

2001-2003 HVAC

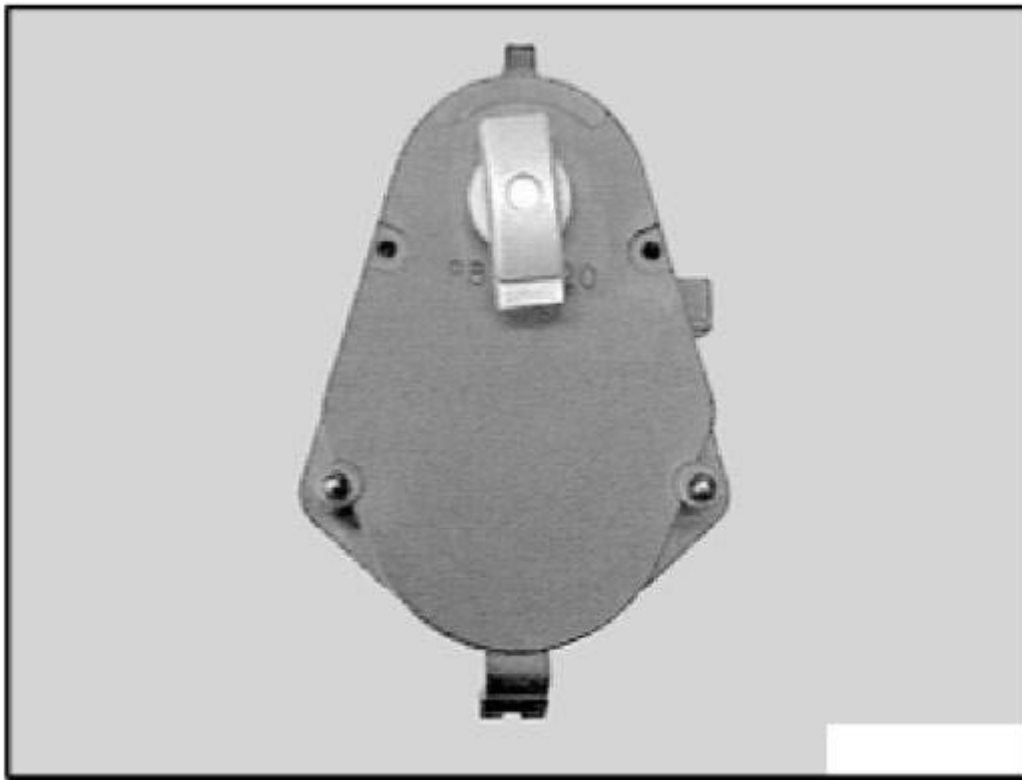
Air Conditioning & Heating Systems - Repair Instructions - X5 (3.0i) M54

HEATER WITH OPERATION

64 11 ... INSTALLING SERVODRIVE

Installation:

If necessary, align shaft of flap(s) to be actuated to position of servodrive to be installed.



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Fig. 1: Aligning Shaft

Courtesy of BMW OF NORTH AMERICA, INC.

64 11 208 REPLACING HEATER CORE (AUTOMATIC A/C)

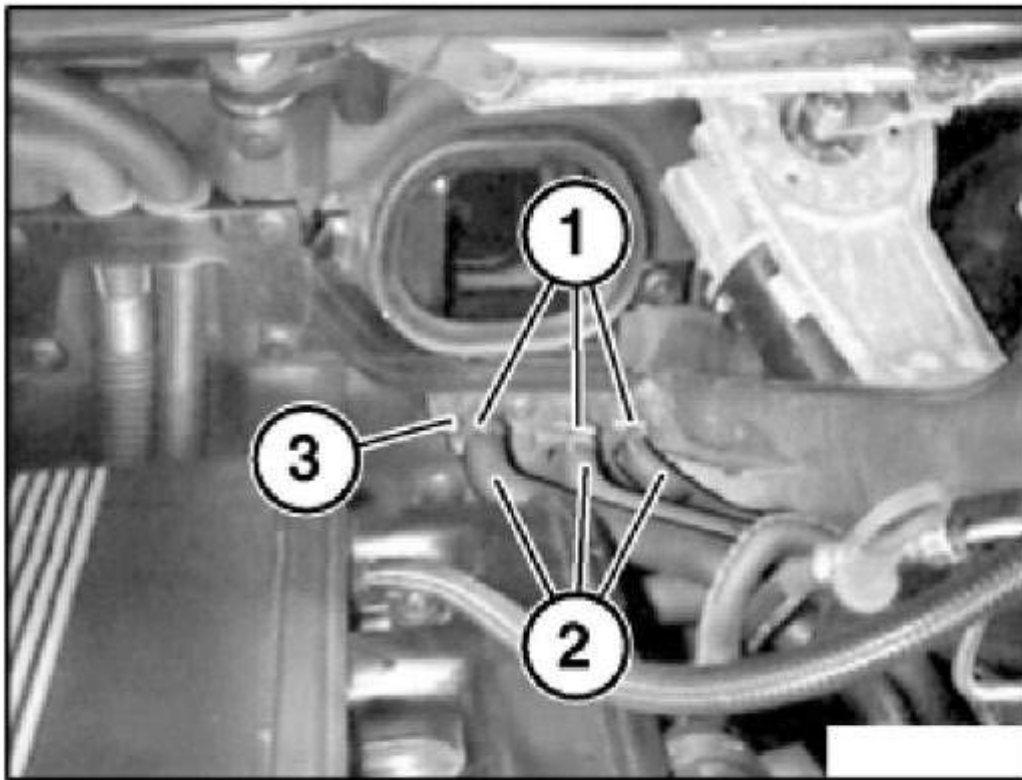
Remove heater bulkhead. Refer to **51 71 080 REMOVING AND INSTALLING/REPLACING HEATER**

BULKHEAD .

WARNING: Danger of scalding! Only perform this work after engine has cooled down.

Release hose clamps (1).

Detach water hoses (2) from flange (3). Carefully blow through lines to remove remaining coolant from heating element.



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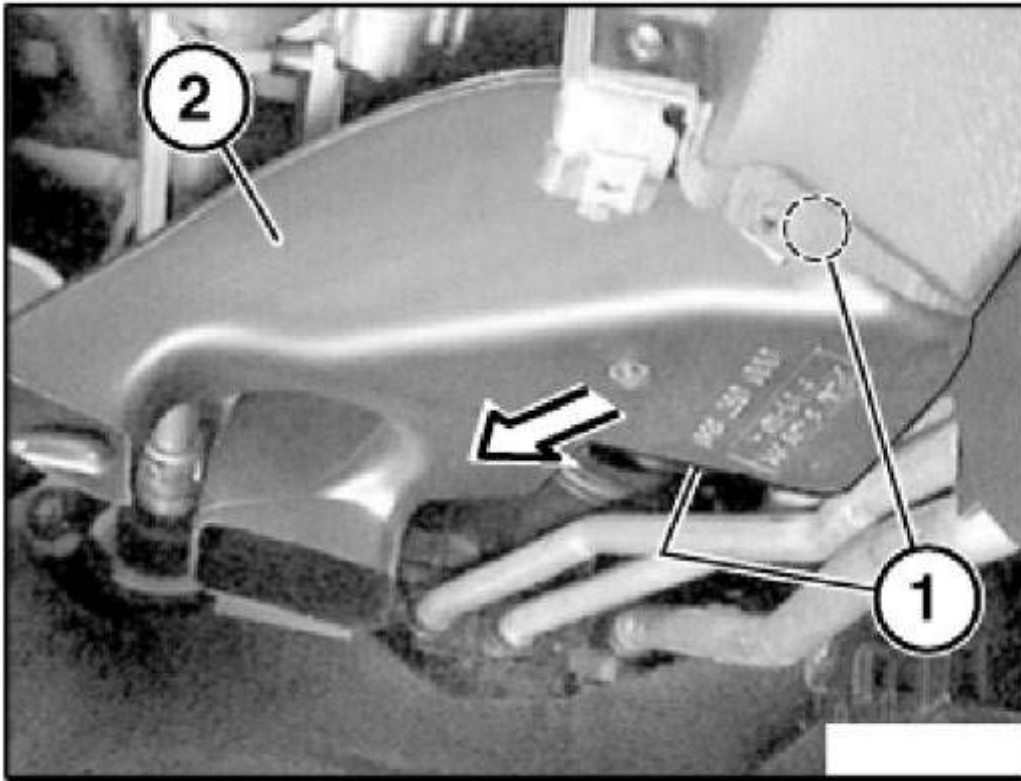
Fig. 2: Detaching Water Hoses From Flange
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fill and vent cooling system. Refer to **17 00 039 VENTING COOLING SYSTEM AND CHECKING FOR LEAKS (M54/M56)** .

Remove trim panel for instrument panel. Refer to **51 45 030 REMOVING AND INSTALLING INSTRUMENT PANEL TRIM** .

Unclip air duct for left footwell (2) at mountings (1) and remove in direction of arrow.

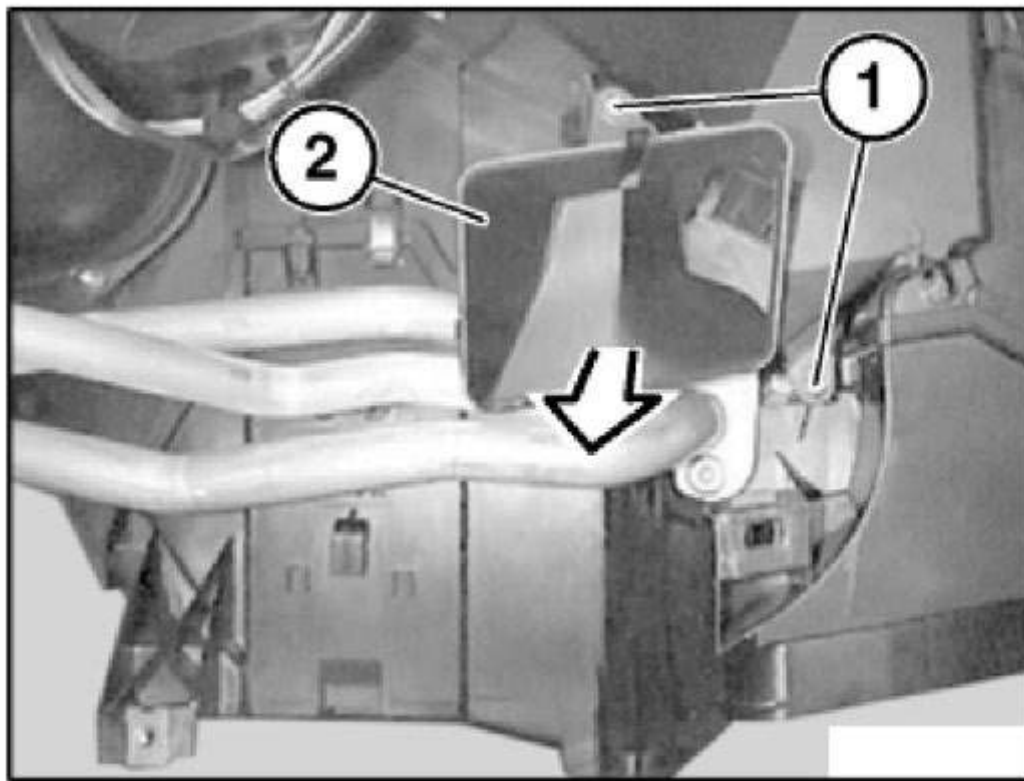


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Fig. 3: Identifying Air Duct For Left Footwell
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen screws (1).

Remove left footwell vent (2) in direction of arrow.



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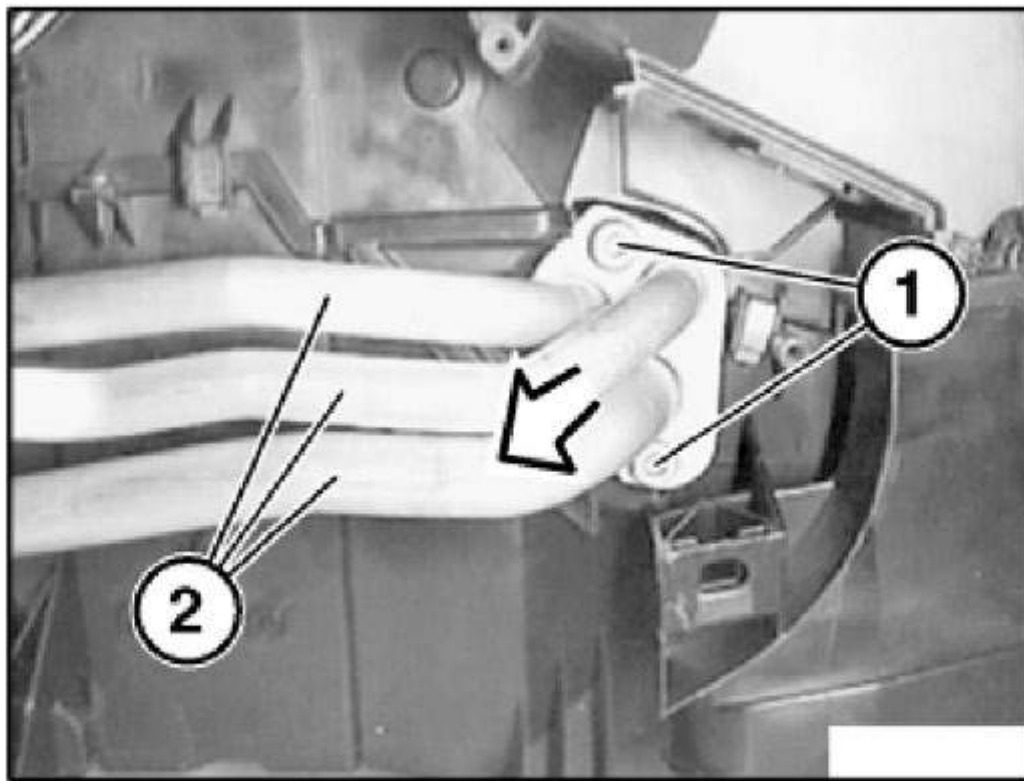
Fig. 4: Locating Left Footwell Vent Retaining Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen screws (1).

Pull out pipes (2) in direction of arrow.

Installation:

Replace sealing rings.



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Fig. 5: Removing Pipes

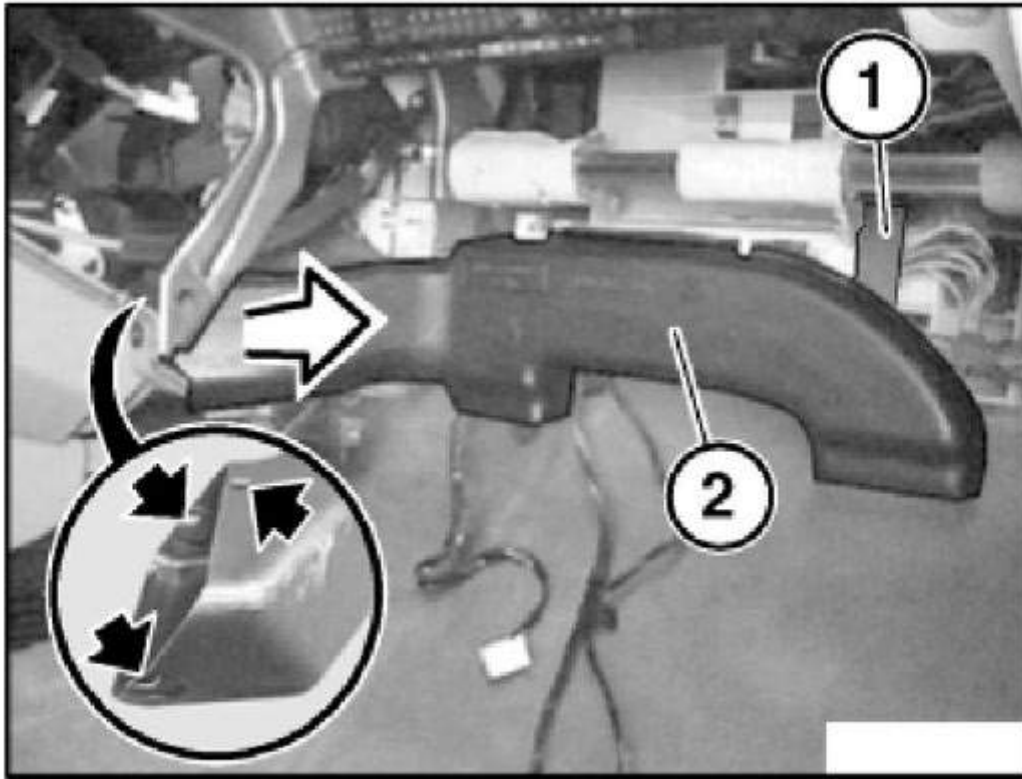
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook holder (1).

Unclip heating duct for right footwell (2) and remove in direction of arrow.

Installation:

Ensure heating channel for right footwell (2) is correctly seated.

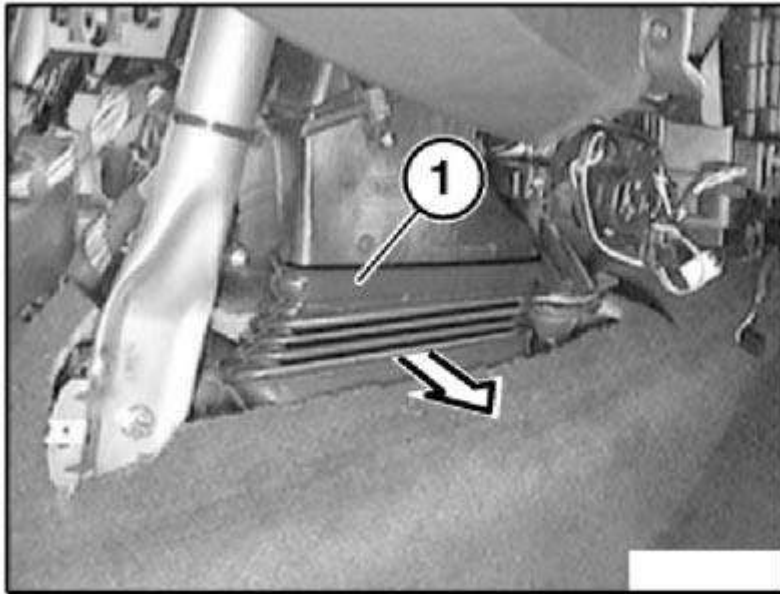


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Fig. 6: Removing Heating Duct For Right Footwell
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip air duct for rear footwell on right (1) and pull out in direction of arrow.

Cover air duct underneath.



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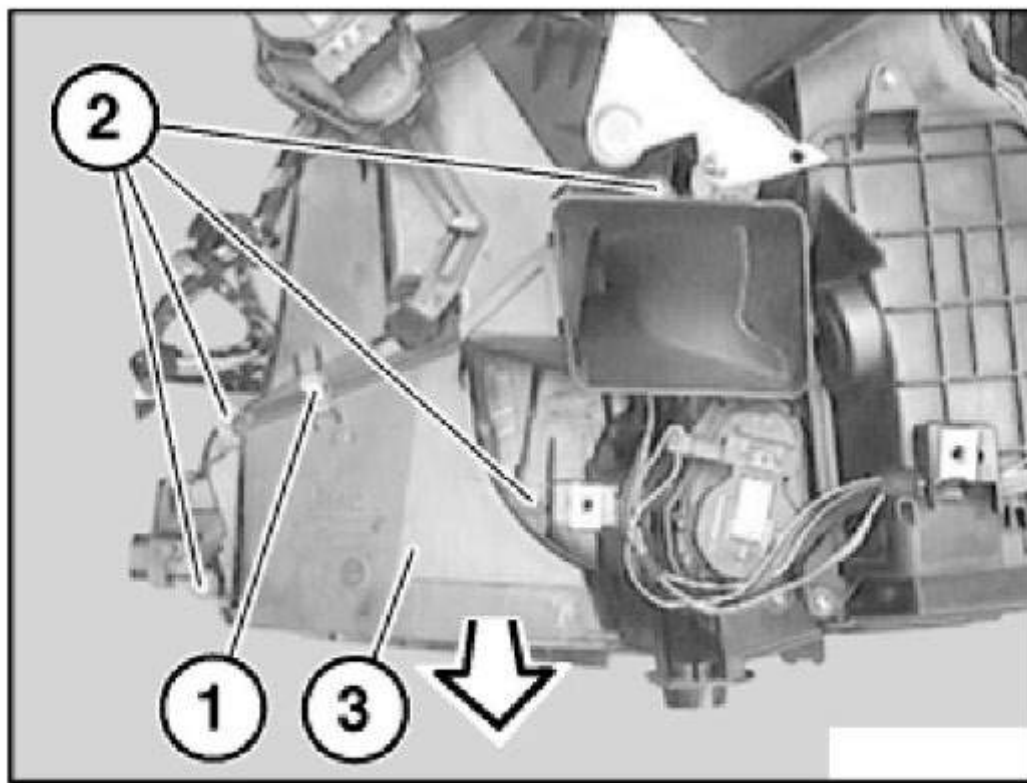
Fig. 7: Locating Air Duct For Rear Footwell On Right
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For purposes of clarity, the following shows the heater/air conditioner removed.

Unclip clip (1).

Loosen screws (2).

Pull heating element cover (3) in direction of arrow out of guide.

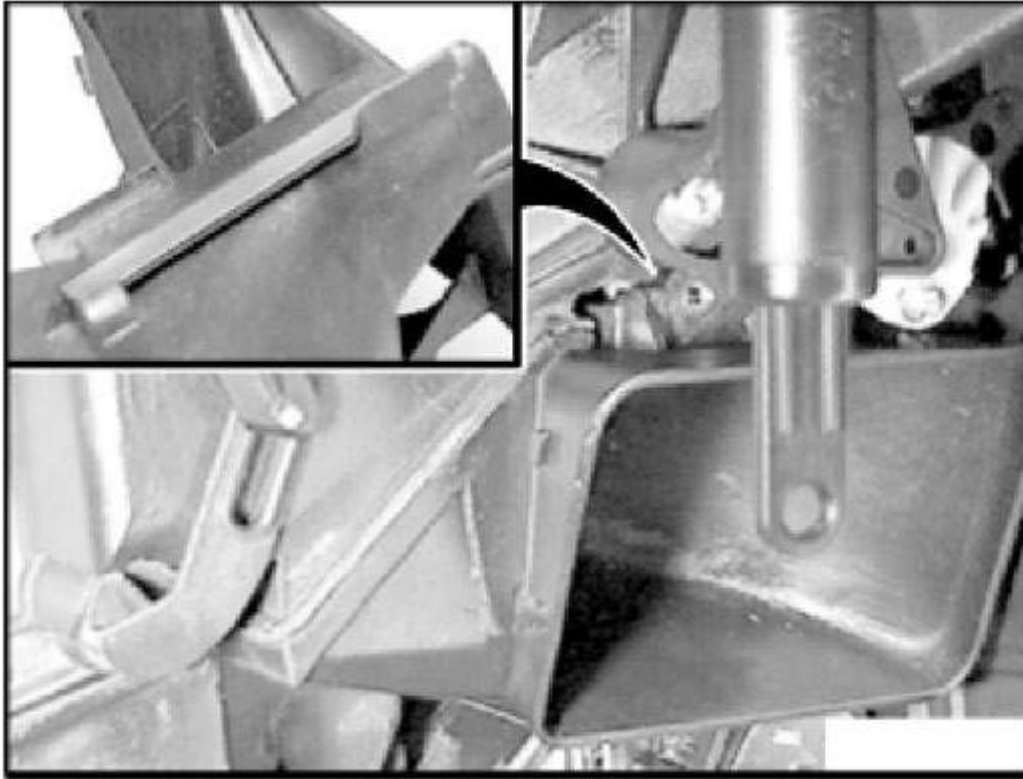


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Fig. 8: Identifying Heating Element Cover Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure guide is correctly seated.



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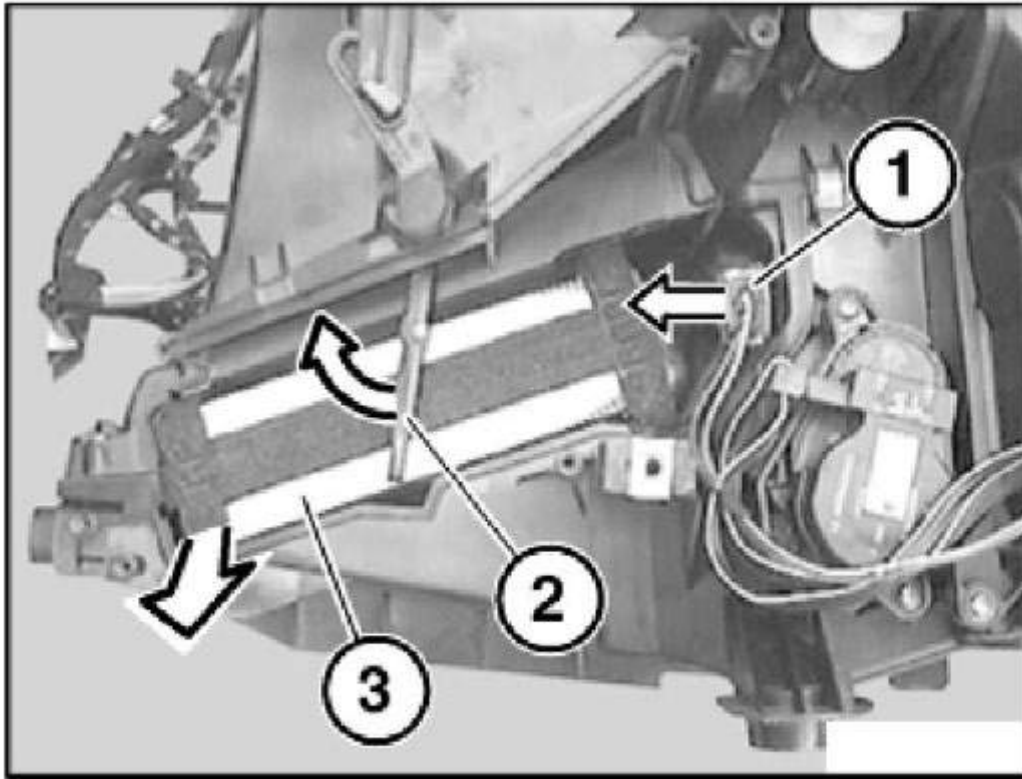
Fig. 9: Installing Guide

Courtesy of BMW OF NORTH AMERICA, INC.

Pull out evaporator temperature sensor (1) in direction of arrow and set to one side.

If necessary, remove servodrives of footwell flap and footwell flap (2) in direction of arrow. Refer to **64 11 839 REPLACING SERVODRIVE OF FOOTWELL FLAP (AUTOMATIC A/C)**.

Pull out heater element (3) in direction of arrow.



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Fig. 10: Pulling Out Evaporator Temperature Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

CAUTION: Do not bend cooling fins. If necessary, clean or align cooling fins with fin comb.

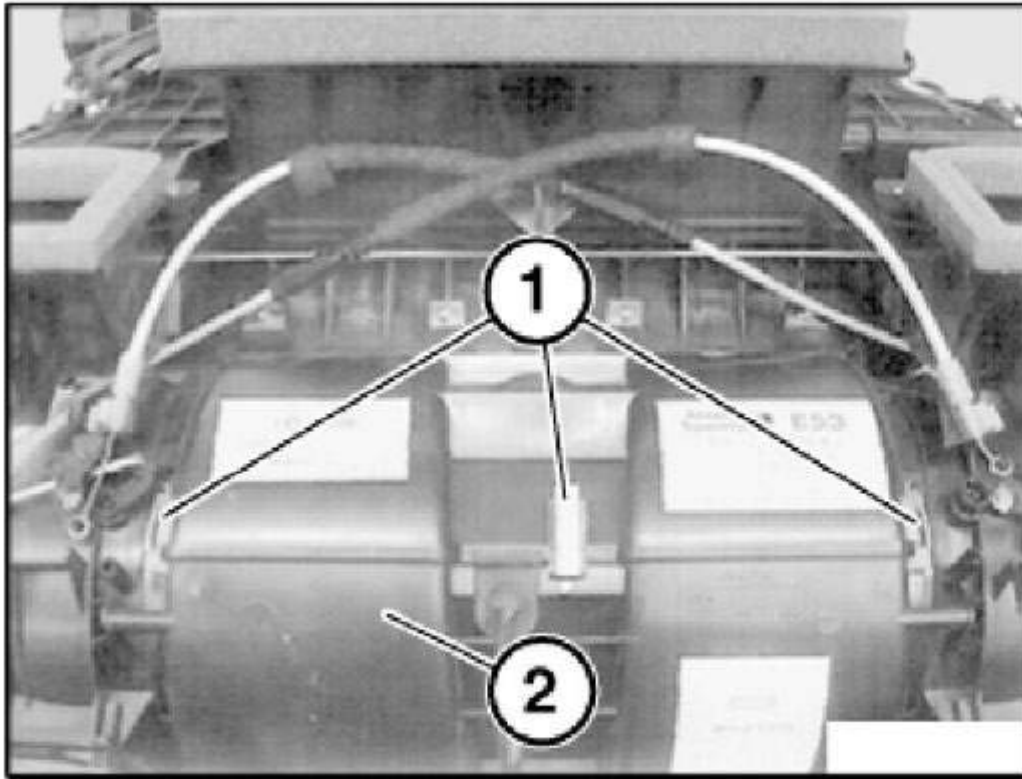
64 11 213 REMOVING AND INSTALLING/REPLACING HEATER - A/C FAN

Remove trim panel for instrument panel. Refer to **51 45 030 REMOVING AND INSTALLING INSTRUMENT PANEL TRIM**.

NOTE: For purposes of clarity, illustration shows heater/air conditioner removed.

Unclip retainers (1).

Remove cover (2).



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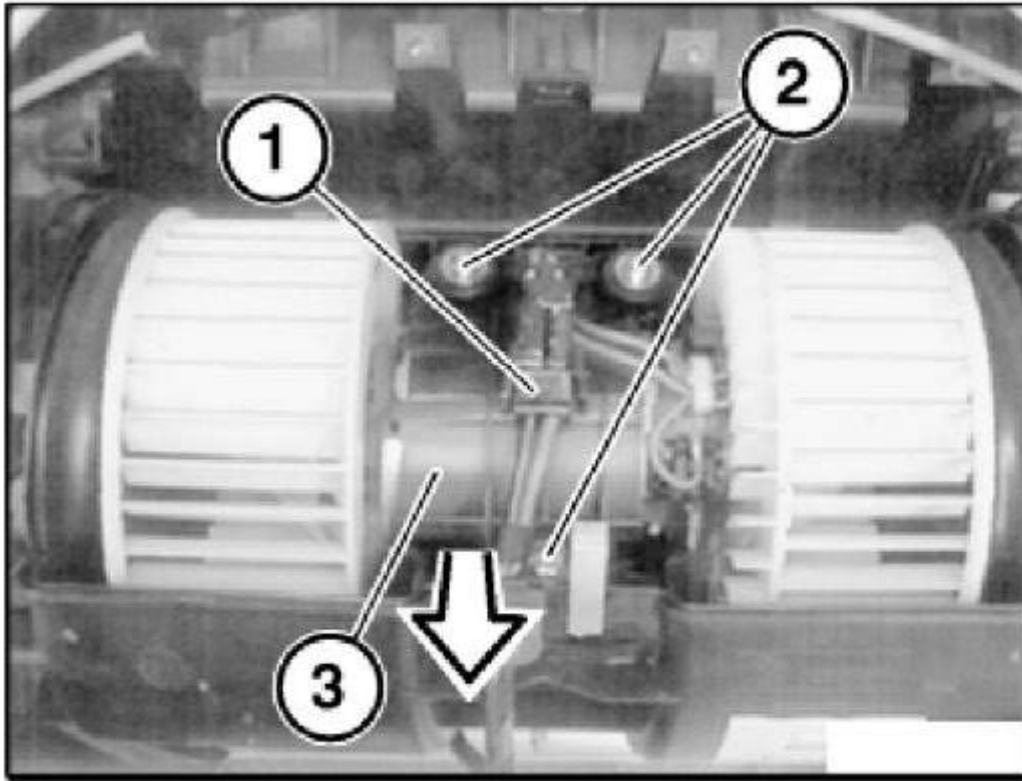
Fig. 11: Locating Heater - A/C Fan Cover
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For purposes of clarity, illustration shows heater/air conditioner removed.

Disconnect plug connection (1).

Loosen screws (2).

Remove heater - A/C fan (3) in direction of arrow.



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Fig. 12: Identifying Plug Connection On Heater - A/C Fan
Courtesy of BMW OF NORTH AMERICA, INC.

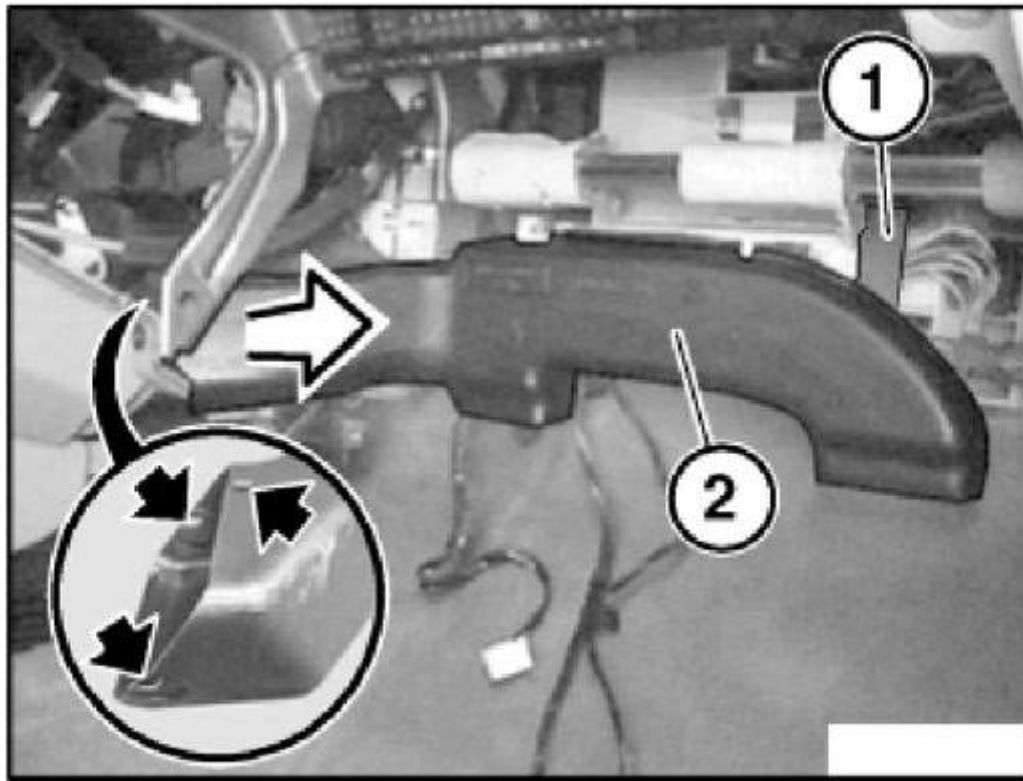
64 11 227 REPLACING LIMIT SWITCH FOR FAN OF HEATER/AIR CONDITIONER (CLIMATE CONTROL)

Remove right glovebox. Refer to **51 16 360 REMOVING AND INSTALLING RIGHT GLOVE BOX** .

Remove trim on center console. Refer to **64 51 522 REMOVING AND INSTALLING OR REPLACING EXPANSION VALVE** .

Unhook holder (1).

Unclip heating duct for right footwell (2) and remove in direction of arrow.



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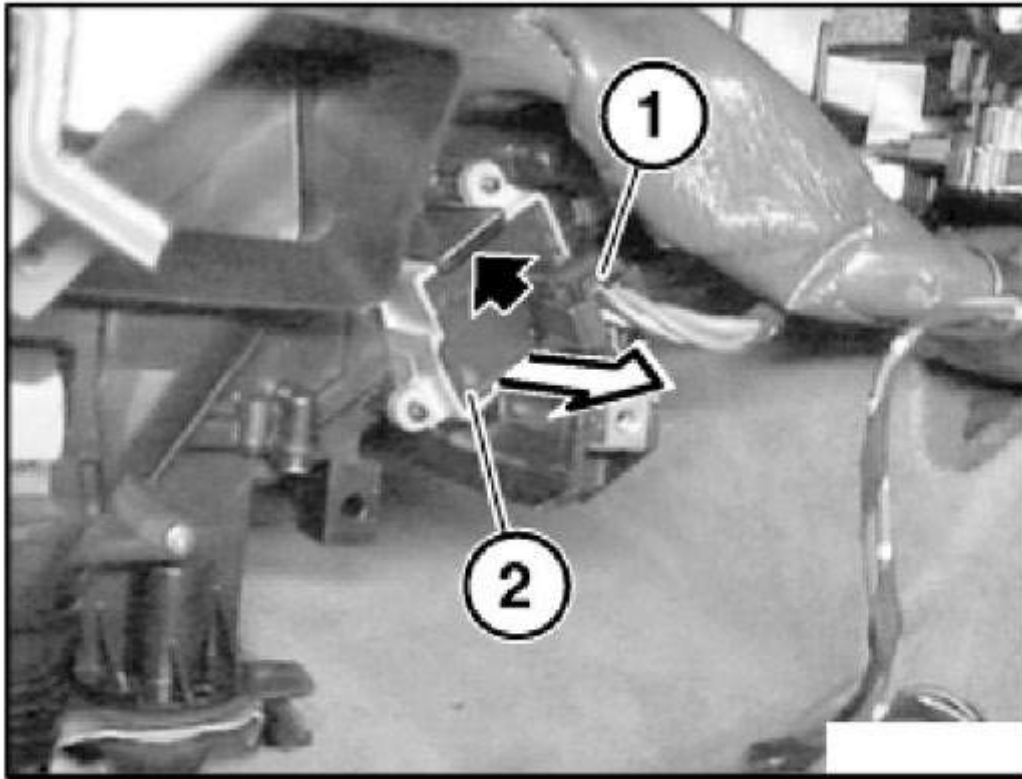
Fig. 13: Removing Heating Duct For Right Footwell
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Ensure heating channel for right footwell (2) is correctly seated.

Disconnect plug connection (1).

Unlock limit switch for fan (2) and pull out in direction of arrow.



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Fig. 14: Locating Limit Switch For Fan
Courtesy of BMW OF NORTH AMERICA, INC.

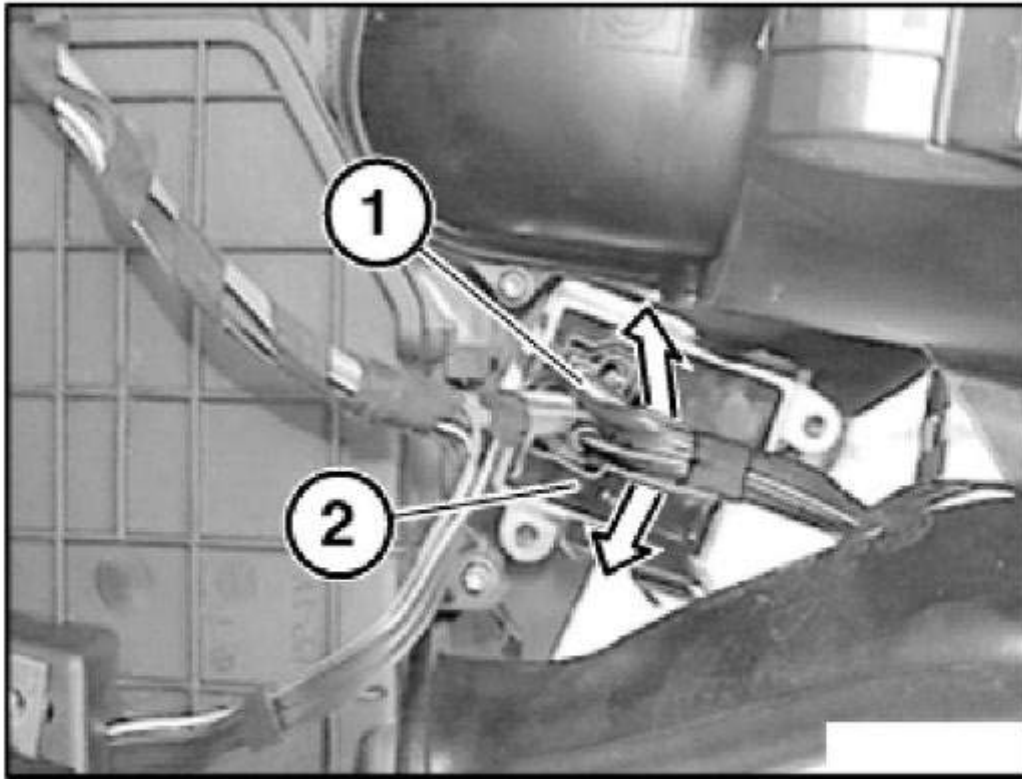
64 11 228 REPLACING OUTPUT STAGE/SWITCH FOR HEATER -A/C SYSTEM BLOWER

Remove trim for instrument panel, bottom right. Refer to **51 45 181 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT** .

