Service Manual

Repairs and maintenance

Section 8 (87)

Air conditioning
240, 260
1975–
Volvos are sold in versions adapted for different markets. These adaptations depend on many factors including legal, taxation and market requirements. This manual may therefore show illustrations and text which do not apply to cars in your country.

Order No TP 30461/1
This manual supersedes:
TP 11633/1 240 Air conditioning
TP 11248/1 260 Air conditioning
TP 11584/1 240 Air conditioning (USA/Canada)
TP 11412/2 260 Air conditioning (USA/Canada)

We reserve the right to make alterations
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<tr>
<td>240, 260, 1980</td>
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</tr>
<tr>
<td>240, 260, 1981</td>
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</table>

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## Specifications

### Refrigerant, type

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity</th>
<th>Refrigerant Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975-1978</td>
<td></td>
<td>R 12 (dichlorodifluoromethane)</td>
</tr>
<tr>
<td>1979-1980</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Air conditioning 240

#### Compressor York (Petrol/Gasoline engines)

<table>
<thead>
<tr>
<th>Type (1975-1978)</th>
<th>No. cylinders</th>
<th>Swept volume</th>
<th>Max. rev.</th>
<th>Lubricating oil capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>York A 209</td>
<td>2</td>
<td>147 cm³ (9.0 in³)</td>
<td>100 r/s (6,000 r/min)</td>
<td>300 cm³ (0.64 US pint)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type (1979-)</th>
<th>No. cylinders</th>
<th>Swept volume</th>
<th>Max. rev.</th>
<th>Lubricating oil capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>York A 210</td>
<td>2</td>
<td>164 cm³ (10 in³)</td>
<td>100 r/s (6,000 r/min)</td>
<td>300 cm³ (0.64 US pint)</td>
</tr>
</tbody>
</table>

- Compressor oil P/N 1 160048-3 or Suniso 5, BP Energol LPT 100, Shell Clavus 33, Texaco Capella E 500

#### Sankyo compressor (Diesel)

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>No. cylinder</th>
<th>Swept volume</th>
<th>Max. rev.</th>
<th>Lubricating oil capacity</th>
<th>Lubricating oil, type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-1981</td>
<td>Sankyo SD-508</td>
<td>5</td>
<td>138 cm³ (8.4 in³)</td>
<td>100 r/s (6,000 r/min)</td>
<td>135 cm³ (0.3 US pint)</td>
<td>BP Energol LPT 100, Shell Clavus 33, Texaco Capella E 500</td>
</tr>
<tr>
<td>1982-</td>
<td>Sankyo SD-510</td>
<td>5</td>
<td>164 cm³ (10 in³)</td>
<td>100 r/s (6,000 r/min)</td>
<td>135 cm³ (0.3 US pint)</td>
<td>BP Energol LPT 100, Shell Clavus 33, Texaco Capella E 500</td>
</tr>
</tbody>
</table>
### Tightening torques

<table>
<thead>
<tr>
<th>Component</th>
<th>Nm</th>
<th>ft. lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulleys, engine crankshaft (outer-inner) B17-B 23</td>
<td>6-10</td>
<td>4.4-7.4</td>
</tr>
<tr>
<td>Unions, expansion valve pressure equalizing pipe</td>
<td>17</td>
<td>12.5</td>
</tr>
<tr>
<td>expansion valve</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>expansion valve hose</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>evaporator hose</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>condenser</td>
<td>17</td>
<td>12.5</td>
</tr>
<tr>
<td>receiver/dryer</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>compressor York 209/210</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>Sankyo SD508, SD510</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>Compressor, (York 209/210)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cylinder block</td>
<td>20-30</td>
<td>15-22</td>
</tr>
<tr>
<td>bottom cover</td>
<td>20-30</td>
<td>15-22</td>
</tr>
<tr>
<td>rear bearing cover</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>conrod bolts</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>oil plug</td>
<td>5</td>
<td>3.7</td>
</tr>
<tr>
<td>Compressor clutch, center bolt</td>
<td>25-30</td>
<td>18-22</td>
</tr>
<tr>
<td>Compressor, Sankyo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cylinder block</td>
<td>32</td>
<td>24</td>
</tr>
<tr>
<td>sealer retainer</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>oil plug</td>
<td>10</td>
<td>7.4</td>
</tr>
<tr>
<td>valve plate</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Compressor clutch, centre bolt</td>
<td>38</td>
<td>28</td>
</tr>
</tbody>
</table>

### Air conditioning 260

**Refrigerant, type**
- **Quantity 1975-1978**: R 12 (dichlorodifluoromethane)
  - 1.1 kg 3.4 lbs.
- **1979-**
  - 1.5 kg 3.3 lbs.

**Compressor Delco**

- **Type**: Delco 6
- **Swept volume (1975-1977)**
  - (1978-)
  - 150.7 cm³ (9.2 in³)
  - 208 cm³ (12.7 in³)
- **Max. rev**: 91.6 r/s (5 500 r/min)
- **Lubricating oil, volume**: 310 cm³ (0.65 US pint)
- **Lubricating oil, type**: Compressor oil P/N 1160048-3 or Suniso 5, BP Energol LPT 100, Shell Clavus, 33, Texaco Capella E 500
Group 87 Air conditioning

Specifications 260, Special tools

Tightening torques

<table>
<thead>
<tr>
<th>Union, condenser</th>
<th>Nm</th>
<th>ft. lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>evaporator hose</td>
<td>17</td>
<td>12.5</td>
</tr>
<tr>
<td>*DWH: hose from condenser</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>hose (thick) *DWH to evaporator</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>hose (thin) evaporator to DWH</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>hose *DWH to compressor</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>hose receiver/dryer (1979-)</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>expansion valve equalizing pipe</td>
<td>17</td>
<td>12.5</td>
</tr>
<tr>
<td>expansion valve</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>expansion valve hose</td>
<td>30</td>
<td>22</td>
</tr>
<tr>
<td>compressor</td>
<td>35</td>
<td>26</td>
</tr>
</tbody>
</table>

*DWH - Receiver/dryer incorporating equalizing valve housing

Compressor, connection plate

<table>
<thead>
<tr>
<th>Description</th>
<th>Nm</th>
<th>ft. lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>rear cylinder head</td>
<td>14-34</td>
<td>10-25</td>
</tr>
<tr>
<td>compressor clutch, shaft nut</td>
<td>19-35</td>
<td>14-26</td>
</tr>
<tr>
<td>safety valve</td>
<td>14-19</td>
<td>10-14</td>
</tr>
</tbody>
</table>

Special tools

<table>
<thead>
<tr>
<th>Description</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1801-3</td>
<td>Standard handle</td>
</tr>
<tr>
<td>2261-9</td>
<td>Puller: Sankyo compressor</td>
</tr>
<tr>
<td>5085-9</td>
<td>Press tool: Installing pulley</td>
</tr>
<tr>
<td>5132-9</td>
<td>Fixture</td>
</tr>
<tr>
<td>5133-7</td>
<td>Counterhold: compressor clutch</td>
</tr>
<tr>
<td>5134-6</td>
<td>Puller: Delco compressor pulley</td>
</tr>
<tr>
<td>5135-2</td>
<td>Spacer: Pulley</td>
</tr>
<tr>
<td>5137-8</td>
<td>Drift: Pulley</td>
</tr>
<tr>
<td>5138-6</td>
<td>Drift: Installing pulley bearing</td>
</tr>
<tr>
<td>5139-4</td>
<td>Puller: Ceramic sleeve</td>
</tr>
<tr>
<td>5140-2</td>
<td>Puller: Front seal</td>
</tr>
<tr>
<td>5141-0</td>
<td>Adaptor: Compressor</td>
</tr>
<tr>
<td>5142-8</td>
<td>Support: compressor</td>
</tr>
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<td>5143-6</td>
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<td>Leak detector</td>
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<td>5152-7</td>
<td>Press tool: clutch</td>
</tr>
<tr>
<td>5153-5</td>
<td>Nipple: free on container</td>
</tr>
<tr>
<td>9175-4</td>
<td>Puller: compressor seal</td>
</tr>
</tbody>
</table>
General repair instructions

Caution

All leaks must be rectified as soon as possible to prevent moisture or foreign particles from entering into the system. To reduce the risk of moisture ingress during repairwork, keep surfaces dry and clean.

The compressor lubricating oil should be stored in an airtight container otherwise it will absorb moisture from the air.

Do not remove the protective plugs on new parts until just before the part is to be fitted. Leave one of the hose connections unconnected when fitting the component and flush the complete system with refrigerant for 15–20 seconds before connecting it. This removes any impurities and moisture. Do not however flush too strongly otherwise the lubricating oil will be flushed out as well.

In the event of a collision, check very carefully every component, which may have been damaged. Check the soldered joints extra carefully. Deformed or split pipes must not be repaired.

*Receiver/dryer

The receiver/dryer, or the drying agent, should be replaced after major repairs involving leakage or when fitting new components, or if moisture is suspected in the air conditioning system.

*USA: to conform with Warranty policy, the receiver/dryer must be replaced each time the system is opened.

Fitting new air conditioning system

The compressor should contain oil. Other components must be dry.

Important

The air conditioning system must be filled with refrigerant immediately after installation to minimize the risk of corrosion. For instructions on how to fill the system see page 16.

If the air conditioning system has been left empty (in a closed state) for more than 24 hours it must be flushed twice with about 200 grams (0.5 lb) refrigerant before the final filling. The system must also be evacuated for about 10 minutes between the first and second flush. Following the instructions on page 16.

