KOLEOS

2 Transmission

23A AUTOMATIC GEARBOX

TCU
Vdiag No.: 04

V2 **Edition Anglaise**

1. SCOPE OF THIS DOCUMENT

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

Vehicle(s): **KOLEOS** *Function concerned:* **Automatic gearbox**	*Name of computer:* **Automatic gearbox** *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-Schema (CD-ROM).

Type of diagnostic tools:

– CLIP

Special tooling required:

Special tooling required	
	Diagnostic tool
	Multimeter
MOT 1681	**TEST PIN KIT**

3. RECAP

Fault Finding Procedure

The passenger compartment computer will feed + after ignition for **1 hour** by applying insert the card in the reader and press the start button for ignition on.
Pressing the Start button again or removing the card from the card reader stop the **+ after ignition feed** but the **+ after ignition feed** again by press the start button for ignition on.

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 for these lines (for oxidation, bent pins, etc.),
– the resistance of the component detected as faulty,
– the condition of the wires (melted or split insulation, wear).

NOTE
First, repair any fault of the combination meter (for example, particle filter warning light).
Then perform the maintenance schedule for the vehicle.

Conformity check

The aim of the conformity check is to check data that does not produce a fault on the **diagnostic tool** when the data is 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.

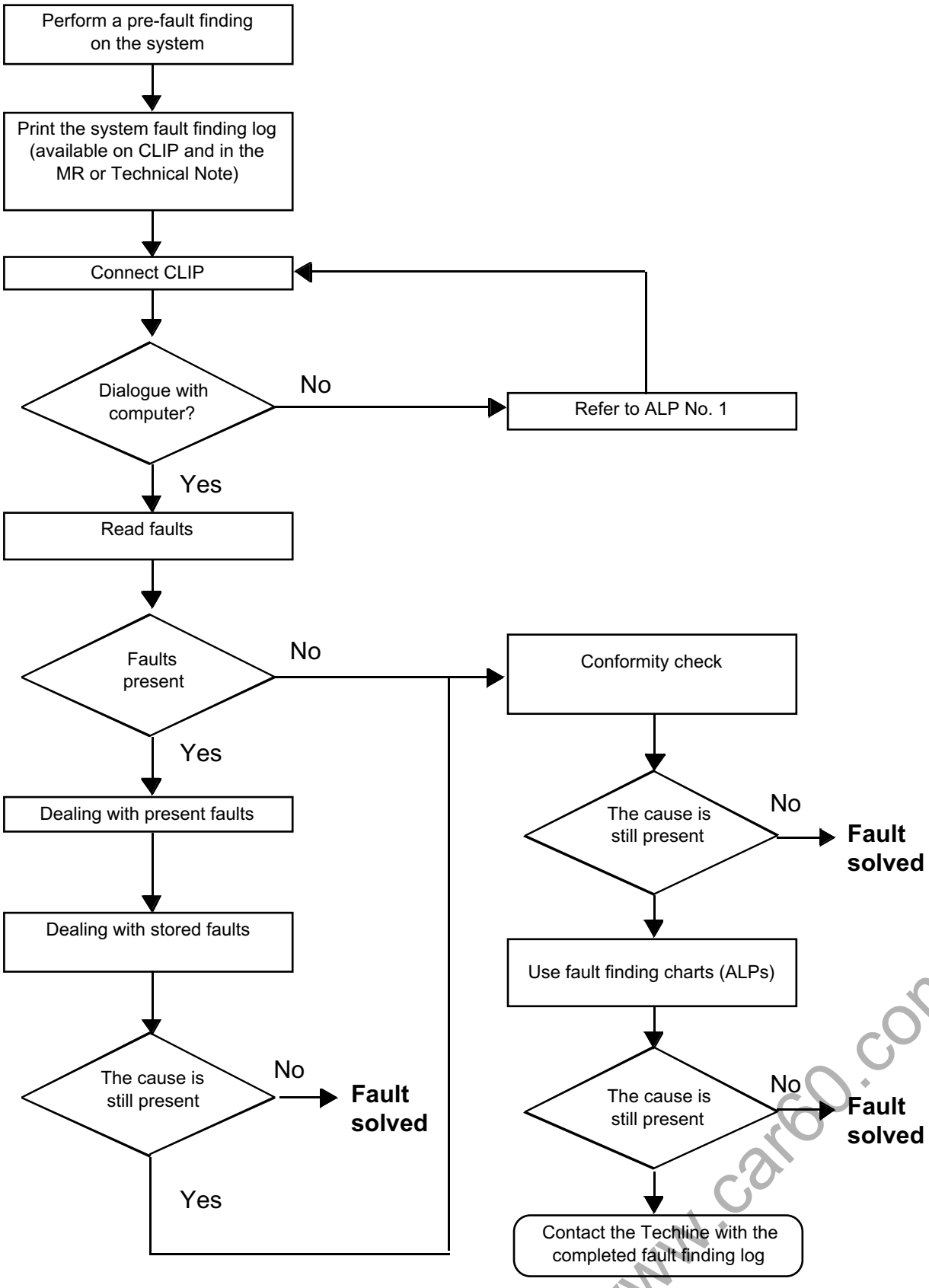
If a status is not behaving normally or a parameter is outside permitted tolerance values, consult the corresponding fault finding page.

Customer complaints - Fault finding chart (ALP)

If the test using the **diagnostic tool** is OK, but the customer complaint is still present, the fault should be treated by **Customer complaints**.

A summary of the general 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

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
Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

Tactile inspection
While manipulating the wiring harness, use the diagnostic tool to note any change in fault status from stored to present.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Gently move the wiring harness.
If there is a change in status, try to locate the source of the fault.

Inspection of each component
Disconnect the connectors and check the appearance of the clips and tabs, as well as the crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the holes.
Check that no clips or tabs have been dislodged during connection.
Check the clip contact pressure using an appropriate model of tab.

Resistance check
Check the continuity of entire lines, then section by section.
Look for a short circuit to earth, to **+ 12 V** or to another wire.

If a fault is detected, repair or replace the wiring harness.

5. FAULT FINDING LOG

IMPORTANT!

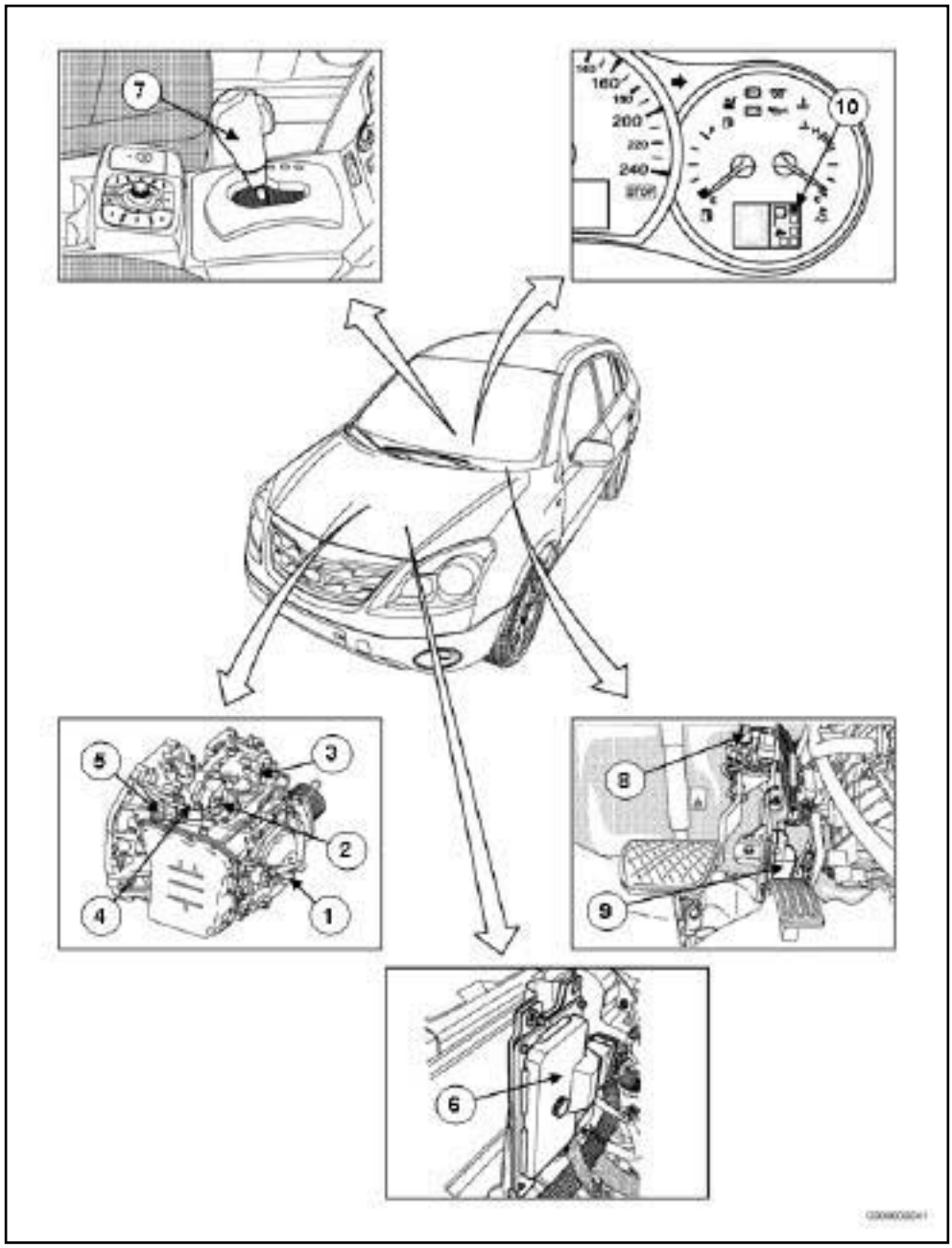
IMPORTANT
Any fault on a complex system requires thorough fault finding with the appropriate tools.
The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE COMPULSORY TO COMPLETE A FAULT FINDING LOG EVERY TIME THE TECHLINE OR THE WARRANTY RETURN SERVICE ASKS FOR IT.

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 ADVICE

Safety rules must be observed during any work on a component to prevent any damage or injury:
– Make sure that the battery is preperly charged to avoid damaging the computers with a low load,
– use the appropriate tools.



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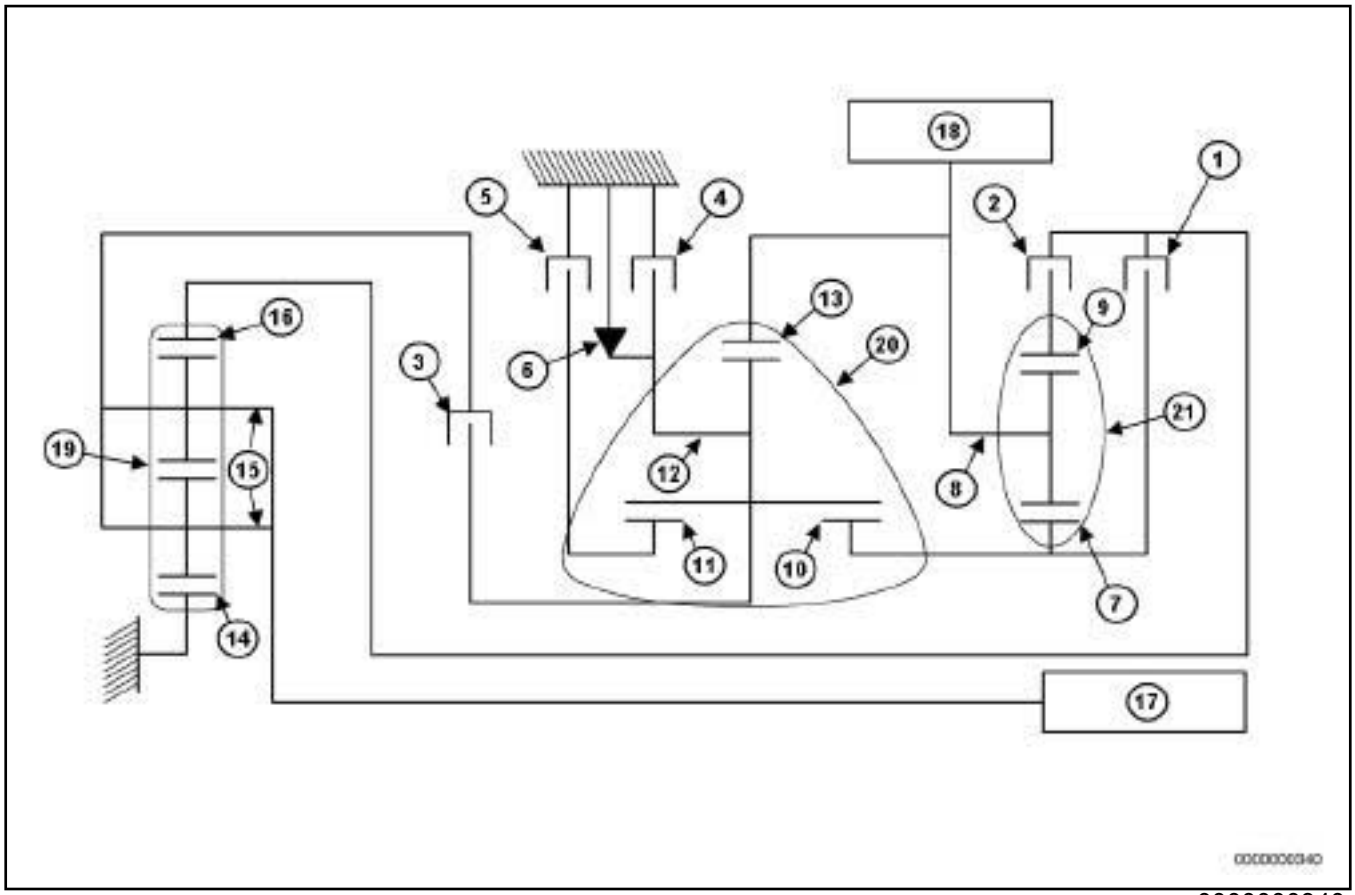
Number	Description	Number	Description
1	Automatic gearbox	6	Automatic transmission computer
2	Turbine revolution sensor	7	Manual mode switch
3	Vehicle speed sensor	8	Stop light switch
4	Automatic transmission multifunction switch	9	Accelerator pedal sensor
5	Hydraulic/electric interface	10	Instrument panel

Automatic gearbox mechanism:



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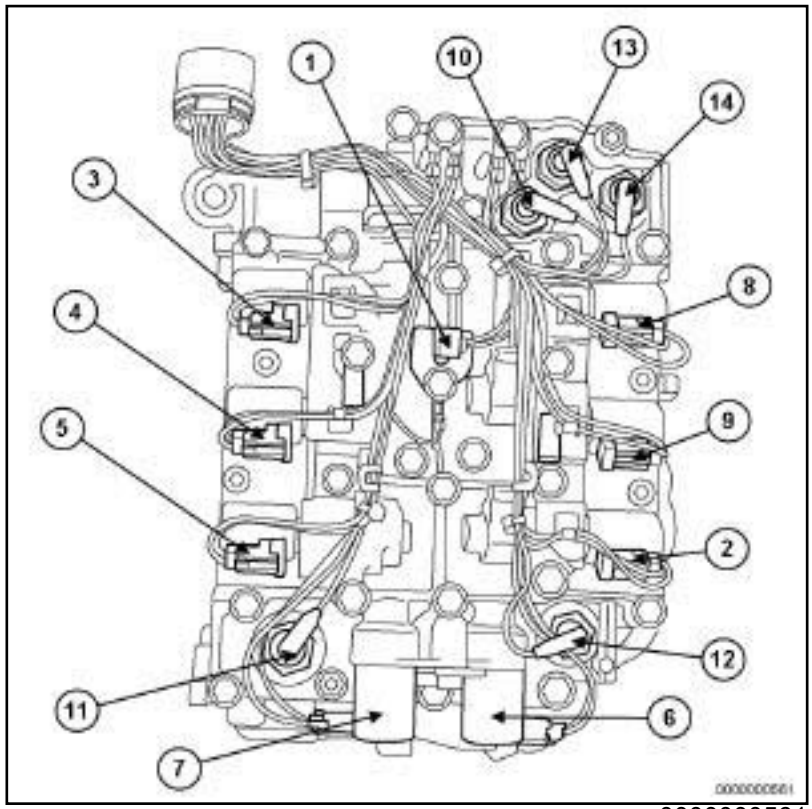
Number	Description	Number	Description
1	Clutch 2 (3-5 reverse clutch)	12	Rear carrier
2	Clutch 1 (Low clutch)	13	Rear internal gear
3	Clutch 3 (High clutch)	14	Reduction sun gear
4	Brake 1 (Low and reverse brake)	15	Carries
5	Brake 2 (2-6 brake)	16	Reduction carrier
6	Free wheel (One way clutch)	17	Input shaft
7	Front sun gear	18	Output shaft
8	Front carrier	19	Reduction planetary gear
9	Front internal gear	20	Rear planetary gear
10	Rear sun gear (front shift)	21	Front planetary gear
11	Rear sun gear (rear side)		

Hydraulic/Electric Interface:



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Number	Description
1	Gearbox oil temperature sensor
2	Clutch 1 solenoid valve
3	Clutch 2 solenoid valve
4	Clutch 3 solenoid valve
5	LS* pressure regulation solenoid valve
6	Shift solenoid "EVS1"
7	Shift solenoid "EVS2"
8	Converter lock-up and brake 1 solenoid valve
9	Brake 2 solenoid valve
10	Clutch 1 solenoid valve pressure switch
11	Clutch 2 solenoid valve pressure switch
12	Clutch 3 solenoid valve pressure switch
13	Brake 1 solenoid valve pressure switch
14	Brake 2 solenoid valve pressure switch

* LS: line pressure.
* EVS: sequence solenoid valve.

