

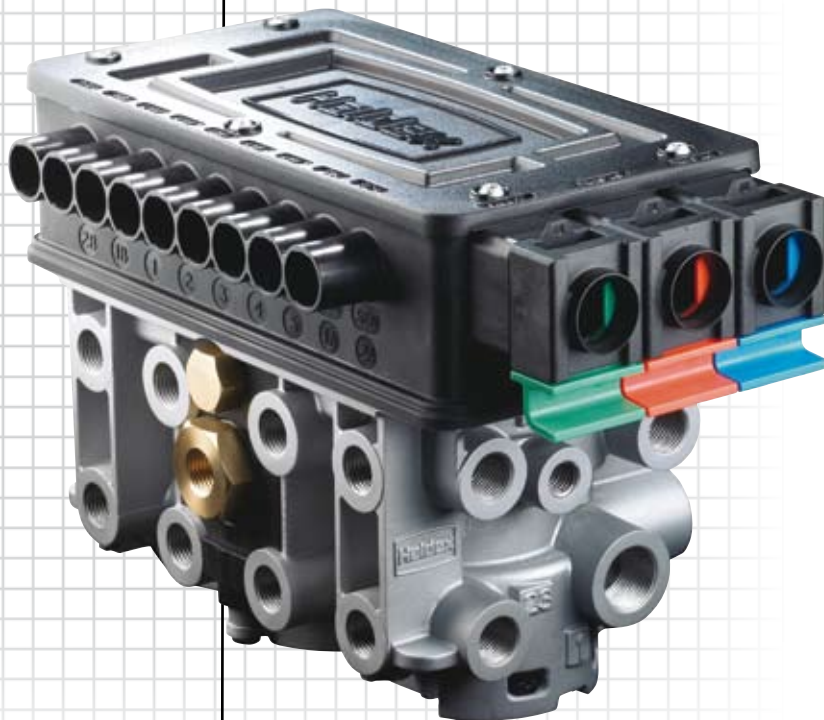


# Operator's Guide

Haldex



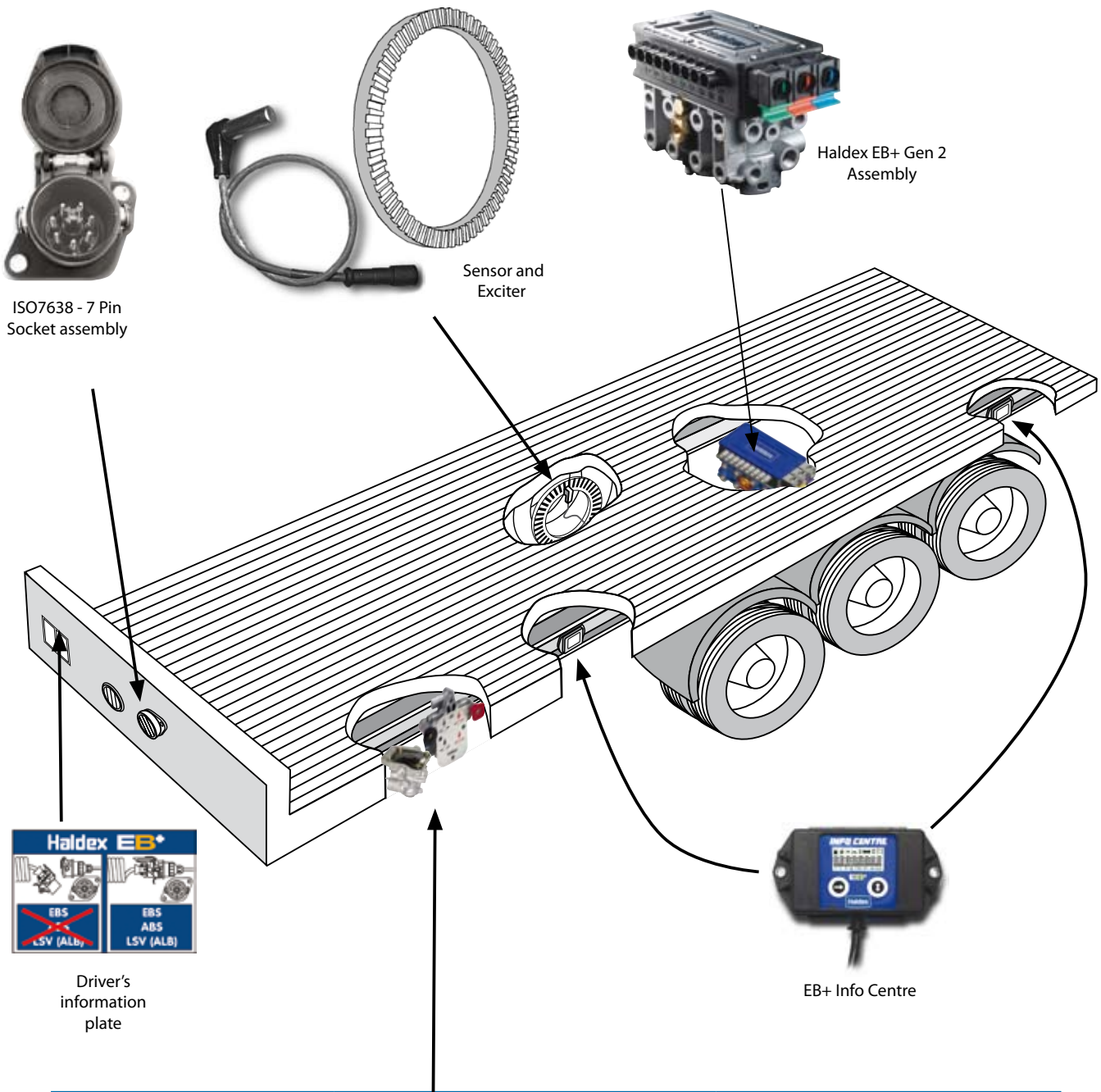
## ELECTRONIC BRAKE SYSTEMS EB+ GEN 2



# Contents

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EB+ GEN 2 Operator's guide	2	Your trailer has been fitted with the latest technology Haldex Electronic Braking System EB+ Gen 2. This system has been specifically designed to be effective, reliable and easy to service. The purpose of this booklet is to describe the components involved and give you sufficient information to make your use of the system easy.
General Components Guide	3	
System Layout	4	Concept
Chassis Components	5	EB+ Gen2 = Antilock Brake System (ABS) + Electronic Load Sensing (ELS)
System Diagnostics	6	+ CAN (Controller area network ISO11992 data link - computer data from and to the towing vehicle)
Warning Device, System Check Procedure and Power-Up Modes	7	The system reacts to electrical or pneumatic signal from the towing vehicle. It electronically processes those signals plus signals received from other sensors on the trailer. In response to those signals the EB+ Gen 2 regulates pressure to the brake chambers.
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Diagnostic Trouble Codes (DTC)	9	System Description
ECU Connector Identification	11	The position of the various components is shown in Tri-axle layout, Fig 1. The system is equally compatible with single and tandem axles.
Wiring diagram	12	The EB+ Gen 2 system is an integrated construction of an encapsulated Electronic Control Unit (ECU), Electro pneumatic relay valves (EPRV's), over moulded connectors, integrated pressure transducers and a flash upgradable program memory.
Piping Diagrams	13	
Multimeter Reading	17	Onset of braking is denoted by presence of a demand on the ISO11992 data link (CAN) via the ISO7638 connector. Driver demand pressure is then determined electronically either by the data link or control line pressure transducer within the EPRV's assembly.
Recommended Maintenance Schedule	18	The demand pressure is then modified using data from the air suspension (Electronic Load Sensing), and may be further modified when a wheel speed sensor detects imminent locking of the sensed wheels (ABS).
Part Reference	19	The output to the brakes is exercised by the ECU control of the EPRV's see Fig 2.
General Information	21	The EB+ Gen2 ECU also provides up to 5 auxilliary functions such as automatic reset-to-ride height (COLAS <sup>®</sup> ), lift axle control (ILAS <sup>®</sup> -E), retarder and Stability control.
		EB+ Gen 2 incorporates an odometer facility which measures total distance of the trailer and its read-out is shown on an optional EB+ Info Centre unit (Only when powered by the ISO7638 cable).
		The EB+ Info Centre is a side of trailer mounted unit used also for read-out of diagnostic codes and other information available from the EB+ Gen 2 ECU.
		The EB+ Gen 2 also incorporates an enhanced information storage and retrieval facility.
		For the fleet operator, a 'Fleet Log Reader' allows the compilation of a full history of each trailer or long term monitoring.
		For the trailer manufacturer, an 'End-of-line' Testing (EOLT) to confirm correct performance of the EB+ Gen 2 system.

# General Components Guide




Park/Shunt and REV Options		
<p>Option 1</p>  <p>Park &amp; Shunt valve</p>	<p>Option 2</p>  <p>Relay Emergency Valve (REV) Optional position <b>and</b> Park &amp; Shunt valve</p>	<p>Option 3</p>  <p>TrCM</p>

Fig. 1

# System Layout

The system fitted to your trailer may have 2 or 4 Sensors and 2 Modulators (EPRV's). The variants available being 2S/2M and 4S/2M.

The powering of the system is via :  
ISO7638- 7 Pin - Full EBS function Fig 2.

The EB+ Gen 2 system can also be powered via :  
ISO7638- 5 Pin - (No CAN data bus) ABS + ELS function only Fig 3.

