



A/C





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# Summary of F3 Air Conditioner

The F3 Air Conditioner is designed to improve the vehicle quality and comfort with equipped of the most advanced technology and the integrated condenser which integrated the dryer to make less connecting. The A/C is of quick refrigerated and warmed up, but consume least power. By the A/C, the vehicle can have comfortable environment at any time.





# 1. A/C Specification

Item		Rating
<b>Compressor</b>	Type	WXH-086-F10
	Volume	86mL
	Max. rotating speed	10000r/min
	Oil volume	120ml
	Oil type	PAG-56
<b>Condenser</b>	Type	parallel
	Capacity of heat exchange	$\geq 8.5\text{KW}$
<b>Evaporator</b>	Type	Cascade
	Capacity of heat exchange	$\geq 4.1\text{KW}$
	Expansion valve	1.5ton
	resistance	$R_{0^{\circ}\text{C}}=5.32\text{ k}\Omega$ ; $R_{25^{\circ}\text{C}}=1.5\text{ k}\Omega$

BT0504501-B



<b>Blower</b>	Max flow	570 m <sup>3</sup> /h
	Flow adjusting	4 speed
	Power	180W
Power of refrigeration		4.5kW
Power of warm-up		4.5kW
Method of temp. adjusting		Control of warm /cool air ratio
Refrigerant filling		650g
Refrigerant type		R134a
<b>Belt type</b> BT0504501-B		5 wedge ( 5PK1090 )



## Tightened torque:

<b>Installation of compressor</b>	<b>35N·m</b>
<b>Installation of compressor Suction and exhaust hose</b>	<b>35N·m</b>
<b>Connection of evaporator and compressor</b>	<b>12N·m</b>
<b>Connecting of condenser and compressor</b>	<b>12N·m</b>
<b>Other pipe connector</b>	<b>18N·m</b>

## Parameters, evaporator temperature sensor:

<b>Temperature</b> /°C	<b>0</b>	<b>2</b>	<b>4</b>	<b>6</b>	<b>25</b>
<b>Resistance</b> /KΩ	<b>5.32</b>	<b>4.77</b>	<b>4.32</b>	<b>3.91</b>	<b>1.5</b>



**If replacing a separate part, fill enough lubricant as following:**

<b>Item</b>	<b>Quantity</b>
<b>Condenser</b>	<b>35ml</b>
<b>Evaporator</b>	<b>30ml</b>
<b>Pipe</b>	<b>10ml</b>
<b>Dryer</b>	<b>10ml</b>

**Compressor Lubricant Type: PAG-56.**

**Compressor Lubricant Volume: 120 ml.**

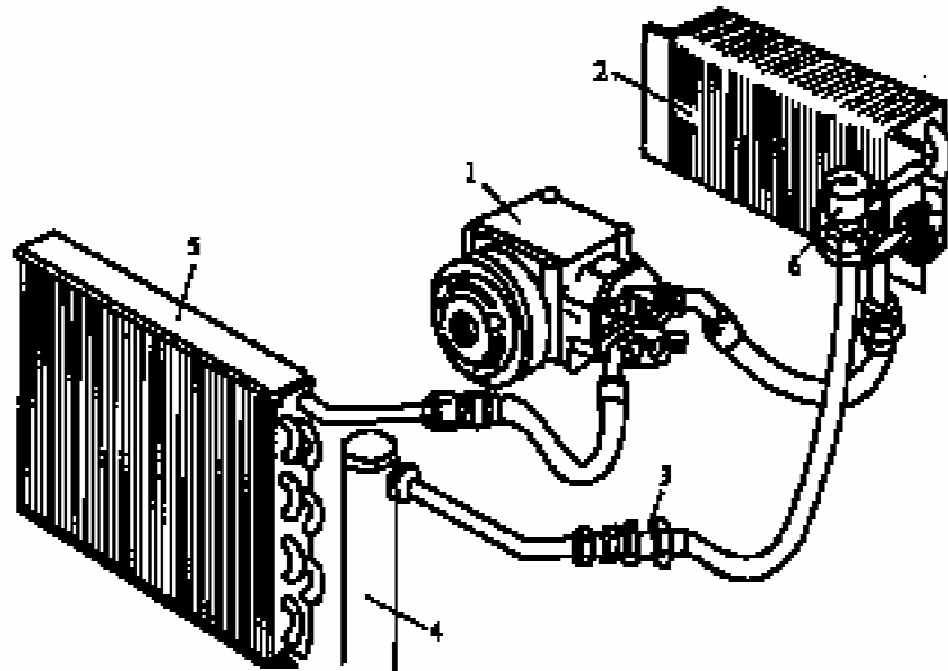




## 2. Composing of A/C System

### 2.1 Refrigeration System:

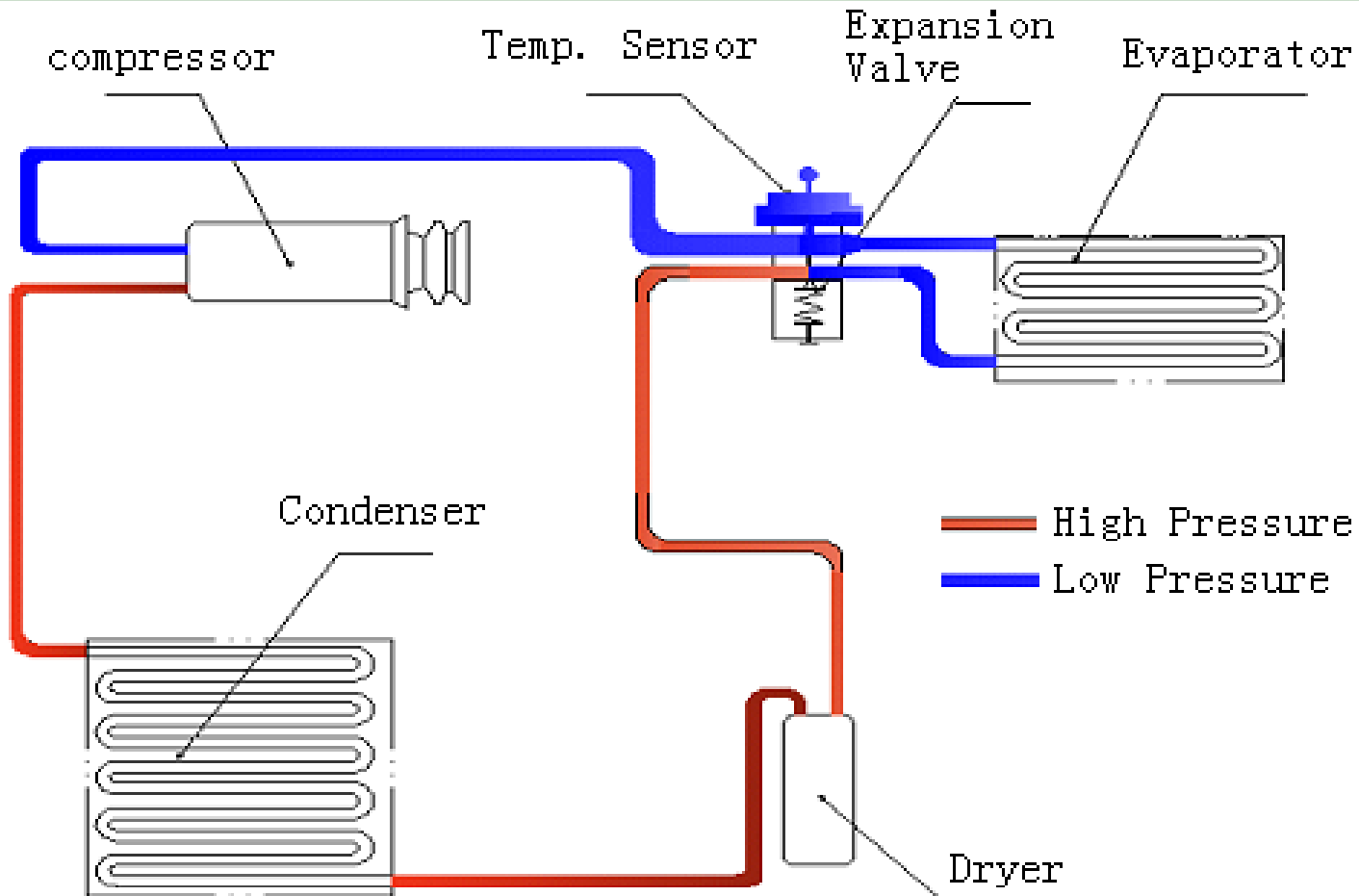
- 1) Compressor
- 2) Evaporator
- 3) View window
- 4) Dryer
- 5) Condenser
- 6) Expansion valve







