

Fig. 36. 6-cylinder engine belt diagram: To remove A/C belt, lever tensioner (A) in clockwise direction using long-handled wrench or breaker-bar.

6. Disconnect electrical harness connector from compressor.

7. Remove A/C pressure hose and suction hose flange bolts from compressor. Plug hoses immediately. See Fig. 37.

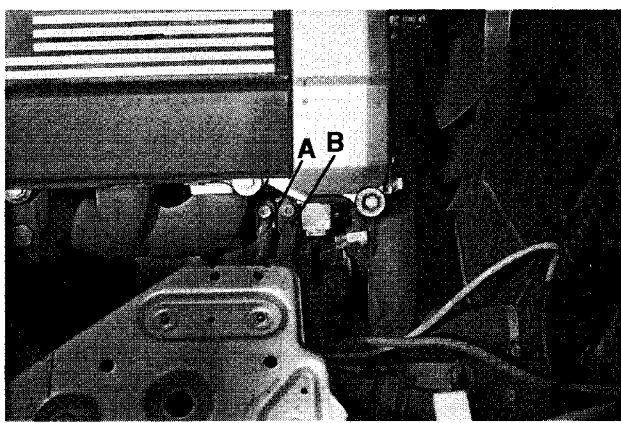


Fig. 37. A/C compressor pressure hose (A) and suction hose (B). (6-cylinder engine shown. 4-cylinder engine is similar.)

8. Remove compressor mounting bolts. See Fig. 38. Remove compressor by pulling downward from underneath car.

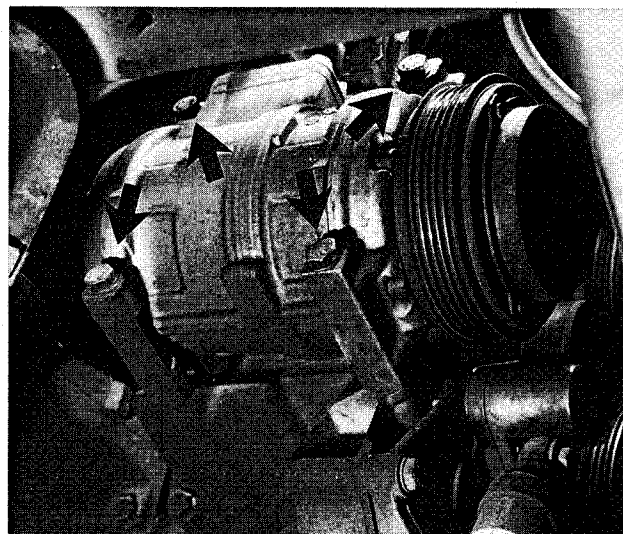


Fig. 38. A/C compressor mounting bolts (arrows).

9. Installation is reverse of removal.

CAUTION —

- Always replace O-rings when reconnecting refrigerant lines.
- When installing a new compressor always replace receiver/drier unit.

10. Before recharging, evacuate system for at least 30 min. Recharge system following equipment manufacturer's instructions. See **Table d. A/C System Refrigerant Capacities.**

Tightening Torques

- A/C compressor to engine block 22 Nm (17 ft-lb)
- A/C line flange to A/C compressor
 - 5/8 in. line 20 Nm (15 ft-lb)
 - 3/4 in. line 39 Nm (29 ft-lb)
 - 7/8 in. line 42 Nm (31 ft-lb)
 - 1 1/16 in. line 48 Nm (35 ft-lb)

A/C Compressor Clutch

The compressor clutch can be replaced without disturbing the sealed refrigerant system, although clearances in the six-cylinder cars may be very tight. Detach the compressor from the compressor bracket to gain extra clearance.

Typical A/C compressor and clutch is shown in Fig. 39.

Remove drive plate and pulley to access clutch magnetic winding. See Fig. 40.