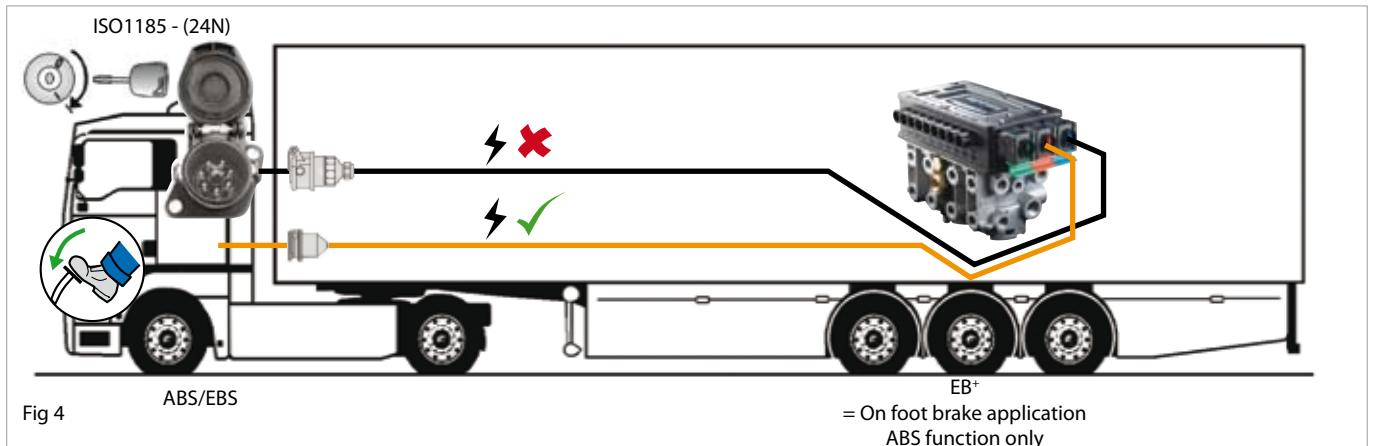
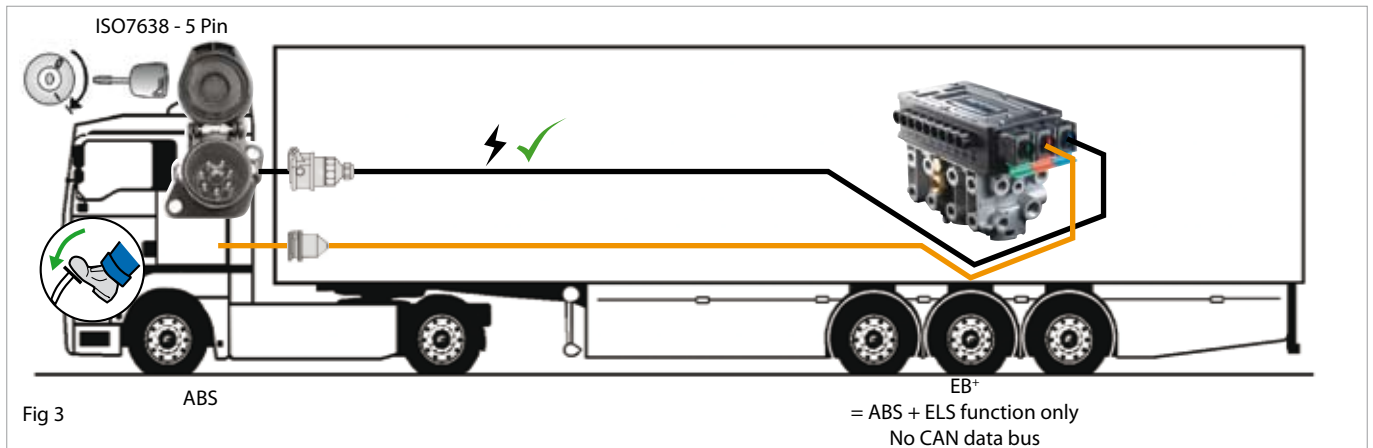
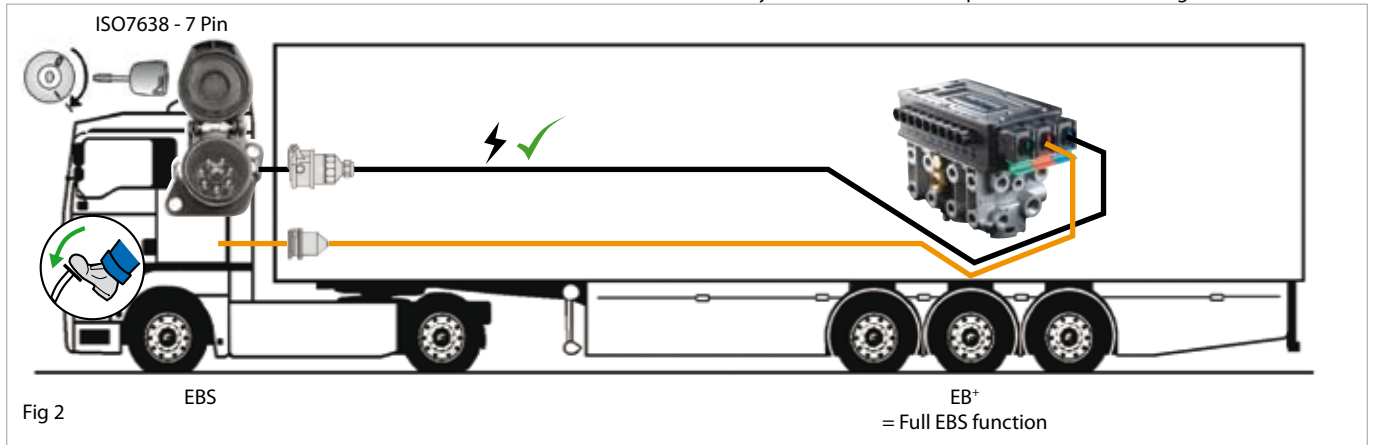
As a safety back-up ISO1185 (24N) - Stop Light powering provides ABS function Fig 4.

The ISO7638 controls a Trailer warning device in the driver's console .

The warning device has two functions:

- To indicate system integrity via the correct sequence (see Figs 10 and 11 on page 10) every time the EB+ Gen 2 ECU is electrically powered up.
- To indicate by a permanent display, when the vehicle is moving, if a fault has been detected.

The layout of the chassis components are shown in Fig 5



# Chassis Components

## Electrical connections

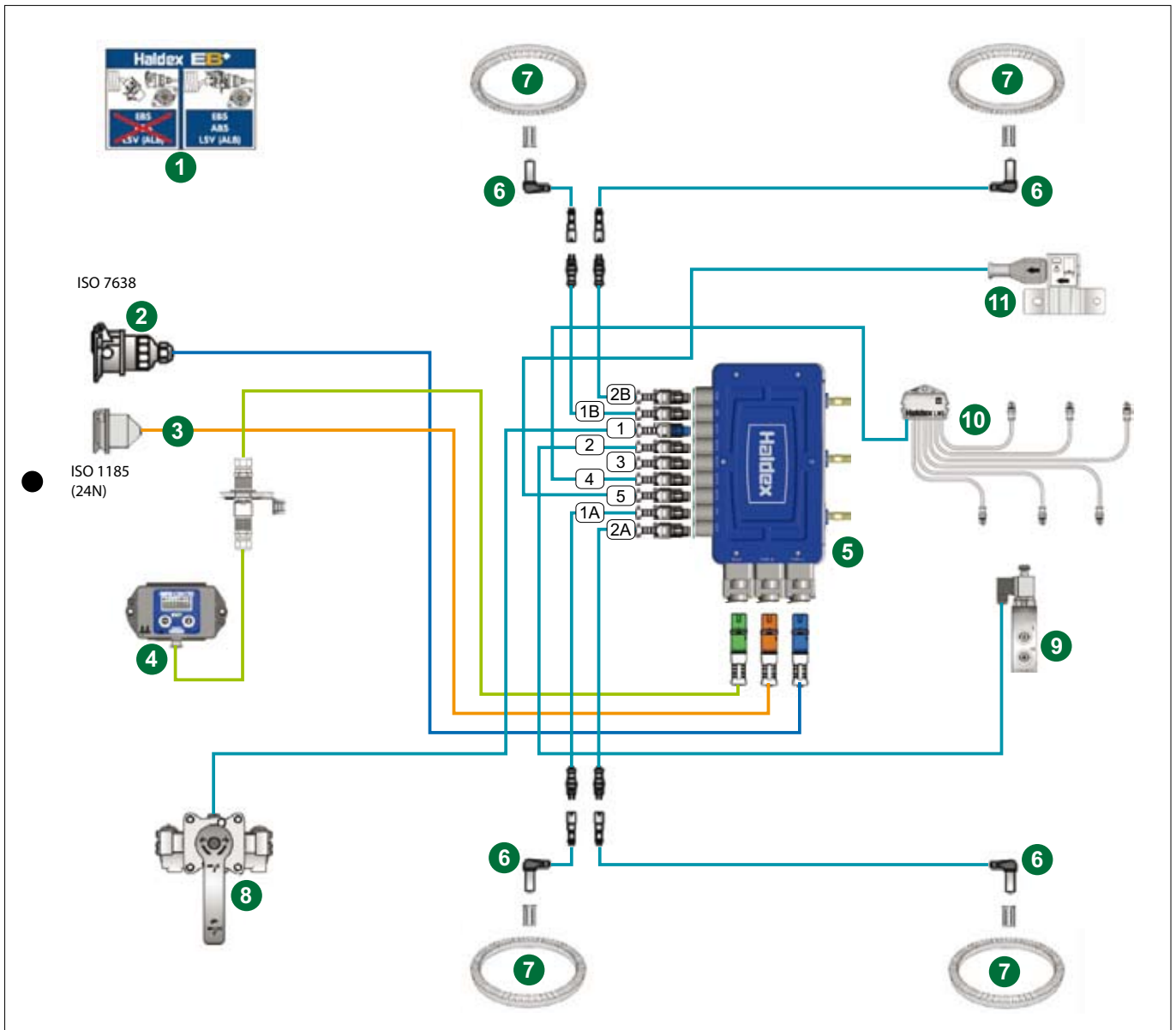


Fig. 5

Item	Description	Notes
1	EB+ Gen 2 Label	
2	ISO7638 - 7 Pin Socket assembly	
3	Safety backup cable - ISO1185 (24N)	
4	EB+ Gen 2 Info Centre (side of vehicle connection)	
5	EB+ Gen 2 ECU and EPRV's assembly	
6	Sensor assembly	
7	Exciter	
8	COLAS®	Aux 1, 2 or 3
9	ILAS®-E	Aux 1, 2 or 3
10	Lining Wear Sensing (LWS)	Aux 4 ONLY
11	EB+ Gen 2 Stability	External Sensor Assembly - Aux 5 ONLY

Note: Aux to be set in line with DIAG+

# System Diagnostics

An important feature of the EB+ Gen 2 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 to ISO11898 using Keyword (KWP2000) protocol and is accessed by either the ISO7638 - 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 (Fig 7). Any suitable device connected to this CAN data bus may read diagnostic information.

