



TECHNICAL TRAINING

SYSTEM DIAGNOSIS

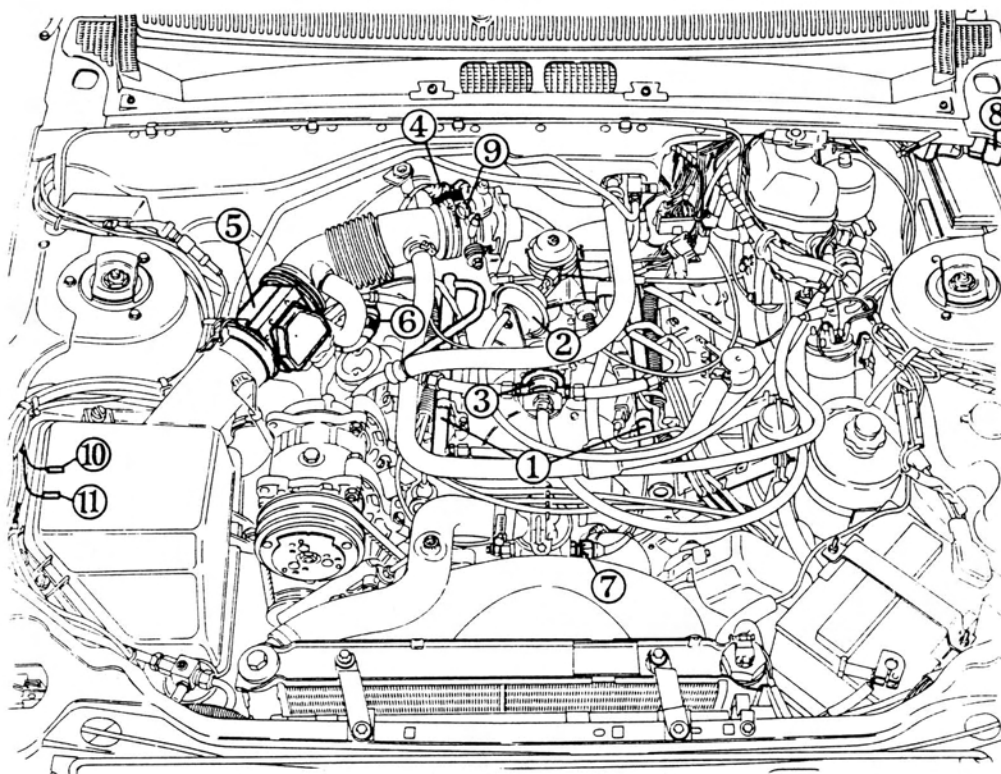
NSD 15-5

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LH TEST SECTION

ZN3J



- | | |
|--------------------------------|-----------------------------------|
| 1 Fuel rails | 7 Engine temperature sender (NTC) |
| 2 Cruise control (Servo) | 8 Relay board |
| 3 Fuel pressure regulator | 9 Idle speed screw |
| 4 Throttle switch unit | 10 Wire no. 12 idle preset |
| 5 Hot wire air flow sensor | 11 Wire no. 22 mixture |
| 6 Auxiliary speed electrovalve | |