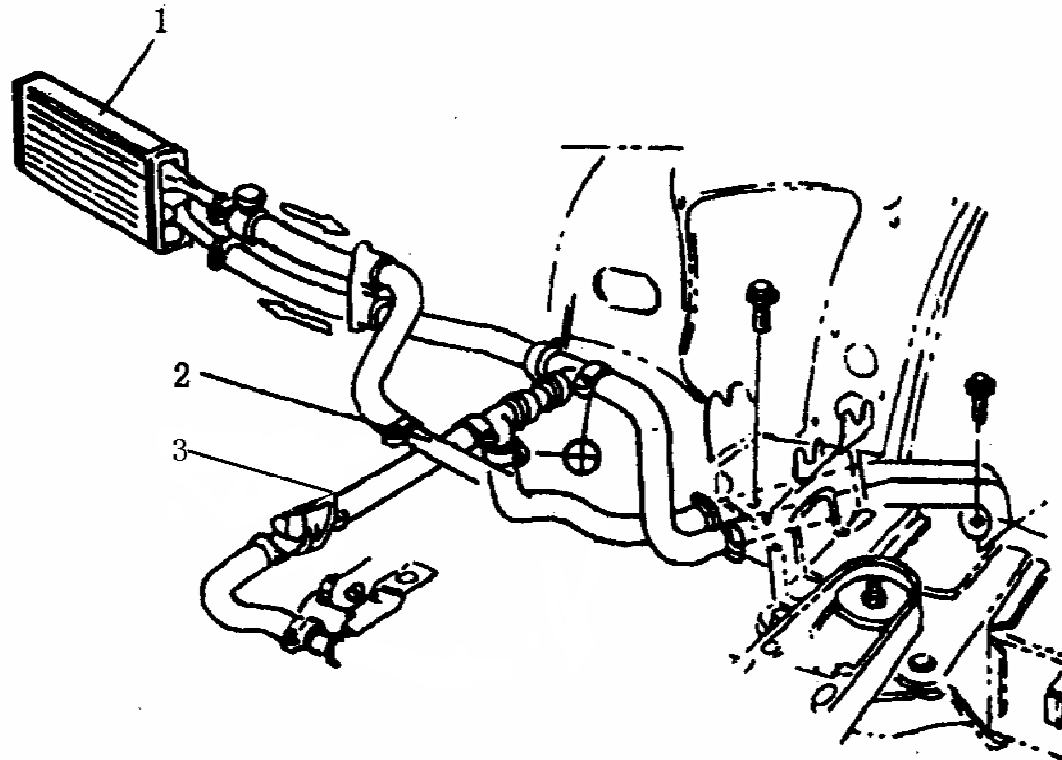
# The Refrigeration Cycle:





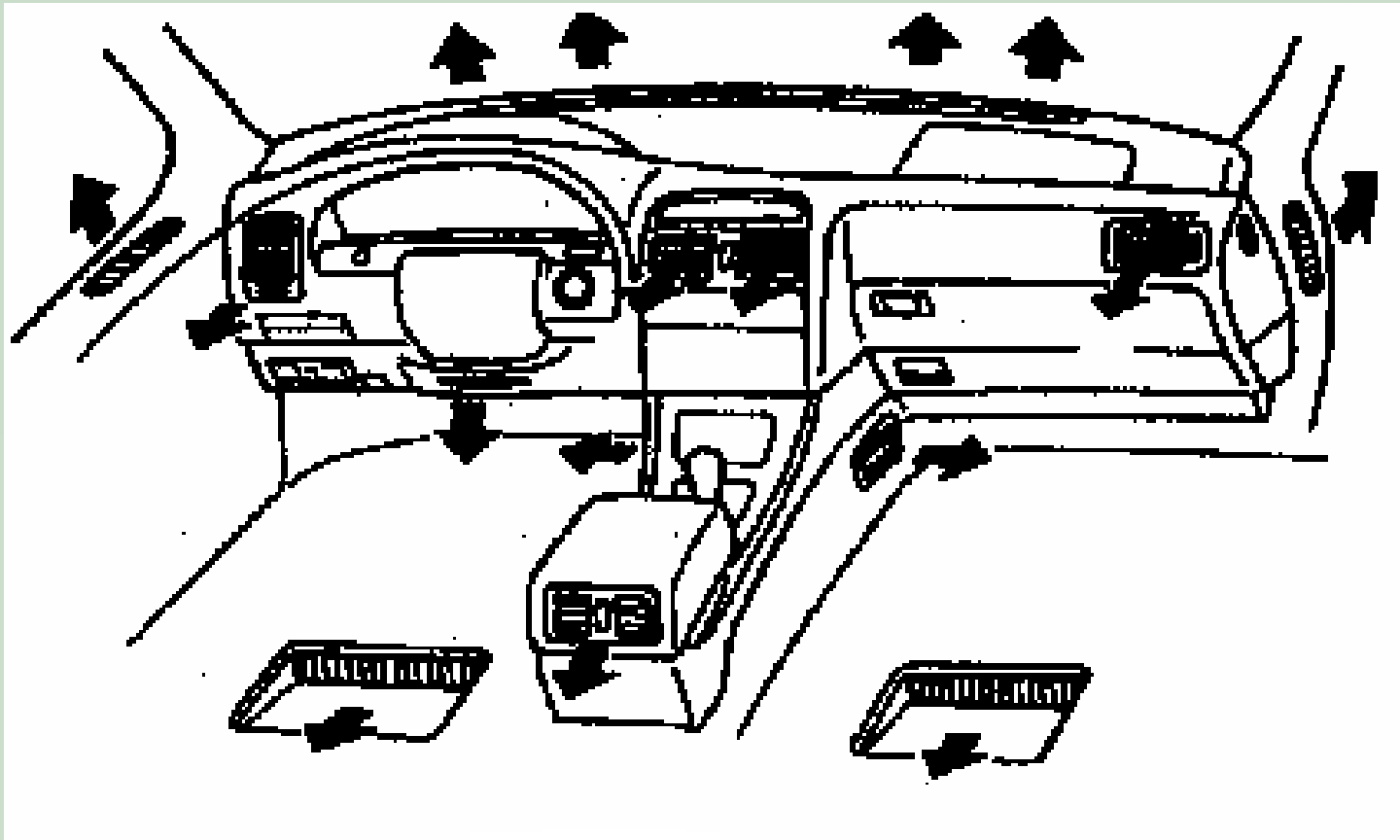
## 2.2 Heating System :