An EB+ Gen 2 Info Centre 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 on EB+ Gen 2 Info Centre see user guide (000 700 270).

The EB+ Gen 2 Info Centre provides a multi-digit display of:

**Information:**

- Read Diagnostic Trouble Code (DTC)
- Clear DTC
- Configuration
- ECU software version number
- ECU serial number
- Vehicle Ident Number (VIN)
- Manufacturer OEM
- Info Centre 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

**Changes:**

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

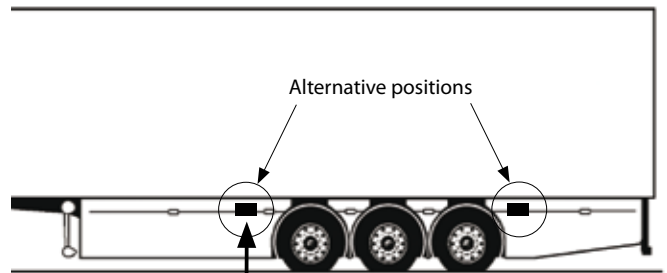


Fig 6

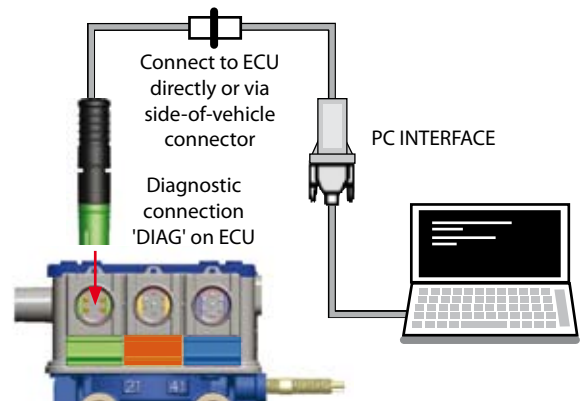
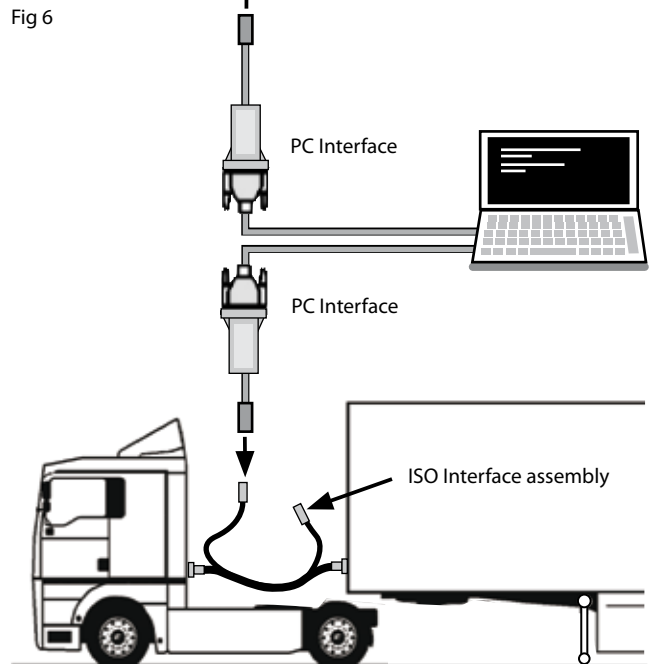
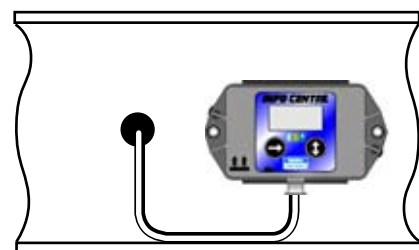


Fig 7



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

Fig 8

# Warning Device, System Check Procedure and Power-Up Modes

## Warning Device

The warning device function depends on the ISO7638 power supply used:

A warning device located on the driver's console of the towing vehicle is operated from the ISO7638 power cable only when the EB+ Gen 2 is powered by the ignition switch. (Fig 9)

Note: If a dedicated power source is unavailable to the EB+ Gen 2 from the ISO7638 connector then system integrity will not be indicated by the cab mounted warning device.

As an option to the cab warning device a trailer mounted warning lamp may be provided as an auxiliary function. This lamp mimics the signal to the cab warning device but will only function if the ISO7638 power is connected.

Note: The signal produced may be different to that produced by the cab device due to possible modification of the cab device by the towing vehicle.

## System Check Procedure

1. On power up of the system, the warning device must indicate one of the following sequences in order to show a fault-free system:

OPTION 'A' - (Fig 10)

OPTION 'B' - (Fig 11)

2. During the self-check procedure, the system cycles the EPRV's. With foot brake applied one exhaust of air from each EPRV will be audible.

Once these two checks are made with correct results, no further checks are required.

If the results are not satisfactory, Haldex DIAG+ or EB+ Info Centre should be used to establish the diagnosis.

This information is described visually in Fig 14 on page 11.

## Power Up Modes

The EB+ Gen 2 system has two power up modes. With switching the Ignition on (B+ applied) the following occurs:

With no yellow line pneumatic pressure (i.e. Brakes OFF)  
The system adopts load sensing mode when the brakes are applied. This load sensing mode is limited to 2 minutes for any single brake application, after which it returns to a push-through condition (approx 1:1).

The push-through condition is cancelled on vehicle movement above 10 km/h returning the system to load sensing operation.

With yellow line pneumatic pressure (i.e. Brakes ON) (Park on air)  
Apply foot brake, switch Ignition On.

The system adopts a push-through (approx 1:1) condition. When the brakes are released and re-applied the system remains in push-through unless the brakes are released for longer than 2 minutes, after which it returns to load sensing operation.

This condition is cancelled on vehicle movement above 10 km/h returning the system to load sensing operation.



Fig 9

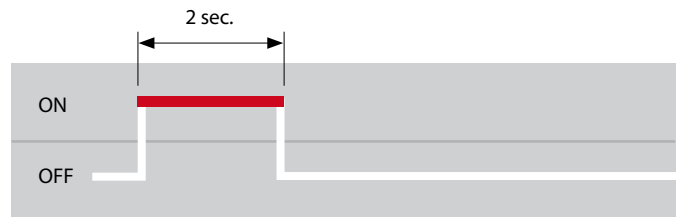
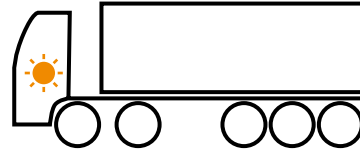


Fig 10

### Option A

ON for 2 seconds	Warning device OK and system self-checking.
OFF	System self-checked (not sensors)

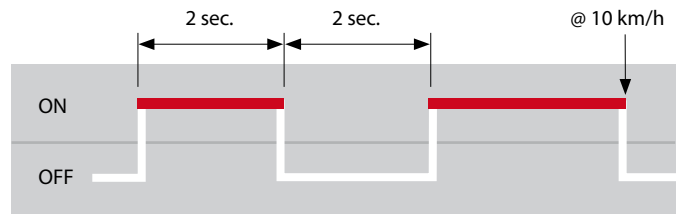


Fig 11

### Option B

ON for 2 seconds	Warning device OK and system self-checking.
OFF for 2 seconds	System self-checked and preparing to check sensors.
ON until moving	System waiting for vehicle to move above 10 km/h in order to check that the sensors are working.
OFF	Once the vehicle is moving above 10 km/h and the warning device clears, the electronic system is fully checked.

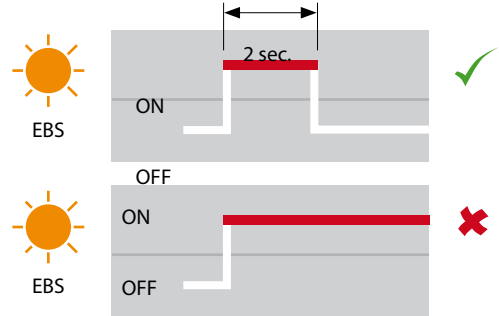
# Test Procedure

## Summary

### Example sequence

STEP 1 Power up; WATCH WARNING DEVICE IN TOWING VEHICLE

### Option A



### Option B

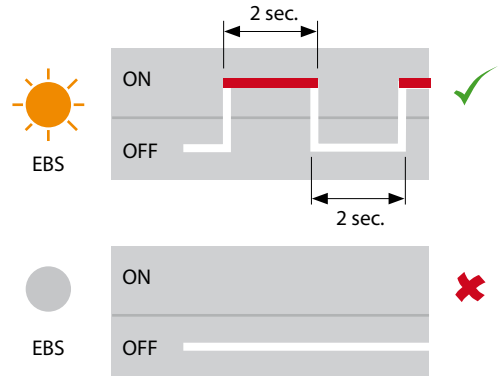


Fig 12

STEP 2 Apply foot brake, Power up, Listen for EPRV CYCLE.

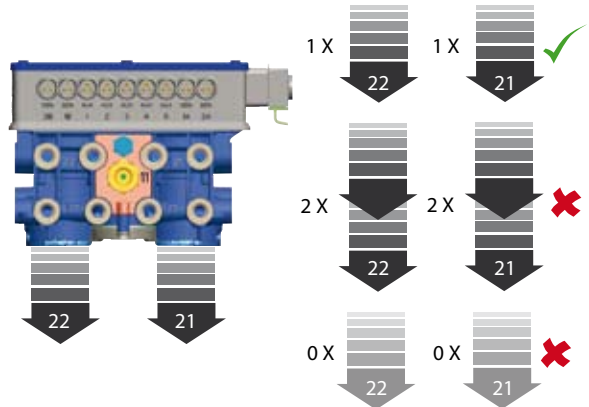


Fig 13

STEP 3 Reading Diagnostic Codes using EB+ Info Centre  
Remove foot brake  
SPIN EACH SENSED WHEEL IN TURN,  
Refer to diagnostic code listing.

