



PEUGEOT

THE AM6 BOX

**Technical
formation**



**Technical
formation**

The AM6 box

Presentation

It generally equips higher-end PEUGEOT vehicles.

- > **It is coupled to the ES and DT engine families and is manufactured by equipment manufacturer AISIN AW.**
- > **6-speed forward gearbox, with converter bypass:**
 - > **Maximum torque: 450 Nm.**
 - > **Weight: approximately 94 kg.**
- > **It is a self-adaptive box.**



The AM6 box

Presentation

Incorporation of a command TIPTRONIC type sequential

In sequential position, it allows raising or lowering speeds manually.

Allows the driver to select the position desired (P, R, N or D)



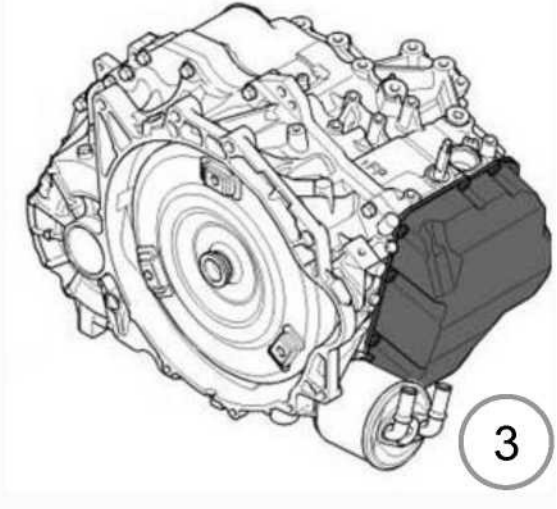
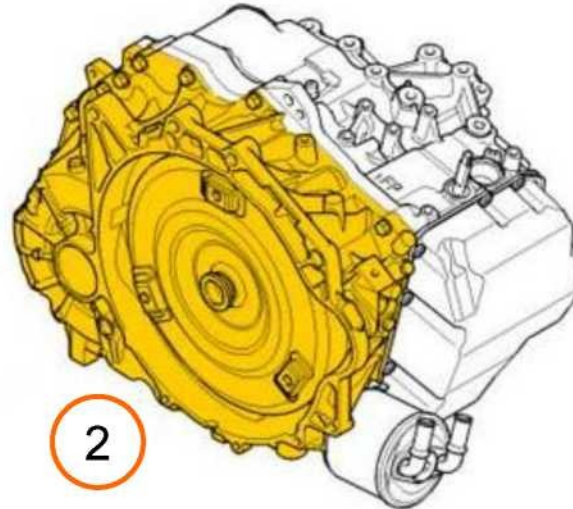
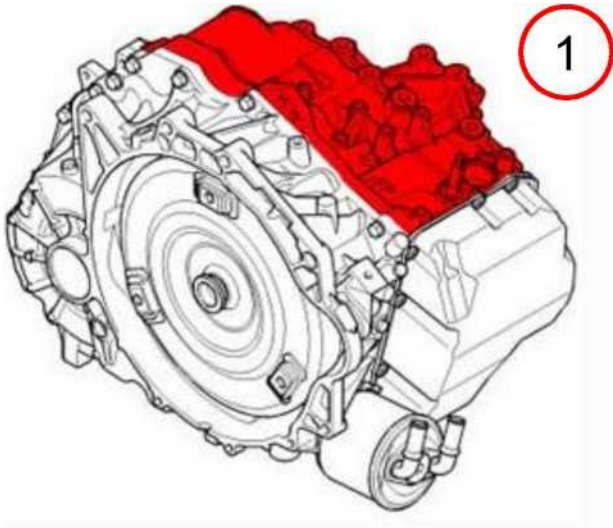


The AM6 box

Composition

- 🌿 The AM6 box is made up of 3 main parts:
1. Sump major
 2. Sump converter
 3. Sump hydraulic block

The AM6



The AM6 box

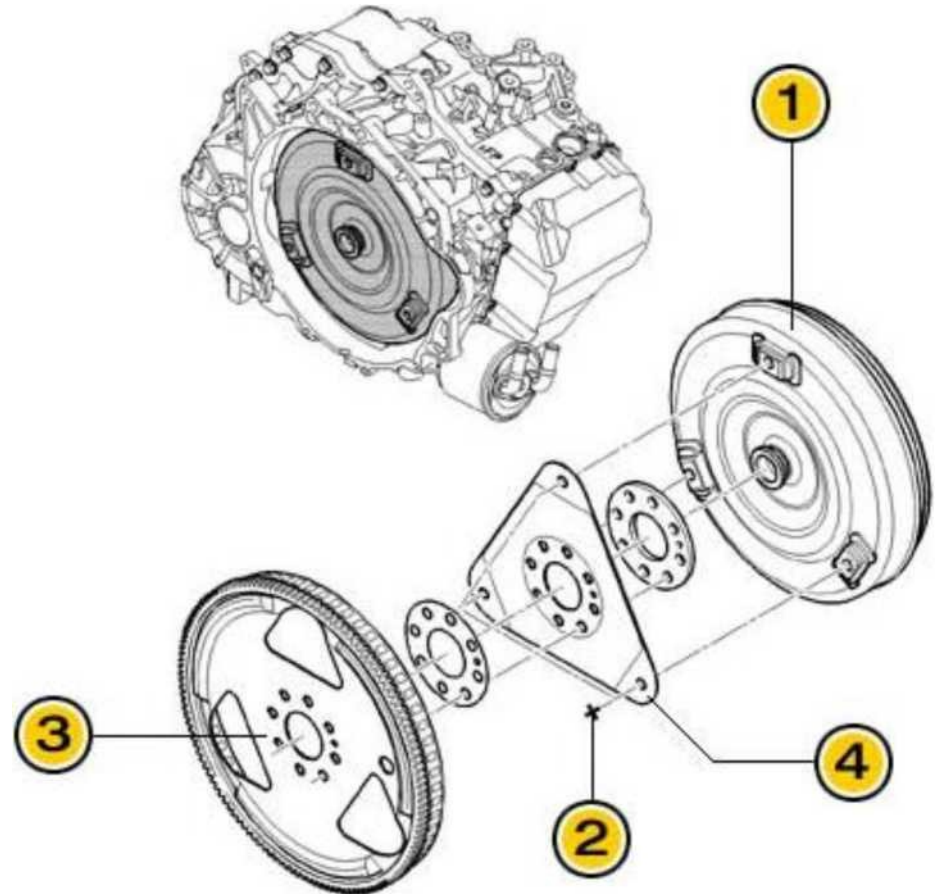
Composition

Torque converter

The operation of the converter does not differ from a classic converter.

It is equipped with a bridging clutch that allows establishing a mechanical connection between the engine and the box.

The fixation of the converter is secured by three high-resistance screws (or 6 depending on the engine).





