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SECTION 7B/C

MANUAL CONTROL / SEMIAUTO TEMPERATURE CONTROL HEATING, VENTILATION AND AIR CONDITIONING SYSTEM

Caution: Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in LOCK unless otherwise noted.

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SPECIFICATIONS

COOLING CAPACITY

Application	Description
Type	Air mix type
Max. Capacity	4,500kcal/h
Max. Blowing Capacity	7.Om^3/min
Refrigerant	R134a
Refrigerant Amount	650 - 75Og

COMPRESSOR

Application	Description
Model	FK- II
Type	Vane rotary type
Output	140.5cc/rev
Oil	ZXL 200PG (PAG oil)
Magnetic Clutch Output	45W

CONDENSER

Application	Description
Type	Parallel type (Multi Flow Condenser)
Capacity	11,000 kcal/h
Condenser Fan Motor Output	160W

RECEIVER DRIER

Application	Description
Desiccant	XH - 9 (30g)
Type	Aluminum type
Capacity	240cc

DUAL PRESSURE SWITCH

Application	Description
High	OFF: 27±2kgf / cm^2, DIFF : 6±2kgf / cm^2
Low	OFF : 1.8±0.2kgf / cm^2, ON 1.9±0.3kgf/ cm^2

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EVAPORATOR

Application	Description
Type	Tank laminated
Expansion Valve	Uniform external pressure type (1.5 RT)
Resistance	4 stage (Coil resistance)
Thermo Amp	Sensor type OFF : 2±0.5°C, DIFF : 2±0.5°C

HEATER UNIT

Application	Description
Heater Core Type	2-ROW
Heating Capacity	4,600 kcal/h (AT 300 CMH)
Heater Core Size (LxWxT)	219.5 x 151.8 x 52.0

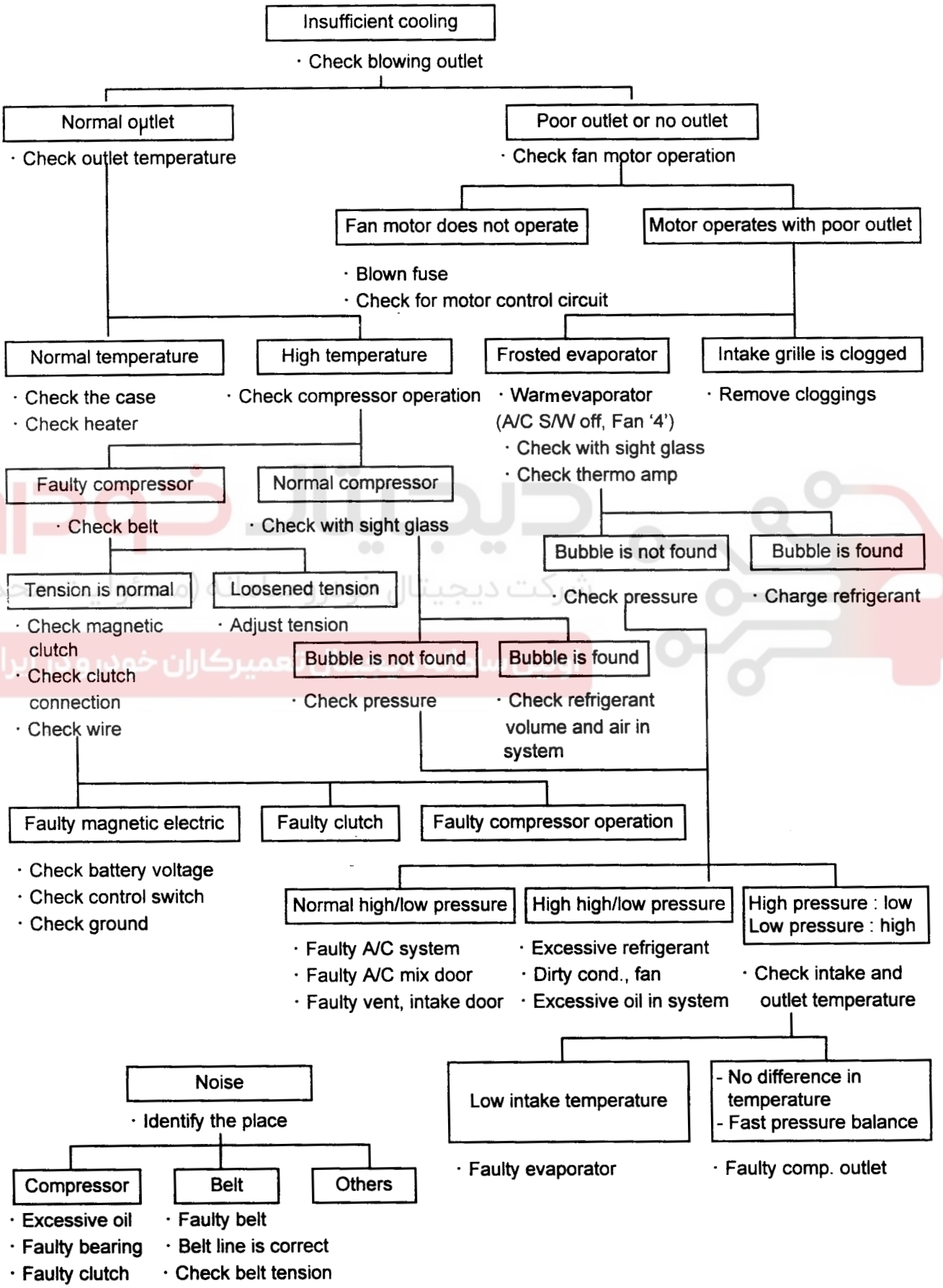
FASTENER TIGHTENING SPECIFICATIONS

Application	N•m
Condenser Bolt	4-6
Condenser Fan Nut	4-6
Condenser Bolt	4-6
Receiver Drier Pipe Bolt	5-8
Receiver Drier Pipe Bolt (Condenser)	4-6
Pressure Pipe Bolt	20-30
Pressure Mounting Bolt	20-26

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DIAGNOSIS



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DEFECTIVES IN FAN MOTOR CIRCUIT

Fan Motor Does Not Run

Checks	Action
Blown fuse	Check for short and replace fuse.
Battery voltage is low	Check battery voltage.
Faulty wiring	Check connectors' connection. Do not apply grease. This can cause voltage down.
Faulty ground	Remove body painting and completely ground, Tighten ground bolts and make sure body ground connection.

Fan Motor Runs in '4'position Only ('3', '2', '1' : Does Not Run)

Checks	Action
Blown resister temperature fuse	Replace resistor.
Air leakage in parts connection	Check heater, cooling unit and blower for proper connection.

Motor Runs With Poor Blowing

Checks	Action
Clogged or blocked intake grille	Clogged or blocked intake grille reduces blowing capacity.

Frosted Evaporator

Checks	Action
Faulty thermo amp	Frosted evaporator reduces cooling capacity.
	Off compressor and maximize blowing capacity

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DEFECTIVES IN COMPRESSOR CIRCUIT

Compressor Does Not Run

Checks	Action
Faulty high/low pressure	Check compressor magnet voltage supply.
Faulty A/C relay	A/C relay.

Magnetic Clutch Slips /Idles

Checks	Action
Oily clutch plate	Clean oily plate using cleaning agent.
Low voltage	Charge battery or check for cause.
Faulty electric connection or operation	Check wire continuity Check A/C switch and fan switch for continuity and ground.

Magnetic Clutch Plays By Hand Only

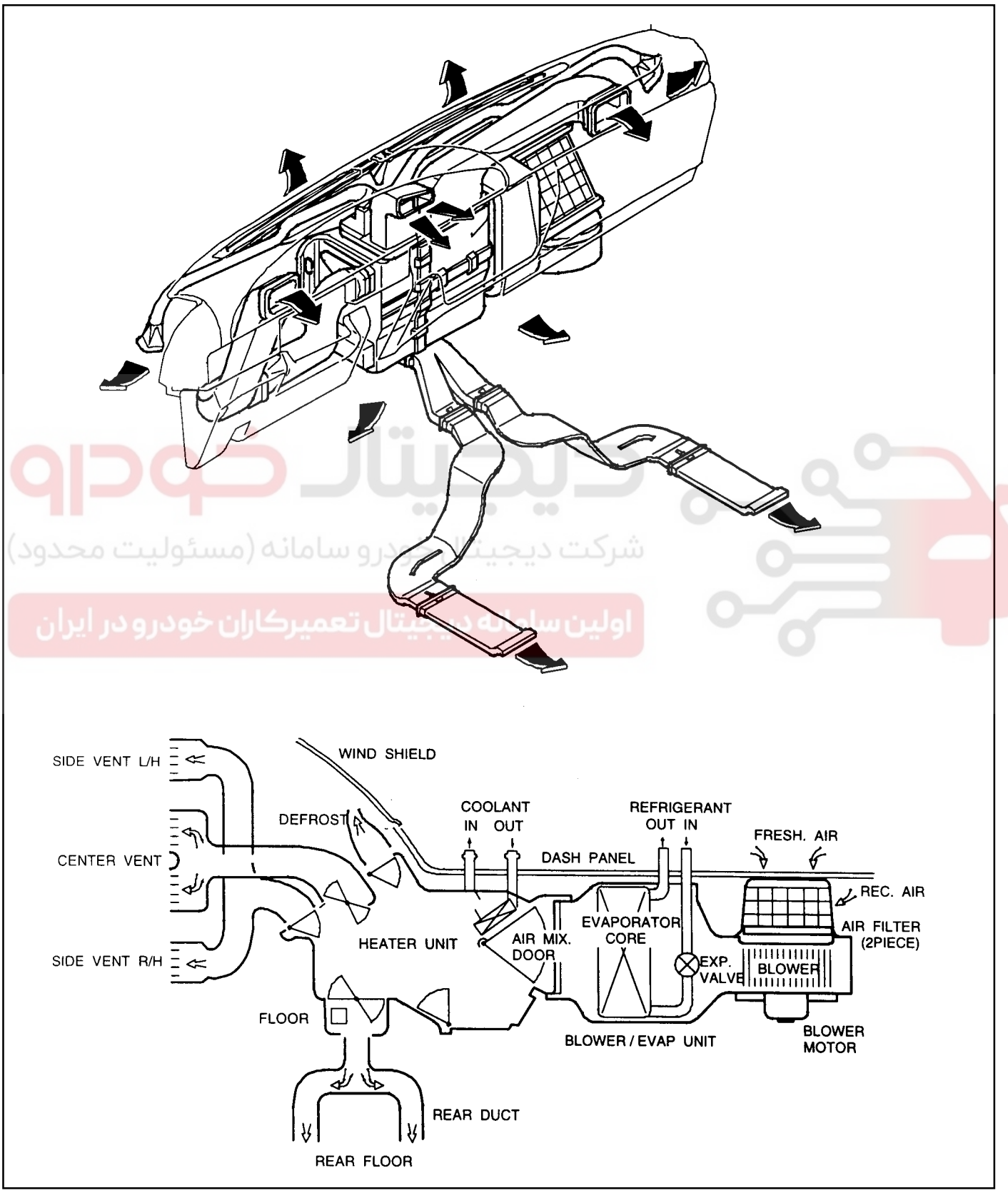
Checks	Action
Excessive clearance between	Adjust clutch clearance (0.2-0.6mm).
Clutch plate and clutch coil	