IGNITION LED

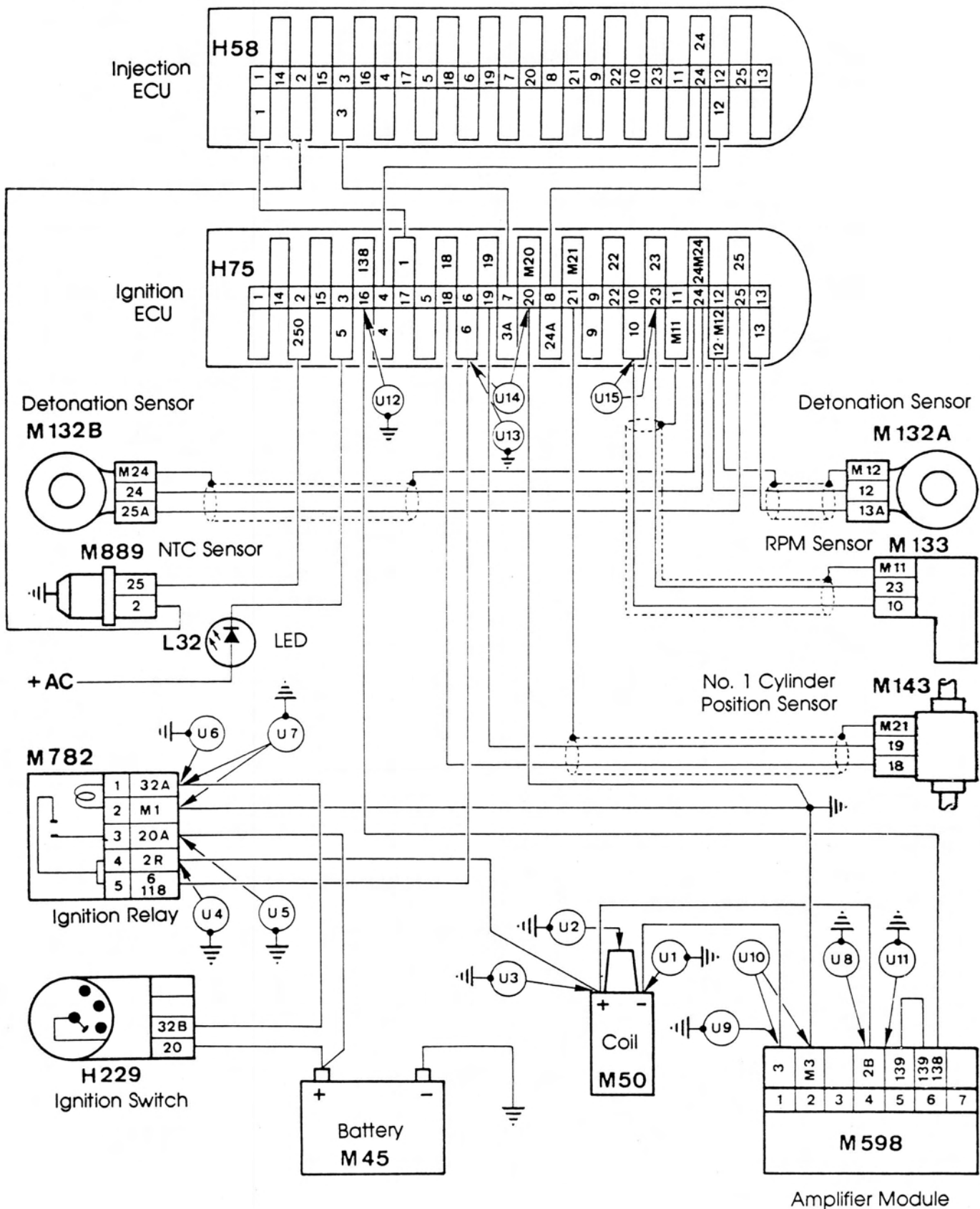
Location - Instrument cluster

Warning Flash Codes:

