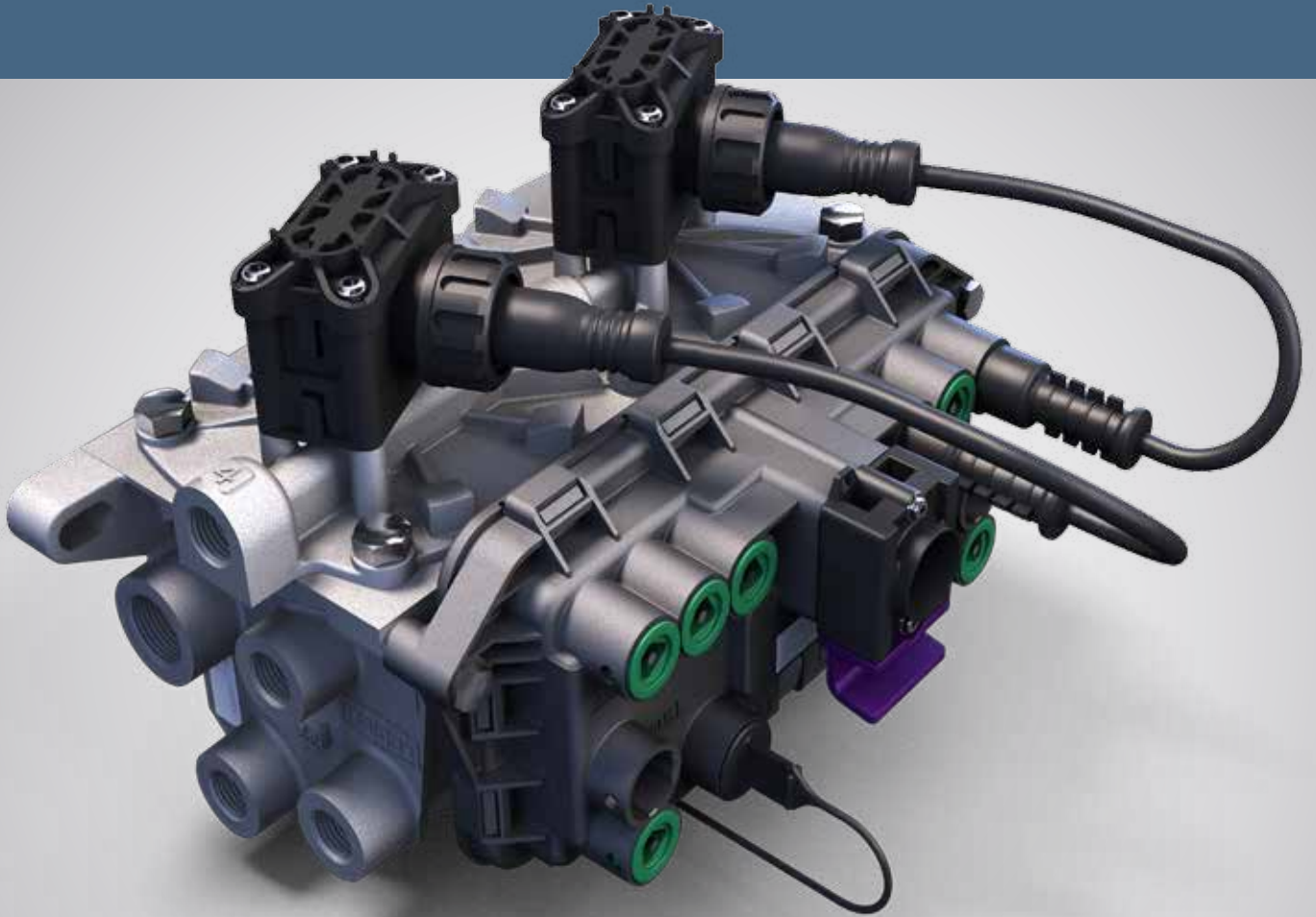


INSTALLATION GUIDE



U-ABS



Innovative Vehicle Solutions

Notes on the use of this manual

This manual has been designed to assist personnel in satisfactory installation of Haldex U-ABS onto trailers. The intention has been to illustrate various aspects of the installation. It is expected that this manual will be in possession of the appropriate person throughout their 'training' and 'experience' and that the manual will be used as:

a) A teaching aid following supervision of a Haldex engineer.

b) A reminder of the correct procedure of Haldex U-ABS installation.

- › Use appropriate spare-parts documentation when obtaining spare parts
- › Use only genuine Haldex parts in repairs
- › Due to continuous development the right is reserved to alter the specification without notice
- › No legal rights can be derived from the contents of the manual
- › Duplication, translation and reprinting are prohibited without permission from Haldex Brake Products

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Introduction

Universal ABS (U-ABS) is a 24 V brake control system for full, semi and centre axle trailers using air braking systems that meets the anti-lock requirement of ECE Regulation 13, series 11. U-ABS is a flexible and upgradeable anti-lock system for trailers that is available in three versions.

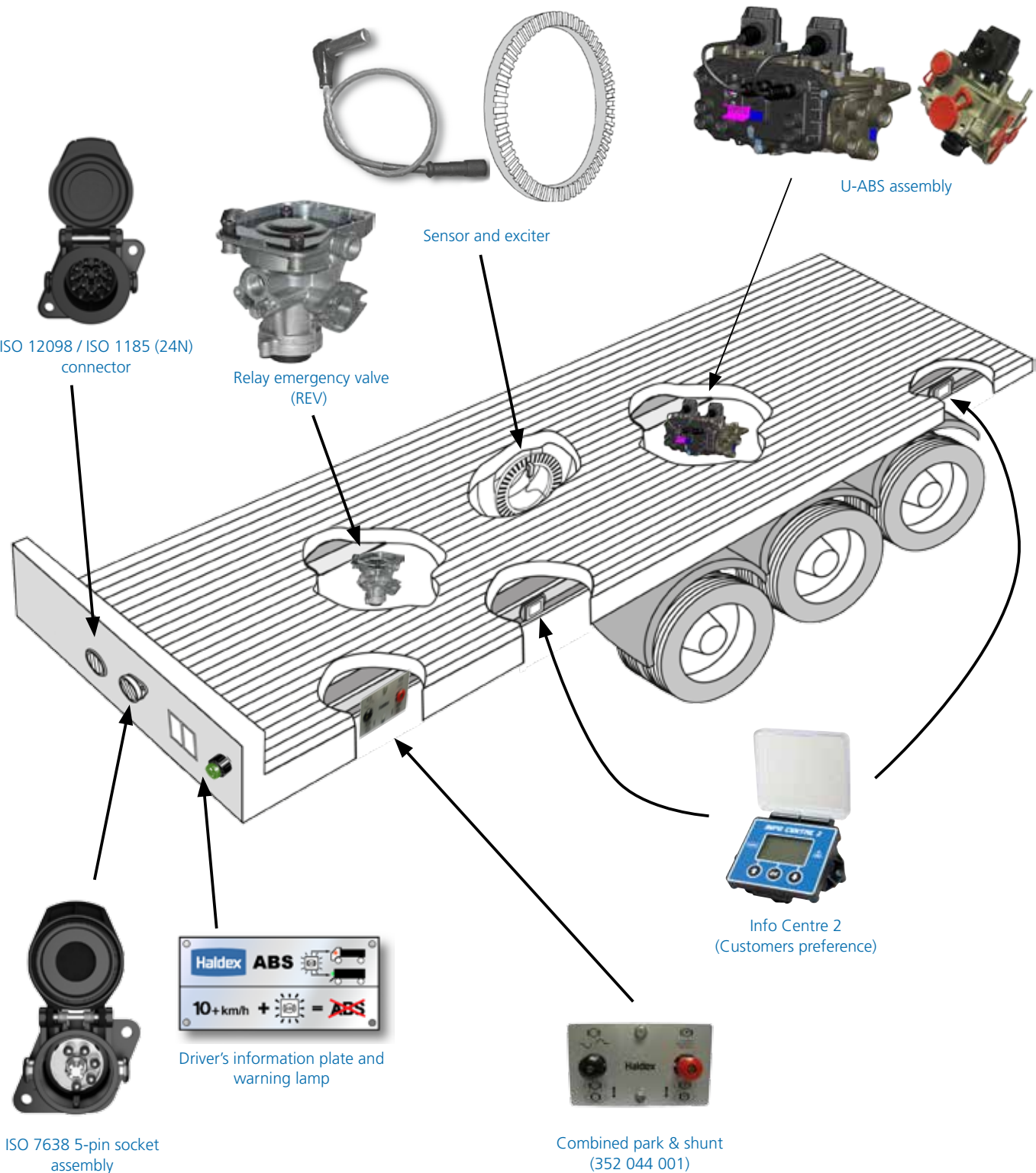
Premium	2S / 1M to 4S / 3M up to 3 AUX's and CAN diagnostics.
Standard	2S / 1M to 4S / 2M with 1 AUX and CAN diagnostics.
Basic	2S / 2M, 0 AUX and no CAN diagnostics (i.e. blink code diagnostics only).

U-ABS is robust in design using well proven valve design from the Haldex Modular ABS product family which is easy to install and allows service of individual parts of the product. Different levels of diagnostics are available using KWP2000 on CAN diagnostics to meet various customer demands.

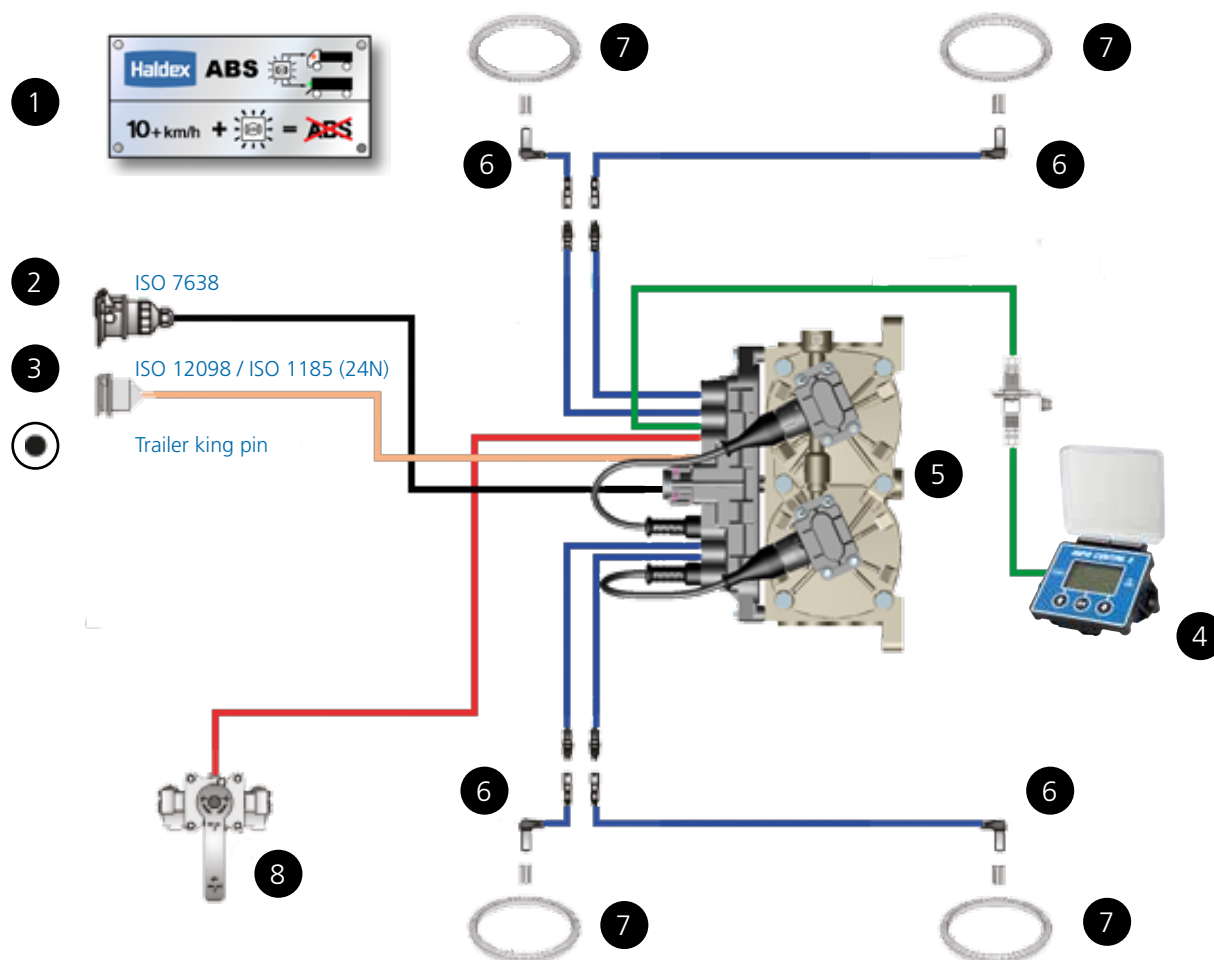
Note:

- › For auxiliary possibilities see the DIAG+ manual (doc ref: 006300019)
- › When not configured AUX 1 automatically functions as COLAS® reset to ride height
- › U-ABS should be supplied with clean / dry air
- › No pipe sealant or tape (PTFE) must be used during the installation of U-ABS
- › No warranty claims will be accepted on pipe sealant or tape induced faults
- › U-ABS should only be connected to a d.c. voltage supply (16-32 V), a battery supply is preferred. Never connect the U-ABS to any a.c. voltage supply, as this will damage the unit (see page 56)

General component guide



Chassis components

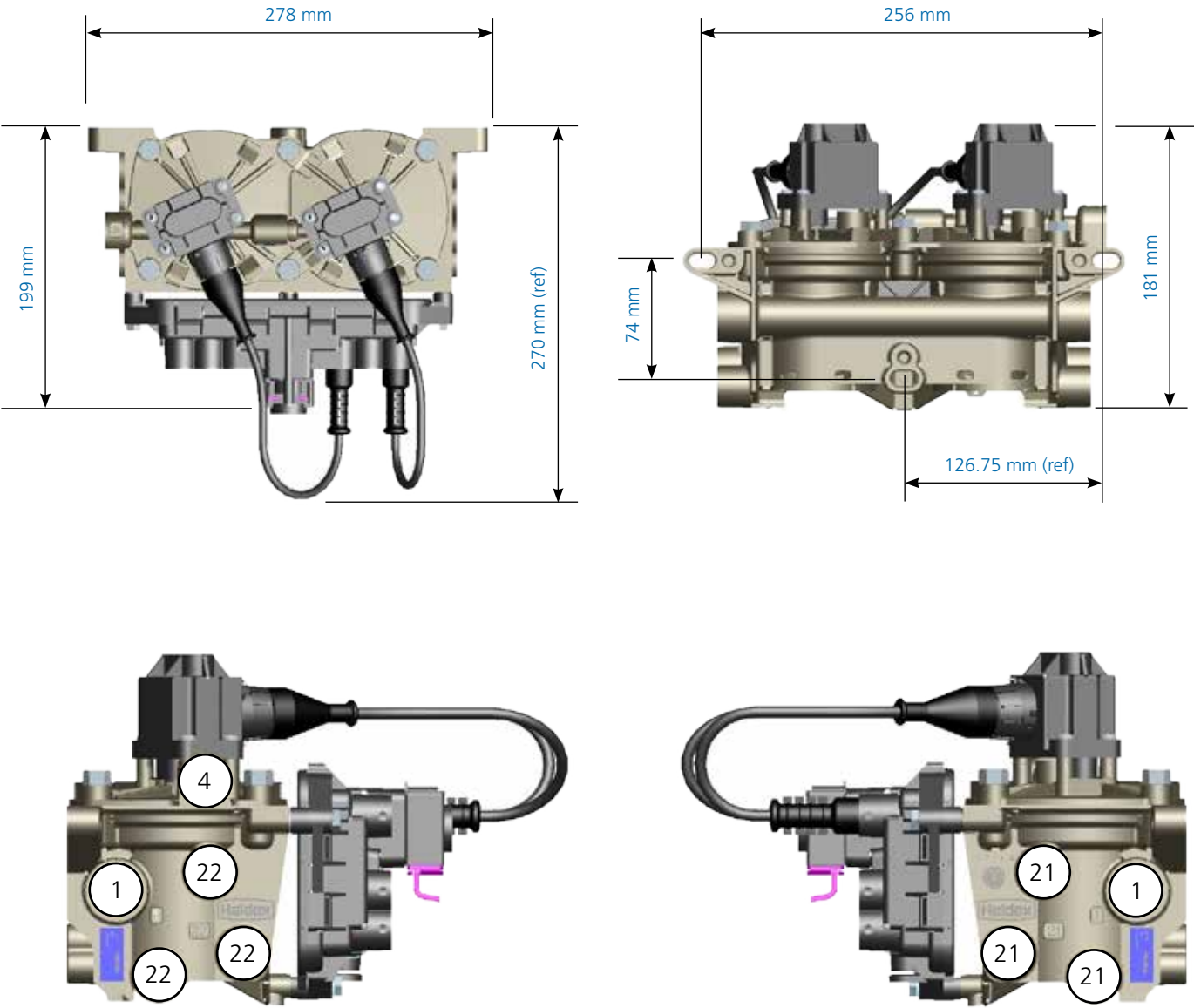


Item	Description	Notes
1	ABS label	
2	ISO 7638 5-pin socket assembly	
3	ISO 12098 / ISO1185 (24N)	Optional safety backup cable
4	Info Centre 2 (via SOV connection)	
5	U-ABS ECU assembly	
6	Sensor assembly	
7	Exciter	
8	COLAS®	AUX 1

Note:

Aux to be set in line with DIAG+

Dimension and port identification



Note:
No pipe sealant or tape must be used during the installation of U-ABS

Port no.	Description	Notes
1	Reservoir port	M22 x 1.5 (2 x quantity)
4	Control port	M16 x 1.5 (1 x quantity)
21 / 22	Delivery ports	M16 x 1.5 (6 x quantity)

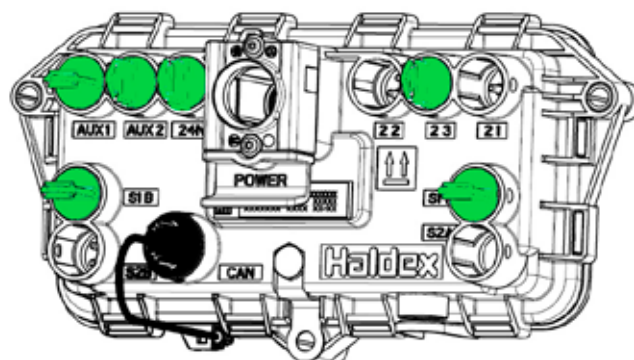
U-ABS versions

Premium

Valve & ECU assembly	364 564 001
Premium ECU only	364 569 001

1M, 2M or 3M capable, 4 x sensors and 3 AUX's, with CAN diagnostics.

- › For 2S / 1M systems use S1A, S1B and mod 21
- › For 2S / 2M systems use S2A, S2B and mod 21 & 22
- › For AUX 3 operation, use 23 connector

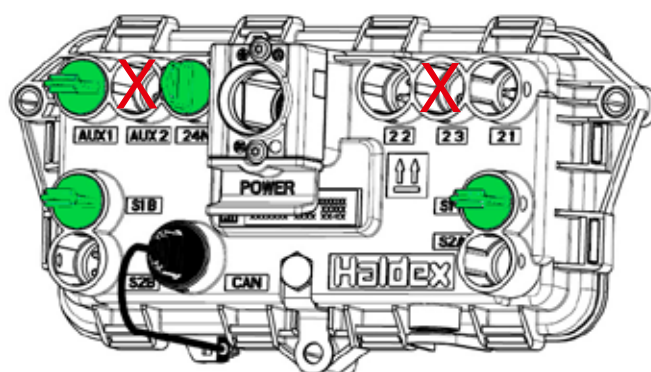


Standard

Valve & ECU assembly	364 565 001
Standard ECU only	364 570 001

1M, 2M capable, 4 x sensors and 1 AUX, with CAN diagnostics.

- › For 2S / 1M systems use S1A, S1B and mod 21
- › For 2S / 2M systems use S2A, S2B and mod 21 & 22

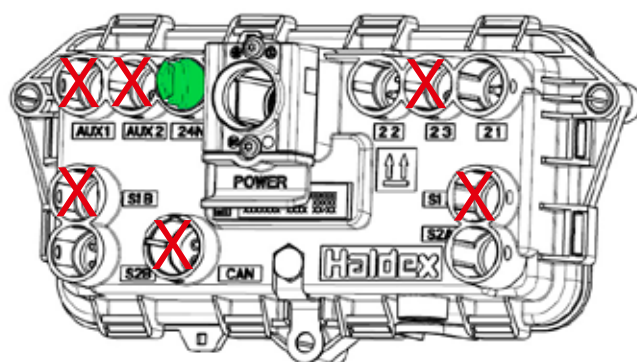


Basic

Valve & ECU assembly	364 566 001
Standard ECU only	364 571 001

2M only capable, 2 x sensors only and no AUX's, without CAN, blink code diagnostics only.

- › For 2S / 2M systems use S2A, S2B and mod 21 & 22
- › No 1M capability is available

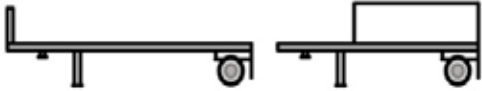
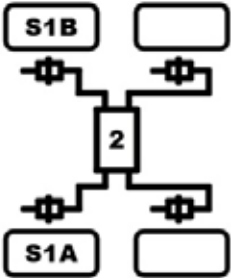
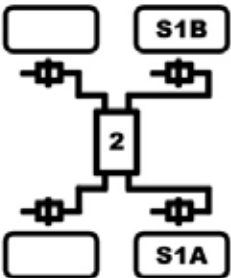


= blanking plug fitted

= option not available (i.e. no pins fitted to case)

System configurations

2S / 1M

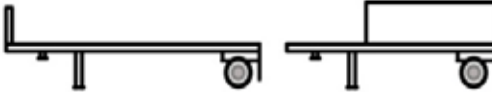
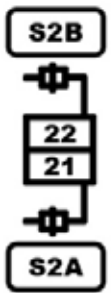
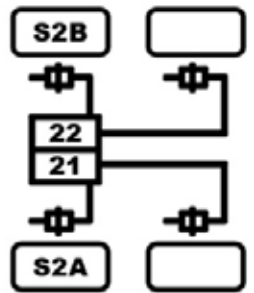
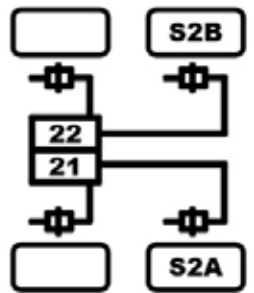
			
			
			

2 = connection no. 21 on the U-ABS ECU

Notes:

- › Directly controlled axle shall not be lifted
- › Any axle without directly controlled wheels may be a lift axle
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations

2S / 2M

Notes:

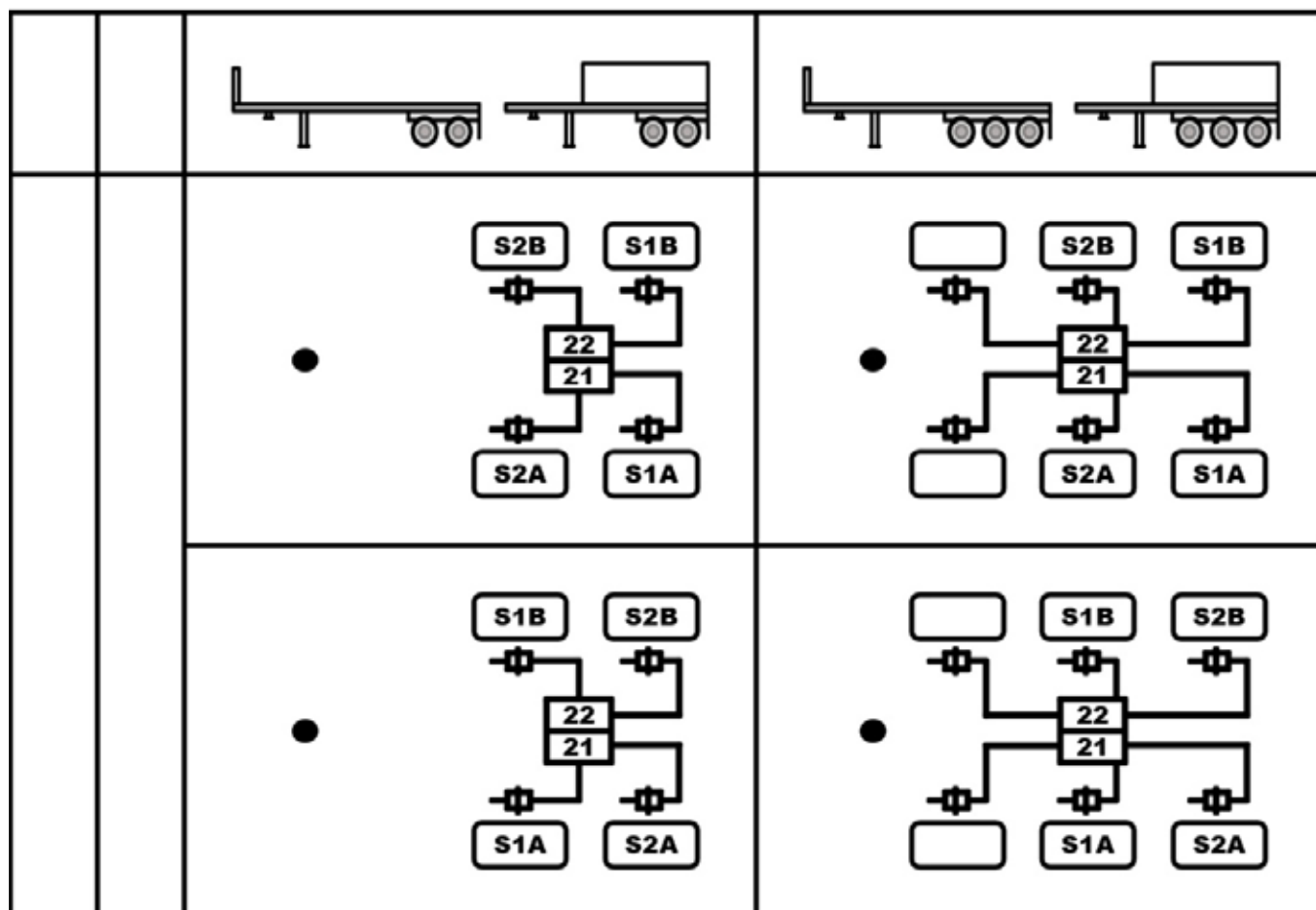
- › Directly controlled axle shall not be lifted
- › Any axle without directly controlled wheels may be a lift axle
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations

