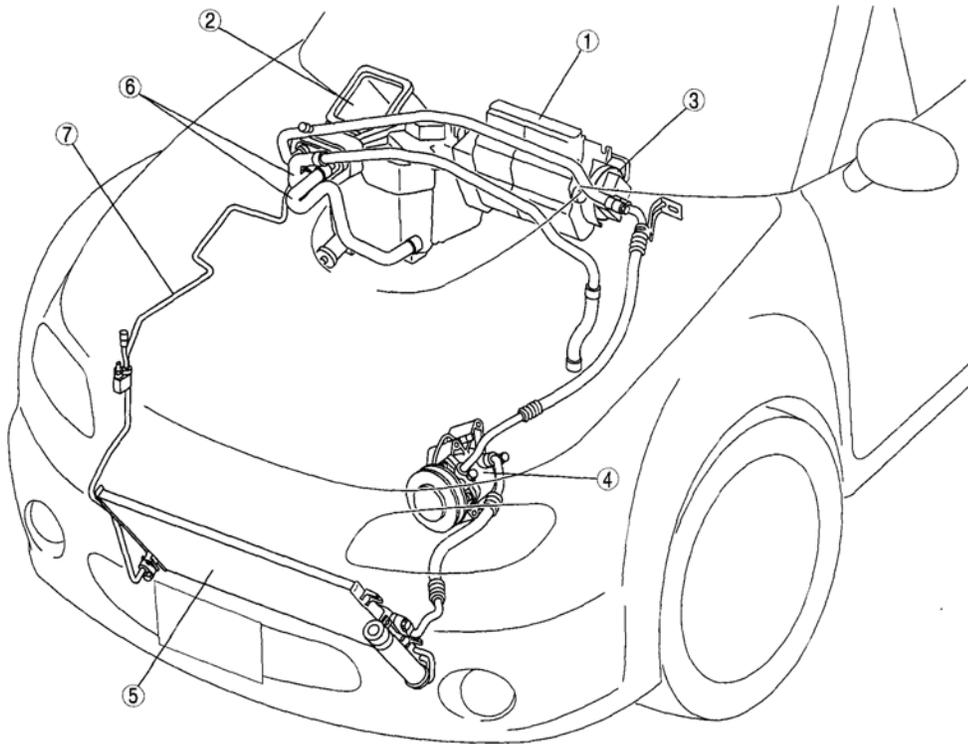


2008 HVAC

Basic System - MX-5 Miata

HVAC BASIC SYSTEM



E5U7112W5107

1	Air dist unit
2	A/C unit
3	Airflow mode main link
4	A/C compressor
5	Condenser
6	Heater hose
7	Refrigerant line

Fig. 1: Identifying Location Of HVAC Basic System Components
 Courtesy of MAZDA MOTORS CORP.

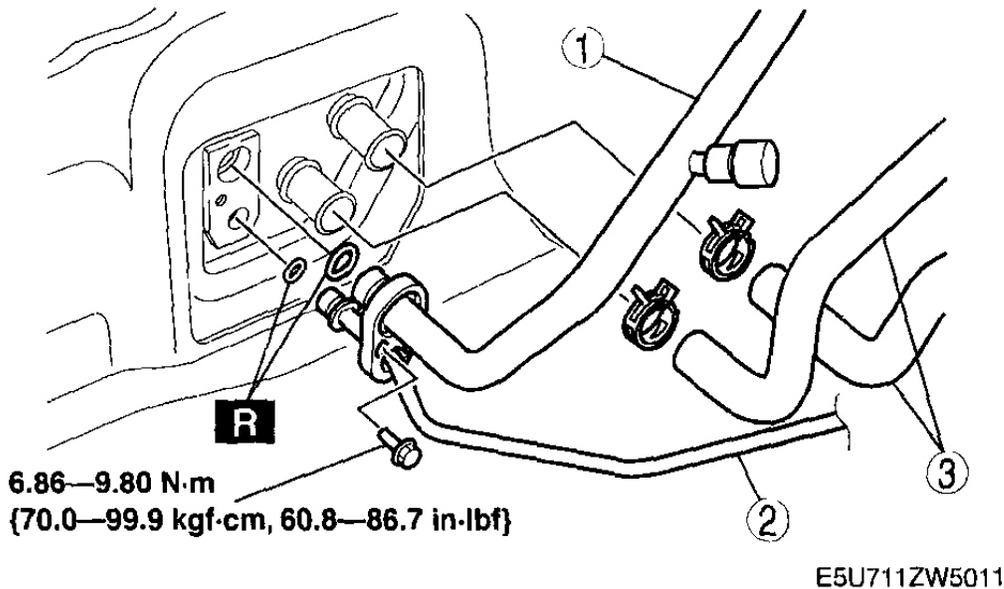
AIR DISTRIBUTION UNIT REMOVAL/INSTALLATION

