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Industry Connectors Reference

Including DrewLinQ and TVIT Pinouts

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Date: 03/30/2017

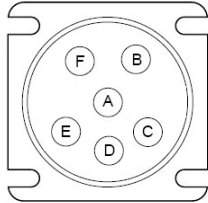
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2. Common Medium/Heavy-Duty Vehicles and Equipment Connectors

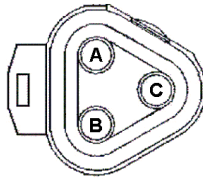
2.1. SAE J1708 Connector - 6-Pin Deutsch (Typically Grey)

Pin	Value
A	J1708+
B	J1708-
C	Power
D	OEM Specific
E	Ground
F	OEM Specific



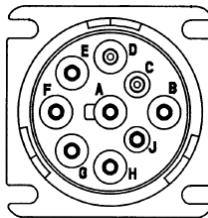
2.1. SAE J1939 Backbone Connector - 3-pin Deutsch (Typically Grey)

Pin	Value
A	CAN+
B	CAN-
C	CAN Shield



2.2. SAE Standard J1939 Type I - 9-Pin Deutsch (Typically Black)

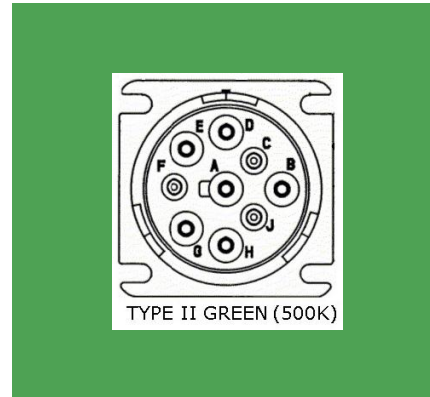
Pin	Value
A	Ground
B	Power
C	J1939+
D	J1939-
E	J1939 Shield
F	J1708/J1587+
G	J1708/J1587-
H	OEM Specific
J	OEM Specific



2.1. SAE Standard J1939 Type II - 9-Pin Deutsch (Green Connector) for J1939@500k

NOTE: As of 02/04/2016, all HD On-Highway OEMs have provided their 2016 diagnostic connector pinouts. All OEMs have decided to follow the Freightliner Cascadia standard for the second CAN channel on the "OEM Defined" pins, CAN2=(H+/J-). The third CAN channel (if used) is CAN3=(F+/G-).

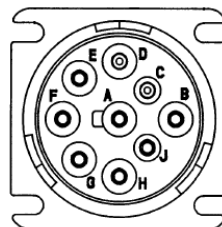
Pin	Function
A	Ground
B	Power
C	CAN1/J1939+
D	CAN1/J1939-
E	CAN1/J1939 Shield
F	J1708+ or CAN+
G	J1708- or CAN-
H	OEM Defined
J	OEM Defined



2.2. Freightliner Cascadia - J1939 Type I - 9-pin Deutsch

The RP1210 committee has asked VDA and tool vendors to make this cable with blue sheaths to indicate pins H/J are used for CAN2/ISO15765. NOTE: As of 02/04/2016, all HD On-Highway OEMs have provided their 2016 diagnostic connector pinouts. All OEMs have decided to follow the Freightliner Cascadia standard for the second CAN channel on the "OEM Defined" pins, CAN2=(H+/J-). The third CAN channel (if used) is CAN3=(F+/G-).

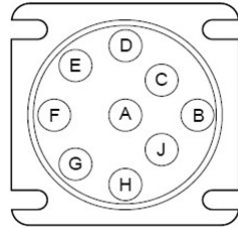
Pin	Value
A	Ground
B	Power
C	J1939+
D	J1939-
E	J1939 Shield
F	J1708/J1587+
G	J1708/J1587-
H	CAN2+
J	CAN2-



2.3. CAT Industrial Connector – CAT Specific 9-pin Deutsch

Note that the A pin (Power) is not "keyed" like the SAE J1939 Type I 9-pin Deutsch and that CAT reverses the pins for power and ground.

Pin	Value
A	Power
B	Ground
C	CAN Shield
D	CAT Data Link (CDL)+
E	CAT Data Link (CDL)-
F	CAN/J1939-
G	CAN/J1939+
H	ATA/J1587/J1708-
J	ATA/J1587/J1708+

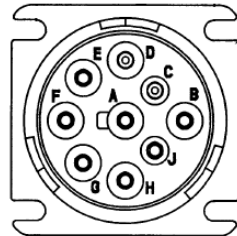


2.4. PACCAR - J1939 Type I - 9-Pin Deutsch

This connector is used on:

- Class 8 (and "baby 8") trucks built before and up to 2009
- Medium Duty Trucks.

