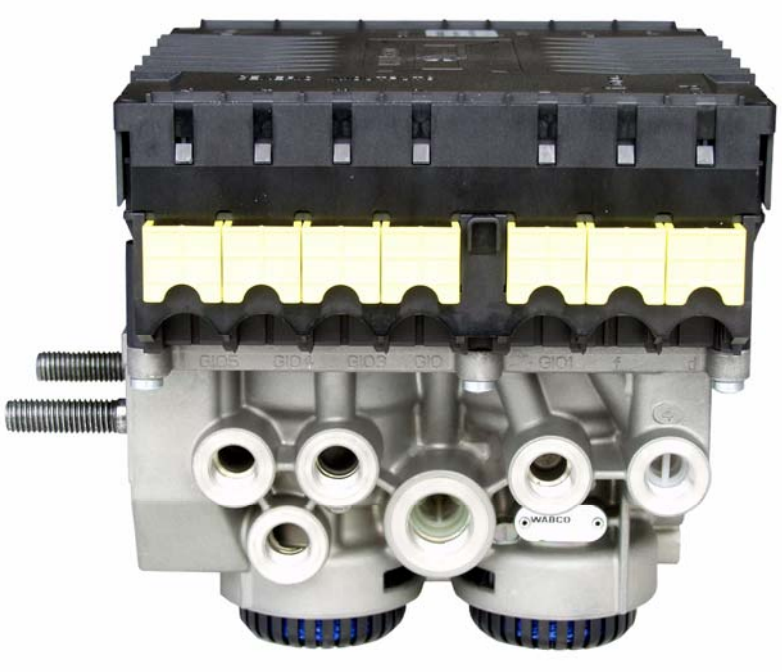
WABCO EBS E Retrofit Instructions



WABCO EBS E Retrofit Instructions

Preparation

Before commencing the installation of WABCO EBS to your trailer, it is important to ensure that you have completed a Brake Calculation questionnaire. This calculation will generate the information needed to program the installed EBS system.
The questionnaire can be found on page 16 of these instructions and if you have any queries you should contact the WABCO technical department on 0113 251 2600.

Wheel Sensors & Pole Wheels

It is also important to establish which type of ABS Sensors and Pole Wheels are fitted to the Vehicle. The WABCO EBS system only operates with machined type toothed wheels, the number of teeth depends on the size of wheels used.
The pressed steel exciter rings found on some other systems cannot be used and must be replaced with pole wheels with the correct number of teeth, usually 100 teeth for an axle with Super Single tyres.
Please check the tyre data table in the WABCO diagnostic software help menu for further details.
The correct pole wheels can be purchased from the axle manufacturer, along with WABCO wheel speed sensors. Kit number 441 032 921 2 should be ordered which contains the sensor, locating bush and grease.

WABCO EBS E Retrofit Instructions

Removing The Old System

Before any of the pipes are removed from the existing system it is good practice to label them. This will avoid problems later, as some of the existing pipe work can be reused.
A good selection of pipe fittings may be required to carry out the installation of the new system. All ports on the WABCO EBS E system are either M16x1.5 or M22x1.5 threads.
Remove the old unit and all relevant pipes and cables, including the green headboard warning lamp and it's cable. Also at this point make a note of the location of the electrical junction box from where the EBS system can pick up brake light power.

Checking of all new components

The new WABCO EBS system comes pre-packed as a kit - Part number **480 102 929 2**. This kit contains all the components of a 2S/2M system,(two sensor / two modulator). This system is suitable for most 1-2 & 3 axle trailers & also 1-2 & 3 axle centre axle drawbar trailers.

It is not however, suitable for trailers with a steered axle.

WABCO recommend a 4S/3M system be used for these vehicles. Please contact WABCO Technical for details on this system.

