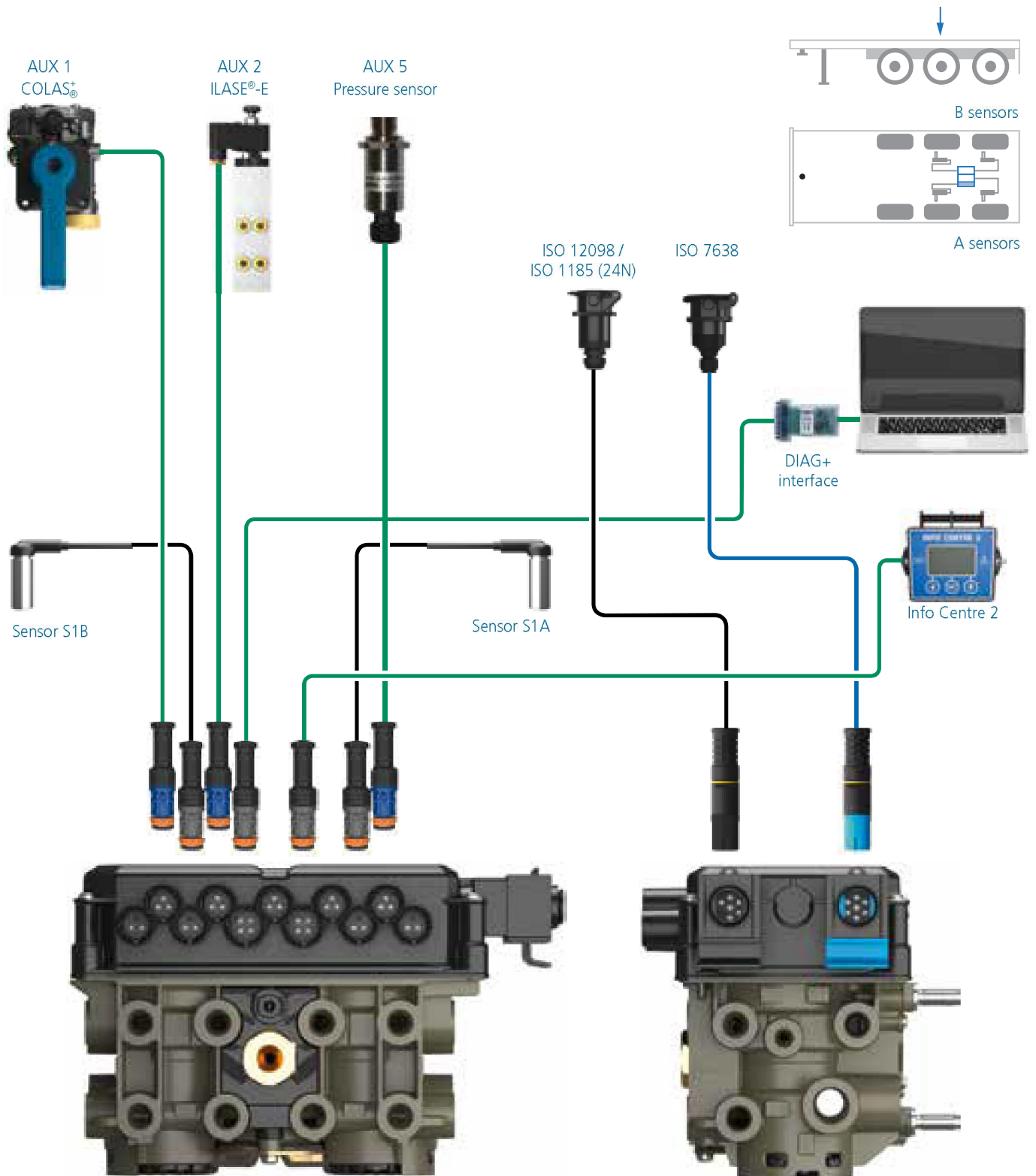


2 sensors, 2 modulators, 3 AUX, with Info Centre 2

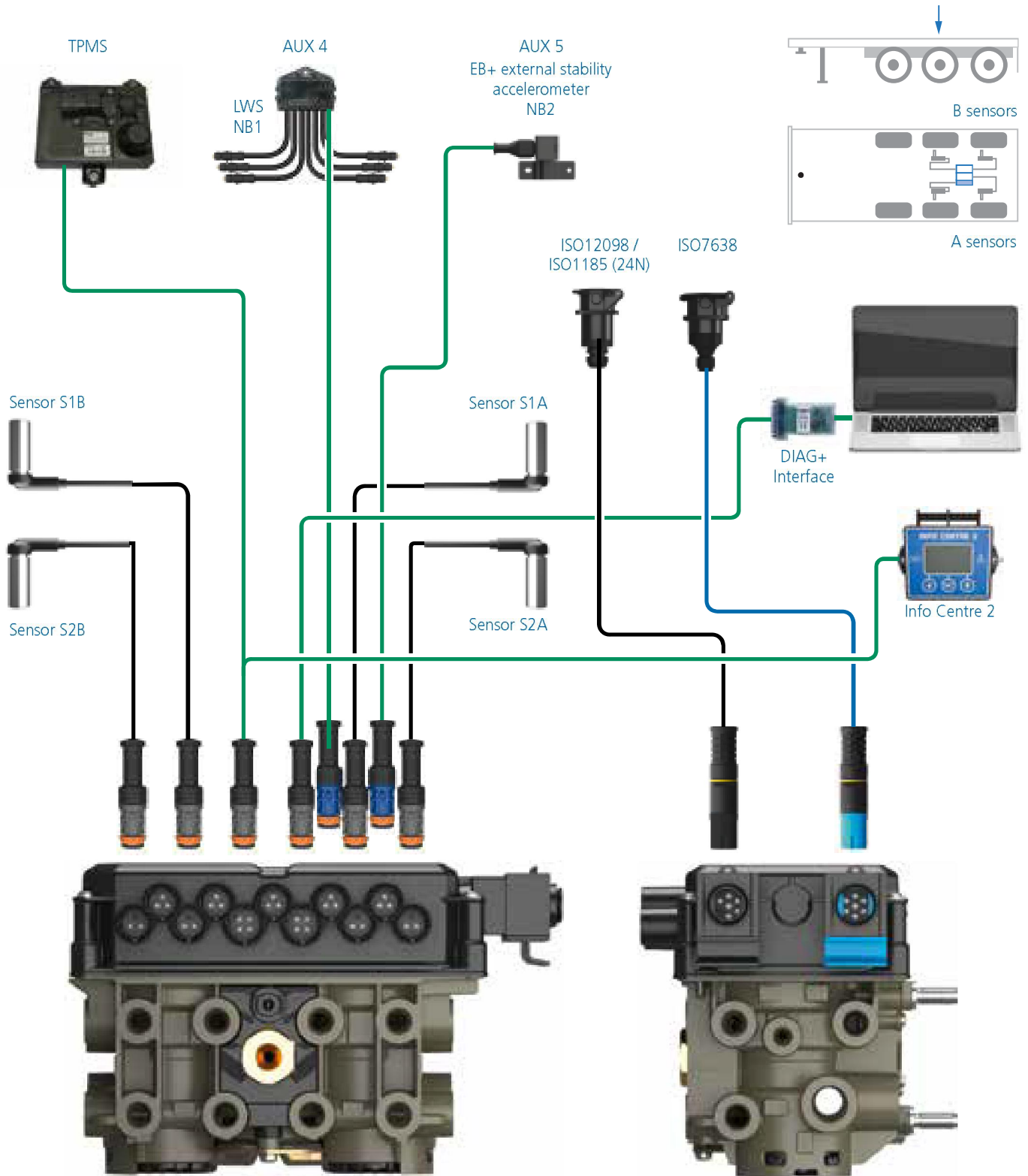


Connections shown:

ISO 7638	ISO 12098	DIAG	S1A	S1B	S2A	S2B	AUX 1	AUX 2	AUX 3	AUX 4	AUX 5
✓	✓	✓	✓	✓			✓	✓			✓



4 sensors, 2 modulators, 3 AUX, with Info Centre 2 and TPMS



Connections shown:

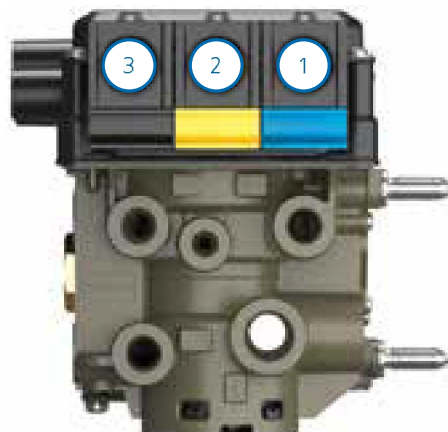
NB1 - Lining wear sensor to be fitted in AUX 4 only  
 NB2 - External stability accelerometer to be fitted in AUX 5 only

ISO 7638	ISO 12098	DIAG	S1A	S1B	S2A	S2B	AUX 1	AUX 2	AUX 3	AUX 4	AUX 5
✓	✓	✓	✓	✓	✓	✓				✓	✓

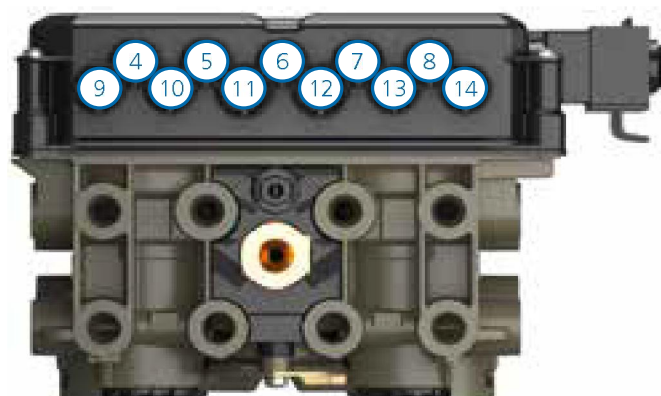


# ECU connections - 3M

- 1 ISO 7638
- 2 3M link cable
- 3 ISO 12098 / ISO 1185 (24N)
- 4 AUX 1
- 5 AUX 2
- 6 AUX 3
- 7 AUX 4
- 8 AUX 5
- 9 Sensor S2B
- 10 Sensor S1B
- 11 DIAGN
- 12 DIAGN
- 13 Sensor S1A
- 14 Sensor S2A



EB+ Gen3 3M



## Full trailer 3M system

Make connection to the Slave ECU using the interconnecting cable.

It is possible to use the DIAG+ software to set the ECU parameters with only the power supply ISO 7638 and interconnection cable (Master to Slave ECU) connected. But diagnostic codes will be logged and will require to be deleted on the final vehicle installation.

Note:

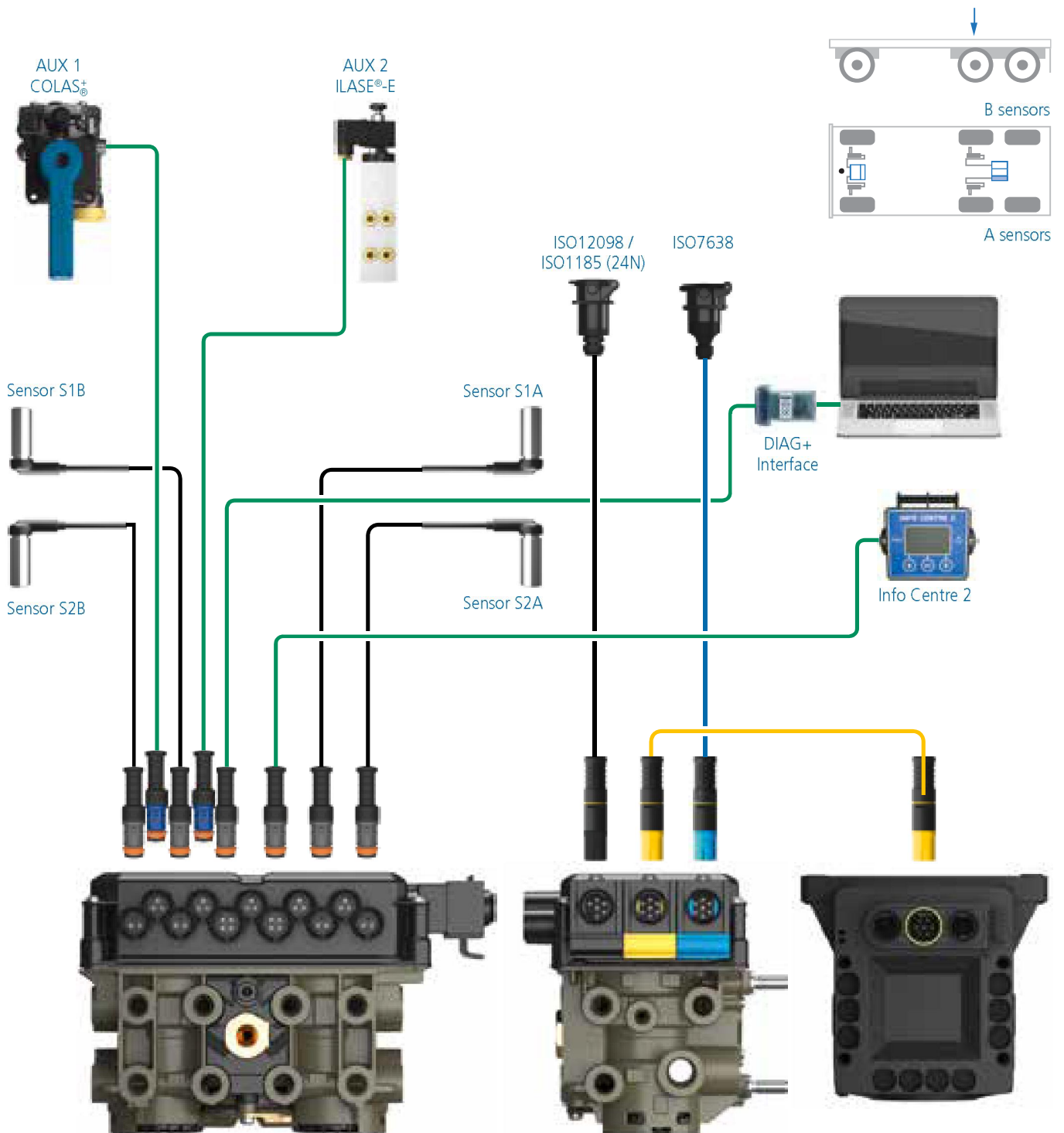
The EB+ Gen3 Slave assembly (ECU & valve) is only supplied as one complete unit that cannot / should not be separated.



