SEN00060-07

Shop Manual

BULLDOZER

D85EX -15E0
D85PX-15E0

SERIAL NUMBERS D85EX- 11001 and up
D85PX- 1201

ecot3

KOMATSU®

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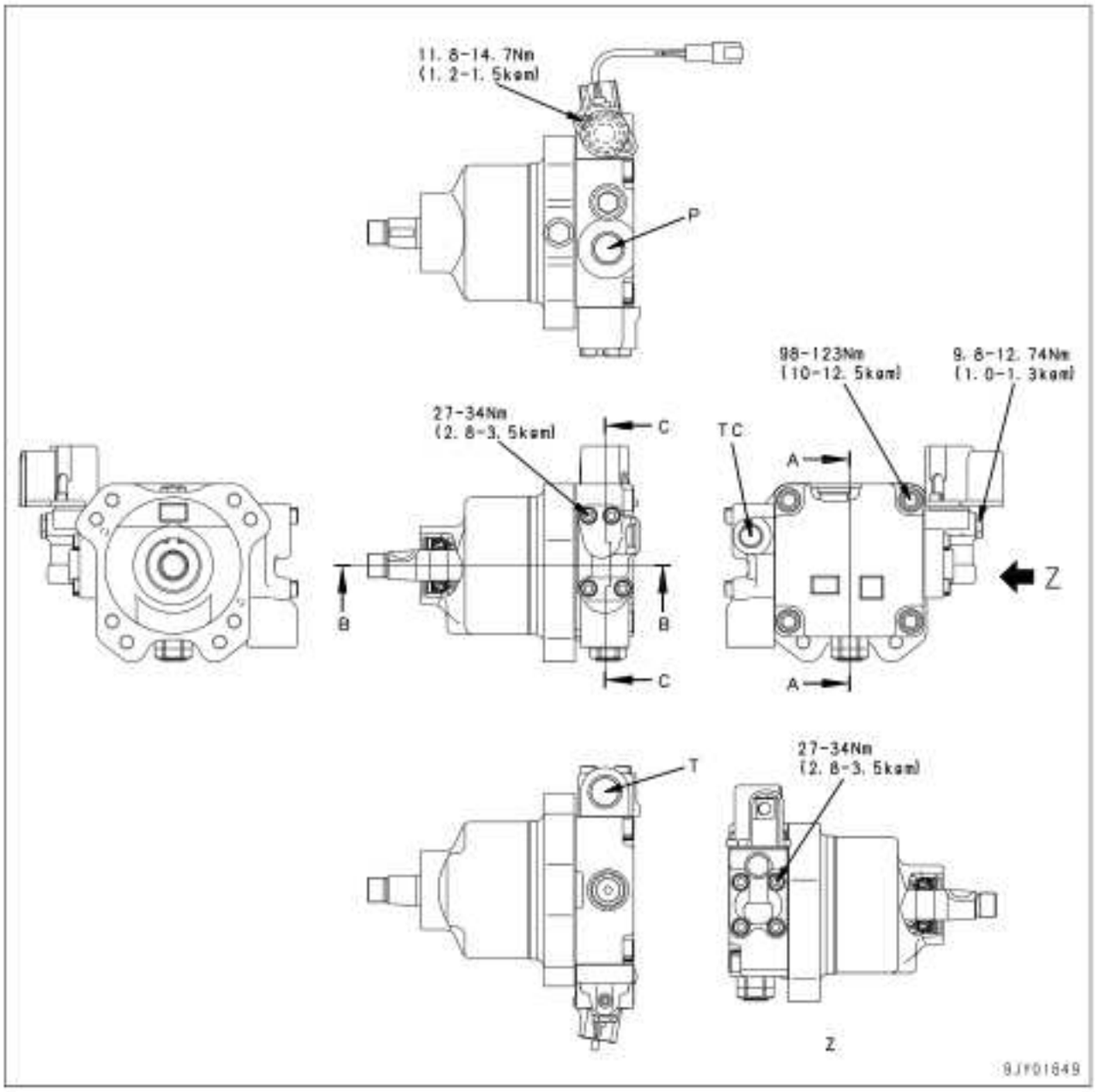
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Cooling fan motor

Type: LMF28



P: From fan pump
T: From cooler to tank
TC: To tank

Specifications

Type	: LMF28
Capacity	: 28.0 cc/rev
Rated speed	: 1,650 rpm
Rated flow	: 46 ℓ/min
Check valve cracking pressure	: 0.044 MPa (0.45 kg/cm^2)

