

# K-Jetronic CONTINUOUS INJECTION (CI). 240 B21FT Lambda ECU Pin Functions.

BK or SB - BLACK	W - WHITE	OR - ORANGE	VO - VIOLET
GN - GREEN	GR - GRAY	BL - BLUE	P - PINK
BN - BROWN	R - RED	Y - YELLOW	

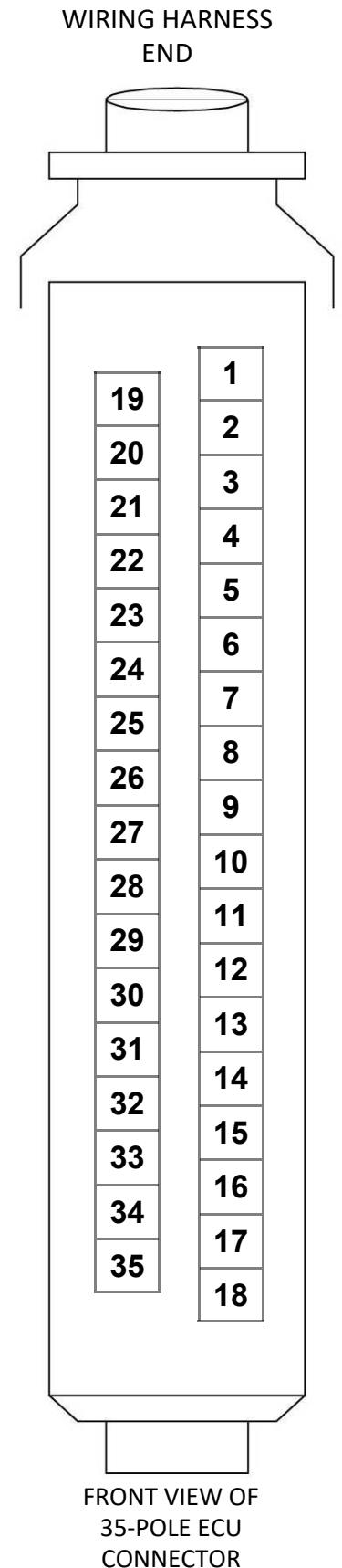
1. —
2. (GN) Input signal from oxygen sensor (shielded).
3. —
4. (BK) SHIELD (shield for oxygen sensor GN wire at Terminal 2).
5. (BK) Ground (external signal ground for shield).
6. —
7. (GN wire, all years): Green wire to Firewall Charge Air Pressure Switch closes when pressure exceeds 2.9 PSI, providing ground to Terminal 7. This changes the Frequency Valve duty cycle to 64-70° dwell (71-77%) to provide boost acceleration enrichment.  
(GR wire added, 1982-85): A Gray wire was added to the 1-pole terminal on the firewall for the Charge Air Pressure Switch. This wire connects to a new Thermal Cutout Switch. The Thermal Cutout Switch is threaded into the side of the engine block (intake side, rear). This switch grounds Terminal 7 when coolant is below 59° F (15° C) to provide cold fuel enrichment.
8. (GN) 12v input from Lambda relay pin 87 (which receives switched power via fuel pump relay pin 87).
9. —
10. —
11. (W) (1984 or 1985 only) Input signal (ground) from the Pressure Differential Switch for cold acceleration enrichment. This switch is connected by a vacuum hose to a Thermostat Vacuum Valve (thermal vacuum sensor) in the head, which allows vacuum to pass to the pressure differential switch when the coolant temp is below 131° F (55° C). The Pressure Differential Switch is open when vacuum is present. When the accelerator is quickly pressed, vacuum drops and the switch closes for up to 1.5 seconds, grounding Terminal 11 for temporary cold fuel enrichment. Grounding Terminal 11 sets the frequency valve duty cycle to 82° dwell (91%). When the Thermostat Vacuum Valve in the cylinder head is warm, above 131° F (55° C), it disables this function by closing and blocking vacuum.
12. —
13. —
14. —
15. (BN) Control signal output (ground) to Frequency Valve.
16. (BK) Ground (external ground for control signal).
17. (RD) Lead to Lambda Sond test plug.
18. —

**Pins 19 — 35 not used.**

### LAMBDA ECU PART NUMBERS FOR B21FT

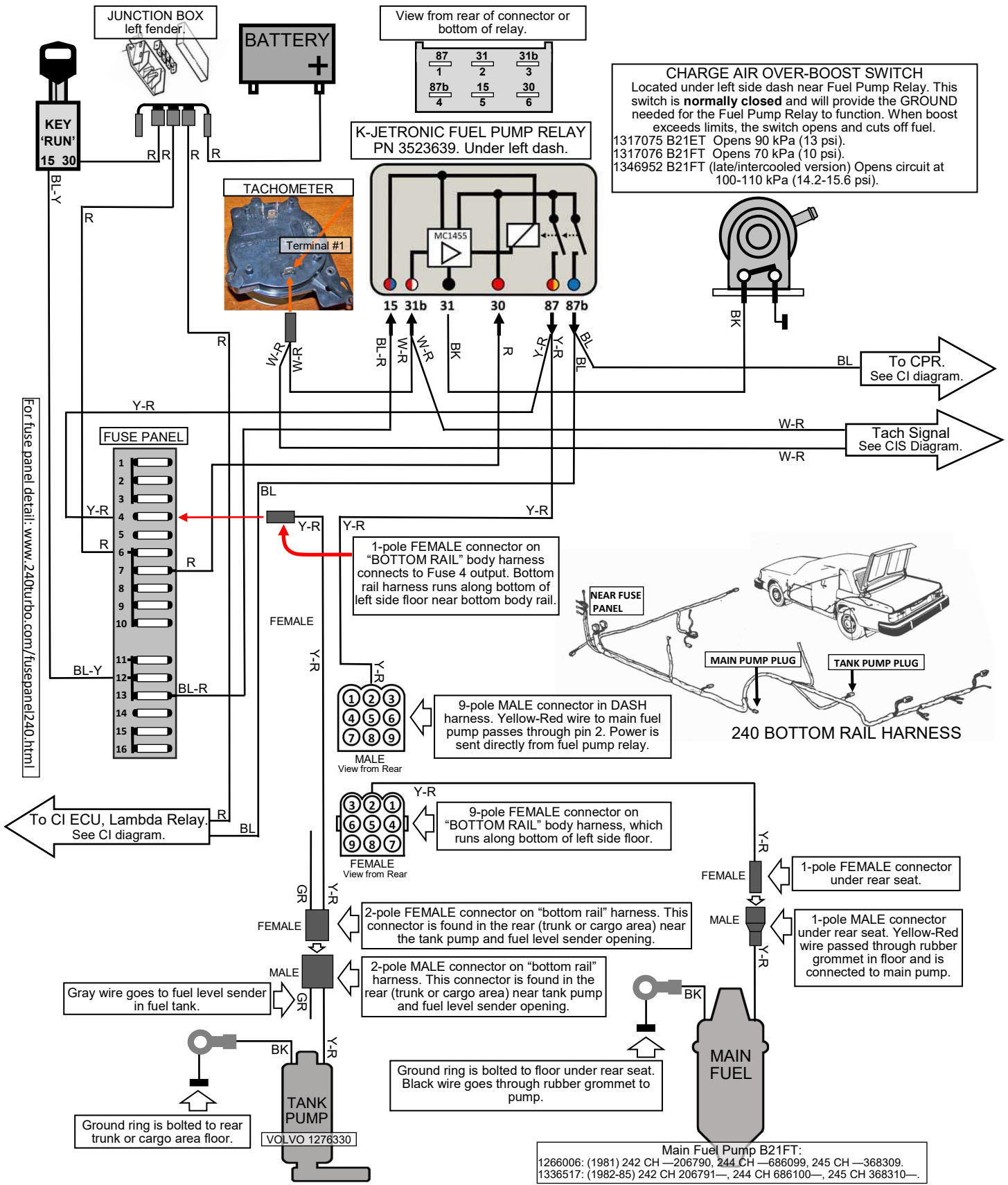
VOLVO 1276896 (1981 242 CH to 206790, 244 CH to 686099, 245 CH to 368309).