2 Interconnecting cable

Slave ECU

4 sensors, 3 modulators, 2 AUX, with Info Centre 2



Connections shown:

ISO 7638	ISO 12098	DIAG	S1A	S1B	S2A	S2B	AUX 1	AUX 2	AUX 3	AUX 4	AUX 5	3M
✓	✓	✓	✓	✓	✓	✓	✓	✓				✓

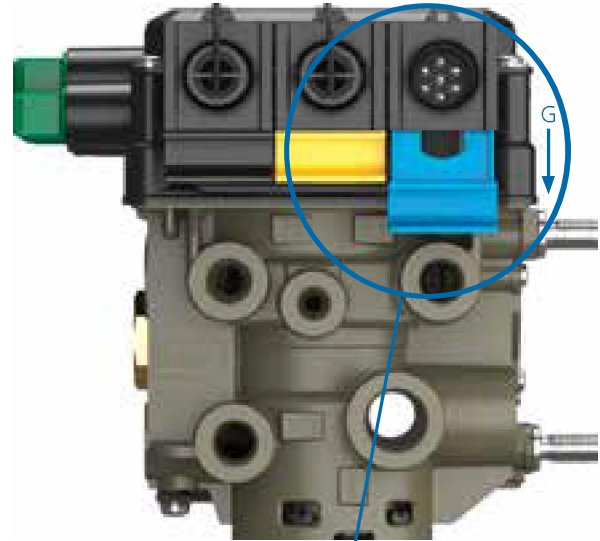




# ECU connectors - slide lock

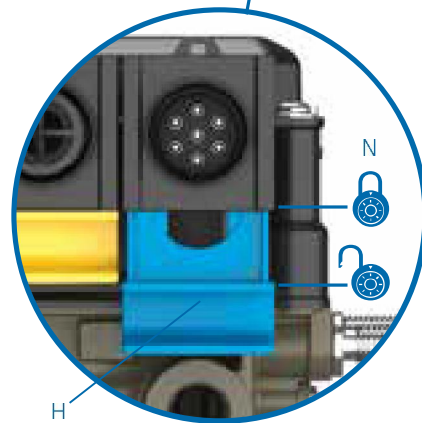
## Slide lock power connectors

Unlock the housing by sliding down lever 'G'.



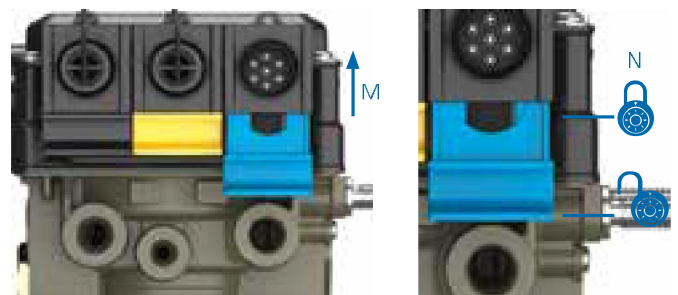
Make sure slider is in the unlocked position 'H'.

Ensure contact pins and seal are kept clean and free of any contamination prior to installation.

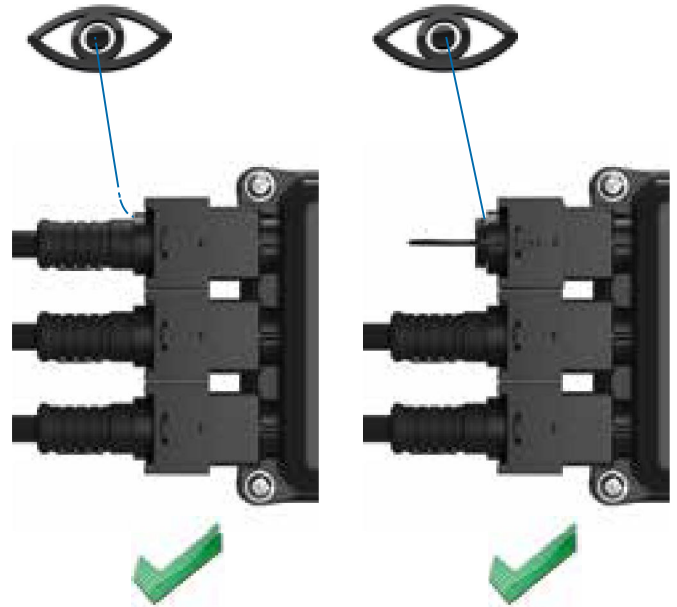


Push in lock slider 'M' to secure in place all plugs and connectors. Do not use extreme force to push in slider.

Make sure slider is in the lock position 'N'.

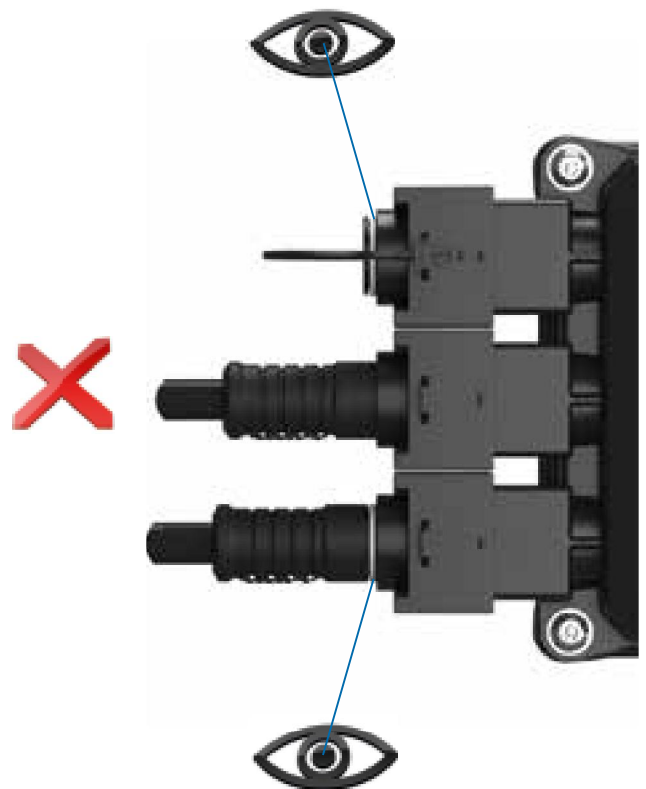


Make sure that all connectors and blanking plugs are fully inserted into the ECU slide lock housing.



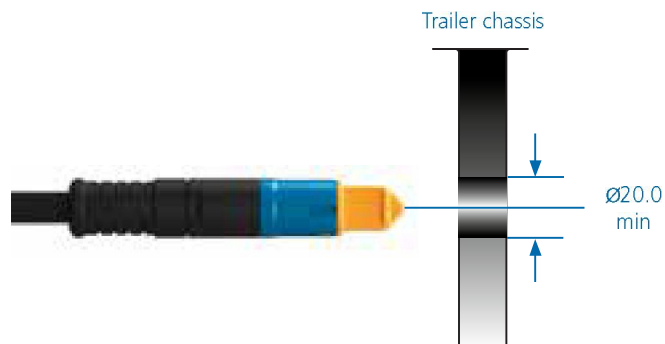
**Warning:**

- > If difficulty is encountered in locking the slider, check plug or connector for correct fitment.
- > If the white o-ring is visible, the plug is not installed correctly and slider will not lock into position.

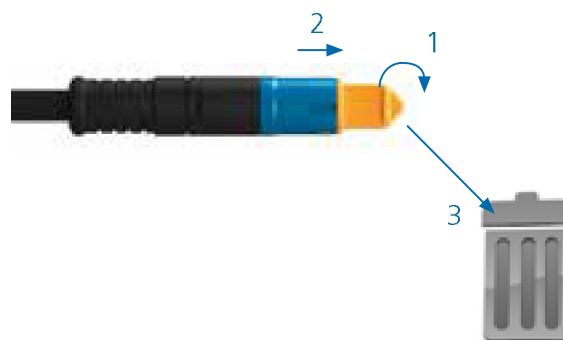


ISO 7638 (PWR-A)

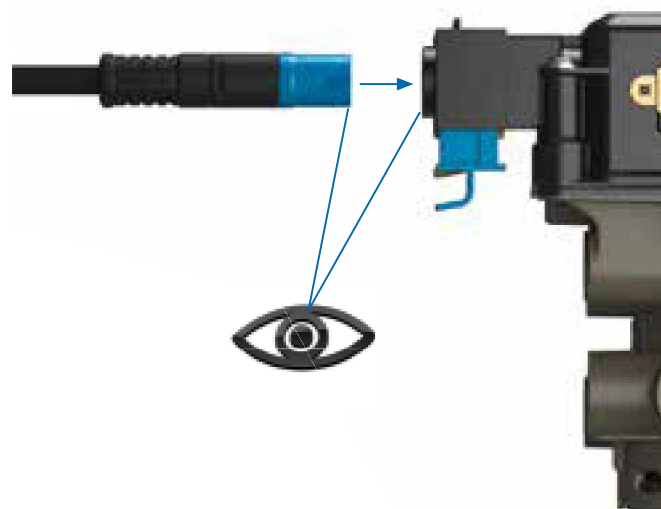
Feed all connectors through the chassis with protective cap in place to avoid connector sockets being contaminated.



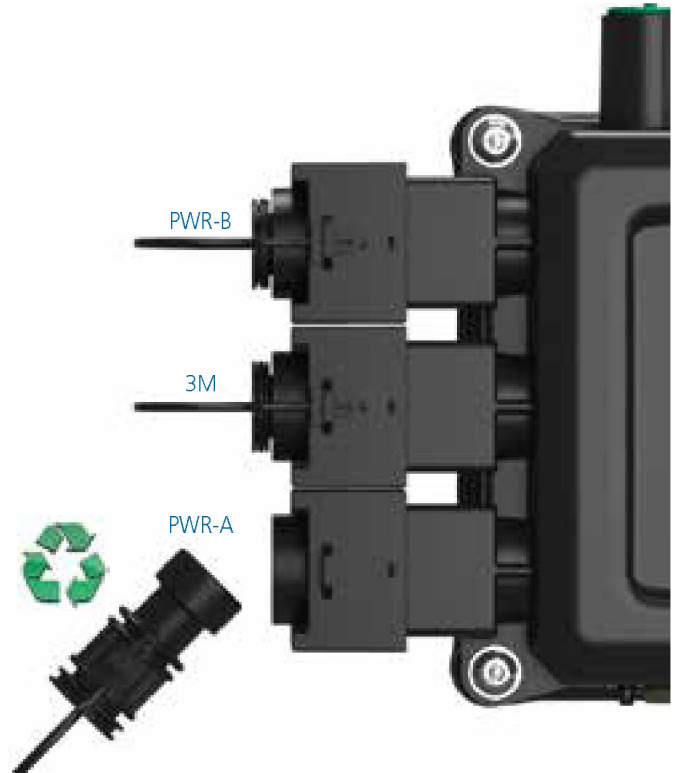
Remove protective cap from end of connector before connecting into the ECU.



Connections: make sure that all connections (socket and plug) are clean and dry before assembly.



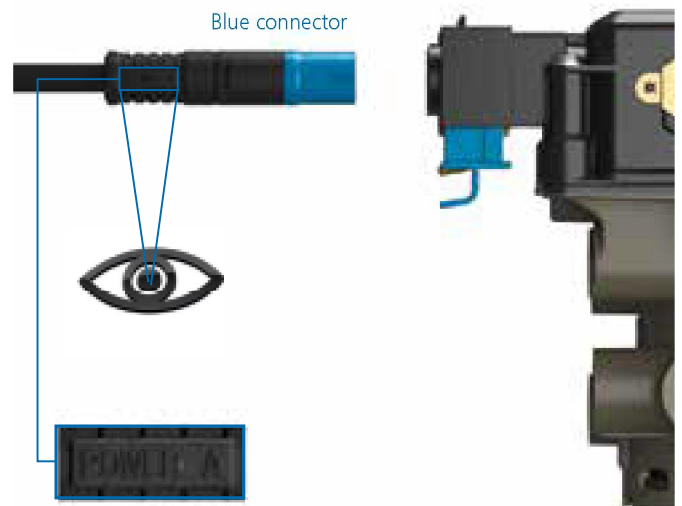
Remove the blanking plug from the 'PWR-A' position.



Identify orientation of the ISO 7638 blue coloured connector.

Ensure contact pins and seal are clean and free of any contamination prior to installation.

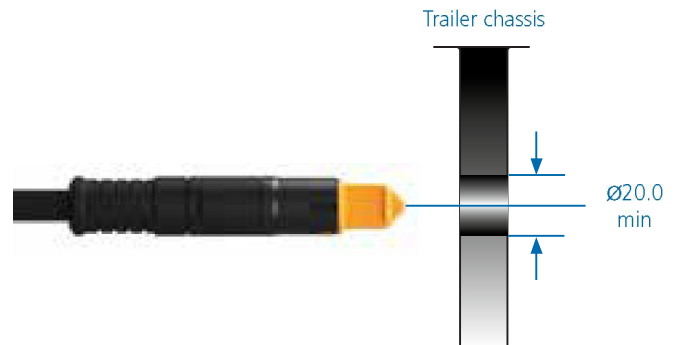
In position 'PWR-A', on the slide lock housing, insert connector fully home.



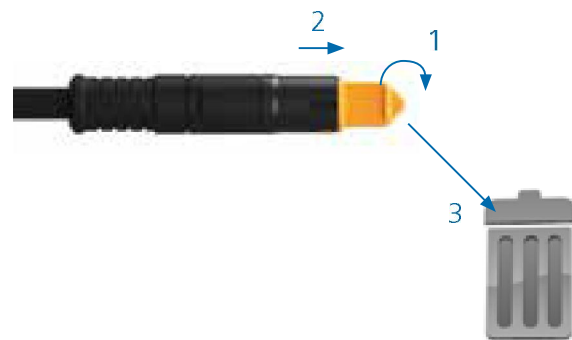


ISO 12098 / ISO 1185 (24N) (PWR-B)

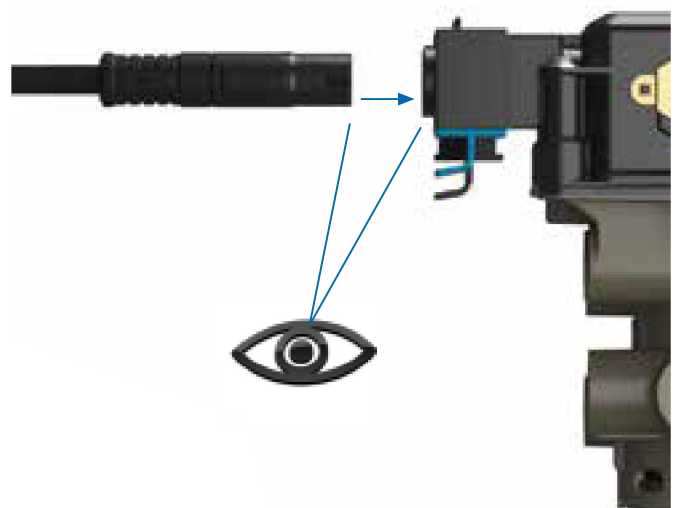
Feed all connectors through the chassis with protective cap in place to avoid connector sockets being contaminated.