1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]**)
3. Discharge the refrigerant from the system. (See **REFRIGERANT RECOVERY .**) (See **REFRIGERANT CHARGING .**)
4. Drain the engine coolant. (See **ENGINE COOLANT REPLACEMENT [LF]** .)

5. Disconnect from A/C unit in the order in **Fig. 2** .

CAUTION:

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



1	Cooler pipe No.3 (LO)
2	Cooler pipe No.2 (HI)
3	Heater hose

Fig. 2: View Of A/C Unit Pipe Lines & Components (With Torque Specifications)
 Courtesy of MAZDA MOTORS CORP.

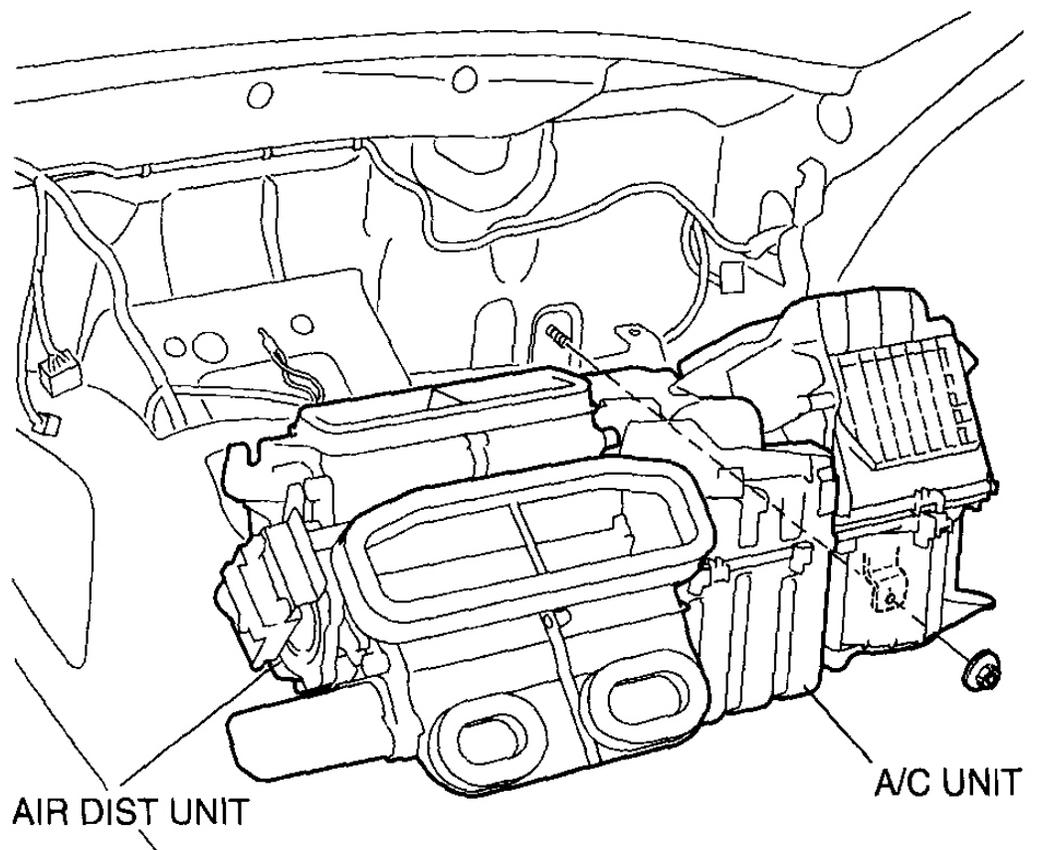
6. Remove the following parts:

