

TWINGO

3 Chassis

38C ANTI-LOCK BRAKING SYSTEM

MK70 ABS

Vdiag No: 04

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V1

Edition Anglaise

"The repair procedures given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The procedures may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle: **New Twingo**
Function concerned: **MK70 ABS**

Computer name: **TEVES ABS**
Vdiag No.: **04**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- Assisted fault finding (integrated into the **diagnostic tool**), Dialogys.

Wiring Diagrams:

- Visu-Schéma (CD-ROM), paper.

Type of diagnostic tools

- **CLIP**

Special tooling required

Special tooling required	
Multimeter	
Elé. 1681	Universal bornier

3. REMINDERS

Procedure

To run diagnostics on the vehicle computers, switch on the ignition using the key.

Faults

Faults are declared as either present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but have not been diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is switched on after the **+ after ignition feed** (without any system components being active).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the instructions in the **Notes** section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:

- the electrical lines which correspond to the fault,
- the connectors on these lines (corrosion, bent pins, etc.),
- the **resistance** of the component detected as faulty,
- the condition of the wires (melted or split insulation, wear).

Conformity check

The aim of the conformity check is to check statuses and parameters that do not produce a fault display on the **diagnostic tool** when they are inconsistent. Therefore, this stage is used to:

- carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint.
- check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

This section gives the fault finding procedures for statuses and parameters and the conditions for checking them.

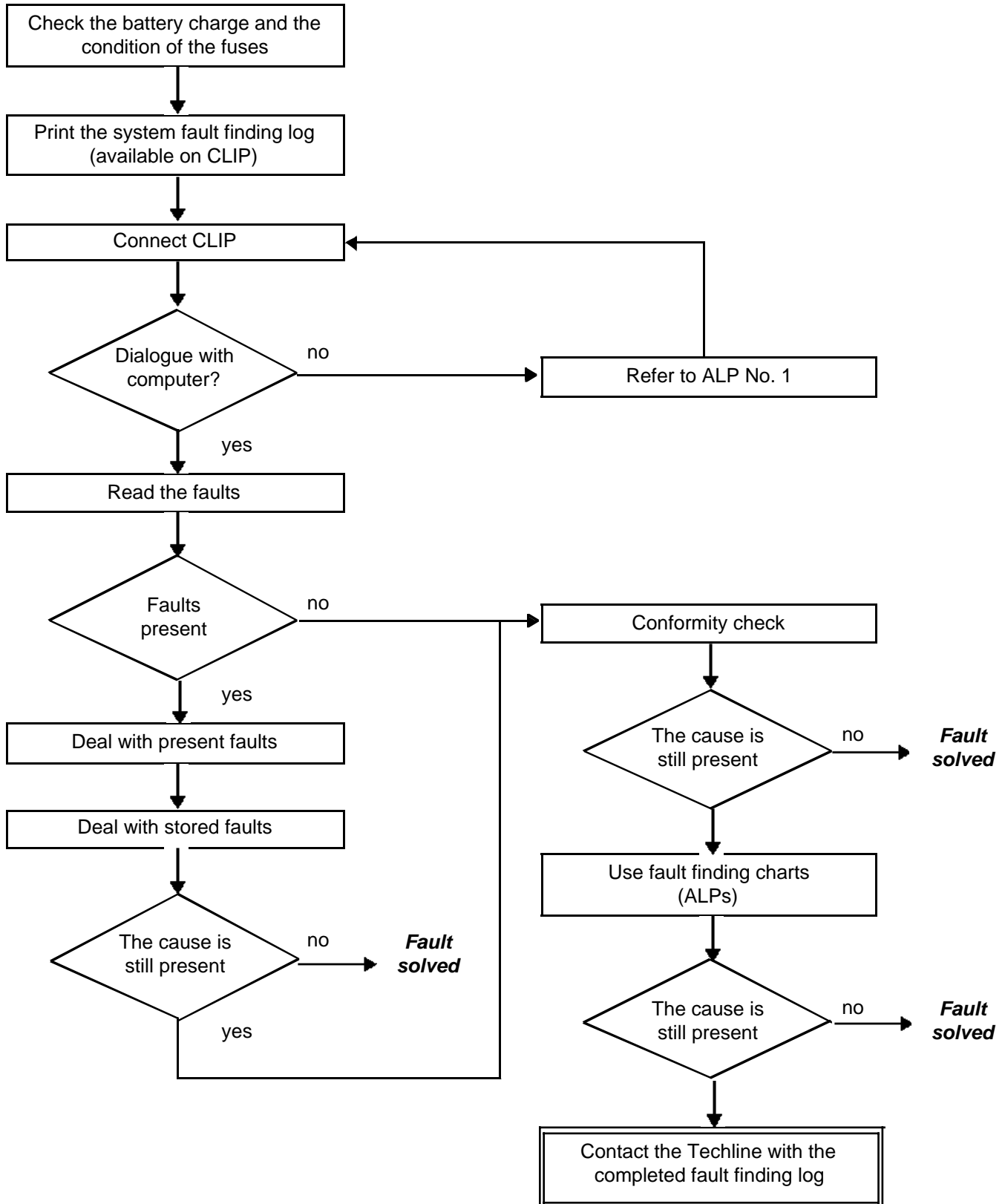
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaint**.

A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (CONTINUED)

Wiring check

Note:

Carry out each requested check visually. Do not remove a connector if it is not required.

Note:

Repeated connections and disconnections alter the functionality of the connectors and increase the risk of poor electrical contact. Limit the number of connections/disconnections as much as possible.

Note:

The check is carried out on the 2 parts of the connection. There may be two types of connections:

- Connector / Connector
- Connector / Device

Fault finding problems

Disconnecting the connectors and/or manipulating the wiring harness may temporarily remove the cause of a fault.

Electrical measurements of voltage, resistance and insulation are generally correct, especially if the fault is not present when the analysis is made (stored fault).

Visual inspection of the connection:

- Check that the connector is connected correctly and that the male and female parts of the connection are correctly coupled.

Visual inspection of the area around the connection:

- Check the condition of the mounting (pin, strap, adhesive tape, etc.) if the connectors are attached to the vehicle.
- Check that there is no damage to the wiring trim (sheath, foam, adhesive tape, etc.) near the wiring.
- Check that there is no damage to the electrical wires at the connector outputs, in particular on the insulating material (wear, cuts, burns, etc.).

Disconnect the connector to continue the checks.

Visual inspection of the plastic casing:

- Check that there is no mechanical damage (casing crushed, cracked, broken, etc.), in particular to the fragile components (lever, lock, openings, etc.).
- Check that there is no heat damage (casing melted, darker, deformed, etc.).
- Check that there are no stains (grease, mud, liquid, etc.).

Visual inspection of the metal contacts:

(The female contact is called CLIP. The male contact is called TAB.)

- Check that there are no bent contacts (the contact is not inserted correctly and can come out of the back of the connector). The spring contact of the connector when pulling the wire slightly.
- Check that there is no damage (folded tabs, clips open too wide, blackened or melted contact, etc.).
- Check that there is no oxidation on the metal contacts.

Visual inspection of the sealing:

(Only for watertight connectors)

- Check for the seal on the connection (between the 2 parts of the connection).
- Check the seal at the back of the connectors:
 - For *unit* joints (1 for each wire), check that the unit joints are present on each electrical wire and that they are correctly positioned in the opening (level with the housing). Check that plugs are present on openings which are not used.
 - For a *grommet* seal (one seal which covers the entire internal surface of the connector), check that the seal is present.
 - For *gel* seals, check for gel in all of the openings without removing the excess or any protruding sections (it does not matter if there is gel on the contacts).
 - For *hotmelt* sealing (heat-shrink sheath with glue), check that the sheath has contracted correctly on the rear of the connectors and electrical wires, and that the hardened glue comes out of the side of the wire.
- Check that there is no damage to any of the seals (cuts, burns, significant deformation, etc.).

If a fault is detected, repair or replace the wiring (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**)

5. FAULT FINDING LOG



IMPORTANT

IMPORTANT

Any fault on a complex system requires thorough fault finding with the appropriate tools. The **FAULT FINDING LOG**, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT.

You will always be asked for this log:

- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for
- warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any damage or injury:

- check the battery voltage to avoid incorrect operation of computer functions,
- use the proper tools.

It is forbidden to carry out a road test with the diagnostic tool in dialogue with the ECU because the ABS and Electronic Brake Distribution functions are deactivated. Braking pressure is identical on both vehicle axles (risk of a spin under heavy braking).

The computer/hydraulic unit assembly:

- Located to the left of the bulkhead in the engine compartment.

Front wheel sensors:

- Screwed into the stub-axle, each front sensor has an intermediate connector located behind the plastic wheel arch liner.

Rear wheel sensor intermediate connectors:

- Located in a sealed unit under the vehicle.