Automatic gearbox:

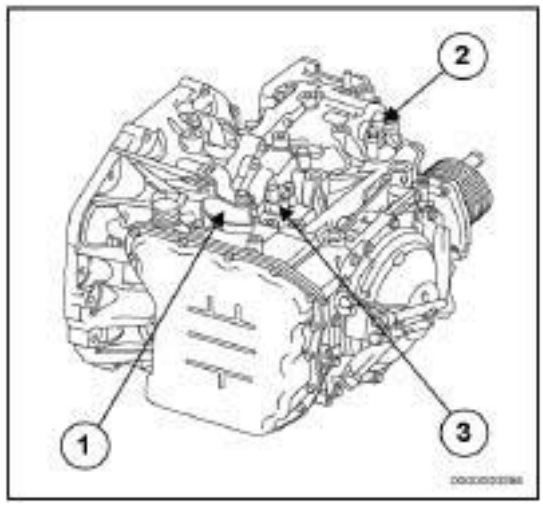
Components	Description
Torque converter	It consists of the cover converter, turbine assembly, stator, impeller assembly and increases the torque of the engine to transmit the power to the gearbox.
Oil pump	It consists of the gear, housing, cover etc. It generates fluid pressure that is necessary to circulate gearbox oil and to activate the clutches and the brakes.
Clutch 1	It works at the 1st, 2nd, 3rd, and 4th speed to transmit the input from clutch 2 drum to the front internal gear.
Clutch 2	It works at the 3rd, 5th speed and the reverse position to transmit the input of the RDCN* internal gear to the front sun gear.
Clutch 3	It works at the 4th, 5th and 6th speed to transmit the input of the input shaft to the rear carrier.
Brake 1	It works at the 1st speed and the reverse position to operate the engine brake and to fix the rear carrier.
Brake 2	It works at the 2nd and 6th speed to fix rotation of the rear sun gear.
Front carrier	It fixes and releases the carrier, sun gear to increase and decrease the output rotation according the input.
Rear carrier	It fixes and releases the carrier, sun gear to increase and decrease the output rotation according the input and convert the rotating direction into forward/reverse direction.
Reduction carrier	It fixes and releases the carrier, sun gear to increase and decrease the output rotation according the input.
4 points gear	The power is transmitted from the rear internal to output gear, idler gear, reduction and final differential gear.
F1 (Free wheel)	It works upon the first speed and accelerating and fixes the rear carrier (it does not work when accelerating).

* RDCN: Reduction

– Turbine revolution sensor:
The turbine revolution sensor detects the revolution of the low clutch drum to transmit the pulse signal to automatic transmission computer.

– Vehicle speed sensor:
The vehicle speed detects the rotation of the idler gear to output the pulse signal. The pulse signal is transmitted to automatic transmission computer and converted into the vehicle speed.

– Automatic transmission multifunction switch:
The automatic transmission multifunction switch detects the gear lever position and transmits a signal to the automatic transmission computer.



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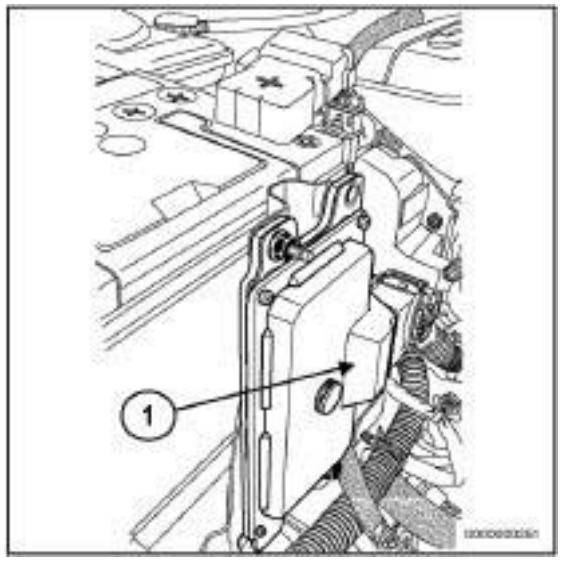
1.	Automatic transmission multifunction switch
2.	Vehicle speed sensor
3.	Turbine revolution sensor

– Hydraulic/electric interface:

Components	Description
Gearbox oil temperature sensor	The gearbox oil temperature detects the oil temperature send a signal to the automatic transmission computer.
LS* pressure regulation solenoid valve	The **LS** pressure regulation solenoid valve is normal-high* type to adjust the output pressure of the oil pump into the optimized pressure accordant to the driving condition.
Brake **1** solenoid valve	The Brake **1** solenoid valve is normal-low* type to control the operation of the brake **1** solenoid valve according to the signal from automatic transmission computer.
Clutch **1** solenoid valve	Clutch **1** solenoid valve is normal-low* type to control the clutch **1** solenoid valve according to the signal from automatic transmission computer.
Brake **2** solenoid valve	Brake **2** solenoid valve is normal-low* type to control the brake **2** solenoid valve according to the signal from automatic transmission computer.
Clutch **2** solenoid valve	Clutch **2** solenoid valve is normal-high* type to control the clutch **2** solenoid valve according to the signal from automatic transmission computer.
Clutch **3** solenoid valve	Clutch **3** solenoid valve is normal-high* type to control the clutch **3** solenoid valve according to the signal from automatic transmission computer.
Shift solenoid "**EVS1**"*	The shift solenoid "**EVS1**" is **ON/OFF** type to control the shift solenoid "**EVS1**" according to the signal from automatic transmission computer.
Shift solenoid "**EVS2**"*	The shift solenoid "**EVS2**" is **ON/OFF** type to control the shift solenoid "**EVS2**" according to the signal from automatic transmission computer.

*LS: line pressure.
*EVS: sequence solenoid valve.
*normal-low: in rest position, the pressure is minimum.
*normal-high: in rest position, the pressure is maximum.

– Automatic transmission computer:
This is installed in the engine compartment, and the vehicle driving status is evaluated from sensor signal.
It controls the continuous stepless variable automatic gearbox mechanism.



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– Manual mode switch (gear selector control):
The manual mode switch is installed on the gear selector control. When the gear lever is set to the "**D**" position and the manual mode switch is turned **ON** (manual mode display on), manual mode driving is allowed. When the switch is **OFF** (manual mode display off), normal "**D**" position driving is performed. When the gear lever is shifted to a position other than "**D**" during manual mode driving, the manual mode is released.

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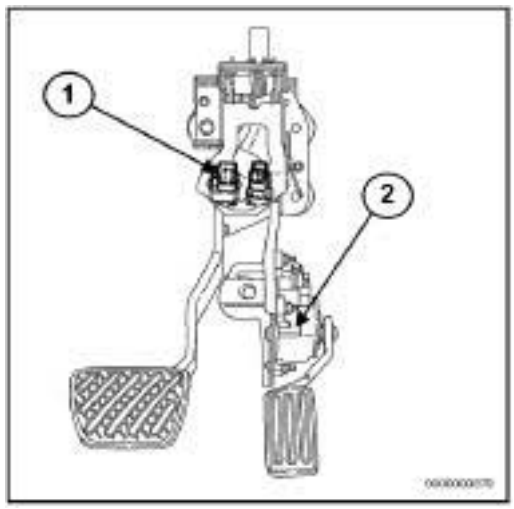
– Stop light switch:
The multiplex network system provides output of the signal from the stop light switch, which is input by the passenger compartment connection unit, to the automatic transmission computer and conveys the deceleration intent of the driver.

– Accelerator pedal sensor:
The accelerator pedal sensor is built into accelerator unit, refitting to the upper part of the accelerator pedal. The accelerator opening of the accelerator pedal sensor is converted into a continuous electric signal for output to the injection computer. The injection computer outputs the vehicle speed status to the automatic transmission computer with the multiplex network.



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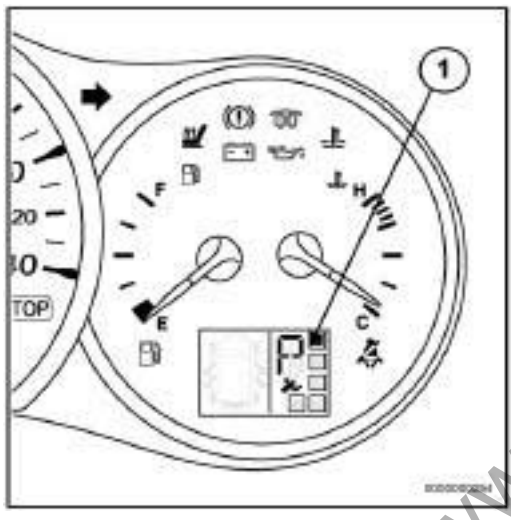
1.	Stop light switch
2.	Accelerator pedal sensor

– Instrument panel:
These functions are integrated in the display of the instrument panel. In the gear lever position / gear engaged / lever positioning in "**P**" or "**N**" request indicator light.



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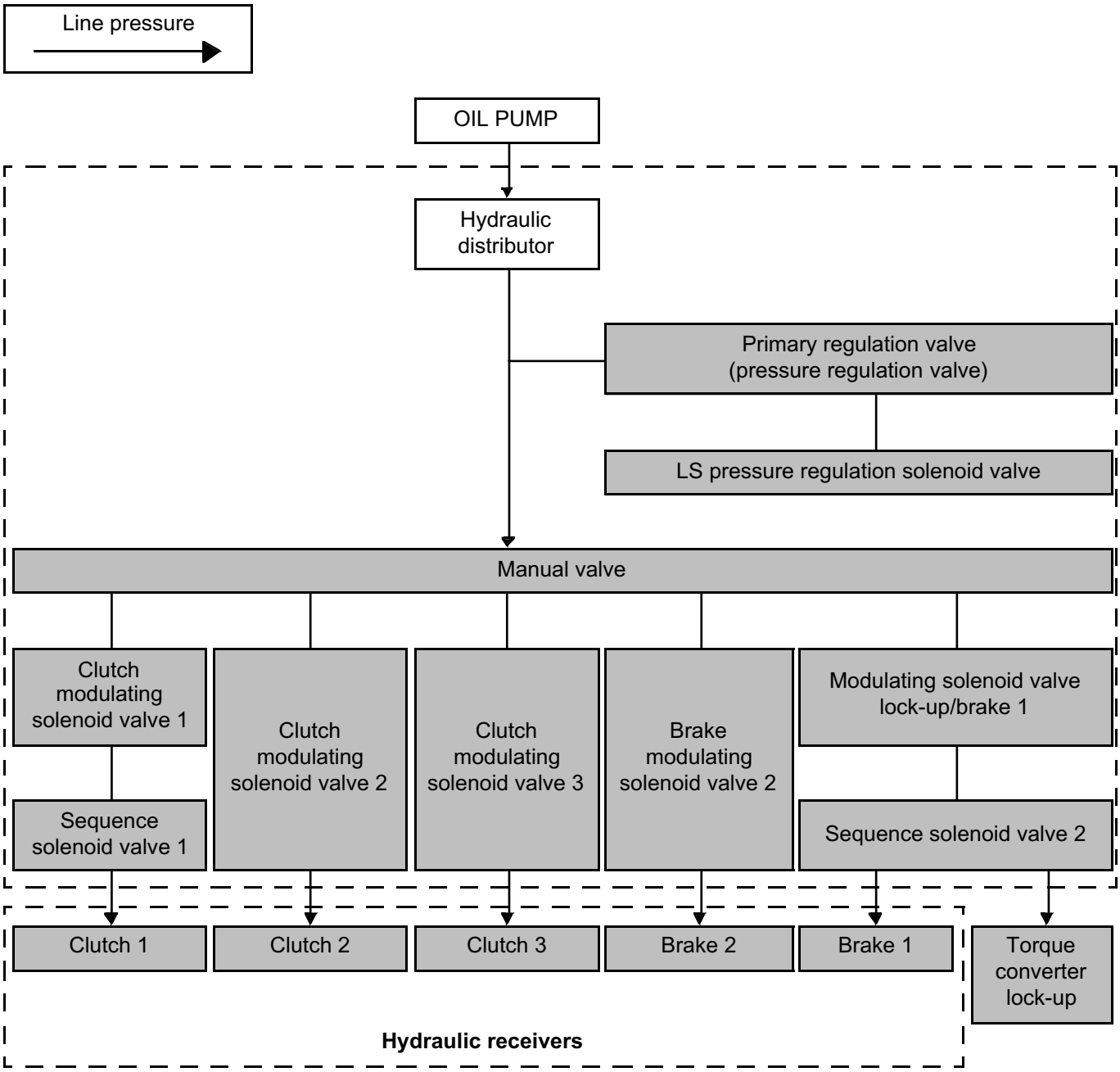
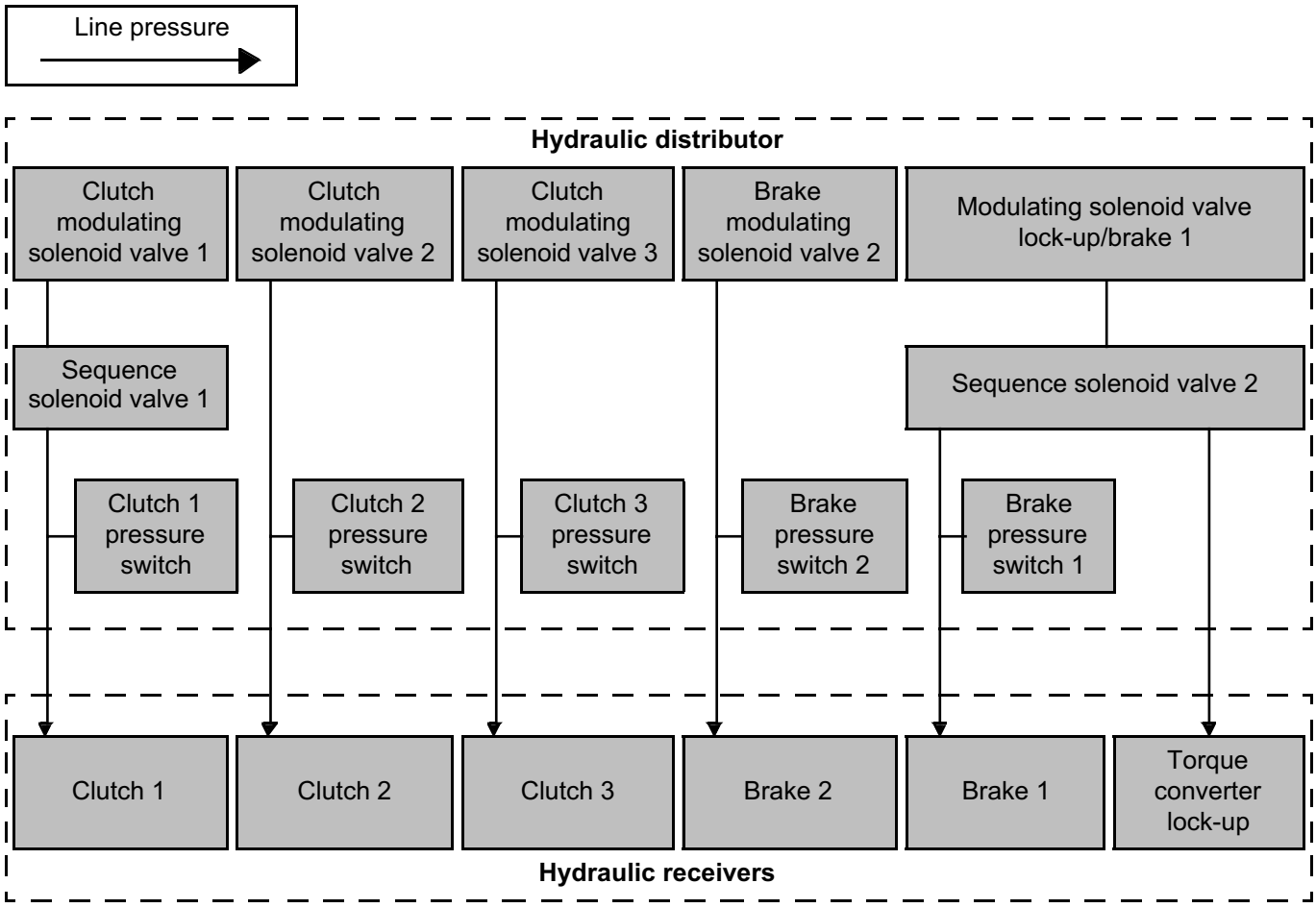
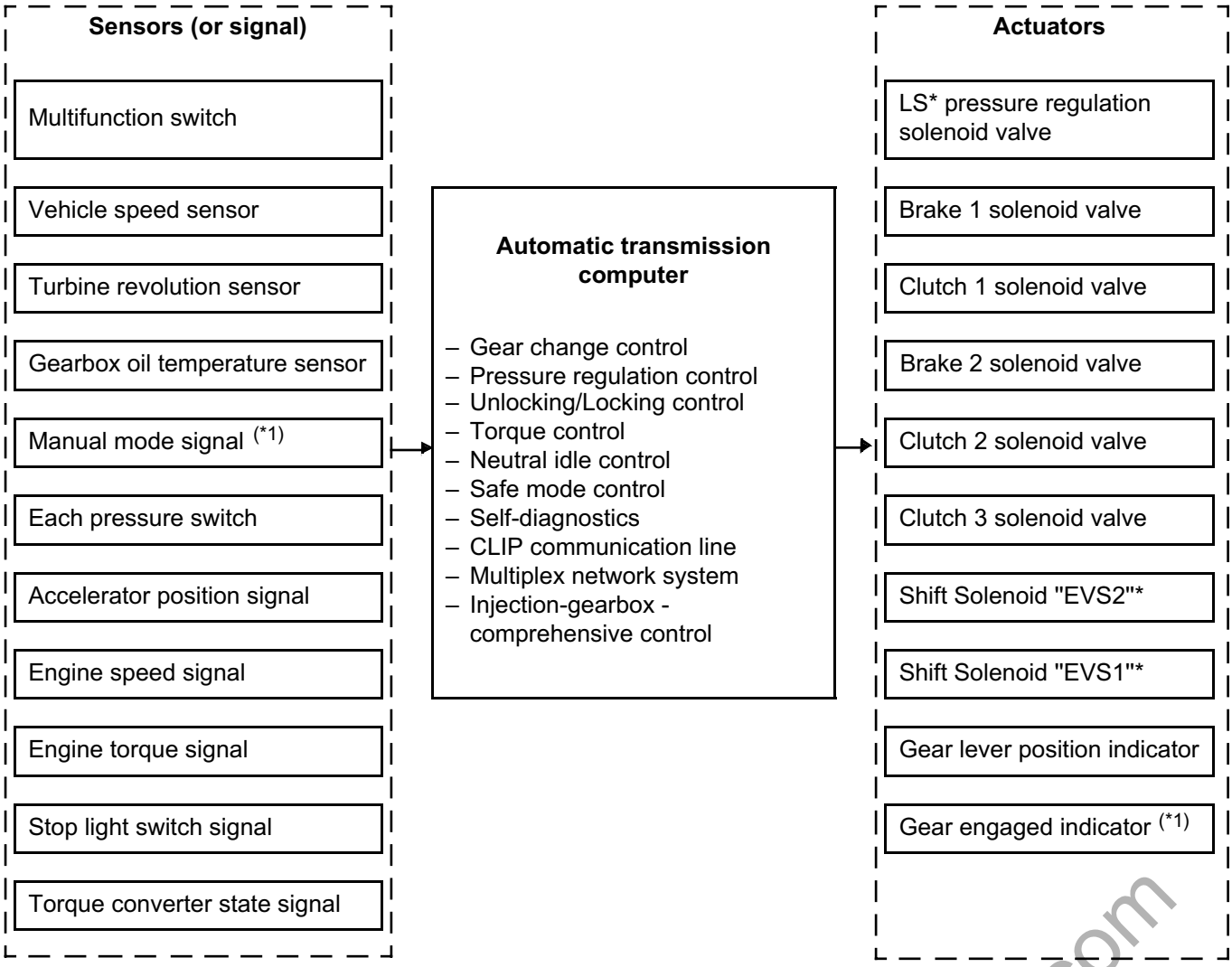




Automatic gearbox management function:

Purpose of this function:
The functions of the automatic transmission computer are following as:
– Receive input signals sent from various switches and sensors.
– Determine required line pressure, shifting point, and lockup operation.
– Send required output signals to the step motor and the respective solenoids.
– Injection and automatic transmission comprehensive control (Multiplex network control)
– Control between automatic transmission and instrument panel (Multiplex network control)
– Self-diagnosis function, Safe-mode function, and communication function with diagnostic tool



*1: Manual mode.
*LS: line pressure.
*EVS: sequence solenoid valve.