2S / 2M

Notes:

- › Directly controlled axle shall not be lifted
- › Any axle without directly controlled wheels may be a lift axle
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations

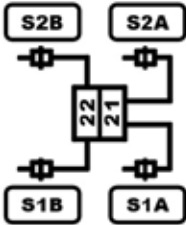
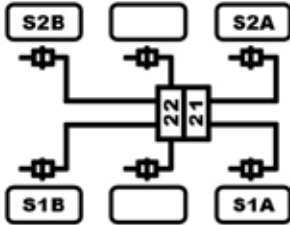
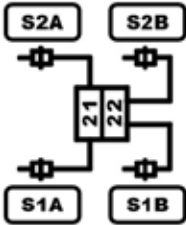
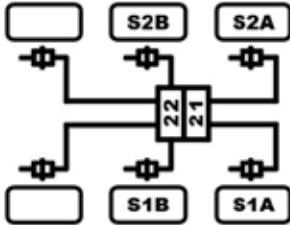
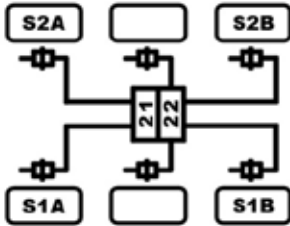
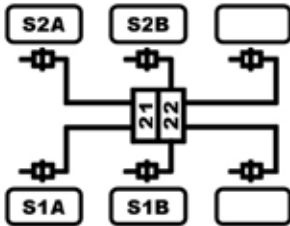
4S / 2M side x side



Notes:

- › Either, but not both directly controlled axles may be lifted
- › Any axle without directly controlled wheels may be a lift axle
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations

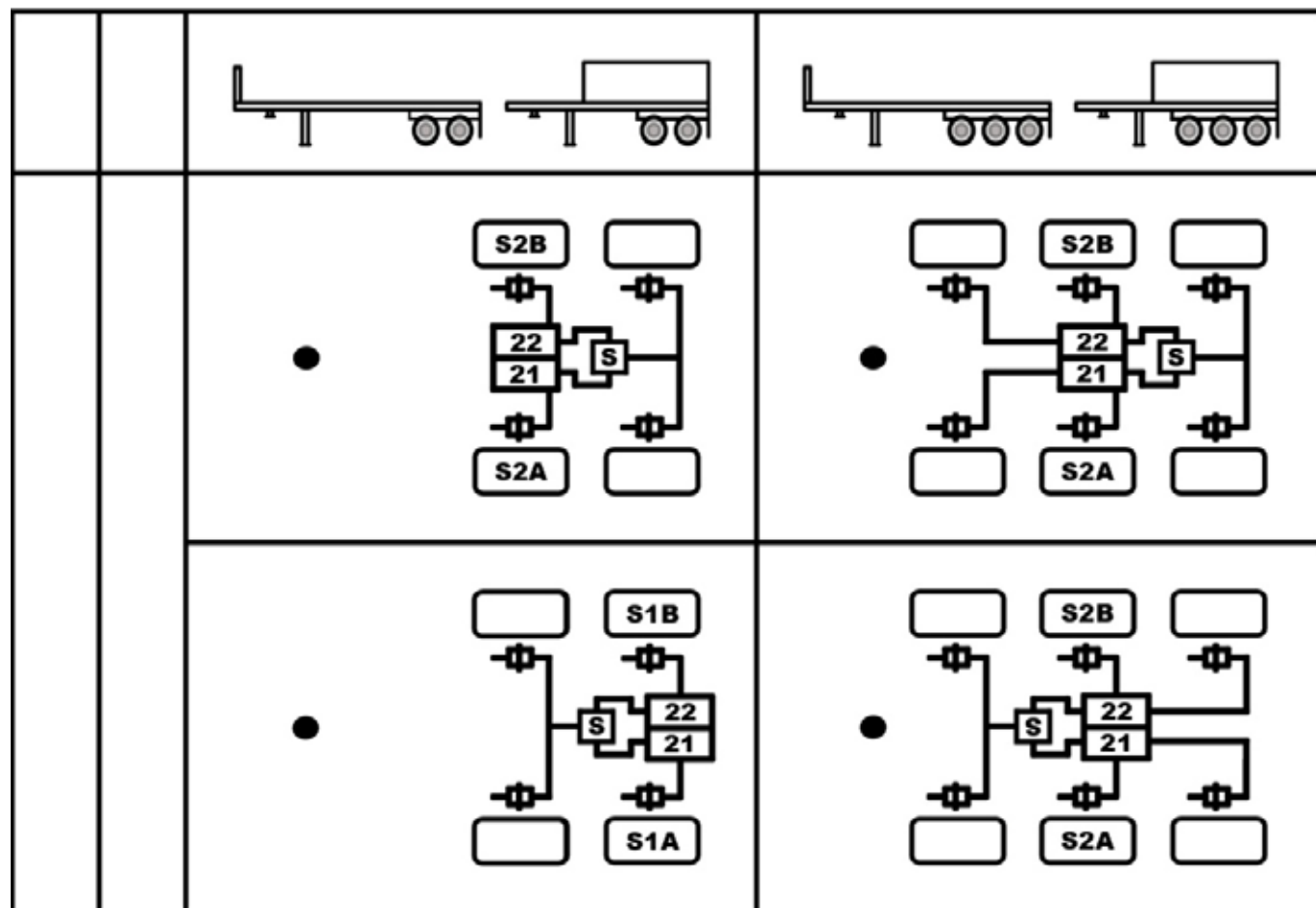
4S / 2M axle x axle

Notes:

- › Directly controlled axles shall not be lifted
- › Any axle without directly controlled wheels may be a lift axle.
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › Adaptive surface control (ASC) on modulator 22 and select low (SL) on modulator 21

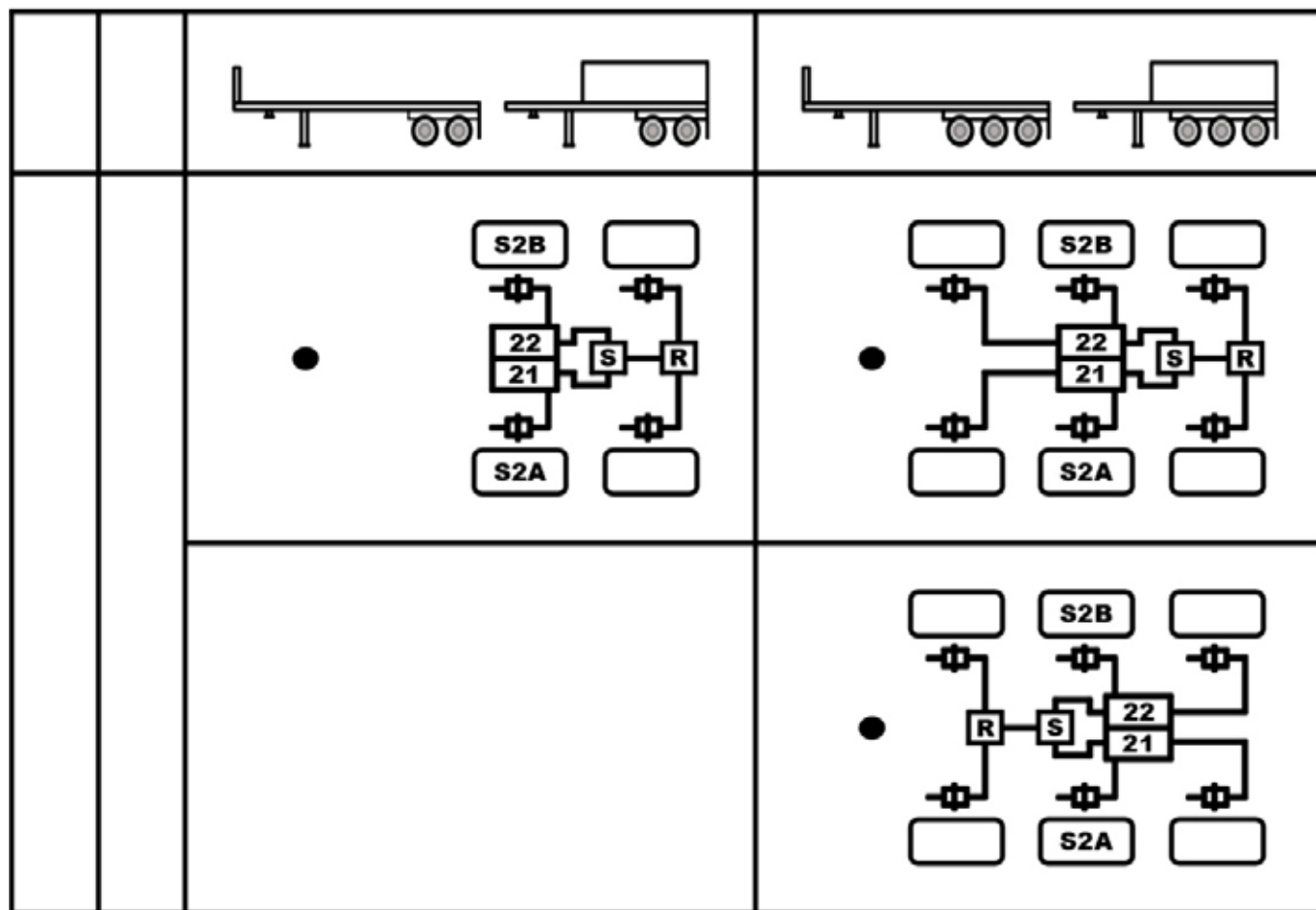
2S / 2M select low



Notes:

- › Directly controlled axle shall not be lifted
- › Any axle without directly controlled wheels may be a lift axle
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › S is select low valve (to be used on steered axles)

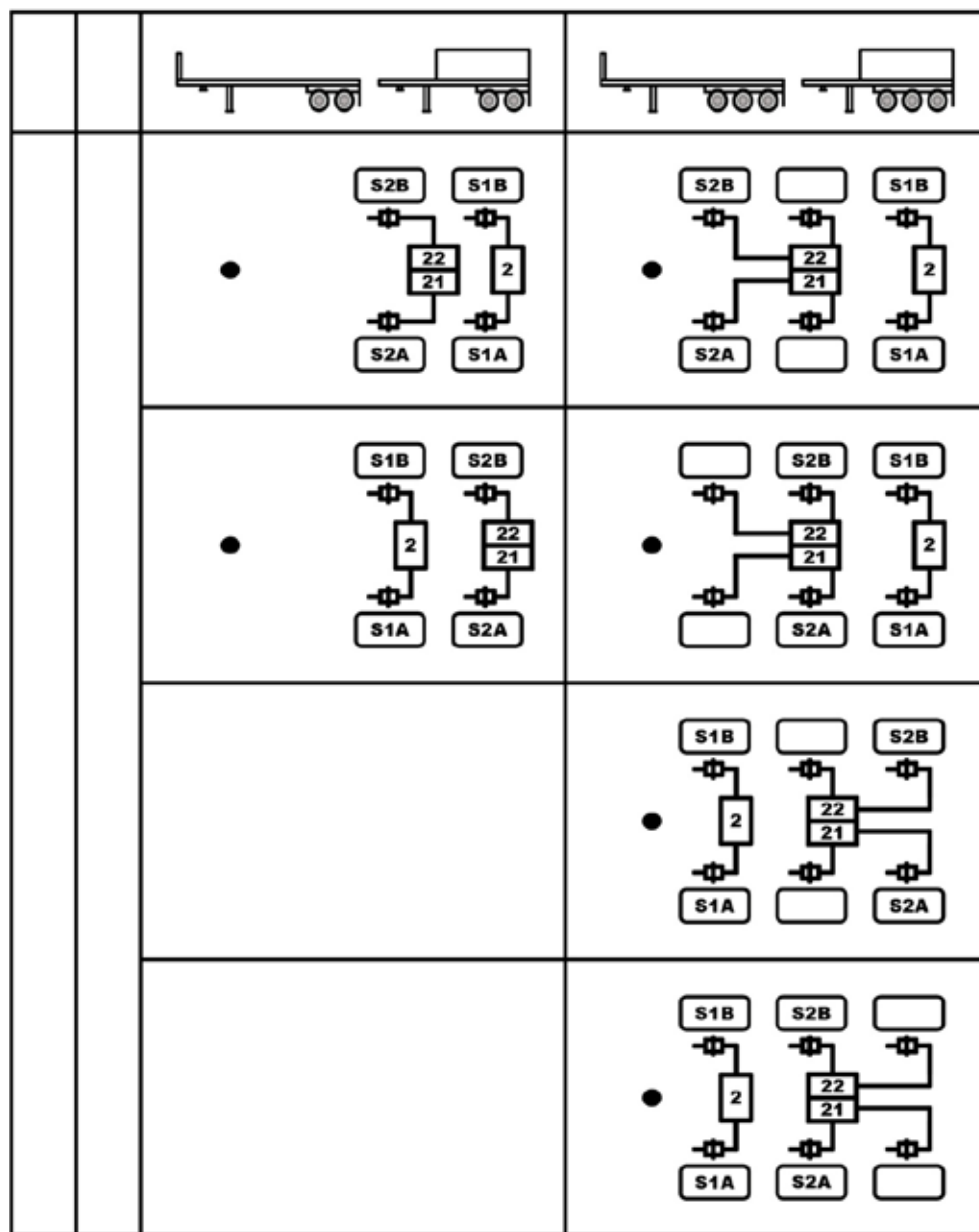
2S / 2M select low + relay



Notes:

- › Directly controlled axle shall not be lifted
- › Any axle without directly controlled wheels may be a lift axle
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › S is select low valve (to be used on steered axles)
- › R is relay valve (can be used if required to comply with response times)

4S / 3M

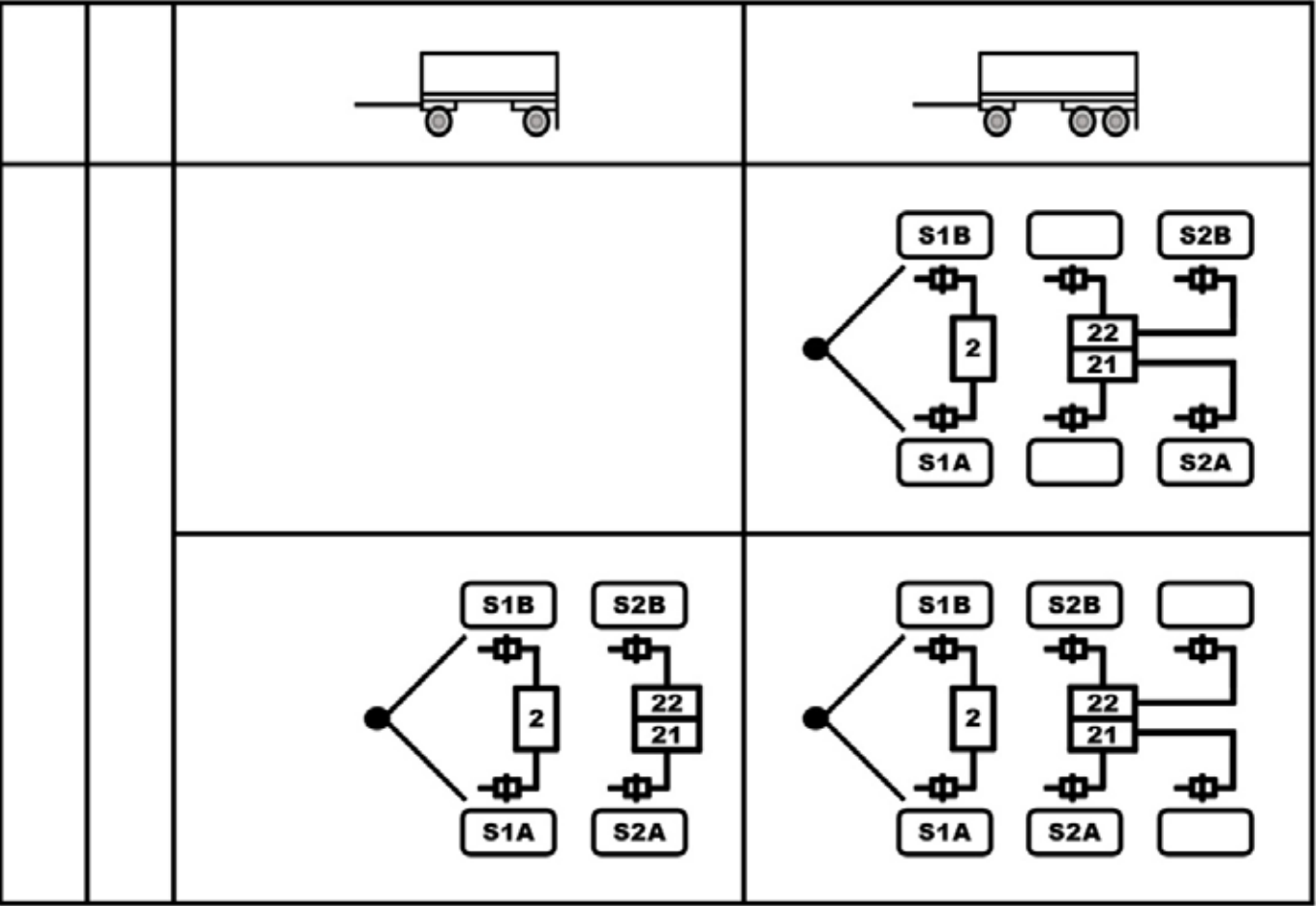


2 = connection no. 23 on the U-ABS ECU

Notes:

- › Directly controlled axle connected to modulator 21 and 22 shall not be lifted
- › Directly controlled axle connected to modulator 2 may be lifted
- › Any axle without directly controlled wheels may be a lift axle
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations

4S / 3M



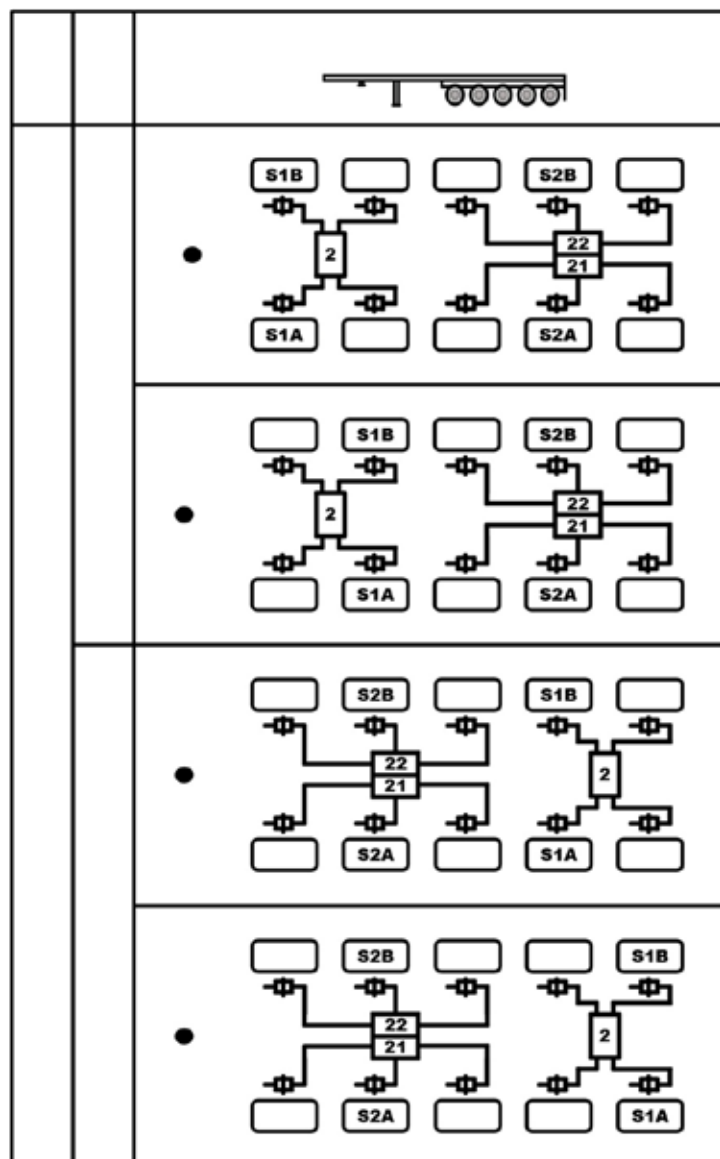
2

 = connection no. 23 on the U-ABS ECU

Notes:

- › Directly controlled axles shall not be lifted
- › Any axle without directly controlled wheels may be a lift axle
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained

4S / 3M (2S / 1M + 2S / 2M)

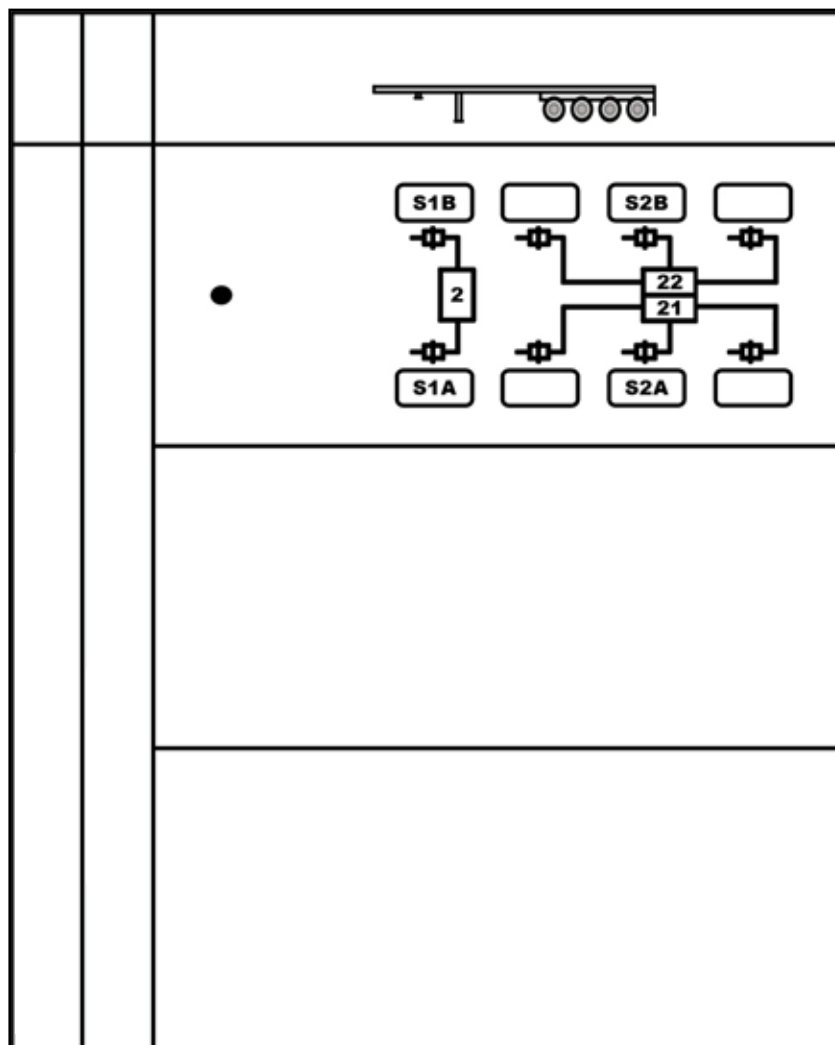


2 = connection no. 23 on the U-ABS ECU

Notes:

- › Directly controlled axle connected to modulator 21 and 22 shall not be lifted
- › Only one of the indirectly controlled (un-sensed) axles connected to modulator 21 and 22 can be lifted at any time
- › Directly controlled axle connected to modulator 2 can be lifted but corresponding indirectly controlled axle (un-sensed) must be lifted in parallel
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained

4S / 3M (2S / 1M + 2S / 2M)

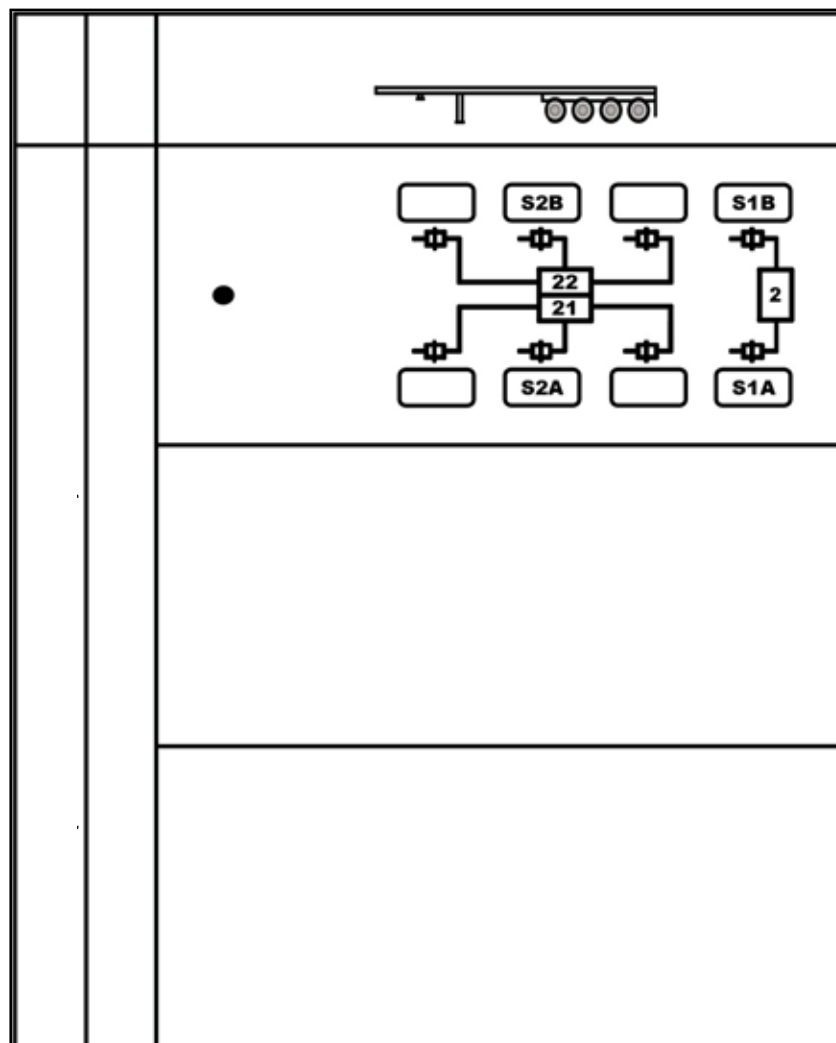


2 = connection no. 23 on the U-ABS ECU

Notes:

- › Directly controlled axle connected to modulator 21 and 22 shall not be lifted
- › Both indirectly controlled (un-sensed) axles connected to modulator 21 and 22 can be lifted
- › Directly controlled axle connected to modulator 2 can be lifted
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained

4S / 3M (2S / 1M + 2S / 2M)

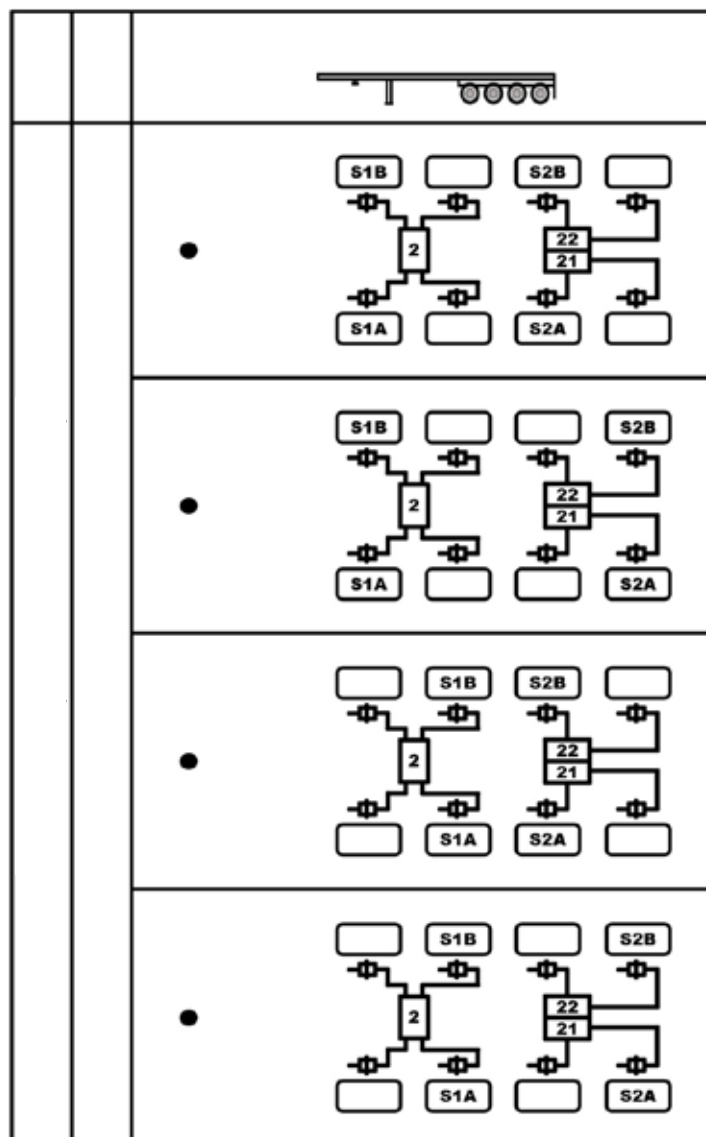


2 = connection no. 23 on the U-ABS ECU

Notes:

- › Directly controlled axle connected to modulator 21 and 22 shall not be lifted
- › Both indirectly controlled (un-sensed) axles connected to modulator 21 and 22 can be lifted
- › Directly controlled axle connected to modulator 2 can be lifted
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained

4S / 3M (2S / 1M + 2S / 2M)

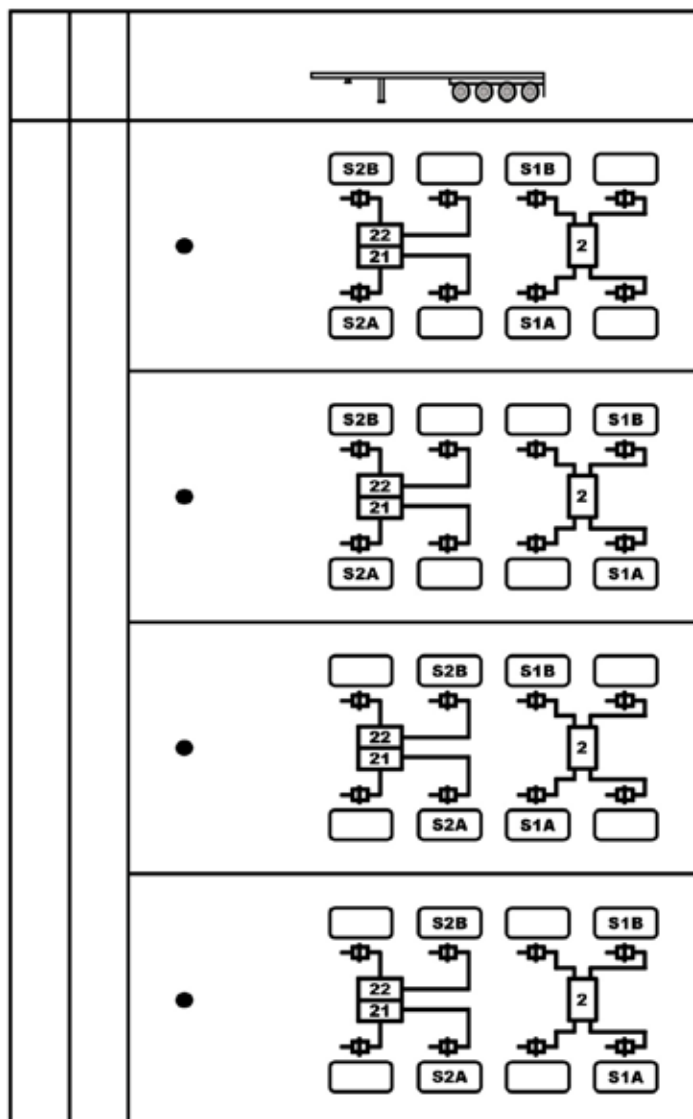


2 = connection no. 23 on the U-ABS ECU

Notes:

- › Directly controlled axle connected to modulator 21 and 22 shall not be lifted
- › Indirectly controlled (un-sensed) axle connected to modulator 21 and 22 can be lifted but only after modulator 2 indirectly controlled (un-sensed) axle is lifted.
- › Directly controlled axle connected to modulator 2 can be lifted but corresponding indirectly controlled axle must be lifted in parallel
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained

4S / 3M (2S / 1M + 2S / 2M)

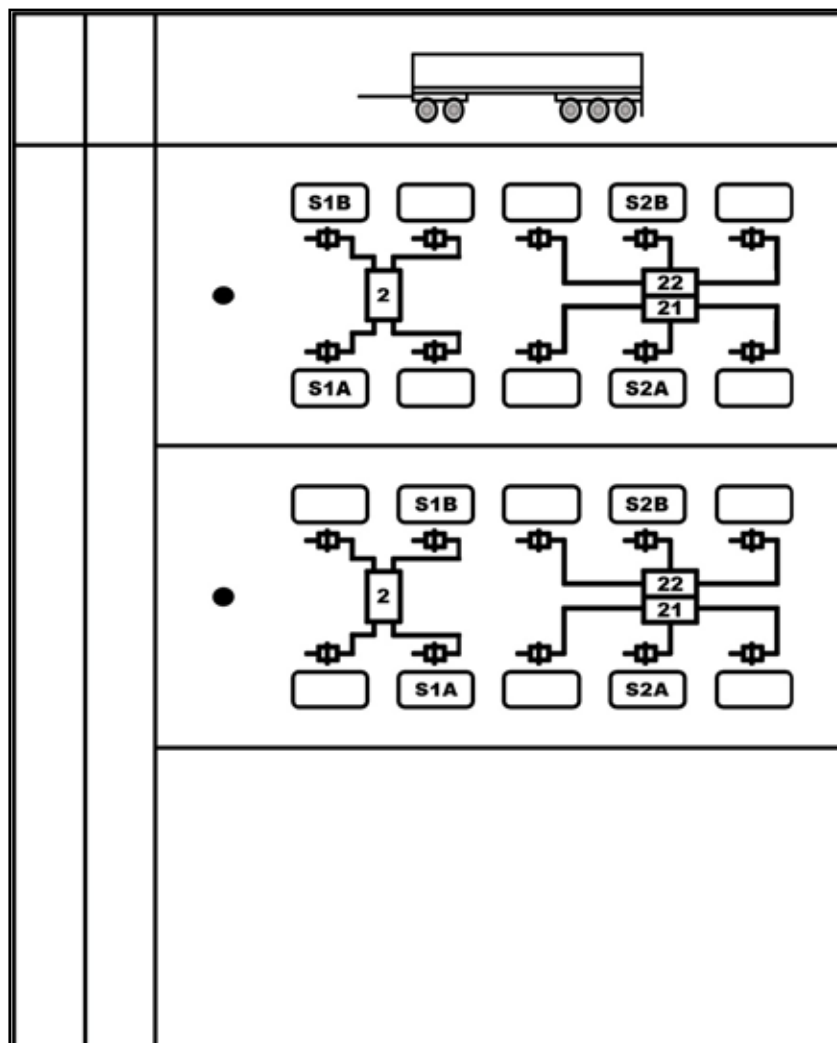


2 = connection no. 23 on the U-ABS ECU

Notes:

- › Directly controlled axle connected to modulator 21 and 22 shall not be lifted
- › Indirectly controlled (un-sensed) axle connected to modulator 21 and 22 can be lifted but only after modulator 2 indirectly controlled (un-sensed) axle is lifted
- › Directly controlled axle connected to modulator 2 can be lifted but corresponding indirectly controlled axle must be lifted in parallel
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained

4S / 3M (2S / 1M + 2S / 2M)

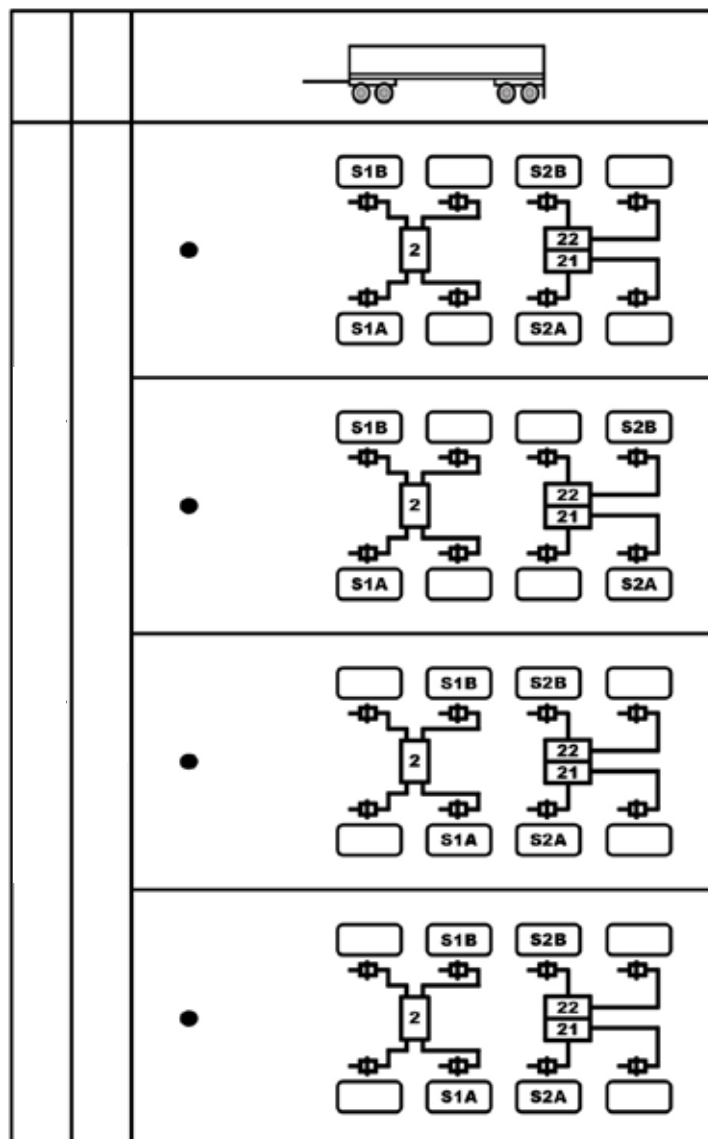


2 = connection no. 23 on the U-ABS ECU

Notes:

- › Directly controlled axle connected to modulator 21 and 22 shall not be lifted
- › Only one of the indirectly controlled (un-sensed) axles connected to modulator 21 and 22 can be lifted at any time
- › Directly controlled axle connected to modulator 2 can be lifted but corresponding indirectly controlled axle (un-sensed) must be lifted in parallel
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained

4S / 3M (2S / 1M + 2S / 2M)

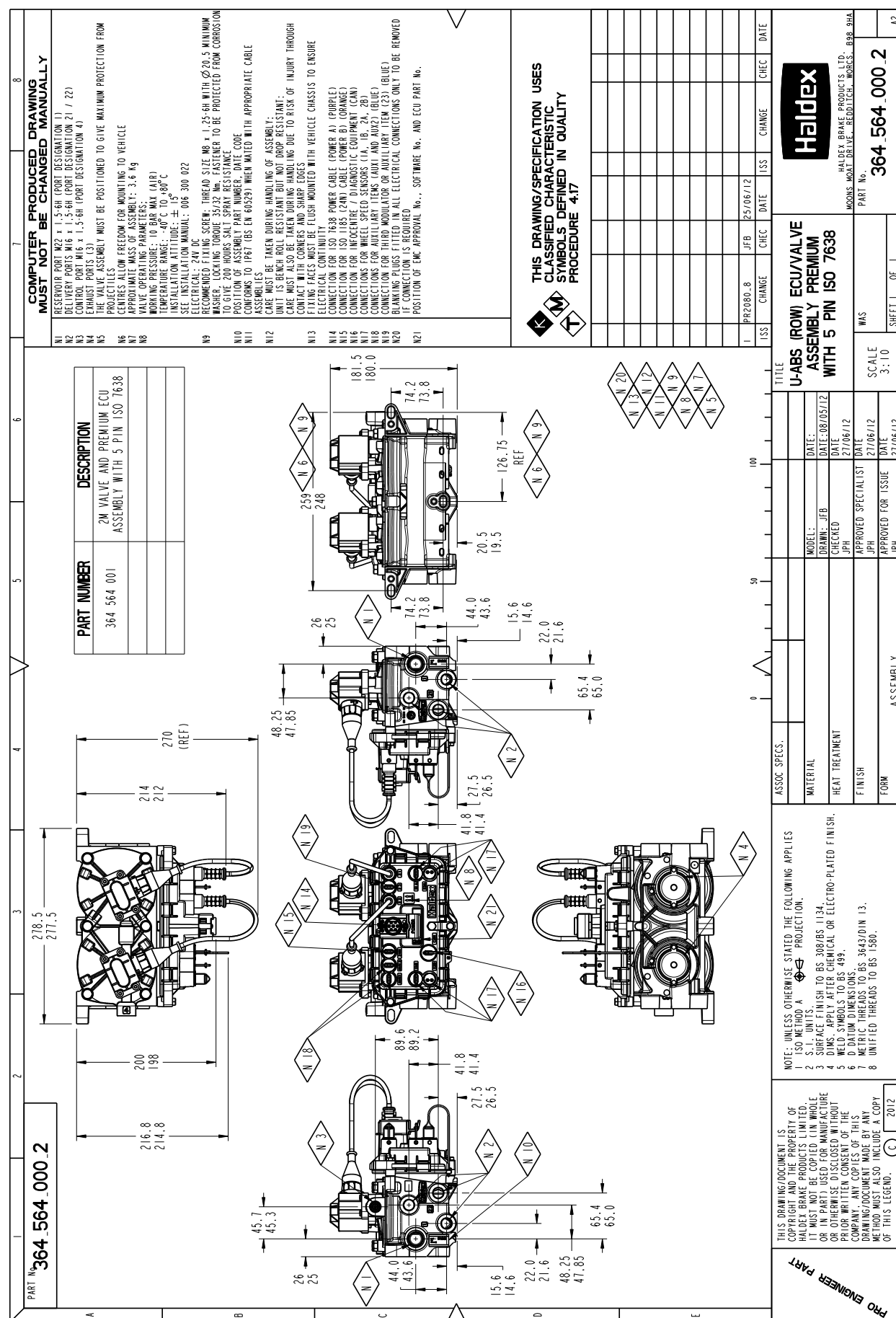


2 = connection no. 23 on the U-ABS ECU

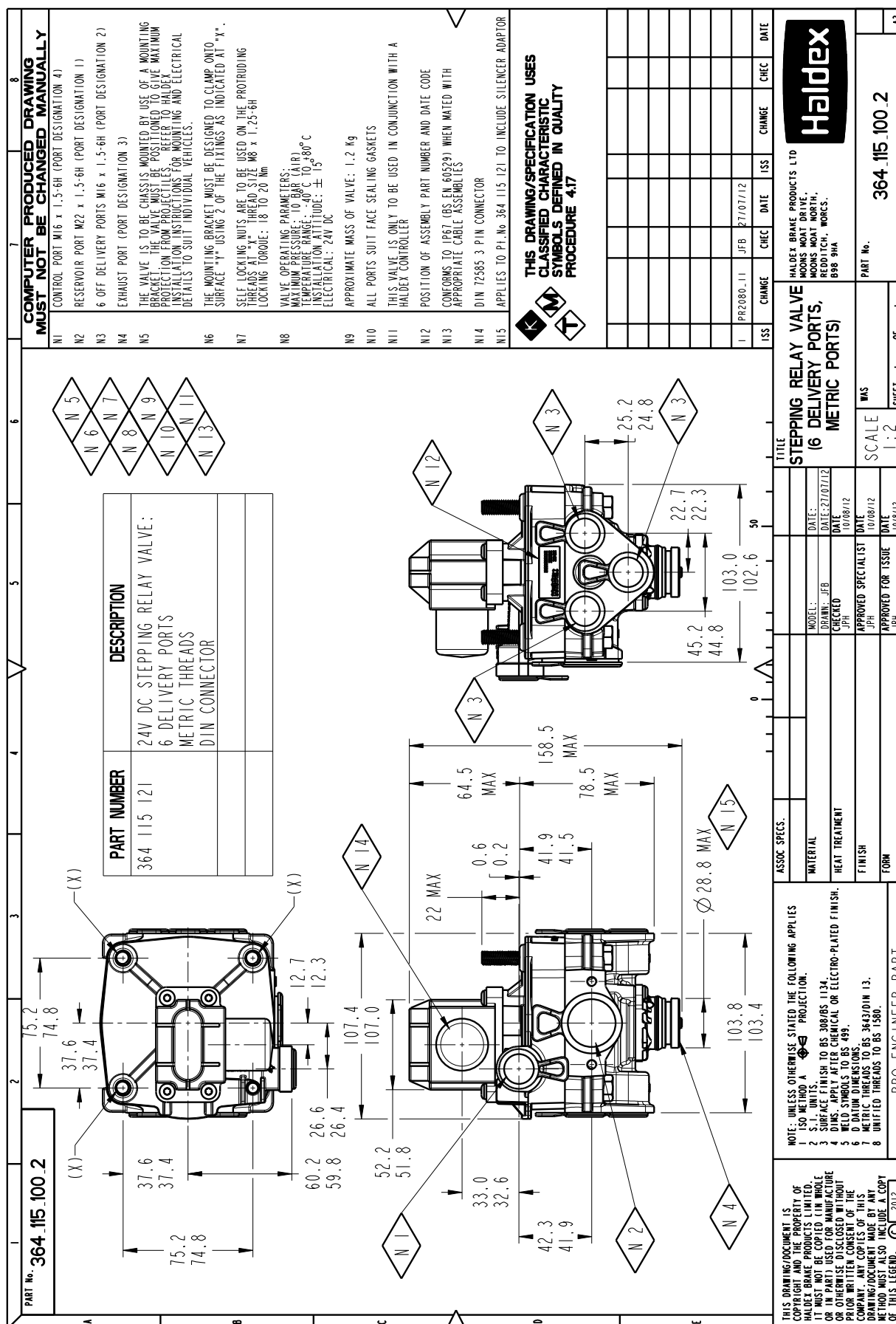
Notes:

- › Directly controlled axle connected to modular 21 and 22 shall not be lifted
- › Indirectly controlled (un-sensed) axle connected to modulator 21 and 22 can be lifted but only after modulator 2 indirectly controlled axle is lifted
- › Directly controlled axle connected to modulator 2 can be lifted but corresponding indirectly controlled axle (un-sensed) must be lifted in parallel
- › Any axle may be a command steered axle. Self steer axles are subject to the axle manufacturers recommendations
- › Sensor references on an axle may be reversed but the wheel sensor to modulator valve relationship must be maintained

2M valve mounting dimensions



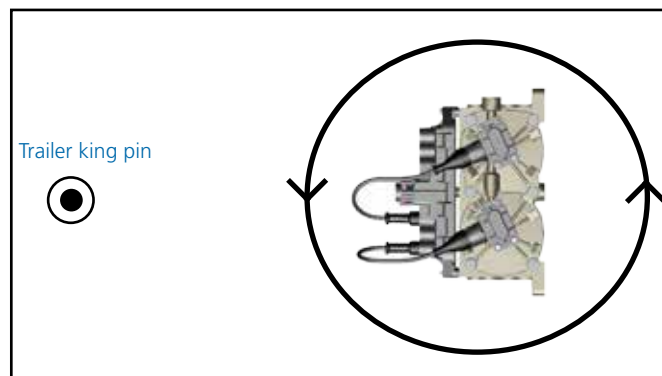
1M valve mounting dimensions



Chassis installation

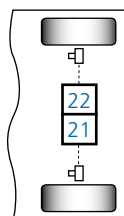
The following are applicable to all installations and configurations.

360° Installation rotation

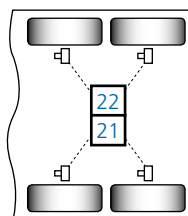


Mount modulator valves centrally to the brake chambers.

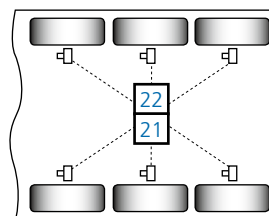
If mounting to stainless steel, then a suitable membrane must be used.



Single axle



Tandem axle

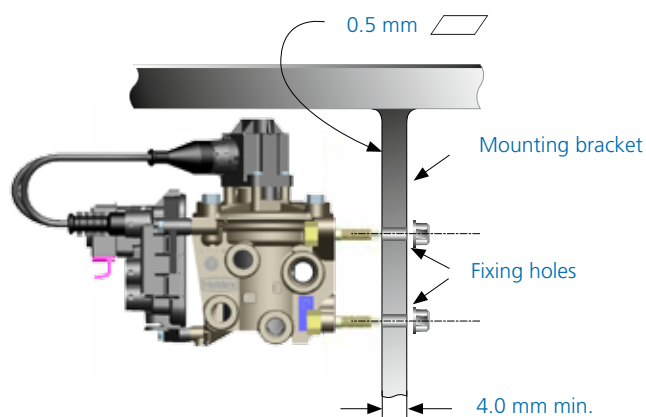


Tri-axle

Additional bracket design to be as rigid as possible.

The mounting fixing must provide an electrical connection between U-ABS ECU and vehicle chassis.

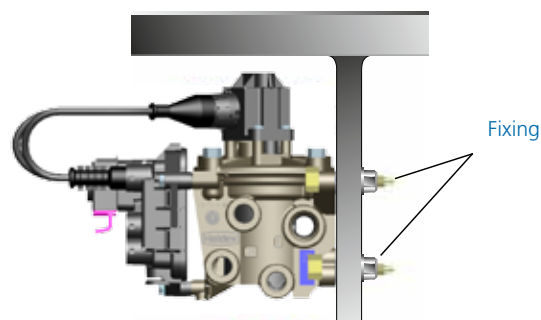
The mounting bracket flatness is to be not more than 0.5 mm deviation from its true plane i.e. the surface must lie between two parallel planes 0.5 mm apart.



Secure the U-ABS using bolts, flat washers and noncorrosive self locking nuts.

Recommended fixing screw thread size M8 x 1.25 with 20.5 dia minimum washer, locking torque 35 / 32 Nm.

The U-ABS mounting parts (i.e. bolts, washers and locking nuts etc) are to be protected from corrosion to give 200 hours salt spray resistance.



Check the earth continuity between U-ABS ECU bracket and vehicle chassis.

Electrical resistance (R) to be less than 5 ohms.
 $0 < R < 5 \text{ ohms}$

Care should be taken to provide reasonable access to the ECU / valve for replacement of cables.

- D = 150 mm minimum
 E = 1. Assembly to be above axle centre line.
 2. To be as high in the frame as possible.

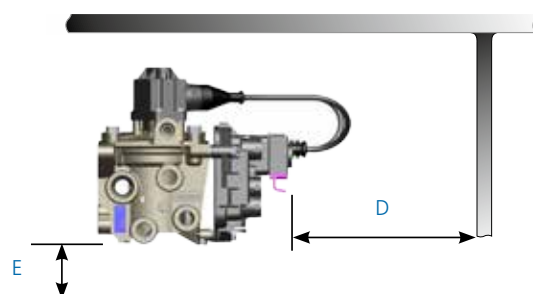
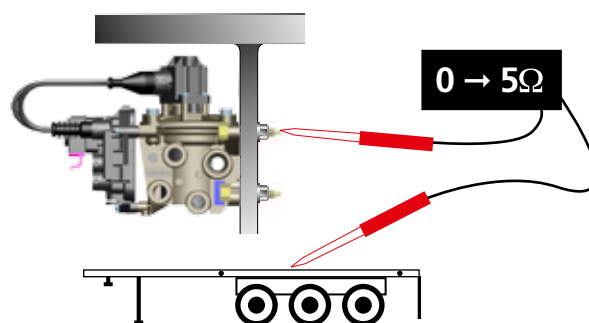
Position assembly as high as possible in the chassis to provide as much protection to the assembly from direct spray, other road debris and to achieve an acceptable hose routing.

Pitch angle: assembly must be mounted vertically.

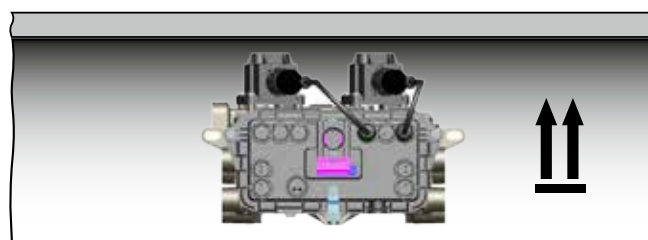
Modulator connector

Identify orientation of sockets in solenoid connector and push fully connector onto the modulator solenoid pins.