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Classification and procedures of troubleshooting

Classification of troubleshooting

Mode	Content
Code display	Troubleshooting by failure code
E-mode	Troubleshooting of electrical system
H-mode	Troubleshooting of hydraulic and mechanical system
S-mode	Troubleshooting of engine

Troubleshooting procedures

When any symptom supposed to be a failure appeared on the machine, select a troubleshooting No. according to the procedures below and proceed to the text of the relevant troubleshooting:

1. **Troubleshooting procedures when any action code is displayed on the monitor panel:**
   When an action code is displayed on the monitor panel, display a failure code in the failure code display mode (electrical system, mechanical system) on the monitor display (EMMS).
   Carry out the troubleshooting of the relevant [**failure code**] in accordance with the displayed failure code.
   - ★ Since a failure code flashes when a failure is detected, the failure has not always been corrected even if it lights when the starting switch is set to ON. (For some codes, failures can be detected by only turning the starting switch ON.)
   - ★ When a failure code has been recorded, be sure to perform the duplication operation corresponding to the failure code and confirm if the failure has still remained or has been already corrected. (For the duplication method, refer to the troubleshooting relevant to the failure code.)

2. **Troubleshooting procedures when a failure code has been recorded:**
   When no action code is displayed on the monitor panel, confirm a failure code in the failure code display mode (electrical system, mechanical system) on the monitor display (EMMS).
   When a failure code has been recorded, carry out the troubleshooting of the relevant [**failure code**] in accordance with the displayed failure code.
   - ★ Since a failure code flashes when a failure is detected, the failure has not always been corrected even if it lights when the starting switch is set to ON. (For some codes, failures can be detected by only turning the starting switch ON.)
   - ★ When a failure code has been recorded, be sure to perform the duplication operation corresponding to the failure code and confirm if the failure has still remained or has been already corrected. (For the duplication method, refer to the troubleshooting relevant to the failure code.)

3. **Troubleshooting procedures when no action code is displayed and a failure code has not been recorded:**
   When a failure code has not been recorded in the monitor panel (EMMS), a failure that the machine cannot diagnose by itself is supposed to have occurred in the electrical system or the hydraulic and mechanical system.
   In this case, check again a symptom supposed to be a failure and select the relevant symptom out of the table of "Symptom supposed to be failure and troubleshooting No." Then, carry out the troubleshooting in the [**E-Mode**], [**H-Mode**] or [**S-Mode**] related to the symptom.

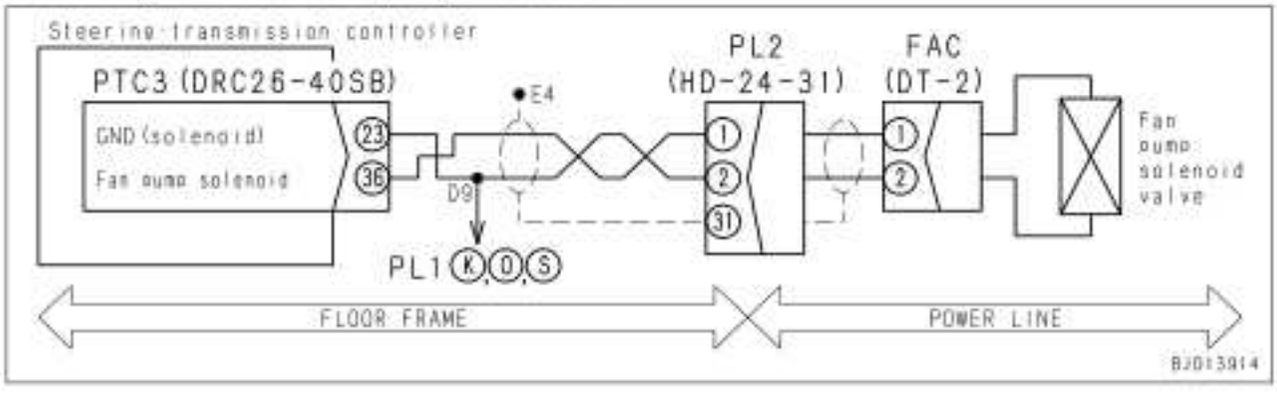
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Failure code [DWN5KB] Fan pump EPC solenoid: Short circuit

Action code	Failure code	Symptom of failure	Fan pump EPC solenoid: Short circuit (Steering and transmission controller system)
E01	DWN5KB		
Failure content	• Abnormal current flowed when power is output to fan pump EPC solenoid circuit.		
Controller's action	• Stops outputting power to fan pump EPC solenoid circuit.		
Symptoms that appear on machine	• Fan speed is kept at maximum level		
General information	• Output state (current) to fan pump EPC solenoid can be checked in monitoring mode. (Code 31623, 31624: Cooling fan solenoid output current) • Duplication of failure code: turn ON the starting switch.		