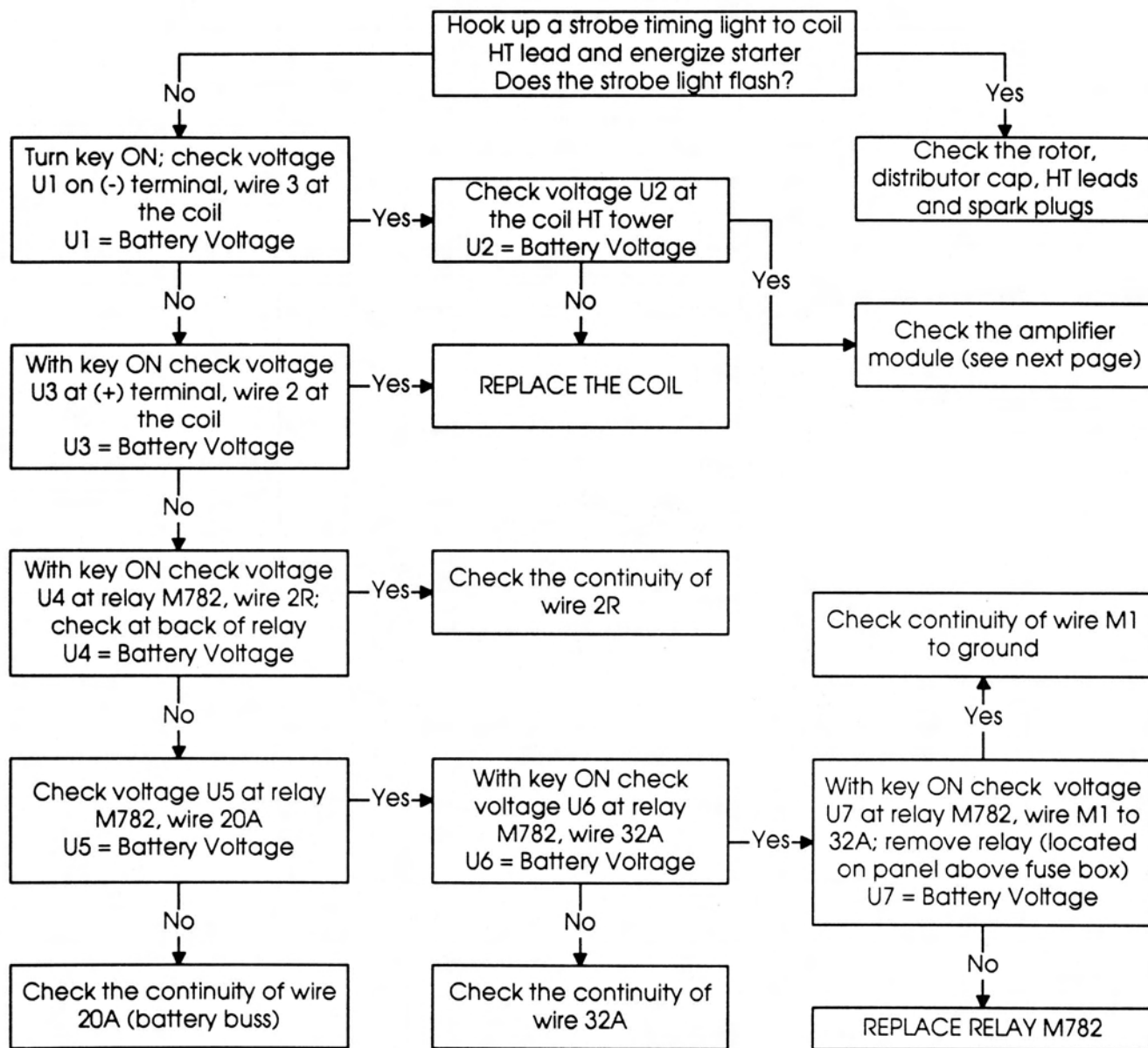
	Ignition on - LED light on	Normal conditions
	Engine running - LED light off	
X1	Maximum retard 13°	Overheating, fuel problem, ECU
X2	NTC sensor	Check sensor and wiring
X4	Knock sensor	Check both sensors and wiring
X5	Load problem	Check ignition ECU to injection ECU wiring; check injection ECU
X6	#1 Cylinder HT sensor	Check sensor and wiring