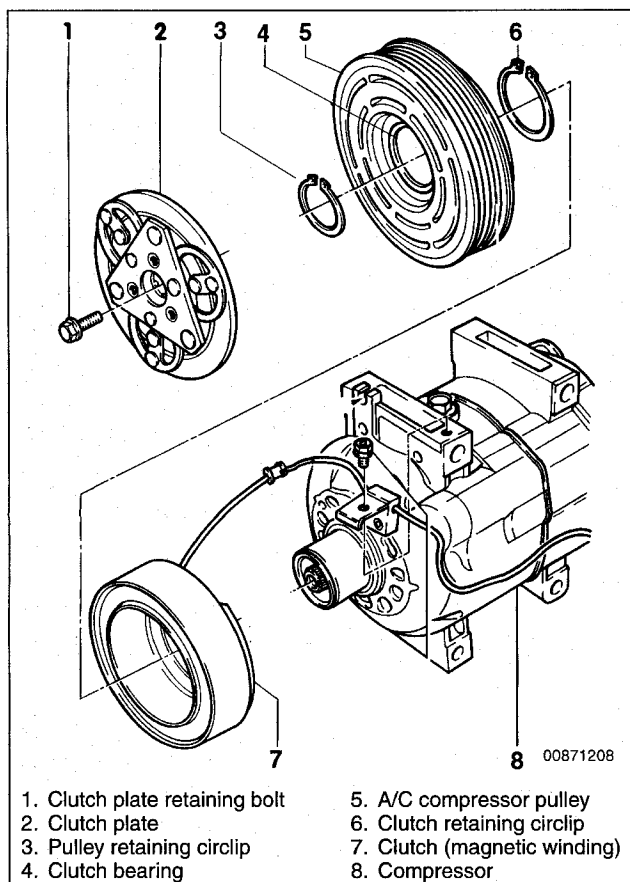


Fig. 39. A/C compressor and clutch components.

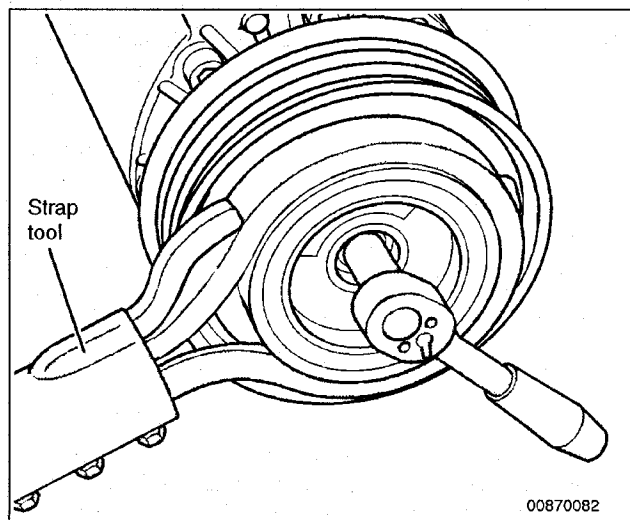


Fig. 40. A/C compressor drive plate can be held stationary with strap tool to allow removal of retaining bolt.

NOTE —

BMW's are equipped with compressors from various manufacturers. Special tools may be required to remove driveplate or pulley.

Tightening Torque

- Compressor clutch bolt
to compressor shaft 20 Nm (15 ft-lb)

A/C condenser, replacing

- Following manufacturer's instructions, connect an approved refrigerant recovery/recycling/recharging unit to A/C system and discharge system.

WARNING —

Do not discharge/charge the A/C system without proper equipment and training. Damage to the vehicle and personal injury may result.

- Remove front bumper and radiator grilles. See 510 Exterior Trim, Bumpers.
- Remove auxiliary electric radiator fan. See 170 Cooling System.
- Detach A/C lines from lower right corner of condenser. Plug lines immediately. See Fig. 41.

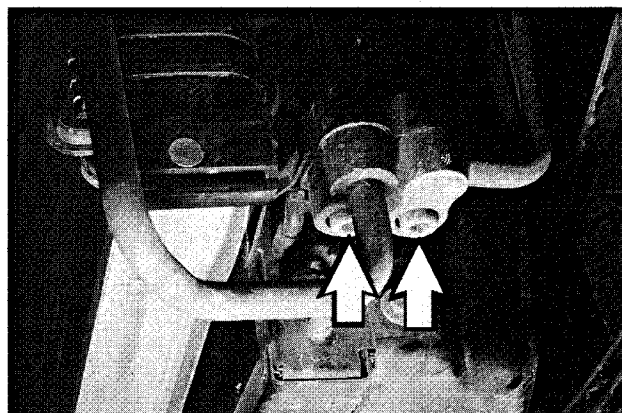
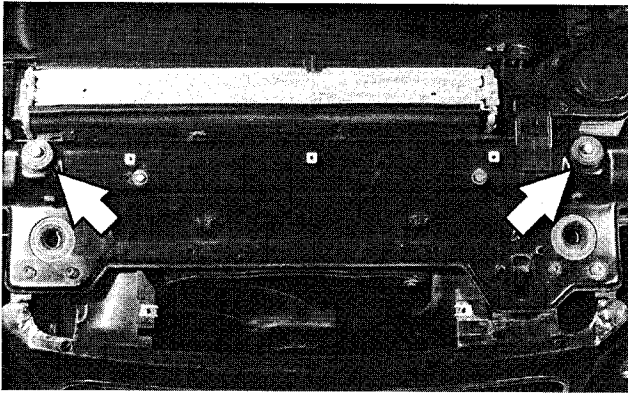