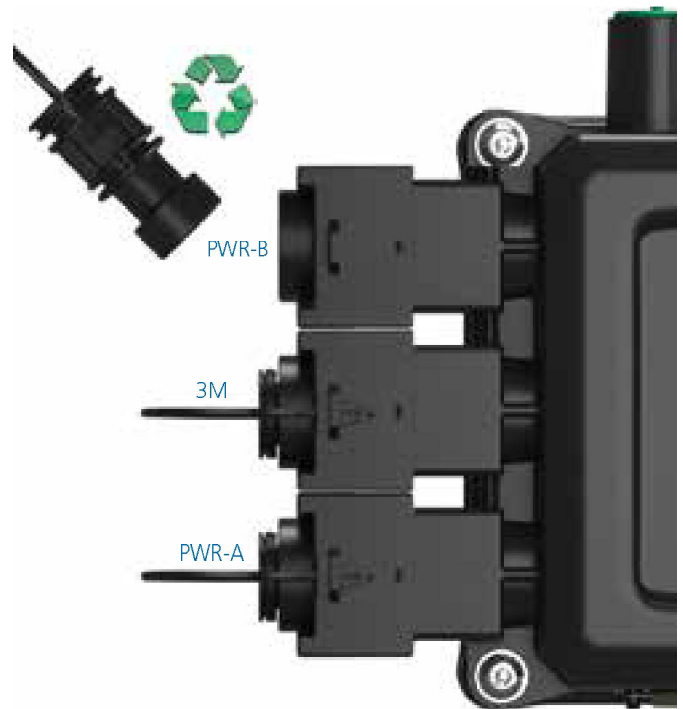
Remove protective cap from end of connector before connecting into the ECU.



Connections: make sure that all connections (socket and plug) are clean and dry before assembly.



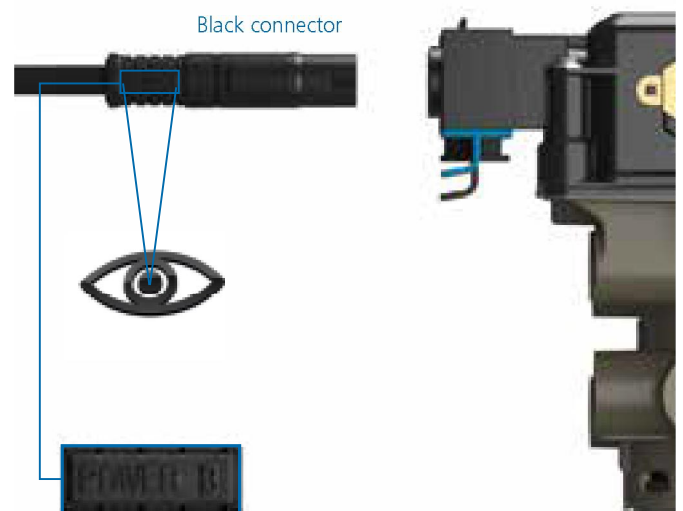
Remove the blanking plug from the 'PWR-B' position.



Identify orientation of the ISO 12098 / ISO 1185 (24N) black coloured connector.

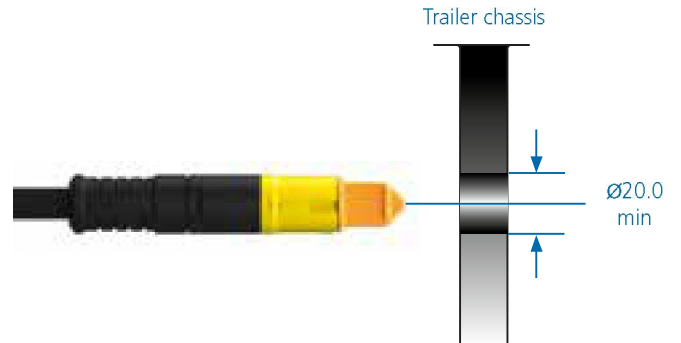
Ensure contact pins and seal are clean and free of any contamination prior to installation.

In position 'PWR-B', on the slide lock housing, insert connector fully home.

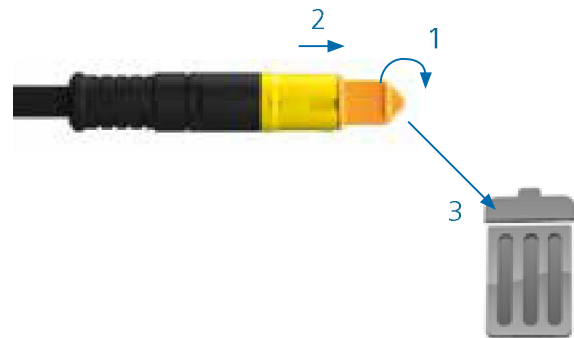


### 3M link cable

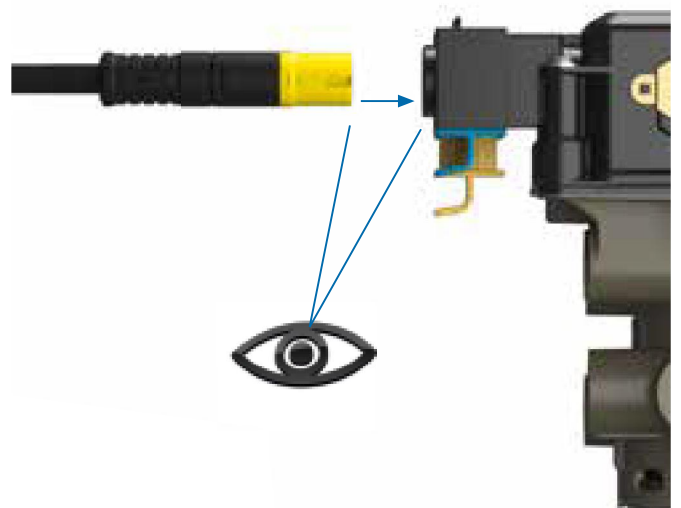
Feed all connectors through the chassis with protective cap in place to avoid connector sockets being contaminated.



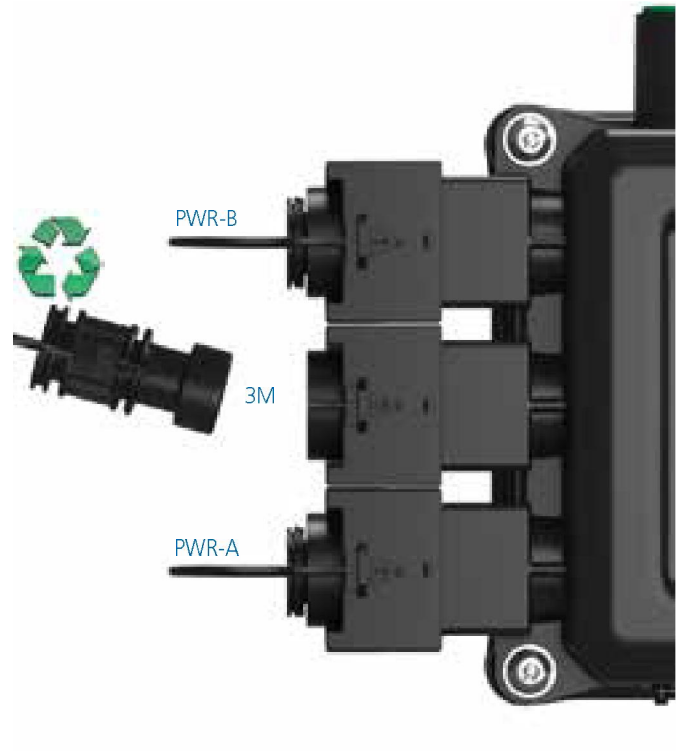
Remove protective cap from end of connector before connecting into the ECU.



Connections: make sure that all connections (socket and plug) are clean and dry before assembly.



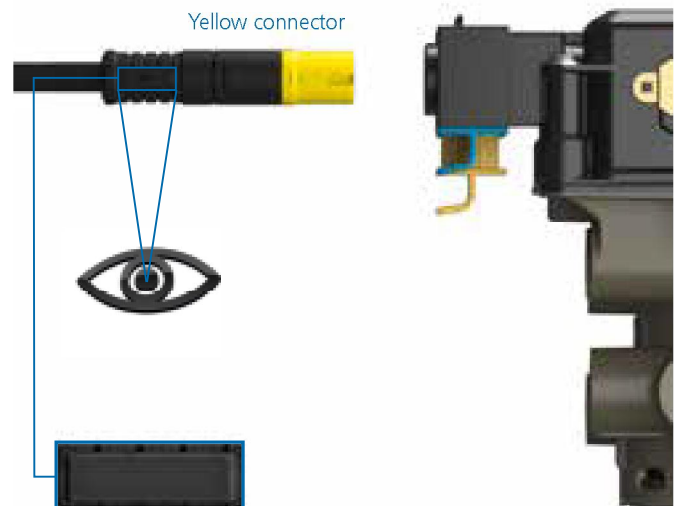
Remove the blanking plug from the '3M' position.



Identify orientation of the 3M link cable yellow coloured connector.

Ensure contact pins and seal are clean and free of any contamination prior to installation.

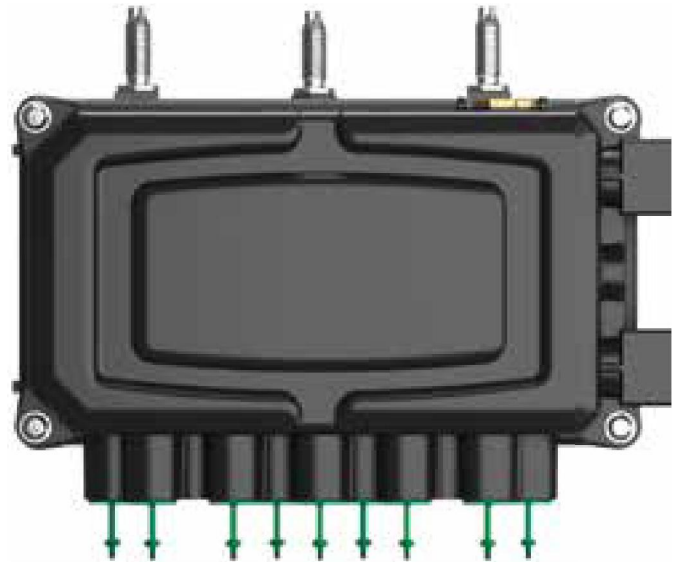
In position '3M', on the slide lock housing, insert connector fully home.





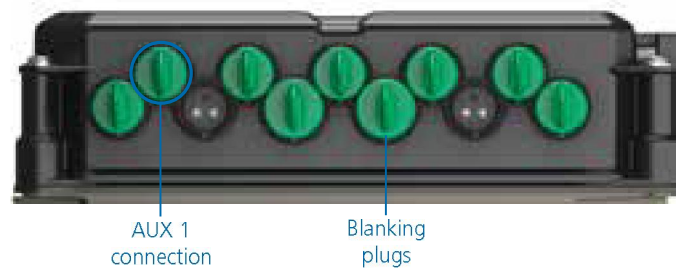
# ECU connectors – sensor & AUX

The ECU is supplied with blanking plugs in positions indicated. These require to be removed to allow fitment of additional sensors or permitted ancillary equipment.

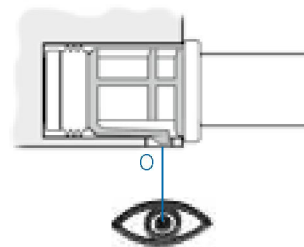


Example - AUX 1 connection

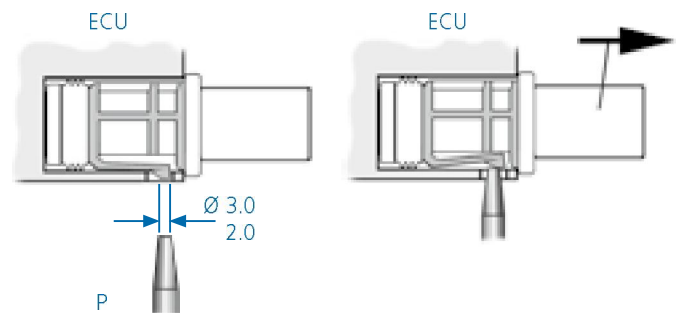
Identify the AUX 1 position on the front face of the ECU.



Locate the locking tag 'O' position.



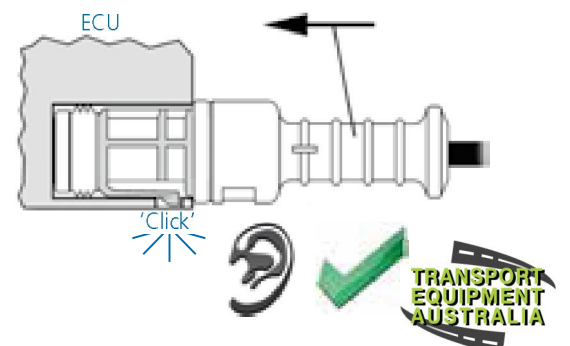
With a tool 'P' having a flat end of  $\varnothing 3-2$  mm insert and press in locking tab of plug. While depressed pull out plug from housing.



Identify orientation:

- > Sensor black body connector
- > Auxiliary blue body connector
- > Diagnostic black body connector

Ensure contact pins and seal are kept clean and free of any contamination prior to installation. Insert fully home.