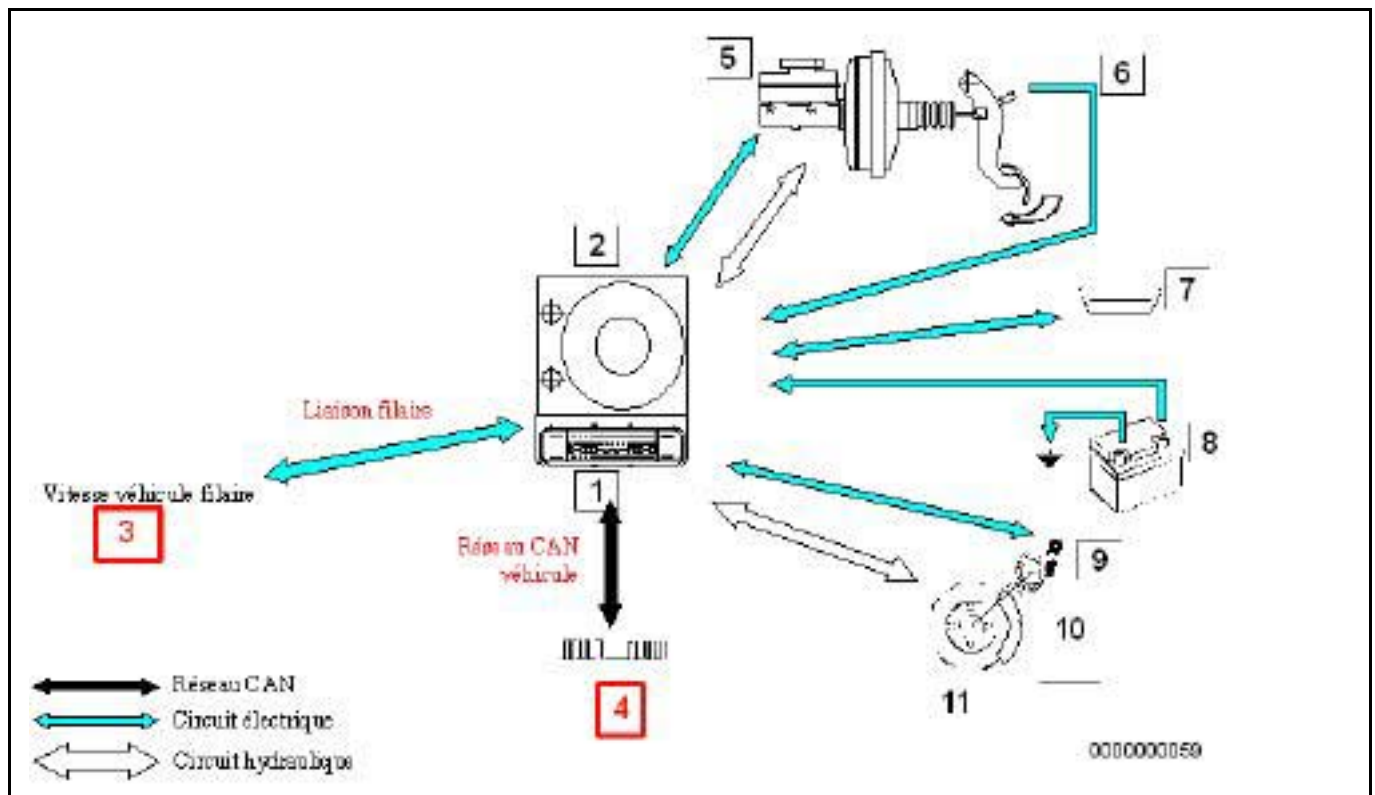
Rear wheel sensors:

- Screwed into the rear brake drum flange.

Brake light switch:

- Located on the pedal assembly.

Number	Description
1	Computer
2	Hydraulic unit (8 solenoid valves)
3	Electric power assisted steering
4	Instrument panel - engine management
5	Passive brake servo
6	Brake lights switch
7	Diagnostic socket
8	Battery
9	Wheel speed sensor
10	Target
11	Brake discs



EBD (electronic braking distribution):

The **EBD** optimises the brakeforce distribution between the front and rear axles. This function ensures vehicle stability under braking.

ABS (anti-lock braking system):

The **ABS** prevents the wheels from locking when braking. This function allows the vehicle to be steered under braking and ensures vehicle stability under braking.

MSR (engine torque control):

This is a function that enhances the **ABS** function. It prevents the drive wheels from spinning excessively when lifting off the accelerator or changing down a gear on a low grip surface, by allowing the engine to regulate the driving torque of the engine (resisting torque compensation) to "relaunch" the wheels.

The system also supplies the other computers with information on the vehicle speed via a wire connection for the radio, the power steering and the electric sunroof, and via the multiplex network for the other computers. The **ABS** computer supplies the multiplex network with the odometry for the instrument panel and navigation system. If heavy braking produces very rapid deceleration, the **ABS** computer sends out a request to the **UCH** (passenger compartment connection unit) via the multiplex network to ask it to switch on the hazard warning lights (depending on the law in the relevant country).

Wheel speed sensor:

Gives the speed of each of the vehicle's wheels. The analysis of the right/left-hand speeds makes it possible to calculate in what direction the vehicle is turning.

Brake lights switch:

Visual indication of the brake pedal position. It makes it possible to tell if the driver is braking or not.

Wire connection (vehicle speed):

The **ABS** computer is best suited to transmit the vehicle speed to the other computers. To do this, the **ABS** transmits the vehicle speed on the **CAN** network. However, some computers are not connected to the **CAN** network, this is why the **ABS** is fitted with a "vehicle speed" wire output. Fault finding is not run on this connection by the **ABS** computer. This enables the consumers of this signal to perform the necessary checks during their own fault finding procedure, or to check the connection by observing the customer complaint on the consumer (for example, increase in the volume of the radio if the speed increases, electric power-assisted steering).

Fault finding warning lights programming

Instrument panel warning light				Instrument panel message	Meaning
Brake faults	ABS system		STOP		No computer.
	ABS flashing at 8 Hz (quickly)				Tachometric index not programmed.
	ABS flashing at 8 Hz (quickly)	SERVICE			Tachometric index not programmed and versions not programmed.
Brake faults flashing at 2 Hz	ABS flashing at 2 Hz (slowly)			No message	ABS computer is in fault finding mode.
	ABS system	SERVICE		Check the ABS	ABS fault.
Brake faults	ABS system	SERVICE	STOP	Braking system fault	EBD fault.

Note:

The **STOP** warning light is always accompanied by a single audible warning (1 beep).

REPLACING THE COMPUTER

When replacing the computer (see **MR411 Mechanical systems, 38C, Brake computer, removal - refitting**), apply the following procedure:

- **switch off the ignition,**
- **replace the computer,**
- **enter the VIN number using command VP001 "Write VIN",**
- **configure the tachometric index with command VP007 "Tachometric index",**
- **configure the vehicle parameters with command VP004 "Vehicle parameters",**
- **configure the gearbox type fitted to the vehicle with command CF079 "Gearbox type",**
- **enter the After-Sales date with command VP006 "Enter last After-Sales operation date",**
- **perform a road test followed by a fault reading to confirm that the system is operating correctly.**

SETTINGS

- VP001:** Enter VIN.
This command allows the **vehicle identification number** to be entered into the computer.
Use this command each time the computer is replaced. The VIN (VF..) is engraved on the manufacturer's plate on the front right-hand door pillar and stamped on the body under the windscreen on the left-hand side.
- VP004:** Vehicle parameters.
This command configures the engine type configuration, the braking definition and the body type.
Select command **VP004** on the **diagnostic tool**.
- VP006:** Write last After Sales operation date.
Whenever the **ABS** system is worked on in the shop, the date must be entered.
Select command **VP006 "Write date of last After-Sales operation"** on the **diagnostic tool**.
Enter the operation date with the tool keyboard.
- VP007:** Tachometric index.
This command is used to program the computer memory with the index required to calculate vehicle speed from the speed at which the wheels turn.
The **MK70 ABS** computer supplies the vehicle speed signal to all areas where this information is needed (instrument panel, engine management, etc.). This vehicle speed signal replaces the one supplied by the speed sensor located on the gearbox.
The **ABS** computer calculates the vehicle speed from the speed of the wheels and the circumference of the tyres fitted on the vehicle.

Note:

The vehicle speed is delivered by wire (**connection 47F**) to the radio, to the electric power-assisted steering, to the electric sunroof and by the multiplex network for the other computers.

The tyre circumference must be programmed into the memory of a new computer. This consists of entering an index "X" using command VP007 "Tachometric index" on the diagnostic tool.

Once the number has been entered using the **VP007** command, delete the fault in the computer memory and then switch off the ignition. Use parameter **PR030 Tachometric index** to check that the index entered has been correctly registered.

CONFIGURATIONS

- CF079:** Gearbox type.
Use this command to configure the gearbox type fitted on the vehicle.

OTHER COMMANDS

- LC008:** Gearbox type.
This command tells you the gearbox type configured on the vehicle.

