

64 Heating and Air Conditioning

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64 Heating and Air Conditioning

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Description of Integrated Heating and Air Conditioning System

The heating system is an air side controlled unit, i.e. the temperature is regulated by the mixing ratio of cold and warm air with help of the temperature mixing flap. All outlets can be heated. Flaps are operated via cables. The water flow rate through the heater is regulated by an electromagnetic water valve in the water return circuit. It is switched on and off by the temperature control via a track circuit with loop contact. The valve will be closed when the temperature control is set to $< 20^{\circ}\text{C}$ (68°F). The valve is open without electric power.

With air conditioning the refrigerant is injected via an expansion valve, which is located in the housing on the right side.

A mechanical thermostat switch, located on left side of the unit, is applied for protection against freezing.

With air conditioning the fresh air/bypass air can be operated for extremely fast cooling of the passenger compartment or elimination of disturbing odors.

The flaps are located in front of both blowers and are operated by two positioning motors.

Air conditioning equipment includes an additional, 2-speed, electric fan.

This fan always runs at least in 1st speed when the air conditioner is switched on.

Regardless of air conditioner operation 1st speed of extra fan is switched on as from a coolant temperature of $89 \dots 93^{\circ}\text{C}$ ($192 \dots 199^{\circ}\text{F}$) and switched off with a coolant temperature of $86 \dots 82^{\circ}\text{C}$ ($187 \dots 180^{\circ}\text{F}$).

Regardless of air conditioner operation 2nd speed of extra fan is switched on as from a coolant temperature of $97 \dots 101^{\circ}\text{C}$ ($207 \dots 214^{\circ}\text{F}$) and switched off with a coolant temperature of $94 \dots 90^{\circ}\text{C}$ ($201 \dots 194^{\circ}\text{F}$).

The drier has one high pressure and one low pressure safety switch.

The high pressure switch stops the compressor when reaching a coolant pressure of $25.5 \dots 17.7$ bar ($363 \dots 252$ psi) and switches the compressor on again when coolant pressure drops to $22.5 \dots 20$ bar ($320 \dots 284$ psi).

The low pressure switch stops the compressor when coolant pressure drops to $2.22 \dots 1.72$ bar ($32 \dots 24$ psi) and switches the compressor on again when coolant pressure rises to $2.0 \dots 2.4$ bar ($28 \dots 34$).

These safety switches prevent damage in or on the air conditioning system.

Heating and Air Conditioning Controls

Consisting Of:

Temperature Control

The temperature control regulates the temperature regulating flap via a cable and opens the water valve at an angle of $\geq 20^{\circ}$.

Air Volume Control Switch

It switches the blower in 3 speeds via fixed resistors, which are located in the heater.

Air Up Control Lever

It operates via a cable the flap in the heater/air conditioner for air distribution to the windshield (defrost).

Air Center Control Lever

It operates via a cable the flap in the heater/air conditioner for air distribution out of the instrument panel nozzles (ventilation).

With air conditioning the control lever will also have a circuit breaking switch (track circuit) for the compressor. The compressor will be switched off with a flap opening of $< 20\%$, to avoid liquid knocks in the air conditioner which could destroy the compressor.

Air Down Control Lever

It operates via a cable the flap in the heater/air conditioner for air distribution down to the footwells.

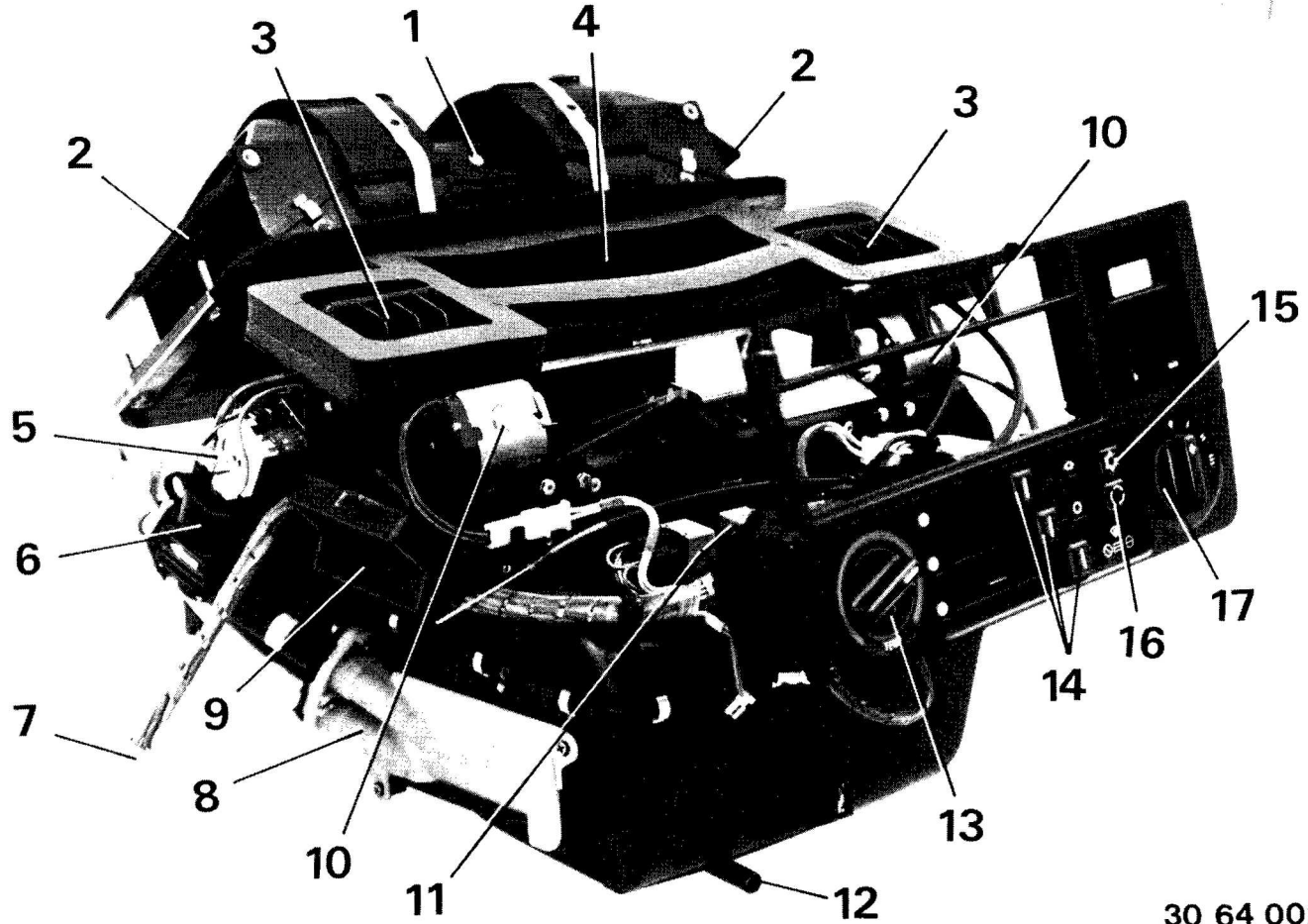
With air conditioning the control lever will have the same compressor circuit breaking switch as for the air center control lever.

A/C Compressor Push Button Switch

Air conditioner is switched on and off with this push button switch. When air conditioning is switched on, the heater blower motor will always run in at least 1st speed. When air conditioning is switched on, the additional fan will always run in at least 1st speed.

Fresh Air/Bypass Air Push Button Switch

When air conditioner is operated, it is used to switch to fresh air or bypass air circulation as desired. In the bypass air switch position the heater blower motor will always run in at least 1st speed.



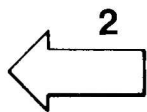
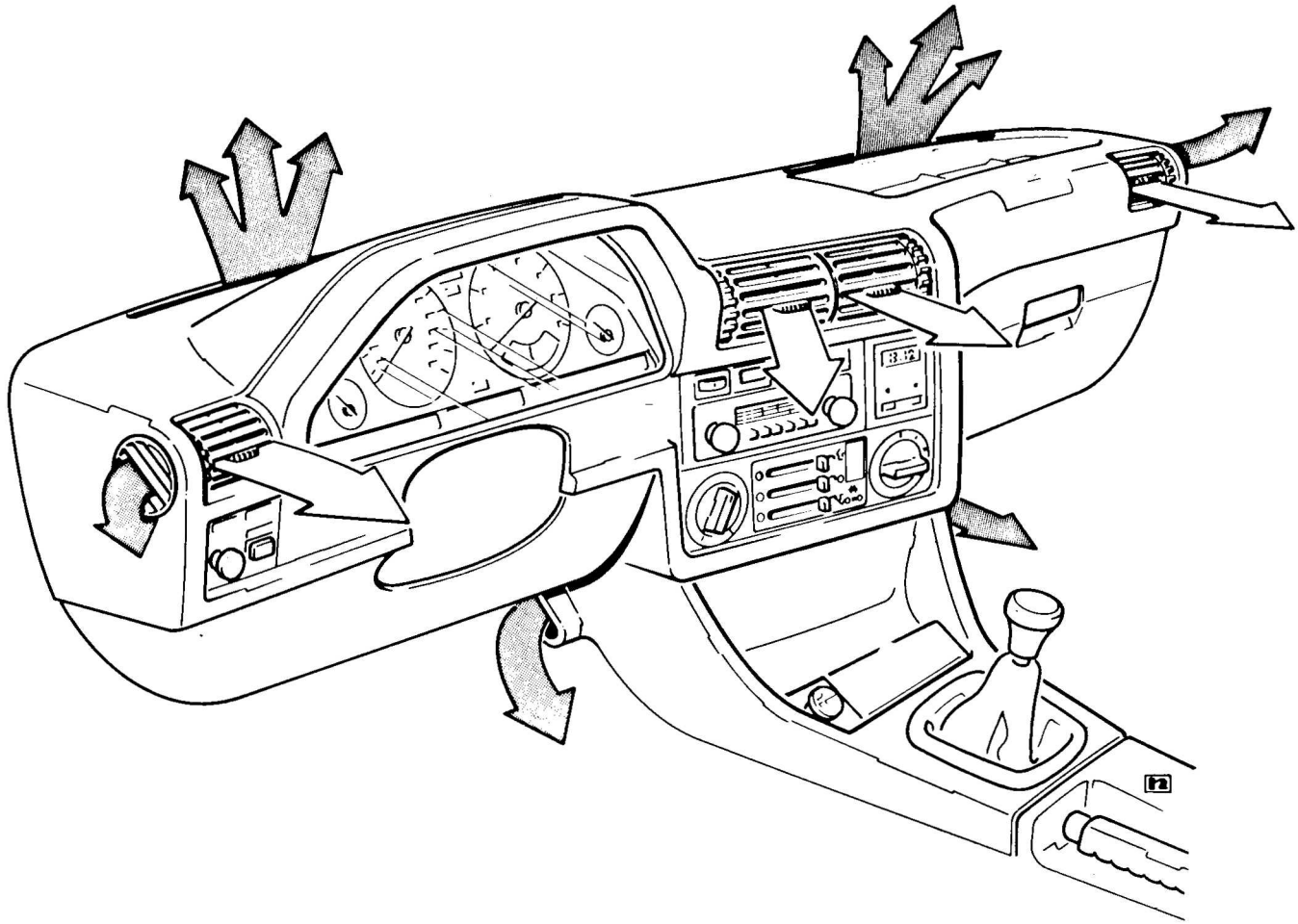
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1 = Blower motor
 2 = Bypass air flaps
 3 = Fresh air flaps
 4 = Window defrost flaps
 5 = Freeze-protection switch

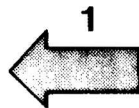
6 = Water valve
 7 = Wire plug
 8 = Heater core
 9 = Footwell flaps

10 = Bypass flap motor
 11 = Motor relay
 12 = Condensation water drain
 13 = Temperature control wheel

14 = Control lever
 15 = Air conditioner switch
 16 = Bypass air switch
 17 = Blower switch



1 = Temperature controlled air



2 = Temperature controlled fresh air

DESCRIPTION OF AIR CONDITIONING SYSTEM

Switching on the air conditioner activates electromagnetic coupling (1) of compressor (2). The Compressor (2) is now driven by the running engine.

Compressor (2) increases the pressure of gaseous refrigerant (Frigen), which automatically causes the refrigerant temperature to also rise.

The refrigerant puts off heat in condenser (3), through which it is condensed (turns into a liquid).

Drier (4) removes residual water from the refrigerant and absorbs it.