WABCO EBS E Retrofit Instructions

Kit Content

- Unpack the system and check all components, the kit should contain the following:-

ISO Supply Cable	449 173 120 0	Quantity One
24N Cable	449 349 100 0	Quantity One
EBS ‘E’ Trailer Modulator	480 102 060 0	Quantity One
Sensor Cables	449 723 023 0	Quantity Two
Publication for Kit	826 102 561 3	Quantity One
EBS Label Trailer	813 000 008 3	Quantity One
Adhesive Label	899 200 922 4	Quantity One
Park Release Emergency Valve (PREV)	971 002 900 0	Quantity One

Once you are satisfied that all the components are correct you can continue with the installation.

WABCO EBS E Retrofit Instructions

449 173 120 0 Supply Cable

480 102 060 0 EBS Modulator

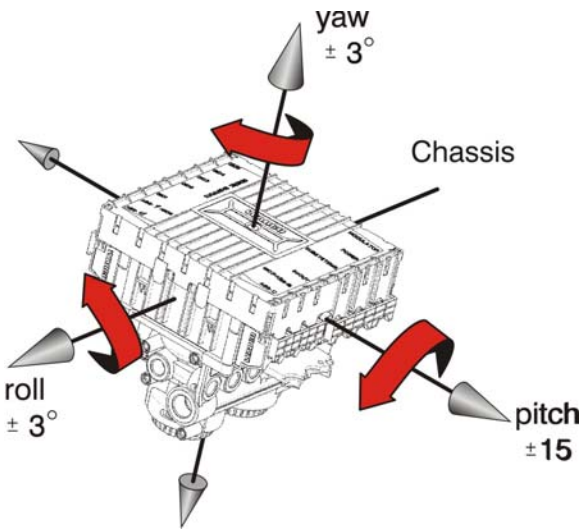
449 349 100 0 24N Cable

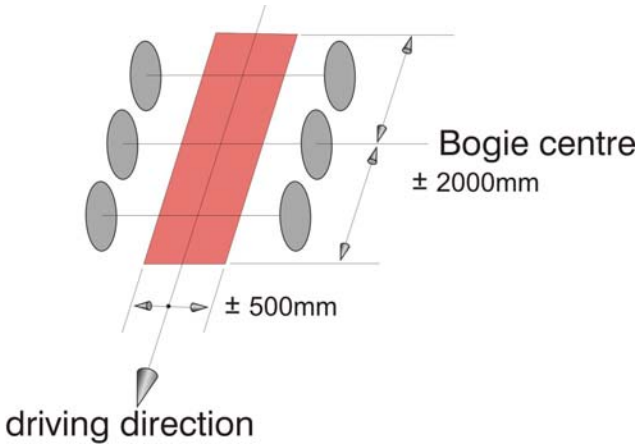
449 723 023 0 Sensor Cables

971 002 900 0 Park Release Emergency Valve (PREV)

Positioning of Components for RSS operation

The position of the ECU/Modulator assembly on the trailer is critical to the operation of the EBS system. It should be mounted in a central position above the axle or axles to be controlled if possible. Directly above the centre axle of a 3 axle trailer is the best position. The red shaded area in the diagram below shows the optimum position.
The mounting position is more critical when the RSS function is used. See diagram for mounting specifications. The reason for this mounting position, is to allow the correct function of the internal roll sensor. The position of the modulator can be calibrated during the parameter setting procedure. The internal RSS sensor can take into account small variations in mounting position, but will reject installation if it is outside the limits shown below.





WABCO EBS E Retrofit Instructions

Installing the Modulator / ECU

The Modulator/ECU should be fastened to a suitable bracket (not supplied by WABCO) or chassis cross member.
If a bracket is used, it should be strong enough to support the weight of the unit, and the connected pipe work. WABCO recommend a bracket of at least 4mm thickness for steel and 6mm for aluminum**.**
The unit can be mounted with the ECU facing forwards or backwards. This does not affect the performance of the system.
The modulator position should be such, that it is possible to make the brake chamber pipes all similar in length, however this does not need to exact. Variation in length is acceptable.