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COMPONENT LOCATOR

VENTILATION

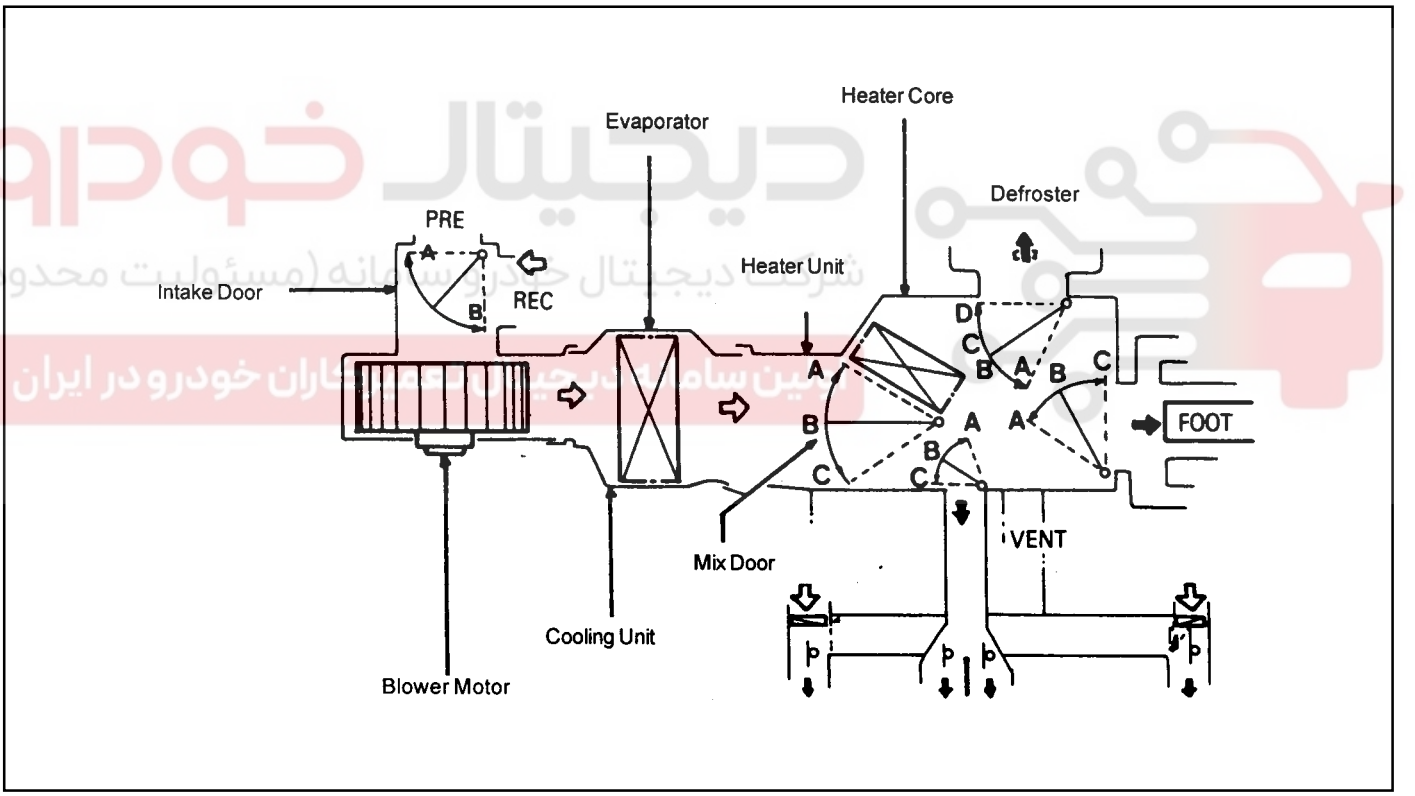


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Air Flow

Switch / Door	Mode Switch					Recirculation Switch		Temperature Control Lever		
	VENT	B/L	FOOT	D/F	DEF	REC	FRE			
										
						INDI. On	INDI. Off	[MANUAL] [SEMI AUTO]		
VENT Door	A	B	C	C	C	-	-	-		
FOOT Door	C	B	A	B	C	-	-	-		
DEF Door	D	D	D	B	A	-	-	-		
INTAKE Door	-					A	B	-		
AIR MIX Door	-							A	B	C