Fig. 41. A/C flange bolts at condenser (arrows).

- Remove condenser mounting bolts from front radiator support. See Fig. 42.
- Lift up condenser to disengage from lower mounts and remove from below.
- Installation is reverse of removal.

CAUTION —

- Always replace O-rings when reconnecting refrigerant lines.
- When installing a new condenser always replace receiver/drier unit.



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Fig. 42. Upper A/C condenser mounting bolts (arrows).

8. Before recharging, evacuate system for at least 30 min. Recharge system following equipment manufacturer's instructions. See **Table d. A/C System Refrigerant Capacities**.

A/C receiver/drier, replacing

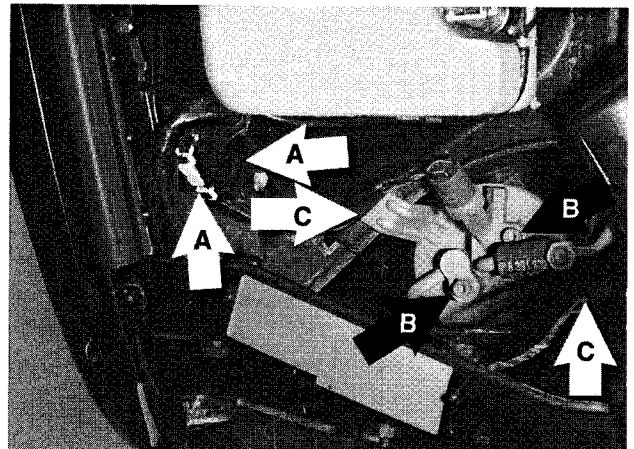
The A/C receiver/drier is mounted in the front right corner of the engine compartment behind the headlight assembly.

CAUTION —

The receiver/drier must be replaced when

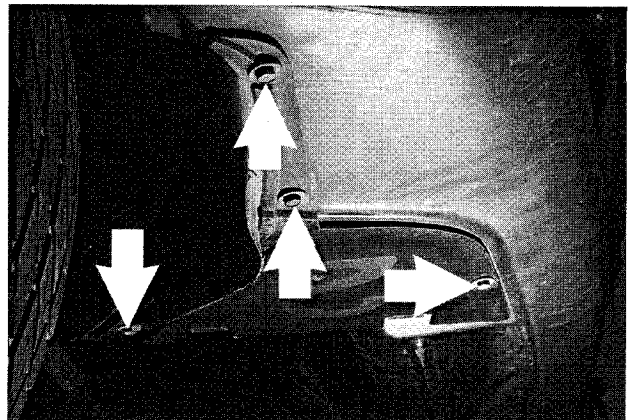
- There is dirt in the A/C system
- The compressor has seized or has been replaced for any reason
- The condenser or evaporator are replaced for any reason
- The A/C system is leaking and there is no more refrigerant
- The A/C system was open for 24 hours or more.

1. Following manufacturer's instructions, connect an approved refrigerant recovery/recycling/recharging unit to A/C system and discharge system.
2. Remove right headlight assembly. See **630 Exterior Lighting**.
3. Disconnect A/C electrical harness connectors. See Fig. 43.
4. Remove refrigerant pressure lines from receiver/drier. Plug lines immediately.
5. Remove receiver/drier mounting bolts.
6. Remove underbody splash shield on passenger side. See Fig. 44.
7. Remove passenger side brake cooling duct. Disconnect outside temperature sensor harness, if applicable.



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Fig. 43. A/C receiver/drier electrical harness connectors (A), pressure line retaining bolts (B), and mounting bolts (C).



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Fig. 44. Passenger side splash shield retaining screws (arrows).