	Causes		Standard values when normal and remarks for troubleshooting		
Possible causes and the standard values when normal	1	Defective fan pump solenoid (Internal short circuit)	★ Prepare with starting switch OFF and diagnose with starting switch still OFF.		
			FAC (male)	Resistance	
			Between (1) – (2)	15 – 25 Ω	
			Between (1) and ground	Min. 1 MΩ	
	2	Defective harness grounding (contact with ground circuit)	★ Prepare with starting switch OFF and diagnose with starting switch still OFF.		
			Between ground and wiring harness between PTC3 (female) (36) – FAC (female) (1)	Resis-tance	Min. 1 MΩ
	3	Harness short (Harness internal short)	★ Prepare with starting switch OFF and diagnose with starting switch still OFF.		
			Wiring harness between PTC3 (female) (36) – FAC (female) (1) and PTC3 (female) (23) – FAC (female) (2)	Resis-tance	Min. 1 MΩ
	4	Defective steering and transmission controller	Since this is an internal defect, it cannot be diagnosed.		

Circuit diagram related to fan pump EPC solenoid

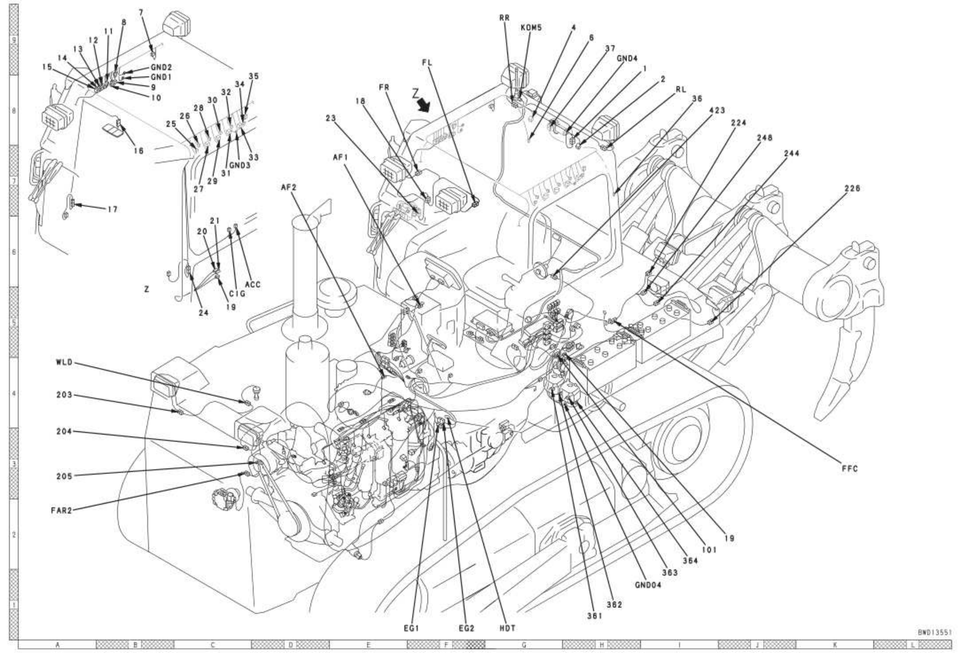


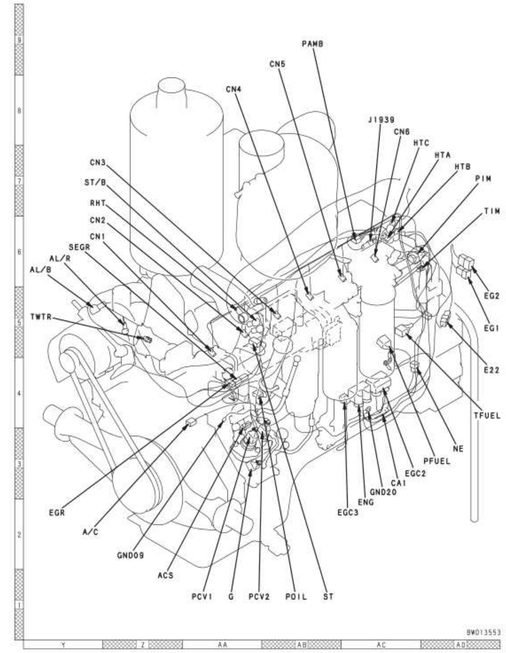
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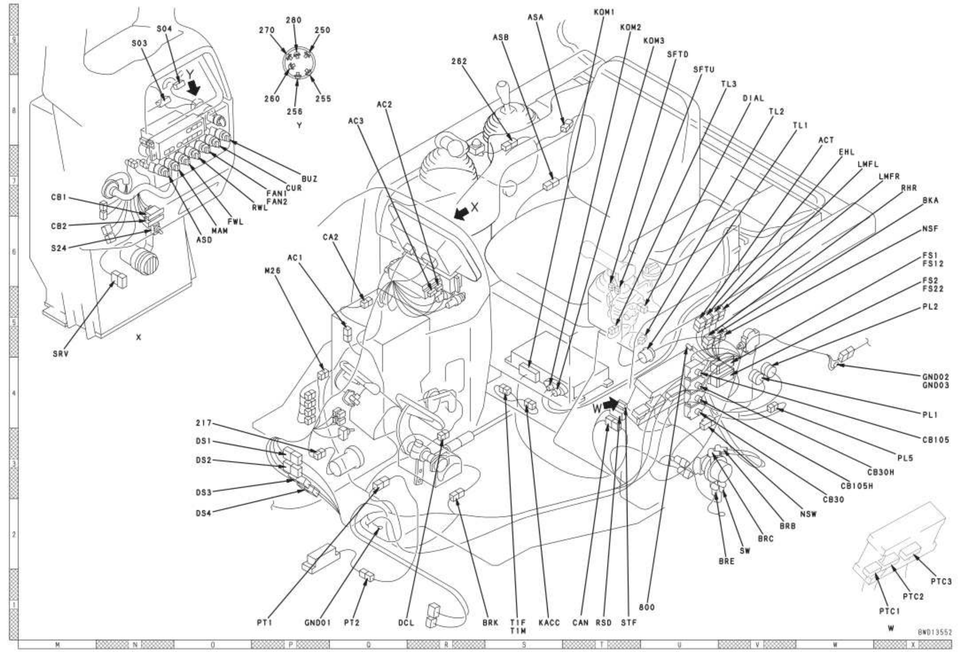
Connector list and stereogram D85EX, PX-15E0