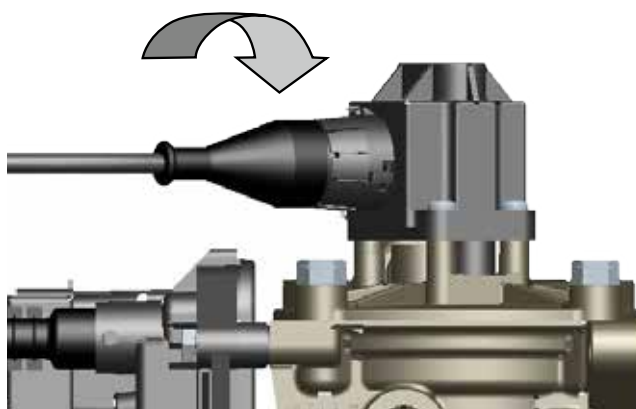
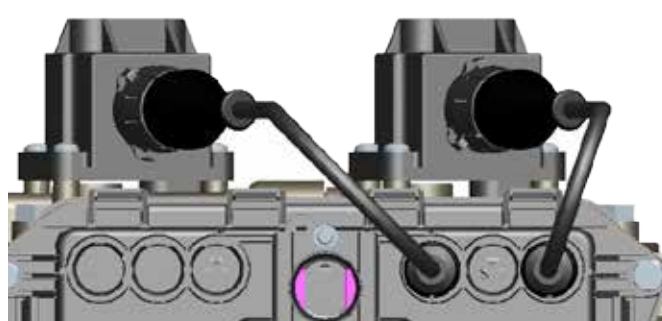
Ensure connectors are fully locked onto the solenoids with a twisting action to activate bayonet fitment.



Deck of trailer



Ground level



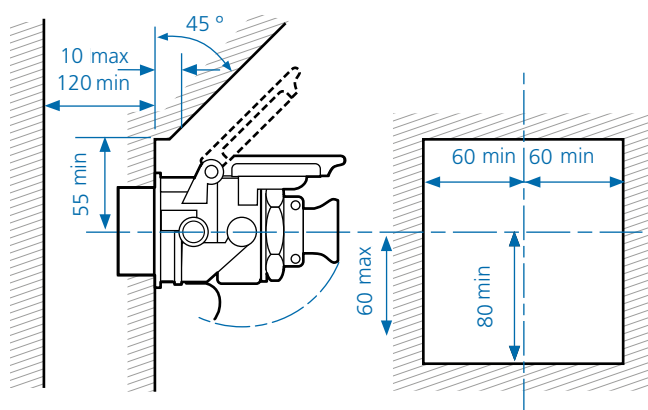
ISO 7638 socket assembly

ISO 7638 5-pin (purple ECU connector)

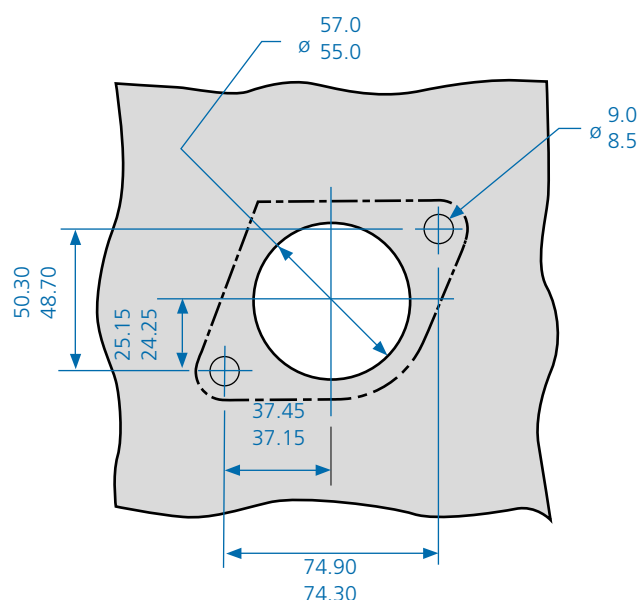
Pin no	Description	Notes
1	Red (RD) 4 mm ²	B+ batt
2	Black (BK) 1.5 mm ²	B+ ign
3	Yellow (YE) 1.5 mm ²	B- earth
4	Brown (BN) 4 mm ²	B- earth
5	White (W) 1.5 mm ²	Lamp



Pin detail and identification key location.

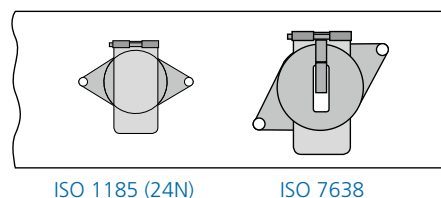


Clearance dimensions



Socket mounting dimensions

Should be positioned / grouped with other electrical connections.

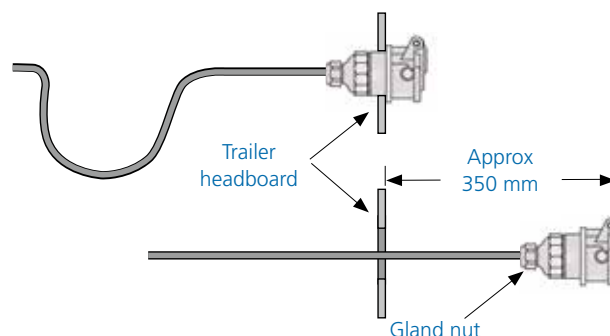


ISO 1185 (24N)

ISO 7638

When installing the ISO 7638 it is important that sufficient extra length of cable is allowed to expose the socket assembly for replacement in service.

It will be necessary to pull the ISO 7638 socket clear from the trailer headboard to undo the gland nut.

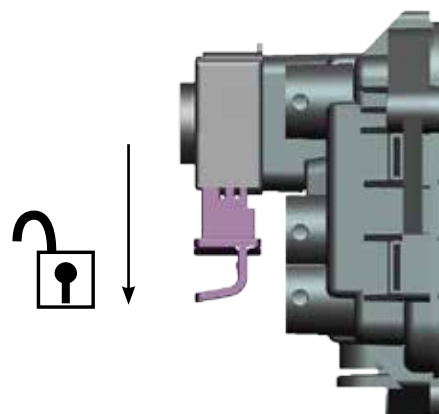


Power (ISO 7638) connector

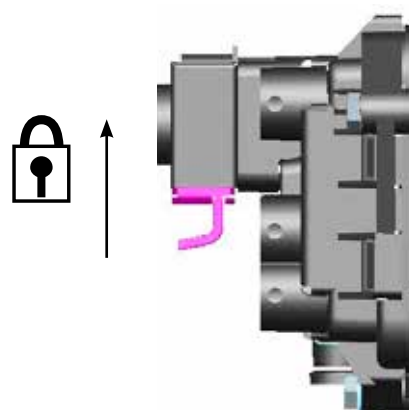
Ensure contact pins and seal are kept clean and free of any contamination prior to installation.



Unlock the 'Power' (ISO 7638) slide lock housing by pulling down the purple latch.



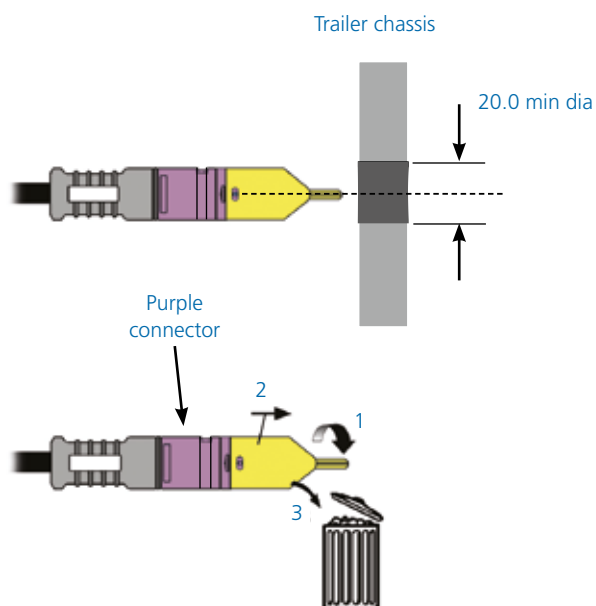
Lock the 'Power' (ISO 7638) slide lock housing by pushing up the purple latch.



Note:

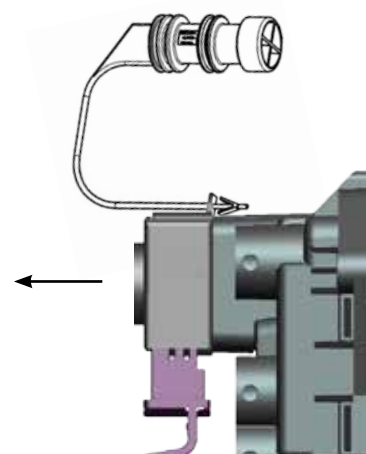
Blanking plug (027514709) and o-ring (024505009) must be fitted to the ISO 7638 connector if no cable is inserted (i.e. U-ABS using only the 24N connector for power).

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



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

If required remove the blanking plug (027514709) from the ISO 7638 position.



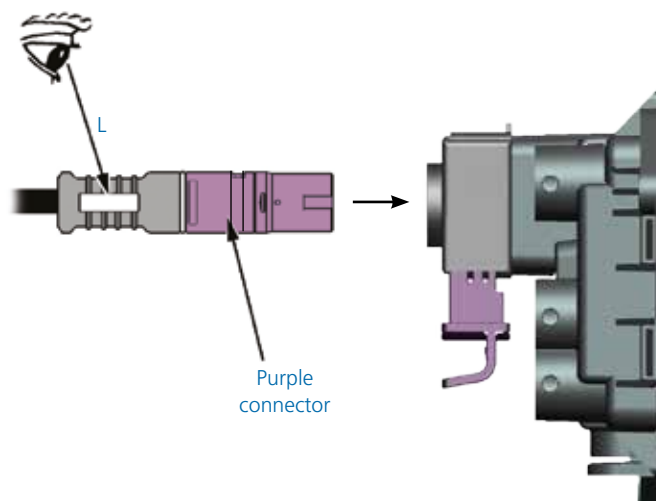
Connections

Make sure that all connections (socket and plug) are clean and dry before assembly.



Identify orientation 'L' of the ISO 7638 purple coloured 5-pin connector. Ensure contact pins and seal are clean and free of any contamination prior to installation.

In position Power (ISO 7638), on the slide lock housing, insert connector fully home.



Make sure that the connector is fully inserted into the ECU slide lock housing.

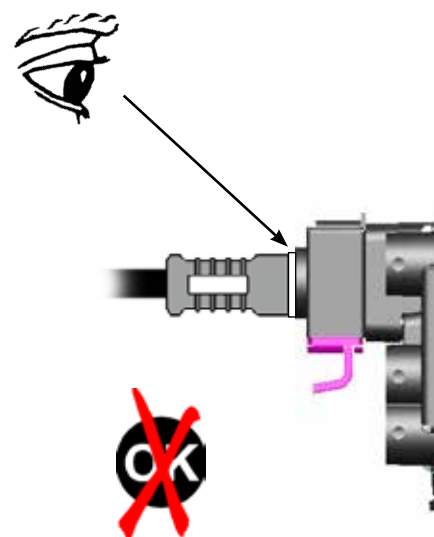
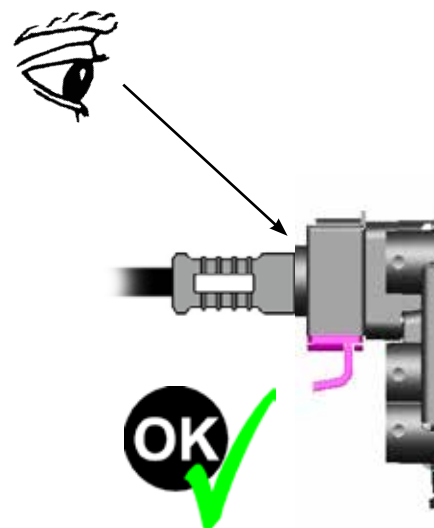
Push in the purple lock slider.

Do not use extreme force to push in slider.



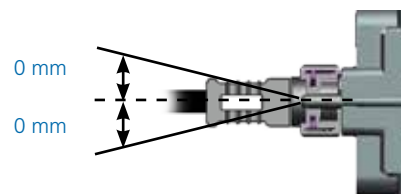
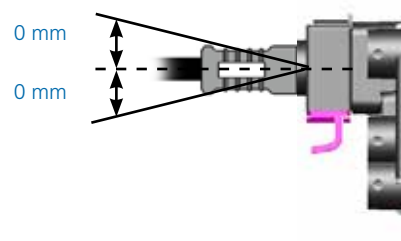
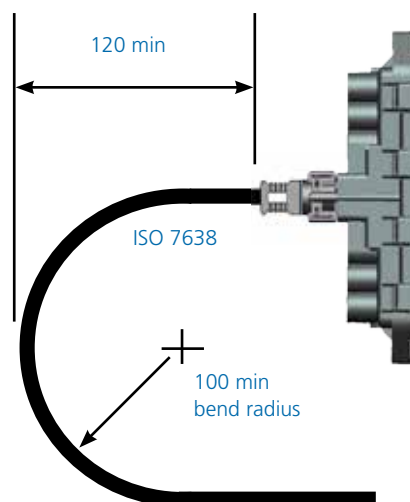
Warning:

- › 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



All cables: the route of the cable from the connector should not start to bend so that the connectors are strained.

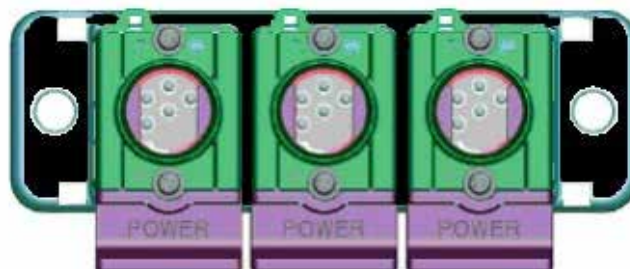
Ensure stated minimum distance is not exceeded.



U-ABS ISO 7638 cable junction box

The ISO 7638 cable junction box is used to extend the ISO 7638 power to allow additional U-ABS systems to be connected together (i.e. road trains, multi-axle installations etc).

Part number 364 590 001



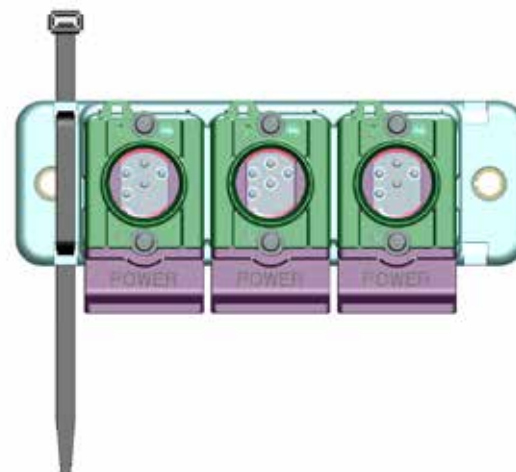
Methods of fixing / mounting

The ISO 7638 cable junction box can be mounted using either tie wraps or M6 fasteners.

The unit should be positioned to give maximum protection from projectiles and water ingress.

The M6 fastener should be tightened to 4.5 - 6.1 Nm

The tie wrap should be threaded through the junction box as shown



Note:

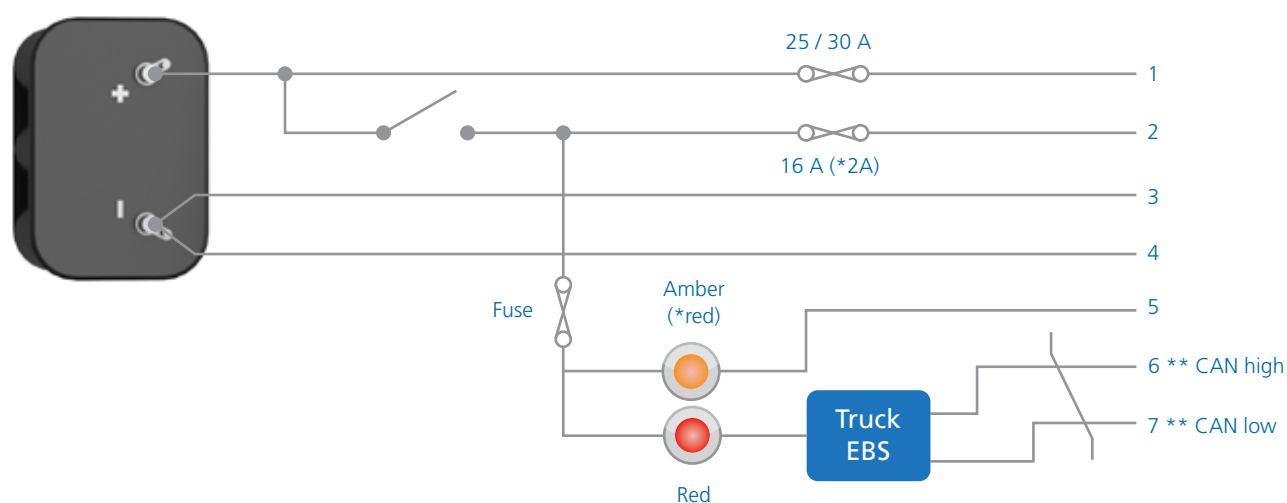
- › Blanking plug (027514709) and o-ring (024505009) must be fitted to the ISO 7638 connector if no cable is inserted
- › The ISO 7638 cable junction box is not to be used to power other auxiliary equipment like telematics systems. Telematics must receive its power from U-ABS auxiliary outputs. These have voltage and current limit protection to ensure the ABS power supply is protected in case of faults with auxiliary equipment. This is a requirement of the ECE R13 braking regulation

[illegible]

Towing vehicle ISO 7638 wiring



Lamp indicator



* ISO 7638 - 1996

** Not fitted on ISO 7638 - 1995

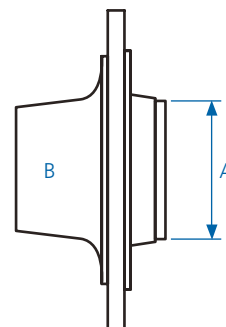
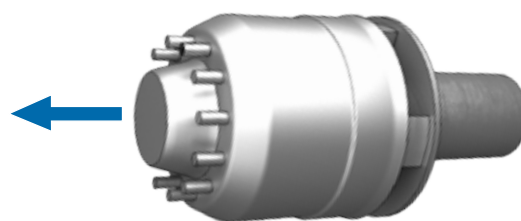
ISO 7638 7-pin

Pin no	Description	Notes
1	Red (RD) 4 mm ²	B+ batt
2	Black (BK) 1.5 mm ²	B+ ign
3	Yellow (YE) 1.5 mm ²	B- earth
4	Brown (BN) 4 mm ²	B- earth
5	White (W) 1.5 mm ²	Lamp
6	White / green (W / GN) 1.5 mm ²	CAN hi
7	White / brown (W / BN) 1.5 mm ²	CAN lo

Sensor installation

Stripping of axle

See individual axle manufacturers information.
Remove hub and drum assembly. Refer to individual ABS axle layout for details of the machine location area 'A' on hub 'B'.



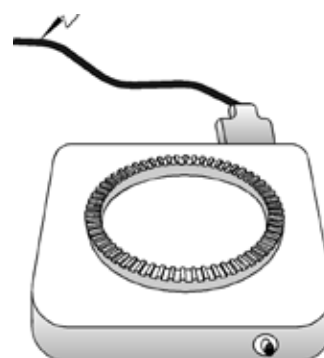
Exciter (solid type)

Available in two sizes to suit differing diameters of wheel. Establish correct exciter teeth in relation to tyre size refer to GS0006.

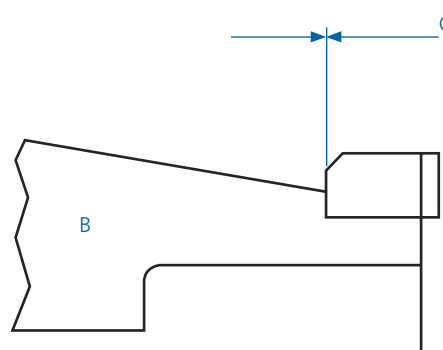
100 tooth exciter - dynamic effective rolling radius (rdyn) = 442 to 645 mm.

80 tooth exciter - dynamic effective rolling radius (rdyn) = 357 to 522 mm.

Heat exciter uniformly to required temperature.



Fit to hub and ensure that it is fully seated on the location area machined on the hub 'B'. Dimension 'C' to be zero gap 0 to 360 degrees.

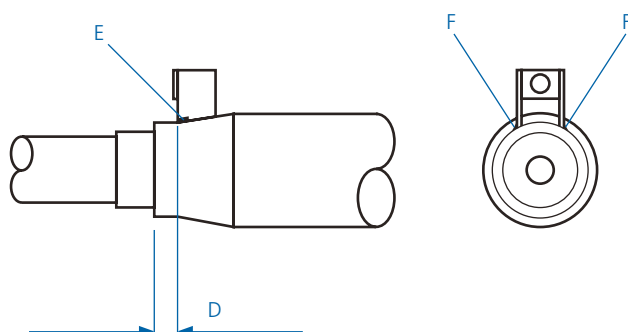


Sensor

Position sensor bracket as detailed on the ABS axle layout, reference dimension 'D'.

Tack weld bracket 'E' first. Recheck for position and squareness and complete weld 'F'.

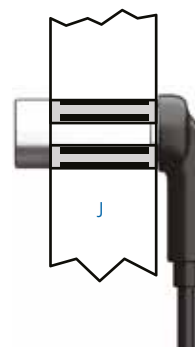
With grease provided liberally coat sensor 'I' steel casing and bore of bracket 'G'. Push the retaining clip 'H' fully home into the sensor bracket housing and insert sensor through the retaining clip pushing it firmly into place until the sensor abuts against the back face of the bracket housing 'J'.



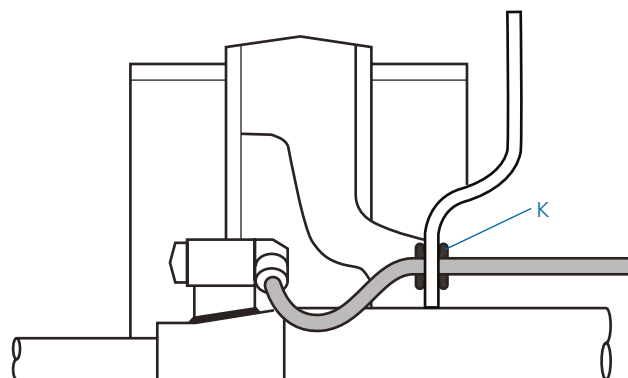
With a grease based corrosion inhibitor, recommended type - Molykote Cu 7439 Plus (Dow Corning) or from the 4g sachet, Haldex part number 042 5857 09, liberally coat sensor 'I' steel casing, retaining clip 'H' and bore of bracket / housing 'G'.



Push the retaining clip 'H' fully home into the sensor bracket housing and insert sensor through the retaining clip pushing it firmly into place until the sensor abuts against the back face of the bracket / housing 'J'.



Layout the sensor cable route. Ensure sensor cable is not under tension and not fouling brake shoe. Avoid any sharp edges and moving parts. The cable exit from the brake torque plate or dirt shield should be via a grommet 'K'.



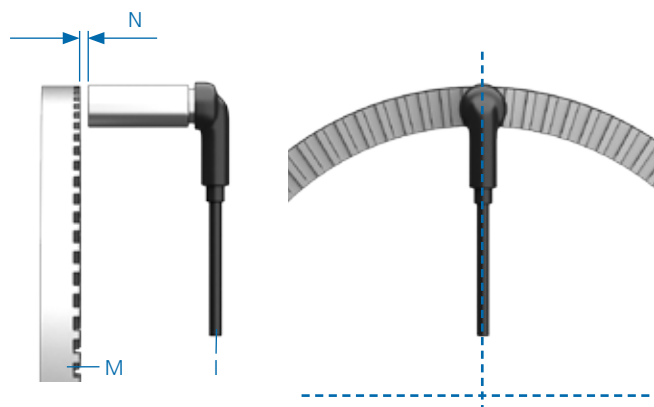
Reassemble hub assembly

Sensor must be central over the exciter teeth.

The gap between exciter 'M' and sensor 'I' must not exceed $N = 0.5 \text{ mm}$.

Maximum run out of 0.2 mm true indicator reading.

Before fitment of hub cap / cover check sensor output.



Sensor and AUX connections

Depending on the U-ABS version, the ECU is supplied with various blanking plugs fitted.

Example: U-ABS Premium version shown

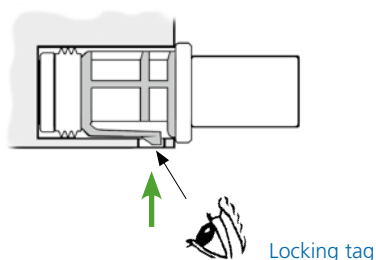
● Sensor / AUX / 24V blanking plug

● CAN diagnostic blanking plug

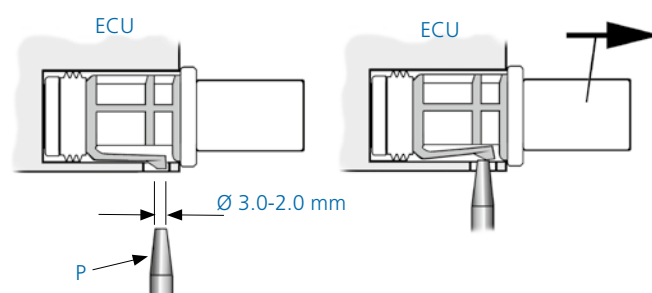
These require removing to allow fitment of sensors or permitted auxiliary equipment.

Blanking plugs must remain fitted where no electrical connections are made to the U-ABS (i.e. unused electrical connectors with pins must be blanked off).

U-ABS locking tag positions



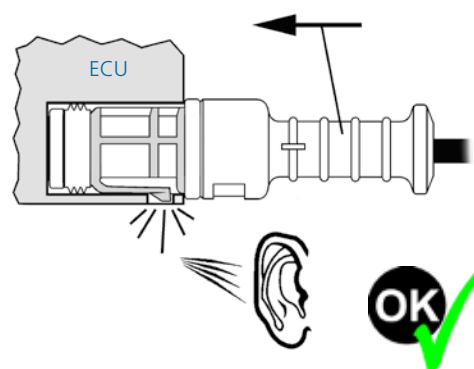
With a tool 'P' having a flat end of $\varnothing$ 3-2 mm insert and press in locking tab of plug. While depressed pull out plug from housing.