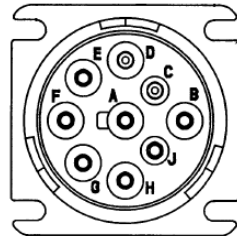
Pin	Value
A	Ground
B	Power
C	CAN1/J1939+
D	CAN1/J1939-
E	CAN1/J1939 Shield
F	J1708/J1587+
G	J1708/J1587-
H	Spare
J	ISO9141 K-Line



2.5. PACCAR - J1939 Type I - 9-Pin Deutsch

This connector is used on Class 8 (and “baby 8”) trucks built on and after 2010

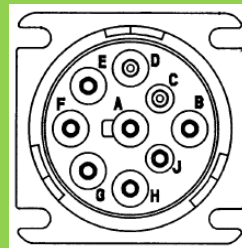
Pin	Value
A	Ground
B	Power
C	CAN1/J1939+
D	CAN1/J1939-
E	CAN1/J1939 Shield
F	J1708/J1587+
G	J1708/J1587-
H	CAN2+
J	CAN2-



2.6. PACCAR - J1939 Type II - 9-Pin Deutsch

This connector is used on Class 8 (and “baby 8”) trucks built on and after 2016

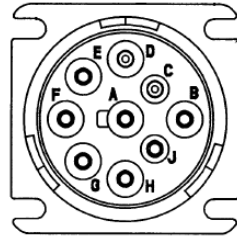
Pin	Value
A	Ground
B	Power
C	CAN1/J1939+
D	CAN1/J1939-
E	CAN1/J1939 Shield
F	CAN3+
G	CAN3-
H	CAN2+
J	CAN2-



J1939 Type II (Green)

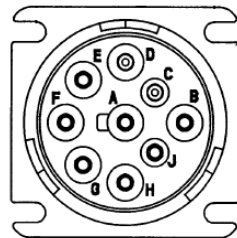
2.7. Navistar - J1939 Type I - Black - 9-Pin Deutsch

Pin	Value
A	Ground
B	Power
C	CAN1/J1939+
D	CAN1/J1939-
E	CAN1/J1939 Shield
F	J1708/J1587+
G	J1708/J1587-
H	Spare
J	ISO9141 K-Line



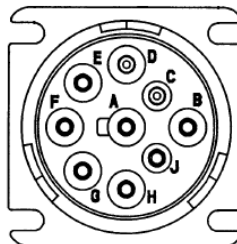
2.1. Navistar - J1939 Type II - Green - 9-Pin Deutsch

Pin	Value
A	Ground
B	Power
C	CAN1/J1939+
D	CAN1/J1939-
E	CAN1/J1939 Shield
F	J1708/J1587+
G	J1708/J1587-
H	CAN2+
J	CAN2-



2.1. Case New Holland (CNH) - J1939 Type I - 9-pin Deutsch

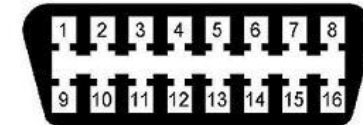
Pin	Value
A	Ground
B	Power
C	CAN1/J1939+
D	CAN1/J1939-
E	ISO9141 K-Line
F	N/C
G	N/C
H	CAN2/J1939+
J	CAN2/J1939-



2.2. Volvo Chassis/Volvo Engine (2013 and newer) - Modified SAE J1962 OBDII Connector

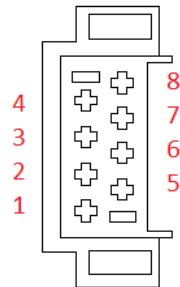
The RP1210 committee has asked VDA and tool vendors to make this cable with purple sheaths to indicate the J1962 is pinned out for this platform.