- 1) Heater
- 2) Water inlet
- 3) Water outlet





## 2.3 Air flow:

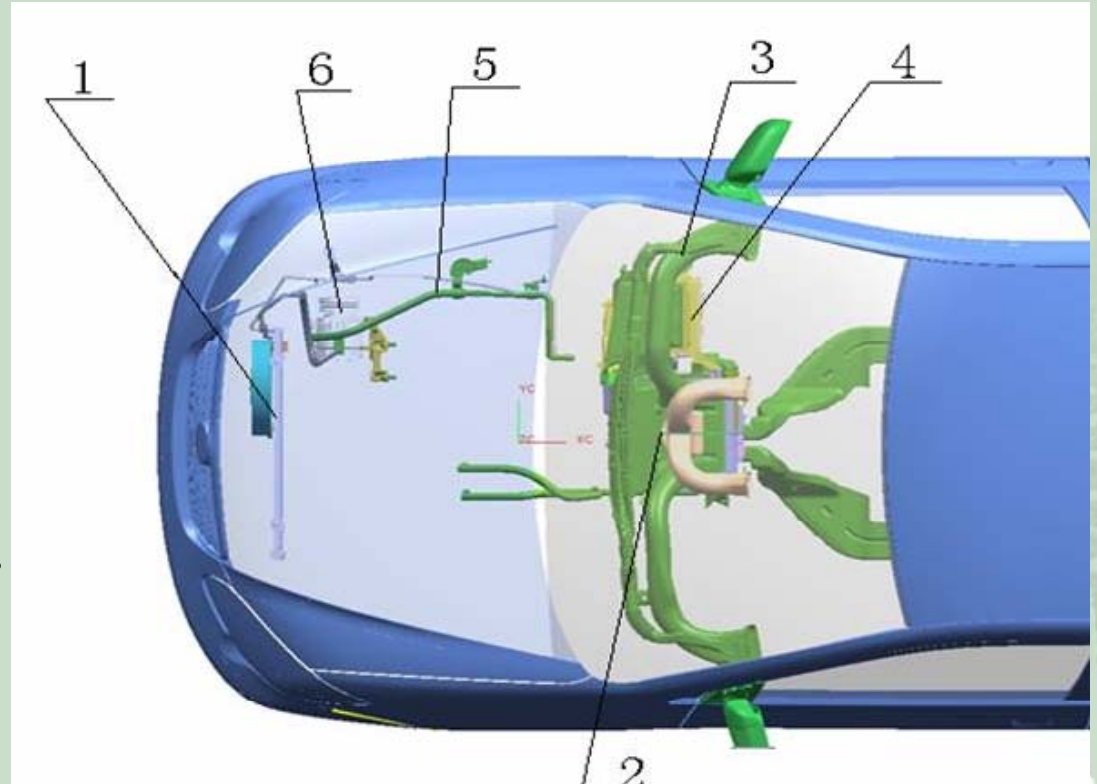


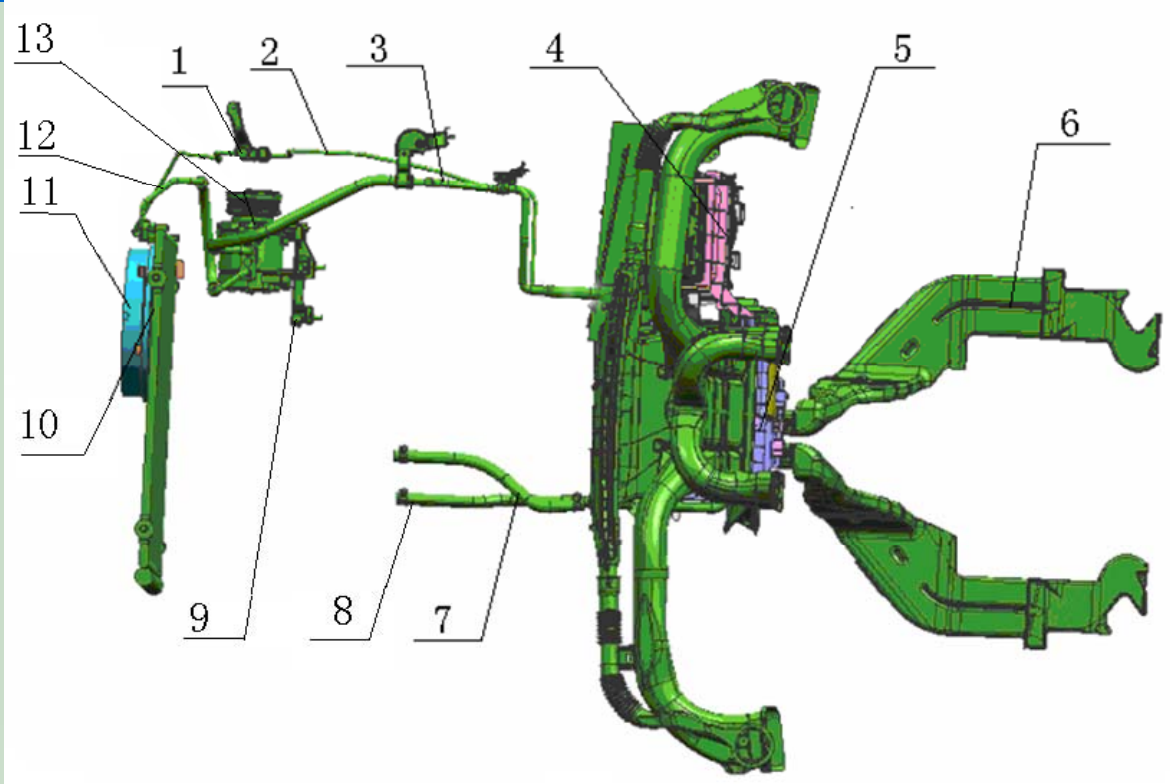


## ■ 3. A/C Layout and Configuration

### ■ 3.1 A/C Layout:

- 1. Condenser Assy.
- 2. Evaporator Assy.
- 3. Duct
- 4. Blower
- 5. Pipe
- 6. Compressor Assy.

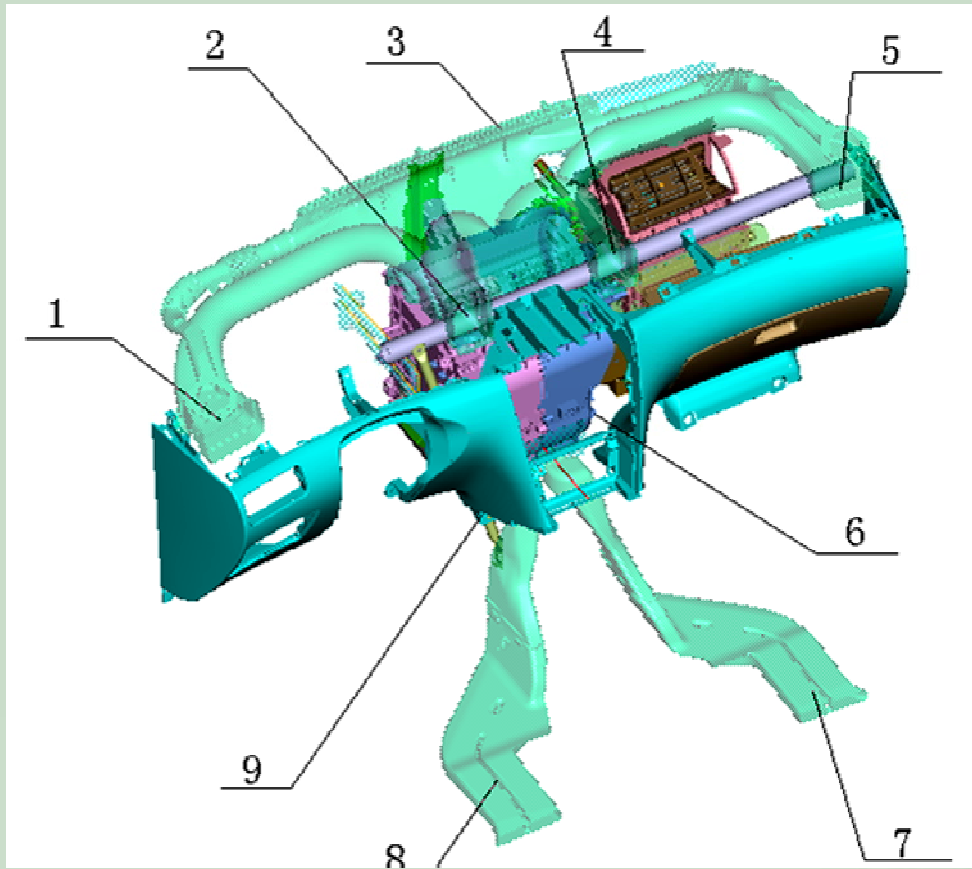




1. **Pressure Switch**    2. **High Pressure Pipe**    3. **Suction Hose Assy., Compressor**    4. **Blower**    5. **Evaporator Assy.**    6. **Duct**    7. **Water Inlet Hose, Heater**    8. **Water Outlet Hose Heater**    9. **Compressor Bracket**    10. **Condenser Assy.**    11. **Condenser Fan**    12. **Exhaust Hose Assy., Compressor**    13. **Compressor**