Topping up with lubricating oil

Note! Too much oil causes poor cooling. Too little will damage the compressor.

Top up the compressor after repairing a leak or replacing one or more of the components in the system.
Slow leakages (more than 24 hours)

Normally this does not involve any loss of lubricating oil.

When replacing components observe:

**Compressor**

Drain and measure the oil from the old compressor. Also drain the oil from the new compressor. Then add the same amount of oil (new), as was drained from the old compressor to the new compressor. (At least 1 dl=0.2 US pint)

**Other components**

Drain and measure the amount of oil. Add the required amount of oil to the new component before fitting it.

This does not apply to air conditioning systems with York compressors. In such cases all oil is added directly to the compressor.

Quick leakages (e.g. burst hose)

This usually involves a loss of lubricating oil.

The following volumes apply when fitting a new component:

<table>
<thead>
<tr>
<th>Component</th>
<th>dl</th>
<th>US pint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor</td>
<td>1.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Evaporator</td>
<td>0.7</td>
<td>0.15</td>
</tr>
<tr>
<td>Drier</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Condenser</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Hose</td>
<td>0.5</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Safety precautions

Always wear tight fitting safety glasses when there is danger of refrigerant loss.

Use tap water to remove refrigerant from eyes etc.

**WARNING!**

Gases formed by heating refrigerant are a serious health risk and can cause serious lung damage.

Get in touch with a doctor if the injury does not heal, or sight is affected. Avoid working near naked flames, cigarettes etc. High temperatures cause the refrigerant to form poisonous fumes which are toxic in high concentrations.

**Note!** The gases can cause serious lung damage even in low concentrations. The symptoms may not become evident for several hours or perhaps even a day later.

**WARNING - EXPLOSION RISK!**

Do not subject refrigerant containers to high temperatures.
Fault tracing

How to use the Fault Tracing tables
Find out the most possible cause of the fault by checking the crosses on the left. Check each item (start with items which are easy to check). Note that the faults are not listed in order of probability.

If it is not possible to locate the fault, pressure test the system to check for internal faults, see pages 10 & 11.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No cooling</td>
<td>Electrical faults:</td>
<td>Check fuses (see wiring diagram)</td>
</tr>
<tr>
<td></td>
<td>Blown fuse</td>
<td>Check all cables</td>
</tr>
<tr>
<td>Poor cooling</td>
<td>Poor connection or short (compressor does not operate)</td>
<td>Replace coupling (see section on compressor)</td>
</tr>
<tr>
<td></td>
<td>Compressor coupling burnt</td>
<td>Check cables and motor</td>
</tr>
<tr>
<td></td>
<td>Fan motor (blower), does not operate</td>
<td>Check/replace</td>
</tr>
<tr>
<td></td>
<td>Fan motor (blower), poor operation (loose or cracked motor)</td>
<td>Replace clutch (see section on compressor)</td>
</tr>
<tr>
<td></td>
<td>Broken or poor connection in compressor clutches, moving in and out</td>
<td>Check</td>
</tr>
<tr>
<td></td>
<td>Fan motor sreeches or contacts fan shroud</td>
<td>Tension or replace belt. See section on compressor. Check valve. See page 60</td>
</tr>
<tr>
<td>Intermittent cooling</td>
<td>Mechanical faults</td>
<td>Check and clean</td>
</tr>
<tr>
<td>Noise</td>
<td>Drive belt too loose or cracked</td>
<td>Check and clean</td>
</tr>
<tr>
<td></td>
<td>Heater control valve leaks in &quot;COOL&quot;</td>
<td>Replace bearing. See section on compressor.</td>
</tr>
<tr>
<td></td>
<td>Air ducts blocked</td>
<td>Recondition compressor. See section on compressor. Drain system.</td>
</tr>
<tr>
<td></td>
<td>Air inlet in front of windsheen/shield blocked</td>
<td>Measure amount of oil in compressor. Must be at least 1.5 dl (0.3 US pint) refill compressor.</td>
</tr>
<tr>
<td></td>
<td>Clutch bearing worn or off-centre</td>
<td>replace drying agent in receiver/dryer and refill system. See page 40</td>
</tr>
<tr>
<td></td>
<td>Compressor worn or loose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low oil level in compressor (260) (warm underneath)</td>
<td></td>
</tr>
<tr>
<td>Symptom</td>
<td>Possible cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
<td>--------</td>
</tr>
<tr>
<td>x</td>
<td>System faults</td>
<td>Check/replace thermostat. See page 54.</td>
</tr>
<tr>
<td>x</td>
<td>Evaporator thermostat does not disengage compressor.</td>
<td>Replace. See page 55.</td>
</tr>
<tr>
<td>x</td>
<td>Expansion valve stuck in open position</td>
<td>Replace. See page 56.</td>
</tr>
<tr>
<td>x</td>
<td>Leakage</td>
<td>Drain system. Refill according to pages 15-16.</td>
</tr>
<tr>
<td>x</td>
<td>Blocked hose or component</td>
<td>Drain system. Refill according to pages 15-16.</td>
</tr>
<tr>
<td>x</td>
<td>No refrigerant in system</td>
<td>Replace valves on receiver/dryer. See page 56.</td>
</tr>
<tr>
<td>x</td>
<td>Air flow through condenser blocked</td>
<td>Check evaporator thermostat. See page 54. Test with fan on.</td>
</tr>
<tr>
<td>x</td>
<td>Evaporator blocked on air cooling side</td>
<td>Check/replace. See page 54.</td>
</tr>
<tr>
<td>x</td>
<td>Evaporator thermostat incorrectly adjusted</td>
<td>Check</td>
</tr>
<tr>
<td>x</td>
<td>Insufficient refrigerant (whistling noise from evaporator near expansion valve, bubbles in sight glass)</td>
<td>Replace. See page 54:</td>
</tr>
<tr>
<td>x</td>
<td>Expansion valve capillary tube damaged</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Receiver/dryer blocked</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Moisture in system. Cooling capacity good at start (few minutes) then poor. Or poor operation at high ambient temperatures</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Air in system (bubbles in sight glass)</td>
<td></td>
</tr>
<tr>
<td>260 1975-77: Only</td>
<td>Suction discharge valve seized. Low pressure in front of compressor, low suction. (Moisture in system)</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Ice on evaporator air cooling side (thermostat adjusted too low or fan not operating)</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Loose evaporator thermostat</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Poor contact between expansion valve capillary tube and evaporator outlet or poor insulation</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Too large a difference between off and on for evaporator thermostat</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>System overfull causes crashing noise or vibrations from high pressure lines, clicking noise from compressor, excessive compressor pressure and suction pressure, hissing noise from expansion valve, bubbles or vapour in sight glass. If compressor valves damaged by overfilling, compressor pressure will be too low</td>
<td></td>
</tr>
<tr>
<td>x</td>
<td>Moisture in system, can cause noise from expansion valve.</td>
<td>Drain system, replace/receiver/dryer or drying agent, fill with refrigerant. See page 15, 16, 58.</td>
</tr>
</tbody>
</table>
### Fault tracing Pressure testing

A separate pressure gauge kit or the pressure gauges on the filling station (5143) should be used for the following tests.

See next page for pressures.

<table>
<thead>
<tr>
<th>Low pressure side</th>
<th>High pressure side</th>
<th>Cause</th>
<th>Remedy</th>
<th>See page</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Normal</td>
<td>1. Expansion valve blocked or seized in closed position</td>
<td>*1. Remove blockage. Replace valve if necessary.</td>
<td>55</td>
<td>G 1-4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Expansion valve capillary tube damage - liquid loss</td>
<td>*2. Replace expansion valve.</td>
<td>55</td>
<td>G 1-4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Moisture in system, causes ice in expansion valve.</td>
<td>3. Drain system. Replace receiver/dryer. Evacuate system and fill.</td>
<td>15, 16</td>
<td>A 1-4 B 1-26</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>1. Not enough refrigerant</td>
<td>*1. Drain system, Evacuate and fill system</td>
<td>15, 16</td>
<td>B1-26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Only 260 1975-1977 No bubbles in sight glass; pressure gauge readings very low. Possibly no refrigerant in sight glass. This can cause large leakage. Expansion valve can be blocked or seized in open position.</td>
<td>2. Replace expansion valve. Fill system</td>
<td>56</td>
<td>H 1-6</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
<td>1. Blockage in receiver/dryer connecting pipes.</td>
<td>1. Replace, Remove blockage.</td>
<td>58</td>
<td>K 1-6</td>
</tr>
<tr>
<td>High</td>
<td>Normal</td>
<td>1. Expansion valve seized in open position.</td>
<td>*1. Replace.</td>
<td>55</td>
<td>G 1-4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Expansion valve coil against evaporator outlet, loose or poorly insulated.</td>
<td>2. Secure coil and insulate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Not enough refrigerant Possibly bubbles in sight glass.</td>
<td>3. Drain system. Evacuate and fill.</td>
<td>15, 16</td>
<td>A 1-4 B 1-26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. No cold air reaches condenser</td>
<td>2. Remove obstruction. Check cooling fan and belts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Engine radiator overheated</td>
<td>4. Improve cooling</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Air in system. Poor evacuation and filling of refrigerant.</td>
<td>5. Drain system. Replace receiver/dryer. Evacuate and fill according to instructions.</td>
<td>15, 16</td>
<td>A 1-4 B 1-26</td>
</tr>
<tr>
<td>Normal</td>
<td>Normal</td>
<td>1. Moisture in system, occasional formation of ice. Low pressure side pressure varies. Cooling ability OK in cool conditions but poor or non existent in hot weather.</td>
<td>1. Drain system. Replace receiver/dryer. Evacuate and fill according to instructions.</td>
<td>15, 16</td>
<td>A 1-4 B 1-26</td>
</tr>
</tbody>
</table>

* USA vehicles:
To conform with Warranty policy, the receiver/dryer must be replaced each time the system is opened.
Test conditions (240, 260)

Bonnet/hood .................................................. Open Open
Front doors .................................................. Open Close
Engine speed .................................................. 33 r/s (2000 r/min) 33 r/s (2000 r/min)

CONTROL SETTINGS

Fan speed .................................................. 3 (max) 3
Temperature .................................................. Cool Cool
FLOOR ................................................................
DEF ..................................................................
REC ..................................................................
Panel vents ..................................................
Air conditioning switch ..................................