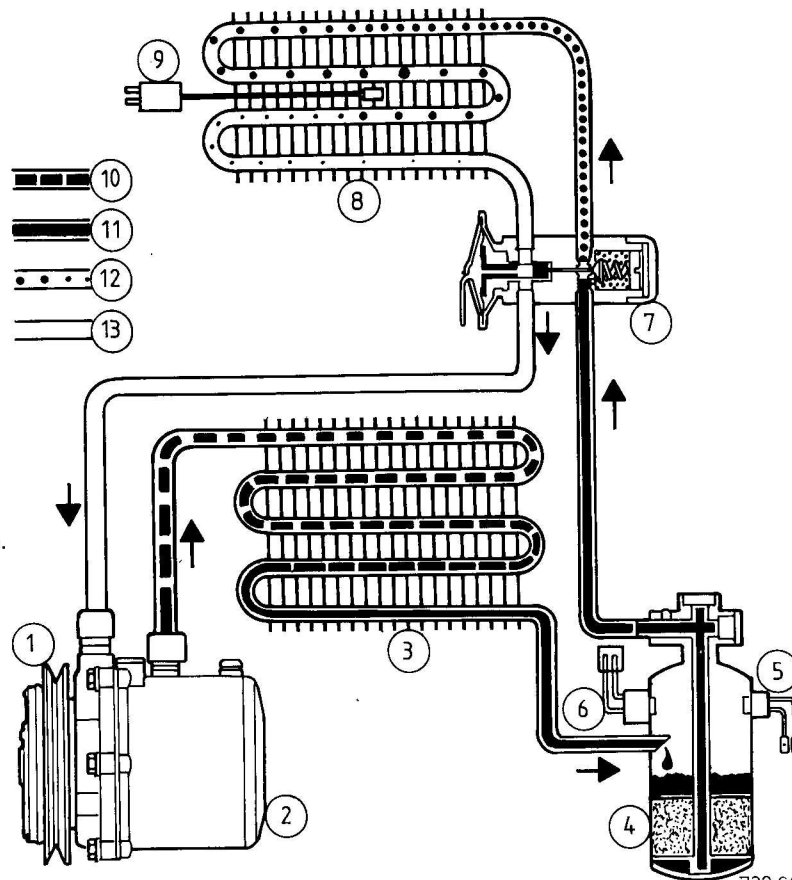
Safety switches (5 and 6) stop the compressor when pressure is too high or too low*. In this manner damage is prevented in the air conditioning system.

Expansion valve (7) meters the amount of refrigerant which is injected into evaporator (8). The amount of refrigerant will depend on the temperature and pressure of refrigerant at outlet of the evaporator.

The liquid refrigerant expands in evaporator (8) and is turned into gas. This change in state produces strong cooling off of the refrigerant and evaporator. The fresh air (or bypass circulation air) is cooled as it passes the evaporator.

Freezing prevention switch (9) switches the compressor to prevent the formation of ice on the evaporator. Ice formation would reduce the cross section opening size and impair cooling efficiency.

Moisture in the fresh air (or bypass circulation air) condenses on the evaporator and is discharged outside of car via lines on the transmission tunnel. This water is normal and not a sign of leakage.



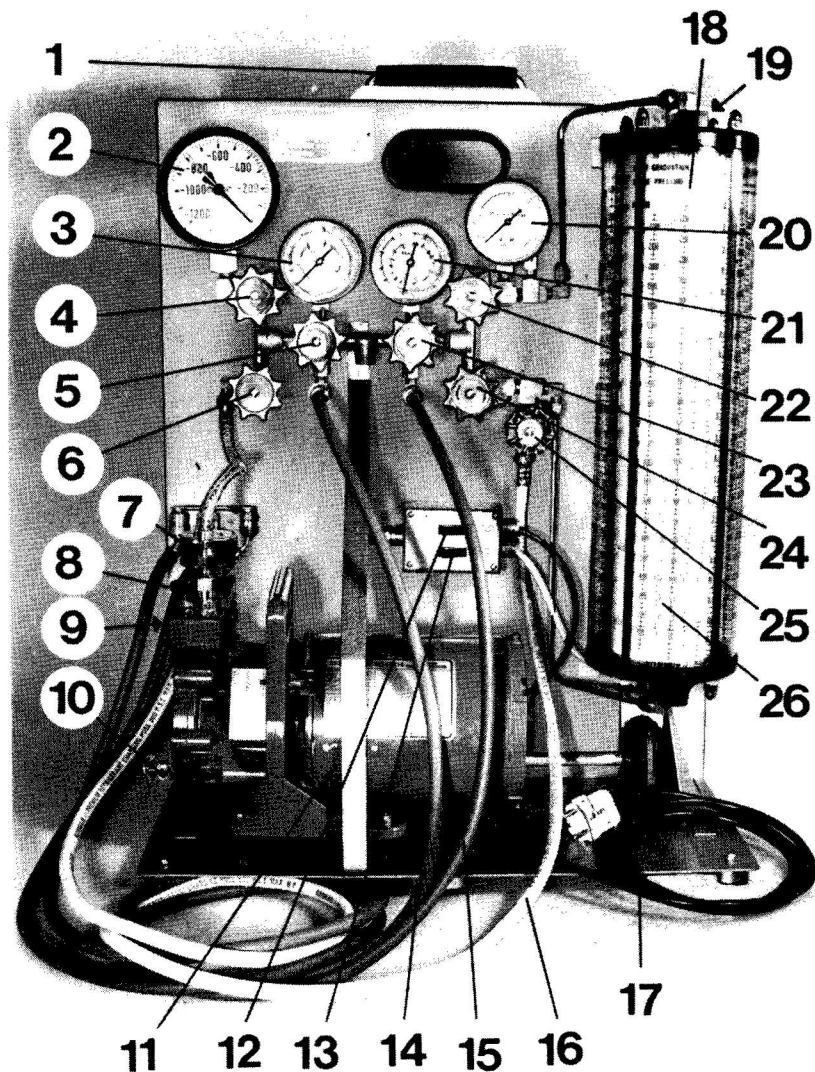
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Main Components of Air Conditioner

- | | |
|--|--------------------------------|
| 1 = Pulley with electromagnetic coupling | 8 = Evaporator |
| 2 = Compressor | 9 = Freezing prevention switch |
| 3 = Condenser | 10 = High pressure — gas |
| 4 = Drier | 11 = High pressure — liquid |
| 5 = Safety switch (low pressure pressostat) | 12 = Low pressure — liquid |
| 6 = Safety switch (high pressure pressostat) | 13 = Low pressure — gas |
| 7 = Expansion valve | |

DISCHARGING AND CHARGING STATION

- 1 = Pull-out carrying handle
- 2 = Torrmeter
- 3 = Low pressure gage
- 4 = Vacuum valve
- 5 = Charging valve "low pressure"
- 6 = Shut-off valve
- 7 = Filter
- 8 = Gas ballast valve
- 9 = Oil level sight glass
- 10 = Shut-off valve - compressor oil
- 11 = Vacuum pump
- 12 = Switch
- 13 = Switch
- 14 = Charging hose (blue) "low pressure"
- 15 = Charging hose (red) "high pressure"
- 16 = Charging hose (white)
- 17 = Power cord
- 18 = Volume scale
- 19 = Schrader valve
- 20 = Pressure gage "charging pressure"
- 21 = Pressure gage "high pressure"
- 22 = Charging valve "gas"
- 23 = Charging valve "high pressure"
- 24 = Charging valve "liquid"
- 25 = Charging valve "refrigerant"
- 26 = Charging cylinder



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64 50 009 DISCHARGING AND CHARGING AIR CONDITIONER

Safety Precautions for Handling Refrigerants:

The air conditioning system must be filled with a safety refrigerant (Frigen 12). Although this refrigerant is non-toxic, non-flammable and non-explosive in any mixture ratio with air at normal temperatures, it can still be dangerous when appropriate safety precautions were not observed.

Avoid any contact with liquid or gaseous refrigerants. When working on the refrigerant circuit of an air conditioner protect hands with gloves and eyes with goggles.

Refrigerant on the skin will cause frostbite. Wash off pertinent parts of body with cold water thoroughly. If refrigerant gets in the eyes, also rinse out with water and then contact a physician immediately.

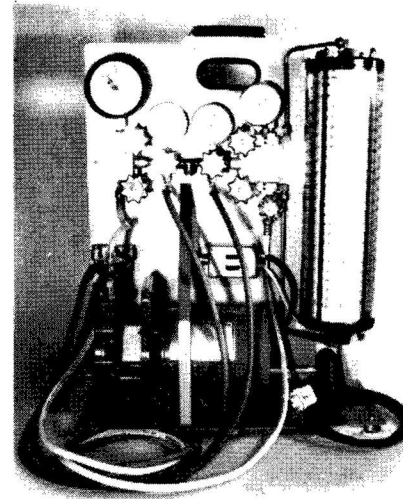
Refrigerants are heavier than air and therefore should not be discharged in closed rooms. Especially in working pits there would be an acute danger of asphyxiation, which would not be noticeable since the gas has no color or odor.

Turn on available air extraction systems.

Never perform welding work on a discharged air conditioner or in the vicinity. The pressure which would occur could lead to an explosion.

In addition, refrigerants decompose at high temperatures or when exposed to an open flame. The decomposed products are injurious to health.

Store full refrigerant cylinders that they are not subjected to direct sunshine or other sources of heat (max. temperature 45° C / 113° F).



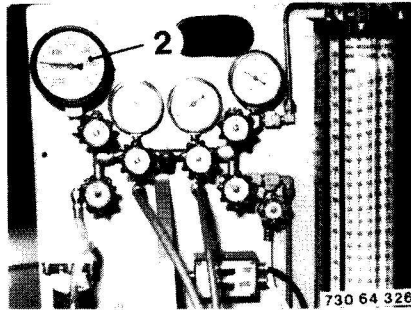
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Discharging and Charging Air Conditioner:

Conform with operating instructions supplied with pertinent charging equipment.

Major Procedures:

- 1) Connecting charging equipment.
- 2) Discharging (time depends on condition of air conditioner).
- 3) Flushing with refrigerant.
- 4) Discharging.
- 5) Charging with refrigerant – "volume"*.
Caution!
Never operate air conditioner while charging.
- 6) Checking function of air conditioner.



Check condition of the discharging and charging station before operation. Check level and grade of oil in the compressor. Also refer to the operating instructions supplied with the charging station.

Caution!

Never leave high pressure on pressure gage (2) during the operating procedures — danger of destruction.

Note:

The air conditioner can also be discharged and charged with only one charging hose (high or low pressure).

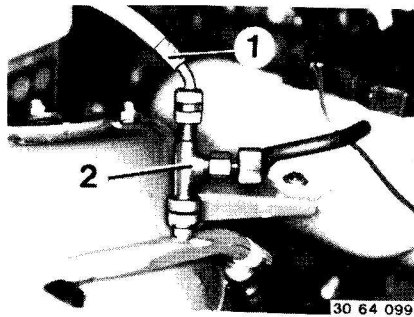
However, working with a valve core remover and two charging hoses will speed up discharging and charging procedures.

Absolute cleanliness is required for the performance of work on an air conditioner.

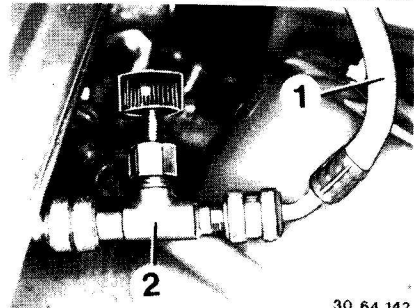
Wear protective clothing!

Close all valves of the discharging station prior to starting the procedures.

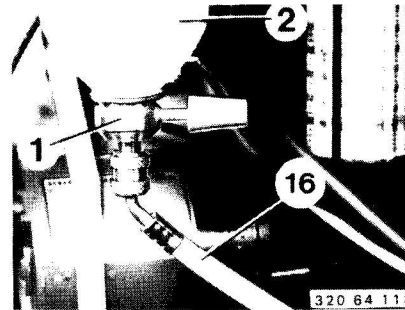
The following procedures are only applicable with the illustrated charging station.



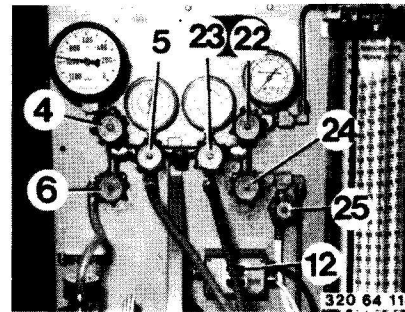
Remove the protective cap. Connect blue charging hose (1) on the low pressure side (thick pipe) of the air conditioner.



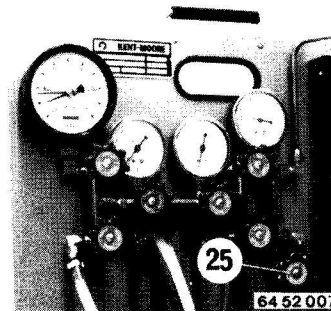
Remove the protective cap. Connect red charging hose (1) on the high pressure side (thin pipe or drier) of the air conditioner.