8. Push receiver/drier down and remove from underneath car. Make sure that receiver/drier is clear of any electrical harnesses.
9. Installation is reverse of removal.

CAUTION —

Always replace O-rings when reconnecting refrigerant lines.

10. Before recharging, evacuate system for at least 30 min. Recharge system following equipment manufacturer's instructions. See **Table d. A/C System Refrigerant Capacities**.

A/C expansion valve, removing and installing

1. Following manufacturer's instructions, connect an approved refrigerant recovery/recycling/recharging unit to A/C system and discharge system.

WARNING —

Do not discharge/charge the A/C system without proper equipment and training. Damage to the vehicle and personal injury may result.

2. Remove glove compartment and glove compartment support frame. See 513 Interior Trim.
3. Remove right side footwell vents.
4. Remove right side control module carrier screws and tilt carrier down. See Fig. 46.

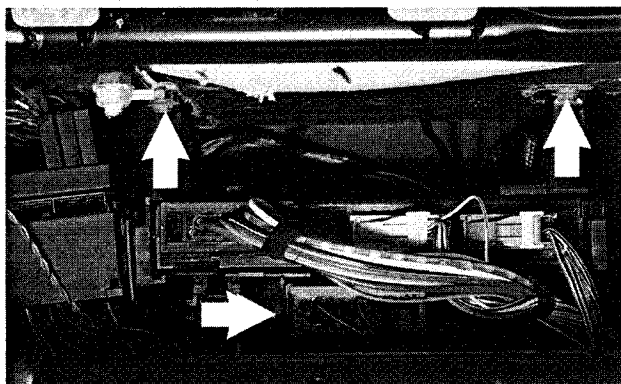


Fig. 45. Control module carrier retaining screws (arrows).

5. Remove expansion valve cover. See Fig. 46.

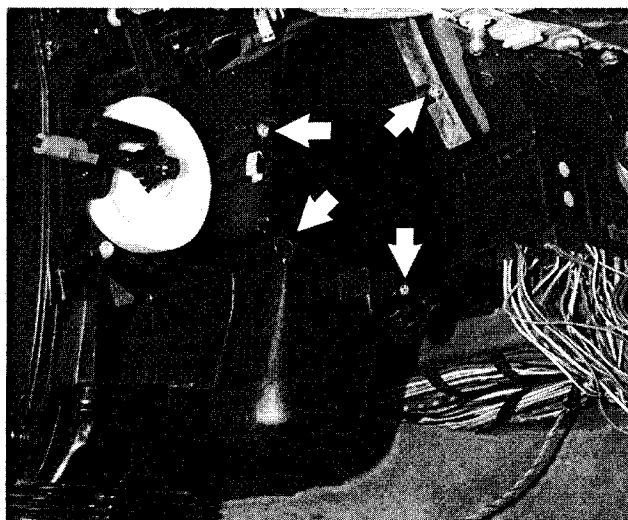


Fig. 46. Four screws retain expansion valve cover (arrows).

6. Remove A/C refrigerant line flange bolt(s) from expansion valve. Plug lines immediately. See Fig. 47.

NOTE —

If necessary, remove air plenum grille from rear of engine compartment as described earlier in **Blower motor, removing and installing**. Remove wiring harness cover screws and then remove right side plenum screws. Reaching into the plenum chamber, remove A/C line flange bolt to allow expansion valve room for removal.

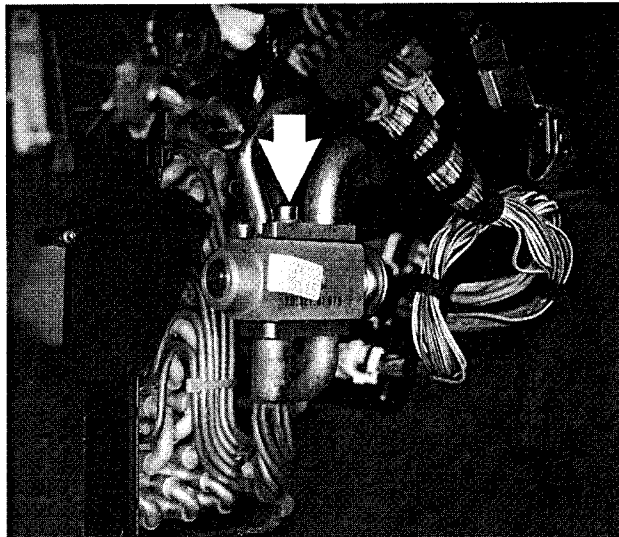


Fig. 47. Refrigerant line flange mounting bolt at expansion valve (arrow).

