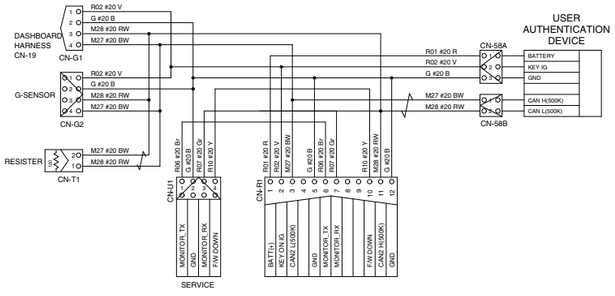
*ELEC.DIAGRAM OF HARNESS CABIN-RH(PARTIAL, w/o AIRCON)



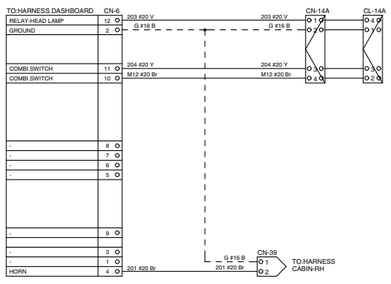
*ELEC.DIAGRAM OF HARNESS CABIN-LH



* RMCU HARNESS

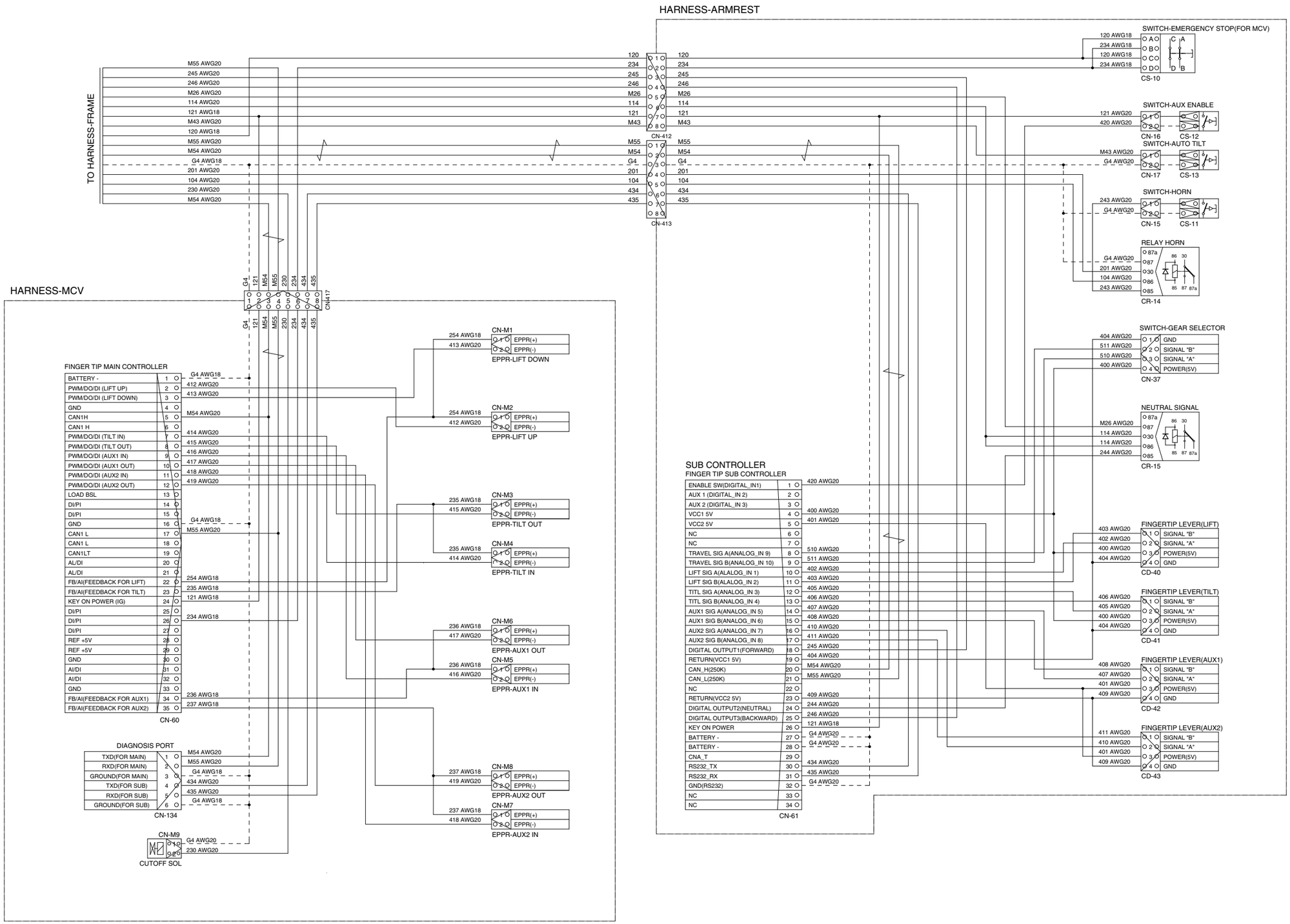


*ELEC.DIAGRAM OF HARNESS OHG-LH



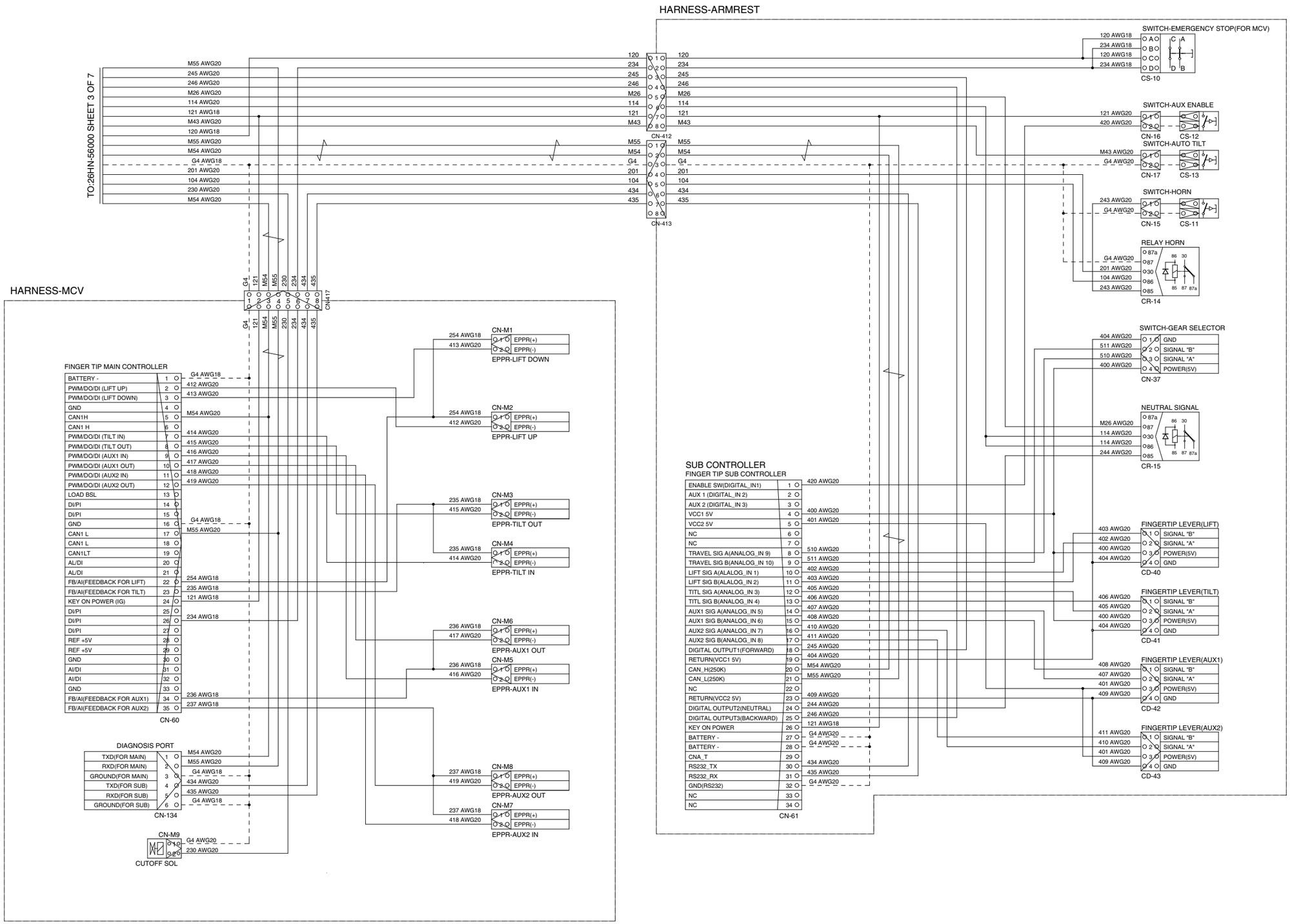
21HN-04102-00

· ELECTRICAL CIRCUIT (8/8, MCV, ARMREST-FINGERTIP, 25D-9V : -#0258, 30D-9V : -#0538, 35DN-9V : -#0255)



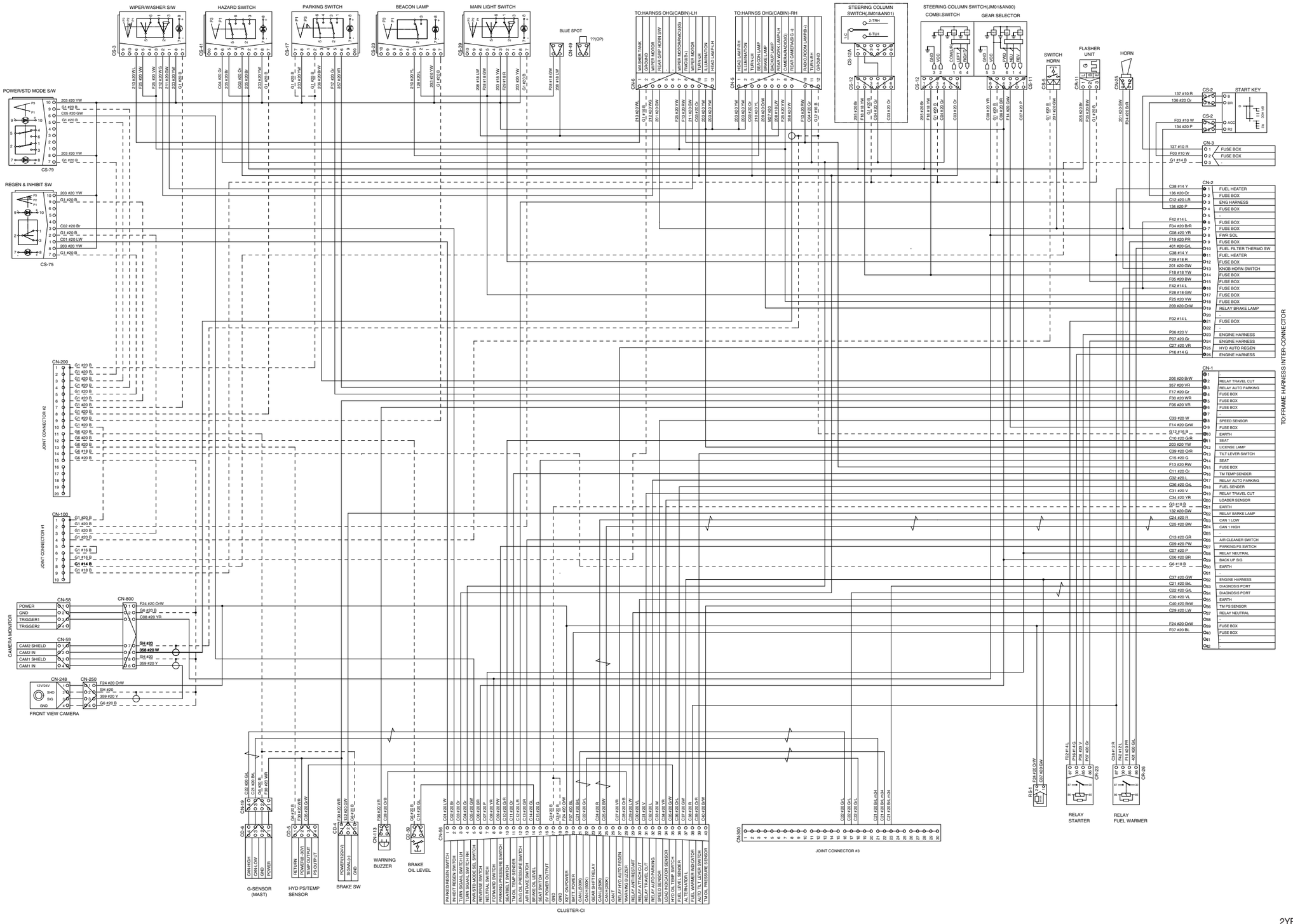
26HN-60034-00

· ELECTRICAL CIRCUIT (8/8, MCV, ARMREST-FINGERTIP, 25D-9V : #0259-, 30D-9V : #0539-, 35DN-9V : #0256-)

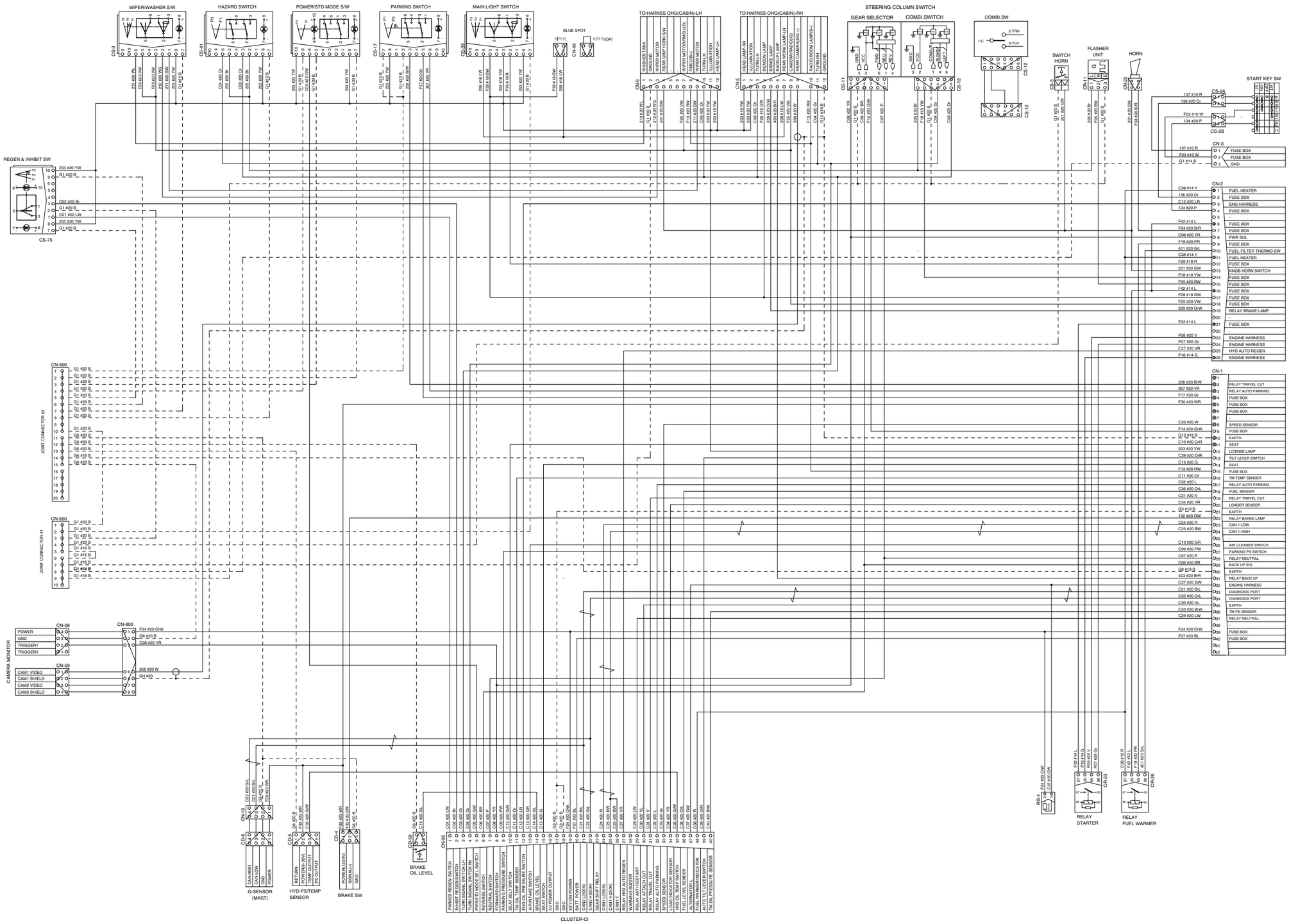


26HN-05650-00

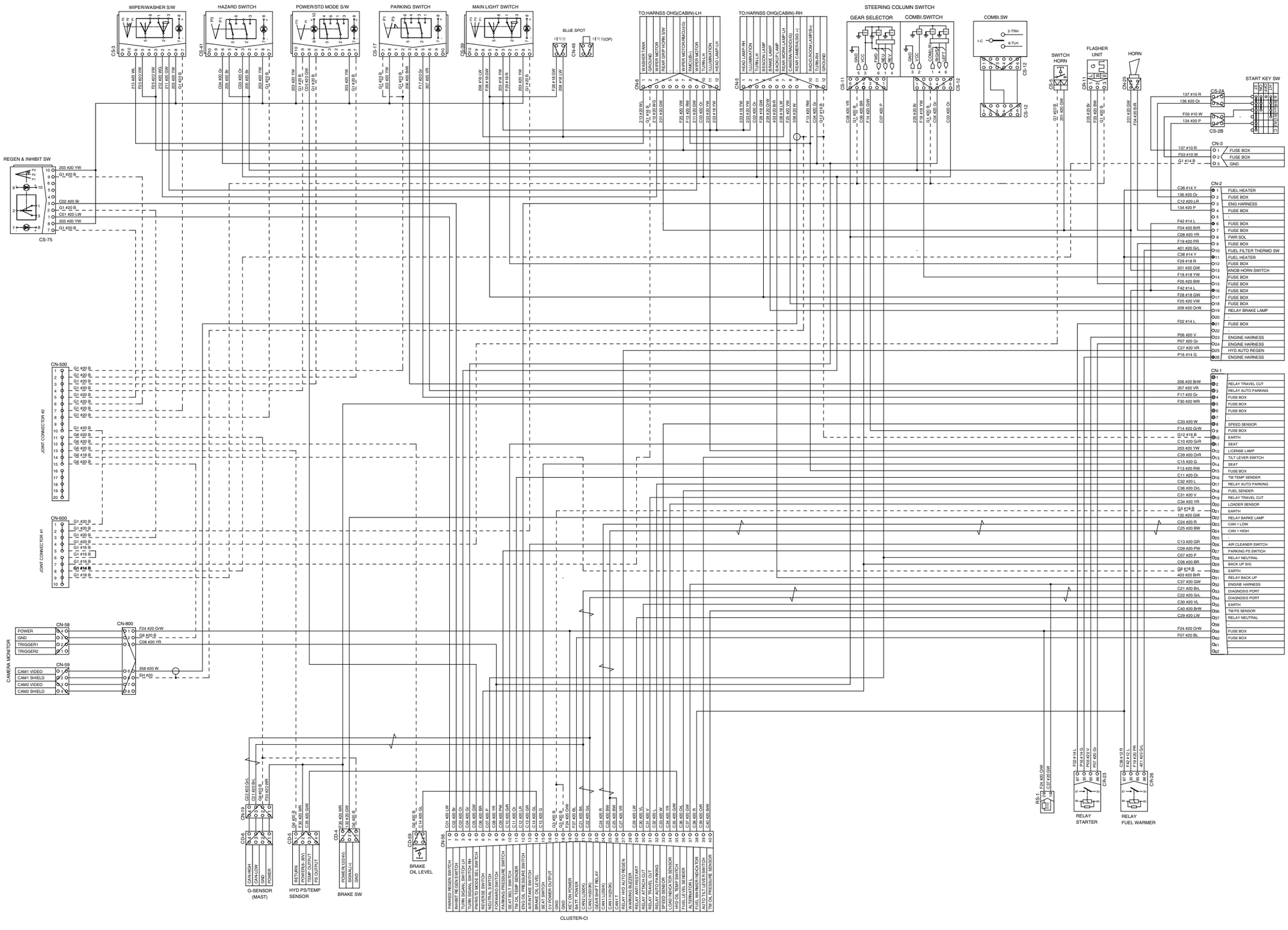
· ELECTRICAL CIRCUIT (1/4, DASHBOARD, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9V : #0178-#0255)



· ELECTRICAL CIRCUIT (1/4, DASHBOARD, 25D-9VS : #0259-#0700, 30D-9VS : #0539-#2116, 35DN-9VS : #0256-#0752)