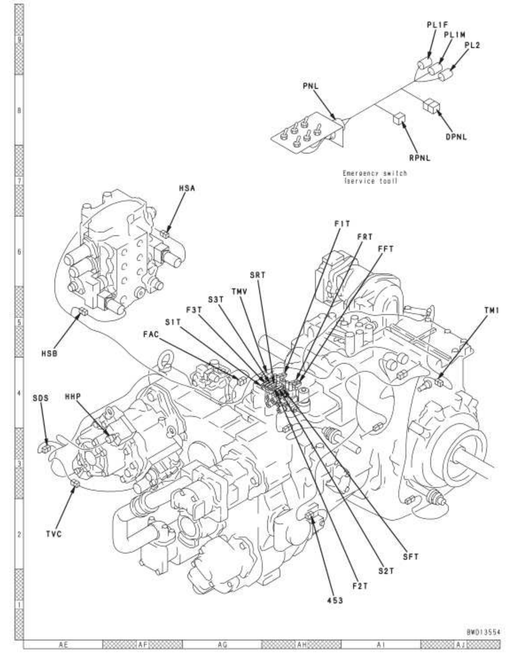
Connector No.	Type	Number of pins	Location	Arrangement drawing
1	DT	4	Intermediate connector [Cab specification]	I-9
2	KES1	2	Rear speaker (Left) [Cab specification]	I-8
4	KES1	2	Rear speaker (Right) [Cab specification]	H-9
6	One-pin connector	1	Heater wire glass [Cab specification]	H-9
7	PA	9	Radio [Cab specification]	B-9
8	DT	2	Accessory (12 V) [Cab specification]	B-9
9	YAZAKI	3	Heater wire glass switch [Cab specification]	B-8
10	M	2	Additional light switch [Cab specification]	B-8
11	M	2	Wiper intermittent switch [Cab specification]	B-9
12	KES1	6	Rear wiper switch [Cab specification]	A-9
13	KES1	6	Right door wiper switch [Cab specification]	A-9
14	KES1	6	Front wiper switch [Cab specification]	A-9
15	KES1	6	Left door wiper switch [Cab specification]	A-9
16	KES1	2	Room lamp [Cab specification]	B-7
17	DT	4	Right door wiper [Cab specification]	B-7
18	DT	4	Intermediate connector [Cab specification]	E-8
19	DT	4	Intermediate connector (Windshield washer motor) [Cab specification]	C-5, J-2
20	DTHD#8	1	Cab power supply [Cab specification]	C-6
21	DTHD#12	1	Cab power supply (Battery direct) [Cab specification]	C-6
23	DT	6	Front wiper [Cab specification]	E-8
24	DT	4	Left door wiper [Cab specification]	C-5
25	Relay (YAZAKI)	4	For light [Cab specification]	B-8
26	Relay (YAZAKI)	6	Left wiper intermittent relay [Cab specification]	C-8
27	Relay	5	Left wiper intermittent selector relay [Cab specification]	C-7
28	Relay (YAZAKI)	6	Front wiper intermittent relay [Cab specification]	C-8
29	Relay	5	Front wiper intermittent selector relay [Cab specification]	C-7
30	Relay (YAZAKI)	6	Right wiper intermittent relay [Cab specification]	C-8
31	Relay	5	Right wiper intermittent selector relay [Cab specification]	C-7
32	Relay (YAZAKI)	6	Rear wiper intermittent relay [Cab specification]	C-8
33	Relay	5	Rear wiper intermittent selector relay [Cab specification]	C-7
34	Relay	4	Heater wire glass relay [Cab specification]	C-8
35	M	4	Converter [Cab specification]	C-8
36	One-pin connector	1	Heater wire glass [Cab specification]	I-8
37	KES1	4	Rear wiper [Cab specification]	H-9
101	DT-A	8	Intermediate connector (Headlamp)	I-2
203	DT	2	Right head lamp	A-4
204	DT	2	Left head lamp	A-3
205	One-pin connector	1	Horn	A-3
217	DT	2	Caution buzzer	n-4
224	DT	2	Left rear lamp	J-8
226	DT	2	Ripper point lamp	K-7
244	DT	2	Backup alarm	J-7
248	DT	2	Intermediate connector (Ripper point lamp)	J-8
250	Terminal	1	Starting switch terminal B	P-9
255	Terminal	1	Starting switch terminal R1	P-8
256	Terminal	1	Starting switch terminal R2	P-8
260	Terminal	1	Starting switch terminal BR	P-8
262	DT	2	Horn switch	R-9
270	Terminal	1	Starting switch terminal ACC	P-9
280	Terminal	1	Starting switch terminal C	P-9
361	M	2	Left door washer motor [Cab specification]	H-1
362	M	2	Front window washer motor [Cab specification]	H-1
363	M	2	Right door washer motor [Cab specification]	I-1
364	M	2	Rear window washer motor [Cab specification]	I-2
423	DT	2	Fuel level sensor	I-8
453	DT	2	Torque converter oil temperature sensor	AH-1
800	—	1	Intermediate connector	U-1
A/C	DT	2	A/C compressor	Y-2
AC1	MIC	17	Air conditioner unit	P-6
AC2	AMP	16	Air conditioner controller	Q-8