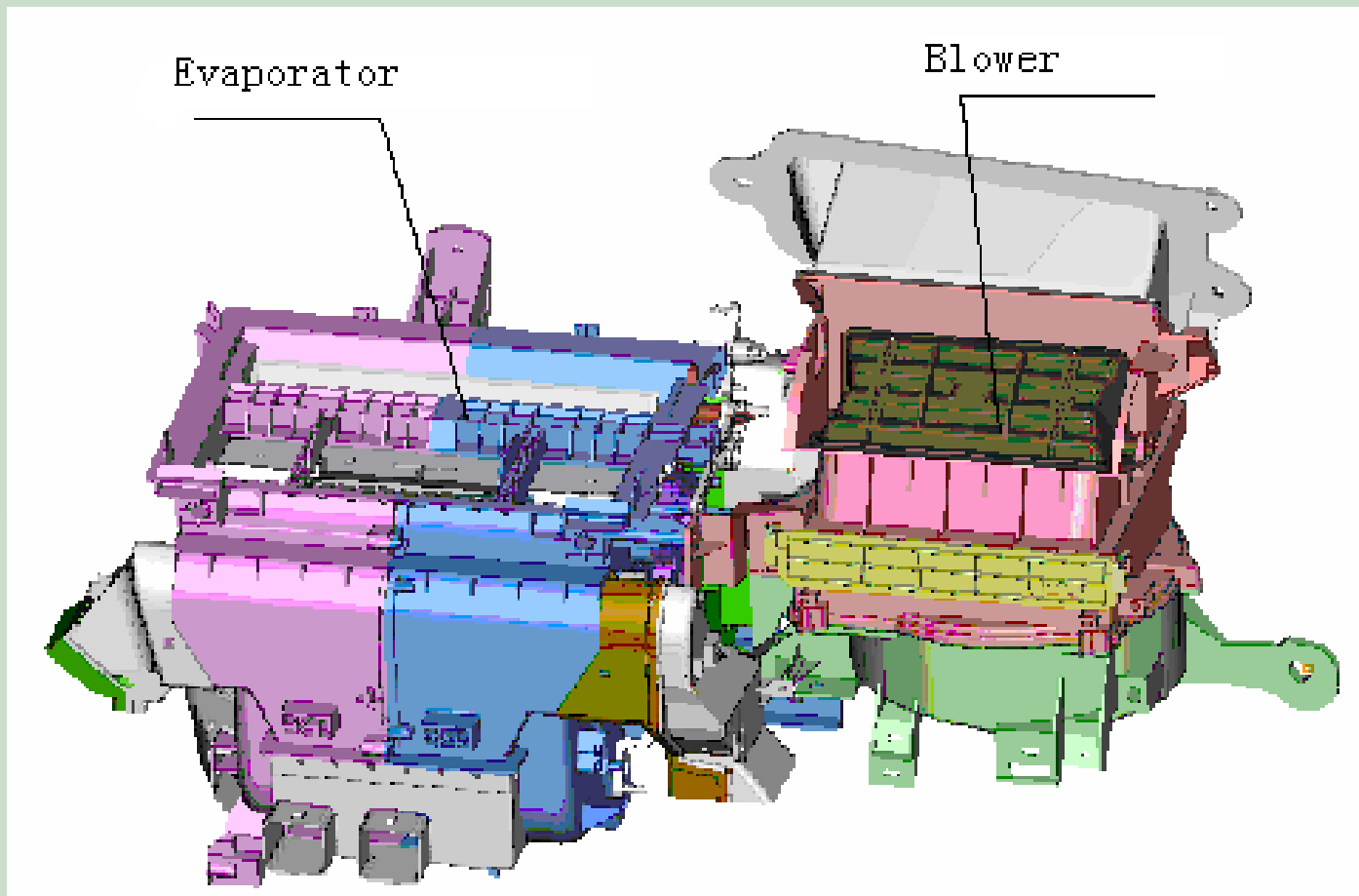
## 3.2 Duct:



- 1. Vent, Driver, Left side
- 2. Vent, Driver, Right side.
- 3. Vent, Defrost
- 4. Vent, Passenger, Left side
- 5. Vent, Passenger, Right side
- 6. Vent, Passenger, Right side, Bottom
- 7. Rear Vent, Right side, Bottom
- 8. Rear Vent, Left side, Bottom
- 9. Vent, Driver, Right side, Bottom.