NOTE: There is **NO** 3-flash warning code

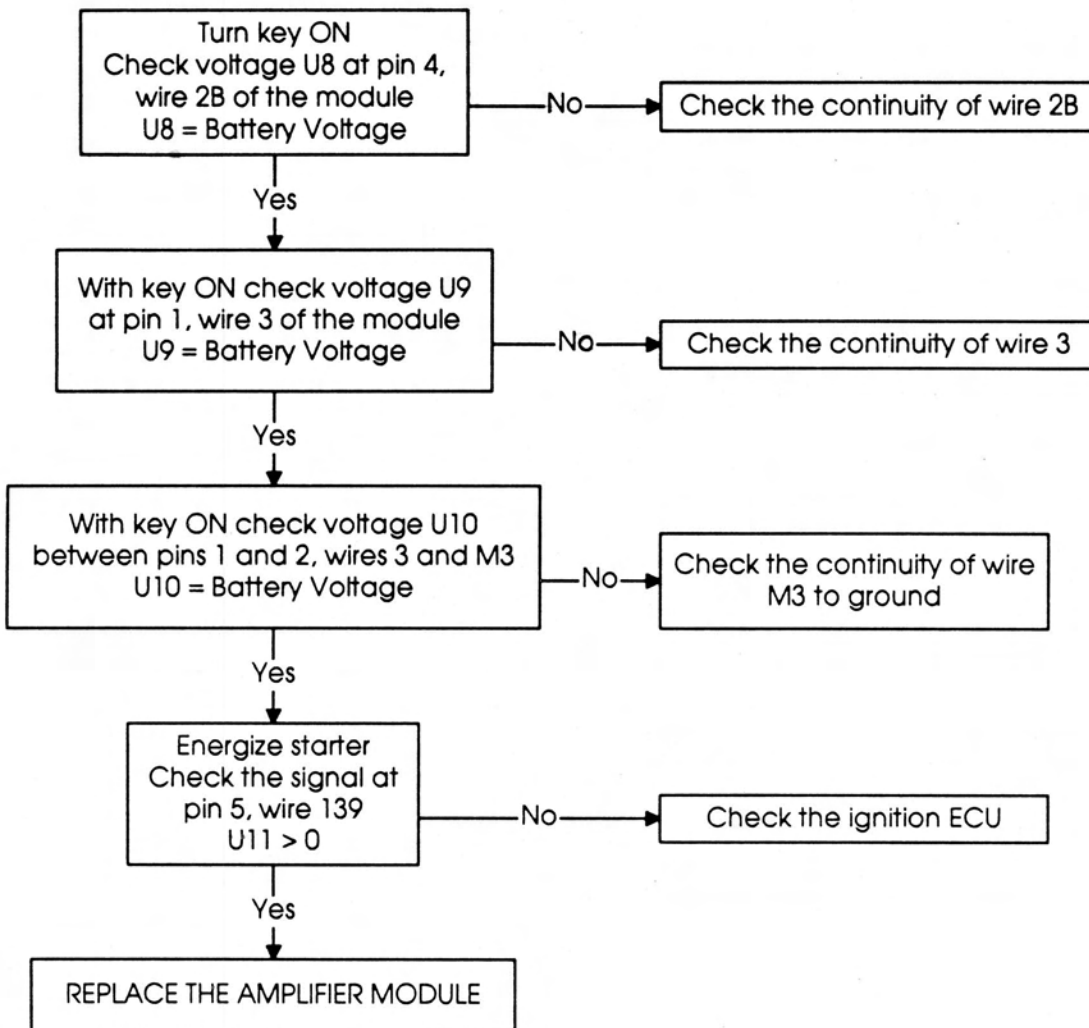
IGNITION SCHEMATIC



IGNITION TROUBLESHOOTING



IGNITION TROUBLESHOOTING - Checking the Amplifier Module



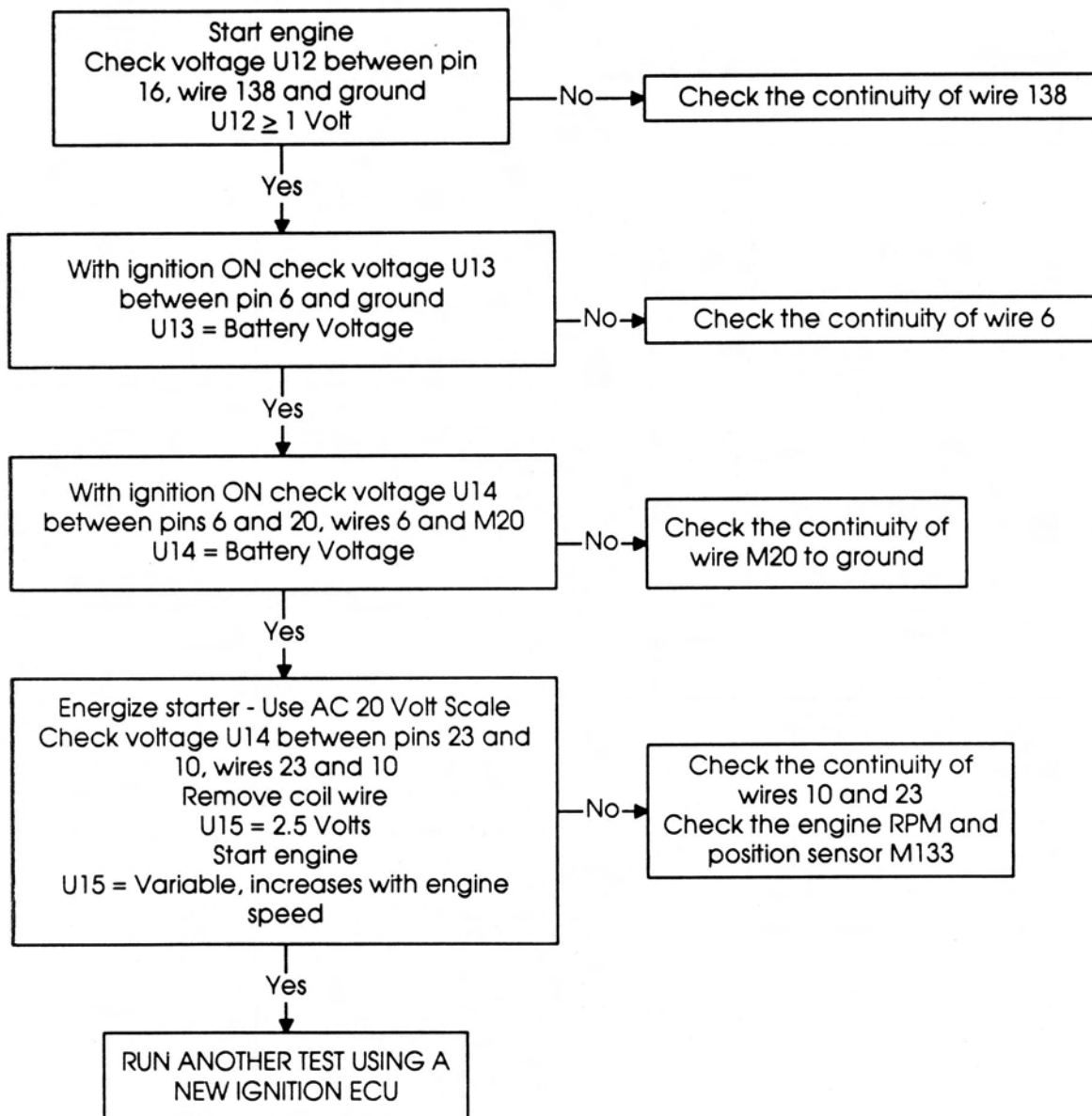
IGNITION TROUBLESHOOTING - Dynamic Test

For these tests:

The female connector of the pin out box must be connected to the ignition ECU of the vehicle (ignition ECU behind right side footrest)

The male connector of the pin out box must be connected to the wiring harness of the vehicle