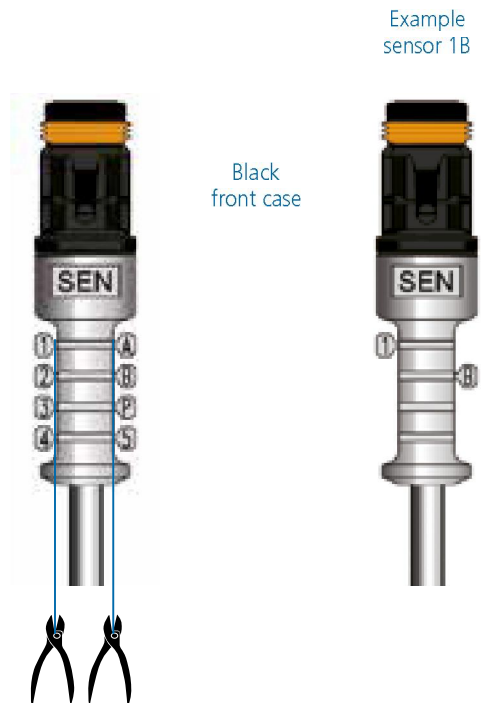


## Sensor connector

Identification tags are incorporated on either side of the sensor / ECU connector.

These must be removed to identify the appropriate sensor before connecting into the ECU.

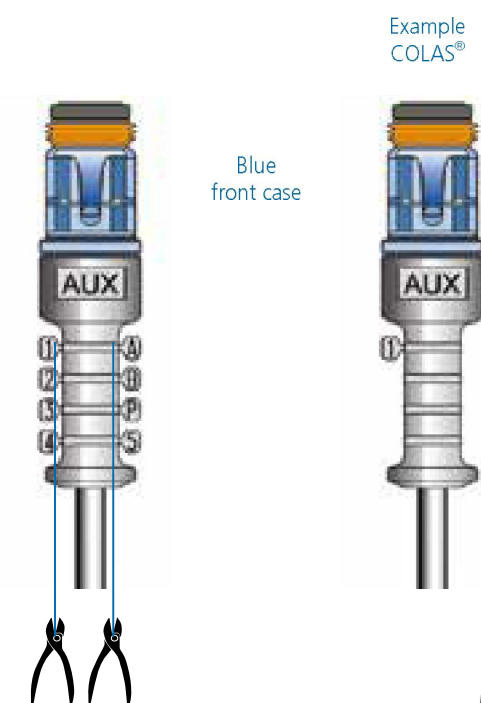
ECU identification	Tags removed					Component
	1	2	3	4	A B P 5	
S1A	✂️✂️		✂️✂️✂️			Sensor 1A
S1B	✂️✂️✂️			✂️✂️		Sensor 1B
S2A	✂️	✂️✂️		✂️✂️✂️		Sensor 2A
S2B	✂️	✂️✂️✂️			✂️✂️	Sensor 2B



## Auxiliary connector

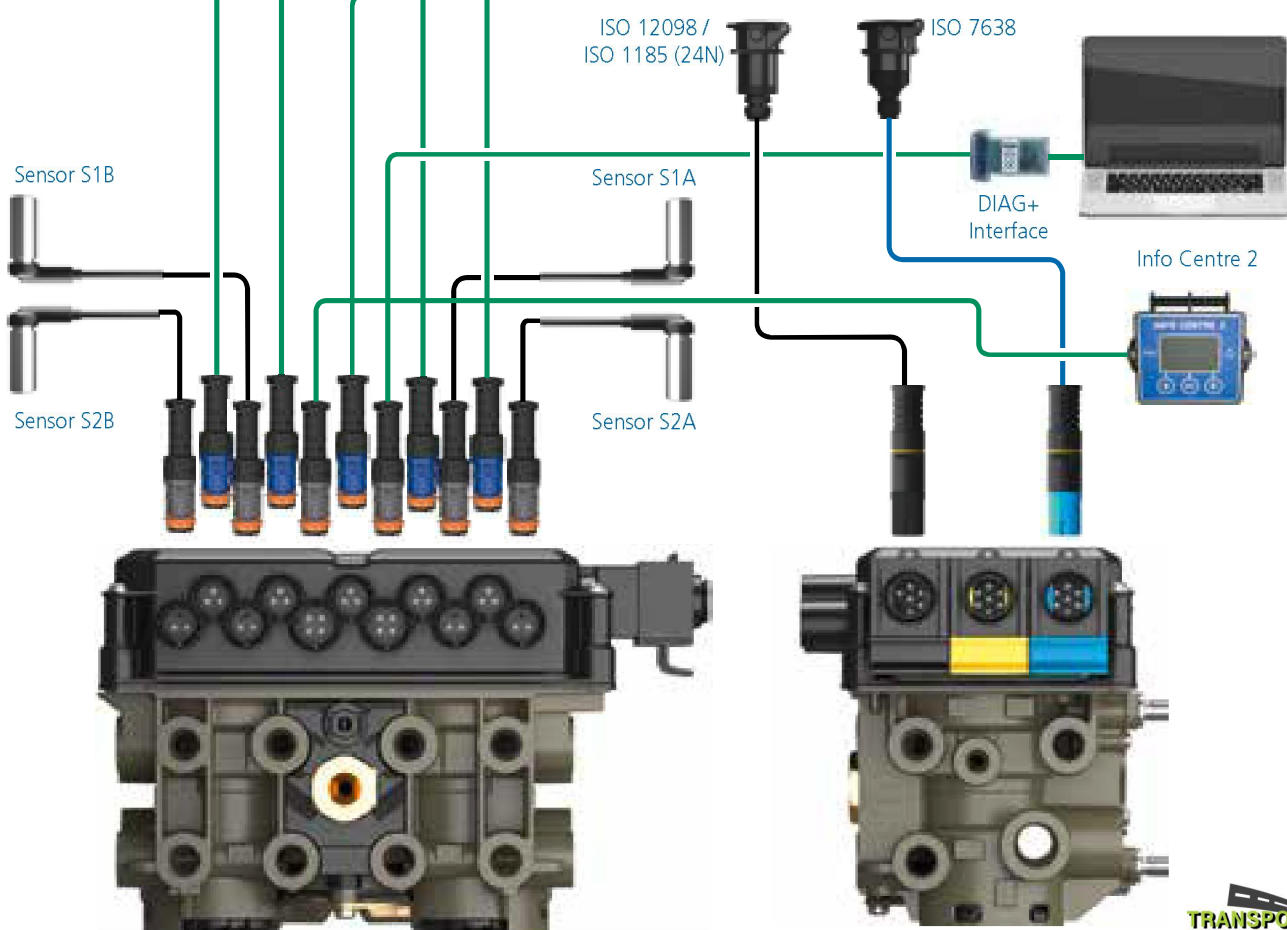
Identification tags are incorporated on either side of the auxiliary connector. These must be removed to identify the appropriate usage before connecting into the ECU.

ECU identification	Tags removed					Component
	1	2	3	4	A B P 5	
AUX 1	✂️✂️✂️✂️✂️✂️					COLAS®
AUX 2	✂️	✂️✂️✂️✂️				ILAS®-E
AUX 3	✂️✂️	✂️✂️✂️✂️				Warning lamp
AUX 4	✂️✂️✂️		✂️✂️✂️✂️			LWS
AUX 5	✂️✂️✂️✂️✂️					Stability



# ECU connector identification

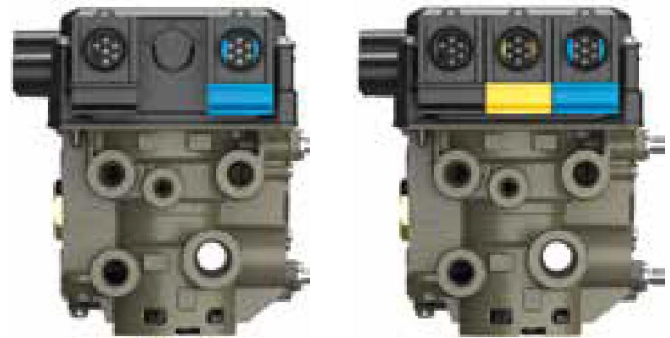
AUX 1	AUX 2 & 3	AUX 4	AUX 5
COLAS®	COLAS®	Lining wear sensor	Lateral accelerometer
Retarder	Retarder	General purpose input	General purpose input
Trailer lamp	Trailer lamp	Control line sensor	Control line sensor
ILAS®-E front	ILAS®-E front	Soft Docking	Soft Docking
ILAS®-E rear	ILAS®-E rear	Mechanical height sensor	Mechanical height sensor
AUX power	AUX power	Mechanical height sensor remote	Mechanical height sensor remote
Steer axle lock	Steer axle lock	External pressure sensor	External pressure sensor
Service lamp	Service lamp		
Overload lamp	Overload lamp		
Remote overload lamp	Remote overload lamp		
Stability lamp	Stability lamp		
General purpose output	ILAS®-E front manual		
TA+	ILAS®-E rear manual		
Info Point	General purpose output		
Info Point / COLAS®	TA+		
Speed lock	Speed lock		
TPMS lamp	TPMS lamp		



# Auxiliary operation

Auxiliary functions are dependant on the installed EBS product.

Gen3	STD	S AUX	P AUX
823 008 xxx	✓	✓	
823 034 xxx	✓	✓	✓



## Standard AUX (STD)

Connections: 3 outputs + 2 inputs. EB+ includes by default 5 auxiliary ports for various surrounding functions. 3 of these auxiliaries are digital, 2 are analogue inputs. These amount of inputs and outputs are sufficient for most commonly used standard trailer applications. For example ILAS®-E (= lift axle control) and COLAS® (= return to ride height) digital AUX are required, whereas for LWI (= lining wear indicator) and Soft Docking (= ramp approach system) analogue inputs are needed. In case of malfunction (short circuit / open circuit) the EB+ system generates a DTC code and the service lamp will be triggered after start up.

The Standard AUX has 5 x AUX connectors that can be configured using DIAG+.

- AUX 1 - 24V switched output
- AUX 2 - 24V switched output and monitor input
- AUX 3 - 24V switched output and monitor input
- AUX 4 - analogue input
- AUX 5 - analogue input

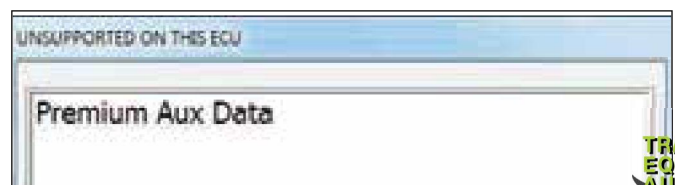
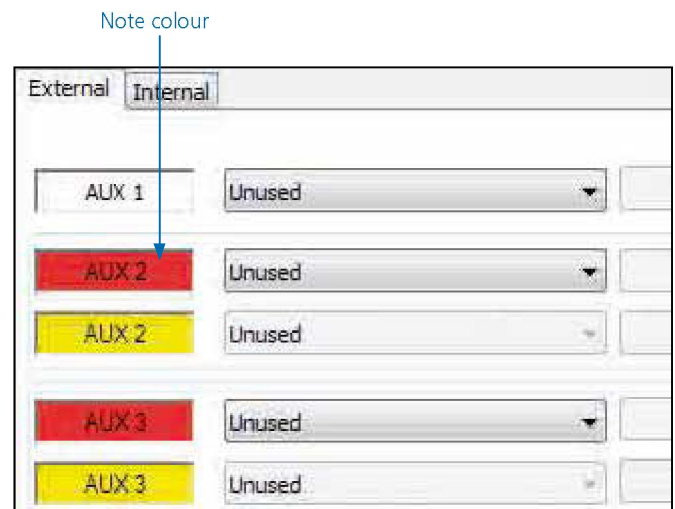
### Programming Standard AUX using DIAG+ V6

The AUX configuration screen shows the various auxiliary connections that can be used.

- AUX 1
- AUX 2 red only
- AUX 3 red only
- AUX 4
- AUX 5

Clicking on the drop down arrow displays a list of options that can be selected on that auxiliary.

Error message: an error message will be displayed if an auxiliary configuration is created and sent to an ECU that does not support that function.





## Super AUX (S AUX)

The Super AUX connection was developed as there are a number of applications where trigger signals from the truck and trailer are required.

Connections via Power B (black connector)

- > 1 x 24N power supply (2 pins)
- > 3 x inputs (i.e. A, B and C) and 24 V signal (4 pins)



Already with EB+ Gen1 Haldex introduced a 'Power B' socket for backup power supply by stop light ISO 12098 / ISO1185 (24N). This link to the lighting system has been extended by the introduction of the 'Super AUX'. The connector includes an additional three digital inputs and 24 V signal supply (only use the 24 V signal supply for the Super AUX control switches). The control inputs can be linked to any auxiliary feature and this allows very sophisticated applications to be realised in a very simple manner. Some examples for controllable auxiliary features are 'traction support' and / or 'steer axle lock' and / or 'EBD' (=Electric Brake Demand). Backup power is always available by default.

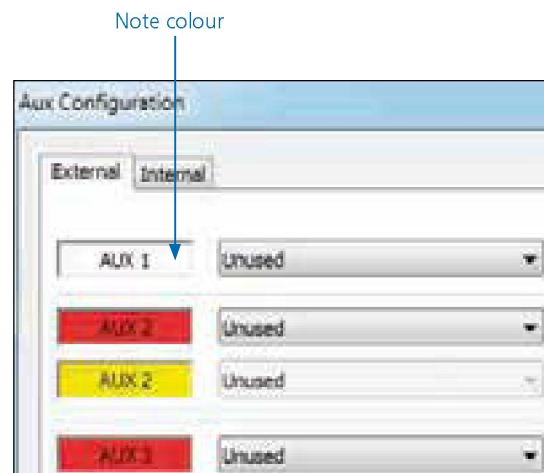
Auxiliary connection cables: to use the full auxiliary functionality of "Super AUX", the following cable can be used.



814 002 3xx series

Programming Super AUX using DIAG+ V6  
The "AUX configuration" screen shows the various auxiliary connections that can be used.

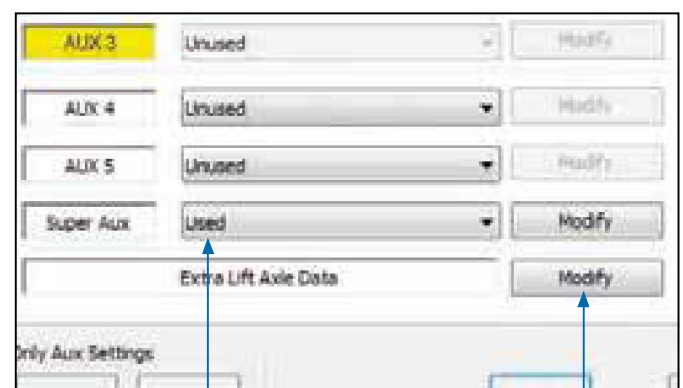
- AUX 1
- AUX 2           Red only
- AUX 3           Red only
- AUX 4
- AUX 5
- Super AUX



Clicking on the drop down arrow displays a list of options that can be selected on that auxiliary.