Remove trim on center console. Refer to **64 51 522 REMOVING AND INSTALLING OR REPLACING EXPANSION VALVE** .

Disconnect plug connection (1).

Press lock in direction of arrow and remove output stage/switch for heater - A/C system blower (2).



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Fig. 15: Removing Output Stage/Switch For Heater - A/C System Blower
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 262 REMOVING AND INSTALLING/REPLACING AUXILIARY WATER PUMP

Follow instructions for working on cooling system. Refer to **17 00 ... INSTRUCTIONS FOR WORKING ON COOLING SYSTEM** .

M54 Only:

Remove intake filter housing. Refer to **13 71 000 REMOVING AND INSTALLING INTAKE FILTER HOUSING (M54)** .

All:

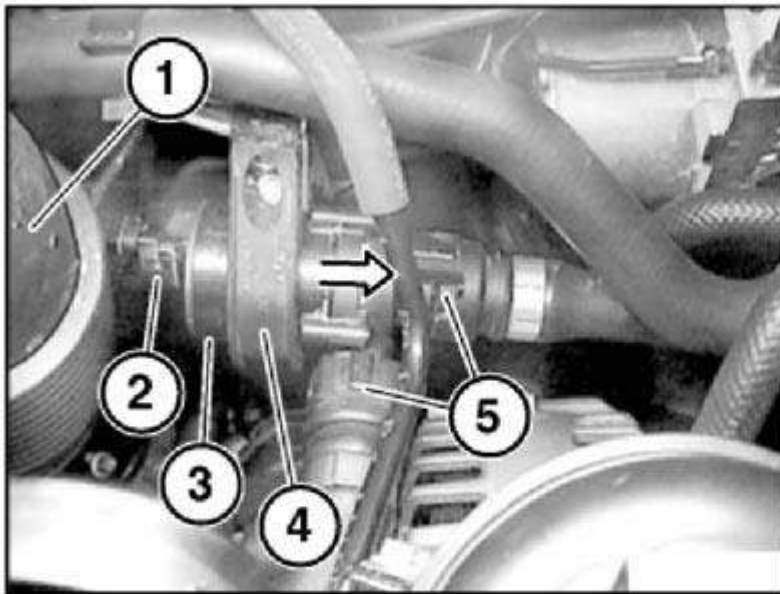
WARNING: Danger of scalding! Only perform this work after engine has cooled down.

If necessary, remove bellows (1).

Unfasten plug connection (2) and disconnect.

Withdraw auxiliary water pump (3) in direction of arrow from bracket (4).

Open quick-release couplings and detach water hoses (5) from auxiliary water pump (3).



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Fig. 16: Identifying Auxiliary Water Pump
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Ensure auxiliary water pump (3) is correctly seated in bracket (4).

Fill and vent cooling system. Refer to **17 00 039 VENTING COOLING SYSTEM AND CHECKING FOR LEAKS (M54/M56)**.

64 11 271 REPLACING WATER VALVE FOR HEATER

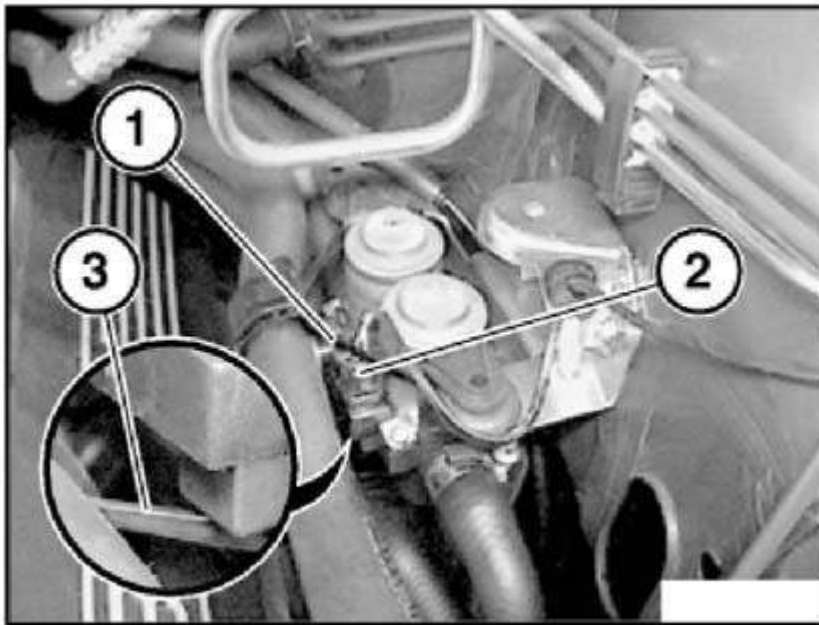
WARNING: Danger of scalding! Only perform this work after engine has cooled down.

All:

Unfasten cable clip (1).

Disconnect connector (2).

Unfasten cable tie (3).



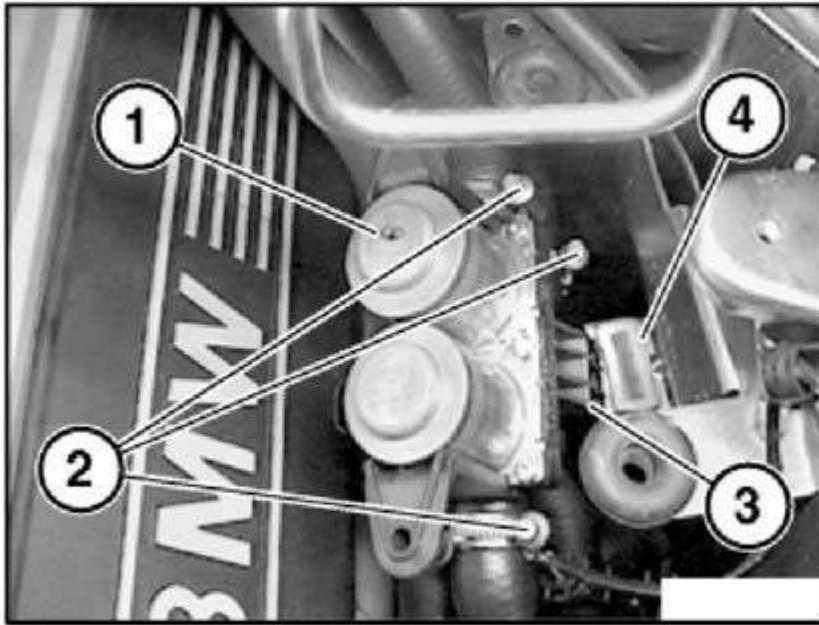
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Fig. 17: Disconnecting Cable Clip And Connector
Courtesy of BMW OF NORTH AMERICA, INC.

Pull out water valve for heater (1) towards top.

Release hose clamps (2) and detach water hoses.

Remove water valve for heater (1).



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Fig. 18: Locating Hose Clamps And Water Hoses
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace grommets or rubber mount (4).

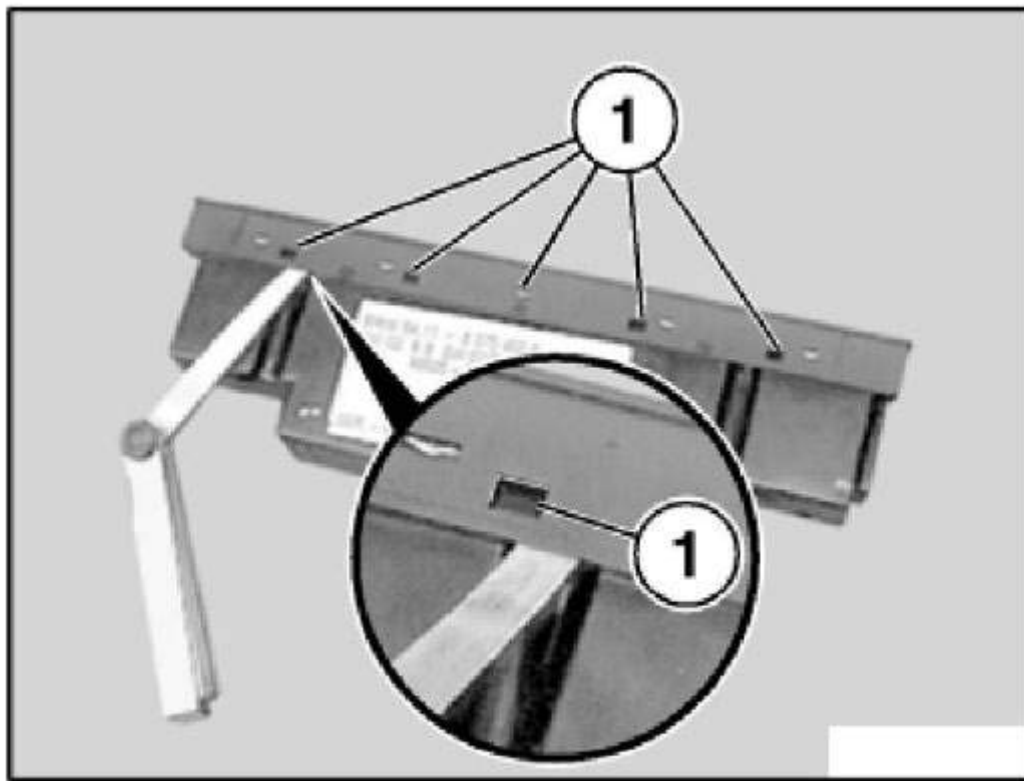
Feed pilot pin (3) into rubber mount (4).

Fill and vent cooling system. Refer to **17 00 039 VENTING COOLING SYSTEM AND CHECKING FOR LEAKS (M54/M56)** .

64 11 321 REPLACING FRONT PLATE (AUTOMATIC A/C)

Remove heating controls. Refer to **64 11 749 REMOVING AND INSTALLING HEATER CONTROL (AUTOMATIC AIR CONDITIONING)** .

Carefully unclip clips (1) at top and bottom. Remove front plate.



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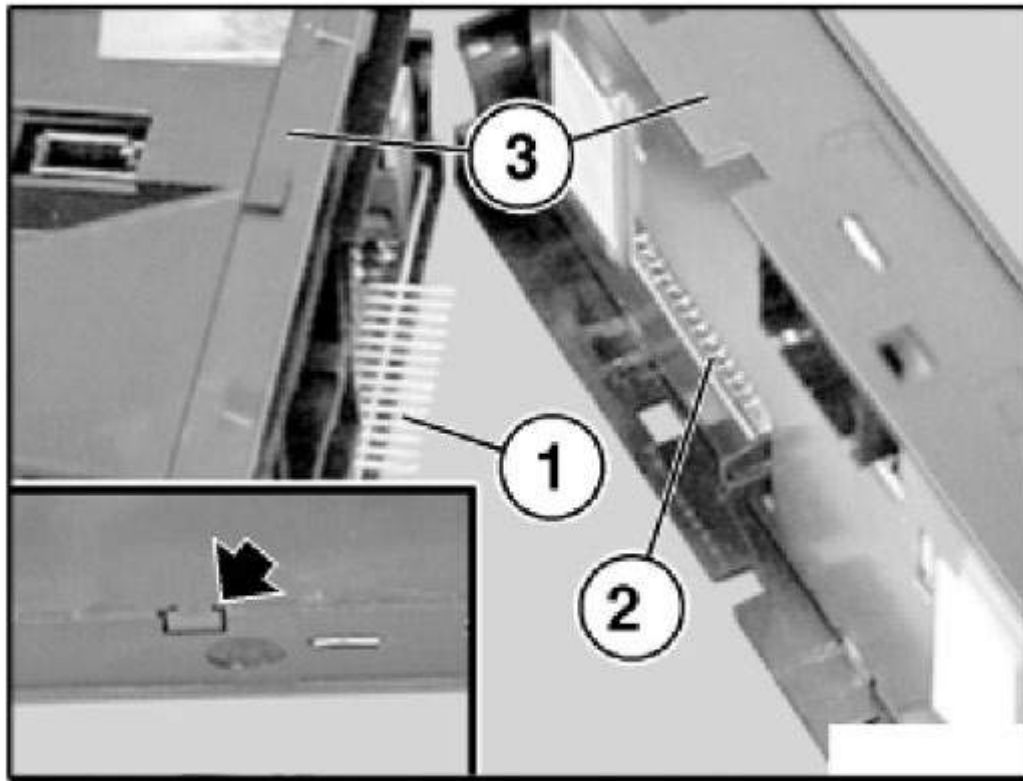
Fig. 19: Locating Front Plate Clips

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert pins (1) straight into bushes (2).

Make sure when pushing front plate together with housing that swallow-tail guides (3) engage each other.



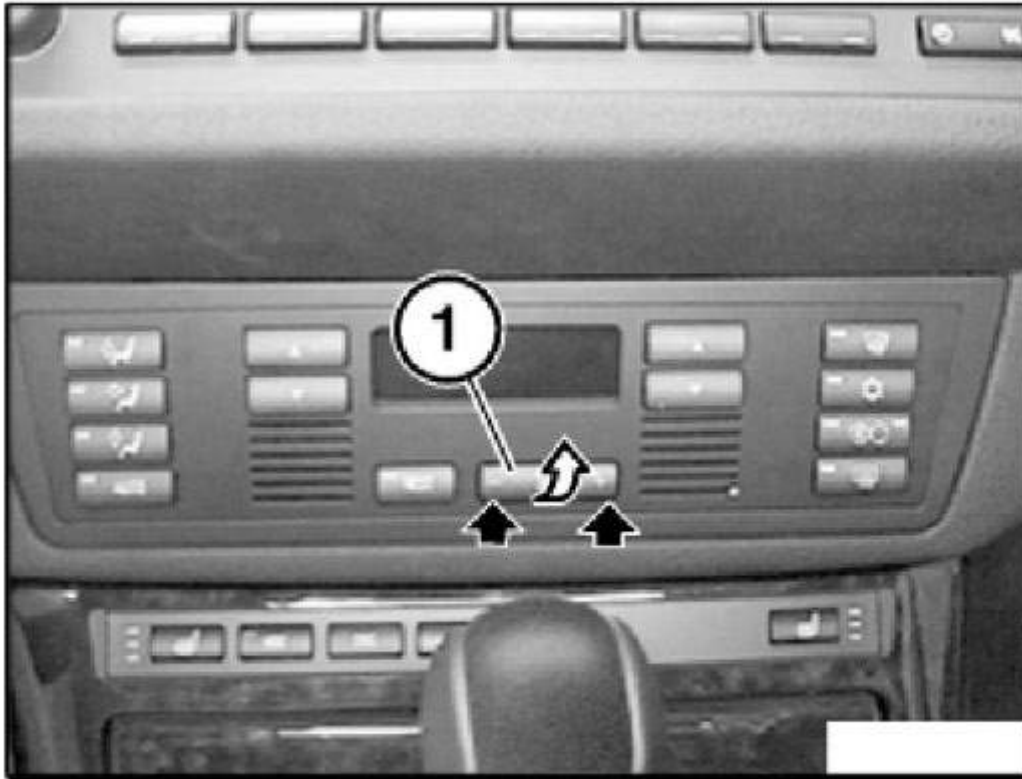
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Fig. 20: Identifying Pins, Bushes, And Guides
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 324 REPLACING PUSHBUTTON COVERS FOR HEATER CONTROLS

NOTE: The following procedure is the same for all pushbutton covers.

Lever out pushbutton cover (1) at bottom and remove.



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Fig. 21: Removing Pushbutton Cover

Courtesy of BMW OF NORTH AMERICA, INC.

64 11 331 REPLACING HEATER CONTROLS (AUTOMATIC AIR CONDITIONING)

Remove heating controls. Refer to **64 11 749 REMOVING AND INSTALLING HEATER CONTROL (AUTOMATIC AIR CONDITIONING)** .

NOTE: Carry out coding/programming.

64 11 748 REMOVING AND INSTALLING HEATER CONTROLS (A/C CONTROL)

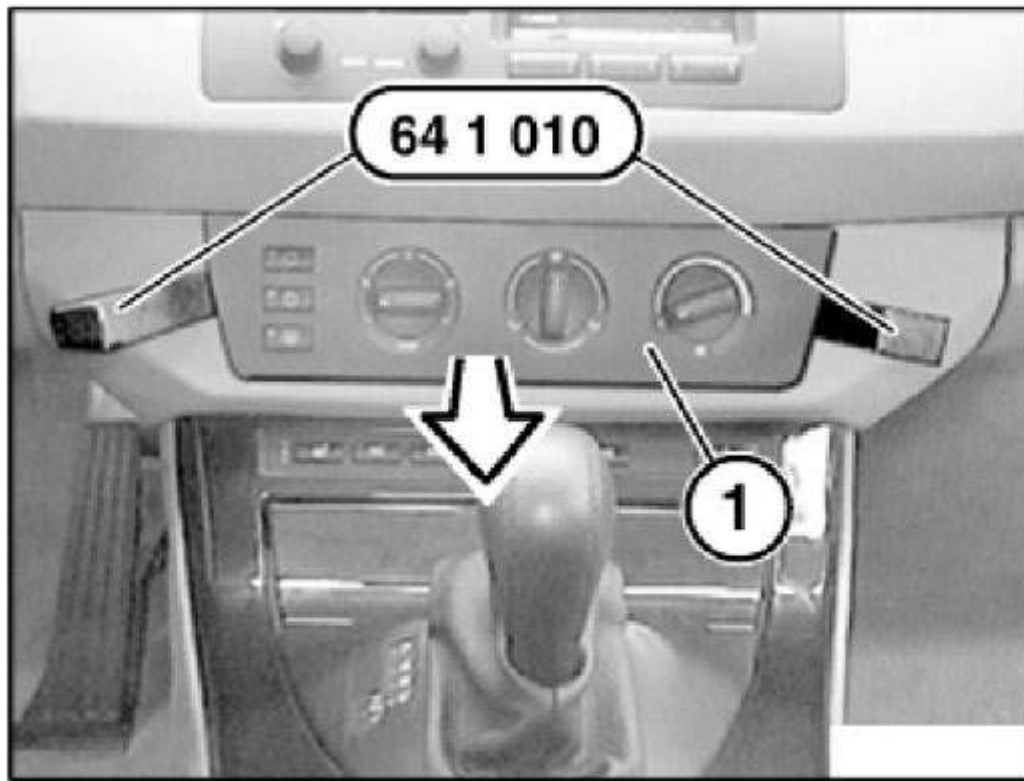
NOTE: For Special Tool identification, see **SPECIAL TOOLS - X5 (3.0i)** .

Special Tools Required:

- 64 1 010

Unlock heating controls (1) with special tool 64 1 010 and pull out in direction of arrow.

Unfasten plug connection.



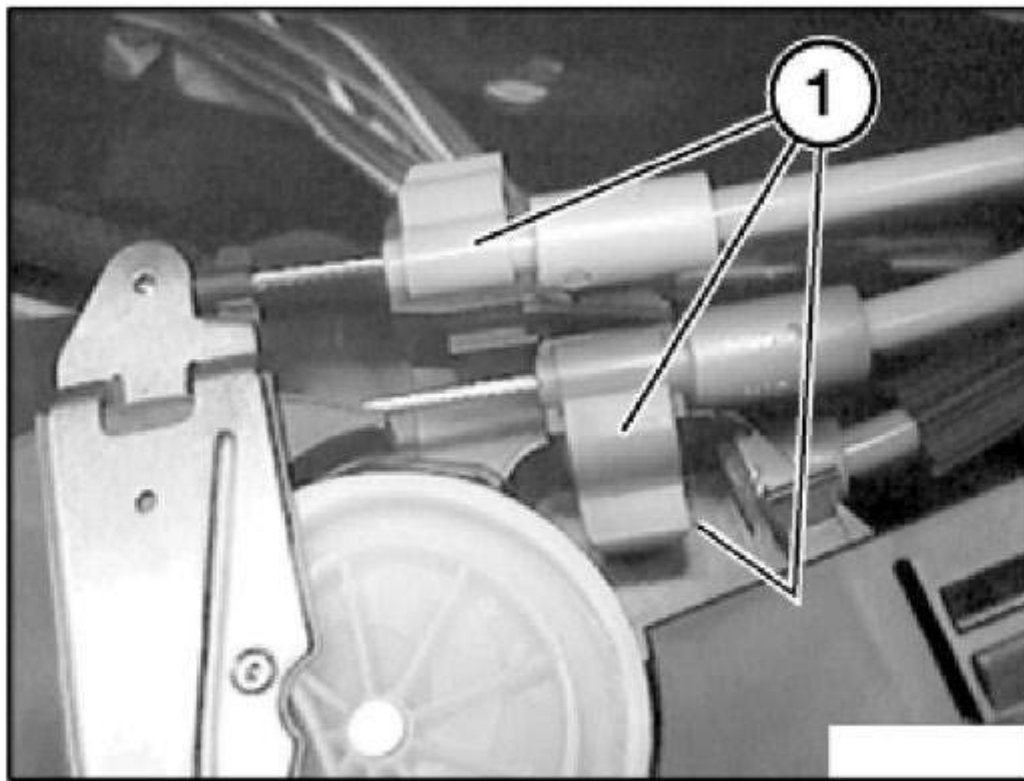
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Fig. 22: Removing Heating Controls With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Remove Bowden cables (1).

Installation:

Observe color coding of Bowden cables.

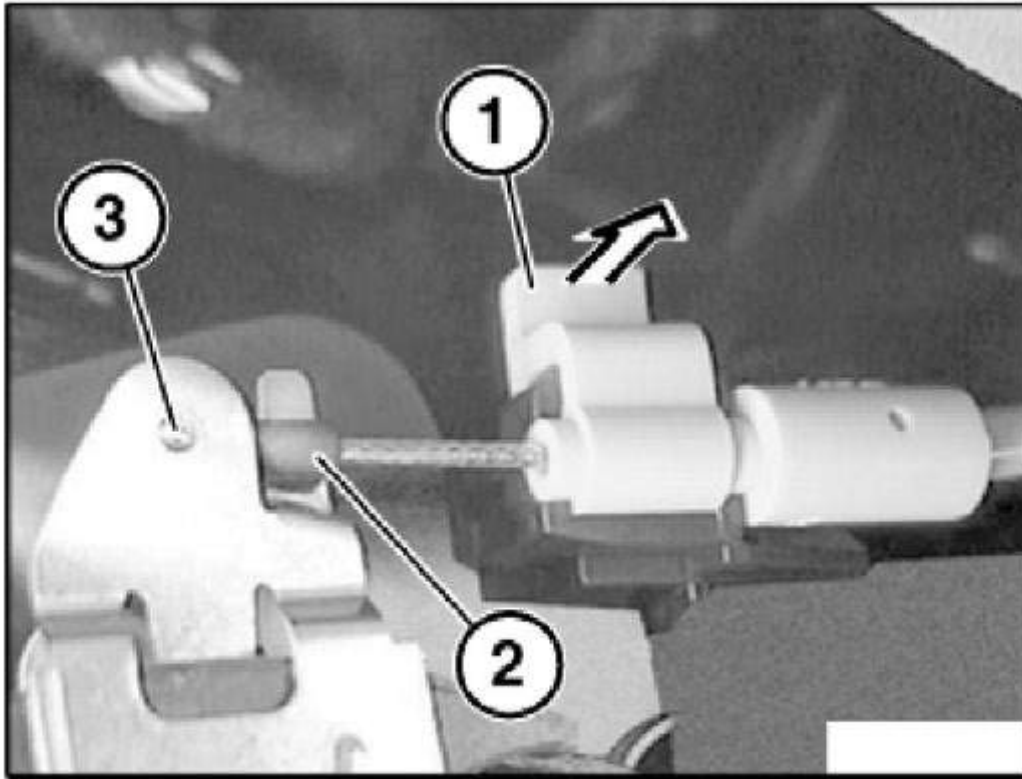


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Fig. 23: Locating Bowden Cables

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Unclip Bowden cable holder (1) in direction of arrow. Remove eye (2) from deflector (3).



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Fig. 24: Removing Eye From Deflector
Courtesy of BMW OF NORTH AMERICA, INC.

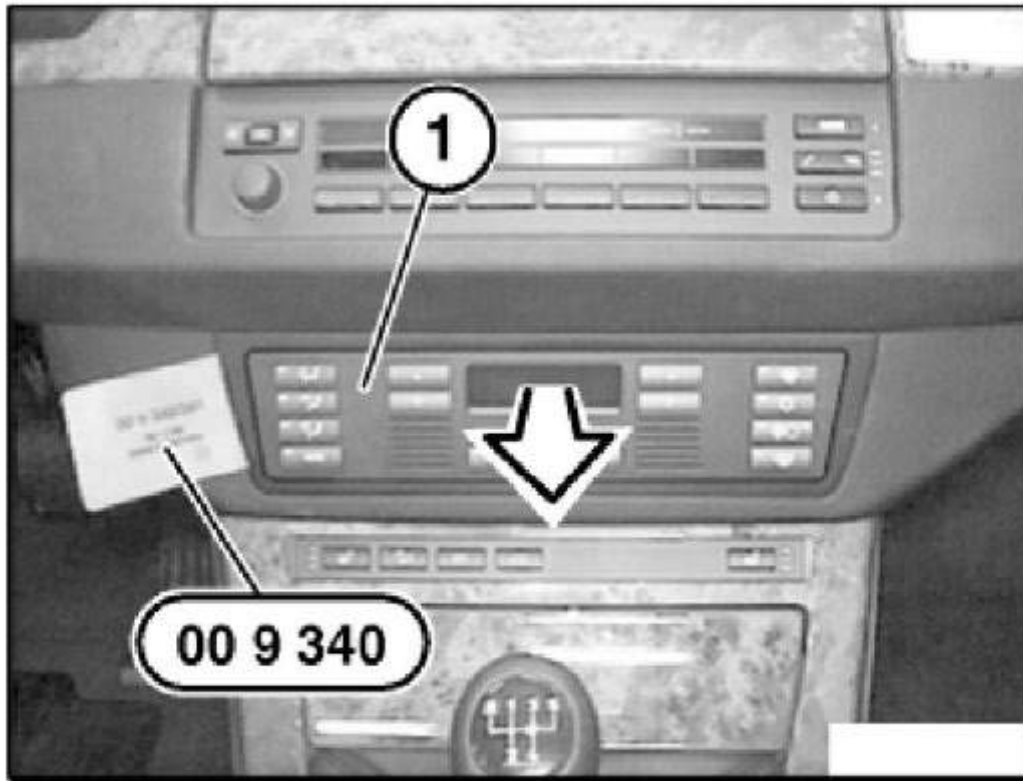
64 11 749 REMOVING AND INSTALLING HEATER CONTROL (AUTOMATIC AIR CONDITIONING)

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X5 (3.0i)** .

Special Tools Required:

- 00 9 340

Unlock heating controls (1) with special tool 00 9 340 and pull out in direction of arrow.



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Fig. 25: Removing Heating Controls With Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Ensure that heating controls (1) are correctly seated.

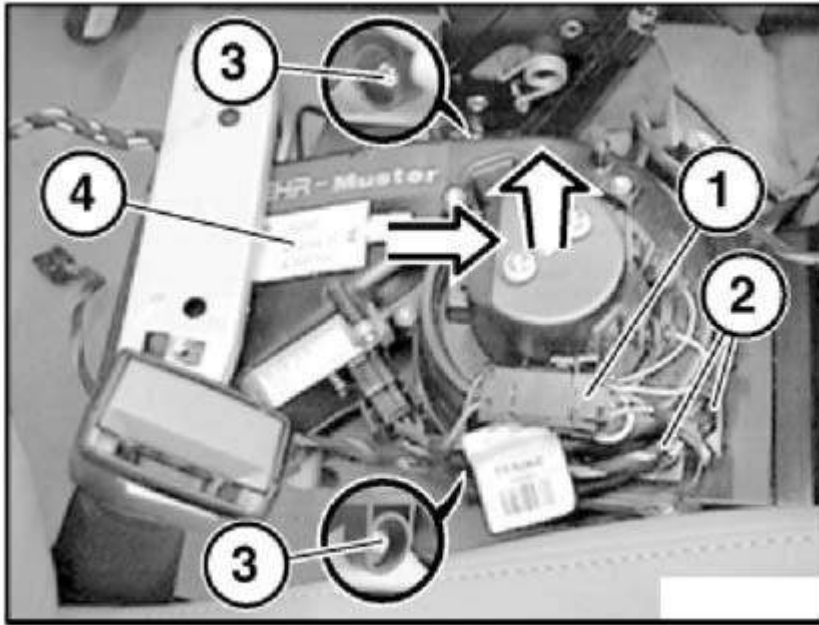
Disconnect plug connections and remove heating controls (1).

64 11 772 REMOVING AND INSTALLING/REPLACING THE REAR FAN COMPLETELY

Remove oddments tray. Refer to **51 16 200 REMOVING AND INSTALLING CENTER CONSOLE** .

Disconnect plug connection (1) and unclip cable (2). Unfasten screws (3).

Slide rear compartment fan (4) forwards. Feed out air duct for rear compartment and lift out rear compartment fan (4).



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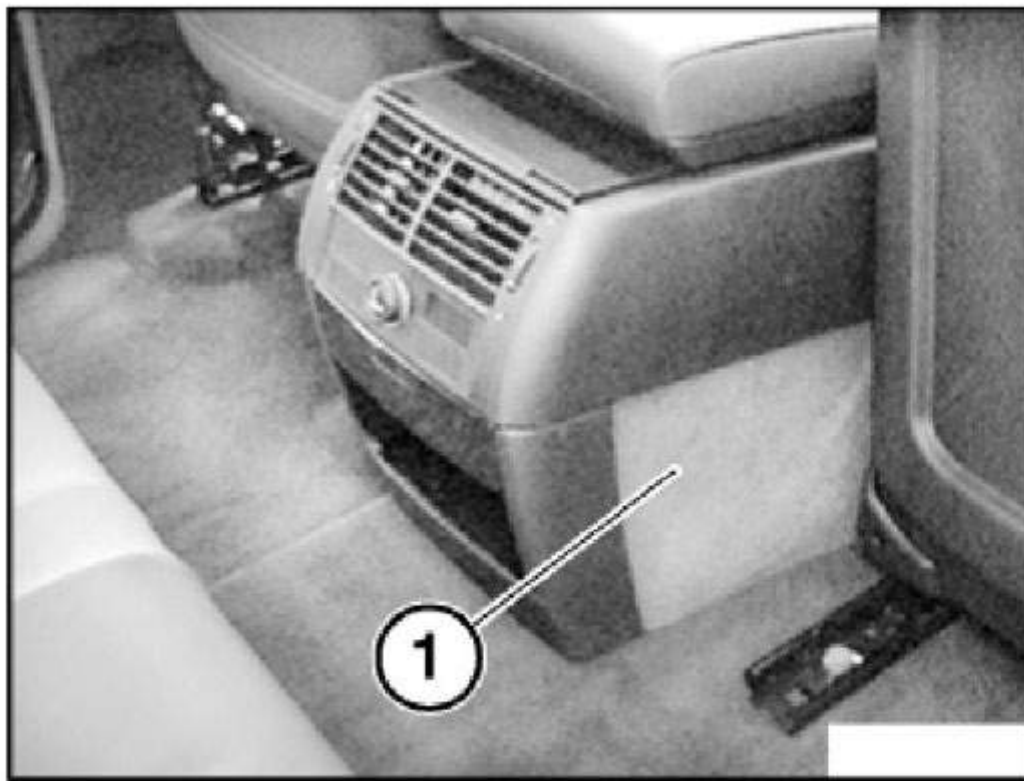
Fig. 26: Locating Rear Compartment Fan Retaining Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Snap retaining lug on underside of rear compartment place into mount.

64 11 794 REMOVING AND INSTALLING/REPLACING THE CONTROLLER FOR THE REAR FAN

Unclip cover (1) on right on storage tray.

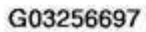


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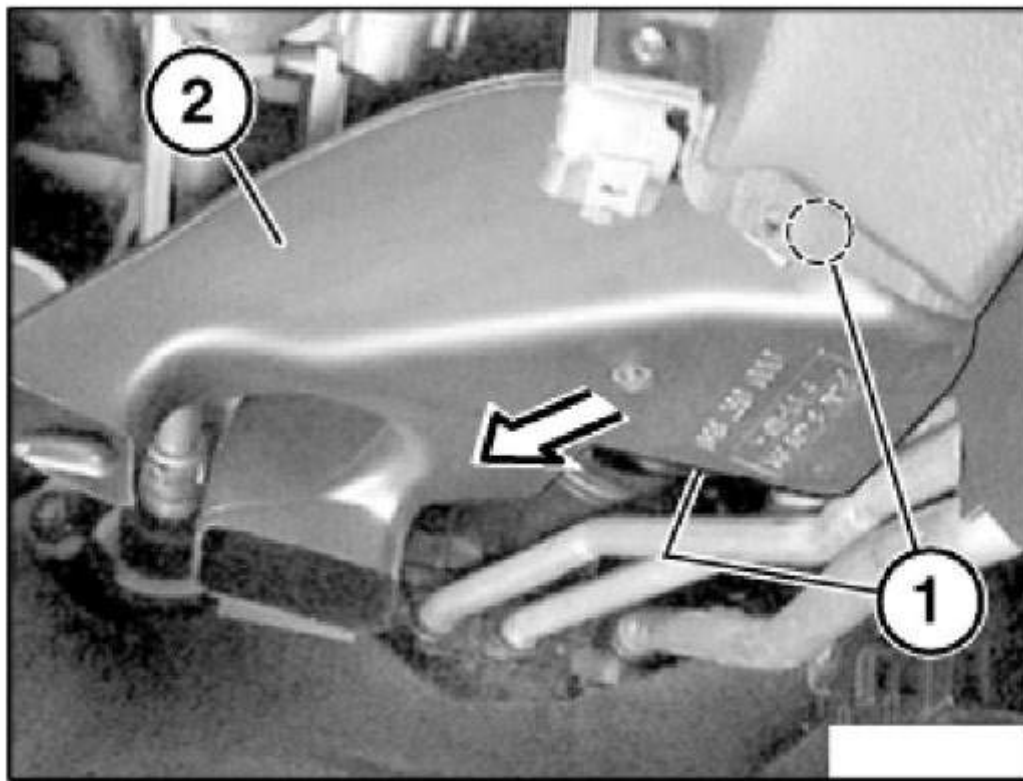
Fig. 27: Identifying Cover On Storage Tray (Right)
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten plug connection (1).

Release screws (2) and pull out controller for rear compartment fan (3).



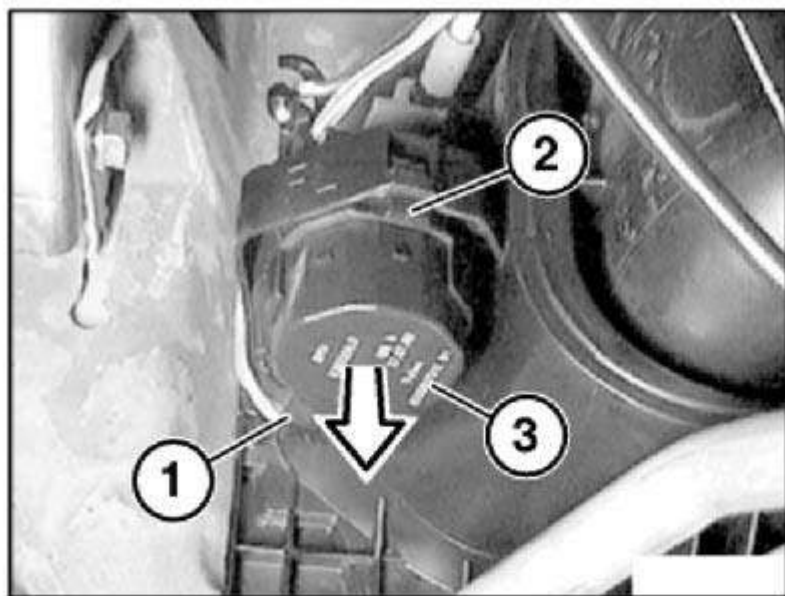
Unclip air duct for footwell on left (2) at mounts (1) and remove in direction of arrow.



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Fig. 29: Locating Air Duct For Footwell On Left
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip lock (2) and pull out servodrive (3) in direction of arrow. Disconnect plug connection (1).

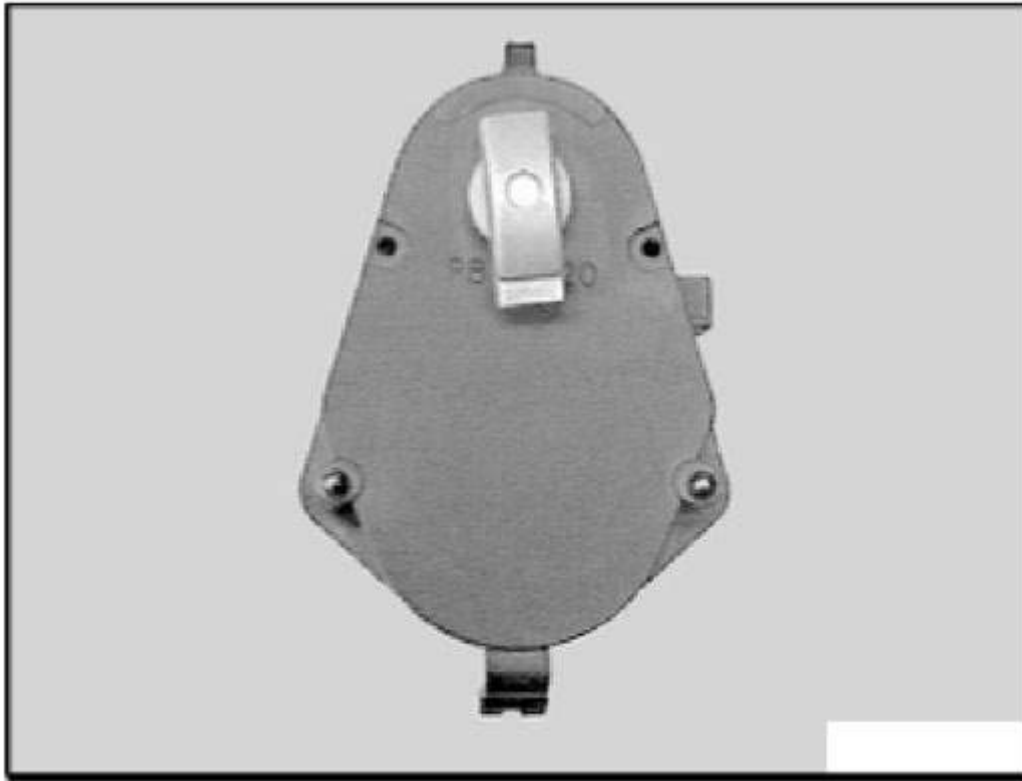


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Fig. 30: Disconnecting Plug Connection Of Servodrive
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, align shaft of fresh air/recirculated air flap to position of servodrive.



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Fig. 31: Aligning Shaft Of Fresh Air/Recirculated Air Flap
Courtesy of BMW OF NORTH AMERICA, INC.

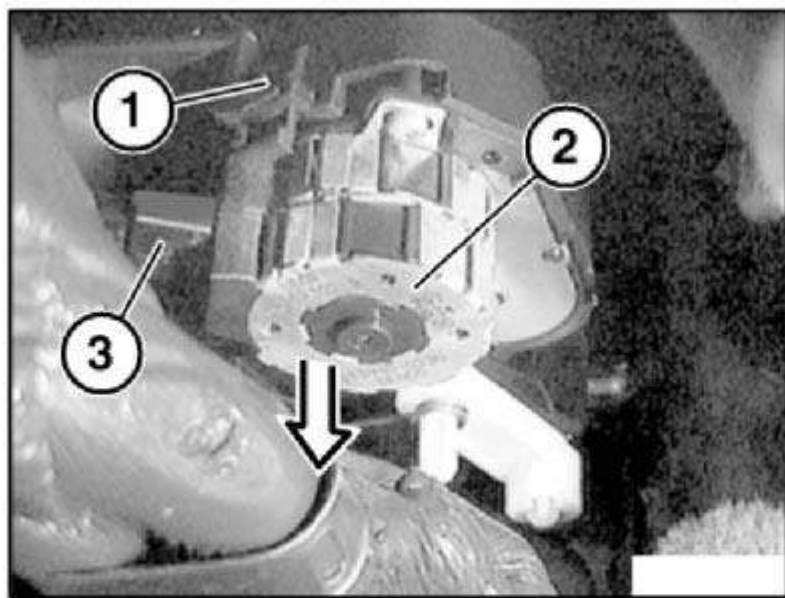
64 11 826 REPLACING SERVODRIVE OF RECIRCULATED AIR FLAPS (A/C CONTROL)

Remove trim for instrument panel, bottom right. Refer to **51 45 181 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT** .