Identify connector orientation:

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

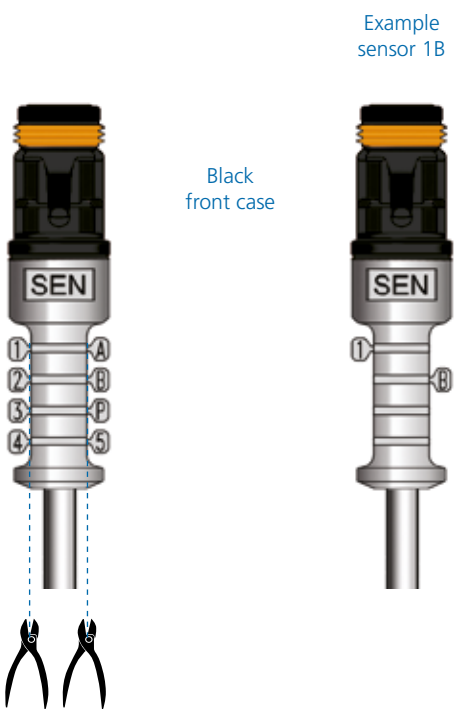
Ensure contact pins and seal are kept clean and free of any contamination prior to installation. Insert fully home in the ECU's housing into appropriate marked positions.



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.

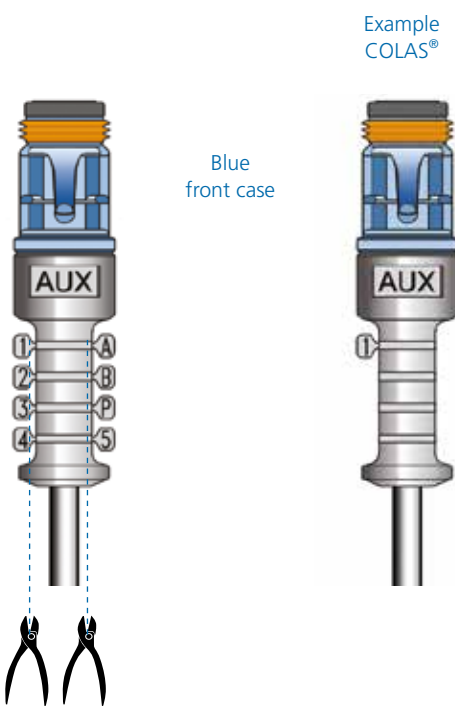
ECU identification	Tags removed							Component
	1	2	3	4	A	B	P 5	
S1A								Sensor 1A
S1B								Sensor 1B
S2A								Sensor 2A
S2B								Sensor 2B



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®



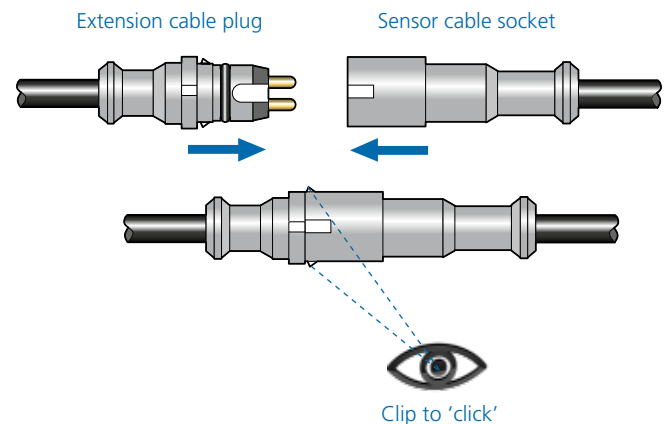
Aux 3 (Premium version only)

For AUX 3 use cable 364 572 xxx (tin plate) and not 814 012 xxx (gold plate) to avoid possibility of pin corrosion.

Sensor connection

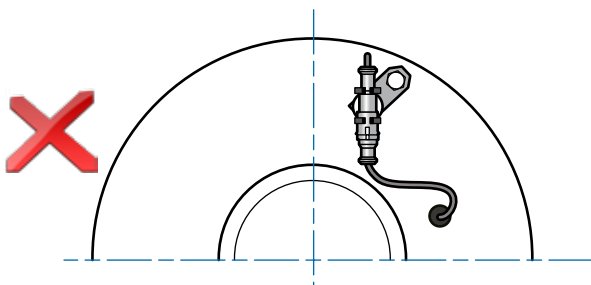
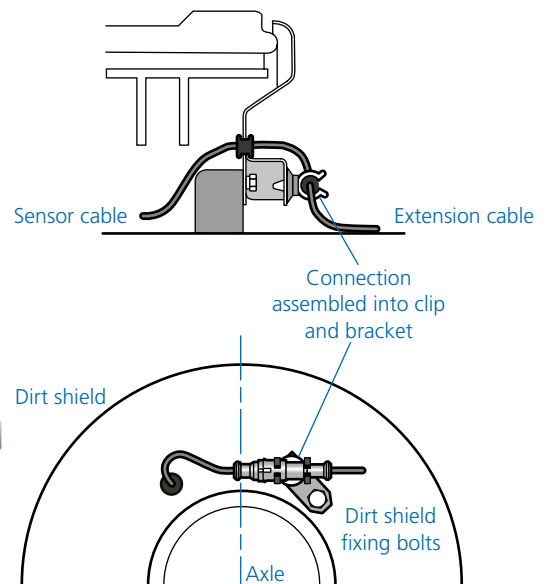
Sensor extension cable socket must be pushed fully into sensor cable plug till they clip into place to prevent falling out with axle vibration.

Haldex recommend that all electrical components are greased prior to assembly using the appropriate electrical grease.

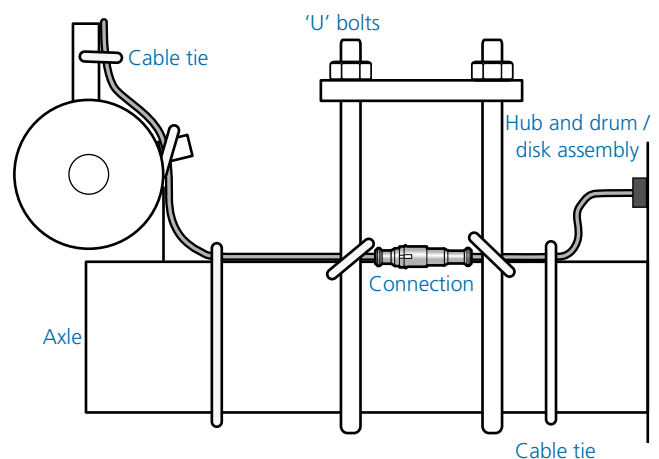


Where possible use a clip and bracket to secure sensor cable connection.

The female connector of the sensor cable should always be horizontal or pointing downward to reduce the possibility of water ingress.



Alternatively: sensor cable connection to be positioned on axle or between axle 'U' bolts and supported with cable ties with 50 mm of each end.



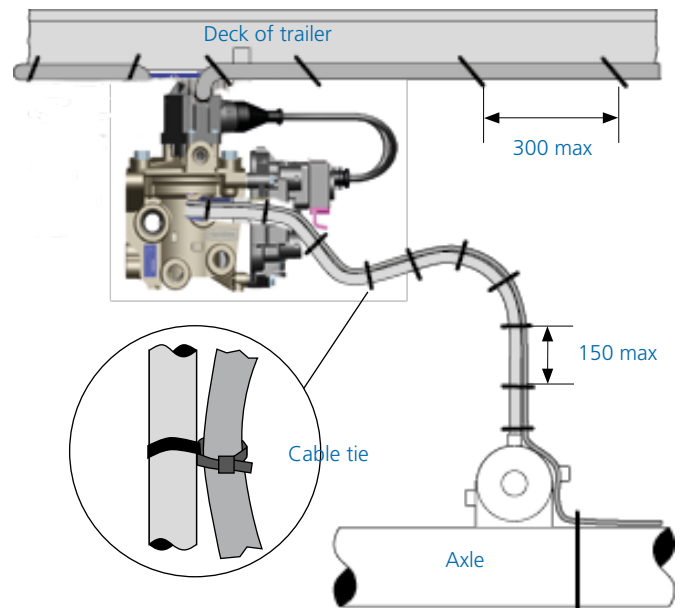
Sensor cable route should follow the centre line or outer radius of pipe or hose.

Tie wraps are not to be over tightened because on brake application rubber hose expands, i.e. tie wrap could damage the hose and sensor cable.

Do not run sensors leads in spiral wrapping on hoses.

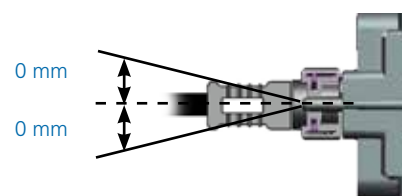
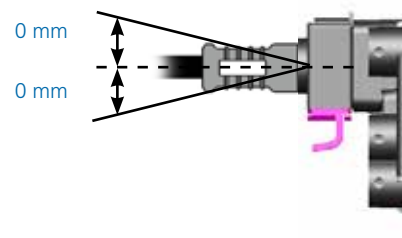
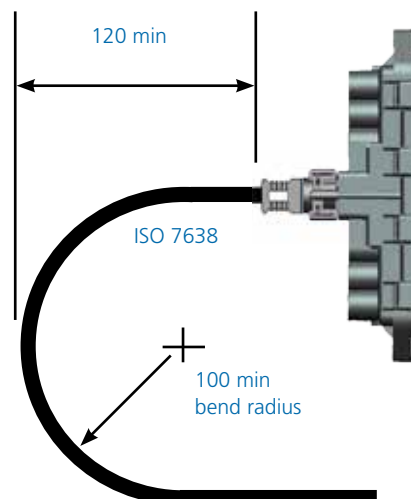
Power leads should be secured down the chassis rail in trunking or to piping and should be secured with 300 mm maximum intervals.

All cables should run 'up to' ECU connections.



All cables: the route of the cable from the connector should not start to bend so that the connectors are strained.

Ensure stated minimum distance is not exceeded.



Excess cable

Excess cable must not be allowed to hang free, but must be attached to the chassis to prevent damage due to vibration and abrasion.

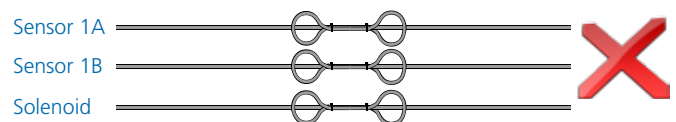
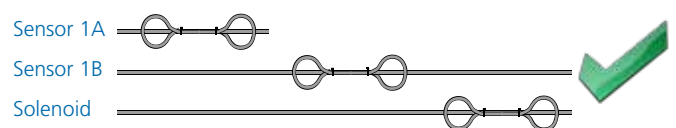
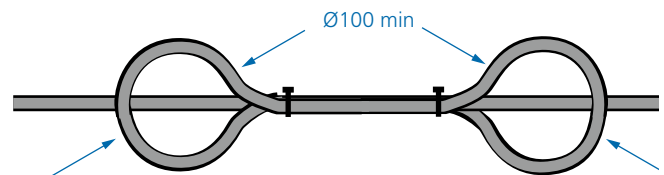
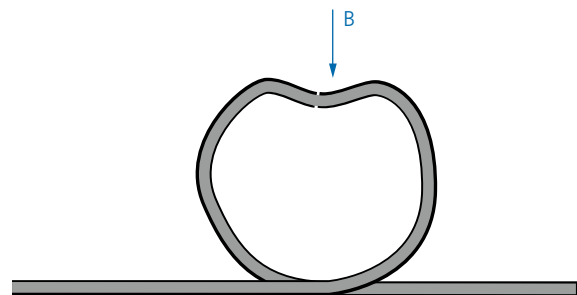
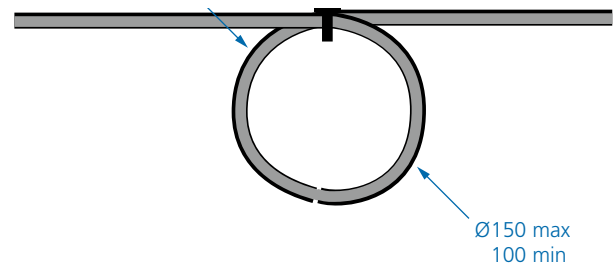
Cable lengths less than 1 m to be coiled into loops of 100 mm minimum and 150 mm maximum diameter.

Excess length which will not form a complete loop may be left to hang in partial loops having a cable bend radius of 50 mm minimum.

Cable lengths greater than 1 m to be coiled and then flattened in the centre 'B' to produce a 'dog bone' shape.

The resulting loops at the end must have a minimum bend radius of 50 mm. Cable ties are to be used to fix the cable in the flattened loop shape.

More than one looped cable must not be looped together.

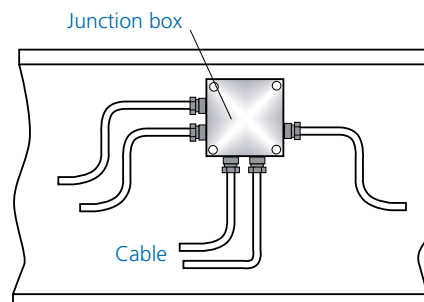


Junction box

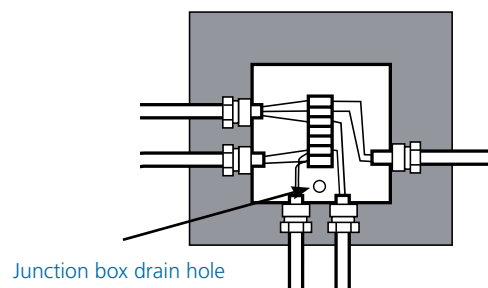
The junction box should be mounted on a flat surface.

Mounting holes to be drilled 6.25 mm diameter to avoid stress at the box from incorrect location.

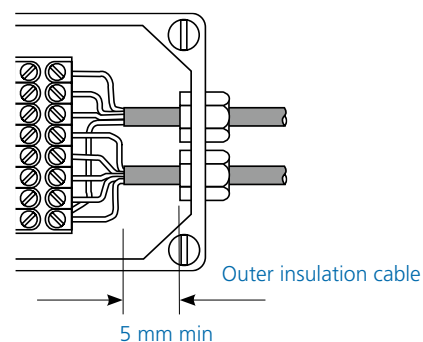
Ensure cables are run up to the junction box.



The drain hole is to be shielded, to provide as much protection from direct spray and other road debris.

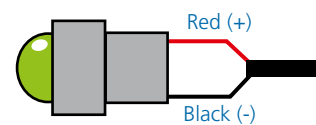


Ensure outer insulation of the cable is inside junction box by 5 mm minimum.



Trailer warning lamp

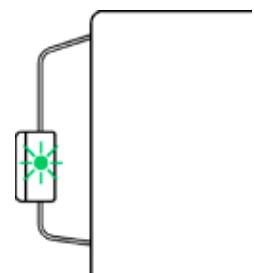
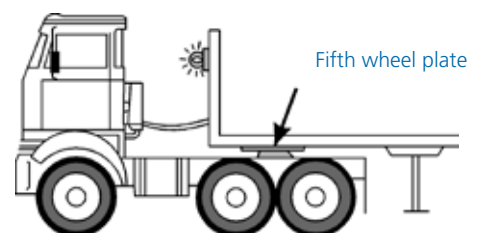
The trailer warning lamp indicates the operation of the U-ABS system when only the stop light power is connected (24N).



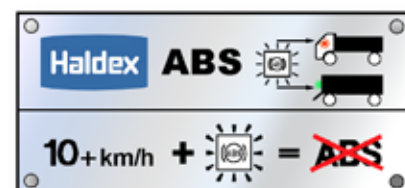
The trailer warning lamp must be positioned where it can be seen from the drivers rear view mirror.

The warning lamp and wiring should be mounted above the fifth wheel plate.

The warning lamp must not protrude beyond the vehicle width.



Instruction label: should be mounted adjacent to the green warning lamp.



Side of vehicle connector (SOV)

Clearance and mounting dimensions

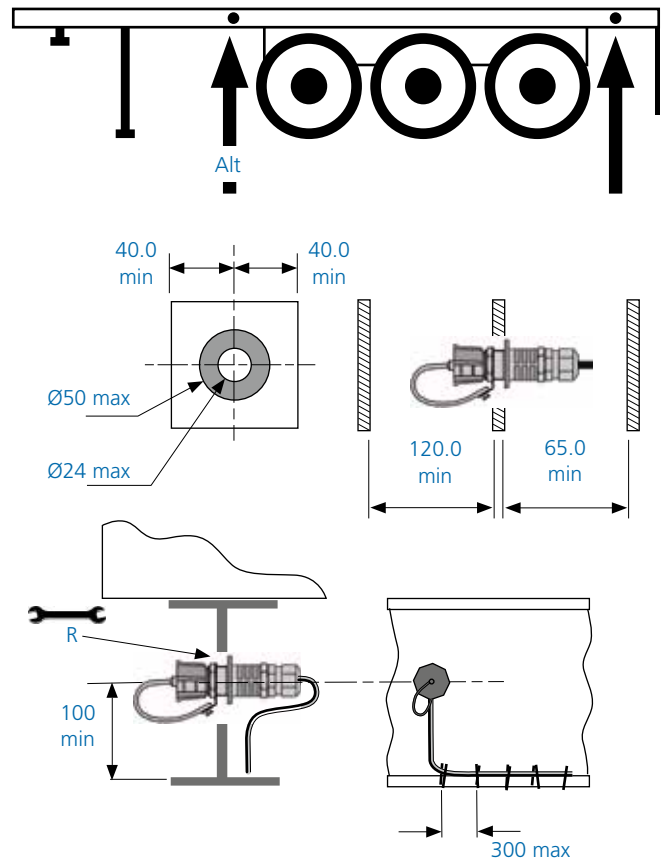
Shaded area around hole to be flat and free from raised markings or surface imperfections which may prevent flush fitting of the connector.

Mount the diagnostic connector on the outside of the main chassis rail. The position must be in an accessible area but not in the direct spray of the wheels.

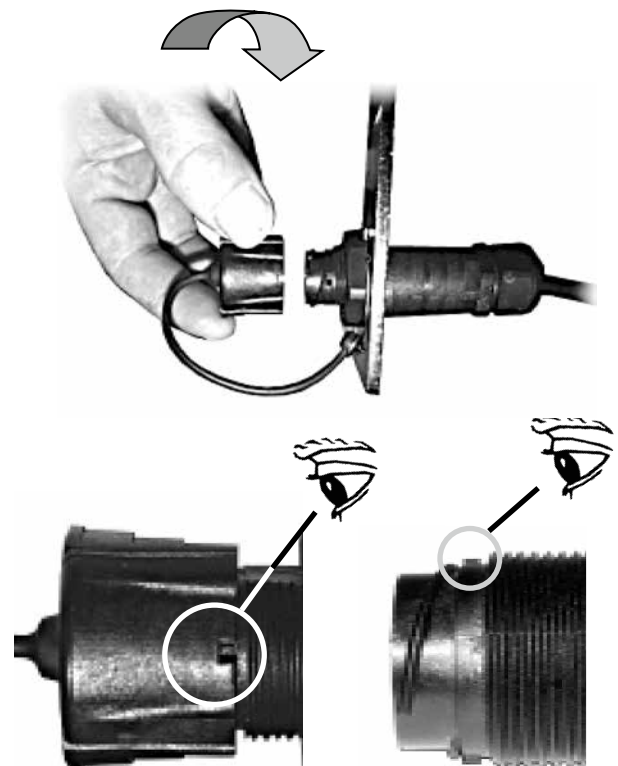
The connector must be mounted horizontally.

Tighten nut 'R' to a torque of 3-4 Nm (2-3 lbft).

Cable to run up to connector and secured to the chassis, or appropriate cable or pipe runs, with cable ties at 300 mm maximum intervals.



Ensure that the cover is fitted and correctly 'locked' in place.



Note:

For installation of Info Centre 2 refer to instructions leaflet 006 300 000

Painting

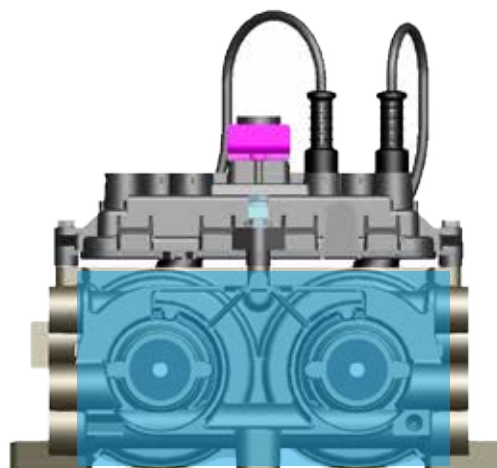
Masked areas

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

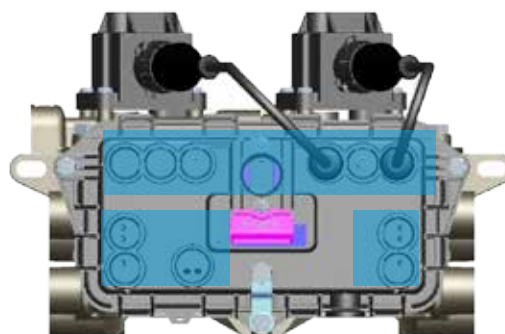
Painting recommendations: water based, baking for 1 hour @ 100°C



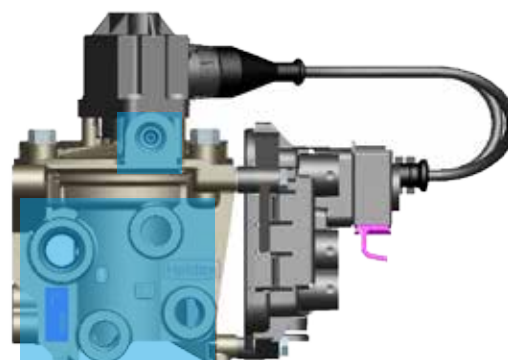
Electro static painting: Haldex recommends that the U-ABS assembly is fitted to the trailer after electro static painting.



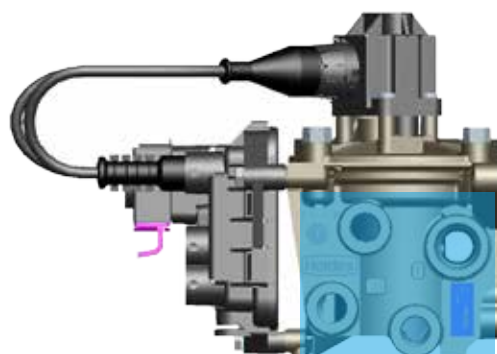
Underside



Front face



Left side



Right side

Configuring U-ABS

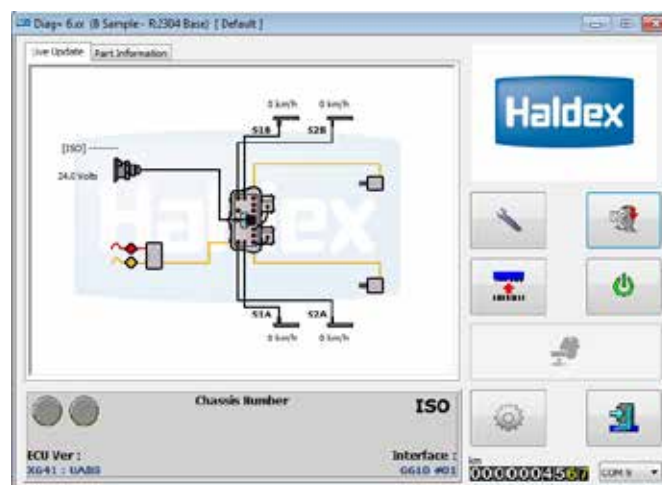
Configuring the U-ABS

The U-ABS is configured using DIAG+ V6 software. The software and operators guide can be downloaded from the Findex section of the Haldex website.

To download the software follow:

1. Click on www.haldex.com/findex
2. Click on DIAG+
3. Click on multi-language version
4. Follow installation procedure

DIAG+ V6 document reference 006300019



Monitoring the U-ABS

Once installed and configured the U-ABS status can also be monitored using an Info Centre 2. The Info Centre 2 operator guide can be downloaded from the Findex section of the Haldex website.

To download the Info Centre 2 operators guide follow:

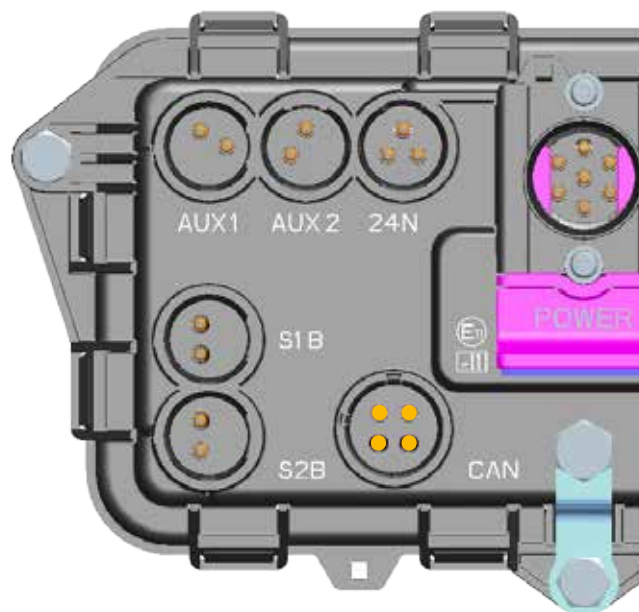
1. Click on www.haldex.com/findex
2. Click on documentation
3. Enter 'Info Centre 2' into the keyword box
4. Press the search button

Info Centre 2 document reference 006 300 001

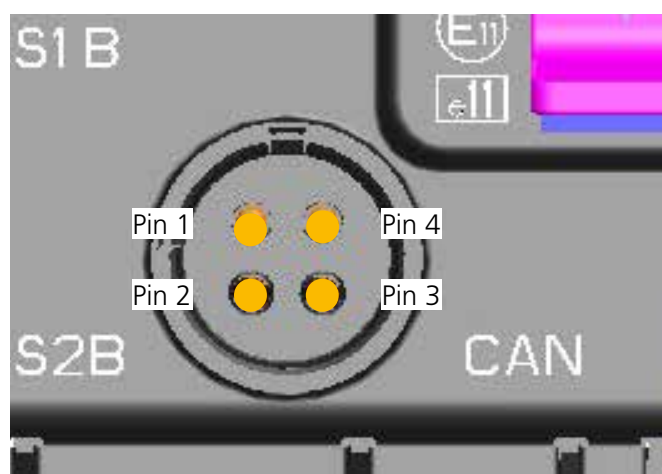


CAN diagnostics

The CAN connector is used to connect the U-ABS to an Info Centre 2 or a laptop.