Tool fault	Associated DTC	Diagnostic tool title
DF001	50 Short circuit	Computer supply
DF006	5015	Front left-hand wheel speed sensor circuit
DF007	5035	Rear left-hand wheel speed sensor circuit
DF008	501F	Front left-hand wheel speed sensor signal
DF009	503F	Rear left-hand wheel speed sensor signal
DF010	50D3	Pump motor circuit
DF017	50C3	Computer
DF020	5140	Tachometric index programming
DF026	5005	Front right-hand wheel speed sensor circuit
DF027	5025	Rear right-hand wheel speed sensor circuit
DF028	500F	Front right-hand wheel speed sensor signal
DF029	502F	Rear right-hand wheel speed sensor signal
DF055	5143	Vehicle parameter programming
DF066	50E2	No injection multiplex signal
DF090	5041	Front right-hand wheel target
DF091	5042	Front left-hand wheel target
DF092	5043	Rear right-hand wheel target
DF093	5044	Rear left-hand wheel target
DF096	5148	Computer internal electronic irregularity
DF098	50E4	No UCH multiplex signal
DF119	5150	Gearbox type configuration
DF121	D11D	Torque requested not available
DF152	50E6	Multiplex network
DF188	50C6	Brake light switch circuit
DF219	D132	ABS multiplex signal consistency
DF229	5002	Front right-hand wheel speed
DF230	5011	Front left-hand wheel speed
DF231	5021	Rear right-hand wheel speed
DF232	5031	Rear left-hand wheel speed
DF250	D117	Engine speed multiplex signal
DF251	D118	Effective average torque multiplex signal
DF252	D119	Torque request multiplex feedback signal
DF253	D120	Recalculated torque multiplex signal
DF254	D12F	Resisting torque multiplex signal
DF311	50E3	No BVR multiplex signal

DF001 PRESENT OR STORED	<p>COMPUTER SUPPLY VOLTAGE</p> <p>1.DEF: Feed voltage too low 2.DEF: Feed voltage too high</p>
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NOTES	<p>Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored.</p>
	<p>Use the Technical Note wiring diagram for New Twingo.</p>

1.DEF	NOTES	<p>Special notes: This fault will appear in a road test (speed greater than 12 mph (20 km/h)) if the computer supply voltage is below the minimum operating voltage (9.4 V < min battery voltage < 10 V).</p>
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Check the tightness and the condition of the battery terminals.
Check the battery voltage and carry out any work required to obtain the correct voltage (**10 V < battery voltage < 17 V**).
Check the charging circuit (see **80A, battery**).

Check the condition and position of the **15A** and **20A** fuses in the **engine fuse and relay box**.
Check the condition and position of the **F10 5 A** fuse in the **Passenger compartment fuse box**.
Consult section **81C, Fuses**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

- Connector of **component 1094** disconnected, check the **insulation and continuity** of connection **MAH** of **component 1094** (tightness, oxidisation etc.).
- Connectors of **component 1094** and **R107** disconnected, check the **insulation and continuity** of connection **AP5** between **component 1094** and intermediate connector **R107**.
- Check the **insulation and continuity** of connection **AP5** between intermediate connector **R107** and **component 1016**.
- Connectors of **component 1094** and **R67** disconnected, check the **insulation and continuity** of connections **BP8** and **BP14** between **component 1094** and intermediate connector **R67**.
- Check the **insulation and continuity** of connections **BP8** and **BP14** between intermediate connector **R67** and **component 597**.

If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.
If the checks reveal no faults, perform a conformity check of **component 597**.

If all the checks are in order, reconnect the computer and clear the computer fault memory.
Exit the fault finding procedure and carry out a road test.
If the fault is still present, contact the Techline.

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF001 CONTINUED	
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2.DEF	NOTES	Special notes: This fault will appear in a road test (speed greater than 12 mph (20 km/h)) if the computer supply voltage is above the maximum operating voltage (17 V < maximum battery voltage < 19 V). This fault may appear when starting using a charger or a 24 V battery.
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Check the charging circuit (See **MR411 Mechanical systems, 16A, Starting-charging**).

If all the checks are in order, reconnect the computer and clear the computer fault memory.
Exit the fault finding procedure and carry out a road test.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF006 PRESENT OR STORED	FRONT LEFT-HAND WHEEL SPEED SENSOR CIRCUIT 1.DEF: Fault on the wheel speed sensor circuit
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NOTES	Conditions for applying the fault finding procedure to stored faults: Follow the fault finding procedure described below for DF006 stored .
	Use the Technical Note wiring diagram for New Twingo .

DF006 PRESENT	NOTES	None
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
 Check the connection and condition (possible damage to the wiring) of the connector of **component 153**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Check for a voltage of approximately **12 V** between the two connections of component **153** near component **1094**.
Is the voltage measured correct?

YES	Swap the 2 front wheel speed sensors over. Clear the computer fault memory. Switch off the ignition. Switch on the ignition again. If the fault initially declared as DF006 Front left wheel speed sensor circuit has become a present DF026 Front right wheel speed sensor circuit , replace the wheel speed sensor. If the fault remains on the same side, the wiring between the computer and the sensor is faulty. Check insulation and continuity of connections 4C and 4E between components 153 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.
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NO	Check insulation and continuity of connections 4C and 4E between components 153 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If the fault is still present, contact the Techline.
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AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF006 CONTINUED	
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DF006 STORED	NOTES	None
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
 Check the connection and condition (possible damage to the wiring) of the connector of **component 153**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Swap the 2 front wheel speed sensors over.
 Clear the computer fault memory.
 Carry out a road test followed by another check with the **diagnostic tool**.

If a fault, which was initially registered as **DF006 Front left-hand wheel speed sensor** becomes present **DF026 Front right-hand wheel speed sensor**, replace the wheel speed sensor (see **MR411 Mechanical, 38C, ABS, Wheel speed sensor: Removal - Refitting**).
 If the fault remains on the same side, the wiring between the computer and the sensor is faulty.
 Check **insulation and continuity of connections 4C and 4E** between **components 153 and 1094**.
 Also check the **insulation** between these 2 connections.
 If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF007 PRESENT OR STORED	REAR LEFT-HAND WHEEL SPEED SENSOR CIRCUIT 1.DEF: Fault on the wheel speed sensor circuit
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NOTES	Conditions for applying the fault finding procedure to stored faults: Follow the fault finding procedure described below for DF007 stored .
	Use the Technical Note wiring diagram for New Twingo .

DF007 PRESENT	NOTES	None
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 151**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check for a voltage of approximately **12 V** between the two connections of component **151** near **component 1094**.
Is the voltage measured correct?

YES	Check insulation and continuity of connections 4G and 4H between components 151 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If the checks reveal no faults, replace the speed sensor (see MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting).
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NO	Check insulation and continuity of connections 4G and 4H between components 151 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If all the checks are in order, contact Techline.
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AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF007 CONTINUED	
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<i>DF007 STORED</i>	NOTES	None
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
 Check the connection and condition (possible damage to the wiring) of the connector of **component 153**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Check **insulation and continuity of connections 4G and 4H** between **components 151 and 1094**.
 Also check the **insulation** between these 2 connections.
 If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.
 Clear the computer fault memory.
 Carry out a road test followed by another check with the **diagnostic tool**.

If the fault is still present, contact Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF008 PRESENT OR STORED	<p><u>FRONT LEFT-HAND WHEEL SPEED SENSOR SIGNAL</u></p> <p>1.DEF: Inconsistent sensor signal 2.DEF: No vehicle speed signal 3.DEF: Inconsistent vehicle speed</p>
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NOTES	<p>Priorities when dealing with a number of faults: Deal with fault DF006 Front left wheel speed sensor circuit first if it is present.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).</p>

<p>Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.</p>
<p>Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth. If there is non-conformity, replace the target.</p>
<p>Check the connection and condition (possible damage to the wiring) of the connector of component 1094. Check the connection and condition (possible damage to the wiring) of the connector of component 153. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for a voltage of approximately 12 V between the two connections of the connector of component 153 near component 1094. If a 12 V feed is not present, contact the Techline.</p>
<p>If all the checks are in order, swap the 2 front wheel speed sensors. Clear the computer fault memory. Switch off the ignition. Switch the ignition back on and carry out a road test. If a fault, which was initially registered as DF008 Front left-hand wheel speed sensor signal has become present DF028 Front right-hand wheel speed sensor signal, replace the wheel speed sensor (see MR 411 Mechanical systems, 38C, Wheel speed sensor: Removal - Refitting). If the fault stays on the same side, the target is faulty, replace the active sensor bearing.</p>

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF009 PRESENT OR STORED	<p>REAR LEFT-HAND WHEEL SPEED SENSOR SIGNAL</p> <p>1.DEF: Inconsistent sensor signal 2.DEF: No vehicle speed signal 3.DEF: Inconsistent vehicle speed</p>
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NOTES	<p>Priorities when dealing with a number of faults: Deal with fault DF007 Rear left-hand wheel speed sensor circuit first if it is present.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).</p>

<p>Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.</p>
<p>Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth. If there is non-conformity, replace the target.</p>
<p>Check the connection and condition (possible damage to the wiring) of the connector of component 1094. Check the connection and condition (possible damage to the wiring) of the connector of component 151. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for a voltage of approximately 12 V between the two connections of the connector of component 151 near component 1094. If a 12 V feed is not present, contact the Techline.</p>
<p>If all the checks are in order, swap the 2 rear wheel brake drums. Clear the computer fault memory. Switch off the ignition. Switch the ignition back on and carry out a road test. If the fault initially declared as DF009 "Rear left-hand wheel speed sensor signal" has become present DF029 "Rear right-hand wheel speed sensor signal", replace the complete drum (see MR411 Mechanical systems, 33A, Rear axle components). If the fault remains on the same side, replace the speed sensor (see MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting). Important, do not forget to refit the drums to the correct wheels. If the fault is still present, contact the Techline.</p>

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF010 PRESENT OR STORED	<u>PUMP MOTOR CIRCUIT</u>
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NOTES	<p>Special notes: If this fault appears after the computer is replaced, the pump motor connection has been twisted. Separate the hydraulic unit from the computer and restore the connection to working order.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present after: Brake pedal held down and AC016 Test pump motor actuator command.</p>
	<p>Use the Technical Note wiring diagram for New Twingo.</p>

Check the tightness and the condition of the battery terminals.
Check the condition and position of the **15A** and **20A** fuses in the **engine fuse and relay box**.
Check the condition and position of the **F10 5A** fuse in the **Passenger compartment fuse box**.
Consult section **81C, Fuses**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

- Connector of **component 1094** disconnected, check the **insulation and continuity** of connection **MAH** of **component 1094** (tightness, oxidisation etc.).
- Connectors of **component 1094** and **R107** disconnected, check the **insulation and continuity** of connection **AP5** between **component 1094** and intermediate connector **R107**.
- Check the **insulation and continuity** of connection **AP5** between intermediate connector **R107** and **component 1016**.
- Connectors of **component 1094** and **R67** disconnected, check the **insulation and continuity** of connections **BP8** and **BP14** between **component 1094** and intermediate connector **R67**.
- Check the **insulation and continuity** of connections **BP8** and **BP14** between intermediate connector **R67** and **component 597**.