Remove side carpet on right side of center console. Refer to **51 16 200 REMOVING AND INSTALLING CENTER CONSOLE** .

Unclip lock (1).

Pull out servodrive (2) in direction of arrow and disconnect plug connection (3).



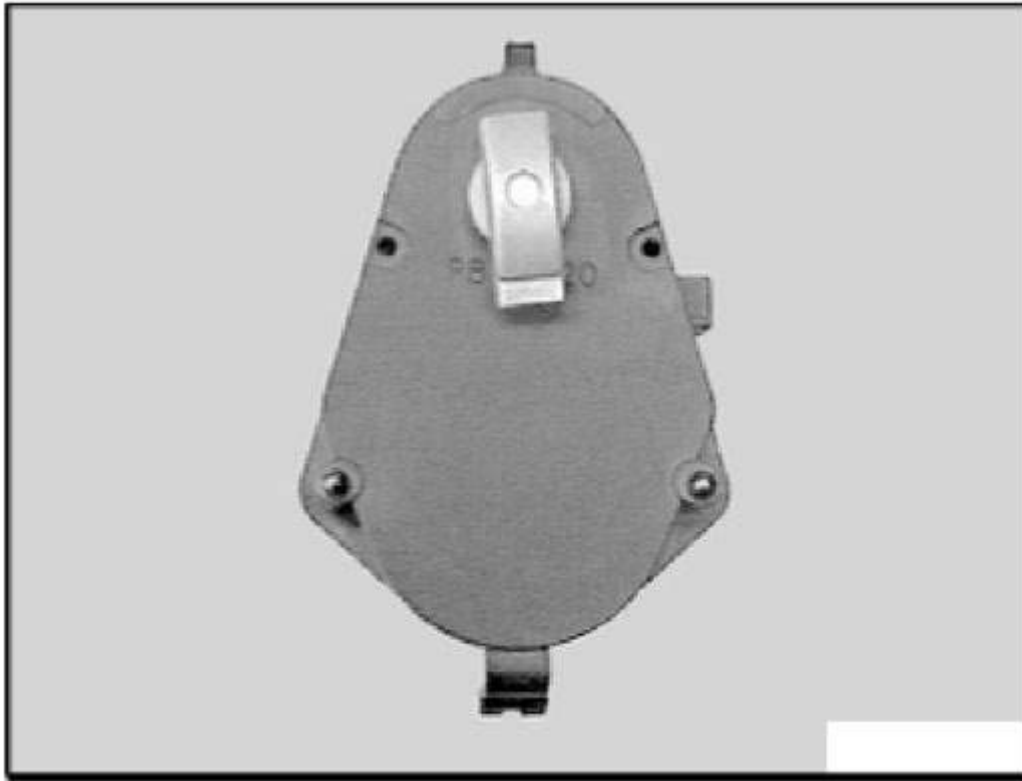
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Fig. 32: Pulling Out Servodrive

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, align shaft of recirculated air flaps to position of servodrive.



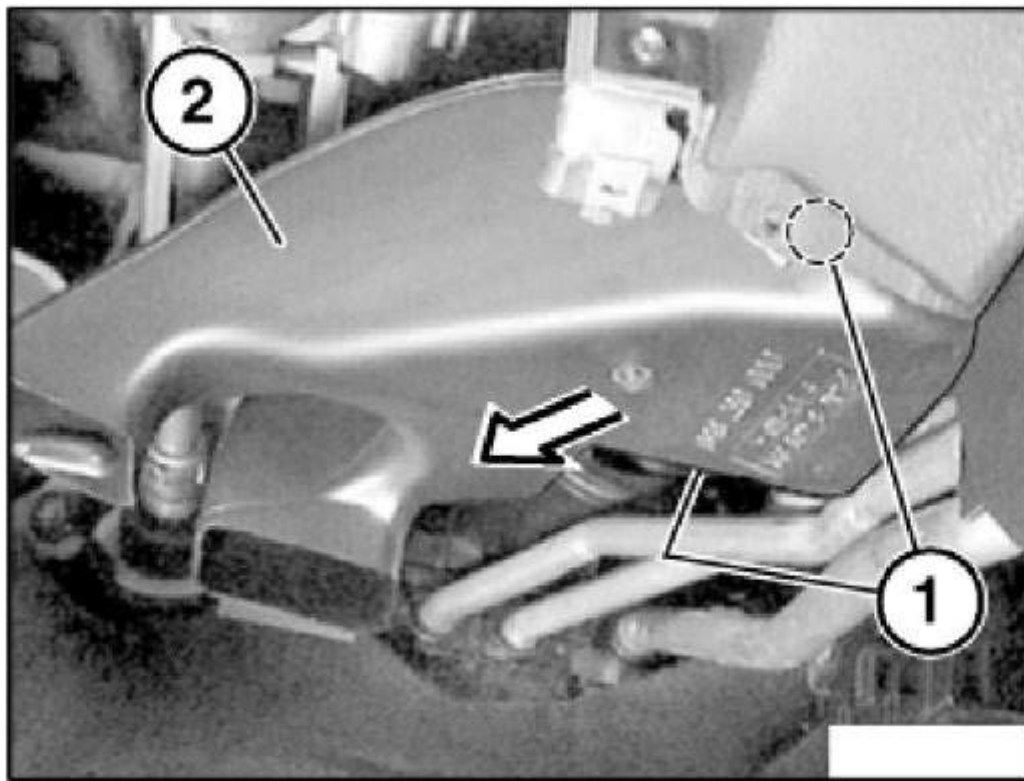
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Fig. 33: Aligning Shaft Of Recirculated Air Flaps To Position Of Servodrive
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 829 REPLACING SERVODRIVE OF VENTILATION FLAPS (AUTOMATIC A/C)

Remove trim for pedal assembly. Refer to **51 45 185 REMOVING AND INSTALLING/REPLACING TRIM FOR PEDAL ASSEMBLY** .

Unclip air duct for footwell on left (2) at mounts (1) and remove in direction of arrow.

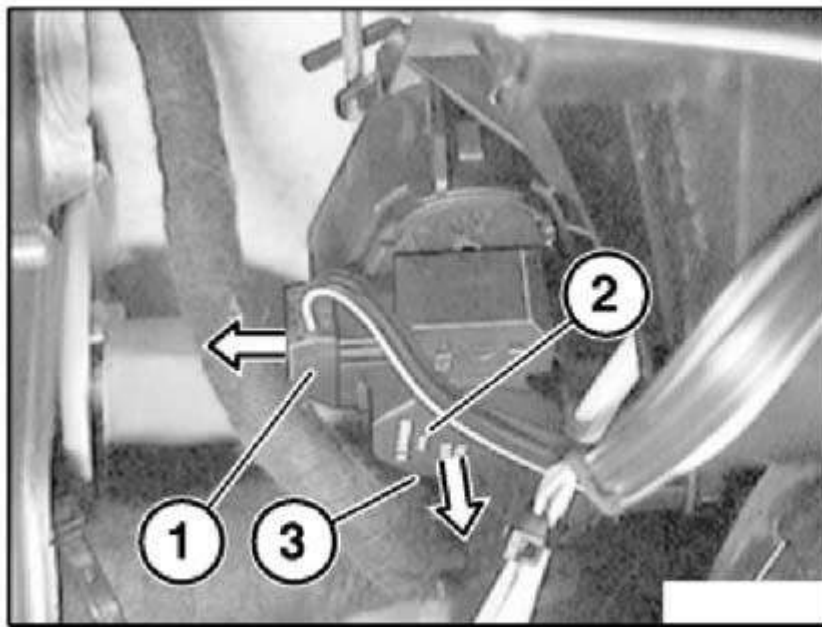


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Fig. 34: Removing Air Duct For Footwell On Left
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Unclip lock (2) and pull out servodrive (3) in direction of arrow.

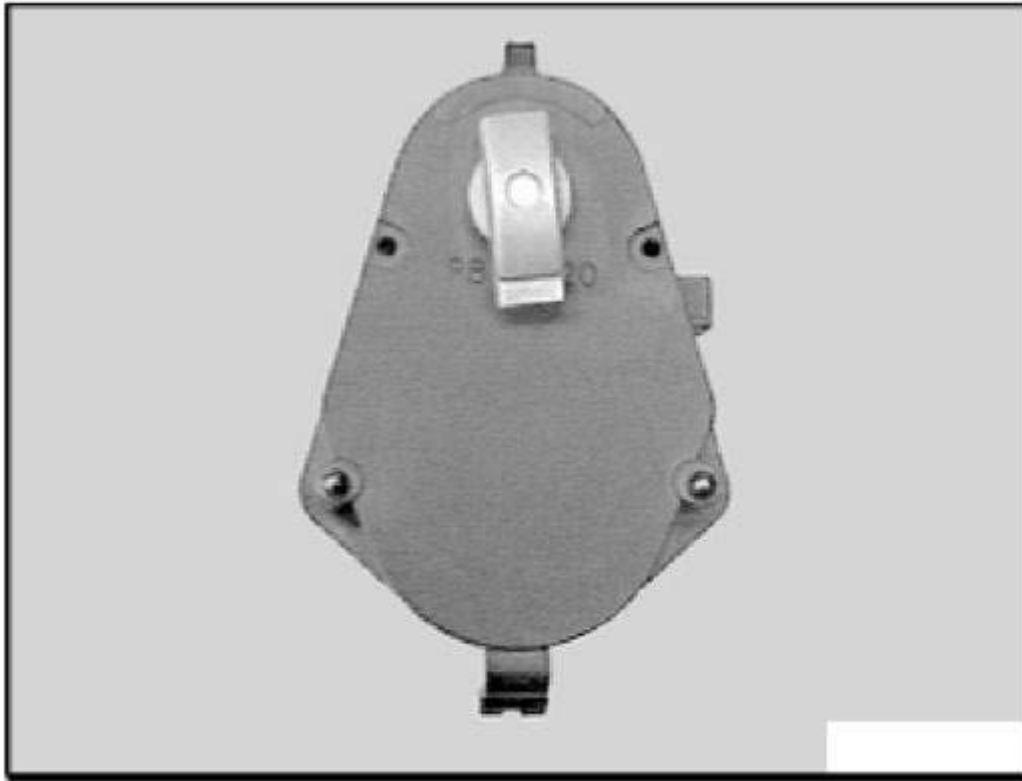


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Fig. 35: Locating Servodrive And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, align shaft of ventilation flaps to position of servodrive.



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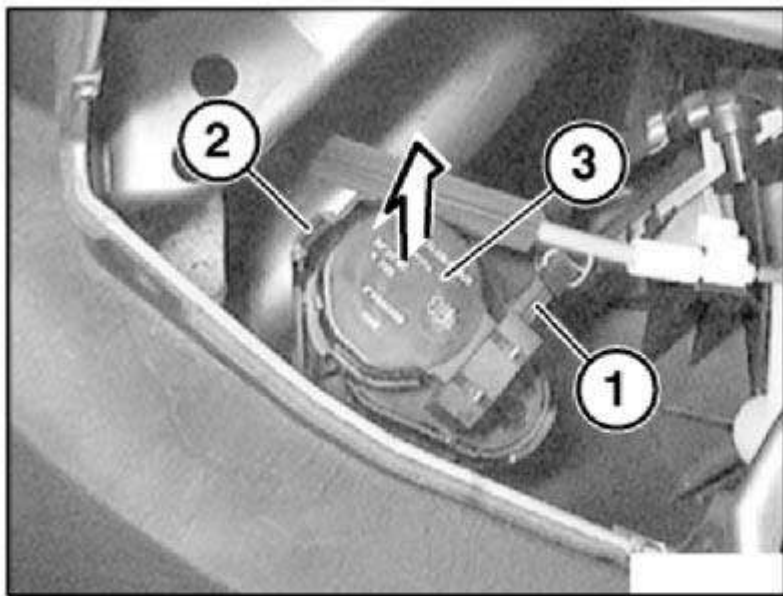
Fig. 36: Aligning Shaft Of Ventilation Flaps To Position Of Servodrive
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 839 REPLACING SERVODRIVE OF FOOTWELL FLAP (AUTOMATIC A/C)

Remove right glovebox. Refer to **51 16 360 REMOVING AND INSTALLING RIGHT GLOVE BOX** .

Disconnect plug connection (1).

Unclip lock (2) and pull out servodrive (3) in direction of arrow.

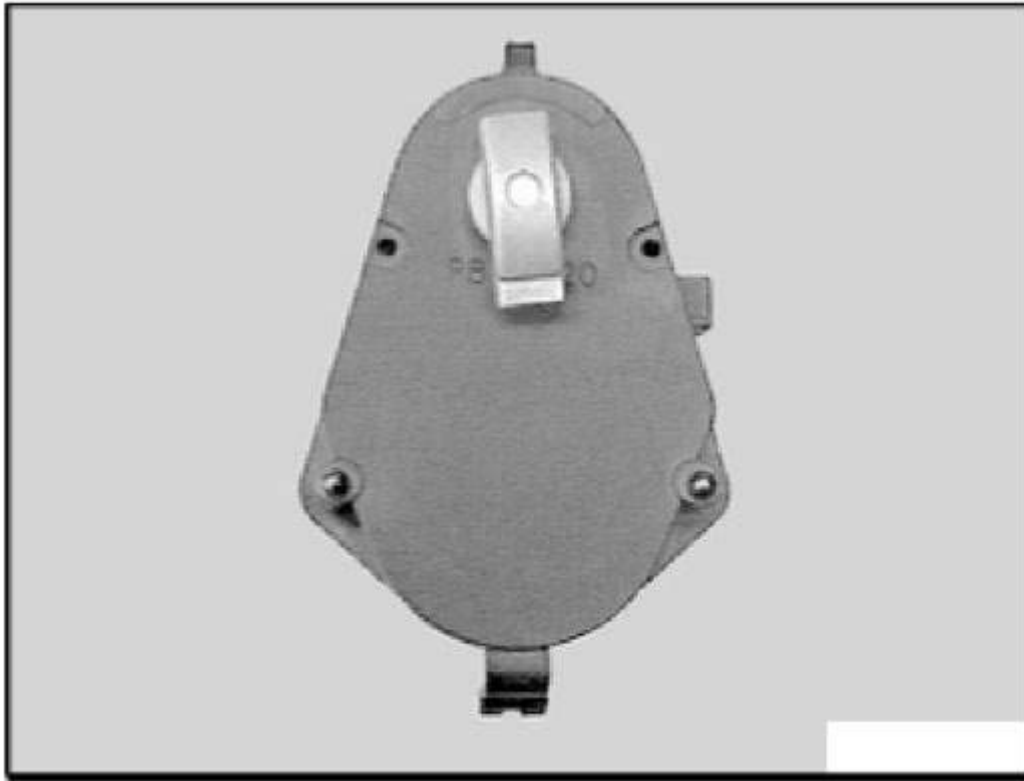


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Fig. 37: Identifying Servodrive And Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, align shaft of footwell flap to position of servodrive.



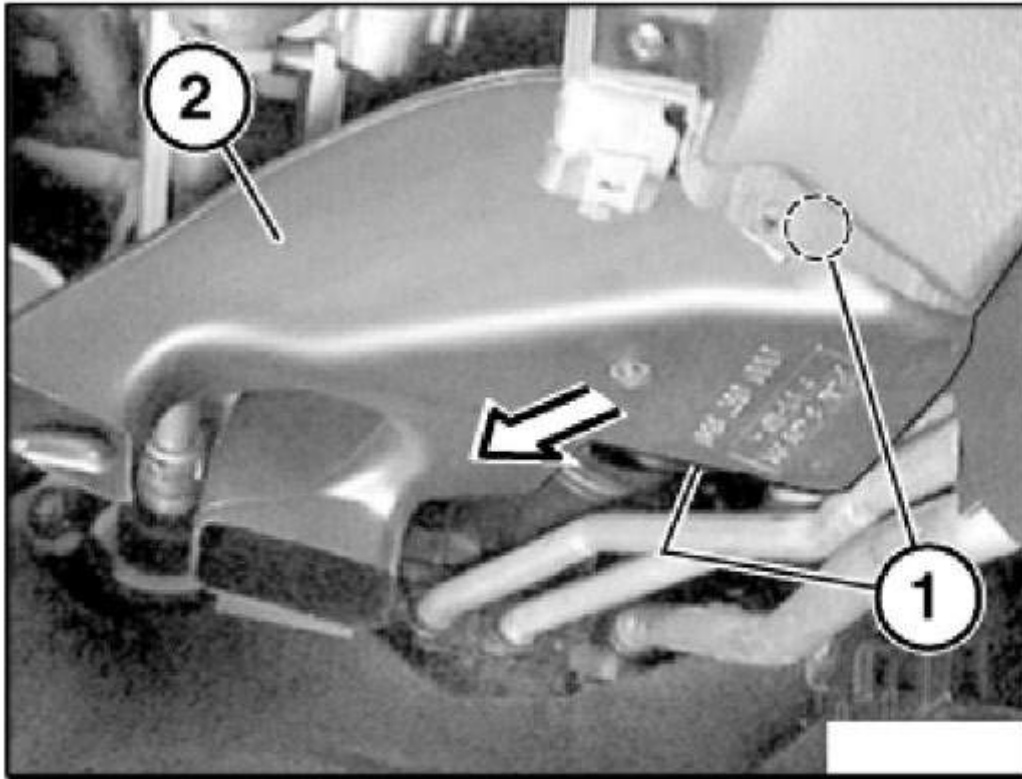
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Fig. 38: Aligning Shaft Of Footwell Flap To Position Of Servodrive
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 845 REPLACING SERVODRIVE OF DEFROSTING FLAPS (AUTOMATIC A/C)

Remove trim for pedal assembly. Refer to **51 45 185 REMOVING AND INSTALLING/REPLACING TRIM FOR PEDAL ASSEMBLY** .

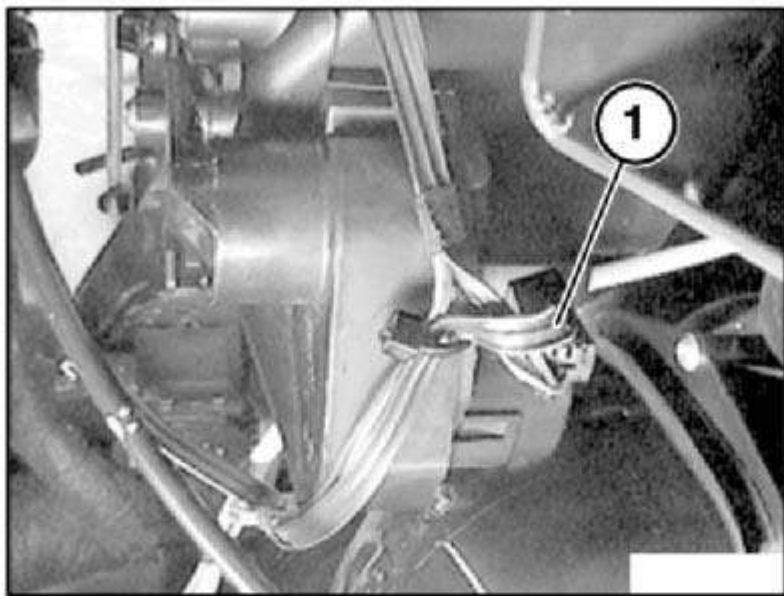
Unclip air duct for footwell on left (2) at mounts (1) and remove in direction of arrow.



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Fig. 39: Identifying Air Duct For Footwell On Left
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

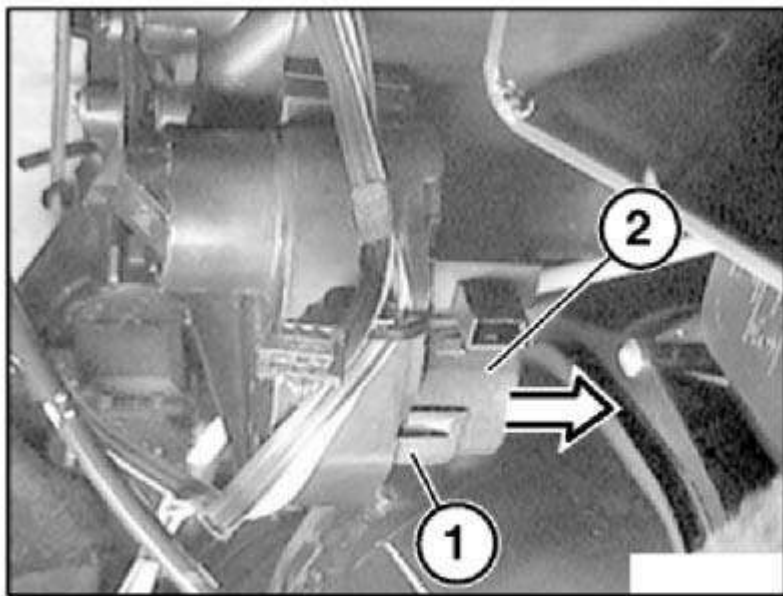


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Fig. 40: Disconnecting Plug Connection

Courtesy of BMW OF NORTH AMERICA, INC.

Unclip lock (1) and pull out servodrive (2) in direction of arrow.



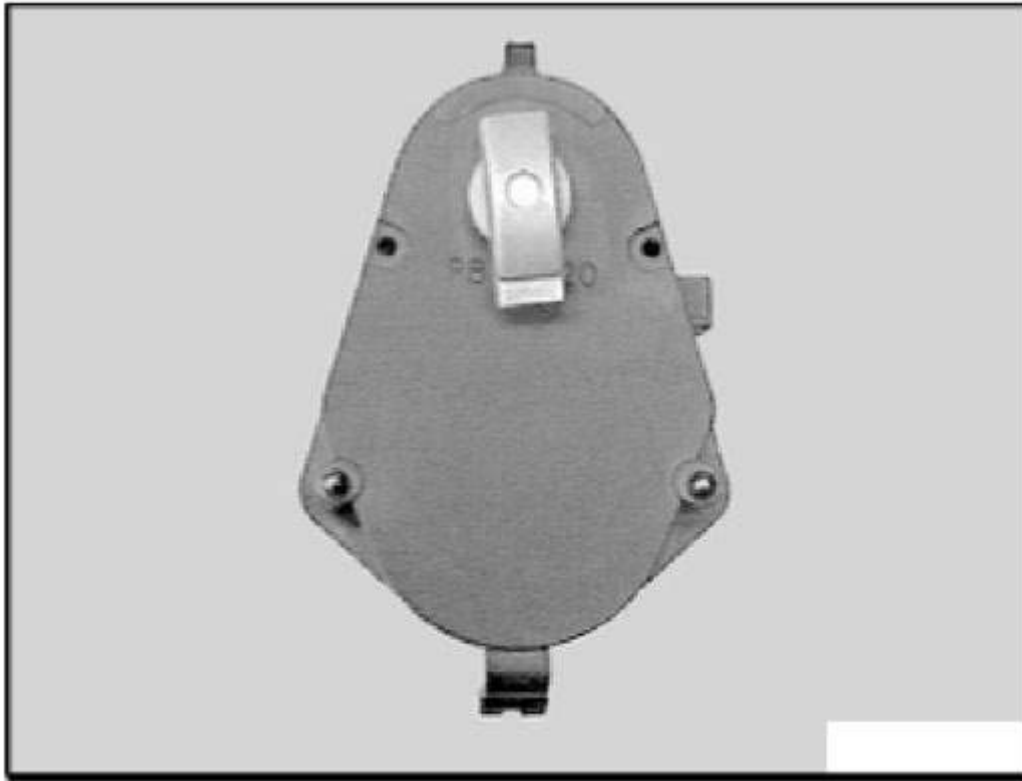
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Fig. 41: Removing Servodrive

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, align shaft of defrosting flaps to position of servodrive.



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Fig. 42: Aligning Shaft Of Defrosting Flaps To Position Of Servodriven
Courtesy of BMW OF NORTH AMERICA, INC.

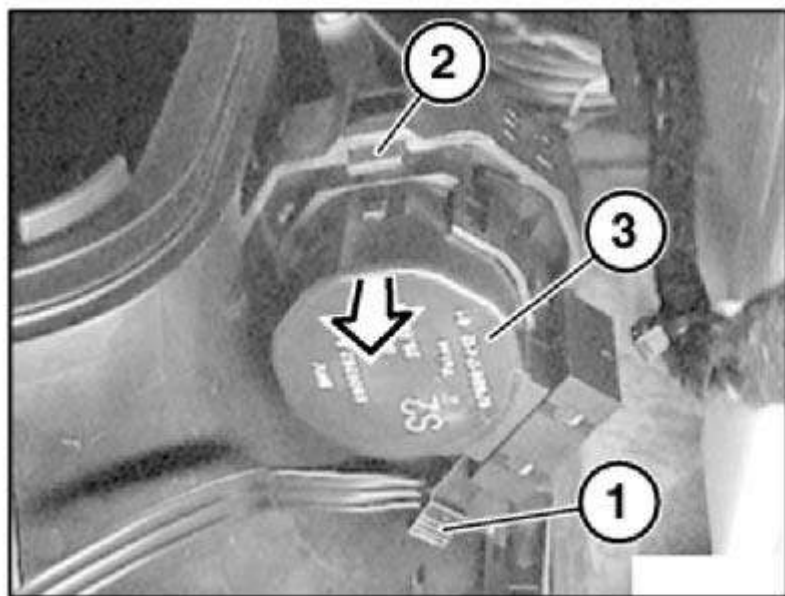
64 11 847 REPLACING SERVODRIVE OF RAM AIR FLAP (AUTOMATIC A/C)

Remove trim for instrument panel, bottom right. Refer to **51 45 181 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT** .

Remove side carpet on right side of center console. Refer to **51 16 200 REMOVING AND INSTALLING CENTER CONSOLE** .

Disconnect plug connection (1).

Unclip lock (2) and pull out servodriven (3) in direction of arrow.



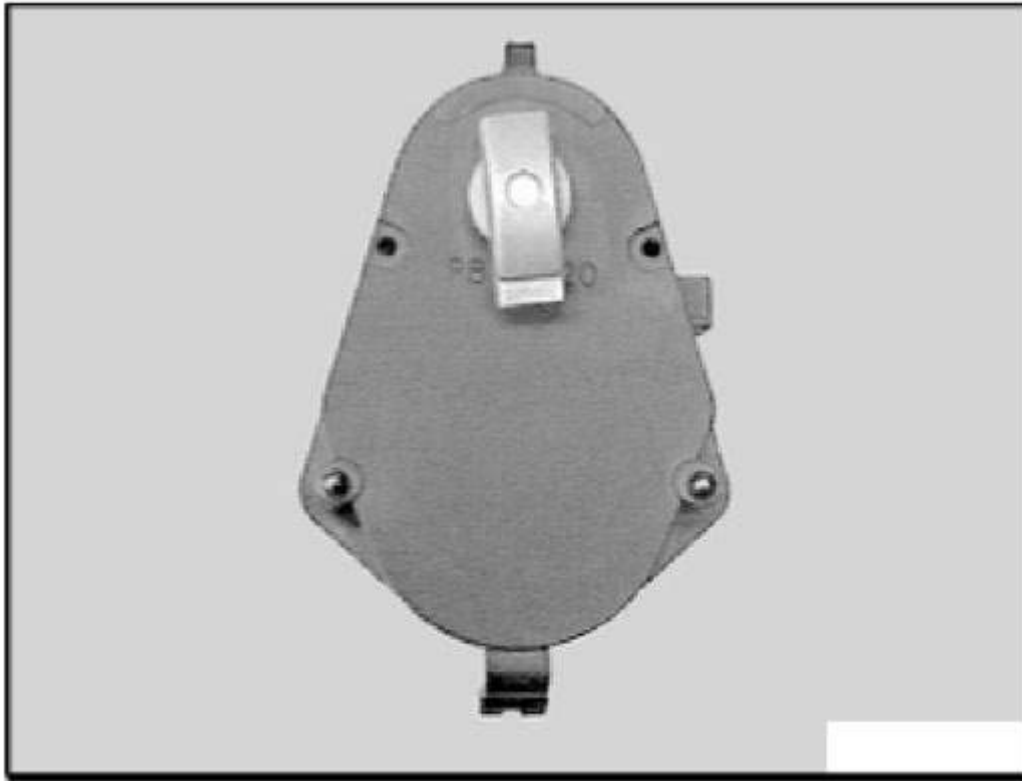
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Fig. 43: Removing Servodrive

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, align shaft of ram air flap to position of servodrive.



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Fig. 44: Aligning Shaft Of Ram Air Flap To Position Of Servodrive
Courtesy of BMW OF NORTH AMERICA, INC.

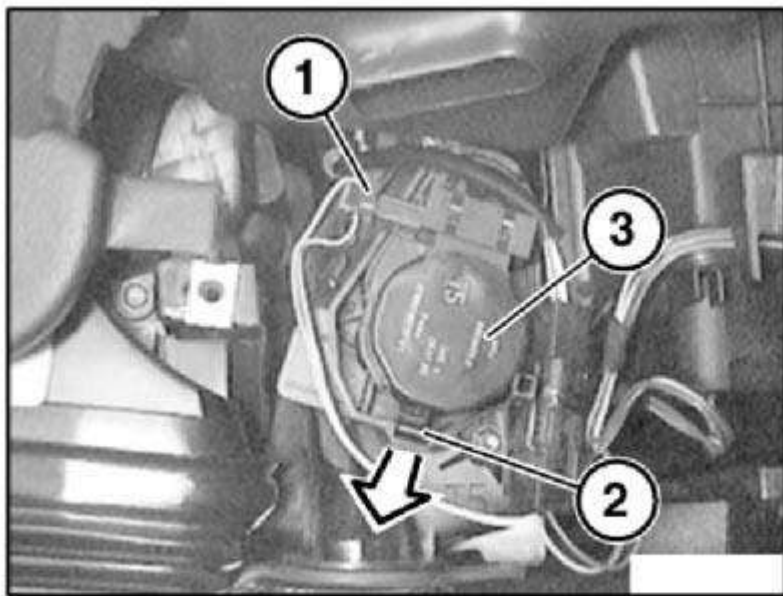
64 11 850 REPLACING SERVODRIVE OF REAR COMPARTMENT FLAP (AUTOMATIC A/C)

Remove trim for instrument panel, bottom right. Refer to **51 45 181 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT** .

Remove side carpet on right side of center console. Refer to **51 16 200 REMOVING AND INSTALLING CENTER CONSOLE** .

Disconnect plug connection (1).

Unclip lock (2) and pull out servodrive (3) in direction of arrow.



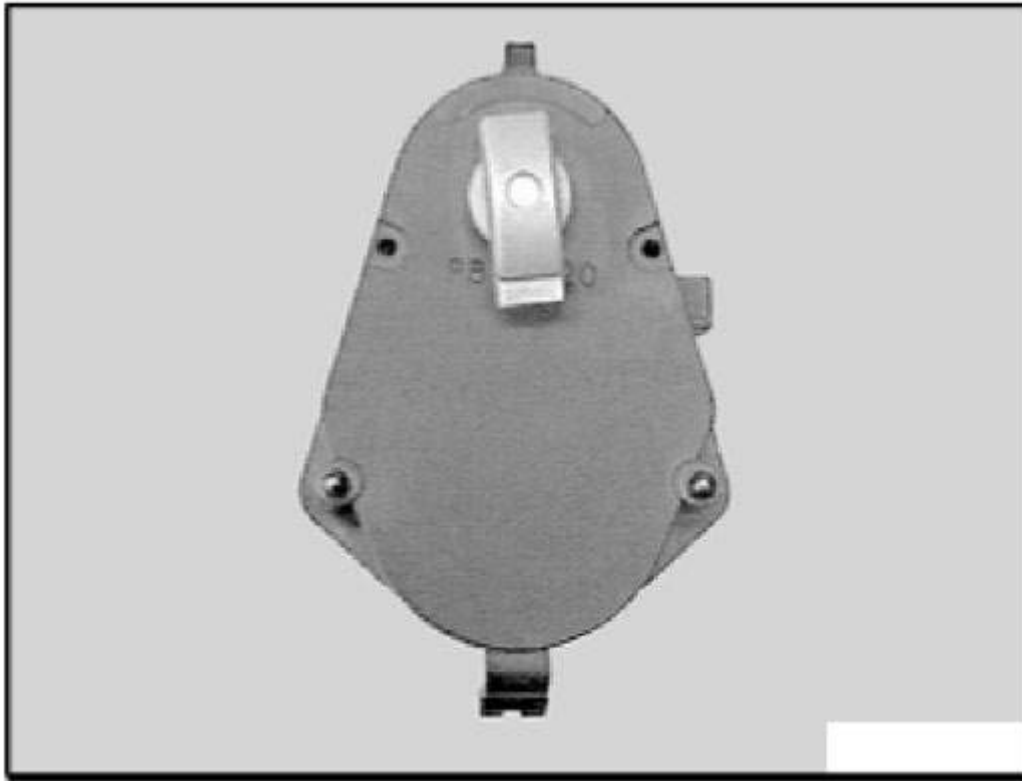
G03256714

Fig. 45: Removing Servodrive

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, align shaft of rear compartment flap to position of servodrive.



G03256715

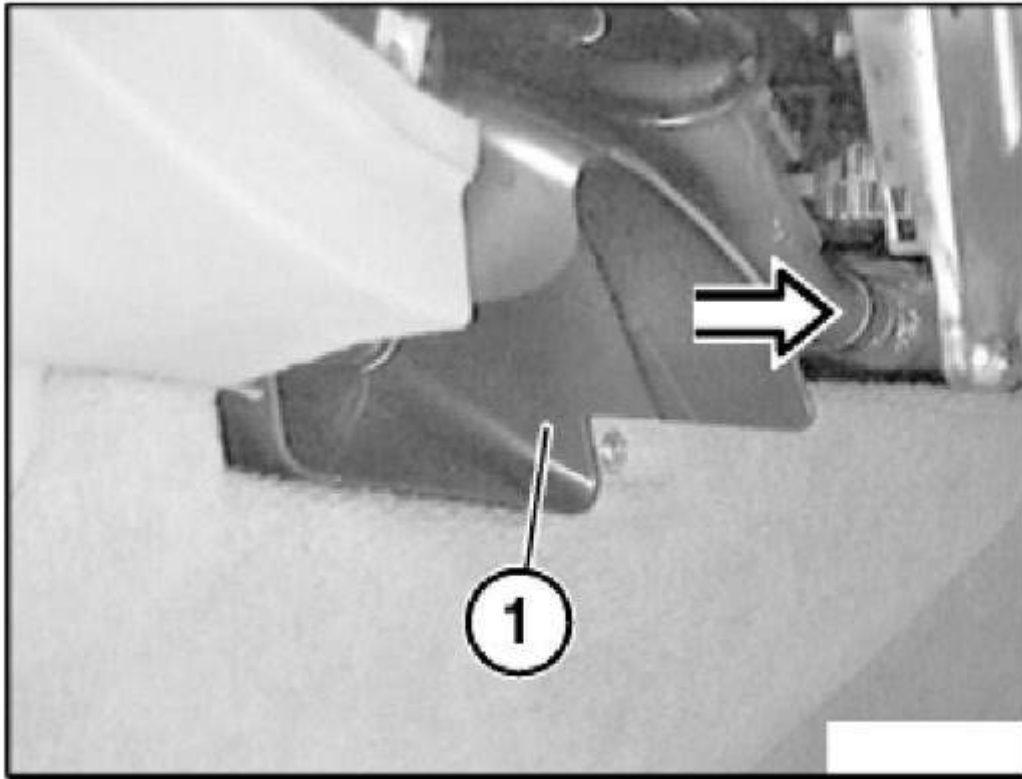
Fig. 46: Aligning Shaft Of Rear Compartment Flap To Position Of Servodrive
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 932 REPLACING EVAPORATOR TEMPERATURE SENSOR (A/C CONTROL)

Remove right glovebox. Refer to **51 16 360 REMOVING AND INSTALLING RIGHT GLOVE BOX** .

E39, E53:

Unclip air duct for right footwell (1) and pull out in direction of arrow.

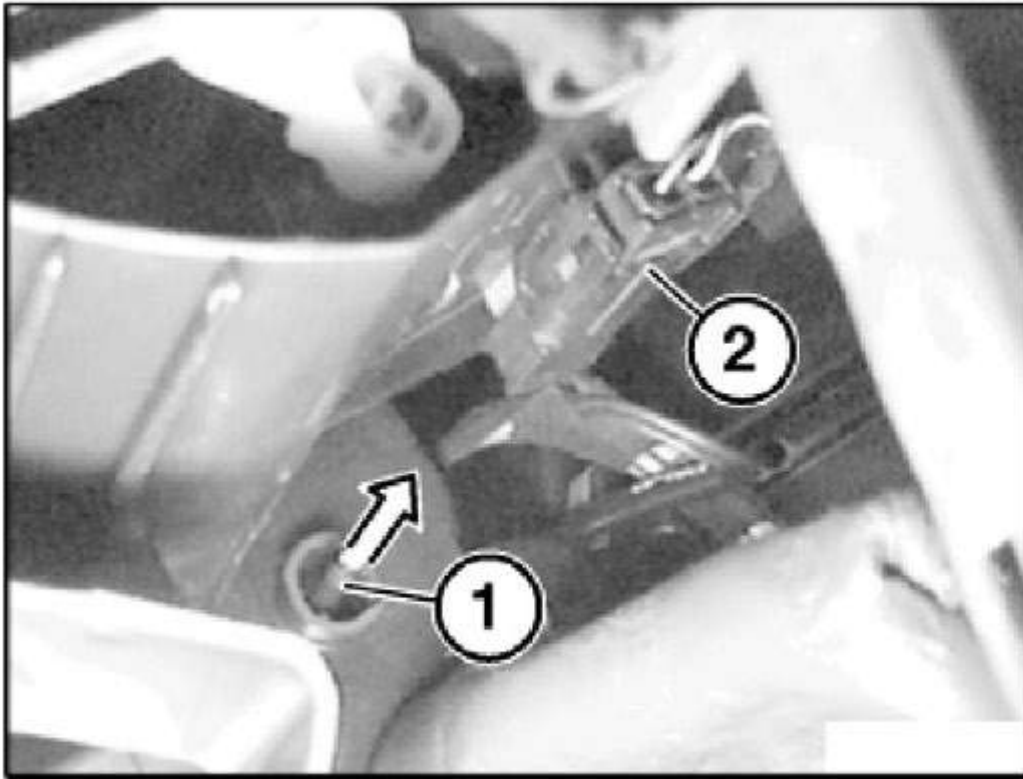


G03256717

Fig. 47: Identifying Air Duct For Right Footwell
Courtesy of BMW OF NORTH AMERICA, INC.

Break out repair cover (1) with pointed pliers in direction of arrow.

Disconnect connector (2).



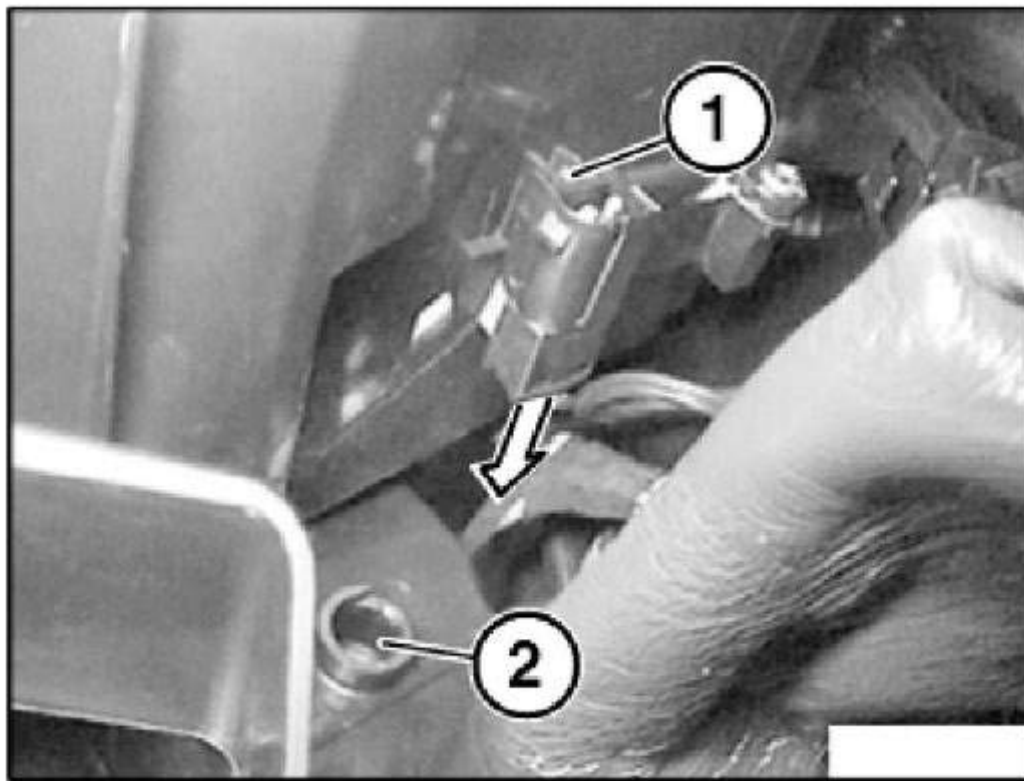
G03256718

Fig. 48: Disconnecting Plug Connector
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock plug of faulty evaporator temperature sensor (1) and pull out in direction of arrow.