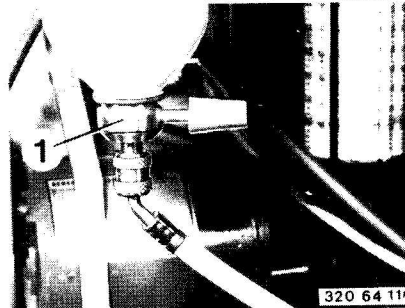
Connect the refrigerant cylinder (2) and charging hose (16) with charging valve (1). Charging valve (1) remains connected until the charging cylinder has been filled.



Open valves (4, 6 and 22). Turn on the pump with switch (12) and discharge the charging station. Close valve (22) and open valves (5 and 23). Discharge the air conditioner.



Open valve (25).



Open charging valve (1) and fill the charging cylinder with refrigerant while the air conditioner is still being discharged. Type and amount of refrigerant*.

* See label in engine compartment

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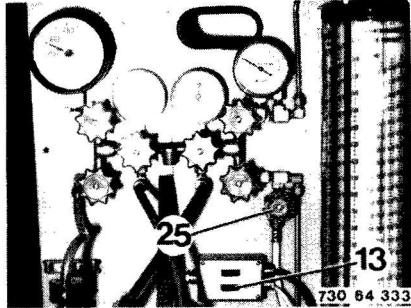
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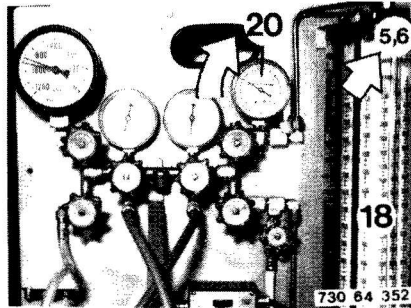
To fill the charging cylinder, unscrew protecting cap (1) and apply pressure on the valve core to let pressure escape from the charging cylinder.

This is necessary so that refrigerant can flow into the charging cylinder.



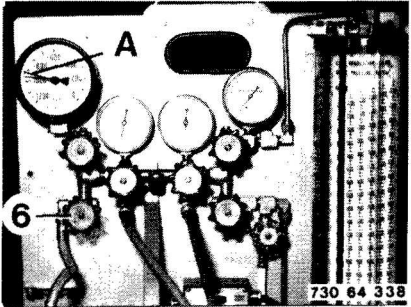
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Close charging valve (25) and operate the heater with switch (13) after finishing the charging procedure.



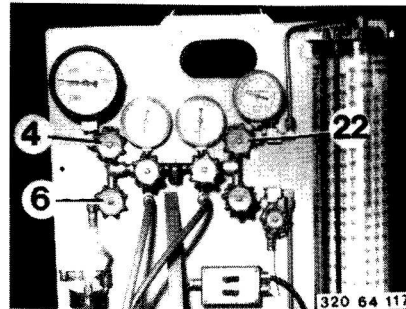
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Read the rising pressure in the charging cylinder on gage (20) and set the same pressure (e.g. 5.6 bar/80 psi) on the volume scale (18). The amount of refrigerant in the charging cylinder can now be read on the volume scale. The heater can be switched off after reaching the charging pressure of 4.9 to 9.1 bar (70 to 129 psi).



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After Finishing Discharging:
Close shutoff valve (6).
Mark the red indicator (A) with the displayed value.
The air conditioner does not have moisture or leaks, if the pressure does not rise.
Switch off the vacuum pump.



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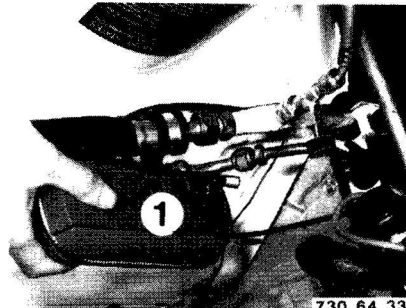
Detecting Leaks:

Close valve (6).

Close vacuum valve (4).

Switch off the vacuum pump.

Open charging valve (22) about 1 second and then close it again.



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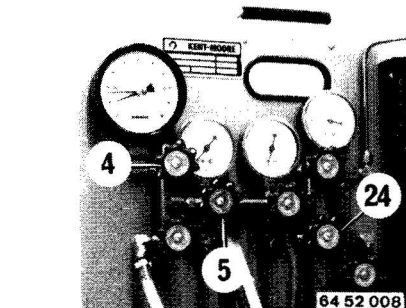
Calibrate leak detector (1) to the operating instructions.

Check air conditioner for leaks with leak detector (1).

Eliminate any leaks.

Note:

Always look for a leak underneath a possible leak point, since refrigerant is heavier than air.

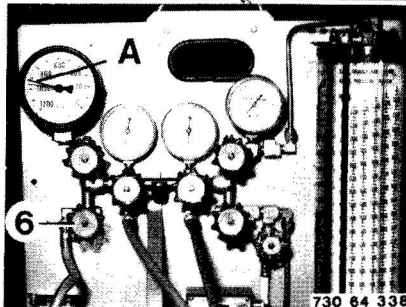


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Charging the System:

Close vacuum valves (4 and 5).

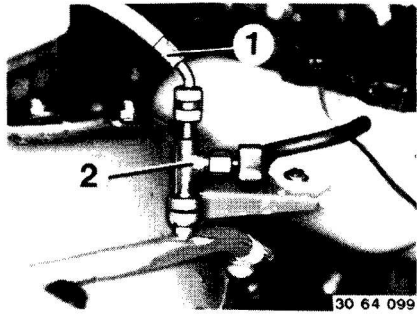
Open liquid valve (24) and let the correct amount* of refrigerant flow into the system.



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Shut the liquid valve (24) when the system has the correct amount* of refrigerant.
Disconnect hoses and screw on the protective caps.

* See label in engine compartment



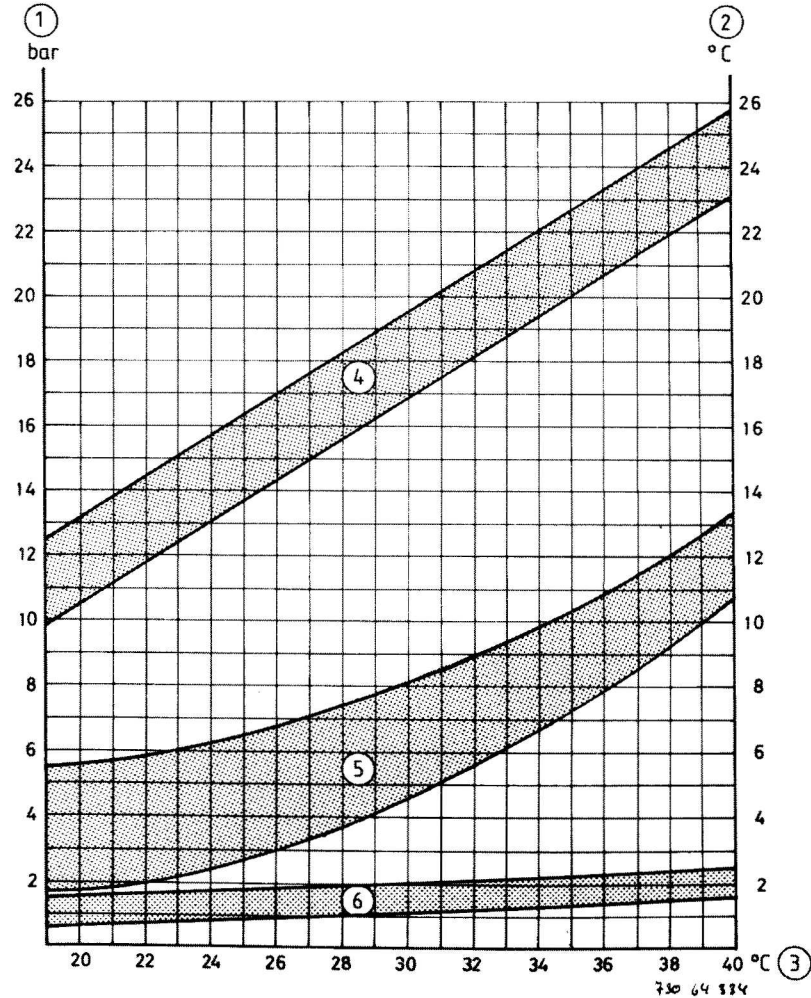
Checking Air Conditioner:
 Unscrew the protective cap.
 Connect blue charging hose (1) with the valve core remover (2) on the low pressure side of the air conditioner.
 Connect the high pressure hose in the same manner as the low pressure hose.

Insert the thermometer in the air outlet grill.
Testing Conditions:

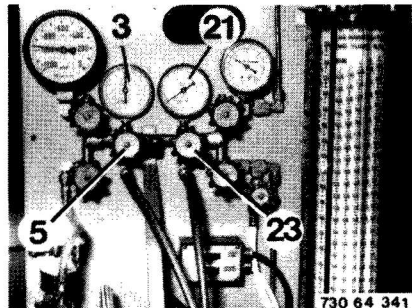
1. Car parked in shade (indoors).
2. Air conditioner discharged and charged. Correct type and amount of oil in the compressor.
3. Engine running at 2,000 rpm and air conditioner switched on.
4. Doors shut.



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Close all valves of the discharging and charging station.

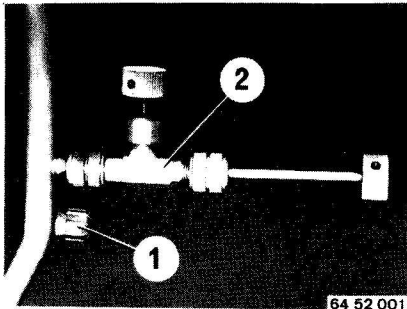
Only open charging valve (5) or (23).
 Read operating pressure values on low or high pressure gages (3 or 21) and compare with the nominal value graph 730 64 334.
 Always check only one pressure range.

- (1) = Pressure scale in bar
- (2) = Temperature scale in degrees Celsius
- (3) = Temperature scale - ambient temperature - in degrees Celsius
- (4) = Tolerance range - high pressure range
- (5) = Tolerance range - center nozzle air outlet
- (6) = Tolerance range - low pressure range

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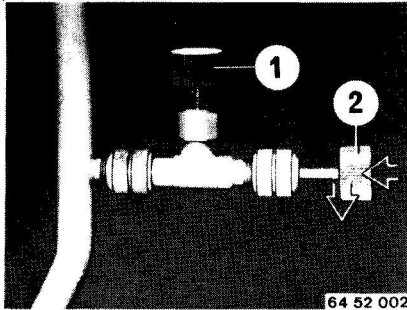
64 52 . . . REMOVING AND INSTALLING
VALVE CORE

Unscrew protective cap (1).
Screw on valve core remover (2).



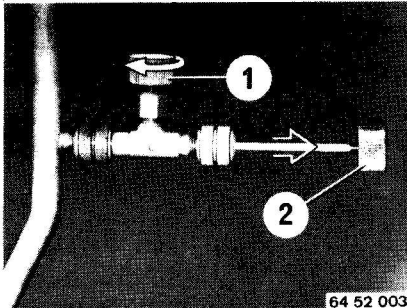
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Open shutoff valve (1).
Unscrew the valve core with valve turner (2).



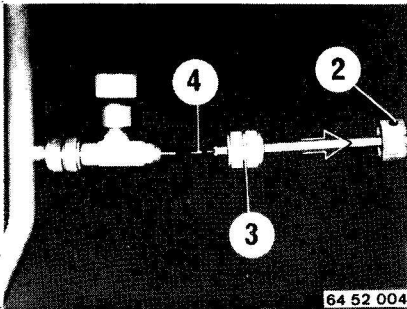
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Pull back valve turner (2) together with the
valve core.
Close shutoff valve (1).

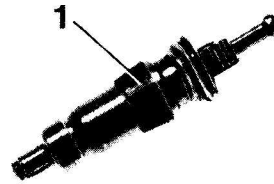


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Unscrew coupling nut (3) and take off valve
turner (2) with valve core (4).



64 52 004



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Installation:
The refrigerant-resistant valve cores can be
recognized on the transparent seal (1).

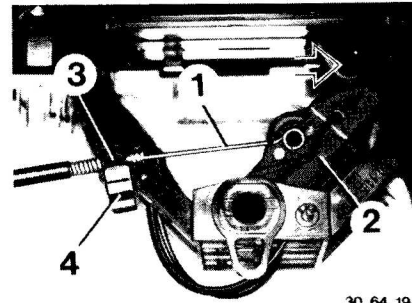
64 11 071 REPLACING CABLE FOR FOOTWELL VENTILATION

Disconnect battery ground lead.
 Remove and install instrument panel trim at left 51 45 180.
 Remove and install tray 51 16 200.

Remove radio opening mask or radio.
 Pull covers (1) or switches (2) out of control panel.
 Pull off plugs (3) on switches (2).