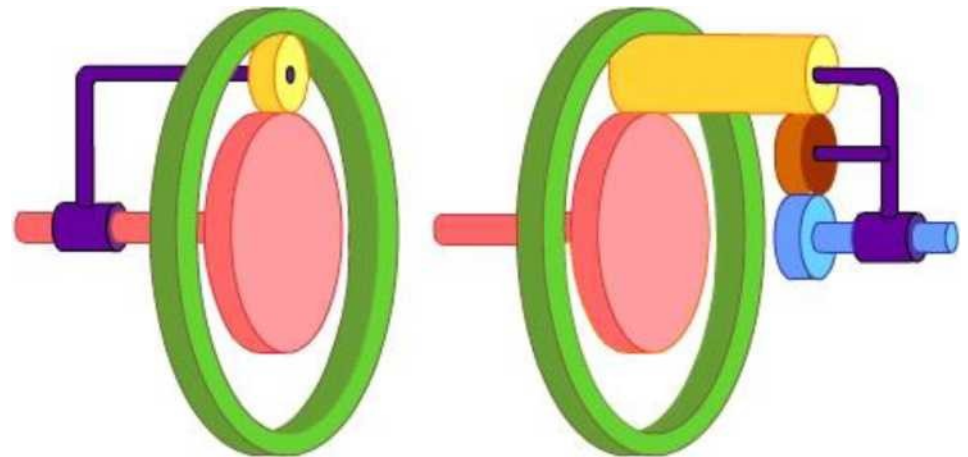
Composition

Double epicyclic train

Train composed of a SIMPSON system + a RAVIGNEAUX system.

It allows 6 forward gears, reverse gear and neutral gear.

The AM6 box



Te
formation

The AM6 box

Composition

Lowering torque

Located in the main crankcase, it receives the movement from the crown of the "RAVIGNEAUX" train.

The size of the descending pair sprockets and the bridge crown characterize the final reduction of the CCA*.



The AM6 box

Composition

differential bridge

Transmission outputs are

waterproof planetariums

The differential is 4 satellites



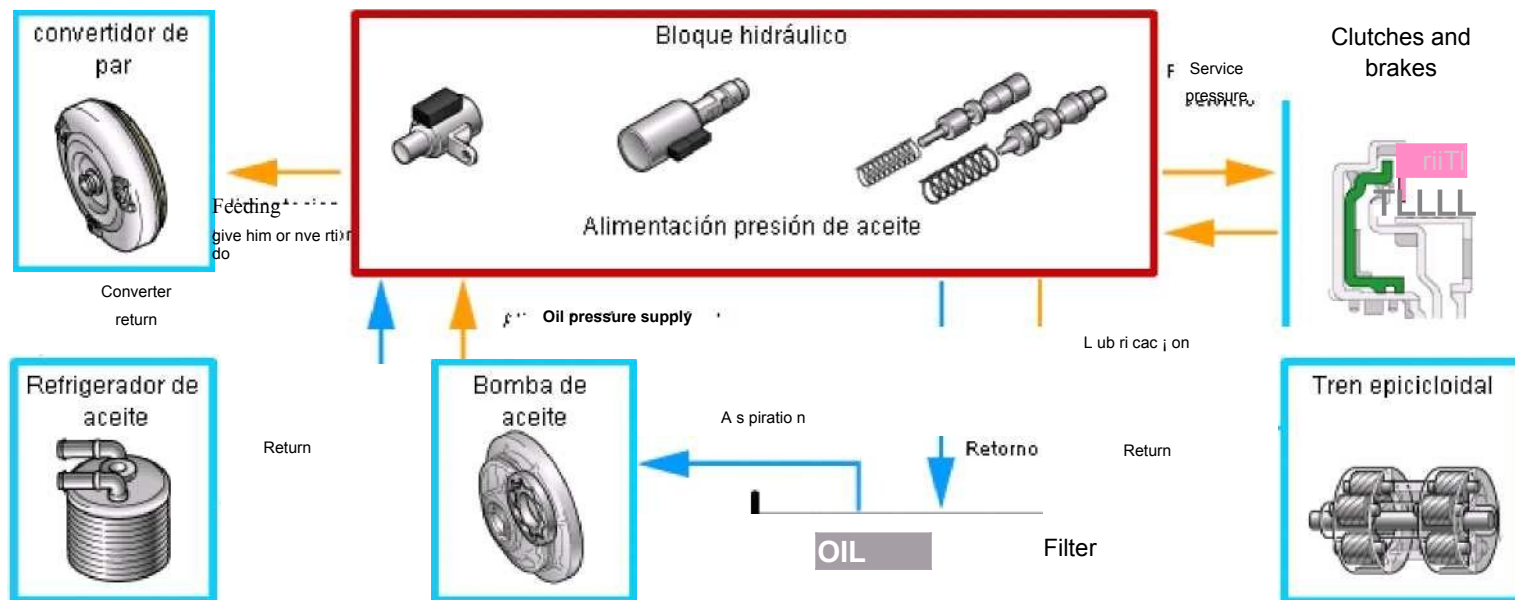
Technical
formation

The AM6 box

Composition

Hydraulic circuit

The hydraulic circuit provides pressurized oil to control the different mechanisms, lubricates and cools the gearbox.



The AM6 box

Composition

Hydraulic circuit

> The hydraulic circuit has the following elements:

- > Hydraulic Block and Solenoid Valves
- > Suction filter
- > Oil pump
- > Heat exchanger
- > Deposit



The AM6 Box: Torque Converter

Torque converter

AM6



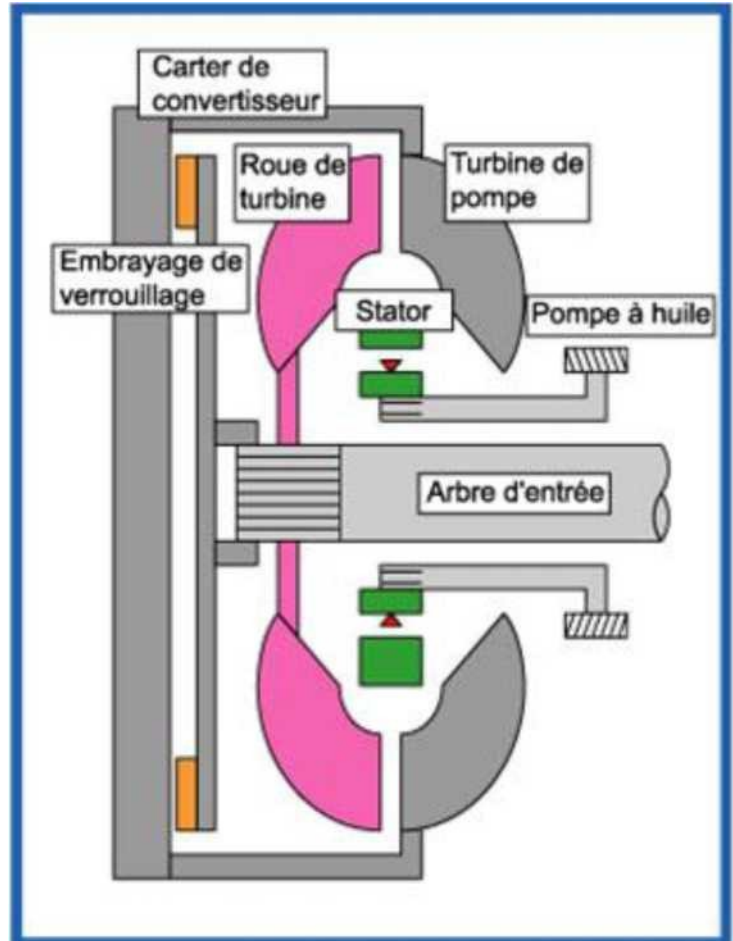
Technical
formation

The AM6 Box: Torque Converter

Items

Different states of the converter

- > Free converter:
- > Bridged converter: 100% performance
- > Piloted converter