NOTE: **Secure plug of faulty evaporator temperature sensor with fabric adhesive tape.**

Insert new evaporator temperature sensor in opening (2) and lock into place.

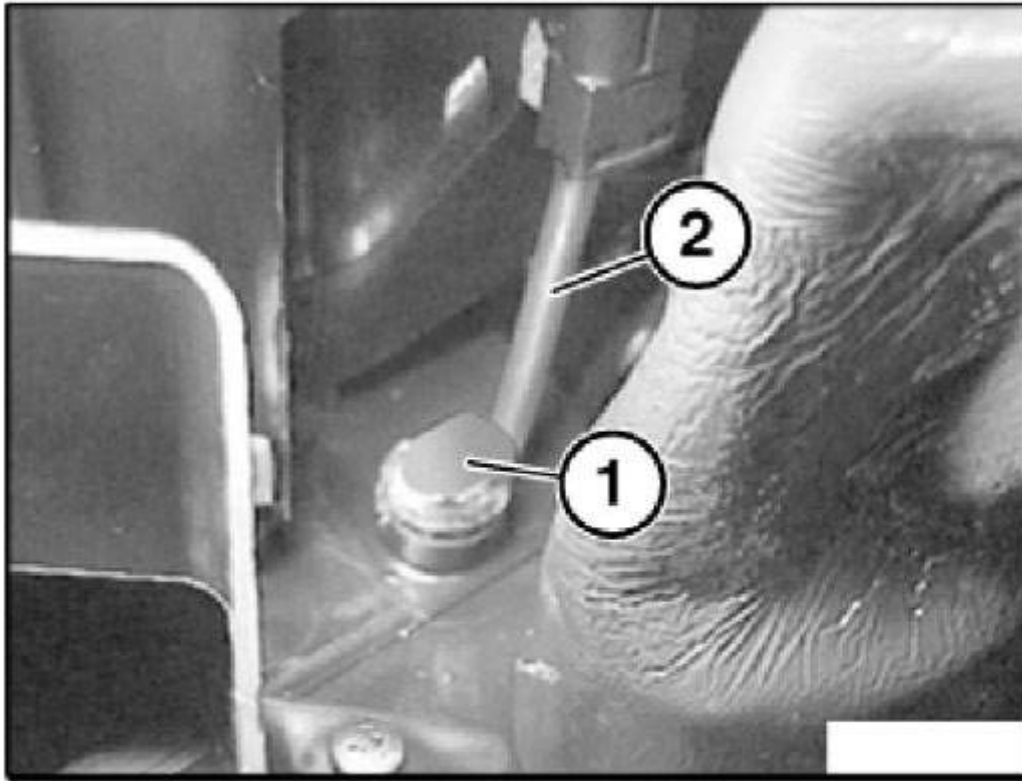


G03256719

Fig. 49: Unlocking Plug Of Evaporator Temperature Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure evaporator temperature sensor (1) and cable (2) are correctly seated.



G03256720

Fig. 50: Identifying Evaporator Temperature Sensor And Cable
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 937 REPLACING EVAPORATOR TEMPERATURE SENSOR (AUTOMATIC A/C)

Remove trim for instrument panel, bottom right. Refer to **51 45 181 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT** .

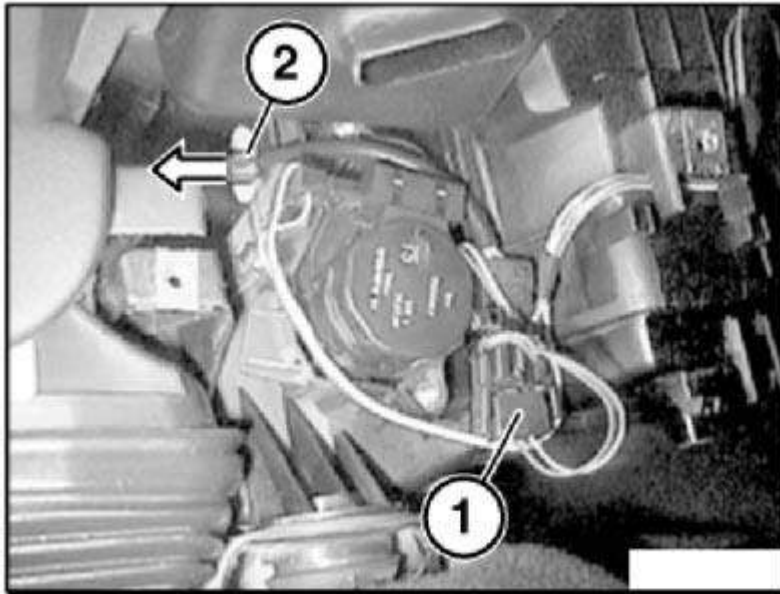
Remove side carpet on right side of center console. Refer to **51 16 200 REMOVING AND INSTALLING CENTER CONSOLE** .

Disconnect plug connection (1).

Pull out evaporator temperature sensor (2) in direction of arrow.

Installation:

Ensure evaporator temperature sensor (2) is correctly seated.



G03256721

Fig. 51: Locating Evaporator Temperature Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

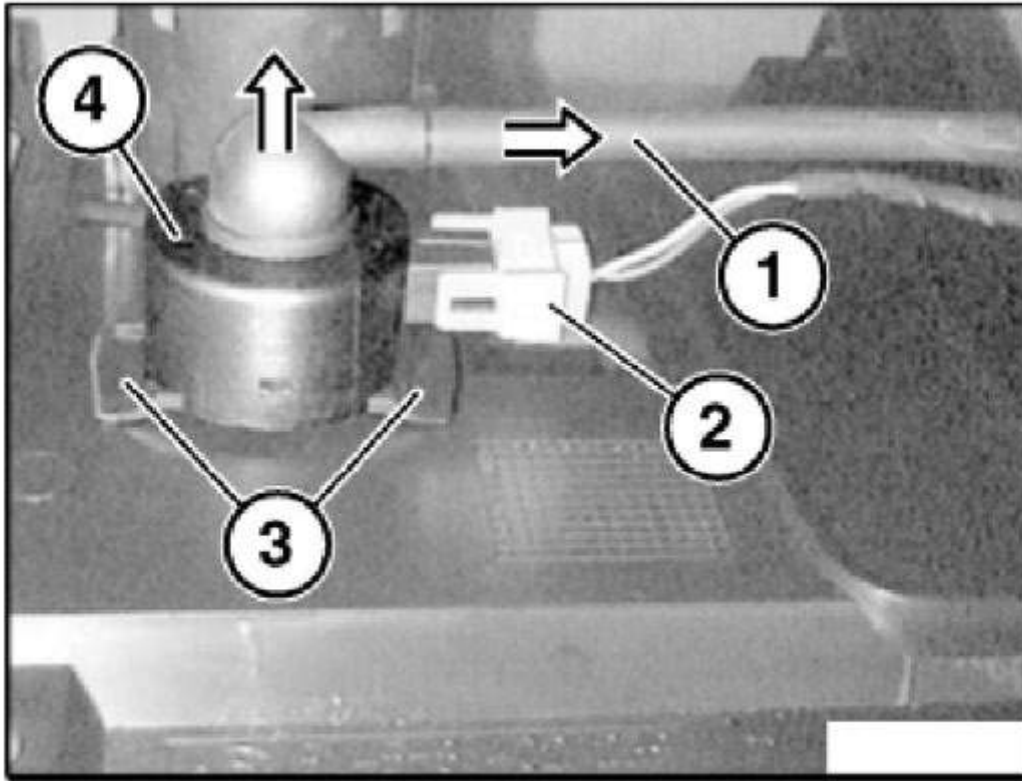
64 11 938 REMOVING AND INSTALLING/REPLACING INTERIOR TEMPERATURE SENSOR (A/C CONTROL)

Remove trim for pedal assembly. Refer to **51 45 185 REMOVING AND INSTALLING/REPLACING TRIM FOR PEDAL ASSEMBLY** .

Detach hose (1) in direction of arrow.

Disconnect connector (2).

Unlock catches (3) and remove temperature sensor (4) in direction of arrow.



G03256722

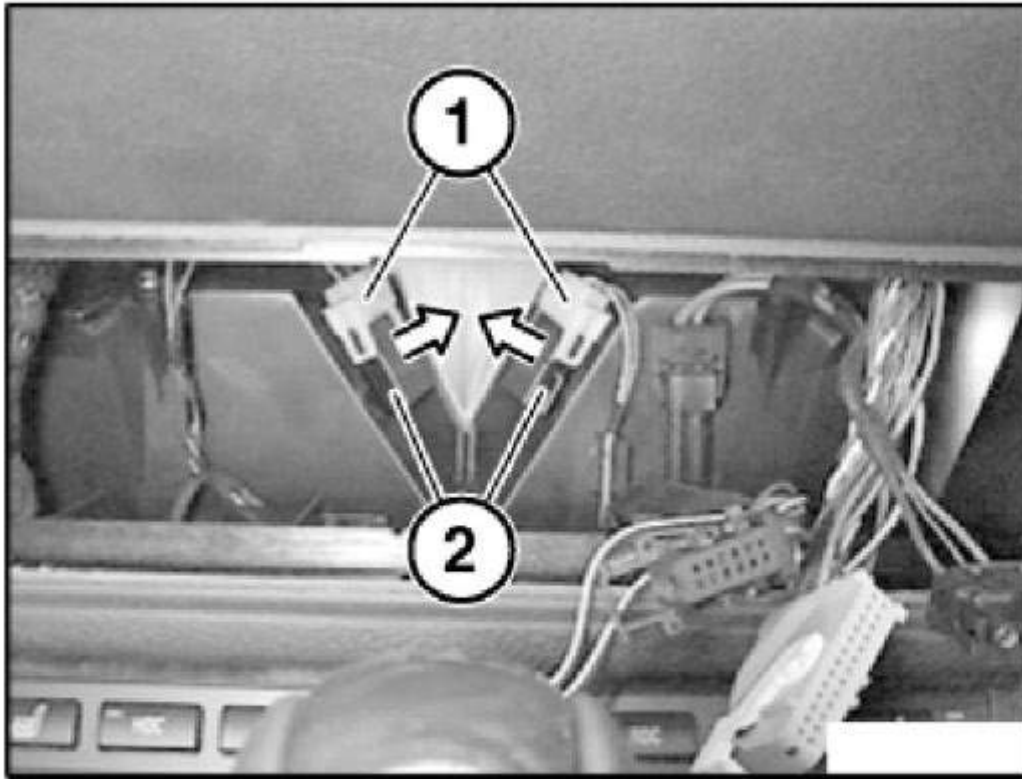
Fig. 52: Removing Temperature Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 939 REPLACING TEMPERATURE SENSOR FOR HEATER

Heater controls removed. Refer to **64 11 749 REMOVING AND INSTALLING HEATER CONTROL (AUTOMATIC AIR CONDITIONING)** .

Disconnect plug connection (1).

Remove temperature sensor (2).



G03256723

Fig. 53: Removing Temperature Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

64 11 949 REPLACING TEMPERATURE SENSOR FOR HEATER (A/C CONTROL)

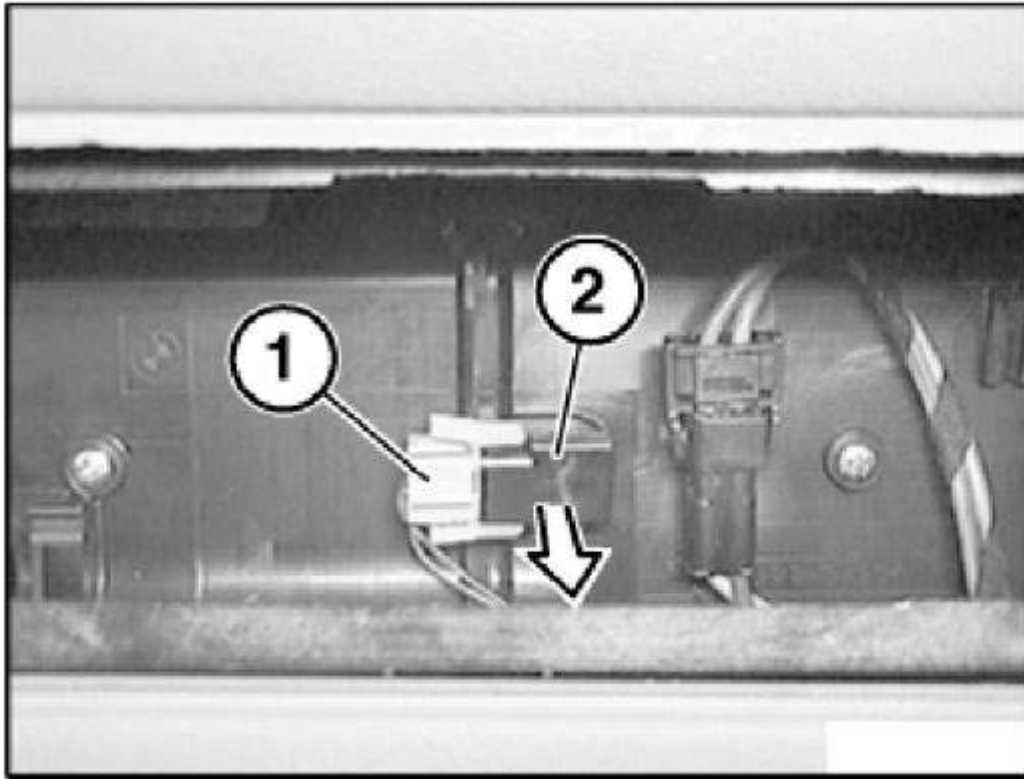
Remove heating controls. Refer to **64 11 749 REMOVING AND INSTALLING HEATER CONTROL (AUTOMATIC AIR CONDITIONING)** .

Disconnect plug connection (1).

Pull out temperature sensor (2) in direction of arrow.

Installation:

Ensure temperature sensor (2) is correctly seated.



G03256724

Fig. 54: Locating Temperature Sensor
Courtesy of BMW OF NORTH AMERICA, INC.

AUXIL. HEATER WITH CONTROL ELEMENTS

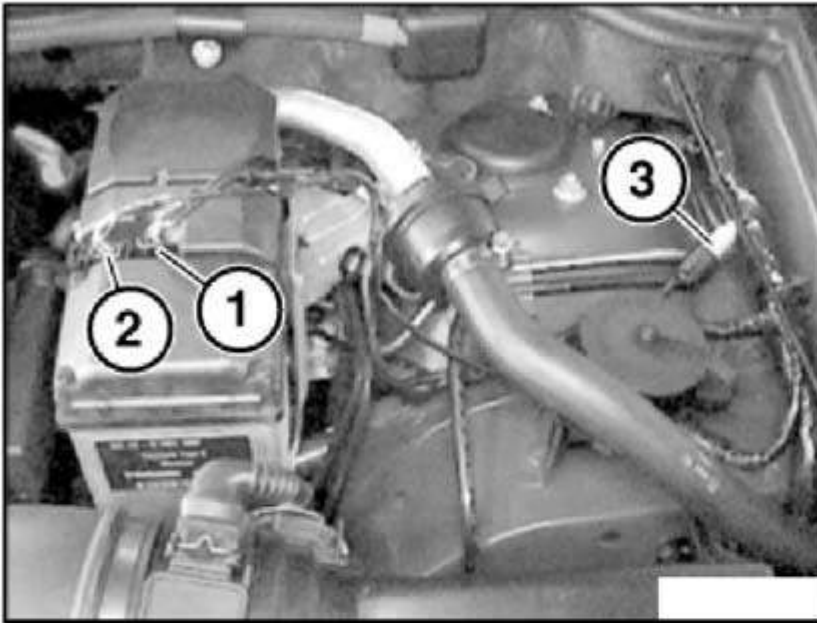
64 12 500 REMOVING AND INSTALLING OR REPLACING COMPLETE HEATER

All:

Disconnect plug connections (1) to (3).

CAUTION: To avoid damage during installation, it is absolutely essential to adhere to the following contacting sequence for the plug connections:

1. Plug connection (1).
2. Plug connection (2).
3. Plug connection (3).



1. Plug connection (1)
2. Plug connection (2)
3. Plug connection (3)

G03256726

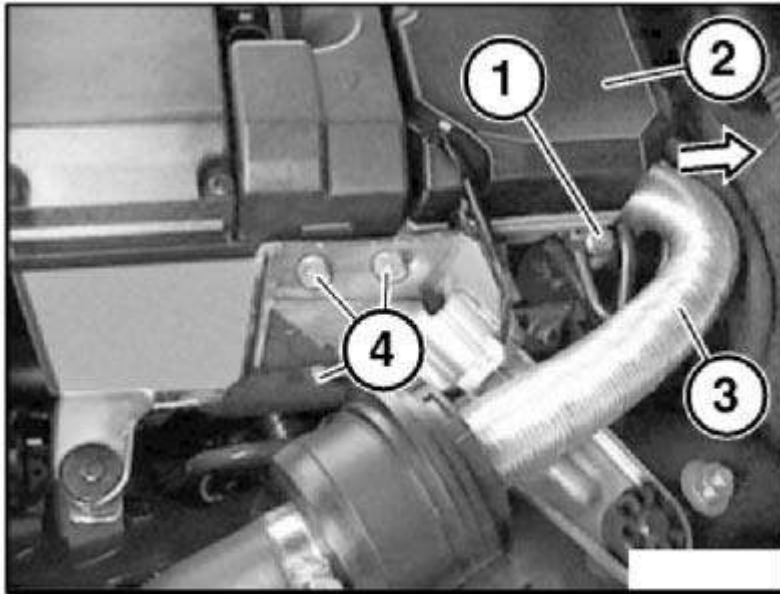
Fig. 55: Identifying Plug Connections

Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten hose clip (1).

Detach intake hose (3) in direction of arrow from heater (2).

Release screws (4).



G03256727

Fig. 56: Detaching Intake Hose

Courtesy of BMW OF NORTH AMERICA, INC.

WARNING: Danger of scalding! Only perform this work after engine has cooled down.

Detach fuel line (1) from heater (5).

Release hose clamp (3).

Detach water hose (2) from heater (5).

M54, M62 Only:

Release screw (4).

All:

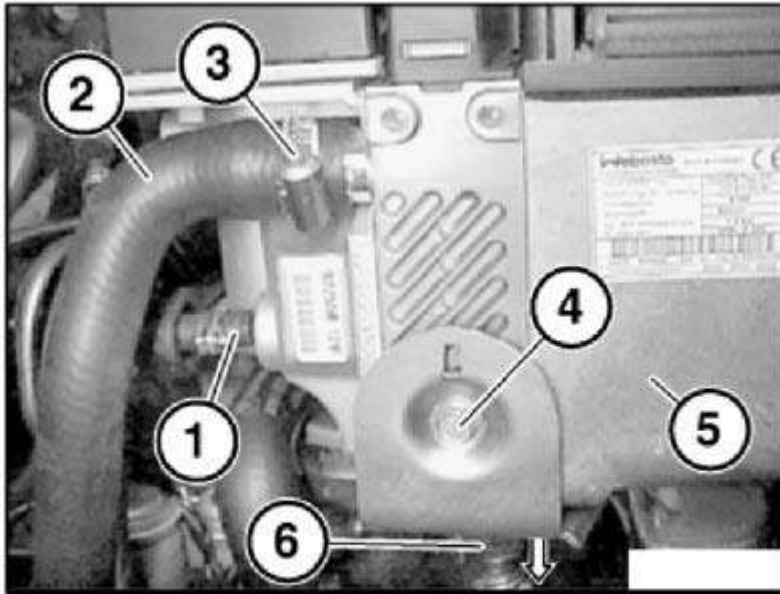
Detach exhaust hose (6) in direction of arrow from heater (5).

Lift heater (5) upwards.

Unfasten hose clip (2).

Detach water hose (1).

Lift out heater.



G03256728

Fig. 57: Locating Exhaust Hose

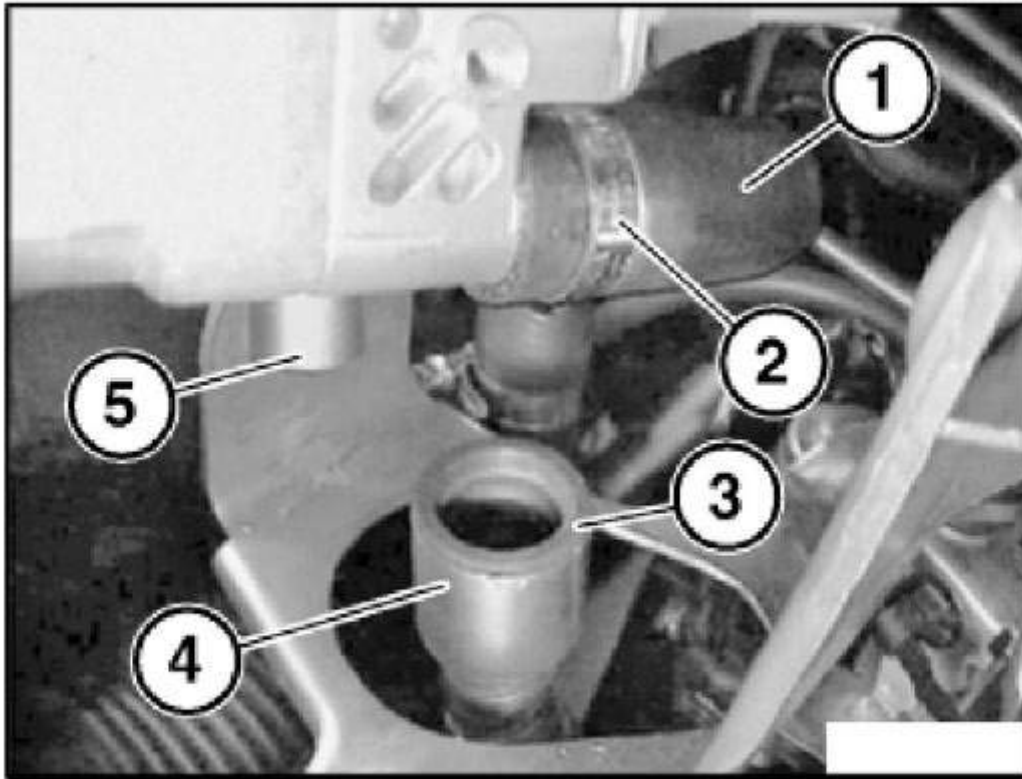
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace gasket (3).

Make sure exhaust hose (4) is correctly seated on flange of heater (5).

Fill and vent cooling system. Refer to **17 00 039 VENTING COOLING SYSTEM AND CHECKING FOR LEAKS (M54/M56)** .



G03256729

Fig. 58: Identifying Water Hose And Clip
Courtesy of BMW OF NORTH AMERICA, INC.

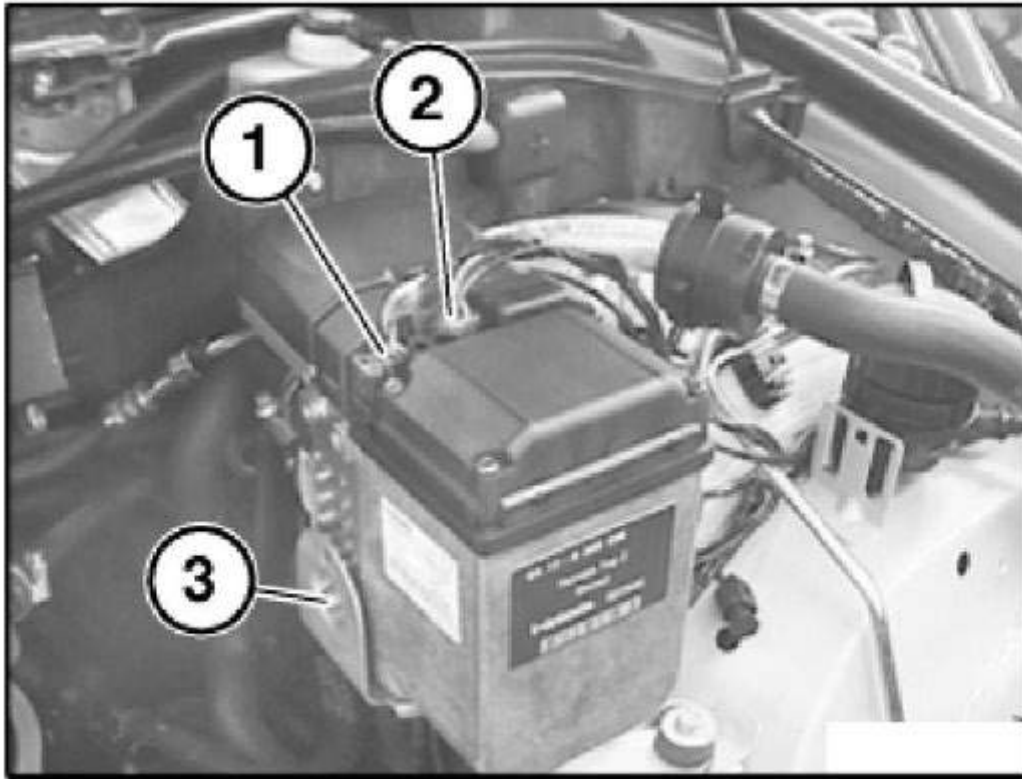
64 12 579 REMOVING AND INSTALLING/REPLACING EXHAUST PIPE (TOP)

All:

Disconnect plugs (1) and (2).

CAUTION: To avoid damage during installation, it is absolutely essential to adhere to the following contacting sequence for the plug connections:

1. Plug connection (2).
2. Plug connection (1).



G03256730

Fig. 59: Identifying Plugs

Courtesy of BMW OF NORTH AMERICA, INC.

M54, M62 Only:

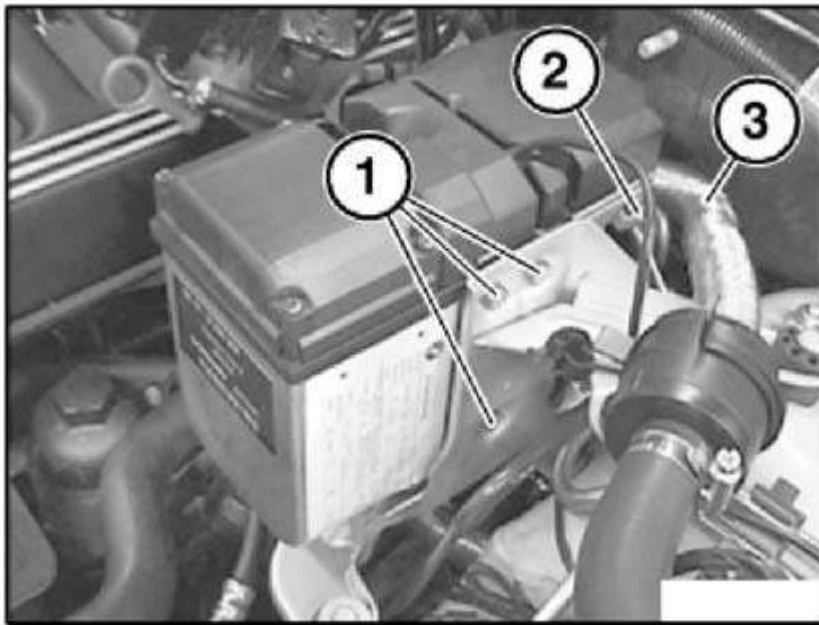
Release screw (3).

All:

Detach hose clamp (2) from intake hose (3).

Detach intake hose (3) from heater (4) and place to one side.

Loosen screws (1).



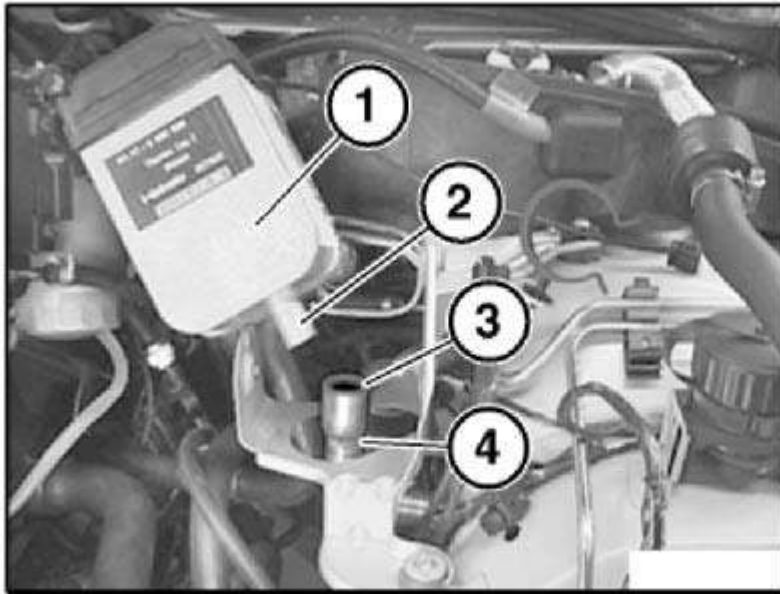
G03256731

Fig. 60: Locating Hose Clamp And Intake Hose
Courtesy of BMW OF NORTH AMERICA, INC.

Raise heater (1) and detach exhaust pipe (4) from flange (2).

Installation:

Ensure gasket (3) is correctly seated.



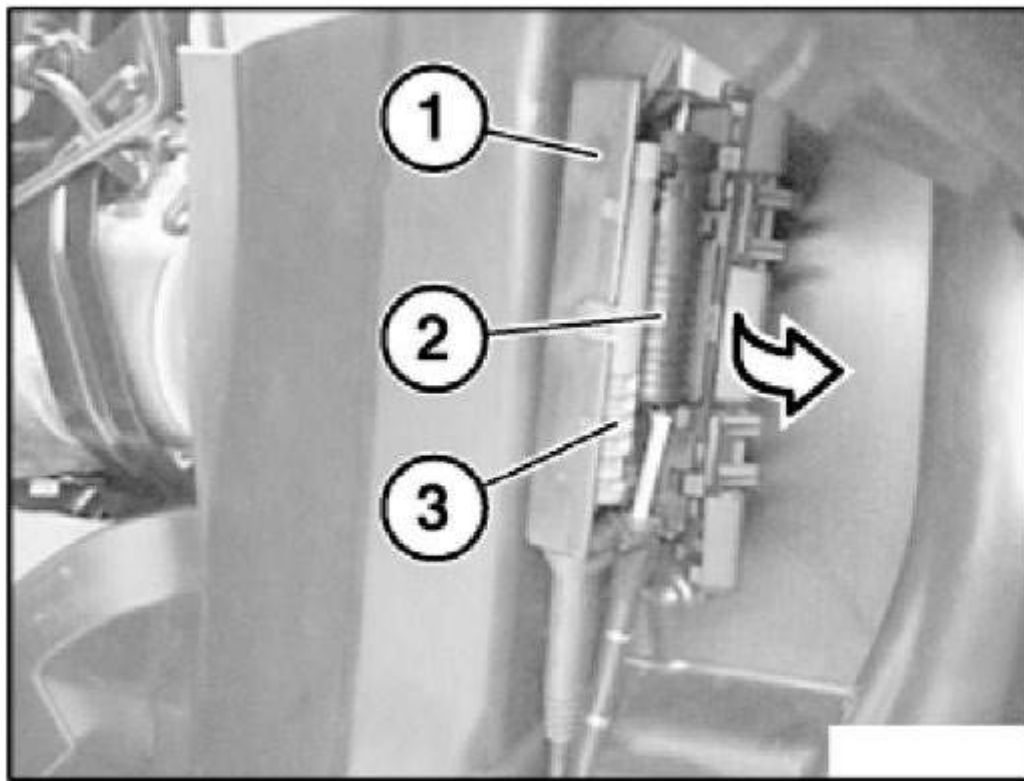
G03256732

Fig. 61: Identifying Heater And Exhaust Pipe
Courtesy of BMW OF NORTH AMERICA, INC.

Remove front left wheel.

Remove wheel arch cover at front left.

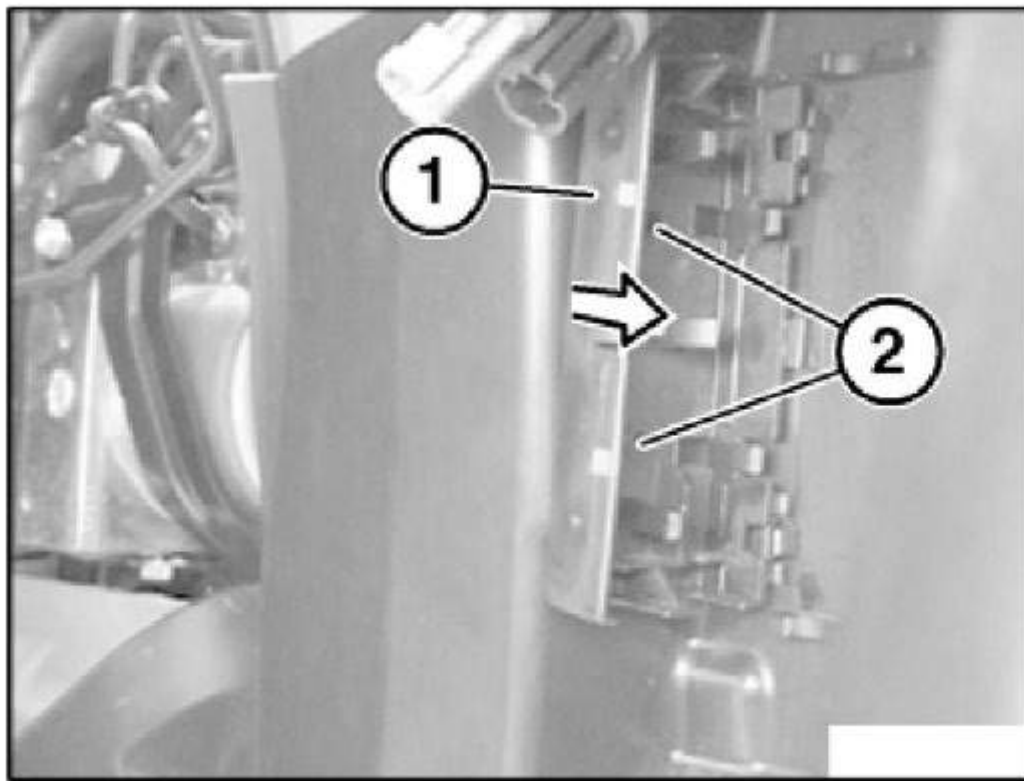
Fold back plug connection holder (1) in direction of arrow. Unclip plug connections (2) and (3) and disconnect.



G03256733

Fig. 62: View Of Plug Connection Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Pull out pins (2) with aid of appropriate metal screw. Unclip plug connection holder (1) in direction of arrow.

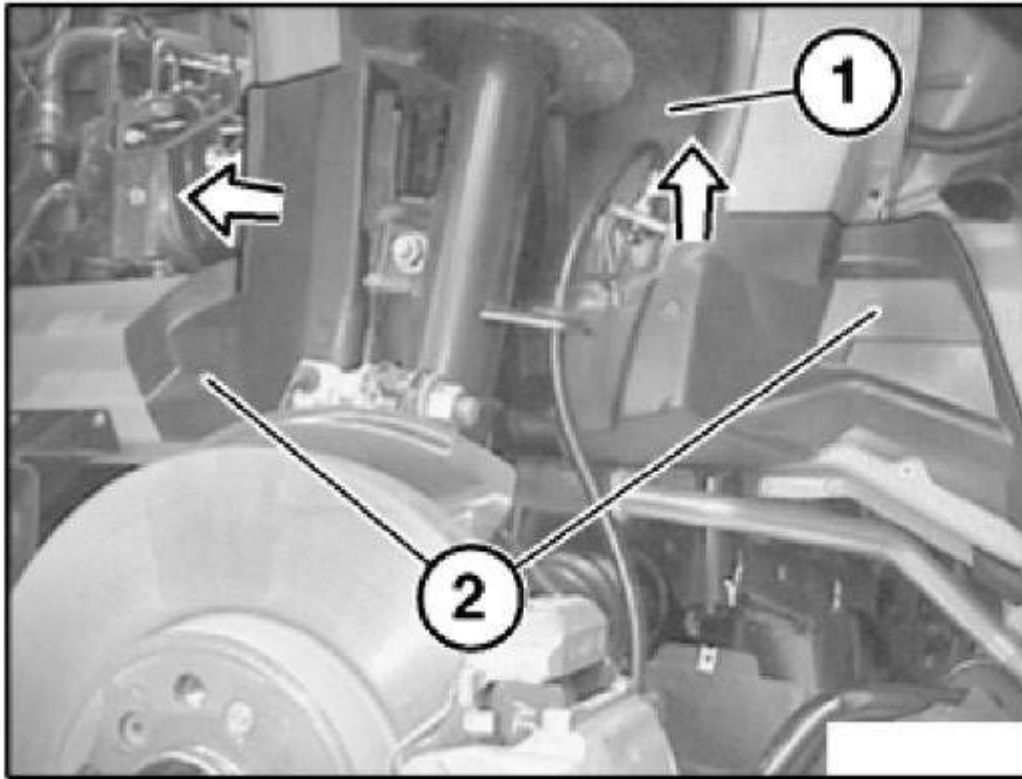


G03256734

Fig. 63: Locating Plug Connection Holder Pins
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen screws (2).

Detach cover (1) at front in direction of arrow a little and push upwards.



G03256735

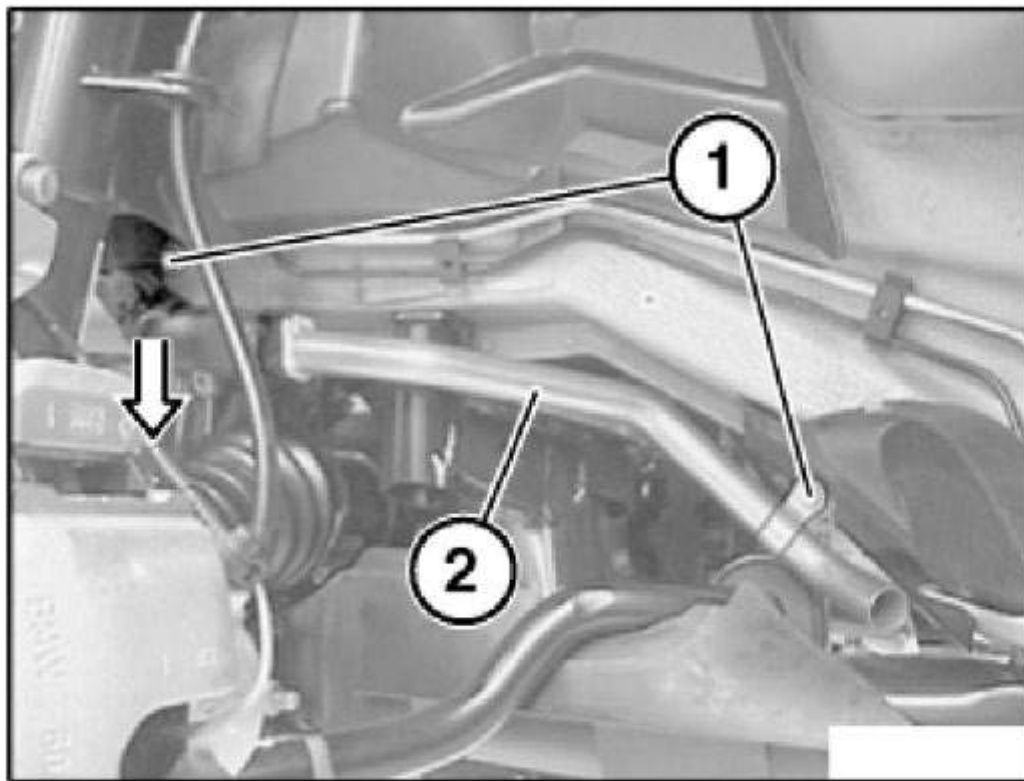
Fig. 64: Detaching Cover

Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For purposes of clarity, illustration shows exhaust pipe (bottom) removed.