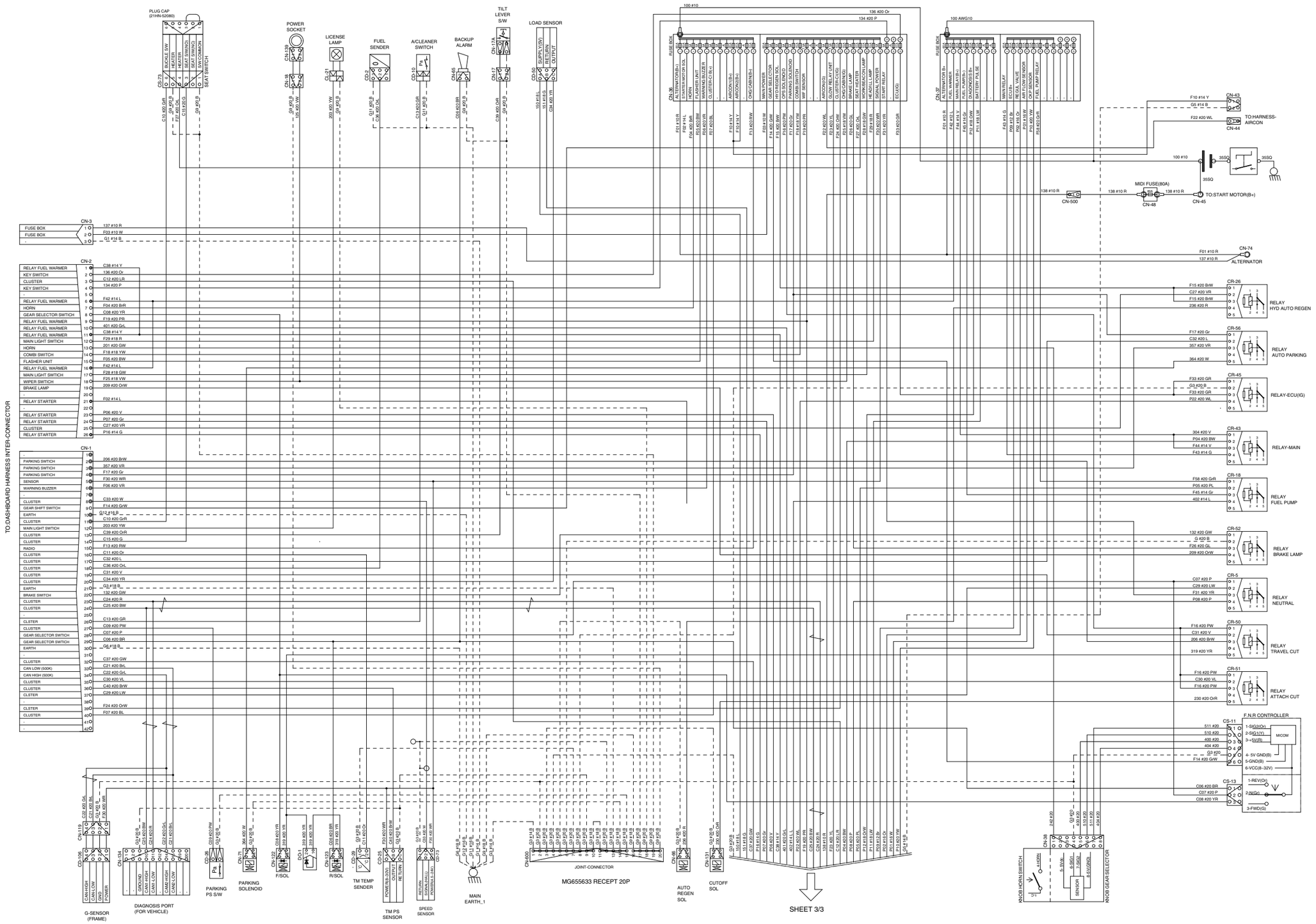


· ELECTRICAL CIRCUIT (1/4, DASHBOARD, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



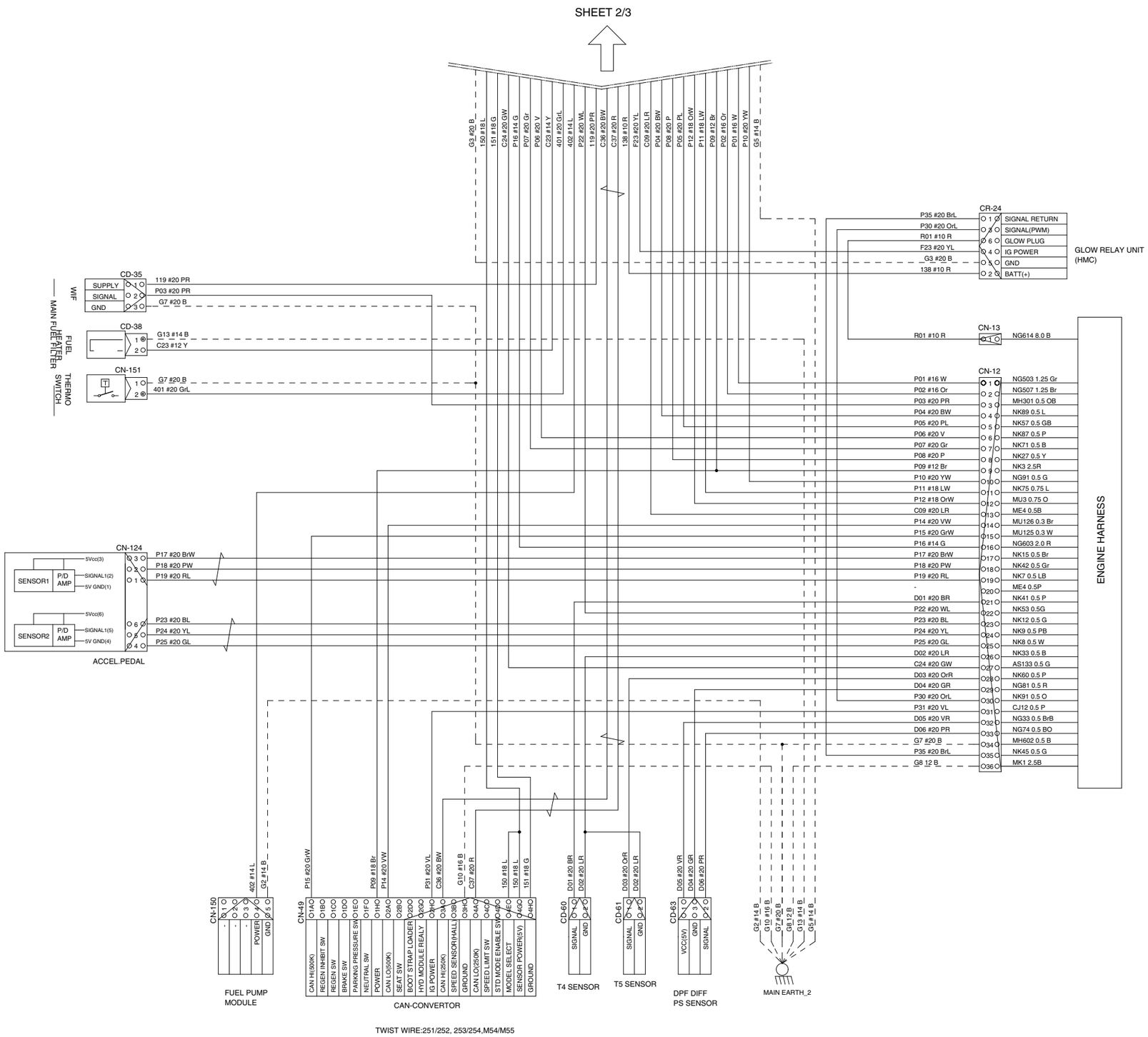
26HN-05602-00 5OF8

· ELECTRICAL CIRCUIT (2/4, FRAME 1 OF 2, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9V : #0178-#0255)



2YFG-11011-00 2OF3

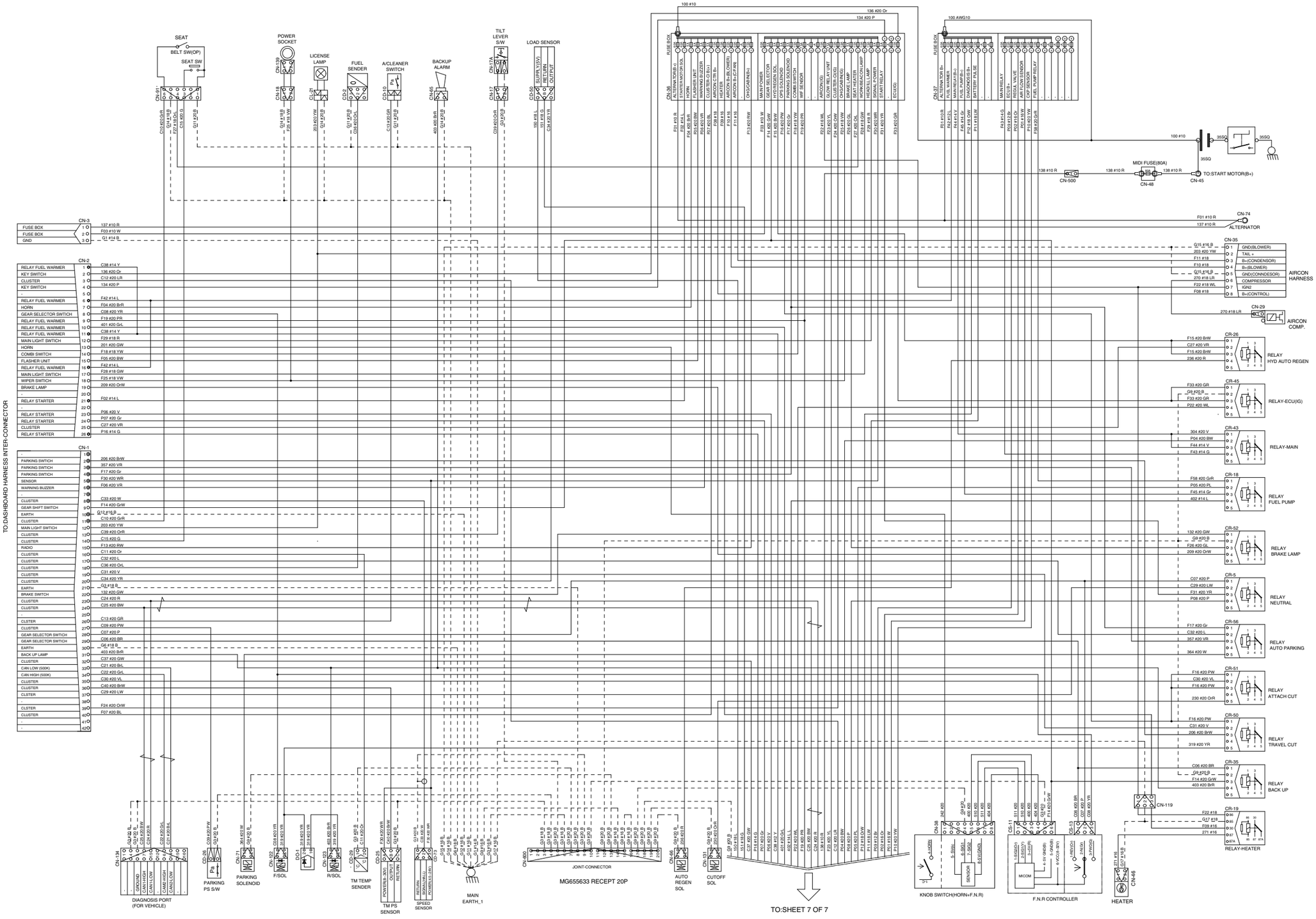
· ELECTRICAL CIRCUIT (2/4, FRAME 2 OF 2, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9V : #0178-#0255)



TWIST WIRE:251/252, 253/254,M54/M55

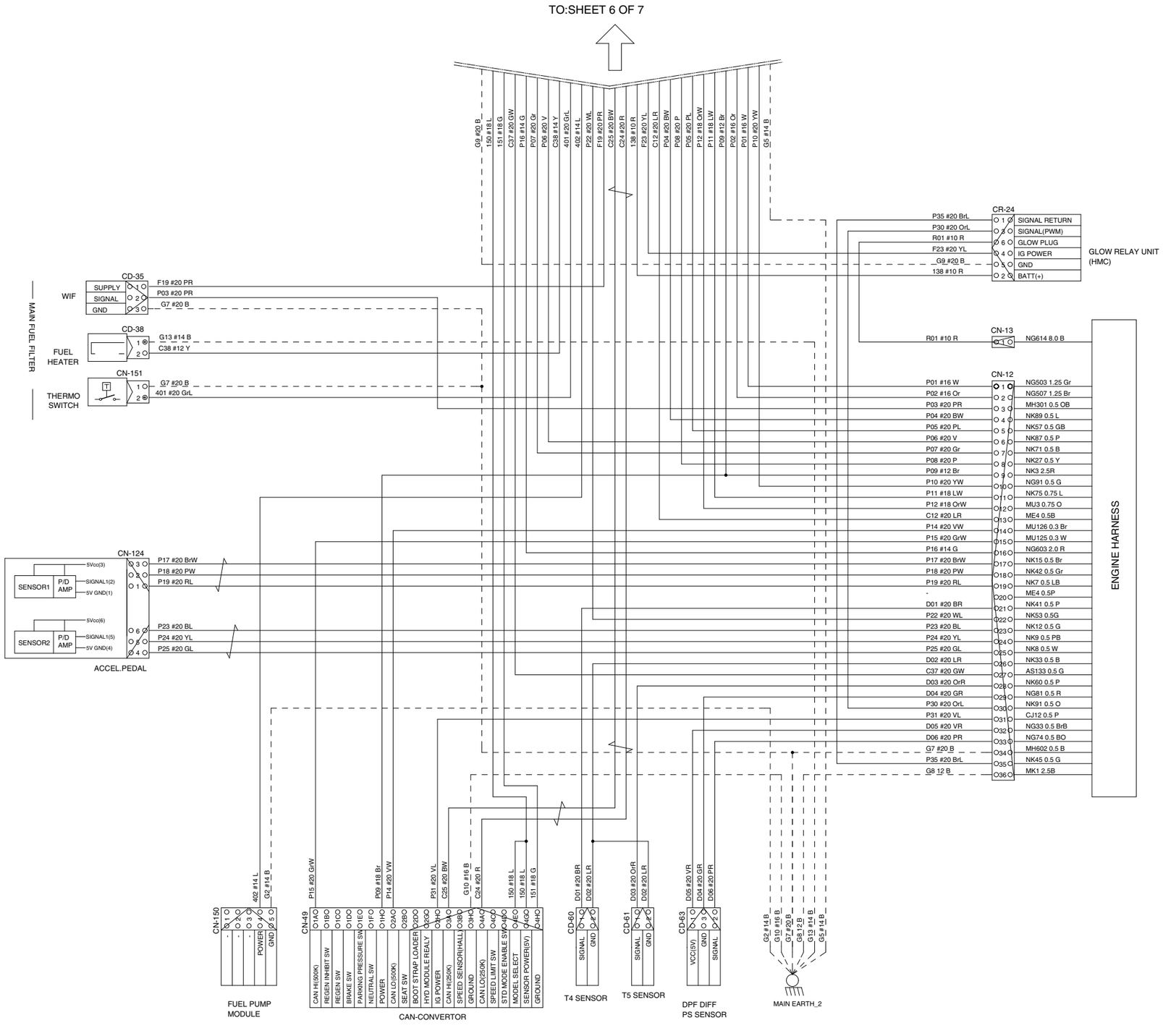
2YFG-11011-00 3OF3

· ELECTRICAL CIRCUIT (2/4, FRAME 1 OF 2, 25D-9VS : #0259-#0700, 30D-9VS : #0539-#2116, 35DN-9VS : #0256-#0752)



26HN-05601-00 6OF7

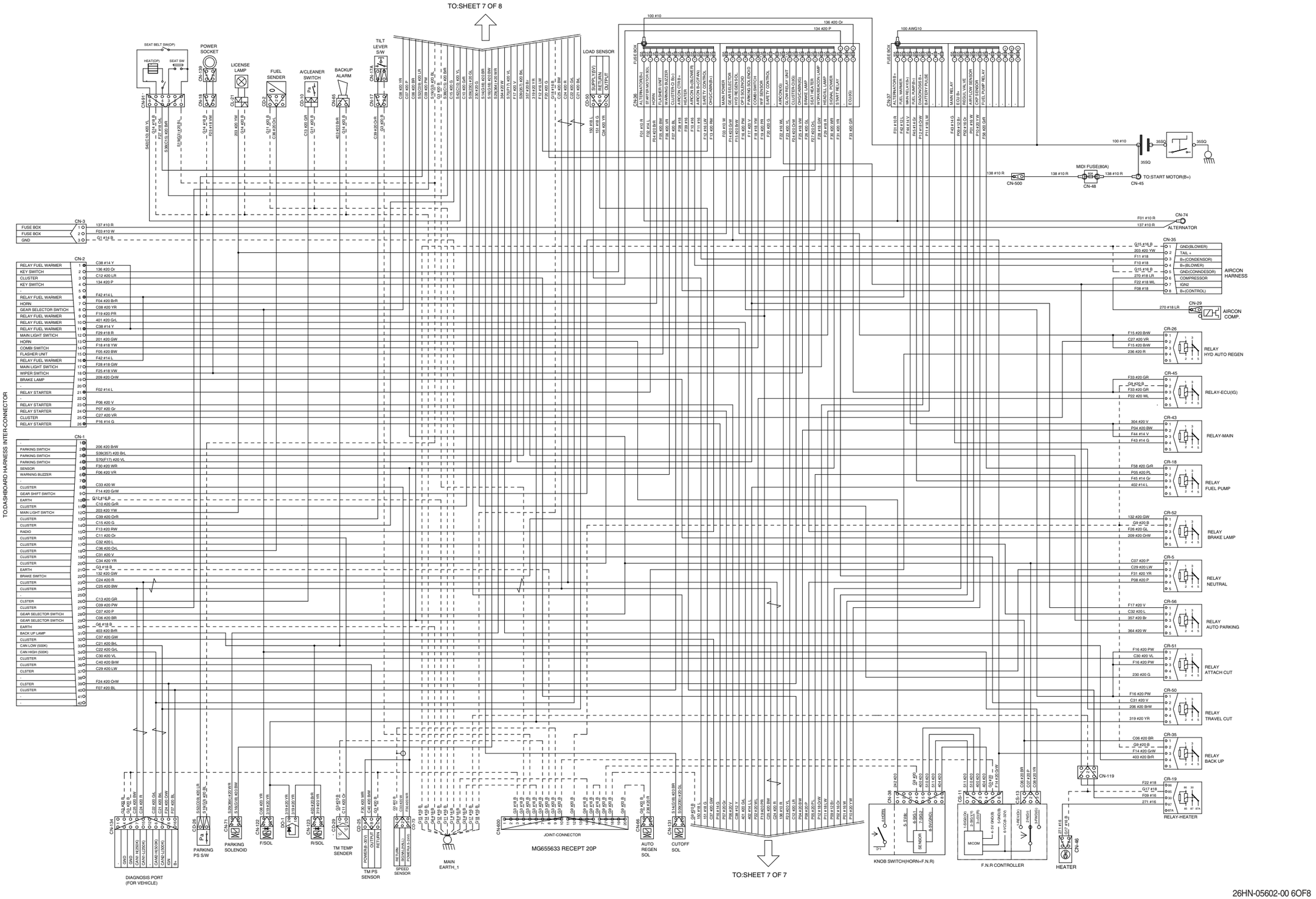
· ELECTRICAL CIRCUIT (2/4, FRAME 2 OF 2, 25D-9VS : #0259-#0700, 30D-9VS : #0539-#2116, 35DN-9VS : #0256-#0752)



TWIST WIRE:251/252, 253/254,M54/M55

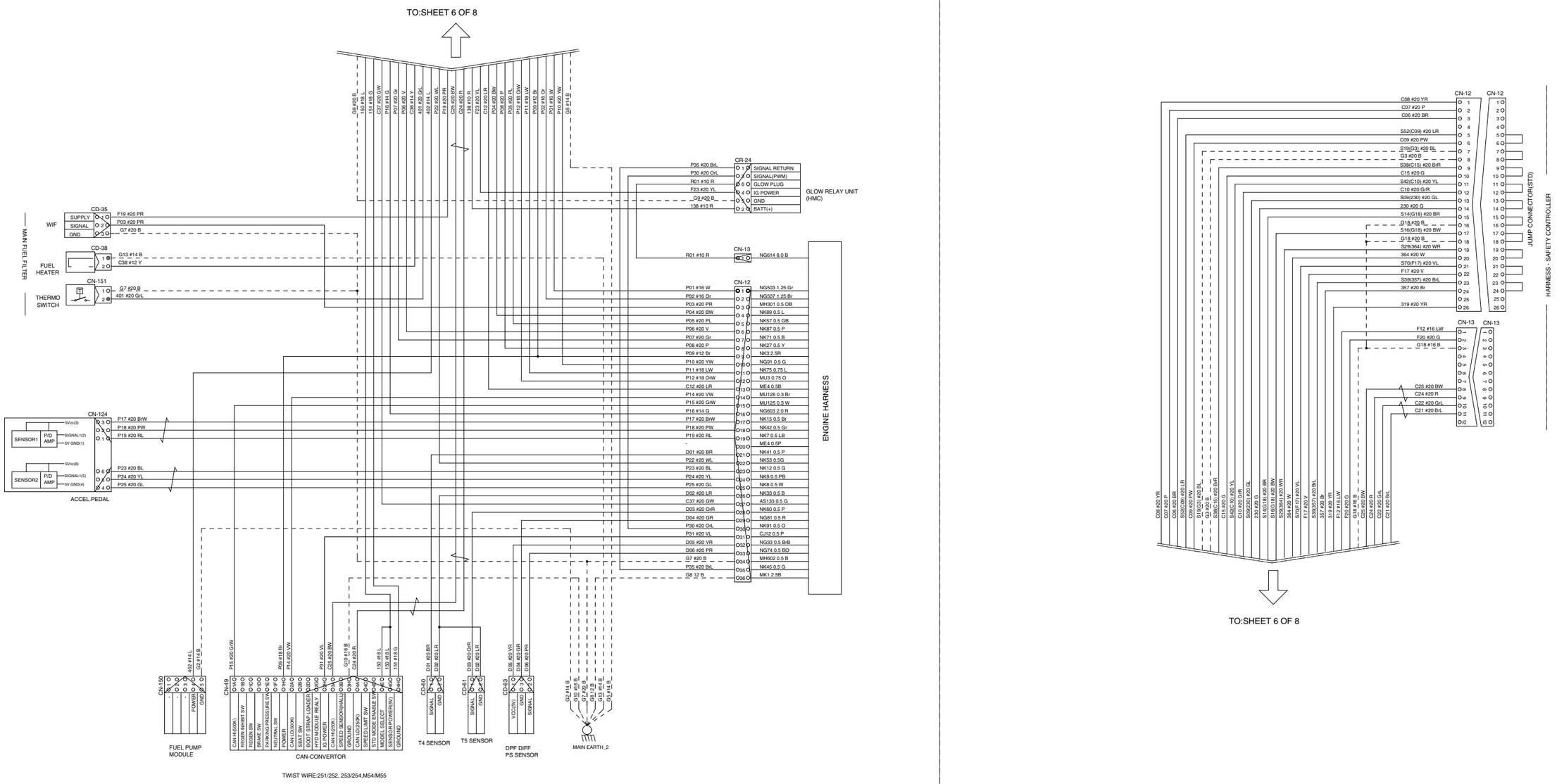
26HN-05601-00 7OF7

· ELECTRICAL CIRCUIT (2/4, FRAME 1 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)