VOLVO 1306412 (1982+ 242 CH after 206791, 244 CH after 686100, 245 CH after 368310). BOSCH 0280800052.



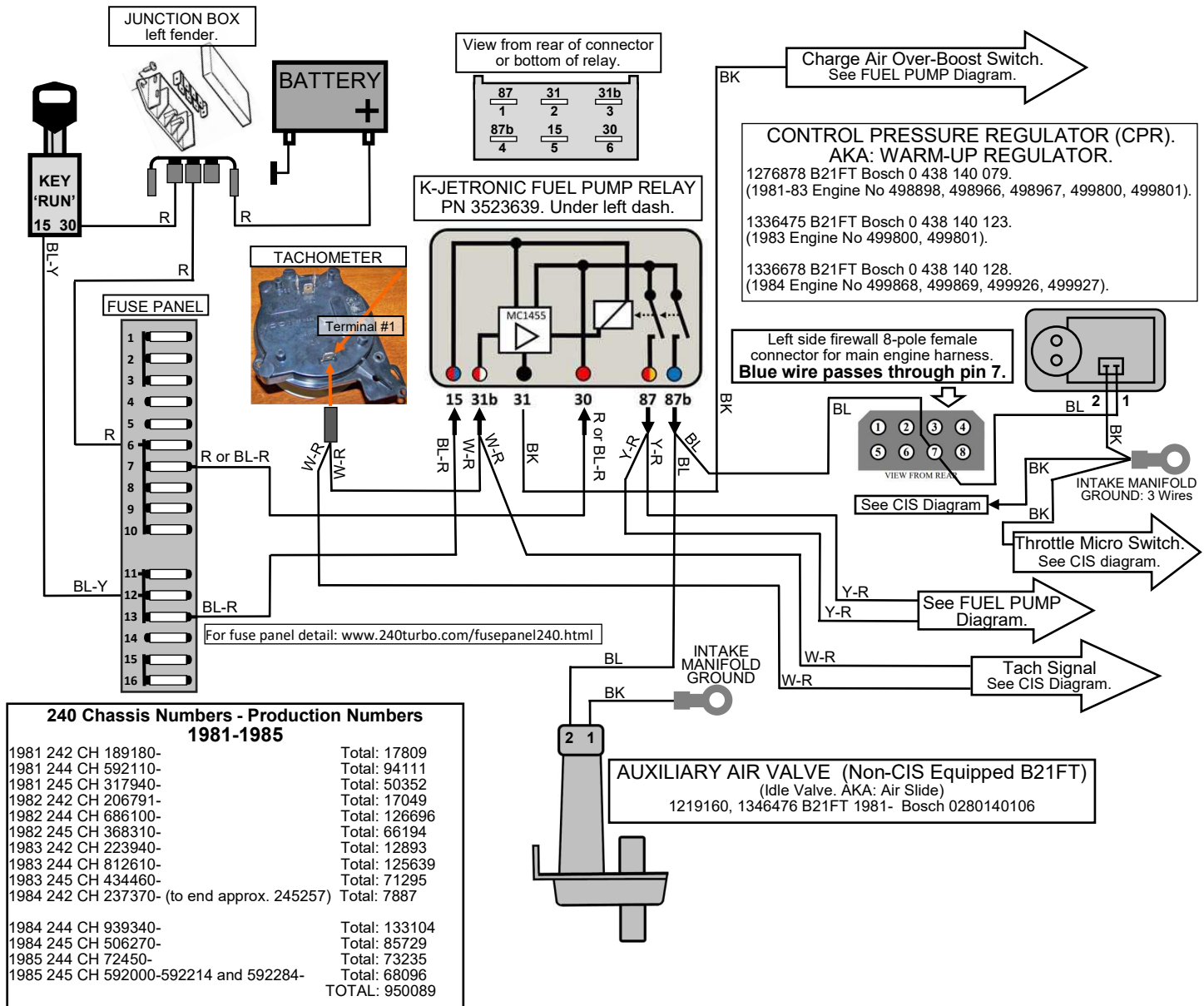
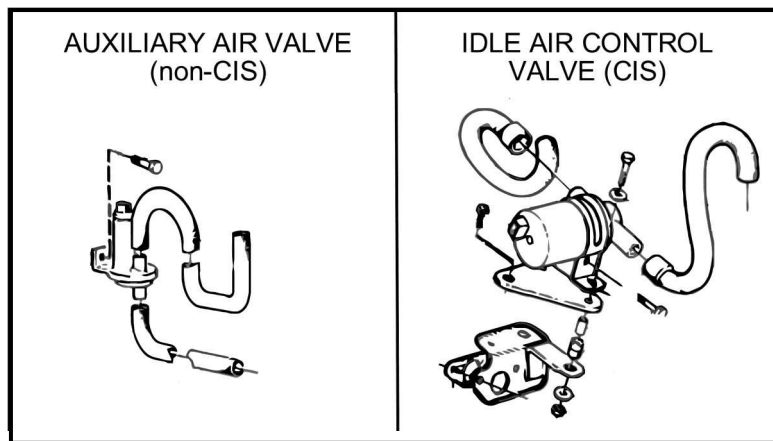


# 240 B21FT FUEL PUMP Circuits.



# K-Jetronic CONTINUOUS INJECTION (CI). Early 240 Turbo WITHOUT Constant Idle Speed (CIS) System. (Lambda system not shown in this diagram)

If the Constant Idle Speed (CIS) System is NOT present, the car will have an Auxiliary Air Valve for cold/warm idle speed compensation. If the CIS System is present, it will include an Idle Air Control Valve, which is shown in following pages.