Loosen screws (1).

Pull out exhaust pipe (2) downwards.



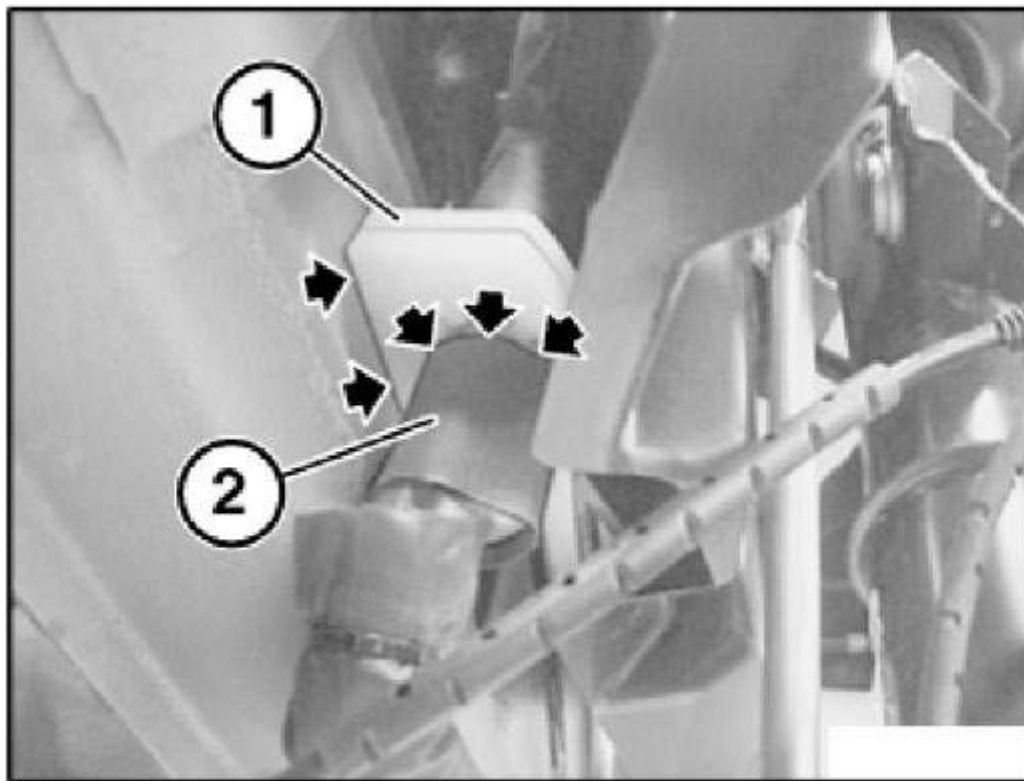
G03256736

Fig. 65: Aligning Exhaust Pipe

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure rubber seal (1) and heat insulation (2) are correctly seated.



G03256737

Fig. 66: Installing Rubber Seal And Heat Insulation
Courtesy of BMW OF NORTH AMERICA, INC.

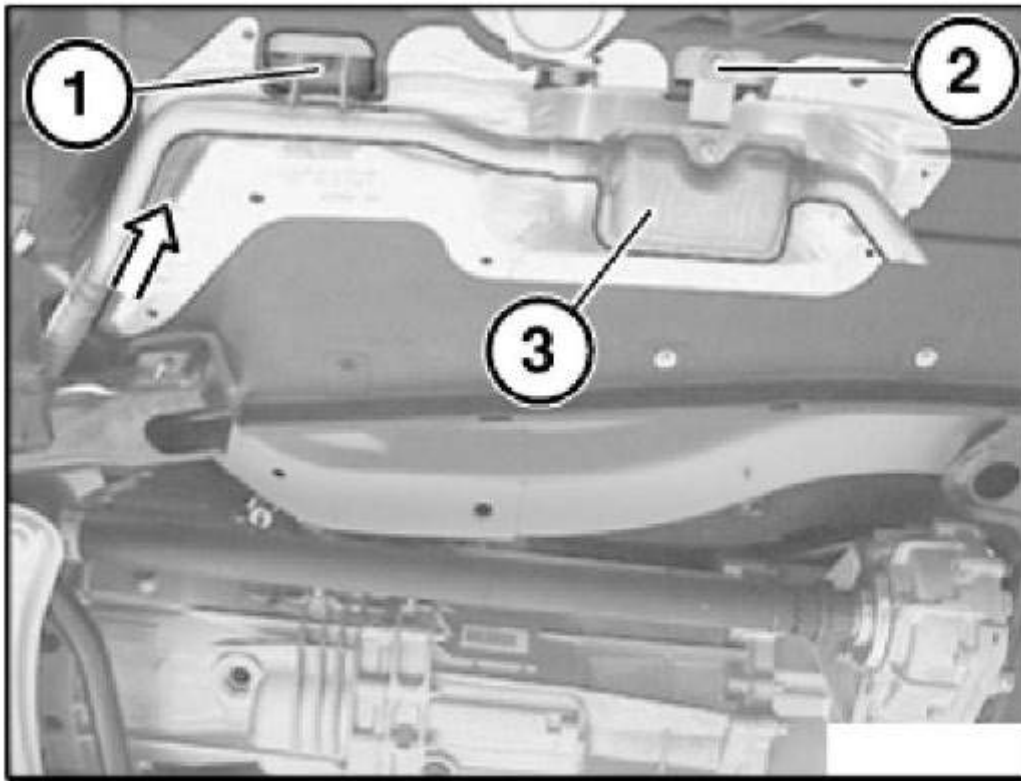
64 12 580 REMOVING AND INSTALLING/REPLACING EXHAUST PIPE (BOTTOM)

Release cap nut (1) and screw (2).

Detach exhaust pipe (3) in direction of arrow.

Installation:

Replace cap nut.



G03256738

Fig. 67: Detaching Exhaust Pipe

Courtesy of BMW OF NORTH AMERICA, INC.

NOZZLES AND OUTLETS

64 22 135 REMOVING AND INSTALLING/REPLACING LEFT FRESH-AIR GRILL

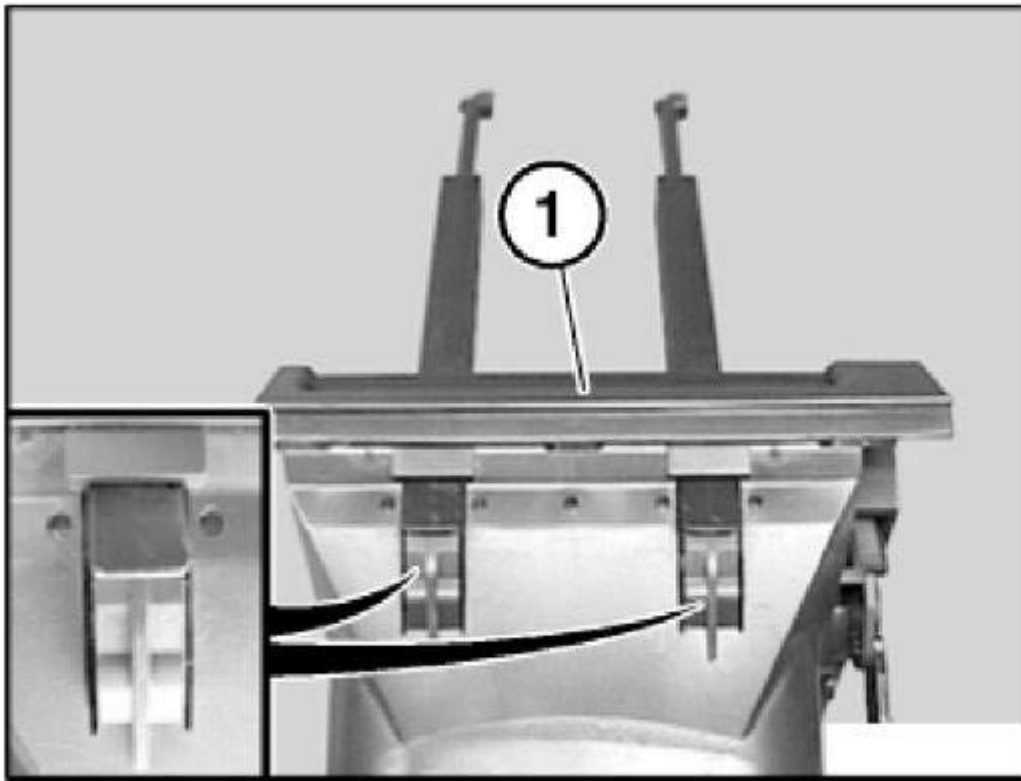
NOTE: For Special Tool identification, see **SPECIAL TOOLS - X5 (3.0i)** .

Special Tools Required:

- 64 1 020

For Purposes Of Clarity:

Fresh air grill (1) in unlocked state.



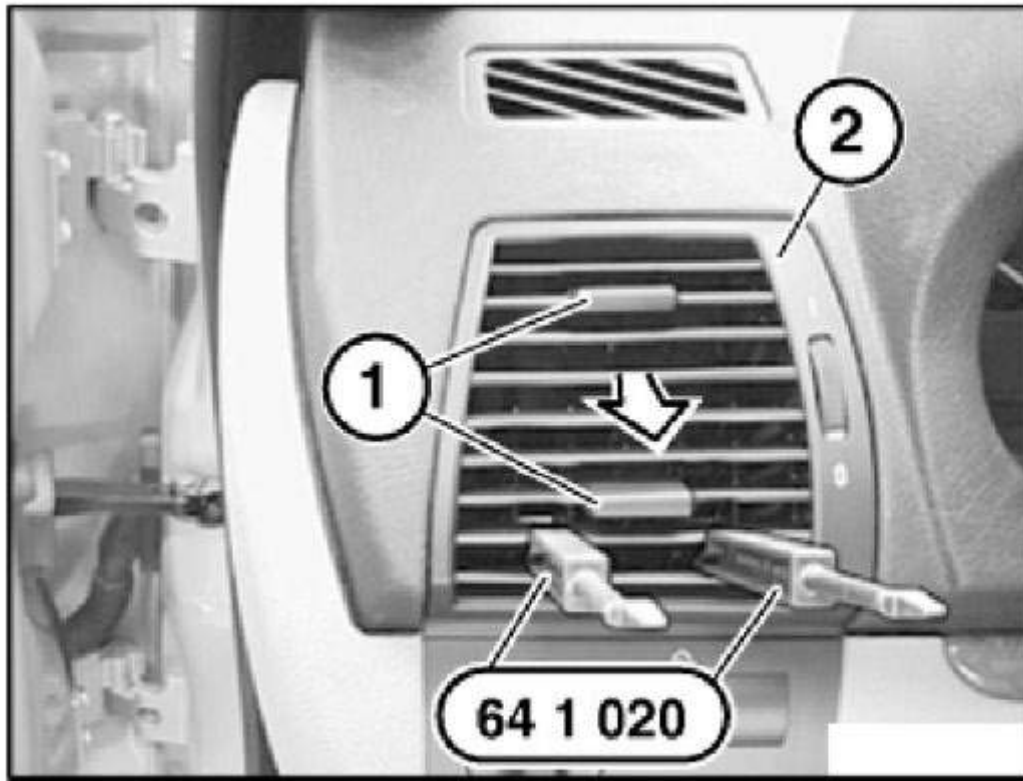
G03256739

Fig. 68: Identifying Fresh Air Grill (Unlocked)
Courtesy of BMW OF NORTH AMERICA, INC.

Move air outlet adjuster (1) into illustrated position.

Insert special tool 641020 as illustrated at an angle downwards into openings of fresh air grill (2) and unlock fresh air grill (2).

Withdraw fresh air grill (2) at air outlet adjusters (1) in direction of arrow.



G03256740

Fig. 69: Inserting Release Hooks Into Fresh Air Grill
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

First allow fresh air grill (2) to snap into place at top.

Fresh air grill (2) must snap audibly into place.

64 22 136 REMOVING AND INSTALLING/REPLACING RIGHT FRESH-AIR GRILL

Remove and install/replace fresh-air grill, refer to **64 22 135 REMOVING AND INSTALLING/REPLACING LEFT FRESH-AIR GRILL** .

64 22 161 REMOVING AND INSTALLING/REPLACING FRESH-AIR GRILL CENTER

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X5 (3.0i)** .

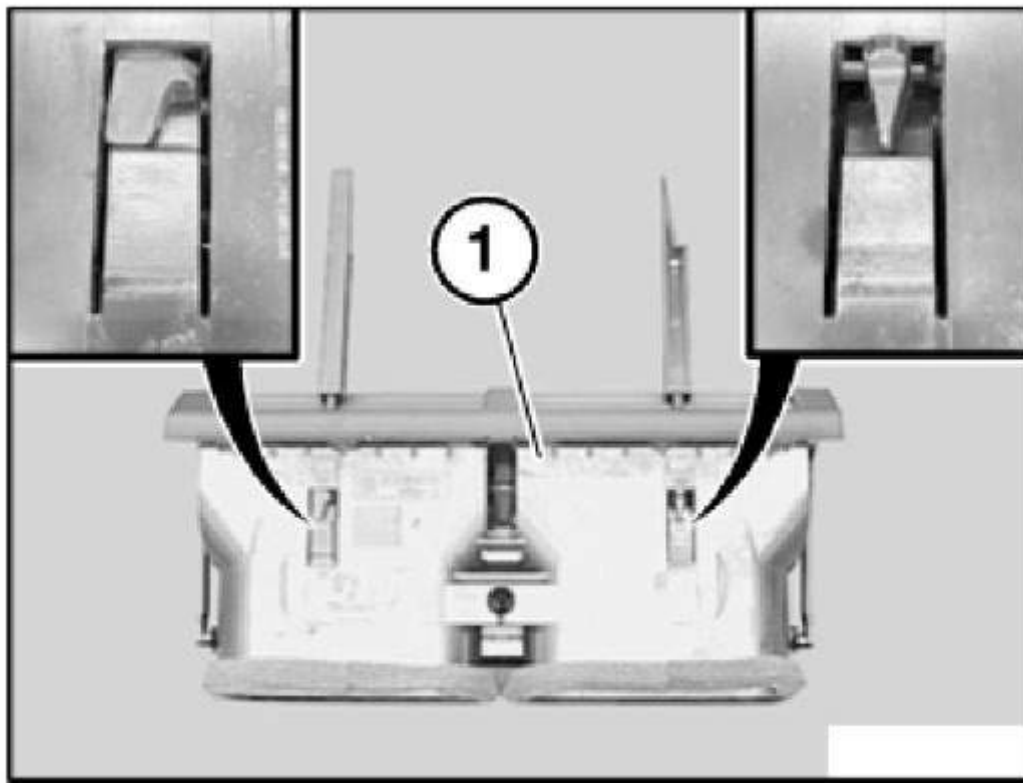
Special Tools Required:

- 64 1 020

For Purposes Of Clarity:

Fig. 1: Fresh air grill (1) in locked state.

Fig. 2: Fresh air grill (1) in unlocked state.



G03256741

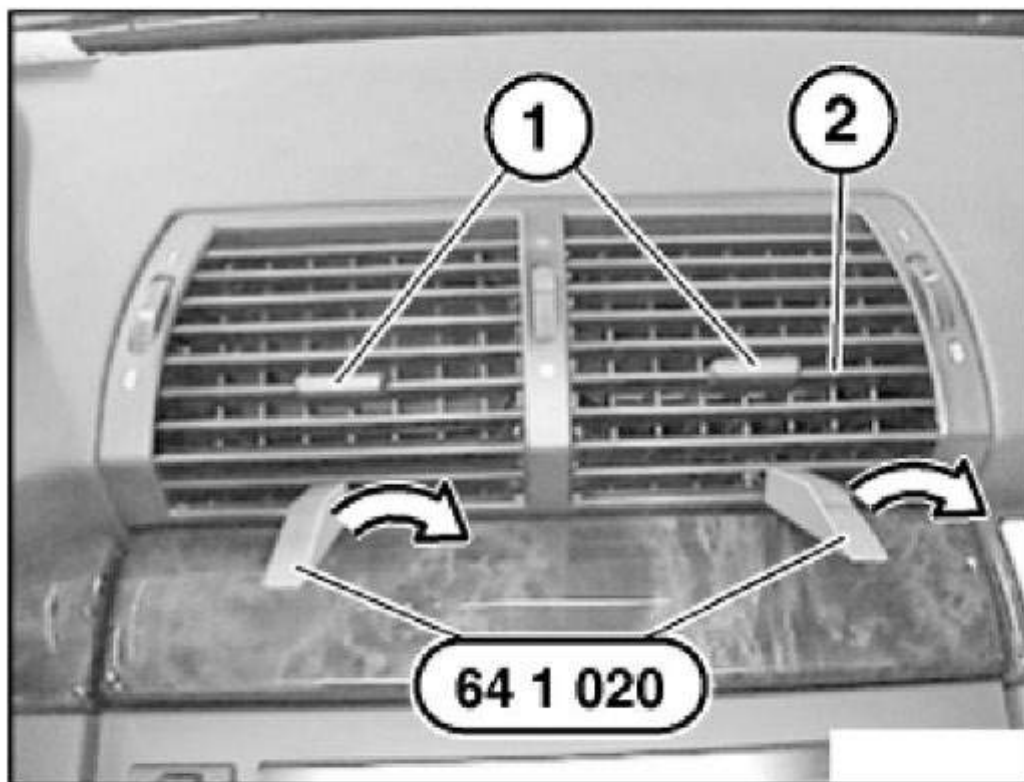
Fig. 70: View Of Fresh Air Grill (Locked/Unlocked)
Courtesy of BMW OF NORTH AMERICA, INC.

Move air outlet adjuster (1) into illustrated position.

Insert special tool 64 1 020 as illustrated at an angle downwards into openings of fresh air grill (2).

To unlock fresh air grill (2), turn special tool 64 1 020 through approx. 90° in direction of arrow.

Withdraw fresh air grill (2) in direction of arrow.



G03256742

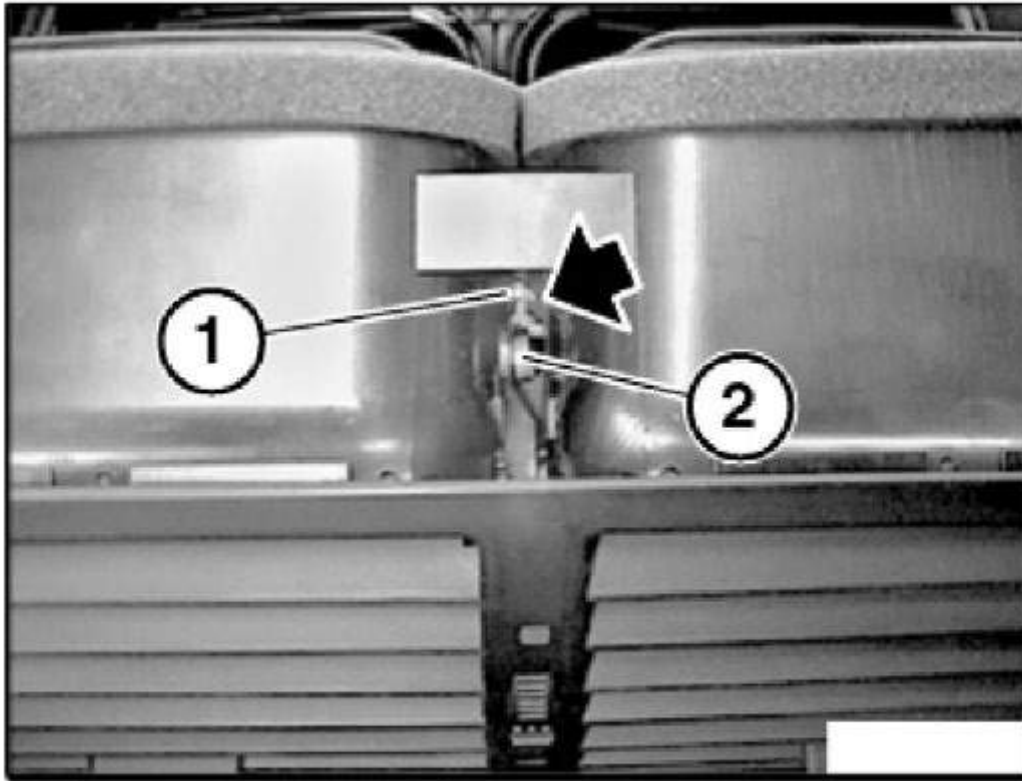
Fig. 71: Unlocking Fresh Air Grill

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

First allow fresh air grill (2) to snap into place at top.

Unclip Bowden cable (1) and unhook at eyelet (2).



G03256743

Fig. 72: Identifying Bowden Cable And Eyelet
Courtesy of BMW OF NORTH AMERICA, INC.

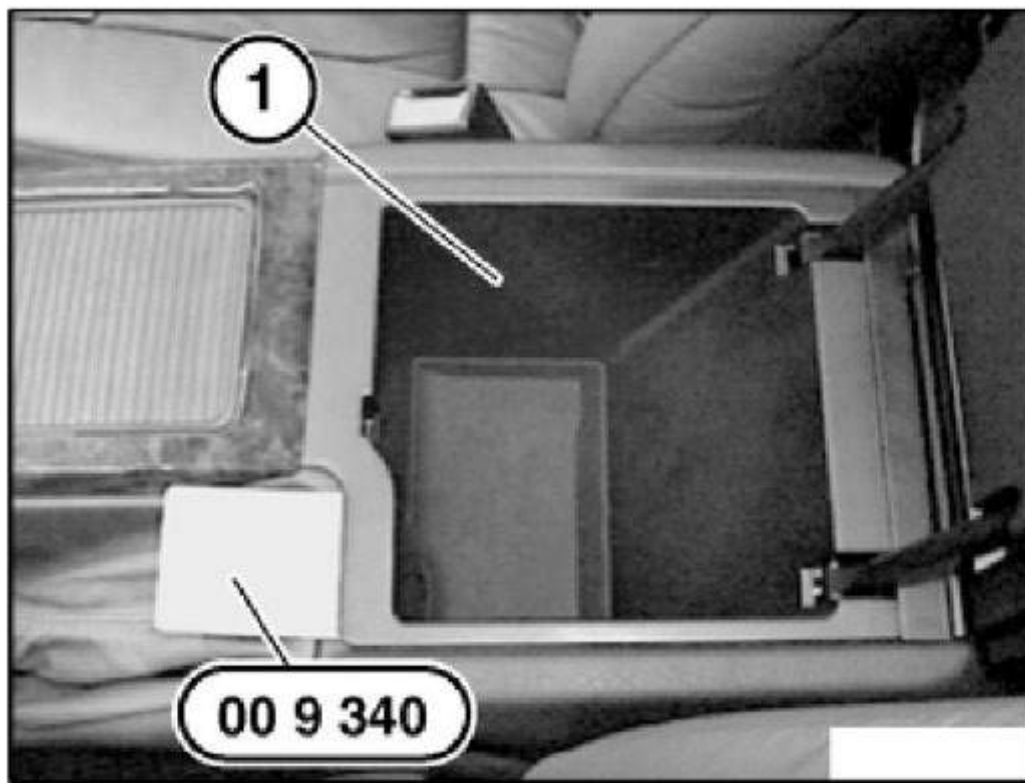
64 22 190 REMOVING AND INSTALLING/REPLACING FRESH-AIR GRILL IN REAR OF CAR

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X5 (3.0i)** .

Special Tools Required:

- 00 9 340

Lever out storage box (1) with special tool 00 9 340 and remove.



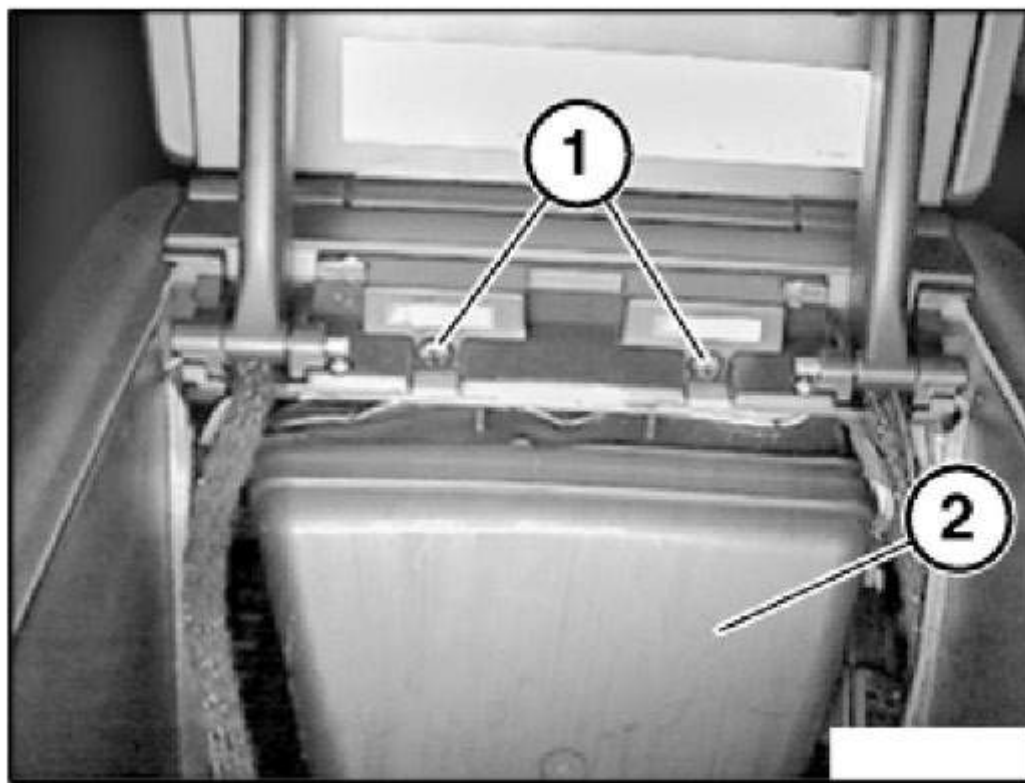
G03256744

Fig. 73: Identifying Storage Box
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen screws (1).

Installation:

Ensure that air duct (2) is correctly seated.

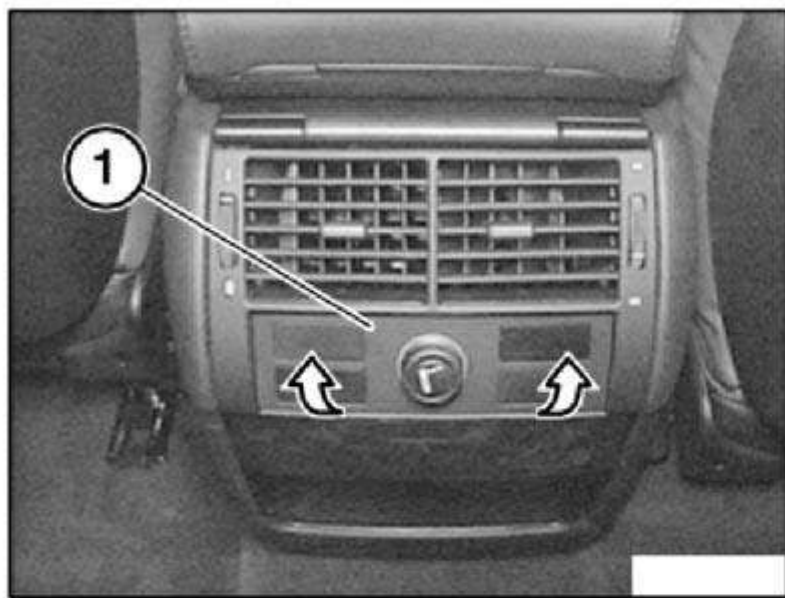


G03256745

Fig. 74: View Of Air Duct

Courtesy of BMW OF NORTH AMERICA, INC.

Pull out fresh-air grill (1) in direction of arrow.



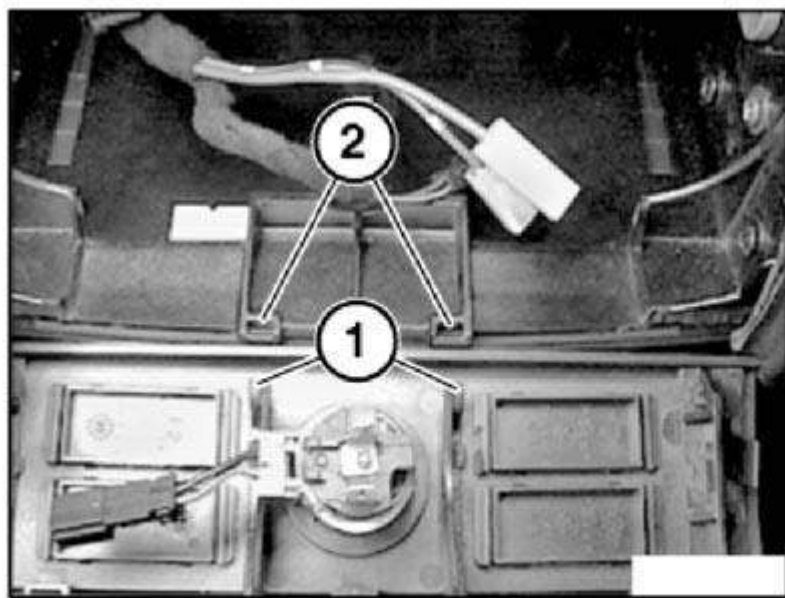
G03256746

Fig. 75: Removing Fresh-Air Grill

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Snap journals (1) into place in openings (2).



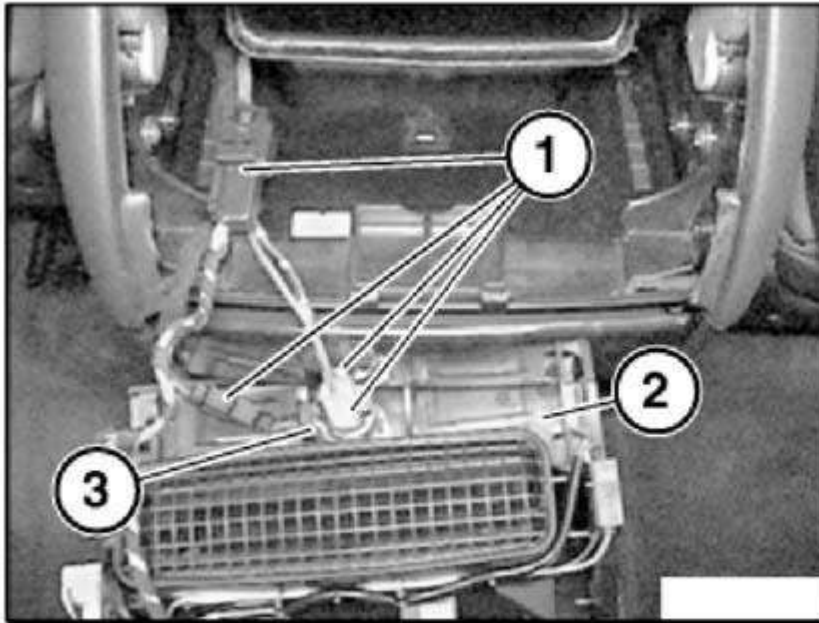
G03256747

Fig. 76: Locating Opening For Journals
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connections (1).

If necessary, disconnect plug connections on switch for seat heating.

Remove fresh air grill (2).



G03256748

Fig. 77: Removing Fresh Air Grill

Courtesy of BMW OF NORTH AMERICA, INC.

Replacement:

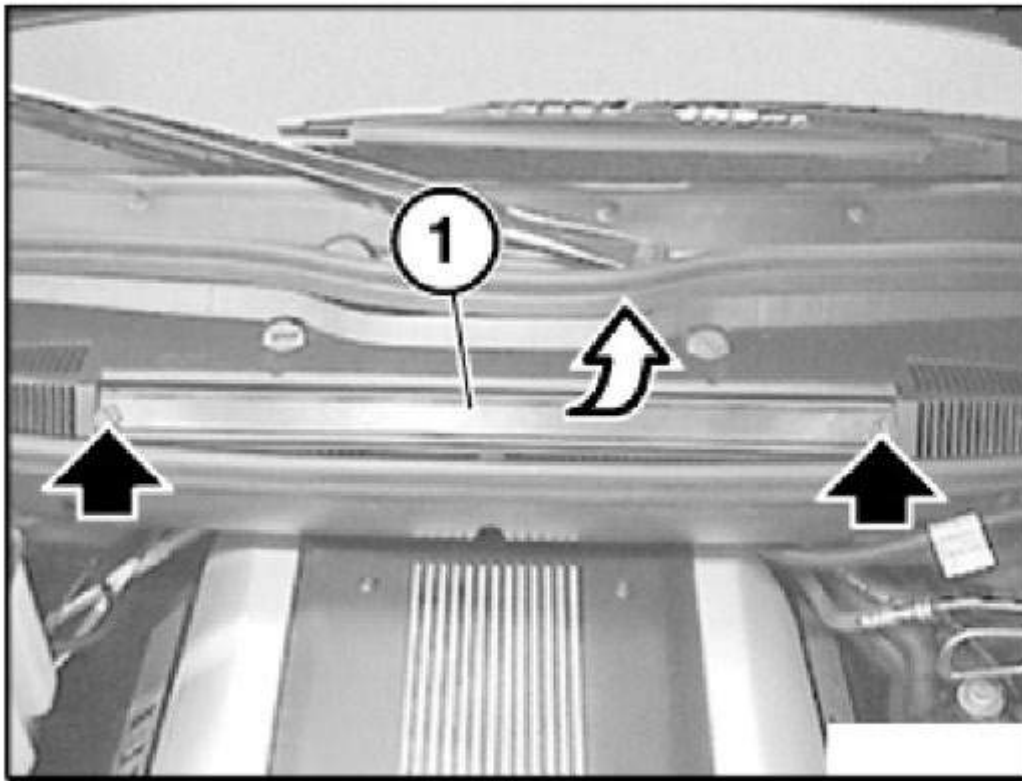
Unclip cigarette lighter (3).

If necessary, unclip switch for seat heating.

MICROFILTER

64 31 010 REPLACING MICROFILTER FOR INTERIOR VENTILATION

Turn toggle through approx. 90° and open cover (1).

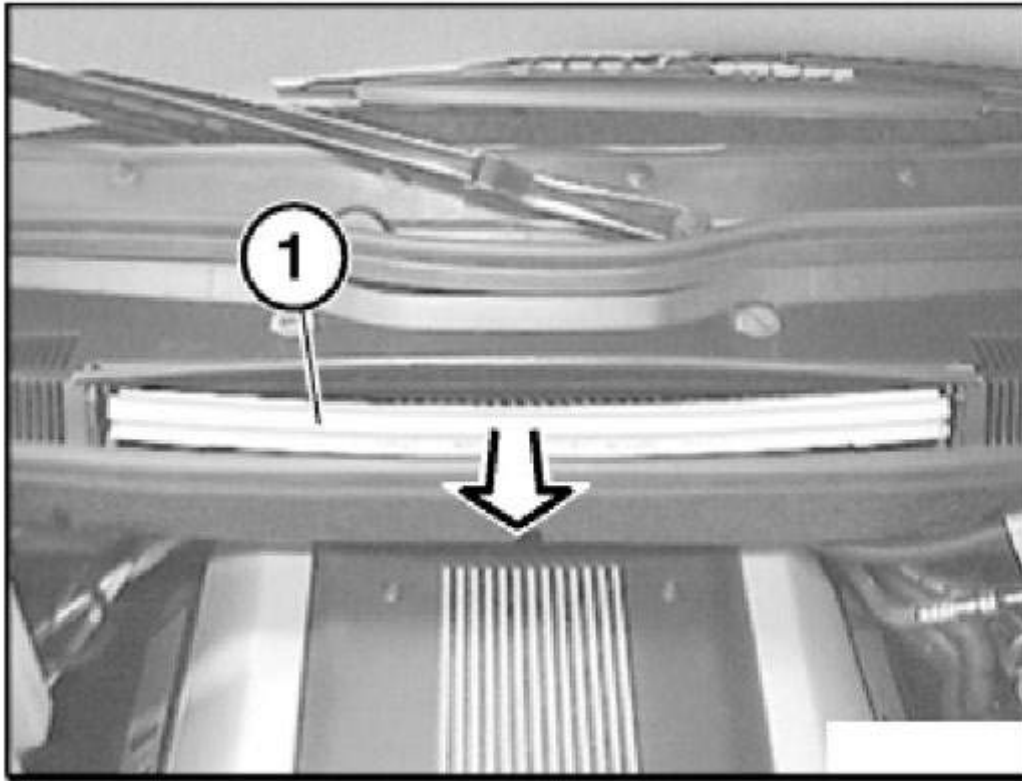


G03256749

Fig. 78: Opening Cover

Courtesy of BMW OF NORTH AMERICA, INC.

Pull out microfilter for interior ventilation (1) in direction of arrow.



G03256750

Fig. 79: Removing Microfilter For Interior Ventilation
Courtesy of BMW OF NORTH AMERICA, INC.

AIR CONDITIONING SYSTEM

64 50 ... AIR CONDITIONER TEST (R 134A)

Before A/C efficiency test, satisfy following conditions:

1. Provide a MoDiC or DIS.
2. Provide a thermometer with separate gauge.
3. Compressor load (intake air temperature of approx. 50°C).

Re 1:

Connect MoDiC or DIS to car and display evaporator temperature.

Re 2:

Position a thermometer with a separate gauge approx. 5 cm below the roofliner at the height of the B-pillar. Lay gauge outwards out of vehicle interior.

Re 3:

Heating up vehicle interior:

- A/C button is not activated during heating up.
- Close all windows and doors.
- Set recirculated air mode.
- Select air distribution mode for footwell and defrosting.
- Maximum temperature setting.
- Maximum fan stage.
- Run engine at approx. 2000 rpm.

A/C Efficiency Test:

Turn on A/C compressor at a vehicle interior temperature of 50° Celsius.

After 2-3 minutes, evaporator sensor temperature must be 10° Celsius.

Draw off A/C system if this temperature is not reached. Measure amount of refrigerant drawn off. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

If drawn-off quantity does not correspond to specified fill quantity: replenish refrigerant. Refer to **64 50 A/C SYSTEM, REFRIGERANT AMOUNTS E53** and **64 50 A/C SYSTEM, REFRIGERANT AMOUNTS E46** .

If refrigerant quantity is correct fill A/C system. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

NOTE: **A/C systems with uncontrolled compressors only: If necessary, then continue troubleshooting by pressure measurement. Refer to 64 50 ... TROUBLESHOOTING BY PRESSURE MEASUREMENT (R 134A) .**

64 50 ... LEAK-TESTING WITH LEAK TESTER DEVICE

WARNING: Avoid contact with refrigerant. Follow safety precautions when handling refrigerant. Refer to **64 50 ... SAFETY INSTRUCTIONS FOR HANDLING REFRIGERANT R 134A** .

Carry out leak-testing with a leak tester device from the workshop equipment catalog following the device manufacturer's operating instructions

If leaks not to be localized are already identified during evacuation, the A/C system must nevertheless be filled. Then test for leaks with leak tester device. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

NOTE: **Refrigerant is heavier than air. Therefore always conduct the leak test below the lines and components to be tested. Shield lines and components against strong blasts of air (wind, drawing off).**

Tighten down loose lines, mark leaks.

Then draw off draw off A/C system and seal off or repair leakage points. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

Then refill A/C system and test for leaks. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

64 50 ... SAFETY INSTRUCTIONS FOR HANDLING REFRIGERANT R 134A

WARNING: **Although R 134a at normal temperature is non-toxic, non-flammable and not explosive in air in any mixture ratio, it is still essential to follow various safety precautions.**

The filled refrigerant circuit of the A/C system is subject to gauge pressure. When carrying out repairs on the A/C system, it is absolutely essential to draw off the refrigerant.

Do not weld or solder on filled A/C systems or in rooms into which R 134a may have leaked. Exposure to flames or high temperatures (= 50° C) may give rise to toxic decomposition products (fluorine gas). For this reason, do not smoke either.

R 134a must be drawn off, cleaned and returned to the A/C system with a service station following the relevant operating instructions.

Avoid all contact with liquid or gaseous R 134a. Wear protective goggles and gloves when working on the refrigerant circuit. R 134a acting on the skin can cause frostbite. Wash off thoroughly with cold water. If R 134a gets into your eyes, likewise rinse with plenty of water and, if necessary, remove contact lenses if worn. Then seek immediate medical attention. Likewise seek immediate medical attention if you experience problems after inhaling R 134a fumes.