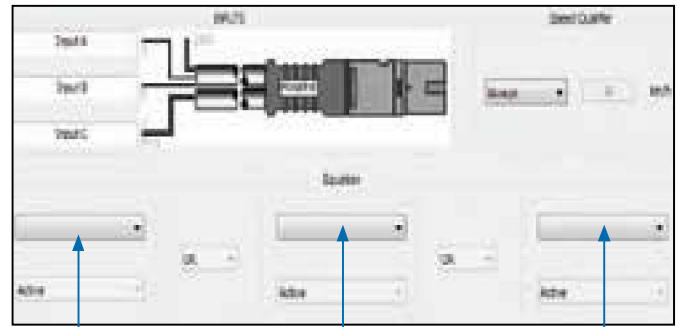
## Configuring Super AUX

Click on the  button to configure the Super AUX inputs.



## Custom Super AUX input screen

Inputs A, B and C can now be configured using the drop down boxes.



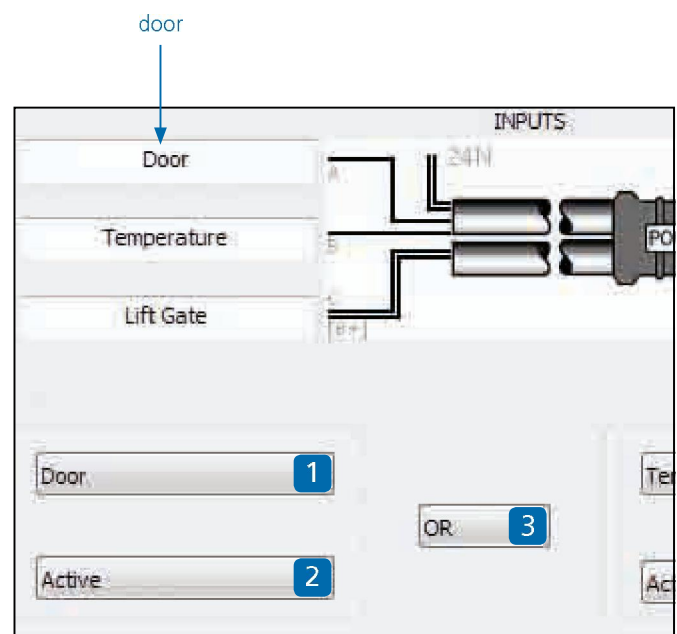
Drop down boxes used to configure the input signals.

Inputs A, B and C can also be renamed to their intended activation input (e.g. door).

The required input combination can be achieved by using the drop down boxes for:

- 1 The input signal (e.g. door)
- 2 The activation level (i.e. high or low)
- 3 The action (i.e. OR & AND).

A combined summary input statement is shown in the window at the bottom of the screen.



### Speed qualifier

A speed signal can also be added to the final 'input statement' by using the 'speed qualifier' drop down box options.

Always	No speed signal referenced
<=	Less than and equal to selected km / h
>	Greater than selected km / h

Click on the button to cancel with no modifications.

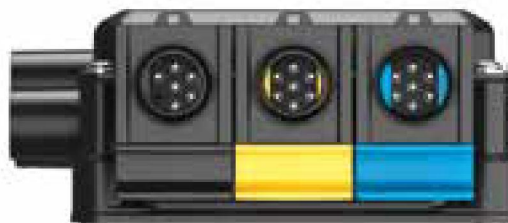
Click on the button to exit and keep the modifications.

### Summary statement



## Premium AUX (P AUX)

Premium AUX allows the user to program two totally independent outputs on both AUX 2 and AUX 3. It is only available with the Premium ECU (as shown).

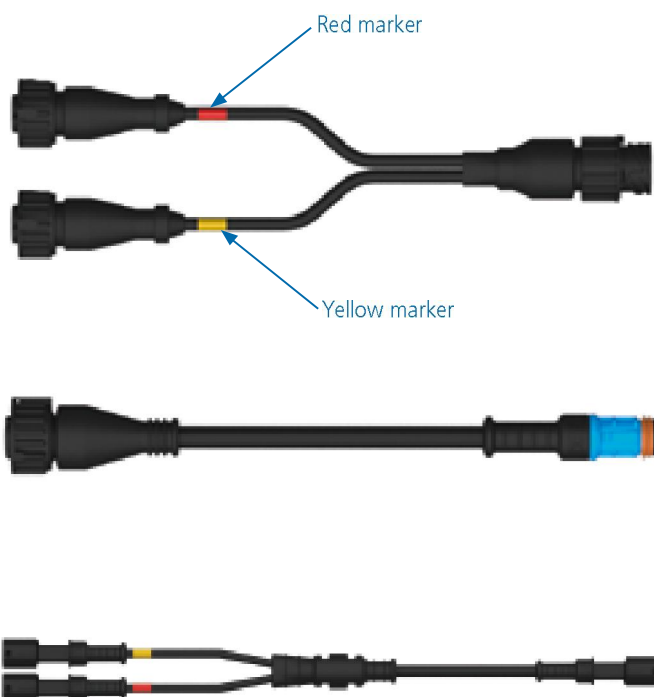


The Premium system provides five instead of three outputs (AUX 2 and 3 are capable to operate two separate functions). An example for an extended application could be ILAS®-E front including TA+ on AUX 2, steer axle lock on AUX 3 and COLAS® RtR on AUX 1. The twin outputs of AUX 2 and AUX 3 are colour coded red and yellow within the DIAG+ software. These colours then match the twin identifiers of the cables below.

### Auxiliary connection cables

To use the full auxiliary twin functionality of the "Premium AUX" product, the following cables can be used.

- 814 028 xxx series
- 814 012 2xx series
- 814 039 001



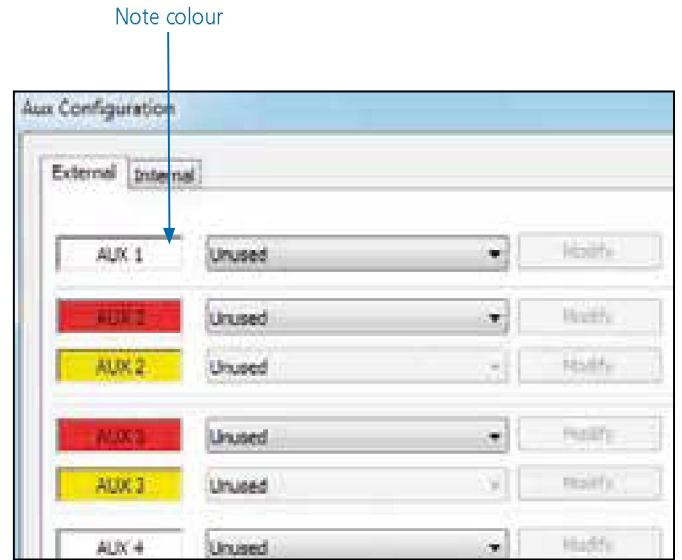
Programming Premium AUX using DIAG+ V6

Programming of AUX 2 and AUX 3 on Premium AUX is only possible using DIAG+ V6 or later.

The 'AUX configuration' screen shows the various auxiliary connections that can be used.

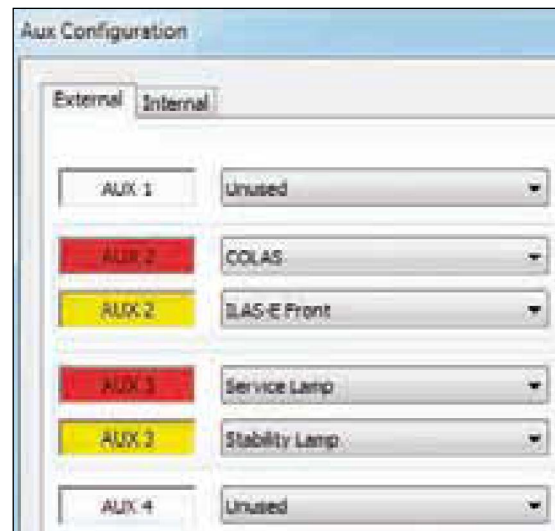
- AUX 1
- AUX 2           Red
- AUX 2           Yellow
- AUX 3           Red
- AUX 3           Yellow
- AUX 4
- AUX 5
- Super AUX

Clicking on the drop down arrow displays a list of options that can be selected on that auxiliary.



Premium AUX example

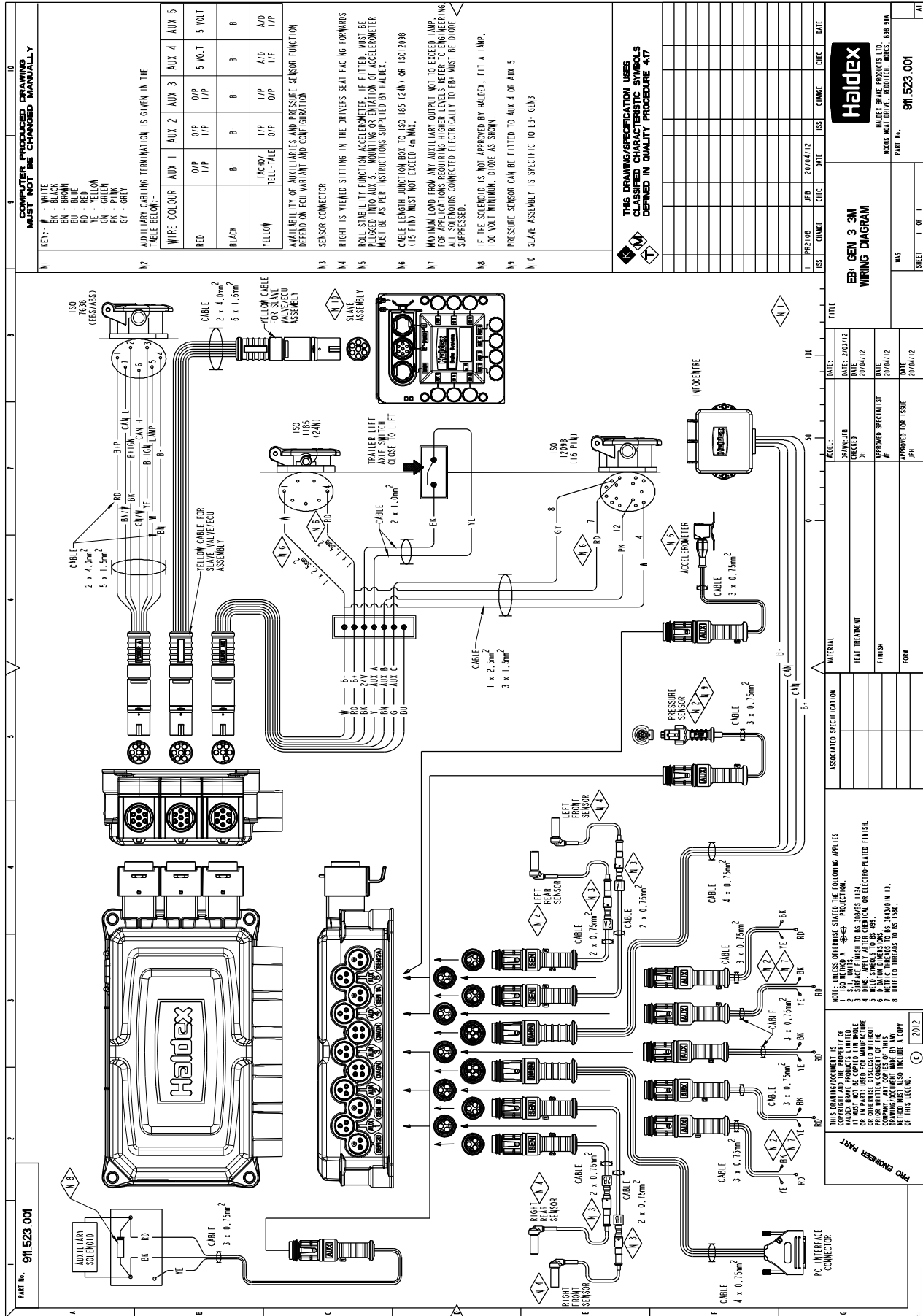
- AUX 2 (red AUX)       COLAS®
- AUX 2 (yellow AUX)   ILAS®-E front
- AUX 3 (red AUX)       Service lamp
- AUX 3 (yellow AUX)   Stability lamp