# K-Jetronic Constant Idle Speed (CIS) System.

## CIS ECU Pin Functions for B21FT. Under right side dash.

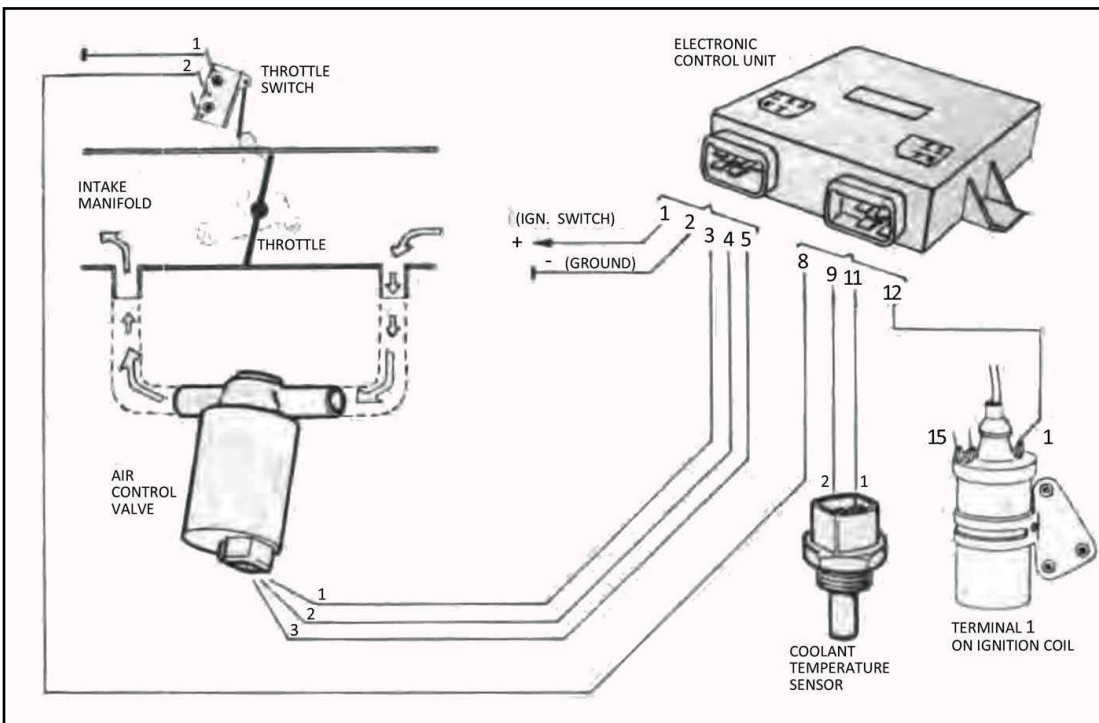
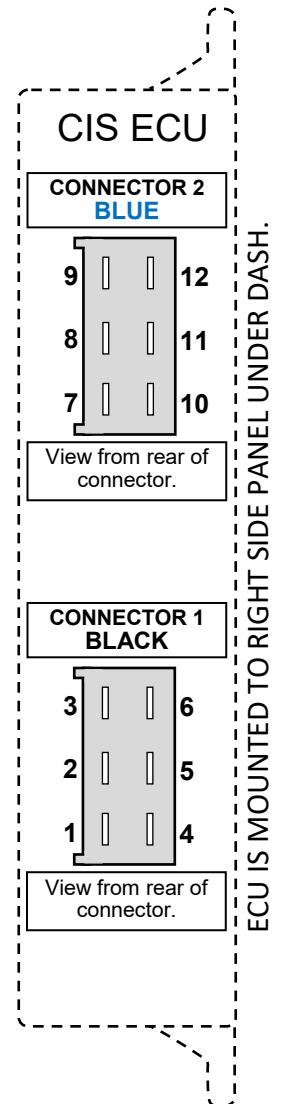
### TWO 6-POLE FEMALE CONNECTORS.

#### CONNECTOR 2 **BLUE** CONNECTOR (TOP) :

7. — (W-GN or R) (not used for B21FT) Input signal (12v) from AC for elevated idle.
8. (Y) Input signal (ground) from throttle micro switch (switch open at idle, closed above idle).
9. (R) Input signal from CIS coolant temp sensor (CLT).
10. (BL-W) Lead to idle control service/test plug. Ground to set base idle.
11. (BL) Input signal from CIS coolant temp sensor (CLT).
12. (W-R) Ignition pulse signal input from coil terminal 1 (Neg.)

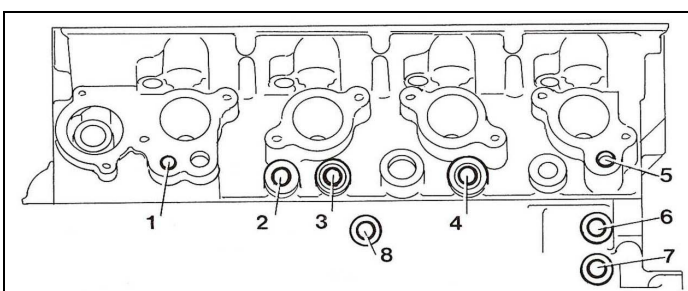
#### CONNECTOR 1 **BLACK** CONNECTOR (BOTTOM) :

1. (B-R) 12v input from terminal 15 ignition switch.
2. (BK) Ground.
3. (W) Control signal output to idle air control valve pin 1
4. (BN) 12v output to idle air control Valve pin 2.
5. (GN) Control signal output to idle air control valve pin 3.
6. — (not used)



### CIS ECU PART NUMBERS B21FT 1981-85

- (1981) VOLVO 1276897, BOSCH 0280220003 (must be matched to CLT sensor 1306024, Bosch 0280130028).  
 (1982) VOLVO 1317499, BOSCH 0280220005 (must be matched to CLT sensor 1306937, Bosch 0280130023).  
 (1983)(1983-85 non-intercooler and intercooler) VOLVO 1317499, BOSCH 0280220005 (also matched to CLT sensor 1306937, Bosch 0280130023).

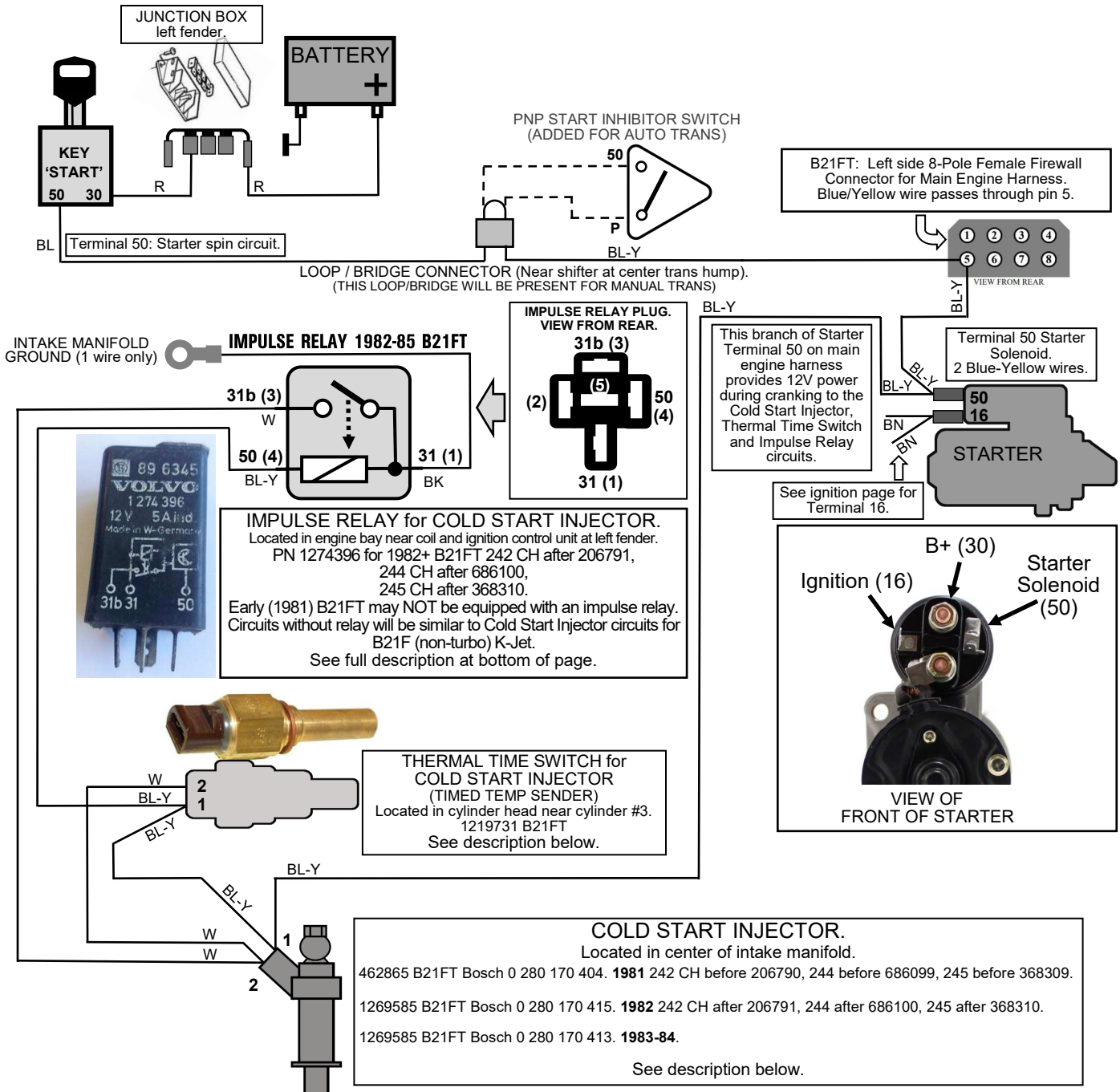


### B21FT ENGINE CONTROL SENSORS

2. 1269355 Thermostat Valve. Acceleration enrichment (vacuum hoses).
3. 460191 Temperature (dash gauge) Sender. (Y wire).
4. 1219731 Thermal Time Switch (cold start valve) (BL-Y, W wires).
6. 1306024 (1981), 1306937 (1982-85) CIS CLT Sensor (R, BL wires).
7. 1269154 (1982-85) Thermal Cutout Switch (Lambda) (GR wire).



