



AUTOMATIC TRANSMISSION

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AUTOMATIC TRANSMISSION - Description

An electronic management system supervises and governs the operation of the AISIN automatic transmission.

An electronic control unit manages a complex operating logic which enables the transmission to be used either in totally 'assisted' conditions, typical of a conventional automatic transmission, and in manual mode which allows sequential engagement of the gears and a more sporty style of driving.

The electronic control unit dialogues with the engine management control unit via two dedicated lines (CAN), and receives the engine rpm, fuel injection, throttle position and engine temperature signals.

Several sensors on the gearbox provide data on its operation and on the oil temperature: the control unit calculates the most suitable gear ratio and the locked condition of the hydrodynamic torque converter, sending the appropriate commands to the solenoids, also located on the gearbox;

It also drives, when necessary, a gearbox oil cooling fan.

For greater detail, see 2135 AUTOMATIC TRANSMISSION EXTERNAL CONTROLS .

The circuit for the automatic transmission is protected by two specific fuses and operated by a specific relay, located in the engine compartment junction unit.

AUTOMATIC TRANSMISSION - Functional description

The control unit of the AISIN electronic automatic transmission M55 monitors and governs the entire automatic transmission management system.

The direct supply for the control unit arrives at pin 7 of connector B of M55 via the line protected by fuse F10 of junction unit B2.

The ignition-controlled supply (15/54) from the line for relay T17 of engine compartment junction unit B1 protected by fuse F9 for B1 reaches pins 48 and 19 of connector B of M55.

Pin 14 of connector A and pin 28 of connector B of control unit M55 are earthed C61.

Control unit M55 is connected with the selector lever position sensor located on the gearbox (unit L50, connector A): Pins 2 and 9 of L50 connector A are earthed.

The signals for P, R, N and D come from pins 3, 5, 8 and 11 of L50 connector A and are connected at control unit M55 to pins 4, 11, 12 and 25 of connector B.

A safety signal (gear in N or P) comes from pin 10 of L50 connector A for the coil for relay T20 of B1 which supplies the starter motor A20 coil (pin 50). The starter motor coil power circuit is protected by fuse F3 of B1 [E5010].

Pins 1 and 4 of L50 connector A are connected to the reverse gear sensor, and they send signals to turn on the reversing light E2022 REVERSING LIGHTS

The control unit M55 - connector A - also connects to the solenoid unit L50 - connector B - which contains the control valves.

The solenoid valve control signals leave:

- from pins 17, 16, 28, 25 and 1 of connector B of M55 for the gear change solenoids L1, L2, L3, L4 and L5, respectively
- from pins 15 and 27 for the torque converter lock solenoid (L-UP)
- from pins 5-8 and 6-10 of connector B of M55 (for the FARF pressure throttle control solenoid valves).

The control unit M55 - connector A - also connects to the solenoid unit L50 - connector B - with several sensors:

- pins 21 and 22 of connector B of M55 connect to the oil temperature sensor located next to the solenoids in L50
- pins 9 and 2 of connector B M55 are connected to the gearbox output speed sensor;
- pins 3 and 10 of connector B M55 are connected to the gearbox input speed sensor;

Control unit M55 governs a series of safety checks:

- shift lock (lever locked if ignition is not on (MAR) and brake pressed): sends a signal from pin 2 of connector A to the speed control unit H37 (pin 15);
- key lock (key locked if the gear selector is not set to P): sends a signal from pin 1 of connector A which controls the lock electromagnet incorporated in the ignition switch H1 (connector B).
- door open buzzer; the signal that the driver's door is open - lock N50 - reaches pin 6 of connector A of M55; the command for the buzzer, located in gear control unit H37 pin 11, is sent from pin 9 of connector A.

Self-diagnostic data can be read by connecting the unit to connector R10 pin 9: this receives signals from pin 11 of connector A of M55 through the relevant tester line

See

E8010 DIAGNOSTIC MULTIPLE CONNECTOR .

The auto-diagnostic system also produces the signal for the 'automatic transmission failure' warning light in the instrument E50, pin 20 connector D.