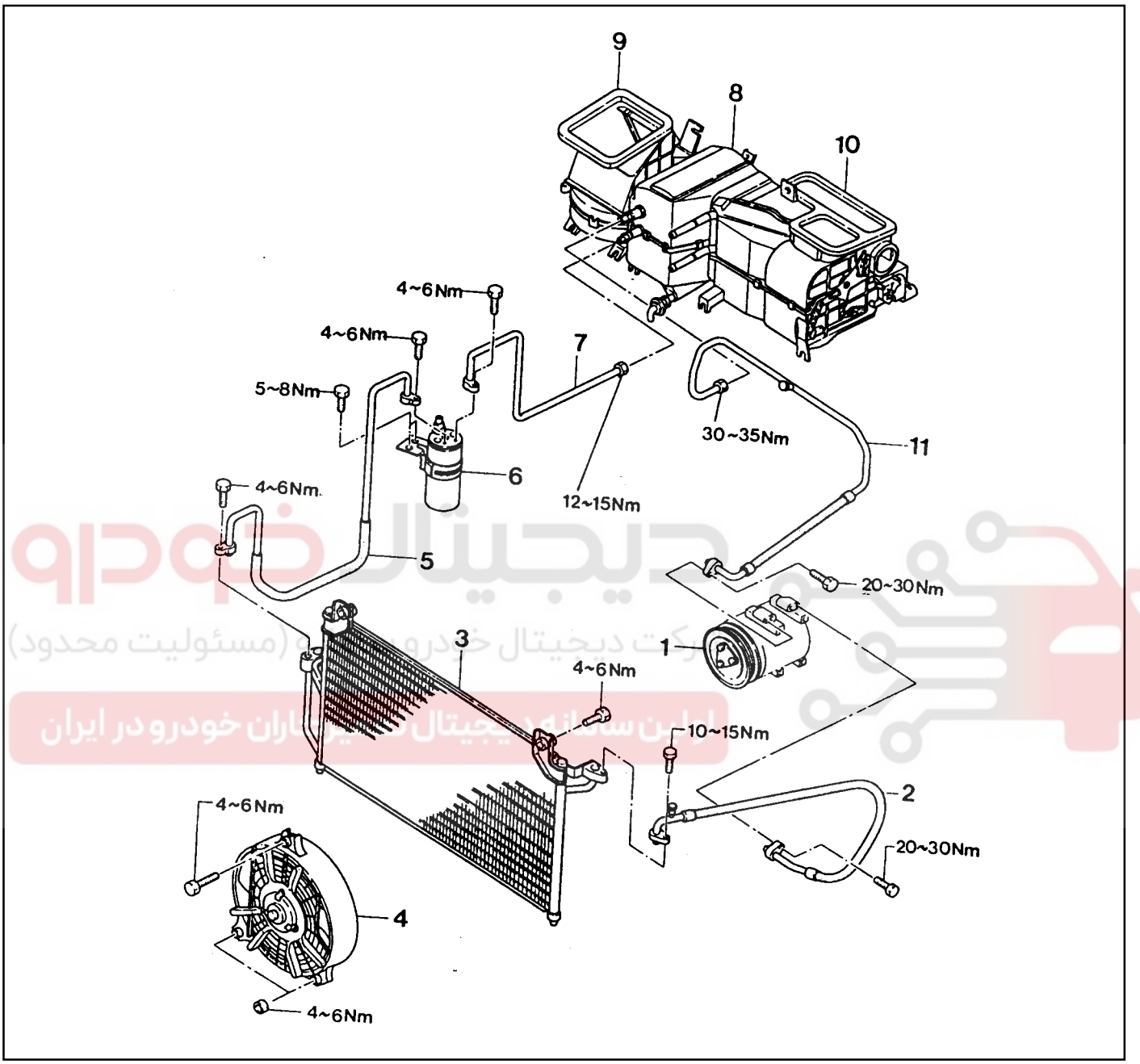


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AIR CONDITIONER SYSTEM

DIESEL ENGINE

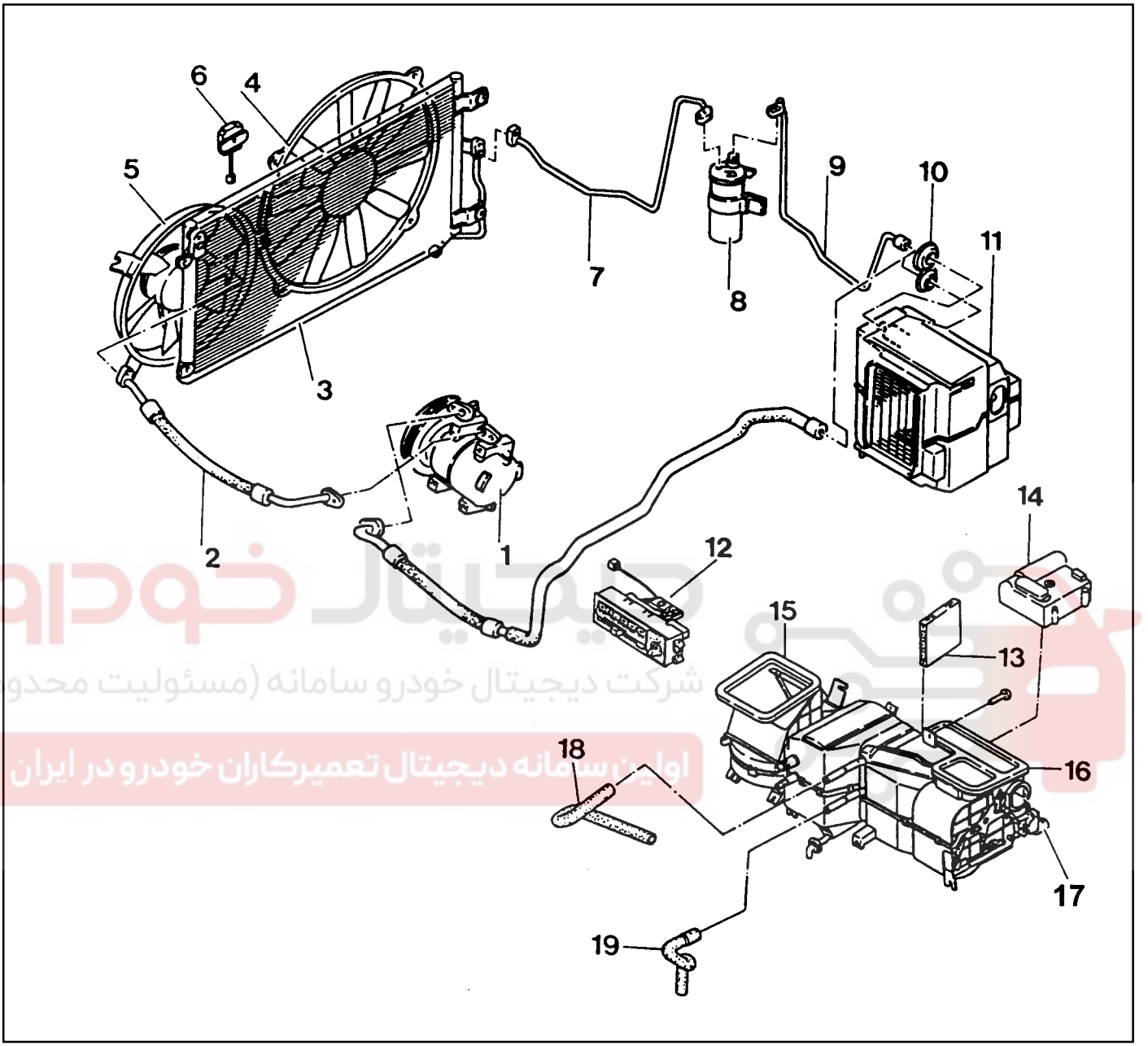


1 Compressor
2 High Pressure Hose
3 Condenser Fan
4 Condenser
5 Liquid Pipe (A)
6 Receiver Drier
7 Liquid (B)
8 Evaporator Assembly
9 Low Pressure Hose
10 Water Inlet Hose
11 Water Outlet Hose
12 Control Assembly
13 Heater Unit Amplifier
14 Mix Actuator Assembly
15 Blower Unit
16 Heater Unit
17 Mode Actuator Assembly

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GASOLINE ENGINE



1 Compressor
2 High Pressure Hose
3 Condenser
4 Main Condenser Fan
5 Sub Condenser Fan
6 Condenser Fan Resistor
7 Liquid Pipe(A)
8 Receiver Dryer
9 Liquid Pipe(B)
10 Grommet
11 Evaporator Assembly
12 Control Assembly
13 Heater Unit Amp
14 Mix Actuator
15 Blower Unit
16 Heater Unit
17 Mode Actuator Assembly
18 Water Inlet Hose
19 Water Outlet Hose

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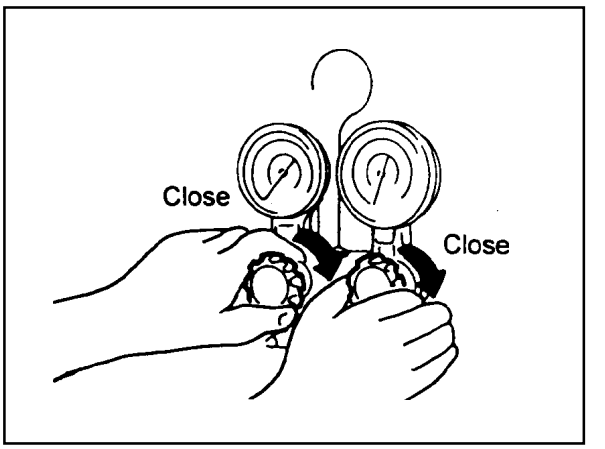
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MAINTENANCE AND REPAIR

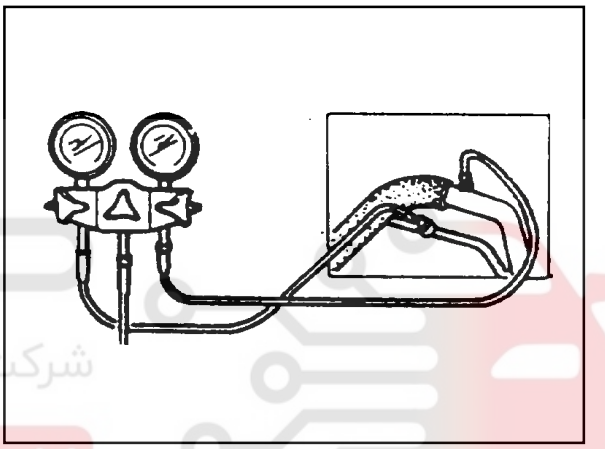
REFRIGERANT CHARGING

Installation of Manifold Gauge

1. Close both high/low pressure hand valve of gauge before installation of gauge to the charging valve.



2. Connect the low pressure hose of the gauge to the low pressure charging valve and the high pressure hose of the gauge to high pressure charging valve. Tighten the hose nuts by hand.



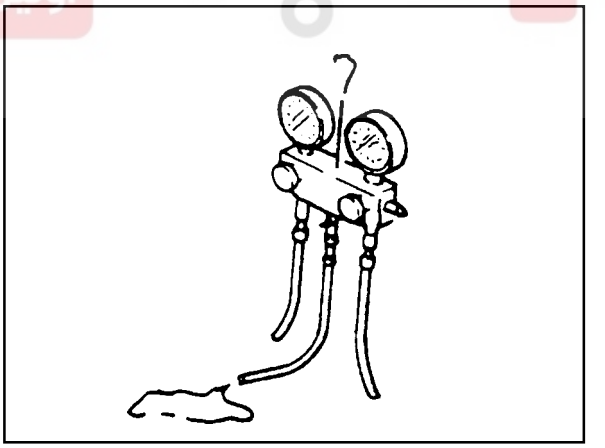
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Discharging of Refrigerant

1. Connect the manifold gauge to the charging valve.
2. Place the free end of center hose in a shop towel.
3. Slowly open the high pressure hand valve and discharge refrigerant.

Notice

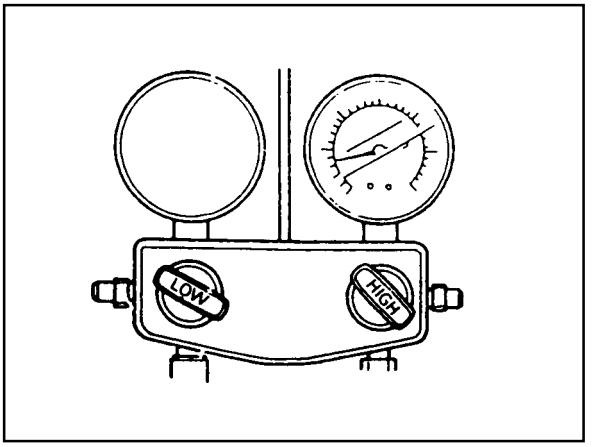
If refrigerant is allowed to escape too fast, compressor oil will be drawn out of the system.



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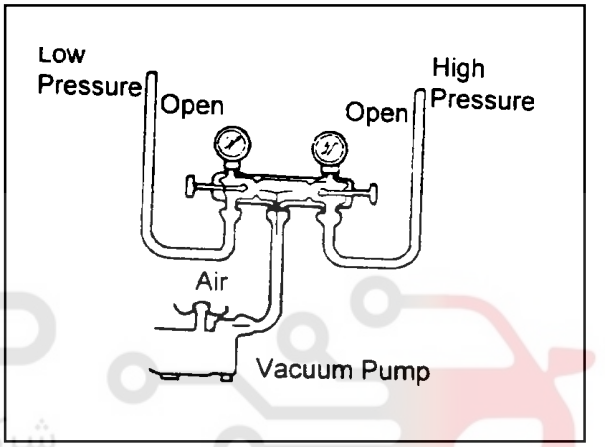
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4. After the high pressure gauge reading drops below 3.5kg/ cm2 , slowly open the low pressure valve.
5. When both high and low pressure gauges reading drops to 0 kg/cm, discharging is completed.

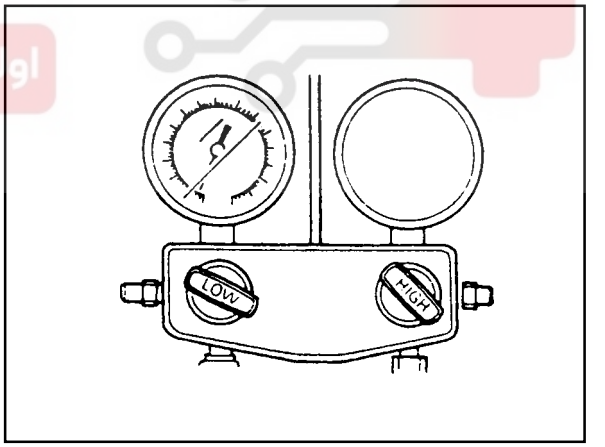


Evacuating Refrigeration System

1. Connect the manifold gauge to the charging valves.
2. Connect the center hose of the gauge to the vacuum pump.
3. Run the vacuum pump and open both high and low pressure hand valves.
4. Run the vacuum pump 15-20 minutes.
5. Check that both high and low pressure gauge reading is more than (-) 750mmHg of vacuum and close both valves.