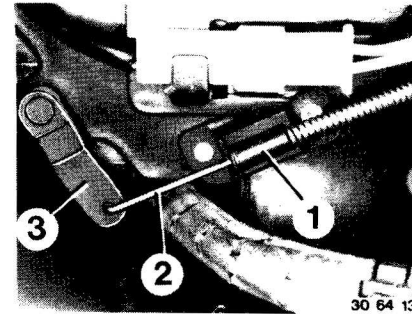
Unscrew bolts.
 Pull out control panel slightly.

Lift out clamp (1).
 Disconnect cable (2) on lever (3).



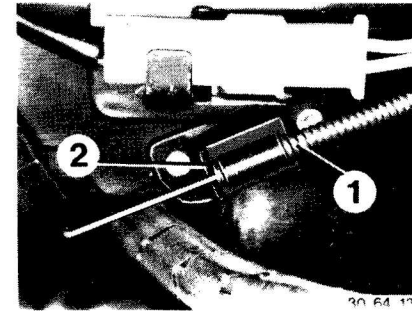
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Installation:
 Connect cable (1) on slide control (2).
 Push slide control and air flap against stop.
 Turn sleeve (3) until it can be placed in the opening.
 Lock cable with clamp (4).



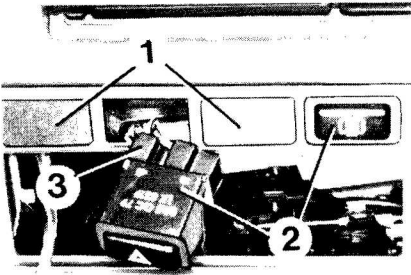
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Pull out clamp (1).
 Disconnect cable (2) on lever (3) and remove.

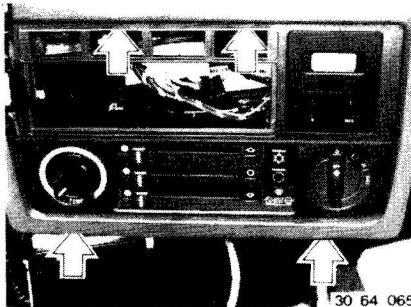


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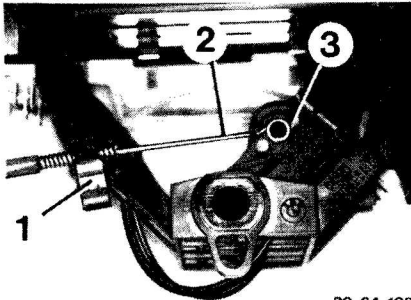
Installation:
 Cable sleeve (1) must be flush on stop (2).



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30 64 065



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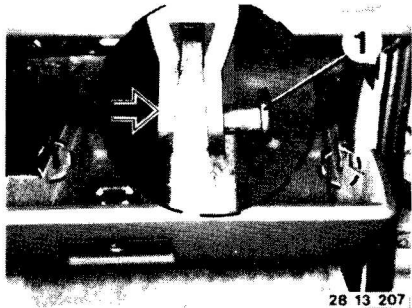
64 11 081 REPLACING CABLE FOR WINDOW VENTILATION

Disconnect battery ground lead.
 Remove and install instrument panel trim on left side 51 45 180.
 Remove and install tray 51 16 200.
 Open glove box.
 Disconnect pins (1) of both retaining straps.

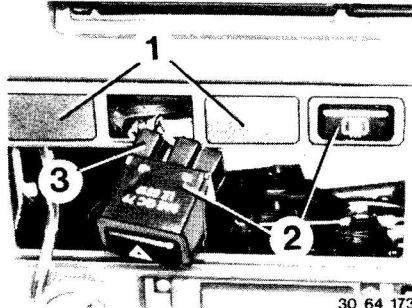
Remove radio opening mask or radio.
 Pull opening covers (1) or switches out of control panel.
 Pull off plugs (3) on switches (2).

Unscrew screws.
 Pull out control panel slightly.

Unscrew screw (1).
 Take off trim panel (2).



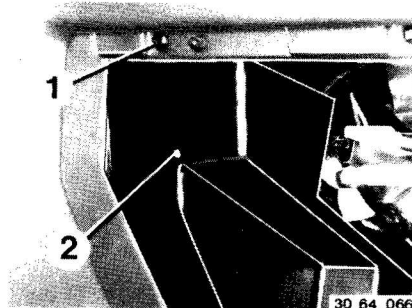
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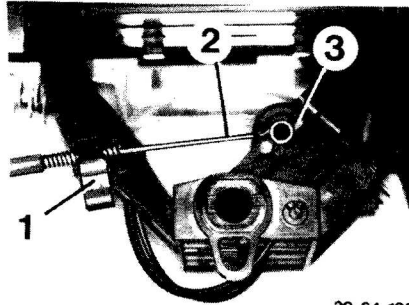
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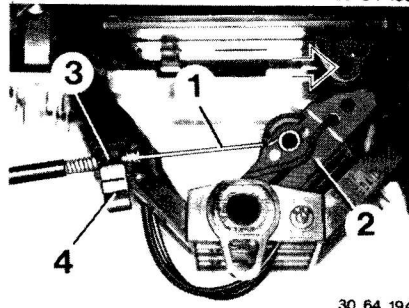


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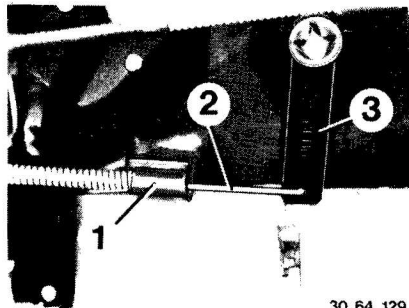
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Lift out clamp (1).
 Disconnect cable (2) on lever (3) and remove.



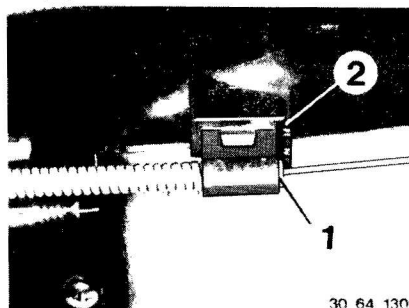
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Installation:
 Connect cable (1) in sliding control (2).
 Push sliding control and air flap against stop.
 Turn sleeve (3) enough until it can be placed in opening.
 Secure cable with clamp (4).



30 64 129

Pull out clamp (1).
 Disconnect cable (2) on lever (3) and remove.



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Installation:
 Cable sleeve (1) must be flush with stop (2).

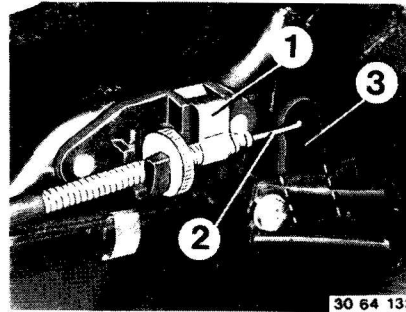
64 11 161 REPLACING CABLE FOR TEMPERATURE MIXING FLAP

Disconnect battery ground lead.
 Remove and install instrument panel trim on left side 51 45 180.
 Remove and install tray 51 16 200.
 Open glove box.
 Disconnect pins (1) of both retaining straps.

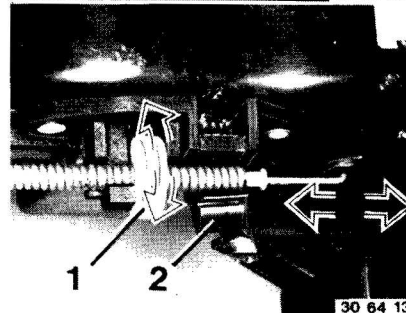
Remove radio opening mask or radio.
 Pull opening covers (1) or switches (2) out of control panel.
 Pull off plugs (3) on switches (2).

Unscrew screws.
 Pull out control panel slightly.

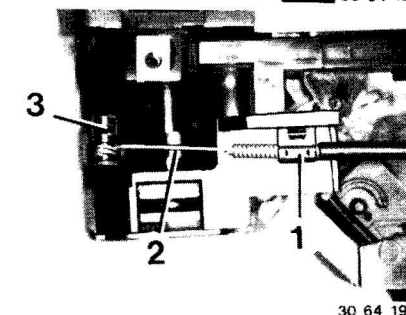
Unscrew screw (1).
 Take off trim panel (2).



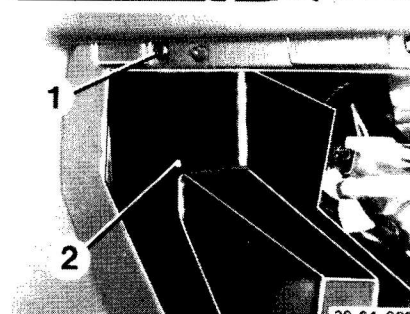
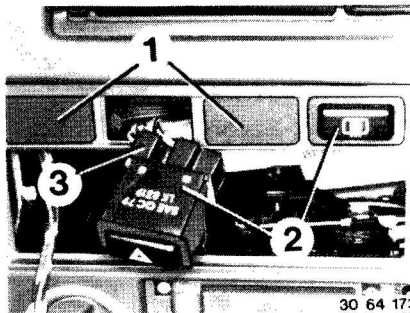
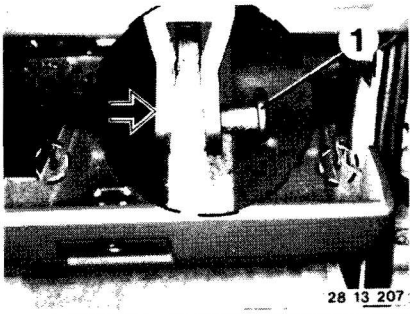
Lift out clamp (1).
 Disconnect cable (2) on lever (3).



Installation:
 Set temperature selection wheel to (cold or warm) stop.
 Turn knurled nut (1) to also move temperature mixing flap to (cold or warm) stop.
 Secure cable with clamp (2).



Pull out clamp (1).
 Disconnect cable (2) on lever (3) and remove.



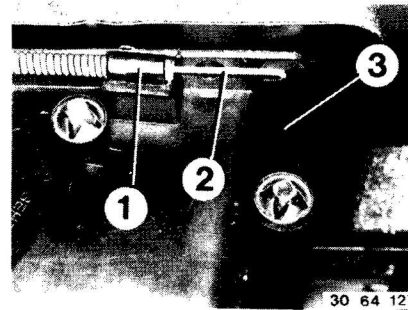
64 11 191 REPLACING CABLE FOR FRESH AIR FLAP

Disconnect battery ground lead.
 Remove and install instrument panel trim on left side 51 45 180.
 Remove and install tray 51 16 200.
 Open glove box.
 Disconnect pins (1) of both retaining straps.

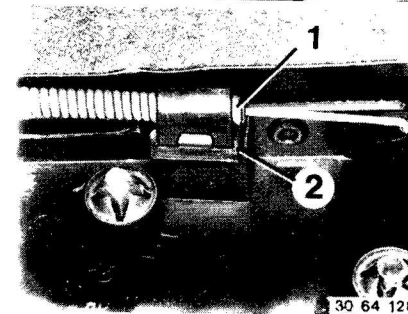
Remove radio opening mask or radio.
 Pull opening covers (1) or switches (2) out of control panel.
 Pull off plugs (3) on switches (2).

Unscrew screws.
 Pull out control panel slightly.

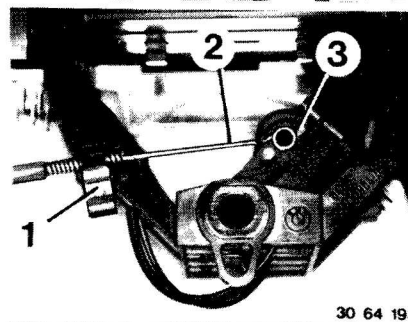
Unscrew screw (1).
 Take off trim panel (2).



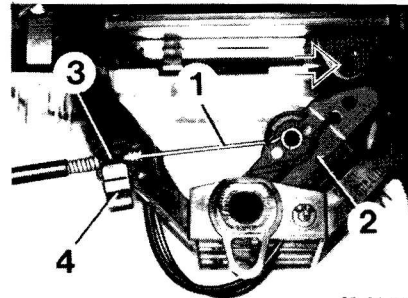
Pull out clamp (1).
 Disconnect cable (2) on lever (3) and remove.