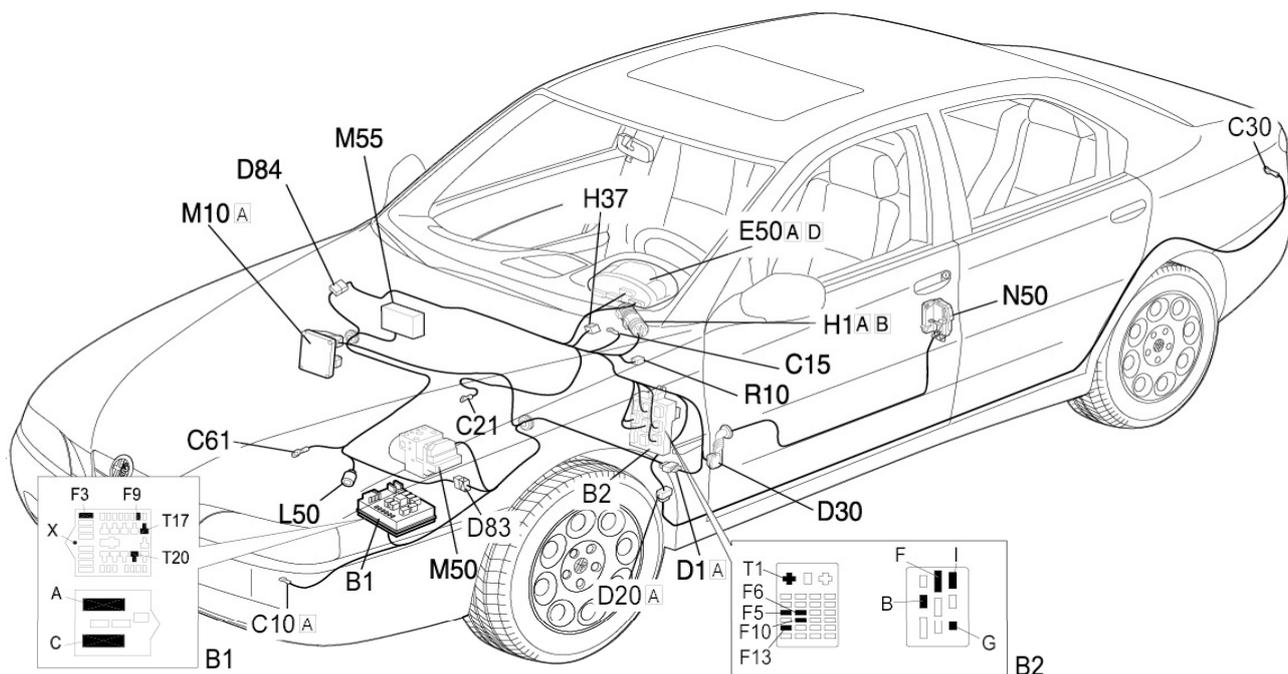
The gear control unit H37 is supplied at pin 10 via the line protected by fuse F10 of junction unit B2. controlled by the ignition (INT/A) at pin 9 by the line protected by fuse F5 of junction unit B2; pins 1, 16 and 17 are earthed (C21).

Unit H37 is connected to instrument E50 at pins 3, 4, 5, 6 and 7 of connector D to turn on the LEDs for the relevant gears engaged.

Unit H37 connects control unit M55 via pins 18, 19 and 20 to pins 13, 14 and 24 of connector B of M55 respectively to indicate activation of the TIP function (manual transmission operation).

Control unit M55 is connected to the engine management control unit M10 and ABS control unit M50. This connection is via a CAN line from pins 3, 4, 12 and 13 of connector B of M55.