# K-Jetronic CONTINUOUS INJECTION (CI). Specific to B21FT Cold Start Injector Circuits.



The COLD START INJECTOR will assist the starting of the engine when cold. It's activated when the starter motor is activated. The length of time that this additional injector sprays is determined by the engine's temperature, which is seen by the THERMAL TIME SWITCH and by the IMPULSE RELAY.

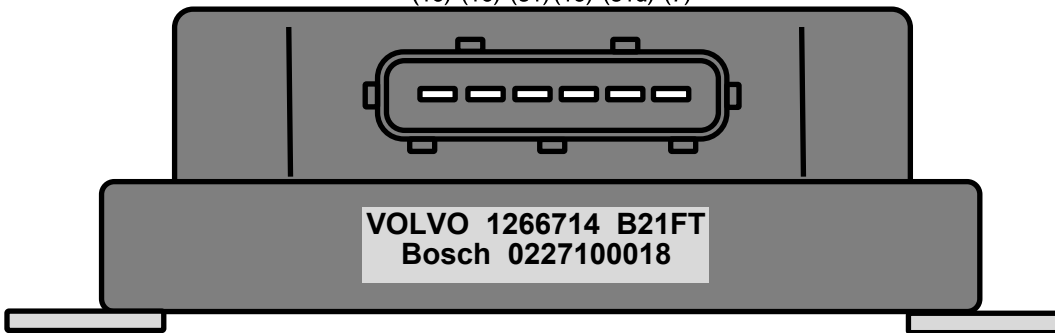
The THERMAL TIME SWITCH, when cold (below 86-95°F), provides the ground path to activate the cold start injector. It has a bi-metal strip, which is then heated by voltage from starter motor Terminal 50 during cranking. As the strip heats, up to a period of about 8 to 10 seconds, the legs on the bimetal strip become separated and the ground path is disengaged, which deactivates the cold start injector. A moderately warm engine may only require a few seconds before this circuit becomes deactivated. A hot engine will likely already have an open circuit and the injector will not likely activate.

The IMPULSE RELAY, introduced in 1982 for B21FT, provides precise limited cold start injector operation to assist during warm starts, such as when the car has been parked for up to a couple of hours. During warm start cranking, the impulse relay will engage after about 1.5 seconds. It will then give 0.1 second of cold start fuel injection with 0.3 second intervals during cranking.

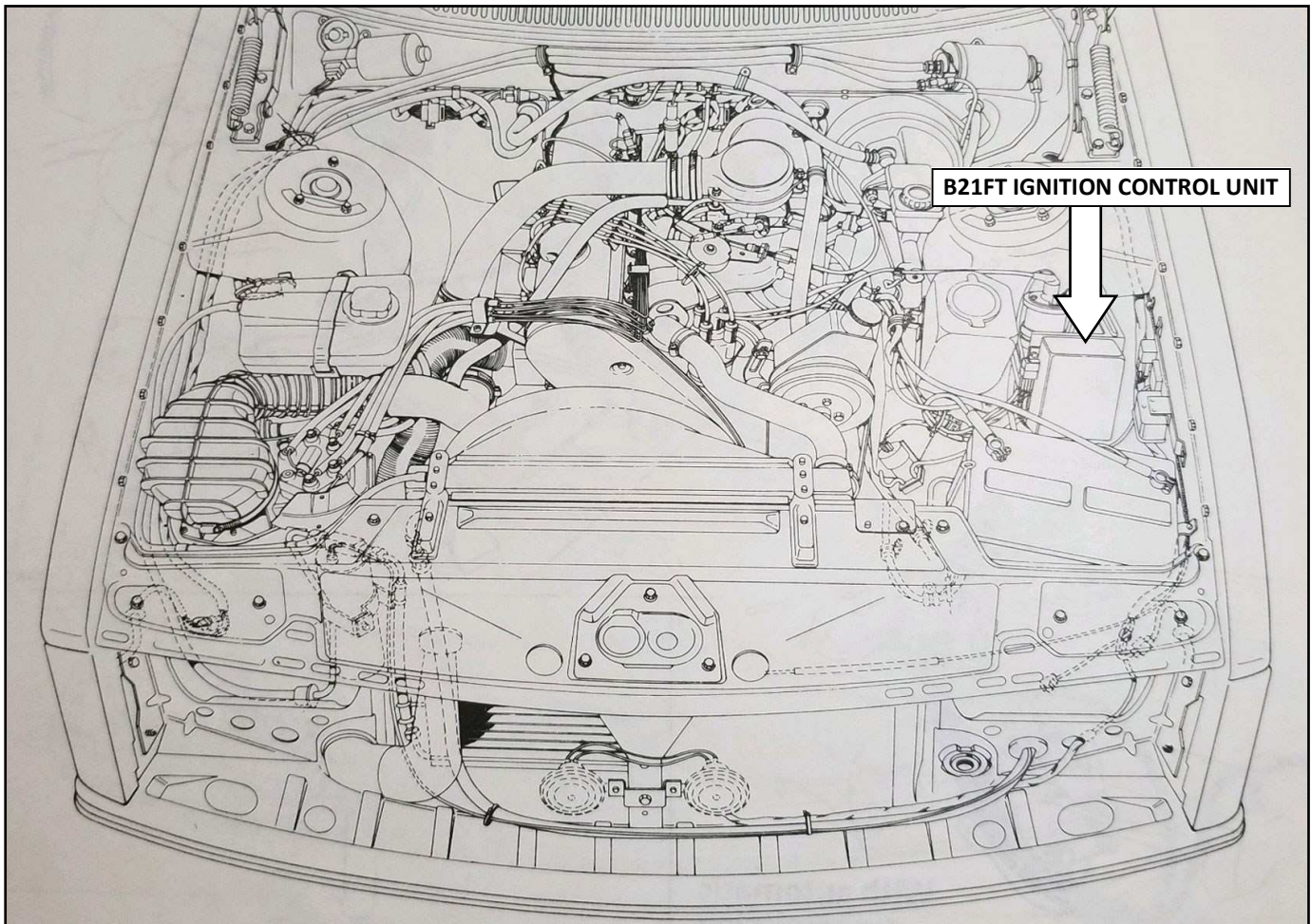
# Breakerless Electronic Ignition for B21FT. Ignition Control Unit (ICU) Pin Functions.

Located in engine bay near LEFT fender.