The pneumatic pipes and hoses can now be connected. The pipes or hoses that feed the brake actuators should be connected first. It is critical to the operation of the EBS system that these pipes & hoses are connected to the correct ports.
If the ECU was mounted facing forwards, the actuators on the nearside of the vehicle should be connected to ports 21. The actuators on the offside should be connected ports 22, If the ECU is facing backwards, reverse the above.
These output ports are M16 x 1.5 thread. Hoses, pipes and fittings with good flow characteristics should be used. The existing pipe work may be used if suitable.

Pneumatic Pipe Connections Cont

The next pipe to be connected should be the feed from the reservoir. This should be connected to the unit at port 1. On EBS E, port number 1 is located at two different locations on the unit, and both ports are common. Either can be used, and the redundant port should be plugged.

The size of pipe used should be 18mm diameter nylon pipe, however 15mm diameter may be used instead, as long as both of the number 1 ports are fed from the reservoir. If an ABS system was previously fitted to the trailer, the correct size pipe may already be present, and can be re used.

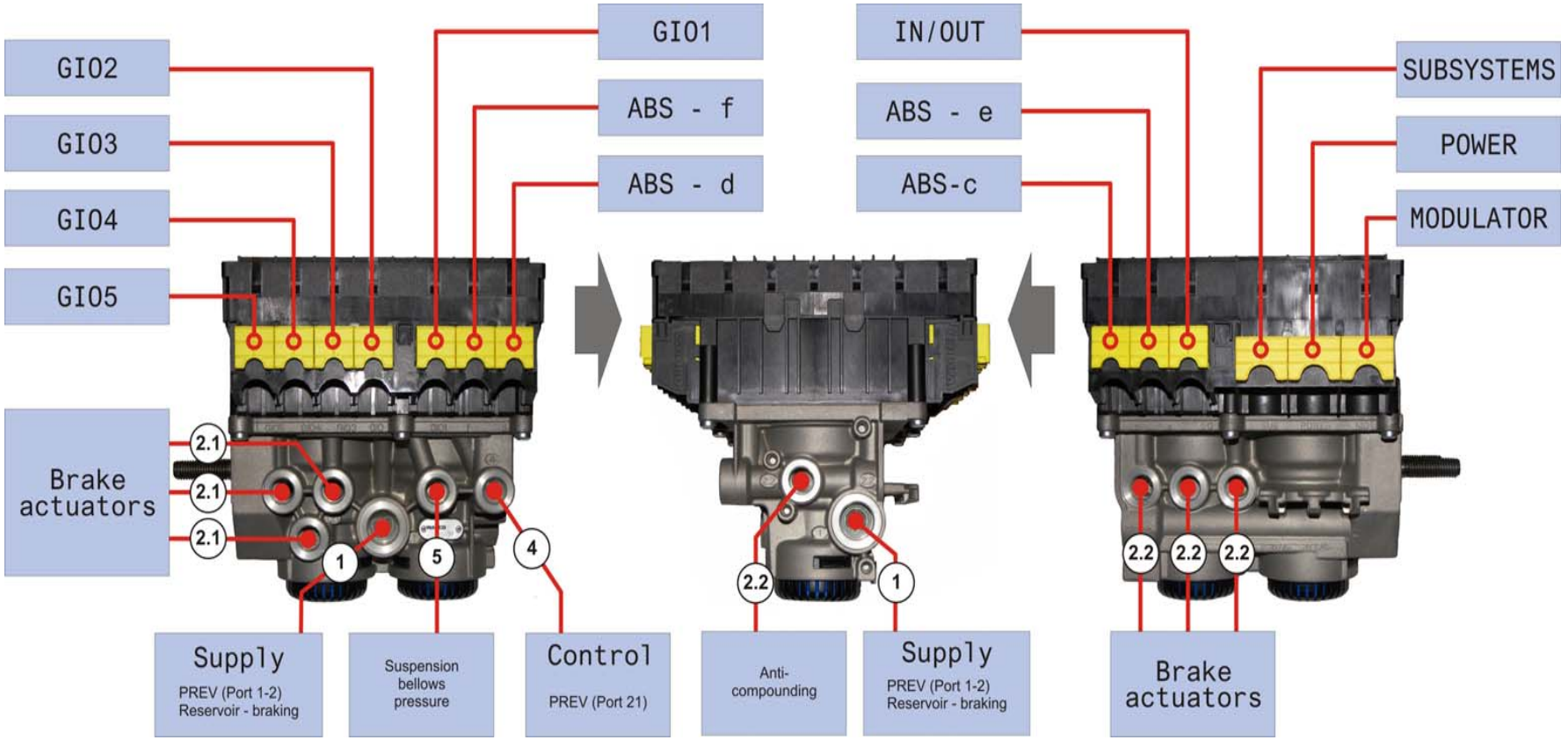
The next pneumatic connection is to Port 4 of the unit. The pipe that connects to Port 4 is the signal pipe (usually 10mm diameter) from the output port of the PREV (port 21) or relay emergency valve (port 2).

