

■ **ABS/ASR „D“-
„Cab“ - Version
Anti-Lock Braking System
for Commercial Vehicles**

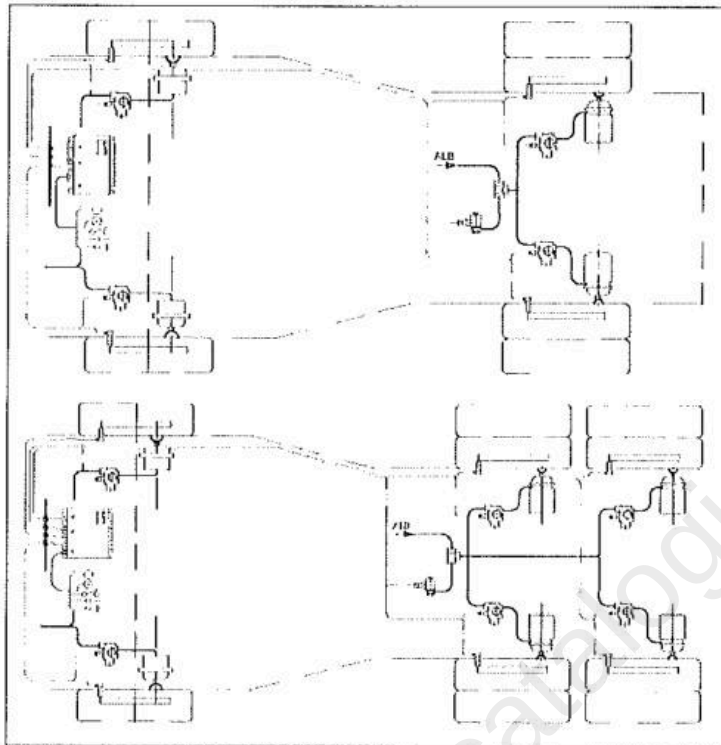
■ **1st Edition**

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Vehicle Control Systems
An American Standard Company

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The following may also be included:

- q a normal switch or push-button for the speed-setting function
- q a switch for temporarily switching of the limiting speed if the vehicle does not have a synchromesh gearbox.

For vehicles with two axles, the 4S-4M system is the best choice. For vehicles with three axles, the 6S-6M system is available. A compromise regarding system cost and performance is achieved if not every wheel has a sensor, i.e. is not individually controlled. Different ECU variants are available for this purpose.

Fig. 2

Vehicle	4 x 2	6 x 2	6 x 4	8 x 4
ABS - System				
4S - 3M	front axle: MAR rear axle: IR			
4S - 4M	front axle: MIR rear axle: IR	front axle: MIR 1 st rear axle: IR 2 nd rear axle: secondary control by sides	front axle: MIR 1 st rear axle: IR 2 nd rear axle: secondary control by sides	1 st front axle: MIR 2 nd front axle: secondary control by sides 1 st rear axle: IR 2 nd rear axle: secondary control by sides
6S - 4M	—	—	front axle: MIR rear axles: MSR	front axle: MIR rear axles: MSR
6S - 6M 6x2 ASR	—	front axle: MIR 1 st rear axle: IR 2 nd rear axle: IR	front axle: MIR 1 st rear axle: IR 2 nd rear axle: IR without ASR function	front axle: MIR 2 nd front axle: secondary control by sides 1 st rear axle: IR 2 nd rear axle: IR without ASR function
6S - 6M 6x4 ASR	—	front axle: MIR 1 st rear axle: IR 2 nd rear axle: IR without ASR function	front axle: MIR 1 st rear axle: IR 2 nd rear axle: IR	front axle: MIR 2 nd front axle: secondary control by sides 1 st rear axle: IR 2 nd rear axle: IR

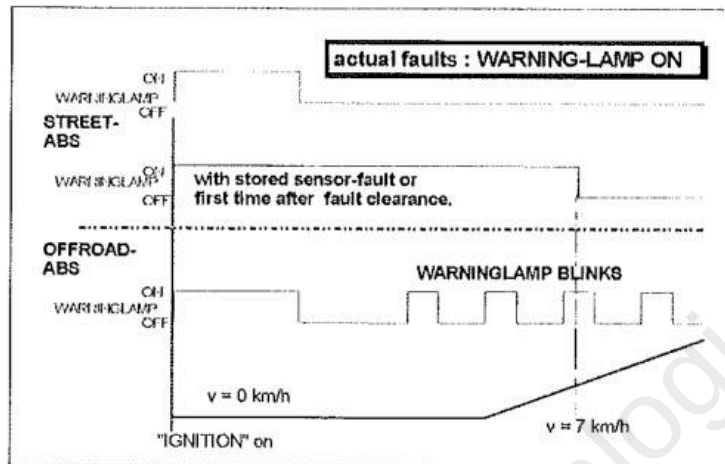
4.2.2 Function when ignition is switched on and vehicle is still stationary

In the normal mode (on-road ABS) the warning lamp goes off in keeping with ECE R 13 Supplement 07 while the vehicle is stationary. The warning lamp indicates defective sensors

detected when the ignition was first switched on.

It is possible that maintenance work (changing the lining) increases the clearance of the sensors because the workshop staff failed to re-adjust them (pushing sensors home).

In order to prevent that the vehicle is driven before this has been put right, WABCO recommends that the error memory of the ECU is deleted when maintenance work has been done. This puts the ECU into its workshop mode. To leave this mode, the speed signals received from all wheels have to be measured again. When this has been achieved successfully, the ECU will automatically return to the normal mode.



4.2.3 Sensor input ports

Different types of inductive sensors can be connected. In order to prevent any interference potential, the induced sinusoidal sensor voltage is filtered.