6 5 4 3 2 1  
(16) (16) (31)(15) (31d) (7)

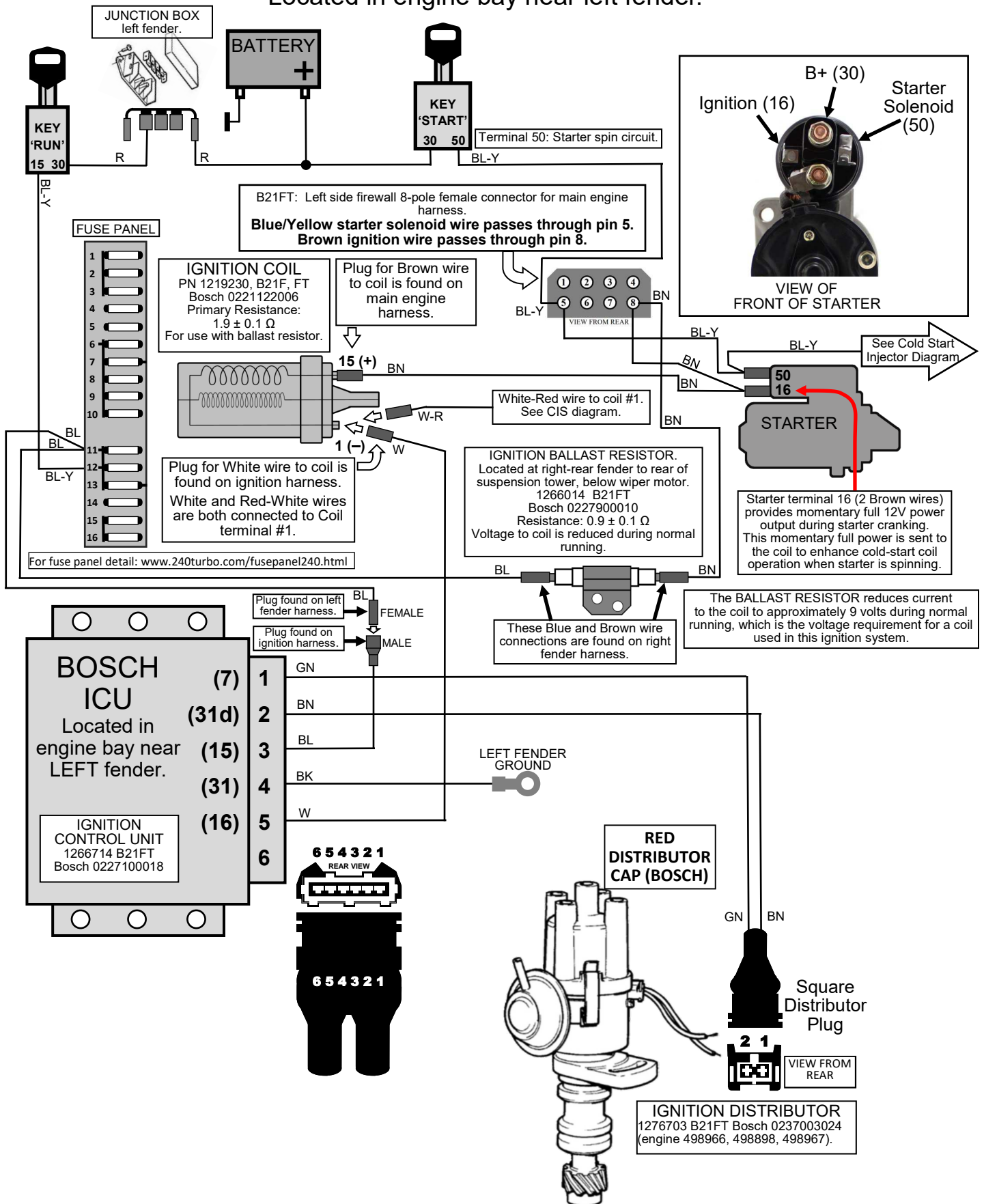


1. (7) (GN) Engine speed input from distributor Hall generator.
2. (31d) (BN) Signal ground for Hall generator input.
3. (15) (BL) 12v input from ignition switch terminal 15.
4. (31) (BK) Ground.
5. (16) (W) Control signal output to coil terminal 1 (negative).
6. — (not used)

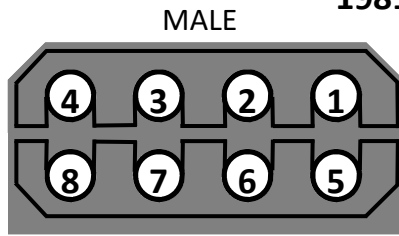




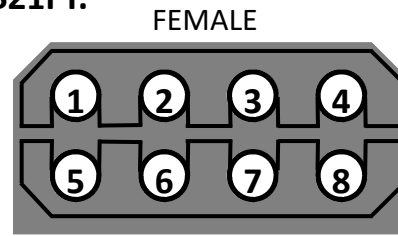
# Breakerless Electronic Ignition for B21FT. Ignition Control Unit (ICU) Pin Functions. Located in engine bay near left fender.



## Details of the 8-pole firewall connectors used in the engine bay for the 1981-85 240 Turbo B21FT.

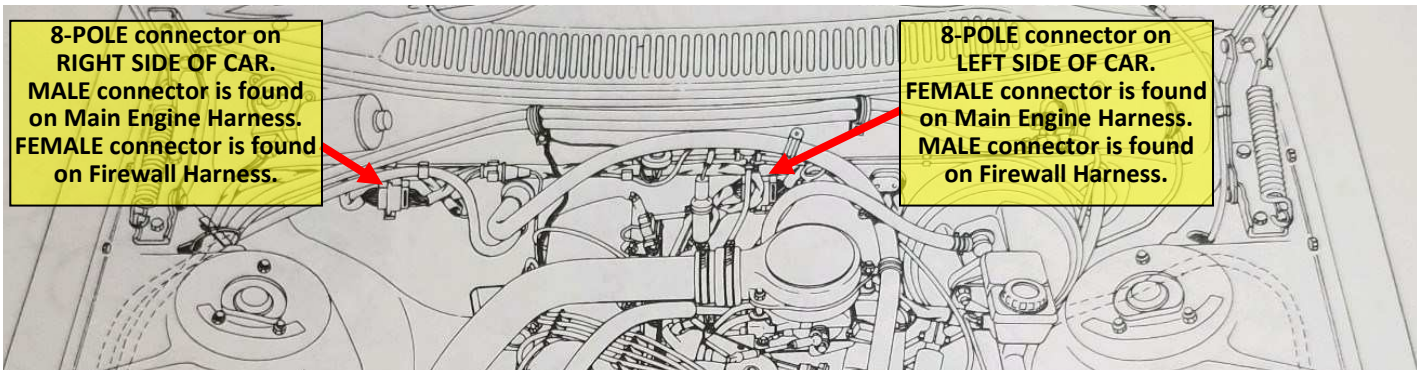


VIEW FROM REAR



VIEW FROM REAR

**NOTE: The wire order is different between male and female (one is a mirror image of the other.)**



The 240 Turbo has two sets of 8-pole bullet connectors in the engine bay. Both connectors serve wires coming from the dash, through the firewall, to the main engine harness.

### MALE 8-pole connector on RIGHT SIDE of Main Engine Harness (shown on left in the above image).

The 8-pole connector on the FIREWALL here is FEMALE. The 8-pole connector on the ENGINE HARNESS here is MALE.

**WIRE POSITIONS** (relevant to male connector on main engine harness):

	ENGINE HARNESS DESTINATIONS	FIREWALL/DASH DESTINATIONS
1. Black:	Ground ring at intake manifold. Ground for CPR and throttle micro switch.	CIS Idle ECU, pin 2.
2. Red:	CIS ECU temp sensor.	CIS ECU, pin 9.
3. Blue:	CIS ECU temp sensor.	CIS ECU, pin 11.
4. Yellow:	Throttle micro switch.	CIS ECI, pin 8.
5. —		
6. White:	Idle control valve, pin 1.	CIS ECU, pin 3.
7. Green:	Idle control valve, pin 3.	CIS ECU, pin 5.
8. Brown:	Idle control valve, pin 2.	CIS ECU, pin 4.