If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.

Use command **AC016 Pump motor test**. If the fault is still present (no sound of the pump turning or loss of communication with the computer), replace the entire unit (pump mechanically seized, pump short circuited, etc.).

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF017 PRESENT OR STORED	COMPUTER 1.DEF: Computer fault
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NOTES	Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure whether the fault is present or stored.
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Clear the computer fault memory, exit the fault finding and switch off the ignition.
Carry out another check using the **diagnostic tool**.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF020 PRESENT	<p><u>TACHOMETRIC INDEX PROGRAMMING</u> 1.DEF: Tachometric index not programmed</p>
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NOTES	None
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The **MK70 ABS** computer with the tachometric function supplies the vehicle speed signal to all areas where this information is needed (instrument panel, engine management, etc.).
 This vehicle speed signal replaces the one supplied by the speed sensor located on the gearbox.
 The **ABS** computer calculates the vehicle speed from the speed of the wheels and the circumference of the tyres fitted on the vehicle.
The tyre circumference must be programmed into the memory of a new computer. This consists of entering an index "X" using command VP007 "TACHOMETRIC INDEX" using the diagnostic tool.
 Once the index has been entered using the **VP007** command, clear the computer fault memory and then switch off the ignition.
 Use the **PR030** parameter to check that the index has been stored correctly.

If the fault is still present, contact the Techline.

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF026 PRESENT OR STORED	FRONT RIGHT-HAND WHEEL SPEED SENSOR CIRCUIT 1.DEF: Fault on the wheel speed sensor circuit
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NOTES	<p>Conditions for applying the fault finding procedure to stored faults: Follow the fault finding procedure described below for DF026 stored.</p> <p>Use the Technical Note wiring diagram for New Twingo.</p>
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DF026 PRESENT	NOTES	None
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
 Check the connection and condition (possible damage to the wiring) of the connector of **component 152**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Check for a voltage of approximately **12 V** between the two connections of component **152** near component **1094**.
Is the voltage measured correct?

YES	<p>Swap the 2 front wheel speed sensors over. Clear the computer fault memory. Switch off the ignition. Switch on the ignition again.</p> <p>If a fault, which was initially registered as DF026 Front right-hand wheel speed sensor circuit becomes present DF006 Front left-hand wheel speed sensor circuit, replace the wheel speed sensor (see MR411 Mechanical, 38C, ABS, Wheel speed sensor: Removal - Refitting).</p> <p>If the fault remains on the same side, the wiring between the computer and the sensor is faulty.</p> <p>Check the insulation and continuity of connections 4M and 4N between components 152 and 1094.</p> <p>Also check the insulation between these 2 connections.</p> <p>If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.</p>
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NO	<p>Check the insulation and continuity of connections 4M and 4N between components 152 and 1094.</p> <p>Also check the insulation between these 2 connections.</p> <p>If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.</p> <p>If all the checks are in order, contact Techline.</p>
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AFTER REPAIR	<p>Clear the computer fault memory.</p> <p>Carry out a road test followed by another check with the diagnostic tool.</p>
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DF026 CONTINUED	
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DF026 STORED	NOTES	None
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
 Check the connection and condition (possible damage to the wiring) of the connector of **component 152**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Check **the insulation and continuity of connections 4M and 4N** between **components 152 and 1094**.
 Also check the **insulation** between these 2 connections.
 If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.
 Swap the 2 front wheel speed sensors over.
 Clear the computer fault memory.
 Carry out a road test followed by another check with the **diagnostic tool**.

If a fault, which was initially registered as **DF026 Front right-hand wheel speed sensor circuit** becomes **present DF006 Front left-hand wheel speed sensor circuit**, replace the wheel speed sensor (see **MR411 Mechanical, 38C, ABS, Wheel speed sensor: Removal - Refitting**).
 If the fault remains on the same side, the wiring between the computer and the sensor is faulty.
 Check **the insulation and continuity of connections 4M and 4N** between **components 152 and 1094**.
 Also check the **insulation** between these 2 connections.
 If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF027 PRESENT OR STORED	REAR RIGHT-HAND WHEEL SPEED SENSOR CIRCUIT 1.DEF: Fault on the wheel speed sensor circuit
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NOTES	Conditions for applying the fault finding procedure to stored faults: Follow the fault finding procedure described below for DF027 stored .
	Use the Technical Note wiring diagram for New Twingo .

DF027 PRESENT	NOTES	None
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 150**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check for a voltage of approximately **12 V** between the two connections of component **150** near **component 1094**.
Is the voltage measured correct?

YES	Check the insulation and continuity of connections 4S and 4T between components 150 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If the checks reveal no faults, replace the speed sensor (see MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting).
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NO	Check the insulation and continuity of connections 4S and 4T between components 150 and 1094 . Also check the insulation between these 2 connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring. If all the checks are in order, contact Techline.
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AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF027 CONTINUED	
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DF027 STORED	NOTES	None
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Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
 Check the connection and condition (possible damage to the wiring) of the connector of **component 150**.
 If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
 Check the **insulation and continuity** of **connections 4S** and **4T** between **components 150** and **1094**.
 Also check the **insulation** between these 2 connections.
 If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the wiring, otherwise replace the wiring.
 Clear the computer fault memory.
 Carry out a road test followed by another check with the **diagnostic tool**.

If the fault is still present, contact Techline.

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF028 PRESENT OR STORED	<p><u>FRONT RIGHT-HAND WHEEL SPEED SENSOR SIGNAL</u></p> <ol style="list-style-type: none"> 1.DEF: Inconsistent sensor signal 2.DEF: No vehicle speed signal 3.DEF: Inconsistent vehicle speed
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NOTES	<p>Priorities when dealing with a number of faults: Deal with fault DF026 Front right wheel speed sensor circuit first if it is present.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).</p>

	<p>Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.</p>
	<p>Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth. If there is non-conformity, replace the target.</p>
	<p>Check the connection and condition (possible damage to the wiring) of the connector of component 1094. Check the connection and condition (possible damage to the wiring) of the connector of component 152. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for a voltage of approximately 12 V between the two connections of component 152 near component 1094. If a 12 V feed is not present, contact the Techline.</p>
	<p>If all the checks are in order, swap the 2 front wheel speed sensors. Clear the computer fault memory. Switch off the ignition. Switch the ignition back on and carry out a road test. If a fault, which was initially registered as DF028 Front right-hand wheel speed sensor signal has become present DF008 Front left-hand wheel speed sensor signal, replace the wheel speed sensor (see MR411 Mechanical systems, 38C, Wheel speed sensor: Removal - Refitting). If the fault stays on the same side, the target is faulty, replace the active sensor bearing.</p>

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF029 PRESENT OR STORED	<p>REAR RIGHT-HAND WHEEL SPEED SENSOR SIGNAL</p> <p>1.DEF: Inconsistent sensor signal 2.DEF: No vehicle speed signal 3.DEF: Inconsistent vehicle speed</p>
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NOTES	<p>Priorities when dealing with a number of faults: Deal first with fault DF027 Rear right-hand wheel speed sensor circuit if it is present.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).</p>

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
If there is a lot of grease on the target, contact the Techline.
Check that the wheel speed sensor mounting is in good condition.
Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.
If there is non-conformity, replace the target.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
Check the connection and condition (possible damage to the wiring) of the connector of **component 150**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.
Check for a voltage of approximately **12 V** between the two connections of component **150** near **component 1094**.
If a **12 V** feed is not present, contact the Techline.

If all the checks are in order, swap the 2 rear brake drums. Clear the computer fault memory.
Switch off the ignition. Switch the ignition back on and carry out a road test.
If the fault initially declared as **DF029 Rear right-hand wheel speed sensor circuit signal has become present DF009 Rear left-hand wheel speed sensor circuit signal**, replace the complete drum. (see **MR411 Mechanical systems, 33A Rear axle components**).
If the fault remains on the same side, replace the speed sensor (see **MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting**).
Important, do not forget to refit the drums to the correct wheels.
If the fault is still present, contact the Techline.

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF055 PRESENT	<u>VEHICLE PARAMETER PROGRAMMING</u> 1.DEF: Absence of vehicle parameter programming
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NOTES	None
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Configure the vehicle parameters with command **VP004 "Vehicle parameters"** in accordance with the vehicle configuration.

Clear the fault memory, and initialise the computer (switch the **+** after **ignition feed switch off and on again**).