7. Remove screws from top of expansion valve and remove expansion valve from evaporator. See Fig. 48.

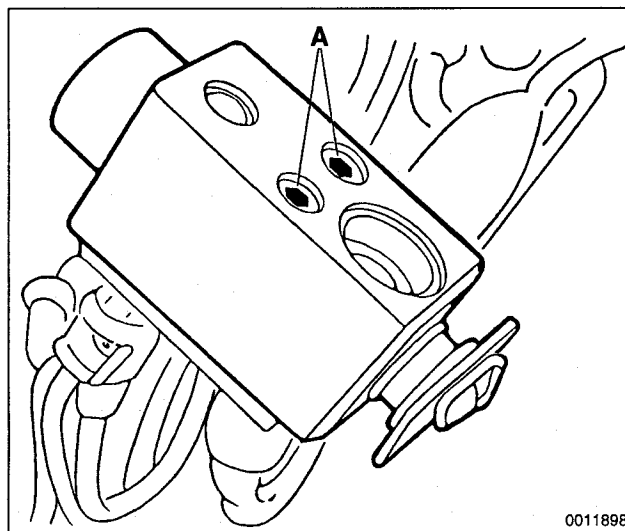


Fig. 48. Expansion valve mounting screws (A).

8. Installation is reverse of removal.

CAUTION —

Always replace O-rings when reconnecting refrigerant lines.

9. Before recharging, evacuate system for at least 30 min. Recharge system following equipment manufacturer's instructions. See **Table d. A/C System Refrigerant Capacities.**

A/C evaporator, removing and installing

1. Following manufacturer's instructions, connect an approved refrigerant recovery/recycling/recharging unit to A/C system and discharge system.
2. Remove complete heater box as described earlier.
3. Remove expansion valve as described earlier.
4. Unfasten evaporator sensor electrical harness connector and pull out sensor from left side of heater box. See Fig. 50.

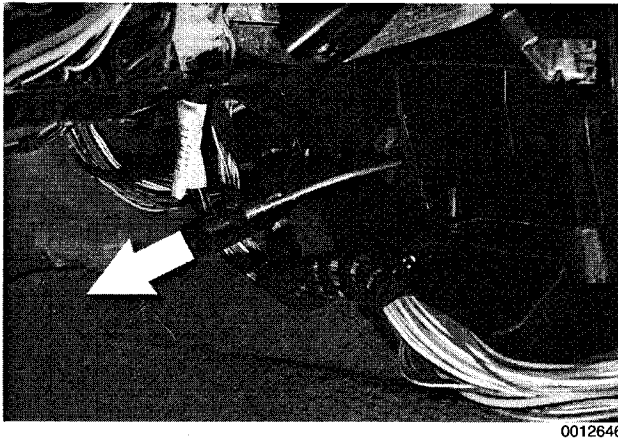


Fig. 49. Pull out evaporator sensor from housing in direction of arrow.

5. Remove rear heater box cover.
6. Remove clips retaining lower evaporator housing cover. Tilt out heater core, then pull evaporator out of housing.
7. Installation is reverse of removal.

CAUTION —

Always replace O-rings when reconnecting refrigerant lines.

8. Before recharging, evacuate system for at least 30 min. Recharge system following equipment manufacturer's instructions. See **Table d. A/C System Refrigerant Capacities.**

A/C evaporator temperature sensor, replacing

The evaporator temperature sensor is mounted in the left (driver) side of the heater box behind the center console.

1. Remove lower dash panel and knee bolster on driver side. See **513 Interior Trim.**
2. Remove left footwell ventilation duct by removing retaining rivet in bottom of duct. Pull it down and away from heater box. See Fig. 50.