AC3	AMP	12	Air conditioner controller	Q-8
ACC	YAZAKI	2	Accessory socket [Cab specification]	C-6
ACS	DT	2	Diode	Z-1
ACT	Relay	5	ACC cut relay	W-8
AF1	DT	2	Intermediate connector (Air-flow switch)	E-7
AF2	DT	2	Air flow switch	D-7
AL/B	Terminal	1	Alternator terminal B	Y-6
AL/R	Terminal	1	Alternator terminal R	Y-6
ASA	DT	2	Intermediate connector (Air suspension seat)	S-9
ASB	DT	2	Air suspension seat	S-9
ASD	KES1	4	Auto shift-down switch	Q-6
BKA	Relay	5	Backup alarm relay	X-7
BRB	Terminal	1	Battery relay power supply inlet	V-2
BRC	Terminal	1	Battery relay power supply outlet	V-2
BRE	Terminal	1	Battery relay ground	V-2
BRK	DT	3	Brake pedal	S-1
BUZ	KES1	3	Buzzer cancel switch	P-7
CA1	DT	3	CAN terminating resistor	AC-3
CA2	DT	3	CAN terminating resistor	Q-6
CAN	DT-A	12	Intermediate connector (KOMTRAX)	T-1
CB1	One-pin connector	2	Circuit breaker (Starting switch 20A)	M-7
CB105	—	—	Circuit breaker (Mainpower 105A)	X-3
B105H	—	—	Circuit breaker (Ribbon heater 105A)	W-3
CB2	One-pin connector	2	Circuit breaker (Air conditioner)	M-6
CB30	—	1	Circuit breaker (Constant power source 30A)	W-3
CB30H	—	1	Circuit breaker (Engine controller 30A)	W-3
CIG	YAZAKI	2	Cigarette lighter [Cab specification]	C-5
CN1	DT	2	Engine No.1 injector	Y-6
CN2	DT	2	Engine No.2 injector	Z-6
CN3	DT	2	Engine No.3 injector	Z-7
CN4	DT	2	Engine No.4 injector	AA-9
CN5	DT	2	Engine No.5 injector	AB-9
CN6	DT	2	Engine No.6 injector	AC-8
CUR	KES1	3	Information switch	P-7
DCL	DT	3	Decelerator pedal	R-1
DIAL	DT	3	Fuel control dial potentiometer	V-8
DPNL	DT	2	Diode (Emergency switch)	AJ-8
DS1	DT-B	12	Intermediate connector	O-3
DS2	DT-A	12	Intermediate connector	O-3
DS3	DT-C	12	Intermediate connector	O-3
DS4	DT-D	12	Intermediate connector	O-2
E22	DT	6	Intermediate connector (Starting motor)	AD-4
EG1	DTP	2	Intermediate connector (Engine controller)	F-1, AD-5
EG2	DT-B	12	Intermediate connector	F-1, AD-5
EGC1	DRC-60	60	Engine controller	AC-2
EGC2	DRC-50	50	Engine controller	AC-3
EGC3	DTP	4	Engine controller	AC-2
EGR	DT	2	EGR valve	Y-2
EHL	Relay	5	Engine hold relay	W-7
F1T	DT	2	1st clutch ECMV (Fill switch)	AH-6
F2T	DT	2	2nd clutch ECMV (Fill switch)	AI-1
F3T	DT	2	3rd clutch ECMV (Fill switch)	AG-5
FAC	DT	2	Fan pump control valve	AF-5
FAN1	KES1	3	Fan clean mode switch	P-7
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FFT	DT	2	Forward clutch ECMV (Fill switch)	AI-6
FL	DT	2	Front additional light (Left) [Cab specification]	F-9
FR	DT	2	Front additional light (Right) [Cab specification]	E-8
FRT	DT	2	Reverse clutch ECMV (Fill switch)	AI-6
FS1	—	—	Fuse box	X-6
FS2	—	—	Fuse box	X-6
FS12	—	—	Fuse box	X-6
FS22	—	—	Fuse box	X-5
FWL	KES1	4	Headlamp switch	O-6
G	SUMITOMO	3	Engine speed G sensor	AA-1
GND01	Terminal	1	Ground (Floor)	P-1
GND02	Terminal	1	Ground (ROPS)	X-4
GND03	Terminal	1	Ground (ROPS)	X-4
GND04	Terminal	1	Ground (Fender)	I-1
GND09	Terminal	1	Ground	Z-2
GND1	Terminal	1	Ground [Cab specification]	B-8
GND2	Terminal	1	Ground [Cab specification]	B-9
GND3	Terminal	1	Ground [Cab specification]	C-7
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GND20	Terminal	1	Ground	AC-3
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HHP	DT	3	Hydraulic oil pressure sensor	AE-4
HSA	DT	2	HSS-EPC solenoid (Left swing)	AG-7