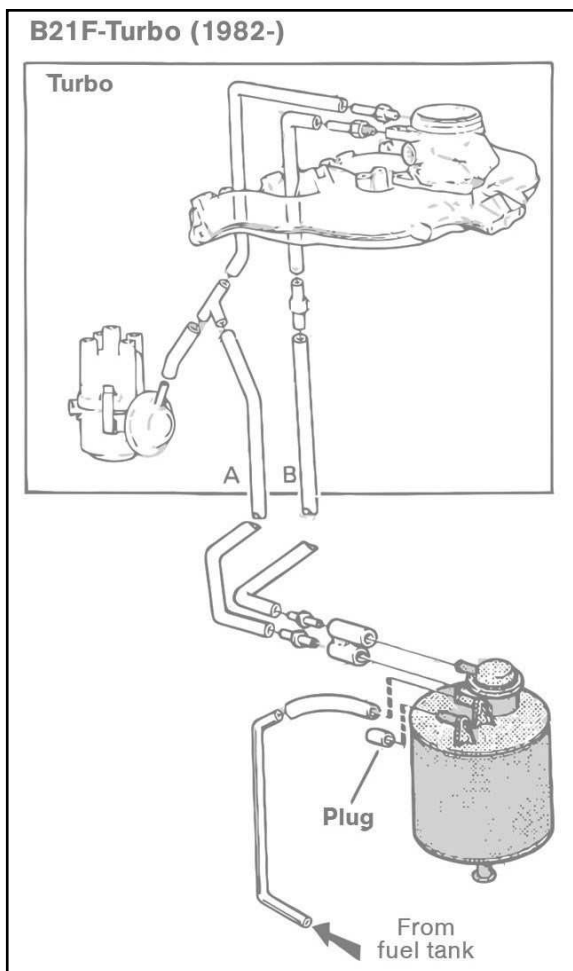
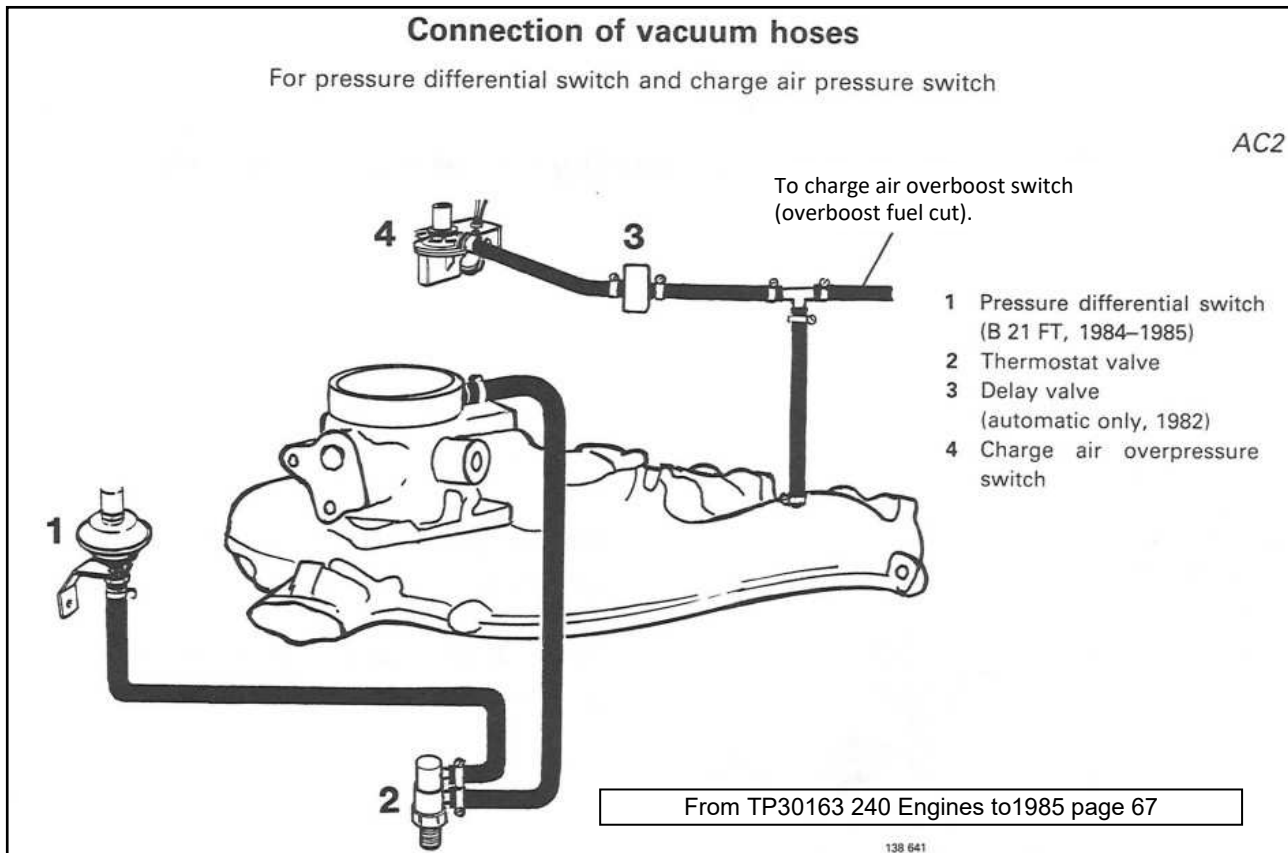
### FEMALE 8-pole connector on LEFT SIDE of Main Engine Harness (shown on right in the above image).

The 8-pole connector on the FIREWALL here is MALE. The 8-pole connector on the ENGINE HARNESS here is FEMALE.

**WIRE POSITIONS** (relevant to female connector on main engine harness):

	ENGINE HARNESS DESTINATIONS	FIREWALL/DASH DESTINATIONS
1. Black:	Oil pressure sender.	Dash oil pressure warning light.
2. Yellow:	Coolant temp sender.	Dash coolant temp gauge.
3. Red:	Alternator D+ terminal.	Dash battery warning light.
4. Gray:	Thermal cutout switch.	Charge air pressure switch on firewall and CI Lambda ECU pin 7.
5. Blue-Yellow:	Starter solenoid terminal 50 (starter spin). Branch to cold start injector, pin 1. Branch to thermal time switch, pin 1. Branch to impulse relay, pin 50 (4).	Ignition key switch pin 50 (in START position).
6. Green:	Oil pressure (gauge) sender.	Oil pressure accessory gauge pin G.
7. Blue:	Control pressure regulator.	Fuel Pump Relay 6-pole plug, pin 4 (86b).
8. Brown:	Starter terminal 16, then Coil+.	Ignition ballast resistor.

Vacuum hose routing for Pressure Differential Switch, Thermostatic Vacuum Valve and Charge Air Overpressure Switch detailed on page 2.



From TP30727 page 15.

Vacuum hose routing for distributor diaphragm and charcoal canister to throttle body PORT A and PORT B.