Check for any possible faults.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF066 PRESENT OR STORED	<u>INJECTION MULTIPLEX SIGNAL ABSENT</u>
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NOTES	<p>Special notes: Even though it is stored in the computer, this fault does not cause the warning light to come on or a fault message, because the ABS system is not faulty. Perform fault finding on the injection system using the diagnostic tool.</p> <p>Note: The injection computer does not always store these transient faults as quickly as the ABS computer. If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. After solving the injection system problem, erase the faults from the ABS computer memory.</p>
	<p>Priority in the event of a number of faults: Deal with fault DF152 Multiplex network first if it is present or stored.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.</p>

Perform a multiplex network test and an injection check (see **MR413 Fault finding, 13B, Diesel injection** or **17B, Petrol injection**) using the **diagnostic tool**.
If the fault is still present, contact the Techline.

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF090 PRESENT OR STORED	<u>FRONT RIGHT-HAND WHEEL TARGET</u>
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NOTES	<p>Priorities when dealing with a number of faults: Deal with fault DF026 Front right wheel speed sensor circuit first if it is present.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).</p>

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
If there is a lot of grease on the target, contact the Techline.
Check that the wheel speed sensor mounting is in good condition.
Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.
If there is non-conformity, replace the target.
If the fault is still present, contact the Techline.

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF091 PRESENT OR STORED	<u>FRONT LEFT-HAND WHEEL TARGET</u>
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NOTES	Priorities when dealing with a number of faults: Deal with fault DF006 Front left wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.
Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.

Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.
If there is a lot of grease on the target, contact the Techline.
Check that the wheel speed sensor mounting is in good condition.
Check the conformity of the target (condition, number of teeth = **48**) using the special command **SC001 Check target teeth**.
If there is non-conformity, replace the target.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF092 PRESENT OR STORED	<u>REAR RIGHT-HAND WHEEL TARGET</u>
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NOTES	<p>Priorities when dealing with a number of faults: Deal with fault DF027 right rear wheel speed sensor circuit first if it is present.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).</p>

<p>Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.</p>
<p>Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth. If there is non-conformity, replace the complete drum. If the fault is still present, contact the Techline.</p>

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF093 PRESENT OR STORED	<u>REAR LEFT-HAND WHEEL TARGET.</u>
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NOTES	Priorities when dealing with a number of faults: Deal with fault DF007 Rear left-hand wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.
Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth . If there is non-conformity, replace the complete drum. If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF096 PRESENT OR STORED	COMPUTER INTERNAL ELECTRONIC FAULT 1.DEF: Fault in EEPROM
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NOTES	None
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Clear the fault memory using the **diagnostic tool** and switch off the ignition.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF098 PRESENT OR STORED	<u>NO UCH MULTIPLEX SIGNAL</u>
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NOTES	<p>Special notes: Even though it is stored in the computer, this fault does not cause the warning lights to come on or a fault message, because the ABS system is not faulty. Perform fault finding on the UCH (Passenger compartment connection unit) using the diagnostic tool. Note: After repairing the fault in the UCH (Passenger compartment connection unit), clear the fault memory in the ABS system.</p>
	<p>Priority in the event of a number of faults: Deal with fault DF152 Multiplex network first if it is present or stored.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.</p>

Check the UCH (Passenger compartment connection unit) using the diagnostic tool .
Run a multiplex network test (see 88B, Multiplex). If the fault is still present, contact the Techline.

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF119 PRESENT	GEARBOX TYPE CONFIGURATION DEF: Configuration absent or incorrect
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NOTES	Priorities when dealing with a number of faults: Deal with fault DF097 No automatic transmission multiplex signal first if it is present.
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Check the gearbox type configuration with the **diagnostic tool**, using command **LC008 Gearbox type**.
If the configuration is not correct, configure the gearbox type present on the vehicle using command **CF079 Gearbox type**.
Clear the computer fault memory, exit the fault finding and switch off the ignition.
Switch on the ignition again and carry out a new check using the **diagnostic tool**.
If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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<p>DF121 PRESENT OR STORED</p>	<p><u>TORQUE REQUESTED NOT AVAILABLE</u></p>
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<p>NOTES</p>	<p>Special notes: Although it is stored in the computer, the ABS system is not faulty. Perform fault finding on the injection system using the diagnostic tool.</p> <p>Note: The injection computer does not always store these transient faults as quickly as the ABS computer. If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. After solving the injection system problem, erase the faults from the ABS computer memory.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test.</p>

Carry out fault finding on the injection system (see **MR413 Fault Finding, 13B, Diesel injection** or **17B, Petrol injection**).
If the fault is still present, contact the Techline.

<p>AFTER REPAIR</p>	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF152 PRESENT OR STORED	<p>MULTIPLEX NETWORK 1.DEF: Multiplex line connection fault</p>
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NOTES	<p>Special notes: If several computers are affected by a similar multiplex network fault, contact the Techline to check the cases previously noted first.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: Apply the fault finding procedure as below.</p>
	<p>Use the Technical Note wiring diagram for New Twingo.</p>

<p>If no other computer has detected the failure of the multiplex network but only the absence of ABS frames, carry out the following checks: Check the connection and condition (possible damage to the wiring) of the connector of component 1094. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check the Insulation and continuity of connections 133B, 133C and HK of component 1094. Also check the insulation between these connections. If the connection or connections are faulty (see Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair), repair the connectors or wiring, otherwise replace the wiring.</p>
<p>Run a multiplex network test (see 88B, Multiplex). If the fault is still present, contact the Techline.</p>

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF188 PRESENT OR STORED	<u>BRAKE LIGHT SWITCH CIRCUIT</u> 1.DEF: Inconsistency
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NOTES	Conditions for applying the fault finding procedure to stored faults: Clear the stored fault, carry out a road test at a speed of > 36 mph (60 km/h) and test the brakes using ABS . Use the interpretation of the fault if it recurs.
	Special notes: The fault is detected if the computer does not detect a brake lights switch status change for 4 acceleration/braking cycles and/or the contact is closed for over 6 minutes with the vehicle speed above 24 mph (40 km/h) .

Using the diagnostic tool, check on the statuses screen that **ET017 Brake pedal** recognises the depressed and released positions of the brake pedal.
If the pedal position is not detected, use the interpretation of **ET017**.

If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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DF219 PRESENT OR STORED	<u>ABS MULTIPLEX SIGNAL CONSISTENCY</u>
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NOTES	<p>Special notes: Although it is stored in the computer, the ABS system is not faulty. Perform fault finding on the injection system using the diagnostic tool. Note: The injection computer does not always store these transient faults as quickly as the ABS computer. If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. After solving the injection system problem, erase the faults from the ABS computer memory.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.</p>

Carry out fault finding on the injection system (see **MR413 Fault Finding, 13B, Diesel injection or 17B, Petrol injection**).
If the fault is still present, contact the Techline.

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF229 PRESENT OR STORED	FRONT RIGHT-HAND WHEEL 1.DEF: Vehicle speed sensor signal consistent
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NOTES	Priorities when dealing with a number of faults: Deal with fault DF026 Front right wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

<p>Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres.</p> <p>Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.</p>
<p>Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary.</p> <p>If there is a lot of grease on the target, contact the Techline.</p> <p>Check that the wheel speed sensor mounting is in good condition.</p> <p>Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth.</p> <p>If there is non-conformity, replace the target.</p>
<p>Check the connection and condition (possible damage to the wiring) of the connector of component 1094.</p> <p>Check the connection and condition (possible damage to the wiring) of the connector of component 152.</p> <p>If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring.</p> <p>Check for a voltage of approximately 12 V between the two connections of component 152 near component 1094.</p> <p>If a 12 V feed is not present, contact the Techline.</p>
<p>If all the checks are in order, swap the 2 front wheel speed sensors. Clear the computer fault memory.</p> <p>Switch off the ignition. Switch the ignition back on and carry out a road test.</p> <p>If a fault, which was initially registered as DF229 front right-hand wheel speed has become present DF230 front left-hand wheel speed, replace the wheel speed sensor (see MR411 Mechanical systems, 38C, Wheel speed sensor: Removal - Refitting).</p> <p>If the fault stays on the same side, the target is faulty, replace the active sensor bearing.</p>

AFTER REPAIR	<p>Clear the computer fault memory.</p> <p>Carry out a road test followed by another check with the diagnostic tool.</p>
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DF230 PRESENT OR STORED	FRONT LEFT-HAND WHEEL SPEED 1.DEF: Vehicle speed sensor signal consistent
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NOTES	Priorities when dealing with a number of faults: Deal with fault DF006 Front left wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

<p>Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.</p>
<p>Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth. If there is non-conformity, replace the target.</p>
<p>Check the connection and condition (possible damage to the wiring) of the connector of component 1094. Check the connection and condition (possible damage to the wiring) of the connector of component 153. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for a voltage of approximately 12 V between the two connections of the connector of component 153 near component 1094. If a 12 V feed is not present, contact the Techline.</p>
<p>If all the checks are in order, swap the 2 front wheel speed sensors. Clear the computer fault memory. Switch off the ignition. Switch the ignition back on and carry out a road test. If a fault, which was initially registered as DF230 front left-hand wheel speed has become present DF229 front right-hand wheel speed, replace the wheel speed sensor (see MR411 Mechanical systems, 38C, Wheel speed sensor: Removal - Refitting). If the fault stays on the same side, the target is faulty, replace the active sensor bearing.</p>