Different types of errors are detected to permit selective deactivation.

Types of errors: interrupt and short circuit to ground or plus and crossed or wrong connections are detected even before the vehicle has moved off and stored in the error memory. Dynamic sensor defects are detected by analysing the signalling frequency (implausible signals such as erratic changes).

To allow the ECU to detect any clearance or wheel wobble on the brake test bench, the ECU for the

D-version has been designed in such a way that the peak-peak voltage is measured and its highest and lowest readings stored in the RAM for at least one wheel revolution.

This is designed for the inspection after installation; the ECU should not be disconnected from the system for this purpose.

It is important to know that the filtered sensor voltages may result in different values being measured using an oscilloscope or a multimeter. In normal operation, measuring supports the safety functions and helps identify any errors in the installation, such as excessive clearances, wrong installation of a pole wheel, or a soiled pole wheel.

4.2.4 Grounding of output stage for modulators

Every solenoid is connected between a switching (+) transistor and one of the two (diagonal) disconnecting (ground) transistors.

This allows redundant interruption of the valve current, thereby ensuring that a single defect does not cause

ABS to be switched off. If there is a defect inside the ECU, the system is partially or fully shut down. The transistors are checked periodically. A distinction is made between parting of a cable and a defective output stage.

have to take into account the wide range of voltages.

WABCO recommends to measure these components and the resistance of the sensor insulation at least while the vehicle is being manufactured (cab, axles).

By turning only one wheel and reading out the wheel speed, the proper allocation of sensors can be checked.

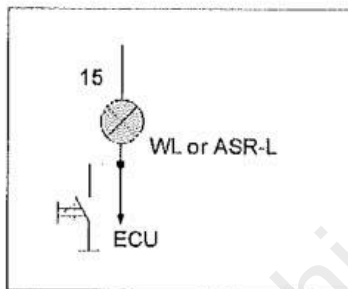
Any run-out deviation of the pole wheel and the clearance between sensor and pole wheel can be computed by reading out the analogue values of the minimum and maxi-

mum voltages of the sensor. For this purpose it is necessary to turn the wheel at a consistently slow speed, and the size of the pole wheel must be known.

The output voltage of the sensor depends on the clearance and the size of the pole wheel. The monitoring facility integrated in the ECU takes into account any excessive clearance in combination with small pole wheel sizes. In production, the clearance between the sensor and the pole wheel should be set properly.

WABCO offers different types of equipment for testing after final assembly.

5.4.4 Flash code



To activate the flash code, the warning lamp or the ASR lamp has to be grounded for a certain time by pushing a button. The type of lamp used depends on the type of ECU or the parameters set for it. The length of time the push-button is held down determines the mode. After releasing that push-button, the lamp is on for another 0.5 second to confirm that the push-button has been recognized and that the ECU has accepted stimulation of the flash code. Electronic Control Unit = ECU.

If an error is perceived, or if the lamp is grounded for longer than 6.3 seconds, the flash code is ended. If the flash code is stimulated (via the warning lamp) for longer than 15 seconds, a warning lamp defect might be perceived.

Testing equipment that grounds all dashboard lamps activates the flash code. ABS ECUs for such vehicles usually inhibit the flash code.

Error code	Repair instructions
2 . n	Check modulator cable. Inlet (IV) or outlet (OV) or joint cable is continuously or temporarily disconnected to shorted to ground or plus.
3 . n	Amplitude of sensor signal is too low. Check wheel bearing clearance, wheel wobble, push sensor in further. Check sensor wiring and plug-in connections for intermittent contact. Another possible cause: gear was engaged on slippery road surface causing a driving wheel to slip for 16 seconds.
4 . n	Check sensor cable. Interrupt, short to plus or ground or between cables IG/GM has been detected.
5 . n	Check sensor cables and plugs for intermittent contact. Check pole wheel for any damage. Check if cables of two sensors have been confused. Tyres or number of teeth on pole wheel are different.
6 - n	Check pole wheel for any damage, missing teeth. Check for wobble. Check using WABCO Sensor Probe. Replace pole wheel as required. If clearance errors have also been stored, adjust the clearance (pushing in the sensor).
7 -1	ECU with PROP: Check cable and speedometer signal. C3/B7 signal calibration, check tyre sizes. gear lever shows "neutral" or has been manipulated. Electronic engine control: check interface wiring or other ECUs. High slip / dynamometer? One axle was much faster than others?
7 -2	Check cable. Output interrupt or shorted to ground or battery voltage.
7 -3	Check cable. Output interrupt or shorted to ground or battery voltage. ECU with SAE J1922 or SAE J1939: Check other ECUs. No communication via interface.
7 -4	Check cable and bulb. Was flash code button pushed down for longer than 16 sec?
7 -5	Check cable and parameters. A differential brake valve has been detected but no engine control feature. If "ASR self-learning" is inhibited, engine control feature CAN, PWM, PROP has been detected.
7 -6	Check cable. Output interrupt or shorted to ground or battery voltage.
8 -1	Check voltage supply and fuses. Supply voltage is too low at times.
8 -2	Check generator and battery. Supply voltage was too high for longer than 5 sec.
8 -3	Replace the ABS (ASR) ECU if the error occurs repeatedly.
8 -4	Wrong ECU or wrong parameter settings on the ECU.
8 -5	Check ECU ground wiring and shared valve lines IV/OV.

7.



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Full Version Available

Wabco ABS/ASR D Cab Service Manual

Wabco ABS/ASR D Cab component service manual, with system functions, components, ASR description and installation. 50-page English PDF.

VIEW THE FULL MANUAL

<https://machinecatalogic.com/wabco-abs-asr-d-cab-service-manual/>

File Pages: 50 · File Count: 1 · File Language: English