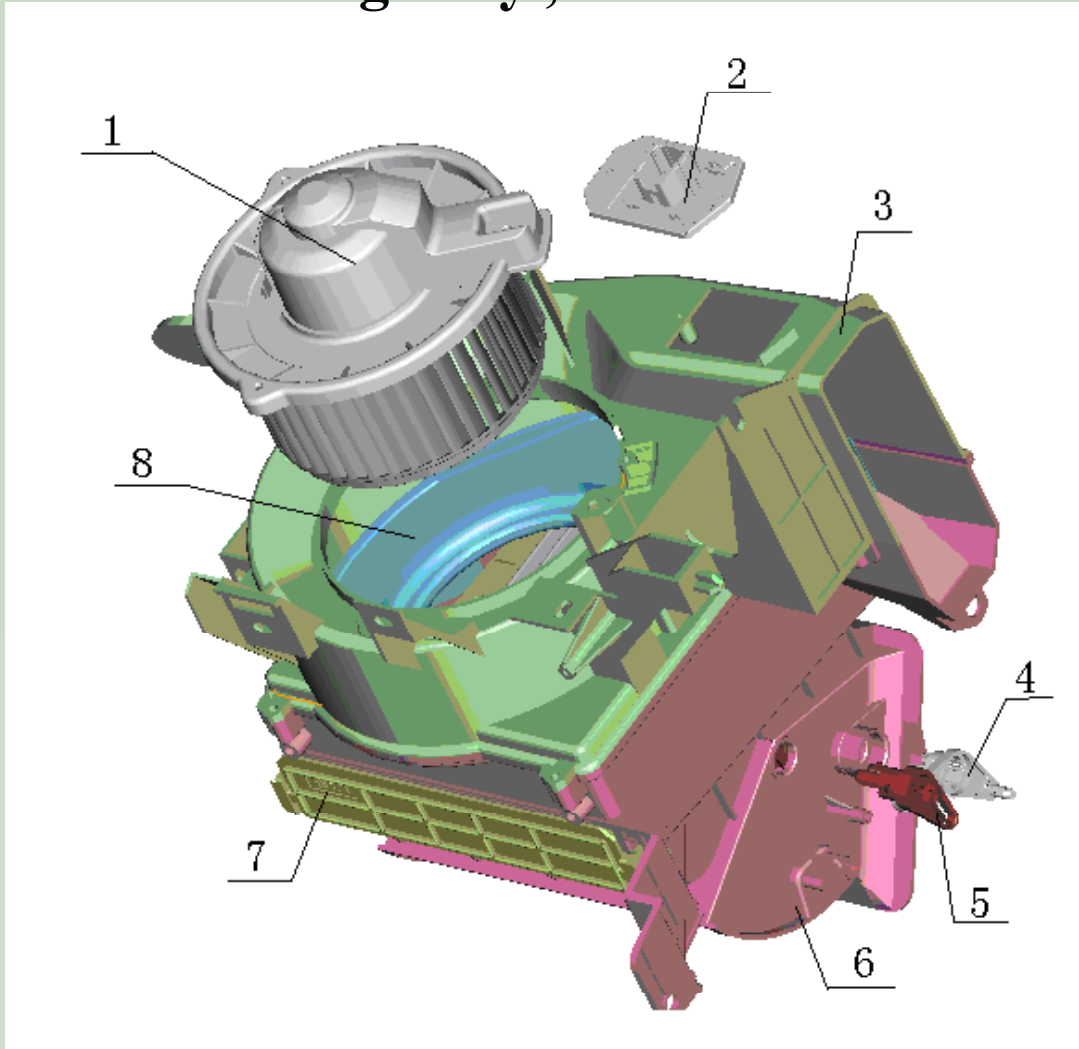


### 3.3 Housing Assy.:





### 3.3.1 Housing Assy., Blower:

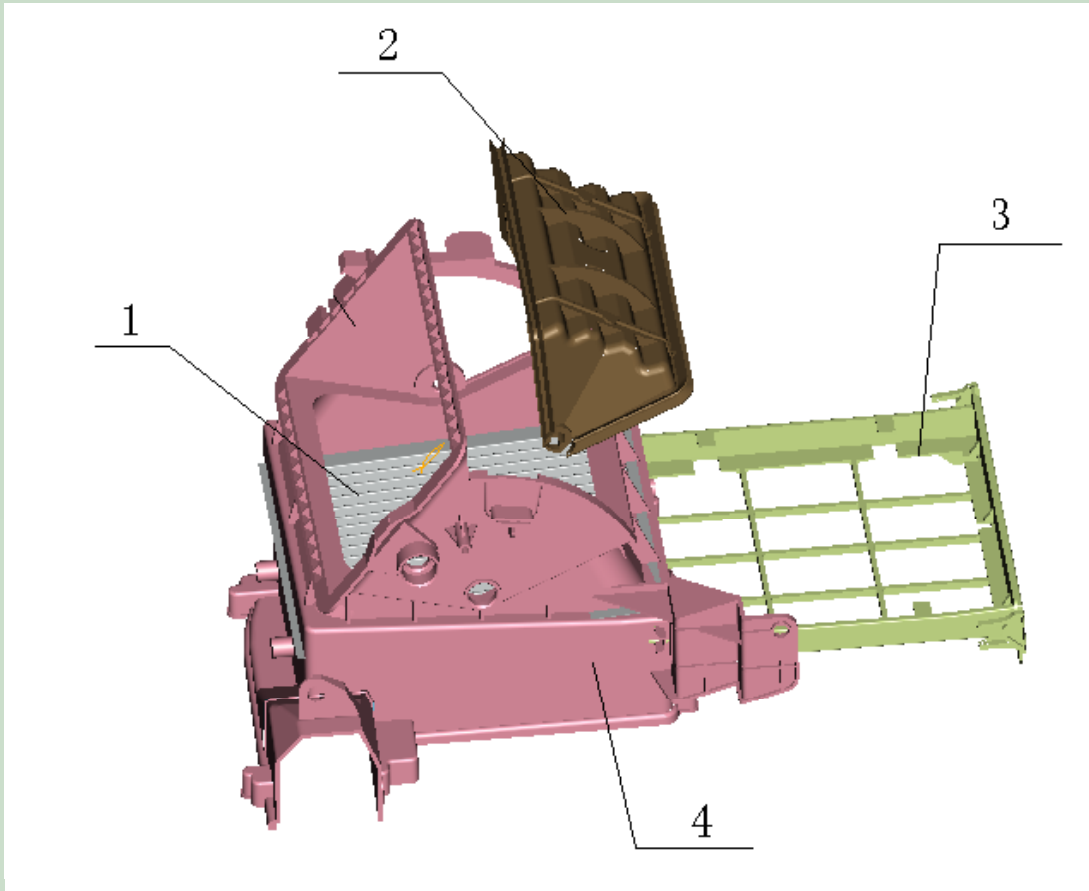


- 1. Blower
- 2. Adjusting module
- 3. Upper housing
- 4. Cycling wind control rod
- 5. Cycling wind drive rod
- 6. Lower housing
- 7. Strainer bracket
- 8. Pan ,duct