The AM6 Box: Torque Converter

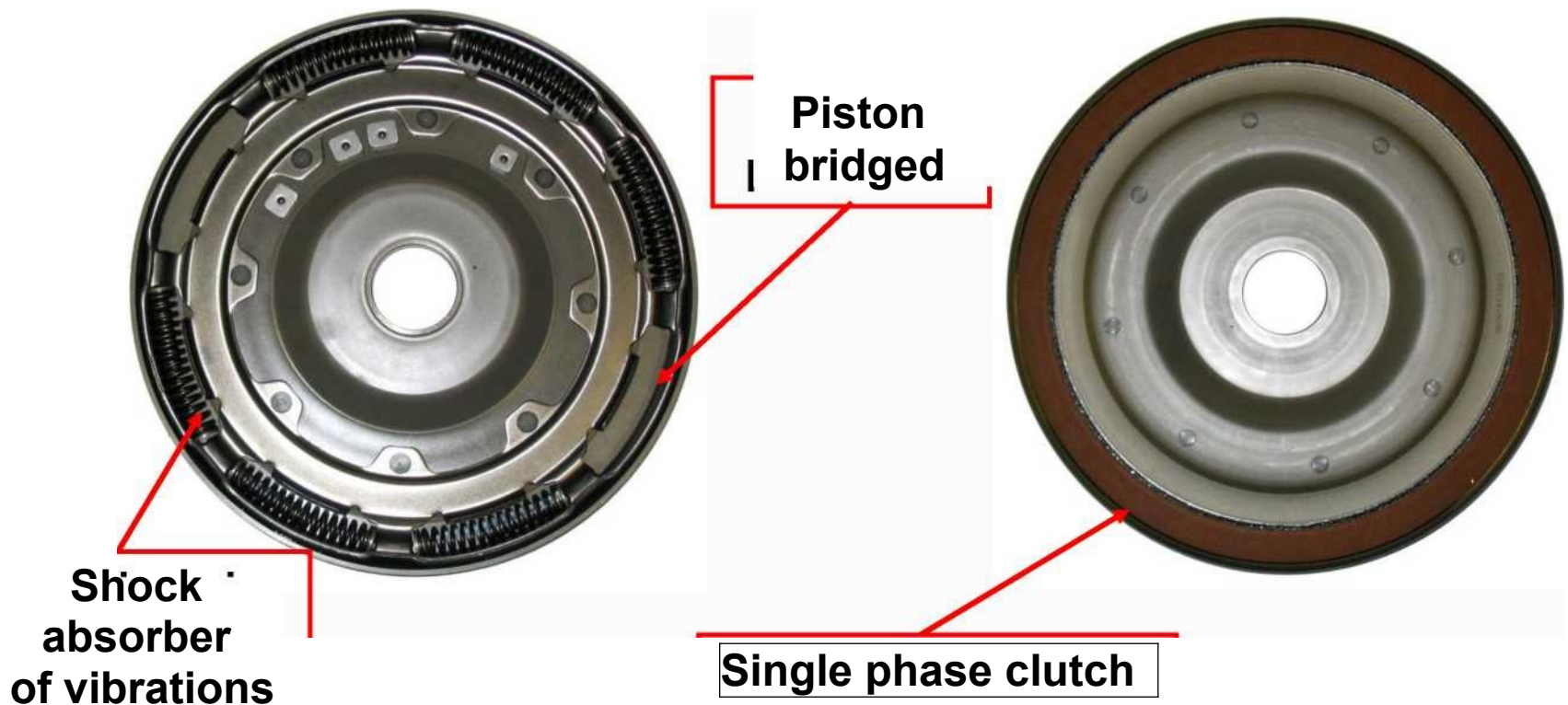
Items



Particularity of the AM6 converter:
The warping of the turbine and impeller are crimped and tin plated.

Bridged Mechanism

⚠ The AM6 torque converter bypass device takes the AL4 and 4HP20 technologies (management of engine acyclism and load shocks).



Bridged Mechanism

⊗ The bypass clutch provides several states:

Open status:

Converter phase : multiplication of engine torque up to 2.2 times.

Phase coupled : efficiency up to 0.98%.

Bridged state:

Bridged: 100% performance.

Piloted State:

The computer maintains a slip to filter out engine acyclisms.



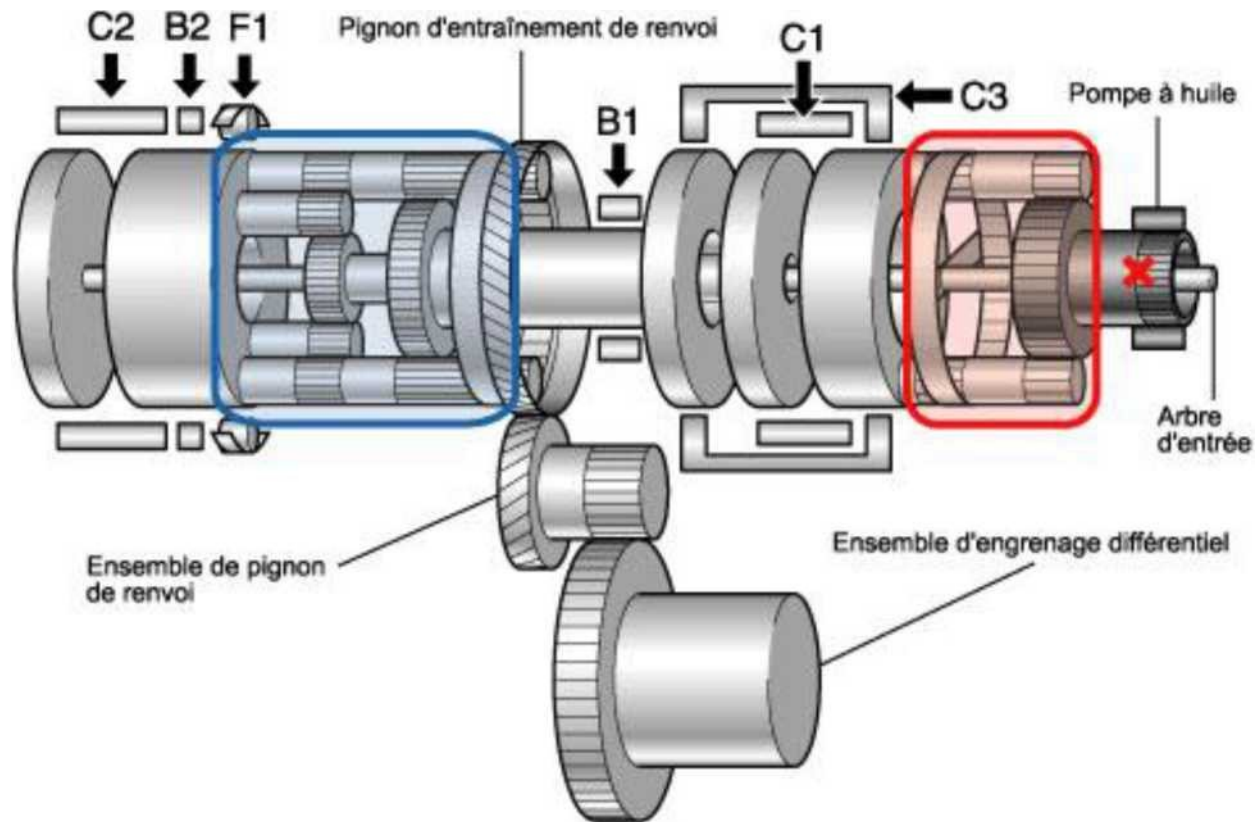
The AM6 box: Epicyclic train

Epicyclic Train AM6



The AM6 box: Epicyclic train

Setting

Ravigneaux Compound Epicyclic Train (type AM6)

Technical formation



The AM6 box: Epicyclic train

The AM6 box: Enivelle train

Configuración

	C1	C2	C3	B1	B2	RL
P						
R						
N						
1a						
1						
2						
3						
4						
5						
6						

Observación: para la
Marcha atrás, si la
velocidad es superior a 7
km/h, C3 no está
alimentada.