CHECKING THE IGNITION ECU WITH THE PIN OUT BOX



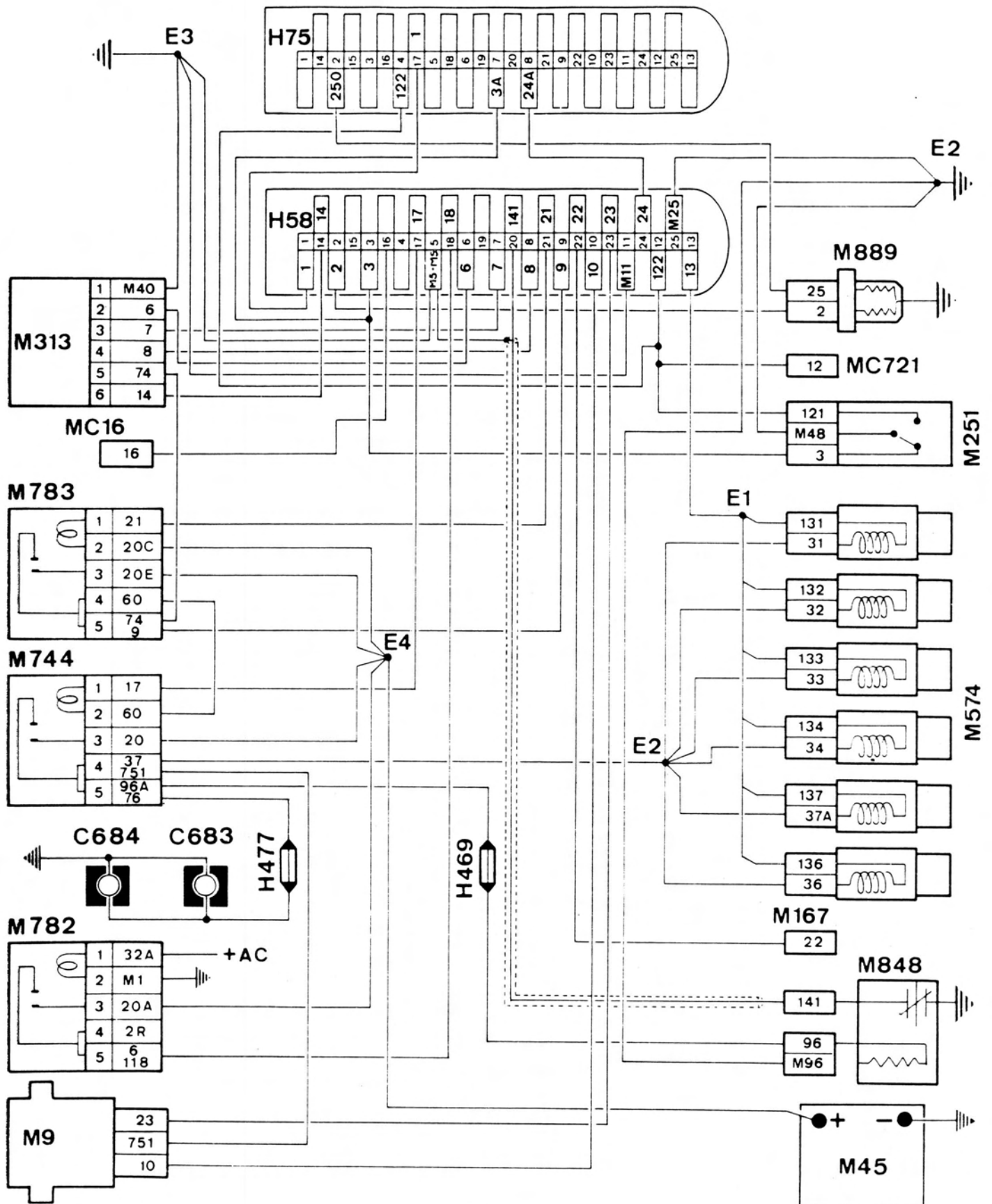
LEGEND - 1987-88 Model Year

Idle Regulation Electrovalve (Idle Actuator)	M9
Battery	M45
Integrator Voltage Signal for adjusting richness at idle (wire no. 22)	M167
Throttle Switch Unit	M251
Air Flow Sensor	M313
Injectors	M574
Fuel Pump Relay	M744
Ignition Relay	M782
Main Relay	M783
Lambda Sensor	M848
Engine NTC Temperature Sensor	M889
A/C (Load Input for Idle Compensation through ECU)	MC16
Test Lead (wire no. 12) for Idle Preset Adjustment	MC721
Injection ECU	H58
Ignition ECU	H75
Fuel Pump Fuse (15A)	H477
Lambda Sensor Heater Fuse (15A)	H469
Main Fuel Pump	C683
Primer Fuel Pump	C684

IDENTIFICATION OF LETTERS M - P - H - C - L:

The vehicle is divided into four compartments by letters placed before the component number reference, according to the geographic location of said component