### STEP 4 MULTIPLE LAMP SEQUENCE

The Haldex EB+ incorporates a modified lamp flash of three flashes.

The red lamp will flash when the system is powered up when at rest. This lamp sequence relates to:

1. Service due - indicates that trailer or system service distance is due. After servicing the trailer or system the next service distance must be reset by using the Info Centre or EOLT program.
2. NON EB+ fault - A fault with a device connected to the EB+ but not directly effecting the EB+, for example: Reset-to-Ride valve (COLAS').

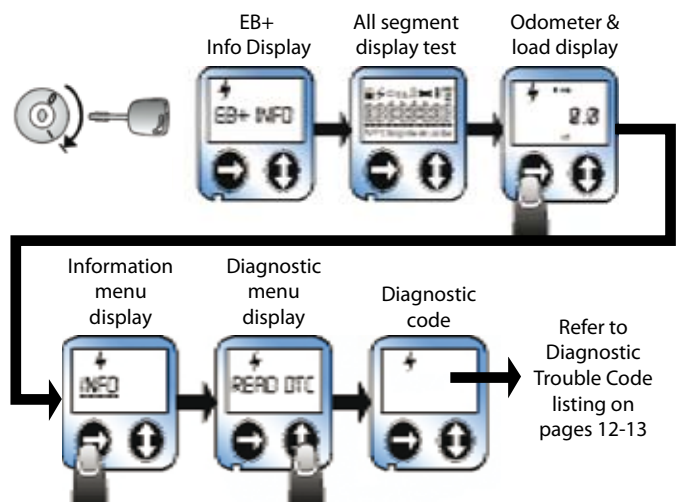


Fig 14



# Diagnostic Trouble Codes (DTC)

If a Diagnostic Trouble Code displayed is not listed here, check for intermittent sensor and wiring faults.

DTC Displayed	Possible Causes
ECU TIME OUT or NO LINK	No supply on ignition switched line.  Possible causes: Truck fuse blown EB+ GEN2 INFO CENTRE or cable fault. Open circuit B - . ISO7638 not connected

Sensor Group	
S1A CONT	1A Sensor1/wiring open or short circuit
S1B CONT	1B Sensor/wiring open or short circuit
S2A CONT	2A Sensor/wiring open or short circuit
S2B CONT	2B Sensor/wiring open or short circuit

Intermittent Low Sensor Output Group	
S1A SIGNAL	1A Sensor signal fault
S1B SIGNAL	1B Sensor signal fault
S2A SIGNAL	2A Sensor signal fault
S2B SIGNAL	2B Sensor signal fault
Possible causes: Loose sensor, connection, bracket or exciter. Damaged exciter. Maladjusted sensor or worn sensor cable insulation.	

Low Sensor Output Group	
S1A OUTPUT	1A Sensor system fault
S1B OUTPUT	1B Sensor system fault
S2A OUTPUT	2A Sensor system fault
S2B OUTPUT	2B Sensor system fault
Possible causes: Sensor worn, maladjusted sensor, wiring open or short circuit	

Brake Apply Solenoid Group	
BRK APPLY SC	Brake apply solenoid short circuit
BRK APPLY OC	Brake apply solenoid short circuit
BRK APPLY SC DRIVE	Brake apply solenoid short circuit permanently energised
BRK APPLY UNSPEC	Brake apply solenoid short circuit

EPRV 21 Hold and Dump Solenoid Group	
EPRV 21 HOLD SC	Modulator 21 hold solenoid short circuit
EPRV 21 DUMP SC	Modulator 21 dump solenoid short circuit
EPRV 21 HOLD OC	Modulator 21 hold solenoid open circuit
EPRV 21 DUMP OC	Modulator 21 dump solenoid open circuit
EPRV 21 HOLD SC DRIVE	Modulator 21 hold solenoid short circuit permanently energised

DTC Displayed	Possible Causes
EPRV 21 DUMP SC DRIVE	Modulator 21 dump solenoid short circuit permanently energised
EPRV 21 HOLD UNSPEC	Modulator 21 hold solenoid control circuit fault
EPRV 21 DUMP UNSPEC	Modulator 21 dump solenoid control circuit fault

EPRV 22 Hold and Dump Solenoid Group	
EPRV 22 HOLD SC	Modulator 22 hold solenoid short circuit
EPRV 22 DUMP SC	Modulator 22 dump solenoid short circuit
EPRV 22 HOLD OC	Modulator 22 hold solenoid open circuit
EPRV 22 DUMP OC	Modulator 22 dump solenoid open circuit
EPRV 22 HOLD SC DRIVE	Modulator 22 hold solenoid short circuit permanently energised
EPRV 22 DUMP SC DRIVE	Modulator 22 dump solenoid short circuit permanently energised
EPRV 22 HOLD UNSPEC	Modulator 22 hold solenoid control circuit fault
EPRV 22 DUMP UNSPEC	Modulator 22 dump solenoid control circuit fault

Demand Pressure Transducer Group	
DEMAND SC	Service line pressure transducer short circuit
DEMAND OC	Service line pressure transducer open circuit

Delivery Pressure Transducer Group	
EPRV 21 DEL SC	Modulator 21 delivery pressure transducer short circuit
EPRV 21 DEL OC	Modulator 21 delivery pressure transducer open circuit
EPRV 22 DEL SC	Modulator 22 delivery pressure transducer short circuit
EPRV 22 DEL OC	Modulator 22 delivery pressure transducer open circuit

One Wheel with Slow Recovery Group	
EPRV 21 SLOW REC	Slow recovery of one wheel of modulator 21
EPRV 22 SLOW REC	Slow recovery of one wheel of modulator 22
Possible causes: Slow brake release, foundation brake mechanical faults, dry bearings, broken spring, restricted piping	
Check for kinks and blockages etc. Incorrect piping, Wiring.	
Modulator fault. Sensor wiring crossed across an axle	

# Diagnostic Trouble Codes (DTC)

DTC Displayed	Possible Causes
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## Reservoir Pressure Transducer Group

RESR SC	Reservoir pressure transducer short circuit
RESR OC	Reservoir pressure transducer open circuit

## Suspension Pressure Transducer Group

SUSP SC	Suspension pressure transducer short circuit
SUSP OC	Suspension pressure transducer open circuit
SUSP OUT OF RANGE	Suspension pressure values outside operating range

## Pressure Switch Group

REV SWITCH SC	Relay emergency valve pressure switch short circuit
REV SWITCH OC	Relay emergency valve pressure switch open circuit
REV SWITCH PNEUMATIC	Relay emergency valve pressure switch pneumatic fault
REV SWITCH SIGNAL	Relay emergency valve pressure switch failed to activate

## ISO11992 (CAN) Electrical Signal Group

PNEUMATIC DEMAND LOSS	No corresponding pneumatic demand pressure
TOWED CAN DEMAND LOSS	CAN line (pin 6 and 7 on ISO7638) fault
TOWED CAN CONTROL LOSS	CAN line (pin 6 and 7 on ISO7638) data fault

## Supply Voltage Group

PWR ISO7638 FAIL	Power loss on pin 1 or 2 (ISO7638)
PWR LO VOLT	Supply voltage at ECU less than 19v when brake apply solenoid energised
PWR HI VOLT	Supply voltage at the ECU greater than 32v
PWR UNSPEC	Internal ECU fault

## ECU Group

ECU EE ERR	Internal ECU fault or ECU not programmed
ECU PARAM ERR	Internal ECU fault or ECU not programmed
ECU EE UNSPEC	Internal ECU fault or ECU not programmed

DTC Displayed	Possible Causes
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## Auxiliary Components Group

AUX1	Auxiliary 1 system/wiring open or short circuit
AUX2	Auxiliary 2 system/wiring open or short circuit
AUX3	Auxiliary 3 system/wiring open or short circuit
AUX4	Auxiliary 4 system/wiring open or short circuit
AUX5	Auxiliary 5 system/wiring open or short circuit

## Lining Wear Group

BRAKE PADS	Lining wear wiring open circuit
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## Lateral Accelerometer

LAT ACC OC	Lateral accelerometer wiring open circuit
LAT ACC SC	Lateral accelerometer wiring short circuit
LAT ACC SIGNAL	Lateral accelerometer signal fault

## Slave Valve Group

SLAVE VALVE SENSOR	Pressure transducers open or short circuit
SLAVE VALVE MODULATOR	Hold, Dump or Brake Apply solenoid open or short circuit
SLAVE VALVE CABLE	Link cable open or short circuit
SLAVE VALVE SLOW REC	Slow recovery of one wheel slave valve
SLAVE SUSP LOW	Suspension pressure values outside operating range

Note: If a DTC is displayed and after following recommended procedure, as detailed in the Service Manual, no fault is found, the ECU should be replaced.