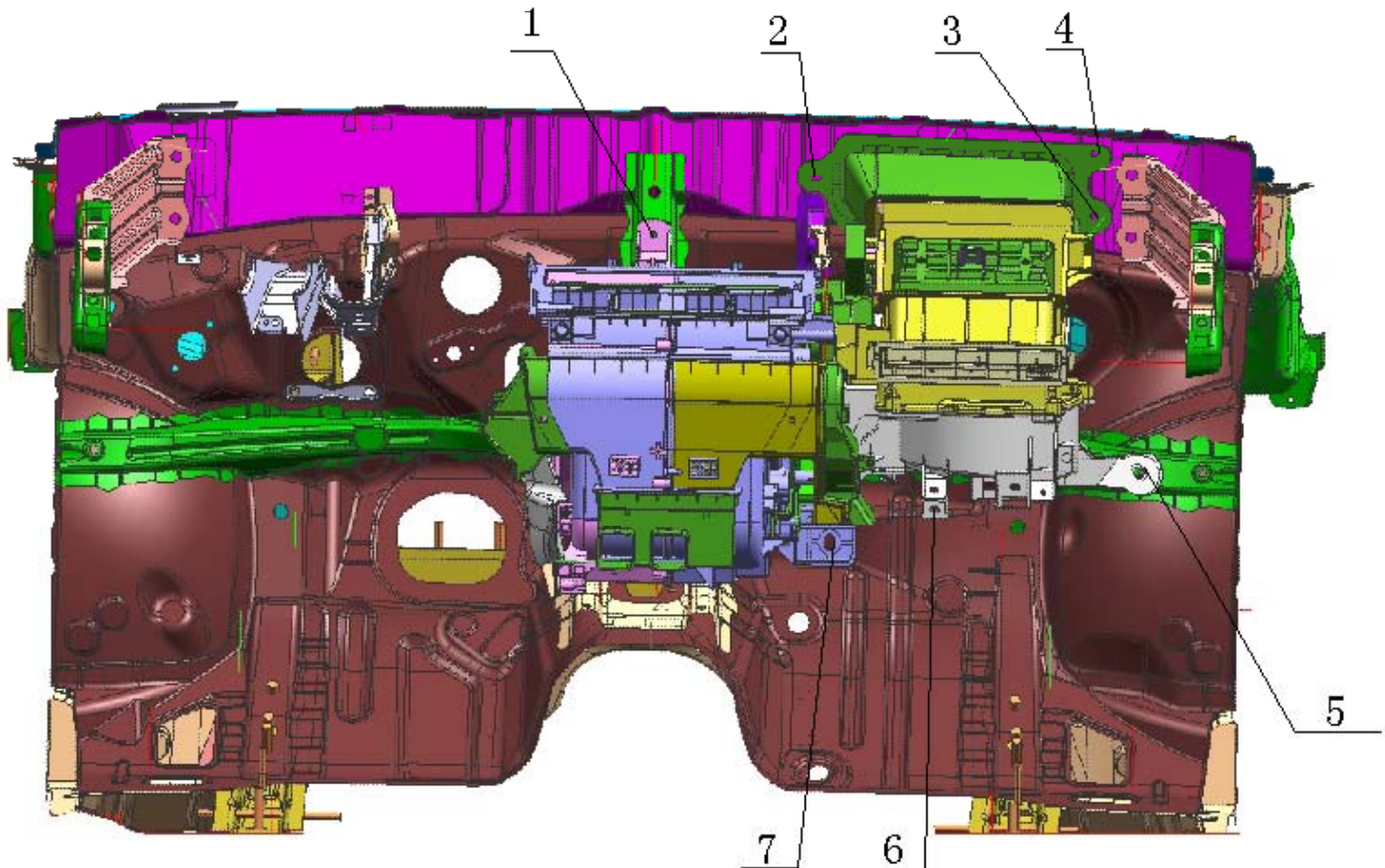


## 3.3.2 Air filter:





### 3.3.3 Location of Housing Assy.:



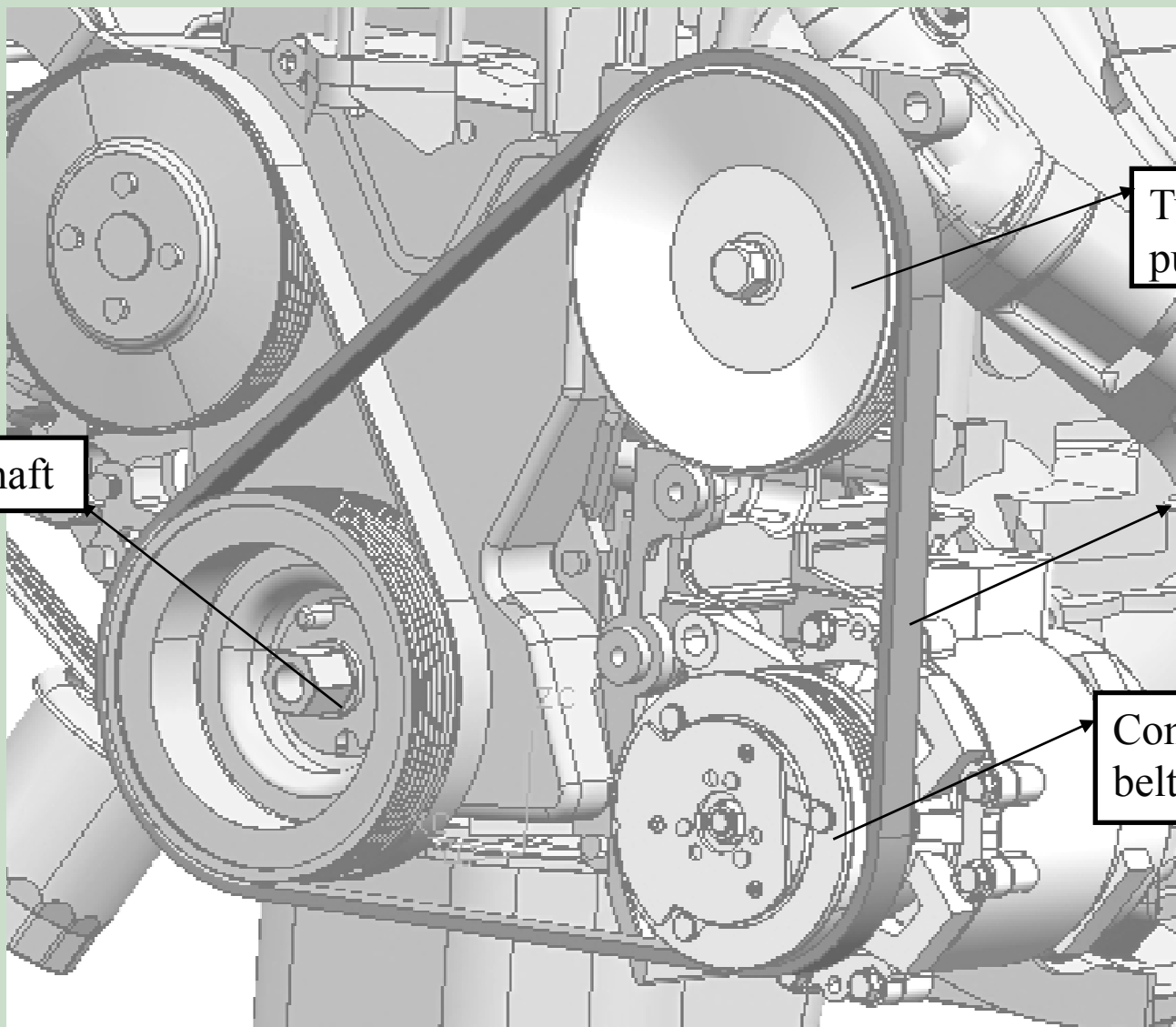


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## 3.4 Compressor:





Crankshaft

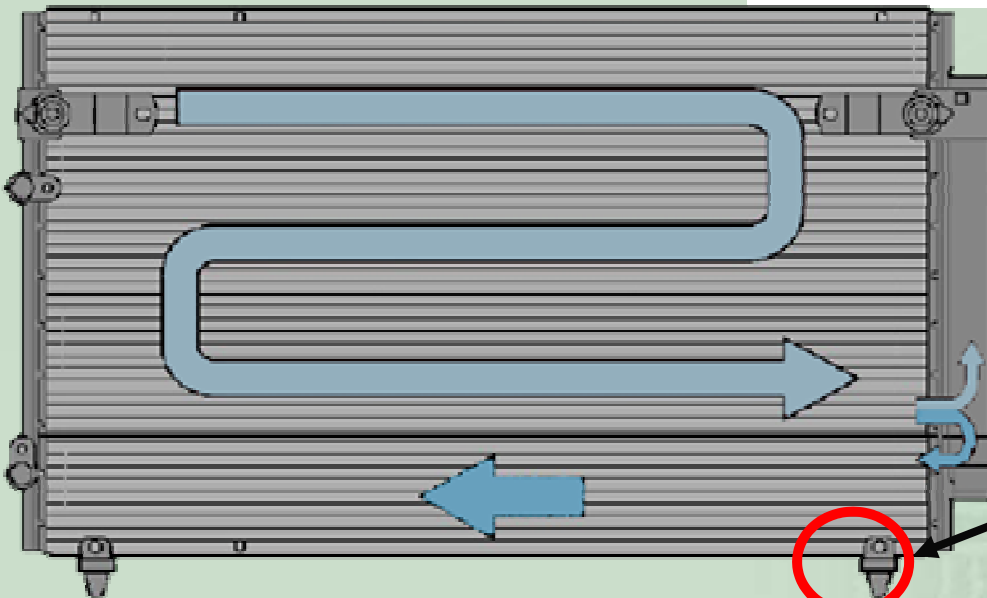
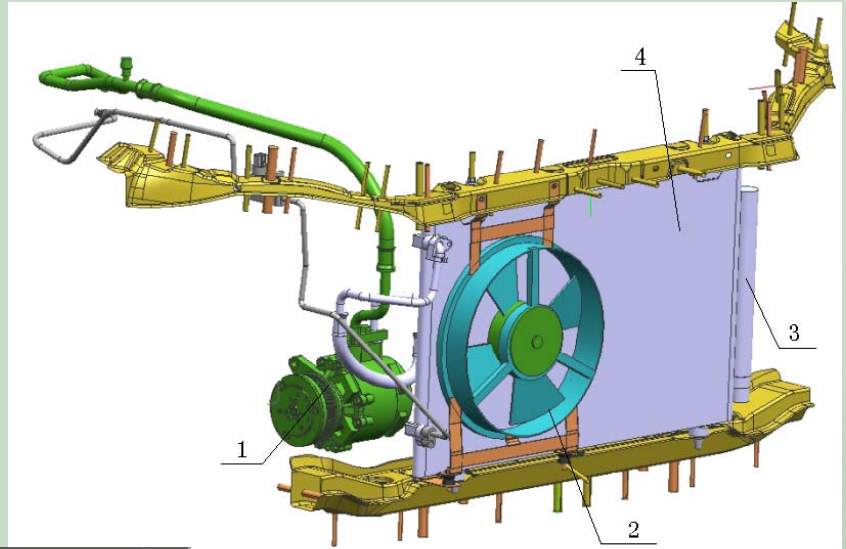
Turning pump wheel