As a gas, R 134a is colorless, odorless and heavier than air. If it gets into the atmosphere, this may result especially in workshop pits in an imperceptible danger of asphyxiation or in cardiac palpitations. Ventilate rooms adequately; if necessary, turn on installed extractor systems.

For a properly functioning A/C system, it is essential to have the greatest possible levels of cleanliness when working on the A/C system and the best possible evacuation (at least 30 minutes dehumidification from refrigerant circuit) before each filling of the A/C system.

R 134a absorbs moisture very easily. Therefore seal off opened pipes, condenser, evaporator, compressor and drier bottle immediately with plugs.

With replacement parts, the plugs may only be removed immediately before the lines are connected.

In the event of warranty claims, the old parts must be provided with plugs to be able to determine the cause of the damage.

If an A/C system has been completely drained by leakage, accident or repair, the drier element must be replaced as excessive moisture may have entered the system. Refer to **64 53 515 REPLACING DRIER INSERT FOR A/C SYSTEM** .

Store filled pressurized refrigerant bottles in such a way that they are not exposed to direct sunlight or other heat sources (max. 45° C). Also avoid exposing them to mechanical stress (e.g. by dropping).

In the event of fire, carbon dioxide (CO₂), extinguishant powder and a sprayed water jet are deemed to be suitable extinguishants. Cool reservoirs at risk with a sprayed water jet (risk of bursting!).

CAUTION: After each refill of an A/C system, check that protective caps of filling valves are hand-tight. They serve as additional seals.

64 50 ... SAFETY PRECAUTIONS WHEN HANDLING REFRIGERANT OIL (FOR REFRIGERANT R 134A)

WARNING: Observe the following points when handling refrigerant oil:

- **Wear protective goggles.**
- **Wear gloves made from impermeable plastic.**
- **Do not swallow.**
- **Do not inhale.**

Action to be taken after contact with refrigerant oil:

- After contact with eyes, rinse thoroughly with plenty of water and take out contact lenses (if worn). Then seek immediate medical attention.
- After contact with the skin, wash body parts affected with plenty of soap and water.
- Do not induce vomiting if oil is swallowed, seek immediate medical attention.
- If inhaled, introduce the person affected to fresh air. Seek medical attention if problems persist.

WARNING: Refrigerant oil is non-combustible and non-explosive at normal temperatures. In spite of this, the following precautions must be observed:

- **Do not store in the vicinity of flames, heat sources or strongly**

oxidizing materials.

- **Suitable extinguishants: carbon dioxide (CO₂), dry extinguishant, foam.**

Recycling:

Dispose of drawn-off refrigerant oil as hazardous waste.

Observe country-specific waste-disposal regulations.

Absorb escaping refrigerant oil with fluid-binding material.

Notify the relevant authorities if larger amounts of refrigerant oil are discharged into above-ground water supplies, drainage systems or subsoil.

64 50 ... TROUBLESHOOTING BY PRESSURE MEASUREMENT (R 134A)

NOTE: **The troubleshooting by pressure measurement described in the following is only possible on A/C systems with uncontrolled compressors.**

This includes among others:

- E53.
- E46, M47 up to 09/2001.
- E38 up to 09/1997.
- E36, E36/7.
- E34.
- E32.
- E31.

Connect service station to car and open both valves on the charging hoses. Adjust A/C system at control panel as described for A/C efficiency measurement. Refer to **64 50 ... SAFETY PRECAUTIONS WHEN HANDLING REFRIGERANT OIL (FOR REFRIGERANT R 134A)**.

NOTE: **The following values apply as normal pressure ranges for ambient temperatures between + 20° C and + 40° C:**

- Inlet pressure: 1.0-2.2 bar.
- Outlet pressure: 12-22 bar.

Normal inlet pressure and high outlet pressure indicate an overfilled system, a contaminated condenser or a faulty auxiliary fan.

Remedy:

Draw off, evacuate and refill A/C system. Clean condenser from outside, check auxiliary fan, replace if necessary. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

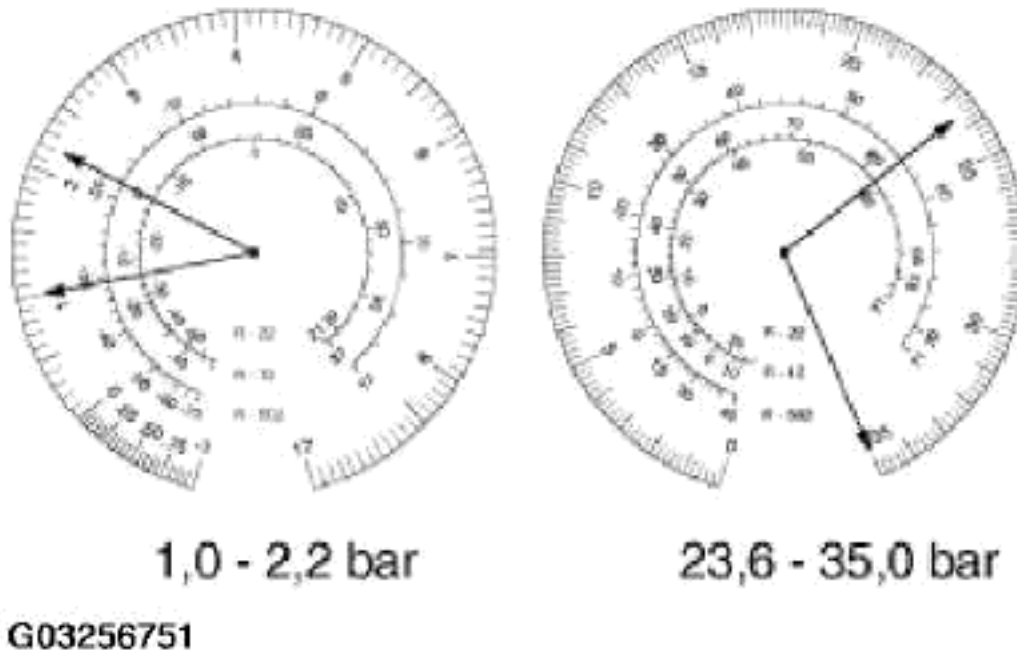


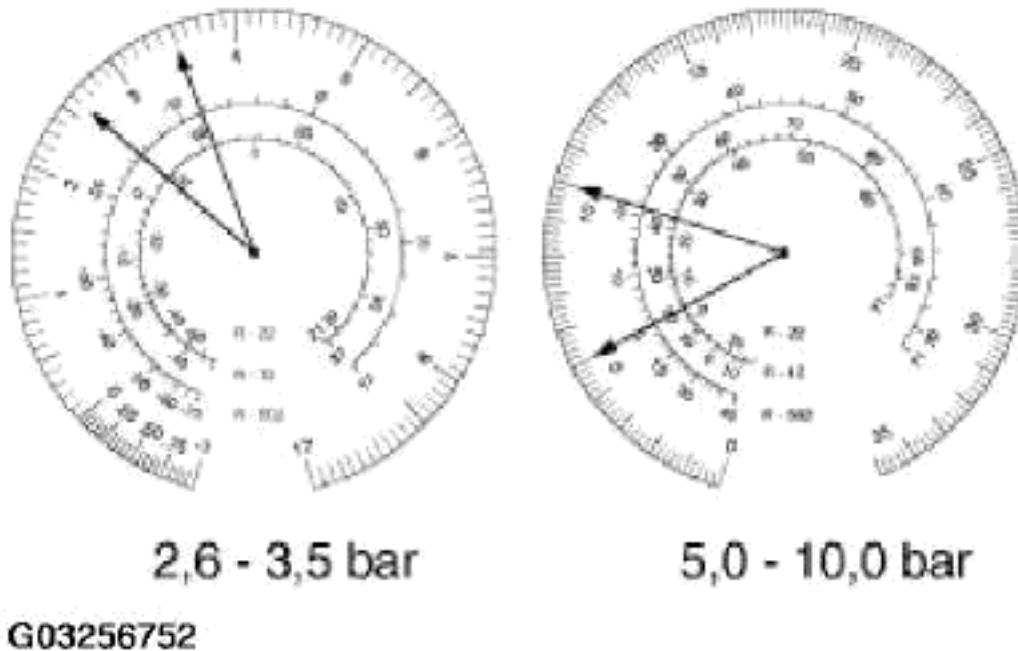
Fig. 80: Measuring Pressure (1 Of 6)

Courtesy of BMW OF NORTH AMERICA, INC.

High inlet pressure and low outlet pressure indicate a faulty compressor.

Remedy:

Replace compressor. Refer to **64 52 520 REMOVING AND INSTALLING/REPLACING COMPLETE A/C COMPRESSOR (M54)** .

**Fig. 81: Measuring Pressure (2 Of 6)**

Courtesy of BMW OF NORTH AMERICA, INC.

Compressor does not run with equal inlet and outlet pressures.

Remedy:

If the anti-icing facility has shut down the compressor, check evaporator sensor and power supply to clutch. Otherwise check clutch mechanically (by slipping).

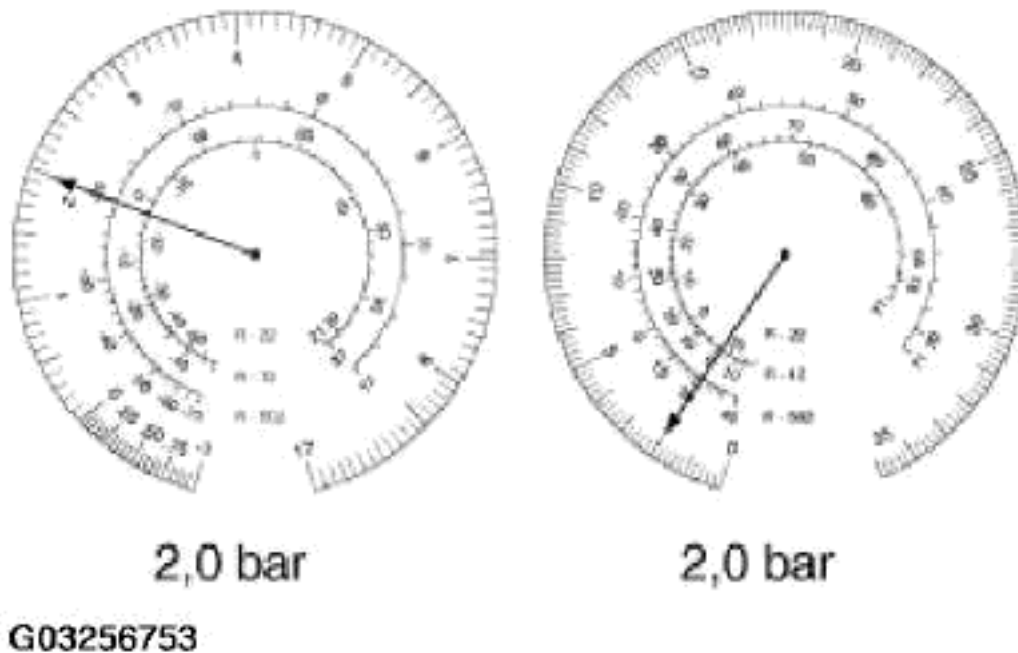


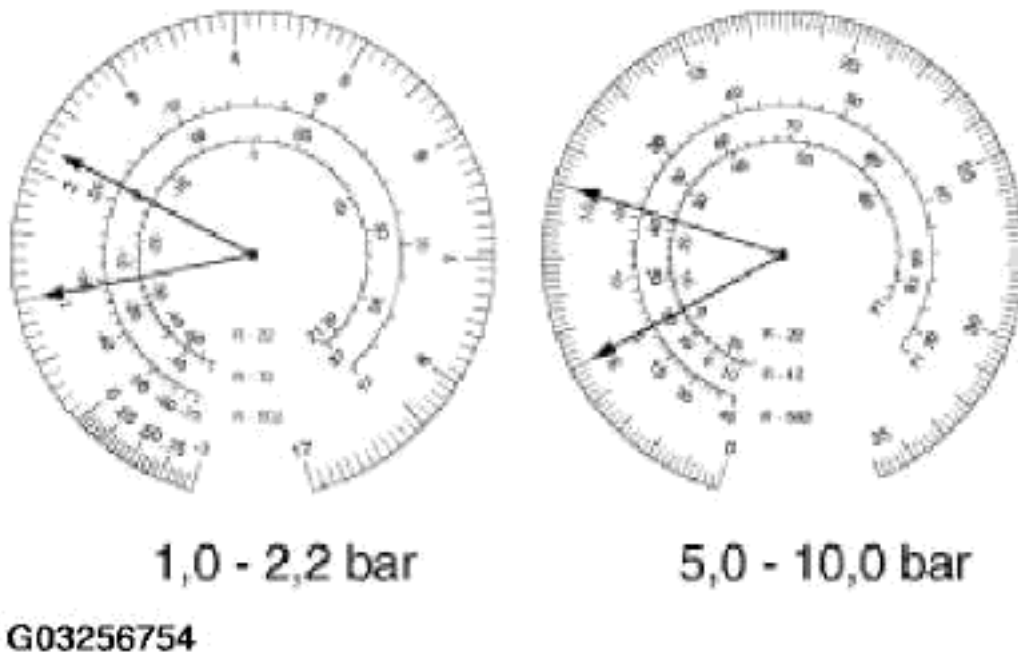
Fig. 82: Measuring Pressure (3 Of 6)

Courtesy of BMW OF NORTH AMERICA, INC.

Normal inlet pressure and low outlet pressure indicate an insufficient fill quantity of refrigerant.

Remedy:

1. Draw off and measure refrigerant. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .
2. If the amount drawn off corresponds approx. to the specified fill quantity, check expansion valve for unobstructed throughflow; replace if necessary. Refer to **64 50 A/C SYSTEM, REFRIGERANT AMOUNTS E53** and **64 50 A/C SYSTEM, REFRIGERANT AMOUNTS E46** .
3. Then evacuate and refill A/C system. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

**Fig. 83: Measuring Pressure (4 Of 6)****Courtesy of BMW OF NORTH AMERICA, INC.**

Low inlet pressure and high outlet pressure can be caused by a variety of factors:

- Icing of evaporator.

Remedy: Check evaporator sensor, replace if necessary.

- Obstruction on H.P. side after condenser or on L.P. side.

Remedy:

Check drier, expansion valve and pipes in these areas for unobstructed throughflow; clean or replace if necessary.

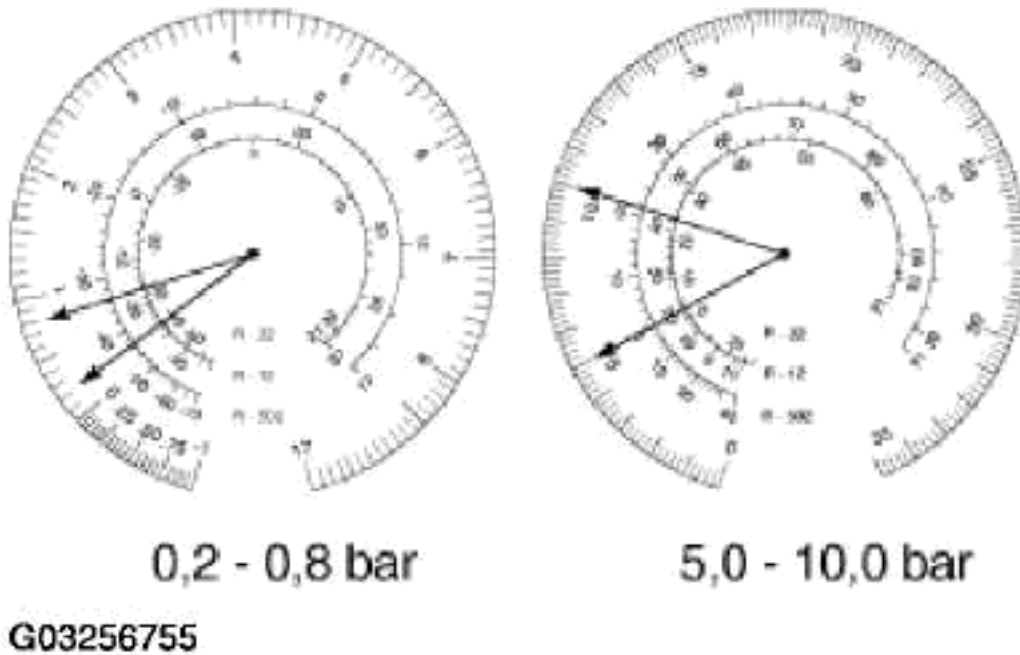


Fig. 84: Measuring Pressure (5 Of 6)
Courtesy of BMW OF NORTH AMERICA, INC.

Low inlet pressure and high outlet pressure indicate an obstruction in the condenser area.

Remedy:

Check condenser for unobstructed throughflow; clean or replace if necessary.

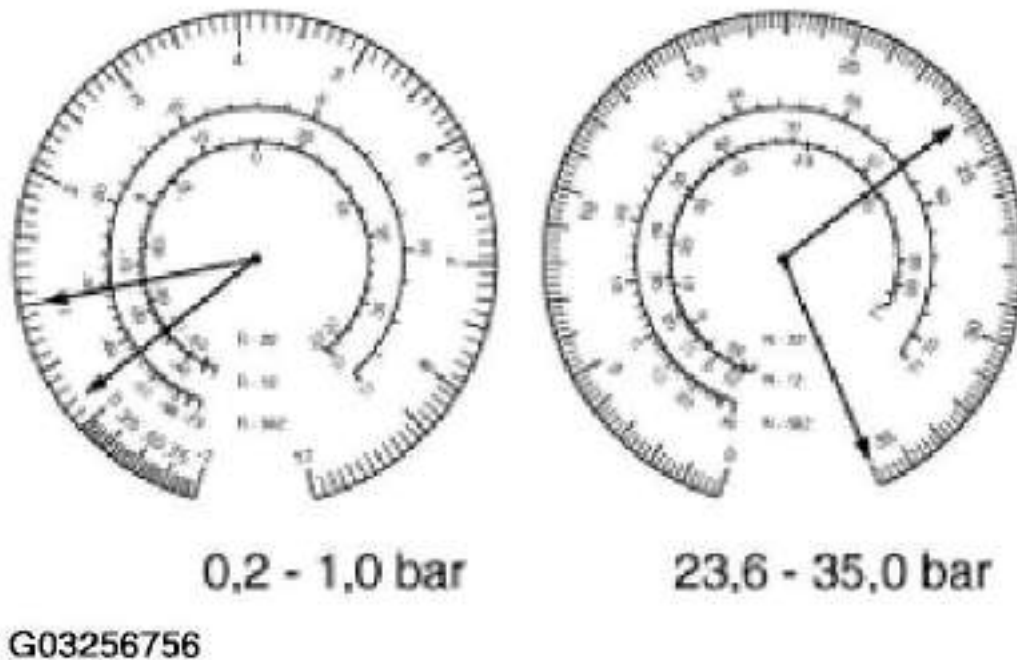


Fig. 85: Measuring Pressure (6 Of 6)

Courtesy of BMW OF NORTH AMERICA, INC.

64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)

WARNING: Avoid contact with refrigerant and refrigerant oil. Follow safety instructions for handling refrigerant R 134a. 64 50 ... SAFETY INSTRUCTIONS FOR HANDLING REFRIGERANT R 134A . Follow safety instructions for handling refrigerant oil. Refer to 64 50 ... SAFETY PRECAUTIONS WHEN HANDLING REFRIGERANT OIL (FOR REFRIGERANT R 134A) .

IMPORTANT: Risk of damage! Restart engine only when A/C system has been correctly filled.

NOTE: Draw off, evacuate and fill the A/C system in accordance with the operating instructions of the relevant service station.

Instructions For Drawing Off A/C System:

To help separation of refrigerant and refrigerant oil, run engine at low speed (800-1200 rpm) and with A/C system turned on for a few minutes.

This limits the contamination of refrigerant oil while it is drawn off.

Drawn-off refrigerant oil must be changed and reintroduced via the service station.

If at the end of the drawing-off procedure the service station moisture indicator shows that the drawn-off refrigerant is excessively moist, clean the refrigerant in accordance with the service station operating instructions.

Recycling:

Dispose of drawn-off refrigerant oil as hazardous waste.

Observe country-specific waste-disposal regulations.

Instructions for evacuating off A/C system:

The evacuation procedure removes all traces of ambient air, water vapor and any other gases present from the A/C system. This enables subsequent system filling with refrigerant.

A decrease in the vacuum level indicates a leak in the refrigerant circuit. Refer to **64 50 ... LEAK-TESTING WITH LEAK TESTER DEVICE** .

Instructions For Filling A/C System:

Before filling with refrigerant, top up the refrigerant oil entrained during drawing off.

Depending on the type of component replaced on the A/C system, it may be necessary to top up the refrigerant oil, even if no measurable losses have occurred during drawing off. Read and comply with the A/C system manufacturer's notes in this regard and the operating instructions of the relevant service station.

Information on the required refrigerant fill quantity for the entire A/C system is contained on the rating plate (1) in the engine compartment.

If necessary, refer to **64 50 A/C SYSTEM, REFRIGERANT AMOUNTS E53** and **64 50 A/C SYSTEM, REFRIGERANT AMOUNTS E46** for fill quantities.



G03256757

Fig. 86: Identifying Instructions For Filling A/C System
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Reseal refrigerant filler necks on vehicle with sealing caps.

A/C HOUSING/EVAP., SWITCHING ELEMENTS

64 51 001 CLEANING EVAPORATOR

NOTE: For Special Tool identification, see SPECIAL TOOLS - X5 (3.0i) .

Special Tools Required:

- 64 1 451
- 64 1 456

2001 BMW X5 30i

2001-2003 HVAC Air Conditioning & Heating Systems - Repair Instructions - X5 (3.0i) M54

- 64 1 457
- 64 1 458

WARNING: When handling cleaning agent, observe following protection measures:
Wear protective rubber gloves and protective goggles. If cleaning agent comes into contact with eyes or skin, wash immediately with lots of water.

CAUTION: To avoid dirtying vehicle interior:

- Close all air vents.
- Switch air conditioner to recirculated air mode.
- Cover carpet in work area.

Recycling:

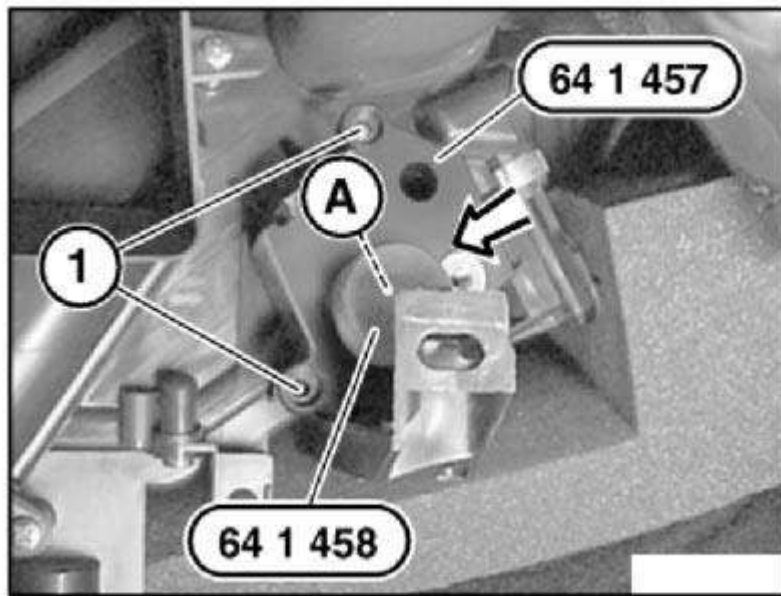
Carry out the cleaning operation in a suitable washing bay as the emerging cleaning agent escapes through the drain openings in the transmission tunnel.

NOTE: **Make sure the cleaning agent can escape freely from the drain openings. If necessary, remove rear underbody protection.**

Remove limit switch for heater - A/C fan. Refer to **64 11 227 REPLACING LIMIT SWITCH FOR FAN OF HEATER/AIR CONDITIONER (CLIMATE CONTROL)** .

Seal off opening (A) of adapter for spray lance 64 1 457 with plug 64 1 458.

Clip adapter for spray lance 64 1 457 into opening of limit switch for heater - A/C fan.



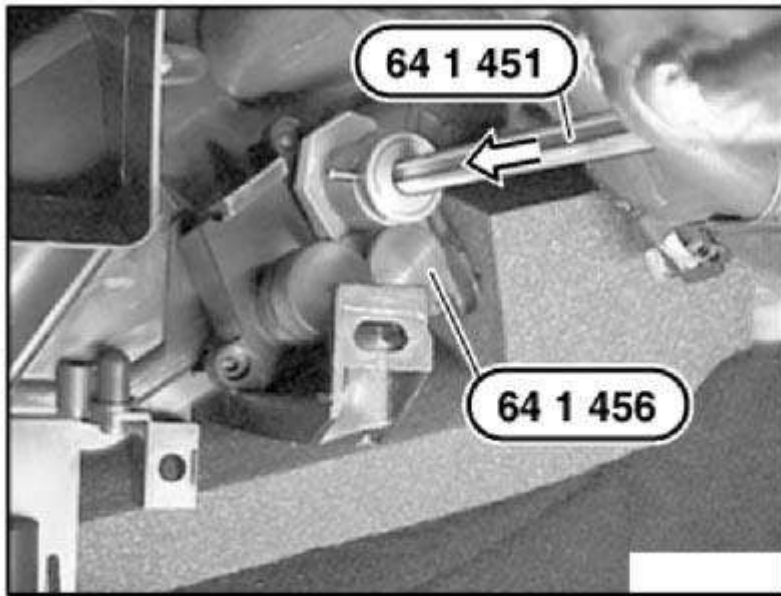
G03256758

Fig. 87: Identifying Adapter For Spray Lance
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure adapter for spray lance 64 1 457 is correctly seated in guides (1).

Insert spray lance 64 1 451 in direction of arrow and secure with fixture for spray lance 64 1 456.



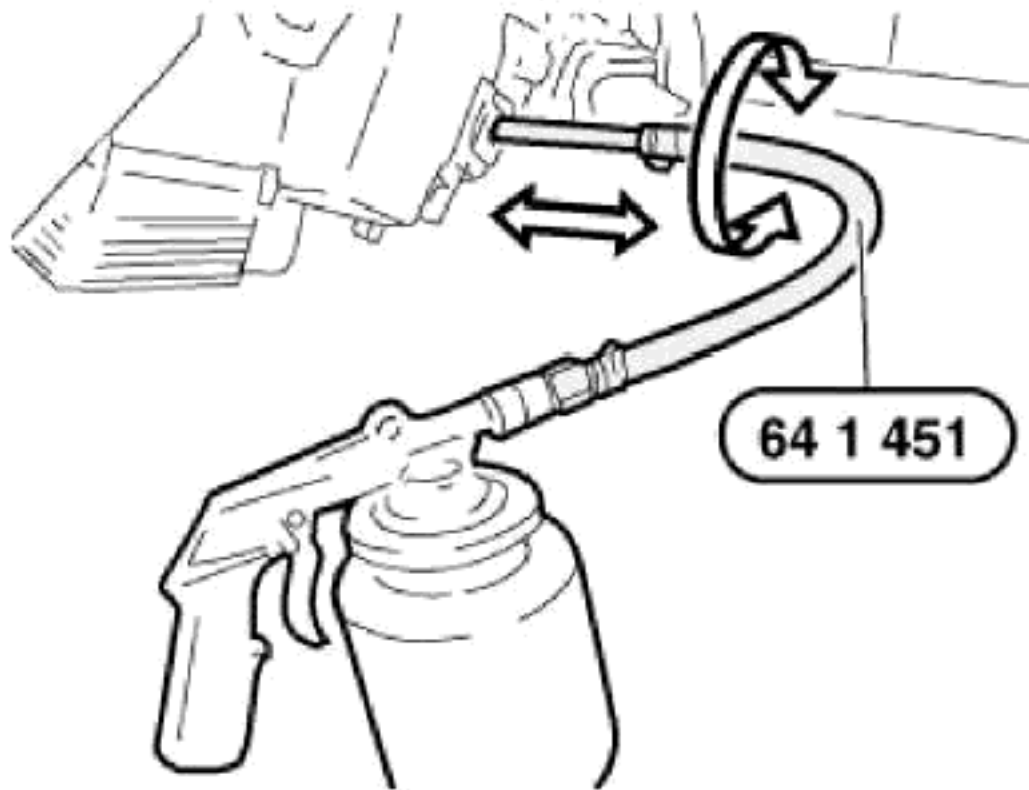
G03256759

Fig. 88: Applying Cleaning Agent Onto Evaporator
Courtesy of BMW OF NORTH AMERICA, INC.

Connect spray lance 64 1 451 to spray apparatus.

By moving spray lance 64 1 451 back and forth, spray a uniform amount of cleaning agent onto evaporator.

NOTE: **After completing cleaning, allow car to drip-dry for approx. 5 minutes.**



G03256760

Fig. 89: Connecting Spray Lance

Courtesy of BMW OF NORTH AMERICA, INC.

Set heater - A/C to footwell ventilation and fresh air operation. Open windows/doors.

Start car and run heater - A/C at max. fan power for approx. 5 minutes in order to dry evaporator.

NOTE: In order to eliminate the last remnants of cleaning agent, repeat this procedure shortly before handover to the customer.

64 51 002 CLEANING EVAPORATOR (AUTOMATIC CLIMATE CONTROL)

NOTE: For Special Tool identification, see **SPECIAL TOOLS - X5 (3.0i)** .

Special Tools Required:

- 64 1 451

2001 BMW X5 30i

2001-2003 HVAC Air Conditioning & Heating Systems - Repair Instructions - X5 (3.0i) M54

- 64 1 452
- 64 1 453
- 64 1 454
- 64 1 455
- 64 1 456

WARNING: When handling cleaning agent, observe following protection measures:
Wear protective rubber gloves and protective goggles. If cleaning agent comes into contact with eyes or skin, wash immediately with lots of water.

CAUTION: To avoid dirtying vehicle interior:

- Close all air vents.
- Switch air conditioner to recirculated air mode.
- Cover carpet in work area.

Recycling:

Carry out the cleaning operation in a suitable washing bay as the emerging cleaning agent escapes through the drain openings in the transmission tunnel.

NOTE: Make sure the cleaning agent can escape freely from the drain openings. If necessary, remove rear underbody protection.

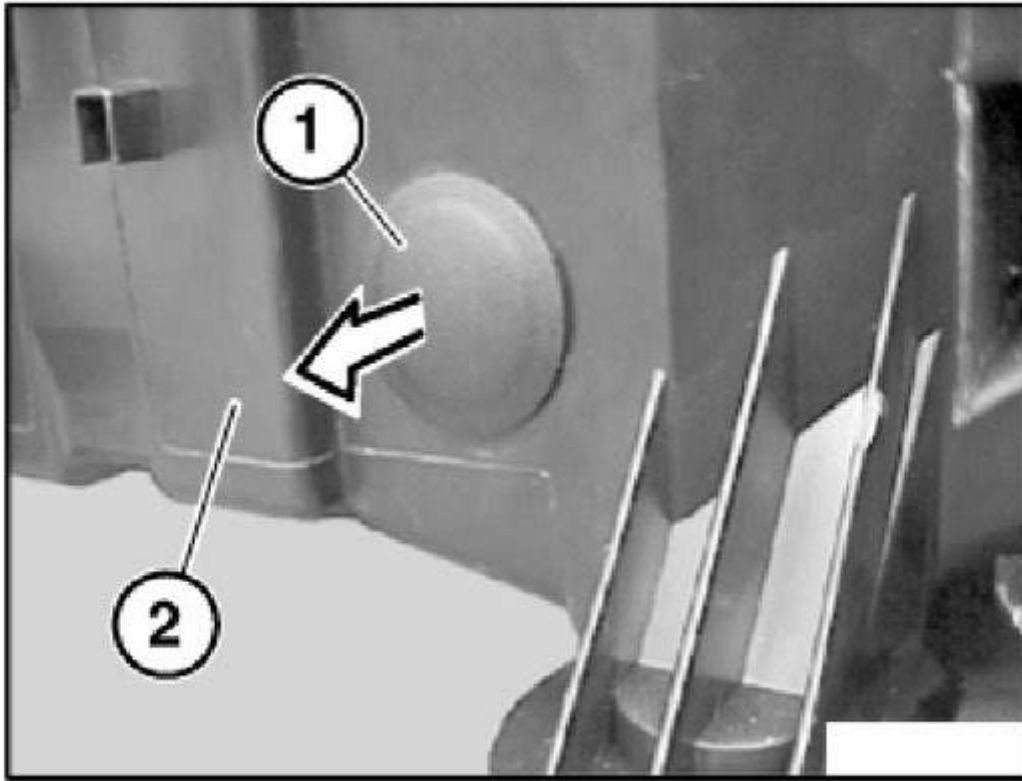
Remove side carpet on left.

Repeat Repair Only:

Remove sealing cap (1) from hole in A/C housing (2).

Installation:

Replace sealing cap.



G03256761

Fig. 90: Replacing Sealing Cap

Courtesy of BMW OF NORTH AMERICA, INC.

First Repair Only:

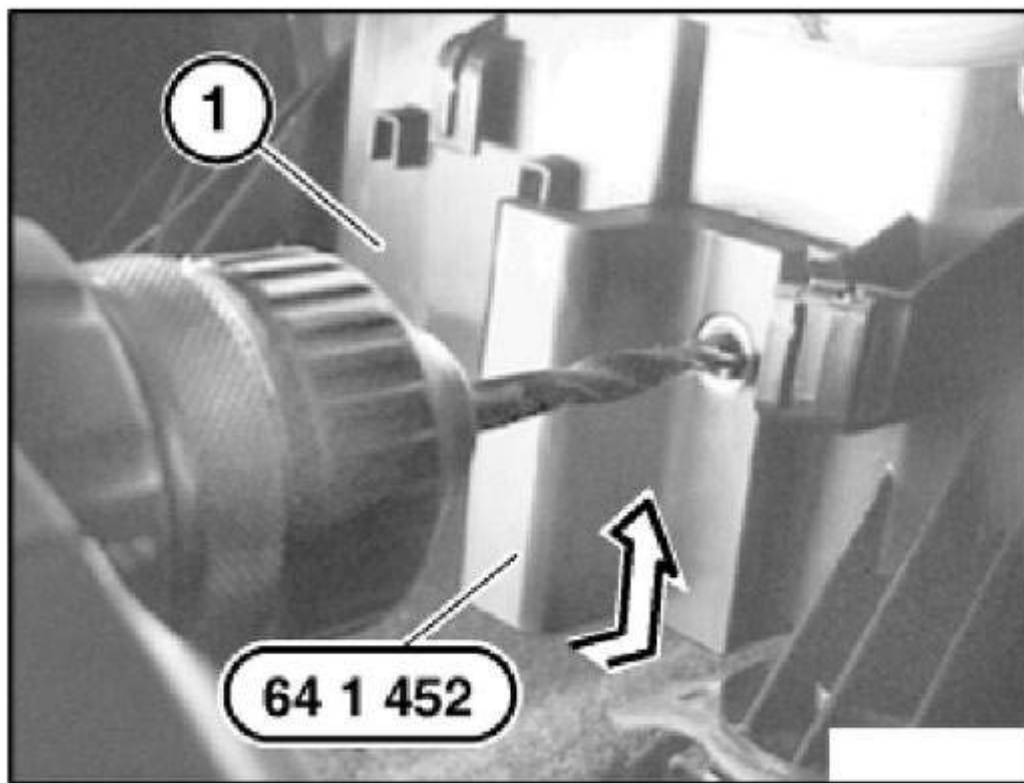
CAUTION: To avoid swarf in A/C housing: Drill holes at very low drilling speeds.
Carefully withdraw switched off drill together with swarf from holes.

Place drilling template 64 1 452 as illustrated on A/C housing (1) and predrill with 6 mm dia. drill bit.

Remove drilling template 64 1 452 and drill out hole with center bit 64 1 453 to 20 mm dia.

Installation:

Seal hole with sealing cap.

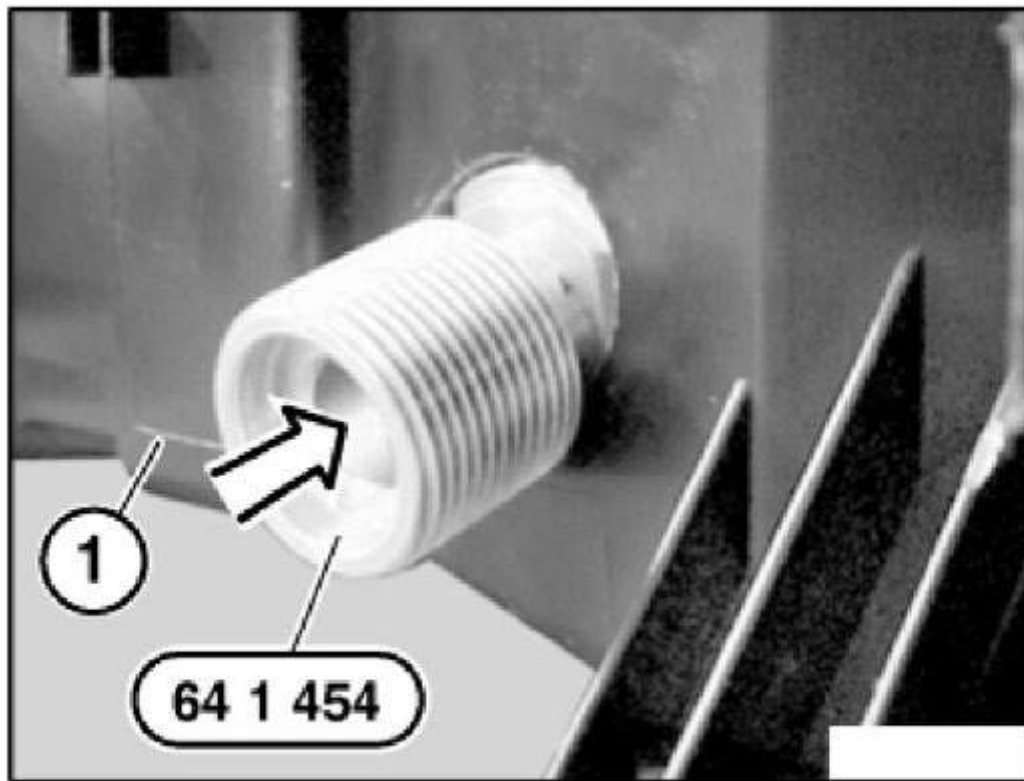


G03256762

Fig. 91: Identifying Drilling Template
Courtesy of BMW OF NORTH AMERICA, INC.

All:

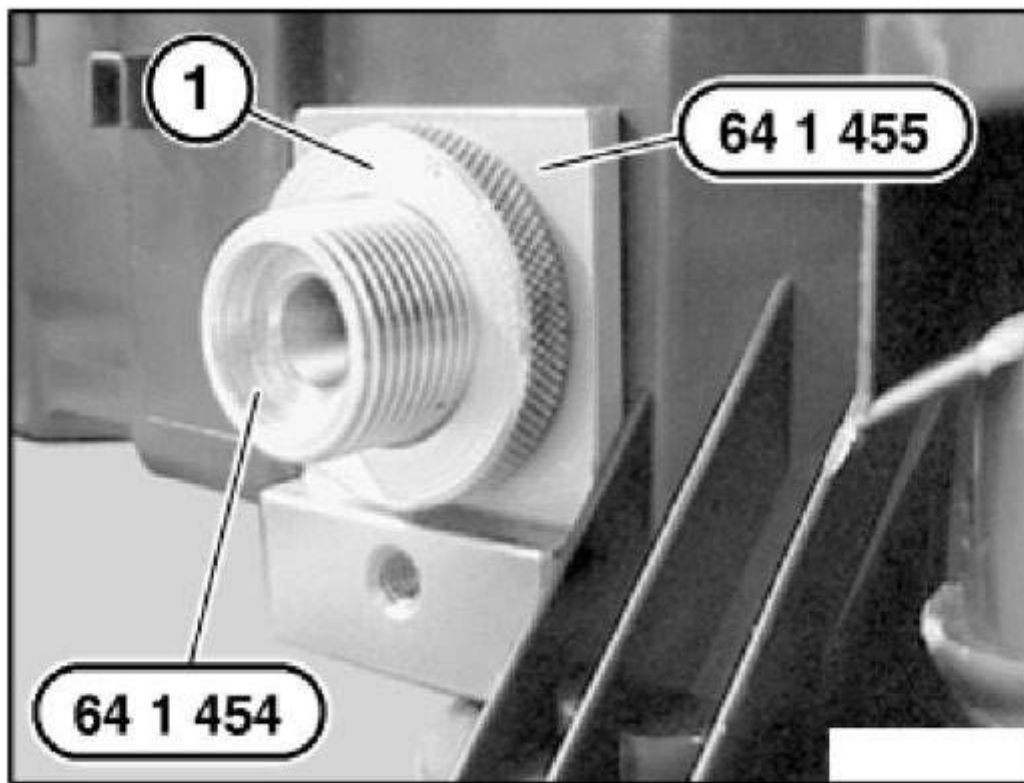
Attach guide for spray lance 64 1 454 as illustrated into hole in A/C housing (1).