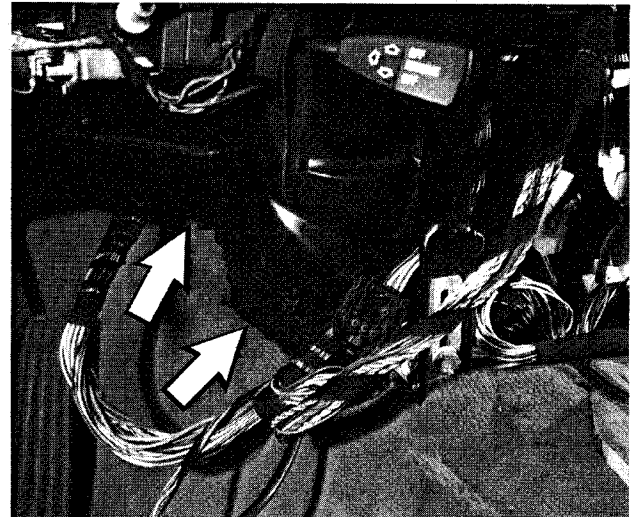


Fig. 50. Left footwell ventilation duct (arrow).

3. Disconnect sensor electrical connector from heater box. Pull sensor straight out of heater box. Refer to Fig. 49.
4. Installation is reverse of removal. **Table c.** lists evaporator temperature sensor test values.

Table c. Evaporator Temperature Sensor Test Values

Test temp.	Resistance
23°F (-5°C)	11.4 – 11.9 k ohms
32°F (0°C)	8.8 – 9.2 k ohms
41°F (5°C)	6.8 – 7.2 k ohms
50°F (10°C)	5.3 – 5.6 k ohms
59°F (15°C)	4.2 – 4.5 k ohms
68°F (20°C)	3.3 – 3.6 k ohms
77°F (25°C)	2.6 – 2.9 k ohms
86°F (30°C)	2.1 – 2.3 k ohms
95°F (35°C)	1.7 – 1.9 k ohms

A/C microfilter, replacing

1. Remove glove compartment. See **513 Interior Trim**.
2. Remove right footwell ventilation duct. See Fig. 51.

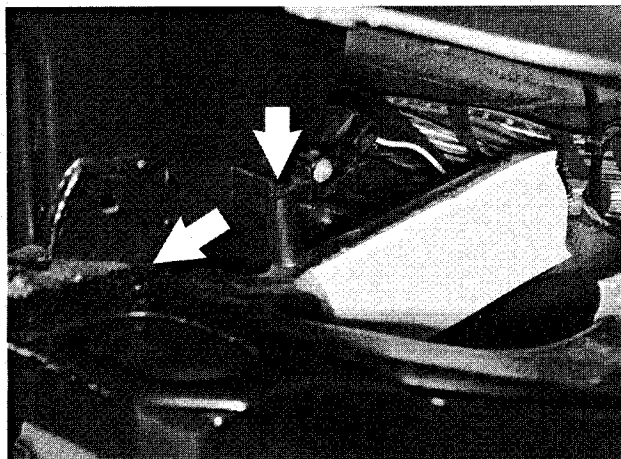


Fig. 51. Unfasten retaining rivets from right ventilation duct (arrows).

3. Remove right side control module carrier screws and tilt carrier down. See Fig. 52.

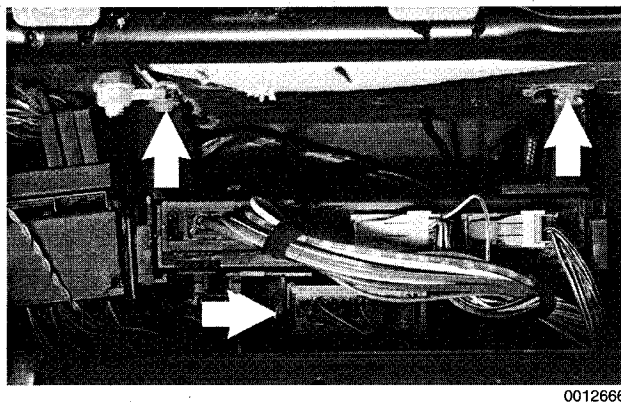


Fig. 52. Control module carrier retaining screws (arrows).

4. Rotate A/C microfilter housing release knob about 45° counterclockwise and remove filter housing cover. See Fig. 53.
5. Remove microfilter while moving module harnesses out of the way.
6. Installation is reverse of removal.