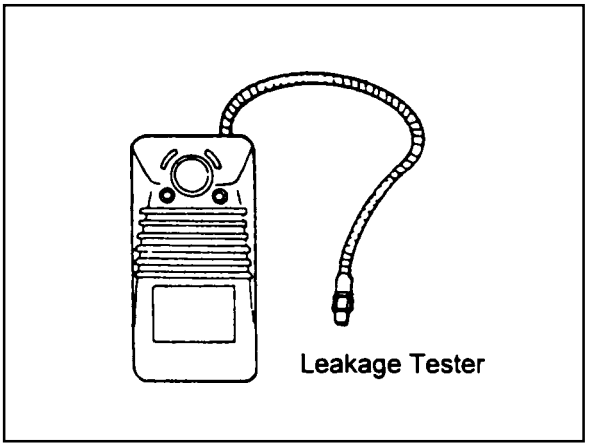


6. Stop the vacuum pump and wait about 5 minutes.
7. After 5 minutes, check that low pressure gauge reading is changed or not.
8. If low pressure gauge reading is changed, check the system for leaks and repair as necessary and repeat steps from '1' to '7'.
9. If there are no changes in low pressure gauge reading, disconnect the vacuum pump.



Check for Refrigerant Leaks

1. Connect the center hose of the gauge to the refrigerant tank.
2. Open the high pressure valve of the gauge to charge with refrigerant gas.
3. Charge until the low pressure gauge reads 1.0kg/cm^{2}and close the valve.
4. Using a gas leak detector, check the system for leaks.
5. If a leak is found, replace a O-ring or repair the faulty connection



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Charging Refrigerant

1. Connect the manifold gauge to the charging valve and evacuate the system.
2. Connect the center hose of the gauge to the refrigerant tank.
3. Open the high pressure valve and charge the system with 350g of refrigerant.
4. Close the high pressure valve and start the engine and run the compressor.

   Notice

   Never open the high pressure valve when the compressor is running. Refrigerant gas will be charged reverse.

5. Slowly open the low pressure valve and charge the system with refrigerant.

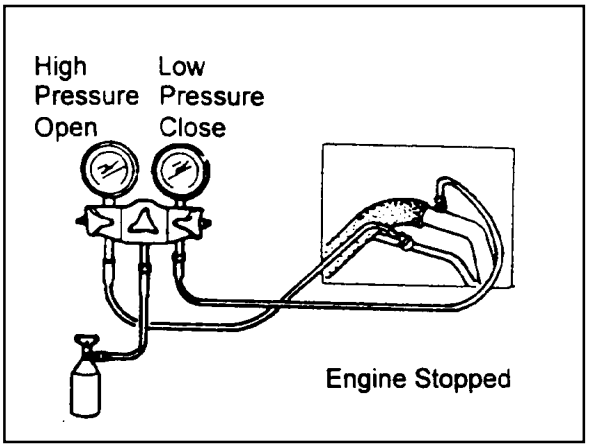
Standard	650 - 750 g

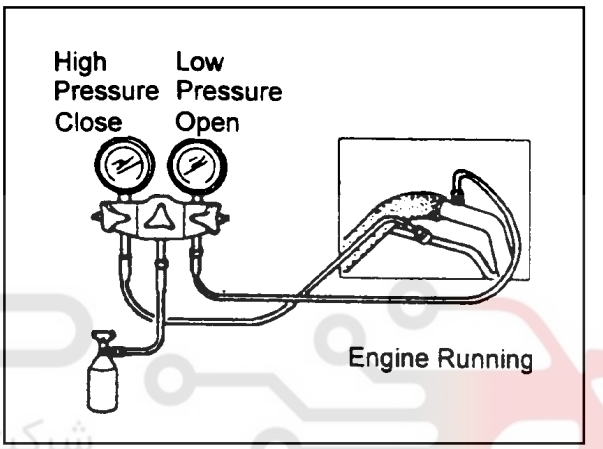
6. Close the low pressure valve after charging.

   Notice

   Checking the pressure through the sight glass is impossible by applying & R-134a.

7. Stop the engine and disconnect the manifold gauge from the system.

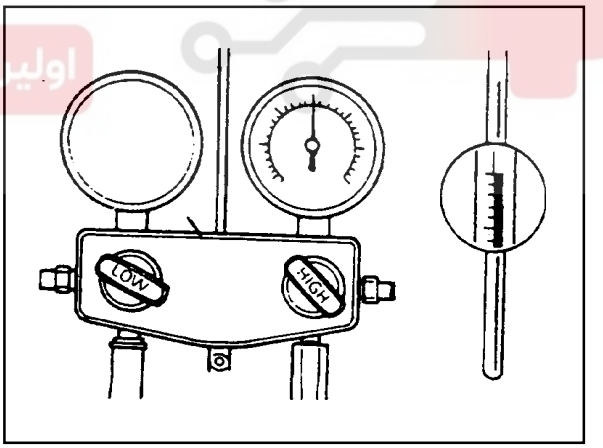




Operation Check

1. Place a dry bulb thermometer to the front duct.
2. Place a psychrometer close to the inlet of the cooling unit (under the glove box).
3. Run the engine at 1,500 rpm.
4. Set the blower switch at ‘HI’ and A/C switch ‘ON”.
5. Set the temperature control lever at ‘COOL’.
6. Set the air flow control at ‘REC’.
7. Check that air conditioning system is stabilized.

Temperature of Air Inlet	25 - 35°C
High Pressure Gauge Reading	13.2 - 18.5kg/cm^2



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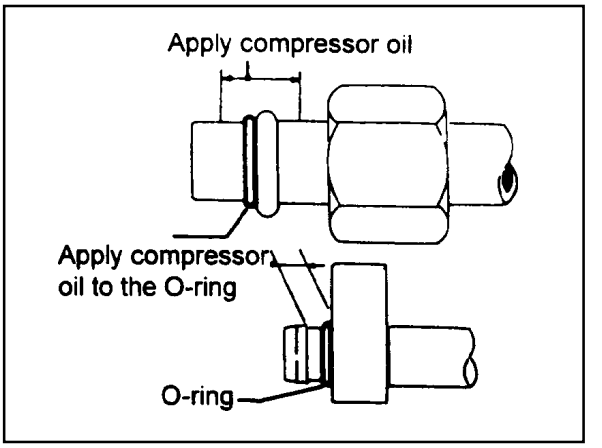
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Replacement of Refrigerant Connection (O-ring Type)

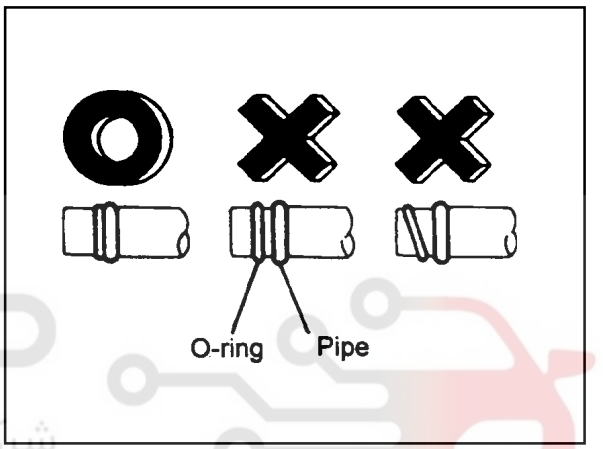
1. When connecting a O-ring type, apply compressor oil to portions shown in illustration. Be careful not to apply oil to threaded portion.

   Notice

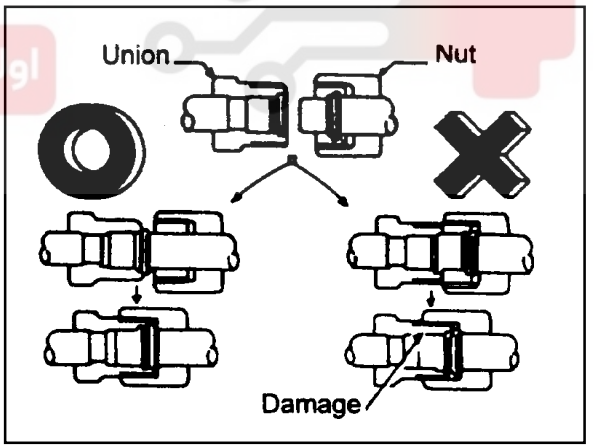
   Use specified compressor oil.



2. O-rings must be closely attached to inflated portion of pipe and always replace used O-rings.



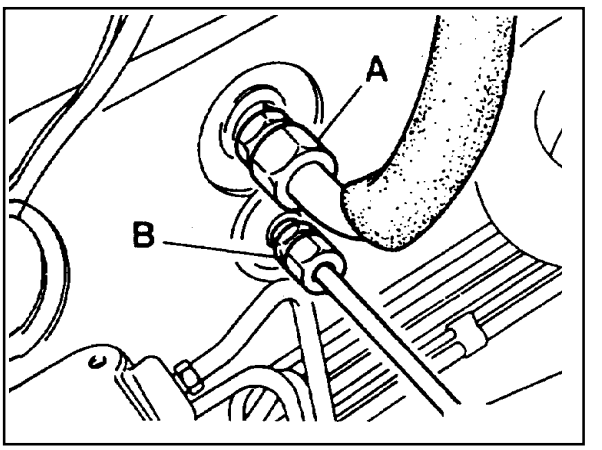
3. After inserting the pipe to the union, tighten the nut by hand as much as possible and tighten the nut to specified torque.



4. When connecting liquid pipe(B) and low pressure hose(A) to evaporate pipe, apply compressor oil to the O-ring.
5. When tightening, set the center of pipe and tighten fully.
6. Tighten the nut by specified wrench.