240 Petrol/Gasoline 1975-1978

<table>
<thead>
<tr>
<th>Ambient temp in front of car °C (°F)</th>
<th>Pressure at compressor inlet bar (psi)</th>
<th>Pressure at compressor outlet bar (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (68)</td>
<td>1.7-2.0 (24-28)</td>
<td>10-13 (139-181)</td>
</tr>
<tr>
<td>30 (86)</td>
<td>2.2-2.7 (31-38)</td>
<td>13-16 (181-223)</td>
</tr>
<tr>
<td>40 (104)</td>
<td>3.0-3.4 (42-47)</td>
<td>18-22 (250-307)</td>
</tr>
</tbody>
</table>

Note! Pressures refer to sea level, and can vary depending on altitude, equipment, test conditions etc.

240 Petrol/Gasoline 1979–

<table>
<thead>
<tr>
<th>Ambient temp in front of car °C (°F)</th>
<th>Pressure at compressor inlet bar (psi)</th>
<th>Pressure at compressor outlet bar (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (68)</td>
<td>1.2-2.0 (17-36)</td>
<td>6.5-9.0 (91-125)</td>
</tr>
<tr>
<td>30 (86)</td>
<td>1.4-2.6 (19-36)</td>
<td>8.0-12.0 (111-167)</td>
</tr>
<tr>
<td>40 (104)</td>
<td>1.3 (18)</td>
<td>14.8 (208)</td>
</tr>
</tbody>
</table>

240 Diesel 1980–

<table>
<thead>
<tr>
<th>Ambient temp in front of car °C (°F)</th>
<th>Pressure at compressor inlet bar (psi)</th>
<th>Pressure at compressor outlet bar (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (68)</td>
<td>1.0-2.7 (14-37)</td>
<td>6.7-10.9 (93-152)</td>
</tr>
<tr>
<td>30 (86)</td>
<td>1.0-2.7 (14-37)</td>
<td>9.4-14.1 (131-196)</td>
</tr>
<tr>
<td>40 (104)</td>
<td>1.4 (19)</td>
<td>18.0 (251)</td>
</tr>
</tbody>
</table>

260 Petrol/Gasoline 1975-1977

<table>
<thead>
<tr>
<th>Ambient temp in front of car °C (°F)</th>
<th>Evaporator pressure at relief valve (low pressure) bar (psi)</th>
<th>Pressure at compressor outlet bar (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (68)</td>
<td>1.9-2.0 (28-28)</td>
<td>9-13 (125-181)</td>
</tr>
<tr>
<td>30 (86)</td>
<td>2.2-2.7 (31-38)</td>
<td>15-18 (209-251)</td>
</tr>
<tr>
<td>40 (104)</td>
<td>2.8-3.5 (39-49)</td>
<td>19-23 (265-321)</td>
</tr>
</tbody>
</table>

260 1978–Petrol/Gasoline

<table>
<thead>
<tr>
<th>Ambient temp in front of car °C(°F)</th>
<th>Pressure at compressor inlet bar (psi)</th>
<th>Pressure at compressor outlet bar (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (68)</td>
<td>1.0-2.4 (14-33)</td>
<td>6.5-9.3 (90-130)</td>
</tr>
<tr>
<td>30 (86)</td>
<td>1.0-2.3 (14-32)</td>
<td>8.7-13.5 (121-188)</td>
</tr>
<tr>
<td>40 (104)</td>
<td>1.2-2.2 (17-31)</td>
<td>10.5-16.7 (146-233)</td>
</tr>
</tbody>
</table>
Modifications

1976 model year
New evaporator housing cover
Butyl tape used to seal evaporator outlet, cover and evaporator housing.
NOTE! Expansion valve must not be insulated.

1978 model year
Receiver/dryer relocated
Receiver/dryer moved to front panel next to engine radiator. Same receiver/dryer used on 240 and 260 series.

240 expansion valve and thermostat fitted on 260.
Expansion and discharge pressure valves on 260 were discontinued in 1978. The valves, which were incorporated in the receiver/dryer, have been replaced by the 240 expansion valve (A).
Same thermostat (B) is used for 240 and 260 series. Compressor does not operate constantly but only when temperature of evaporator exceeds a predetermined level.
1979 model year

Adjustable thermostat

Previously the thermostat could be switched on by means of a rocker switch, and the temperature adjusted by a lever. 1979 models now have an adjustable knob.

The capillary tube now leads from the thermostat to the evaporator outlet. The function of the thermostat is the same as before.

Note! The orange section beyond MAX should only be used when quick cooling is required, and in extreme conditions such as driving in desert regions, otherwise water which has condensed on the evaporator will freeze and obstruct the passage of air.

Larger capacity compressor (240 petrol/gasoline only).
York A 210. Capacity 164 cm³ (10 in³) (previously 147 cm³ (9.0 in³)).

Larger condenser

Refrigerant volume increased accordingly:

- 240: 1.3 kg (2.9 lbs)
- 260: 1.5 kg (3.3 lbs)

New type of AC compensation for engine

Operates in principle by supplying extra fuel-air (carbureted engines or air-injected engines) to engine when compressor is engaged.

The system comprises a solenoid valve, a vacuum valve and vacuum hoses.

See AC compensation, pages 61-67
Group 87 Air conditioning

Modifications

1980 model year

260 compressor

Millimetre (mm) threads used for mounting bolts, previously inches.

Diesel

Sankyo compressor used, mm threads.

Note! Diesel engines do not have an AC compensation system (idle speed compensation).

Delayed engagement of compressor

Delay relay fitted to 1980-vehicles, engages compressor approx. 10 seconds after engine start and relay receives alternator voltage.

1981 model year

Cut-out switch on receiver/dryer

(USA only)

Senses the receiver/dryer pressure. If this is too low, the switch cuts off the current to the compressor, thus preventing damage.
A. Draining refrigerant

Special tool: 5143

Read the safety precautions on page 7.

The AC system must be drained if the refrigerant circuit is disconnected or if one or more of the components is replaced. The pressure gauge set on filling station (5143) should be used; make sure that the pressure gauges are closed before connecting the hoses.

Connections

Nipples should be finger tight only.

Disconnect the battery negative lead.

**240 Petrol/gasoline and diesel**

Remove the cover nuts and connect the blue hose to the compressor "suction" side and the red hose to the outlet side marked "disch".

**260 1975-1977**

Remove the cover nuts and connect the red hose (high pressure) to the compressor (small pipe) and the blue hose (low pressure) to the equalising valve on the suspension turret.

**260 1978-**

Remove the cover nuts and connect the red hose (high pressure) to the compressor (small pipe) and the blue hose (low pressure) to the compressor (large pipe).
The short centre hose should be placed in an exhaust gas extractor hose as a safety precaution.

Open the gauge valves and the valves on the components. Open the valve on the centre hose very carefully so that the refrigerant slowly flows out.

**Caution! If the refrigerant flows out too quickly lubricating oil will be drawn out of the system.**

Close the valves when the gauges indicate zero.

### B. Filling refrigerant

*Special tools: 5143, 5144, 5153, 9942*

Read the safety precautions on page 7.

![Special tools images]

**Equipment required**

- Filling station 5143
- Leak detector 5144
- Nipple 5153
- Thermometer 9942
- Rubber gloves, safety glasses.

**Evacuating system, filling measuring cylinder**

Disconnect the battery negative lead.

Check that:

- hoses and pressure gauges are correctly connected
- all valves are closed
- vent screw on vacuum pump is closed.

Make sure that spacers are fitted to the ends of the hoses. The spacers, which open the valves, should be placed in the nipples at the end of each hose.
Connect hoses to component
See page 15.

Connect centre short hose to vacuum pump

Make sure that measuring cylinder is empty
This can be checked at the liquid indicator in the centre of the cylinder. If empty, it must be evacuated at the same time as the system.

Method:
Open the outlet valve on the measuring cylinder, see fig.

Caution! Do not open the valve until the cylinder is drained.

Fully open gauge valves and valves at components

Start vacuum pump

Open the vacuum pump valve slowly (the centre valve below the pressure gauges).
Turn vent screw on vacuum pump one turn clockwise
Leave the pump on 1/2–1 minute and then close the vent screw.
This is performed to remove moisture from the system and from the oil in the pump. A higher depression can be obtained in this way.

Evacuate system until low pressure gauge (on left) indicates nearly – 1 bar (~14 psi), then run vacuum pump for a further 30 minutes.

Note! If the temperature is below 30°C (86°F) the vacuum pump should be left running for a further 20 minutes, all together 50 minutes.