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF231 PRESENT OR STORED	<p>REAR RIGHT-HAND WHEEL 1.DEF: Vehicle speed sensor signal consistent</p>
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NOTES	<p>Priorities when dealing with a number of faults: Deal with fault DF027 right rear wheel speed sensor circuit first if it is present.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).</p>

<p>Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.</p>
<p>Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth. If there is non-conformity, replace the target.</p>
<p>Check the connection and condition (possible damage to the wiring) of the connector of component 1094. Check the connection and condition (possible damage to the wiring) of the connector of component 150. If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for a voltage of approximately 12 V between the two connections of component 150 near component 1094. If a 12 V feed is not present, contact the Techline.</p>
<p>If all the checks are in order, swap the 2 rear brake drums. Clear the computer fault memory. Switch off the ignition. Switch the ignition back on and carry out a road test. If the fault initially declared as DF231 "rear right-hand wheel speed" has become DF232 "rear left-hand wheel speed" present, replace the complete drum (see MR411 Mechanical systems, 33A, Rear axle component). If the fault remains on the same side, replace the speed sensor (see MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting). Important, do not forget to refit the drums to the correct wheels. If the fault is still present, contact the Techline.</p>

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF232 PRESENT OR STORED	REAR LEFT-HAND WHEEL 1.DEF: Vehicle speed sensor signal consistent
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NOTES	Priorities when dealing with a number of faults: Deal with fault DF007 Rear left-hand wheel speed sensor circuit first if it is present.
	Conditions for applying the fault finding procedure to stored faults: The fault is declared present during a road test (in excess of 12 mph (20 km/h) for 2 minutes).

Check the condition of the axle assemblies (impacts, damage, etc.) and the conformity and good condition of the tyres. Check that the braking system (condition of brake pads, sealing, sticking, bleed, bearing clearance, etc.) is in good condition.
Visually inspect the condition of the target (for clogging, metallic contamination, bearing grease, etc.) and clean using compressed air if necessary. If there is a lot of grease on the target, contact the Techline. Check that the wheel speed sensor mounting is in good condition. Check the conformity of the target (condition, number of teeth = 48) using the special command SC001 Check target teeth . If there is non-conformity, replace the target.
Check the connection and condition (possible damage to the wiring) of the connector of component 1094 . Check the connection and condition (possible damage to the wiring) of the connector of component 151 . If the connector is faulty (see Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair), repair the connector, otherwise replace the wiring. Check for a voltage of approximately 12 V between the two connections of the connector of component 151 near component 1094 . If a 12 V feed is not present, contact the Techline.
If all the checks are in order, swap the 2 rear wheel brake drums. Clear the computer fault memory. Switch off the ignition. Switch the ignition back on and carry out a road test. If the fault initially declared as DF232 "rear left-hand wheel speed" has become present DF231 "rear right-hand wheel speed" , replace the complete drum. (see MR411 Mechanical systems, 33A Rear axle components). If the fault remains on the same side, replace the speed sensor (see MR411 Mechanical systems, 38C Wheel speed sensor, Removal - Refitting). Important, do not forget to refit the drums to the correct wheels. If the fault is still present, contact the Techline.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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<p>DF250 DF251 DF252 DF253 DF254 PRESENT OR STORED</p>	<p><u>ENGINE SPEED MULTIPLEX SIGNAL</u> <u>AVERAGE EFFECTIVE TORQUE MULTIPLEX SIGNAL</u> <u>TORQUE REQUEST MULTIPLEX FEEDBACK SIGNAL</u> <u>CALCULATED TORQUE MULTIPLEX SIGNAL</u> <u>RESISTING TORQUE MULTIPLEX SIGNAL</u></p>
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<p>NOTES</p>	<p>Special notes: Although it is stored in the computer, the ABS system is not faulty. Perform fault finding on the injection system using the diagnostic tool. Note: The injection computer does not always store these transient faults as quickly as the ABS computer. If no fault is stored in the injection computer, start the engine; if there is no fault present, contact the Techline. After solving the injection system problem, erase the faults from the ABS computer memory.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.</p>

Carry out fault finding on the injection system (see **MR413 Fault Finding, 13B, Diesel injection** or **17B, Petrol injection**).
If the fault is still present, contact the Techline.

<p>AFTER REPAIR</p>	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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DF311 PRESENT OR STORED	<u>NO BVR MULTIPLEX SIGNAL</u>
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NOTES	<p>Special notes: Even though it is stored in the computer, this fault does not cause the warning lights to come on or a fault message, because the ABS system is not faulty. Perform fault finding on the BVR (sequential gearbox) using the diagnostic tool. Note: After repairing the fault in the BVR (sequential gearbox), clear the fault memory in the ABS system.</p>
	<p>Priority in the event of a number of faults: Deal with fault DF152 Multiplex network first if it is present or stored.</p>
	<p>Conditions for applying the fault finding procedure to stored faults: The fault is declared present when the engine is started up.</p>

<p>Check the gearbox type configuration with the diagnostic tool, using command LC008 Gearbox type. If the configuration is not correct, configure the gearbox type present on the vehicle using configuration command CF079 Gearbox type.</p>
<p>Check the BVR (sequential gearbox) using the diagnostic tool.</p>
<p>Run a multiplex network test (see 88B, Multiplex). If the fault is still present, contact the Techline.</p>

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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NOTES

Only check conformity after a full check with the **diagnostic tool**.

SUB-FUNCTION: BRAKE REGULATION

Order	Function	Parameter or Status checked or Action	Display and Notes	Fault finding
1	Diagnostic tool dialogue		ABS system	Apply ALP1.
2	Computer configuration	PR030: Tachometric index	Check that the index entered corresponds to the tyres fitted to the vehicle (see Clip help).	See Configurations and Programming (VP007).
3	Brake pedal not depressed detection	ET017: Brake pedal	Status " RELEASED " confirmed, brake pedal not depressed.	If there is a fault, use the interpretation for ET017 Brake pedal.
4	Depressed brake pedal detection	ET017: Brake pedal	Status " DEPRESSED " confirmed, brake pedal depressed.	If there is a fault, use the interpretation for ET017 Brake pedal.
5	Vehicle parameter reading	PR063: Vehicle parameters	Check that the version corresponds to the vehicle being tested (see the Clip Help)	See Configuration and programming (VP004 "Vehicle parameters").
6	Gearbox type reading	LC008: Gearbox type	Check that the gearbox selected corresponds to that fitted on the vehicle.	See Configuration and programming (CF079 "Gearbox type").

ABS STATUS SUMMARY TABLE

Tool status	Diagnostic tool title
ET017	Brake pedal

ABS PARAMETER SUMMARY TABLE

Tool parameter	Diagnostic tool title
PR001	Front right-hand wheel speed
PR002	Front left-hand wheel speed
PR003	Rear right-hand wheel speed
PR004	Rear left-hand wheel speed
PR005	Computer feed voltage
PR030	Tachometric index
PR038	Vehicle speed
PR063	Vehicle parameters

ET017	<u>BRAKE PEDAL</u>
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NOTES	<p>Special notes: Only carry out the checks if the PRESSED and RELEASED statuses are inconsistent with the pedal position.</p>
	<p>Use the Technical Note wiring diagram for New Twingo.</p>

<p>STATUS "RELEASED" Brake pedal depressed</p>

<p>If brake lights operate:</p> <ul style="list-style-type: none"> – Check the continuity of connection 65A between components 160 and 1094. If the connector is faulty (see NT6015, Repairing electrical wiring, wiring: Precaution for repairs), repair the connector, otherwise replace the wiring. <p>If the brake lights are not working:</p> <ul style="list-style-type: none"> – Check the condition, mounting and adjustment of the brake light switch and the conformity of the bulbs. – Remove the brake light switch and check that it is operating correctly: 		
	Connection continuity	Connection insulation
Switch pressed (Brake pedal released)	AP10 and 5A	AP10 and 65A
Switch released (Brake pedal depressed)	AP10 and 65A	AP10 and 5A
<ul style="list-style-type: none"> – Replace the switch if necessary. <p>Intermediate connector R107 and component 160 and 1081 disconnected:</p> <ul style="list-style-type: none"> – Check the continuity and insulation of connection AP10 between component 1016 and intermediate connector R107. – Check the continuity and insulation of connection AP10 between component 160 and intermediate connector R107. <p>If the connector is faulty (see NT6015, Repairing electrical wiring, wiring: Precaution for repairs), repair the connector or the wiring, otherwise replace the wiring.</p>		

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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**ET017
CONTINUED 1**

Connectors of **components 645, 172, 173, 639 and 1094**, intermediate connectors **R107 and R15** and connector of **component 119** (if present on the vehicle) disconnected from **connection 65A**:

- Check the **insulation** of **connection 65A** between **component 160** and intermediate connector **R107**.
- Check the **insulation** of **connection 65A** between **component 172** and intermediate connector **R107**.
- Check the **insulation** of **connection 65A** between **component 173** and intermediate connector **R107**.
- Check the **insulation** of **connection 65A** between intermediate connectors **R107 and R15**.
- Check the **insulation** of **connection 65A** between **component 639** and intermediate connector **R15**.
- Check the **insulation** of **connection 65A** between **component 645** and intermediate connector **R107**.

If the connector is faulty (**see NT6015, Repairing electrical wiring, wiring: Precaution for repairs**), repair the connector, otherwise replace the wiring.

- Check for **+ 12 V after ignition feed** on connection **AP10** of **component 1016** to earth **MAH**.