A signal from an air suspension bellow must be connected to port 5 of the unit. The size of pipe used should be 6mm diameter, or larger. The only other pneumatic connection required, is a signal to the anti compounding valve. This should be taken from a specially designated port 22, which is situated on the front of the unit.

Please refer to the detailed picture on page 10 for the location of all ports / electrical connections.

WABCO EBS E Retrofit Instructions

Pneumatic ports and electrical connections

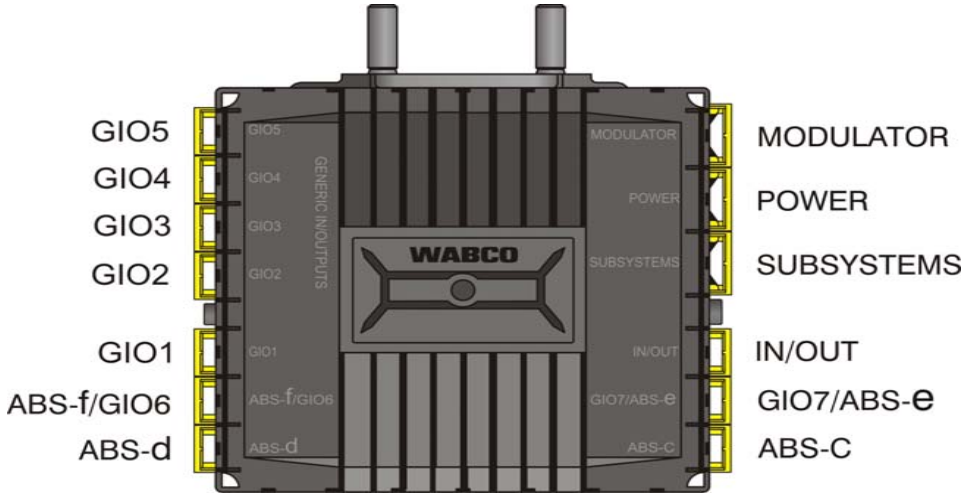


WABCO EBS E Retrofit Instructions

Electrical Connections Cont

An ISO 7638 power cable is provided in the kit. This should be routed carefully in the chassis, and connected to the ECU at the connection marked POWER. When making this connection, it is important that the cable is not pulled tight, causing stress at the connection. A small length of excess cable will help to avoid this. A bracket is provided on the modulator, to which the power cable can be secured with a cable tie.

Connect the 24N cable (449 349 100 0) to the input marked IN/OUT. From this cable, connect the blue wire to pin 4 (brake lamp feed) of the 24N, and the brown wire to pin1(ground connection to the chassis is not allowed).



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Electrical Connections

Connect the sensor extension cables to the ends of the sensors. It is important to connect the extension cables to the ECU at the correct channels. If your trailer has a 2 sensor system, only sensor inputs C and D will be used. The positions of all the electrical inputs, are marked on the top of the ECU.

If your modulator is facing forwards, the nearside (R/H) wheel sensor cable MUST go to position D. The offside (L/H) to position C. Reverse this if the modulator is facing backwards.
To connect the sensors to the ECU, the yellow retaining clip should be prized outwards, by approximately 12mm. The sensor should then be located and pushed upwards. Once the sensor is in place, the clip should be pushed inwards to secure the sensor.
The ECU has two sensor connections for each side of the vehicle. On a 2S/2M system, sensors E and F will be blanked off, It is important that these blanking plugs are left in place.
Failure to observe this may cause water to enter the ECU, invalidating the warranty.