The above values are valid at (or close to) sea level. Pressures should be reduced by 0.034 bar (0.47 psi) for every 300 metres 984 ft above sea level.

E.g. 1500 metres (4920 ft) above sea level
=5×0.034⇨0.17 bar (2.37 psi) reduced pressure ⇨ approx. −0.82 bar.

Close the vacuum pump valve and also the outlet valve on the measuring cylinder (if evacuated).
Switch off the vacuum pump.
If the specified depression cannot be obtained or if it drops on closing the valves, there is a leak in the system.
Find and correct the leak and evacuate the system once more.

The following procedures only apply if the measuring cylinder has been evacuated or if there is less than 1600, 1800 or 2000 grammes refrigerant in it (depends on year and vehicle type).
In other cases proceed to leak testing, B16
1600 g = 3.6 lbs, 1800 g = 4 lbs, 2000 g = 4.5 lbs
Open

- valve on refrigerant container
- valve for input refrigerant on measuring cylinder.

Open the upper valve above the measuring cylinder and transfer a few hundred grammes of refrigerant. Close the valve.

Record pressure and set scale on measuring cylinder.

Turn the scale (marked R 12) to the same pressure as indicated on the pressure gauge.

E.g. pressure gauge shows 4.9. Set the measuring cylinder with the 4.9 scale above the refrigerant indicator.

Open upper valve on measuring cylinder and transfer 1600 (3.6 lbs), 1800 (4 lbs) or 2000 (4.5 lbs) grammes refrigerant (depending on model year and vehicle type).

1100 (2.5 lbs), 1300 (2.9 lbs) or 1500 (3.4 lbs) grammes in system plus 200 grammes for leak test and moisture removal. The rest is necessary to prevent the measuring cylinders from draining completely which would necessitate evacuating the cylinder before the next filling.

Close valve.

Close

- valve for input refrigerant
- valve on refrigerant container

Leak test

Open the outlet valve on the measuring cylinder and transfer 200 grammes (0.4 lb) of refrigerant to the system. Close the valve.
Check all connections with leak detector 5144
Set the detector to the most sensitive field (buzzes nearly all the time). Rectify any leaks and perform a new leak test if necessary.

Filling
Before adding refrigerant to the system, the refrigerant used for the leak test must be drained and the system evacuated.
Method:
Disconnect the hose from the vacuum pump and place the end of the hose in an exhaust gas extractor (safety precaution).
Open the valve on the centre hose very carefully so that the refrigerant slowly flows out.
Note! If the refrigerant flows out too quickly lubricating oil will be drawn out of the compressor.
Close the valve when the gauges indicate approximately zero.

Reconnect centre hose to vacuum pump.
Switch on the vacuum pump and open the pump valve slowly.
Leave the pump running for 10 minutes after the low pressure gauge indicates nearly -1 bar (-14 psi).

Close vacuum pump valve
Switch off vacuum pump

Fill refrigerant
Open the outlet valve on the measuring cylinder and transfer 1 100, 1 300 or 1 500 grammes of refrigerant to the system. (Amount depends on model year and vehicle type, see pages 2-4).
Switch on the heater unit for the cylinder if it is difficult to see the last 300-400 grammes.
Note! If the measuring cylinder is drained completely it must be evacuated before the next filling.
Close both the gauge valves and make sure that the other valves are closed. Reconnect the battery earth lead.
Test the system, see next page.
# Performance test

## Test conditions (240, 260)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonnet/hood</td>
<td>Open</td>
<td>Closed</td>
</tr>
<tr>
<td>Front doors</td>
<td>Open</td>
<td>Closed</td>
</tr>
<tr>
<td>Engine speed</td>
<td>33 r/s (2,000 r/min)</td>
<td>33 r/s (2,000 r/min)</td>
</tr>
</tbody>
</table>

**CONTROL SETTINGS**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan speed</td>
<td>3 (max)</td>
<td>3</td>
</tr>
<tr>
<td>Temperature</td>
<td>Cool</td>
<td>Cool</td>
</tr>
<tr>
<td>FLOOR</td>
<td>Closed (push button out)</td>
<td>Closed (push button out)</td>
</tr>
<tr>
<td>DEF</td>
<td>Closed (push button out)</td>
<td>Closed (push button out)</td>
</tr>
<tr>
<td>REC</td>
<td>Open (push button in)</td>
<td>Open</td>
</tr>
<tr>
<td>Panel vents</td>
<td>On</td>
<td>On, red section</td>
</tr>
<tr>
<td>Air conditioning switch</td>
<td>On</td>
<td></td>
</tr>
</tbody>
</table>

## Recorded operating conditions 240

Applies to vehicles equipped with a viscous coupling fan.

**Note**: Pressures refer to sea level, and can vary depending on altitude, equipment, test conditions etc.

### 240 Petrol/Gasoline 1975–1978

<table>
<thead>
<tr>
<th></th>
<th>20 (68)</th>
<th>30 (86)</th>
<th>40 (104)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temp in front of car °C (°F)</td>
<td>8–10 (46–50)</td>
<td>13–17 (55–63)</td>
<td>20–26 (68–79)</td>
</tr>
<tr>
<td>Air temp at panel vents °C (°F)</td>
<td>0.17–0.20</td>
<td>0.22–0.27</td>
<td>0.30–0.34</td>
</tr>
<tr>
<td>Pressure at compressor inlet (large connection) MPa psi</td>
<td>24–28</td>
<td>31–38</td>
<td>43–48</td>
</tr>
<tr>
<td>Pressure at compressor outlet (small connection) MPa psi</td>
<td>1.0–1.3</td>
<td>1.3–1.6</td>
<td>1.8–2.2</td>
</tr>
</tbody>
</table>

### 240 Petrol/Gasoline 1979–

<table>
<thead>
<tr>
<th></th>
<th>20 (68)</th>
<th>30 (86)</th>
<th>40 (104)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temp in front of car °C (°F)</td>
<td>9–12 (48–54)</td>
<td>9–12 (48–54)</td>
<td>9–12 (48–54)</td>
</tr>
<tr>
<td>Air temp at panel vents °C (°F)</td>
<td>0.12–0.26</td>
<td>0.14–0.26</td>
<td>0.13</td>
</tr>
<tr>
<td>Pressure at compressor inlet (large connection) MPa psi</td>
<td>17–37</td>
<td>20–37</td>
<td>18</td>
</tr>
<tr>
<td>Pressure at compressor outlet (small connection) MPa psi</td>
<td>0.65–0.90</td>
<td>0.80–1.20</td>
<td>1.48</td>
</tr>
<tr>
<td></td>
<td>92–128</td>
<td>114–171</td>
<td>210</td>
</tr>
</tbody>
</table>
**Group 87 Air conditioning**

**Performance test, Diesel, 260**

### 240 Diesel 1980–

<table>
<thead>
<tr>
<th>Parameter</th>
<th>20 (68)</th>
<th>30 (86)</th>
<th>40 (104)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temp in front of car °C (°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air temp at panel vents °C (°F)</td>
<td>8–12 (46–54)</td>
<td>8–12 (46–54)</td>
<td>8–12 (46–54)</td>
</tr>
<tr>
<td>Pressure at compressor inlet (large connection) MPa</td>
<td>0.1–0.27</td>
<td>0.1–0.27</td>
<td>0.14</td>
</tr>
<tr>
<td>psi</td>
<td>14–38</td>
<td>14–38</td>
<td>20</td>
</tr>
<tr>
<td>Pressure at compressor outlet (small connection) MPa</td>
<td>0.67–1.09</td>
<td>0.94–1.41</td>
<td>1.8</td>
</tr>
<tr>
<td>psi</td>
<td>95–155</td>
<td>134–200</td>
<td>256</td>
</tr>
</tbody>
</table>

### Recorded operating conditions 260

Applies to vehicles equipped with a viscous coupling fan.

**Note:** Pressures refer to sea level, and can vary depending on altitude, equipment, test conditions etc.

### 260 Petrol/Gasoline 1975–1978

<table>
<thead>
<tr>
<th>Parameter</th>
<th>20 (68)</th>
<th>30 (86)</th>
<th>40 (104)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temp in front of car °C (°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air temp at panel vents °C (°F)</td>
<td>8–12 (46–54)</td>
<td>14–20 (57–68)</td>
<td>20–28 (68–82)</td>
</tr>
<tr>
<td>Evaporator pressure at relief valve MPa</td>
<td>0.19–0.20</td>
<td>0.22–0.27</td>
<td>0.28–0.35</td>
</tr>
<tr>
<td>psi</td>
<td>27–28</td>
<td>31–38</td>
<td>40–50</td>
</tr>
<tr>
<td>High pressure at compressor MPa</td>
<td>0.9–1.3</td>
<td>1.5–1.8</td>
<td>1.9–2.3</td>
</tr>
<tr>
<td>psi</td>
<td>130–185</td>
<td>210–256</td>
<td>270–320</td>
</tr>
</tbody>
</table>

### 260 1979– Petrol/Gasoline

<table>
<thead>
<tr>
<th>Parameter</th>
<th>20 (68)</th>
<th>30 (86)</th>
<th>40 (104)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temp in front of car °C (°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air temp at panel vents °C (°F)</td>
<td>9–12 (48–54)</td>
<td>9–12 (48–54)</td>
<td>9–12 (48–54)</td>
</tr>
<tr>
<td>Pressure at compressor inlet (large connection) MPa</td>
<td>0.10–0.24</td>
<td>0.10–0.23</td>
<td>0.12–0.22</td>
</tr>
<tr>
<td>psi</td>
<td>14–34</td>
<td>14–33</td>
<td>17–32</td>
</tr>
<tr>
<td>Pressure at compressor outlet (small connection) MPa</td>
<td>0.65–0.93</td>
<td>0.87–1.35</td>
<td>1.05–1.67</td>
</tr>
<tr>
<td>psi</td>
<td>92–132</td>
<td>124–192</td>
<td>149–237</td>
</tr>
</tbody>
</table>
C. York compressor – B 20 engine
Removing – fitting – belt adjustment

Note! Check oil level before fitting a new or reconditioned compressor, see page 26.