If the checks reveal no faults, carry out a check of each component associated with connection **65A** and **AP10** (short circuits).
Check the condition and positioning of the **F5 5A** fuse (**see MR411 Mechanical systems, 81C, Fuses: 16A**).

**STATUS
DEPRESSED:
Brake pedal
released**

- Check the condition, mounting and adjustment of the brake light switch and the conformity of the bulbs.
- Remove the brake light switch and check that it is operating correctly:

	Connection continuity	Connection insulation
Switch pressed (Brake pedal released)	AP10 and 5A	AP10 and 65A
Switch released (Brake pedal depressed)	AP10 and 65A	AP10 and 5A

- Replace the switch if necessary.
- Connectors of **components 645, 172, 173, 639 and 1094**, intermediate connectors **R107 and R15** and connector of **component 119** (if present on the vehicle) disconnected from connection **65A**
- Check the **insulation** of **connection 65A** between **component 160** and intermediate connector **R107**.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ET017
CONTINUED 2

- Check **the insulation** of **connection 65A** between **component 172** and intermediate connector **R107**.
- Check **the insulation** of **connection 65A** between **component 173** and intermediate connector **R107**.
- Check **the insulation** of **connection 65A** between intermediate connectors **R107** and **R15**.
- Check **the insulation** of **connection 65A** between **component 639** and intermediate connector **R15**.
- Check **the insulation** of **connection 65A** between **component 645** and intermediate connector **R107**.

If the connector is faulty (see **NT6015, Repairing electrical wiring, wiring: Precaution for repairs**), repair the connector, otherwise replace the wiring.

If the checks reveal no faults, carry out a check of each component associated with **connection 65A** (internal component faults).

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

PARAMETERS

PR001: Front right-hand wheel speed.

PR002: Front left-hand wheel speed.

PR003: Rear right-hand wheel speed.

PR004: Rear left-hand wheel speed.
These parameters indicate the speed in **mph (km/h)** of each wheel on the vehicle.

PR005: Computer supply voltage.
This parameter indicates the computer supply voltage in **volts**.

PR030: Tachometric index.
This parameter specifies the tachometric index entered in the computer for the tyres fitted to the vehicle.

PR038: Vehicle speed.
This parameter indicates the vehicle speed in **mph (km/h)**.

PR063: Vehicle parameters.
This parameter shows whether the configuration (**VP004 "Vehicle parameters"**) matches the vehicle undergoing fault finding.

STATUS

ET017: Brake pedal
This status gives the position (depressed or released) of the brake pedal

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

CLEARING

RZ001: Fault memory.
This command is used for clearing the computer's stored faults.

SPECIAL COMMANDS

SC001: Check target teeth.
This command tests the condition of the teeth on each wheel.
Select command **SC001 "Check target teeth"** and follow the instructions.
The test result should indicate **48 sprockets**.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

Tool command	Diagnostic tool title
AC003	Front left-hand wheel solenoid valves
AC004	Front right-hand wheel solenoid valves
AC005	Rear left-hand wheel solenoid valves
AC006	Rear right-hand wheel solenoid valves
AC016	Pump motor test
AC153	Bleed front left-hand wheel
AC154	Bleed front right-hand wheel
AC155	Bleed rear left-hand wheel
AC156	Bleed rear right-hand wheel
AC195	Vehicle speed signal
AC196	Hazard warning light activation request

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

AC003 AC004 AC005 AC006	<u>FRONT LEFT-HAND WHEEL SOLENOID VALVES</u> <u>FRONT RIGHT-HAND WHEEL SOLENOID VALVES</u> <u>REAR LEFT-HAND WHEEL SOLENOID VALVES</u> <u>REAR RIGHT-HAND WHEEL SOLENOID VALVES</u>
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NOTES	Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.
	Before using the commands, check that the battery is fully charged.

The previous 4 commands allow the hydraulic check of each wheel.
Raise the vehicle in order to be able to rotate the wheels, and check that they rotate freely.
Keep the brake pedal depressed to prevent the wheel being tested from being turned by hand (do not brake so firmly that full braking power is reached).
Select and confirm the command of the wheel being examined (e.g. Front left-hand wheel solenoid valves, etc.)
Turn the wheel concerned by hand; **5 locking/unlocking cycles** should be noted on the wheel.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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AC016	<u>PUMP MOTOR TEST</u>
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NOTES	Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.
	Before using the command, check that the battery is fully charged.

This command is used to test the pump motor control circuit.
Select command **AC016 Pump Motor Test**.
The motor must run for **5 seconds**.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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AC153 AC154 AC155 AC156	<u>BLEED FRONT LEFT-HAND WHEEL</u> <u>BLEED FRONT RIGHT-HAND WHEEL</u> <u>BLEED REAR LEFT-HAND WHEEL</u> <u>BLEED REAR RIGHT-HAND WHEEL</u>
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NOTES	Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.
	Before using the commands, check that the battery is fully charged.

These 4 commands should only be used if you observe lengthening of the brake pedal travel during a road test with **ABS** regulation (the system should have been bled in advance using the conventional procedure). See ALP8.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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AC195	<u>VEHICLE SPEED SIGNAL</u>
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NOTES	<p>Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.</p>
	<p>Before using the command, check that the battery is fully charged.</p>

This command is used to generate a speed other than **0 mph** at the computer's vehicle speed wire output (**connection 47F**) for users of that signal (radio, sunroof).
This command has no visible effect on the dashboard speedometer needle.

- **Radio:** Turn on the radio and make sure that the Adjust volume as a function of speed function is active. Run command **AC195**. During the command, you should notice the volume of the sound increase and then decrease. (**See 86A, radio**).
- **Sunroof:** This command has no visible effect on the sunroof. This command changes the activation threshold of the anti-pinch system (the energy required to close the sunroof varies with vehicle speed due to aerodynamic constraints). (**See 87D ELECTRIC WINDOWS - SUNROOF**).

AFTER REPAIR	<p>Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool.</p>
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AC196	<u>HAZARD WARNING LIGHT ACTIVATION REQUEST</u>
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NOTES	Conditions of use of the command. Ignition on, engine stopped and vehicle speed zero.
	Before using the command, check that the battery is fully charged.

This command sends a hazard warning light activation request to the **UCH** (Passenger compartment connection unit) to test their operation in the event of emergency braking (depending on **UCH, Passenger Compartment Connection Unit** configuration).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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NOTES

Only consult this customer complaint after a complete check with the diagnostic tool.

FAULTS DETECTED ON BRAKING WITH ABS/BRAKING REGULATION

LOCKING OF ONE OR MORE WHEELS	ALP 2
PULLING	ALP 3
DRIFT	ALP 4
UNEXPECTED ABS OPERATION AT LOW SPEEDS AND SLIGHT PEDAL PRESSURE	ALP 5
UNEXPECTED ABS OPERATION ON A POOR ROAD SURFACE	ALP 6
UNEXPECTED ABS OPERATION WHEN SPECIAL EQUIPMENT USED (CAR PHONE, CB, ETC.)	ALP 7
EXTENSION OF BRAKE PEDAL TRAVEL FOLLOWING REGULATION PHASE (WITH LEAKING PEDAL WHEN STARTING REGULATION PHASE)	ALP 8
SPONGY PEDAL	ALP 9
BRAKE PEDAL VIBRATION	ALP 10
NOISES FROM THE PUMP, PIPES OR HYDRAULIC UNIT	ALP 11

OTHER CASES

NO DIALOGUE WITH THE ABS COMPUTER	ALP 1
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ALP 1	No dialogue with the ABS computer
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .
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Check that the **diagnostic tool** is not causing the fault by trying to establish dialogue with a computer on another vehicle. If the tool is not at fault, and dialogue cannot be established with any other computer on the same vehicle, the cause could be a faulty computer interfering on the multiplex network.
Check the battery voltage and carry out the necessary operations to obtain the correct voltage (**9.5 V < Battery voltage < 17.5 V**, see **MR411 Mechanical systems, 16A, Starting-charging**).

Run fault finding on the multiplex network, using the **diagnostic tool** (see **MR413 Fault finding, 88B, Multiplex**).

Check the condition and position of the **15A** and **20A** fuses in the **engine fuse and relay box**.
Check the condition and position of the **F10 5 A** fuse in the **Passenger compartment fuse box**.
Consult section **81C, Fuses**.

Check the connection and condition (possible damage to the wiring) of the connector of **component 1094**.
If the connector is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the connector, otherwise replace the wiring.

Check that the supply to the computer is correct:

- Connector of **component 1094** disconnected, check the **insulation and continuity** of connection **MAH** of **component 1094** (tightness, oxidation etc.).
- Connectors of **component 1094** and **R107** disconnected, check the **insulation and continuity** of connection **AP5** between component **1094** and intermediate connector **R107**.
- Check the **insulation and continuity** of connection **AP5** between intermediate connector **R107** and **component 1016**.
- Connectors of **component 1094** and **R67** disconnected, check the **insulation and continuity** of connections **BP8** and **BP14** between **component 1094** and intermediate connector **R67**.
- Check the **insulation and continuity** of connections **BP8** and **BP14** between intermediate connector **R67** and **component 597**.

If the connection or connections are faulty (see **Technical Note 6015A, Electrical wiring repair, Wiring: Precautions for repair**), repair the connectors or wiring, otherwise replace the wiring.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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**ALP 1
CONTINUED**

Ensure that the supply to the diagnostic socket is correct:

Check the condition and position of the **F12 5 A** fuse in the **Passenger compartment fuse box**.