G03256763

Fig. 92: Attaching Guide For Spray Lance
Courtesy of BMW OF NORTH AMERICA, INC.

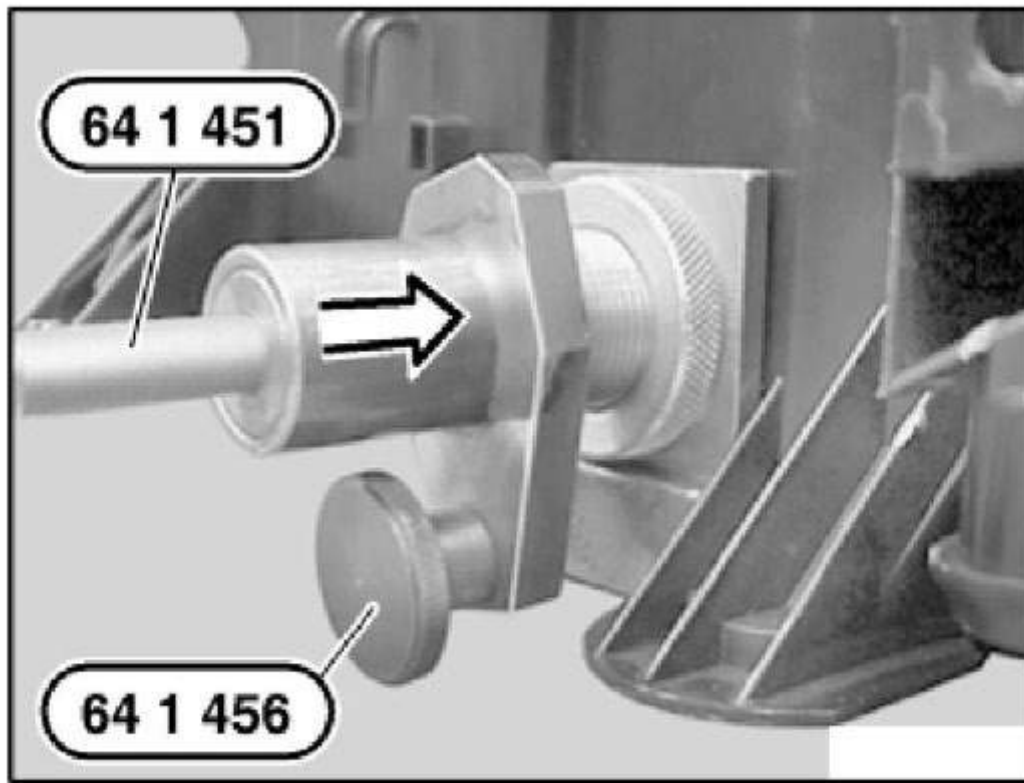
Attach positioner for spray lance 64 1 455 as illustrated to guide for spray lance 64 1 454 and secure with knurled nut (1).



G03256764

Fig. 93: Attaching Positioner For Spray Lance
Courtesy of BMW OF NORTH AMERICA, INC.

Insert spray lance 64 1 451 in direction of arrow and secure with fixture for spray lance 64 1 456.



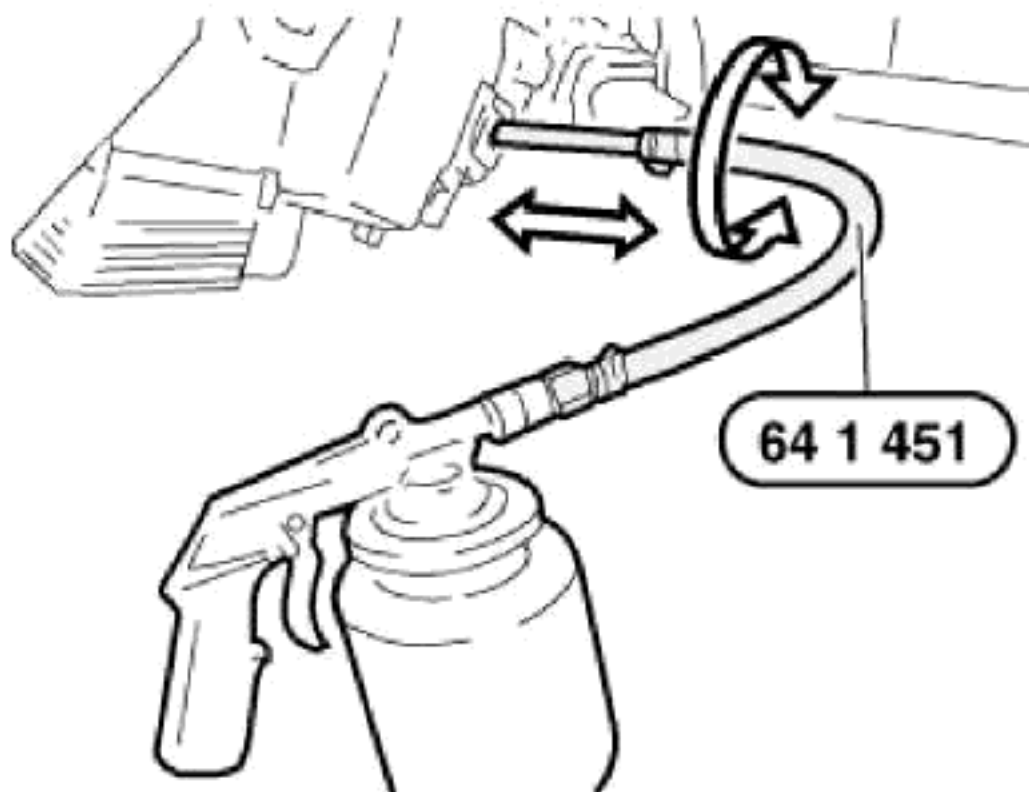
G03256765

Fig. 94: Inserting Spray Lance
Courtesy of BMW OF NORTH AMERICA, INC.

Connect spray lance 64 1 451 to spray apparatus.

By moving spray lance 64 1 451 back and forth, spray a uniform amount of cleaning agent onto evaporator.

NOTE: After completing cleaning, allow car to drip-dry for approx. 5 minutes.



G03256766

Fig. 95: Connecting Spray Lance

Courtesy of BMW OF NORTH AMERICA, INC.

Set heater - A/C to footwell ventilation and fresh air operation. Open windows/doors.

Start car and run heater - A/C at max. fan power for approx. 5 minutes in order to dry evaporator.

NOTE: In order to eliminate the last remnants of cleaning agent, repeat this procedure shortly before handover to the customer.

64 51 522 REMOVING AND INSTALLING OR REPLACING EXPANSION VALVE

Necessary Preliminary Tasks:

- Draw off refrigerant from A/C system. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)**.
- Remove heater bulkhead. Refer to **51 71 080 REMOVING AND INSTALLING/REPLACING**

HEATER BULKHEAD .

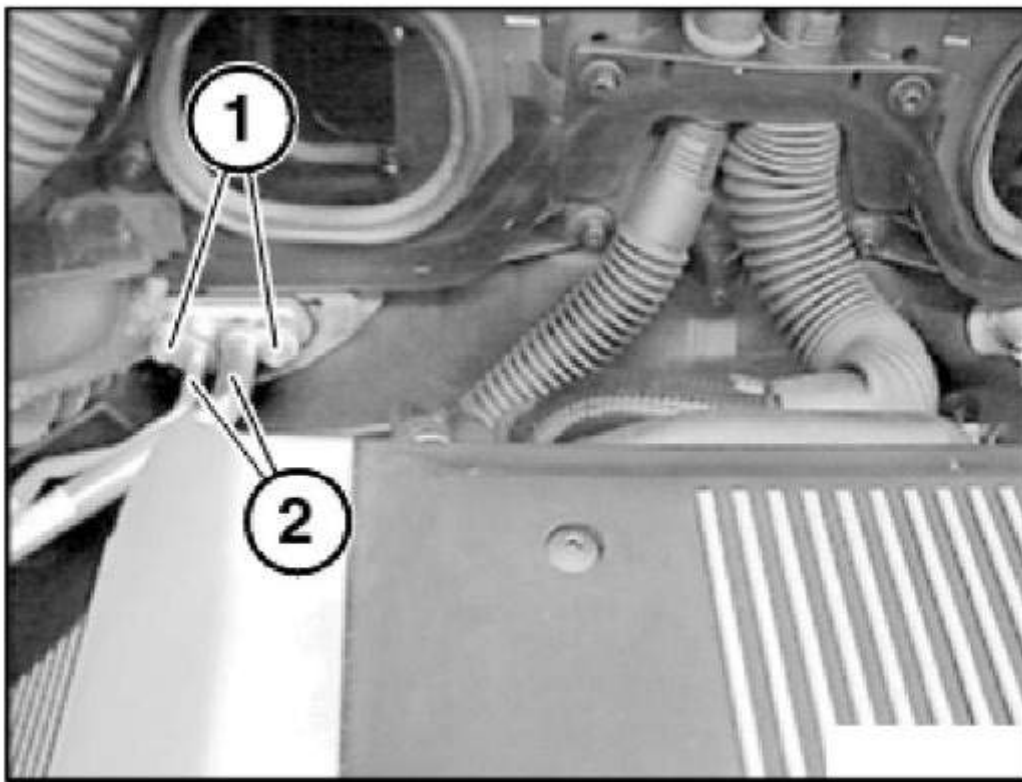
- Remove trim for instrument panel, bottom left. Refer to **51 45 181 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT** .
- Remove right glovebox. Refer to **51 16 360 REMOVING AND INSTALLING RIGHT GLOVE BOX** .

Release screws (1), tightening torque, (18 N.m.).

Detach lines (2).

Installation:

Replace sealing rings.



G03256767

Fig. 96: Detaching Lines

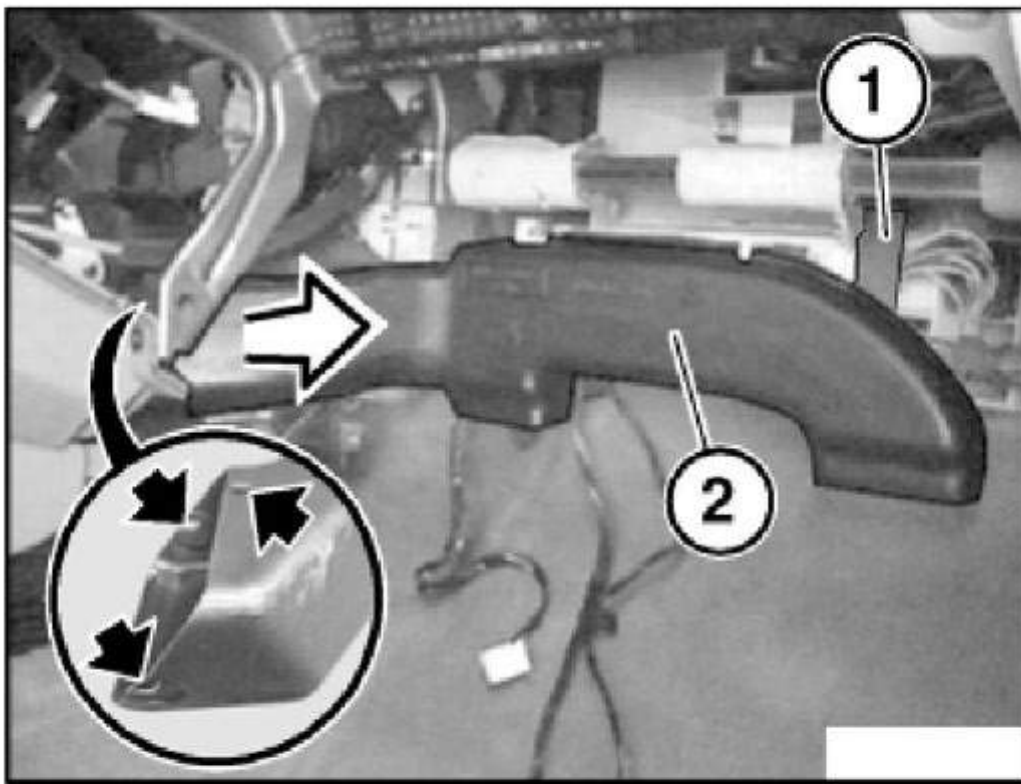
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook holder (1).

Unclip heating duct for right footwell (2) and remove in direction of arrow.

Installation:

Ensure heating channel for right footwell (2) is correctly seated.



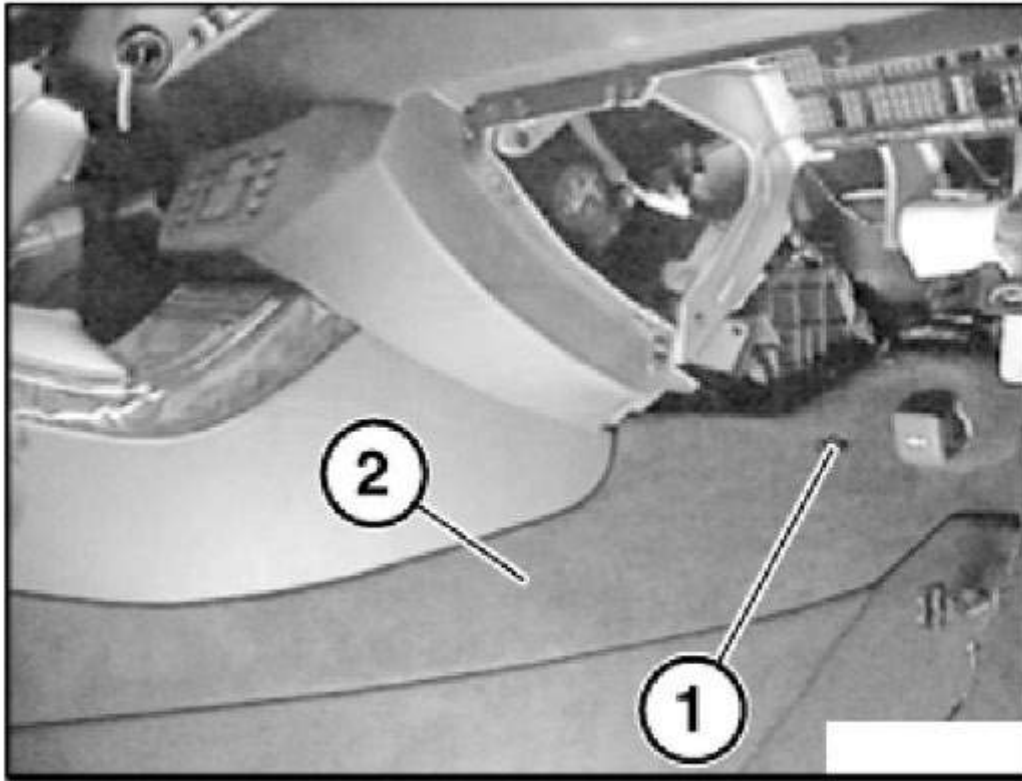
G03256768

Fig. 97: Locating Heating Duct For Right Footwell
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

If necessary, disconnect plug connection at socket.

Unclip trim on center console (2) and remove.



G03256769

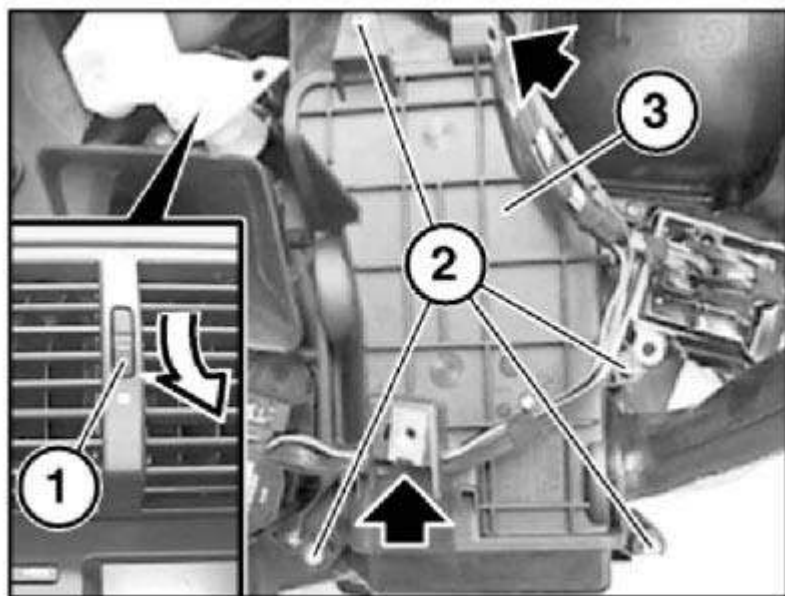
Fig. 98: Identifying Trim On Center Console
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For purposes of clarity, illustration shows heater/air conditioner removed.

Turn control wheel in center of fresh air grill (1) in direction of arrow to end position.

Unclip cable. Release screws (2).

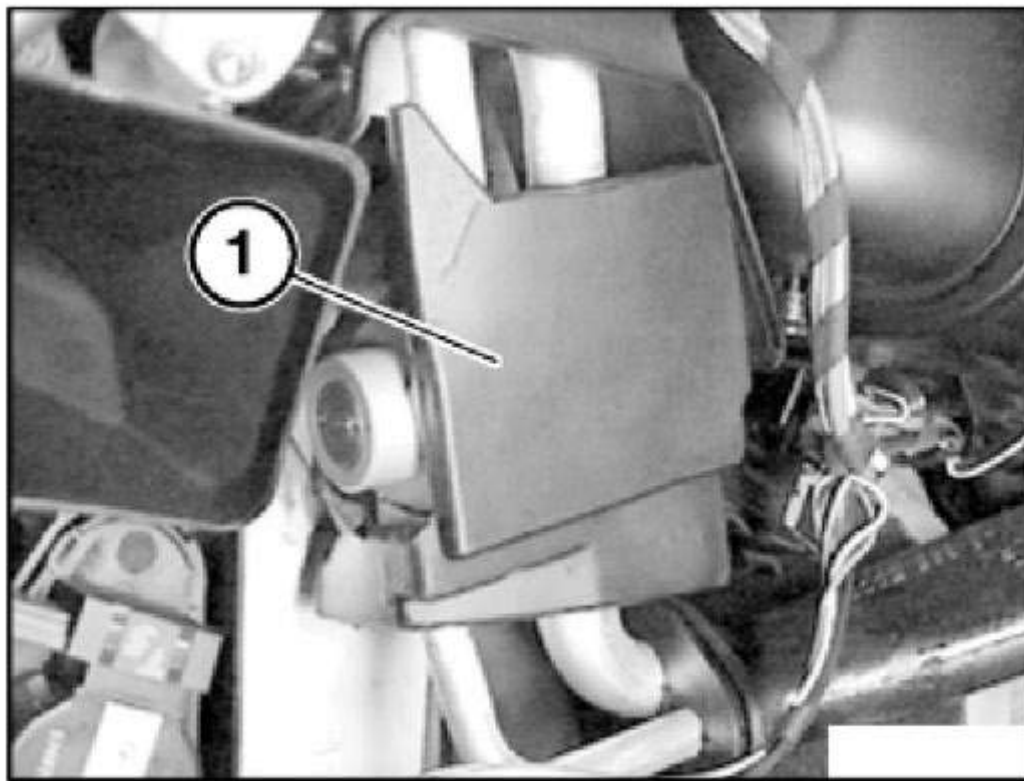
Remove cover (3).



G03256770

Fig. 99: View Of Control Wheel In Center Of Fresh Air Grill
Courtesy of BMW OF NORTH AMERICA, INC.

Remove sound insulation (1).



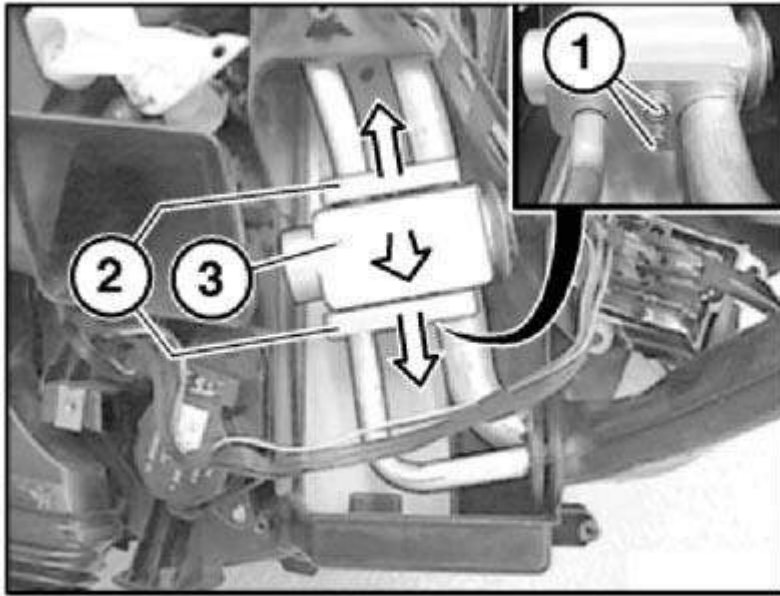
G03256771

Fig. 100: Locating Sound Insulation

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and remove plates (2).

Pull lines apart a little and remove expansion valve (3).



G03256772

Fig. 101: Removing Expansion Valve

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace sealing rings.

64 51 580 LEAK-TESTING EVAPORATOR**NOTE:** For Special Tool identification, see **SPECIAL TOOLS - X5 (3.0i)** .**Special Tools Required:**

- 64 5 104
- 64 5 105
- 64 5 106

Necessary Preliminary Tasks:

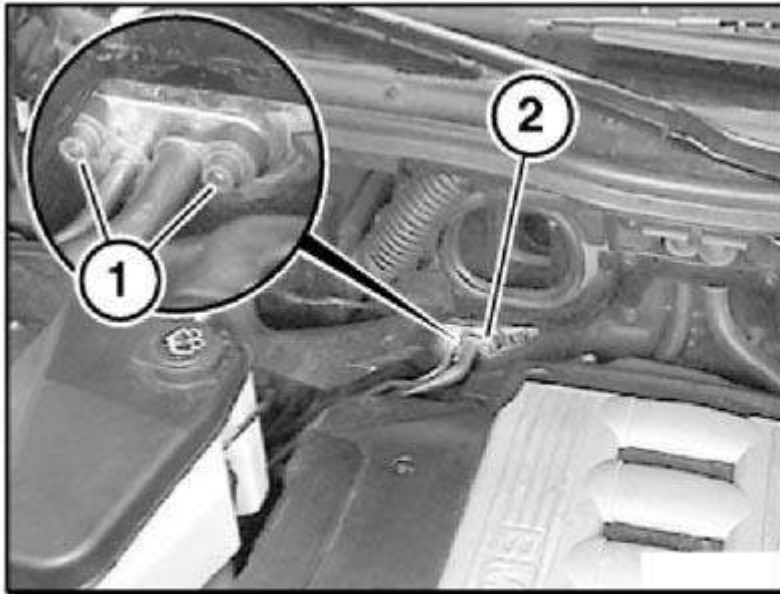
- Draw off refrigerant from A/C system. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .
- Remove heater bulkhead. Refer to **51 71 080 REMOVING AND INSTALLING/REPLACING HEATER BULKHEAD** .

Release screws (1), tightening torque, (18 N.m.).

Disconnect refrigerant lines (2).

Installation:

Replace sealing rings.



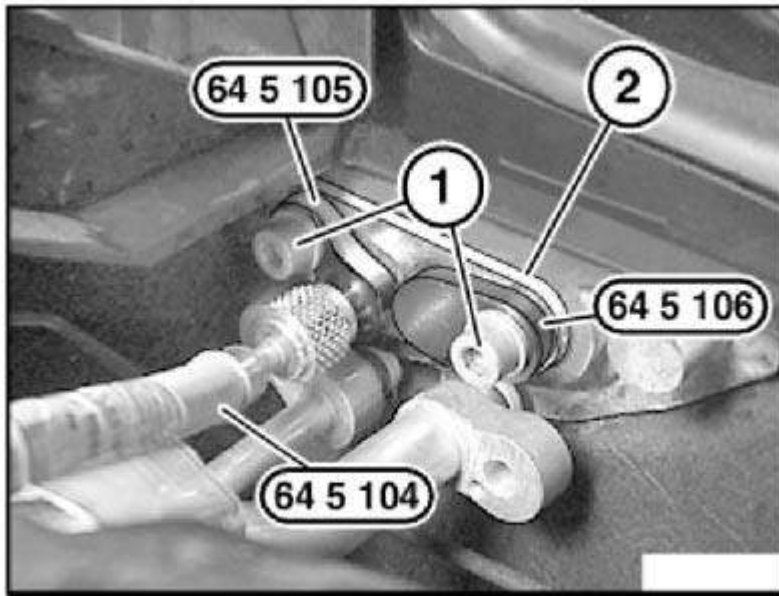
G03256773

Fig. 102: Locating Refrigerant Lines

Courtesy of BMW OF NORTH AMERICA, INC.

Connect special tool 64 5 104 with special tool 64 5 105 and connect to suction line of refrigerant lines (2).
Connect special tool 64 5 106 to pressure line of refrigerant lines (2).

Tighten screws (1) to specified tightening torque, (18 N.m.).



G03256774

Fig. 103: Attaching Sealing Adapters To Suction Line
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Risk of damage: Use only nitrogen pressure bottles with pressure reducers for leak-testing. Pressurize evaporator to 15 bar slowly only. Excessively fast pressurization and pressures in excess of 20 bar may cause damage to the evaporator. Connect nitrogen pressure bottle with pressure reducer to pressure gauge and then connect to special tool 64 5 104 (connecting hose).

NOTE:

- Testing apparatus must be leakproof.
- Ambient temperature and temperature of vehicle must not change during the test procedure.
- Do not move the vehicle during this period.

Slowly apply test pressure of 15 bar and close nitrogen pressure bottle.

Check leak-tightness of testing apparatus and of connection to refrigerant line.

Set test pressure of 15 bar is only permitted to drop by 2 bar to 13 bar over a test period of 2 hours.

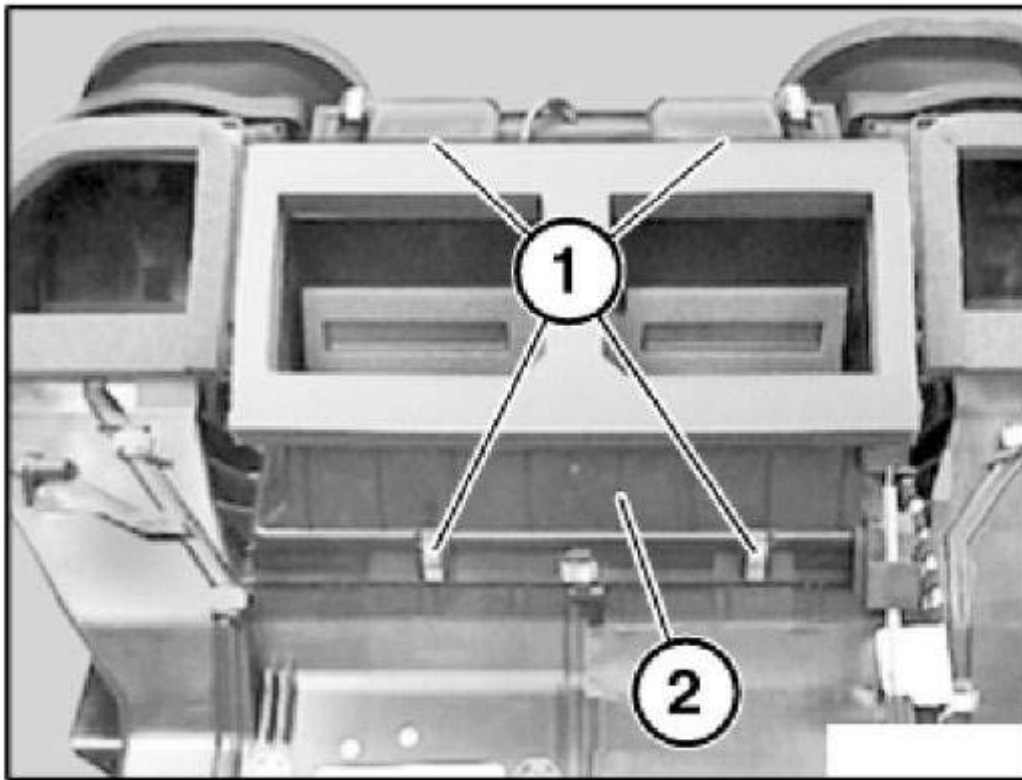
If the pressure loss is greater than 2 bar, this indicates that there is a leak in the evaporator unit with expansion valve.

64 51 592 REMOVING AND INSTALLING/REPLACING EVAPORATOR (A/C CONTROL)

NOTE: Heater - A/C is removed.

Unclip retainers (1).

Remove defroster nozzle, center (2).

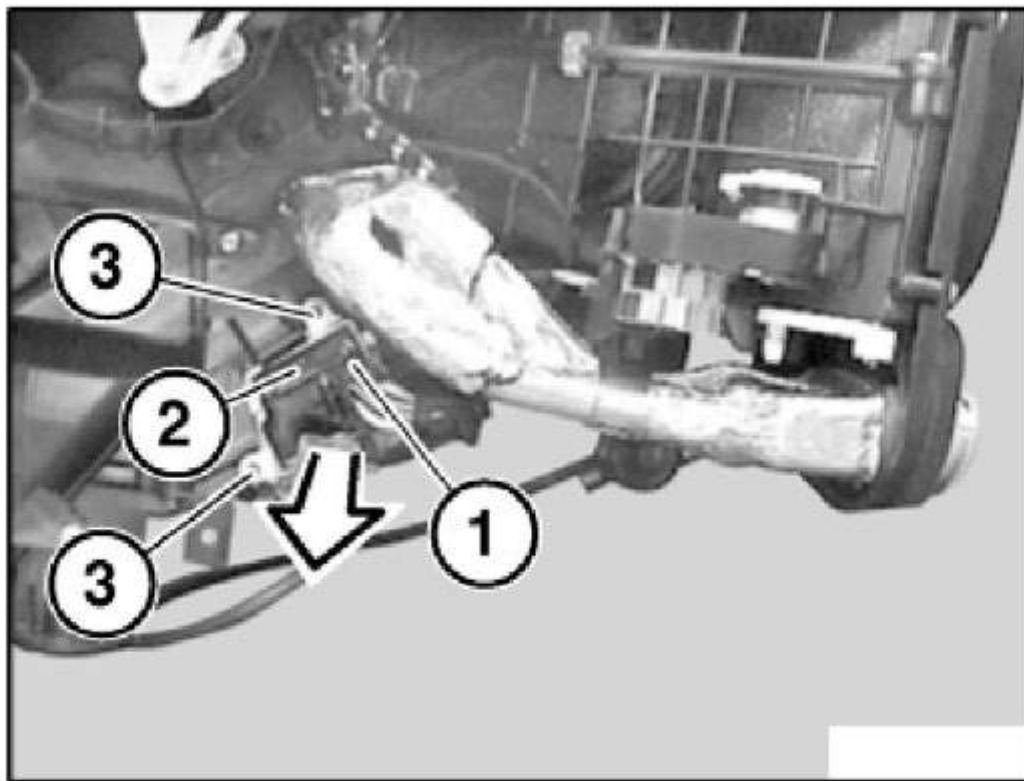


G03256775

Fig. 104: Removing Defroster Nozzle
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock plug connection (1) and disconnect.

Unlock limit switch for blower (2) and pull in direction of arrow out of guide (3).



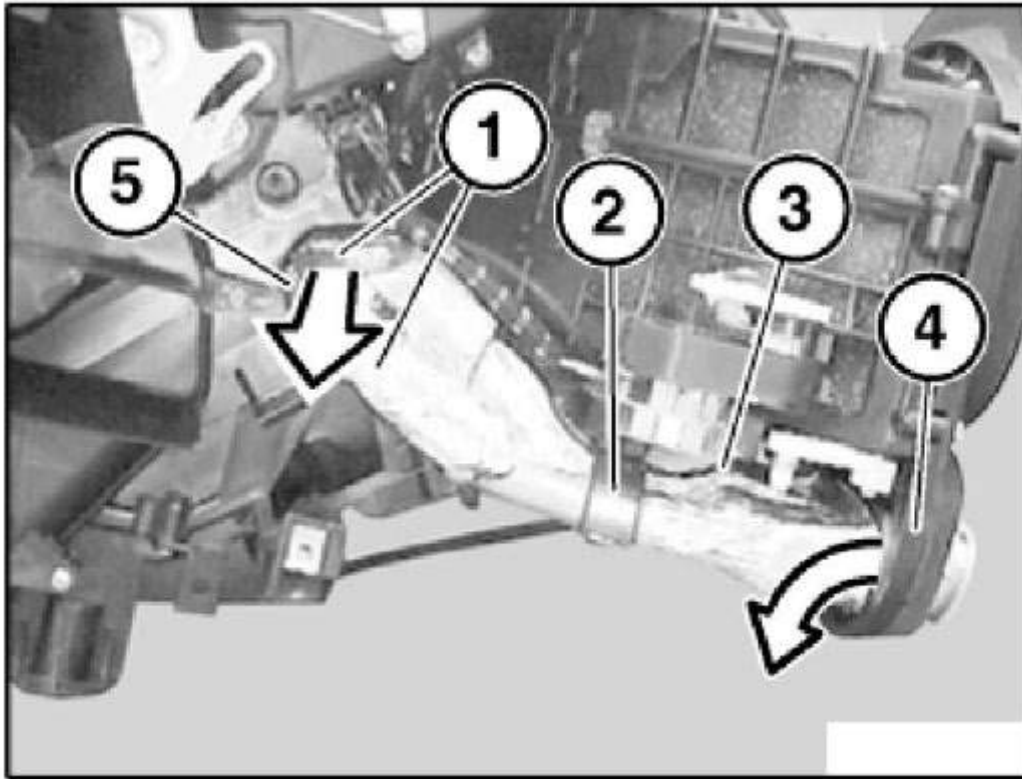
G03256776

Fig. 105: Unlocking Limit Switch For Blower
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Unscrew holder (2).

Detach expansion valve (3) in direction of arrow from flange (5) and feed out of housing (4).



G03256777

Fig. 106: Detaching Expansion Valve
Courtesy of BMW OF NORTH AMERICA, INC.

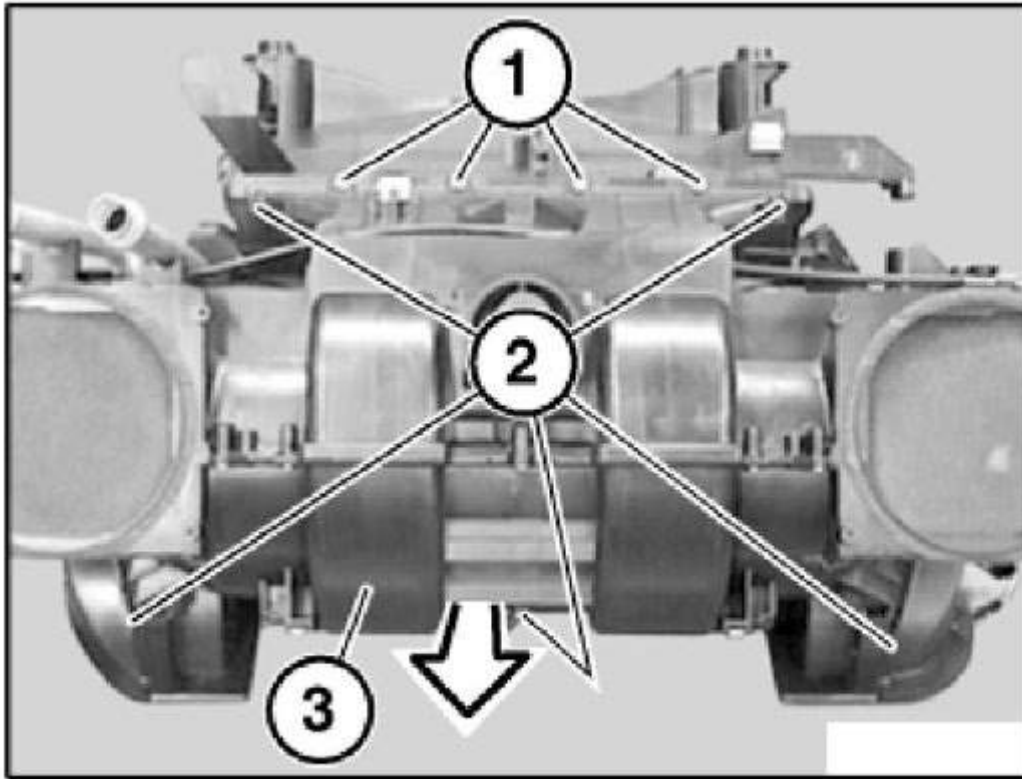
Installation:

Replace sealing rings.

Make sure flange (5) is correctly seated.

Unclip retainers (1).

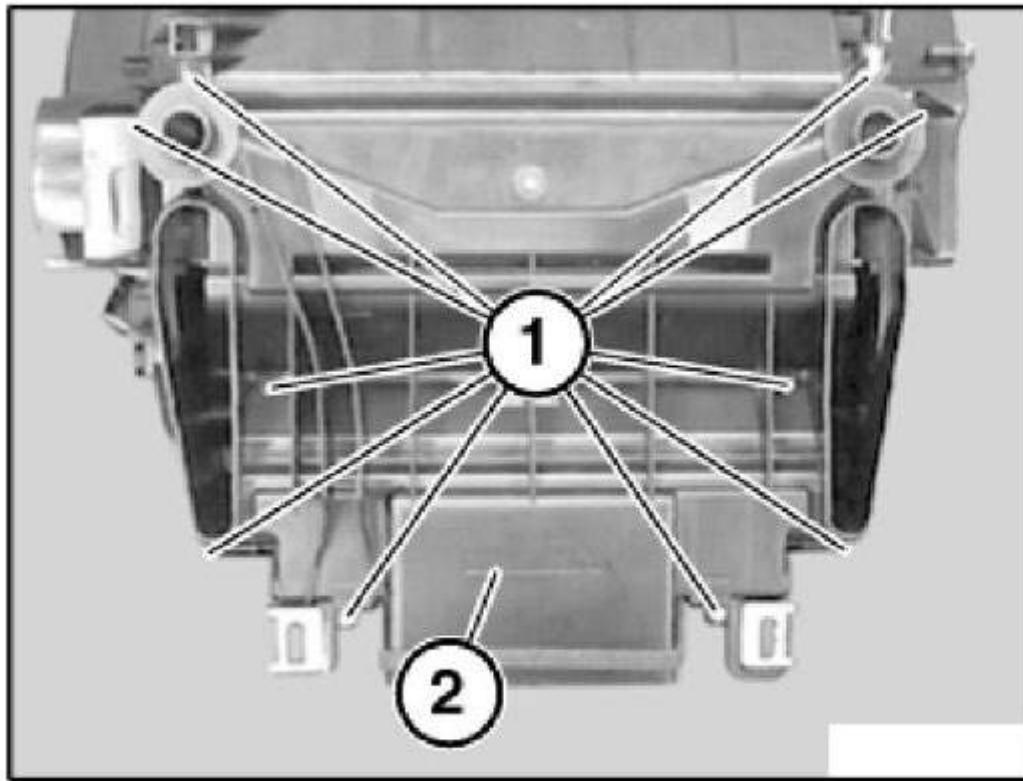
Release screws (2) and remove blower housing completely (3) in direction of arrow.



G03256778

Fig. 107: Removing Blower Housing
Courtesy of BMW OF NORTH AMERICA, INC.