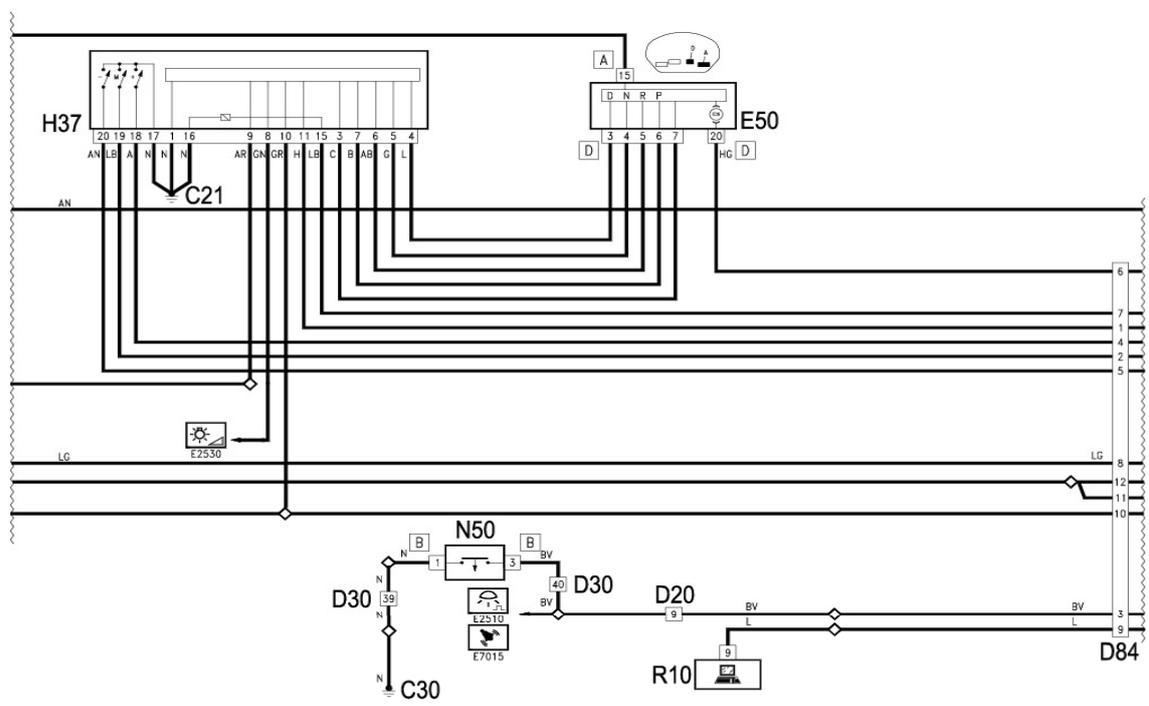
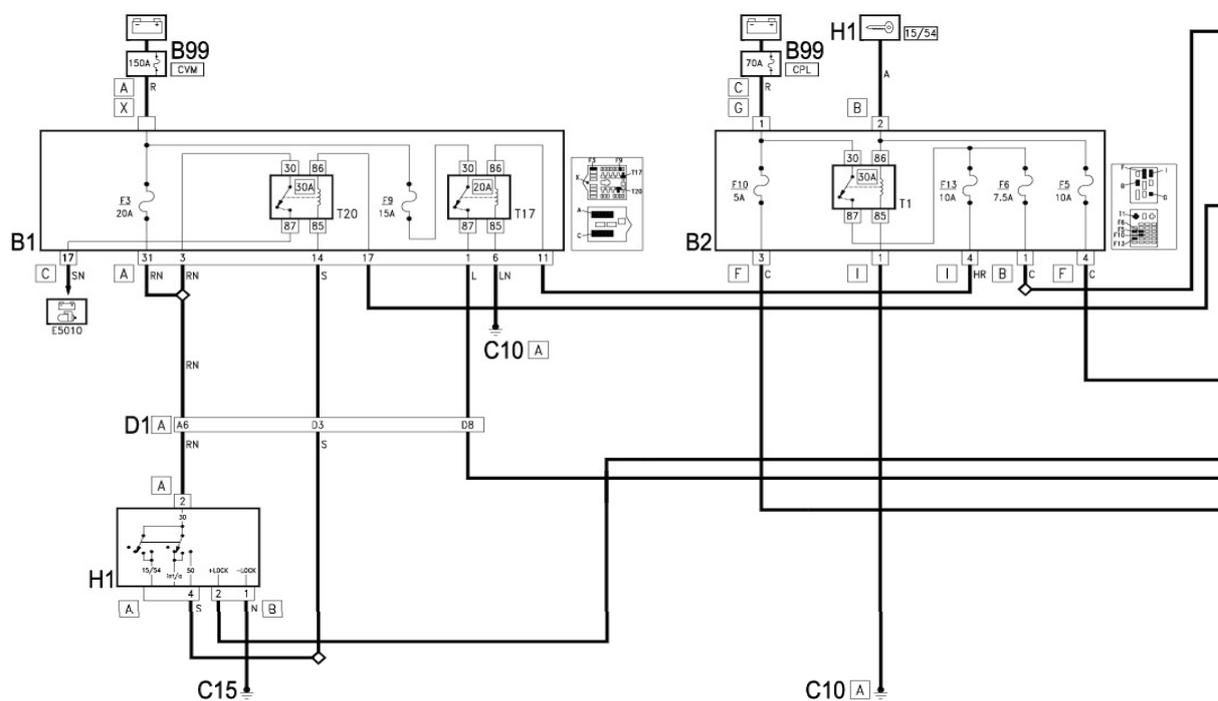
AUTOMATIC TRANSMISSION - Location of components