Consult section **81C, Fuses**.

Connector of **component 645** of **connection BP19** disconnected:

- Check for **+ after ignition feed** on **connection BP19** of **component 225**.

If the **+ after ignition feed** is not present on **connection BP 19**, check **component 1016**.

- Check **connections NAM** and **MAM** of **component 225**.

If the connection is faulty (see **Technical Note 6015A, Repairing electrical wiring, wiring: Precautions for repair**), repair the wiring, otherwise replace it.

If dialogue has still not been established after these checks, contact the Techline.

AFTER REPAIR

Clear the computer fault memory.

Carry out a road test followed by another check with the **diagnostic tool**.

ALP 2	Locking of one or more wheels
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . Check the conformity of the mechanical components.
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NOTES	<p>Locking of wheels on a vehicle fitted with ABS or squealing of the tyres, which feels like locking to the customer, may be linked to normal operation of the system and should not always be considered a fault:</p> <ul style="list-style-type: none"> – Locking is allowed below 4 mph (6 km/h) (system regulation will not be activated). – Braking with ABS system regulation on very poor roads (significant grating).
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However, if the wheel(s) is/are actually locking, lift the vehicle in order to be able to rotate the wheels and check:

- Possible inversion when connecting the speed sensors.

Using parameters **PR001, PR002, PR003 and PR004**, rotate the wheels slowly and check the consistency of the results obtained.

If the value measured is zero, rotate the other wheels to confirm an electrical inversion of the sensors and repair the wiring harness.

- Possible inversion of pipes on the hydraulic unit.

Use commands Front left wheel solenoid valves, Front right wheel solenoid valves, Rear left wheel solenoid valves and Rear right wheel solenoid valves while depressing the brake pedal and check for 10 unlocking/locking cycles on the wheel concerned (see **Dealing with command modes**). If the 10 cycles are not carried out on the wheel tested (wheel remains locked), check whether they are carried out on another wheel (confirmation of a reversal: repair).

If the 10 cycles are not detected on a wheel and the pipes have not been reversed, change the hydraulic unit.

Check that the sensor holder does not rotate (depending on fitting).

Check the quality of the mounting of the wheel speed sensors (correct clipping for the front wheels).

Check the conformity of the targets: condition, **number of teeth = 48 (using command SC001 Check target teeth)**.

If the fault is still present after these checks, replace the hydraulic unit.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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ALP 3

Pull

NOTES

Only consult this customer complaint after a complete check with the **diagnostic tool**.
Check the conformity of the mechanical components.

Disconnect one wheel speed sensor.
Start the engine and ensure that only the **ABS system** fault warning light comes on. Do not drive the vehicle if the brake fault warning light is also lit, as the "EBD" (brake limiter) function is no longer ensured.
Carry out a road test with the **ABS** thus out of order.
Is the customer complaint still present under these conditions?

YES

If the brake pedal travel is relatively long, bleed the brake circuit.
If the travel is normal, check the tyre pressures, the front axle, or for any leaks in the circuit.

NO

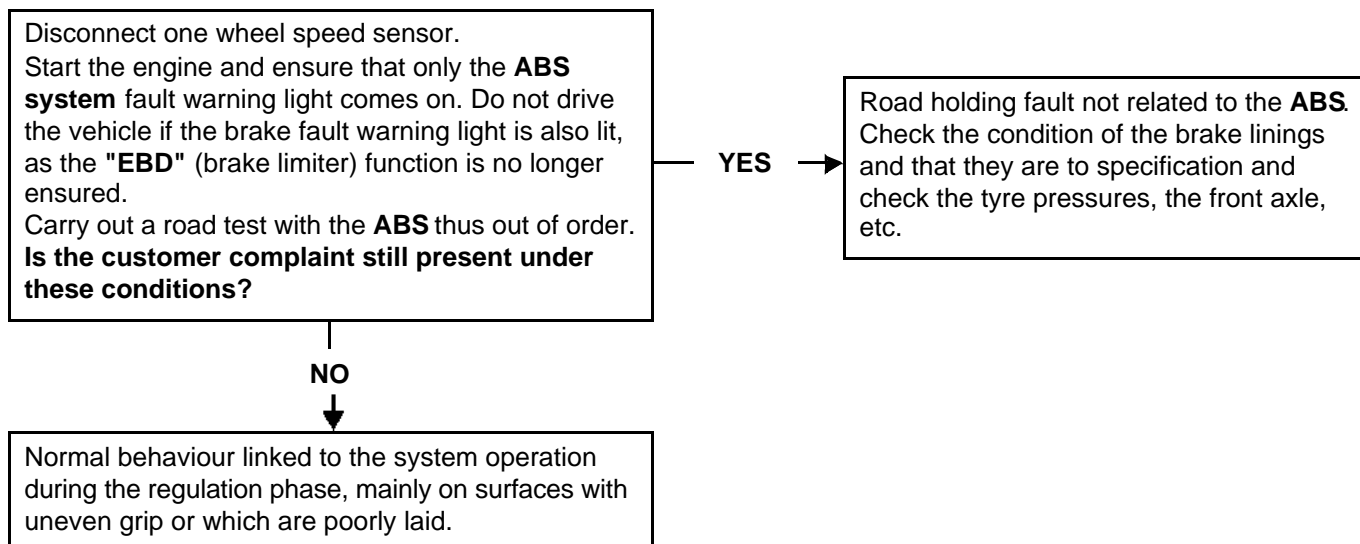
Raise the vehicle so that you can rotate the wheels and check:
– Possible inversion when connecting the speed sensors.
– Possible inversion of pipes on the hydraulic unit.
For these two tests, refer to and apply the procedures described in **ALP 2**.
Check the condition and conformity of the **ABS** targets.
If necessary, replace the targets.
If the fault is still present replace the hydraulic unit.

AFTER REPAIR

Clear the computer fault memory.
Carry out a road test followed by another check with the **diagnostic tool**.

ALP 4	Drift
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool.
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AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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ALP 5	Unexpected ABS operation at low speed and with slight pedal pressure
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . IMPORTANT: ABS regulation is sensitive on slippery surfaces (ice, wet cobbled streets, etc.). Check the conformity of the mechanical components.
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Brake pedal vibrations may be felt which are connected to the system behaviour in particular situations:

- Crossing speed bumps.
- Tight cornering with lifting of the inside rear wheel.

These vibrations may be linked simply to "EBD" (brake limiter) activation, when the pressure on the rear axle is limited.

If the fault relates to something else, check the speed sensor connectors (micro-breaks) as well as the targets.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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ALP 6	Unexpected ABS system intervention on a poor road surface
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . Check the conformity of the mechanical components.
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On poor road surfaces it is normal to feel bucking and vibration of the pedal as well as more significant tyre squealing than on good surfaces.
This gives the impression of a variation in efficiency, but this should be considered normal.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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ALP 7	Unexpected ABS operation when using special equipment (car phone, CB, etc.)
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool .
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Check that the equipment which is causing the fault is approved.
Check that this equipment has been correctly installed without modification to the original wiring, in particular, that of the **ABS** (connections to earth and **+ after ignition/+ before ignition** of the **ABS** are not permitted).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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ALP 8	Lengthening of the brake pedal travel following a regulation phase (with an irregular pedal when entering the regulation phase)
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . Check the conformity of the mechanical components.
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Air transit from the hydraulic unit regulation channels to the brake circuits.

Using the following **diagnostic tool** commands:

AC155: Rear left wheel bleed.

AC154: Front right wheel bleed.

AC156: Rear right wheel bleed.

AC153: Front left wheel bleed.

Carry out a bleed of the secondary circuits starting with the left-hand rear brake then the right-hand front brake, the right-hand rear brake then the left-hand front brake.

After the operation, carry out a road test with **ABS** regulation.

If the fault is still present, carry out the above operation again 1 or 2 times.

If the customer complaint is particularly serious, and bleeding the circuit does not improve matters, replace the hydraulic unit.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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ALP 9	Spongy pedal
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . Check the conformity of the mechanical components.
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Air in the brake circuits.
Carry out a conventional primary circuit bleed (see **MR411, Mechanical systems, 30A, Braking circuit, Bleed**).
Repeat the operation if necessary.

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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ALP 10	Brake pedal vibration
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . Check the conformity of the mechanical components and in particular check that the brake discs are not warped.
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Normal reaction of the brake pedal during **ABS** regulation or of limitation of pressure on the rear axle ("EBD" brake limiter function).

AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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ALP 11	Noises from the pump, the pipes or the hydraulic unit
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NOTES	Only consult this customer complaint after a complete check with the diagnostic tool . Check the conformity of the mechanical components.
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<p>– Vibration of the unit: Check that the unit support insulating rubber mounting bushes are in place and in good condition.</p> <p>– Vibration of pipes: check that all pipes are correctly supported in their mounting clips and that there is no contact between pipes or between pipes and bodywork.</p> <p>The Front left-hand wheel solenoid valves, Front right-hand wheel solenoid valves, Rear left-hand wheel solenoid valves and Rear right-hand wheel solenoid valves actuating commands may be used while depressing the brake pedal to determine where the noise is coming from.</p>
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AFTER REPAIR	Clear the computer fault memory. Carry out a road test followed by another check with the diagnostic tool .
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