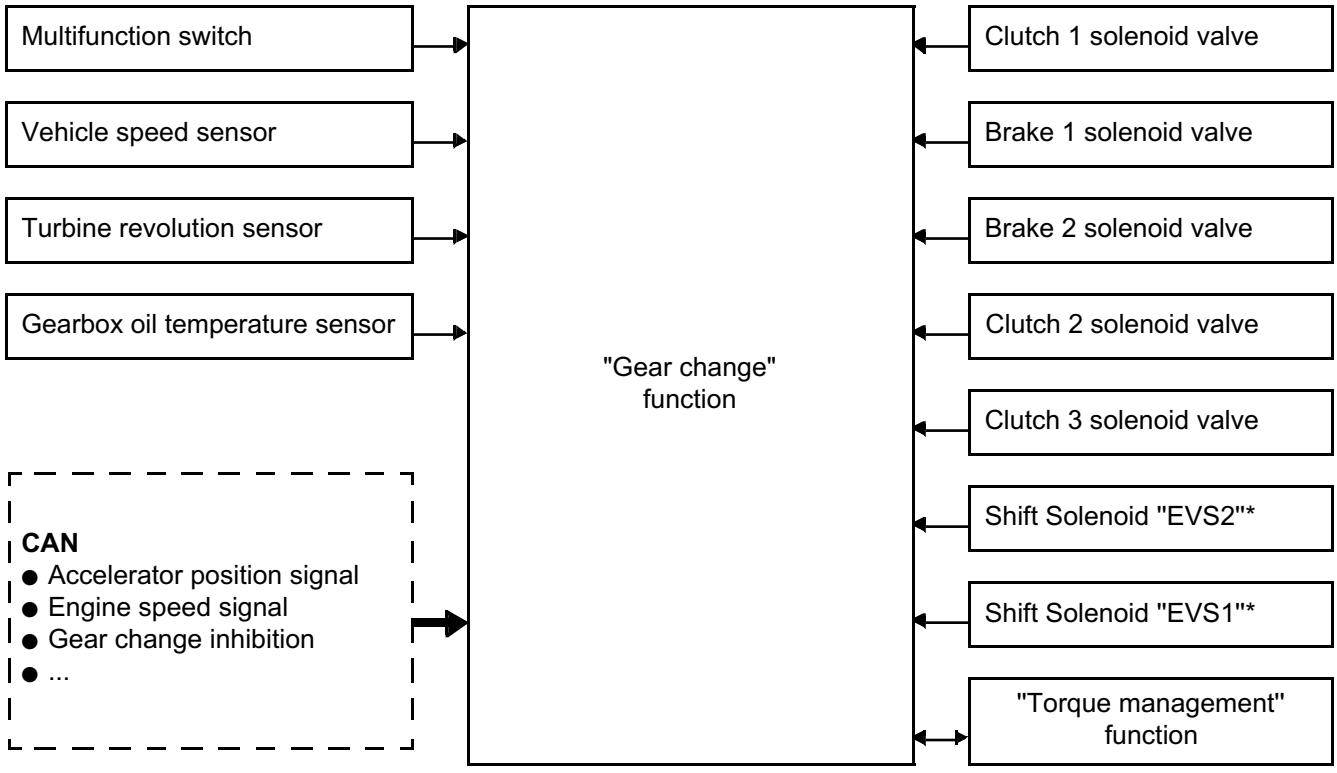
Input/Output signal of computer:

	Control item	Gear change	Pressure regulation	Release/ Lockup	Torque control	Neutral idle control	Safe mode function(*1)
Input	Multifunction switch signal	X	X	X	X	X	X
	Vehicle speed sensor	X	X	X	X	X	X
	Turbine revolution sensor	X	X	X	X	X	X
	Gearbox oil temperature sensor	X	X	X		X	X
	Manual mode signal(*2)						X
	Clutch pressure switch 1					X	X
	Brake pressure switch 2						X
	Clutch pressure switch 2						X
	Clutch pressure switch 3						X
	Brake pressure switch 1						X
	Accelerator position signal(*2)	X	X	X	X	X	X
	Engine speed signal(*2)	X	X	X	X	X	
	Engine torque signal(*2)		X	X	X	X	
	Stop light signal(*2)			X		X	
Output	LS* pressure regulation solenoid valve		X				X
	Brake 1 solenoid valve	X					X
	Clutch 1 linear solenoid valve	X				X	X
	Brake 2 linear solenoid valve	X				X	X
	Clutch 2 solenoid valve	X					X
	Clutch 3 solenoid valve	X					X
	Shift Solenoid "EVS1"*	X					X
	Shift Solenoid "EVS2"*	X					X
	Torque converter state signal(*2)				X		

*1: If these input and output signals are different, the computer triggers the safe mode function.
*2: Input by multiplex network.
*LS: line pressure.
*EVS: sequence solenoid valve.

“GEAR CHANGE” FUNCTION:

Purpose of this function:
The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus, the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes possible to finely control the clutch hydraulic pressure with high precision and a smoother shift change characteristics attained.



*EVS: sequence solenoid valve.

System operation table:

Shift position/ gear application		Solenoid valves							Clutch/brake pressure switch					Free wheel
		Clutch1 (EVM*)	Clutch2 (EVM*)	Clutch3 (EVM*)	Brake1 (EVM*)	Brake2 (EVM*)	EVS1*	EVS2*	Clutch1	Clutch2	Clutch3	Brqke1	Brqke2	F1
P			○	○				○						
R				○	○			○		○		○		
N			○	○				○						
M+/-	1st(*1)	○	○	○	○			○	○			○		
D	1st	○	○	○				○	○					○
D or M+/-	2nd	○	○	○	●	○			○				○	
	3rd	○		○	●				○	○				
	4th	○	○		●				○		○			
	5th				●		○			○	○			
	6th		○		●	○	○				○		○	

○ = Active.

● : operation when lockup operation.

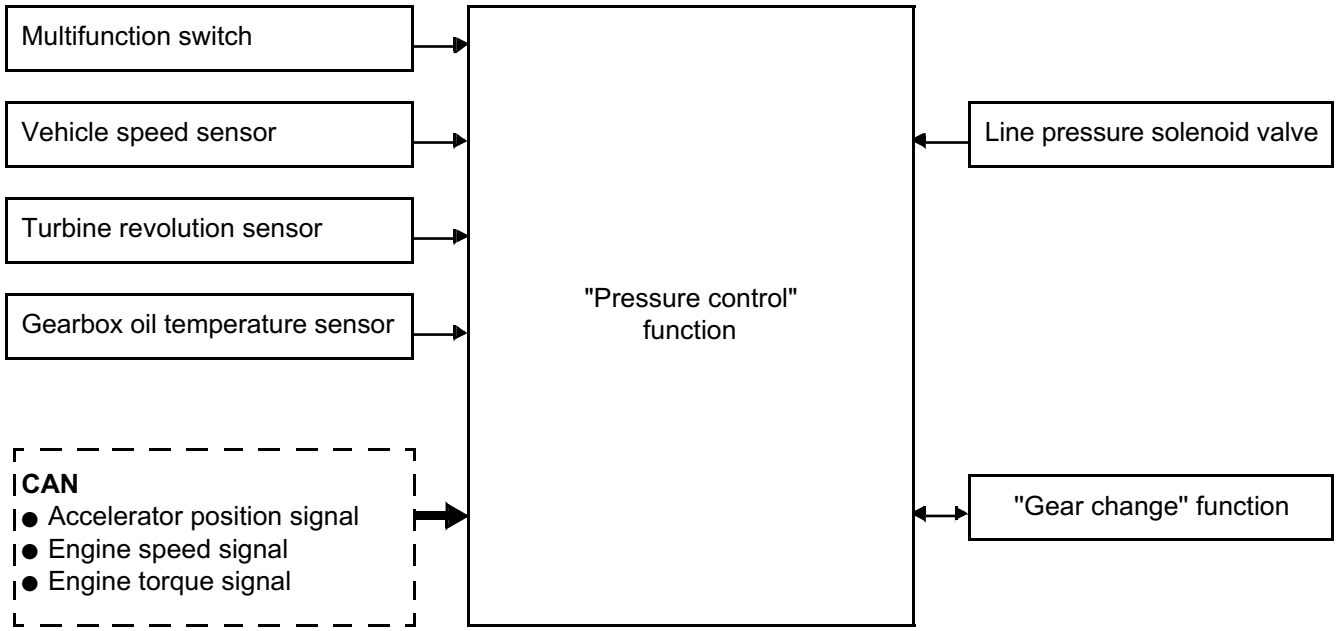
*1 : 1st speed engine brake operation.

*EVM: linear solenoid valve.

*EVS: shift solenoid valve.

“PRESSURE REGULATION” FUNCTION:

Purpose of this function:
- When an engine torque signal equivalent to the engine drive force is sent from the engine control module to the automatic transmission computer, the automatic transmission computer controls the line pressure linear solenoid valve.
- This line pressure linear solenoid controls the pressure regulator valve as the signal pressure and adjusts the pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving state.



Pressure control is based on the automatic transmission computer line pressure characteristic pattern
- The automatic transmission computer has stored in memory a number of patterns for the optimum line pressure characteristic for the driving state.
- In order to obtain the most appropriate line pressure characteristic to meet the current riving state, the automatic transmission computer controls the line pressure solenoid current value and thus controls the line pressure.

Normal control
- Each clutch is adjusted to the necessary pressure to match the engine drive force.

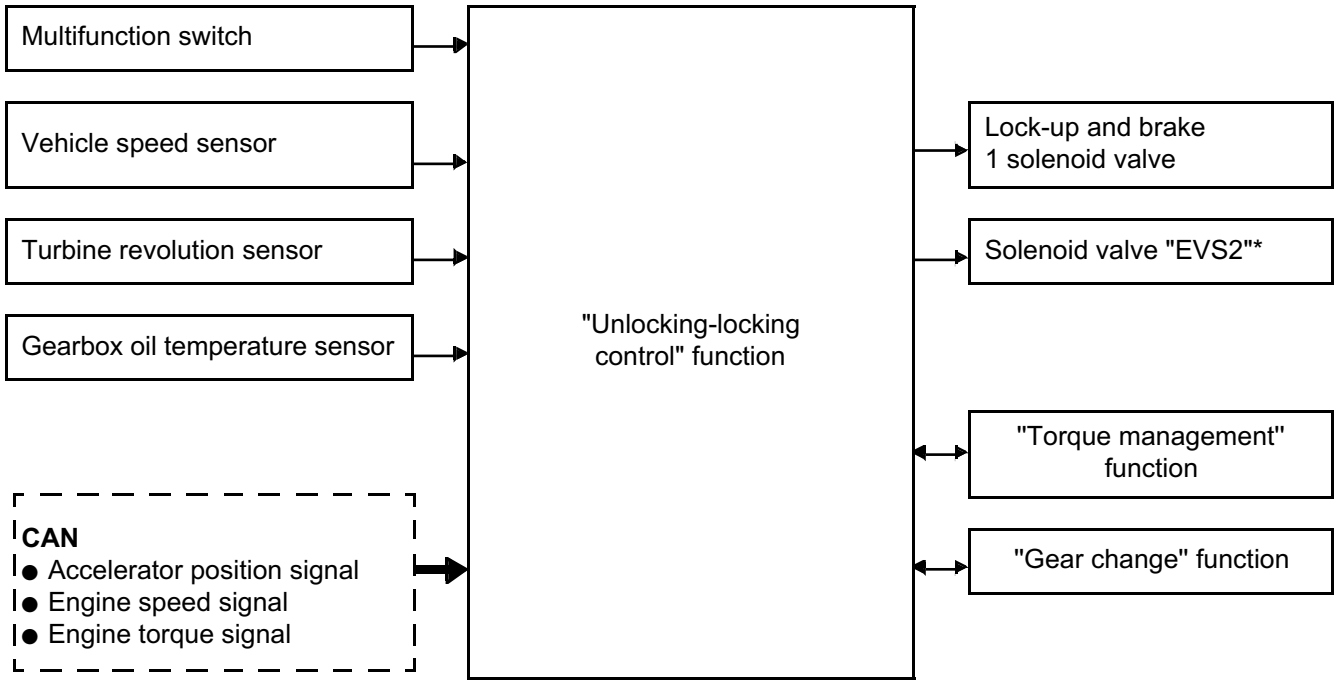
Back-up control (Engine Brake)
- When the select operation is performed during driving and the automatic gearbox is shifted down, the line pressure is set according to the vehicle speed.

During shift change
- The necessary and adequate line pressure for shift change is set. For this reason, line pressure pattern setting corresponds to input torque and gearshift selection. Also, line pressure characteristic corresponds to engine speed, during engine brake operation.

At low fluid temperature
- When the automatic gearbox oil temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.

“UNLOCKING/ LOCKING” FUNCTION:

Purpose of this function:
The torque converter clutch piston in the torque converter is engaged to eliminate torque converter lip to increase power transmission efficiency.
The torque converter clutch control valve operation is controlled by the lockup and low and reverse brake linear solenoid valve, which is controlled by a signal from automatic transmission computer, and the torque converter clutch control valve engages or releases the torque converter clutch piston.



*EVS: sequence solenoid valve.

Torque converter clutch control valve control

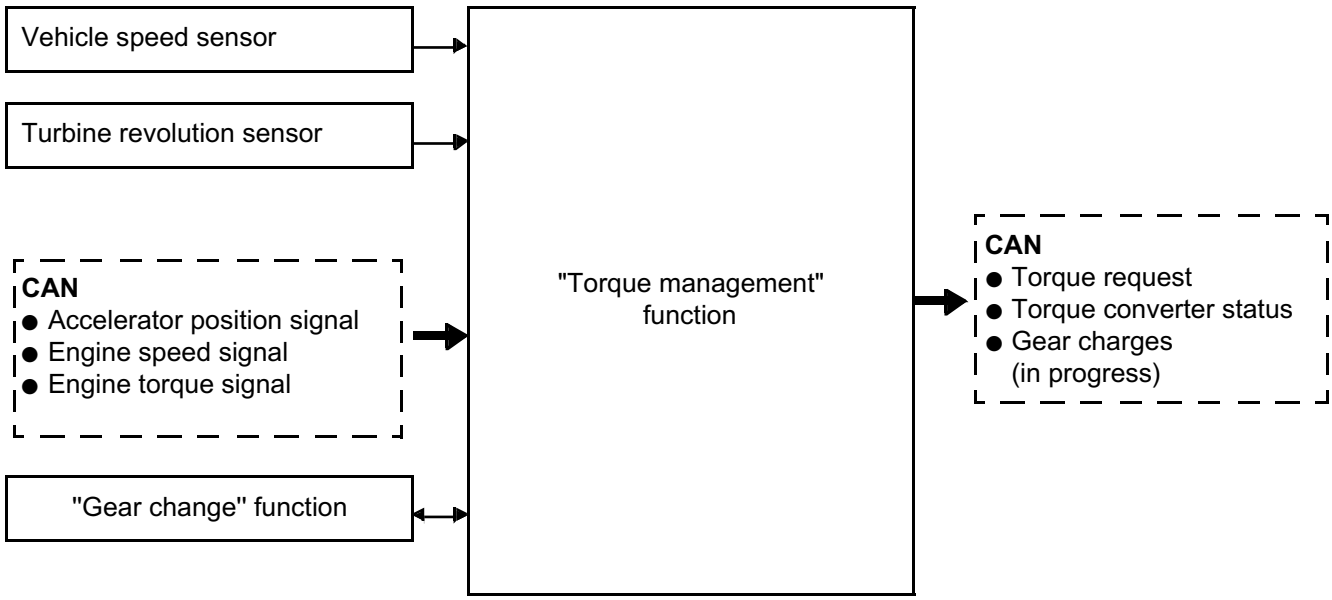
Lockup Released
In the lockup released state, the torque converter clutch control valve is set into the unlocked state by the torque converter clutch solenoid and the lockup apply pressure is drained.
In this way, the torque converter clutch piston is not coupled.

Lockup Applied
In the lockup applied state, the torque converter clutch control valve is set into the locked state by the torque converter clutch solenoid and lockup apply pressure is generated.
In this way, the torque converter clutch piston is pressed and coupled.