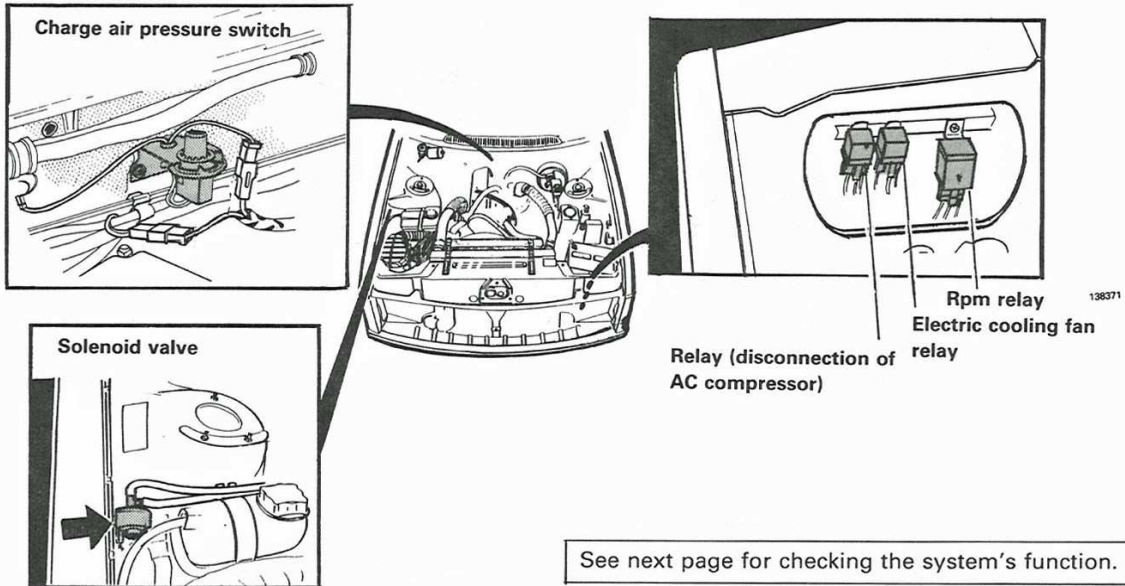
## H. Control system for charge pressure

Only B 21 FT with intercooler

Special tool: 5230

### Positioning of components (factory-installed intercooler)

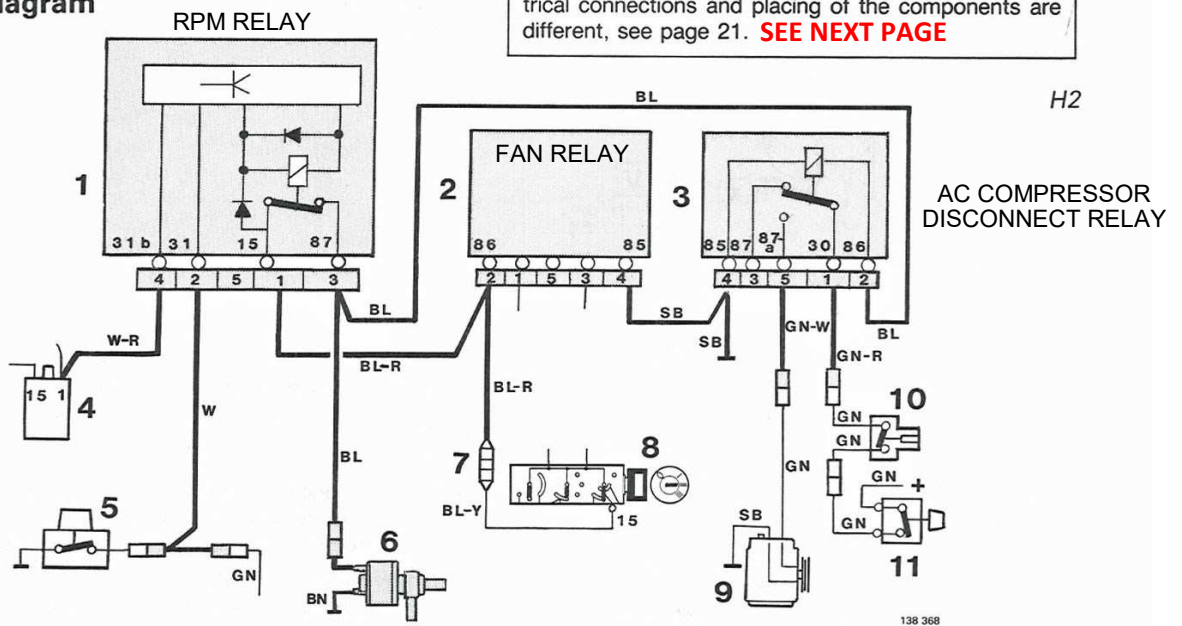
H1



See next page for checking the system's function.

### Wiring diagram

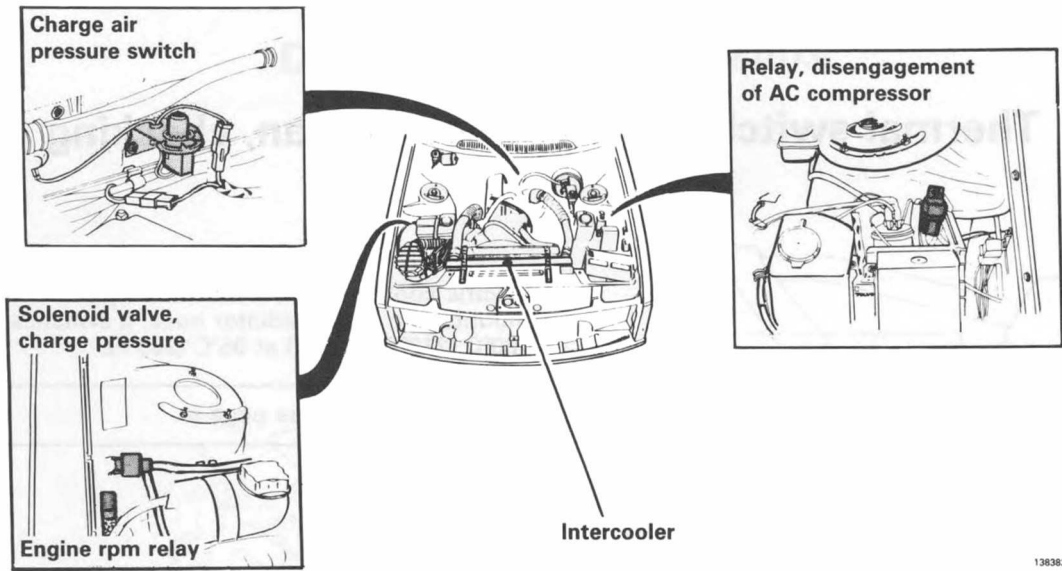
**NOTE!** On cars equipped with intercooler kits the electrical connections and placing of the components are different, see page 21. **SEE NEXT PAGE**



The picture shows the operating position at engine speeds exceeding 3,700 rpm and charge pressure exceeding 20 kPa (2.8 lb/in<sup>2</sup>)

- |  |                              |                 |                                   |
|--|------------------------------|-----------------|-----------------------------------|
| 1 Rpm relay                              | 4 Ignition coil              | 7 Fuse No. 13   | 10 Low pressure switch (in dryer) |
| 2 Electric cooling fan relay             | 5 Charge air pressure switch | 8 Ignition      | 11 Switch (circuit closed)        |
| 3 Relay (disconnection of AC compressor) | 6 Solenoid valve             | 9 AC compressor |                                   |