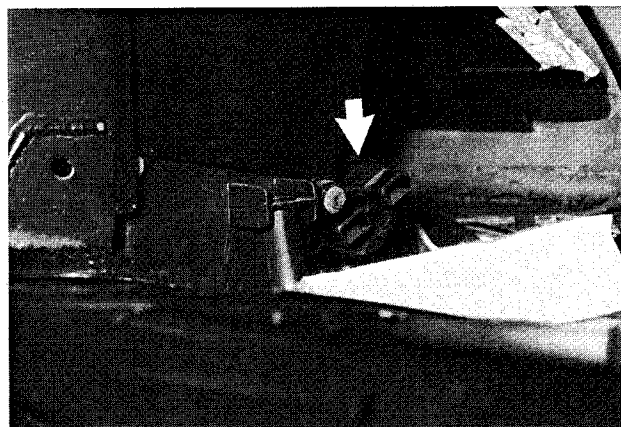


Fig. 53. A/C microfilter cover release knob (arrow) on passenger side of heater box.

Table d. A/C System Fluid Capacities (total)

Fluid	Quantity
R-12 refrigerant	1200g \pm 25 g (2.65 lbs. \pm 0.05 lbs.)
R-134a refrigerant	1000 g \pm 25 g (2.20 lbs. \pm 0.05 lbs.)
PAG oil SP-10 (R12 system)	200 ml \pm 20 ml (6.8 oz. \pm 0.7 oz.)
Refrigerant oil (R134a system)	Nippondeso 120ml Seiko Seiki 150ml



650 Radio

GENERAL	650-1
AUDIO SYSTEM	650-1
RADIO AND SPEAKER SERVICE	650-2
Radio, removing and installing	650-2
Left footwell speaker, removing and installing	650-3
Right footwell speaker, removing and installing	650-4

Rear speaker, removing and installing	650-5
Door panel speaker, removing and installing	650-5
Radio connector	650-6

TABLE

a. Radio Connector Terminal Designation	650-6
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GENERAL

This section covers the BMW factory-installed sound system, including radio and speaker removal, radio connectors and terminal designations.

The antenna is incorporated into the rear window defogger.

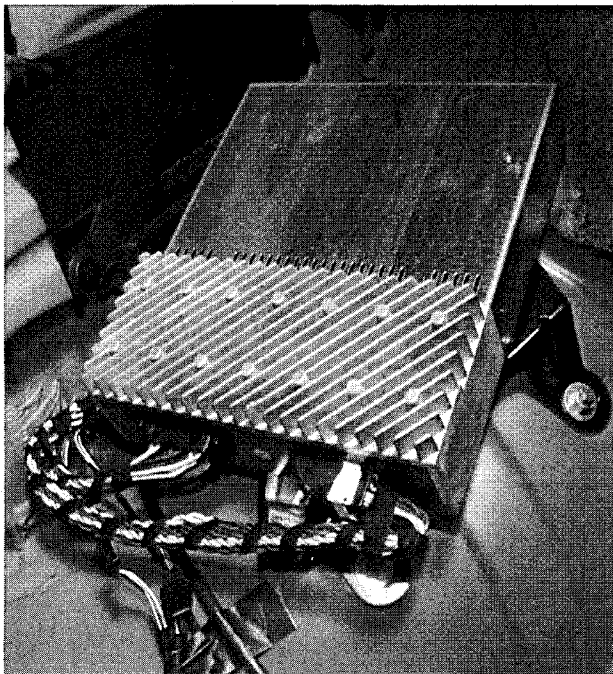


Fig. 1. Radio amplifier (premium package) in luggage compartment behind left panel.

AUDIO SYSTEM

The BMW E36 is equipped with a three band radio/cassette player unit mounted in the middle of the center console. In addition to AM and FM bands, the radio will receive broadcasts from the National Weather Service.

The cassette deck is equipped with the Dolby™ C noise reduction system, for improved tape performance with reduced background tape noise.

A 6-speaker audio system was standard in the early years of the model line. Many additional features have been installed as optional or standard equipment during the vehicle production run.

- A 200-watt power amplifier with custom-contoured equalization and ten speaker output. See Fig. 1.
- A multi-disc compact disc changer, for which the vehicle and the radio are prewired. See Fig. 2.