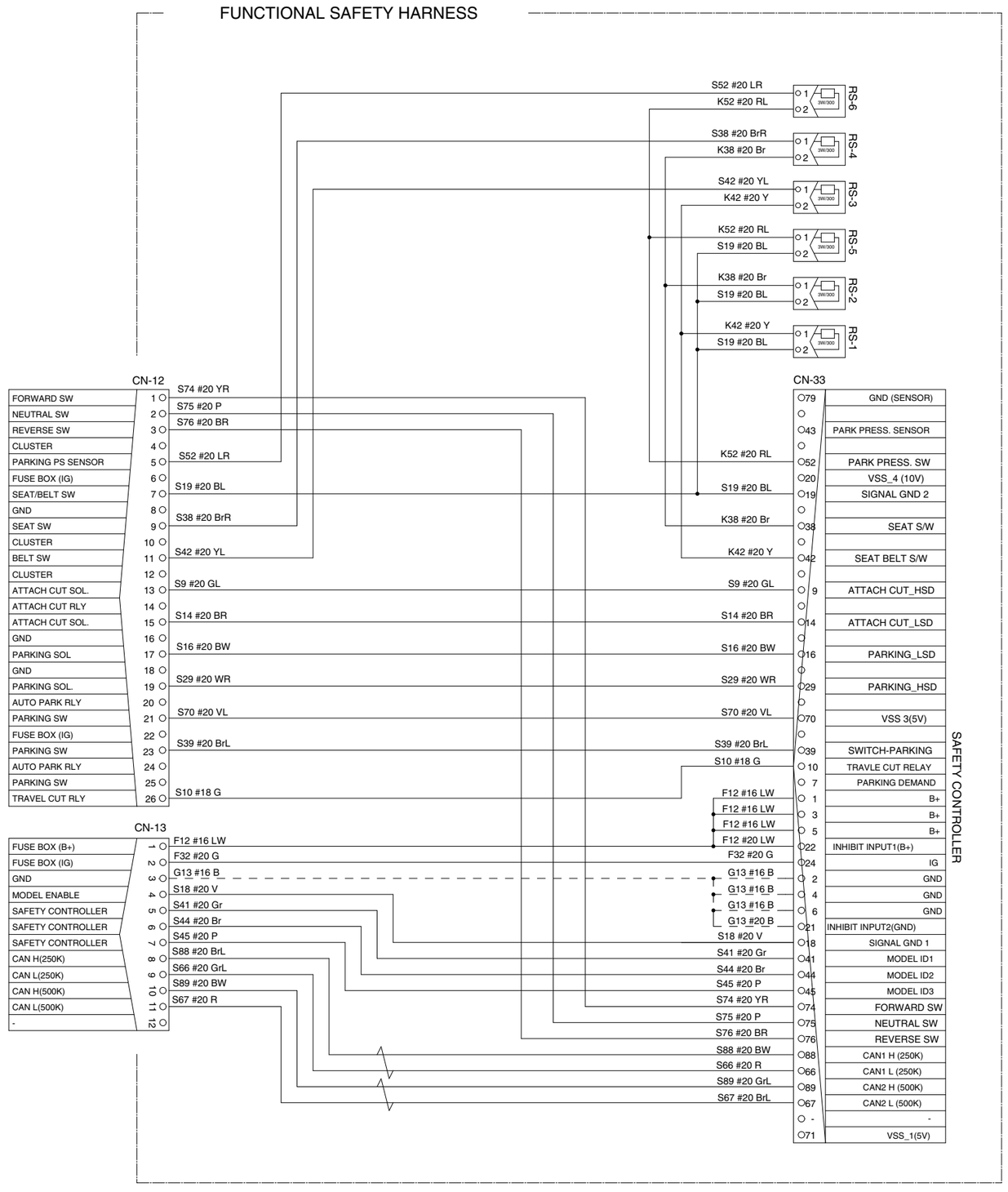


26HN-05602-00 6OF8

· ELECTRICAL CIRCUIT (2/4, FRAME 2 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



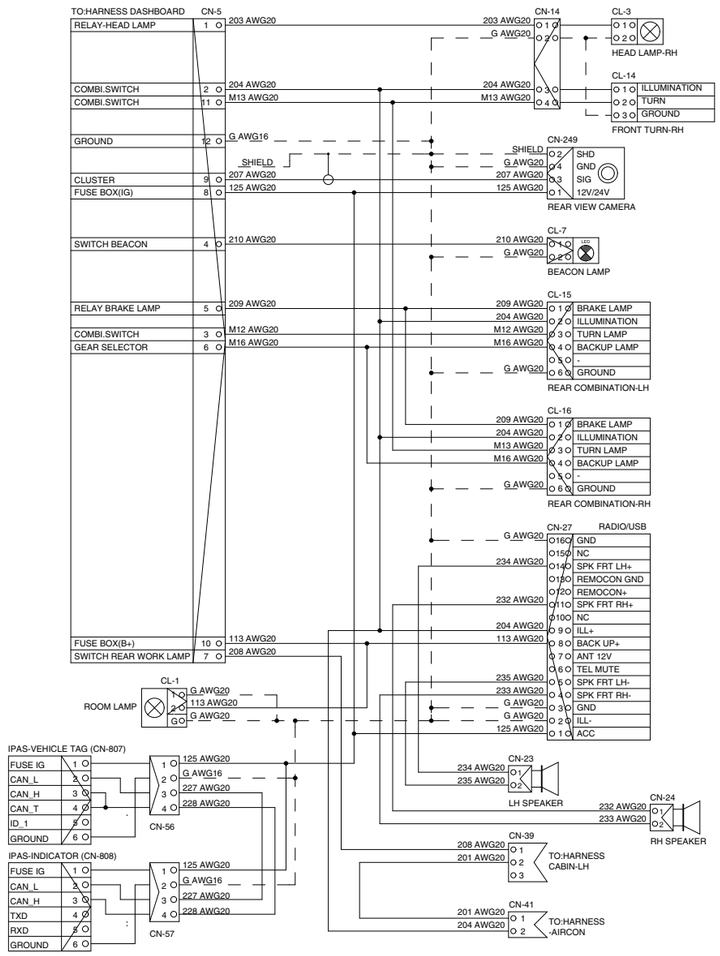
· ELECTRICAL CIRCUIT (2/4, FRAME 3 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



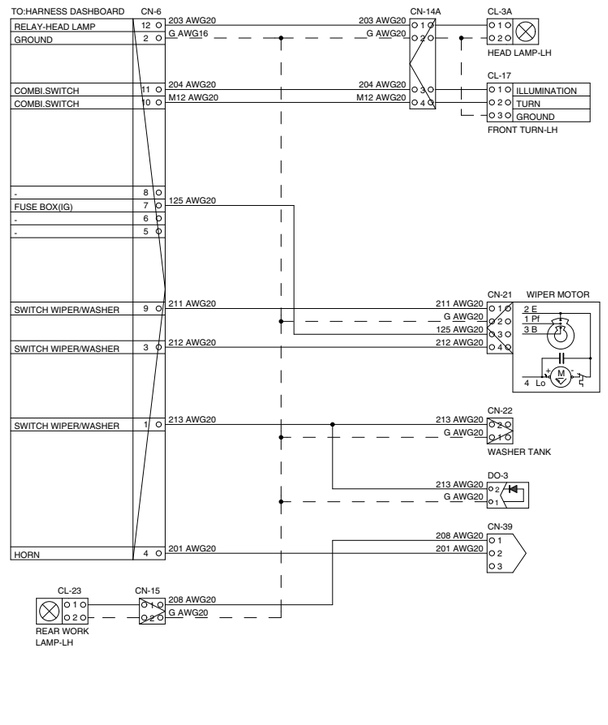
26HN-05602-00 8OF8

· ELECTRICAL CIRCUIT (3/4, CABIN WITH AIRCON, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9VS : #0178-#0255)

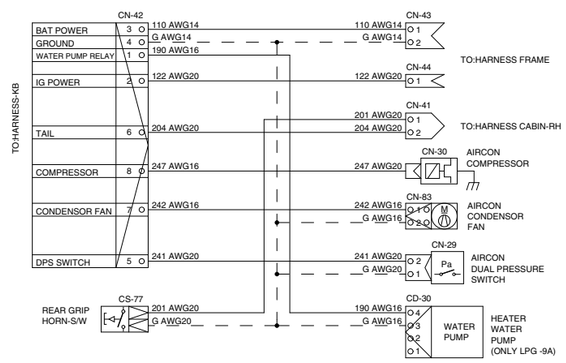
*ELEC.DIAGRAM OF HARNESS CABIN-RH



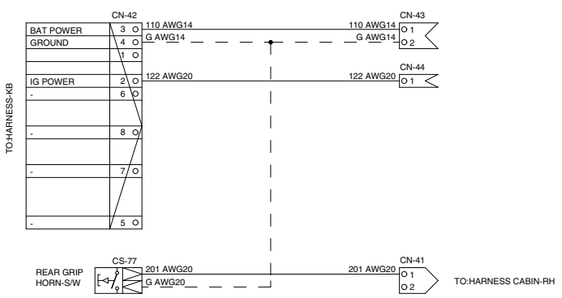
*ELEC.DIAGRAM OF HARNESS CABIN-LH



*ELEC.DIAGRAM OF HARNESS-AIRCON(AIRCON+HEATER)

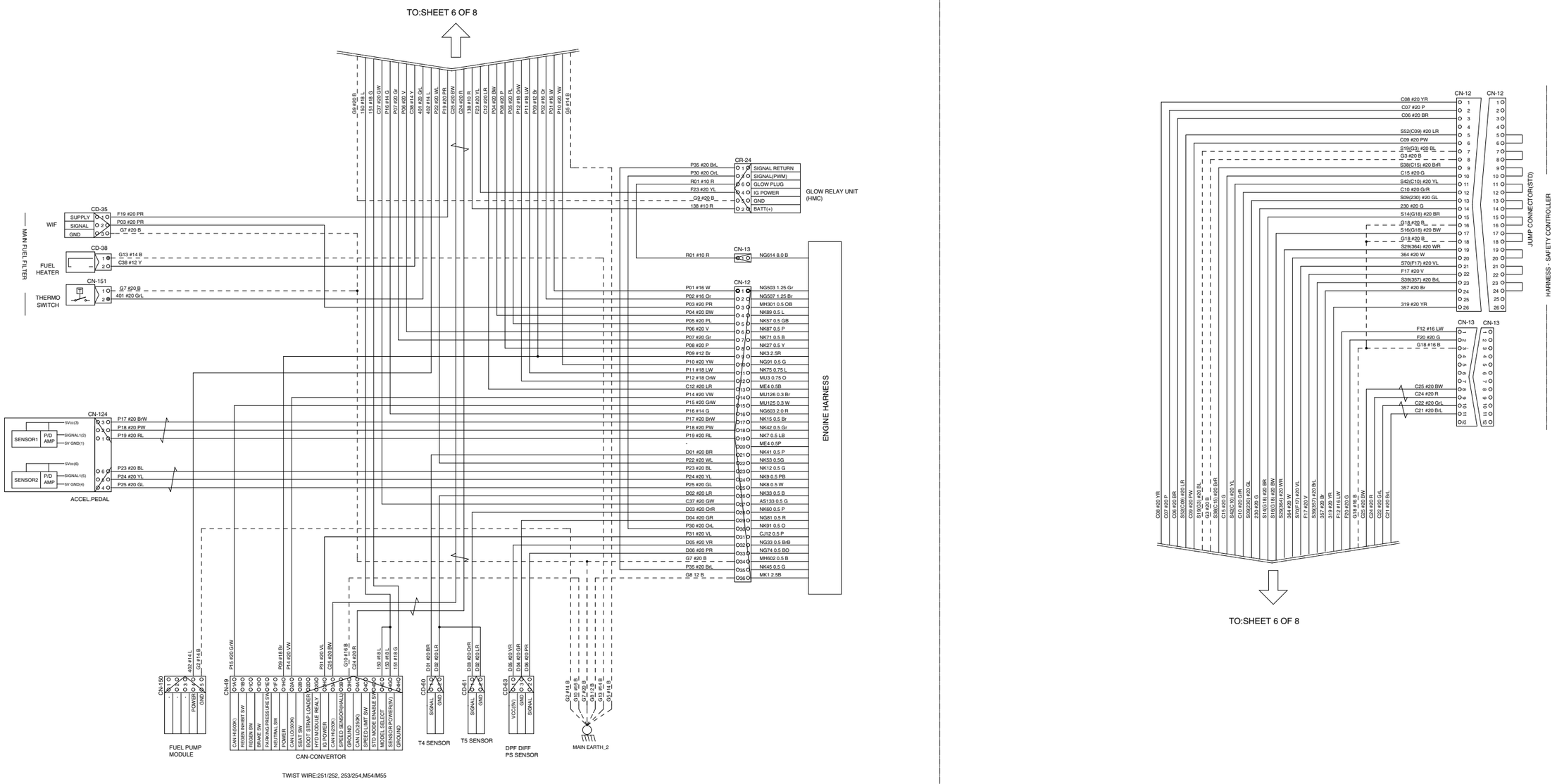


*ELEC.DIAGRAM OF HARNESS-HEATER(HEATER ONLY)

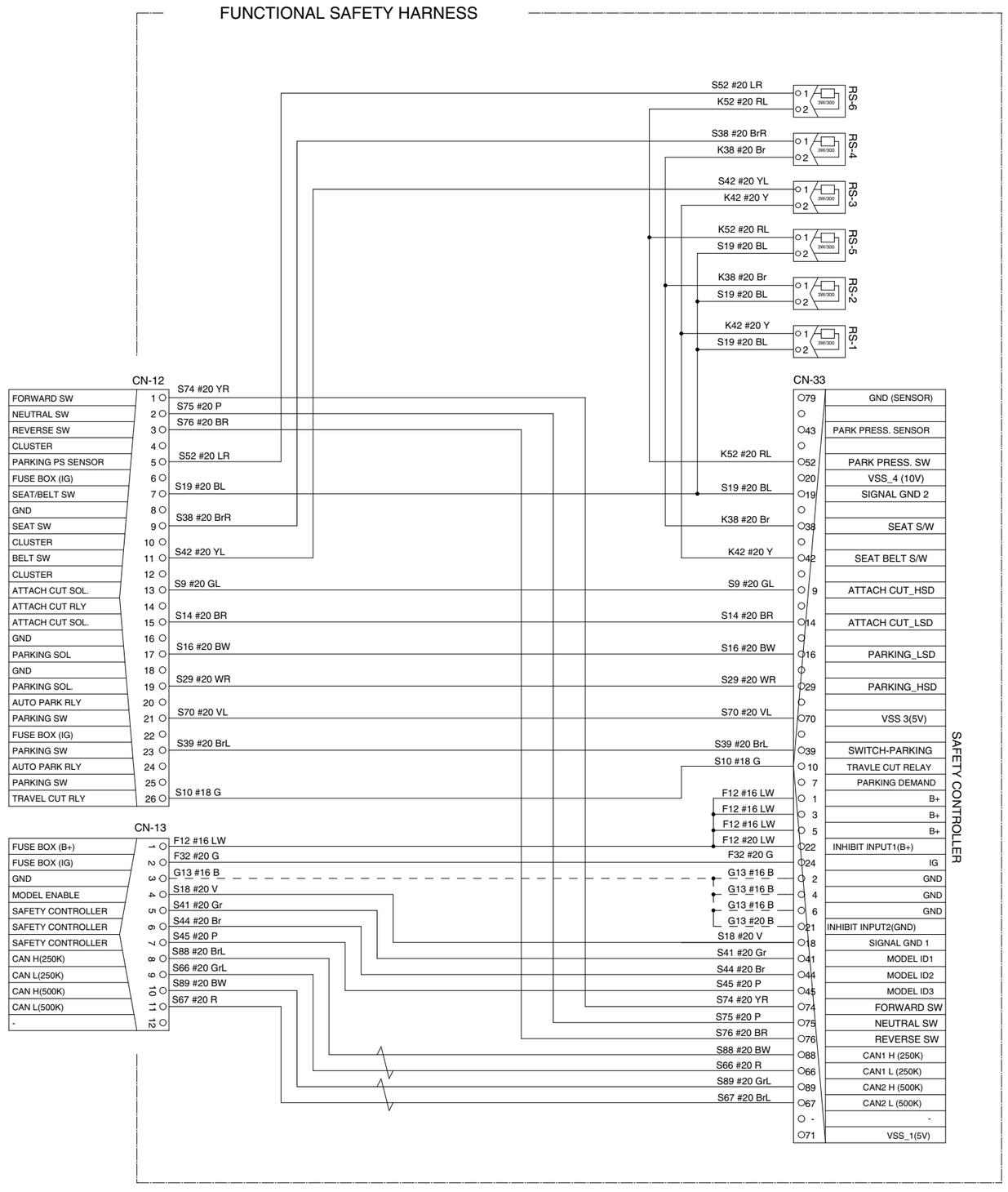


21HN-40082-00

· ELECTRICAL CIRCUIT (2/4, FRAME 2 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



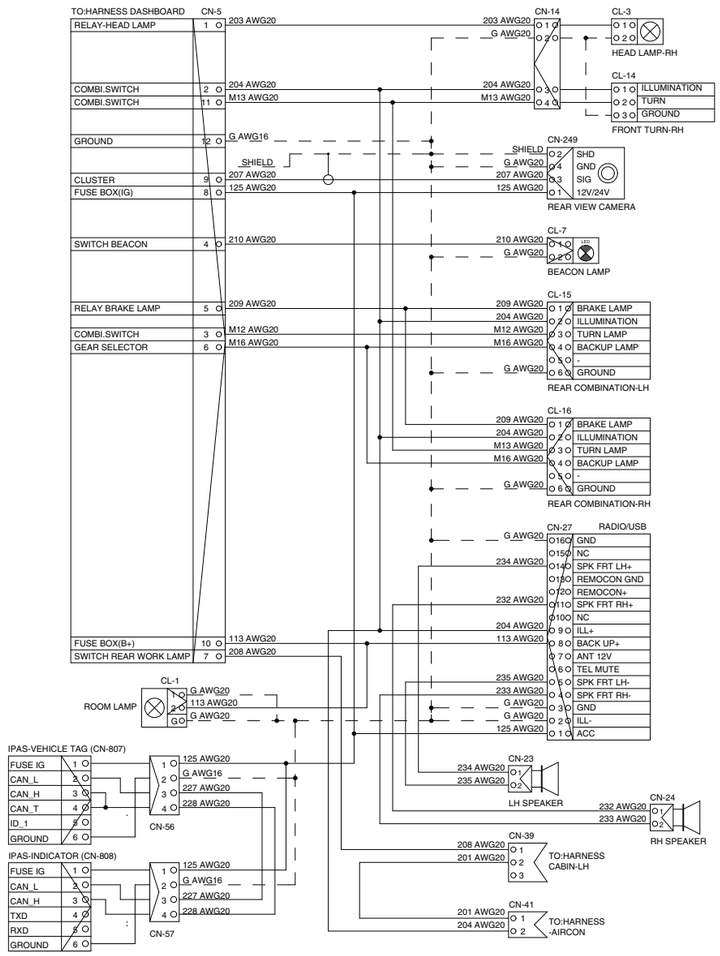
· ELECTRICAL CIRCUIT (2/4, FRAME 3 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



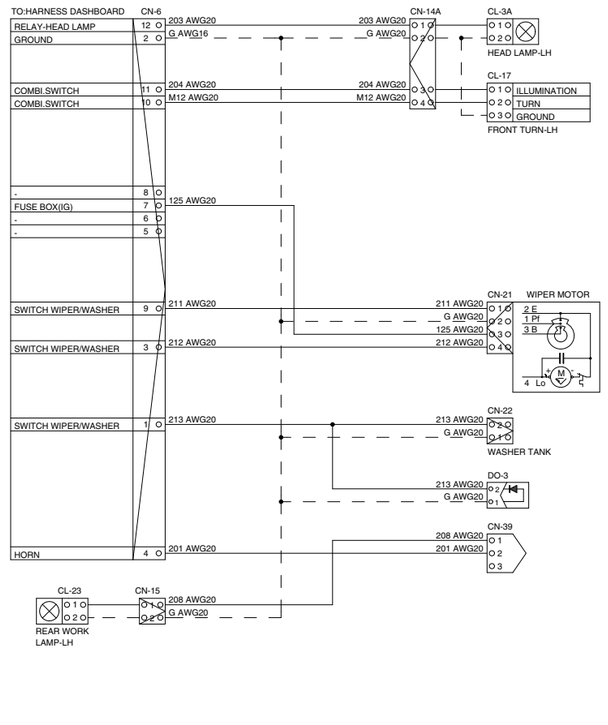
26HN-05602-00 8OF8

· ELECTRICAL CIRCUIT (3/4, CABIN WITH AIRCON, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9VS : #0178-#0255)

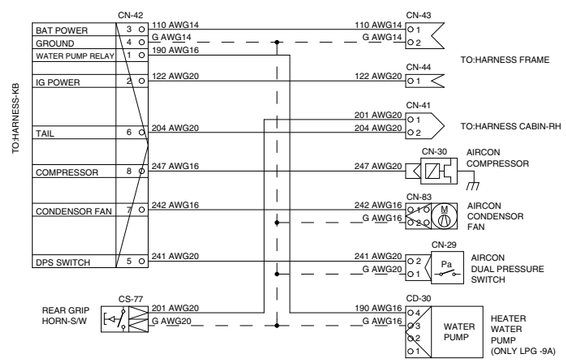
*ELEC.DIAGRAM OF HARNESS CABIN-RH



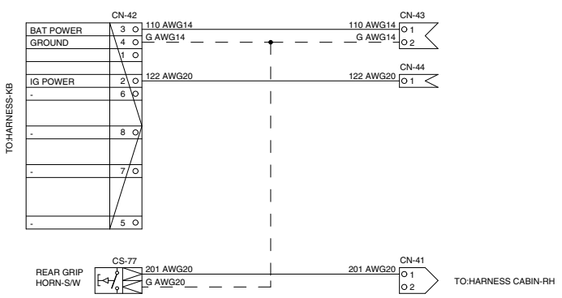
*ELEC.DIAGRAM OF HARNESS CABIN-LH



*ELEC.DIAGRAM OF HARNESS-AIRCON(AIRCON+HEATER)