If a SMART BOARD is to be fitted, it's cable should be connected to the connector "SUB SYSTEMS".
If an external component is required (eg a lift axle valve, or RTR valve), an additional cable can be purchased, and connected to one of the G I/O ports. Please contact WABCO technical for details.

Please refer to the diagram on page 10.

WABCO EBS E Retrofit Instructions

Commissioning

The system must now be programmed using WABCO diagnostic software. The data from the brake calculation should be entered along with other parameters, and a sign off test carried out.

Power up the system using ISO 7638 power, connect lead and switch the ignition on. After a few seconds four clicks will be heard from the modulator valves, This is the system checking itself.
The dashboard warning lamp will come on with the ignition switch & the warning light will go out after the vehicle has moved at more than 7KPH. This is to check the function of the wheel speed sensors.
When the system is next powered and every time there after, the lamp will go out after approximately two seconds, and will only come back on if a fault occurs.
The system must now be tested using the alternative power supply. Depress the footbrake and switch on ignition, the self check clicks will be heard.

For additional information on WABCO trailer EBS and its functions please request a free copy of brochure 815 010 093 3 from WABCO Technical.

WABCO EBS E Retrofit Instructions

Fitting a Park Release Emergency Valve (PREV)

The PREV valve recommended by WABCO is 971 002 900 0. The valve has five ports all the ports are M16x1.5 thread. The ports are connected as follows:-

- Port 1 - Energy supply. This pipe comes from the red coupling (emergency), 10mm diameter pipe can be used.

- Port 21 - This is the output from the PREV and feeds air to Port 4 of the EBS modulator. Pipe diameter should be approximately 10mm.

- Port 22 – This pipe goes to the spring brake circuit. Pipe diameter should be minimum 10 mm

- Port 1-2 - This pipe feeds the trailer reservoirs, minimum pipe diameter should be 10mm, although 12mm is normally used.

- Port 4 - The pipe connected to this port comes from the yellow coupling (service), Usually 10mm diameter. After connecting all pipes to the PREV, the system can be charged with air. Check for leaks and correct function. Also check the operation of the PREV by disconnecting the red coupling and checking that the service brakes apply. Also, check correct operation of shunt button.

Approval of the System

After installation & checking of the system the VTG10 form must be completed and the Vehicle Inspectorate (VI) informed to make sure the installation is correct. This can be done two ways:-

1) If the customer has the appropriate WABCO diagnostic software (246 301 589 0) then once the installation is complete it will produce a system sign off certificate. This is evidence of a successful installation of the EBS system. Attach the certificate to the VTG10 form and send it to the Vehicle Inspectorate (VI).