   Installation Notice

Tightening Torque	Inlet Side to 12 - 15Nm
	Low Pressure Hose (A) 30 - 35 Nm



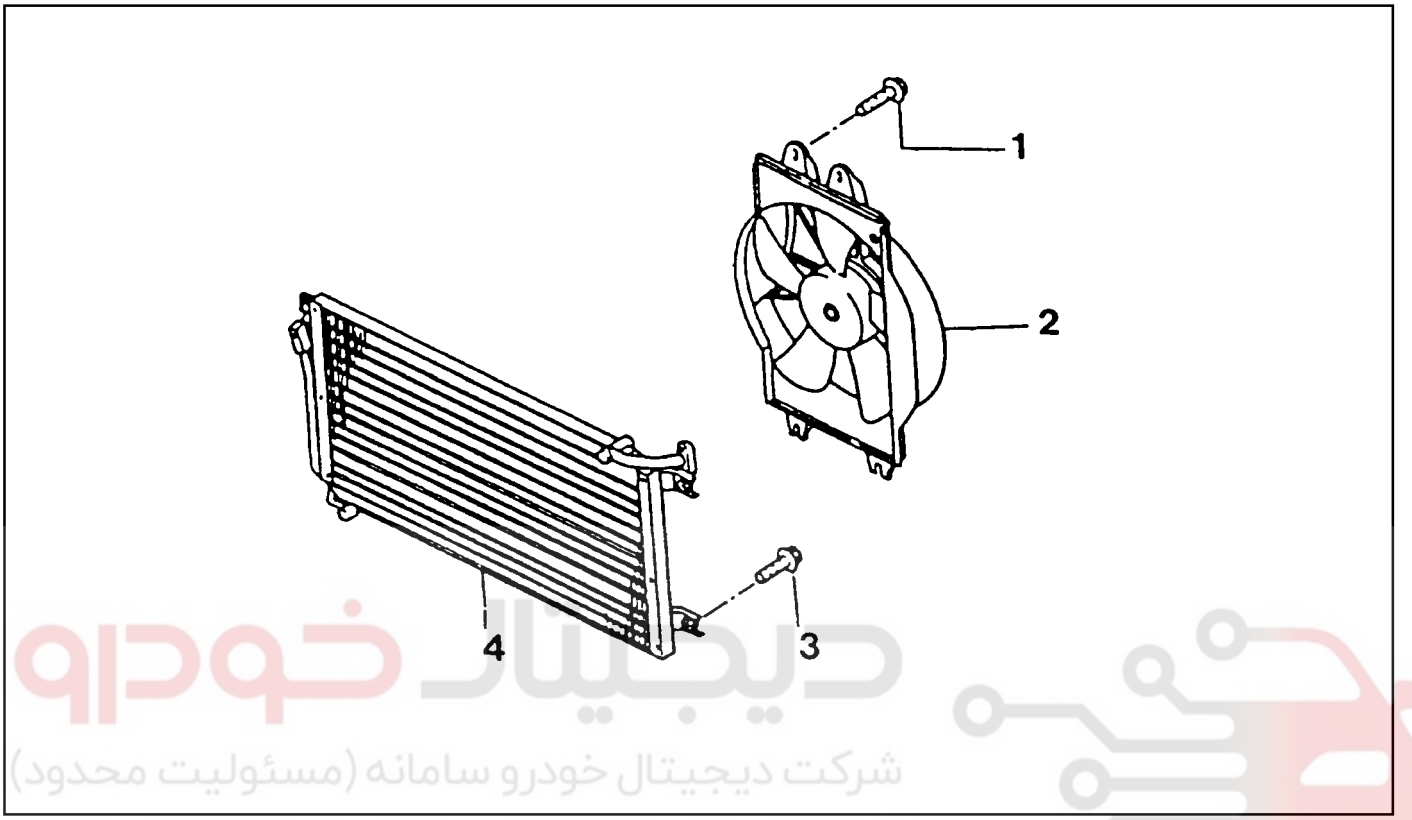
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CONDENSER

Preceding Work : Removal of the radiator

Diesel Engine



1 Bolt
2 Condenser Fan
3 Bolt
4 Condenser

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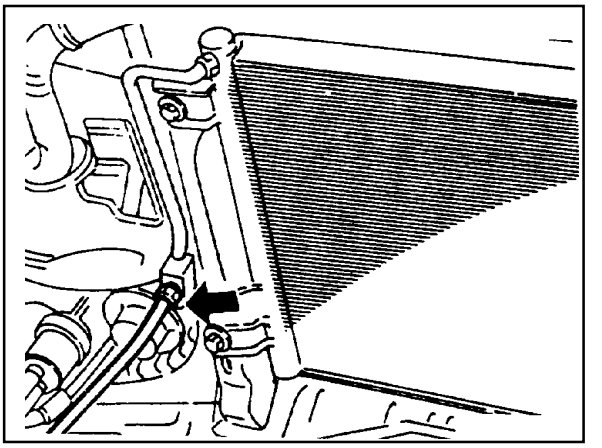
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Removal & Installation Procedure

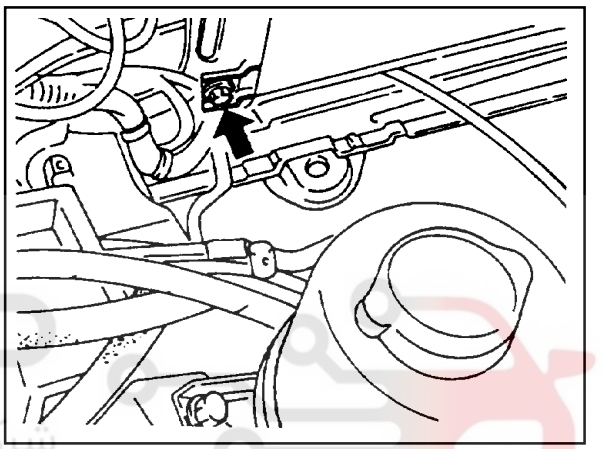
1. Disconnect the inlet and outlet pipes of condenser.

   Notice

   Before disconnection, evacuate the refrigerant from the system.



2. Remove the mounting bolts (4 EA) and condenser assembly.
3. Installation should follow the removal procedure in the reverse order.

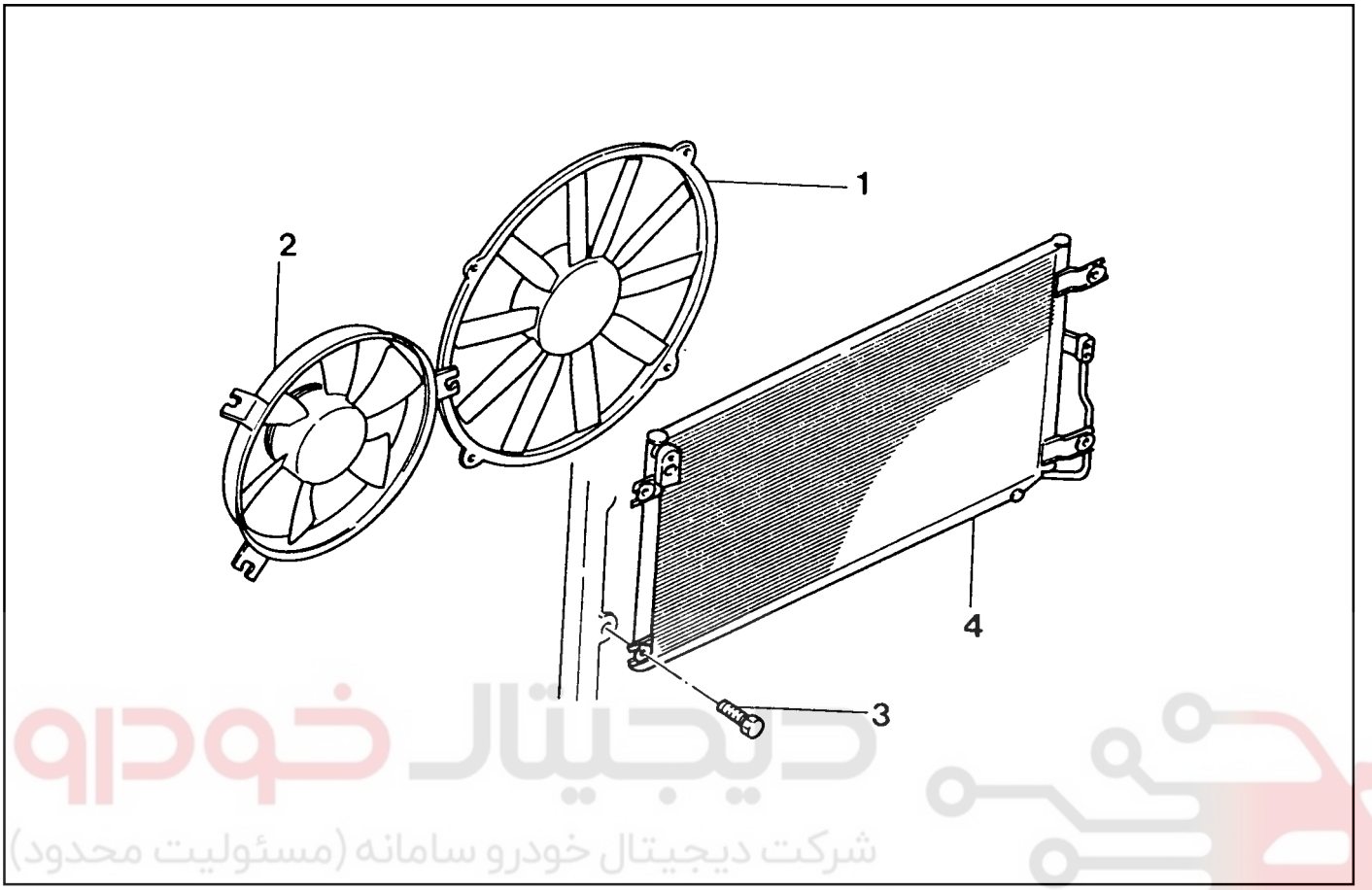


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Gasoline Engine



1 Main Condenser Fan
2 Auxiliary Condenser Fan
3 Bolt
4 Condenser

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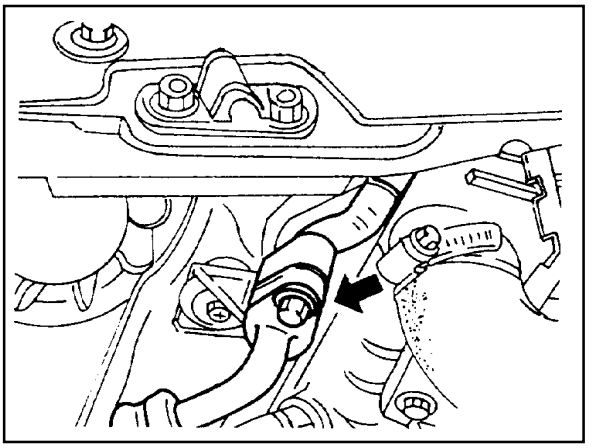
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Removal & Installation Procedure

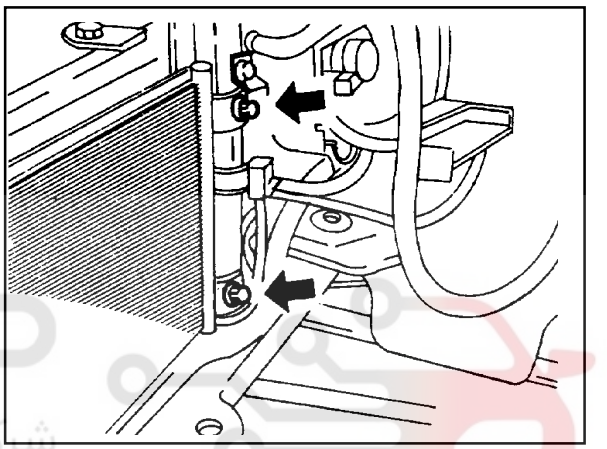
1. Disconnect the inlet and outlet pipes of condenser.