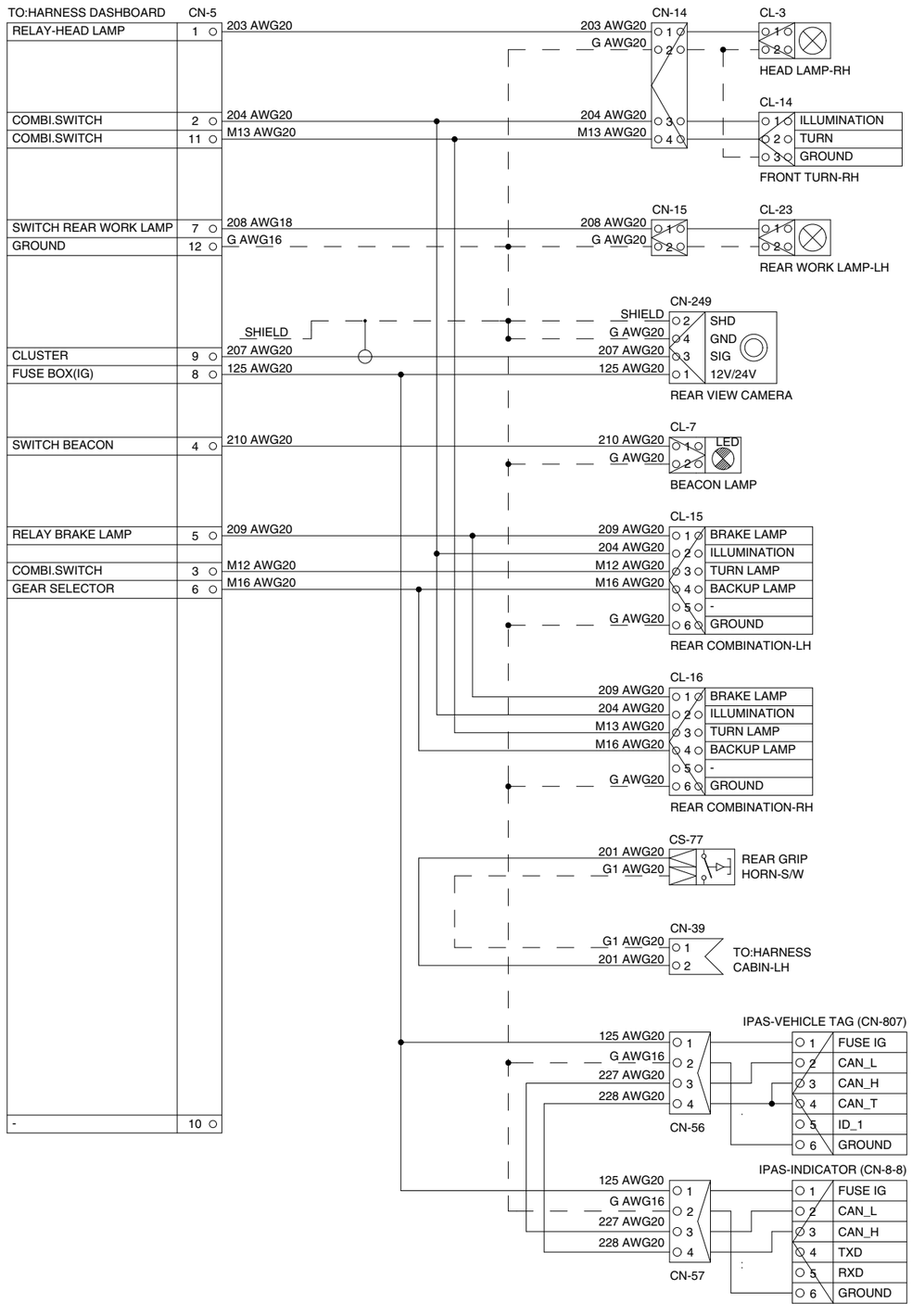
*ELEC.DIAGRAM OF HARNESS-HEATER(HEATER ONLY)



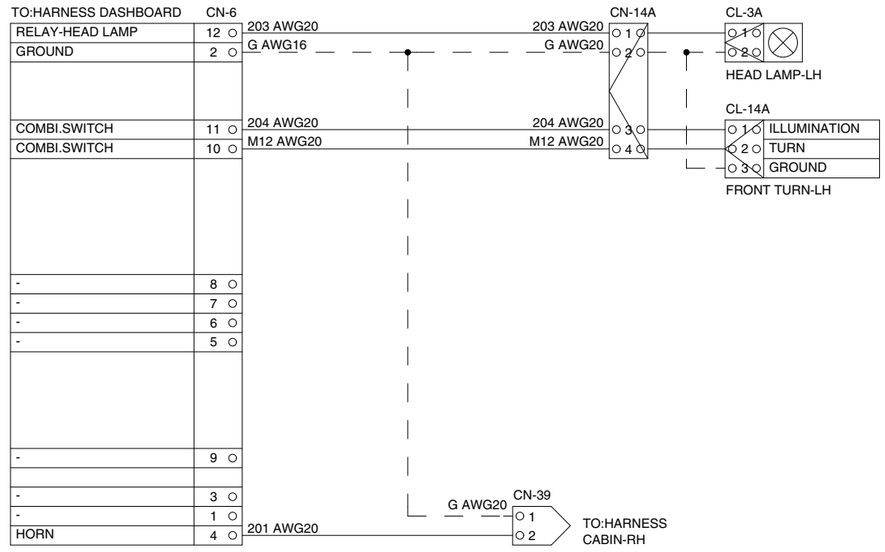
21HN-40082-00

· ELECTRICAL CIRCUIT (4/4, OVERHEAD GUARD, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9VS : #0178-#0255)

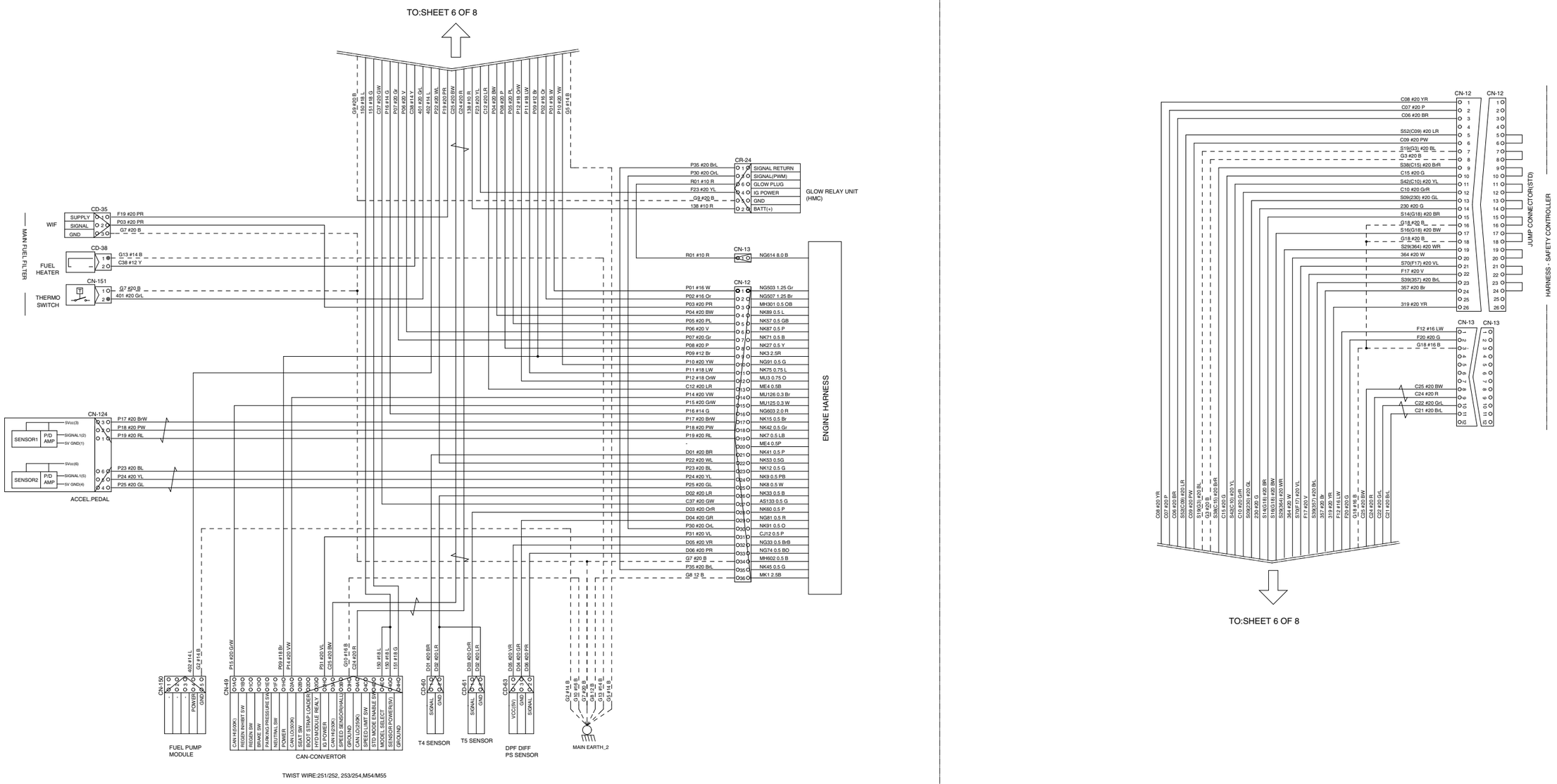
*ELEC.DIAGRAM OF HARNESS OHG-RH



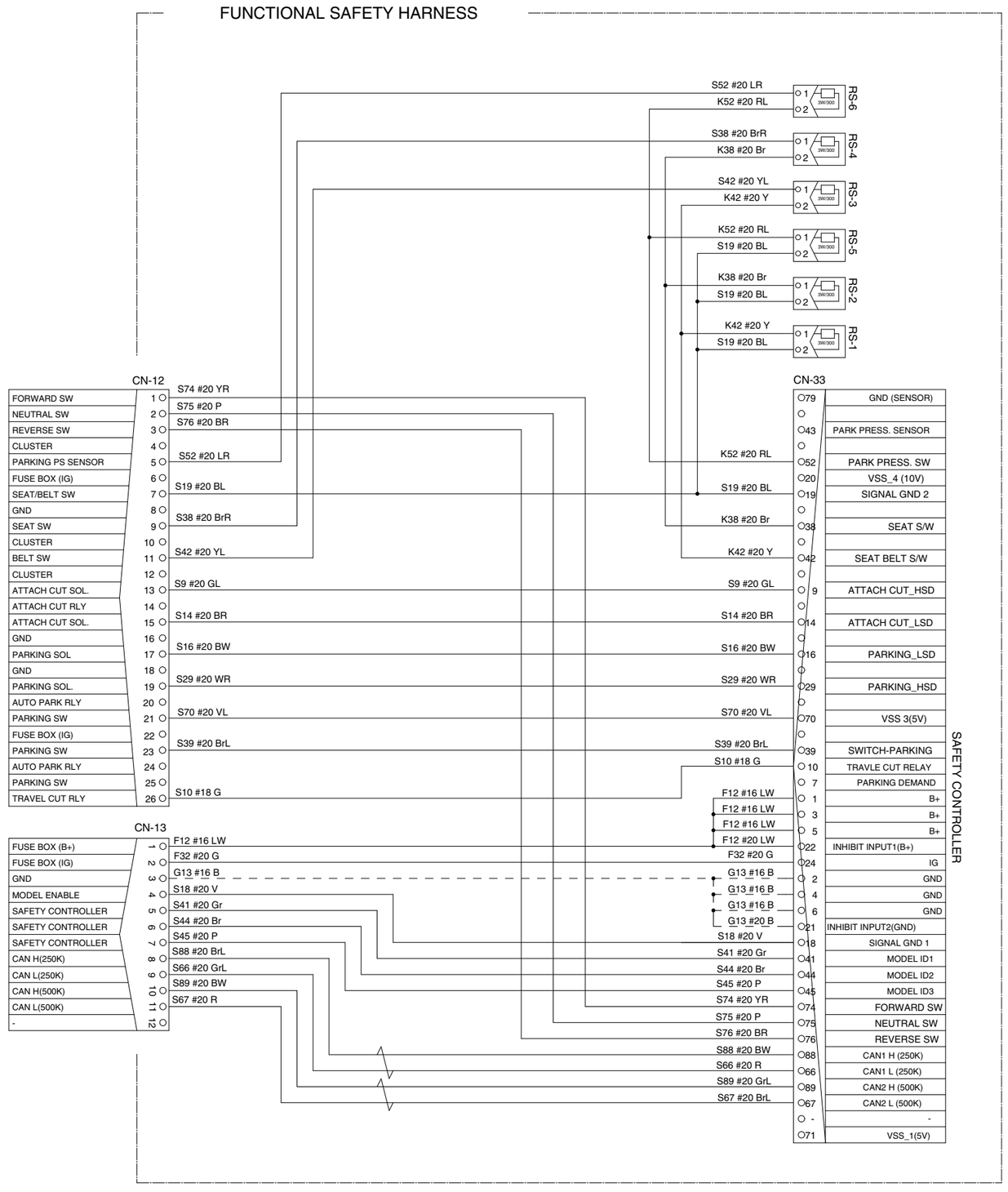
*ELEC.DIAGRAM OF HARNESS OHG-LH



· ELECTRICAL CIRCUIT (2/4, FRAME 2 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



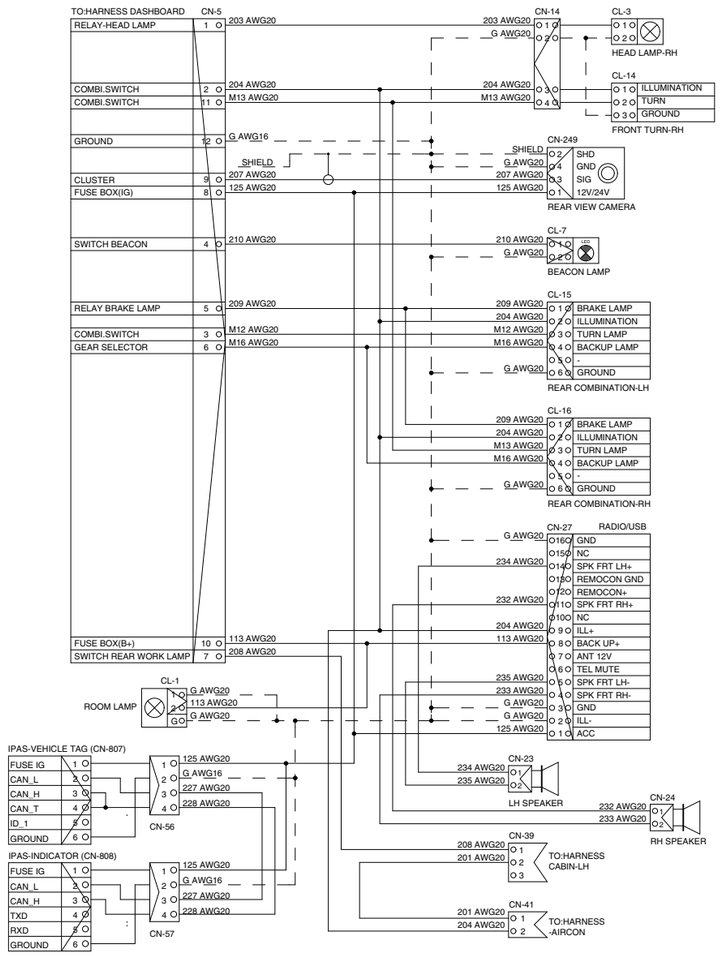
· ELECTRICAL CIRCUIT (2/4, FRAME 3 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



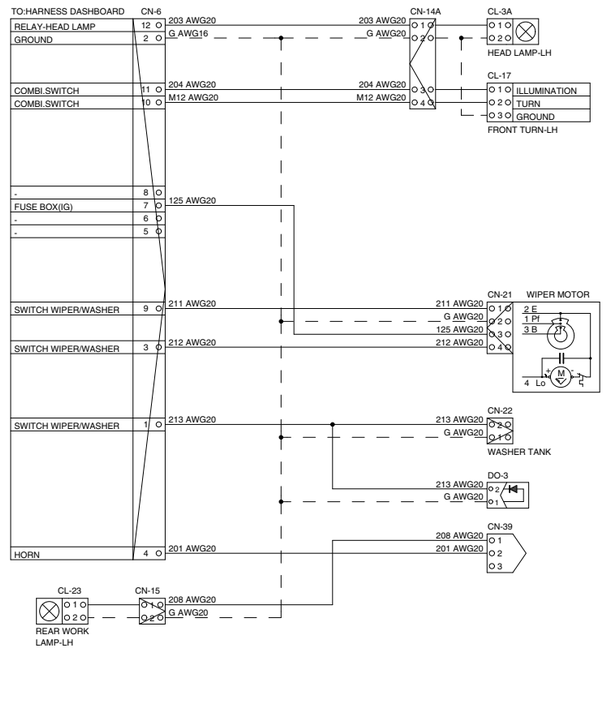
26HN-05602-00 8OF8

· ELECTRICAL CIRCUIT (3/4, CABIN WITH AIRCON, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9VS : #0178-#0255)

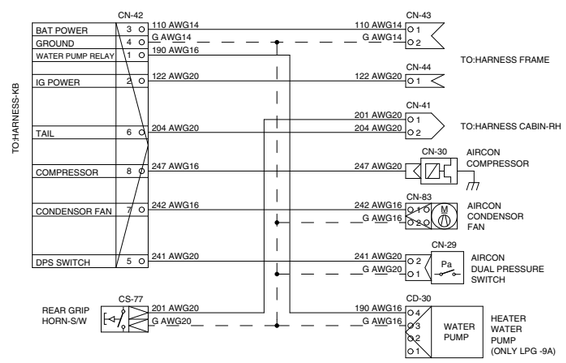
*ELEC.DIAGRAM OF HARNESS CABIN-RH



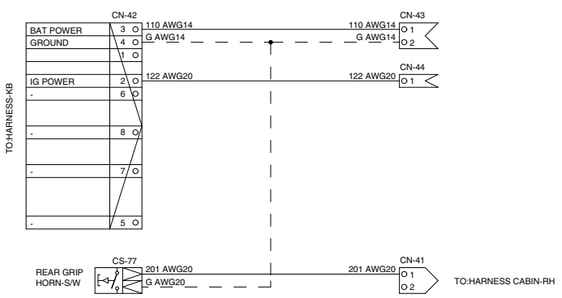
*ELEC.DIAGRAM OF HARNESS CABIN-LH



*ELEC.DIAGRAM OF HARNESS-AIRCON(AIRCON+HEATER)



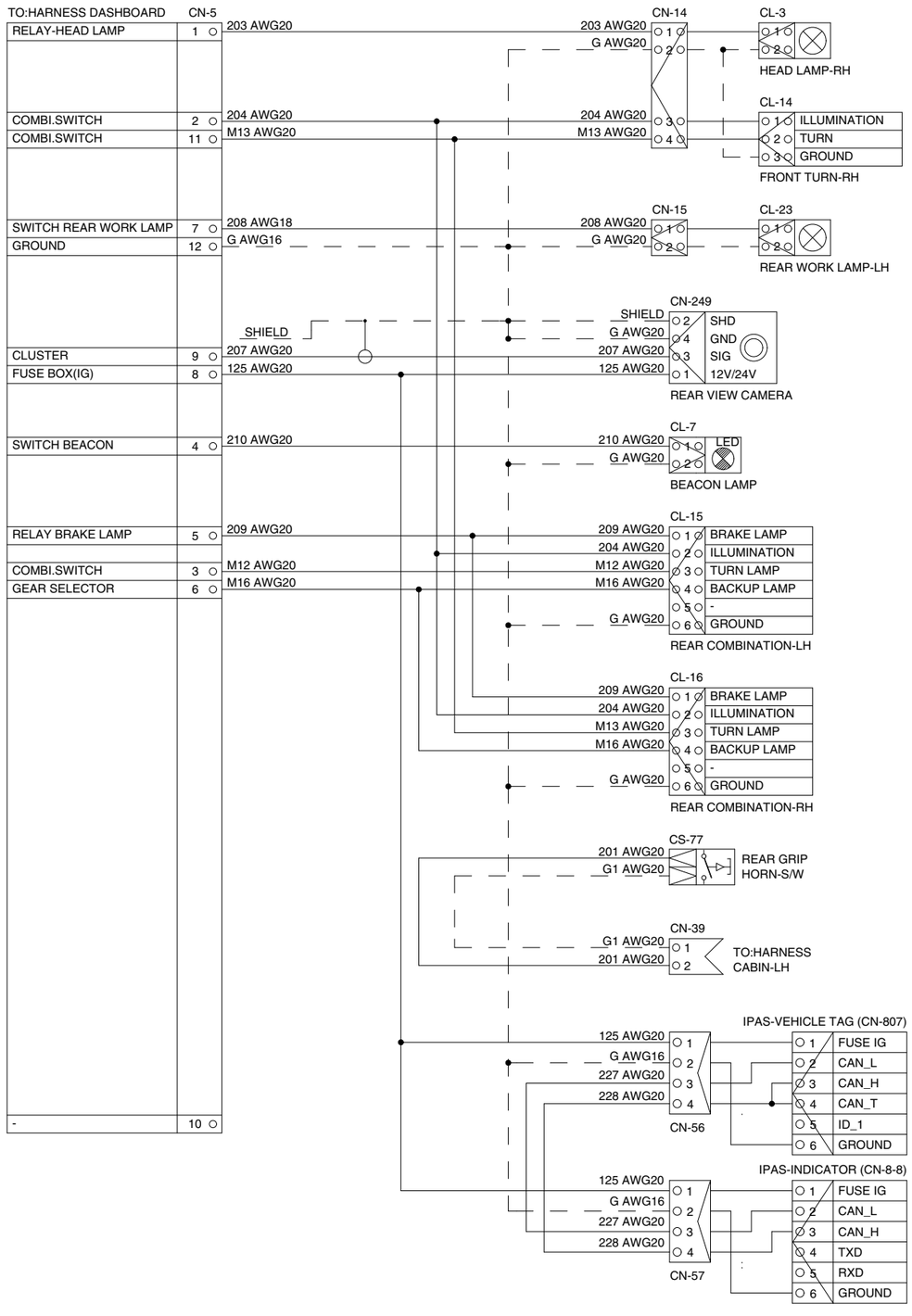
*ELEC.DIAGRAM OF HARNESS-HEATER(HEATER ONLY)