Removing
Drain refrigerant from system, see page 15.
Disconnect from compressor:
- electric leads
- refrigerant hoses (plug ends immediately).
Detach the compressor from the mounting bracket.

Fitting
Position the compressor, do not tighten the retaining bolts yet.
Fit the stay between the centre and lower brackets.
Tighten the bolts in the order indicated adjacent.
Tightening torques:
Compressor bolts max. 30 Nm (22 ft. lbs)
Remaining bolts 33-41 Nm (24-30 ft. lbs.)

Fit belt
Adjust the belt tension by means of the air pump/roller. It should not be possible to depress the belt by more than 6–8 mm (measured between air pump – compressor). Connect the refrigerant hoses. Use new O-rings, smeared with compressor oil.
Tightening torque 30 Nm (22 ft. lbs).
Replace receiver/dryer or drying agent. See page 58.
Add refrigerant to the system, see page 16.
York compressor – B 17–B 23 engines

Removing – fitting – cleaning

Note! Check oil level before fitting a new or reconditioned compressor, see page 26.

Removing

Drain refrigerant from system, see page 15.

Cars with power steering

Detach the power pump and hang it from the wheel housing.

Cars with twin drive belts

Lift off the drive belts by removing the crankshaft pulley.

All cars:

Disconnect from compressor:
- wires
- refrigerant hoses (plugs ends immediately).

Remove the compressor and mounting bracket.

Fitting

Cars without power steering

Fit the compressor and drive belt(s).

Reconnect the refrigerant hoses. Use new O-rings, smeared with compressor oil.

Tightening torque 30 Nm (22 ft. lbs)

Set belt tension by moving the compressor. It should not be possible to depress the belt by more than 5–10 mm (0.2–0.4 in).

Replace the receiver/dryer or drying agent, see page 59.

Add refrigerant to the system, see page 16.
Cars with power steering and twin drive belts

Fit the compressor.

Fit:
1 - studs opposite each other
2 - inner pulley
3 - five washers
4 - compressor drive belt and outer pulley
5 - outer washer
6 - screws and nuts.

Note! The crankshaft should be rotated whilst tightening the pulley bolts, and also when fitting the belt. (2–3 turns).

Check belt tension: It should not be possible to depress the belt by more than 3–10 mm (0.12–0.4 in), (80–100 N=18–22 lbs).

Incorrect belt tension
Place washer(s) between the pulley halves to slacken the belts. Remove washer(s) to tighten the belts.
One washer alters the belt tension by about 5 mm (0.2 in).
Reconnect the refrigerant hoses. Use new O-rings, smeared with compressor oil.
Tightening torque 30 Nm (22 ft. lbs.)
Replace the receiver/dryer or drying agent. See page 58.
Add refrigerant to the system, see page 16.

Cars with power steering and one drive belt

Fit the compressor.

Fit drive belt
Fit the belt over the crankshaft, compressor and power pump.
Tighten the belt by moving the power pump.
Check the belt tension as follows:
Attach tool 5197 to the belt between the crankshaft pulley and power pump.
The belt tension should be 17–18 units.
Reconnect the refrigerant hoses. Use new O-rings, smeared with compressor oil.
Tightening torque 30 Nm (22 ft. lbs.)
Replace the receiver/dryer or drying agent. See page 58.
Add refrigerant to the system, see page 16.
Oil level check – York compressor

A dipstick can be made to measure the level of oil in the compressor. The dipstick can be shaped from a 3 mm diameter brass wire, and graduated with 10×3 mm marks as shown above. Each division corresponds to approximately 0.03 dm³/(0.06 US pint).

Normally it is not necessary to check the oil level on installed compressors, but new or reconditioned units must be checked before installation and refrigerant is added. New compressors are charged with oil during manufacture.

**WARNING**

If the oil level in an installed compressor is checked, it is important that the refrigerant is drained from the system before the oil plug is unscrewed. If this precaution is not followed the refrigerant will spray out of hole, taking the oil in the compressor along with it.

**Checking**

The graduated part of the dipstick should be held at right angles to the bottom of the compressor. The correct oil level for new compressors is 28–29 mm (0.3 dm³ = 0.06 US pint). On installed compressors which have been run, so some of the oil will have been circulated in the system and consequently the level of oil in the compressor will be considerably lower (20–25 mm = 0.8–1.0 in) than specified above. If the level is less than 20 mm (0.8 in) top up to 20 mm.

**Adding oil**

Only compressor oils may be used to top-up the system, see fig.

Before unscrewing the oil plug check that the O-ring is intact and that the sealing surfaces on the plug and crankcase are undamaged. The oil plug should be tightened to approximately 5 Nm (4 ft. lbs.).
York compressor, clutch replacement (on car)
(Not necessary to drain refrigerant)

Removing
Lock clutch and remove pulley centre bolt
Turn on the ignition to engage the electromagnetic clutch and counterhold the pulley with the drive belt. Remove the bolt and free the pulley from the shaft by screwing in a 5/8" UNC (A) bolt in the centre.

Remove magnet
Disconnect lead (2).
Remove:
- four bolts (1).
- magnet (3).

Fitting
Fit the magnet with the lead turned upward, and connect the cable. Make sure that the key is located correctly in the groove. Attach the pulley.

Fit centre bolt
Turn on the ignition and counterhold the pulley with the drive belt when tightening the bolt.
Tightening torque 25-30 Nm (18-30 ft. lbs.)
Turn the pulley and make sure that it does not contact the magnet.

Fit belt
See page 24 for B20 engines, and page 25 for B21.
Disassembling York compressor
(Off car)

Note! The valve plate is only available as a complete unit including valves, and can be replaced without removing the compressor from the vehicle. See operations C24-25, C38. It is however necessary to drain the refrigerant from the system, see page 15.

C21
Remove clutch and magnet
Lock the clutch by connecting a battery. Counterhold the pulley as illustrated and remove the centre bolt.
Screw in a 5/8” UNC bolt and remove the pulley.
Lift out the magnet.

C22
Remove key and end washer

C23
Remove seal
Carefully lift out the seal with the aid of a steel wire. Make sure that there are no burns or scores on the shaft, and that the inner sealing surfaces are clean.

C24
Remove service valves and bolts retaining compressor top

Remove compressor top
Group 87 Air conditioning

York compressor, disassembly

Remove:
- guide pin
- valve plate (if necessary tap the sides lightly with a plastic mallet).
Carefully scrape off pieces of gasket (if any) from the crankcase and cover.

Valve plate replacement only, see page 31 operation C38.

Unscrew and remove bottom cover and clean crankcase and cover mating surfaces.

Identify con rods and caps

Remove con rod bolts, lift off cap and press out con rod and piston through cylinder.

Remove bearing cover plate
Clean and dry the crankcase and shaft to remove all traces of oil.

Remove crankshaft bearing
Heat the crankcase to 150°C (300°F) in an oven.
(This makes it easier to remove the crankshaft and bearing.)
If the crankshaft is undamaged, and only the bearing is to be replaced, clamp the centre section of the shaft in a vice and lever off the bearing with two screwdrivers.
Assembling York compressor

**Fit crankshaft rear bearing**
Fit the bearing by exerting pressure on the inner race.

**Fit crankshaft front bearing**
Make sure that the bearing seat is free from burns and dirt. Heat the crankcase to 150°C (300°F) in an oven. Press in the bearing.

**Fit crankshaft**
After the crankcase has cooled place it in a press as illustrated resting the front end on a support. Insert the crankshaft and carefully align it in relation to the bearing inner race. Press in the shaft until the bearing inner race contacts the crankshaft flange.

**Important** If the crankshaft does not contact the bearing inner race, damage will result.
C34

Fit new rubber seal to rear cover plate

C35

Lightly press on cover plate and tighten all screws
Tighten to a torque of 20 Nm (15 ft. lbs.).

C36

Fit pistons and con rods

Note! The lock pin (A) in the gudgeon pin must point towards the centre of the compressor.

Assemble con rods and caps and tighten to a torque of 20 Nm (15 ft. lbs.).
Check for smooth operation by turning the shaft a few turns.

C37

Fit bottom cover with new gasket and tighten crosswise to 20–30 Nm (15–30 ft. lbs.)

C38

Fit valve cover and top cover

Smear compressor oil on to the crankcase, valve cover and top cover sealing surfaces.
Fit the crankcase guide pins.
Place a new gasket on the crankcase and make sure when fitting the valve plate that the nuts point upwards.
Place a new gasket between the valve cover and top cover.
Smear the sealing surfaces of the service valves with compressor oil and place new seals in the top cover.
Secure the valves with the four long bolts and tighten the remaining bolts in the order indicated adjacent to a torque of 20–30 Nm (15–30 ft. lbs.).
Check new seal
Compress seal a few times.
The lugs (1) must be able to move in and out of the recesses (2).

Fit seal
Immerse the seal in compressor oil and press it on to the shaft.
Place the piston ring in its holder with the finely ground surface (A) facing upward.