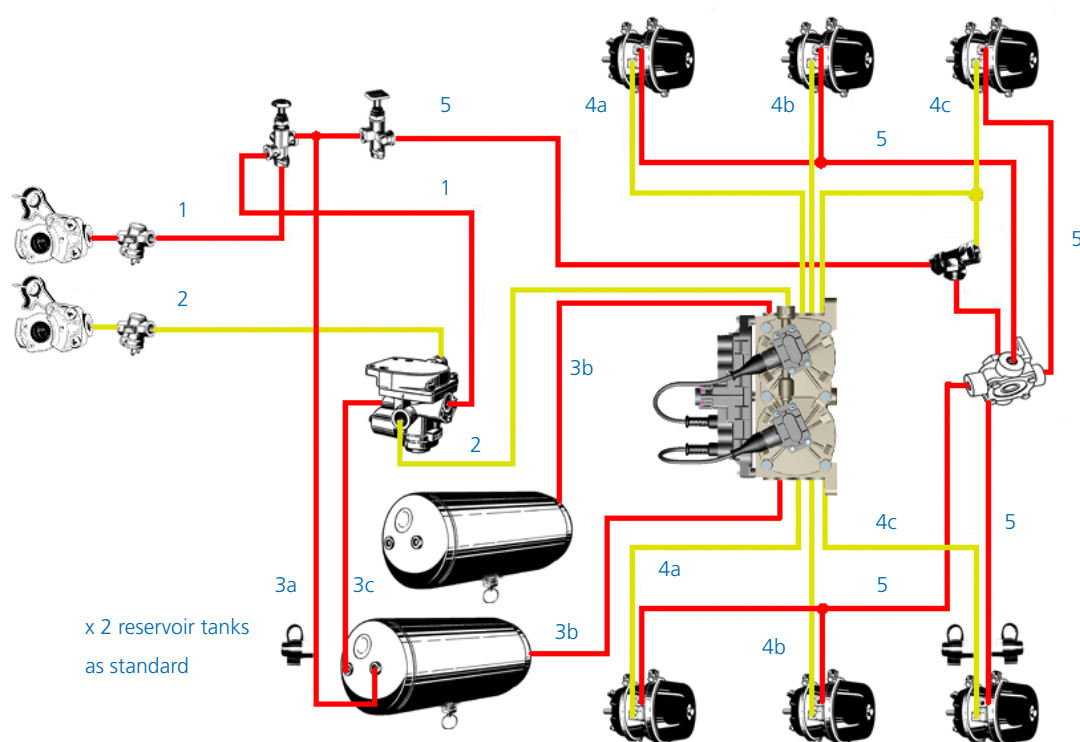
- Pin 1 B+ DIAG
- Pin 2 ISO 11898 CAN hi
- Pin 3 ISO 11898 CAN lo
- Pin 4 B-



Info Centre 2 diagnostic trouble codes (DTC)

Info Centre 2 DTC	Possible cause
Wheel sensor 1A or 1B continuity	1A or 1B wheel sensor / wiring open or short circuit
Wheel sensor 2A or 2B continuity	2A or 2B wheel sensor / wiring open or short circuit
Wheel sensor 1A or 1B signal integrity	1A or 1B wheel sensor signal fault
Wheel sensor 2A or 2B signal Integrity	2A or 2B wheel sensor signal fault
Wheel sensor 1A or 1B output level	1A or 1B wheel sensor system fault
Wheel sensor 2A or 2B output level	2A or 2B wheel sensor system fault
EPRV 21 or 22 hold solenoid short circuit	Modulator 21 or 22 hold solenoid short circuit
EPRV 21 or 22 dump solenoid short circuit	Modulator 21 or 22 dump solenoid short circuit
EPRV 21 or 22 hold solenoid open circuit	Modulator 21 or 22 hold solenoid open circuit
EPRV 21 or 22 dump solenoid open circuit	Modulator 21 or 22 dump solenoid open circuit
EPRV 21 or 22 hold solenoid short to B+	Modulator 21 or 22 hold sol short circuit energised
EPRV 21 or 22 dump solenoid short to B+	Modulator 21 or 22 dump sol short circuit energised
EPRV 21 or 22 hold solenoid unspecified fault	Modulator 21 or 22 hold sol control circuit fault
EPRV 21 or 22 dump solenoid unspecified fault	Modulator 21 or 22 dump sol control circuit fault
EPRV 21 or 22 delivery sensor short circuit	Modulator 21 or 22 delivery transducer short circuit
EPRV 21 or 22 delivery open circuit	Modulator 21 or 22 delivery transducer open circuit
EPRV 21 or 22 slow wheel recovery	Modulator 21 or 22 slow recovery of one wheel
Slave valve modulator	Hold or dump solenoid open or short cct.
Slave valve cable	Link cable open or short circuit
Slave valve slow recovery	Slow recovery of one wheel of slave valve
Power ISO 7638 fail	Power loss on pin 1 or 2 on ISO 7638
Power low voltage	Supply voltage at ECU < 16 V
Power high voltage	Supply voltage at the ECU greater than 32 V
Power unspecified fault	Internal ECU fault
ECU EEprom error	Internal ECU fault
ECU configuration error	ECU not programmed
ECU EEprom unspecified error	Internal ECU fault
ECU shutdown FET	Internal ECU fault
AUX 1 / AUX 2 / AUX 3	Auxiliary system wiring open or short circuit
External TPMS	TPMS hardware fault (RCU, WUS etc)

Piping recommendations



Note:

U-ABS should be supplied with clean / dry air.

Item	Description	Material	Size	Remark
1	Emergency pipe	Nylon	8 x 1 10 x 1, 10 x 1.25 12 x 1.5	
2	Service pipe	Nylon	8 x 1 10 x 1, 10 x 1.25 12 x 1.5	
3a	Reservoir pipe	Nylon	8 x 1 10 x 1, 10 x 1.25 12 x 1.5	
3b		Nylon	15 x 1.5 15 x 1.5 x 2 qty (preferred) 18 x 2	short as possible 1.0 m max. short as possible 4.0 m max.
3c		Nylon	12 x 1.5	
4a 4b 4c	Brake delivery Pipe	Nylon or Rubber hose	12 x 1.5 or I.D. 11.0, I.D. 13.0	4a, 4b and 4c to be as short as possible.
5	Emergency pipe	Nylon	8 x 1 10 x 1.25 12 x 1.5	
		Rubber hose	I.D. 11.0, I.D 13.0	

Piping information

- › Actual pipe sizes need to be optimized for individual trailer response time requirements
- › All pipe and rubber hose to comply to recognized international standards
- › Nylon pipe to DIN 73378, rubber hose to SAE 1402
- › The referenced sizes are defined as guide lines only
- › For optimum performance all pipe lengths should be as short as possible

Pipe fittings

Avoid elbows as much as possible. If essential, use swept type elbow.

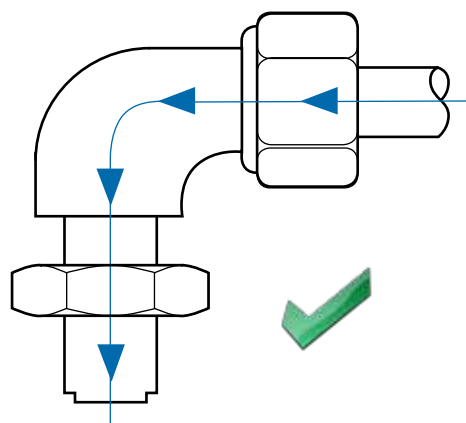
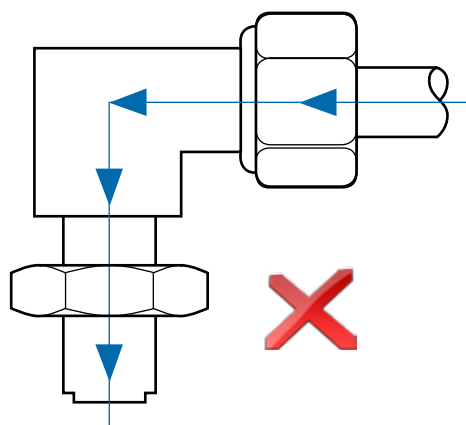
Inside diameter of fitting should be the same as the inside pipe diameter it is serving.

On metric (parallel thread) pipe fitting a backing washer and O-ring should be used.

The use of tape (PTFE) must not be used.

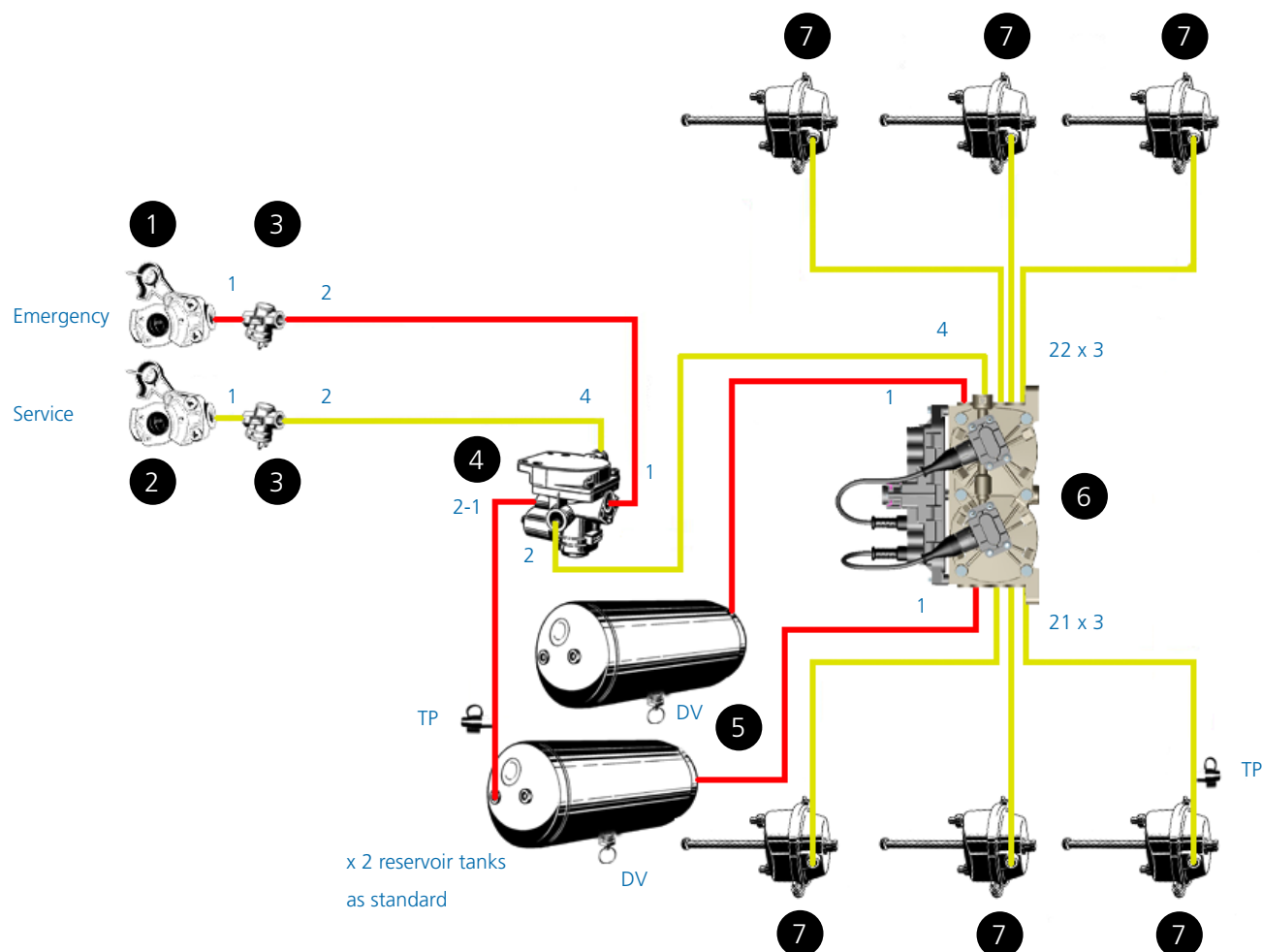
Note:

No pipe sealant or tape (PTFE) must be used during the installation of U-ABS. No warranty claims will be accepted on pipe sealant or tape induced faults.



Piping layouts

Basic layout (2M)

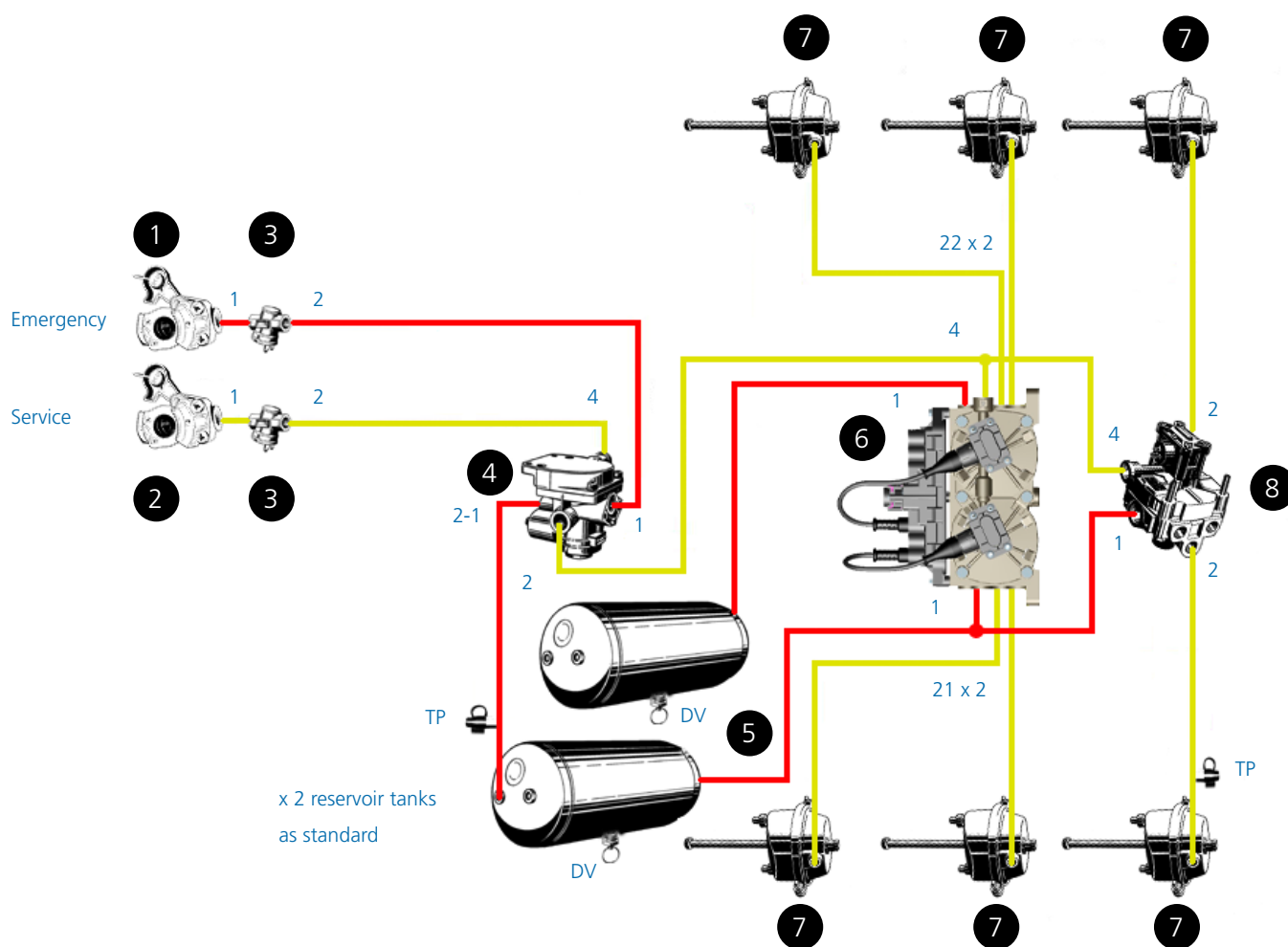


Note:

U-ABS should be supplied with clean / dry air.

Item	Description
1	Emergency coupling
2	Service coupling
3	Pipe filter
4	Relay emergency valve (REV)
5	Air reservoir (capacity as required)
6	U-ABS
7	Brake chamber
TP	Test point
DV	Drain valve

Basic layout (3M)

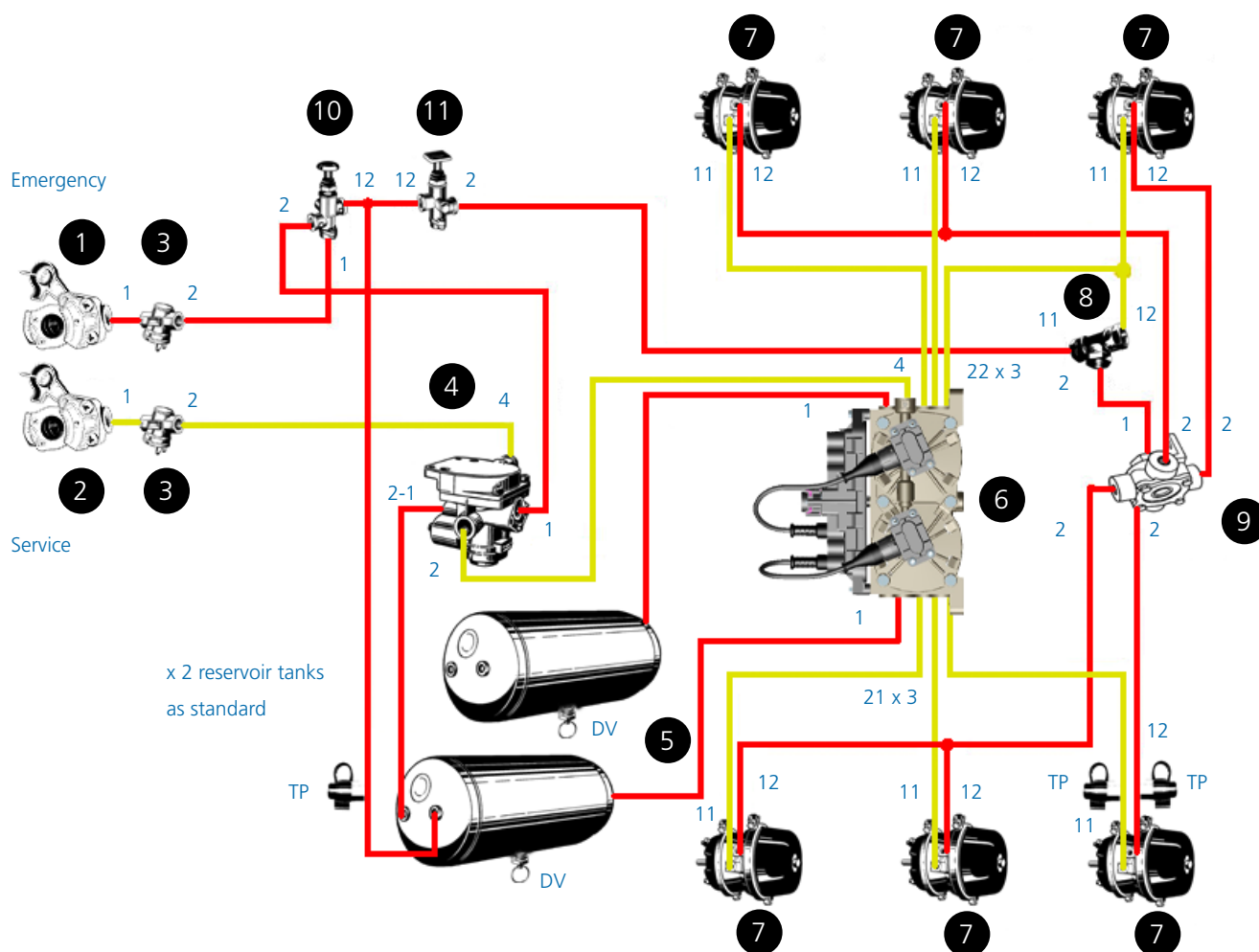


Note:

U-ABS should be supplied with clean / dry air.

Item	Description
1	Emergency coupling
2	Service coupling
3	Pipe filter
4	Relay emergency valve (REV)
5	Air reservoir (capacity as required)
6	U-ABS
7	Brake chamber
8	1M valve
TP	Test point
DV	Drain valve

Individual park and shunt valves

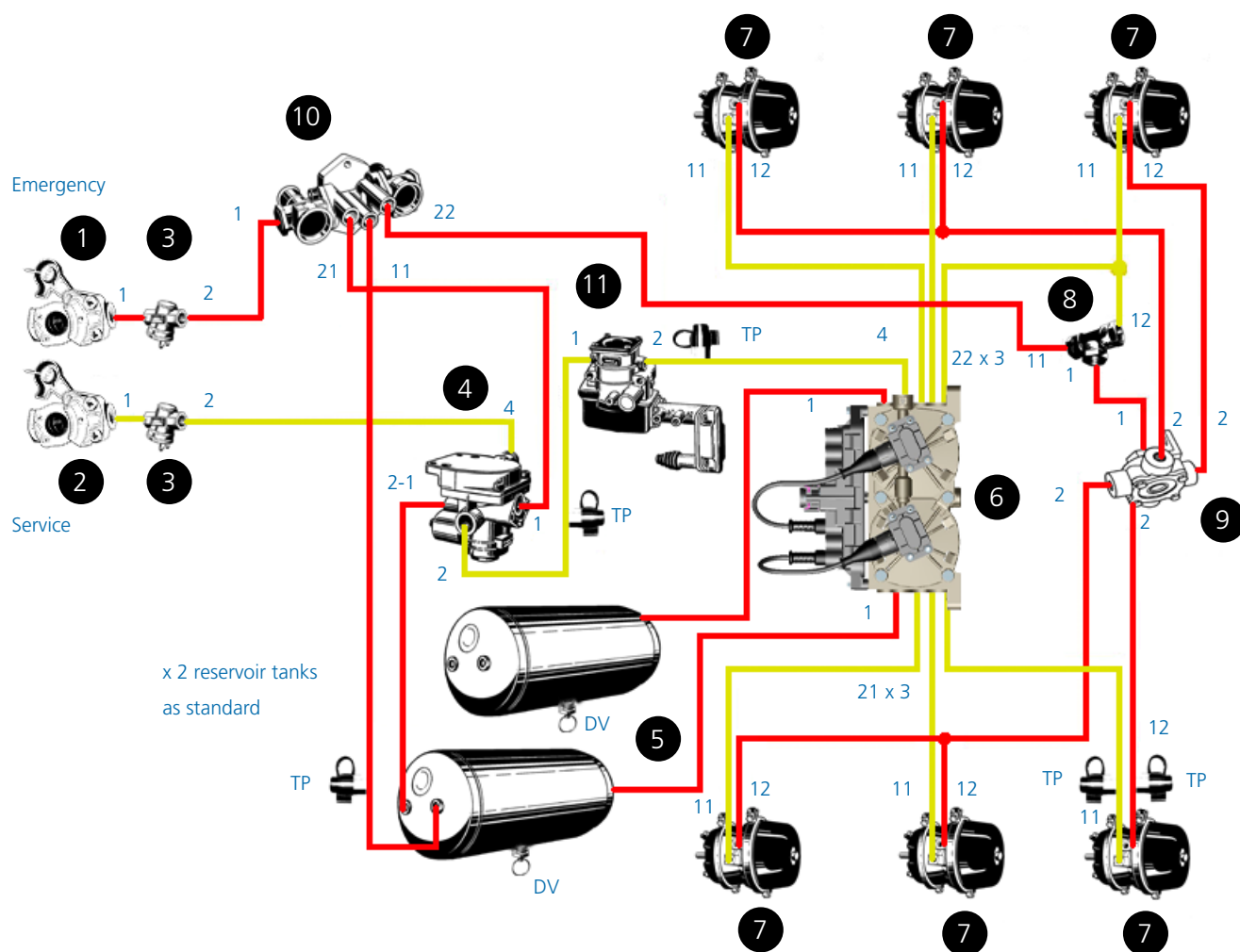


Note:

U-ABS should be supplied with clean / dry air.

Item	Description
1	Emergency coupling
2	Service coupling
3	Pipe filter
4	Relay emergency valve (REV)
5	Air reservoir (capacity as required)
6	U-ABS
7	Spring brake chamber
8	Double check valve (DCV)
9	Quick release valve (QRV)
10	Shunt valve (red button)
11	Park valve (blue or black button)
TP	Test point
DV	Drain valve

Combined park and shunt valve including load sensing valve (LSV)



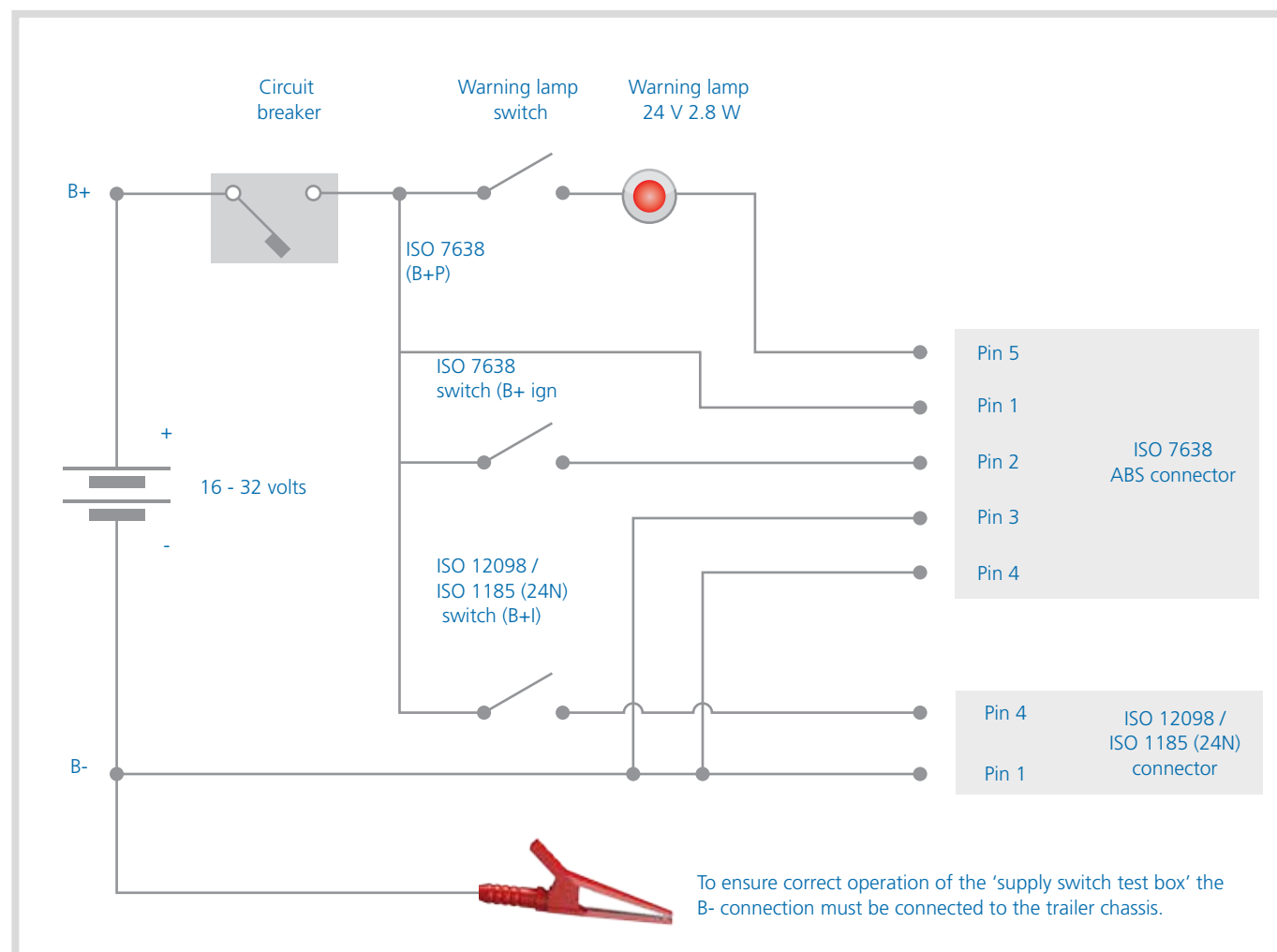
Note:

U-ABS should be supplied with clean / dry air.