Compressor belt

Compressor belt wheel



### 3.5 Condenser:

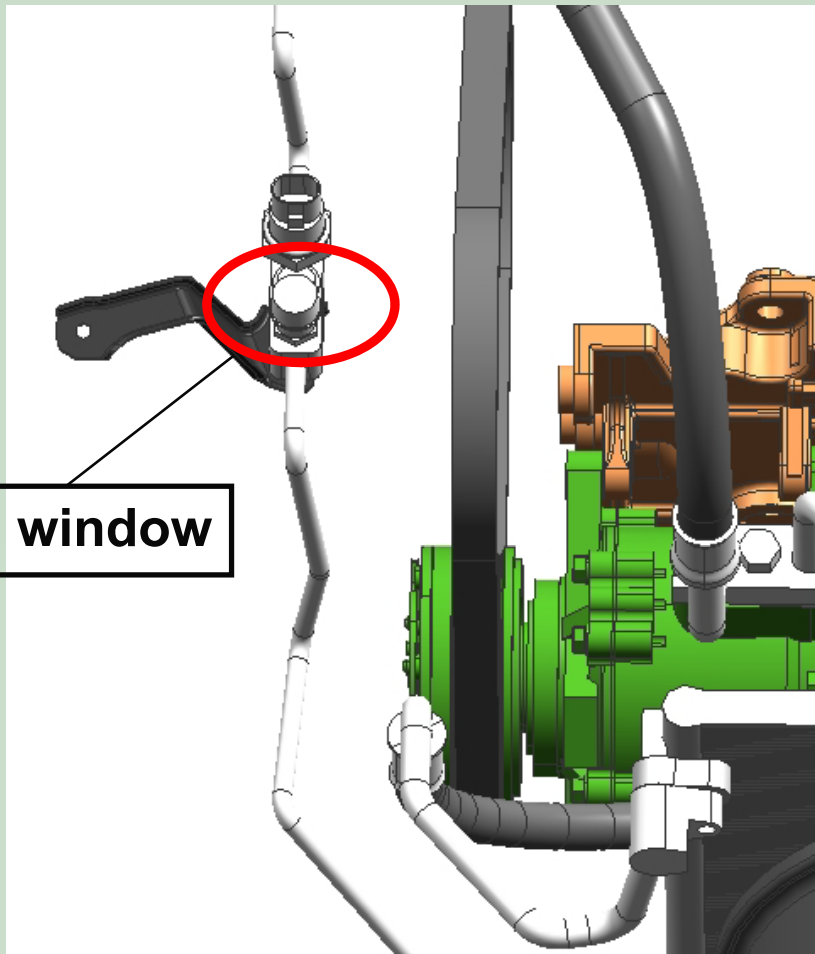


**Cushion**

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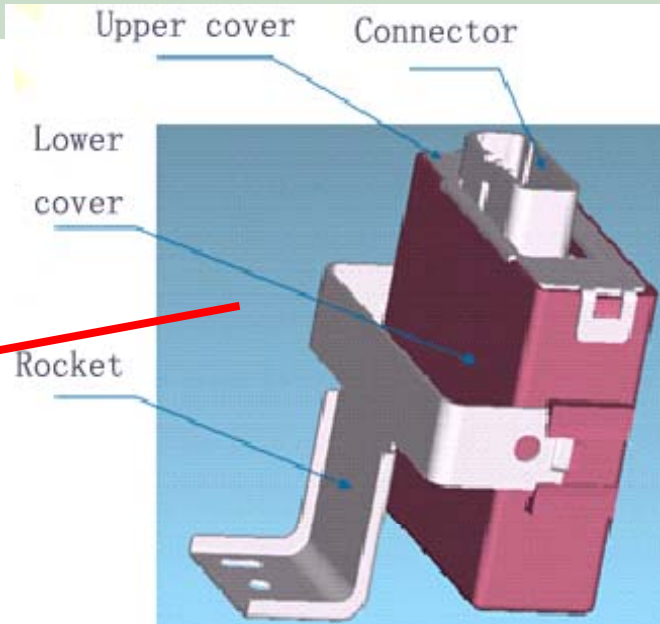
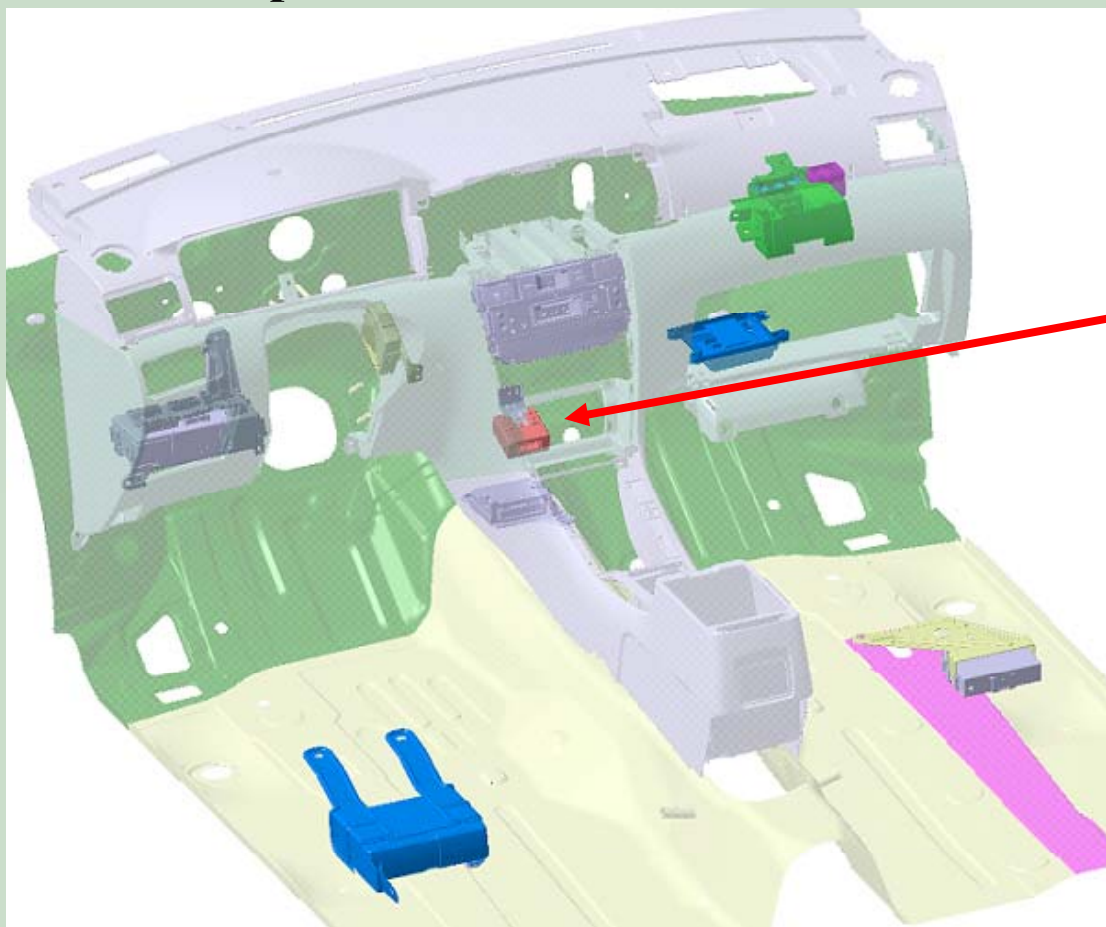
## 3.6 A/C Pressure Switch:



- 1) Scope of low pressure to high pressure: 0.196MPa ~ 3.14MPa.
- 2) Scope of mid pressure to high pressure: 1.77MPa ~ 3.14MPa.
- 3) The view window is to check if A/C is normal or not.



### 3.7 A/C Amplifier:

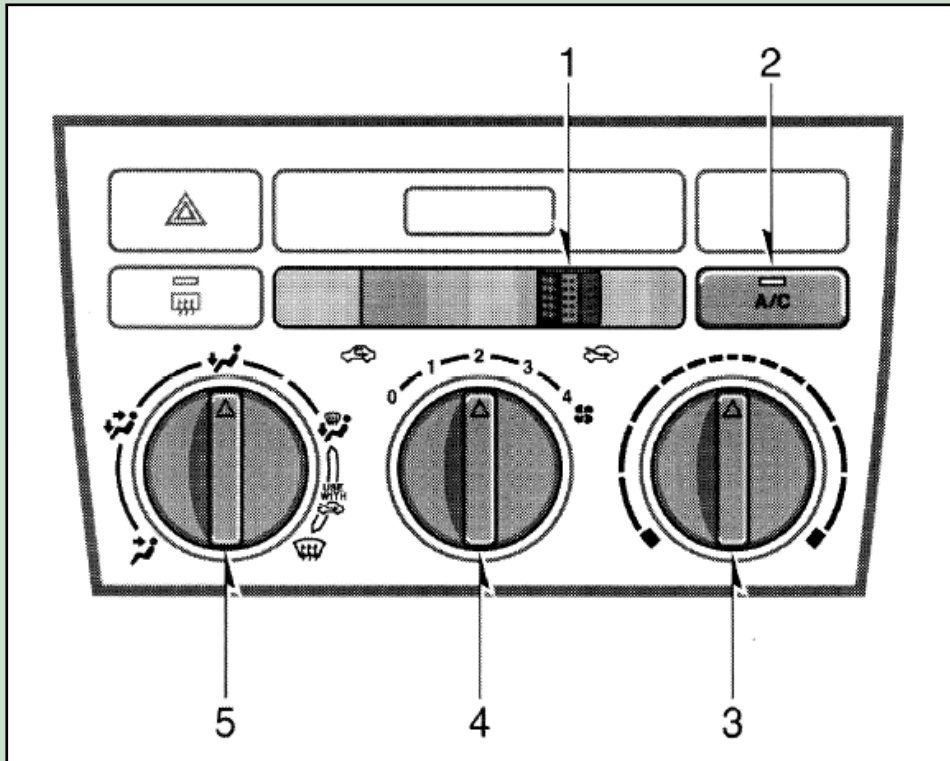






## 4. A/C Control:

### 4.1 Control Panel

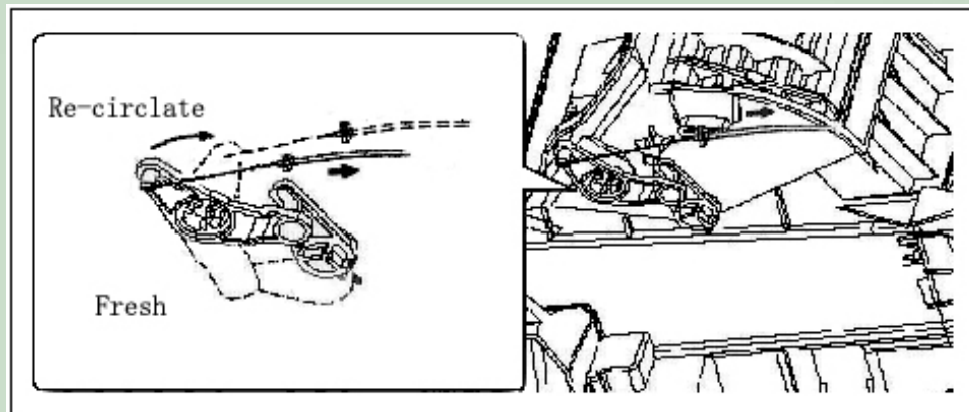
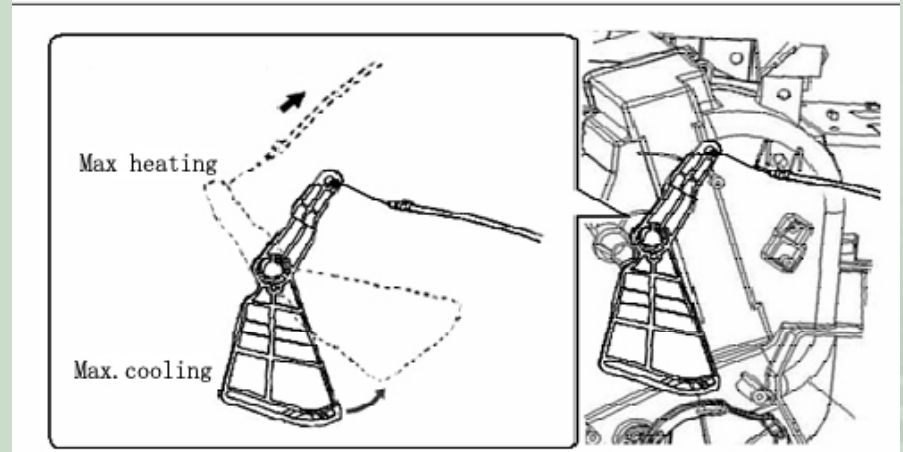