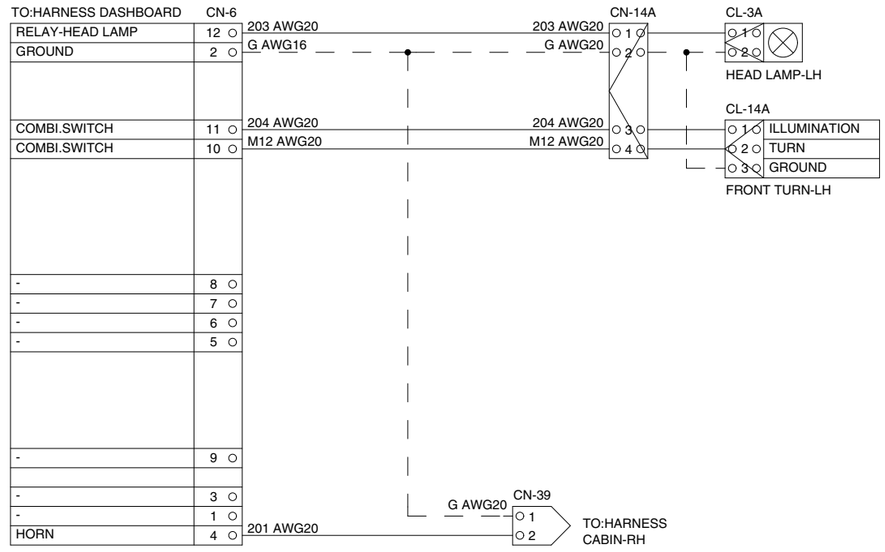
21HN-40082-00

· ELECTRICAL CIRCUIT (4/4, OVERHEAD GUARD, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9VS : #0178-#0255)

*ELEC.DIAGRAM OF HARNESS OHG-RH

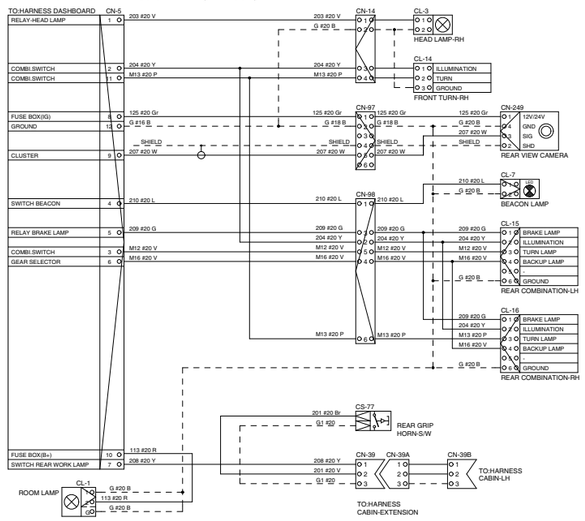


*ELEC.DIAGRAM OF HARNESS OHG-LH

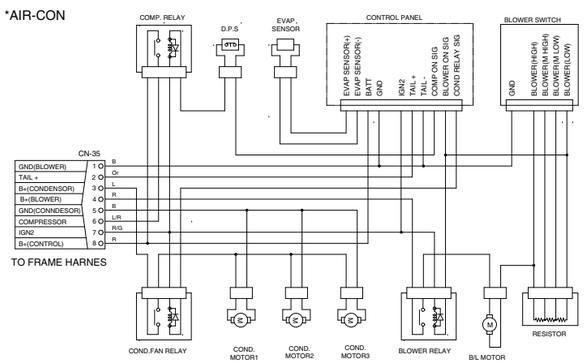


· ELECTRICAL CIRCUIT (3~4/4, CABIN, OVERHEAD GUARD, 25D-9VS : #0259-#0700, 30D-9VS : #0539-#2116, 35DN-9VS : #0256-#0752)

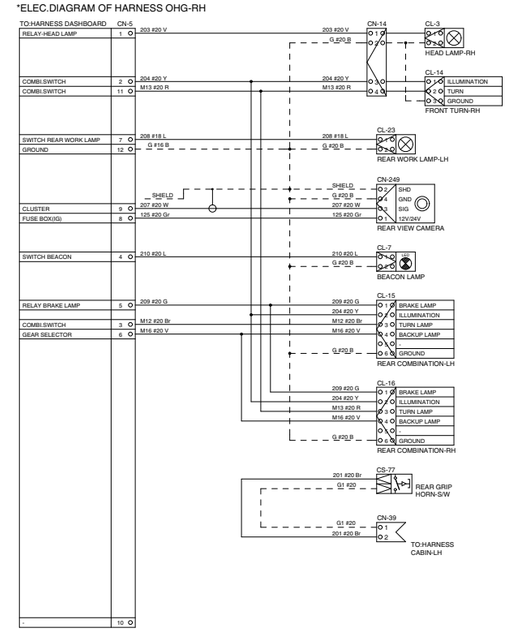
*ELEC.DIAGRAM OF HARNESS CABIN-RH(w AIRCON)



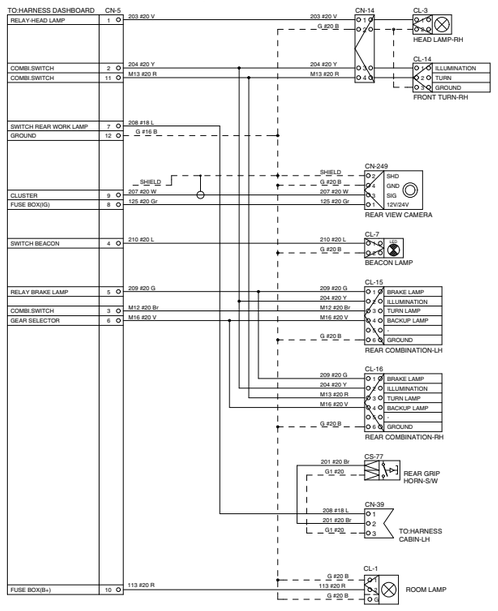
*AIR-CON



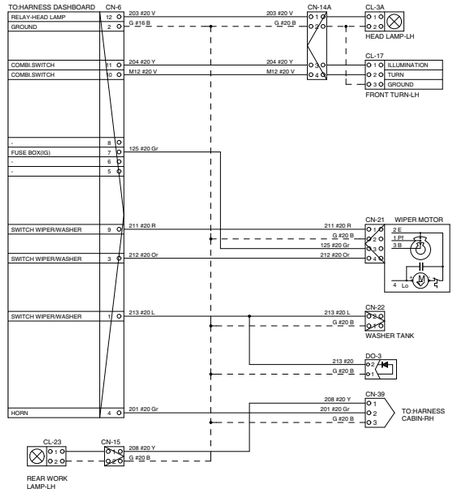
*ELEC.DIAGRAM OF HARNESS OHG-RH



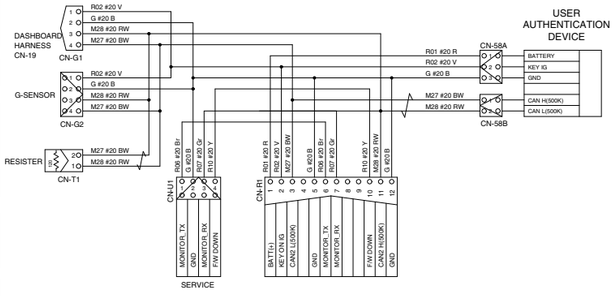
*ELEC.DIAGRAM OF HARNESS CABIN-RH(PARTIAL, w/o AIRCON)



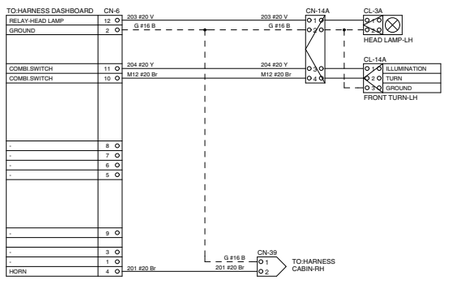
*ELEC.DIAGRAM OF HARNESS CABIN-LH



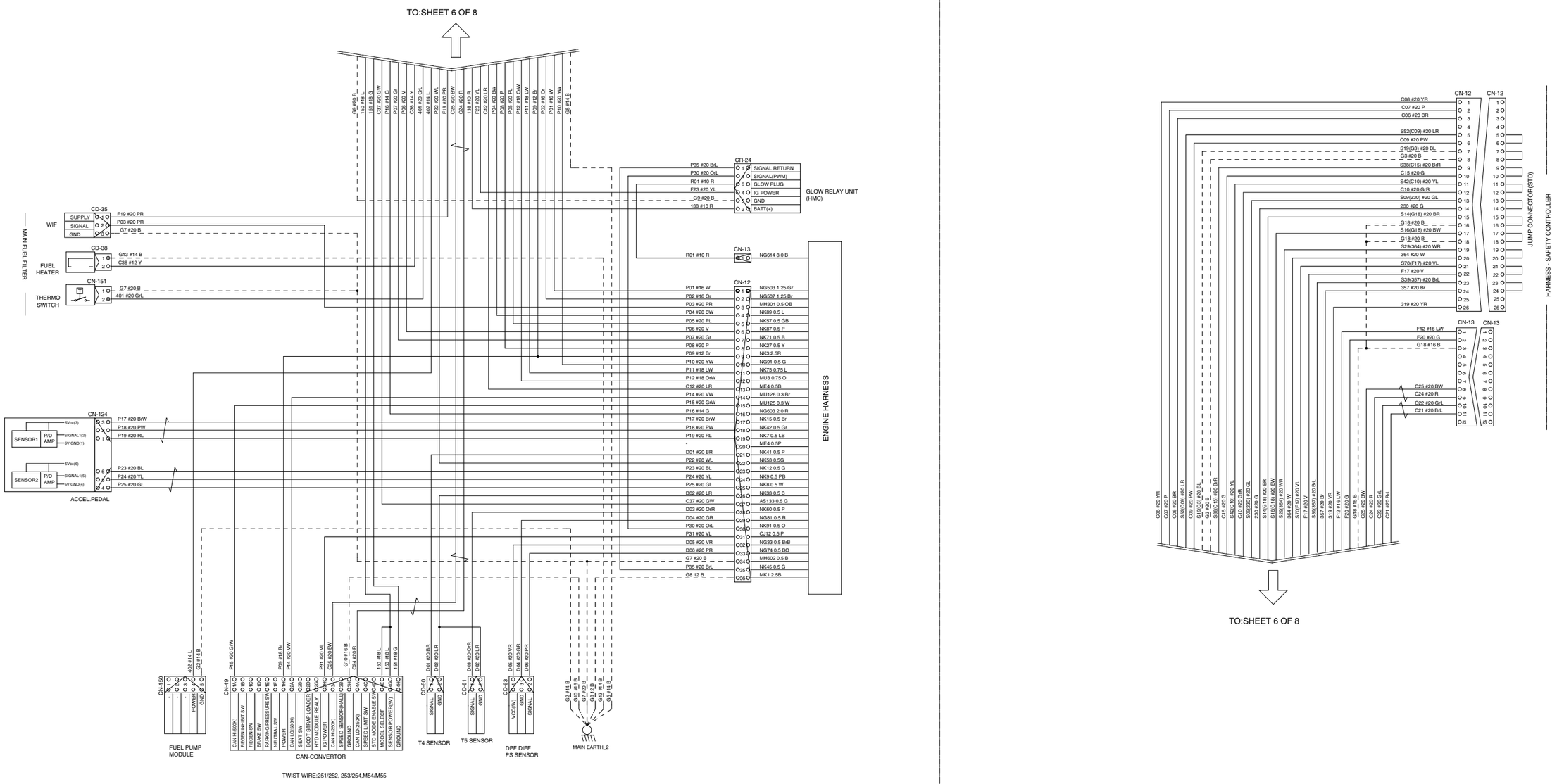
* RMCU HARNESS



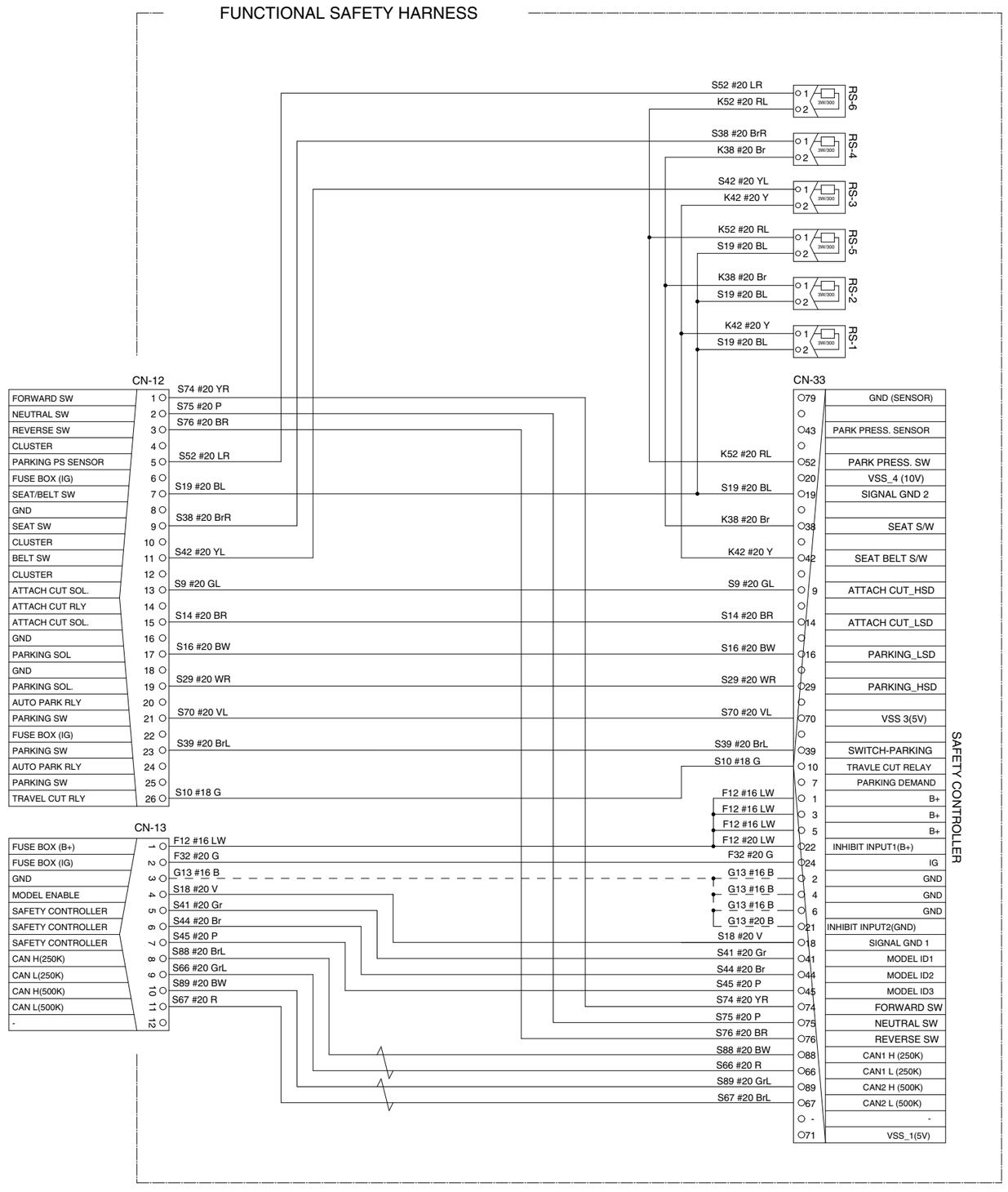
*ELEC.DIAGRAM OF HARNESS OHG-LH



· ELECTRICAL CIRCUIT (2/4, FRAME 2 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



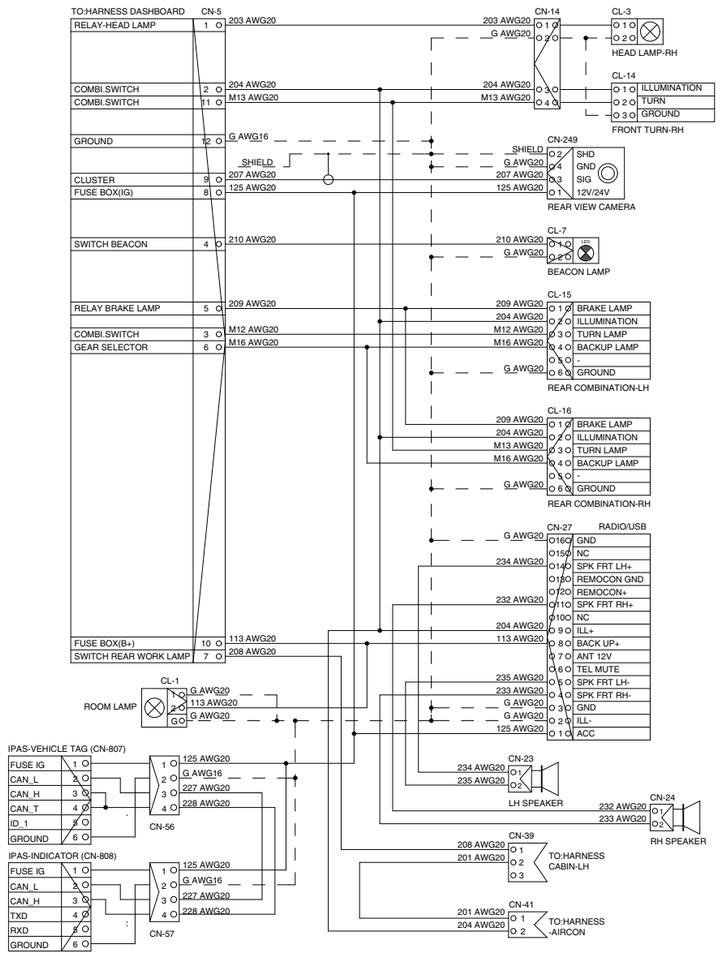
· ELECTRICAL CIRCUIT (2/4, FRAME 3 OF 3, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)



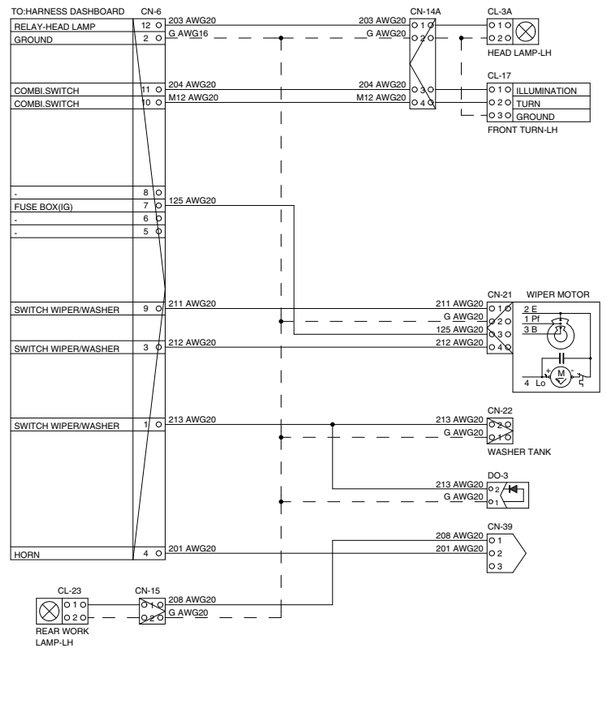
26HN-05602-00 8OF8

· ELECTRICAL CIRCUIT (3/4, CABIN WITH AIRCON, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9VS : #0178-#0255)

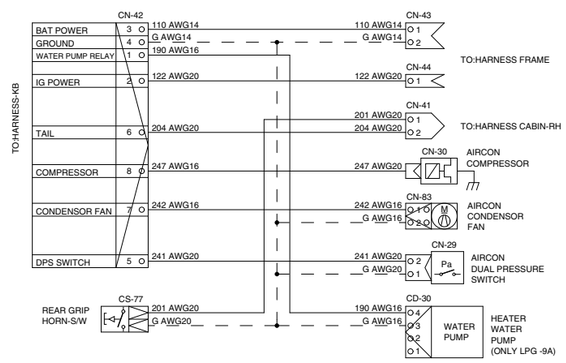
*ELEC.DIAGRAM OF HARNESS CABIN-RH



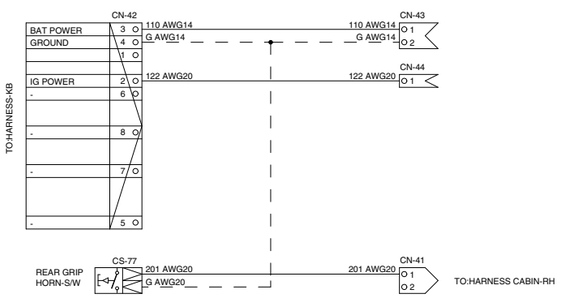
*ELEC.DIAGRAM OF HARNESS CABIN-LH



*ELEC.DIAGRAM OF HARNESS-AIRCON(AIRCON+HEATER)