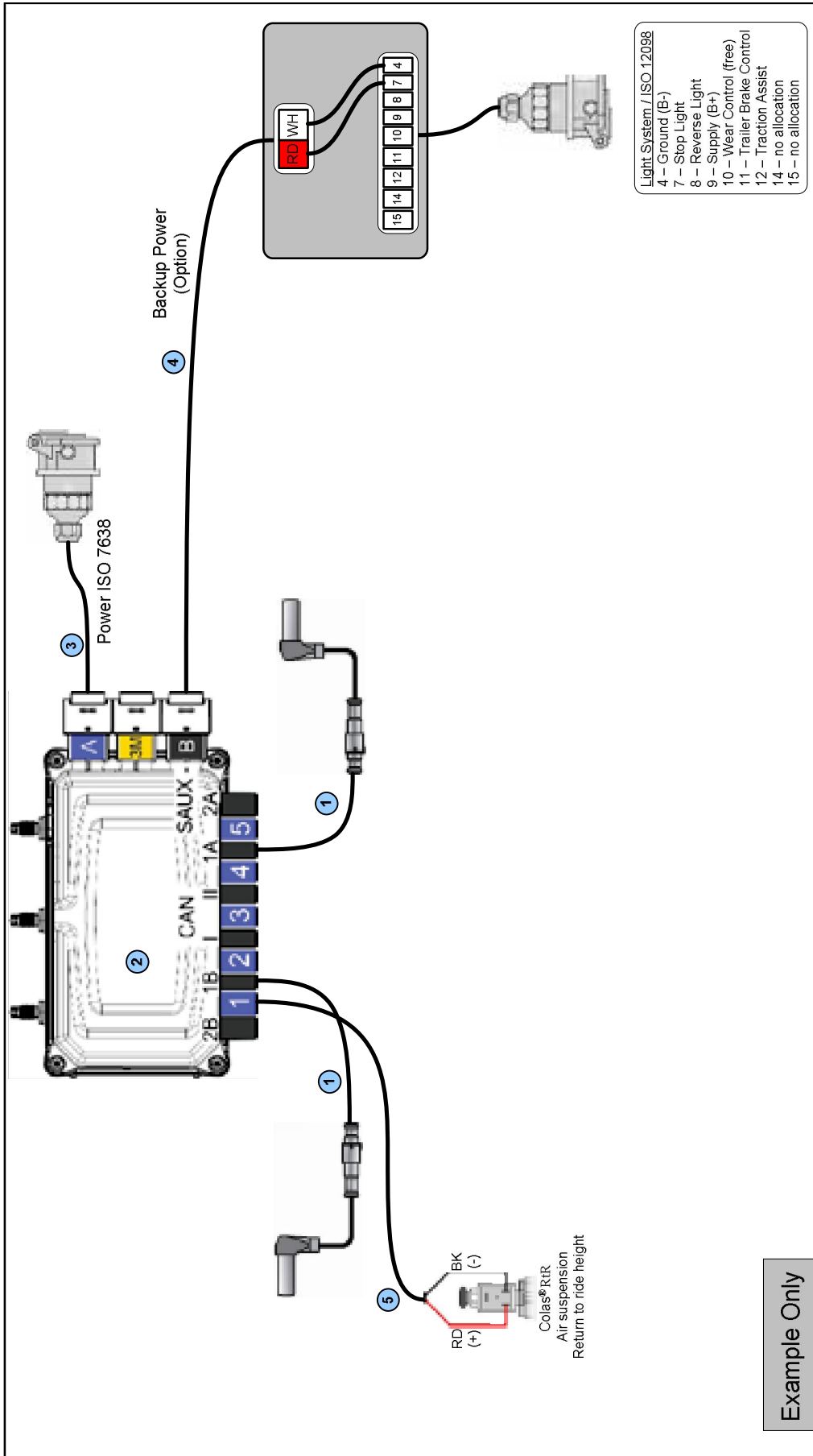




# Wiring diagram - Gen3 3M




# System drawing layout - COLAS®



Example Only

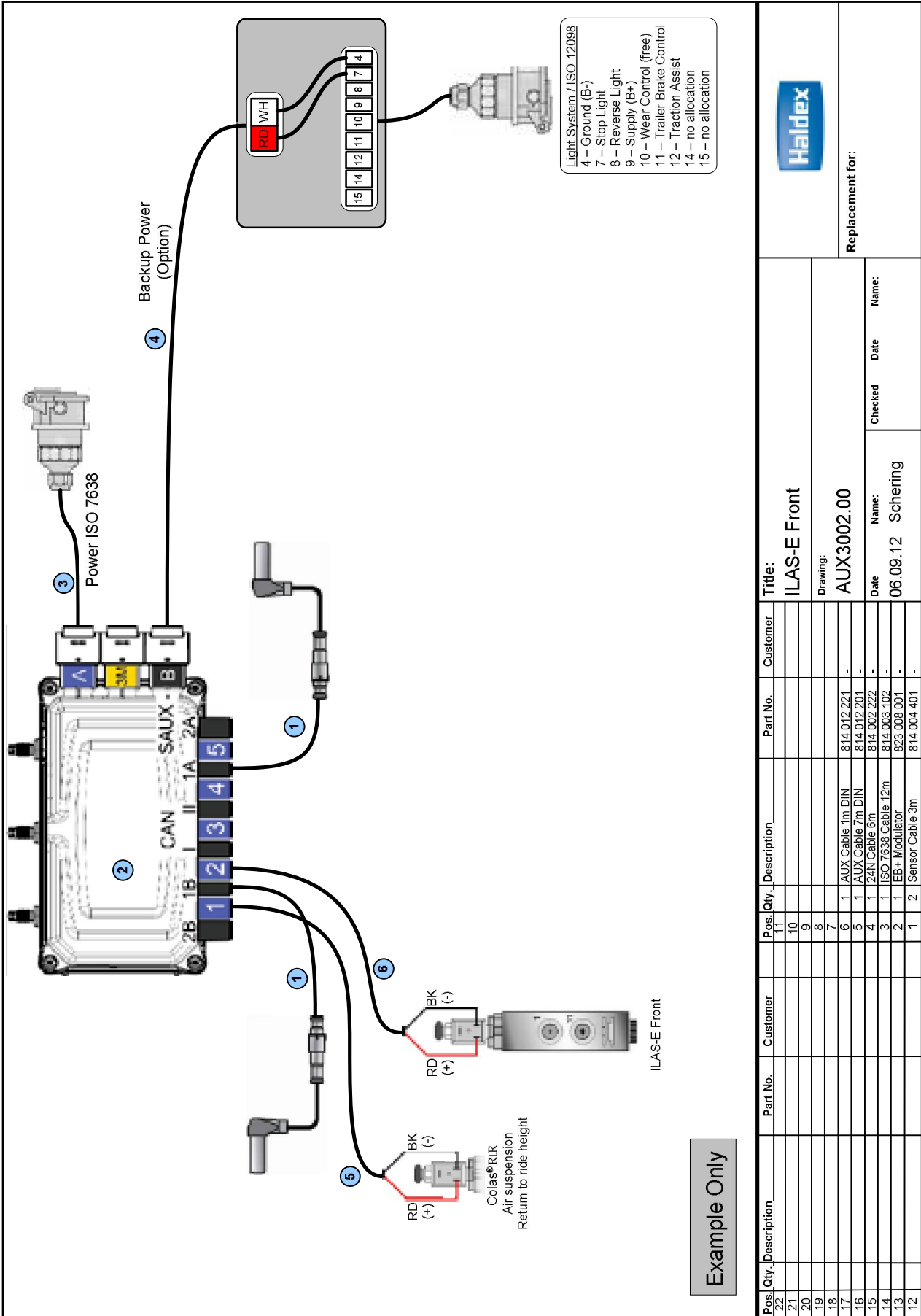
Pos.	Qty.	Description	Part No.	Customer	Part No.	Customer	Title:
11	1						COLAS
21	10						
20	9						
19	8						
18	7						
17	6						
16	5	AUX Cable 7m DIN	814 012 201	-			
15	4	24N Cable 6m	814 002 222	-			
14	3	ISO 7638 Cable 12m	814 003 102	-			
13	2	EB+ Modulator	823 008 001	-			
12	1	Sensor Cable 3m	814 004 401	-			

<b>Replacement for:</b> 	
Name: Schering Date: 06.09.12 Checked:	Name: Date: Checked:



# System drawing layout - ILAS®-E front



Example Only

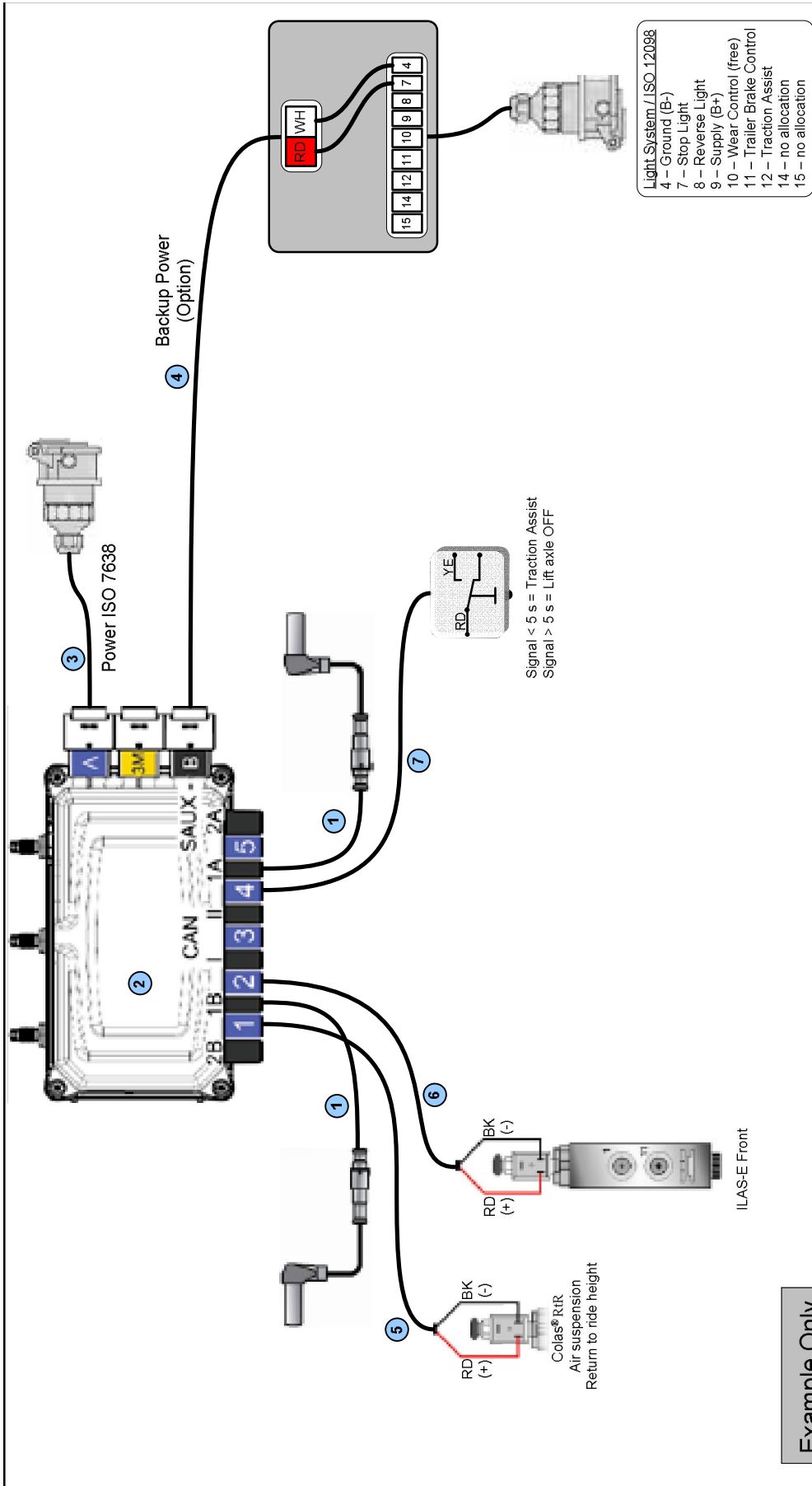
Pos.	Qty.	Description	Part No.	Customer
22	11			
21	10			
20	9			
19	8			
18	7			
17	6	1 AUX Cable 1m DIN	814.012.221	
16	5	1 AUX Cable 7m DIN	814.012.201	
15	4	1 24N Cable 6m	814.002.222	
14	3	1 ISO 7638 Cable 12m	814.003.102	
13	2	1 EB+ Modulator	823.003.001	
12	1	2 Sensor Cable 3m	814.004.401	

<b>Title:</b> ILAS-E Front	
Drawing: AUX3002.00	
Date	Name:
06.09.12	Schering
Checked	Date
<b>Replacement for:</b>	



# System drawing layout - ILAS®-E front



\*) ILAS-E using side of vehicle switch via GPI

Example Only

Pos.	Qty.	Description	Part No.	Customer
11	1			
21	10			
20	9			
19	8			
18	7	Switch / Cable 7m	815 040 001	
17	6	AUX Cable 7m DIN	814 012 221	
16	5	AUX Cable 7m DIN	814 012 201	
15	4	24N Cable 6m	814 002 222	
14	3	ISO 7638 Cable 12m	814 003 102	
13	2	EB+ Modulator	823 008 001	
12	1	Sensor Cable 3m	814 004 401	

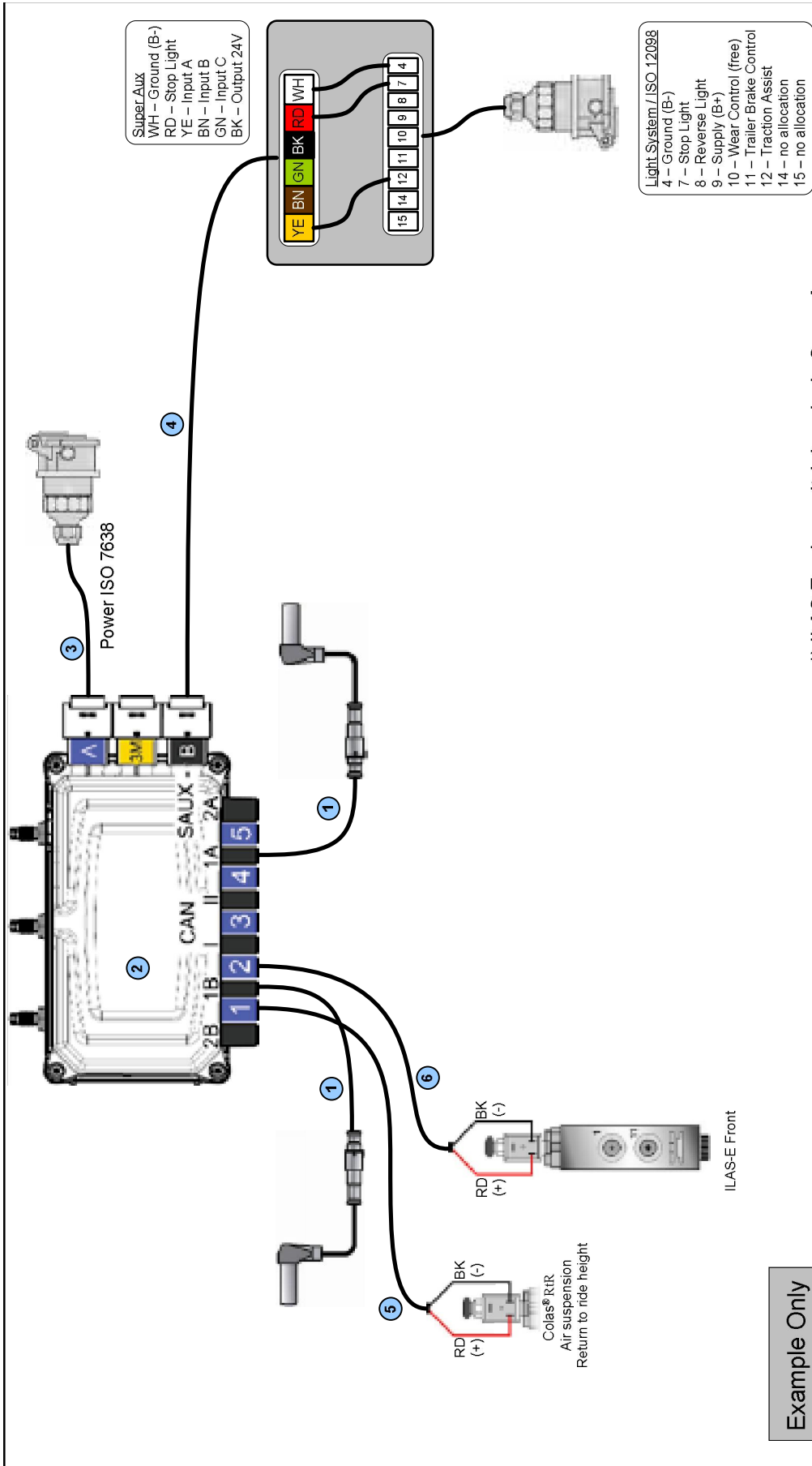
Title:		Customer:	
ILAS-E Front *			
Drawing:			
AUX3003.00			
Date:	Name:	Checked:	Date:
06.09.12	Schering		