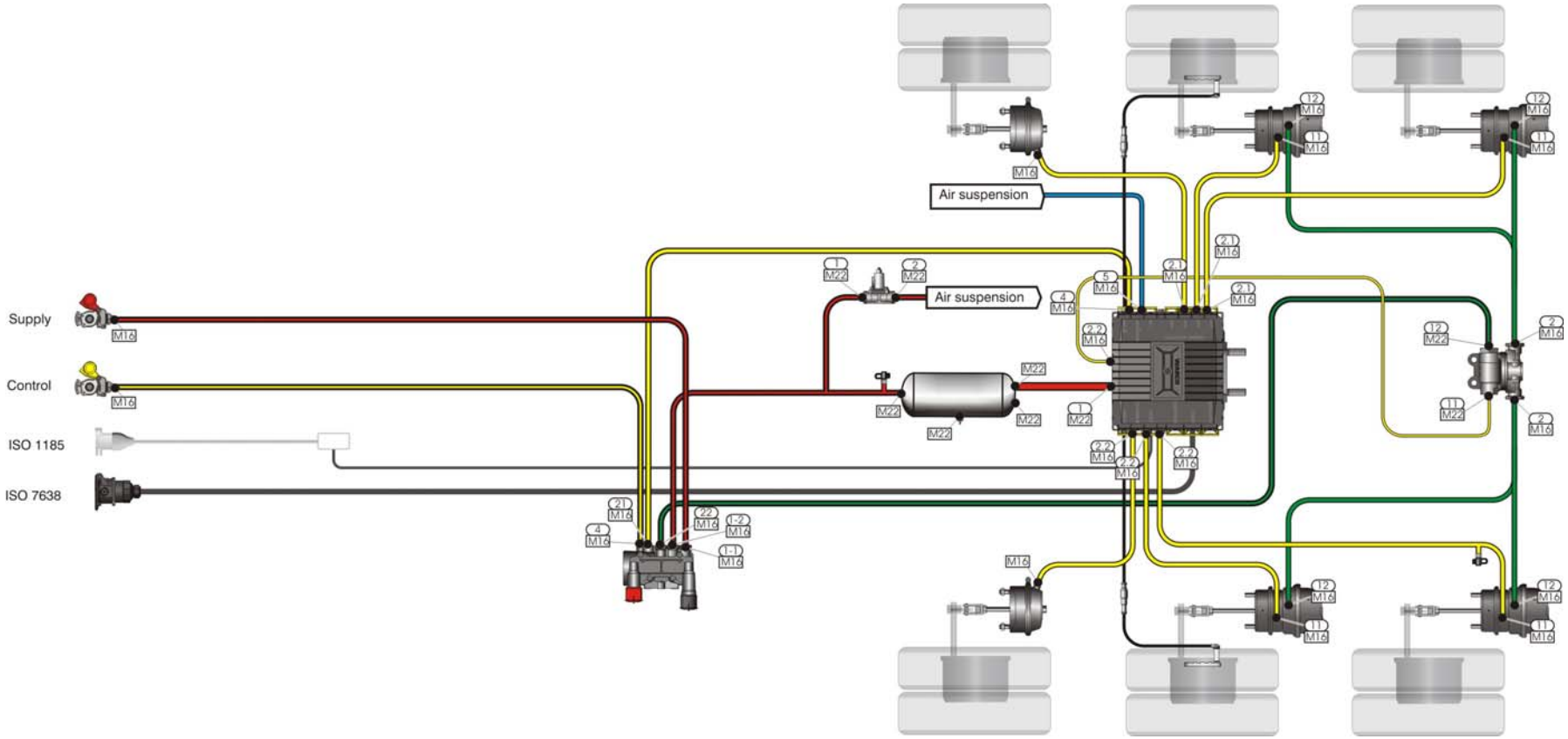
2) If diagnostic software is not available, then contact WABCO Technical on 0113 251 2600 for a list of approved WABCO Service Centre's. Contact your nearest Service Centre who will travel to your vehicle and sign off the EBS system. The customer will be issued with a sign off certificate which can be attached to the VTG10 and sent to the Vehicle Inspectorate.

There will be no charge for this service!

The VTG10 form can be found on page 17 of this publication.

WABCO EBS E Retrofit Instructions

TEBS E Schematic Diagram



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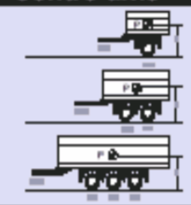
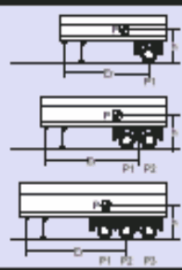
Cut out and use

WABCO

Questionnaire for trailers fitted with EBS

Trailer Manufacturer	
Trailer Model	
Chassis Number(s)	

				laden	unladen
centre axle					
	maximum mass	P	kg		
	drawbar hitch load	Pst	kg		
	axle load - axle 1	P1	kg		
	axle load - axle 2	P2	kg		
	axle load - axle 3	P3	kg		
	suspension pressure	Bp	bar		
semi-trailer					
	maximum mass min	P	kg		
	maximum mass max	P	kg		
	axle load - axle 1	P1	kg		
	axle load - axle 2	P2	kg		
	axle load - axle 3	P3	kg		
	C of G height	h	m		
	wheelbase	Er	m		
	suspension pressure	Bp	bar		
full trailer					
	maximum mass	P	kg		
	axle load - axle 1	P1	kg		
	axle load - axle 2	P2	kg		
	axle load - axle 3	P3	kg		
	C of G height	h	m		
	wheelbase	Er	m		
	suspension press. - RA	Bp	bar		

brake data		axle 1	axle 2	axle 3
actuator size				
cam lever length	mm			
brake factor				
threshold torque	kgm			
brake approval number				
tyre size				