# ECU Connector Identification

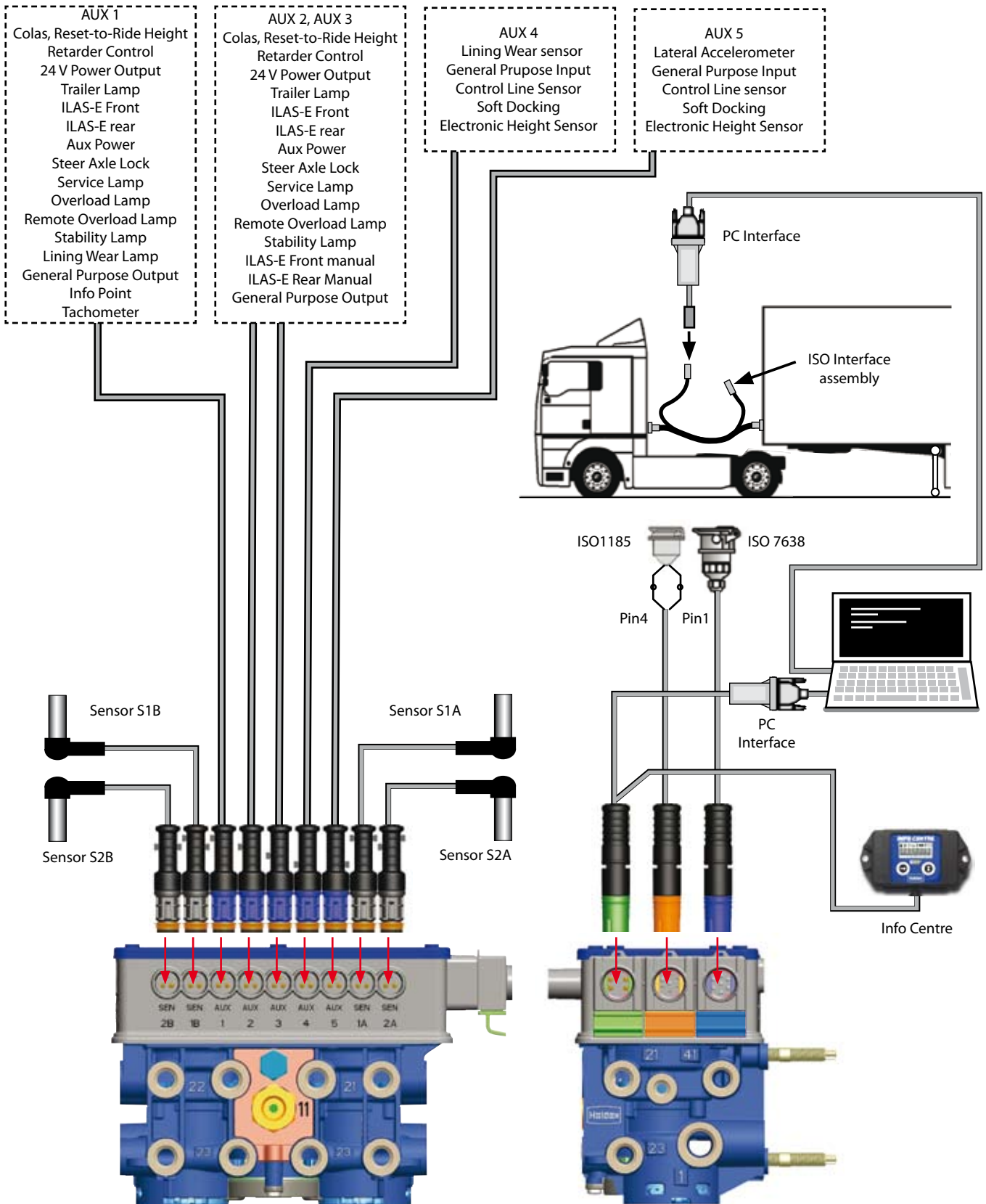


Fig. 15

# Wiring diagram

Full System information (911-440-001)

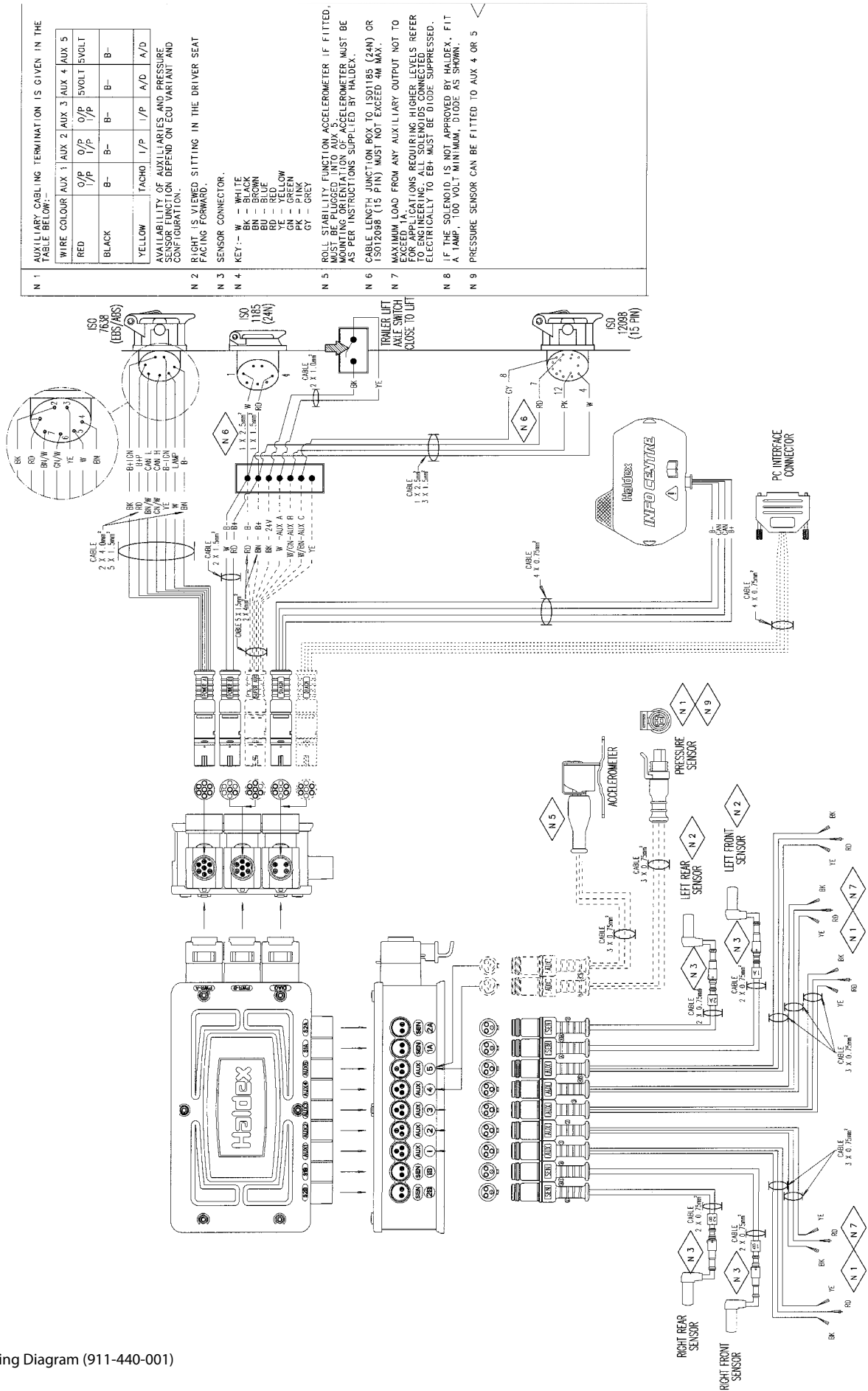


Fig 16 - Wiring Diagram (911-440-001)

# Piping Diagram

4S/2M - Side-by-Side Configuration with REV

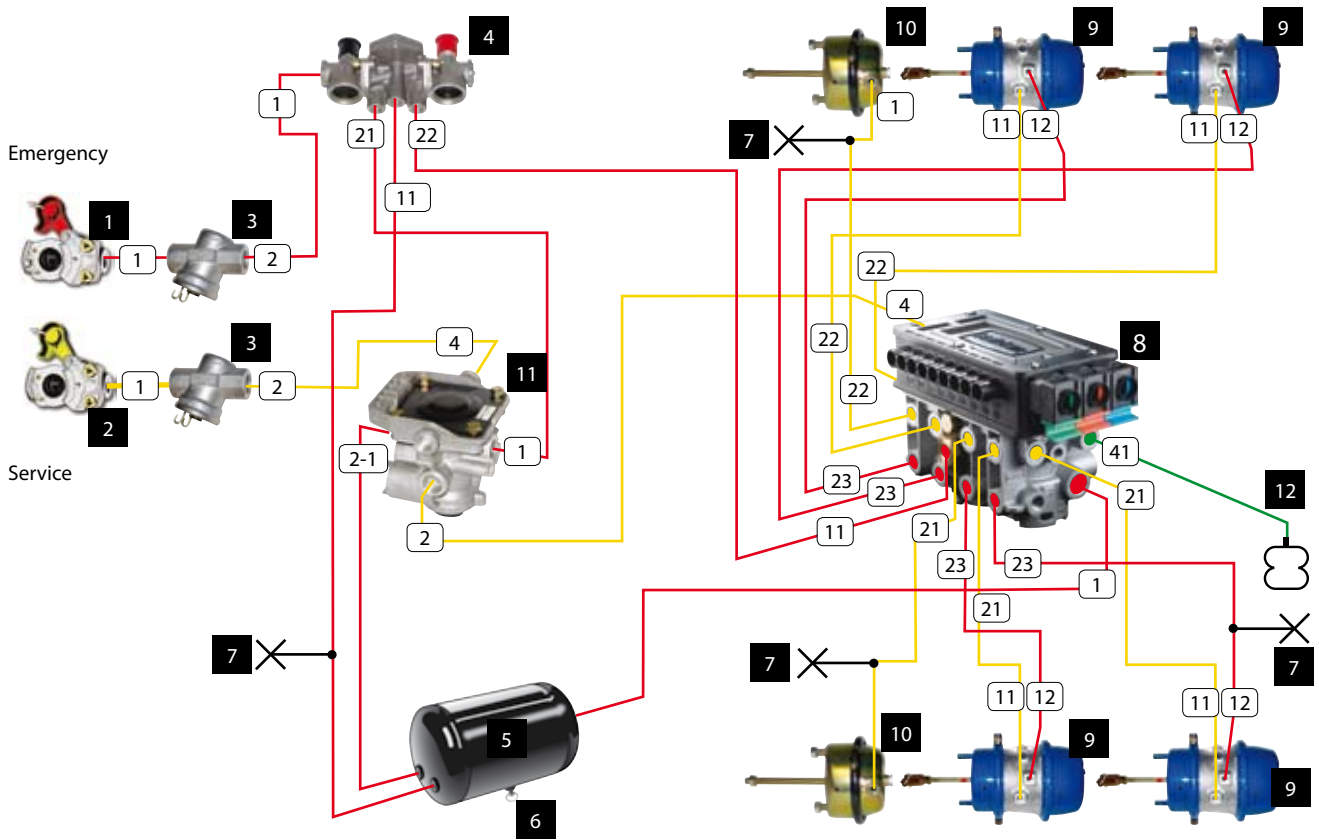


Fig. 17 Key: **1** Item no. **1** Port No.