Slip lockup control (except driving in manual mode)
In the slip region, the torque converter clutch solenoid current is controlled with the automatic transmission computer to put it into the half-clutched state. This absorbs the engine torque fluctuation and lockup operates from low speed. This raises the fuel efficiency for 2nd, 3rd, 4th, 5th and 6th gears at both low speed and when the accelerator has a low degree of opening.

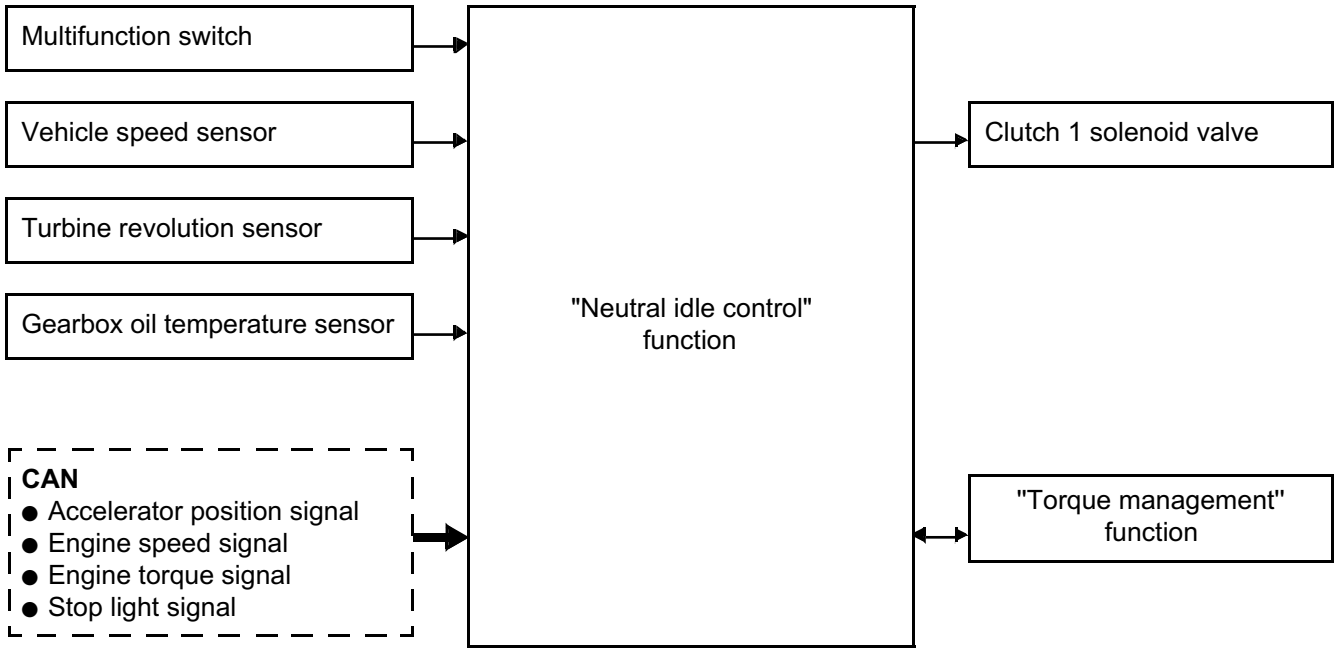
“TORQUE MANAGEMENT” FUNCTION:

Purpose of this function:
The purpose of this function is to manage the torque setpoint during certain gear shifts by informing the injection computer. This function means smoother gear shifts and better mechanical protection.



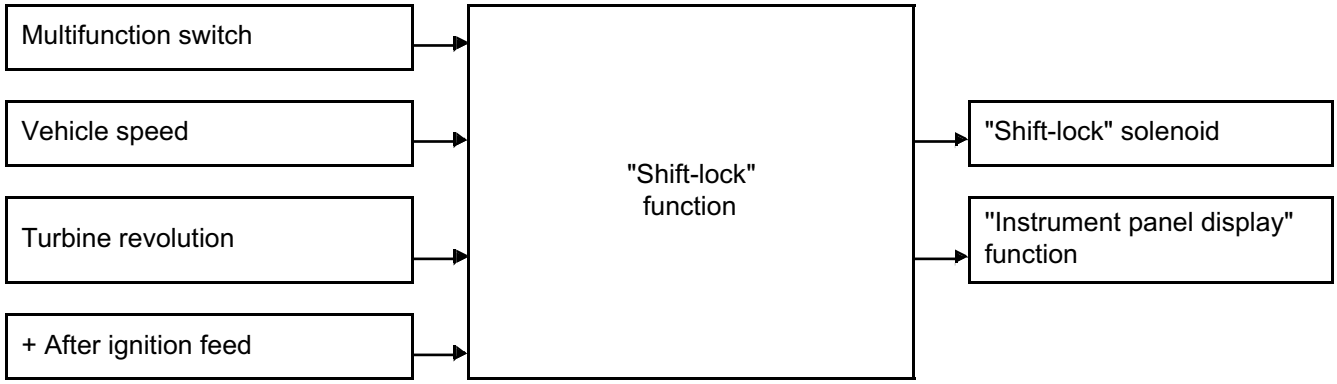
“NEUTRAL IDLE CONTROL” FUNCTION:

Purpose of this function:
By sliding the low clutch while parking in idle with D-rang, decreased torque fluctuations are conveyed to outputs and engine idling vibrations are reduced.
Neutral idle controls the number of revolutions (slip revolutions) of low clutch and torque converter to reduce shock or lag when starting again after parking the vehicle.



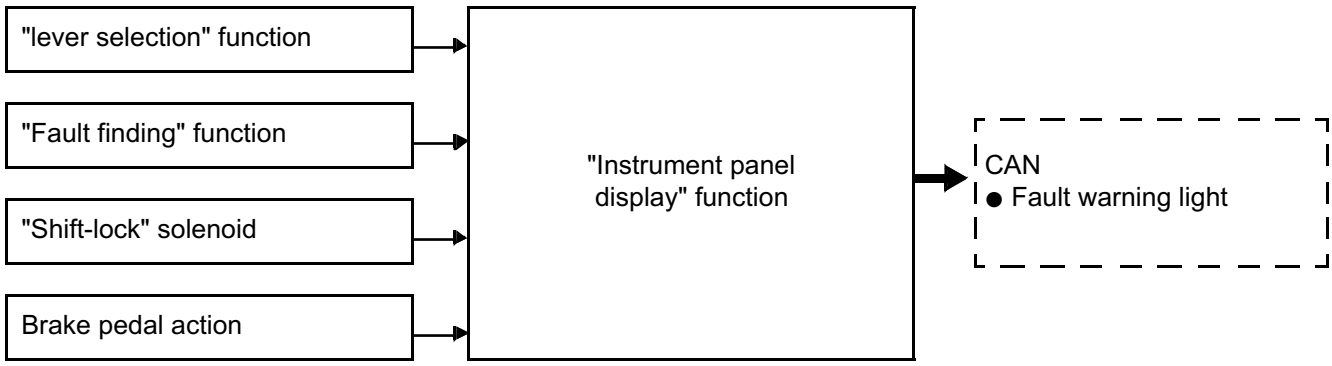
“SHIFT-LOCK” FUNCTION:

Purpose of this function:
Shift-lock: locking the gear lever in position “**P**” and blocking the transmission to immobilize the vehicle while stationary.
To release the gear lever from position “**P**”, the vehicle must be stationary and the brake pedal depressed.



“INSTRUMENT PANEL DISPLAY” FUNCTION:

Purpose of this function:
The purpose of this function is to manage the multiplex network signals required from gearbox computer for the instrument panel display.



Replacing the transmission computer:

Before replacing the transmission computer, be approved by the Techline previously.

If the **Techline** approves the transmission computer remove, carry out the work as following procedures.

– Remove the transmission **computer** (see **MR420 Mechanical, 23A, Automatic gearbox, Automatic transmission computer: Removal – Refitting**).

– Refit the transmission **computer** (see **MR420 Mechanical, 23A, Automatic gearbox, Automatic transmission computer: Removal – Refitting**).

– Adjust the neutral position between the gear lever position and multifunction switch (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment**).

– Perform road test.

Replacing the hydraulic distributor:

Before replacing the transmission hydraulic distributor, be approved by the Techline previously.

If the **Techline** approves the transmission hydraulic distributor remove, carry out the work as following procedures.

– Remove the transmission **hydraulic distributor** (see **MR420 Mechanical, 23A, Automatic gearbox, hydraulic distributor: Removal – Refitting**).

– Refit the transmission **hydraulic distributor** (see **MR420 Mechanical, 23A, Automatic gearbox, hydraulic distributor: Removal – Refitting**).

– Perform road test.

Replacing of the automatic gearbox:

Before replacing the automatic gearbox, be approved by the Techline previously.

If the **Techline** approves the automatic gearbox remove, carry out the work as following procedures.

– Remove the **automatic gearbox** (see **MR420 Mechanical, 23A, Automatic gearbox: Removal – Refitting**).

– Refit the **automatic gearbox** (see **MR420 Mechanical, 23A, Automatic gearbox: Removal – Refitting**).

– Adjust the neutral position between the gear lever position and multifunction switch (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment**).

– Perform road test.

Tool Fault	associated DTC	Diagnostic tool title
DF023	**0710**	Gearbox oil temperature circuit
DF038	**0717**	Turbine speed sensor circuit
DF067	**0705**	Lever position switch circuit
DF084	**D000**	Multiplexed network
DF085	**1750**	Sequence solenoid valve “EVS1*” circuit
DF086	**1755**	Sequence solenoid valve “EVS2*” circuit
DF091	**0745**	Pressure regulation solenoid valve “LS*” circuit
DF107	**0725**	Engine speed multiplexed information
DF108	**1787**	Effective mean torque multiplexed information
DF171	**0720**	Vehicle speed sensor circuit
DF194	**1705**	Throttle position sensor
DF238	**1788**	Info*. multiplex gross engine torque invalid
DF256	**1732**	Gearbox slip randomly
DF273	**1746**	Clutch solenoid valve circuit 1
DF274	**1748**	Clutch solenoid valve circuit 2
DF275	**1749**	Clutch solenoid valve circuit 3
DF289	**D010**	Automatic transmission multiplex transmission
DF298	**1730**	Changing gear
DF300	**1747**	Brake solenoid valve circuit (2)
DF301	**1790**	Clutch pressure switch circuit 1
DF302	**1793**	Clutch pressure switch circuit 2
DF303	**1794**	Clutch pressure switch circuit 3

* EVS: sequence solenoid valve.
* LS: line pressure.
* Info: information

Tool Fault	DTC	Diagnostic tool title
DF304	**1795**	Brake pressure switch circuit 1
DF305	**1792**	Brake pressure switch circuit 2
DF306	**1743**	Brake/lock-up solenoid valve circuit 1
DF307	**1731**	Engine braking
DF308	**1789**	Comp* earth
DF328	**1722**	Vehicle speed multiplexed information
DF356	**0744**	Torque converter clutch solenoid valve function

* Comp: computer

DF023 PRESENT OR STORED	GEARBOX OIL TEMPERATURE CIRCUIT CO.1: Open circuit or short circuit to +12V 1.DEF: Permanent low level 2.DEF: Permanent high level 3.DEF: Signal incorrect.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● engine started and vehicle driven for **10 min** at vehicle speed of **6 MPH (10km/h)**.
	Special notes: When the gearbox oil temperature sensor is faulty, safe mode control is followed: ● while driving, it locks transmission in the gear which was used at the time of malfunction detection. ● after the vehicle is stopped, it locks transmission in the **3rd** gear. ● it prohibits driving in the manual mode.

1.DEF	***NOTES***	**Conditions for applying fault finding procedures to stored faults:** After driving for **10 min** at vehicle speed of **6 MPH (10km/h)**, displayed oil temperature less than **0 ~ 40˚C**.

Check the parameter **PR004 "Gearbox oil temperature"** when cool and warm.

2.DEF	***NOTES***	**Conditions for applying fault finding procedures to stored faults:** After driving for **10 min** at vehicle speed of **6 MPH (10km/h)**, displayed oil temperature more than **180˚C**.

Check the parameter **PR004** when cool and warm.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF023 CONTINUED 1	

CO.1 3.DEF	*NOTES*	Apply following fault finding procedure.

Look for any damage to the harness, check the connection and condition of the following connectors:
- Automatic transmission computer, component code **119**.
- Hydraulic/electric interface, component code **754**.

Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119**. Measure the **resistance** of the gearbox oil temperature sensor(on the connector of component **119**) between the following connections:
- Connection code **5BY**,
- Connection code **5BZ**,

The **resistance** should be between
– **Approximately 6.62 kΩ at oil T = 10˚C**,
– **Approximately 3.51 kΩ at oil T = 25˚C**,
– **Approximately 0.55 kΩ at oil T = 80˚C**,
– **Approximately 0.25 kΩ at oil T = 110˚C**,
If the value is not correct, contact the **Techline**.

Disconnect the connector of component **754**.
Check **the continuity and insulation** of the following connections:
- Connection code **5BY**,
- Connection code **5BZ**,

Between component **119 and 754**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF023 CONTINUED 2	

Measure the **resistance** of the gearbox oil temperature sensor(on the connector of component **754**) between the following connections:
- Connection code **5BY**,
- Connection code **5BZ**,

The **resistance** should be between
– **Approximately 6.62 kΩ at oil T = 10˚C**,
– **Approximately 3.51 kΩ at oil T = 25˚C**,
– **Approximately 0.55 kΩ at oil T = 80˚C**,
– **Approximately 0.25 kΩ at oil T = 110˚C**,
If the value is not correct, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF038 PRESENT OR STORED	TURBINE SPEED SENSOR CIRCUIT DEF: Value outside tolerances.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● engine started and left running for **1min**. ● automatic transmission computer detects turbine speed of **305rpm** or less while driving at **25 MPH (40 km/h)** or more with engine speed of **1,600rpm** or more.
	Special notes: Safe mode control of turbine speed sensor is followed: ● While driving, it locks gearbox in the gear which was used at the time of malfunction detection. ● After the vehicle is stopped, it locks gearbox in the 3rd gear. ● It prohibits driving in the manual mode. ● It locks turbine speed sensor signal at **600rpm**. ● It prohibits driving with lockup.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Turbine speed sensor, component code **1060**.
Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **1060**.
Check the **+ after ignition feed** on the **AP4** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the connector, otherwise replace the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

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DF038 CONTINUED	

Disconnect the connector of component **119**.
Check **the continuity and insulation** of the following connections:
- Connection code **5DA,**
- Connection code **5HN,**

Between component **119 and 1060.**
If the connector or the connections are faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the connector, otherwise replace the wiring, otherwise replace it.

Measure the **resistance** of the component **1060** between the following connections:
- Connection code **5DA,**
- Connection code **5HN,**

The **resistance** should be between
– **Approximately 300 Ω ± 40 Ω on oil temperature 20˚C**.
If the value is not correct, replace the component **1060** (see **MR420 Mechanical, 23A, Automatic gearbox, Speed sensor: Removal – Refitting**).

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF067 PRESENT OR STORED	LEVER POSITION SWITCH CIRCUIT CO.0: Open circuit or short circuit to earth CC.1: Short-circuit to +12V

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● computer receives no input signal from automatic transmission multifunction switch. ● computer simultaneously detects two or more signals from automatic transmission multifunction switch.
	Special notes: Upon fault of the lever position switch, safe mode control is followed: ● It locks gearbox in "**D**" position. ● It prohibits driving in the manual mode. ● It continuously keeps sequence solenoid valve "**EVS1**"* inactive. ● It sets the line pressure at the maximum pressure. ● It does not show shift position indicator.

Make sure the automatic transmission multifunction switch connector is correctly installed on the automatic gearbox.
Check the control adjustment (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment**).

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Automatic transmission multifunction switch, component code **779**.
Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **779**.
Check the **+ after ignition feed** on the **AP11** connection.
If the connection or connector are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

*EVS: sequence solenoid valve.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF067 CONTINUED	

Disconnect the connector of component **119**.
Check **the continuity and insulation** of the following connections:
- Connection code **H66P**,
- Connection code **5DH**,
- Connection code **5DJ**,
- Connection code **5DF**,

Between component **119 and 779**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

If the connections are correct, replace the component **779** (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Removal – Refitting**).

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF084 PRESENT OR STORED	MULTIPLEXED NETWORK 1.DEF: CAN bus mute 2.DEF: Signal incorrect.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault is declared present after the automatic transmission computer is not transmitting or receiving multiplex network signal for **2s** or more.

Check the fault finding on the multiplex network circuit (see 88B, Multiplexing).

Check **the continuity and insulation** of the following connections:
- Connection code **CANH**,
- Connection code **CANL**,

Between component **119 and 120**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

If the fault is still present, contact the Techline.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF085 PRESENT OR STORED	SEQUENCE SOLENOID VALVE "EVS1" CIRCUIT CO.1: Open circuit or Short circuit to +12V CC.0: Short circuit to earth.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● starting the engine, ● shifting to **"P", "R"** or **"N"** ● If driving conditions permit, select **1st, 2nd, 3rd** or **4th** gear (no lock up application), when the isolation of the circuit of the sequence solenoid valve **"EVS1"** is detected. ● If driving conditions permit, select **5th** and **6th** gear (no lock up application), when the short of the circuit of the sequence solenoid valve **"EVS1"** is detected.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear. ● After the vehicle is stopped, it locks the gearbox in the **3rd** gear

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **754**.
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

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DF085 CONTINUED	

Disconnect the connector of component **119** and component **754**.
Check **the continuity and insulation** of the following connections:
- Connection code **5HL**,
- Connection code **5LW**,

Between the component **119 and 754**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the connector, otherwise replace the wiring.