   Notice

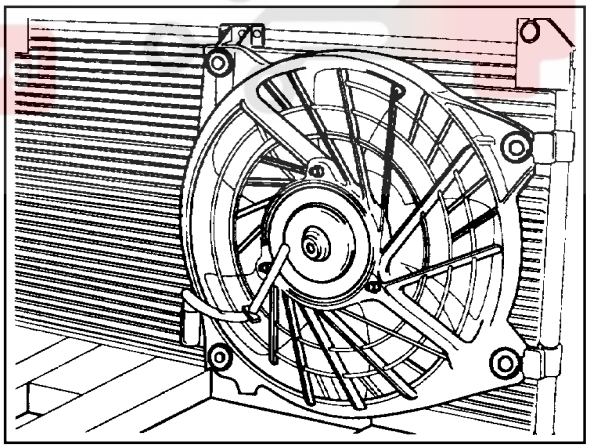
   Before disconnection, evacuate the refrigerant from the system.



2. Remove the mounting bolts (4bolts) and condenser assembly.



3. Remove the main condenser fan from condenser.



4. Installation should follow the removal procedure in the reverse order.

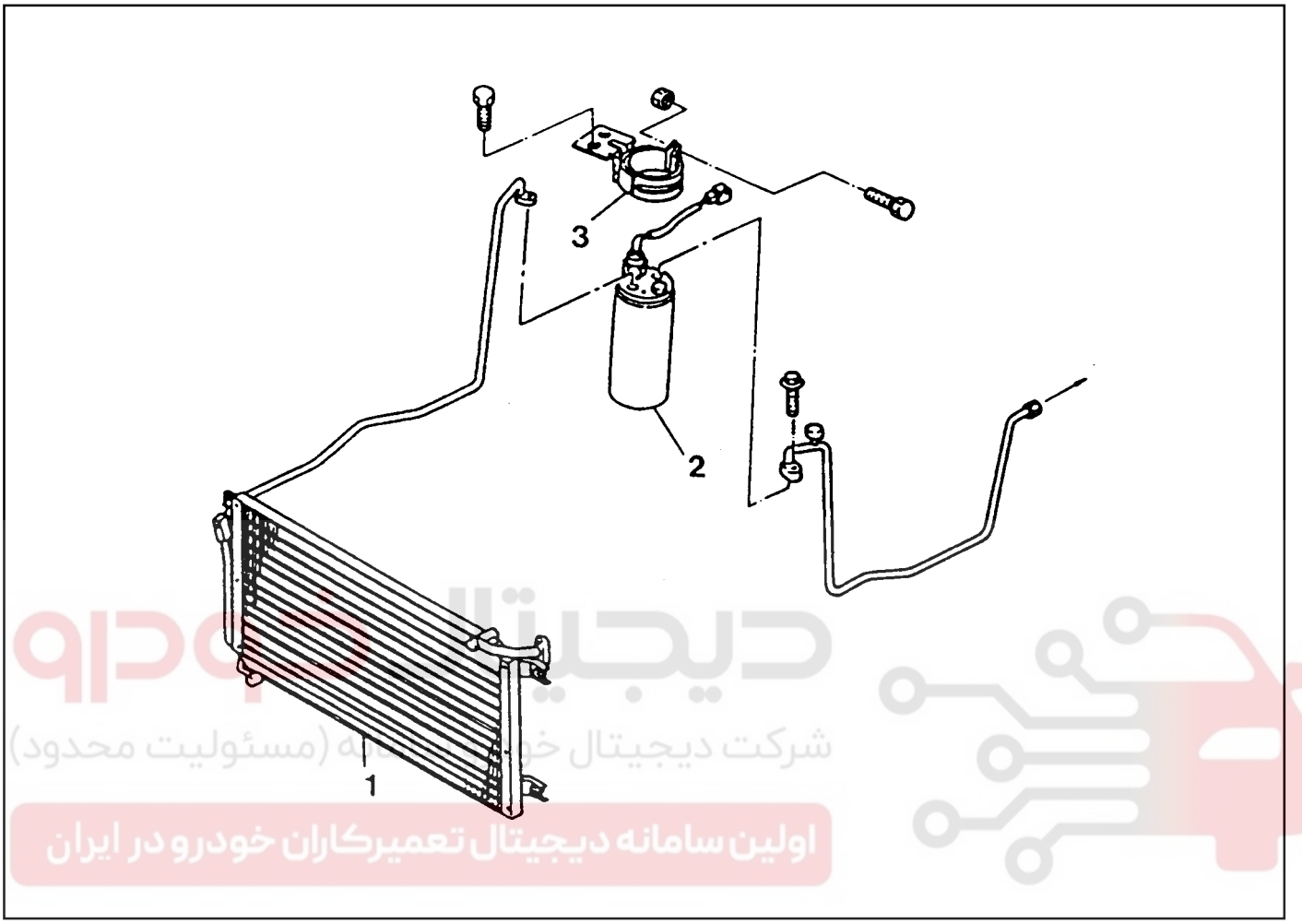
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RECEIVER DRIER

Diesel Engine



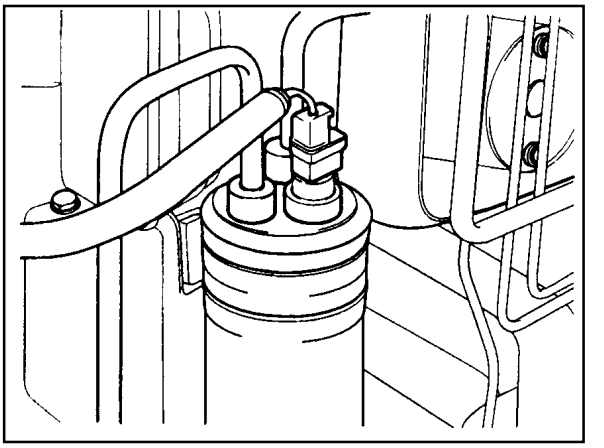
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1 Condenser
2 Receiver Drier
3 Bolt ..... 4-6 Nm
4 Bolt ..... 5-8 Nm
5 Bracket

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Removal & Installation Procedure



1. Disconnect the negative(-) terminal from the battery.
2. Discharge refrigerant from the system.

   Notice

   By connecting a manifold gauge connection hose to High/ Low pressure line, discharge the refrigerant.

3. Disconnect the inlet and outlet pipes of receiver drier.

   Notice

   When installing, check the O-ring and apply the compressor oil.

   Installation Notice

Tightening Torque	4 - 6 Nm

4. Remove the bracket bolt and then remove the receiver drier.

   Installation Notice

Tightening Torque	5 - 8 Nm

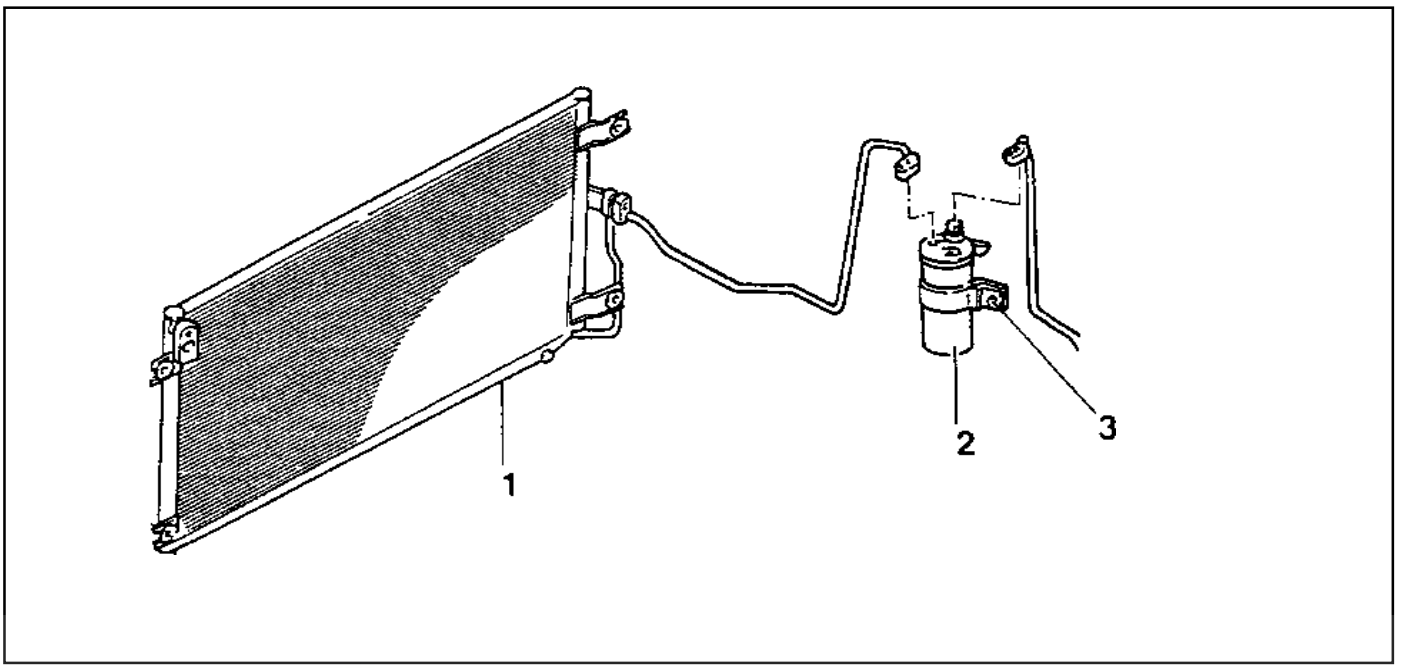
5. Installation should follow the removal procedure in the reverse order.