HSB	DT	2	HSS-EPC solenoid (Right swing)	AE-5
HTA	Terminal	1	Heater relay (Terminal A)	AD-7
HTB	Terminal	1	Heater relay (Terminal B)	AD-7
HTC	Terminal	1	Heater relay (Terminal C)	AC-7
J1939	DT	3	Service connector	AC-9
KACC	DT	3	Intermediate connector (KOMTRAX)	S-1
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KOM2	GIT5	1	KOMTRAX controller	T-9
KOM3	BNC	1	KOMTRAX controller	T-9
KOM5	ML	1	KOMTRAX controller (Antenna)	G-9
LMFL	Relay	5	Left head lamp relay	W-7
LMFR	Relay	5	Right head lamp relay	X-7
M26	M	6	Air conditioner controller	P-6
MAM	KES1	4	Manual mode switch	O-6
NE	FRAMATO-NE	3	Engine speed NE sensor	AD-3
NSF	Relay	5	Neutral safety relay	X-6
NSW	DT	3	Parking lock switch	W-2
PAMB	AMP	3	Ambient pressure sensor	AB-9
PCV1	SUMITOMO	2	Fuel supply pump (PCV1)	AA-1
PCV2	SUMITOMO	2	Fuel supply pump (PCV2)	AA-1
PFUEL	AMP	3	Common rail pressure sensor	AD-3
PIM	SUMITOMO	3	Boost pressure sensor	AD-7
PL1	HD-24	23	Intermediate connector (Power train)	X-4
PL1F	HD-24	23	Intermediate connector (Emergency switch)	AJ-9
PL1M	HD-24	23	Intermediate connector (Emergency switch)	AJ-9
PL2	HD-24	31	Intermediate connector (Power train)	X-5
PL2	HD-24	31	Intermediate connector (Emergency switch)	AJ-9
PL5	DT	6	Intermediate connector	X-3
PNL	HD-24	31	Intermediate connector	AH-8
POIL	FRAMATO-NE	3	Engine oil pressure sensor	AB-1
PT1	DT	3	Intermediate connector [Pitch angle sensor]	P-1
PT2	DT	3	Pitch angle sensor	Q-1
PTC1	DRC26	24	Steering and transmission controller	X-1
PTC2	DRC26	40	Steering and transmission controller	X-1
PTC3	DRC26	40	Steering and transmission controller	X-1
RHR	Relay	5	Pre-heater relay	X-7
RHT	Terminal	1	Electrical intake air heater	Z-7
RL	DT	2	Rear additional light (Left) [Cab specification]	I-8
RPNL	X	2	Intermediate connector (Emergency switch)	AI-7
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ST1	DT	2	1st clutch ECMV (Solenoid)	AF-5
ST2	DT	2	2nd clutch ECMV (Solenoid)	AI-1
ST3	DT	2	3rd clutch ECMV (Solenoid)	AG-5
SDS	DT	2	Hydraulic oil temperature sensor	AE-4
SEGR	DT	4	EGR valve position sensor	Y-6
SFT	DT	2	Forward clutch ECMV (Solenoid)	AI-2
SFTD	—	3	Shift-down switch	U-9
SFTU	—	3	Shift-up switch	U-9
SRT	DT	2	Reverse clutch ECMV (Solenoid)	AH-6
SRV	DT	12	Intermediate connector (Service connector)	M-5
ST	DT	2	Starting motor	AB-1
ST/B	Terminal	1	Starting motor (Terminal B)	Z-7
STF	X	4	Software writing connector (Steering and transmission controller)	T-1
SW	Terminal	1	Battery relay terminal BR	V-2
TFUEL	PACKARD	2	Fuel temperature sensor	AD-4
T1F	DT	2	Check connector (KOMTRAX)	S-1
T1M	DT	2	Check connector (KOMTRAX)	S-1
TIM	PACKARD	2	Boost temperature sensor	AD-6
TL1	HD-24	23	Intermediate connector [Console]	W-8
TL2	DT-B	8	Travel lever	V-8
TL3	DT	6	Intermediate connector [Shift switch]	V-8
TM1	DT	2	Transmission bevel speed sensor	AJ-5
TMV	HD-24	23	Intermediate connector (Transmission ECMV)	AG-5
TVC	DT	2	HSS/hydraulic pump	AE-2
TWTR	PACKARD	2	Engine coolant temperature sensor	Y-5
WLD	DT	2	Radiator coolant level sensor	A-4

★ The color symbols of the bodies of the heavy duty wire connectors (DT-8 poles, 12 poles) are as follows.
DT-A = Gray, DT-B = Black, DT-C = Green, DT-D = Brown









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