☐ drum ☐ disc

trailer modulator mounting position:

☐ towards front

☐ towards rear

EBS configuration: ☐ 2S/2M ☐ 4S/2M ☐ 4S/2M+1 ☐ 4S/3M

sensed axle(s): c,d ☐ axle 1 ☐ axle 2 ☐ axle 3
e,f ☐ axle 1 ☐ axle 2 ☐ axle 3

lift axle(s): ☐ axle 1 ☐ axle 2 ☐ axle 3
lift axle raised at ☐ kph (0 - 30kph)
lift axle drops at ☐ % laden axle load

output switch 1: ☐ lift axle control (ILS1) ☐ speed switch (ISS)
ISS options: ☐ standard ☐ inverted ☐ colas ☐ kph

output switch 2: ☐ lift axle control (ILS2) ☐ ECAS ☐ ELM

lining wear sensors ☐ indicator in every pad ☐ sensor in one caliper

roll stability support (RSS) ☐ single tyres ☐ twin tyres

connector IN/OUT1 ☐ external axle load sensor
☐ traction help (TH) ☐ traction help + solenoid (TH+)

connector IN/OUT2 ☐ ISO 7638 gateway ☐ telematic (A) ☐ telematic (B)
☐ external brake (command) pressure sensor

warning lamp function: ☐ out after 2 sec. (ECE-R13) ☐ out above 7kph

Vehicle Inspectorate

Details of Notifiable Alterations or Application for Change of Plated Details of a Goods Motor Vehicle or Trailer or Application for Design, Weight Certificate

ROAD TRAFFIC ACT 1988, PART II, SECTION 49
VEHICLES EXCISE AND REGISTRATION ACT 1994 SECTION 61A

Completed forms should be sent to the Goods Vehicle Centre, 91/92 The Strand, Swansea, SA1 2DH, or to any Goods Vehicle Testing Station

PART A - YOUR DETAILS AND LEGAL DECLARATION

Company Name _____

Name & Address for correspondence _____

_____

Post Code _____

I (print full name) _____
hereby declare that, to the best of my knowledge, all the statements in this application are true. I understand that to make a false statement is an offence under Section 174(2) of the Road Traffic Act 1988.

Signature _____ Date _____

PART B - VEHICLE DETAILS

Registration Mark (If notifying a cherished transfer write the old registration mark on the top row, and the new one below)

Vehicle identification or chassis number

Trailer Ministry Number

Make _____ Model _____ No of axles _____

PART C - FEE

1 If the vehicle has a plating certificate are *any* of the details shown on the plating certificate affected? Please tick YES ☐ NO ☐ If YES, a fee is payable

Your local goods Vehicle Testing Station can tell you what the fee is. Please enclose a cheque made payable to the Vehicle Inspectorate, or write your customer account here _____

2. If you are applying for a design weight certificate please tick ☐ (a fee is payable)

PART D - EXAMINATION APPOINTMENT

Note: Please complete this section in all cases (we reserve the right to inspect the vehicle)

At which Testing Station would you like the vehicle inspected? (Please give station name, and, if you know it, the number) Station _____ No _____

Which day and date would you prefer? _____ AM or PM _____

Do you want an annual test at the same time? _____ Remember to enclose the test fee as well

NOTE: If the vehicle carries dangerous goods it must be presented safe for test.

PART E - DISCLOSURE OF INFORMATION

We occasionally release details of our customers to reputable organisations. If you do not want us to release your details, tick the box ☐

Official Use Only

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