Press down seal with end washer

Fit end washer
Fit a new seal under the washer. Oil the sealing surfaces with compressor oil and centre it before tightening.

Fit cover washer
The washer can be pressed on by hand. It slides on to the shaft and takes up the correct position when the clutch is fitted.

Fit clutch
Tighten the centre bolt to 25-30 Nm (18-22 ft. lbs.).

Add 300 cm³ (0.6 US pint) compressor oil
See page 26 for oil level check.
D. Sankyo compressor SD 508, 510
Removing – fitting – belt adjustment

Removing
Drain refrigerant, see page 15.
Disconnect from compressor:
- leads
- refrigerant hoses (plug ends immediately).

Slacken the mounting bolts, arrowed.

Lift off the drive belt, remove the mounting bolts and lift away the compressor.

Fitting – belt adjustment
If the compressor has been replaced or repaired the oil level must be checked.
Method:
Drain the old compressor oil into a measuring cylinder and note the amount.
Add the same amount of new oil to the compressor before installing it.
The amount of oil added must be more than 40 cm³ (0.08 US pint).
Smear the plug O-ring with compressor oil and tighten the plug to a torque of 10±2 Nm (7.4±1.5 ft. lbs.).
If for instance a hose has burst and refrigerant has been lost very quickly, add 135 cm³ oil to the compressor.

Attach the compressor loosely. Adjust the belt tension and tighten the mounting bolts. It should not be possible to depress the belt by more than 5–10 mm (0.2–0.4 in).
Reconnect the lead.
Reconnect the refrigerant hoses. Use new O-rings, smeared with compressor oil.
Tightening torque 30 Nm (22 ft. lbs.)
Replace receiver/dryer or drying agent, see page 58.
Fill refrigerant, see page 16.
Clutch replacement, Sankyo compressor SD 508, 510

Includes replacement of pulley, carbon seal, bearings (2x), magnet

Special tools: 1801, 2261, 5137, 5142, 9175

Disassembly

Mount compressor in vice
Use protective jaws to avoid damaging the compressor.

Remove nut (19 mm) from clutch
Use a hook wrench to counterhold the clutch.

Pull off clutch
Attach puller 2261 with 3 x 1/4" x 1" bolts and pull off the clutch.

Remove retainer and felt seal
Use a screwdriver.
Group 87 Air conditioning
Sankyo compressor, parts replacement

**D10**
Remove:
- key from shaft
- shims
- circlip and washer
- O-ring.

**D11**
Remove carbon seal from shaft
Use puller 9175.

**D12**
Remove inner circlip

**D13**
Remove pulley
Use a universal puller.
Remove the circlip securing the bearing.
Press out bearings
Support the pulley on block 5142. Press out the two bearings with drift 1801 and 5137. NOTE There are two bearings.

Remove magnet
Unclamp the lead.
Remove the screws and lift out the magnet.

Assembly
Special tools: 5085, 5142 and 9175

Fit magnet
Secure the lead to the clamp.
Tighten the screws.
**Press in bearings**
Use press tool 5085 and block 5142. Fit the bearings one at a time.

**Fit circlip**

**Attach pulley to compressor**
Use block 5142. Carefully tap the pulley into position with a plastic mallet.

**Fit inner circlip**

**Fit carbon seal**
First attach the seal to tool 9175.

**Smear O-ring with compressor oil before placing in compressor**
(Raised section of O-ring upward.)
**Group 87 Air conditioning**

**Sankyo compressor, parts replacement**

**Fit:**
- circlip
- shims
- felt seal and retainer
- key in keyway.

**Fit clutch**

Align the clutch to the keyway.

Carefully tap on the clutch with a plastic mallet until one or two of the threads are visible. Use block 5142.

**Fit nut**

Tightening torque 38 Nm (28 ft. lbs.)

**Fit compressor, see page 33.**
Valve plate on Sankyo compressor, replacement
(Off car)

Removing

Mount compressor in vice (valve cover up.)
Mark the position of the cover.

Remove screws and cover
Carefully lever off the cover with a screwdriver.

Free valve plate
Carefully lever off the valve plate without scoring the surface.
Clean the compressor body and valve plate.

Fitting

Place new gasket and valve plate on body
Make sure that the guide pin fits in to the correct hole, otherwise the retaining screws will not fit properly.

Place new gasket between valve plate and cover
Position the cover according to the identification marks. Tighten the bolts crosswise.
Tightening torque 15.2 Nm (11±1.5 ft. lbs.).

NOTE If oil has been spilt during the repair, the oil plug should be removed and the compressor oil drained into a measuring cylinder. Correct amount = 135 cm³ (0.3 US pint).
Return the oil and tighten the oil plug to 10 Nm (7.4 ft. lbs.).
E. Delco compressor

Removing – fitting – belt adjustment

Special tool 5141

It is not necessary to discharge refrigerant from the system if the compressor is only moved to one side to obtain access to the engine valves e.t.c. In such a case follow E2 and hang the compressor from the bonnet hinge.

Removing

Drain refrigerant from the system, see page 15.

Disconnect the connection plate for the compressor hoses.

Fit:

- protective plugs on plate
- adaptor 5141 to compressor.

Remove compressor

Disconnect the lead.

Move aside the upper radiator hose and tie it to a suitable point.

Remove:

- mounting bolts (4 x)
- drive belt.

Lift away the compressor.

Fitting – belt adjustment

Position the compressor and drive belt.

Adjust the belt tension and tighten the compressor mounting bolts. It should not be possible to depress the belt by more than 5–10 mm (0.2–0.4 in).

Reconnect the lead.

Remove adaptor 5141 and fit the connection plate.

Tightening torque 14–34 Nm (10–25 ft. lbs.).

Replace receiver/dryer or drying agent, see page 58.

Fill refrigerant, see page 16.
Clutch replacement, Delco compressor

Includes replacement of pulley, bearing, magnet

**Obtain access to clutch**

Disconnect the negative lead from the battery.

Detach the compressor from the mounting brackets and lift off the drive belt.

Bend the upper radiator hose under the compressor and place a piece of wood above the hose to support the compressor.

**For removal of components, see pages 42–43, E7–13.**

**For fitting of solenoid, see page 48, E36–39.**

**For fitting the remaining components, see pages 49–50, E40–45.**
Disassembling Delco compressor

Special tools: 1801, 5132, 5133, 5134, 5135, 5137, 5139, 5140, 5142
(Off car)

Mount fixture 5132 in vice
Support the compressor in the fixture.

Remove clutch nut
Counterhold the clutch with 5133 and remove the nut with a 9/16” socket.

Remove:
- circlip
- washer.

Withdraw clutch
Use puller 5134.

Remove:
- key
- circlip
- sleeve (lever out with screwdriver)
- felt seal.
Pull off pulley
Use a suitable puller.
Use tool 5135 to support the centre spindle of the puller.

Remove pulley circlip and drive out bearing
Use drift 5137 and handle 1801.
Place support 5142 beneath the pulley.

Remove magnet
Identify the position of the magnet.
Remove:
- circlip
- magnet.

Remove circlip and ceramic sleeve
Remove the circlip and front collar.
Withdraw the sleeve with puller 5139.
Remove O-ring
Use a piece of steel wire, shaped as illustrated.

Remove seal with 5140
Press the tool against the seal and turn it until the lug grips the seal.
Pull out the tool and seal.

Turn compressor and fixture so that bottom end points up
Remove the safety valve, O-rings and rear cover.
Lift out the sieve.

Identify location of oil pump gear and collar
Remove:
- collar
- outer O-ring.

Lift off rear valve housing and valve plate
Use a pair of locking pliers and grip the two drilled holes in the housing.
Remove oil pump suction pipe and O-ring

Detach compressor from fixture
Support compressor on 5142, front end up

Lift off outer housing from cylinder unit

Pull out front end O-ring

Lift off front section

Remove front valve housing and valve plate from cylinder unit

Clean and check all parts

Replace seals and worn parts

Note: The cylinder unit (incl. shaft and pistons) is available as a complete spare part.
Assembling Delco compressor

*Special tools: 1801, 5132, 5133, 5138, 5139, 5140, 5142, 5152*

---

**E28**

Support cylinder unit on 5142 and fit front valve plate and valve housing

*Note* The location of the two guide pins.

---

**E29**

Fit front section and O-ring on valve housing

Smear the O-ring with compressor oil.

---

**E30**

Position outer housing above cylinder unit

Turn the housing so that the hole in the plate above the oil sump aligns with the suction pipe hole in the cylinder unit.
Mount compressor in fixtures 5132 as illustrated and fit suction pipe and O-ring
The cylinder unit should then be turned so that the suction pipe is centred in the hole in the oil sump plate.

Fit rear valve plate
Align the plate with the cylinder unit.

Fit:
- valve housing
- O-ring
- oil pump (align identification marks).

Fit sieve in rear section
Group 87 Air conditioning

Delco compressor, assembly

**Fit rear section**

<table>
<thead>
<tr>
<th>Note</th>
<th>The location of the two guide pins.</th>
</tr>
</thead>
</table>

Tightening torque for nuts = 26-34 Nm (19-25 ft. lbs.)

Fit:
- safety valve, tightening torque = 14-19 Nm (10-14 ft. lbs.)
- O-rings for hose connections.

**Fit magnet**

Fit the magnet according to the previously made identification marks.

<table>
<thead>
<tr>
<th>NOTE</th>
<th>The plug for the electric leads should point to 10 o'clock when the service plate on the compressor points to 12 o'clock.</th>
</tr>
</thead>
</table>

The fixture should be held in the vice with the front end facing up.