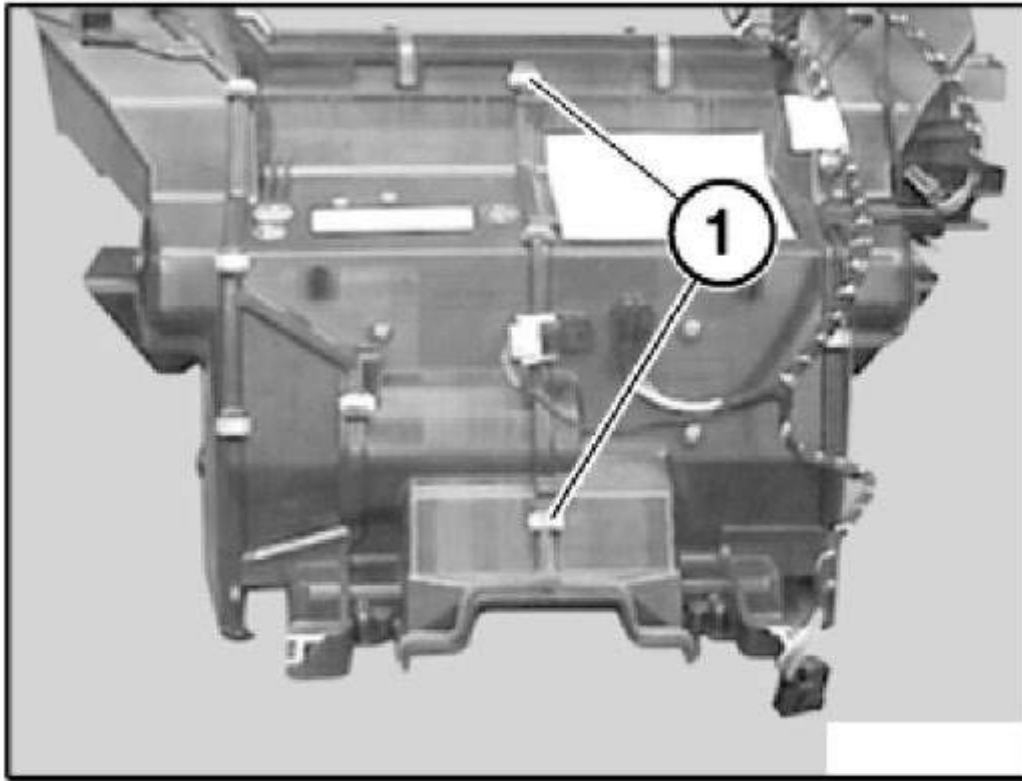
Release screws (1) and remove housing base (2).



G03256779

Fig. 108: Removing Housing Base
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip retainers (1).



G03256780

Fig. 109: Locating Retainers
Courtesy of BMW OF NORTH AMERICA, INC.

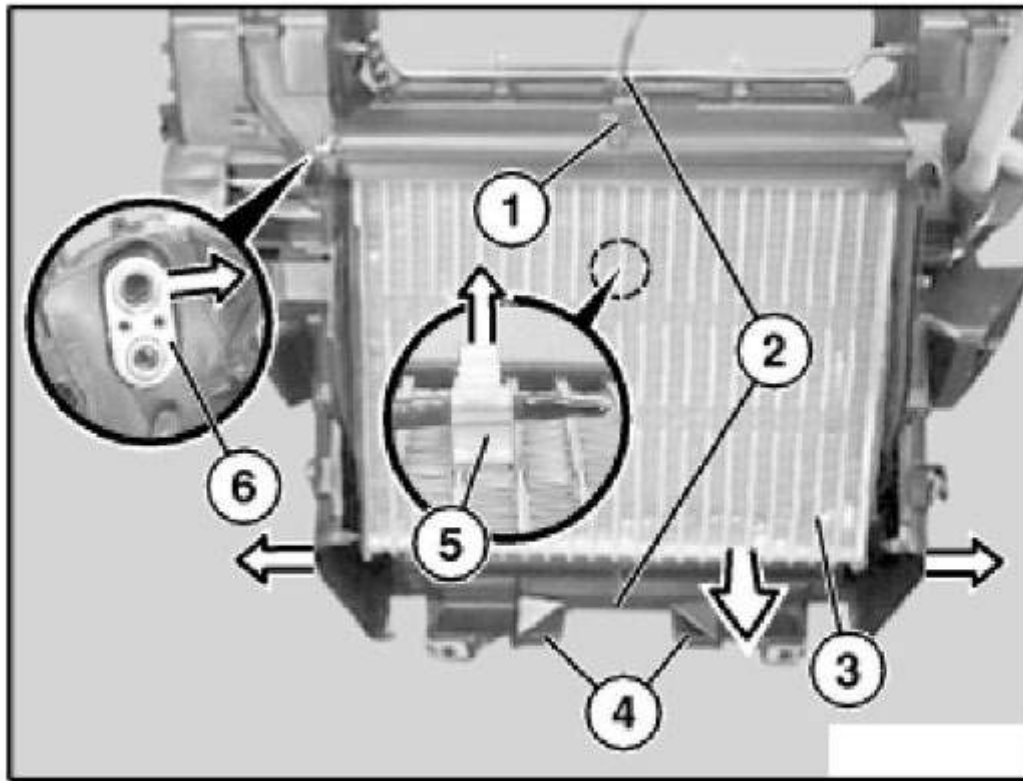
Release screw (1).

Unclip retainers (2).

Pull both housing sections (4) apart and press flange (6) in direction of arrow out of housing opening.

Unclip temperature sensor holder (5) in direction of arrow from evaporator (3).

Pull evaporator (3) in direction of arrow out of housing.



G03256781

Fig. 110: Removing Evaporator Out Of Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure all moving parts are correctly seated (linkage, flaps).

Make sure both housing sections (4) are correctly seated.

Make sure temperature sensor cable outside housing is of sufficient length.

CAUTION: Do not bend radiator fins. If necessary, clean or align radiator fins with fin comb.

COMPRESSOR

IMPORTANT: Compressors with plastic belt pulleys:

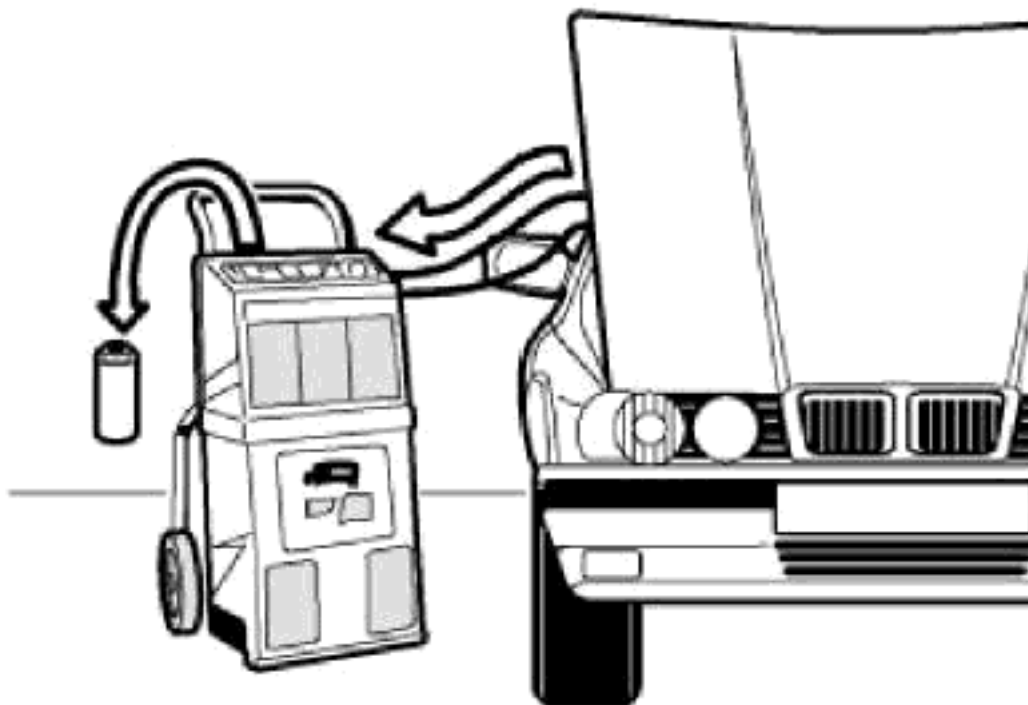
- **Avoid impacts/knocks to plastic belt pulley (caused by tools, contact with base).**
- **Return faulty compressors in their original packaging only.**

IMPORTANT: When starting up a new compressor for the first time, it is absolutely essential to carry out the following breaking-in procedure:

- **Switch on A/C system.**
- **Set all air vents in instrument cluster to "OPEN".**
- **Start engine and let it stabilize at idle speed.**
- **Set blower output to min. 75% of max. blower output.**
- **Switch on A/C system and run for at least 2 minutes at idle speed (risk of damage at higher speed!).**

When evacuating the air-conditioning system, refrigerant oil is also extracted and collected in the oil separator of the service station.

After evacuation, the refrigerant must be filtered in the service station as the oil separator could still contain a liquid refrigerant/oil mixture. The filtering process gasifies the refrigerant completely and only the previously bound refrigerant oil remains in the oil separator. Measure and note down this quantity of refrigerant oil, refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .



G03256782

Fig. 111: Extracting Refrigerant Oil
Courtesy of BMW OF NORTH AMERICA, INC.

Transfer the refrigerant oil remaining in the previous compressor via the filler plug completely into a measuring container.



G03256783

Fig. 112: Transferring Refrigerant Oil To Measuring Container
Courtesy of BMW OF NORTH AMERICA, INC.

Measure the amount of refrigerant oil collected from the previous compressor.

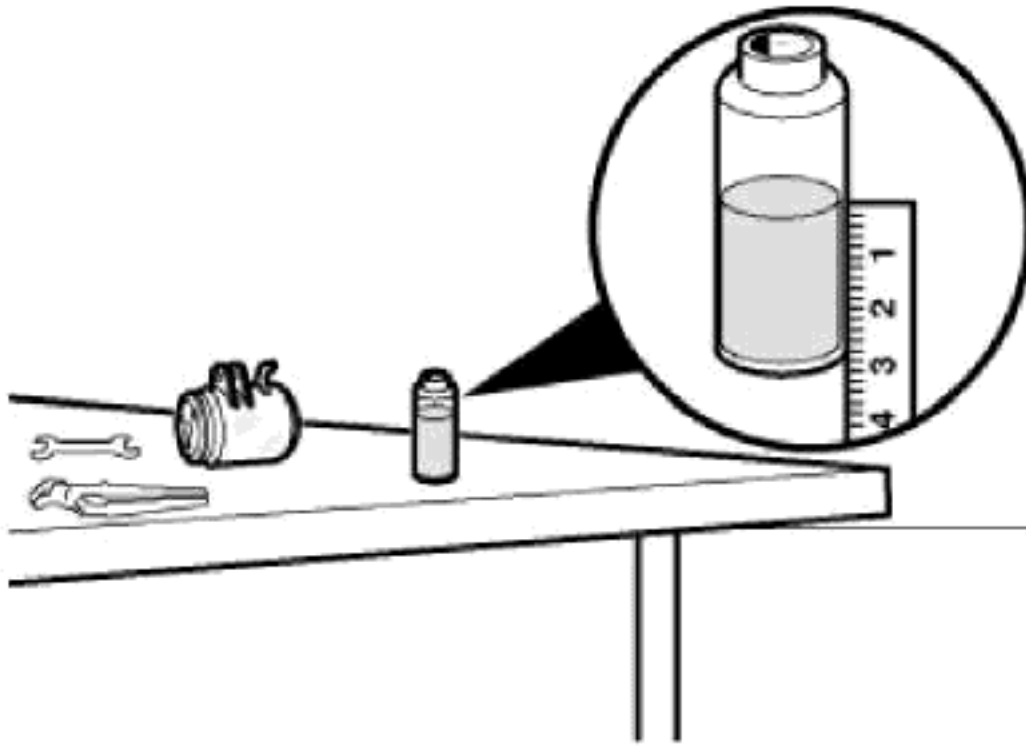
**G03256784**

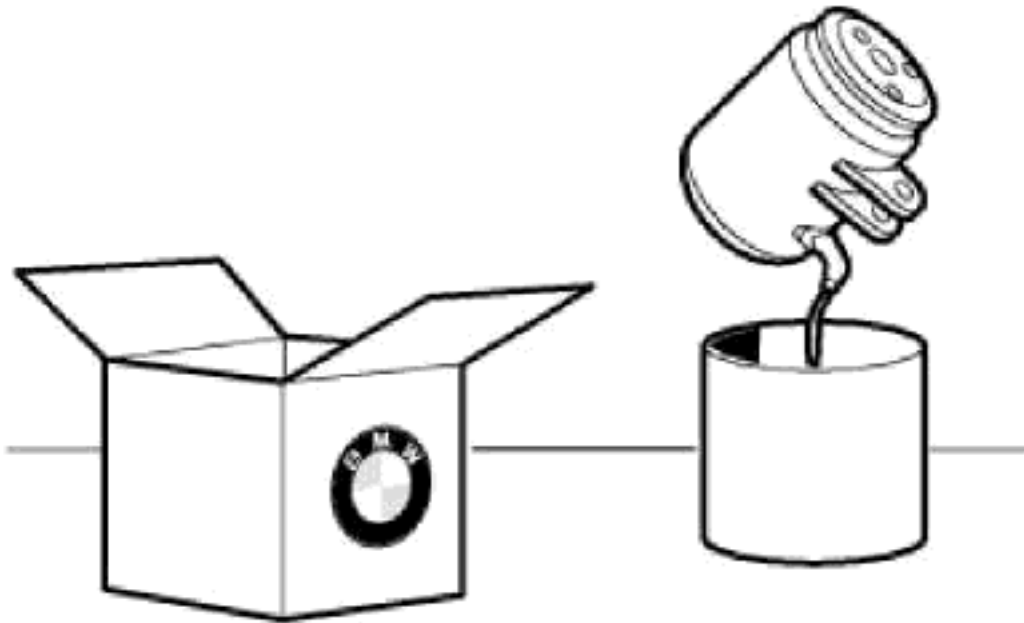
Fig. 113: Measuring Amount Of Refrigerant Oil Collected
Courtesy of BMW OF NORTH AMERICA, INC.

Depending on its design, the new compressor is filled at the factory with 120 to 200 g refrigerant oil. Open filler plug and pour entire contents of compressor into a clean container.

Installation:

If necessary, replace gasket.

Observe tightening torque, (30 +/- 1 N.m.).

**G03256785****Fig. 114: Draining Refrigerant Oil****Courtesy of BMW OF NORTH AMERICA, INC.**

From this refrigerant oil, pour the same amount (as drained from the previous compressor) + 10 g extra into a clean measuring container and pour again into the new compressor.

Remaining refrigerant oil can be poured into service station tank, refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

Otherwise the excess refrigerant oil must be disposed of correctly.

On account of its hygroscopic properties, refrigerant oil must not be stored in open containers.

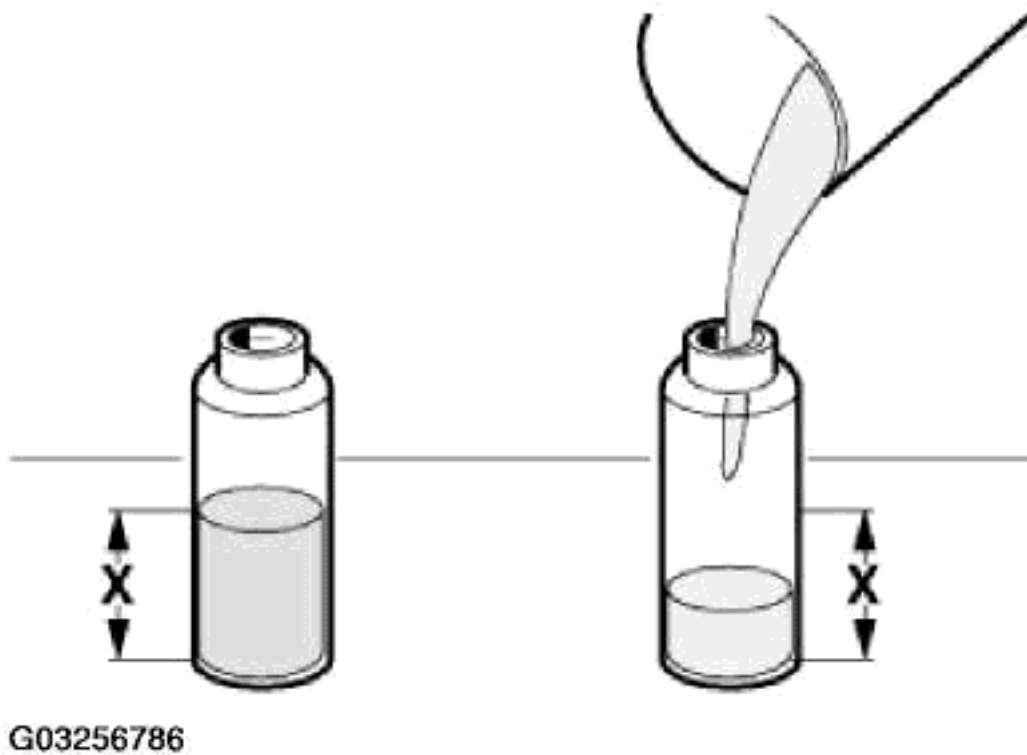
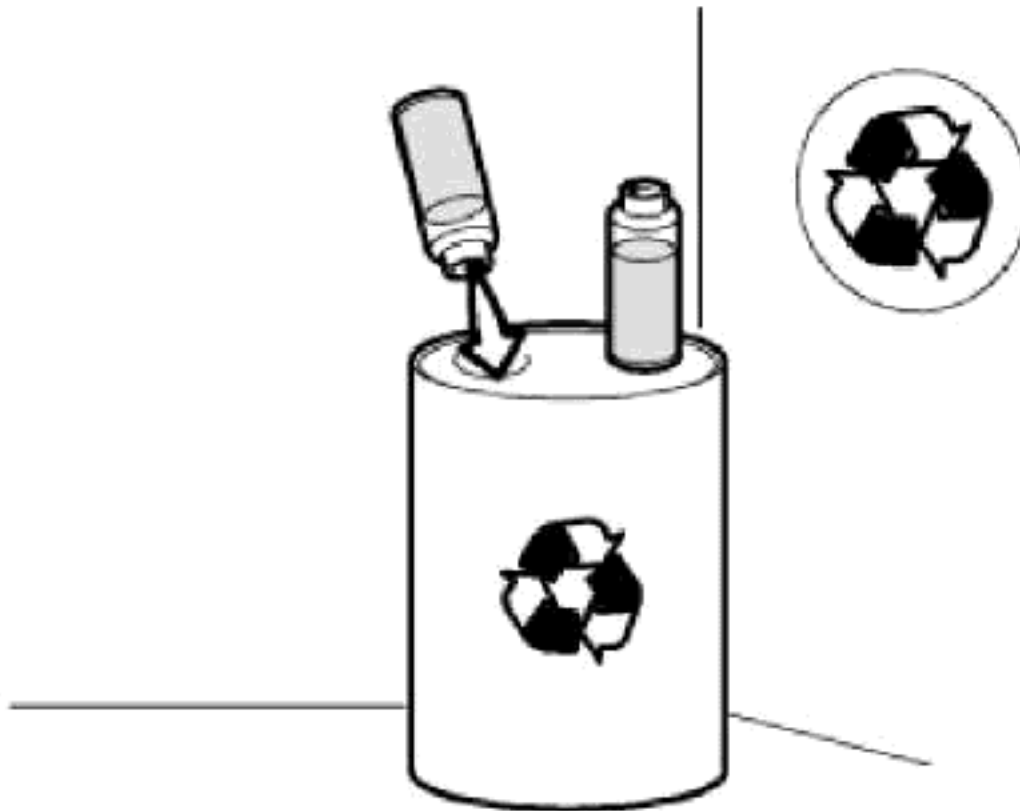


Fig. 115: Measuring Refrigerant Oil
Courtesy of BMW OF NORTH AMERICA, INC.

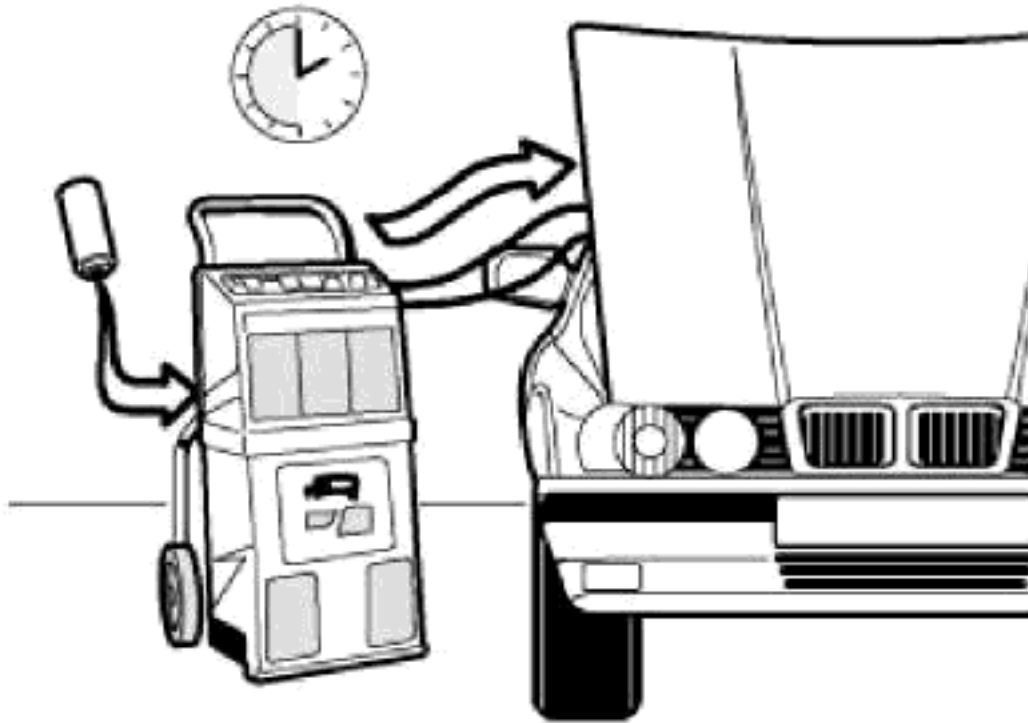
The refrigerant oil drawn off from the oil separator of the service station and from the previous compressor must not be reused and must be correctly disposed of.



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Fig. 116: Identifying Correct Refrigerant Oil Disposal
Courtesy of BMW OF NORTH AMERICA, INC.

After installing the new compressor, it is essential before filling the A/C system to pour the same amount of the previously drawn off refrigerant oil into the system again, refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .



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Fig. 117: Drawing Off Refrigerant Oil
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

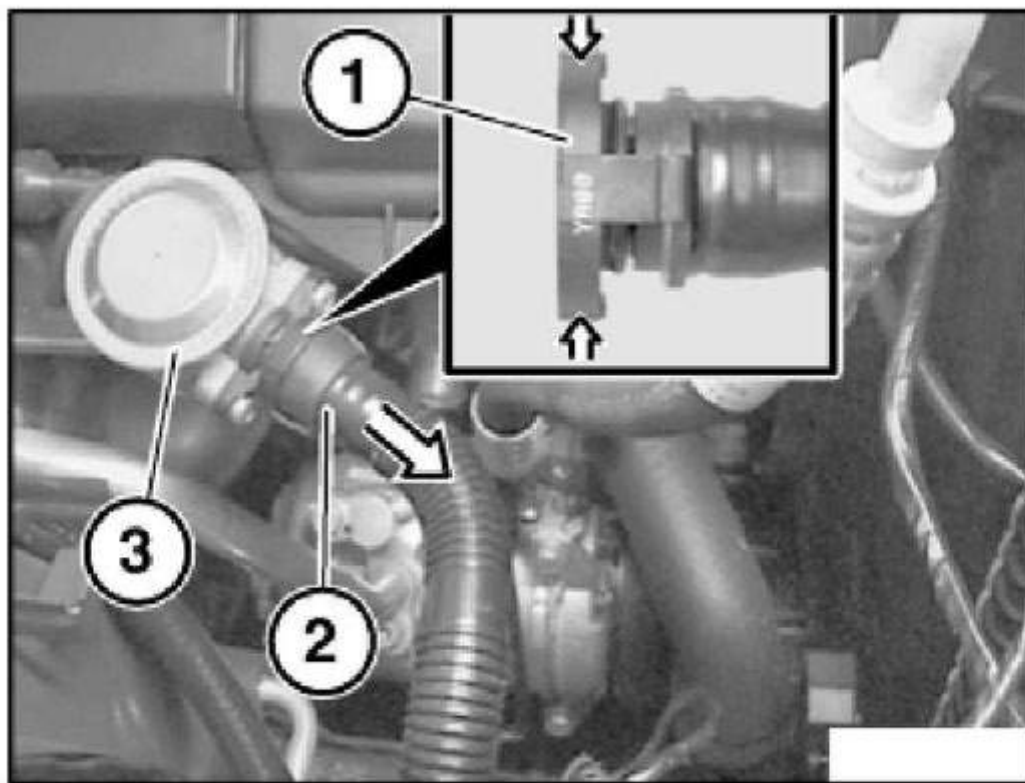
If A/C system is opened for more than 24 hours: Replace drier bottle/drier insert. Refer to **64 53 515 REPLACING DRIER INSERT FOR A/C SYSTEM** .

64 52 520 REMOVING AND INSTALLING/REPLACING COMPLETE A/C COMPRESSOR (M54)

CAUTION: Risk of damage! Follow instructions for compressor replacement without fail. Refer to 64 52 ... INSTRUCTIONS FOR COMPRESSOR REPLACEMENT .

NOTE: A/C system is drawn off. Refer to 64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A) .

Press ring catch (1) together, detach pressure hose (2) in direction of arrow from shut-off valve (3) and lay to one side.



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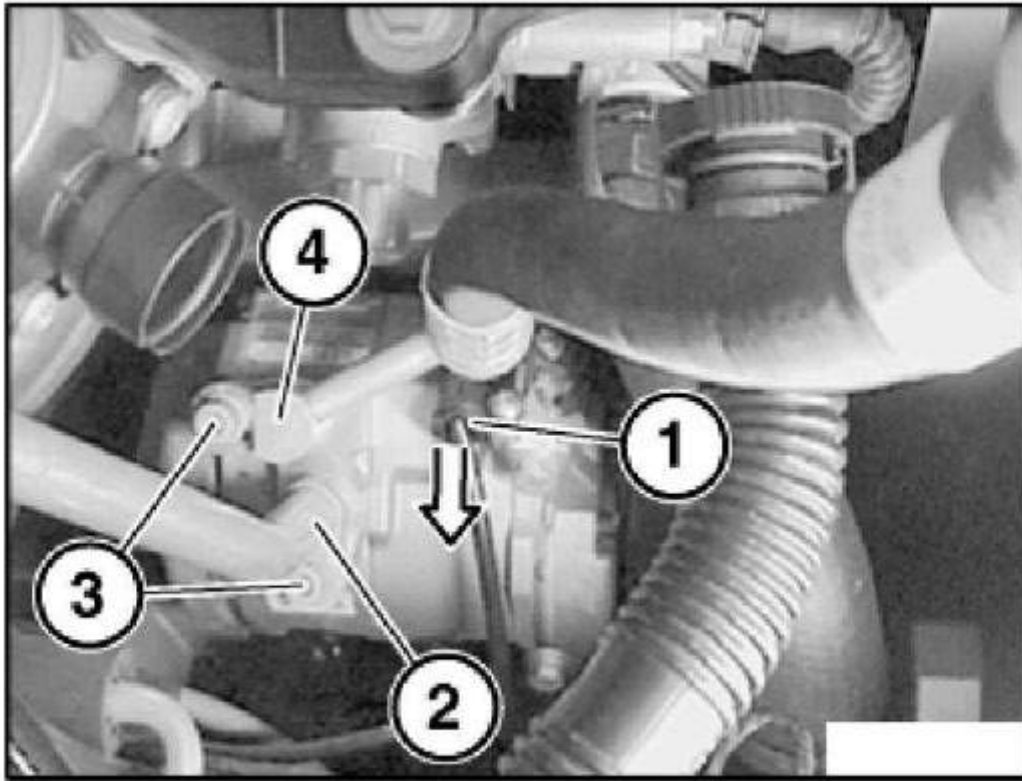
Fig. 118: Detaching Pressure Hose

Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) in direction of arrow.

Release screws (3).

Remove lines (2) and (4).



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Fig. 119: Disconnecting Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace sealing rings.

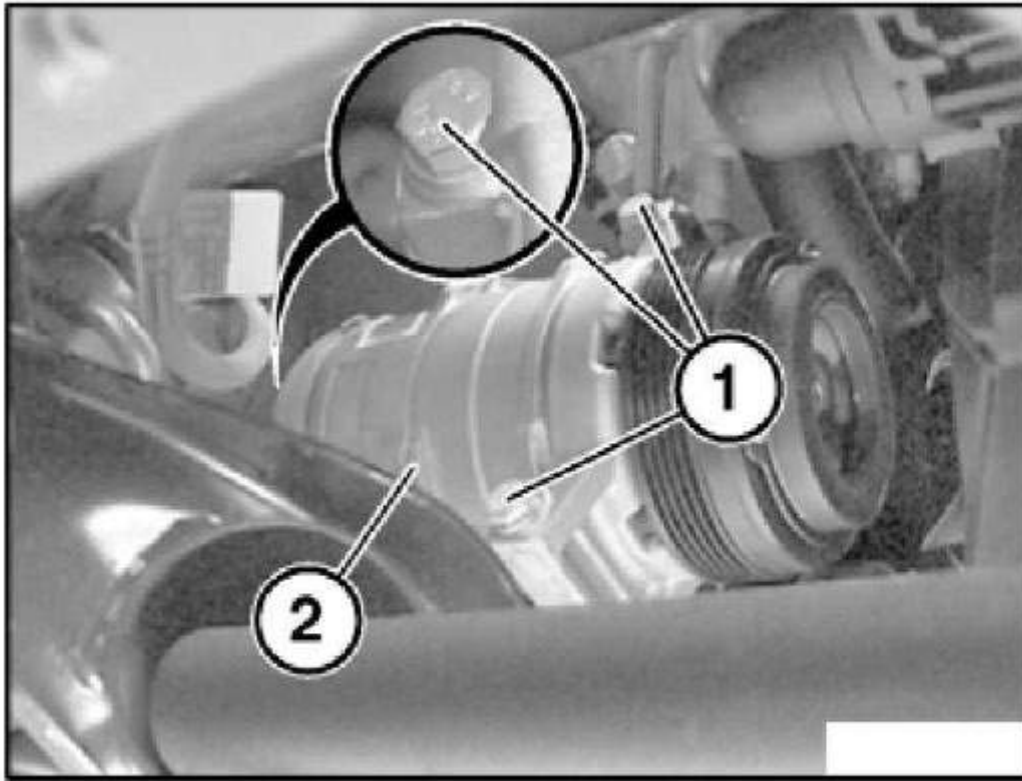
Observe tightening torque, (20 N.m.).

Remove front splash guard.

Remove A/C compressor drive belt. Refer to **11 28 050 REPLACING A/C COMPRESSOR DRIVE BELT (M52/S52/M52TU/M54/M56)** .

NOTE: **Secure A/C compressor (2) against falling out.**

Release screws (1) and remove A/C compressor (2).



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Fig. 120: Removing A/C Compressor

Courtesy of BMW OF NORTH AMERICA, INC.

CONDENSER AND DRYER WITH LINES

64 53 ... NOTES ON REPLACING DRIER BOTTLE OR DRIER INSERT

The drier bottle or drier insert does not have to be replaced at regular service intervals in a functioning, leakproof A/C system.

However, The Drier Bottle Or Drier Insert Must Be Replaced Without Fail In The Event Of:

- Fouling of the refrigerant by filings/shavings (e.g. when the compressor is clamped).
- A leaking A/C system or loss of refrigerant.
- The refrigerant circuit being opened for a period exceeding 24 hours, e.g. during repair work.

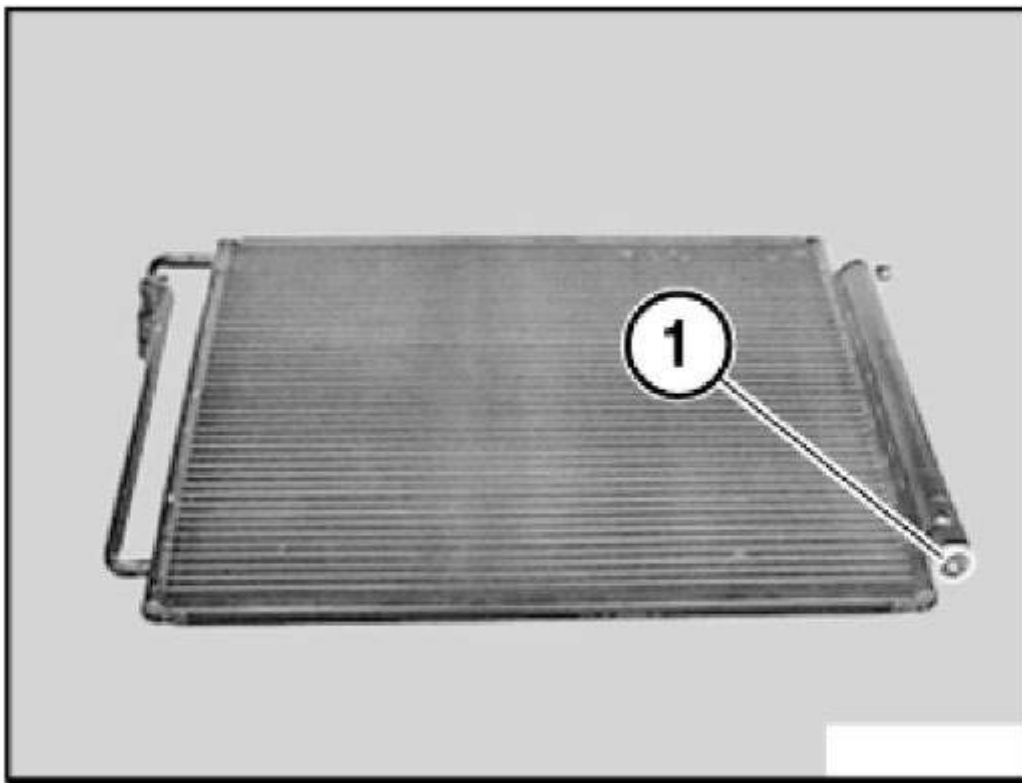
64 53 515 REPLACING DRIER INSERT FOR A/C SYSTEM

Necessary Preliminary Tasks:

- Remove condenser for A/C system. Refer to **64 53 550 REMOVING AND INSTALLING OR REPLACING CONDENSER FOR AIR CONDITIONER**.

Remove screw plug (1), tightening torque (3.0 +/- 0.5 N.m.).

Withdraw drier insert from condenser.



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Fig. 121: Locating Screw Plug

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace sealing ring and coat with suitable refrigerant oil.

64 53 550 REMOVING AND INSTALLING OR REPLACING CONDENSER FOR AIR CONDITIONER

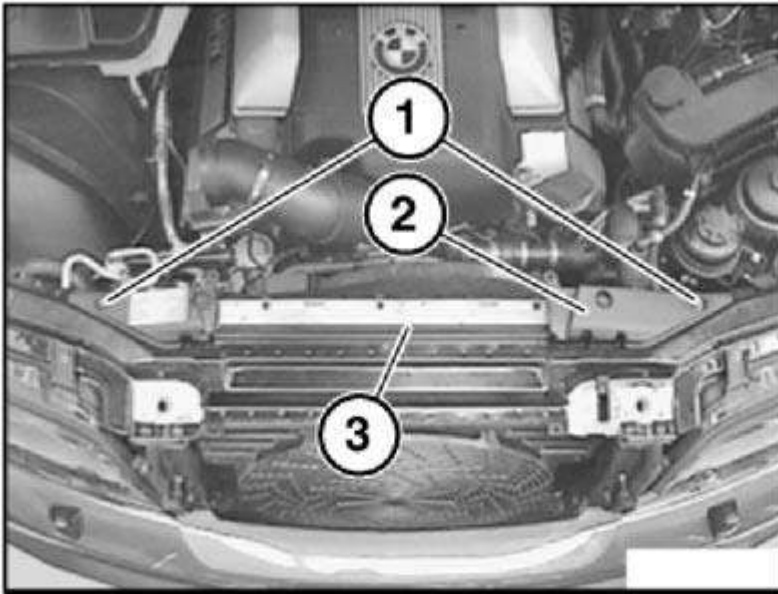
A/C system is drawn off. Refer to **64 50 009 DRAWING OFF, EVACUATING AND FILLING A/C SYSTEM (R 134A)** .

Remove intake hood. Refer to **17 11 031 REPLACING FAN COWL (M62/M54)** .

M54, M62 Only:

Remove intake filter housing. Refer to **13 71 000 REMOVING AND INSTALLING INTAKE FILTER HOUSING (M54)** .

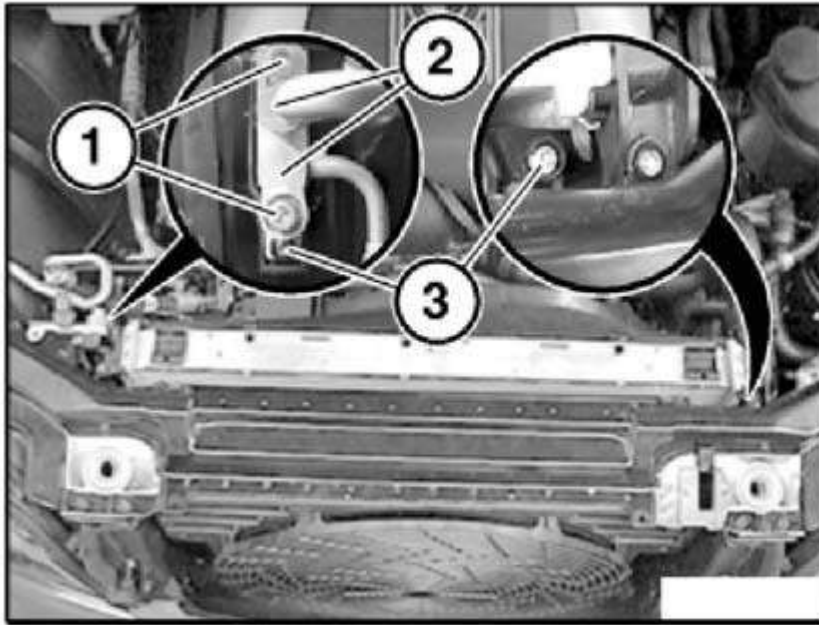
Release screws (1) and remove radiator bracket (2). Detach rubber strip (3).



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Fig. 122: Identifying Radiator Bracket Retaining Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and detach lines (2).



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Fig. 123: Locating Screws For Lines
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace sealing rings.

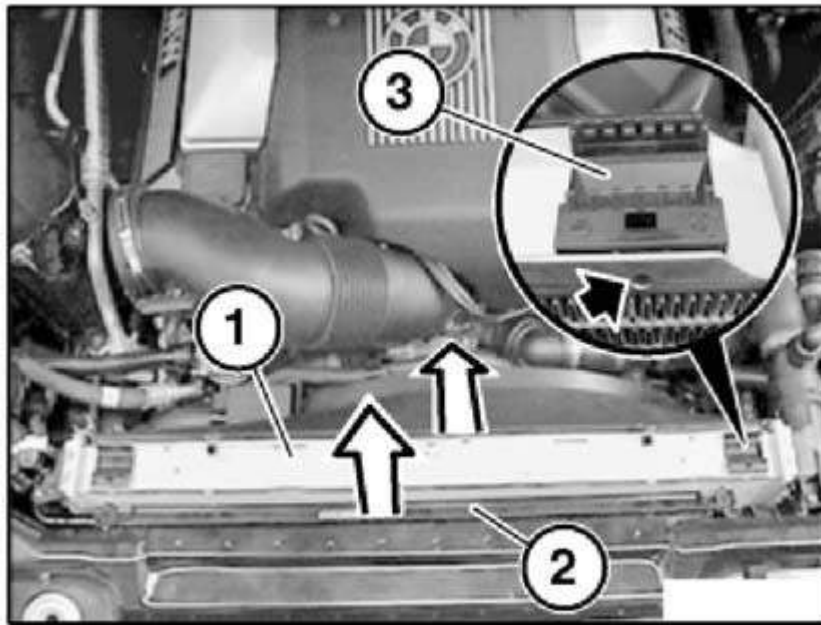
Release screws (3).

Gently press cooler (1) towards rear and lift out A/C condenser (2).

Installation:

Lugs of plastic guides (3) must be securely engaged in bores.

Replace faulty plastic guides.



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Fig. 124: Locating Lugs Of Plastic Guides
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If A/C system is opened for more than 24 hours:

Replace desiccator insert. Refer to **64 53 515 REPLACING DRIER INSERT FOR A/C SYSTEM** .