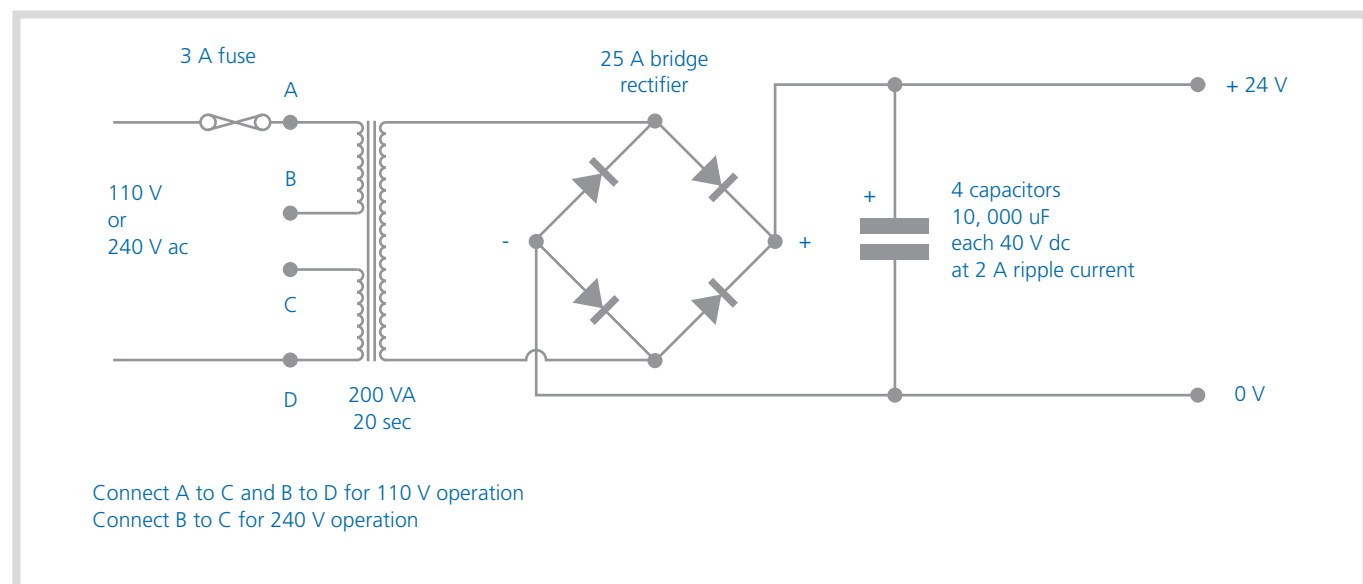
Item	Description
1	Emergency coupling
2	Service coupling
3	Pipe filter
4	Relay emergency valve (REV)
5	Air reservoir (capacity as required)
6	U-ABS
7	Spring brake chamber
8	Double check valve (DCV)
9	Quick release valve (QRV)
10	Combined park and shunt valve (352 044 001)
11	Load sensing valve (LSV, pneumatic version)
TP	Test point
DV	Drain valve

Wiring diagrams

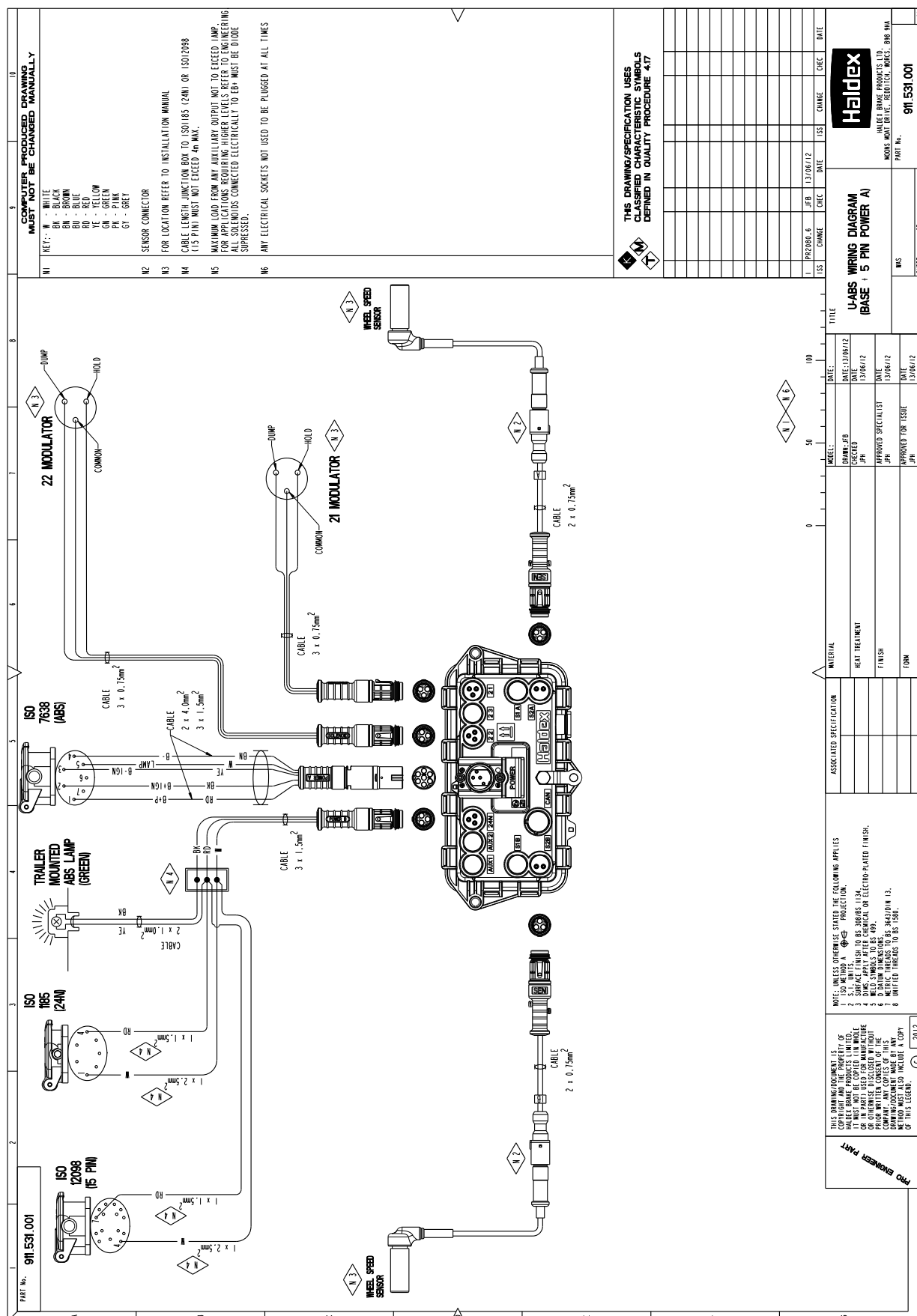
Supply switch test box circuit diagram



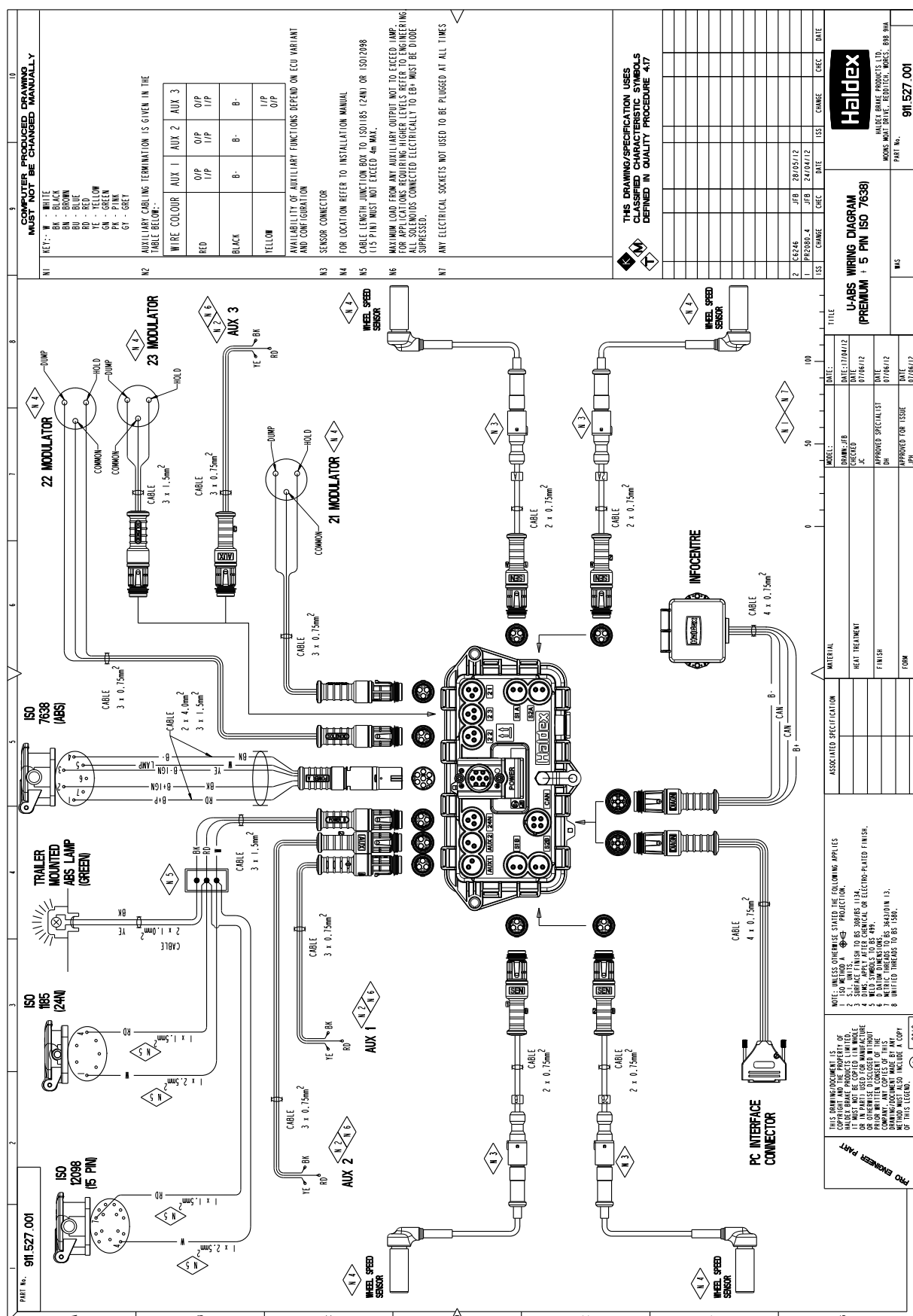
Mains power supply circuit diagram



Basic version



Premium version



Electrical testing

Checking position	Measure between		Correct value	Remarks	Figure
Sensor output	A	B	0.2 V ac min	Sensor 1A, 1B, 2A, 2B, sensor disconnected from ECU and wheel rotated at 1 rev / 2 sec	1
Sensor resistance	A	B	$1.0 < R < 2.4 \text{ K}\Omega$	Sensor 1A, 1B, 2A, 2B Sensor disconnected from ECU	1
Modulator solenoid resistance	B-	DS	$12 < R < 20 \Omega$	Modulator cable disconnected from ECU	2
Modulator solenoid resistance	B-	HS	$12 < R < 20 \Omega$	Modulator cable disconnected from ECU	2
Diagnostic supply using ISO 7638 power	1	4	$16 < V < 32 \text{ volts}$	Ignition 'On', approx battery voltage	3
Diagnostic supply using ISO 12098 / 1185 (24N) power	1	4	$16 < V < 32 \text{ volts}$	Brake applied, ignition 'On', approx. battery voltage	3
Earth continuity	ECU / modulator bracket and vehicle chassis		$0 < R < 5 \Omega$		4
COLAS® solenoid resistance	+	-	$180 < R < 215 \Omega$	Cable disconnected	5

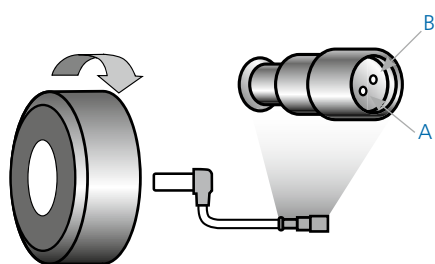


Figure 1

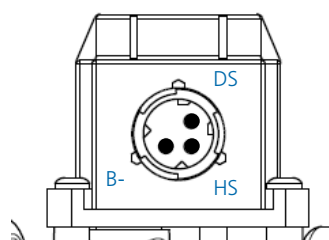


Figure 2

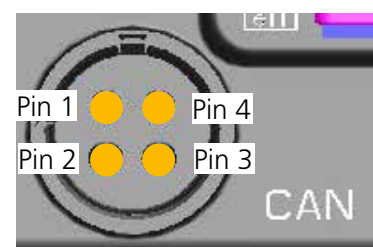


Figure 3

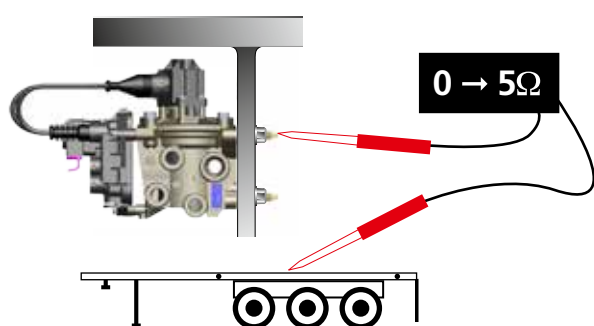


Figure 4

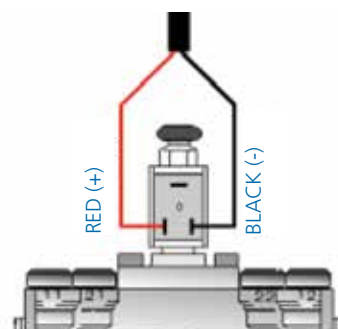


Figure 5

U-ABS trailer lamp blink code mode diagnostics

General

The U-ABS blink code mode diagnostics will use the trailer ABS warning lamp to identify and display active faults, with a short pause between each fault.

Blink code mode diagnostics will identify:

- › Components that need repair
- › Cause (or type) of fault, such as a cut sensor cable

Procedure for activating blink code mode diagnostic at the trailer ABS warning lamp

1. The vehicle must be stationary to activate the blink code, no sensor input signal.
2. The trailer must be connected to a dc power supply that is capable of providing the trailer ABS ECU with a minimum of 16 volts (16-28 volts) via the ISO 7638 cable.
3. Turn 'Off' ignition power to the trailer ABS ECU by removing power to B+ ignition, pin 2.
4. Provide power to B+ ignition, pin 2 by switching the power 'On' for the desired mode as follows.

Procedure for entering each blink code mode

The blink mode diagnostic is activated by applying pulses to the ignition supply line. Each valid pulse advances the mode by one.

Lamp blink modes

Blink duration of lamp	Action
330 ms (quick flash) 'On' 0 ms (quick flash) 'On'	Stored fault occurrence
500 ms (standard flash) 'On'	Blink code number
2 seconds 'On'	Blink code zero
2 seconds 'Off'	Delay between each digit of the fault code
3 seconds 'Off'	Delay before, between and after fault codes and occurrences
7 seconds 'On'	Delay before the display of fault code sequence is repeated

In case of any operator mistake the system returns to normal ECU operation.

There are 3 modes of operation:

- 1 Normal ECU operating mode
- 2 Simple mode & wheel speed mode
- 3 Active faults mode

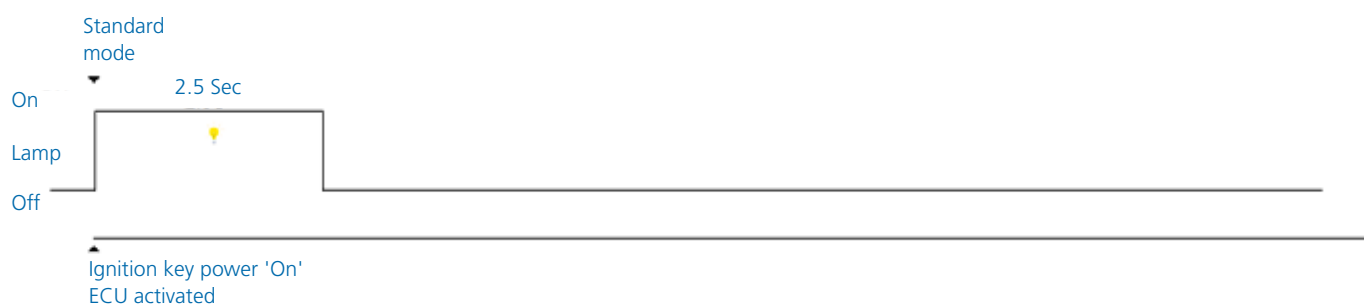
Once entered, a mode can only be terminated by completely disconnecting all power sources from the ECU. All modes repeat endlessly. Each repeat is separated by 7 seconds of permanent lamp energization. All data elements within a particular emission are separated by 3 seconds of lamp 'Off'.

Normal mode (ignition switched 'On')

This is the mode for normal ABS ECU operation. Figure 1 & 2 below are examples of the trailer ABS warning lamp flash sequence in normal mode.

Normal mode ABS operation, no faults

Figure 1



Normal mode ABS operation, with faults

Figure 2



Simple mode

In simple mode the trailer ABS warning lamp displays a numerical fault code sequence for each active fault, up to three codes at a time, where the highest level fault code is displayed first. When there is more than one existing fault, the ECU will display the three highest existing faults, from which the ABS must be powered down and repaired before simple mode diagnostics will display additional active faults. Simple mode diagnostics only identifies the component that needs repair; for fault examples see table below.

Item	Flash count
System OK	Lamp stays 'On'
Sensor 1A	1 Flash
Sensor 1B	2 Flashes
Sensor 2A	3 Flashes
Sensor 2B	4 Flashes
Valve 2.1	7 Flashes
Valve 2.2	8 Flashes
Valve 2.3	9 Flashes
Low voltage	10 Flashes
ECU failure or configuration error	11 Flashes

To activate the simple fault mode the following steps will need to be performed:

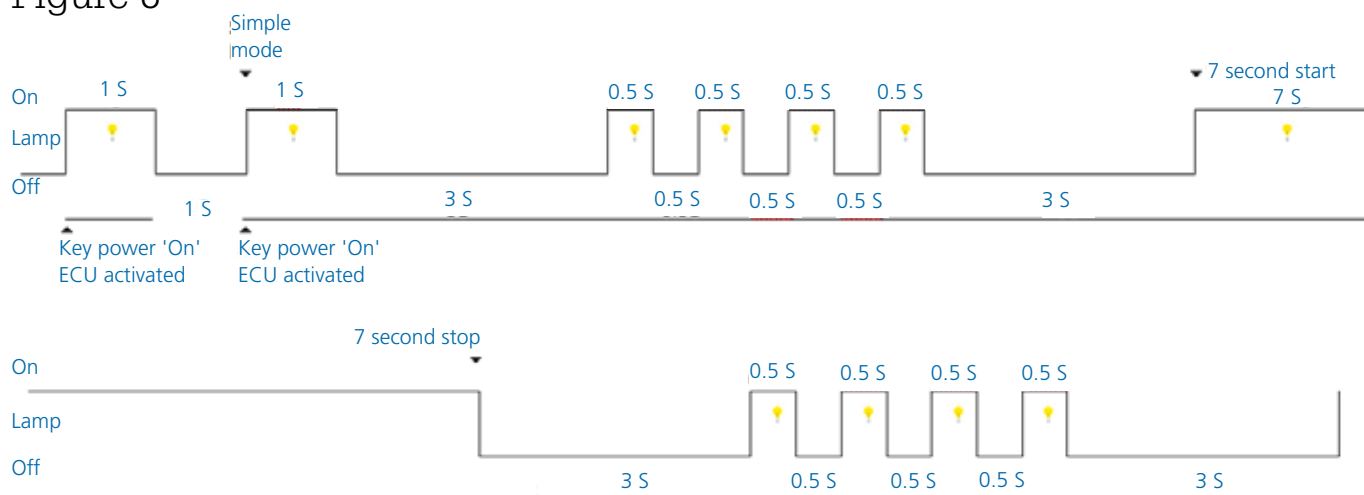
- › Provide power to B+ ignition, pin 2 for 1 second (+/- ½ second)
- › Turn power 'Off' to B+ ignition, pin 2 for 1 second (+/- ½ second)
- › Turn power back 'On' to B+ ignition, pin 2

Upon entering simple mode there will be a 3 seconds lamp 'Off' delay before and after active faults are displayed. There will also be a 3 seconds lamp 'Off' delay between active faults when there is more than one active fault. There will be a 7 seconds lamp 'On' delay before the active faults are repeated. Active fault mode diagnostics can be restarted at any time by turning 'Off' power to the ABS ECU and repeating the activation sequence described above. The trailer ABS warning lamp will come 'On' and stay 'On' if the system is OK and there are no active faults.

Simple mode diagnostics, wheel speed sensor S2B fault

Figure 3 shows the lamp sequence for activating "simple mode" to display a sensor S2B fault, with a 3 seconds lamp 'Off' delay before and after displaying the active fault, and a 7 seconds lamp 'On' delay before repeating the fault.

Figure 3

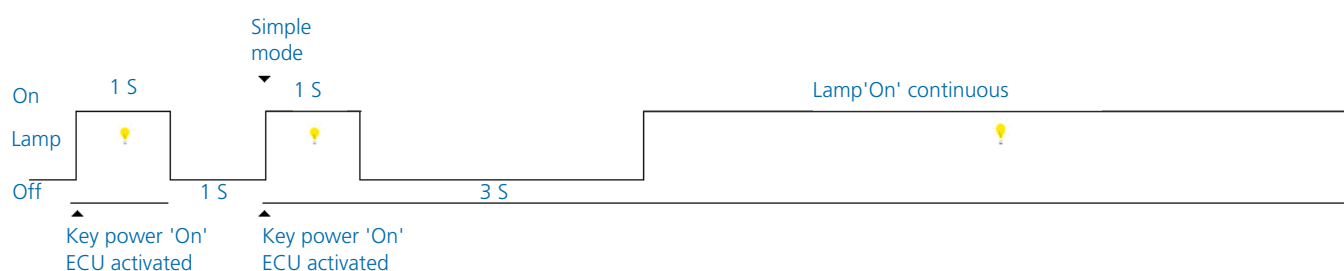


Simple mode diagnostics, system OK

When the ECU has no active faults the lamp will remain 'On' continuously.

Figure 4 shows the lamp sequence for activating "simple mode" to display system 'OK', with a 3 seconds lamp 'Off' delay followed by the display of system 'OK' with the lamp 'On' continuously until ignition power is turned 'Off'.

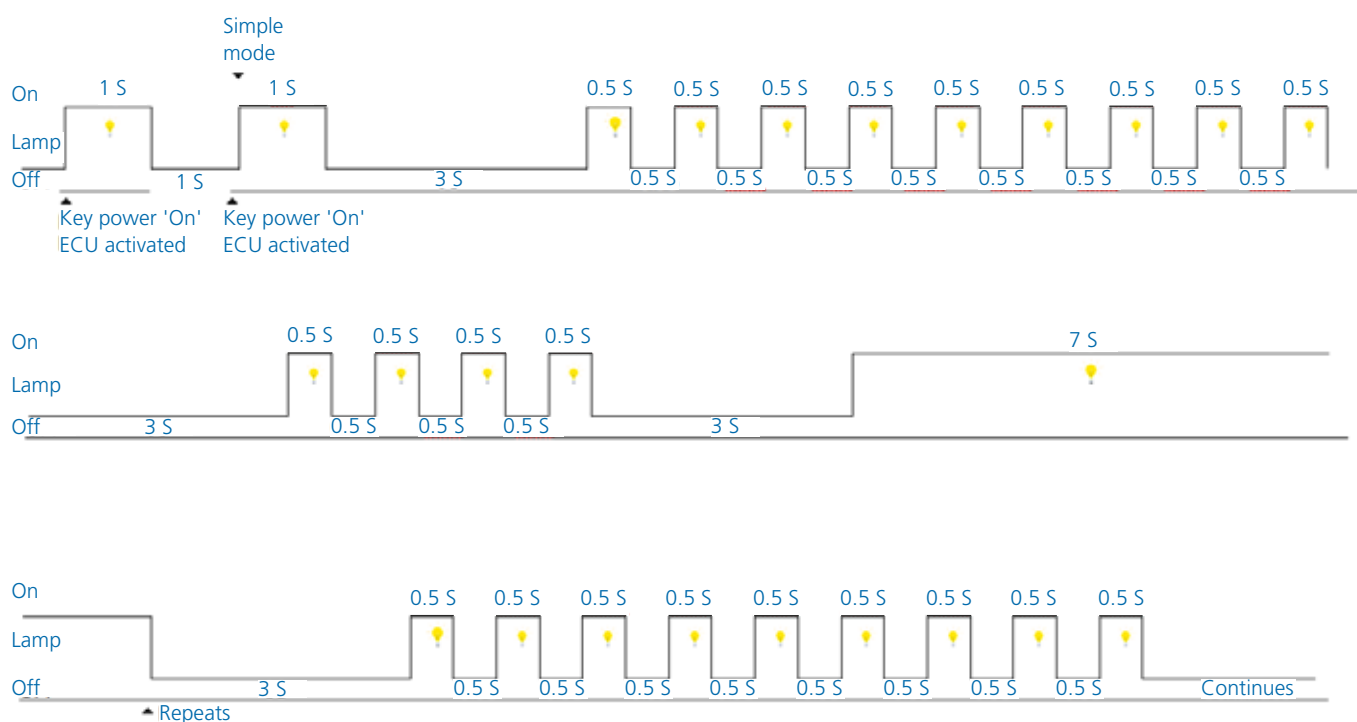
Figure 4



Simple mode diagnostics, modulator 2.3 & sensor S2B

Figure 5 shows the lamp sequence for activating “simple mode” to display a modulator 2.3 and sensor S2B faults, with a 3 seconds lamp ‘Off’ delay before, between and after the active faults, and a 7 seconds lamp ‘On’ delay before the display of active faults is repeated.