Side by Side configuration,  
3 axle Semi-Trailer - 2 line air brake system

Item	Description	Notes
1	Emergency Coupling	
2	Service Coupling	
3	Pipe Filter	
4	Combined Park and Shunt Valve	352-044-... / 352-045-...
5	Air Reservoir	
6	Drain Valve	
7	Test Point	
8	EB+ Gen 2 Assembly	
9	Spring Brake Chamber	
10	Single Diaphragm Brake Chamber	
11	Relay Emergency Valve	
12	Suspension Bellows	

# Piping Diagram

4S/2M - Side-by-Side Configuration with Trailer Control Module (TrCM)

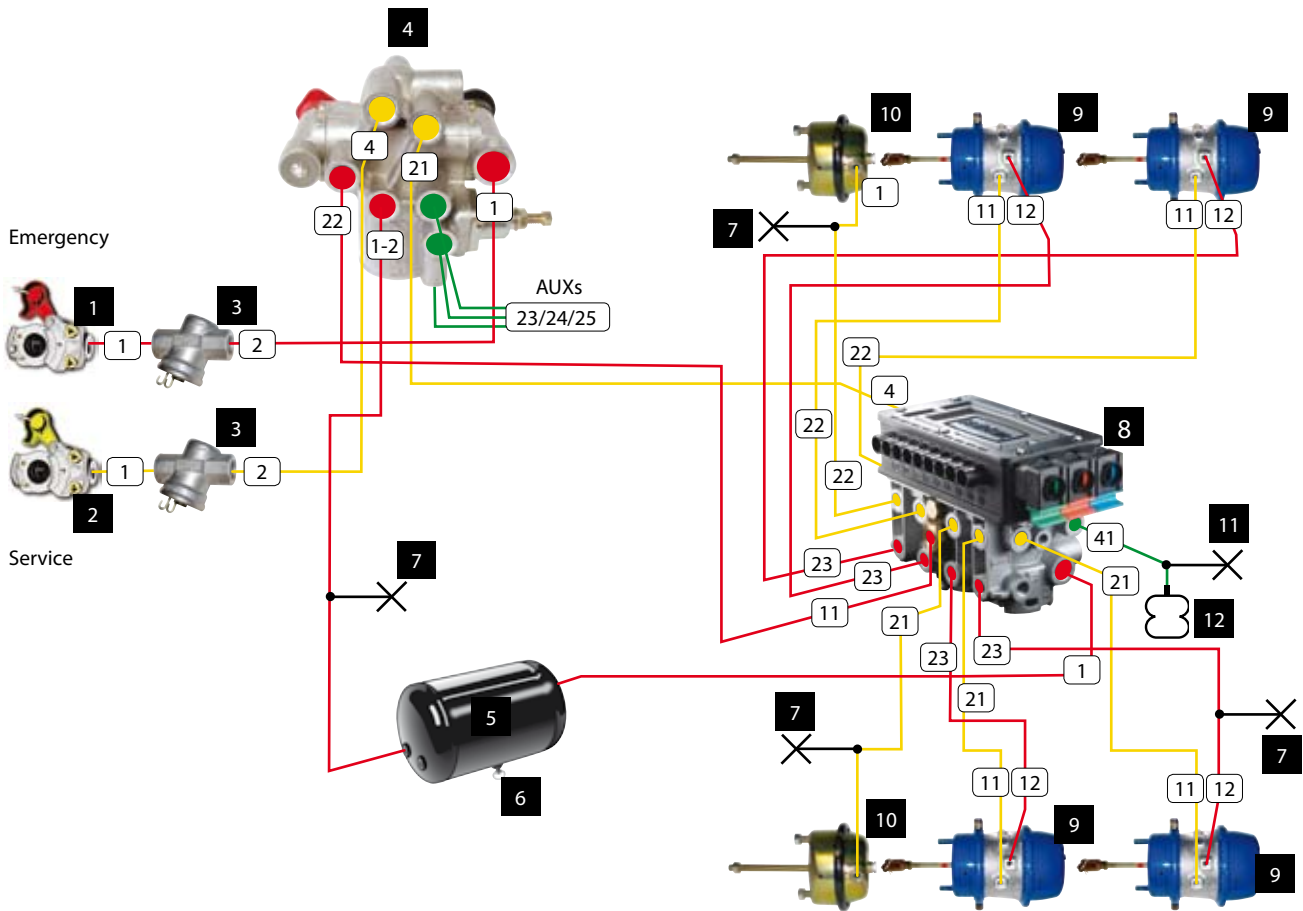


Fig. 18 Key: **1** Item no. **1** Port No.

Side by Side configuration,  
3 axle Semi-Trailer - 2 line air brake system with Trailer Control Module - Spring brake chambers

Item	Description	Notes
1	Emergency coupling	
2	Service coupling	
3	Pipe filter	
4	Trailer Control Module (TrCM)	
5	Air reservoir - service	
6	Drain valve	
7	Test point	
8	EB+ Gen 2 Assembly	
9	Spring Brake Chamber	
10	Single Diaphragm Brake Chamber	
11	Test Point Simulator	
12	Suspension Bellows	

# Piping Diagram

2M, Side-by-Side, with Combined Park and Shunt valve (352-046-001)

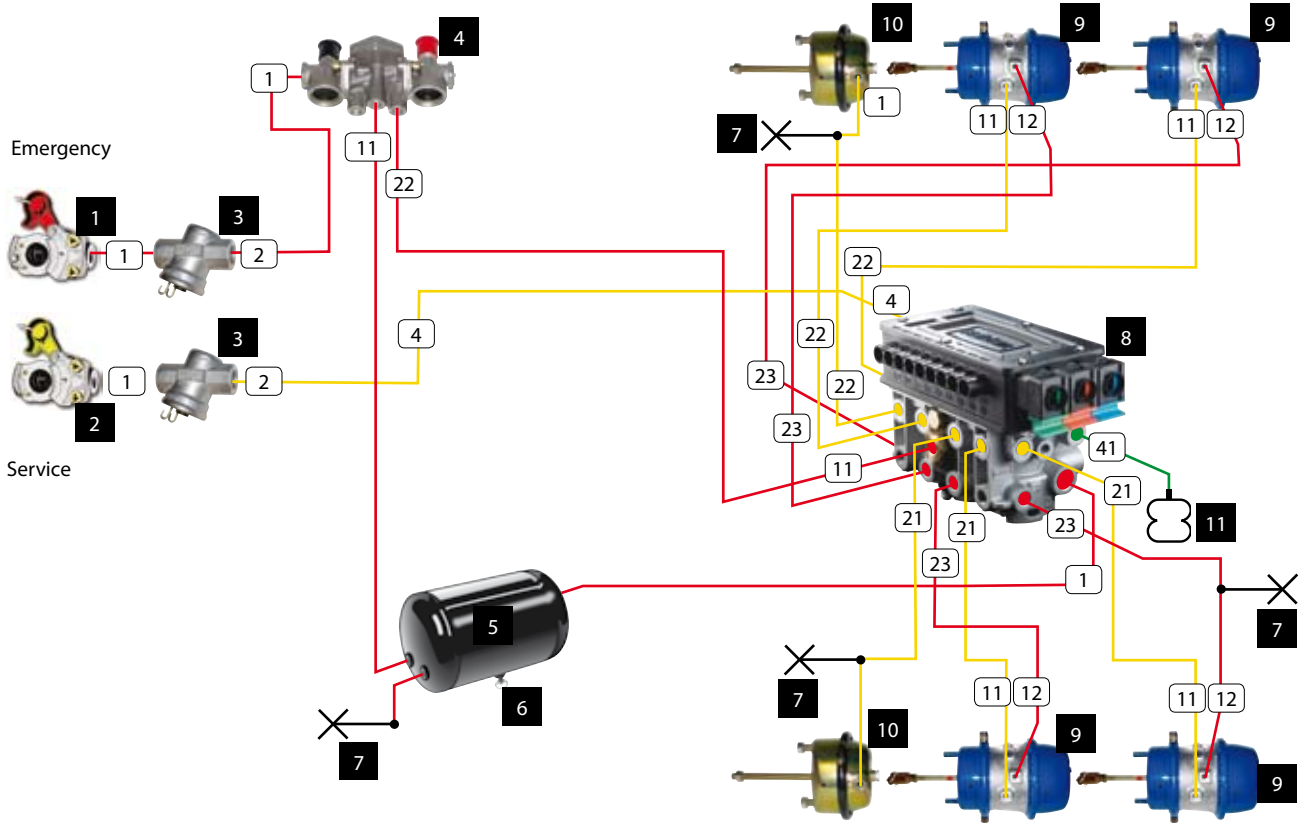


Fig. 19 Key: **1** Item no. **1** Port No.

Side by Side configuration,  
3 axle Semi-Trailer - 2 line air brake system - Spring brake chambers

Item	Description	Notes
1	Emergency coupling	
2	Service coupling	
3	Pipe filter	
4	Combined Park and Shunt valve	352-046-001
5	Air reservoir	
6	Drain valve	
7	Test point	
8	EB+ Gen 2 Assembly	
9	Spring Brake Chamber	
10	Single Diaphragm Brake Chamber	
11	Suspension Bellows	