Pin	Function	CAN	J1962/OBDII Standard
1			N/C
2			J1850 VPW/PWM+
3	J1939+	CAN2+	Ford DCL+ (Argentina/Brazil Pre-OBDII) 1997-2000
4			Chassis Ground (Vehicle Ground)
5	Ground		Signal Ground
6	ISO15765+	CAN1+	CAN+
7			ISO9141/ISO14230 K-Line
8			N/C
9			N/C
10			J1850-
11	J1939-	CAN2-	Ford DCL+ (Argentina/Brazil Pre-OBDII) 1997-2000
12	J1708+		N/C
13	J1708-		N/C
14	ISO15765-	CAN1-	CAN-
15			ISO9141 L-Line
16	Power		Power

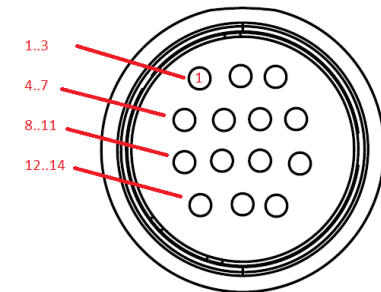


2.1. Volvo Construction Equipment - 8 and 14-Pin

Pin	Function
1	Ground
8	Power
7	J1708-
4	J1708+



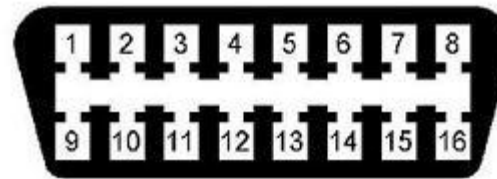
Pin	Function
14	Ground
13	Power
9	J1708-
8	J1708+



2.2. GMC Topkick/Kodiak Cable, Isuzu F-Series 1998 and Newer - Modified SAE J1962 OBDII Connector

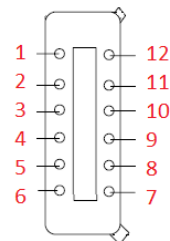
Also works on Isuzu F series vehicles 1998+ using the J1708/J1587 protocol.

Pin	Function
1	
2	Class 2 Serial Data (J1850VPW+)
3	
4	Ground
5	Signal Ground
6	GMLAN+
7	SAE J1587 Serial Data Bus+ Primary
8	Keyless Entry Program Enable Signal
9	
10	
11	
12	
13	
14	GMLAN-
15	SAE J1587 Serial Data Bus- Primary
16	Power



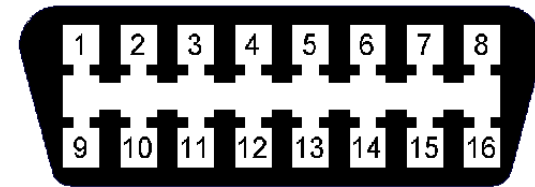
2.3. Komatsu Construction - 12-Pin

Pin	Function
12	Ground
1	Power
10	CAN1-
5	CAN1+



2.4. OBDII (SAE J1962) Connector (12/24 Volts)

Pin	Function
1	N/C
2	J1850 VPW/PWM+
3	Ford DCL+ (Argentina/Brazil Pre-OBDII) 1997-2000
4	Chassis Ground (Vehicle Ground)
5	Signal Ground
6	CAN+
7	ISO9141/ISO14230 K-Line
8	N/C
9	N/C
10	J1850-
11	Ford DCL+ (Argentina/Brazil Pre-OBDII) 1997-2000
12	N/C
13	N/C
14	CAN-
15	ISO9141 L-Line
16	Power



SAE J1962 OBDII Cable 12V
Center Tab Solid

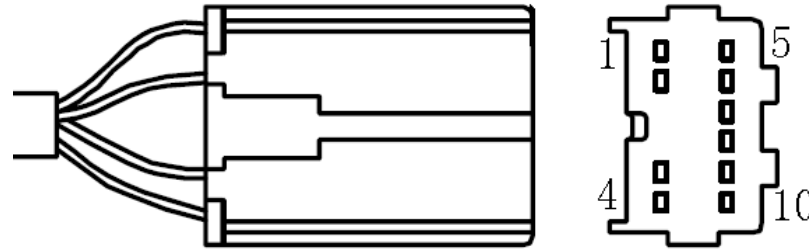


SAE J1962 OBDII Cable 24V
Center Tab Divided

2.1. Isuzu 10-Pin Yazaki Connector

This connector appears on Isuzu vehicles in the center console and has the J1939 data bus on it. Currently the J1939 databus contains the transmission and ABS, while the OBDII connector provides access for emissions-related diagnostics using the ISO15765 protocol.