Measure the **resistance** of the component **754** between the following connections:
- Connection code **5HL**,
- Connection code **5LW**,

The **resistance** should be between
– **Approximately 28 Ω ± 2.8 Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

* EVS: sequence solenoid valve.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF086 PRESENT OR STORED	SEQUENCE SOLENOID VALVE "EVS2" CIRCUIT CO.1: Open circuit or Short circuit to +12V CC.0: Short circuit to earth.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● starting the engine, ● shifting to **"P", "R"** or **"N"** ● If driving conditions permit, select **M1st** and **1st** gear to manual mode and **1st, 2nd, 3rd, 4th, 5th** or **6th** gear (lockup release), when the isolation of the circuit of the sequence solenoid valve **"EVS2"** is detected. ● If driving conditions permit, select **2nd, 3rd, 4th, 5th** or **6th** gear (lockup application), when the short of the circuit of the sequence solenoid valve **"EVS2"*** is detected.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear. ● After the vehicle is stopped, it locks the gearbox in the 3rd gear

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **754**.
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF086 CONTINUED	

Disconnect the connector of component **119** and component **754**.
Check **the continuity and insulation** of the following connections:
- Connection code **5HL**,
- Connection code **5LW**,

Between the component **119 and 754**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Measure the **resistance** of the component **754** between the following connections:
- Connection code **5HL**,
- Connection code **5LW**,

The **resistance** should be between
– **Approximately 28 Ω ± 2.8 Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

* EVS: sequence solenoid valve.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF091 PRESENT OR STORED	PRESSURE REGULATION SOLENOID VALVE "LS" CIRCUIT CO.1: Open circuit or Short circuit to +12V CC.0: Short circuit to earth.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● engine started and vehicle driven between **2nd** and **6th** gear. ● if the circuit isolation is detected **5s** for open circuit of the pressure regulation solenoid valve of short with **+ after ignition feed**.
	Special notes: When the pressure regulation solenoid valve circuit is faulty, the safe mode control is set to maximum pressure.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the connector, otherwise replace the wiring.

Disconnect the connector of component **754**.
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119** and component **754**.
Check **the continuity and insulation** of the following connections:
● Connection code **5Q**,
● Connection code **5LW**,
Between the component **119 and 754**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF091 CONTINUED	

Measure the **resistance** of the component **754** between the following connections:
- Connection code **5Q**,
- Connection code **5LW**,

The **resistance** should be between
– **Approximately 5.3 Ω ± 0.5 Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

* LS: line pressure.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF107 PRESENT OR STORED	ENGINE SPEED MULTIPLEXED INFORMATION DEF: Injection engine speed information faulty

NOTES	**Priority when dealing with a number of faults:** When a number of faults are declared, check the interpretation of faults **DF084 "Multiplexed network"** first.
	Conditions for applying fault finding procedures to stored faults: ● Apply this fault finding procedure if the fault reappears as present or stored after a fault has been cleared and the ignition has been switched off and on again ● engine speed signal is not input from injection computer to automatic transmission computer.
	Special notes: If automatic transmission computer do not transmit the engine speed signal from injection computer, it is declared **0 rpm** in safe mode control. However, judge the engine stop etc. by vehicle speed only.

Check the fault finding on the multiplex network circuit (see **88B, Multiplexing**).

If the fault is still present, carry out fault finding on the injection system (see **13B, diesel injection**).

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF108 PRESENT OR STORED	EFFECTIVE MEAN TORQUE MULTIPLEXED INFORMATION DEF: Multiplex frames missing or invalid values (fault on the computer producing the signal or CAN connection fault).

NOTES	**Priority when dealing with a number of faults:** When a number of faults are declared, check the interpretation of faults **DF084 "Multiplexed network"** first.
	Conditions for applying fault finding procedures to stored faults: ● Apply this fault finding procedure if the fault reappears as present or stored after a fault has been cleared and the ignition has been switched off and on again ● Automatic transmission computer does not receive a signal input from injection computer using the multiplex network line, or abnormal signals. ● The fault is declared present after a road test.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear. ● After the vehicle is stopped, it locks the gearbox in the **3rd** gear. ● It prohibits driving with lockup.

Check the fault finding on the multiplex network circuit (see **88B, Multiplexin**g).

If the fault is still present, carry out fault finding on the injection system (see **13B, diesel injection**).

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF171 PRESENT OR STORED	VEHICLE SPEED SENSOR CIRCUIT DEF: Value outside tolerances.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault is declared present after a test. The automatic transmission computer receives no input signal from vehicle speed sensor. The vehicle speed transmitted by the multiplex line **> 12 mph (20 km/h)** and the speed of transmission output sensor **< 3 mph (5km/h)** then the vehicle speed transmitted by multiplex line **< 12 mph (20km/h)**.
	Special notes: If the system detects an error, there are four main safe modes: When the vehicle speed sensor circuit is faulty, the safe mode control is followed: ● While driving, it locks gearbox in the gear which was used at the time of malfunction detection. ● After the vehicle is stopped, it locks gearbox in the **3rd** gear. ● It prohibits driving in the manual mode. ● It uses vehicle speed signal (multiplexing) from anti-lock braking system computer.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Gearbox output speed sensor, component code **1140**.
Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **1140**.
Check the **+ after ignition feed** of between on the **AP4** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119**.
Check **the continuity and insulation** of the following connections:
● Connection code **5T**,
● Connection code **5TA**,
Between the component **119 and 1440**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF171 CONTINUED	

Measure the **resistance** of the component **1140** between the following connections:
- Connection code **5T**,
- Connection code **5TA**,

The **resistance** should be between
– **Approximately 300 Ω ± 40 Ω on oil temperature 20˚C**.
If the value is not correct, replace the component **1140** (see **MR420 Mechanical, 23A, Automatic gearbox, Speed sensor: Removal – Refitting**).

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF194 PRESENT OR STORED	THROTTLE POSITION SENSOR DEF: Multiplex frames missing or invalid values (fault on the computer producing the signal or CAN connection fault).

NOTES	**Priority when dealing with a number of faults:** When a number of faults are declared, check the interpretation of faults **DF084 "Multiplexed network"** first.
	Conditions for applying fault finding procedures to stored faults: The fault is declared present after the automatic transmission computer does not receive the proper accelerator pedal position signals (input by multiplex network) from injection computer.
	Special notes: When the throttle position sensor is faulty, fix the acceleration pedal sensor signal on about 25% in safe mode control, then prohibit the lockup operation.

Check the fault finding on the multiplex network circuit (see **88B, Multiplexing**).

If the fault is still present, carry out fault finding on the injection system (see **13B, diesel injection**).

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF238 PRESENT OR STORED	INFO*. MULTIPLEX GROSS ENGINE TORQUE INVALID DEF: Multiplex frames missing or invalid values (fault on the computer producing the signal or CAN connection fault).

NOTES	**Priority when dealing with a number of faults:** When a number of faults are declared, check the interpretation of faults **DF084 "Multiplexed network"** first.
	Conditions for applying fault finding procedures to stored faults: ● Apply this fault finding procedure if the fault reappears as present or stored after a fault has been cleared and the ignition has been switched off and on again ● Automatic transmission computer does not receive a signal input from injection computer using the multiplex network line, or abnormal signals. ● The fault is declared present after a road test.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear. ● After the vehicle is stopped, it locks the gearbox in the **3rd** gear. ● It prohibits driving with lockup.

Check the fault finding on the multiplex network circuit (see **88B, Multiplexing**).

If the fault is still present, carry out fault finding on the injection system (see **13B, diesel injection**).

If the fault is still present, contact the **Techline**.

* Info: Information

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

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DF256 PRESENT OR STORED	GEARS SLIP RANDOMLY DEF: Hydraulic, mechanical or electrical solenoid valve fault; deal with other faults first.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault is declared present after a road test.
	Special notes: When the fault is declared, the safe mode control is as followed: ● When driving forward (gear lever position **"D"** or **"M"**): – When driving in 1st, 2nd, 3rd, 4th, 5th or 6th gear, the gearbox will keep the same gear engaged. ● Shift to **1st** gear rejected: – Gearbox is locked in the **5th** gear for clutch **1** fault. – Gearbox is locked in the **4th** gear for clutch **3** fault. – Gearbox is locked in the **3rd** gear for clutch **2** fault. – Gearbox is locked in the **2nd** gear for brake **2** fault. ● Shift to **2nd** gear rejected: – Gearbox is locked in the **5th** gear. ● Shift to **3rd** gear rejected: – Gearbox is locked in the **6th** gear. ● Shift to **4th** gear rejected: – Gearbox is locked in the **5th** gear for clutch **1** fault. – Gearbox is locked in the **3rd** gear for clutch **3** fault. ● Shift to **5th** gear rejected: – Gearbox is locked in the **2nd** gear. ● Shift to **6th** gear rejected: – Gearbox is locked in the **3rd** gear. ● When driving reverse (gear lever **"R"** position): – It keeps gearbox in neutral until the vehicle speed lowers below the specification; when the vehicle speed is below the specification, it sets the line pressure at the maximum pressure with idle switch signal **ON** and brake switch signal **ON**. ● When the vehicle is at a stop with gearbox in forward ranges (gear lever position of **"D"** or **"M"**): – It locks gearbox in the 5th gear when the engine speed is below the specification and brake switch signal is **ON**. ● When the vehicle is at a stop with gearbox in the reverse range (select lever in "**R**" position): – If sets the line pressure at the maximum pressure when the engine speed is below the specification and brake switch signal is **ON**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF256 CONTINUED	

Check the gearbox oil level to refill or change the oil if necessary (see **MR420 Mechanical, 23A, Automatic gearbox, Automatic gearbox oil: Removal – Refitting**).
Check the gearbox oil (see **Test1 "Checking the gearbox oil"**).
Carry out the stall revolution check (see **Test2 "Checking the stall revolution"**).
Check the line pressure (see **Test3 "Checking the line pressure"**).
If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF273 PRESENT OR STORED	CLUTCH SOLENOID VALVE CIRCUIT 1 CO.1: Open circuit or Short circuit to +12V CC.0: Short circuit to earth.

NOTES	**Conditions for applying fault finding procedures to stored faults:** This fault is declared: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● starting the engine, ● shifting to **"P"** or **"R"** or **"N"**. ● If driving conditions permit, select **1st**, **2nd**, **3rd** and **4th** gear. ● 5s of break or short in the circuit of clutch **1** solenoid valve is detected. ● the clutch solenoid valve 1 current is abnormally high or low.
	Special notes: If the system detects an error, the gearbox will shift to **5th**.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **754**.
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connector are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF273 CONTINUED	

Disconnect the connector of component **119 and 754**.
Check **the continuity and insulation** of the following connections:
- Connection code **5DL**,
- Connection code **5LW**,

Between the component **119 and 754**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Measure the **resistance** of the component **754** between the following connections:
- Connection code **5DL**,
- Connection code **5LW**,

The **resistance** should be between
– **Approximately 5.3 Ω ± 0.5 Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF274 PRESENT OR STORED	CLUTCH SOLENOID VALVE CIRCUIT 2 CO.1: Open circuit or Short circuit to +12V CC.0: Short circuit to earth.

NOTES	**Conditions for applying fault finding procedures to stored faults:** This fault is declared: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● starting the engine, ● shifting to **"P"** or **"R"** or **"N"**. ● If driving conditions permit, select **1st**, **2nd**, **4th** and **6th** gear. ● if the circuit isolation is detected more than **5s** by the clutch solenoid valve circuit 2 shot or control current is high or low abnormally.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear. ● After the vehicle is stopped, it locks the gearbox in the **3rd** gear.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **754**.
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF274 CONTINUED	

Disconnect the connector of component **119 and 754**.
Check **the continuity and insulation** of the following connections:
- Connection code **5HH**,
- Connection code **5LW**,

Between the component **119 and 754**.
If the connection or connectionsare faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Measure the **resistance** of the component **754** between the following connections:
- Connection code **5HH**,
- Connection code **5LW**,

The **resistance** should be between
– **Approximately 5.3 Ω ± 0.5 Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF275 PRESENT OR STORED	CLUTCH SOLENOID VALVE CIRCUIT 3 CO.1: Open circuit or Short circuit to +12V\ CC.0: Short circuit to earth.

NOTES	**Conditions for applying fault finding procedures to stored faults:** This fault is declared: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● starting the engine, ● shifting to **"P"** or **"R"** or **"N"**. ● If driving conditions permit, select **1st, 2nd** and **3rd** gear. ● if the circuit isolation is detected more than **5s** by the clutch solenoid valve circuit **3** shot or control current is high or low abnormally.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **754**.
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF275 CONTINUED	

Disconnect the connector of component **119** and component **754**.
Check **the continuity and insulation** of the following connections:
- Connection code **5HK**,
- Connesation code **5LW**,

Between the component **119 and 754**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Measure the **resistance** of the component **754** between the following connections:
- Connection code **5HK**,
- Connection code **5LW**,

The **resistance** should be between
– **Approximately 5.3 Ω ± 0.5 Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF289 PRESENT OR STORED	AUTOMATIC TRANSMISSION MULTIPLEX TRANSMISSION DEF: Multiplex frames missing or invalid values (fault on the computer producing the signal or CAN connection fault).

NOTES	**Priority when dealing with a number of faults:** In the event of a combination of faults, deal with fault **DF084 "Multiplexed network"** first.
	Conditions for applying fault finding procedures to stored faults: The fault appears after: ● No signals transmitted over the multiplex line network.
	Special notes: When the fault is declared, the safe mode control is followed: ● Engine does not start. ● No lever position display on the instrument panel. Note: The defects of the disappear as soon as signals start transmitting again over the multiplex network.

Check the fault finding on the multiplex network circuit (see **88B, Multiplexing**).

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF298 PRESENT OR STORED	CHANGING GEAR DEF: Hydraulic, mechanical or electrical solenoid valve fault; deal with other faults first.

NOTES	**Conditions for applying fault finding procedures to stored faults:** This fault is declared present: ● An abrupt acceleration which exceeds a set time is detected under normal conditions of both the stop lamp switch signal and the vehicle speed sensor. ● Solenoid valve has both an electrical malfunction and a functional malfunction. ● An interlock pattern is due to a pressure switch operation.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear. ● After the vehicle is stopped, it locks the gearbox in the **3rd** gear (There are some exceptions depending on the failing component). ● It prohibits driving with lockup.

Check the gearbox oil level to refill or change the oil if necessary (see **MR420 Mechanical, 23A, Automatic gearbox, Automatic gearbox oil: Removal – Refitting**).
Check the gearbox oil (see **Test1 "Checking the gearbox oil"**).
Carry out the stall revolution check (see **Test2 "Checking the stall revolution"**).
Check the line pressure (see **Test3 "Checking the line pressure"**).
If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF300 PRESENT OR STORED	BRAKE SOLENOID VALVE CIRCUIT (2) CO.1: Open circuit or Short circuit to +12V CC.0: Short circuit to earth.

NOTES	**Conditions for applying fault finding procedures to stored faults:** This fault is declared: ● the computer fault memory has been cleared, ● the ignition has been switched off and on again, ● starting the engine, ● shifting to **"P"** or **"R"** or **"N"**. ● If driving conditions permit, select **2nd** and **6th** gear. ● if the circuit isolation is detected more than **5s** by the brake solenoid valve circuit **2** shot or control current is high or low abnormally.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear. ● After the vehicle is stopped, it locks the gearbox in the **3rd** gear.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status **(Present → stored)**.
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **754**.
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF300 CONTINUED	

Disconnect the connector of component **119 and 754**.
Check **the continuity and insulation** of the following connections:
- Connection code **5HG**,
- Connection code **5LW**,

Between the component **119 and 754**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Measure the **resistance** of the component **754** between the following connections:
- Connection code **5HG**,
- Connection code **5LW**,

The **resistance** should be between
– **Approximately 5.3 Ω ± 0.5 Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF301 PRESENT OR STORED	CLUTCH PRESSURE SWITCH CIRCUIT 1 CO.1 : Open circuit or Short circuit to +12V

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● Lever in **"D"** position, gear engaged at **1st** gear to **4th** gear. ● **and** accelerator pedal **> 0 %**, vehicle speed **> 6 mph (10 km/h)**, ● **and** for each gear, the status of clutch pressure switch **1** does not correspond to the solenoid control status. ● After engaging **4th** gear, switch off the ignition and remove card from its drive. Reinsert the card in the card reader, start up the vehicle then repeat the previous operation. ● Check (engine running) status **ET261 "Clutch 1"** (consult interpretation of status **ET261 "Clutch 1" (**see **Interpretation of statuses)**).
	Special notes: When the fault is declared, keep **ON** the **low clutch pressure switch** in safe mode control.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF301

DF301 CONTINUED	

Look for any damage to the harness, check the connection and condition of the following connectors:
- Automatic transmission computer, component code **119**.
- Hydraulic/electric interface, component code **754**.

Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119 and 754.**
Check **the continuity and insulation** of the following connections:
- Connection code **5LM,**
- Connection code **5LW,**

Between the component **119 and 754.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connections:
- Connection code **5LM**, between the component **119 and the pressure switch on the clutch1**.

If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF302 PRESENT OR STORED	CLUTCH PRESSURE SWITCH CIRCUIT 2 CO.1 : Open circuit or Short circuit to +12V

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● Lever in **"D"** position, gear engaged at **3rd** gear, **5th** gear or **"R"** position, ● **and** accelerator pedal **> 0 %**, vehicle speed **> 6 mph (10 km/h)**, ● **and** for each gear, the status of clutch pressure switch **2** does not correspond to the solenoid control status. ● After engaging **4th** gear, switch off the ignition and remove card from its drive. Reinsert the card in the card reader, start up the vehicle then repeat the previous operation.
	Special notes: When the fault is declared, keep **ON** the **clutch pressure switch 3** in safe mode control.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF302

DF302 CONTINUED	

Look for any damage to the harness, check the connection and condition of the following connectors:
- Automatic transmission computer, component code **119**.
- Hydraulic/electric interface, component code **754**.

Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119 and 754.**
Check **the continuity and insulation** of the following connections:
- Connection code **5HN,**
- Connection code **5LW,**

Between the component **119 and 754.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connections:
- Connection code **5HN**, between the component **119 and the pressure switch on the clutch2**.

If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF303 PRESENT OR STORED	CLUTCH PRESSURE SWITCH CIRCUIT 3 CO.1 : Open circuit or Short circuit to +12V

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● Lever in **"D"** position, gear engaged at **4th**, **5th** and **6th** gear, ● **and** accelerator pedal **> 0 %**, vehicle speed **> 6 mph (10 km/h)**, ● **and** for each gear, the status of clutch pressure switch **3** does not correspond to the solenoid control status. ● After engaging **4th** gear, switch off the ignition and remove card from its drive. Reinsert the card in the card reader, start up the vehicle then repeat the previous operation.
	Special notes: When the fault is declared, keep **ON** the **clutch pressure switch 3** in safe mode control.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF303

DF303 CONTINUED	

Look for any damage to the harness, check the connection and condition of the following connectors:
- Automatic transmission computer, component code **119**.
- Hydraulic/electric interface, component code **754**.

Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119 and 754.**
Check **the continuity and insulation** of the following connections:
- Connection code **5CZ,**
- Connection code **5LW,**

Between the component **119 and 754.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connections:
- Connection code **5CZ**, between the component **119 and the pressure switch on the clutch3**.

If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF304 PRESENT OR STORED	BRAKE PRESSURE SWITCH CIRCUIT 1 CO.1 : Open circuit or Short circuit to +12V

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● Lever in Reverse position, ● **and** brake pressure switch **1** status is **"INACTIVE".** ● After engaging **4th** gear, switch off the ignition and remove card from its reader. ● Reinsert the card in the card reader, start up the vehicle then repeat the previous operation.
	Special notes: When the fault is declared, keep **ON** the **brake pressure switch 1** in safe mode control.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119 and 754.**
Check **the continuity and insulation** of the following connections:
● Connection code **5KY,**
● Connection code **5LW,**
Between the component **119 and 754.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connections:
● Connection code **5KY**, between the component **119 and the pressure switch on brake1**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF304

DF305 PRESENT OR STORED	BRAKE PRESSURE SWITCH CIRCUIT 2 CO.1 : Open circuit or Short circuit to +12V

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● Lever in **"D"** position, gear engaged at **2nd**, **3rd**, **4th**, **5th** and **6th** gear, ● **and** accelerator pedal **> 0 %**, vehicle speed **> 6 mph (10 km/h)**, ● **and** for each gear, the status of brake pressure switch **2** does not correspond to the solenoid control status. (consult the interpretation of faults **ET260 "Brake2"** in the fault finding chapter, Interpretation of statuses).
	Special notes: When the fault is declared, keep **ON** the **brake pressure switch 2** in safe mode control.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119 and 754.**
Check **the continuity and insulation** of the following connections:
● Connection code **5LH,**
● Connection code **5LW,**
Between the component **119 and 754.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connections:
● Connection code **5LH**, between the component **119 and the pressure switch on brake2**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF305

DF306 PRESENT OR STORED	BRAKE/LOCK-UP SOLENOID VALVE CIRCUIT 1 CO.1 : Open circuit or Short circuit to +12V CC.0 : Short circuit to earth.

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault appears after: ● Lever in **"D"** position, gear engaged = **1st**, **2nd**, **3rd**, **4th**, **5th** and **6th** gear or gear engaged = **1st** and engine brake. ● **5s** of break or short in the circuit of **brake/lock-up solenoid valve 1** is detected. ● Control current of **brake/lock-up solenoid valve 1** is abnormally high or low.
	Special notes: When the fault is declared, the safe mode control is followed: ● While driving, it shifts the gearbox into the **5th** gear. ● After the vehicle is stopped, it locks the gearbox in the **3rd** gear (There are some exceptions depending on the failing component). ● It prohibits driving with lockup.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **119 and 754.**
Check **the continuity and insulation** of the following connections:
● Connection code **5R,**
● Connection code **5LW,**
Between the component **119 and 754.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Measure the **resistance** of the component **754** between the following connections:
● Connection code **5R,**
● Connection code **5LW,**
The **resistance** should be between
– **Approximately 5.3Ω ±0.5Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF306

DF307 PRESENT OR STORED	ENGINE BRAKING DEF: Hydraulic, mechanical or electrical solenoid valve fault; deal with other faults first.

NOTES	**Priority when dealing with a number of faults:** If there is a combination of the following fault: ● **DF300 "Brake solenoid valve circuit (2)"** ● **DF306 "Brake/Lock-up solenoid valve circuit 1"** ● **DF307 "Engine braking"** Deal first with faults **DF300 "Brake solenoid valve circuit (2)"** and **DF306 "Brake/ Lock-up solenoid valve circuit 1"**
	Conditions for applying fault finding procedures to stored faults: This fault appears after: ● Lever in **"D"** position. ● The correlation between control current of **sequence solenoid valve "EVS1"*** and **ACTIVE - INACTIVE** of brake **1** pressure switch is abnormal with a position other than manual mode and an accelerator opening of **75%** or less.
	Special notes: When the fault is declared, the safe mode control is followed: ● It prohibits **1st** gear engine brake. ● It continuously keeps **sequence solenoid valve "EVS1"* OFF** ● It turns **sequence solenoid valve "EVS1"* OFF** when driving in the **1st** gear.

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **754.**
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF307

DF307 CONTINUED	

Check **the continuity and insulation** of the following connections:
- Connection code **5R,**
- Connection code **5LW,**

Between the component **119 and 754.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnectthe connector from component **119**, measure the **resistance** of brake solenoid valve **2** (on the connector of component **119**) between the following connections:
- Connection code **5R,**
- Connection code **5LW,**

The **resistance** should be between
– **Approximately 5.3 Ω ±0.5 Ω on oil temperature 20˚C**.
If the value is not correct, contact the **Techline**.

Perform fault finding process of following components.
- **DF038 "Turbine speed sensor circuit"**
- **DF171 "Vehicle speed sensor circuit"**
- **DF306 "Brake/lock-up solenoid valve circuit 1"**
- **DF304 "Brake pressure switch circuit 1"**
- **DF301 "Clutch pressure switch circuit 1"**
- **DF273 "Clutch solenoid valve circuit 1"**
- **DF086 "Sequence solenoid valve "EVS"* circuit"**

If the fault is still present, contact the **Techline**.

*EVS: sequence solenoid valve.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

DF308 PRESENT OR STORED	COMP EARTH CO: Open circuit

NOTES	**Conditions for applying fault finding procedures to stored faults:** The fault is declared present after the vehicle ignition has been switched on.

Look for any damage to the harness, check the connection and condition of the following connectors:
- Automatic transmission computer, component code **119**.
- Motor fuse and relay, component code **597**.
- Switching protection unit, component code **1337**.

Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Check **10A** fuse (**F16**) in motor fuse and relay, component code **597** and **10A** fuse (**U10**) in component **1337**
If fuse is blown, be sure to eliminate cause of malfunction before installing new fuse

Disconnect the connector of component **119**.
Check the **+ 12 V** supply on the **BP42** connection.
Check the **+ after ignition feed** on the **AP4** connection.
Check the continuity of the **earth** on connection **MZR**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connections:
- Connection code **BP42**, between the component **119 and 597**,
- Connection code **AP4**, bbetween the component **119 and 1337**.

If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the connector, otherwise replace the wiring.

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF308

DF328 PRESENT OR STORED	VEHICLE SPEED MULTIPLEXED INFORMATION DEF: Multiplex frames missing or invalid values (fault on the computer producing the signal or CAN connection fault).

NOTES	**Priority when dealing with a number of faults:** When a number of faults are declared, check the interpretation of faults **DF084 "Multiplexed network"** first.
	Conditions for applying fault finding procedures to stored faults: The fault appears after: ● The computer fault memory has been cleared, ● the ignition has been switched off and on again, ● road test.

Check the fault finding of the multiplex network circuit (see **88B, Multiplexing**).

If the fault is still present, carry out fault finding on the anti-lock braking system (see **38C, Anti-lock braking system**).

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF328

DF356 PRESENT OR STORED	TORQUE CONVERTER CLUTCH SOLENOID VALVE FUNCTION DEF: CONVERTER LOCK UP CONTROL

NOTES	**Priority when dealing with a number of faults:** If there is a combination of the following fault: ● **DF356 "Torque converter clutch solenoid valve function"** ● **DF086 "Sequence solenoid valve "EVS2"* circuit"** ● **DF306 "Brake/Lock-up solenoid valve circuit 1"** Deal first with faults **DF086 "Sequence solenoid valve "EVS2"* circuit" and DF306 "Brake/Lock-up solenoid valve circuit 1"**
	Conditions for applying fault finding procedures to stored faults: The fault is declared present after a road test, Slip revolution of torque converter exceeds the specified value in the lockup operating area. Number of revolutions of torque converter continuously keeps a very low state for the specified period of time in the lockup non-operating area.
	Special notes: When the fault is declared, it commands to turn lockup "**INACTIVE**".

Look for any damage to the harness, check the connection and condition of the following connectors:
● Automatic transmission computer, component code **119**.
● Hydraulic/electric interface, component code **754**.
Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Disconnect the connector of component **754.**
Check the **+ after ignition feed** of between on the **5LW** connections.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

TCU_V04_DF356

DF356 CONTINUED	

Disconnect the connector from component **119**, measure the **resistance of sequence solenoid valve "EVS2"*** (on the connector of component **119**) between the following connections:
- Connection code **5HL,**
- Connection code **5LW,**

The **resistance** should be between
Approximately 28Ω ±2.8Ω on oil temperature 20˚C.
If the value is not correct, contact the **Techline**.

Perform fault finding process of following components.
- **DF038 "Turbine speed sensor circuit"**
- **DF171 "Vehicle speed sensor circuit"**
- **DF306 "Brake/Lock-up solenoid valve circuit 1"**
- **DF304 "Brake pressure switch circuit 1"**
- **DF301 "Clutch pressure switch circuit 1"**
- **DF273 "Clutch solenoid valve circuit 1"**
- **DF086 "Sequence solenoid valve "EVS2"* circuit "**

If the fault is still present, contact the **Techline**.

*EVS: sequence solenoid valve.

AFTER REPAIR	Deal with any other faults. Clear the fault memory. Switch off the ignition, wait **1min** and carry out a road test followed by another check with the **diagnostic tool**.

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

Main Screen

Parameter or Status checked or Action		Display and Notes	Fault finding
PR008:	Computer supply voltage	**Approximately 9.6 V < X < 15 V**	If the value of the parameter is not within this range, check **the insulation, continuity and the absence of interference resistance** on the computer power supplies and earths. If the fault is still present, test the battery and run fault finding on the charging circuit. (see **Technical Note 6014A, Checking the charging circuit**).
ET012:	Gear lever position	**P:** lever in position **"P"**. **N:** lever in position **"N"**. **R:** lever in position **"R"**. **D:** lever in position **"D"**. **M:** lever in position **"Manual mode"**. **Fault:** gear lever position in error (invalid)	In the event of a fault, refer to the interpretation of faults **DF067 "Lever position switch circuit"**.
PR006:	Engine speed	Closely matches the tachometer reading the engine speed. **0 rpm**	If there is a problem, Carry out a fault finding procedure on the injection system (see **13B, Diesel injection system**) Note: **The value of this parameter depends on the injection fitted to the vehicle. The values noted in this check are therefore only average values (refer to the petrol injection conformity check).**
PR004:	Gearbox oil temperature	Indicates the automatic gearbox oil temperature in ˚**C**. **- 40 ˚C < X < 140 ˚C**	Indicates the actual temperature on the gearbox oil. Refer to the interpretation of faults **DF023"Gearbox oil temperature circuit".**

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

Sub function: CHANGING GEARS

Parameter or Status checked or Action		Display and Notes	Fault finding
ET012:	Gear lever position	**P:** lever in position **"P"**. **N:** lever in position **"N"**. **R:** lever in position **"R"**. **D:** lever in position **"D"**. **M:** lever in position **"Manual mode"**. **Fault:** gear lever position in error (invalid)	In the event of a fault, refer to the interpretation of faults **DF067 "Lever position switch circuit"**.
PR105:	Vehicle speed	When driving, the speed correspondent with speed meter of instrument panel **0 km/h**	If the fault is still present run **fault finding on** the anti-lock braking system computer (see **38C, Anti-lock braking system**).
PR007:	Turbine speed	When driving, approximately Matches the engine speed. **0 rpm**	In the event of a fault, refer to the interpretation of faults DF038 "Turbine speed **sensor circuit**".
PR004:	Gearbox oil temperature	Indicates the automatic gearbox oil temperature in **˚C**. **- 40 ˚C < X < 140 ˚C**	Indicates the actual temperature on the gearbox oil. Refer to the interpretation of fault **DF023"Gearbox oil temperature circuit".**
ET097:	Manual mode	**INACTIVE,** If gear lever is in **P/N, R, D** position **MANUAL MODE,** if gear lever is in manual mode position **M+,** if gear lever in lower one-touch position **M-,** if gear lever in upper one-touch position	In the event of a fault, refer to the interpretation of status **ET097 "Manual mode**".

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

Sub function: CHANGING GEARS (CONTINUED1)

Parameter or Status checked or Action		Display and Notes		Fault finding
ET261:	Clutch 1	Clutch 1 engaged	**ACTIVE**	In the event of a fault, refer to the interpretation of faults **DF301 "Clutch pressure switch 1"**
		Clutch 1 disengaged	**INACTIVE**	
ET262:	Clutch 2	Clutch 2 engaged	**ACTIVE**	In the event of a fault, refer to the interpretation of faults **DF302 "Clutch pressure switch 2".**
		Clutch 2 disengaged	**INACTIVE**	
ET263:	Clutch 3	Clutch 3 engaged	**ACTIVE**	In the event of a fault, refer to the interpretation of faults **DF303 "Clutch pressure switch 3".**
		Clutch 3 disengaged	**INACTIVE**	
ET259:	Brake 1	Brake 1 engaged	**ACTIVE**	In the event of a fault, refer to the interpretation of faults **DF304 "Brake pressure switch 1".**
		Brake 1 disengaged	**INACTIVE**	
ET260:	Brake 2	Brake 2 engaged	**ACTIVE**	In the event of a fault, refer to the interpretation of faults **DF305 "Brake pressure switch 2".**
		Brake 2 disengaged	**INACTIVE**	

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

Sub function: CHANGING GEARS (CONTINUED2)

Parameter or Status checked or Action		Display and Notes		Fault finding
PR022:	Accelerator pedal position	Releasing	**0%**	If there is a problem, Carry out a fault finding procedure on the injection system (see **13B, Diesel injection system**) Note: **The value of this parameter depends on the injection fitted to the vehicle. The values noted in this check are therefore only average values (refer to the injection conformity check).**
		Pressing	**100%**	
PR006:	Engine speed	Closely matches the tachometer reading the engine speed. **0 rpm**		
ET021:	Solenoid valve control sequence 1	When **5th, 6th** speed gear are selected	**ACTIVE**	In the event of a fault, refer to the interpretation of faults **DF085 "Sequence solenoid valve "EVS1"* circuit"**.
		others	**INACTIVE**	
ET022:	Solenoid valve control sequence 2	Select lever **P, N**, **R** position, when **1st gear** driving	**ACTIVE**	In the event of a fault, refer to the interpretation of faults **DF086 "Sequence solenoid valve "EVS2"* circuit".**
		Others	**INACTIVE**	
PR051:	Clutch 1 solen.* valve control current	Clutch 1 engaged	**1000 mA**	In the event of a fault, refer to the interpretation of faults **DF273 "Clutch solenoid valve circuit 1".**
		Clutch 1 disengaged	**0 mA**	
PR055:	Clutch 2 solen.* valve control current	Clutch 2 engaged	**0 mA**	In the event of a fault, refer to the interpretation of faults **DF274 "Clutch solenoid valve circuit 2".**
		Clutch 2 disengaged	**1000 mA**	

*solen: solenoid
*EVS: sequence solenoid valve.

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

Sub function: CHANGING GEARS (CONTINUED3)

Parameter or Status checked or Action		Display and Notes		Fault finding
PR056:	Clutch 3 solen.* valve control current	Clutch 3 engaged	**0 mA**	In the event of a fault, refer to the interpretation of faults **DF275 "Clutch solenoid valve circuit 3".**
		Clutch 3 disengaged	**1000 mA**	
PR050:	Brake 1 solen.* valve control current	When **"R"** position selected, coasting in **1st** speed position, and lockup is working	**1000 mA**	In the event of a fault, refer to the interpretation of faults **DF306 "Brake/Lock-up solenoid valve circuit 1"**.
		other than the above	**0 mA**	
PR072:	Brake 2 solen.* valve control current	Brake 2 engaged	**1000 mA**	In the event of a fault, refer to the interpretation of faults **DF300 "Brake solenoid valve circuit (2)".**
		Brake 2 disengaged	**0 mA**	
PR109:	Pressure regulation SV "LS"* current	When driving	**0 – 1000 mA**	In the event of a fault, refer to the interpretation of faults **DF091 "Line pressure solenoid circuit"**.
ET013:	Gear engaged	**DECLUTCHED:** Declutching when stationary **P/N:** Park/Neutral position **R:** Gear engaged: R **1:** Gear engaged: 1st **2:** Gear engaged: 2nd **3:** Gear engaged: 3rd **4:** Gear engaged: 4th **5:** Gear engaged: 5th **6:** Gear engaged: 6th		In the event of a fault, refer to the interpretation of status **ET013 "Gear engaged"**.

*solen: solenoid.
*LS: line pressure.

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

SUB FUNTION: PRESSURE REGULATION

Parameter or Status checked or Action		Display and Notes		Fault finding
ET012:	Gear lever position	**P:** lever in position **"P"**. **N:** lever in position **"N"**. **R:** lever in position **"R"**. **D:** lever in position **"D"**. **M:** lever in position **"Manual mode"**. **Fault:** gear lever position in error (invalid)		In the event of a fault, refer to the interpretation of faults **DF067 "Lever position switch circuit".**
PR105:	Vehicle speed	When driving, the speed correspondent with speed meter of instrument panel **0 km/h**		If the fault is still present run **fault finding on** the anti-lock braking system computer (see **38C, Anti-lock braking system**).
PR007:	Turbine speed	When driving, approximately Matches the engine speed. **0 rpm**		In the event of a fault, refer to the interpretation of faults **DF038 "Turbine speed sensor circuit"**.
PR004:	Gearbox oil temperature	Display the actual temperature of gearbox oil **- 40 ˚C < X < 140 ˚C**		Indicates the actual temperature on the gearbox oil. Refer to the interpretation of fault **DF023 "Gearbox oil temperature circuit"**.
PR022:	Accelerator pedal position	Releasing	**0%**	If there is a problem, Carry out a fault finding procedure on the injection system (see **13B, Diesel injection system**) Note: **The value of this parameter depends on the injection fitted to the vehicle. The values noted in this check are therefore only average values (refer to the injection conformity check).**
		Pressing	**100%**	
PR006:	Engine speed	Closely matches the tachometer reading the engine speed. **0 rpm**		
PR106:	Effective engine torque	This parameter indicates the effective engine torque in **Nm.**		
PR109:	Pressure regulation SV "LS"* current	When driving	**0 – 1000 mA**	In the event of a fault, refer to the interpretation of faults **DF091 "Pressure regulation solenoid valve "LS"* circuit"**.