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Gasoline Engine

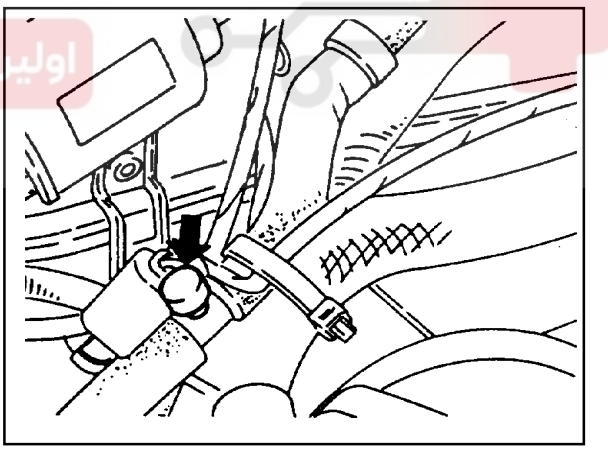


1 Condenser
2 Receiver Drier
3 Bracket

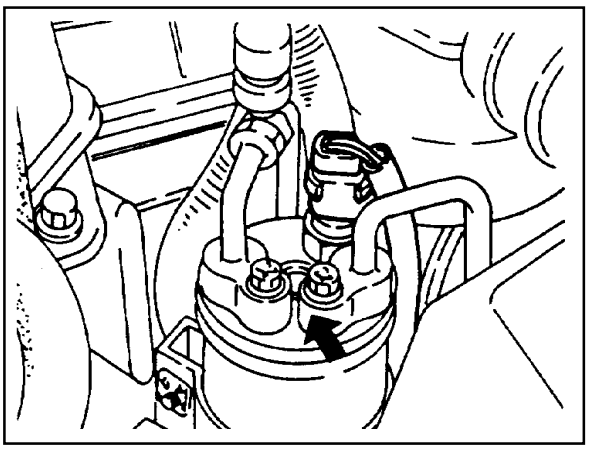
شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

Removal & Installation Procedure

1. Disconnect the dual pressure switch connector from the receiver drier.
2. Discharge refrigerant from the system.



3. Remove the high pressure pipe from the inlet / outlet of receiver drier.
4. Remove the bracket bolts and remove the receiver drier.
5. Installation should follow the removal procedure in the reverse order.



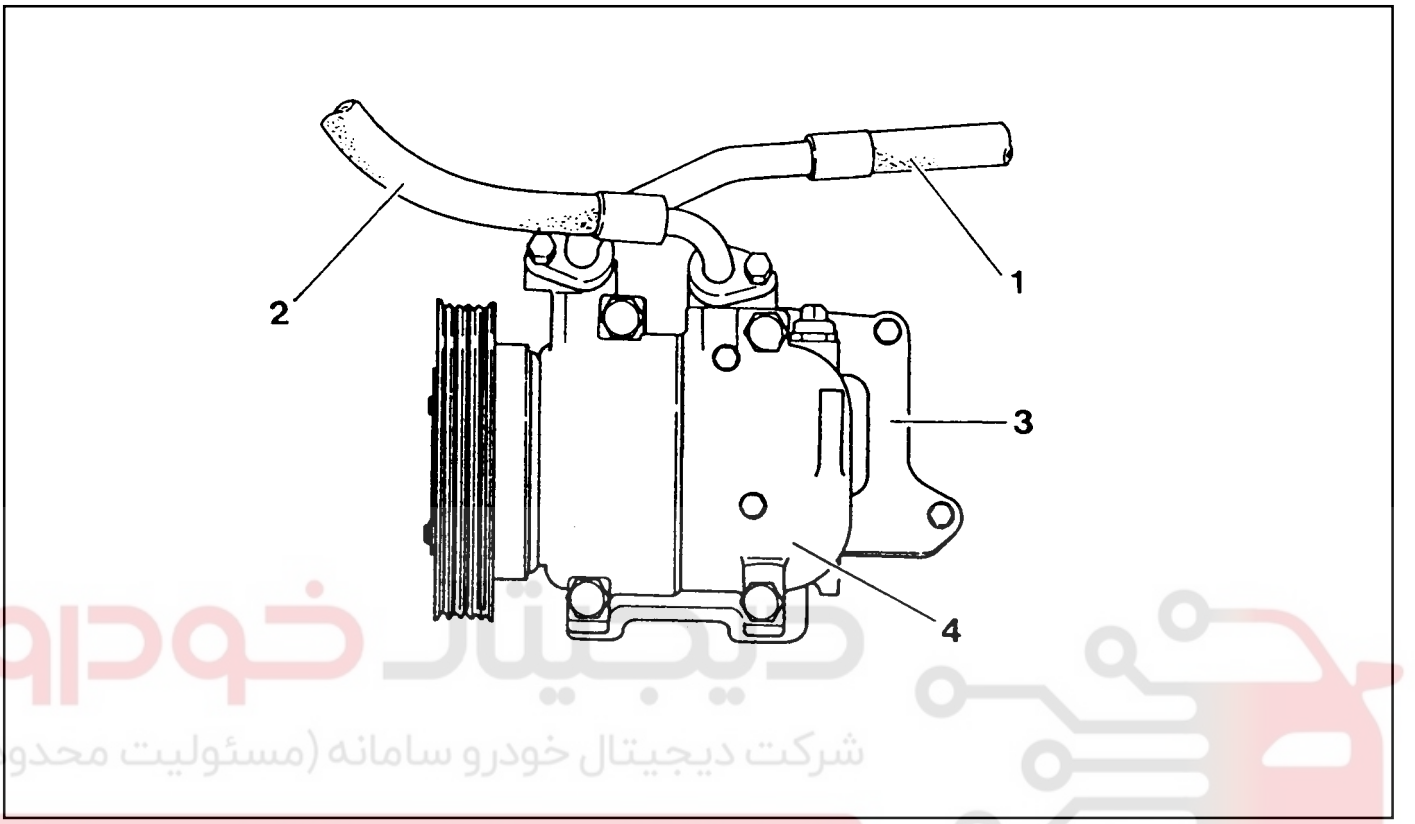
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COMPRESSOR

Preceding Work : Removal of the poly V-belt

Diesel Engine



1 Low Pressure Pipe
2 High Pressure Pipe
3 Compressor Bracket
4 Compressor

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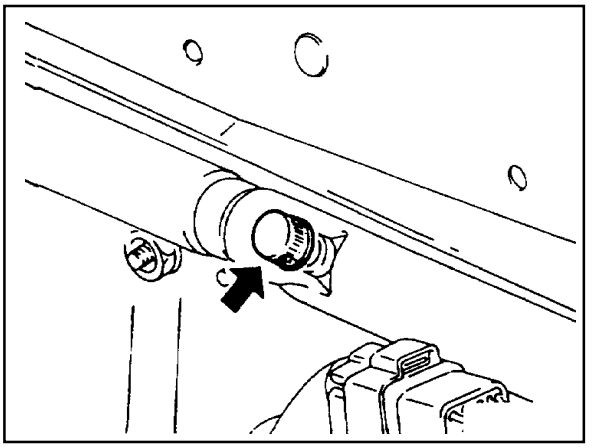
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Removal & Installation Procedure

1. Disconnect the negative(-) terminal from the battery.
2. Discharge refrigerant from the system.

   Notice

   By connecting a manifold gauge connection hose to High/ Low pressure line, discharge the refrigerant.



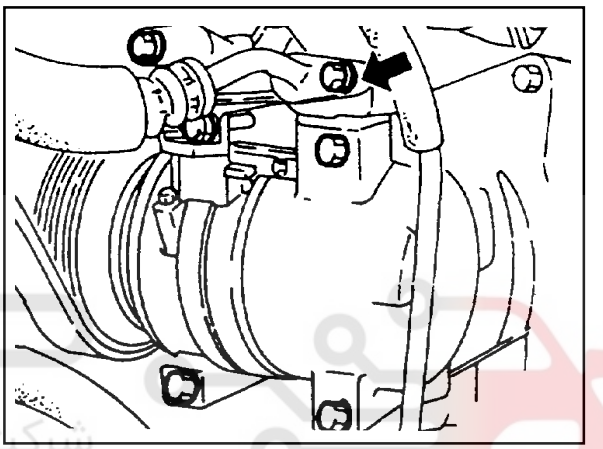
3. Disconnect the high / low pressure pipe and wire connectors.

   Installation Notice

Tightening Torque	20 - 30 Nm

   Notice

   Before tightening, apply the compressor oil to O-ring.



4. Remove the mounting bolt from the compressor bracket and remove compressor assembly.

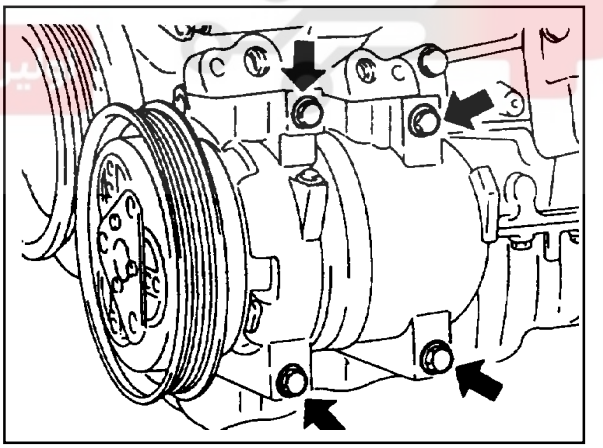
   Notice

   Place the removed compressor in vertical position.