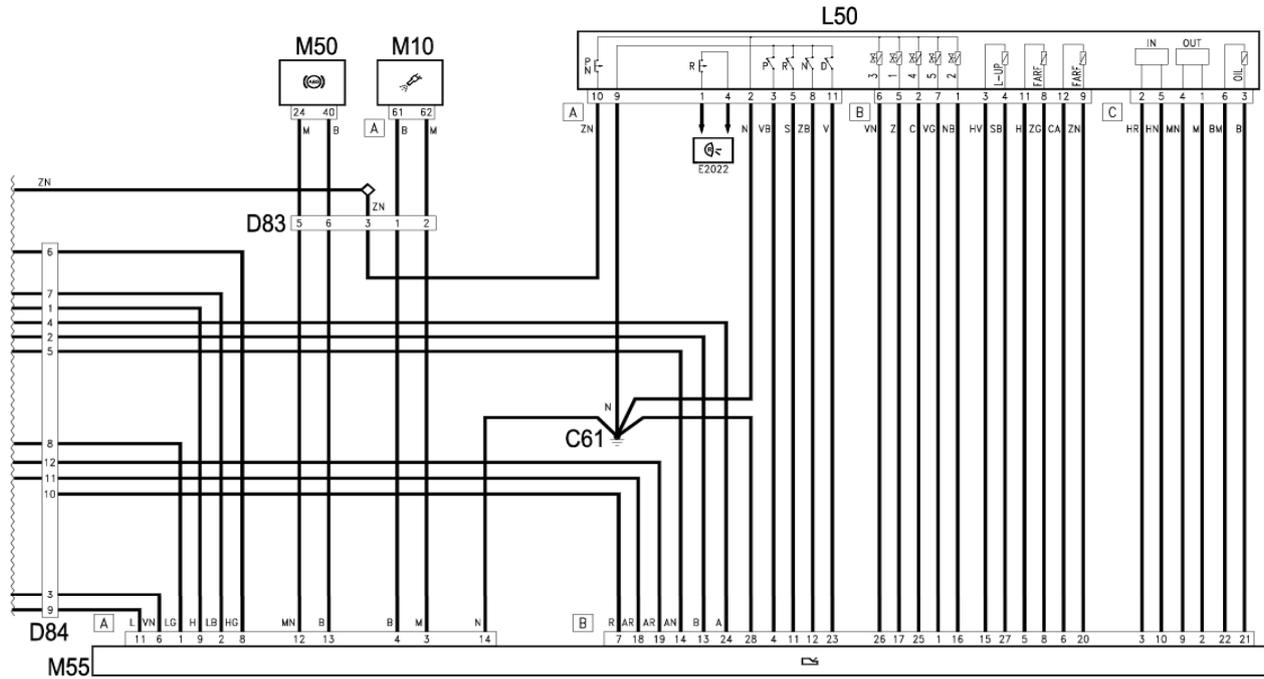


Component code	Name	Assembly reference
A5	Terminal board	-
A20	Starter' motor	5520B
B1	Junction unit	-
B1	Junction unit	5505A
B1	Junction unit	5505A
B2	Dashboard junction unit (CPL)	-
B2	Junction unit	-
B2	Junction unit	5505A
B5	MAXI FUSE box	-
B9	Starting enablement MAXI FUSE	-
B42	CAE supply fuse	-
B99	Battery fuses junction unit (CBA)	5530B
C10	Front left earth	-
C13	Front earth on left side panel	5505A
C15	Facia earth, driver's side	-
C21	Passenger side dashboard earth	-
C25	Earth on steering column	-
C30	Rear left earth	-
C40	Engine earth	5505A
C61	Automatic transmission earth	-
D1	Front-dashboard coupling	-
D4	Engine front connection	-
D6	Rear - front coupling	-
D7	Recharging front connection	-
D19	Dashboard / battery coupling	-
D20	Dashboard-rear coupling	-
D30	Driver's front door rear. section.	-
D30	Front left door connection	-
D79	CAE sensors connection	-
D82	CAE-ABS coupling	-
D83	CAE-front coupling	-
D83	CAE-i.e coupling.	-
D83	Front-automatic transmission coupling	-
D84	CAE-dashboard coupling	-
D84	Connection with dashboard cable for CAE	-
E50	Instrument panel	-
E50	Instrument panel	5560B

H1	Ignition switch	5520A
H37	CAE gear control unit	2135A
J5	Starting enablement relay	-
J6	Key Lock relay	-
J6	Starting disablement relay (CAE)	-
L50	CAE solenoids assembly	-
L50	CAE solenoids assembly	2130B
M10	Engine management control unit	-
M10	Engine management control unit	1056B
M11	Fuel injection main relay diode	-
M50	ABS control unit	3340A
M55	CAE control unit	-
M55	CAE control unit	2135B
N50	Left front door lock geared motor	-
R10	Multiple tester connection	-