The AM6 box: Hydraulic Circuit

Hydraulic circuit AM6



The AM6 box: The hydraulic circuit

hydraulic block

- ⊕ It is protected by a sheet metal casing.
- > Manages the different hydraulic pressures that the Box needs

The Block incorporates:

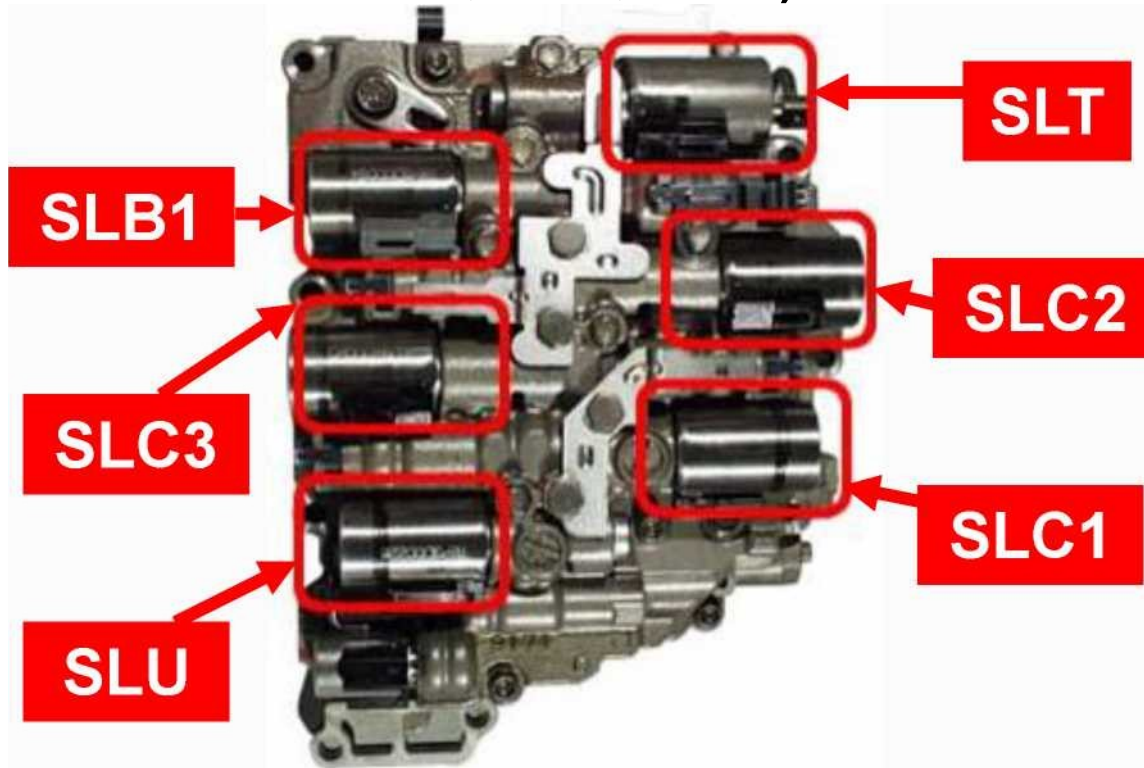
- 1 Modulation solenoid
- 1 Bypass solenoid
- 2 3-way solenoids
- 4 Gear shift solenoids
- Manual valve



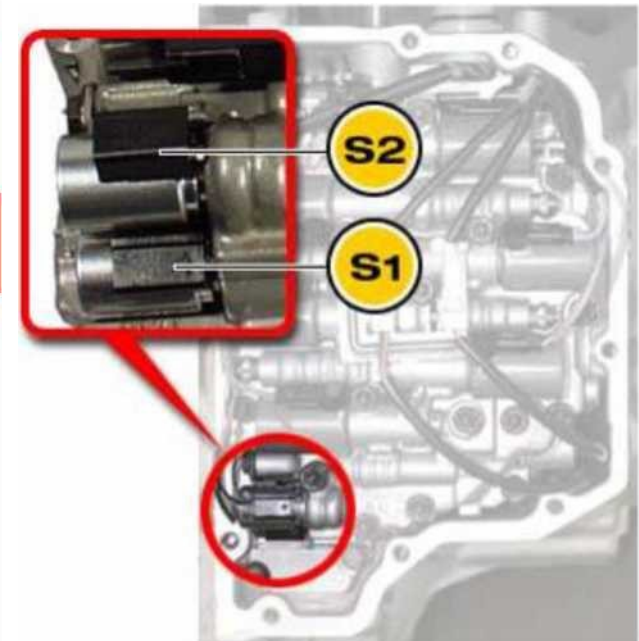
The AM6 box: The hydraulic circuit

Solenoid valves

Gear shift control solenoid assembly (SLC1, SLC2, SLC3, SLB1)



Solenoid assembly 3-way (S1,S2)

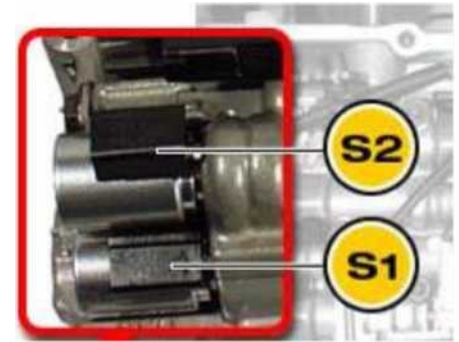


The AM6 box: The hydraulic circuit

Solenoid valves

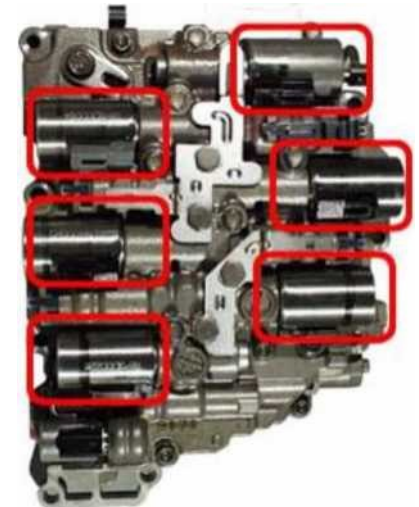
3-way solenoid assembly (S1,S2)

The solenoids latch (ON) and cut off (OFF) in response to signals coming from the computer. Depending on the ON or OFF condition of S1 or S2, the 1st gear engine brake is activated or the box goes into reverse gear.