*LS: line pressure.

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

SUB FUNTION: UNLOCKING/LOCKING

Parameter or Status checked or Action		Display and Notes		Fault finding
ET012:	Gear lever position	**P:** lever in position **"P"**. **N:** lever in position **"N"**. **R:** lever in position **"R"**. **D:** lever in position **"D"**. **M:** lever in position **"Manual mode"**. **Fault:** gear lever position in error (invalid)		In the event of a fault, refer to the interpretation of faults **DF067 "Lever position switch circuit".**
PR105:	Vehicle speed	When driving, the speed correspondent with speed meter of instrument panel **0 km/h**		If the fault is still present run **fault finding on** the anti-lock braking system computer (see **38C, Anti-lock braking system**).
PR007:	Turbine speed	When driving, approximately Matches the engine speed. **0 rpm**		In the event of a fault, refer to the interpretation of faults **DF038 "Turbine speed sensor circuit"**.
PR004:	Gearbox oil temperature	Display the actual temperature of gearbox oil **- 40 ˚C < X < 140 ˚C**		Indicates the actual temperature on the gearbox oil. Refer to the interpretation of fault **DF023"Gearbox oil temperature circuit"**.
PR022:	Accelerator pedal position	Releasing	**0%**	If there is a problem, Carry out a fault finding procedure on the injection system (see **13B, Diesel injection system**) Note: **The value of this parameter depends on the injection fitted to the vehicle. The values noted in this check are therefore only average values (refer to the injection conformity check).**
		Pressing	**100%**	
PR006:	Engine speed	Closely matches the tachometer reading the engine speed. **0 rpm**		
PR106:	Effective engine torque	This parameter indicates the effective engine torque in **Nm.**		

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

SUB FUNTION: UNLOCKING/LOCKING (CONTINUED)

Parameter or Status checked or Action		Display and Notes		Fault finding
ET037:	Brake switch information	**Released:** brake pedal releasing. **AVTIVE:** brake pedal pressed. **Pressed:** When brake pedal position confirmed as depressed. **Unavailable:** Invalid brake switch signal.		In the event of a fault, refer to the interpretation of status **ET037 "Brake switch information"**. If the fault is still present, carry out the fault finding of body control system (see **87B, Body control system**).
ET259:	Brake 1	When applying	**ACTIVE**	In the event of a fault, refer to the interpretation of faults **DF304 "Brake pressure switch 1"**.
		When releasing	**INACTIVE**	
PR050:	Brake 1 solen.* valve control current	When **"R"** position selected, coasting in **1st** speed position, and lockup is working	**1000 mA**	In the event of a fault, refer to the interpretation of faults **DF306 "Brake/Lock-up solenoid valve circuit 1"**.
		other than the above	**0 mA**	
ET071:	Torque converter	Lock up releasing	**Open**	In the event of a fault, refer to the interpretation of faults **DF356 "Torque converter clutch solenoid valve function"**.
		When lock applying (slip)	**Slipping**	
		Lock up applying	**Closed**	
		When fault	**UNAVAILABLE**	

*solen: solenoid.

NOTES	Only check conformity after a thorough check with the diagnostic tool. The values indicated in this conformity check are given as examples. **Application condition: Engine stopped, ignition on.**

SUB FUNTION: TORQUE CONTROL

Parameter or Status checked or Action		Display and Notes		Fault finding
ET012:	Gear lever position	**P:** lever in position **"P"**. **N:** lever in position **"N"**. **R:** lever in position **"R"**. **D:** lever in position **"D"**. **M:** lever in position **"Manual mode"**. **Fault:** gear lever position in error (invalid)		In the event of a fault, refer to the interpretation of status **ET012 "Gear lever position"**.
PR105:	Vehicle speed	When driving, the speed correspondent with speed meter of instrument panel **0 km/h**		If the fault is still present run **fault finding on** the anti-lock braking system computer (see **38C, Anti-lock braking system**).
PR007:	Turbine speed	When driving, approximately Matches the engine speed. **0 rpm**		In the event of a fault, refer to the interpretation of faults DF038 "Turbine speed **sensor circuit"**.
PR022:	Accelerator pedal position	Releasing	**0%**	If there is a problem, Carry out a fault finding procedure on the injection system (see **13B, Diesel injection system**) Note: **The value of this parameter depends on the injection fitted to the vehicle. The values noted in this check are therefore only average values (refer to the injection conformity check).**
		Pressing	**100%**	
PR006:	Engine speed	Closely matches the tachometer reading the engine speed. **0 rpm**		
PR106:	Effective engine torque	This parameter indicates the effective engine torque in **Nm**.		
ET071:	Torque converter	Lock up releasing	**Open**	In the event of a fault, refer to the interpretation of faults DF356 "Torque converter **clutch solenoid valve function"**.
		When lock up applying (slip)	**slipping**	
		Lock up applying	**Closed**	
		When fault	**Unavailable**	

Tool status	Diagnostic tool title
ET012	Gear lever position
ET013	Gear engaged
ET021	Solenoid valve control sequence 1
ET022	Solenoid valve control sequence 2
ET037	Brake switch information
ET061	Gear positions memorization
ET071	Torque converter
ET097	Manual mode
ET259	Brake 1
ET260	Brake 2
ET261	Clutch 1
ET262	Clutch 2
ET263	Clutch 3

ET012	GEAR LEVER POSITION

NOTES	**Special notes:** Only perform these tests if the statuses do not correspond with the system programming functions.

This status indicates that the position of the gear lever position.
P: shows that the gear lever is in position **"P"**.
R: shows that the gear lever is in position **"R"**.
N: shows that the gear lever is in position **"N"**.
D: shows that the gear lever is in position **"D"**.
M: shows that the gear lever is in position **"Manual mode"**.
Fault: shows that the gear lever is in position **"Error"**.

If the status condition is incorrect, check the adjustment condition of control cable (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment).**

Check the connection and condition of the connector of the multifunction switch, component code **779**.
- Short or open circuit in harness between ignition switch and automatic transmission multifunction switch.
- **10A** fuse (**U10**, located in switching protection unit, component code **1337**)
- Ignition switch (see **37B, Passenger compartment connection unit**)

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

Check **the continuity and insulation** of the following connections:
- Connection code **H66P,**
- Connection code **5DH,**
- Connection code **5DJ,**
- Connection code **5DF,**

Between the automatic transmission computer, component code **119 and 779.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair)** repair the wiring, otherwise replace it.

If the fault is still present, replace the component **779** (see **MR420 Mechanical, Automatic gearbox, Inhibitor switch: Removal – Refitting**).

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_ET012

ET013	GEAR ENGAGED

NOTES	**Special notes:** This status indicates clutch disengagement when stopped **("DISENGAGEMENT")**, the various gears engaged **(1, 2, 3, 4, 5, 6, "R")**, the parking brake and neutral positions **("P/N")** when a fault appears on the lever.

The status displays the shift position applying currently when driving.
1: shows that the gear engaged is 1st gear.
2: shows that the gear engaged is 2nd gear.
3: shows that the gear engaged is 3rd gear.
4: shows that the gear engaged is 4th gear.
5: shows that the gear engaged is 5th gear.
6: shows that the gear engaged is 6th gear.
R: shows that the gear engaged is Reverse gear.
DISENGAGE: shows that the clutch disengagement functions while vehicle stationary is active.
P/N: shows that the transmission is either in “Park” or “Neutral” mode.

Look for any damage to the harness, check the connection and condition of the following connectors:
- Gear selector control, component code **129** and instrument panel, component code **247**.

Manipulate the wiring harness in order to observe any change in the fault status (**Present → stored**).
If the connector is faulty and the repair method exists. (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

If the status is not operating as shown, check that **the continuity and insulation** of the following connections:
- Connection code **5KTA**,
- Connection code **5KTB**,
- Connection code **5KB**,
- Connection code **5KC**.

Between shift pattern control, component code **129** and instrument panel, component code **247**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair)** repair the wiring, otherwise replace it.

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_ET013

ET013 CONTINUED	

Check the **continuity** of following the component **129**.

Connections code		Conditions	Continuity
5KTA	**MZR**	Neutral	Yes
		Others	No
5KTB	**MZR**	Neutral	Yes
		Others	No
5KB	**MZR**	M+	Yes
		Others	No
5KC	**MZR**	M-	Yes
		Others	No

If the measured values do not correspond to the normal value, replace the components **129** (see **MR420 Mechanical, 37A, Mechanical component controls, Gear control unit: Removal - Refitting**).

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

ET021	SOLENOID VALVE CONTROL SEQUENCE 1

NOTES	**Special notes:** Check (engine running) that status **ET021 "SOLENOID VALVE CONTROL SEQUENCE 1"** is active, gear engaged **5th and 6th**

The status displays the operation of the low clutch shift solenoid.
ACTIVE: shows that solenoid valve control sequence 1 is active.
INACTIVE: shows that solenoid valve control sequence 1 is inactive.

If the status is incorrect, refer to the interpretation of faults **DF085 "Sequence solenoid valve "EVS1"* circuit"**.

*EVS: sequence solenoid valve.

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_ET021

ET022	SOLENOID VALVE CONTROL SEQUENCE 2

NOTES	**Special notes:** Check (engine running) that status **ET022 "SOLENOID VALVE CONTROL SEQUENCE 2"** is active, gear lever in "**P", "N", "R"** position or driving on **1st** gear.

The status displays the operation of the low and reverse brake shift solenoid.
ACTIVE: shows that solenoid valve control sequence 2 is active.
INACTIVE: shows that solenoid valve control sequence 2 is inactive.

If the status is incorrect, refer to the interpretation of faults **DF086 "Sequence solenoid valve "EVS2"* circuit"**.

*EVS: sequence solenoid valve.

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_ET022

ET037	BRAKE SWITCH INFORMATION

NOTES	**Special notes:** Apply the conformity check to see if the statuses are consistent with the operating programs of the system.

This status indicates the position of the brake pedal
Released: show that the brake pedal released.
AVTIVE: show that the brake pedal pressed.
Pressed: show that the brake pedal position confirmed as depressed.
Unavailable: show that the brake switch signal is invalid.

If the status is not operating as shown, check that the following connection and condition of the connector of the stop light switch, component code **160**.

- check if there is a short circuit or open circuit in the wiring harness between the battry, component code **107** and component **160**.
- check if there is a short circuit or open circuit in the wiring harness between passenger compartment connection unit, component code **645** and component **106**.
- **10A** fuse (**J07**, located in fuse box and pass compt relay, component code **260**)

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

Check the **continuity** between component **160** of the following connection:

	Continuity between connections	Insulation between connections
Brake pedal depressed	**65A and BP47**	**65A and AP44**
Brake pedal released	**65A and AP44**	**65A and BP47**

If the checks are not in order, replace the component **160** (see **MR420 Mechanical, 37A, Brake mechanism, Brake light switch: Removal – Refitting)**.

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_ET037

ET097	MANUAL MODE

NOTES	**Special notes:** Apply the conformity check to see if the statuses are consistent with the operating programs of the system.

The status displays the operation of the low clutch shift solenoid.
INACTIVE: Indicates that the manual mode is inactive whenever the gear lever is not in “M” position, or when manual mode is fault.
M: shows that the gear lever is in manual mode position
M+: shows that the gear lever in lower one-touch position
M-: shows that the gear lever in upper one-touch position

If the status is not operating as shown, check that **the continuity and insulation** of the following connections:
- Connection code **5KTA**,
- Connection code **5KTB**,
- Connection code **5KB**,
- Connection code **5KC**.

Between shift pattern control, component code **129** and instrument panel, component code **247**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair)** repair the wiring, otherwise replace it.

Check the **continuity** of following the component **129**.

Connections code		Conditions	Continuity
5KTA	**MZR**	Neutral	Yes
		Others	No
5KTB	**MZR**	Neutral	Yes
		Others	No
5KB	**MZR**	M+	Yes
		Others	No
5KC	**MZR**	M-	Yes
		Others	No

If the measured values do not correspond to the normal value, replace the components **129** (see **MR420 Mechanical, 37A, Mechanical component controls, Gear control unit: Removal - Refitting**).

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_ET097

Tool parameter	Diagnostic tool title
PR004	Gearbox oil temperature
PR006	Engine speed
PR007	Turbine speed
PR008	Computer supply voltage
PR022	Accelerator pedal position
PR050	Brake 1 solen.* valve control current
PR051	Clutch 1 solen.* valve control current
PR055	Clutch 2 solen.* valve control current
PR056	Clutch 3 solen.* valve control current
PR072	Brake 2 solenoid valve control current
PR074	Sequence solenoid valve 2 current
PR105	Vehicle speed
PR106	Effective engine torque
PR109	Pressure regulation SV* “LS”* current

*solen.: solenoid.
*SV: solenoid valve.
*LS: line pressure.

PR004	GEARBOX OIL TEMPERATURE

NOTES	**Special notes:** Only perform these tests if the parameters do not correspond with the system operation programming. **No faults should be present or stored.**

The parameter displays the oil temperature detected by gearbox oil temperature sensor.
Connect the **diagnostic tool**, and refer to the interpretation of parameters **PR004 "Gearbox oil temperature"** and following specification chart to check the oil temperature.

Minimum temperature: **- 40 ˚C,**
Maximum temperature: **+ 140 ˚C.**

The vehicle will be operated normally between and minimum temperature and maximum temperature.

Note:
Gearbox oil temperature sensor specification chart **unit: ˚C / Ω**

–40 / 78839	10 / 6445	60 / 988	110 / 247
–35 / 58538	15 / 5189	65 / 844	115 / 219
–30 / 44001	20 / 4208	70 / 725	120 / 195
–25 / 33456	25 / 3437	75 / 625	125 / 174
–20 / 25715	30 / 2826	80 / 541	130 / 156
–15 / 19968	35 / 2338	85 / 471	135 / 140
–10 / 15655	40 / 1947	90 / 411	140 / 126
–5 / 12385	45 / 1630	95 / 380	145 / 114
0 / 9883	50 / 1372	100 / 316	150 / 103
5 / 7950	55 / 1161	105 / 279	-

In the event of a fault, refer to the interpretation of fault **DF023 "Gearbox oil temperature circuit".**

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_PR004

PR006	ENGINE SPEED

NOTES	**Special notes:** Only perform these tests if the parameters do not correspond with the system operation programming. **No faults should be present or stored.**

Conformity check with engine at idle speed, engine coolant temperature > 80˚C

This parameter indicates the engine speed in **rpm**.
PR006 = Approximately 750 rpm ± 50 rpm
In the event of a fault, consult the interpretation of fault **DF116 "Engine speed multiplex signal".**

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_PR006

PR008	COMPUTER SUPPLY VOLTAGE

NOTES	**Special notes:** Only perform these tests if the parameters do not correspond with the system operation programming. **No faults should be present or stored.**

Conformity check with engine stopped and ignition on, engine coolant temperature > 80˚C

This parameter shows the computer feed voltage in **volts**.
PR008 = Battery voltage
In the event of a fault, consult the interpretation of fault **DF096 "Computer supply voltage".**

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_PR008

PR022	ACCELERATOR PEDAL POSITION

NOTES	**Special notes:** Only perform these tests if the parameters do not correspond with the system operation programming. **No faults should be present or stored.**

Conformity check with engine stopped and ignition on

This parameter indicates the accelerator pedal position as a **0%**.
Full load: **PR022 "Accelerator pedal position" ≈ 100**%
In the event of a fault, consult the interpretation of fault **DF145 "Multiplex pedal position invalid signal" and DF235 "Info*. Multiplex pedal position invalid signal".**

*Info: information

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_PR022

PR038	VEHICLE SPEED

NOTES	**Special notes:** Only perform these tests if the parameters do not correspond with the system operation programming. **No faults should be present or stored.**

Conformity check with engine running, engine coolant temperature > 80˚C

This parameter indicates the vehicle speed in **mph (km/h).**
PR038 = 0 mph (km/h)
In the event of a fault, consult the interpretation of fault **DF328 "Vehicle speed multiplexed information".**

AFTER REPAIR	Carry out a road test, then check check with the **diagnostic tool**.

TCU_V04_PR038

NOTES	Consult the fault finding charts only after carrying out a complete fault finding procedure using the diagnostic tool and after completing the conformity check.

TEST1	Gearbox oil condition check

Check the gearbox oil.

- If the gearbox oil is too dark or smelled burning heavy, check the operation automatic gearbox mechanism.
- If the gearbox include the friction material (clutch, brake etc.), replace the oil cooler. And clear the oil cooling line using solvent and compressed air.

Oil status	Conceivable cause	Required operation
Smell of burning, dark or black colour (varnish)	Clutch, brake scorched	Replace the gearbox oil and check the hydraulic/ electric interface and the vehicle for malfunctions (wire harnesses, cooler pipes, etc).
Milky white or cloudy	Water in the fluid	Replace the gearbox oil and check for where water is getting in.
Large amount of metal powder mixed in	Unusual wear of sliding parts within automatic gearbox	Replace the gearbox oil and check for improper operation of the automatic gearbox.

TEST2	Stall test

Inspection

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about **10 min** to warm up the vehicle so that the gearbox oil temperature is **50 to 80˚C**. Inspect the amount of gearbox oil. Replenish if necessary.
3. Securely engage the parking brake so that the tires do not turn.
4. Install a tachometer where it can be seen by driver during test.

Note:
It is good practice to mark the point of specified engine rpm on indicator.

5. Start engine, apply foot brake, and place gear lever in **"D"** position.
6. Gradually press down the accelerator pedal while holding down the foot brake.
7. Quickly read off the stall speed and then quickly remove your foot from the accelerator pedal.

IMPORTANT:
Never hold down the accelerator pedal for more than **5 s** during this test.