Pin	Function
1	
2	
3	
4	
5	
6	Power
7	CAN+
8	
9	CAN-
10	Ground






3. Common Deutsch Connectors and Part Numbers

3.1. SAE J1708 Connectors




<p style="text-align: center;">HD10-6-12P J1708 Cab Mounted Receptacle</p>	<p style="text-align: center;">HD16-6-12S J1708 Mating Plug, Non Locking</p>												
													
<table border="1" data-bbox="270 760 709 857"> <tr> <td>Receptacle</td> <td>HD10-6-12P</td> </tr> <tr> <td>Pin Contact</td> <td>0460-220-1231</td> </tr> <tr> <td>Sealing Cap</td> <td>HDC16-6</td> </tr> </table>	Receptacle	HD10-6-12P	Pin Contact	0460-220-1231	Sealing Cap	HDC16-6	<table border="1" data-bbox="989 760 1423 857"> <tr> <td>Plug</td> <td>HD16-6-12S</td> </tr> <tr> <td>Sockets</td> <td>0462-210-1231</td> </tr> <tr> <td>Strain Relief</td> <td>HD18-006</td> </tr> </table>	Plug	HD16-6-12S	Sockets	0462-210-1231	Strain Relief	HD18-006
Receptacle	HD10-6-12P												
Pin Contact	0460-220-1231												
Sealing Cap	HDC16-6												
Plug	HD16-6-12S												
Sockets	0462-210-1231												
Strain Relief	HD18-006												



3.2. SAE J1939 Connectors, Type I

<p>HD10-9-1939P Cab Mounted Receptacle</p>	<p>HD10-9-1939P-B022 Cab Mounted Receptacle (Jam Nut Mount)</p>												
													
<table border="1"> <tr><td>Receptacle</td><td>HD10-9-1939P</td></tr> <tr><td>Pin Contact</td><td>0460-202-1631</td></tr> <tr><td>Sealing Cap</td><td>HDC16-9-E004</td></tr> </table>	Receptacle	HD10-9-1939P	Pin Contact	0460-202-1631	Sealing Cap	HDC16-9-E004	<table border="1"> <tr><td>Receptacle</td><td>HD10-9-1939P-B022</td></tr> <tr><td>Pin Contact</td><td>0460-202-1631</td></tr> <tr><td>Sealing Cap</td><td>HDC16-9-E004</td></tr> </table>	Receptacle	HD10-9-1939P-B022	Pin Contact	0460-202-1631	Sealing Cap	HDC16-9-E004
Receptacle	HD10-9-1939P												
Pin Contact	0460-202-1631												
Sealing Cap	HDC16-9-E004												
Receptacle	HD10-9-1939P-B022												
Pin Contact	0460-202-1631												
Sealing Cap	HDC16-9-E004												

<p>HD17-9-1939S Mating Plug</p>	<p>HD16-9-J1939SE Mating Plug (with locking ring)</p>												
													
<table border="1"> <tr><td>Receptacle</td><td>HD17-9-1939S</td></tr> <tr><td>Sockets</td><td>0462-201-1631</td></tr> <tr><td>Strain Relief</td><td>HD18-009</td></tr> </table>	Receptacle	HD17-9-1939S	Sockets	0462-201-1631	Strain Relief	HD18-009	<table border="1"> <tr><td>Receptacle</td><td>HD17-9-1939SE</td></tr> <tr><td>Sockets</td><td>0462-201-1631</td></tr> <tr><td>Strain Relief</td><td>HD18-009</td></tr> </table>	Receptacle	HD17-9-1939SE	Sockets	0462-201-1631	Strain Relief	HD18-009
Receptacle	HD17-9-1939S												
Sockets	0462-201-1631												
Strain Relief	HD18-009												
Receptacle	HD17-9-1939SE												
Sockets	0462-201-1631												
Strain Relief	HD18-009												

3.3. SAE J1939 Connectors, Type II

HD10-9-1939P-P080 Cab Mounted Receptacle	HD10-9-1939P-BP03 Cab Mounted Receptacle (Jam Nut)	HD14-9-1939P-P080 In-Line Receptacle																		
																				