Gear shift control solenoid assembly (SLC1, SLC2, SLC3, SLB1)

The solenoids linearly control the hydraulic pressure in response to the signals output from the computer. Consequently; They control the hydraulic pressure of the clutch (C1, C2, C3) and brakes (B1) to provide smooth gear shifting. Depending on the combination of ON or OFF status of the gear shift control solenoid assembly, the gearbox shifts from 1st to 6th gear and vice versa.



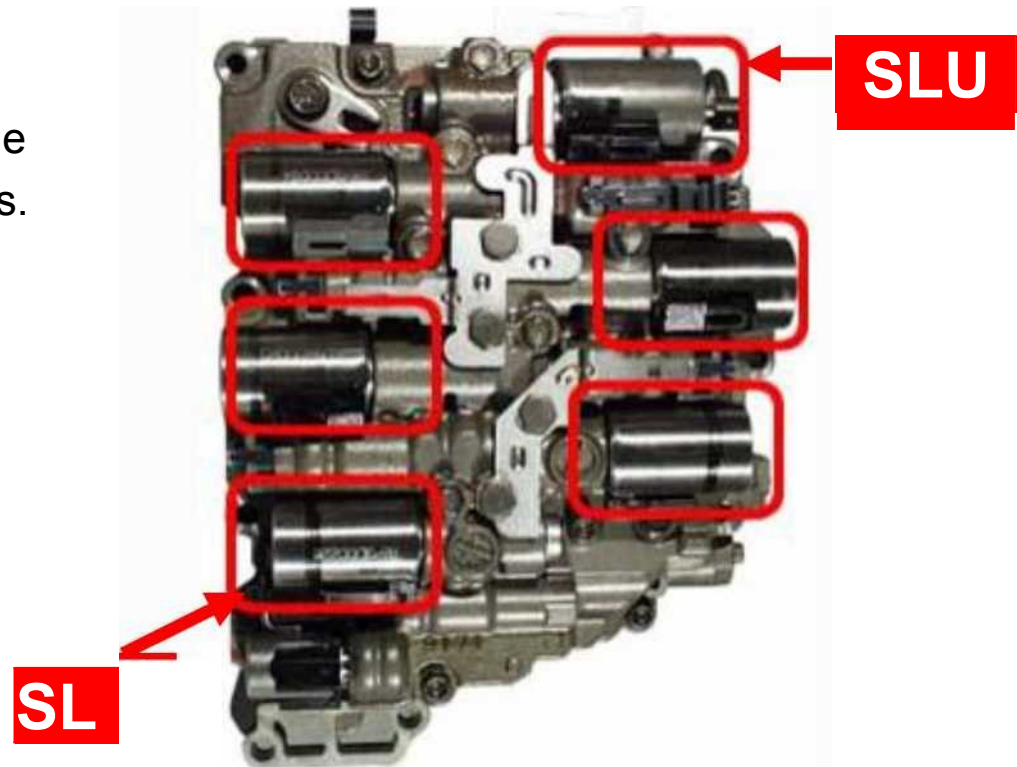
The AM6 box: The hydraulic circuit

Solenoid valves

Gear shift control solenoids (SLT)

They control the hydraulic (line) pressure of the clutch and brakes, ensuring fluid gear changes.

Bypass Control Solenoids (SLU) Linearly controls the hydraulic pressure of the bypass system.

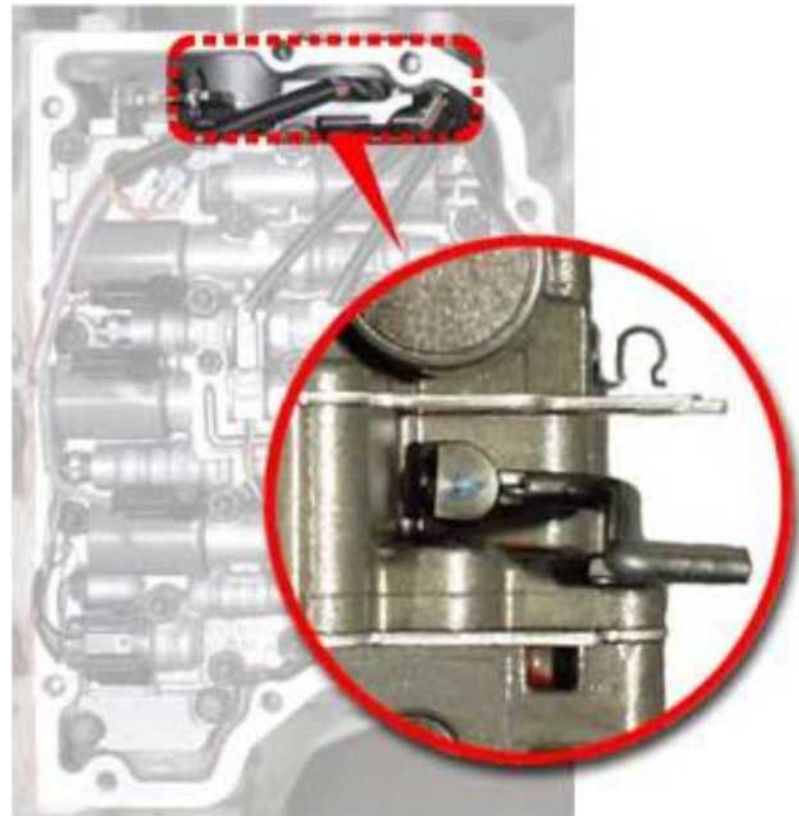


The AM6 box: The hydraulic circuit

Manual valve

It is linked to the gear lever by means of a linkage and a cable.

Allows the oil to be directed to the hydraulic block distributors in the different positions (P, N, D)



The AM6 box: The hydraulic circuit

Suction filter

Attached to the base of the oil pump plate, it filters the oil from the crankcase.



Oil pump

It sucks the oil through the filter and sends it under pressure to the different elements of the hydraulic circuit.



oil cooler

It is fixed to the converter housing.

Cools the oil at the outlet of the converter.

The temperature change is carried out with the engine cooling circuit.



The AM6 box: Sensors and Information

Sensors and Information

AM6 box



The AM6 box: Sensors and Information

Cash Regime collectors

The turbine speed sensor (NIN):

Informs the computer of the turbine rotation speed.

This information allows:

- Decide to change gear.
- Determine the slip of the converter.



**input speed
box (turbine)**

These signals are transmitted to the computer which controls the engine torque, gear change and bridging.

The AM6 box: Sensors and Information

Cash Regime collectors

Informs the calculator of the box output rate

Associated with that of the turbine speed sensor, this information allows:

- Decide to change gear.
- Determine the slip of the clutches and brakes during gear shifting (in order to adjust the timing)
- Correct adaptive cars.

The speed sensor (SP) detects the return gear as the number of of the output shaft.



**Speed of
cash out**

turns

The AM6 box: Sensors and Information

Contactor

- ③ **Traction Control Unit (TCU) or transmission computer**, of the integrated type with gear shift position switch



effect.)

Mechanically attached to the manual valve as well as the shift lever.