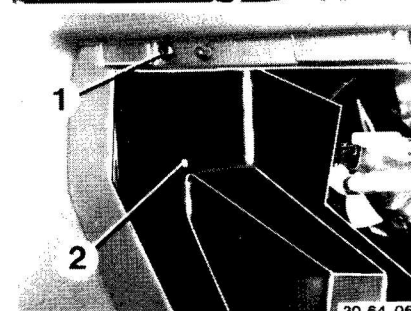
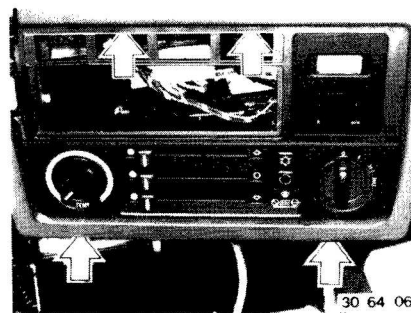
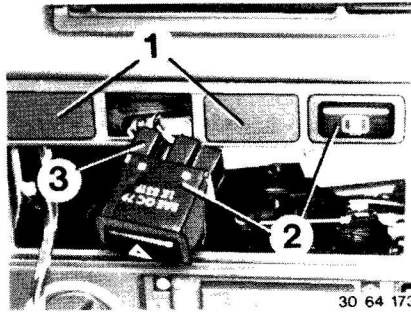
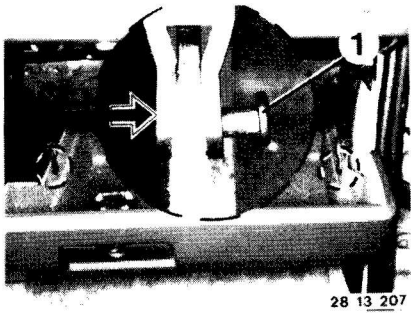
Installation:
 Cable sleeve (1) must be flush with stop (2).



Lift out clamp (1).
 Disconnect cable (2) on lever (3) and remove.



Installation:
 Connect cable (1) in sliding control (2).
 Push sliding control and air flap against stop.
 Turn sleeve (3) enough until it can be placed in opening.
 Secure cable with clamp (4).



30 64 127

30 64 128

30 64 193

30 64 194

28 13 207

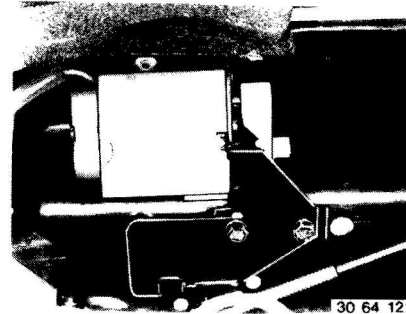
30 64 173

30 64 065

30 64 066

64 11 195 REMOVING AND INSTALLING OPERATING MOTOR FOR FRESH AIR/CIRCULATING AIR FLAPS

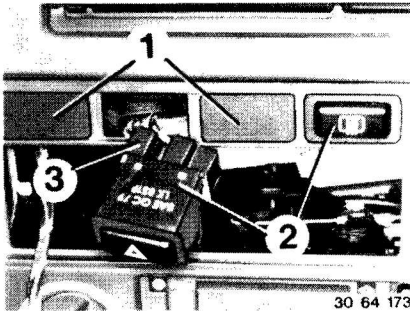
Disconnect battery ground lead.



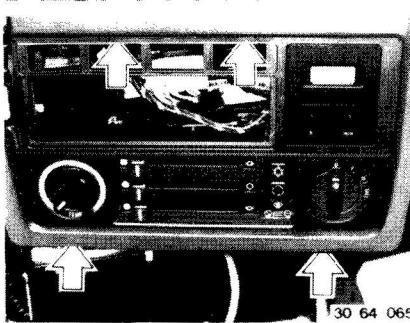
Unscrew bolts and take off operating motor with holder.

Installation:
Engage holder in housing tab.

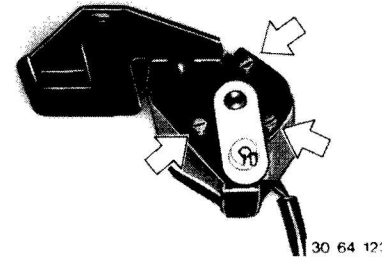
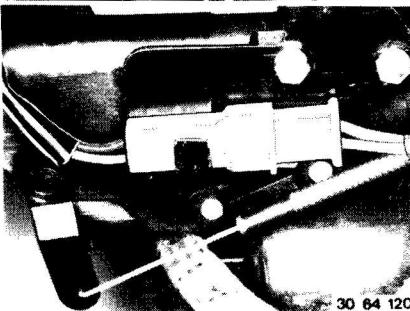
Remove mask for radio opening or radio. Pull covers (1) or switches (2) out of control panel. Pull plugs (3) off of switches (2).



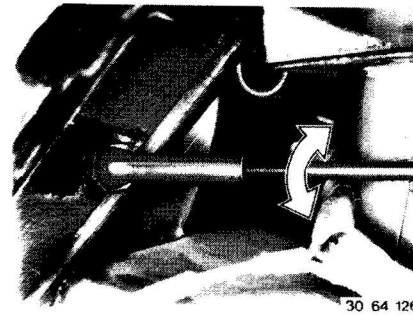
Unscrew screws. Pull out the control panel slightly.



Disconnect plug.



Unscrew bolts. Take operating motor off of holder.



The length of the operating rod must be adjusted in such a manner, that the fresh air/circulating air flaps can be opened and closed completely by the operating motor. Adjust by disconnecting on the operating motor and turning the operating rod in the ball head.

64 11 205 REMOVING AND INSTALLING HEATER

Remove and install instrument panel trim
51 45 030.

Discharge pressure in air conditioner with help
of valve core remover.

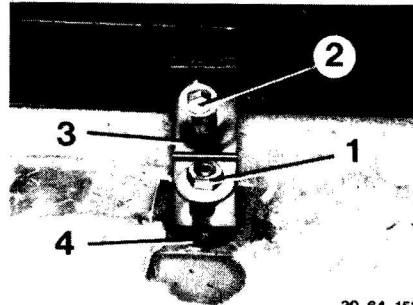
Installation:

Discharge, charge and check air conditioner for
leaks after installation.

Disconnect battery ground lead.
Pull off rubber strip (1).
Cut open wire straps (2).
Unscrew bolts (3).
Place cover (4) aside.

Drain coolant.
Disconnect both water hoses.
Installation:
Bleed cooling system.
Check coolant.

Disconnect plugs (1) connecting heater wire
harness and car wire harness.

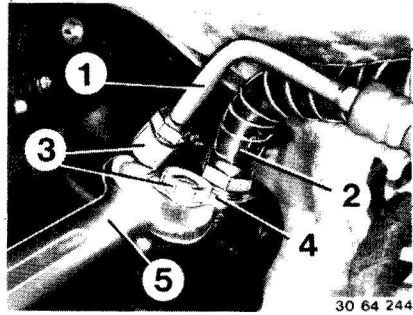


30 64 153

Unscrew nut (1) and bolt (2).
Take off bracket (3).

Installation:

Check rubber mount (4), replacing if necessary.



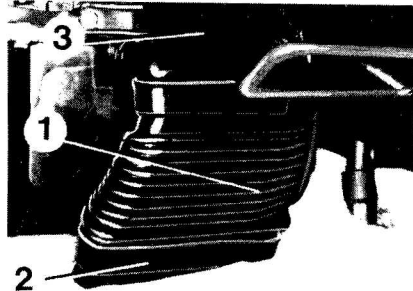
30 64 244

Disconnect lines (1 and 2).

Insert plugs (3) in open connections immediately.
Counterhold on block valve (4) with wrench (5).

Installation:

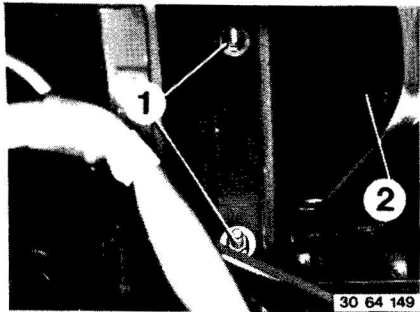
Tightening torque*.
Replace seals.



30 64 151

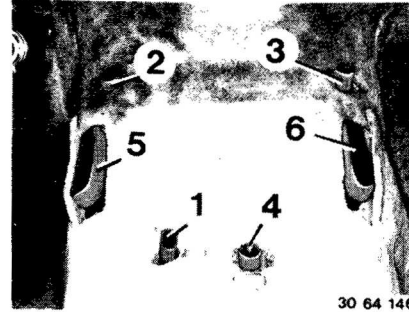
Remove connector (1) between heater (3) and
rear area heater duct (2) on left and right sides.

* See Specifications



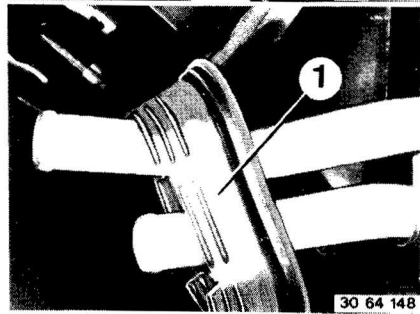
Unscrew left and right nuts (1).
Remove heater.
Note:
Close bypass flaps (2), because the heater can only be removed in this state.

30 64 149



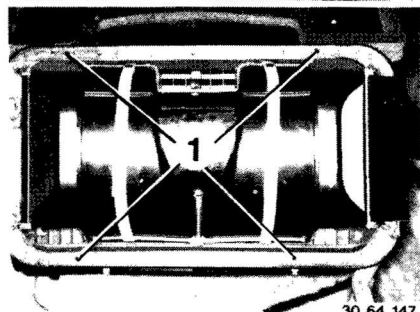
Installation:
Condensation water drains (1 ... 3) must be connected on heater.
Check rubber mount (4), replacing if necessary.
Rear area heater ducts (5 and 6).

30 64 146



Installation:
Make sure sleeve (1) has perfect fit in body wall.

30 64 148



Installation:
Check sealing frame (1), replacing if necessary.

30 64 147

64 11 210 REMOVING AND INSTALLING HEATER MOTOR

Disconnect battery ground lead.
 Pull off rubber strip (1).
 Cut off wire strap (2).
 Unscrew bolt (3).
 Lay cover (4) aside.

Open retaining straps (1) and swing aside.

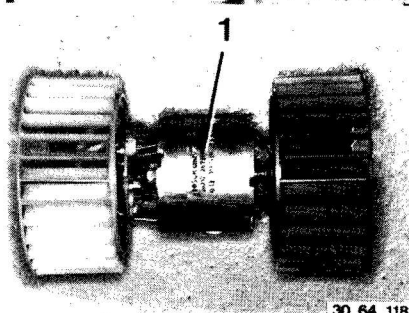
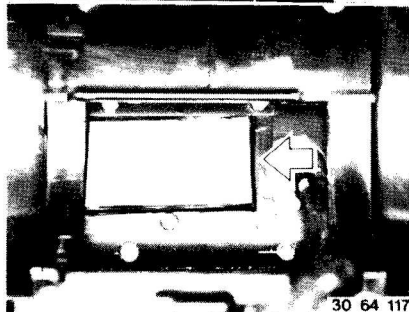
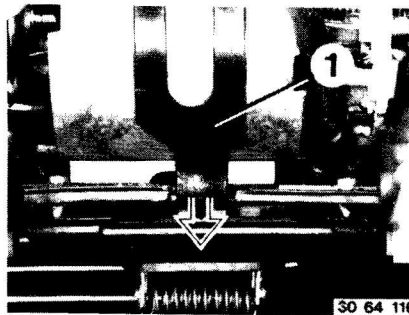
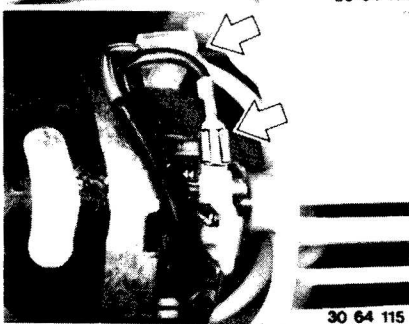
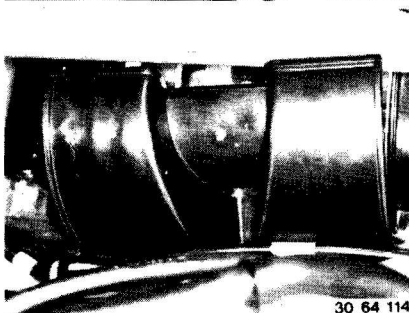
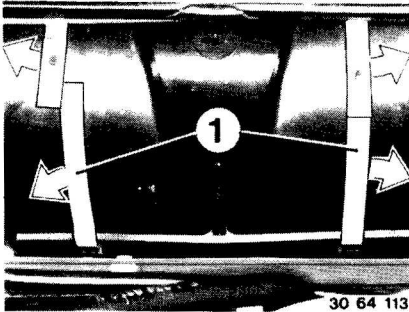
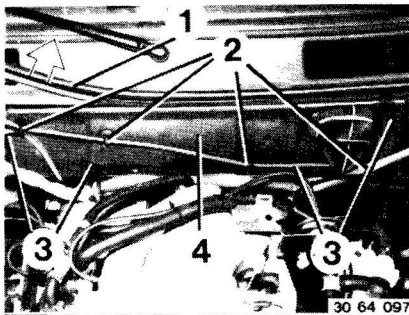
Remove cover.

Pull off both wire plugs.