   Installation Notice

Tightening Torque	21 - 26 Nm

5. Installation should follow the removal procedure in the reverse order.

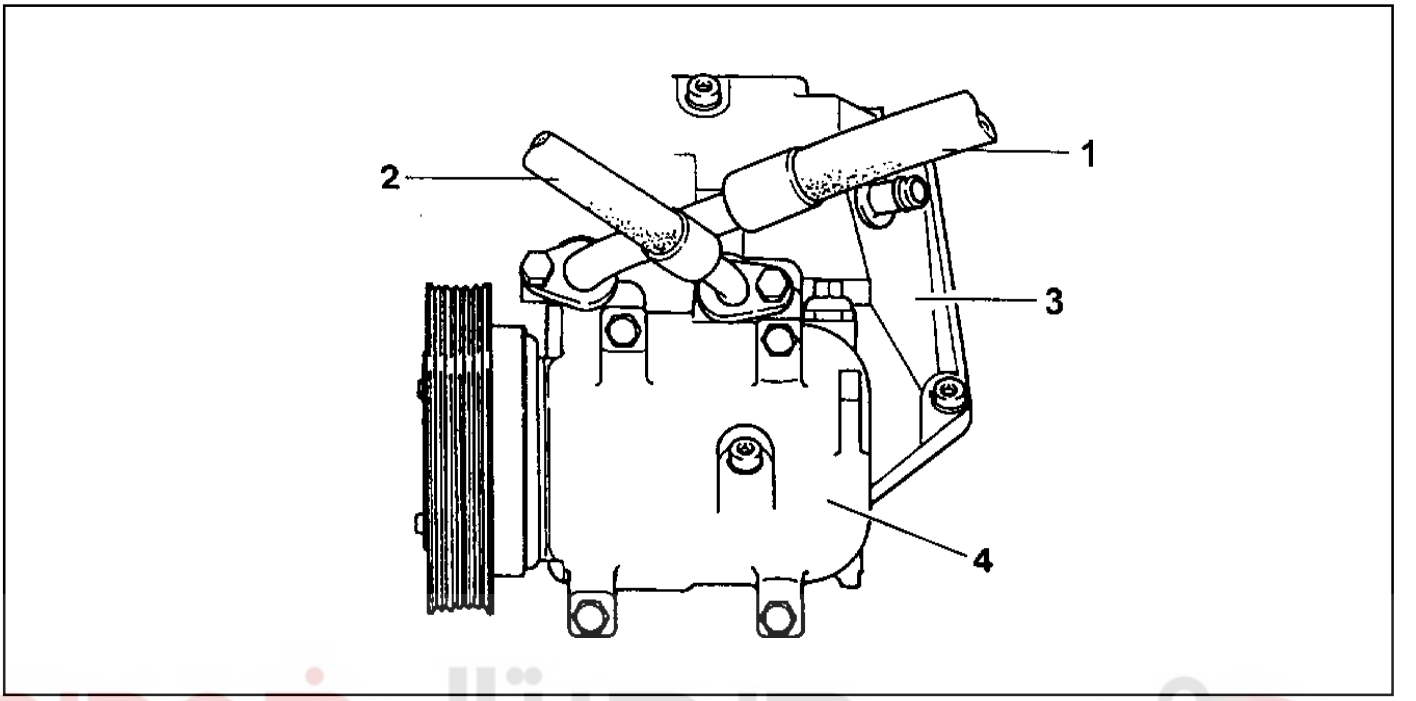


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Gasoline Engine



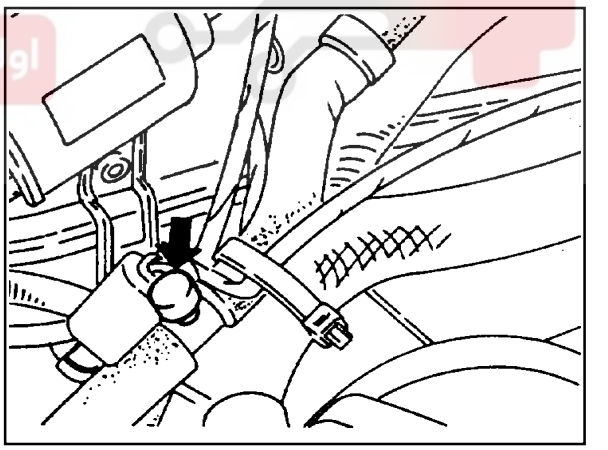
1 Low Pressure Pipe
2 High Pressure Pipe
3 Compressor Bracket
4 Compressor

Removal & Installation Procedure

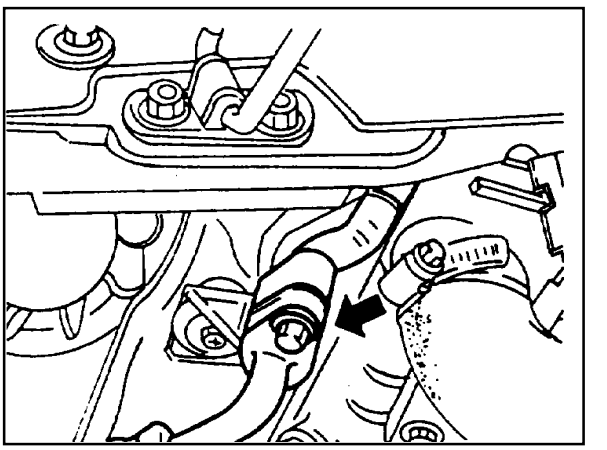
1. Disconnect the negative(-) terminal from the battery.
2. Discharge refrigerant from the system.

   Notice

   By connecting a manifold gauge connection hose to High/ Low pressure line, discharge the refrigerant.



3. Disconnect the high / low pressure pipe and wire connectors.



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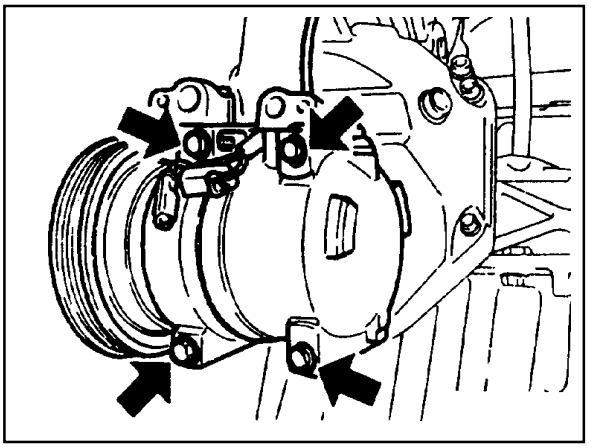
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4. Remove the mounting bolt from the compressor bracket and remove compressor assembly.

   Notice

   Place the removed compressor in vertical position.

5. Installation should follow the removal procedure in the reverse order.



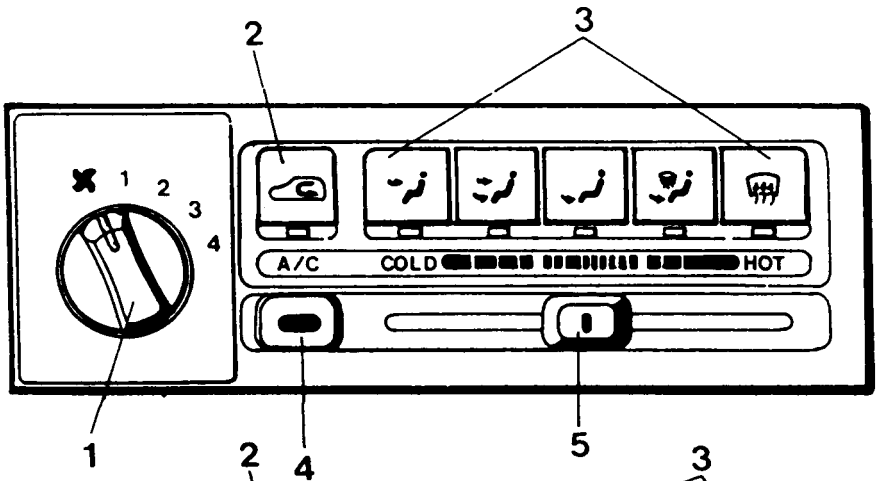
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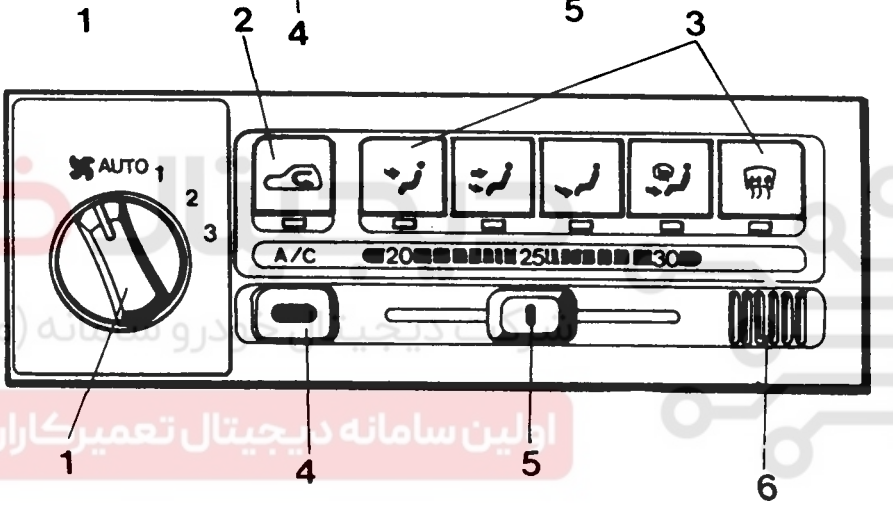
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HEATER AND AIR CONDITIONER CONTROL BOX

MANUAL



SATC



1 Blower Switch
2 Recirculation Switch
3 Mode Switch
4 A/C Switch
5 Temperature Control Lever
6 In-vehicle Sensor

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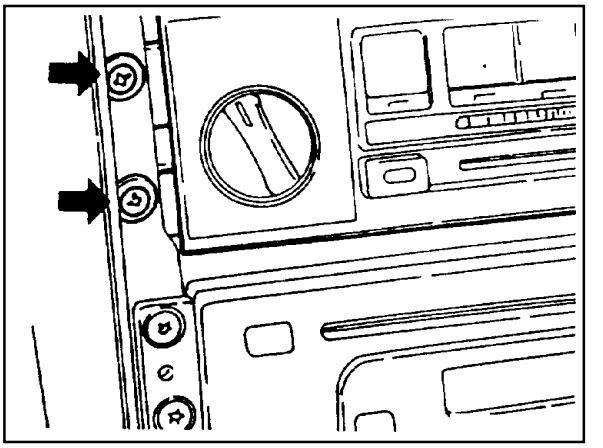
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Removal & Installation Procedure

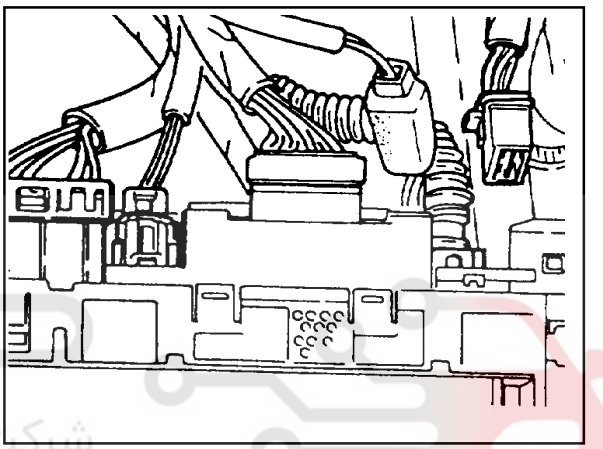
1. Remove the switch panel.

   Notice

   Be careful not to damage the switch panel.
2. Remove the fixing screws (4 screws) of the control box.



3. Disconnect the wire connectors and remove the control box.
4. Installation should follow the removal procedure in the reverse order.



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