Replacement for:	
Haldex	



# System drawing layout - ILAS<sup>®</sup>-E front



\*) ILAS-E using switch in cab via Super Aux

Example Only

Pos.	Qty.	Description	Part No.	Customer	Pos.	Qty.	Description	Part No.	Customer
11	1				11	1			
22	1				10	1			
21	1				9	1			
20	1				8	1			
19	1				7	1			
18	1				6	1	AUX Cable 1m DIN	814 012 221	-
17	1				5	1	AUX Cable 7m DIN	814 012 201	-
16	1				4	1	SAUX Cable 6m	814 002 301	-
15	1				3	1	ISO 7638 Cable 12m	814 003 102	-
14	1				2	1	EB+ Modulator	823 008 001	-
13	1				1	2	Sensor Cable 3m	814 004 401	-
12	1								

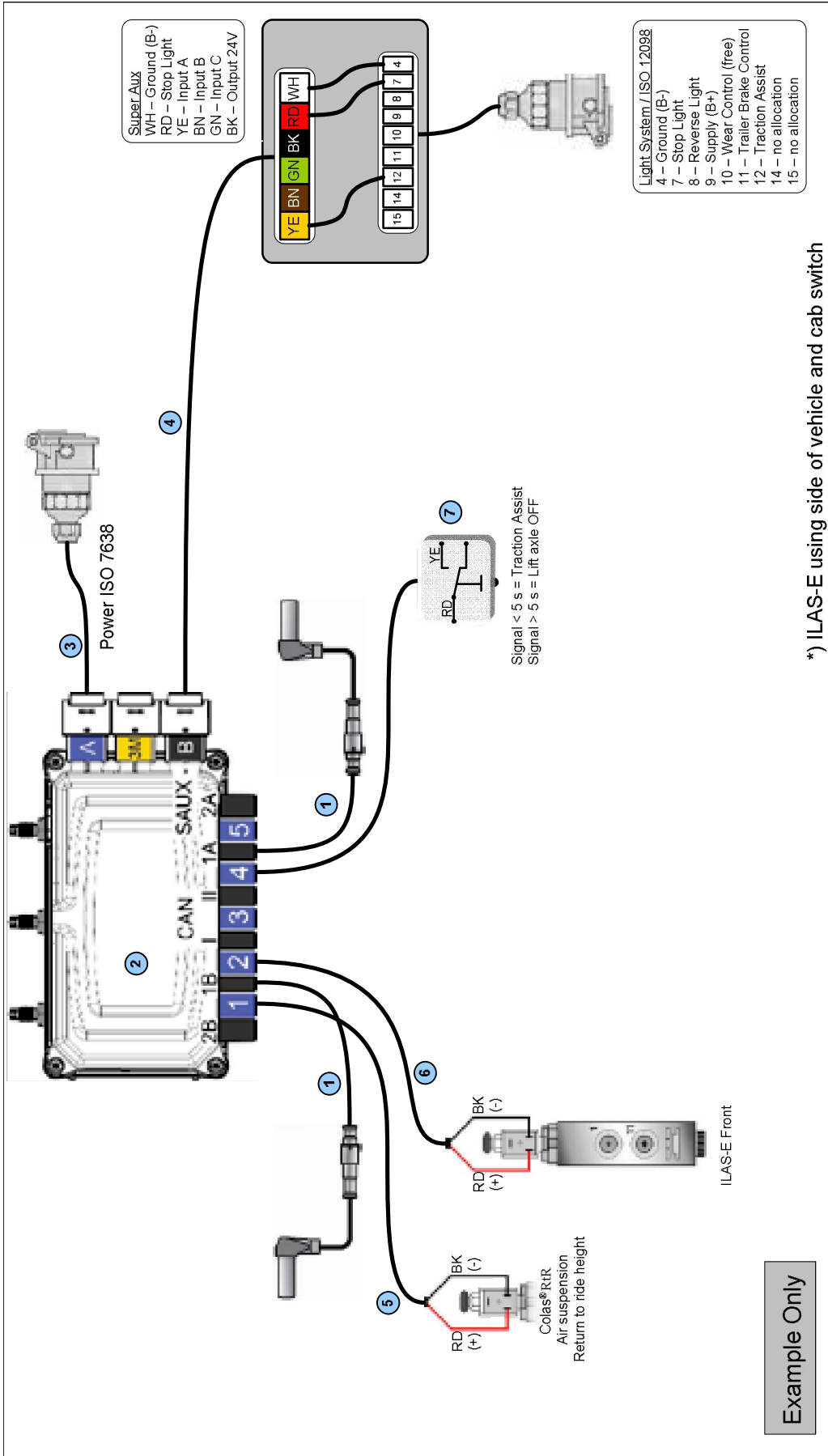
  

<b>Title:</b>		ILAS-E Front *	
<b>Drawing:</b>		AUX3004.00	
<b>Date</b>	<b>Name:</b>	<b>Checked</b>	<b>Date</b>
06.09.12	Schering		

<b>Replacement for:</b>	

# System drawing layout - ILAS® -E front



\*) ILAS-E using side of vehicle and cab switch

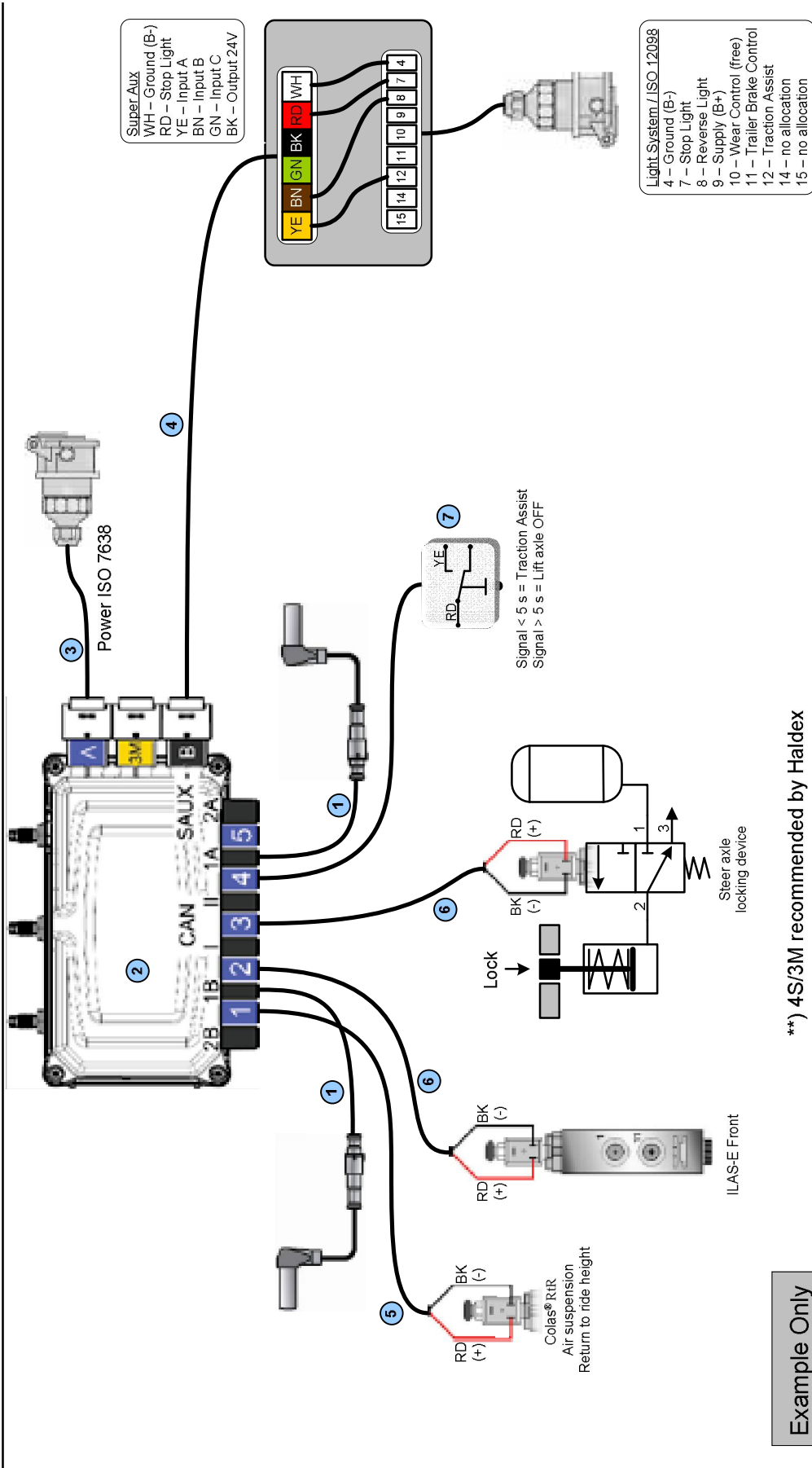
Pos.	Qty.	Description	Part No.	Customer
22	1			
21	1			
20	1			
19	1			
18	1	Switch / Cable 7m	815 040 001	
17	1	AUX Cable 1m DIN	814 012 221	
16	1	AUX Cable 7m DIN	814 012 201	
15	1	SAUX Cable 6m	814 002 301	
14	1	ISO 7638 Cable 12m	814 003 102	
13	2	EB+ Modulator	823 008 001	
12	2	Sensor Cable 3m	814 004 401	

<b>Title:</b> ILAS-E Front *	
<b>Drawing:</b> AUX3005.00	
<b>Date</b> 06.09.12	<b>Name:</b> Schering
<b>Checked</b>	<b>Date</b>
<b>Replacement for:</b>	



# System drawing layout - steer axle lock (2S / 2M)



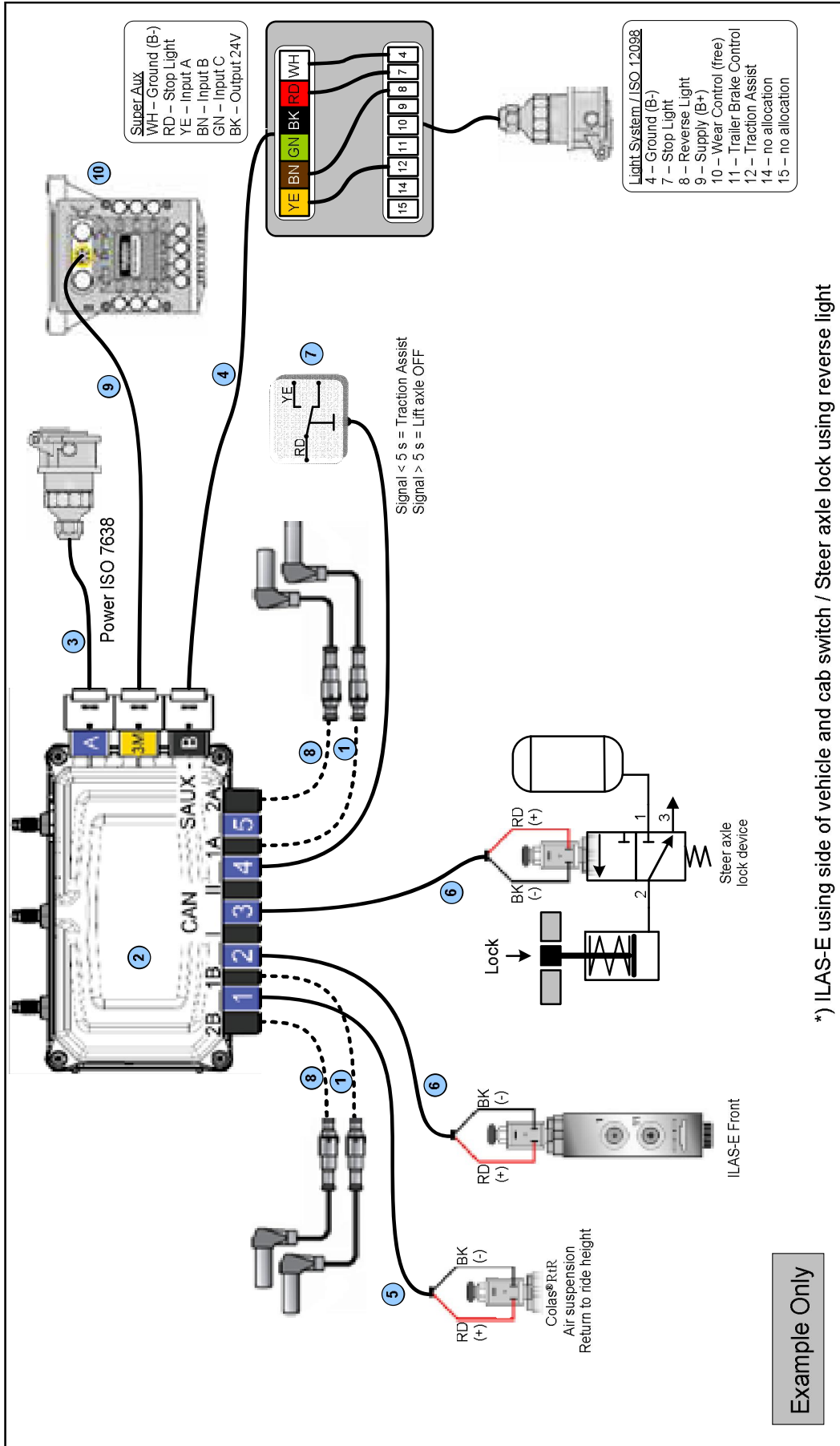
**Example Only**

\*\* 4S/3M recommended by Haldex

\* ILAS-E using side of vehicle and cab switch / Steer axle lock using reverse light