The gear shift position switch built into the TCU detects the range information through the Hall Integrated Circuit and transmits the information to the TCU. The TCU continuously reads the voltage and verifies the range of the automatic transmission. (Hall integrated circuit: integrated circuit that produces a voltage due to the Hall

The AM6 box: Sensors and Information

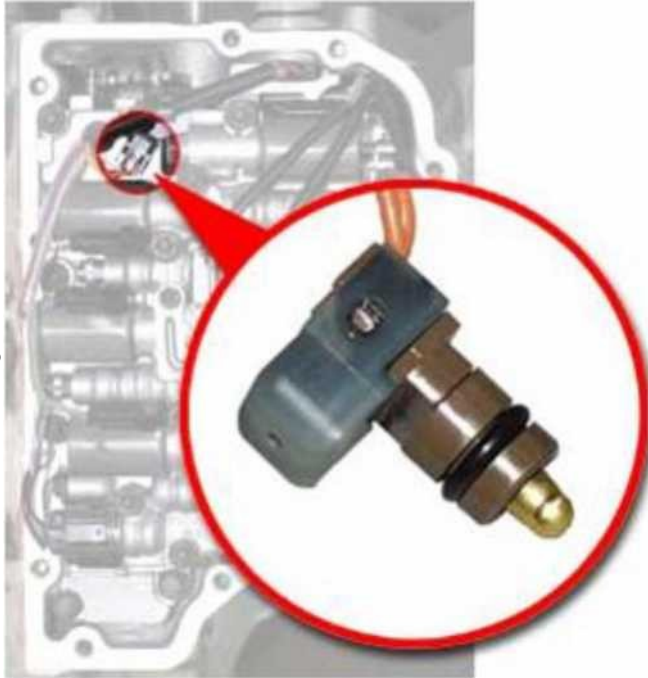
obe



It

this

of



The oil temperature sensor is installed on the front hydraulic distributor.

directly detects the oil temperature inside the hydraulic pressure command circuit and transmits a signal based on temperature to the computer, which controls gear shifting, locking and slipping in response to changes in oil temperature to supply Smooth shifting over a wide range oil temperatures

Technical
formation

The AM6 box: Sensors and Information

Solenoid valves

SLT, SLU, SLC1, SLC2, SLC3, SLB1 modulate the hydraulic pressure in response to computer commands.

Consequently, they control the displacement of the elements they drive to make a gear change smoothly.

S1 and S2 are two all or nothing solenoids.



The AM6 box: The Gear Selector

The selector
speeds

AM6



The AM6 box: The Gear Selector

Operating modes

Parking

- Mechanical transmission lock.
- Authorization of the starter action.
- Activation of the shift lock function.
- Activation of the Key lock function.



The AM6 box: The Gear Selector



Operating modes

Reverse

- Reverse.
- Turning on the backup lights.



The AM6 box: The Gear Selector



Operating modes

Neutra

- Deadpoint.
- Authorization of the starter action.



Technical
formation

The AM6 box: The Gear Selector



Operating modes

Drive

- Change of speeds to automatic.

12345

65432

6

1



Technical
formation

The AM6 box: The Gear Selector

Operating modes

- **Stepping speeds in sequential mode.**
- **Forward impulse to upshift**
- **Backward impulse to downshift**

(The computer resumes priority and adapts the ratio when driving errors such as overspeed or underspeed occur.)



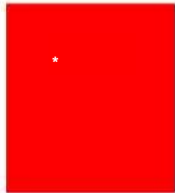
The AM6 box: The Gear Selector

Operating modes



Sporty

This program favors sporty driving.



Snow

This program is adapted to driving on low-adhesion ground.



The AM6 box: The Gear Selector



Parking mode lock function

P The parking lock:

The parking brake crown is integrated into the final group



The AM6 box: The Gear Selector

Parking mode lock function

Shift Lock function

Locks the lever in position P

Unlocking is done with the ignition on and your foot resting on the brake pedal.



The AM6 box: The Gear Selector



Parking mode lock function

P Key Lock function

Two alert levels are available, depending on destination:

- 1- Two audible beeps inform the driver when the ignition is turned off that the gear lever is not in position P.
- 2- A mechanical lock preventing the removal of the ignition key while the lever is in a position other than P.



The AM6 box: The Gear Selector



Parking mode lock function

Start Lock function

Authorizes control of the starter motor only in positions P or N.



The AM6 box: Management

Cash management

AM6



Technical

The AM6 box: Management

Functioning

The computer receives and analyzes information from the CAN network or from the sensors.

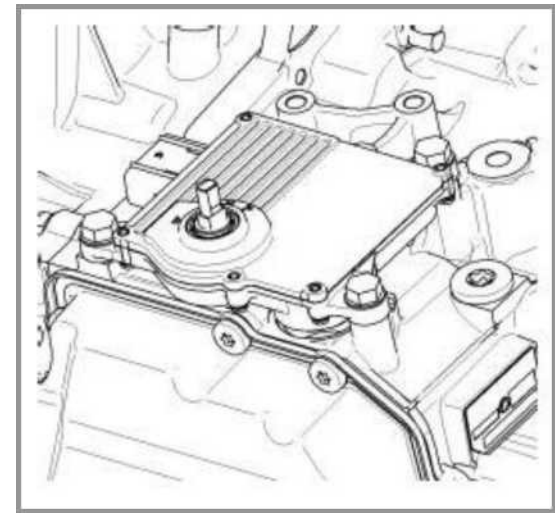
Controls the actuators (solenoids).

It is installed on the gearbox and integrates the multifunction contactor.



Communicate over the CAN* network with:

- The combination to display the information.
- Air conditioning to fix the compressor during gear shifting
- The Hood Service Box to turn on the reverse light



The AM6 box: Management

Features

> The calculator provides the following main functions

- Gear change
- Self-adaptivity of the passing laws
- Programs (sports and snow)
- Reduction (Kick Down)
- Converter control
- Torque blur request (CAN Network)
- Idle speed compensation request (CAN Network)
- The management of self-adaptive parameters The request for the diagnostic warning light to turn on in the event of an anomaly (EOBD depending on destination)
- Safety mode (or refuge mode)
- Management of security locks (Shift Lock, Key Lock, Start Lock)



The AM6 box: Management

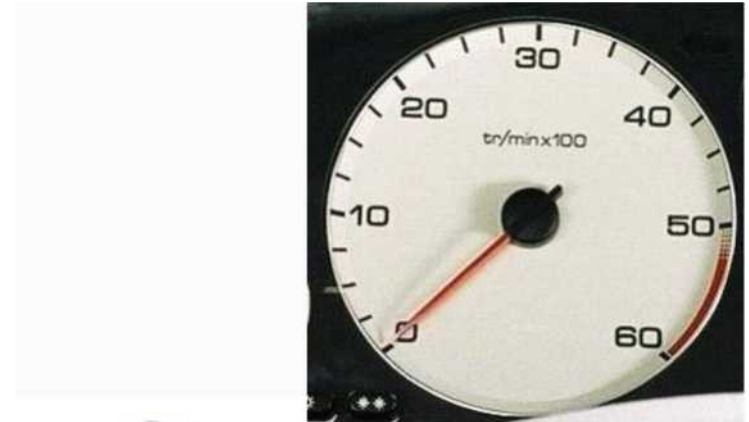
Information

> The computer receives information from the following engine elements

Engine speed

It allows:

- Determine the most appropriate relationship
- Determine the slip of the converter
- Check the torque fade phase



Accelerator pedal position

Informs the computer of the engine load, allowing the change of speeds and reduction (kick down)



The AM6 box: Management

Information

engine torque

Allows the calculator to:

- Decide to change gear
- Adjust line pressure
- Limit the maximum torque admissible through the box



engine temperature

Informs the gearbox computer of the engine temperature, thus participating in the management of engine group temperature.



the

The AM6 box: Management

Information

> The computer receives information from the following engine elements

Turbine speed sensor

The turbine speed sensor (NIN) is positioned facing the battlements of the drum C2 of the intermediate input shaft (in conjunction with the converter turbine).
Informs the computer of the turbine rotation speed.