Disengage clamp (1).
 Lift out fan motor with fan.

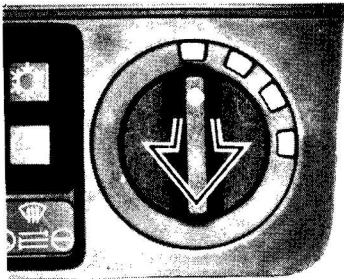
Important!
 Be careful not to damage the air flap.

Installation:
 Check code number (1)*.
Important!
 Do not remove or turn fan wheels on motor shaft,
 since motor and fan wheels were balanced in
 assembled state.



64 11 211 REMOVING AND INSTALLING BLOWER SWITCH

1) Cars without Radio:
Lift off radio opening mask.
Pull off control knob.



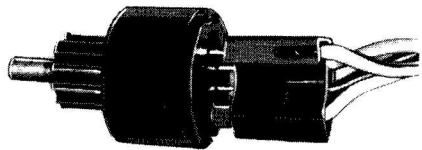
30 64 196

Unscrew nut.

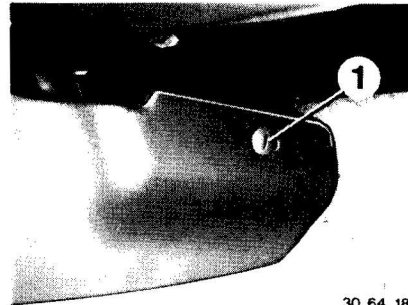


30 64 125

Remove blower switch.
Pull off plug on blower switch.

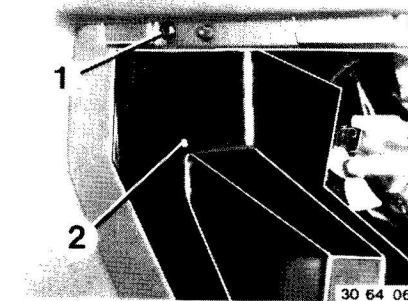


30 64 220



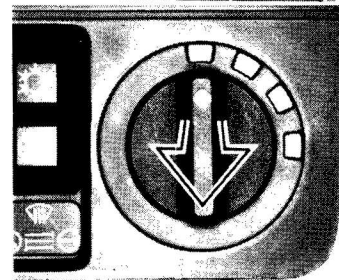
30 64 185

2) Cars with Radio:
Unscrew bolt (1).



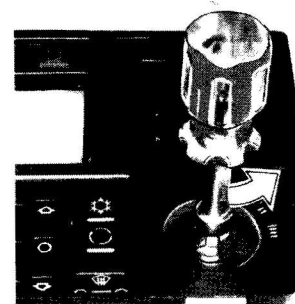
30 64 066

Open glove box.
Unscrew screw (1).
Take off trim panel (2).



30 64 196

Pull off control knob.

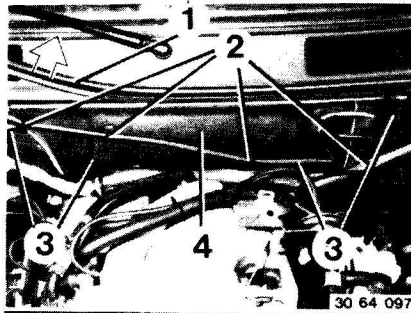


30 64 125

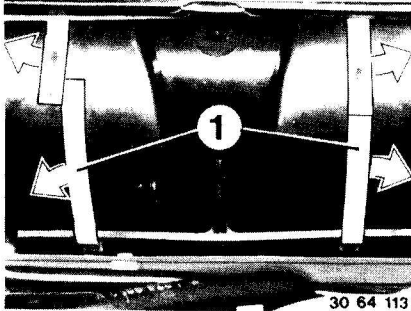
Unscrew nut.
Pull off plug on blower switch.
Remove blower switch.

64 11 220 REMOVING AND INSTALLING
BLOWER MOTOR RESISTOR
PLATE

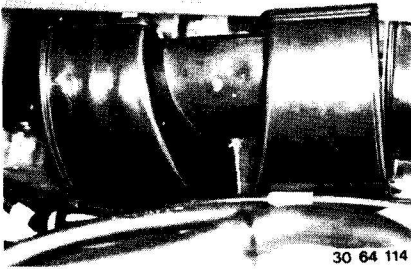
Disconnect battery ground lead.
Pull off rubber strip (1).
Cut off wire strap (2).
Unscrew bolts (3).
Lay cover (4) aside.



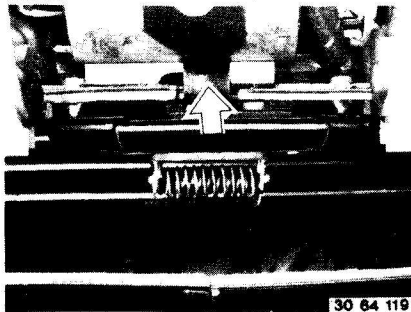
Open retaining straps (1) and swing aside.



Remove cover.



Pull off resistor plate.

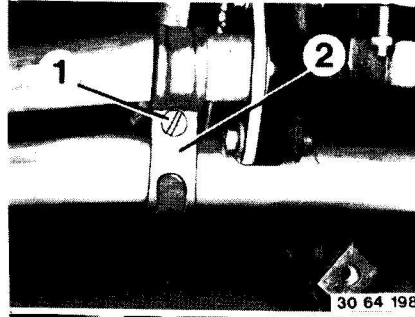


64 11 271 REMOVING AND INSTALLING
WATER VALVE FOR HEATER

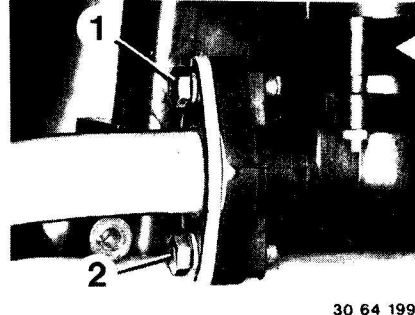
Disconnect battery ground lead.
Remove and install instrument panel trim on
left side 51 45 180.
Remove and install tray 51 16 200.

Drain coolant.
Disconnect both water hoses.
Installation:
Bleed cooling system.
Check coolant.

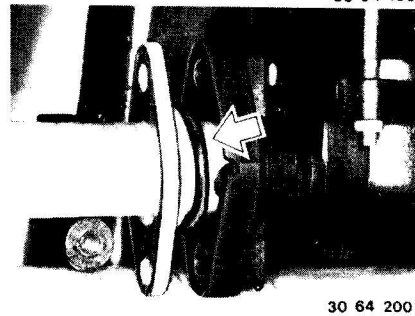
Pull off plug (1).



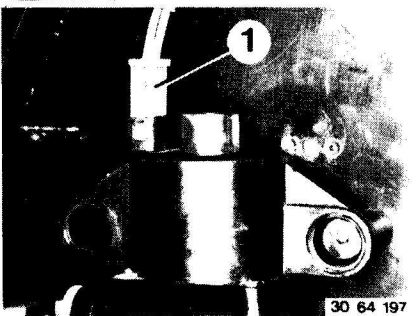
Unscrew bolt (1).
Take off clamp (2).



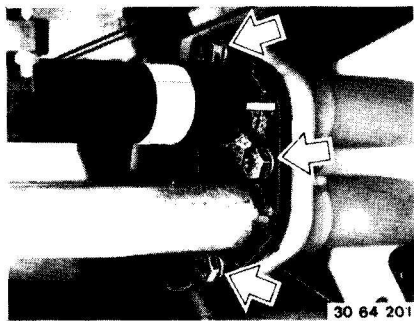
Unscrew bolts (1 and 2).



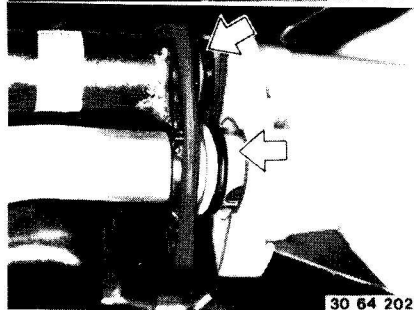
Installation:
Replace seal.



Unscrew bolts.
Take off water valve with pipe lines.



Installation:
Replace seals.



Checking Water Valve:
Water valve should be open when without electric power.
Water valve should be closed when supplied with battery voltage.

64 11 531 REMOVING AND INSTALLING HEATER CORE

Disconnect battery ground lead.
 Remove and install tray 51 16 200.
 Remove and install instrument panel trim on left side 51 45 180.

Drain coolant.
 Loosen screw (1).

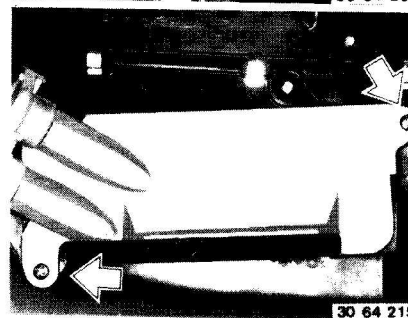
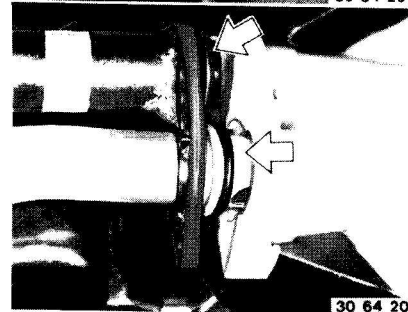
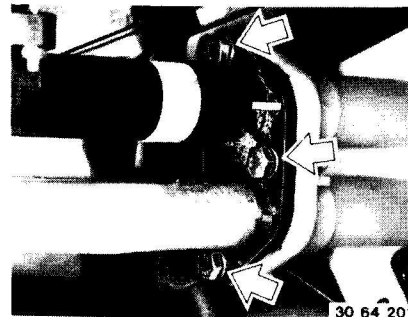
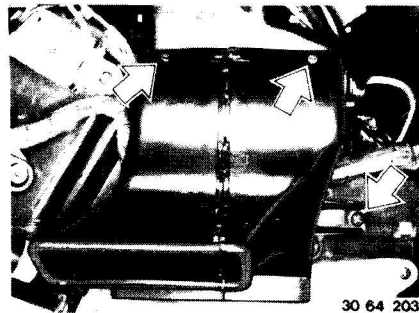
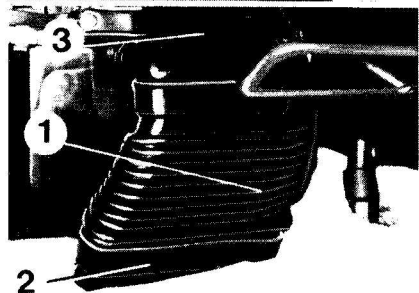
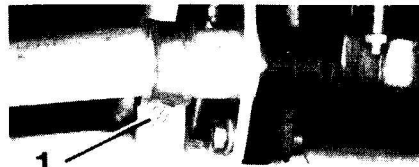
Remove connector (1) on left side between heater (3) and rear area heater duct (2).

Unscrew screws.
 Take off molded parts.

Unscrew bolts.

Installation:
 Replace seals.

Unscrew bolts.
 Pull heater core out of housing.



30 64 192

30 64 151

30 64 203

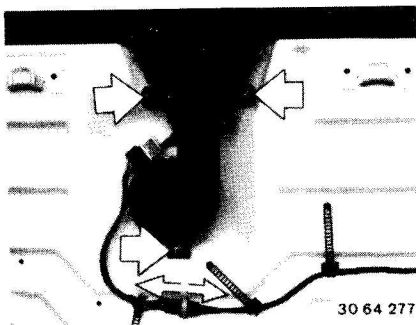
30 64 201

30 64 202

30 64 215

64 23 000 REMOVING AND INSTALLING OR REPLACING REAR WINDOW VENTILATOR

Remove rear seat cushion and backrest -- see
52 20 000.



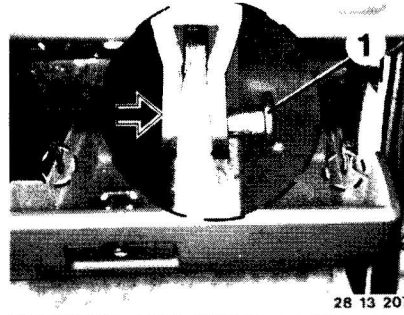
Disconnect plug.
Pull off relay.
Unscrew screws and remove ventilator.

Note:

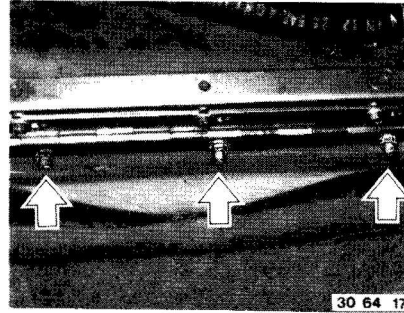
The ventilator is only ready for operation
when the top is closed (microswitch in top
box on left side).