1. Console (See **CONSOLE REMOVAL/INSTALLATION** .)
2. Glove compartment (See **GLOVE COMPARTMENT REMOVAL/INSTALLATION** .)
3. Side wall (See **SIDE WALL REMOVAL/INSTALLATION** .)
4. Console panel (See **CONSOLE PANEL REMOVAL/INSTALLATION** .)
5. Center panel unit (See **CENTER PANEL UNIT REMOVAL/INSTALLATION** .)
6. Lower panel (See **LOWER PANEL REMOVAL/INSTALLATION** .)
7. Knee bolster

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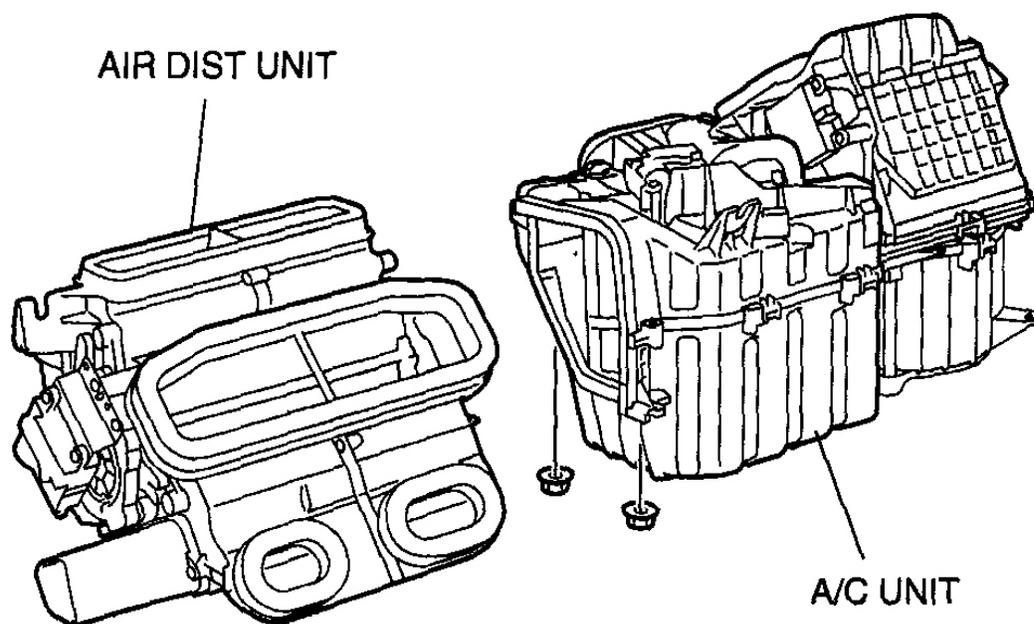
8. Column cover (See **COLUMN COVER REMOVAL/INSTALLATION** .)
 9. Driver-side air bag module (See **DRIVER-SIDE AIR BAG MODULE REMOVAL/INSTALLATION** .)
 10. Steering wheel (See **STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION** .)
 11. Combination switch (See **COMBINATION SWITCH REMOVAL/INSTALLATION** .)
 12. Steering shaft (See **STEERING WHEEL AND COLUMN REMOVAL/INSTALLATION** .)
 13. Meter hood (See **METER HOOD REMOVAL/INSTALLATION** .)
 14. Instrument cluster (See **INSTRUMENT CLUSTER REMOVAL/INSTALLATION** .)
 15. Side panel (See **SIDE PANEL REMOVAL/INSTALLATION** .)
 16. Hood release lever (See **HOOD LATCH AND RELEASE LEVER REMOVAL/INSTALLATION[ADVANCED KEYLESS SYSTEM]** .)
 17. Female bracket (See **CONVERTIBLE TOP DISASSEMBLY/ASSEMBLY** .)
 18. A-pillar trim (See **A-PILLAR TRIM REMOVAL/INSTALLATION** .)
 19. Scuff plate (See **SCUFF PLATE REMOVAL/INSTALLATION** .)
 20. Front side trim (See **FRONT SIDE TRIM REMOVAL/INSTALLATION** .)
 21. Fuse box No.1
 22. Dashboard (See **DASHBOARD REMOVAL/INSTALLATION** .)
7. Remove the air distribution unit and A/C unit.