M = Engine
P = Dashboard
H = Passenger Compartment
C = Trunk
L = Lamp



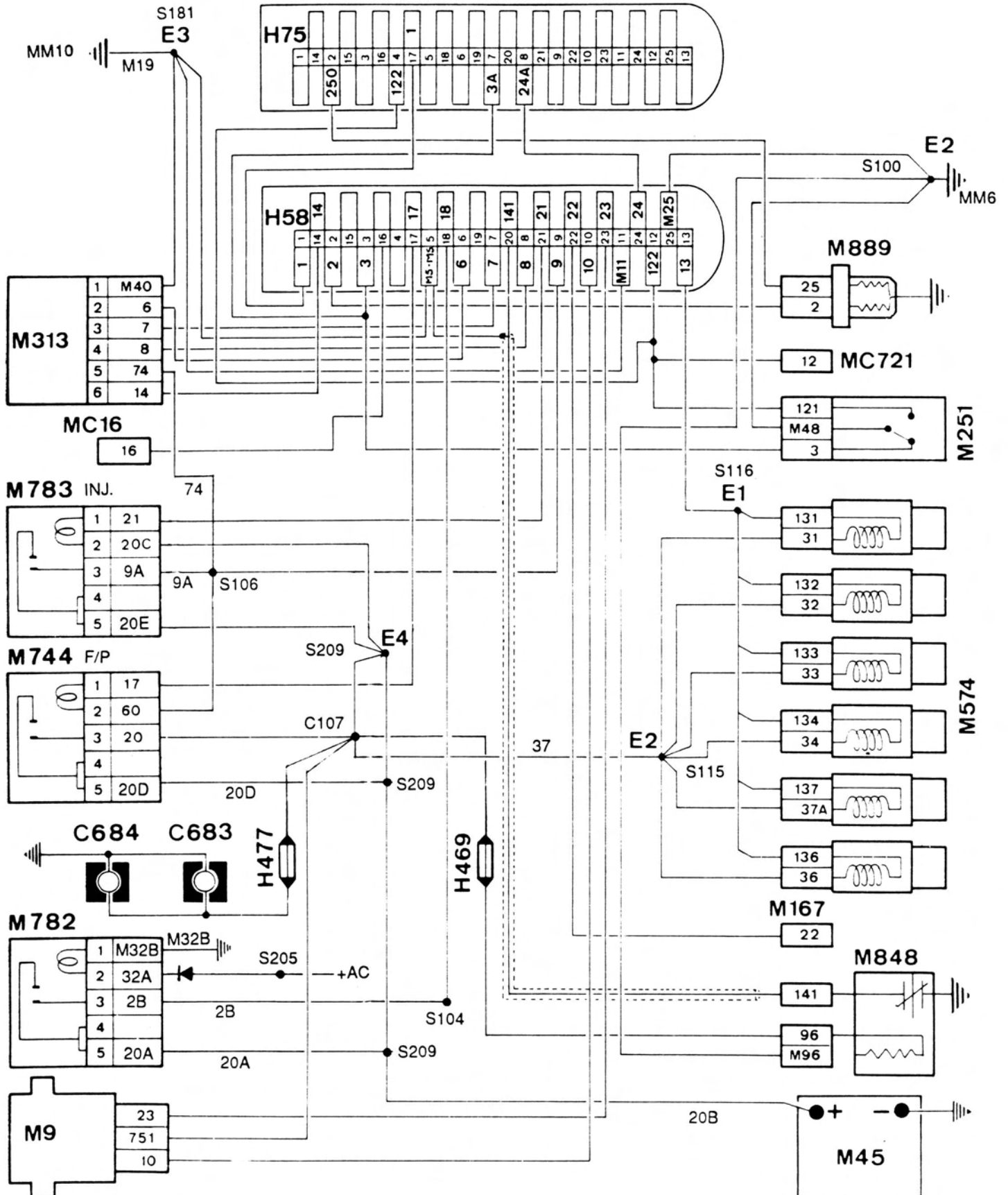
LEGEND - 1989 Model Year

Idle Regulation Electrovalve (Idle Actuator)	M9
Battery	M45
Integrator Voltage Signal for adjusting richness at idle (wire no. 22)	M167
Throttle Switch Unit	M251
Air Flow Sensor	M313
Injectors	M574
Fuel Pump Relay	M744
Ignition Relay	M782
Main Relay	M783
Lambda Sensor	M848
Engine NTC Temperature Sensor	M889
A/C (Load Input for Idle Compensation through ECU)	MC16
Test Lead (wire no. 12) for Idle Preset Adjustment	MC721
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PIN OUT BOX TESTING - Voltage Checks

Check battery voltage first before proceeding to any pin out box voltage checks (for correct voltage drop readings)

The checking of these different pins must be made with the connector removed from the injection ECU and connected to the male end of the pin out box (25-pin harness)