<table border="1"> <tr> <td>Receptacle</td> <td>HD10-9-1939P-P080</td> </tr> <tr> <td>Pin Contact</td> <td>0460-202-1631</td> </tr> <tr> <td>Sealing Cap</td> <td>HDC16-9-E004</td> </tr> </table>	Receptacle	HD10-9-1939P-P080	Pin Contact	0460-202-1631	Sealing Cap	HDC16-9-E004	<table border="1"> <tr> <td>Receptacle</td> <td>HD10-9-1939P-BP03</td> </tr> <tr> <td>Pin Contact</td> <td>0460-202-1631</td> </tr> <tr> <td>Sealing Cap</td> <td>HDC16-9-E004</td> </tr> </table>	Receptacle	HD10-9-1939P-BP03	Pin Contact	0460-202-1631	Sealing Cap	HDC16-9-E004	<table border="1"> <tr> <td>Receptacle</td> <td>HD14-9-1939P-P080</td> </tr> <tr> <td>Pin Contact</td> <td>0460-202-1631</td> </tr> <tr> <td>Sealing Cap</td> <td>HDC16-9-E004</td> </tr> </table>	Receptacle	HD14-9-1939P-P080	Pin Contact	0460-202-1631	Sealing Cap	HDC16-9-E004
Receptacle	HD10-9-1939P-P080																			
Pin Contact	0460-202-1631																			
Sealing Cap	HDC16-9-E004																			
Receptacle	HD10-9-1939P-BP03																			
Pin Contact	0460-202-1631																			
Sealing Cap	HDC16-9-E004																			
Receptacle	HD14-9-1939P-P080																			
Pin Contact	0460-202-1631																			
Sealing Cap	HDC16-9-E004																			

HD17-9-1939S-P080 Mating Plug	HD16-9-1939S-P080 Mating Plug (With Locking Ring)												
													
<table border="1"> <tr> <td>Receptacle</td> <td>HD17-9-1939S-P080</td> </tr> <tr> <td>Sockets</td> <td>0462-201-1631</td> </tr> <tr> <td>Strain Relief</td> <td>HD18-009</td> </tr> </table>	Receptacle	HD17-9-1939S-P080	Sockets	0462-201-1631	Strain Relief	HD18-009	<table border="1"> <tr> <td>Receptacle</td> <td>HD16-9-1939S-P080</td> </tr> <tr> <td>Sockets</td> <td>0462-201-1631</td> </tr> <tr> <td>Strain Relief</td> <td>HD18-009</td> </tr> </table>	Receptacle	HD16-9-1939S-P080	Sockets	0462-201-1631	Strain Relief	HD18-009
Receptacle	HD17-9-1939S-P080												
Sockets	0462-201-1631												
Strain Relief	HD18-009												
Receptacle	HD16-9-1939S-P080												
Sockets	0462-201-1631												
Strain Relief	HD18-009												

4. TVIT Pinouts

Function	DB15 Male Pin (TVIT)
ISO9141/ISO14230 K Line	1
CEC1	2
J1850 VPW+	3
No Connection	4
CAN2+, ALDL, CEC1Enable	5
Signal Ground	6
CAN1 Shield Ground	7
Power	8
CAN2 Shield Ground	9
CAN2-	10
ISO9141-L Line	11
CAN1-	12
CAN1+	13
J1708-	14
J7108+	15

5. DrewLinQ Pinouts

Pin	Protocol 1	Protocol 2	Protocol 3	Protocol 4
1	SW_CAN	FT_CAN+		
2	J1850+ (VPW/PWM)			
3	CAN2+	GM_UART	DoIP Ethernet TX+	CEC1 Enable
4	Case Ground			
5	Signal/Battery Ground			
6	CAN1+			
7	ISO9141/ISO14230 K-Line	J1708+ (J2534 PS)		
8	DoIP Ethernet Sense			
9	CEC1	FT_CAN-		
10	J1850- (PWM)			
11	CAN2-	ISO9141/ISO14230 K-Line	DoIP Ethernet TX-	
12	J1708+ (Primary)	CAN3+	DoIP Ethernet RX+	GM_UART
13	J1708- (Primary)	CAN3-	DoIP Ethernet RX-	
14	CAN1-			
15	ISO9141/ISO14230 L-Line	J1708- (J2534 PS)		
16	V+ Battery (8-32V)			
17	Do Not Connect			
18	Do Not Connect			
19	Reserved/TBA			
20	Do Not Connect			
21	Do Not Connect			
22	Do Not Connect			
23	Do Not Connect			
24	Reserved/TBA			
25	Reserved/TBA			
26	Signal/Battery Ground			

- Note that pins 1, 3, 8, 9, 11, 12, 13 are listed as discretionary pins in J1962.
- Protocols listed as "Protocol 1" are available in RP1210 along with J1708 (Primary), SWCAN, FTCAN, GM_UART, CEC1.
- Protocols listed as "Protocol 1" are available in J2534, and all other protocols are available through J2534 pin switching.