# Piping Diagram

## 2M, Side-by-side with Individual Park & Shunt

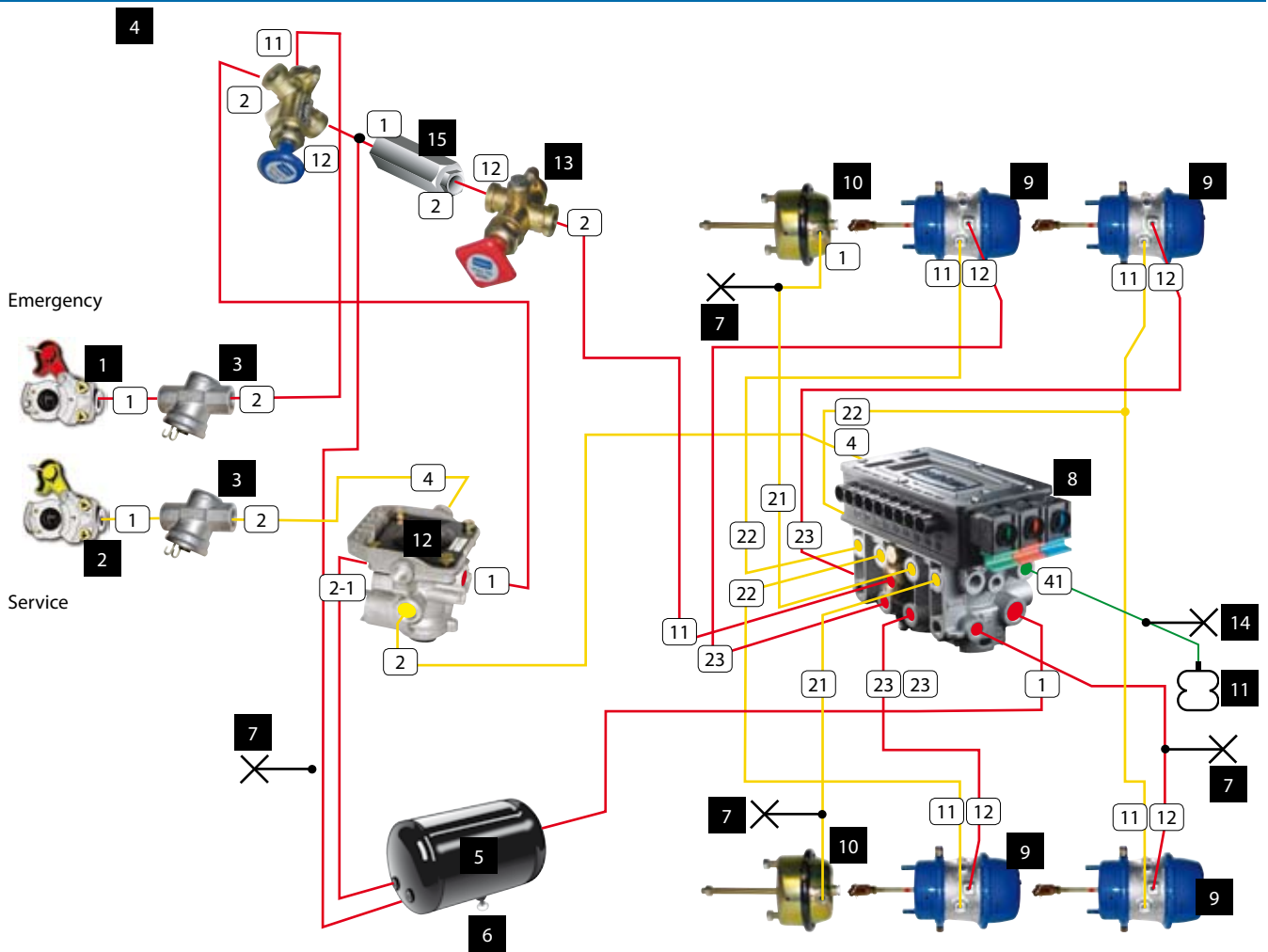


Fig. 20 Key: **1** Item no. **1** Port No.

Side by Side configuration,  
3 axle Semi-Trailer - 2 line air brake system - Spring brake chambers

Item	Description	Notes
1	Emergency coupling	
2	Service coupling	
3	Pipe filter	
4	Shunt Valve	
5	Air Reservoir	
6	Drain valve	
7	Test Point	
8	EB+ Gen 2 Assembly	
9	Spring Brake Chamber	
10	Single Diaphragm Brake Chamber	
11	Suspension Bellows	
12	Relay Emergency Valve (REV)	
13	Park Valve	
14	Test Point Simulator	
15	Single Check Valve (optional)	



# Multimeter Reading

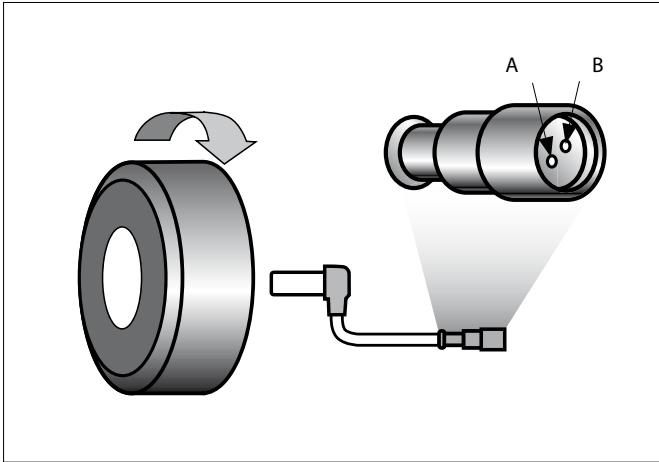


Fig. 21 - Sensor connector

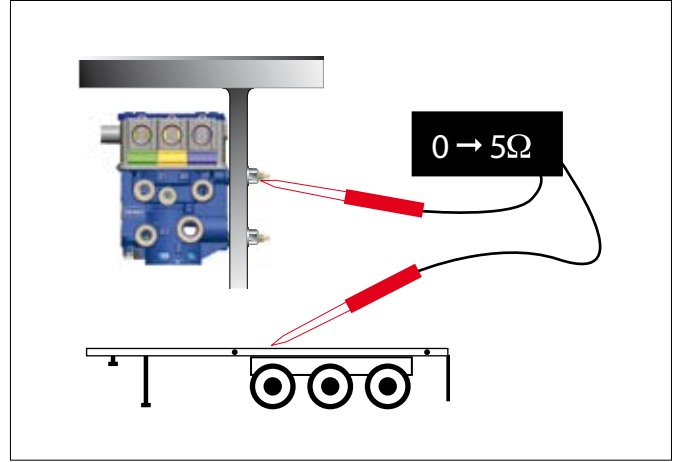


Fig. 22 - Earth continuity

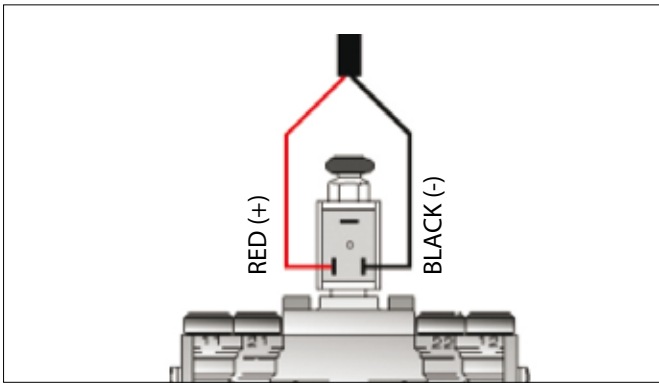


Fig. 23 - COLAS<sup>®</sup> connector

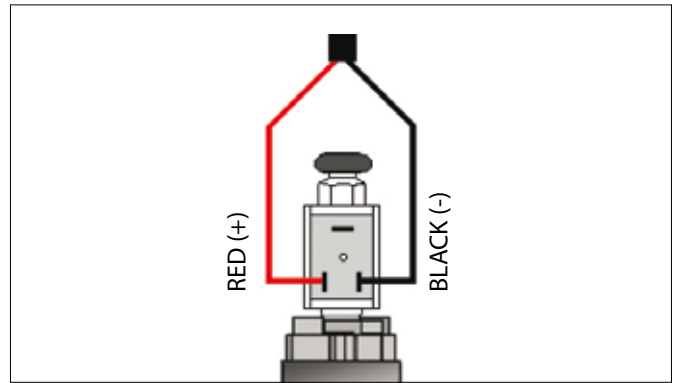


Fig. 24 - ILAS<sup>®</sup>-E connector

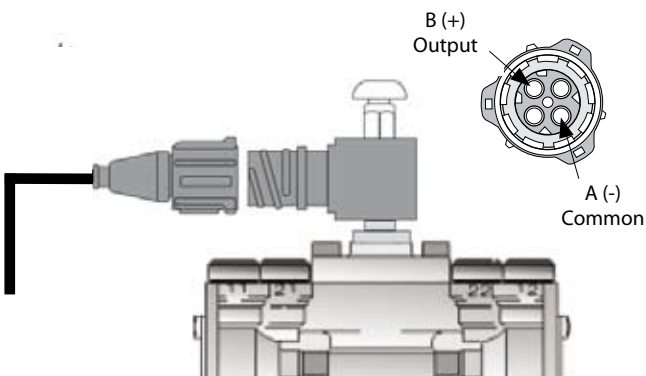


Fig. 25 - COLAS<sup>®</sup> DIN connector

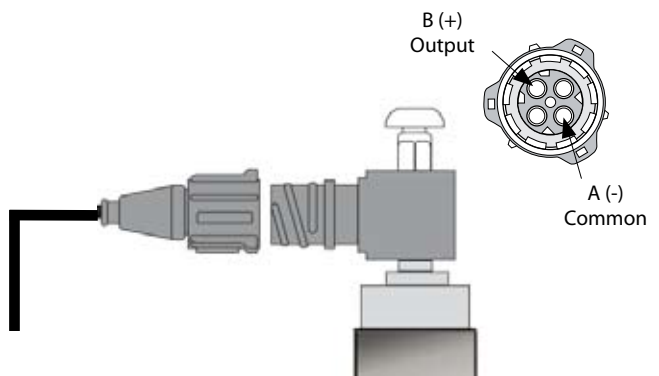


Fig. 26 - ILAS<sup>®</sup>-E DIN connector

Fig	Checking position	Measure between	Correct value	Remarks
21	Sensor output	A B	0.2V AC Min	Sensor 1A, 1B or 2A, 2B Sensor disconnected from ECU Wheel rotated at 1 rev/2 sec.
21	Sensor resistance	A B	>1.0 <2.4 kohm	Sensor 1A, 1B or 2A, 2B Sensor disconnected from ECU
22	Earth continuity	ECU/EPRV Bracket and chassis	0 ohms <5 ohms	
23 & 24	COLAS <sup>®</sup> Solenoid resistance	+ -	>79 <96 ohms	Cable disconnected
25 & 26	ILAS <sup>®</sup> -E Solenoid resistance	+ -	>79 <96 ohms	Cable disconnected

# Recommended Maintenance Schedule

Time or Mileage (whichever occurs first)	Component	Operation
When hubs are removed	Exciter	Check for damage
	Sensor	Check for wear clean and readjust. Check output
Every 3 months or 25,000 miles (40,000 km)	Complete System	Perform system check out and air leakage check.
Annually or every or 100,000 miles (160,000 km)	Complete System	Perform system check out and air leakage check. Check wiring and piping security and integrity.
	Sensor	Check for wear clean and readjust. Check output

## Servicing Parts

The list of available service parts are indicated on page 22 to 24.