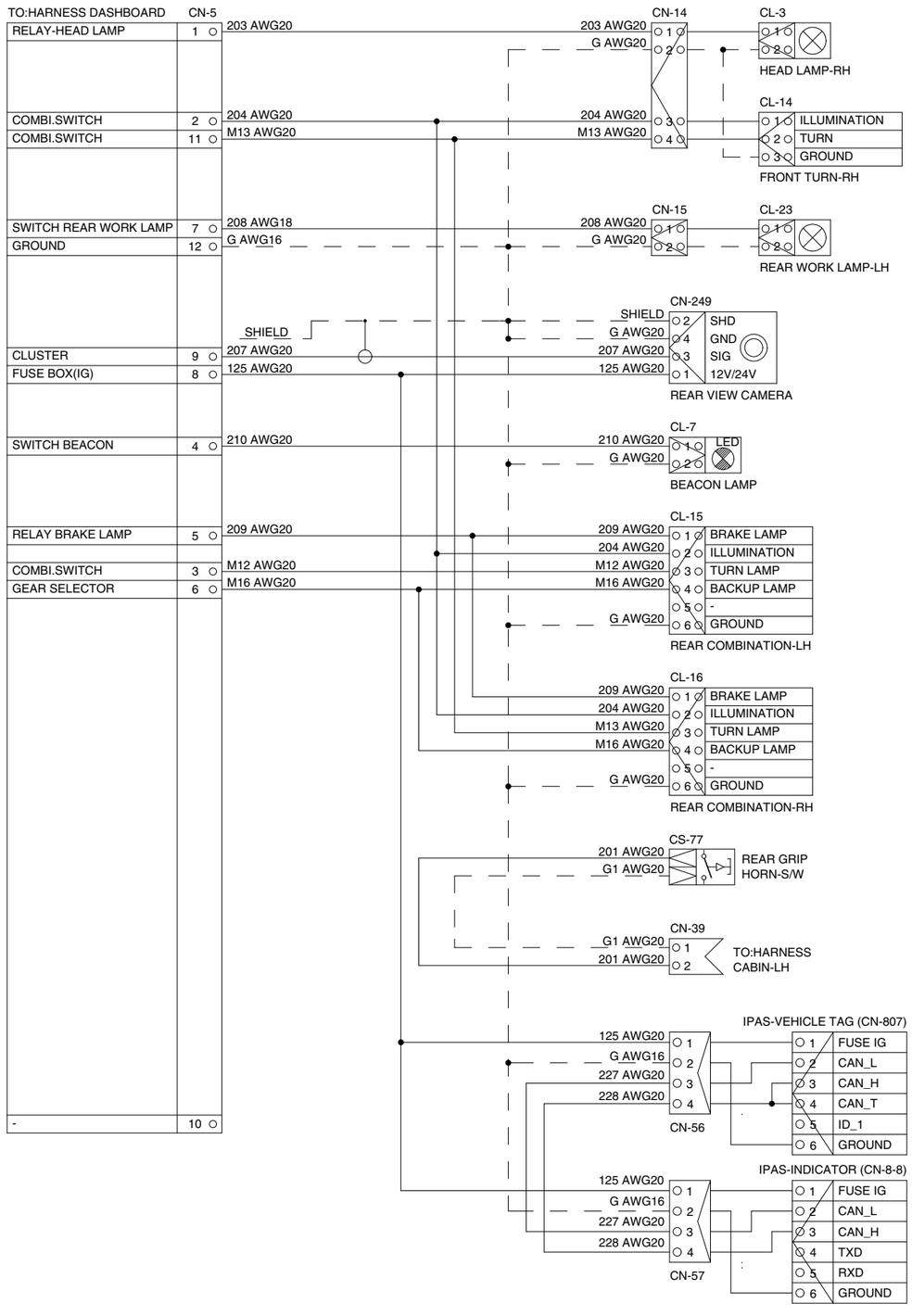
*ELEC.DIAGRAM OF HARNESS-HEATER(HEATER ONLY)



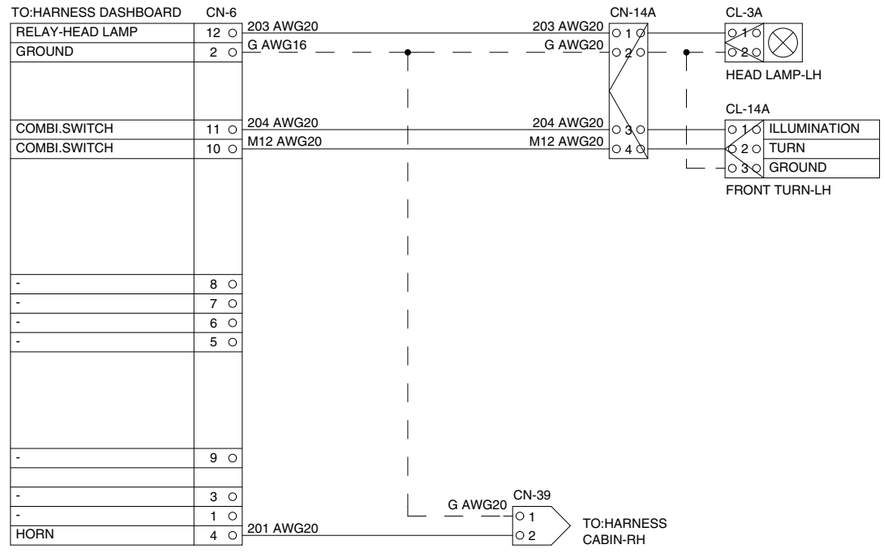
21HN-40082-00

· ELECTRICAL CIRCUIT (4/4, OVERHEAD GUARD, 25D-9VS : #0117-#0258, 30D-9VS : #0122-#0538, 35DN-9VS : #0178-#0255)

*ELEC.DIAGRAM OF HARNESS OHG-RH

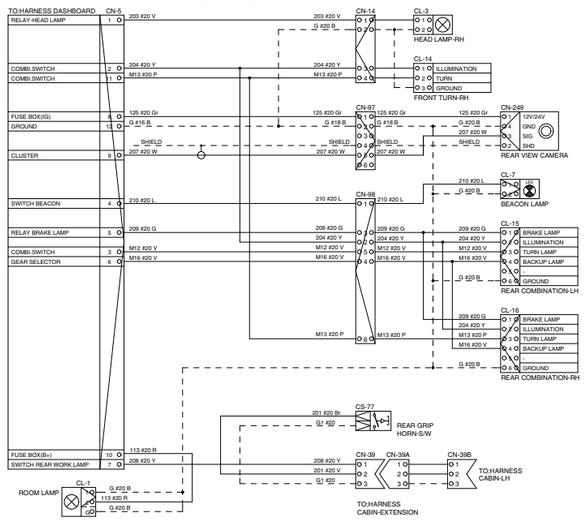


*ELEC.DIAGRAM OF HARNESS OHG-LH

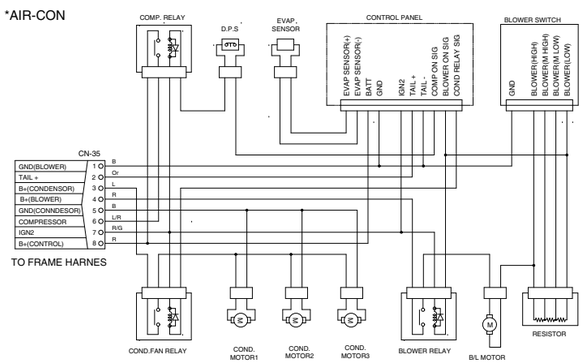


· ELECTRICAL CIRCUIT (3~4/4, CABIN, OVERHEAD GUARD, 25D-9VS : #0259-#0700, 30D-9VS : #0539-#2116, 35DN-9VS : #0256-#0752)

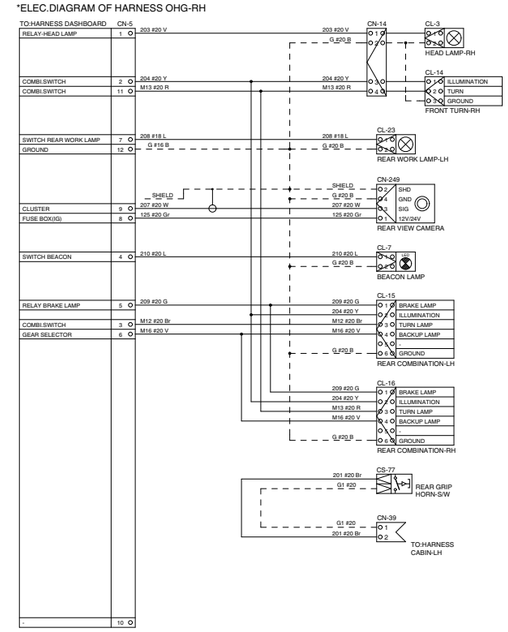
*ELEC.DIAGRAM OF HARNESS CABIN-RH(w AIRCON)



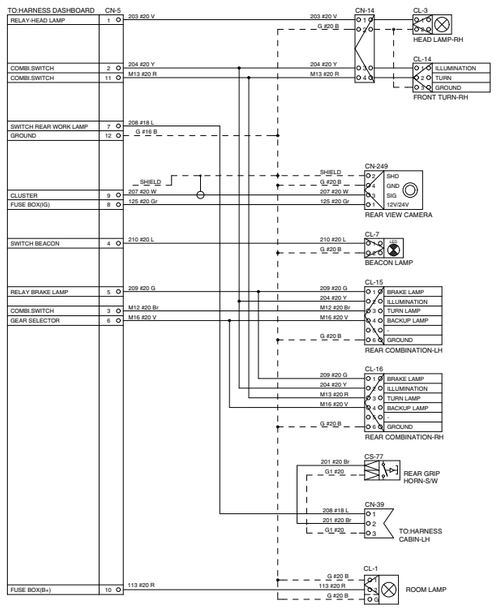
*AIR-CON



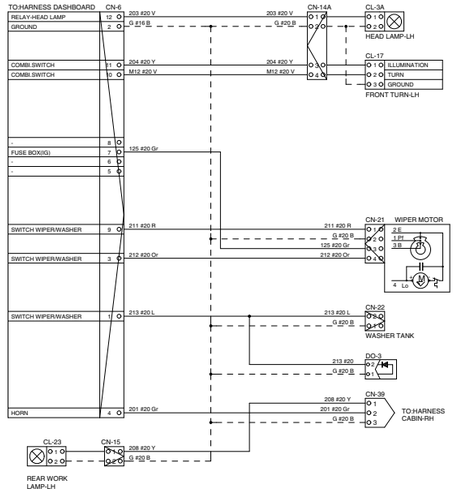
*ELEC.DIAGRAM OF HARNESS OHG-RH



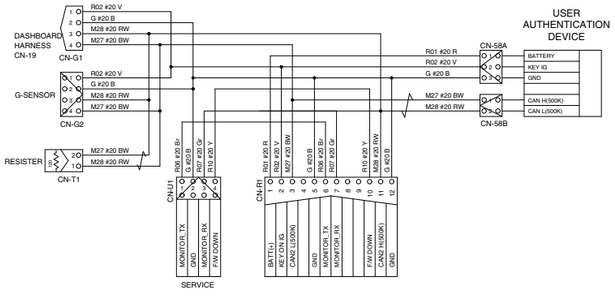
*ELEC.DIAGRAM OF HARNESS CABIN-RH(PARTIAL, w/o AIRCON)



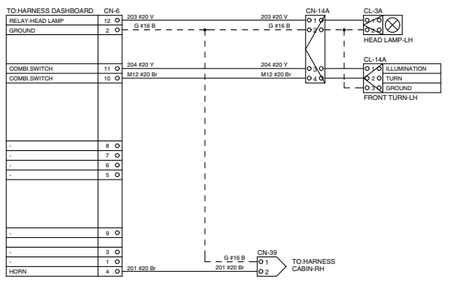
*ELEC.DIAGRAM OF HARNESS CABIN-LH



* RMCU HARNESS

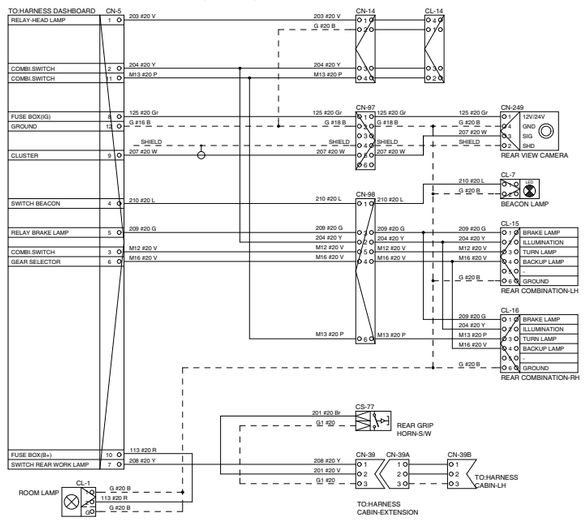


*ELEC.DIAGRAM OF HARNESS OHG-LH

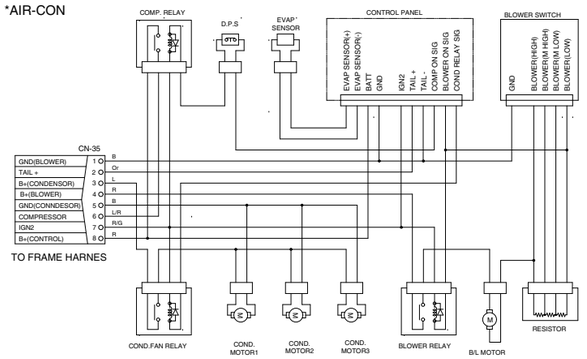


· ELECTRICAL CIRCUIT (3~4/4, CABIN, OVERHEAD GUARD, 25D-9VS : #0701-, 30D-9VS : #2117-, 35DN-9VS : #0753-)

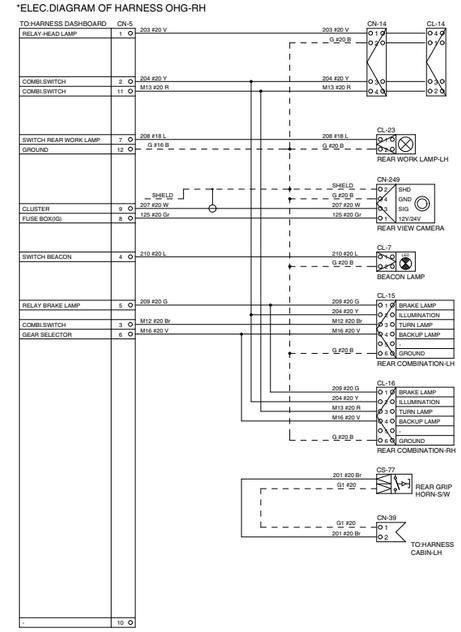
*ELEC.DIAGRAM OF HARNESS CABIN-RH(w AIRCON)



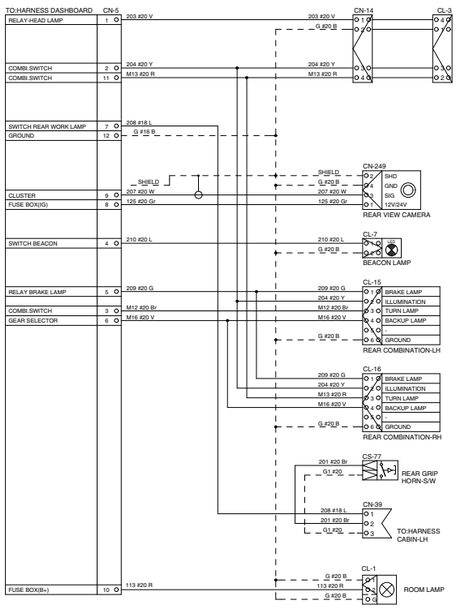
*AIR-CON



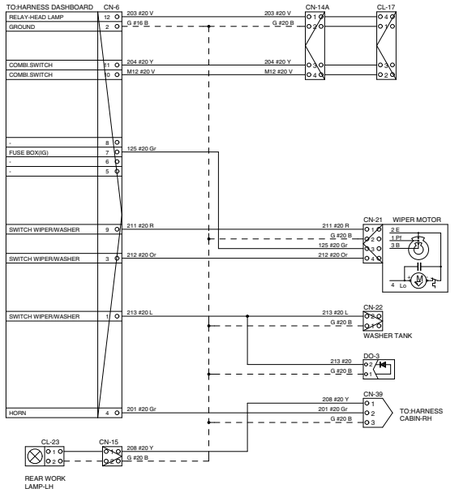
*ELEC.DIAGRAM OF HARNESS OHG-RH



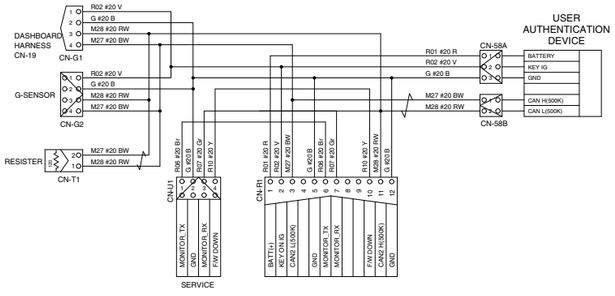
*ELEC.DIAGRAM OF HARNESS CABIN-RH(PARTIAL, w/o AIRCON)



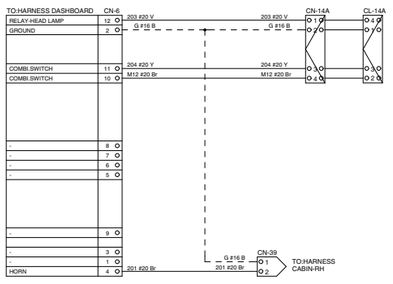
*ELEC.DIAGRAM OF HARNESS CABIN-LH



* RMCU HARNESS



*ELEC.DIAGRAM OF HARNESS OHG-LH



21HN-04102-00

1. POWER CIRCUIT

The negative terminal of the battery is grounded to the truck chassis.
When the start switch is in the off position, the current flows from the positive battery terminal.

1) OPERATING FLOW

Battery (+)

- → Start motor [CN-45 (B+)] → Midi fuse [CN-48] → I/conn [CN-500] → Glow controller [CR-24]
- → Fuse box [CN-36]
  - [No.1] → Alternator [CN-74 (B+)] → I/conn [CN-3 (1)] → Start switch [CS-2 (1)]
  - [No.2] → I/conn [CN-2 (21)] → Starter relay [CR-23]
  - [No.4] → I/conn [CN-2 (7)] → Horn [CN-25 (1)]
  - [No.5] → I/conn [CN-2 (15)] → Flasher unit [CR-11(2)]
  - [No.6] → I/conn [CN-1(6)] → Warning buzzer [CN-113 (1)]
  - [No.7] → I/conn[CN-1(4)] → Cluster-CI [CN-56 (18)]
  - [No.10] → I/conn[CN-43 (1)] → To air conditioner harness
  - [No.11] → I/conn[CN-43 (1)] → To air conditioner harness
  - [No.13] → I/conn[CN-1 (15)] → OHG/Cabin-RH harness [CN-5 (10)
- → Fuse box [CN-37]
  - [No.1] → Alternator [CN-74 (B+)] → I/conn [CN-3 (1)] → Start switch [CS-2 (1)]
  - [No.2] → I/conn [CN-2 (6)] → Fuel warmer relay [CR-26]
  - [No.4] → Main relay [CR-43 (1)]
  - [No.5] → Fuel pump relay [CR-18]
  - [No.6] → Diagnosis [CN-12 (12)]
  - [No.7] → Battery pulse [CN-12 (11)]

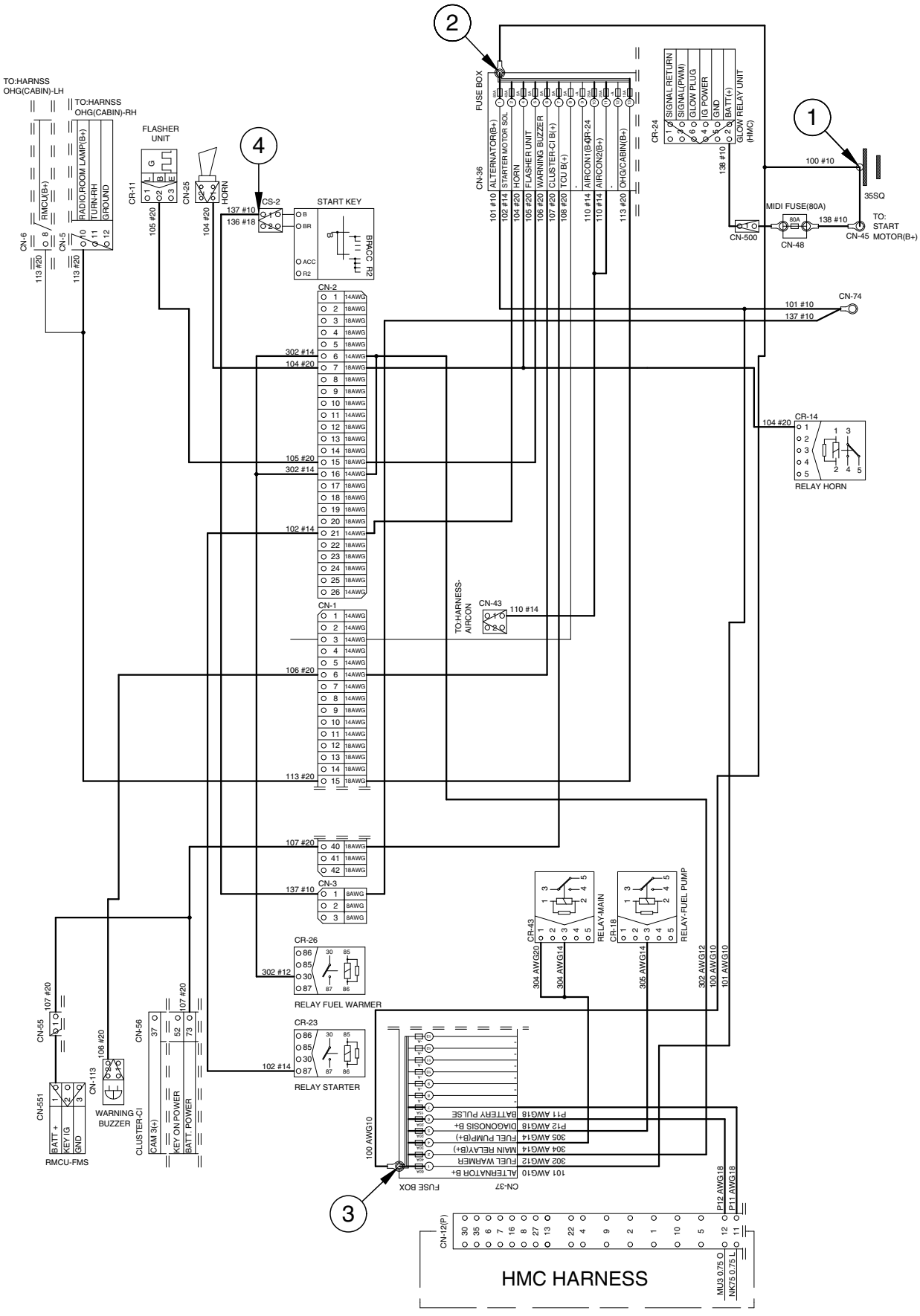
2) CHECK POINT

Engine	Key switch	Check point	Voltage
Stop	OFF	① - GND [Battery (+)] ② - GND [Fuse box (CN-36 B+)] ③ - GND [Fuse box (CN-37 B+)] ④ - GND [Start key (B+)]	12 V

※ GND : Ground

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

POWER CIRCUIT



25D9V7ES02

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

2. STARTING CIRCUIT

1) OPERATING FLOW

Battery (+)
→ Start motor [CN-45 (B+)]
→ Fuse box [CN-36, No.1] → Alternator [CN-74 (B+)] → I/conn [CN-3 (1)]
→ Start switch [CS-2 (1)]

※ The engine can be started only when the gearshift is in neutral position.