**Fit circlip for magnet**

**Fit shaft seal**

Attach the seal to 5140.

Insert the tool in the front end collar and turn it until the seal is correctly fitted.

Then press down the spring and turn the tool anti-clockwise to release the seal from the tool.

**Fit:**
- O-ring in inner groove in collar
- ceramic ring (use puller 5139)
- circlip for ceramic ring.
Fit bearing and circlip on pulley
Use drift 5138 and handle 1801.

Fit pulley
Use drift 5138 and handle 1801.

Fit:
- pulley circlip
- felt seal.

Fit:
- new sleeve for felt seal
- key in shaft keyway.
Evaporator, replacement

F. Evaporator, replacement

Removing

Disconnect the battery negative lead.
Drain refrigerant from the system, see page 15.
Remove:
- glove compartment
- panel beneath glove compartment
- side panel next to heater.
Remove the right defroster vent and air duct.

E44

Fit clutch with press tool 5152
The thrust bearing must be located between the clutch and nut.

NOTE Do not overtighten the clutch otherwise it will contact the pulley.

E45

Fit:
- washer and circlip in clutch centre
- nut (machined end facing washer).

Tighten the nut:
Tightening torque 19-35 (14-26 ft. lbs.)
Use a 9/16" socket and counterhold with 5133.
Remove thermostat from cover

(Appplies to 240 1975–1978)

Note that the position of the thermostat (1) can vary and that the capillary tube on 1979– models is mounted on the evaporator pipe.

Remove:
- expansion valve
- insulation
- cover (2).

Unscrew connections and carefully pull out evaporator

Fitting

Fit:
- new evaporator seal
- evaporator
- cover.

Fit (as applicable):
- expansion valve
- capillary tube
- thermostat.

Connect refrigerant hoses

Use new O-rings, smeared with compressor oil.

Tightening torque 30 Nm (22 ft. lbs.)

Replace receiver/dryer or drying agent, see page 58.

Fill system with refrigerant and leak test, see page 16.

Insulate hoses and connections

NOTE The expansion valve must not be insulated.

Fit:
- defroster vent
- air duct
- glove compartment
- panels.
Evaporator thermostat, replacement

Thermostat location varies with model type and year.

The following variations occur:

**240 1975-1978, 260 1978**: The thermostat is located in the evaporator cover and the capillary tube (heat sensor) is inserted in the evaporator.

**260 1975-1977**: No thermostat fitted. The temperature of the refrigerant is regulated instead by a suction discharge valve, incorporated in the receiver/dryer. For replacement see page 56, operation H1–5.

**240, 260 1979 early types**: Adjustable thermostat located on the control panel. The capillary tube is inserted in the evaporator. If problems arise, e.g. irregular cycling, the thermostat should be replaced and the capillary tube placed on the evaporator outlet (same as for late types). Thermostat P/N 1259617-7.

**240, 260 1979 late types**: Adjustable thermostat located on the control panel. The capillary tube is mounted on the evaporator outlet.

On replacing thermostats on old type models it is advisable to change to the adjustable type, see instructions below. A special kit P/N 1129090-5 is available.

---

**Fitting new type adjustable thermostat**

**Remove:**
- glove compartment
- panel beneath glove compartment
- side panels near heater.

**Loosen thermostat, cut off capillary tube**
Leave rest of capillary tube in evaporator.

**Clean evaporator outlet**
Group 87 Air conditioning

Evaporator thermostat replacement

Connect thermostat across AC relay and compressor solenoid
105 Compressor solenoid
106 Solenoid
107 Thermostat + switch
129 AC relay

Attach thermostat to control panel

Bend capillary tube and attach it to evaporator outlet
Bend the capillary tube approximately 40 mm (1.5 in) from its end around a 10 mm (0.4 in) diameter pipe.
Attach the tube to the evaporator outlet pipe with two clamps (P/N 944267-4).
Insulate evaporator outlet
Use insulation tape P/N 591235-7.
Refit parts removed.
Evaporator thermostat, inspection

Evaporator thermostat, inspection

All vehicles, apart from 260 1975–1977 models, are equipped with evaporator thermostats. The purpose of the thermostat is to cycle (i.e. engage/disengage) the compressor. A defective thermostat can usually cause the evaporator to ice up which blocks the air flow and consequently causes poor cooling.

The type and location of the thermostat varies as follows:

240 1975–1978, 260 1978:
Adjustable type mounted on evaporator cover.

240, 260 1979–:
Non adjustable thermostat mounted on dashboard control panel.

Inspect thermostat as follows:
TEST CONDITIONS
- Bonnet (hood) open. Doors and windows closed
- Engine speed approx. 33 r/s (2,000 r/min)
- An additional fan must be used to cool the condenser.

DASHBOARD CONTROL SETTING
- Fan speed 1
- Temperature control at COOL
- Floor and DEF shutters closed (push buttons out)
- REC (recirculation) button depressed
- Panel vents open
- Air-cond switch ON (1975–1978)
- 1979– models with adjustable type thermostat: set adjuster knob to blue section.

Check that compressor cycles
After 5–10 min operation check that the thermostat cycles by observing the movement of the compressor clutch. If

Road test
(Ambient temperature should not exceed 25°C = 77°F)
Drive the vehicle at approximately 50 km/h (30 mph) and measure the temperature of the air released from the centre panel vents.

If temperature is above 8°C (46°F)
240 1975 – 1978, 260 1978:
Remove the soundproofing and panel on the side of the centre console.
Turn the thermostat screw slightly clockwise.

240, 260 1979–
The thermostat cannot be adjusted and must therefore be replaced.

If temperature is lower than 5°C (41°F)
Remove the soundproofing and panel on the side of the centre console.
Turn the thermostat screw slightly anticlockwise.

240, 260 1979–
The thermostat cannot be adjusted and must therefore be replaced.
G. Expansion valve (near evaporator), replacement
(240 and 260 1976–models)
On 260 1975–1977 models the expansion valve is incorporated with a discharge pressure valve and is mounted on the receiver/dryer, see overleaf.

Removing

Disconnect the battery negative lead.
Drain refrigerant from the system, see page 15.
Remove:
- soundproofing panel
- side panels.

Remove:
- evaporator cover
- evaporator outlet insulation
- expansion valve.

NOTE Thermostat location varies with model type and year.

Fit new expansion valve
Use new O-rings, smeared with compressor oil.
Tightening torque 30 Nm (22 ft. lbs.).

Fit:
- evaporator cover
- thermostat.
Insulate the evaporator outlet pipe.

NOTE Do not insulate the expansion valve.

Replace receiver/dryer or drying agent, see page 58.
Fill system with refrigerant, see page 16.
Refit side panels and soundproofing.
H. Expansion valve, suction discharge valve in receiver/dryer, replacement

Only fitted to 260 1975–1977 models

Removing
Disconnect the battery negative lead.
Drain refrigerant from the system, see page 15.
Mark position of valve body cover.

Remove:
- retaining bolts
- cover
- O-ring.

Remove:
- bolts and lock washers
- valves
- expansion valve O-ring.

Smear new O-rings with compressor oil.
Fit two O-rings to expansion valve and one to suction discharge valve.
Place one O-ring in expansion valve seat in valve body.

Fit:
- valves
- lock washers and mounting bolts
- cover O-ring (oil first)
- cover, according to previously made marks.

Replace drying agent, see page 58, operation K3.
Fill system with refrigerant, see page 16.
J. Condenser, replacement

Removing
Disconnect the battery negative lead.
Drain refrigerant from the system, see page 15.

Obtain access to compressor
Remove:
- radiator grille and headlamp frames
- right headlamp, 260 and 240 1979-
- centre stay
- horn bracket
- electric cooling fan (if fitted).
 Disconnect refrigerant hoses (plug ends immediately).

Remove condenser

Fitting

Fit condenser
Reconnect refrigerant hoses.
Use new O-rings, smeared with compressor oil.
Tightening torque 17 Nm (12 ft. lbs.).

Refit removed parts.
Replace receiver/dryer or drying agent, see next page.
Fill system with refrigerant, see page 16.
Group 87 Air conditioning

Receiver/dryer, replacement

**NOTE** The receiver/dryer contains a desiccant (drying agent) the purpose of which is to absorb any moisture in the refrigerant circuit. Because of this it is very important that the receiver/dryer is not exposed to air (moisture). Receiver/dryer location and type varies with engine type and model.

**NOTE** Following any repairs which involve interrupting the refrigerant circuit or if moisture is suspected in the system, the receiver/dryer or desiccant (drying agent) must be replaced.

---

**Replacing receiver/dryer**

240, 1975–1977
240, 260 1978–

Disconnect the negative lead from the battery.

Drain refrigerant from the system, see page 15.

Disconnect the refrigerant hoses (plug ends immediately).

**Replace receiver/dryer**

**NOTE** Measure the amount of oil in the receiver/dryer. The same amount of new oil must be added to the replacement receiver/dryer (260 and Diesel) or York compressor (240).

---

**Fitting**

Make sure that the evaporator hose is connected to the OUT connection on the receiver/dryer.

Reconnect the refrigerant hoses. Use new O-rings smeared with compressor oil.

Tightening torque 25 Nm (18 ft lbs.).

**Add refrigerant to the system, see page 16. Reconnect the battery.**

---

**Replacing drying agent**

260 1975–1977

**Removing**

Disconnect the battery negative lead.

Drain refrigerant from the system, see page 15.