This information allows:

- Decide to change gear.
- Determine the slip of the converter.



The AM6 box: Management

Information

Vehicle speed sensor

Positioned on the crown (C2), facing the teeth of the driving pinion of the descending pair.

Informs the calculator of the box output rate

Associated with that of the turbine speed sensor, this information allows:

- Decide to change gear.
- Determine the slip of the clutches and brakes during gear shifting (in order to adjust the timing)
- Correct adaptive cars.



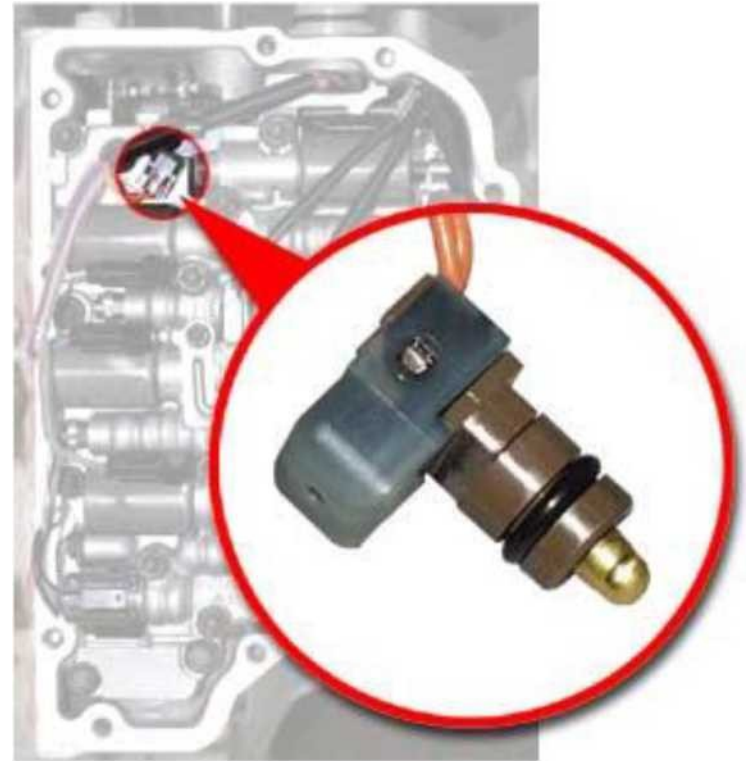
The AM6 box: Management

Information

Temperature probe

It is located on the hydraulic block and directly detects the oil temperature inside the hydraulic pressure control circuit.

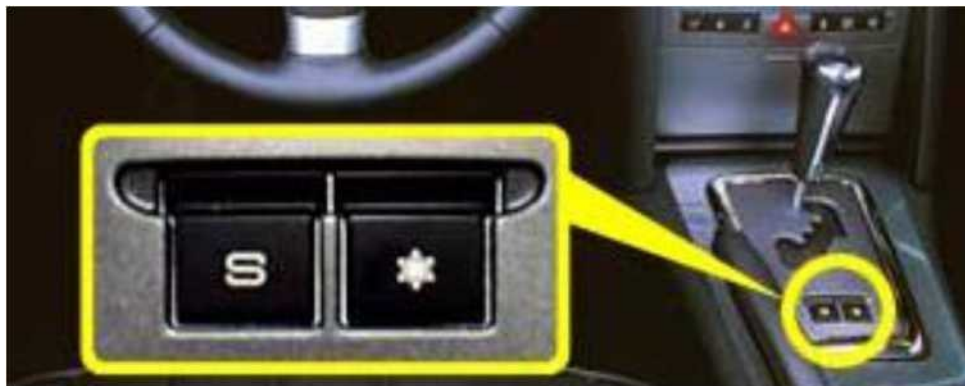
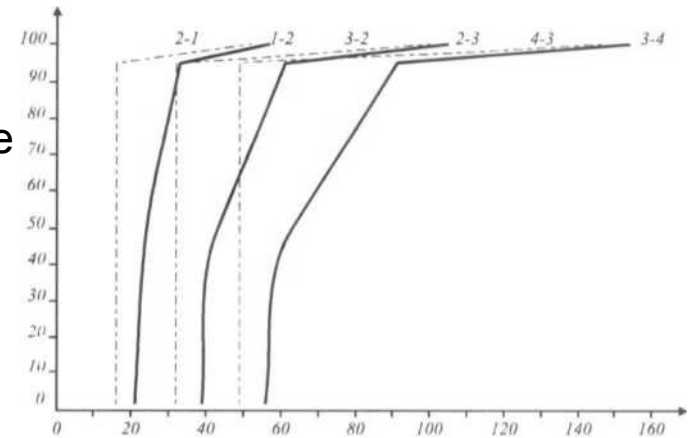
Its information allows the calculator to adopt a strategy depending on the temperature.



The AM6 box: Management

Management

It has several shifting laws (depending on the engine) that allow the behavior of the gearbox to be adapted to the user's **driving style** , the selected **program** and the external and internal **environmental conditions**.



Directs **3 programs** : Sport, snow and normal. Allows you to adapt the operation of the box according to the strategies and the driver's desire

The AM6 box: Management

**Manage
ment**

DRIVER

AROUND

PROGRAMS

LAW 1

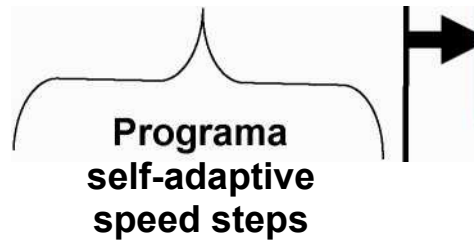
LAW 3

**LAW
4**

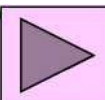
LAW 5

**E
c
o
n
o
m
i
c

S
P
O
R
T**



Technical
formation

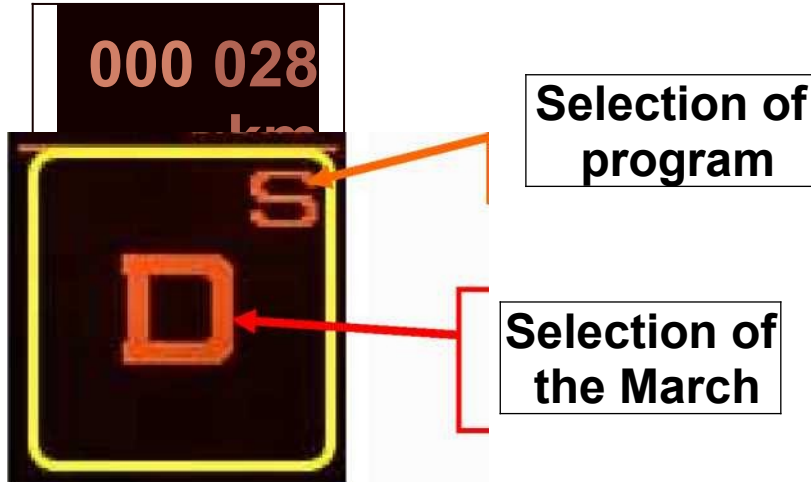




The AM6 box: Management

Management

- ③ The display on the combination or multifunction display of the selection of program and march:



The multifunction screen provides information complementary related to the use of the box

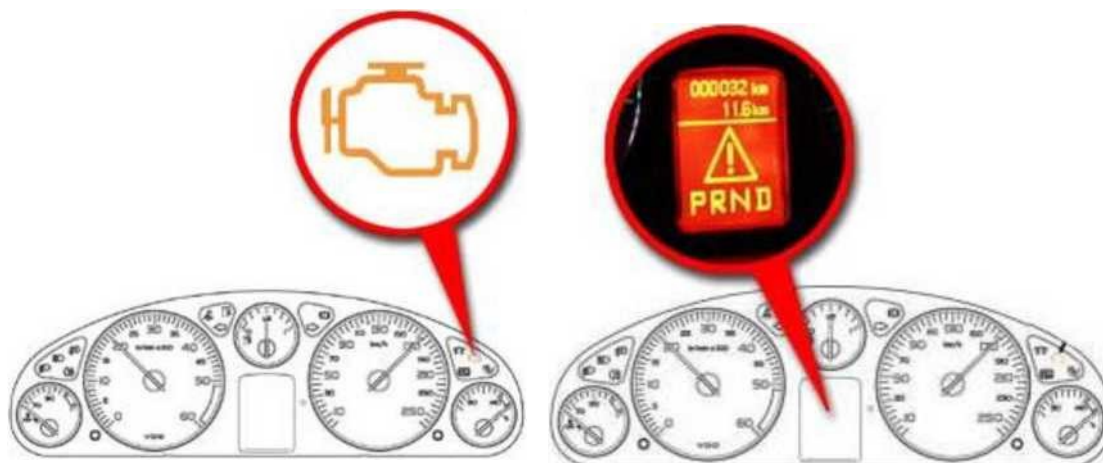
The AM6 box: Management

Management

⚠ Depending on equipment, it indicates to the driver an anomaly in the box that may generate contaminants.

The gearbox computer detects the anomaly and transmits it to the engine computer, which turns on the indicator light.

- The Pictogram indicates an operating anomaly of the box
- The EOBD warning light indicates a transmission anomaly linked to anti-pollution



The AM6 box: Management

Precautions

As with any automatic transmission, you must avoid:

- ✓ Roll with broken contact
- ✓ Push the car to try to start
- ✓ Tow the car with the drive wheels on the ground (possible but exceptionally)



The
same

The

The



AL4 gearbox requires the lubrication, cleaning and temperature precautions as any automatic gearbox.

oil capacity of a box must be respected precisely.

introduction of impurities into the CCA* can create malfunctions.

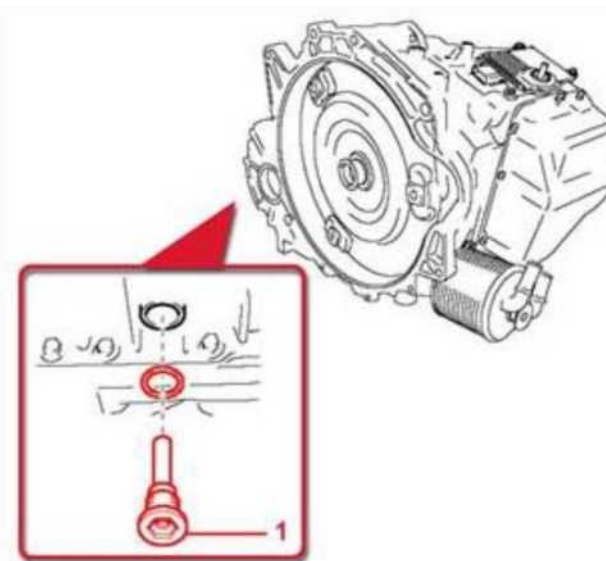
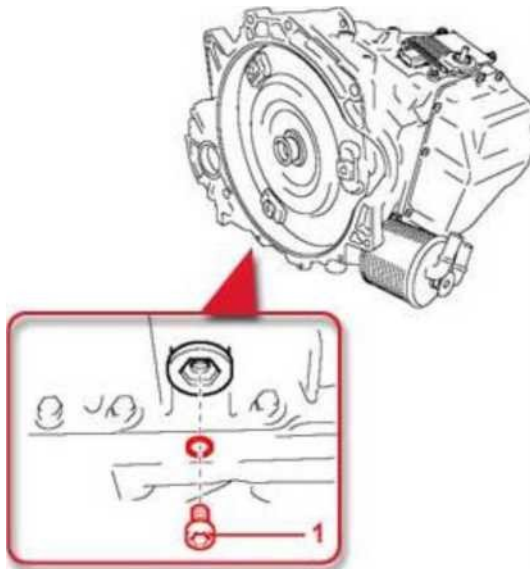
The AM6 box: Management

Maintenance

The level is carried out through the drain in plug 1 (same as in box AL4)

Emptying is carried out through the drain pipe (1) and with the engine running under certain conditions.

Filling is carried out through the specified cap



The AM6 box: Management

Maintenance: Wear counter

The working principle:

It takes into account two pieces of information:

- Box operating time
- The operating temperature of the box totals a maximum of 2,764,800 units corresponding to the oil change. (384

hours at 150°C.)

It starts from zero and increases as soon as the box is between 100°C and 150°C. The increment is carried out every 50 ms.

- **Modify the counter value**

-When changing the box.



-When changing the cash calculator.

When changing the box : Reset the counter to zero.

When changing the cash calculator : Write down the counter value of the old calculator and rewrite it in the new one.

Writing the oil wear counter is done with the PPS

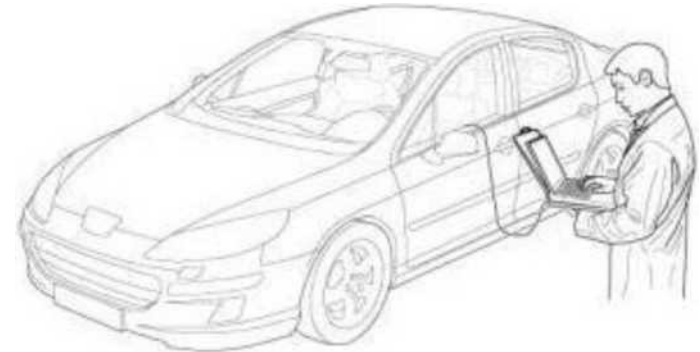
The AM6 box: Management

Maintenance

> THE CALCULATOR:

Maintenance operations that can be carried out on the calculator with the PPS:

- The download.
- Telecoding.
- The initialization.
- Reading and writing the oil wear counter.



🔧 SENSORS AND ACTUATORS:

They do not include any maintenance particularities.

Only the output speed sensor requires opening the box