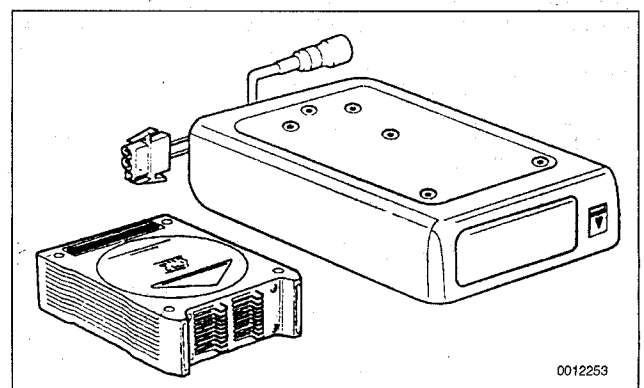


Fig. 2. Optional multi-disc compact disc changer and disc cartridge.

- A 320-watt Harmon-Kardon ten speaker system, including a separate high power multi-channel audio amplifier and two sub-woofers. In this system, the bass and volume outputs from the selected audio source automatically compensate for vehicle speed, making constant volume adjustments unnecessary. An additional feature of this sound system is the ability to switch from normal left-right stereo into Spatial Enhancement Mode, which produces a fuller, rounder sound. See Fig. 3.

The E36 radio is also equipped with a built-in anti-theft system. If power is removed from the radio circuitry by removing the radio electrical connectors, or by disconnecting the battery, the radio is rendered inoperative. The radio is not permanently damaged, and proper operation can be restored by entering the radio anti-theft code.

RADIO AND SPEAKER SERVICE

Radio, removing and installing

CAUTION —

- Before beginning work on the radio or sound system, verify that the radio is an original equipment BMW radio and that the wiring harness has not been modified.
- Servicing of aftermarket sound equipment should be referred to an authorized agent of the equipment's manufacturer.
- Do not remove radio or disconnect the battery without first obtaining the anti-theft code.

1. Carefully pry open small square covers at left and right sides of radio.

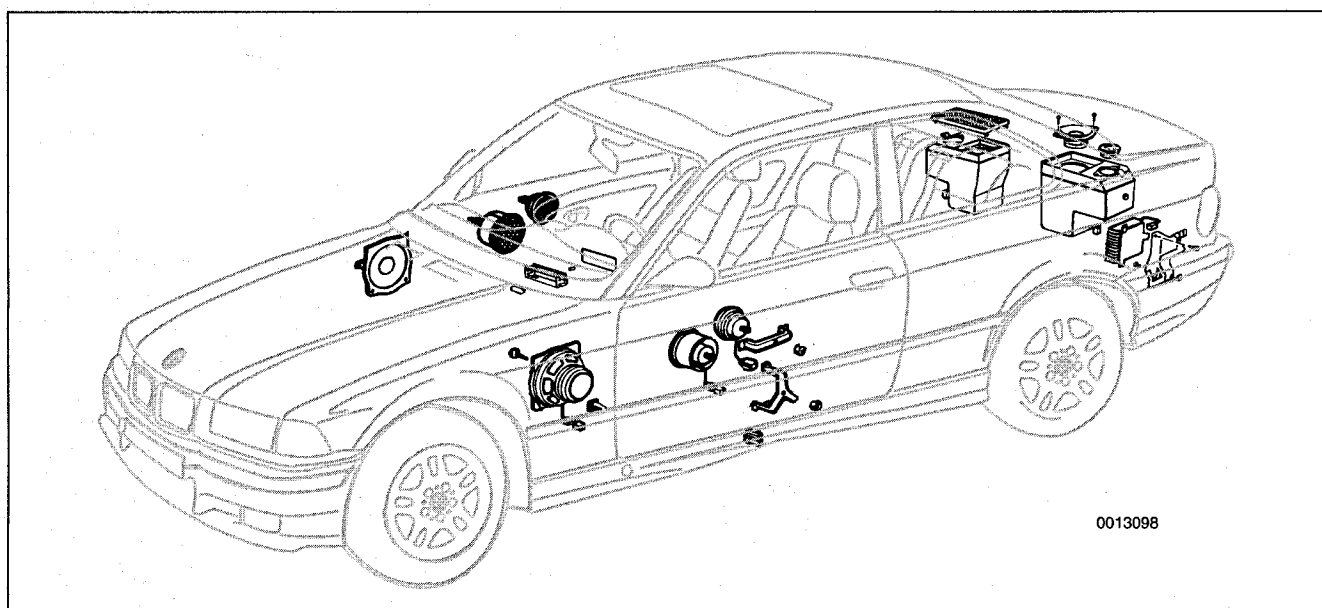


Fig. 3. Ten speaker sound system.