Pos.	Qty.	Description	Part No.	Customer	Part No.	Customer	Title:			
22	1						Steer Axle Lock * (2S/2M **)			
21	10					Drawing: AUX3009.00				
20	9							Date: 06.09.12 Name: Schering		
19	8								Checked:      Date:      Name:      Replacement for:	
18	7	1 Switch / Cable 7m	815 040 001	-						
17	2	AUX Cable 1m DIN	814 012 221	-						
17	1	AUX Cable 7m DIN	814 012 201	-						
16	1	AUX Cable 7m DIN	814 012 201	-						
15	4	SAUX Cable 6m	814 002 301	-						
14	3	ISO 7638 Cable 12m	814 003 102	-						
13	2	EB+ Modulator	823 008 001	-						
12	1	Sensor Cable 3m	814 004 401	-						

# System drawing layout - steer axle lock (4S / 3M)



\*) ILAS-E using side of vehicle and cab switch / Steer axle lock using reverse light

Example Only

Pos. Qty.	Description	Part No.	Customer	Part No.	Customer
11					
22					
21	Gen3 Slave Valve	810.023.001	-		
20	Gen3 Link Cable 5m	814.041.021	-		
19	Sensor Cable 6m	814.004.411	-		
18	Switch / Cable 7m	815.040.001	-		
17	AUX Cable 7m DIN	814.012.221	-		
16	AUX Cable 7m DIN	814.012.201	-		
15	SAUX Cable 6m	814.002.301	-		
14	ISO 7638 Cable 12m	814.003.102	-		
13	EB+ Modulator	823.034.001	-		
12	Sensor Cable 3m	814.004.401	-		

<b>Title:</b>		Steer Axle Lock * (4S/3M)	
<b>Drawing:</b>		AUX4001.00	
<b>Date</b>	<b>Name:</b>	<b>Checked</b>	<b>Date</b>
06.09.12	Schering		
<b>Replacement for:</b>			



# Painting

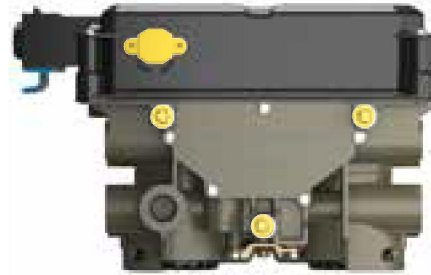
## Masked areas

In the event of paint or coating work all none used connections, pneumatic ports and exhausts must be protected. These are indicated by the yellow shaded areas as shown. Adequate protection should be used to avoid penetration of the paint or coating. All electrical ports to have connectors / blanking plugs installed. Exhaust ports and connectors / locking areas to be masked during painting.

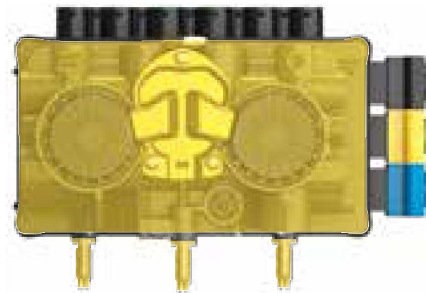
Painting recommendations: water based, baking for 1 hour @ 100°C



Electro static painting: Haldex recommends that the EB+ Gen3 assembly is fitted to the trailer after electro static painting.



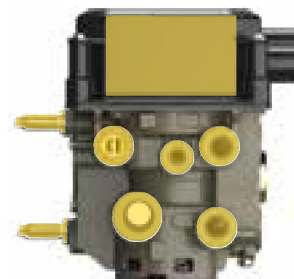
Mounting face



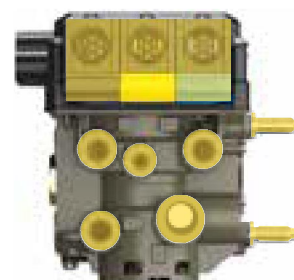
Underside



Front face



Left side



Right side





# ADR Installations

## Introduction

Vehicles equipped to transport hazardous goods or explosive substances are required to have electrical systems with specified levels of safety and protection. These requirements are defined in the European Agreement on international transport of dangerous goods by road (ADR).

The ADR requirements apply to the following classes of dangerous load carrying vehicles: EX / II, EX / III, FL, OX and AT.

The following key points should be observed on hazardous goods / ADR trailer installations.

ADR / GGVS: ---/---/---

Haldex		ADR 10.100.094 04		25/254 Stability		kg	kg	kg
UNLADEN / LEER / A VIDE		LADEN / BELADEN / EN CHARGE						
MAXIMUM PERMITTED		MAXIMUM PERMITTED						
6.50		6.50						
3000		3000						
0.70		0.70						
3.00		3.00						
9000		9000						
5.00		5.00						
0.50		0.50						
-		-						
-		-						
6.50		6.50						

## Trailer plate

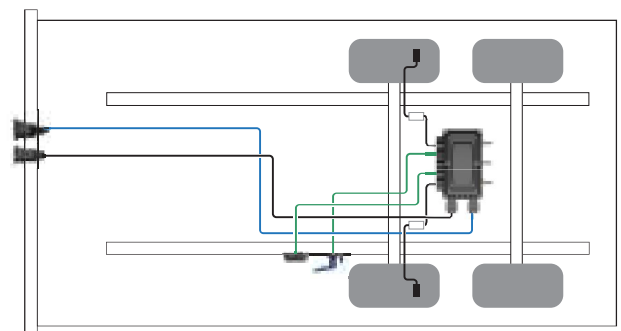
The print out of the load plate from the DIAG+ program must have the ADR / GGVS certificate number as indicated.

## Stop-lamp back-up power supply

The back-up power supply is connected using the ISO 12098 connector.

## Cable routes

Sensor cable route should not be installed to brake air pipes. Do not run sensor leads in spiral wrapping on hoses. Cable should be securely fastened to prevent abrasion and positioned to protect against mechanical and thermal stress. It is recommended that the cables are run in trunking or secured at no less than 300 mm intervals.



Note:

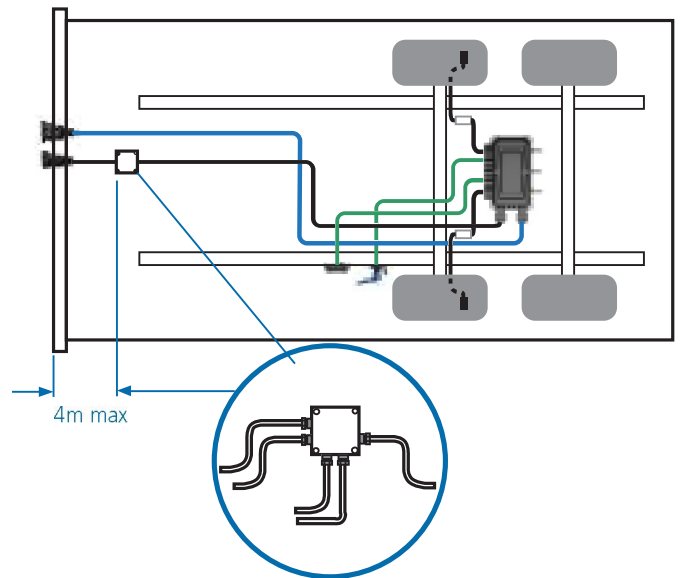
All cables should run 'up to' ECU connections.



## Junction box

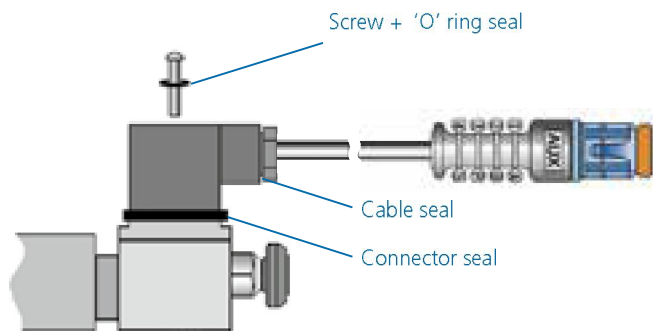
Any wiring required to a junction box (for brake lamp power supply) must be fully approved for use on an ADR vehicle.

The cable length from the junction box to the ISO 12098 connector must not exceed 4 metres.



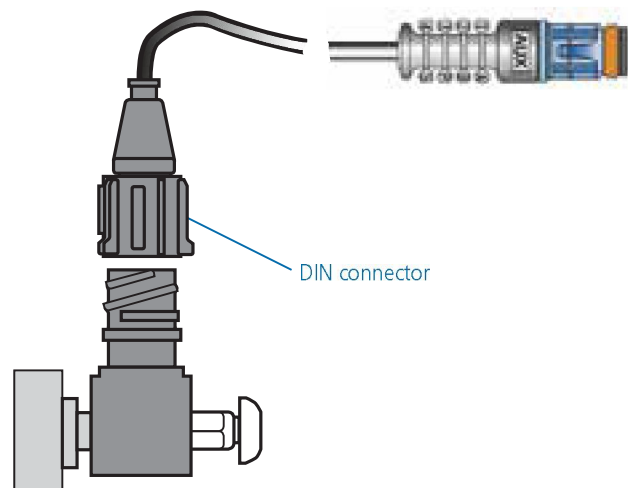
## Auxiliary connections

It is the installers responsibility to ensure that with any auxiliary component fitted, the connector and cable must be sealed in accordance with ADR requirements.



## Towing vehicles

Towing vehicles in categories EX / III and FL must have a battery master switch fitted so that all electrical loads including the trailer, are connected to the non-battery side of the master switch.



# Programming



To complete the EB+ installation the ECU must be programmed using DIAG+ software version 6 or later (Refer to DIAG+ User Guide 000 300 019 for further information)

# System diagnostics

An important feature of the EB+ Gen3 system is that it provides an extensive on board diagnostic capability. The system displays a range of codes, which allow rapid diagnosis of the problem should one occur. Diagnostic communication is in accordance with ISO 15765 protocol and is accessed by either the ISO 7638 7-pin connector which uses pin 6 and 7 as a CAN data bus using ISO interface assembly (815 018 001), or optional side-of-vehicle connector, or directly to ECU. Any suitable device connected to this CAN data bus may read diagnostic information.

An Info Centre 2 can be connected permanently to the ECU's diagnostic 'DIAG' connection. While the ECU is powered, information is transferred to the Info Centre's memory, which can be recalled. Power is supplied from the vehicle system via the ECU diagnostics connector.

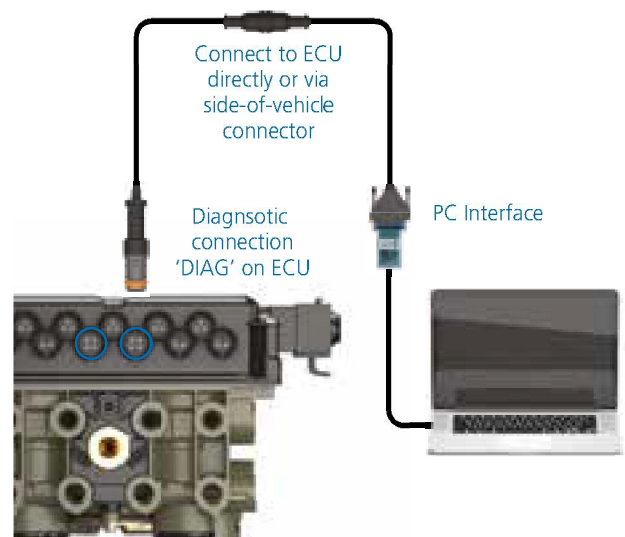
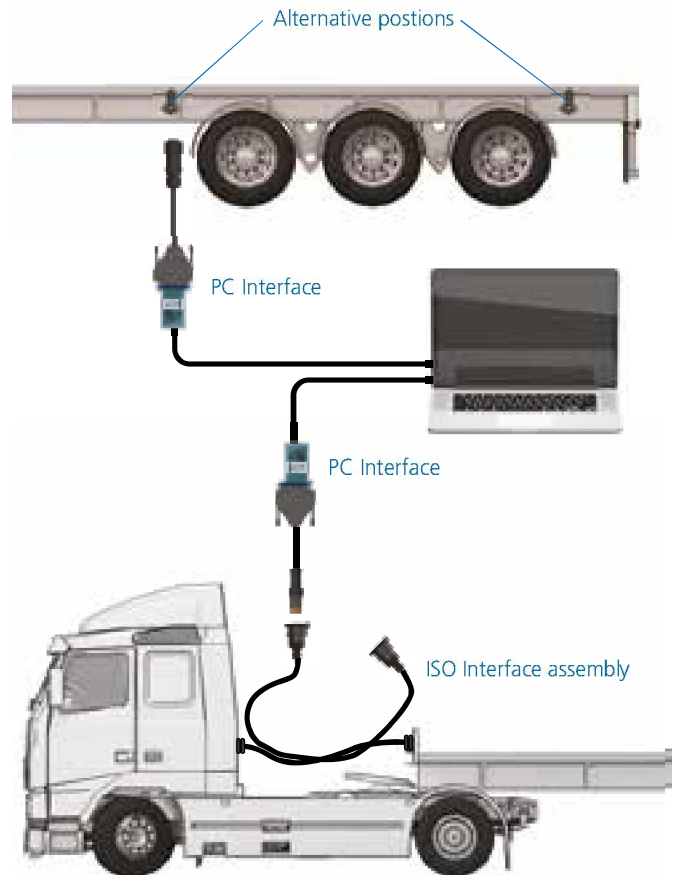
For further information refer to the Info Centre 2 user guide (006 300 001).

## Information

- › Read diagnostic trouble code (DTC)
- › Clear DTC
- › Configuration
- › ECU software version number
- › ECU serial number
- › Vehicle ident number (VIN)
- › Manufacturer OEM
- › Info Centre 2 software version number

## Distance

- › Odometer - total distance
- › Trip distance (1st and 2nd)
- › Service distance
- › Wheel scale factor
- › Clock (time and date)
- › Clear trip 1 and 2



Alternatively - directly connected to ECU or side-of-vehicle connection



## Changes

- › Service distance
- › Service interval
- › Wheel scale factor
- › Clock (time and date)
- › Options - on / off (parameter updating / backlight)
- › Password (pin number)
- › Unlock Info Centre 2 (pin number unknown)

## Testing

- › Load
- › Wheels (sensor / cabling check)
- › Pressure
- › Plate (load plate data)
- › Auxiliaries
- › Brake test
- › Lining wear indication

A Haldex pc based program DIAG+ may be used for more advanced diagnosis. This also allows configuration with system parameters to be entered and an end-of-line test to be carried out.