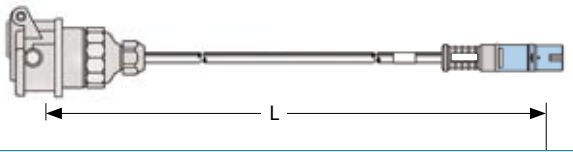
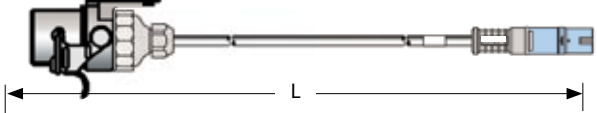
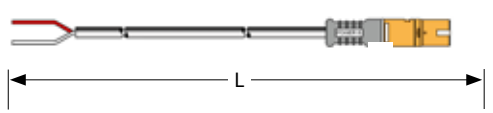
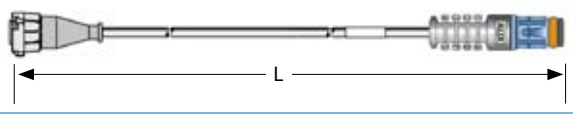
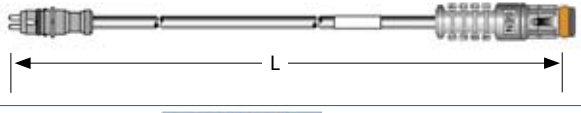


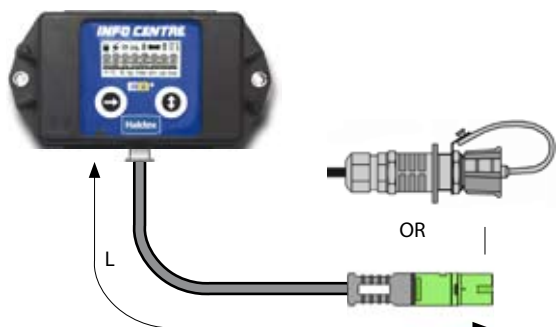
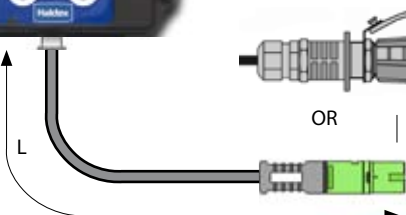
These can be obtained from Haldex service centres or distributors.

# Part Reference

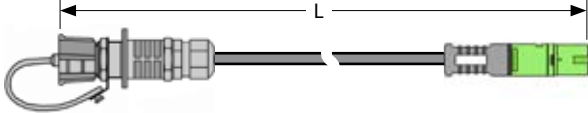

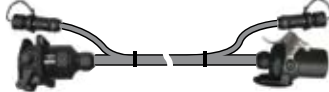

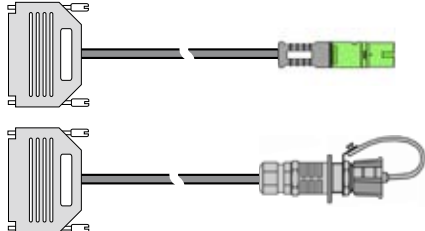







## Servicing Parts

These available service parts can be obtained from Haldex service centres or distributors.

The different parts are shown in view form in order to allow easy recognition.

Description	OE Part Number	AM Part number	View
Electronic Control Unit (ECU) 2M/5Aux Stability with Super Aux, integrated QRV, anticompound	820 008 001	820 008 001	
2M/5Aux Stability, integrated QRV, anticompound	820 007 001	820 007 001	
2M/5Aux integrated QRV, anticompound	820 019 001	820 019 001	
2M/5Aux stability, anticompound	820 011 001	820 011 001	
2M/5Aux anticompound	820 023 001	820 023 001	
3M/5Aux kit with master and slave	820 028 001	820 028 001	
ISO7638 Socket and cable Assy. PVC ADR			
L = 9 m	814 003 132	950 800 404	
L=12 m	814 003 102	950 800 401	
L=16 m	814 003 112	950 800 402	
ISO7638 - 7 Pin Plug Kit Full Trailer. PVC ADR			
L = 9 m	814 004 102	950 800 411	
L=12 m	814 004 112	950 800 412	
ISO1185 (24N) Cable Assembly. PVC ADR			
L = 6 m	814 002 222	950 800 422	
L = 12 m	814 002 202	950 800 421	
L = 16 m	814 002 212	950 800 423	
Auxiliary Cable Assembly. PVC ADR.			
L = 2 m	814 001 322	950 800 433	
L = 7 m	814 001 302	950 800 431	
L = 18 m	814 001 312	950 800 432	
Sensor Cable Assembly. PUR.			
L = 2 m	814 004 412	950 800 442	
L = 3 m	814 004 402	950 800 441	
L = 6m	814 004 422	950 800 443	
EB+ Gen 2 Label	028 5262 09		
Sensor Kit Angled (inc. retaining clip)		950 364 503	
Straight (inc. retaining clip)		950 364 506	
EB+ Info Centre. PVC ADR			
L = 6.5 m Cable	815 001 131		
L = 8 m Cable	815 001 151		
L = 24 m Cable	815 001 141		
Side of Vehicle Installation PVC ADR			
L = 0.5 m Cable	815 014 011		
L = 6.5 m Cable	815 013 011		

# Part Reference

Description	Part Number	View
Side of Vehicle Diagnostic Cable Assembly L = 6.5m – PUR L = 2.5m – PUR L = 5m – PUR L = 15m – PUR	814 010 101 814 010 111 814 010 121 814 010 131	
Blanking Plug ECU positions: S2A, S2B, AUX 1-5	003 8700 09	
ISO7638 DIAG+ Cable EB+ ISO7638 Diagnostic Cable	815 018 001	
DIAG+ PC Interface (Interface Pod, dongle and Software) c/w Instruction Manual USB interface and dongle	815 028 001	
Cable - ECU to Interface L = 6.5m L = 15m L = 20m	814 001 601 814 001 611 814 001 621	
Cable - Side of Vehicle to Interface L = 6.5m L = 15m	814 011 001 814 011 011	
Lining Wear System L = 2m AUX cable - Standard	815 015 001	
Blanking Plug (Std Version)	027 5260 09	
EB+ Gen 2 Stability External Lateral Accelerometer	815 012 011	
Info Point L = 7m Cable L = 18m Cable	815 021 001 815 021 011	
Soft Docking Full system kit with Optical and acoustic aids	815 024 001	
Sensor Adjusting Tool	042 708 309	

# General Information

## Braking with EB+ Gen 2

In an emergency apply full force on the brake pedal. The EB+ Gen 2 will be activated immediately when you fully apply the brakes and will assist you to retain steering control of your vehicle according to the road surface conditions.

DO NOT apply and release the brakes by pumping the brake. This is known as 'Cadence braking' and can have a detrimental effect on vehicle braking.

## Lining Wear Sensing (LWS)

EB+ Gen 2 Lining wear is a device that allows multiple lining wear indicators (LWI) to be connected to a single analogue input 'AUX 4' on the EB+ Gen 2 ECU. EB+ Gen 2 Lining wear device can be installed on all types of towed vehicles where provisions are made in the brake pads. The product provides lining wear indication, without the need to remove wheels as required on disc brakes, via the EB+ Gen 2 diagnostic tools Info Centre or DIAG+.

The device connects to specified sensors from the brake pads and when a brake lining has reached its wear limit the sensor signals the EB+ Gen 2 Lining wear device which activates the EBS warning lamp indicating a fault.

## EB+ Gen 2 Stability

EB+ Gen 2 Stability is an advanced Trailer Roll Stability function that senses when the trailer is near to a rollover condition and automatically applies the trailer brakes to slow the vehicle combination down.

It will help to reduce the likelihood of trailer rollover BUT IT WILL NOT PREVENT ROLLOVER and should be used as an aid to normal good driving practice. The stability function is a SAFETY BACK UP system the same as anti-lock braking function.

It uses a lateral accelerometer to determine the level of cornering and as part of its operation it applies brief pulses of brake pressure during normal cornering, even below a level at which a rollover may occur.

These pulses may be noticeable to a driver but will reduce in number after the system has learnt the vehicle combinations roll characteristics and are part of the normal operation. This learning process will be repeated every ignition cycle, if the load is changed or if an axle is lifted or lowered.

## Traction Assist using ILAS<sup>®</sup>-E

Traction assist is made operative by a 24v (constant or intermittent) supply to the yellow wire in the 3 core auxiliary cable connected to AUX 2 or AUX 3 and programmed as ILAS-E Front. On request for traction assist, front axle lifts.

The front axle drops when either:

- The vehicle speed exceeds 30kph or
- The suspension pressure reaches more than 130 % of the laden bag pressure

## Soft Docking

Soft Docking, when linked to the Haldex EB+/EB+ Gen 2 system will apply brakes automatically when reversing into a loading bay. The system will reduce vehicle speed to prevent significant damage to the vehicle and the dock by timely application of the brake pressure when reversing. The braking is indicated by sensing of 1 meter distance and wheel speed sensing. The EB+ / EB+ Gen 2 system will then command the brake apply.

## Info Point

With an illuminated spot the Info Point will instantly show if the trailer has a fault in the braking system. The Info Point connects to EB+/EB+ Gen 2 Auxiliary. It is dedicated to alert fault in Lining Wear, Sensors, Colas etc. It is ADR approved.

Haldex offers proprietary vehicle technology solutions to the global vehicle industry within specific niches. We focus on products to improve safety, the environment and vehicle dynamics.

We are enhancing our competitive capabilities and building long-term customer relationships through high performance, low total costs to the customer through the product's service life, ethical business practices and commitment to long-term partnerships. Haldex operations are divided into four business areas: Commercial Vehicle Systems, Hydraulic Systems, Garphyttan Wire and Traction Systems.

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