- 1. Air inlet selector
- 2. A/C button
- 3. Temperature knob
- 4. Flow knob
- 5. Flow mode knob

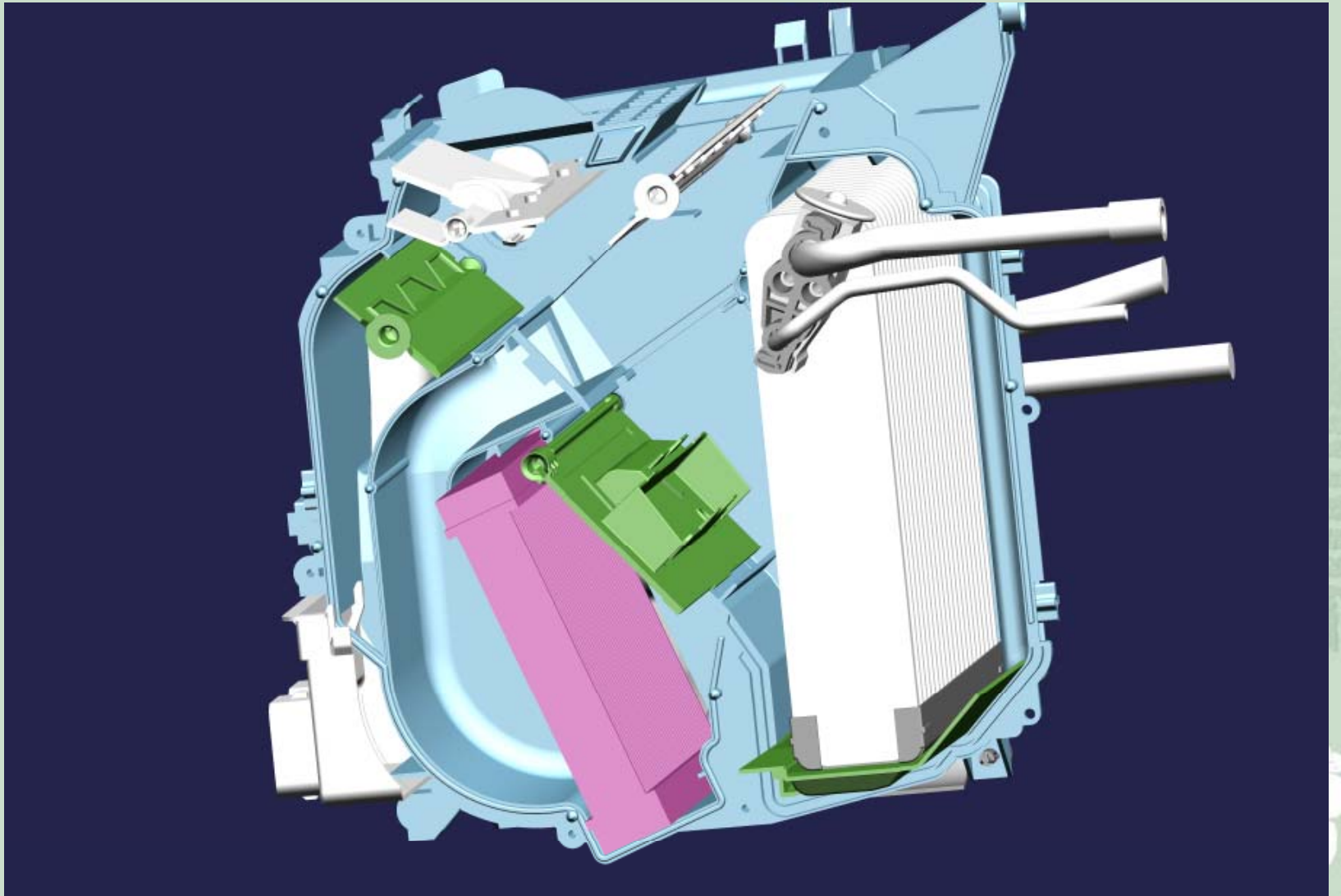




## 4.2 Evaporator housing control:



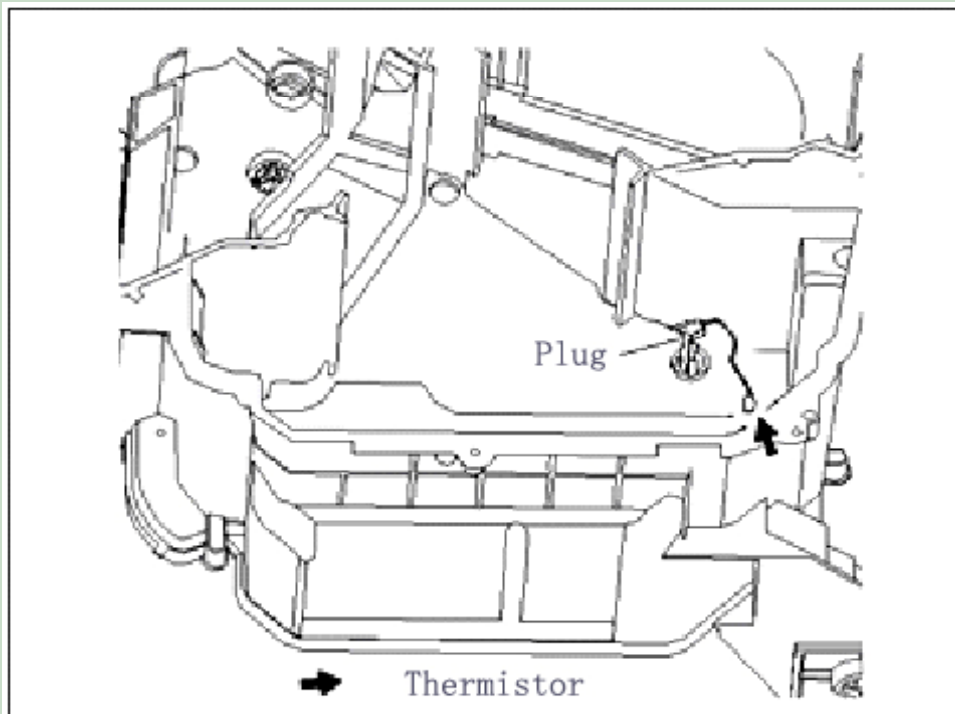




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## 4.3 Resistant, evaporator:





## 4.4 A/C Amplifier

- Through the control to the electromagnetic clutch, the A/C amplifier can control the work of the compressor, condenser fan and cooling fan.
- When the coolant temperature is lower than  $55^{\circ}\text{C}$ , the A/C amplifier will stop the A/C.
- Main tech parameters:
  - Working Voltage: 12V
  - Working Humidity: 35% ~ 95%





- **Main tech parameters:**
  - Working Voltage: 12V**
  - Working Humidity: 35% ~ 95%**
- **Signal Input:**
  - High-Low pressure signal input at pressure: 0.196MPa ~ 3.140MPa.**
  - Mid pressure signal input at pressure: 1.226MPa ~ 1.520MPa**
  - A/C start signal: 5V pulse signal from ECU**
  - When A/C amplifier receipts the 5V pulse signal from ECU, 1# and 3# fan relays connect, radiator fan and condenser fan start working.**
  - When the pressure >1.77MPa, radiator fan run up at high speed.**

## 4.5 Adjusting resistance, blower:

- **Standard of the resistance:**
  - Pin 1-2: 1.2Ω ~ 1.6Ω**
  - Pin 1-3: 0.35Ω ~ 0.45Ω**
  - Pin 1-4: 2.2Ω ~ 3.0Ω**





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Thank you