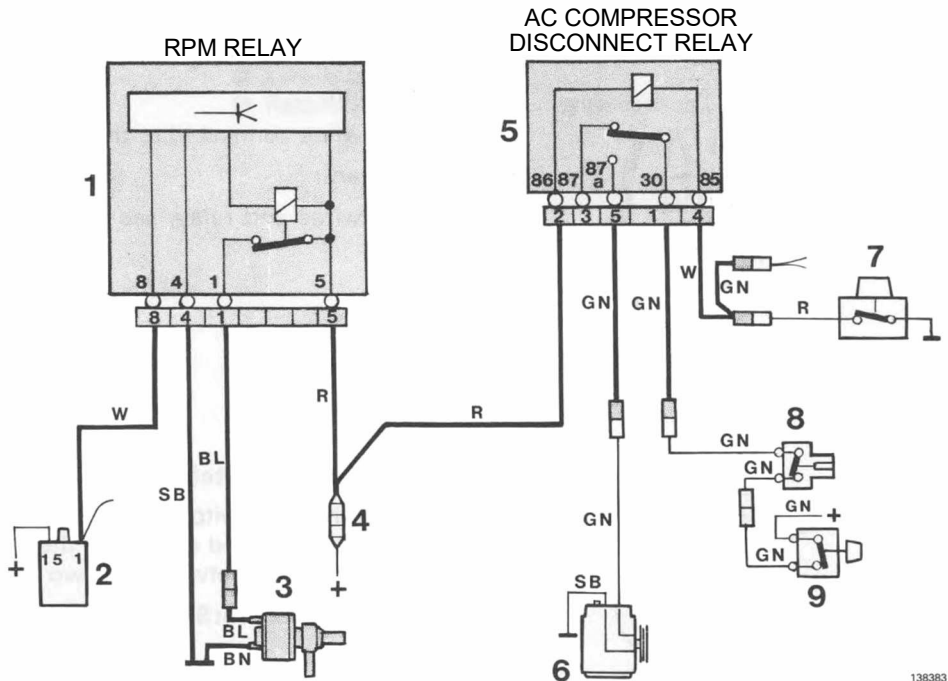
# Intercooler kit



138382

An intercooler conversion kit is available for earlier B 21 FT engines. It differs from the production version in the following points:

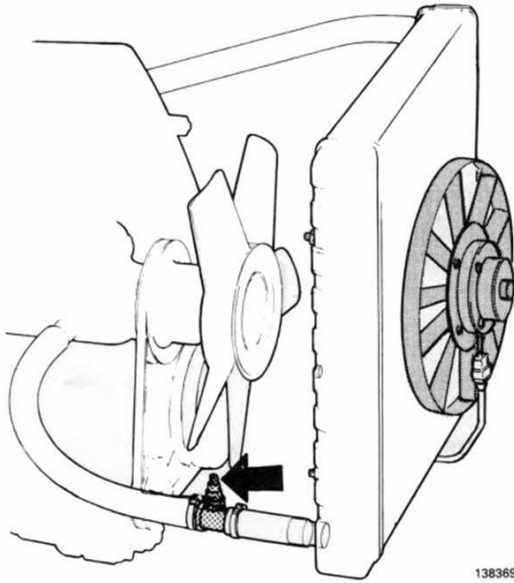
- it does not include an electric cooling fan, heavy-type flywheel or new type clutch
- modified C1 type clutch is not fitted on automatic transmission vehicles.  
Also modified valve body separator plate is not supplied
- engine rpm relay is slightly different and is not fitted in same place
- wiring is different



138383

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1 Engine rpm relay</li> <li>2 Ignition coil</li> <li>3 Solenoid valve</li> <li>4 Fuse No. 12</li> </ul> | <ul style="list-style-type: none"> <li>5 Relay, disengagement AC compressor</li> <li>6 AC compressor</li> <li>7 Charge air pressure switch</li> <li>8 Low pressure switch (receiver/dryer)</li> <li>9 AC dashboard switch</li> </ul> |
|--|--|

## Group 26 Cooling system



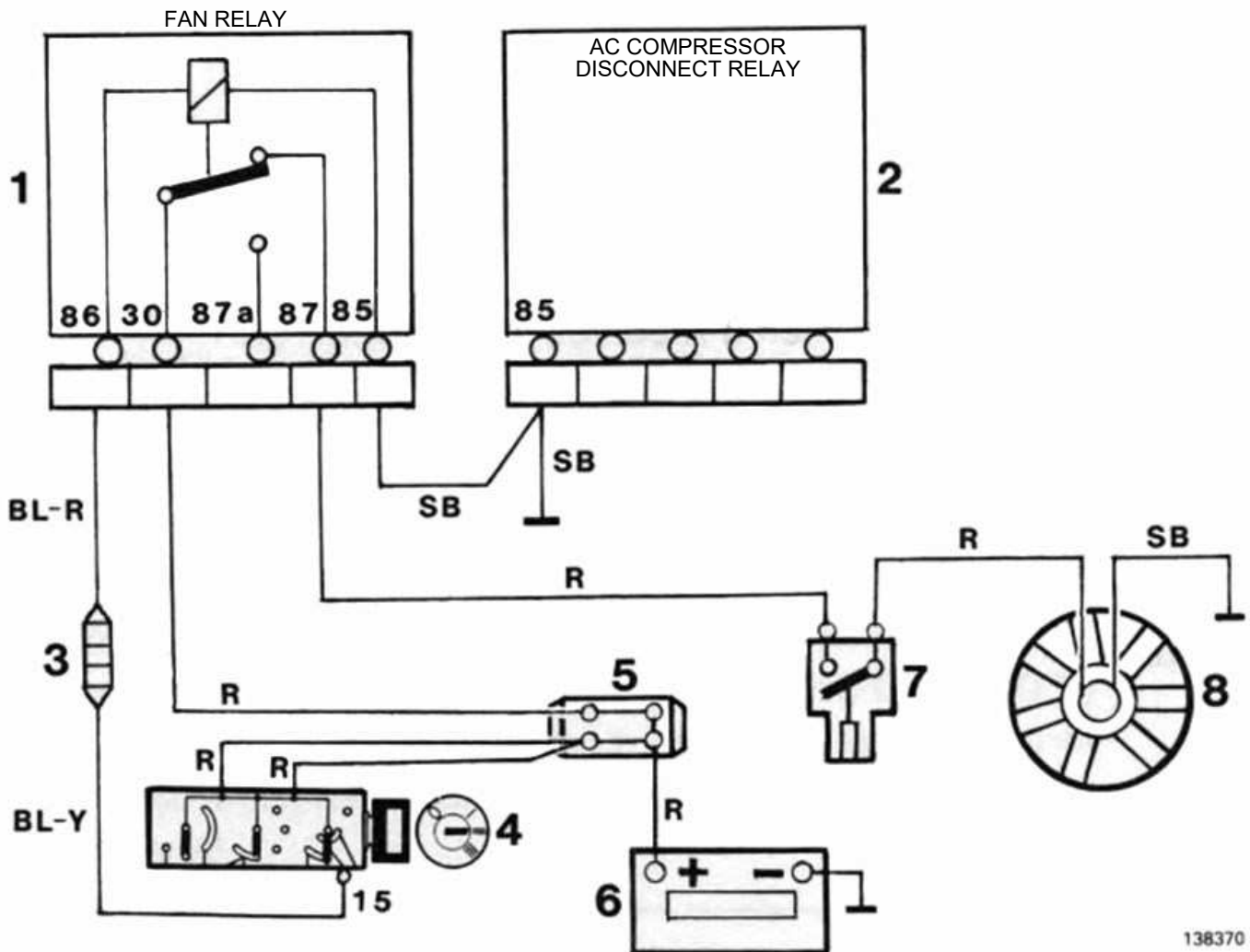
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### Electric cooling fan

A thermal switch, mounted on the lower radiator hose, controls the operation of the electric cooling fan. It switches on the fan at water temperatures above 100°C (212°F) and off at approximately 95°C (203°F).

### Components

- 1 Relay, electric cooling fan
- 2 Relay, disengagement of AC compressor
- 3 Fuse No. 13
- 4 Ignition switch
- 5 Connector
- 6 Battery
- 7 Thermal switch
- 8 Electric cooling fan



138370