(1) When start key switch is in ON position

Start switch ON [CS-2 (1)] → I/conn[CN-3 (2)] → Fuse box [CN-36 (No.3)]

(2) When start key switch is START position

Start switch START [CS-2 (2)] → I/conn [CN-2 (4)] → Fuse box [CN-36 (No.34 → 31)]
→ Neutral relay [CR-5 (3) → (4)] → HMC Harness [CN-12 (8)] → Start motor operating

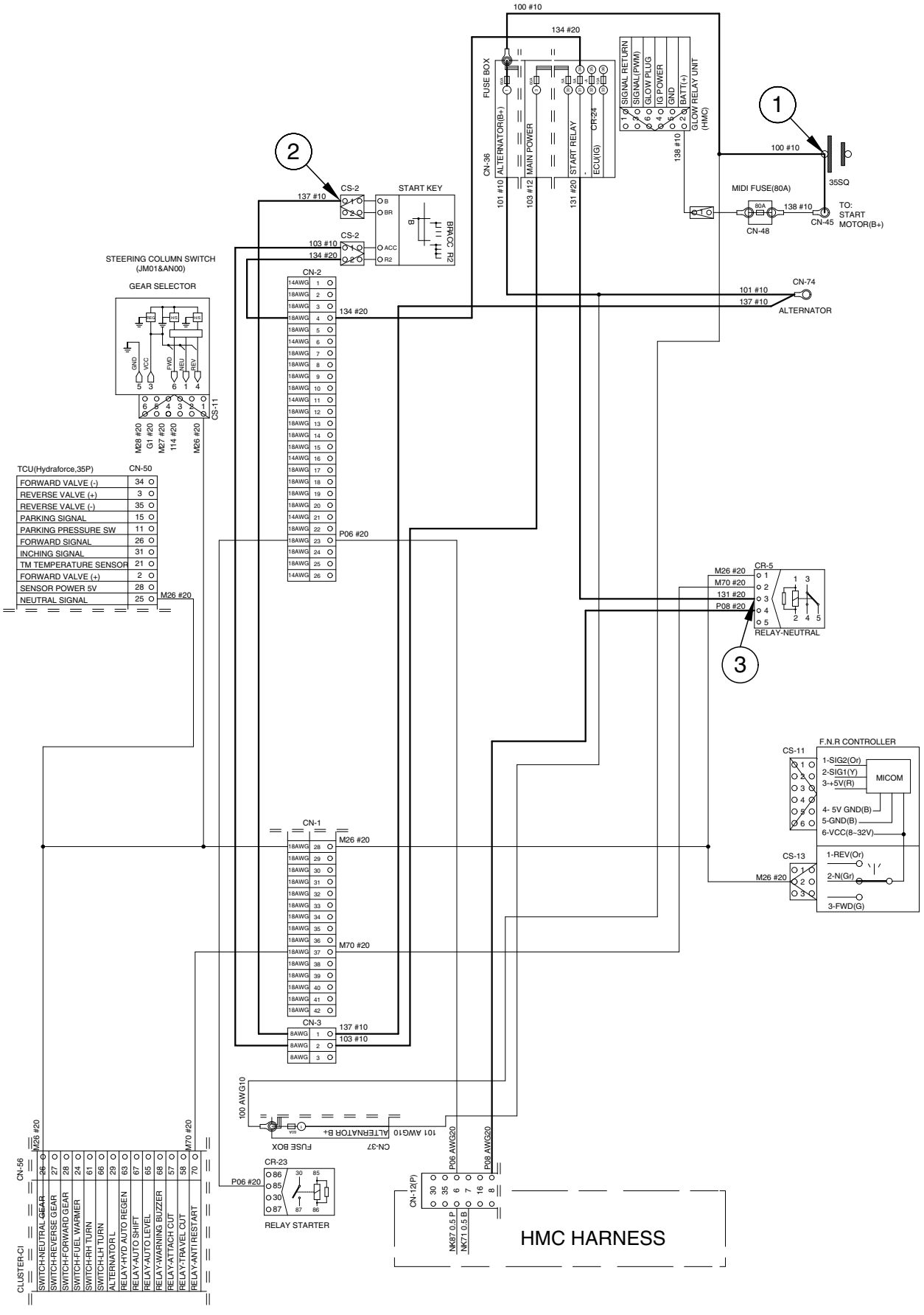
2) CHECK POINT

Engine	Key switch	Check point	Voltage
Running	ON	① - GND (Battery B+) ② - GND (Start key) ③ - GND (Neutral relay)	12 V

※ GND : Ground

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

STARTING CIRCUIT



25D9V7ES03

※ 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 release the start switch to the ON position. Charging current generated by operating alternator flows into the battery.
The current also flows from alternator to each electrical component through the fuse box.

1) OPERATING FLOW

(1) Warning flow

Alternator [CN-74 (1)] → I/conn [CN-1 (32)] → Cluster-CI [CN-56 (29)] → Charging warning lamp

(2) Charging flow

Alternator [CN-74 (B+)] → Fuse box [CN-36 (NO.1 → B+)] → Battery (+) terminal → Charging

2) CHECK POINT

Engine	Key switch	Check point	Voltage
Running	ON	① - GND (Battery voltage) ② - GND (Alternator B+)	12 V

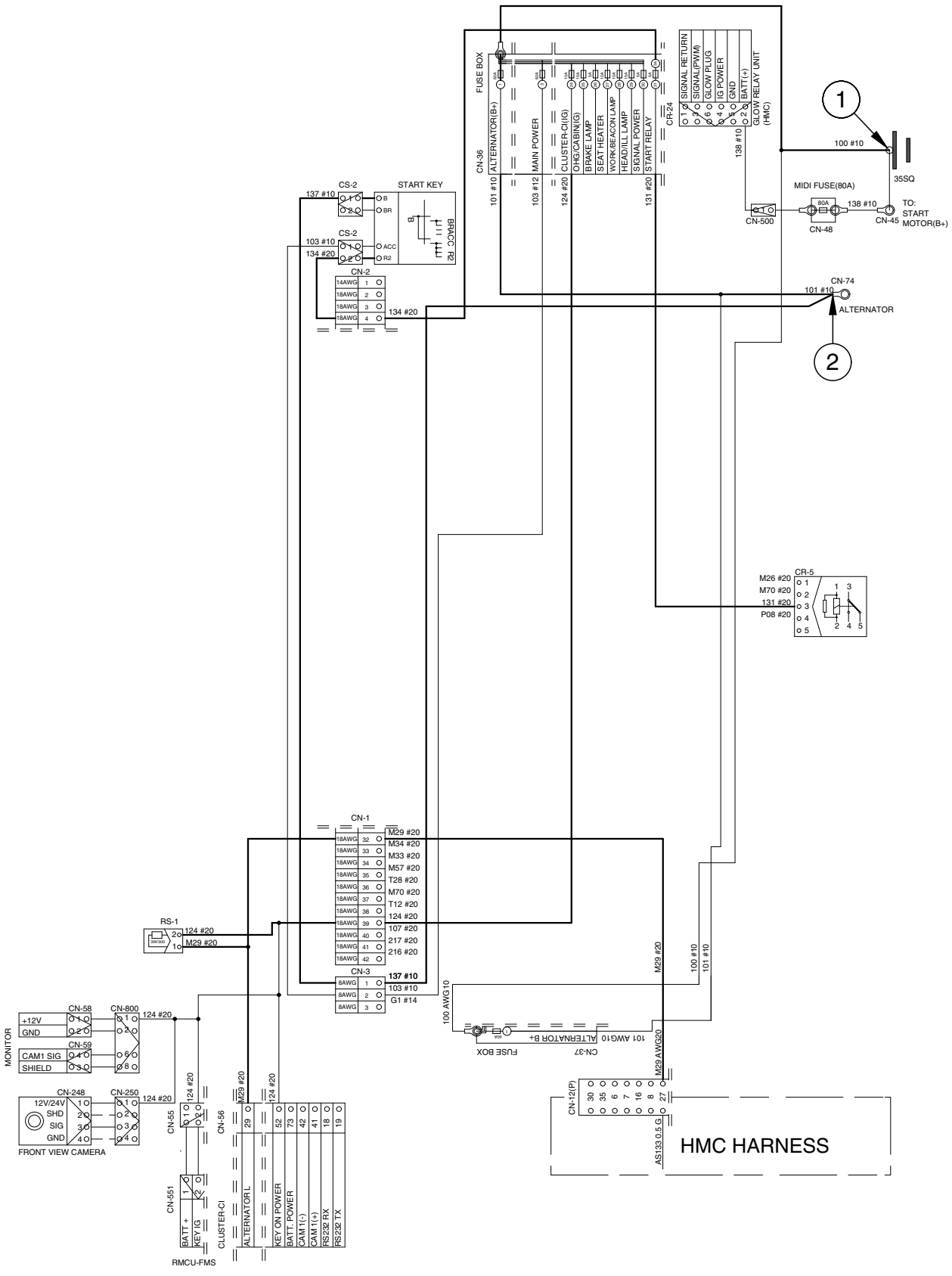
※ GND : Ground

※ Cautions

1. When using an arc welder, always disconnect the ground lead from the battery to prevent alternator or battery damage.
2. Attach the welding ground clamp as close to the weld area as possible to prevent welding current from damaging the bearings of the alternator.
3. Do not disconnect the battery when the engine is running. The voltage surge can damage the diode and resistors in the electrical system.
4. Do not disconnect an electric wire before the engine is stopped and the switches are OFF.

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

CHARGING CIRCUIT



25D9V7ES04

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

4. PREHEATER AND FUEL WARMER CIRCUIT

Combustion chamber glow plugs are used in order to give satisfactory starting of low ambient temperatures.

1) OPERATING FLOW

(1) **Preheater**

Battery (+) terminal → Start motor [CN-45 (B+)] → Midi fuse [CN-48] → I/conn [CN-500] → Glow controller [CR-24]

※ When you turn the start switch to the ON position, the glow relay makes the glow plugs operated and the glow lamp of the cluster turned ON.

(2) **Fuel heater**

Thermo switch [CN-151 (2)] → I/conn [CN-2 (10)] → Fuel warmer relay [CR-26 (86)]
Fuse box [CN-37 (No.2)] → I/conn [CN-2 (6)] → Fuel warmer relay [CR-26 (30 → 87)] → I/conn [CN-2 (11)] → Fuel filter-heater [CD-38]

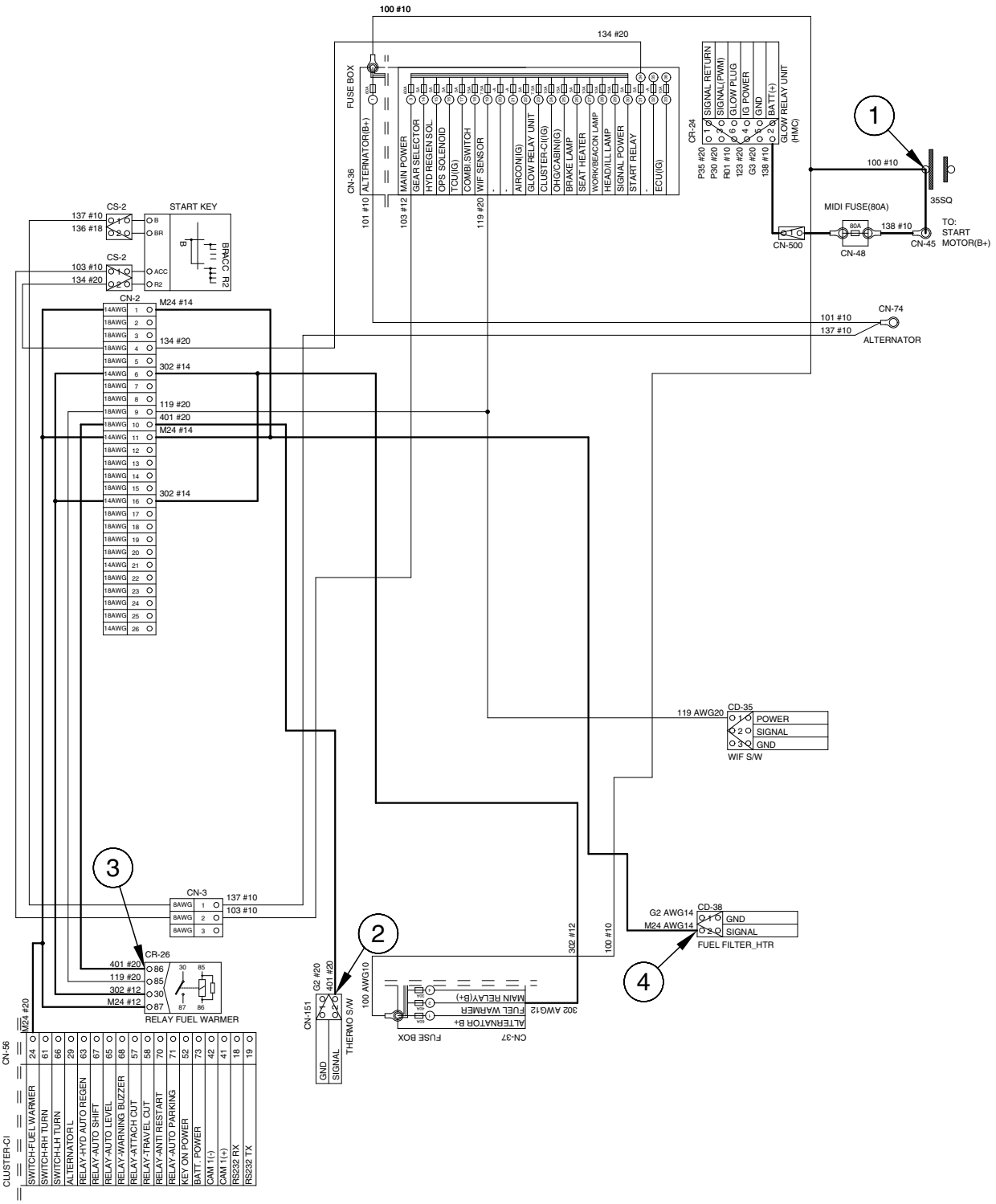
2) CHECK POINT

Engine	Key switch	Check point	Voltage
Stop	ON	① - GND (Battery B+) ② - GND (Themo switch) ③ - GND (Fuel warmer relay) ④ - GND (Fuel filter-heater)	12 V

※ GND : Ground

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

PREHEATER AND FUEL WARMER CIRCUIT



25D9V7ES05

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

5. HEAD LIGHT AND REAR WORK LIGHT CIRCUIT

1) OPERATING FLOW

(1) **Head light**

Fuse box [CN-36 (No.29)] → I/conn [CN-2 (12)] → Main light switch [CS-39 (2)]
Switch ON [CS-39 (3)] → I/conn [CN-6 (12)] → Head lamp ON [CL-3 (1), CL-3A (1)]

(2) **Rear work light**

Fuse box [CN-36 (No.28)] → I/conn [CN-2 (17)] → Main light switch [CS-39 (5)]
Switch ON [CS-39 (6)] → I/conn [CN-5 (7)] → Rear work light ON [CL-23 (1)]

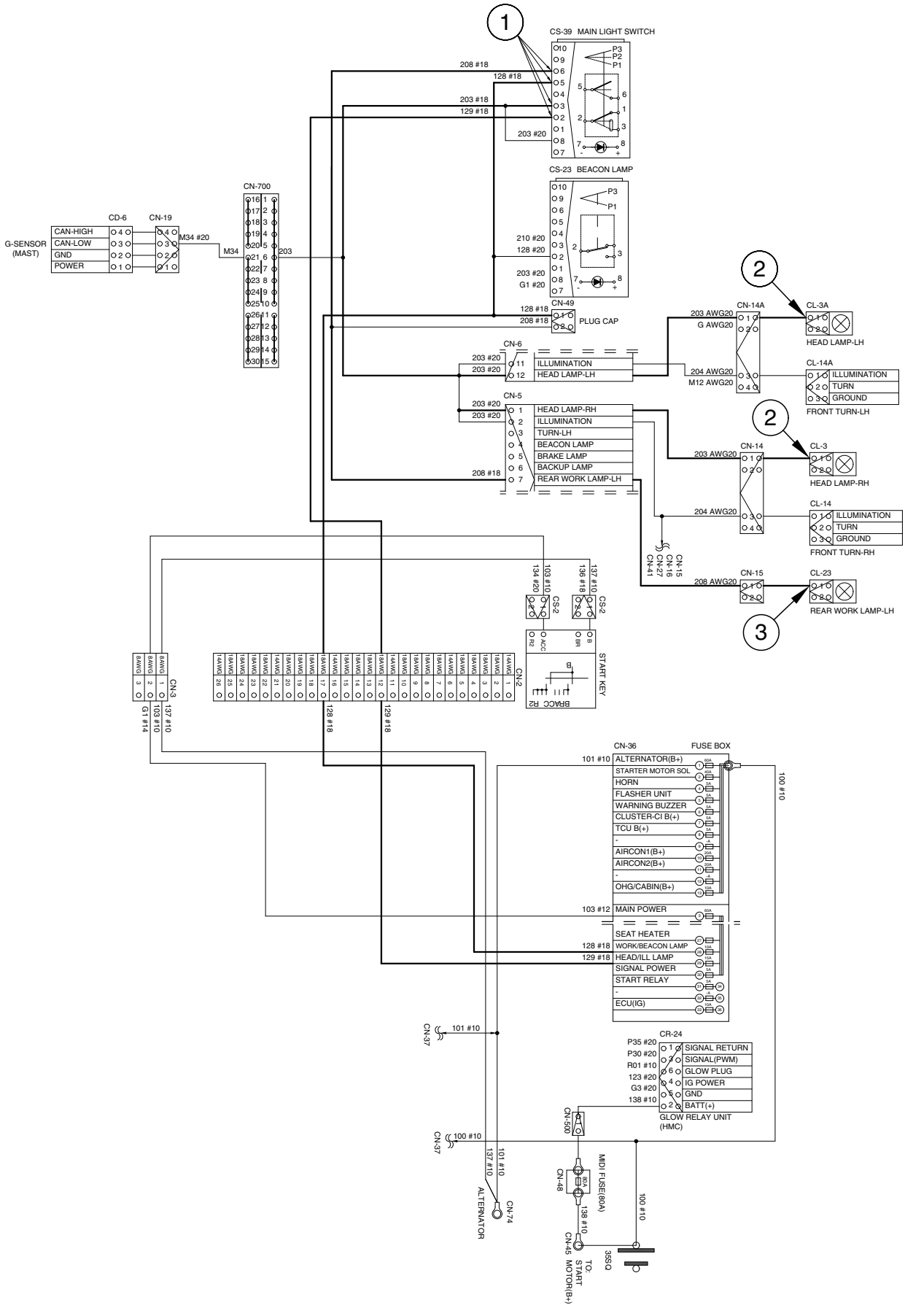
2) CHECK POINT

Engine	Key switch	Check point	Voltage
OFF	ON	① - GND (Main light switch) ② - GND (Head light) ③ - GND (Rear work light)	10 ~ 12.5 V

※ GND : Ground

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

HEAD LIGHT AND REAR WORK LIGHT CIRCUIT



25D9V7ES06

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

6. FRONT WIPER AND WASHER CIRCUIT

1) OPERATING FLOW

Fuse box [CN-36 (No.25)] → I/conn [CN-2 (18)] → Front wiper & washer switch [CS-3 (3, 5)]
→ I/conn [CN-6 (7)] → Wiper motor [CN-21 (3)]

(1) **Front wiper and washer switch ON (1st step)**

Front wiper & washer switch [CS-3 (2)] → I/conn [CN-6 (3)] → Front wiper motor [CN-21 (4)]
→ Front wiper motor operating

(2) **Front wiper & washer switch ON (2nd step)**

Front wiper & washer switch [CS-3 (2)] → I/conn [CN-6 (3)] → Front wiper motor [CN-21 (4)]
→ Front wiper motor operating

Front wiper & washer switch [CS-3 (6)] → I/conn [CN-6 (1)] → Front wiper motor [CN-22 (2)]
→ Front washer pump operating

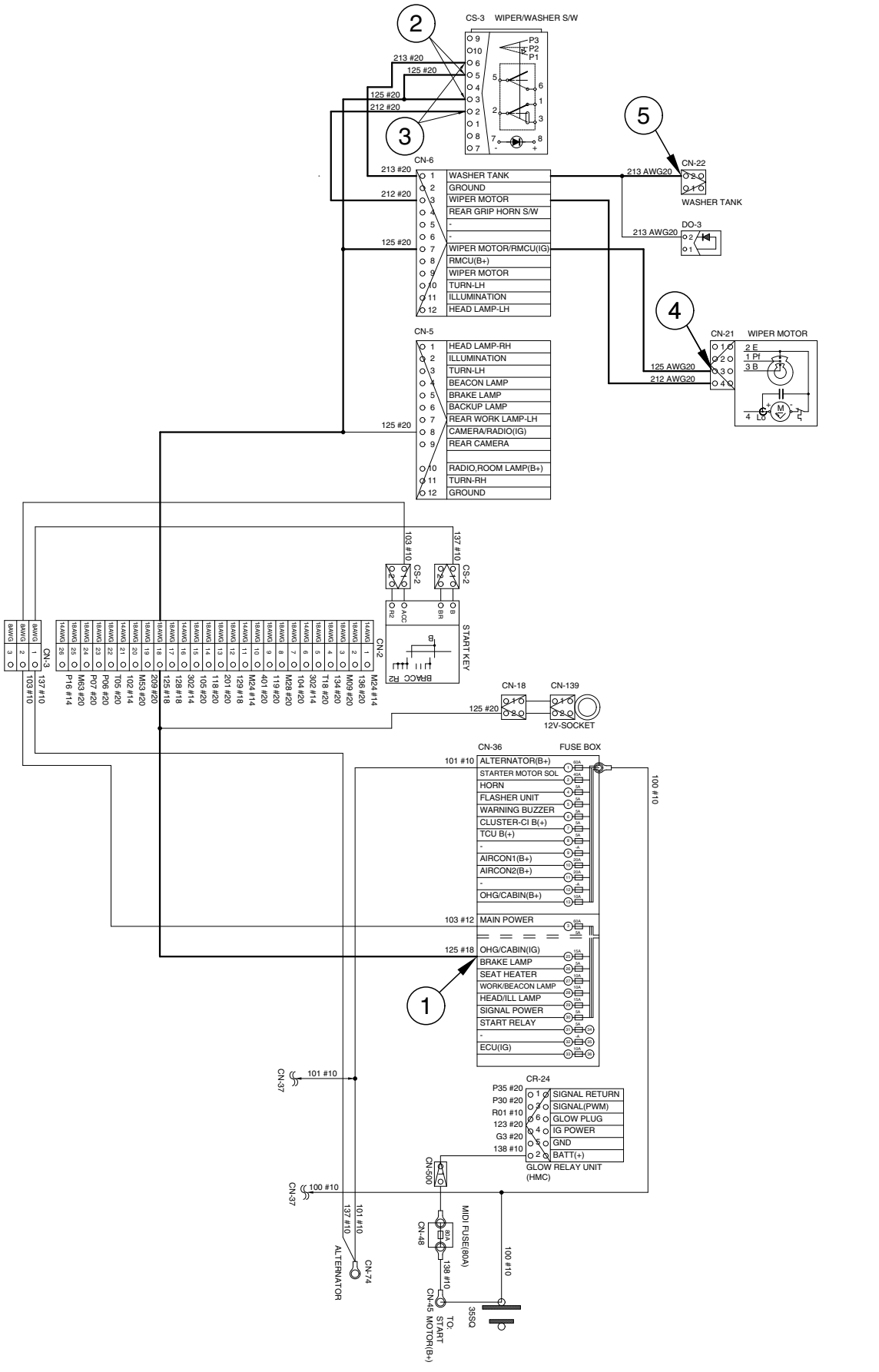
2) CHECK POINT

Engine	Key switch	Check point	Voltage
Stop	ON	① - GND (Fuse box No.25) ② - GND (Front wiper & washer switch power input) ③ - GND (Front wiper & washer switch output) ④ - GND (Front wiper motor power input) ⑤ - GND (Front washer pump power input)	10 ~ 12.5 V