Disconnect refrigerant hoses (plug ends immediately as well as in valve body)

Identify valve body position in relation to mounting bracket.

Remove:
- clamp
- receiver/dryer.
Remove receiver/dryer
(Identify the position of the body first.)

Remove the O-rings. Clean the sieve and remove the bag containing the drying agent.
Smear the new O-rings with compressor oil before fitting.
Place new bag of drying agent in receiver/dryer.

Fit receiver/dryer
Reconnect the refrigerant hoses. Use new O-rings, smeared with compressor oil.
Tightening torque, see fig. (41 Nm = 30 ft. lbs, 24 Nm = 18 ft. lbs, 17 Nm = 12 ft. lbs)
Add refrigerant to the system, see page 16.
Reconnect the battery.
L. Refrigerant hoses, replacement

If one or more of the refrigerant hoses has burst, causing rapid loss of the refrigerant, it is very probable that compressor oil has been lost. This oil must be replaced with new oil. See page 7.

In principle the method for replacing hoses is the same for all types. It should be noted however that the hoses are of varying length and that each hose is intended for a special part of the refrigerant circuit.

**Replacement**

Disconnect the battery negative lead.

Drain refrigerant from the system, see page 15.

Replace the defective hose.

If necessary, add new compressor oil (does not apply to systems with York compressor). Use new O-rings, smeared with compressor oil. Tighten all connections to torque, see specifications on page 2-4.

Replace receiver/dryer or drying agent, see page 58.

Add refrigerant to the system, see page 16.

Reconnect the battery.

M. Inspection of mechanical heater control valve

If the air conditioning system is unable to keep passenger compartment cool in hot weather, the heater control valve should be inspected and if necessary adjusted. The problem may be due to the valve not closing when the heater control is at "COOL".

**Inspection and adjustment**

Remove:
- soundproofing panel beneath steering wheel
- side panels next to heater

Warm up the engine.

Move the heater control to off (closed) and check that the input hose from the engine to the heater control valve is cold. If not, turn the adjuster screw (arrowed) 3/4 turn clockwise.

Check that the hose cools down after a few minutes with the engine idling.

Also check that the heater control valve lever bottoms when the temperature control is set to "COOL".

Apply sealer to the adjuster screw.

Refit side panel and soundproofing.
The purpose of the AC compensation system is to counteract the increased load on the engine at idle speeds when the compressor is engaged. It functions in principle by supplying additional fuel-air mixture (carbureted engines) or air (injected engines) past the throttle valve when the compressor is engaged.

An alternative compensating system is fitted to certain vehicles (B21A 62 – Sweden, Australia, Canada), and functions by advancing the ignition when the compressor is engaged.

Carbureted engines

**All 1975–1978 models**

Idle speed is kept constant when the compressor is engaged by means of a solenoid valve mounted on the carburettor.

When the compressor is engaged the load on the engine increases. On sensing this the solenoid valve opens and allows an additional amount of fuel-air mixture to bypass the throttle valve and maintain a constant idle speed.

The solenoid valve closes the bypass channel when the compressor is disengaged.

**B27A**

4-cylinder 1979–

(Excl. Sweden, Australia, Canada, B21A 1982–)

The compressor, when engaged, actuates the solenoid valve (1) which in turn opens the vacuum valve (2) allowing more fuel-air mixture to bypass the throttle valve. The idle speed is increased by approximately 3.5 r/s (200 r/min).

The adjacent illustration shows where the hoses are connected, the exact routing of the hoses may however be different.
B21A 1982 – (Sweden, Australia, Canada)

The idle speed compensation system functions by advancing the ignition when the compressor is engaged.

Compressor disengaged: The depression in front of the throttle valve is low and consequently the distributor is not affected.

Compressor engaged: The depression after the throttle valve is high, the ignition is advanced and idle speed is kept constant.

The adjacent illustration shows where the hoses are connected, the exact routing of the hoses may however be different.

B27A, B28A 1979–

1. Delay valve
2. Solenoid valve. Only 1979– with AC
3. Check valve (White side facing inlet manifold)
AC Compensation – injected engines B19–B23


A solenoid valve opens a bypass channel allowing more air to flow past the throttle valve when the compressor is engaged and the engine is idling.

B19E, B21E, B23E 1979–
B21F 1979–1981

NOTE B21F California 1981 and all B21F 1982–models are fitted with constant idle speed system

The solenoid valve operates in conjunction with a vacuum valve which opens a channel allowing more air to bypass the throttle valve, thereby increasing the idle speed.

B21ET 1981–
(Shown adjacent)

B21FT is fitted with constant idle speed system (CIS) and therefore does not require AC compensation.
The solenoid valve opens when the compressor is engaged, and more air bypasses the throttle valve.

B27E 1975-1978

(Excl. Sweden and Australia)

1 Solenoid valve
Group 87 Air conditioning
AC compensation, B27E, B28E

B27E 1979 Sweden and Australia

1. Delay valve. Certain models only
2. Solenoid valve. Only cars with AC
3. Thermostat valve
4. Vacuum valve. Australia only
5. Charcoal filter. Australia only
6. *EGR valve
7. Air inlet for filter
8. Vacuum amplifier
*Exhaust gas recirculation

B27E 1980, B28E 1981 - Sweden and Australia

1. Delay valve. Certain models only
2. Solenoid valve. Only cars with AC
3. Thermostat valve
4. Delay valve
5. EGR valve
6. Charcoal filter. Australia only
B27 1975–1978

The solenoid valve opens when the compressor is engaged, and more air bypasses the throttle valve.

B27 F 1979

All markets

1. Solenoid valve
2. Vacuum valve
3. Charcoal filter
B28F 1980 (all markets)
B28F 1981 USA Federal and Canada

1. Solenoid valve
2. Thermostat valve
3. Control pressure regulator
4. Delay valve
5. Charcoal filter

B28F 1981 USA, California and Japan
All B28F 1982–
These vehicles are fitted with constant idle speed system (CIS)
Air conditioning 240
1975-1977

A Fusebox
B Ignition switch
C AC switch
E Solenoid valve
F Compressor solenoid valve
G Thermostat

Fuse no. 4
Heated driver seat
Reversing (Back-up) light
Air conditioning
Electric windows (relay) 1977 only
Glove compartment light

Air conditioning engaged
Air conditioning 260
1975–1977

Fuse no. 2
- Windscreen wiper
- Heater fan
- Horn

Fuse no. 4
- Clove compartment light
- Reversing (Back-up) light
- Heated driver seat
- Air conditioning

Air conditioning engaged

A Fusebox
B Ignition switch
C Air conditioning switch
D Fan switch
E Solenoid valve
F Compressor solenoid
G Relay
Group 87 Air conditioning

Wiring diagram

Air conditioning 240, 260
1978

Colour code, see page 73

Fuse no. 2
- Horn
- Heater fan

Fuse no. 4
- Heated driver seat
- Reversing (Back-up) light
- Air conditioning
- Electric windows (relay)

Air conditioning engaged
(Fan switch off)
Air conditioning 240, 260
1979

Ignition and adjustable thermostat ON.
Fan switch OFF

Ignition, fan switch and adjustable
thermostat, ON

Ignition and fan switch ON
Adjustable thermostat OFF

A Fusebox
B Ignition switch
C Fan switch
D Adjustable thermostat control
E Solenoid valve
F Compressor solenoid
G Relay

Fuse no. 3
Heater fan

Fuse no. 12
Reversing (Back-up) light
Heated driver seat
Electric windows (relay)
Air conditioning 240, 260
1980

Engine running, adjustable thermostat ON
Fan switch OFF

Engine running, adjustable thermostat and fan switch ON

Engine running, fan switch ON
Adjustable thermostat OFF

Fuse no. 3
No other function

Fuse no. 12
Reversing (Back-up) light
Heated driver seat
Electric windows (relay)

Fuse no. 13
Direction indicators
Combined instruments
Ignition ON, engine OFF (alternator not charging)
Air conditioning 240, 260
1981–

A Fusebox
B Ignition switch
C Microswitch (CIS vehicles only)
D Thermostat
E Solenoid valve (excl. CIS vehicles)
F Compressor solenoid
G Delay relay (engages 10 sec after alternator voltage at D+61)
H Charging indicator lamp
K Voltage regulator
L Alternator
M Cut out switch (located on receiver/dryer) USA only

Fuse no. 12
Reversing (Back-up) light
Heated driver seat
Electric windows (relay)

Fuse no. 13
Direction indicators
Combined instrument

Ignition ON (engine OFF alternator not charging)
Engine running, adjustable thermostat ON (AC ON)
Engine running, adjustable thermostat OFF (AC OFF)
Group 87 Air conditioning

Wiring diagram

conditioning 240, 260
1981–

A  Fusebox
B  Ignition switch
C  Microswitch (CIS vehicles only)
D  Thermostat
E  Solenoid valve (excl. CIS vehicles)
F  Compressor solenoid
G  Delay relay (engages 10 sec after alternator voltage at D+61)
H  Charging indicator lamp
K  Voltage regulator
L  Alternator
M  Cut out switch (located on receiver/dryer) USA only

Fuse no. 12
Reversing (Back-up) light
Heated driver seat
Electric windows (relay)

Fuse no. 13
Direction indicators
Combined instrument

Colour code
SB  = black
GR  = grey
W   = white
R   = red
BN  = brown
Y   = yellow
P   = pink
B   = blue
GN  = green
OR  = orange
VO  = violet

= without potential
= earth
= circuit potential
= potential lower than circuit potential
= current flow
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