64 51 050 REMOVING AND INSTALLING EXPANSION VALVE

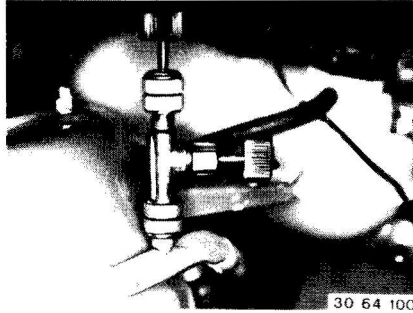
Disconnect battery ground lead.
 Remove and install tray 51 16 200.
 Remove and install instrument panel trim on left side 51 45 180.



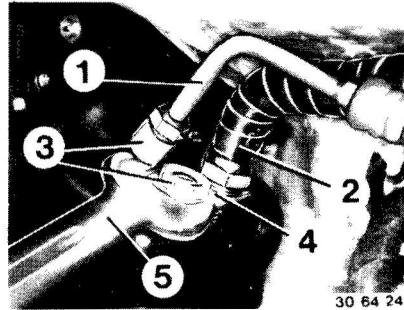
Disconnect pins (1) of both retaining straps.



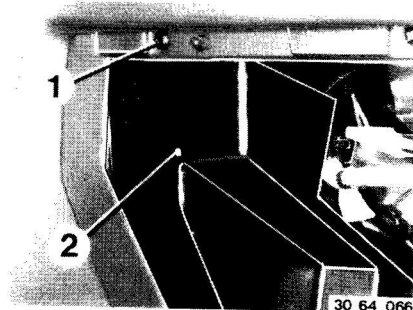
Loosen nuts and remove glove box.



Discharge pressure in air conditioner with help of a valve core remover.
Installation:
 Discharge, charge and check air conditioner for leaks after installation.

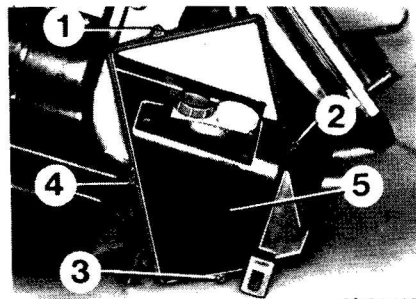


Disconnect lines (1 and 2).
 Insert plugs (3) in open connections immediately. Counterhold on expansion valve (4) with wrench (5).
Installation:
 Tightening torque*.
 Replace seals.



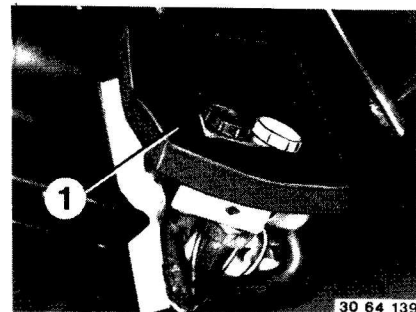
Open glove box.
 Unscrew bolt (1).
 Take off trim panel (2).

* See Specifications



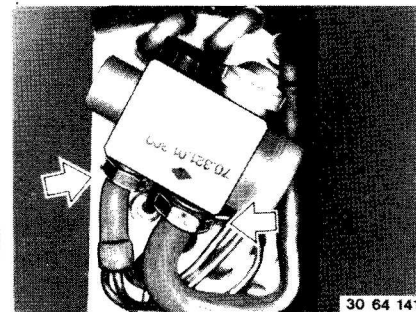
30 64 138

Unscrew bolts (1 ... 4).
Take off cover (5).



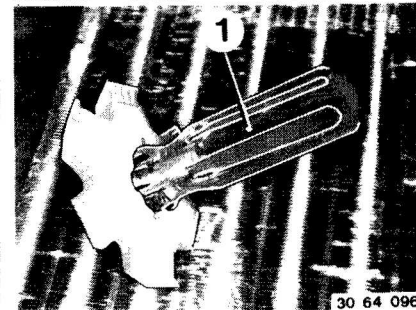
30 64 139

Take off foam rubber cover (1).
Pull evaporator out of housing.



30 64 141

Disconnect both pipes.
Insert plugs in open connections immediately.
Counterhold on expansion valve with a wrench.
Installation:
Replace seals.
Tightening torque*.



30 64 096

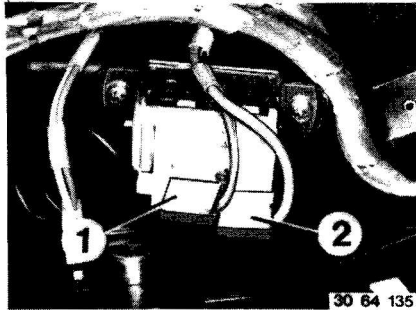
Note:
Straighten bent fins on evaporator with help
of special comb (1).

* See Specifications

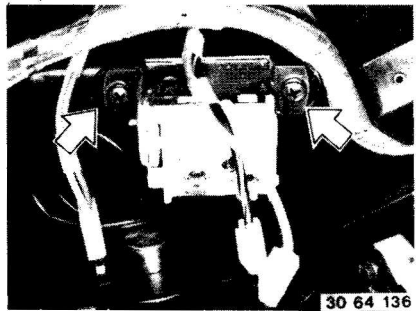
**64 51 150 REMOVING AND INSTALLING
FREEZING PREVENTION
SWITCH**

Disconnect battery ground lead.
Remove and install tray 51 16 200.
Remove and install instrument panel trim on
left side 51 45 180.

Pull off plugs (1 and 2).



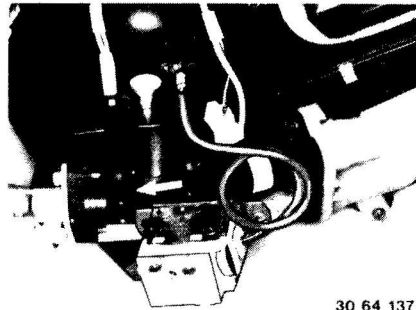
Unscrew screws.



Remove temperature switch, pulling
temperature sensor out of housing at same
time.

Note:

Don't bend temperature sensor.

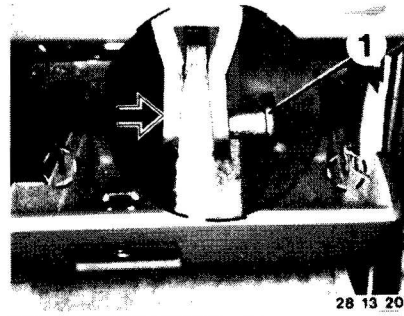


64 51 590 REMOVING AND INSTALLING EVAPORATOR

Disconnect battery ground lead.
 Remove and install tray 51 16 200.
 Remove and install instrument panel trim on left side 51 45 180.

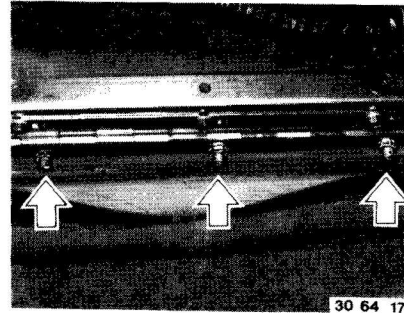
Discharge pressure in air conditioner with help of a valve core remover.
Installation:
 Discharge, charge and check air conditioner for leaks after installation.

Open glove box.
 Unscrew bolt (1).
 Remove trim panel (2).



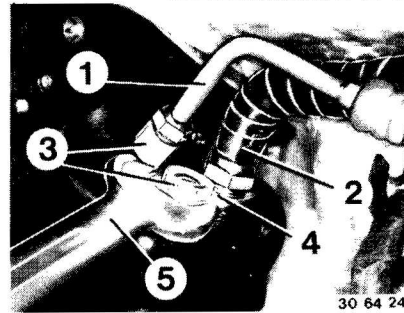
28 13 207

Disconnect pins (1) of both retaining straps.



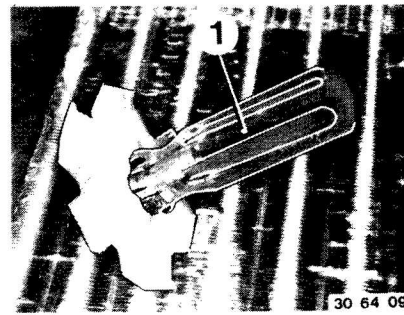
30 64 174

Loosen nuts and remove glove box.



30 64 244

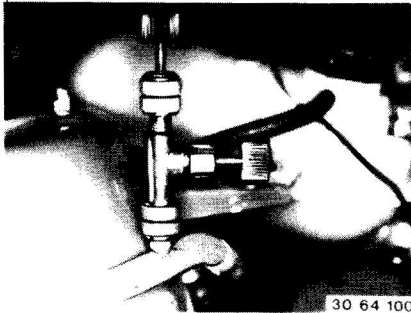
Disconnect lines (1 and 2).
 Plug open connections with caps (3) immediately.
 Counterhold on expansion valve (4) with wrench (5).
Installation:
 Tightening torque*.
 Replace seals.



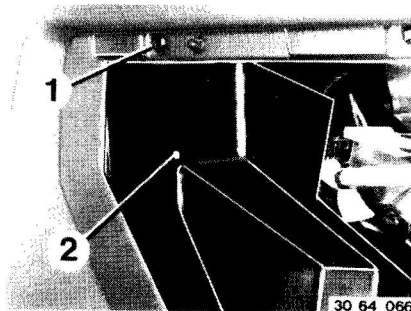
30 64 096

Note:
 Straighten bent cooling fins on condenser with help of special comb (1).

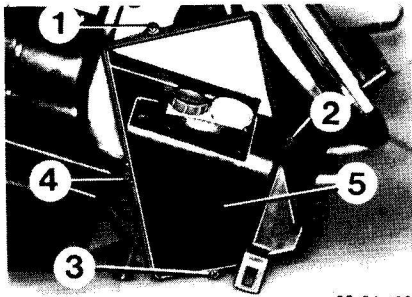
* See Specifications



30 64 100

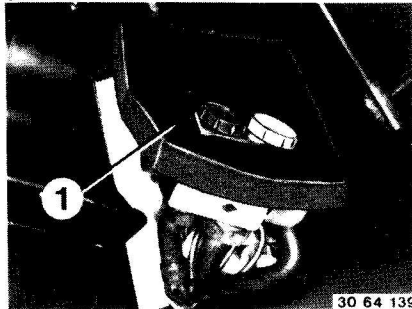


30 64 066



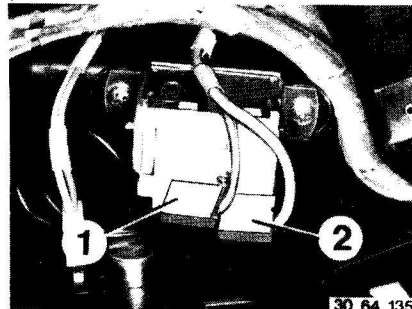
30 64 138

Unscrew screws (1 ... 4).
Remove trim panel (5).



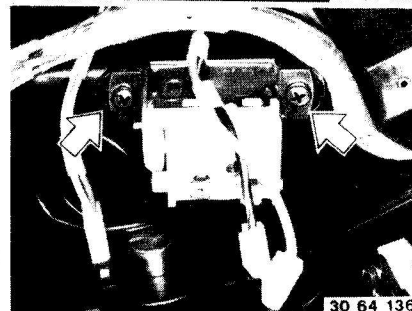
30 64 139

Remove foam rubber cover (1).



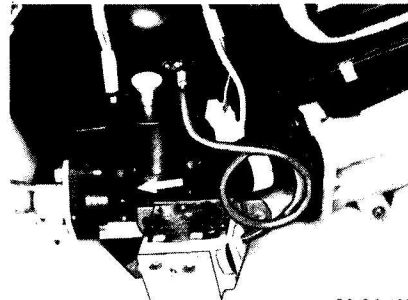
30 64 135

Pull off plugs (1 and 2).



30 64 136

Unscrew bolts.



30 64 137

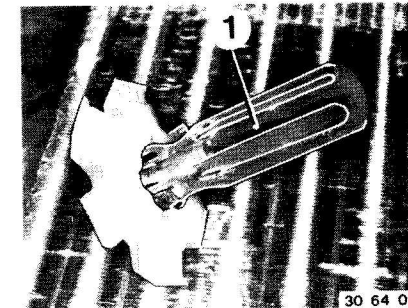
Remove temperature switch, pulling temperature sensor out of housing at same time.

Note:
Don't bend temperature sensor.



30 64 140

Pull evaporator out of housing.
Disconnect both pipes.
Insert plugs in open connections immediately.
Counterhold on expansion valve with a wrench.
Installation:
Install freezing prevention switch only after installation of evaporator.
Replace seals.
Tightening torque*.



30 64 096

Note:
Straighten bent cooling fins on condenser with help of special comb (1).