Stall speed**: 2,290 rpm ~ 2,590 rpm**

8. Move the gear lever to the **"N"** position.
9. Cool off the gearbox oil.

IMPORTANT:
Run the engine at idle for at least **1 min**

10. Repeat steps **6** through **9** with gear lever in **"R"** position.

TEST2 CONTINUED	

Judgment

	Selector lever position		Possible location of malfunction
	"D" and "M"	"R"	
Stall revolution	H	O	One-way clutch
	O	H	Brake 2
	L	L	Engine and torque converter free-way clutch
	H	H	Line pressure low

O: Stall speed within standard value position
H: Stall speed higher than standard value
L: Stall speed lower than standard value

Stall test standard value position

Does not shift-up "**D**" or "**M**" position **1** ➡ **2**	Slipping in 2nd gear	Brake **2** slippage
Does not shift-up "**D**" or "**M**" position **2** ➡ **3**	Slipping in 3rd or 5th gear	Clutch **2** slippage
Does not shift-up "**D**" or "**M**" position **3** ➡ **4**	Slipping in 4th, 5th or 6th gear	Clutch **3** slippage
Does not shift-up "**D**" or "**M**" position **4** ➡ **5**	Slipping in 5th gear	Clutch **2** slippage
Does not shift-up "**D**" or "**M**" position **5** ➡ **6**	Slipping in 6th gear	Brake **2** slippage
If the checks are not in order, contact the **Techline**.		

TEST3	Line pressure test

Inspection

D position:
Warm up the engine enough and drive the vehicle for **10 min i**n order to increase the gearbox oil temperature to the operation temperature of **50~80.**
– Before test.
– Switch off and operate the parking brake completely and install the stay with tire.
– Take off the oil pressure detection plug and fit the oil pressure gauge and AT oil line pressure gauge adaptor **(BVI 1861)**.

Important:
When using of oil pressure gauge, fit the **O-ring** together with oil pressure detection plug.

– Run the engine at idle speed.
– Press the brake pedal and hold so that the vehicle drive forward or reverse in measuring.
– Shift the select lever on **"D"**.

When reading the pressure gauge, it should be between **3.7 bar ~ 4.3 bar** upon engine idling.
Then the interpretation of parameters **PR003 "Oil pressure"** should be in the range of **1000 mA ± 10 mA**.

Press the acceleration pedal to keep the engine speed **2,000 rpm** for 5 seconds and release rightly.
When coming back to engine idling, line pressure in pressure gauge should be kept **3.7 bar.**
Check that the interpretation of parameters **PR109 "Pressure regulation SV* "LS"* current"** indicate less than **1000 mA**.

R position:
– On select lever **"R"** position, check repeatedly as same way as above.

When reading the pressure gauge, it should be between **5.7 bar ~ 6.9 bar** upon engine idling.
Then the interpretation of parameters **PR109 "Pressure regulation SV* "LS"* current"** should be in the range of **1000 mA ± 10 mA**.

Press the acceleration pedal to keep the engine speed **2,000 rpm** for **5 s** and release rightly.
When coming back to engine idling, line pressure in pressure gauge should be kept **5.7 bar**.
Check that the interpretation of parameters **PR109 "Pressure regulation SV* "LS"* current"** indicate less than **1000 mA**.

TEST3 CONTINUED	

Judgment

Engine idling :

1. Value is less than the specification on pressure gauge (**"P", "R", "N", "D", "M"**).

- Oil pump warned
- Pressure regulator valve or plug stuck or spring damage
- Oil strainer => oil pump => oil pressure leakage from pressure regulator valve
- Low engine speed

In these 4 cases, contact the Techline.

2. Low at specified position

- The oil pressure is leaked from correspondent equipment after output from manual valve.

In this case, contact the Techline.

3. Value is more than the specification on pressure gauge.

- Accelerator pedal position signal error.
- Oil temperature sensor malfunction.
- Line pressure solenoid malfunction (OFF for stuck, filter clog, line cut)
- Pressure regulator valve or plug stuck.

In these 4 cases, contact the Techline.

Engine speed 2,000 rpm:

4. Oil pressure does not rise higher than the oil pressure for idle.

- Accelerator pedal position signal error.
- Automatic transmission co,puter malfunction
- Line pressure solenoid malfunction (ON for short circuit, stuck)
- Pressure regulator valve or plug stuck
- Pilot valve stuck or pilot filter clog

In these 5 cases, contact the Techline.

5. Lower pressure than standard.

- Accelerator pedal position signal error.
- Line pressure linear solenoid malfunction
- Pressure regulator valve or plug stuck
- Pilot valve stuck or pilot filter clog

In these 4 cases, contact the Techline.

6. Low at specified position

- The oil pressure is leaked from correspondent equipment after output from manual valve.

In this case, contact the Techline.

TEST4	Checking the shift delay time

Inspection

Note:
Warm up the engine enough and check in stable engine idling.
Measure many times every **1 second** on select lever **"N"** position in every test to calculate average value.

1. Check the gearbox oil level and the condition.
2. Check the shift control cable and linkage.
3. Park on flat ground, operate parking brake completely and install the stay with 4 tires. Press the foot brake pedal strongly to reach the stopper.
4. Shift the select lever from **"N"** to **"D"** position. By this time, measure the reaching time until it is felt using stopwatch.
   Shift delay normal value: **0.8 s**
5. Measure it shifting the select lever from **"N"** to **"R"** position with same way.
6. Shift delay normal value: **0.8 s**

Judgment

If the measuring value is delayed more than **1 s** for a long time, the possible cause is much more likely that the line pressure is low or automatic gearbox internal clutch etc. slip. In this case, connect the Techline.

NOTES	**Special notes:** Only consult this customer complaint after a complete check using the **diagnostic tool** and a conformity check.

ALP1	No dialogue with the computer

NOTES	**Special notes:** Only consult this customer complaint after a multiplex network check using the **diagnostic tool**.

Try the **diagnostic tool** on another vehicle.

Check:
- Connection between **diagnostic tool** and diagnostic probes (wire is in normal condition).
- Connection between the **diagnostic sensors** and diagnostic socket, component code **225** (wire is in normal condition).
- Engine room and internal fuse.

Make sure that the **diagnostic tool** sensor is properly fed by connection code **BP42 (+ 12 V), MZR (earth)** of the component **225**,
which is indicated by the two red warning lights on the sensor lighting up.
Check that the **diagnostic tool** probe is fed using the computer's **USB** port.
Make sure that the **diagnostic tool** sensor is communicating properly with the vehicle's computers; this can be seen by the two green diodes on the sensor lighting up.

Use the component **225** to check the following connection:
Check the **+ 12 V** supply on the **BP42** connection.
Check the **+ after ignition feed** on the **AP4** connection.
Check the continuity of the **earth** on connection **MZR**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Check **the continuity and insulation** of the following connections:
- Connection code **BP42,**
- Connection code **AP4,**
- Connection code **CANH,**
- Connection code **CANL,**

Between component **11 9** and component **225**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair)** repair the wiring, otherwise replace it.

If the fault is still present, contact the **Techline**.

AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

TCU_V04_ALP1

ALP2	The vehicle does not move in every position (including output shortage)

NOTES	**As possible causes for this symptom, following faults are expected.** ● Engine system malfunction ● Gearbox oil shortage ● Control cable adjustment error ● Torque converter malfunction ● Automatic gearbox assembly: hydraulic system, power train

Check the gearbox oil level and condition.
Refill or change the oil if necessary (see **MR420 Mechanical, 23A, Automatic gearbox, Automatic gearbox oil: Draining – Refilling**).

YES

Check the gearbox oil (see **Test1 "Gearbox oil condition check"**). — NO →

YES

Check the stall revolution (see **Test2 "Stall test"**). — NO → Contact the Techline

YES

Check the line pressure (see **Test3 "Line pressure test"**). — NO →

YES

Check the connection and condition of the connections of automatic transmission computer, component code **119** and injection computer, component code **120**. If the connector is faulty and the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Check that the control cable of the select lever is adjusted properly (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment**).

YES

Finished

NO

A

AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

TCU_V04_ALP2

ALP2 CONTINUED	

A

NO

Check the following circuits:
- **DF084 “Multiplexed network”**
- **DF171 “Vehicle speed sensor circuit”**
- **DF273 “Clutch solenoid valve circuit 1”**
- **DF306 “Brake/lock-up solenoid valve circuit 1”**

YES → **Finished**

NO → Contact the Techline.

AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

ALP3	The vehicle does not move on “D” or “R” position.

NOTES	**As possible causes for this symptom, following faults are expected.** ● Control cable adjustment error ● Automatic gearbox assembly: hydraulic system, power train

Check that the control cable of the select lever is adjusted.

NO

Adjust the control cable (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment**).

Does the vehicle move?

YES

NO

YES

Finished

Contact the Techline.

AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

TCU_V04_ALP3

ALP4	Acceleration error

NOTES	**As possible causes for this symptom, following faults are expected.** ● Engine system malfunction ● Automatic transmission computer malfunction ● Automatic transmission computer supply and earth circuit error ● Torque converter malfunction ● Automatic gearbox assembly: hydraulic system, power train

Check the engine system and automatic gearbox system first using the **diagnostic tool** to conform the fault.
— YES → Refer to **13B, Diesel injection.**

NO ↓

Compare the same level model with other vehicle to conform the difference.
— NO → Perform the driving test again and finish the work if same case.

YES ↓

Confirm the supply voltage and earth supplied from automatic transmission computer, component code **119** connector.
Check the **+ 12 V** supply on the **BP42** connection and the **+ ignition on feed** on the **AP4** connection and check the continuity of the **earth** on connection **MZR**.
— NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair)** repair the wiring, otherwise replace it.

YES ↓

Check the gearbox oil (see **Test1 "Checking the gearbox oil"**).
— NO → If a problem is confirmed to gearbox internal part after check, contact the **Techline**.

YES ↓

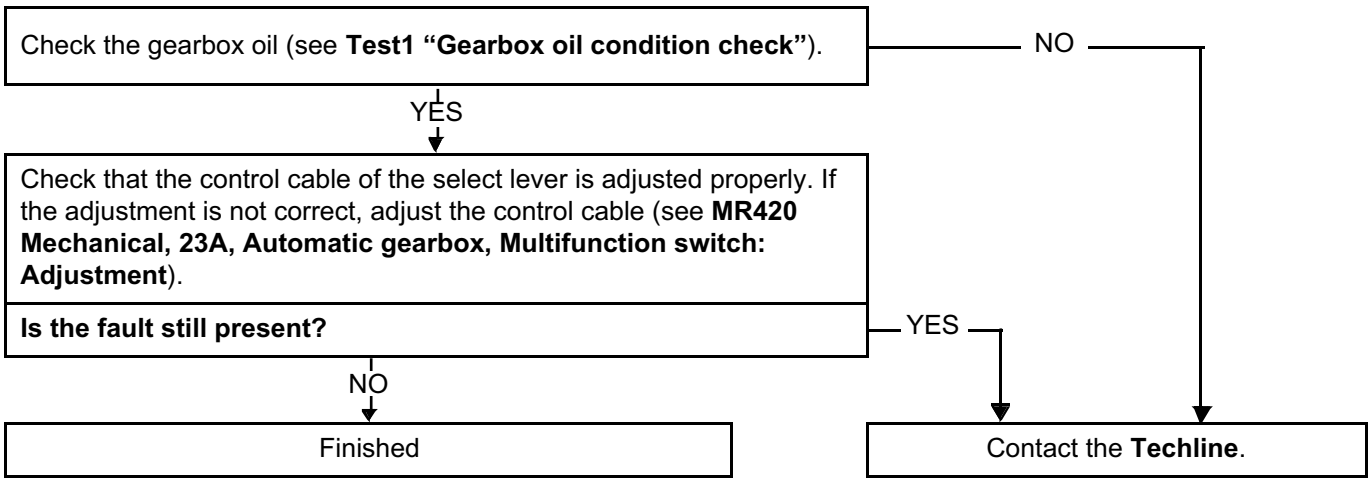
Finished

AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

TCU_V04_ALP4

ALP5	Vehicle movement on "N" position

NOTES	**As possible causes for this symptom, following faults are expected.** ● Control cable adjustment error ● Automatic gearbox assembly: hydraulic system, power train



AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

TCU_V04_ALP5

ALP6	No gear shifting at all or no shifting in particular gears (1st to 2nd, 2nd to 3rd, etc.).

NOTES	**As possible causes for this symptom, following faults are expected.** ● Automatic transmission computer supply low ● Connector connection error and the open circuit or short circuit of wiring ● Automatic transmission multifunction switch malfunction and adjustment error ● Automatic transmission computer fault and supply and earth circuit fault ● Automatic gearbox assembly: hydraulic system, power train

Is any non-genuine electrical device (navigation system, audio devices, etc.) installed?

OK → Remove the supply and signal line of electrical equipment.

NO ↓

Check the connections of the connector and wiring harness of following component.

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES ↓

Check whether the control cable of the select lever is adjusted properly. If the adjustment is not correct, adjust the control cable (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment**).

NO → If the fault is still present, replace the automatic transmission multifunction switch, component code **779** (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Removing - Refitting**).

YES ↓

Confirm the supply voltage and earth supplied from automatic transmission computer, component code **119** connector.
Check the **+ 12 V** supply on the **BP42,** connection and the **+ ignition on feed** on the **AP4** connection and check the continuity of **the earth** on connection **MZR**.

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES ↓

Contact the Techline.

Finished

AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

TCU_V04_ALP6

ALP7	**When shifting the select lever from "N" "R" or "N" "D" position, vibration is generated.**

NOTES	**As possible causes for this symptom, following faults are expected.** ● Engine system fault ● Automatic transmission multifunction switch malfunction and adjustment error ● Automatic transmission computer fault and Automatic gearbox assembly: hydraulic system, power train

Check the injection system and automatic gearbox system first using the **diagnostic tool** to conform the fault.

Is engine idling speed normal?

NO → Refer to **13B, Diesel injection.**

YES ↓

Check that the control cable of the select lever is adjusted properly (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment**).

NO → If the fault is still present, replace the multifunction switch, component code **779** (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Removing - Refitting**).

YES ↓

Compare the same level model with other vehicle to conform the difference.

NO → Perform the driving test again and finish the work if same case.

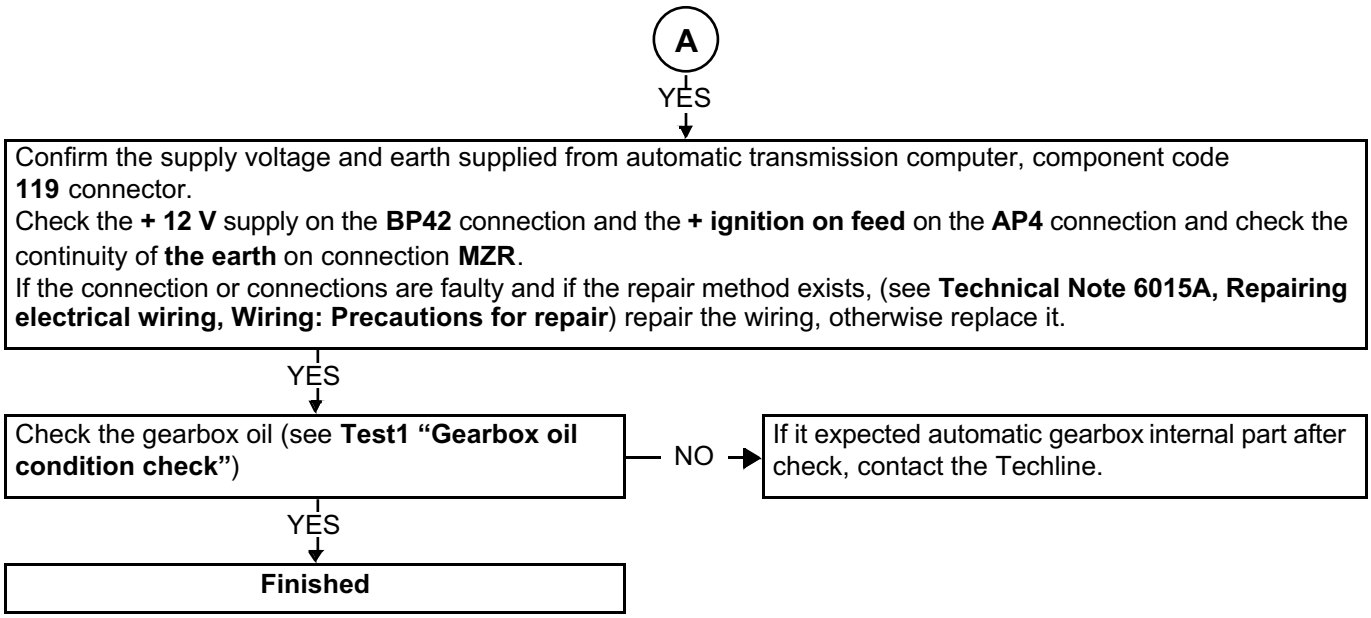
YES ↓

(A)

AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

TCU_V04_ALP7

ALP7 CONTINUED	



AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

ALP8	The start motor is not operated on "P" position.

NOTES	Only carry out a conformity check after a complete check with the **diagnostic tool**.
	As possible causes for this symptom, following faults are expected. ● Engine system fault ● Inhibitor switch malfunction and adjustment error ● Wiring harness and connector malfunction being associated with starter motor ● Automatic transmission computer fault

Check the ignition circuit first and carry out the fault finding (see **Visu-Schema**)

Check the battery voltage.
9.5 V < battery voltage < **15 V**
If the unstable voltage is detected from the battery, recharge the battery to check the charging circuit (see **Visu-Schema**)

Check the connection and condition of the connector of automatic transmission computer, component code **119** and injection computer, component code **120**.
If the connector is faulty and the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair)** repair the wiring, otherwise replace it.
If the problem is detected from engine system, carry out the fault finding of the engine system (see **13B, Diesel injection**).

Connect the diagnostic tool to the vehicle and establish dialogue with the automatic gearbox computer.
Check statuses **ET012 "Gear lever position"** and **ET013 "Gear engaged"**: check the consistency between the display on the tool and the selector lever locked positions (ignition on and engine stopped): "**P**" or "**N**".

Do they correspond with?

NO

Check that the control cable of the select lever is adjusted properly (see **MR420 Mechanical, 23A, Automatic gearbox, Multifunction switch: Adjustment**).

Operate the start motor.
Is the engine cranked?

YES

NO

YES

Contact the Techline.

Finished

AFTER REPAIR	Deal with any faults detected by the **diagnostic tool**. Clear the computer memory. Carry out a road test, then check with the **diagnostic tool**.

TCU_V04_ALP8