Figure 5



Wheel speed mode

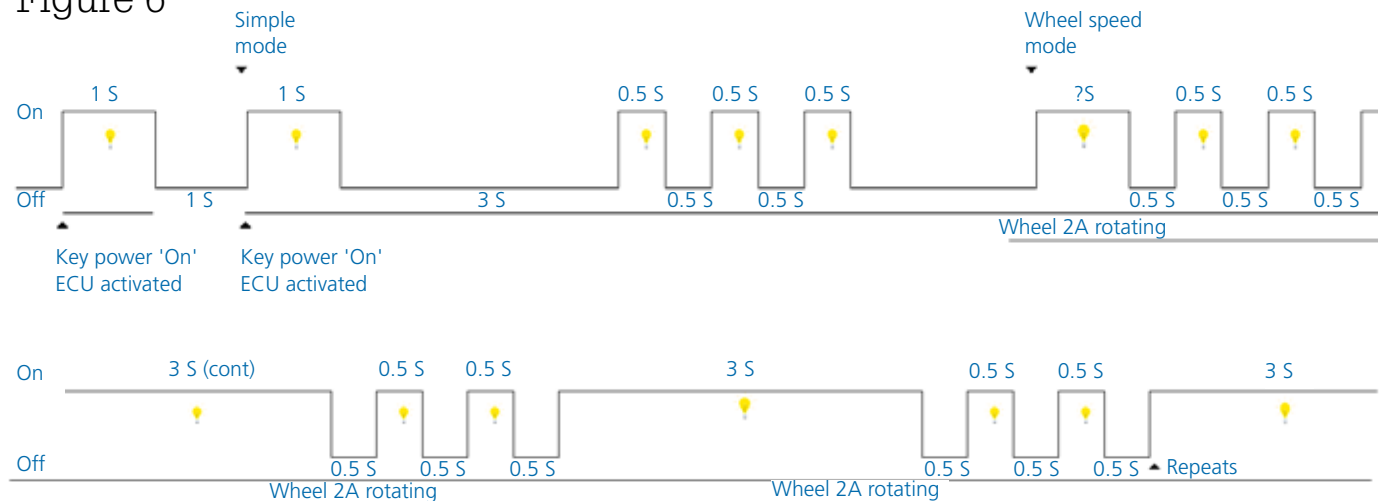
Wheel speed mode is accessible only when in simple mode. This mode emits a blink code for each wheel speed sensor signal received. The ECU will only enter wheel speed mode upon receiving a signal from a wheel speed sensor located at a spinning wheel. The trailer ABS warning lamp will emit the wheel speed blink code 0.5 seconds 'On' and 0.5 seconds 'Off' for the sensed spinning wheel. The ECU will remain in wheel speed mode as long as the wheel remains spinning and a signal is received at the ECU. The ECU will apply reverse lamp 'On' logic when in wheel speed mode, so the lamp will be 'On' for 3 seconds before and after wheel speed blink codes are repeated. The blink codes for the sensed wheels are as follows.

Sensor	Flash count
S1A	1 Flash
S1B	2 Flashes
S2A	3 Flashes
S2B	4 Flashes

Wheel speed mode, sensor S2A fault, simple mode diagnostics then sensor S2A

Figure 6 below shows the ECU's transition from simple mode with a sensor S2A fault to wheel speed mode upon receiving a signal from sensor S2A located at the spinning wheel and demonstrates how reverse lamp 'On' logic is used to indicate wheel speed mode.

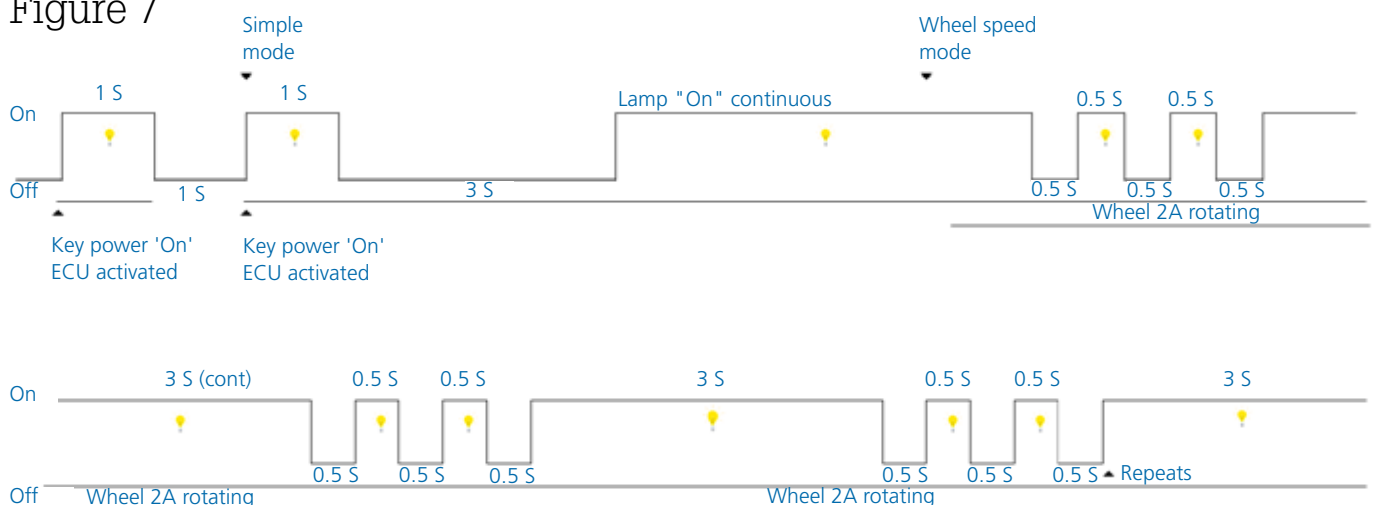
Figure 6



Wheel speed mode, system OK, simple mode diagnostics then sensor S2A

Figure 7 shows the ECU's transition from simple mode to wheel speed mode when there are no active faults.

Figure 7



Active fault mode

In active fault mode the trailer ABS warning lamp displays a numerical fault code sequence for each existing fault, up to three codes at a time where the highest level fault code is displayed first. When there are more than one active fault, the lamp will display the three highest active faults, from which the ABS must be powered down and repaired before additional active faults can be displayed. The blink codes used in the active fault mode are related to the Haldex standard fault codes and are shown in the table below. Each blink code digit will refer to a digit in the Haldex standard fault codes and there will be a 2 seconds lamp 'Off' delay between the 2 digits. There will also be a 3 seconds lamp 'Off' delay before and after displaying the code count, and a 7 seconds lamp 'On' delay before repeating the codes. Not all the Haldex standard fault codes are supported by an equivalent blink code digit.

Code	1st Blinks	2nd Blinks	Code definition
00	N / A	N / A	Normal running (no faults stored).
01	2 sec	1	Wheel speed sensor wiring S1A has an open or short circuit.
02	2 sec	2	Wheel speed sensor wiring S1B has an open or short circuit.
03	2 sec	3	Wheel speed sensor wiring S2A has an open or short circuit.
04	2 sec	4	Wheel speed sensor wiring S2B has an open or short circuit.
07	On	On	System is OK, no sensor output (vehicle at rest).

Low sensor output

11	1	1	Wheel speed sensor S1A gap too large.
12	1	2	Wheel speed sensor S1B gap too large.
13	1	3	Wheel speed sensor S2A gap too large.
14	1	4	Wheel speed sensor S2B gap too large.

Intermittent low sensor output

20	N / A	N / A	Incorrect exciter type, incorrect exciter tooth count.
21	2	1	Wheel speed sensor S1A has an erratic output voltage.
22	2	2	Wheel speed sensor S1B has an erratic output voltage.
23	2	3	Wheel speed sensor S2A has an erratic output voltage.
24	2	4	Wheel speed sensor S2B has an erratic output voltage.

One wheel with slow recovery

41	4	1	Slow wheel recovery, on valve 2.1
42	4	2	Slow wheel recovery, on valve 2.2
43	4	3	Slow wheel recovery, on valve 2.3

Code	1st Blink	2nd Blink	Code definition
Open circuit modulator solenoid or solenoid wiring			
61	6	1	Hold solenoid open circuit on valve 2.1
62	6	2	Hold solenoid open circuit on valve 2.2
63	6	3	Hold solenoid open circuit on valve 2.3 **
67	6	7	Dump solenoid open circuit on valve 2.1
68	6	8	Dump solenoid open circuit on valve 2.2
69	6	9	Dump solenoid open circuit on valve 2.3 **
Short circuit across modulator solenoid or solenoid wiring group			
71	7	1	Hold solenoid short circuit to ground on valve 2.1
72	7	2	Hold solenoid short circuit to ground on valve 2.2
73	7	3	Hold solenoid short circuit to ground on valve 2.3 **
77	7	7	Dump solenoid short circuit to ground on valve 2.1
78	7	8	Dump solenoid short circuit to ground on valve 2.2
79	7	9	Dump solenoid short circuit to ground on valve 2.3 **
Modulator solenoid wiring or solenoid short to B+			
80	8	2 sec	Output leakage / poor insulation on any of the valve channels.
81	8	1	Hold solenoid short circuit to B+ on valve 2.1
82	8	2	Hold solenoid short circuit to B+ on valve 2.2
83	8	3	Hold solenoid short circuit to B+ on valve 2.3 **
87	8	7	Dump solenoid short circuit to B+ on valve 2.1
88	8	8	Dump solenoid short circuit to B+ on valve 2.2
89	8	9	Dump solenoid short circuit to B+ on valve 2.3 **
Supply voltage			
90	9	2 sec	Low supply voltage at ECU when solenoid is energized.
91	9	1	No internal ABS ECU solenoid voltage available.
92	9	2	Supply voltage at the controller greater than 32 V.
93	9	3	Short circuit on ABS ECU internal relay.
99	9	9	Checksum fault on ABS ECU.

** = Flash blink codes not implemented

To activate the active fault mode the following steps will need to be performed:

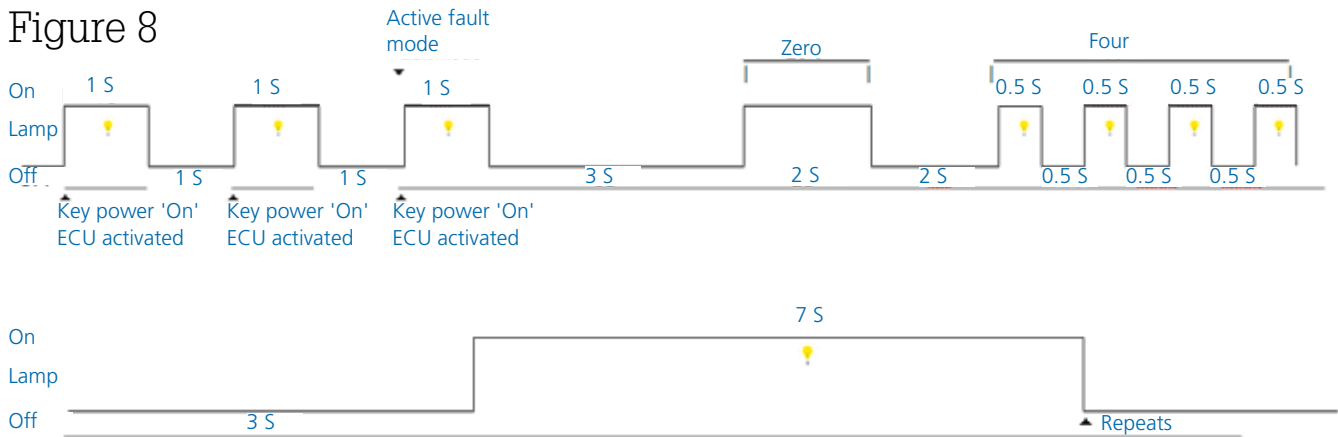
- › Provide power to B+ ignition, pin 2 for 1 second (+/- ½ second)
- › Turn power 'Off' to B+ ignition, pin 2 for 1 second (+/- ½ second)
- › Provide power to B+ ignition, pin 2 for a second time for 1 second (+/- ½ second)
- › Turn power 'Off' to B+ ignition, pin 2 for 1 second (+/- ½ second)
- › Turn power back 'On' to B+ ignition, pin 2

Active fault mode diagnostics can be restarted at any time by turning 'Off' power to the ABS ECU and repeating the activation sequence described above. The trailer ABS warning lamp will come 'On' and stay 'On' if the system is OK and there are no active faults.

Wheel speed sensor wiring S2B has an open or short circuit code 04

Figure 8 shows the lamp sequence for activating “active fault mode” to display a sensor S2B code 04. It also demonstrates a 3 seconds lamp 'Off' delay before and after displaying the active fault, and a 7 seconds lamp 'On' delay before repeating the fault.

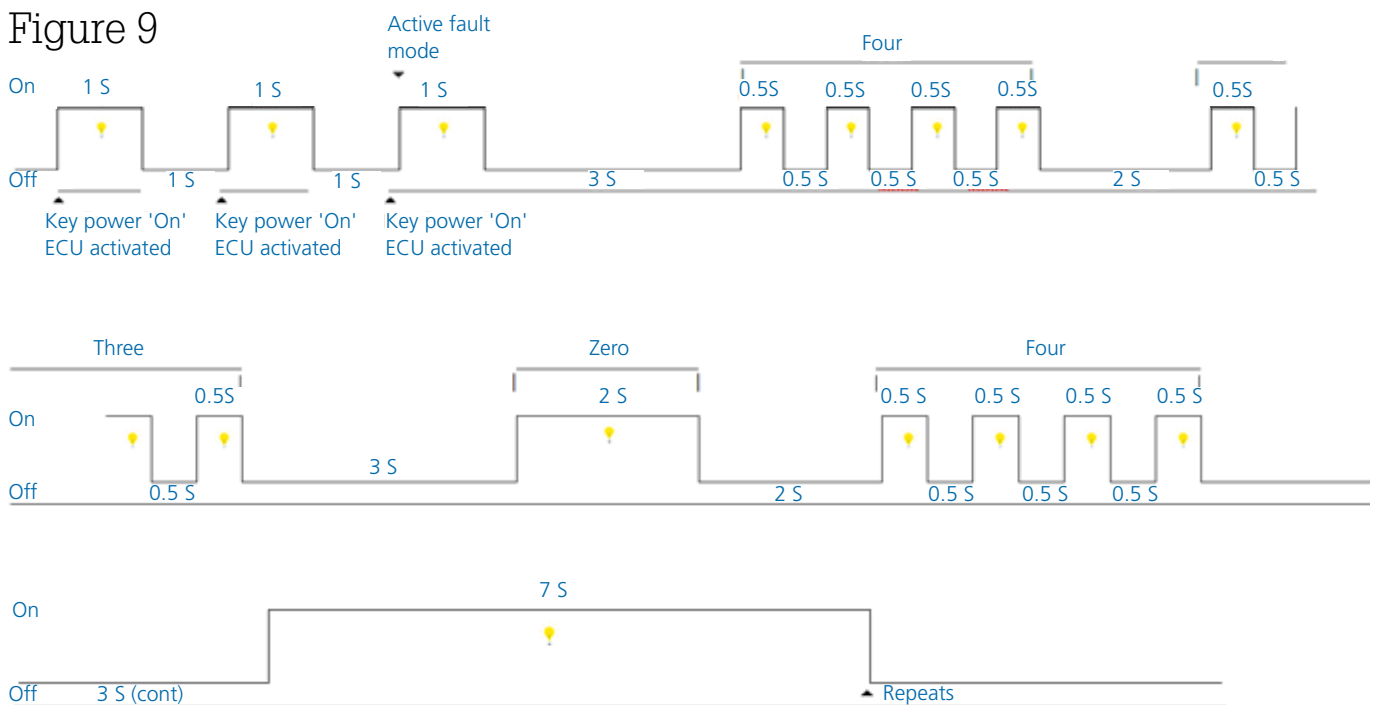
Figure 8



Modulator 2.3 code 43 and sensor S2B code 04

Figure 9 shows the lamp sequence for activating “active fault mode” to display a modulator 2.3 code 43 and sensor S2B code 04 with a 2 seconds lamp 'Off' delay between each digit of the fault code, a 3 seconds lamp 'Off' delay before and after the active faults, and a 7 seconds lamp 'On' delay before the display of active faults is repeated.

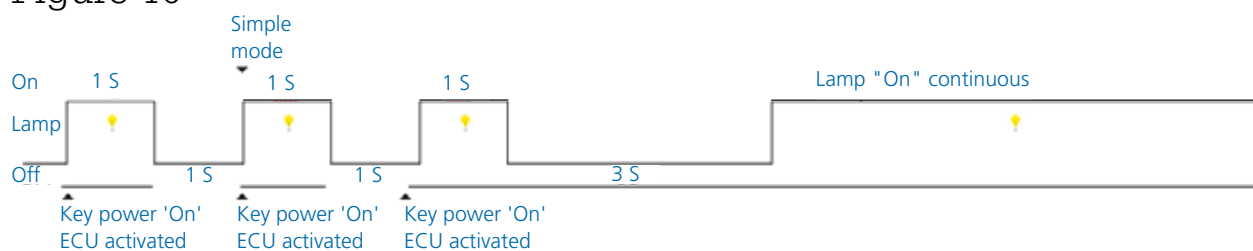
Figure 9



System OK, active fault mode, code 07

Figure 10 shows the lamp sequence for activating "active fault mode" to display system "OK", with a 3 seconds lamp 'Off' delay followed by the display of system "OK" with the lamp 'On' continuously until ignition power is turned 'Off'. When the ECU has no active faults the lamp will remain 'On' continuously until key power is turned 'Off'.

Figure 10



Recommended maintenance schedule

Time or mileage (which ever occurs first)	Components	Operation
When hubs are removed	Exciter	Check for damage.
	Sensor	Check for wear, clean and readjust.
Every 3 months or 25,000 miles (40,000 Km)	Complete system	Perform system checkout and air leakage check.
Annually or every 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.

U-ABS aftermarket service kits

Solenoid replacement

This kit is to be used for replacing the solenoid on the 2M and 1M valve, and reusing the original valve assembly.

Description	Part number
Solenoid only replacement	950 364 820

2M valve replacement

This kit is to be used for replacing the 2M valve body only, and reusing the original solenoid.

Description	Part number
2M valve only replacement	950 364 821

1M valve replacement

This kit is to be used for replacing the 1M valve body only, and reusing the original solenoid.

Description	Part number
1M, 2 port valve only replacement	950 364 822
1M, 6 port valve only replacement	950 364 823

ECU replacement

These kits are to be used for replacing the U-ABS ECU only, and reusing the original valve assembly.

Description	Part number
Premium ECU (364569001) replacement	950 364 824
Standard ECU (364570001) replacement	950 364 825
Basic ECU (364571001) replacement	950 364 826

Part reference

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

U-ABS assemblies	Part number
Premium (1M, 2M, 3M capable, 3 AUX)	364 564 001
Premium ECU only	364 569 001
Standard (1M, 2M capable, 1 AUX)	364 565 001
Standard ECU only	364 570 001
Basic (2S / 2M only capable, no AUX)	364 566 001
Basic ECU only	364 571 001



1M valve assemblies	Part number
2 delivery ports, metric threads with DIN connector	364 105 121
6 delivery ports, metric threads with DIN connector	364 115 121
1M valve mounting bracket	015 502 909



Info Centre 2	Part number
Haldex Info Centre 2	815 041 001
Haldex Info Centre 2 ADR	815 046 001



ABS label	Part number
Warning label U-ABS	028 539 109
Instruction label	028 525 709M
Identification label	028 506 809
Diagnostic connector label	028 518 909



Sensor kit	Part number
Angled (inc. retaining clip)	950 364 503
Straight (inc. retaining clip)	950 364 506



ISO 7638 socket kit	Part number
Black cover - no fuse, crimp pins	950 364 402



U-ABS DIAG+ cable kit	Part number
	950 800 912
Kit contents:	
ECU / pc interface cable (6.5 m)	814 036 001
EB+ ISO diagnostic cable	815 018 001
EB+ SOV / pc interface cable (6.5 m)	814 011 001
Transit case	042 623 719

U-ABS DIAG+ interface kit	Part number
	950 800 909
Kit contents:	
USB pc interface (DIAG+)	815 023 001
USB cable	042 707 309



Warning lamp	Part number
Green warning lamp	950 364 710
Bulb (24 V - 5 W) double pole	950 364 711



Park & shunt	Part number
Combined park & shunt	352 044 001



TPMS	Part number
Receiver control unit (RCU)	815 052 001
Wheel unit sensor (WUS)	042 727 209
Cable / clamp assembly	003 951 709
Cable stretcher tool	042 727 309
Wheel unit sensor indicator label	006 700 021_M
TPMS trigger (hand unit)	815 053 001



U-ABS ISO cables

ISO 7638 to ECU	Length
364 510 001	12 m
364 510 011	7 m
364 510 021	15 m
364 510 031	22 m
364 510 041	2 m
364 510 051	4 m



ISO 7638 to U-ABS power	Length
364 594 001	4 m
364 594 011	16 m



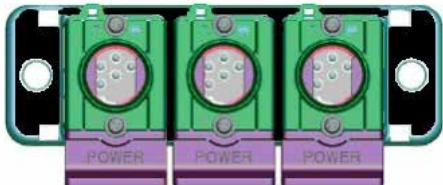
Power A ECU aftermarket	Length
364 574 001	0.7 m



Power to power	Length
364 591 001	2 m
364 591 011	4 m



U-ABS ISO 7638 splitter box	Part number
Power to power	364 590 001



U-ABS 24N cables

Power B	Length
364 509 001	12 m
364 509 011	18 m



24N to DIN	Length
364 588 001	2 m
364 588 011	4 m



24N ECU aftermarket	Length
364 575 001	0.8 m



U-ABS solenoid cables

2M solenoid (0.75 mm²)	Length
364 572 001	0.275 m



3M solenoid (1.5 mm²)	Length
364 572 011	3 m
364 572 021	4 m
364 572 031	6 m
364 572 041	8 m
364 572 051	10 m
364 572 061	14 m



AUX 3 (Premium version only)

For AUX 3 use cable 364 572 xxx (tin plate) and not 814 012 xxx (gold plate) to avoid possibility of pin corrosion.

U-ABS auxiliary cables

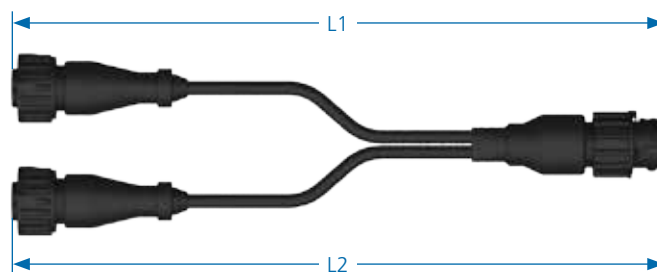
Auxiliary cable	Length
814 001 302	7 m
814 001 312	18 m
814 001 322	2 m
814 001 332	4 m
814 001 342	1 m
814 001 352	12 m
814 001 372	10 m



Auxiliary cable to DIN connector	Length
814 012 201	7 m
814 012 211	18 m
814 012 221	1 m
814 012 231	2 m
814 012 241	5 m
814 012 251	3 m
814 012 261	4 m
814 012 271	10 m



Male to female to female (2x2x2 way)	L1	L2
814 027 001	0.5 m	0.5 m



Auxiliary (3 pole) to auxiliary (3 pole)	Length
814 032 001	1 m
814 032 011	4 m
814 032 021	7 m
814 032 031	18 m



Y-splitter 3x3x3 way	Length
814 039 101	0.5 m



U-ABS diagnostic cables

Info Centre 2 to side of vehicle	Length
814 025 001	1 m



Side of vehicle (SOV) to ECU	Length
814 030 001	6.5 m
814 030 011	2.5 m
814 030 021	5 m
814 030 031	15 m



Vehicle to pc interface (dongle)	Length
814 011 001	6.5 m
814 011 011	15 m



DIAG to DIN	Length
814 033 001	1 m
814 033 011	12 m



DIAG to pc interface (dongle)	Length
814 036 001	6.5 m
814 036 011	15 m
814 036 021	20 m



DIAG to DIAG	Length
814 037 001	6.5 m
814 037 011	0.5 m
814 037 021	8 m
814 037 031	14 m



Y-splitter 4x4x4 way	Length
814 038 001	0.5 m



DIAG to female FCI connector	Length
814 040 001 (rear RCU unterminated)	1.2 m
814 040 101 (front RCU unterminated)	1.2 m
814 040 201 (front RCU terminated)	1.2 m
814 040 211 (front RCU terminated)	6 m
814 040 221 (front RCU terminated)	10 m



U-ABS sensor cable

Sensor	Length
814 004 401	3 m
814 004 411	6 m
814 004 421	2 m
814 004 431	10 m
814 004 441	14 m
814 004 451	8 m
814 004 461	12 m
814 004 471	4 m



Haldex develops and provides reliable and innovative solutions with focus on brake and air suspension products to the global commercial vehicle industry. Listed on the Stockholm Stock Exchange, Haldex has annual sales of approximately 4 billion SEK and employs about 2,200 people.



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