* See Specifications

64 52 020 REMOVING AND INSTALLING COMPRESSOR

BMW 318 i:
 Discharge pressure in air conditioner with help of a valve core remover.
Installation:
 Discharge, charge and check air conditioner for leaks after installation.

Disconnect plug (1) for solenoid of pulley.

Unscrew bolts (1 and 2).
 Disconnect lines (3 and 4).
 Insert plugs in open connections immediately.
Installation:
 Replace seals.
 Tightening torque*.

Unscrew nut (2).
 Remove bolt (1), washer (3) and spacer (4).
 Take off compressor.

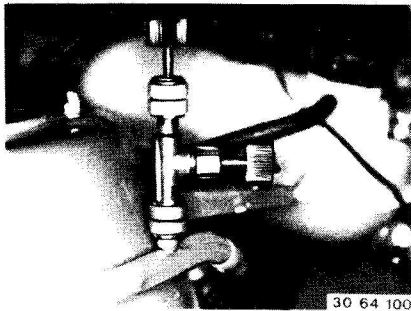
Installation:
 Check code number (1)*.
 Tightening torque*.

Installation:
 Check drive belt tightness with a tester, correcting if necessary.
 Pulling hook must always rest on tip of tooth.

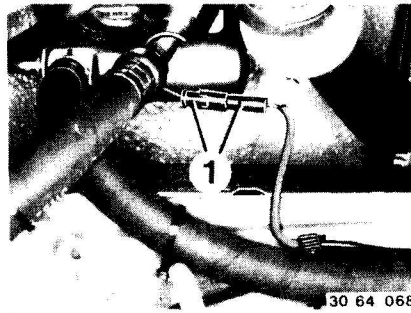
Note:
 Replace compressor oil.
 Unscrew bolt (1).
 Let oil run out of compressor.
 Pour in new oil.
 Oil volume*
 Oil grade*

* See Specifications

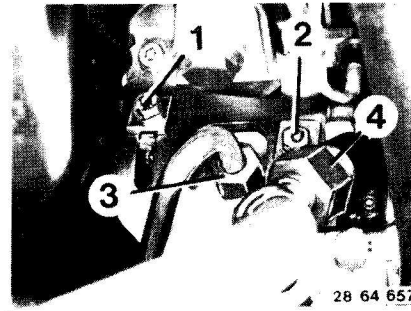
* See Specifications and Parts Microfilm



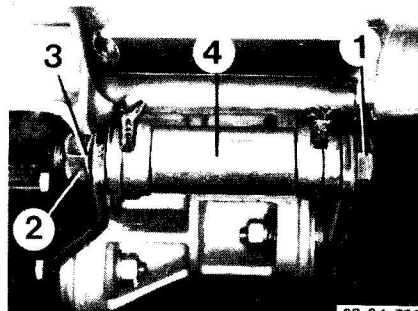
30 64 100



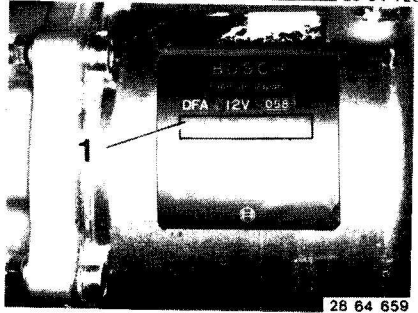
30 64 068



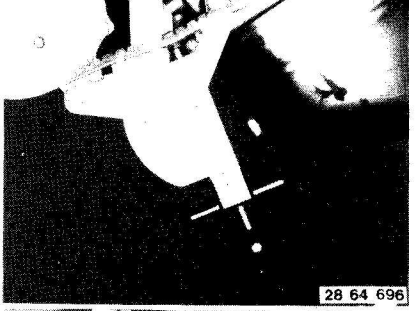
28 64 657



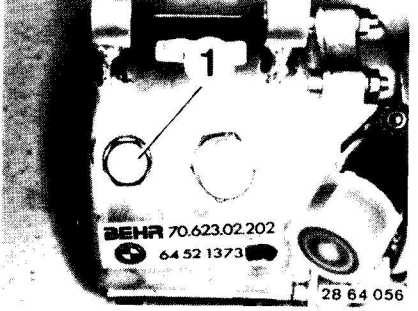
28 64 725



28 64 659



28 64 696



28 64 056

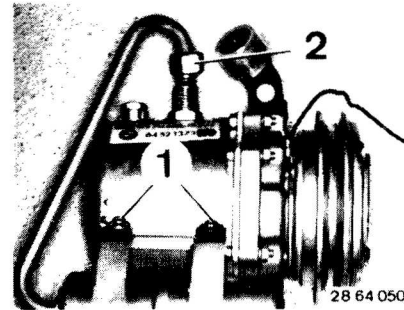
64 52 020 REMOVING AND INSTALLING COMPRESSOR

BMW 325 e:

Discharge pressure in air conditioner with help of a valve core remover.

Installation:

Discharge, charge and check air conditioner for leaks after installation.



Unscrew bolts (1).
Unscrew nut (2) and take off stabilizer.
Installation:
Tightening torque*.
Replace seal.

Remove air cleaner.

Disconnect plugs (1).

Unscrew nut (2).

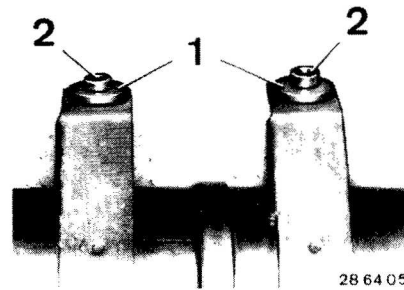
Disconnect hose (3).

Insert plugs in open connections immediately.

Installation:

Tightening torque*.

Replace seal.



Installation:

Check rubber mounts (1), replacing if necessary.
Don't forget spacers (2).

Unscrew nuts (1 and 2).

Disconnect hose (3).

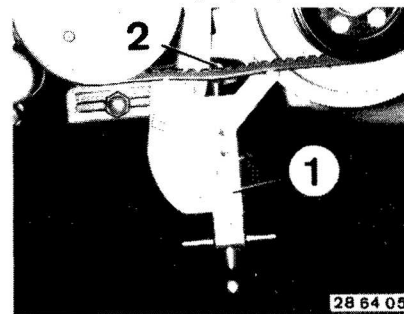
Insert plugs in open connections immediately.

Remove bolts (4 and 5).

Installation:

Tightening torque*.

Replace seal.



Installation:

Check drive belt tightness with tester (1).
Note:
Pulling hook (2) must always be on tip of a tooth.

Remove bolt (1).

Remove compressor.

Note:

Replace compressor oil.
Unscrew bolt (1).
Let oil run out of compressor.
Add oil - volume* and oil grade*.

* See Specifications

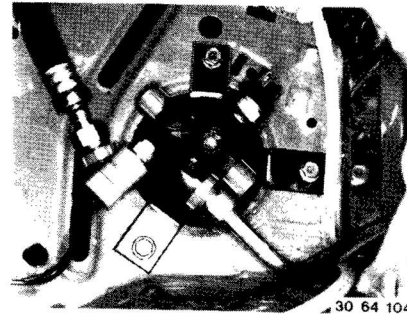
* See Specifications

64 53 010 REMOVING AND INSTALLING A/C DRIER

Discharge pressure in air conditioner with help of a valve core remover.

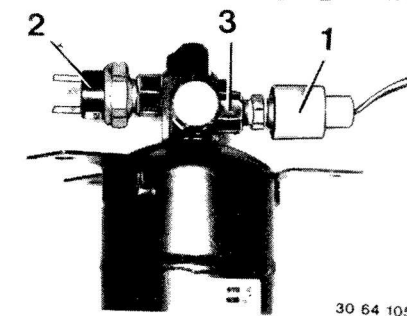
Installation:

Discharge, charge and check air conditioner for leaks after completing installation.
Remove washing fluid tank.



30 64 100

Unscrew screws.
Take off trim.



30 64 104

Disconnect safety switches (1 – high pressure pressostat and 2 – low pressure pressostat), while holding on hexagon (3).

Insert plugs in open connections immediately.

Installation:

Install both safety switches with a bolt locking compound, HWB No. 81 22 9 407 144.
Tightening torque*.

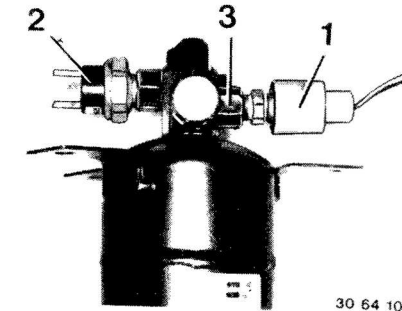
Disconnect lines (1 and 2), while holding on hexagon (3).

Insert plugs in open connections immediately.

Installation:

Tightening torque*.

Check seals, replacing if necessary.



30 64 105

Disconnect plugs (1) on safety switches.

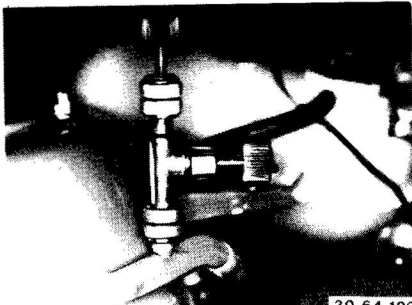
* See Specifications

* See Specifications

64 53 050 REMOVING AND INSTALLING CONDENSER

Remove engine fan.
Loosen radiator and push up to engine.
Discharge pressure in air conditioner with help of a valve core remover.

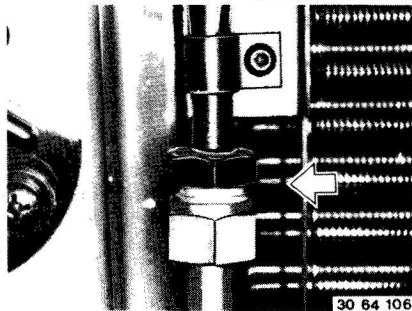
Installation:
Discharge, charge and check air conditioner for leaks after installation.



30 64 100

Remove right radiator grill section.
Disconnect pipe.
Insert plugs in open connections immediately.

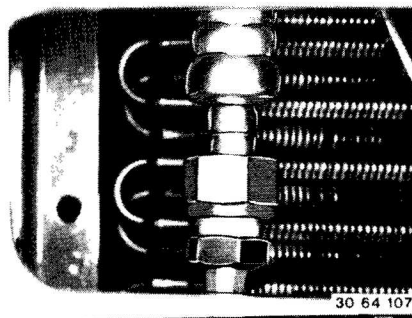
Installation:
Tightening torque*.
Replace gasket.



30 64 106

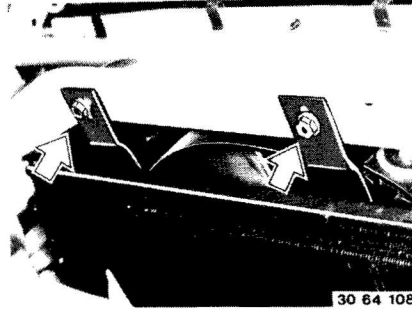
Disconnect pipe.
Insert plugs in open connections immediately.

Installation:
Tightening torque*.
Replace gasket.



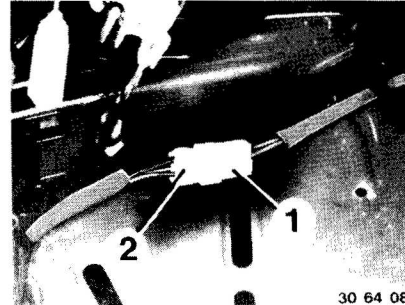
30 64 107

Unscrew bolts.
Remove condenser from above.



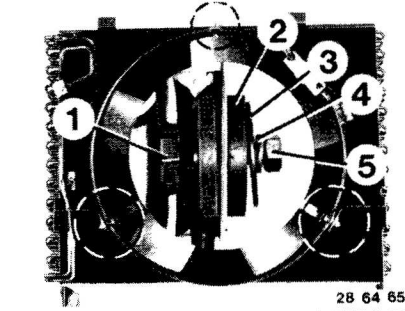
30 64 108

* See Specifications



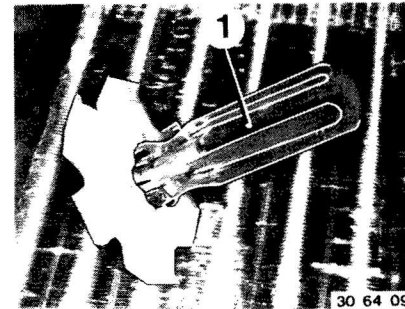
30 64 087

Connect plug (1) of extra fan with plug (2) of wire harness.



28 64 651

Unscrew bolts.
Take extra fan off of condenser.
1 = Bolts
2 = Rubber mount
3 = Washer
4 = Lock washer
5 = Nut



30 64 096

Note:
Straighten bent cooling fins on condenser with help of a special comb (1).