Preliminary conditions: voltage checks, battery charged

CHECKING THE INJECTION ECU CONNECTOR PINS

CHECK	TESTER	PIN NOS.	TEST CONDITION	READINGS	IF READINGS INCORRECT, CHECK:
Injection ECU Power Supply and Grounds	Voltmeter	9 & 11 9 & 5 9 & 25 9 & Grnd	Jump pin 21 to pin 25 (ground), completing main relay circuit M783, M782, M744 located on panel above fuse box	U > 12 Volts	Electrical circuit continuity Relay M783 (Injection relay) Identify by wire nos. 20E and 60
Ignition Signal	Voltmeter	1 & 11	Remove jumper; Energize starter	U > 5 Volts	Electrical circuit continuity Ignition ECU H75
Trigger Circuit of Relay M744 (Fuel Pump)	Voltmeter	17 & 11	Jump pin 21 to pin 25 (ground), completing main relay circuit Remove jumper	U > 12 Volts	Electrical circuit continuity Relay M744 (fuel pump) Identify by wire nos. 76 and 751
Power Supply to Injection ECU	Voltmeter	18 & 11	Ignition on	U > 12 Volts	Electrical circuit continuity Relay M782 (ign. ECU) Identify by wire nos. 2R and 118
Trigger Circuit of Relay M783 (Injection)	Voltmeter	21 & 11	Ignition on	U > 12 Volts	Electrical circuit continuity Relay M783 (inj.) Identify by wire nos. 20E and 60

PIN OUT BOX TESTING - Ohmmeter Checks

NOTE: Disconnect battery

CHECK	TESTER	PIN NOS.	TEST CONDITION	READINGS	IF READINGS INCORRECT, CHECK:
NTC Temp Sensor (M889)	Ohmmeter	2 & 11	-10°C (14°F) +20°C (68°F) +80°C (176°F)	Resistance = 8100-10770 Ohms Resistance = 2280 - 2720 Ohms Resistance = 292 to 362 Ohms	NTC Temp Sensor (M889)
Throttle Switch Unit (M251)	Ohmmeter	3 & 25	Disconnect ignition ECU, Accelerator pedal at rest Accelerator pedal all the way down	Resistance < 1 Ohm Resistance = ∞	Electrical circuit continuity; Throttle switch unit (M251); Throttle switch adjustment
		12 & 25	Accelerator pedal at rest Accelerator pedal all the way down After checking, reconnect the ignition ECU	Resistance = ∞ Resistance < 1 Ohm	
Idle Regulation Electrovalve (M9)	Ohmmeter	MY87-88, 23 & wire 751/fuel pump relay; MY89, 23 & wire 20/fuel pump relay	Disconnect fuel pump relay (M744) located above fuse box; identify by wire nos. 751 and 37 spliced at pin 4; connect jumper to wire 751	Resistance = 19 to 25 Ohms	Electrical circuit continuity; Idle regulation electrovalve (M9)
		MY87-88, 10 & wire 751/fuel pump relay; MY89, 10 & wire 20/fuel pump relay	As above	Resistance = 17 to 22.5 Ohms	
Injectors (M574)	Ohmmeter	13 & Wire 37	Wire 37 is spliced to 751 as above After test reconnect relay (M744)	Resistance = 2.5 to 3 Ohms	Electrical circuit continuity; Injectors (M574)
Grounds	Ohmmeter	5 & Grnd 11 & Grnd 25 & Grnd	After test reconnect battery	Resistance < 1 Ohm	Electrical circuit continuity

LH ELECTRICAL CHECKS

NOTE: Battery connected, ignition ECU connected

For these tests:

The female connector of the pin out box harness must be connected to the injection ECU of the vehicle

The male connector of the pin out box remains connected to the wiring harness of the vehicle

DYNAMIC TESTING - VOLTAGE CHECKS

CHECK	TESTER	PIN NOS.	TEST CONDITION	READINGS	IF READINGS INCORRECT, CHECK:
Air Flow Sensor Output Signal	Voltmeter	6 & 7	Engine running	U = 2 to 5 Volts	Electrical circuit continuity; Air flow sensor M313
Air Flow Sensor (self-cleaning) Wire heats to 1000°C	Voltmeter	8 & 11	5 seconds after stopping the engine, provided that the engine temp has reached >65°C (149°F) and the engine RPM has reached >1500 (can also be checked visually)	Voltage increases with RPM; U = 2 to 5 Volts for 1 second	Electrical circuit continuity; Air flow sensor

[illegible]

[illegible]