AUTOMATIC TRANSMISSION - Wiring diagram





Component code	Name	Assembly reference
A5	Terminal board	-
A20	Starter' motor	5520B
B1	Junction unit	-
B1	Junction unit	5505A
B1	Junction unit	5505A
B2	Dashboard junction unit (CPL)	-
B2	Junction unit	-
B2	Junction unit	5505A
B5	MAXI FUSE box	-
B9	Starting enablement MAXI FUSE	-
B42	CAE supply fuse	-
B99	Battery fuses junction unit (CBA)	5530B
C10	Front left earth	-
C13	Front earth on left side panel	5505A
C15	Facia earth, driver's side	-
C21	Passenger side dashboard earth	-
C25	Earth on steering column	-
C30	Rear left earth	-
C40	Engine earth	5505A
C61	Automatic transmission earth	-
D1	Front-dashboard coupling	-
D4	Engine front connection	-
D6	Rear - front coupling	-
D7	Recharging front connection	-
D19	Dashboard / battery coupling	-
D20	Dashboard-rear coupling	-
D30	Driver's front door rear. section.	-
D30	Front left door connection	-
D79	CAE sensors connection	-
D82	CAE-ABS coupling	-
D83	CAE-front coupling	-
D83	CAE-i.e coupling.	-
D83	Front-automatic transmission coupling	-
D84	CAE-dashboard coupling	-
D84	Connection with dashboard cable for CAE	-
E50	Instrument panel	-
E50	Instrument panel	5560B
H1	Ignition switch	5520A
H37	CAE gear control unit	2135A
J5	Starting enablement relay	-

J6	Key Lock relay	-
J6	Starting disablement relay (CAE)	-
L50	CAE solenoids assembly	-
L50	CAE solenoids assembly	2130B
M10	Engine management control unit	-
M10	Engine management control unit	1056B
M11	Fuel injection main relay diode	-
M50	ABS control unit	3340A
M55	CAE control unit	-
M55	CAE control unit	2135B
N50	Left front door lock geared motor	-
R10	Multiple tester connection	-