※ GND : Ground

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

FRONT WIPER AND WASHER CIRCUIT



25D9V7ES07

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

GROUP 3 COMPONENT SPECIFICATION

<table>
<tr><th>No</th><th>Part name</th><th>Qty</th><th>Specification</th></tr>
<tr><td>1</td><td>Battery</td><td>1</td><td>12V×90 AH
RC : 150 min
CCA : 720 A</td></tr>
<tr><td>2</td><td>Work lamp</td><td>1</td><td>12V, 55W</td></tr>
<tr><td>3</td><td>Work lamp (LED, opt)</td><td>1</td><td>12V, 22W</td></tr>
<tr><td>4</td><td>License lamp (opt)</td><td>1</td><td>12V, 10W</td></tr>
<tr><td>5</td><td>Rear combination lamp (LED)</td><td>2</td><td>12V, 1.6/0.2W (Stop/Tail)
12V, 1.1W (Turn)
12V, 1.1W (Back Up)</td></tr>
<tr><td>6</td><td>Flasher lamp</td><td>2</td><td>12V, 0.5/2.2W (posit/turn signal)</td></tr>
<tr><td>7</td><td>Beacon lamp (LED/opt)</td><td>1</td><td>12V, max. 0.800A</td></tr>
<tr><td>8</td><td>Camera (opt)</td><td>1</td><td>12V, 1.32W</td></tr>
<tr><td>9</td><td>Flasher unit relay (3P)</td><td>1</td><td>12V, 20A</td></tr>
<tr><td>10</td><td>Relay (5P)</td><td>10</td><td>12V, 20A</td></tr>
<tr><td>11</td><td>Flasher Unit</td><td>1</td><td>12V, 85±10 CM, (23W + 23W)×2 + 3W×2</td></tr>
<tr><td>12</td><td>Back buzzer</td><td>1</td><td>12V, 90±5 dB, 60±10 C/M</td></tr>
<tr><td>13</td><td>Horn</td><td>1</td><td>12V, MAX 3.5A, 105 ~ 120 dB</td></tr>
<tr><td>14</td><td>Cluster-CI</td><td>1</td><td>12V, 15W</td></tr>
<tr><td>15</td><td>G-sensor (Mast angle) (opt)</td><td>1</td><td>12V, 5W</td></tr>
<tr><td>16</td><td>Fuel level sender</td><td>1</td><td>
<table>
<tr><td>Float indicator</td><td>E</td><td>4/8</td><td>F</td></tr>
<tr><td>Resistance (Ω)</td><td>700</td><td>350</td><td>50</td></tr>
<tr><td rowspan="2">Tolerance (Ω)</td><td>−0%</td><td rowspan="2">±5%</td><td>+0%</td></tr>
<tr><td>+5%</td><td>−5%</td></tr>
</table>
</td></tr>
<tr><td>17</td><td>Master switch (opt)</td><td>1</td><td>12V, 180A</td></tr>
<tr><td>18</td><td>Gear selector switch</td><td>1</td><td>12V, 3.5A</td></tr>
<tr><td>19</td><td>Combination switch</td><td>1</td><td>Direction : 12V, 3.5A
Multi-function switch : 12V, 2A</td></tr>
<tr><td>20</td><td>Rear worklamp switch (opt)</td><td>1</td><td>12V, 15A</td></tr>
<tr><td>21</td><td>Hazard switch (opt)</td><td>1</td><td>12V, 15A</td></tr>
<tr><td>22</td><td>Fuel warmer switch</td><td>1</td><td>12V, 15A</td></tr>
<tr><td>23</td><td>Beacon lamp switch (opt)</td><td>1</td><td>12V, 15A</td></tr>
<tr><td>24</td><td>Wiper/washer switch (opt)</td><td>1</td><td>12V, 15A</td></tr>
<tr><td>25</td><td>Accelerator pedal</td><td>1</td><td>12V, input voltage 5Vdc, current 16~20mA</td></tr>
<tr><td>26</td><td>Parking switch</td><td>1</td><td>12V, 15A</td></tr>
<tr><td>27</td><td>OPSS buzzer</td><td>1</td><td>12V, 50mA max, 80~90dB</td></tr>
<tr><td>28</td><td>Socket assy (opt)</td><td>1</td><td>12V, 10A</td></tr>
<tr><td>29</td><td>Blue spot (LED, opt)</td><td>1</td><td>12V, 8W</td></tr>
</table>

GROUP 4 CONNECTOR DESTINATION

1. FRAME HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	AMP	42	Dashboard Harness	-	0-936429-2
CN-2	AMP	26	Dashboard Harness	1897009-2	-
CN-3	KET	3	Dashboard Harness	-	MG652290-5
CN-12	KUM	36	HMC E/G Garness	HP645-36021	-
CN-13	KET	1	HMC E/G Garness	MG613801-5	-
CN-17	KET	2	Tilt Lever Switch	MG610320	-
CN-18	AMP	2	Socket(12V) Harness	174352-2	174354-2
CN-36	QPL	-	Fuse Box #1	21HN-55010	-
CN-37	QPL	-	Fuse Box #2	21HN-55010	-
CN-38	KET	8	KNOB Gear Seletor	-	MG640341
CN-43	KET	2	Aircon Harness	MG642928-5	MG652934-5
CN-44	KET	1	Aircon Harness	MG610278	MG640280
CN-45	HCE	-	Start Motor	-	-
CN-47	KET / QPL	2	PLUGGING CAP	MG610320	21HN-52150
CN-48	LITTLE FUSE	-	MIDI FUSE HOLDER	-	-
CN-49	MOLEX	32	CAN Converter	64319-3211	-
CN-65	KET	2	Backup Alarm	-	MG640322
CN-66	DEUTSCH	2	PS Auto Regen V/V	DT06-2S	-
CN-71	DEUTSCH	2	Parking SOL	DT06-2S	-
CN-74	HCE	1	Alternator	-	-
CN-122	DEUTSCH	2	Forward SOL	DT06-2S	-
CN-123	DEUTSCH	2	Reverse SOL	DT06-2S	-
CN-124	AMP	6	Accel Pedal	174262-2	-
CN-131	AMP	2	Cut-off SOL1	347887-3	-
CN-134	KET	20	Diagnosis Port	MG652863	-
CN-150	AMP	5	Fuel Pump Module	MG641521-4	-
CN-151	DELPHI	2	Thermo Switch	282080-1	-
CN-500	KET	1	Start Motor	MG613801-5	MG643800-5
CN-700	KET	10	Joint Connector #3	MG621725-5	MG651727-2
CN-800	KET	20	Joint Connector #1	MG655633	MG645695-5
CN-900	KET	20	Joint Connector #2	MG621818	MG651824-4
· Relay					
CR-24	FCI	6	GLOW Relay Unit	F308210	-
· Switch					
CS-11	AMP	6	F.N.R Controller B	174262-2	174264-2

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CS-13	AMP	3	F.N.R Controller A	174357-2	174359-2
CS-73	DEUTSCH	6	Seat Swtich	DT06-6S	21HN-52080
· Lamp					
CL-21	KET	1	License Lamp	ST730018-3	ST750036-3
· Sensor, sender					
CD-2	KET	3	Fuel Sender	MG610327	-
CD-10	KET	1	Air-Cleaner Switch	ST730057-2	-
CD-26	AMP	1	Parking PS Switch	171809-2	-
CD-29	DEUTSCH	4	T/M PS/Temp Sensor	DT06-S4	-
CD-35	AMP	3	WIF Switch	936251-2	-
CD-38	AMP	2	Fuel Filter HTR	10737780	-
CD-40	AMP	3	Speed Sensor	MG610327-5	-
CD-50	DEUTSCH	3	Load Sensor	DT06-3S	DT04-3P
CD-60	DELPHI	2	T4 Sensor	33401219	-
CD-61	DELPHI	2	T5 Sensor	33401218	-
CD-63	KET	3	DPF Diff PS Sensor	MG644453-5	-

2. FRAME HARNESS (FIGERTIP, OPTION)

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	AMP	42	Dashboard Harness	-	0-936429-2
CN-2	AMP	26	Dashboard Harness	1897009-2	-
CN-3	KET	3	Dashboard Harness	-	MG652290-5
CN-12	KUM	36	HMC E/G Garness	HP645-36021	-
CN-13	KET	1	HMC E/G Garness	MG613801-5	-
CN-18	AMP	2	Socket(12V) Harness	174352-2	174354-2
CN-36	QPL	-	Fuse Box #1	21HN-55010	-
CN-37	QPL	-	Fuse Box #2	21HN-55010	-
CN-43	KET	2	Aircon Harness	MG642928-5	MG652934-5
CN-44	KET	1	Aircon Harness	MG610278	MG640280
CN-45	HCE	-	Start Motor	-	-
CN-47	KET / QPL	2	PLUGGING CAP	MG610320	21HN-52150
CN-48	LITTLE FUSE	-	MIDI FUSE HOLDER	-	-
CN-49	MOLEX	32	CAN Converter	64319-3211	-
CN-65	KET	2	Backup Alarm	-	MG640322
CN-66	DEUTSCH	2	PS Auto Regen V/V	DT06-2S	-
CN-71	DEUTSCH	2	Parking SOL	DT06-2S	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-74	HCE	1	Alternator	-	-
CN-122	DEUTSCH	2	Forward SOL	DT06-2S	-
CN-123	DEUTSCH	2	Reverse SOL	DT06-2S	-
CN-124	AMP	6	Accel Pedal	174262-2	-
CN-134	KET	20	Diagnosis Port	MG652863	-
CN-150	AMP	5	Fuel Pump Module	MG641521-4	-
CN-151	DELPHI	2	Thermo Switch	282080-1	-
CN-412	AMP	8	Armrest Harness	-	174984-2
CN-413	AMP	8	Armrest Harness	174982-2	-
CN-500	KET	1	Start Motor	MG613801-5	MG643800-5
CN-700	KET	10	Joint Connector #3	MG621725-5	MG651727-2
CN-800	KET	20	Joint Connector #1	MG655633	MG645695-5
CN-900	KET	20	Joint Connector #2	MG621818	MG651824-4
· Relay					
CR-24	FCI	6	GLOW Relay Unit	F308210	-
· Switch					
CS-73	DEUTSCH	6	Seat Swtich	DT06-6S	21HN-52080
· Lamp					
CL-21	KET	1	License Lamp	ST730018-3	ST750036-3
· Sensor, sender					
CD-2	KET	3	Fuel Sender	MG610327	-
CD-10	KET	1	Air-Cleaner Switch	ST730057-2	-
CD-26	AMP	1	Parking PS Switch	171809-2	-
CD-29	DEUTSCH	4	T/M PS/Temp Sensor	DT06-S4	-
CD-35	AMP	3	WIF Switch	936251-2	-
CD-38	AMP	2	Fuel Filter HTR	10737780	-
CD-40	AMP	3	Speed Sensor	MG610327-5	-
CD-50	DEUTSCH	3	Load Sensor	DT06-3S	DT04-3P
CD-60	DELPHI	2	T4 Sensor	33401219	-
CD-61	DELPHI	2	T5 Sensor	33401218	-
CD-63	KET	3	DPF Diff PS Sensor	MG644453-5	-

3. DASHBOARD HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	AMP	42	Frame Harness	0-936421-2	-
CN-2	AMP	26	Frame Harness	-	1897013-2
CN-3	KET	3	Frame Harness	MG642292-5	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-5	KET	12	OHG (Cabin) - RH Harness	-	MG640348
CN-6	KET	12	OHG (Cabin) - LH Harness	-	MG640348
CN-19	AMP	4	G-Sensor (Mast)	174257-2	-
CN-25	MOLEX	2	Horn	35825-0211	-
CN-28	DEUTSH	4	HYD PS/Temp Sensor	DT06-4S	-
CN-49	AMP	2	Blue Spot EXT	174352-2	-
CN-50	AMP	35	TCU	776164-4	-
CN-55	KET	6	RMCU-FMS	-	MG640337
CN-56	MOLEX	73	Cluster CI	0-936421-2	-
CN-113	KET	2	Warining Buzzer	MG610320	-
CN-250	AMP	4	Front View Camera	174257-2	-
CN-500	KET	20	Joint Connector #2	MG655633	-
CN-600	KET	10	Joint Connector #1	MG621725-5	-
CN-700	AMP	30	Joint Connector #3	2005499-7	-
CN-800	KET	8	Monitor	-	MG640341
· Relay					
CR-11	DAEDONG	3	Flasher Unit	312 CIHUNG 3P	-
CR-23	KET	4	Starter Relay	MG612017-5	-
CR-26	KET	4	Fuel Warmer Relay	MG612017-5	-
· Switch					
CS-2	KET	2	Starter Key Swithc	MG610281	MG620282
CS-3	CALRING	10	Wiper Washer	21HN-56300	-
CS-5	HCE	-	Horn Switch	-	-
CS-11	KET	6	Gear Selector	-	MG640337
CS-12	KET	6	Combi Switch	MG610335	-
CS-17	CALRING	10	Parking Switch	21HN-56300	-
CS-23	CALRING	10	Beacon Lamp Switch	21HN-56300	-
CS-39	CALRING	10	Main Light Switch	21HN-56300	-
CS-41	CALRING	10	Hazard Swtich	21HN-56300	-
CS-75	CALRING	10	Regen Inhibit Switch	21HN-56300	-
CS-79	CALRING	10	Power / STD Mode Switch	21HN-56300	-
· Sensor, sender					
CD-3	DELPHI	3	Inching Potentiometer	12110293	-
CD-4	DEUTSH	4	Brake PS sensor	DT06-4S	-
CD-59	KET	2	Brake Oil Level	MG610320	-
RS-1	AMP	2	Resistor 1	174352-2	-

4. CABIN LH-HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-6	KET	12	Dashboard Harness	MG610346	-
CN-14A	DAEDONG	4	Head/Turn Lamp Harness	110-4PR G	-
CN-15	DAEDONG	2	Rear Work Lamp Harness	110-2PR G	-
CN-21	AMP	4	Wiper Motor	180900	-
CN-22	KET	2	Washer Tank	MG640605	-
CN-39	KET	3	Cabin Harness-RH	-	MG640329
· Diode					
DO-3	AMP	2	Diode	174352-2	-

5. CABIN RH-HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-5	KET	12	Dashboard Harness	MG610346	-
CN-14	DAEDONG	4	Head/Turn Lamp Harness	110-4PR	-
CN-23	KET	2	Speaker-LH	MG610070	-
CN-24	KET	2	Speaker-RH	MG610070	-
CN-27	KUM	16	USB/Radio	PK145-16017	-
CN-39	KET	3	Cabin-LH Harness	MG610327	-
CN-41	KET	2		MG610320	MG640322
CN-56	MOLEX	4	IPAS-Vehicle Tag	52213-0417	52266-0417
CN-57	MOLEX	4	IPAS-Indicator	52213-0417	52266-0417
CN-249	AMP	4	Rear View Camera	174257-2	174259-2
· Lamp					
CL-1	KET	2	Room Lamp	MG610392	-
CL-7	DEUTSCH	2	Beacon Lamp	DT06-2S	DT04-2P
CL-15	DAEDONG	6	Rear Combi Lamp-LH	110-6PR	-
CL-16	DAEDONG	6	Rear Combi Lamp-RH	110-6PR	-

6. AIRCON AND HEATER HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-29	KET	2	Aircon Dual Pressure Switch	MG640795	-
CN-30	KET	1	Aircon Compressor	MG610041	-
CN-41	KET	2	Cabin Harness-RH	-	MG640322
CN-42	KET	8	Harness-KB	MG610271	-
CN-43	KET	2	Frame Harness	MG642928-5	-
CN-44	KET	1	Frame Harness	MG610278	-
CN-83	KUM	2	Aircon Condensor Fan	PB625-02027	-
· Switch					
CS-77	KET	1	Rear Grip Horn Switch	ST730018-3	ST750036-3

7. HEATER HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-41	KET	2	Cabin Harness-RH		MG640322
CN-42	KET	8	Harness-KB	MG610278	
CN-43	KET	2	Frame Harness	MG642928-5	
CN-44	KET	1	Frame Harness	MG610278	
· Switch					
CS-77	KET	1	Rear Grip Horn Switch	ST730018-3	ST750036-3

8. OHG LH-HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-6	KET	12	Dashboard Harness	MG610346	-
CN-39	KET	3	OHG Harness-RH	-	MG640329
· Lamp					
CL-14A	DAEDONG	4	Harness Head/Turn Lamp	110-4PR	-

9. OHG RH-HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-5	KET	12	Dashboard Harness	MG610346	-
CN-14	DAEDONG	4	Harness Head/Trun Lamp	110-4PR	-
CN-39	KET	2	OHG Harness-LH	MG610320	-
CN-56	MOLEX	4	IPAS-Vehicle Tag	52213-0417	52266-0417
CN-57	MOLEX	4	IPAS-Indicator	52213-0417	52266-0417
CN-249	AMP	4	Rear View Camera	174257-2	174259-2
· Switch					
CS-77	KET	1	Rear Grip Horn Switch	ST730018-3	ST750036-3
· Lamp					
CL-7	DEUTSCH	2	Beacon Lamp	DT06-2S	DT04-2P
CL-15	DAEDONG	6	LH-Rear Combi Lamp	110-6PR	-
CL-16	DAEDONG	6	RH-Rear Combi Lamp	110-6PR	-
CL-23	DAEDONG	2	LH-Rear Work	110-2PR	-

10. MCV HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-60	AMP	35	Fingertip Main Controller	776164-4	-
CN-134	KET	6	Diagnosis Port	MG610335	MG642554
CN-417	KET	8	Frame Harness	MG640341	-
CN-M1	AMP	2	Lift Down	347887-3	-
CN-M2	AMP	2	Lift Up	347887-3	-
CN-M3	AMP	2	Tilt Out	347887-3	-
CN-M4	AMP	2	Tilt In	347887-3	-
CN-M5	AMP	2	AUX1 In	347887-3	-
CN-M6	AMP	2	AUX1 Out	347887-3	-
CN-M7	AMP	2	AUX2 In	347887-3	-
CN-M8	AMP	2	AUX2 Out	347887-3	-
CN-M9	AMP	2	Cut-off SOL	347887-3	-

11. ARMREST HARNESS

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-15	MOLEX	2	Switch Horn	52213-0211	-
CN-16	MOLEX	2	Switch Aux Enable	52213-0211	-
CN-17	MOLEX	2	Switch Auto Tilt	52213-0211	-
CN-37	MOLEX	4	Switch Direction	52213-0417	-
CN-61	AMP	34	Fingertip Sub controller	4-1437290-1	-
CN-412	AMP	9	Frame Harness	174982-2	-
CN-413	AMP	9	Frame Harness	-	174984-2
· Relay					
CR-14	KET	5	Relay Horn	MG640927	-
CR-15	KET	5	Relay Neutral Signal	MG640927	-
· Switch					
CS-10	HONEYWELL	4	Emergency Stop Switch	21HU-92250	-
· Sensor, sender					
CD-40	MOLEX	4	Lift Lever	52266-0417	-
CD-41	MOLEX	4	Tilt Lever	52266-0417	-
CD-42	MOLEX	4	Aux1 Lever	52266-0417	-
CD-43	MOLEX	4	Aux2 Lever	52266-0417	-

Trouble symptom	Probable cause	Remedy
Lamps dimming even at maximum engine speed.	· Faulty wiring.	· Check for loose terminal and disconnected wire.
Lamps flicker during engine operation.	· Improper belt tension.	· Adjust belt tension.
Charge lamp does not light during normal engine operation.	· Charge lamp defective. · Faulty wiring.	· Replace. · Check and repair.
Alternator makes abnormal sounds.	· Alternator defective.	· Replace
Starting motor fails to run.	· Faulty wiring. · Insufficient battery voltage.	· Check and repair. · Recharge battery.
Starting motor pinion repeats going in and out.	· Insufficient battery voltage.	· Recharge battery.
Excessively low starting motor speed.	· Insufficient battery voltage. · Starting motor defective.	· Recharge battery. · Replace
Starting motor comes to a stop before engine starts up.	· Faulty wiring. · Insufficient battery voltage.	· Check and repair. · Recharge battery.
Heater signal does not become red.	· Faulty wiring. · Glow plug damaged.	· Check and repair. · Replace
Engine oil pressure caution lamp does not light when engine is stopped (with starting switch left in"ON" position).	· Caution lamp defective. · Caution lamp switch defective.	· Replace · Replace