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Fig. 3: View Of Air Distribution Unit & A/C Unit
Courtesy of MAZDA MOTORS CORP.

8. Disassemble the air distribution unit as shown in **Fig. 4** .
9. Install in the reverse order of removal.
10. Perform the refrigerant system performance test. (See **REFRIGERANT SYSTEM PERFORMANCE TEST** .)



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Fig. 4: Identifying Air Distribution Unit
Courtesy of MAZDA MOTORS CORP.

AIR DISTRIBUTION UNIT DISASSEMBLY/ASSEMBLY

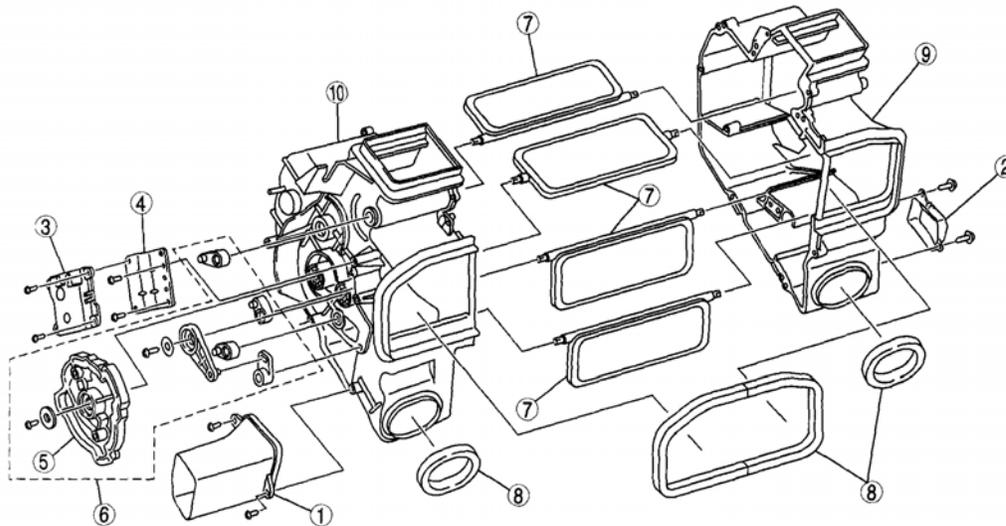
1. Disassemble in the order indicated in **Fig. 5**.

CAUTION:

- If a non-specified grease is used, it may result in abnormal noise or improper operation of the links. Apply only the specified grease to each link.

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E5U7112W5002

1	Duct (1)
2	Duct (2)
3	Airflow mode actuator
4	Bracket
5	Airflow mode main link

6	Airflow mode link set
7	Airflow mode door
8	Polyurethane form
9	Case (1)
10	Case (2)

Fig. 5: Exploded View Of Air Distribution Unit Components
Courtesy of MAZDA MOTORS CORP.

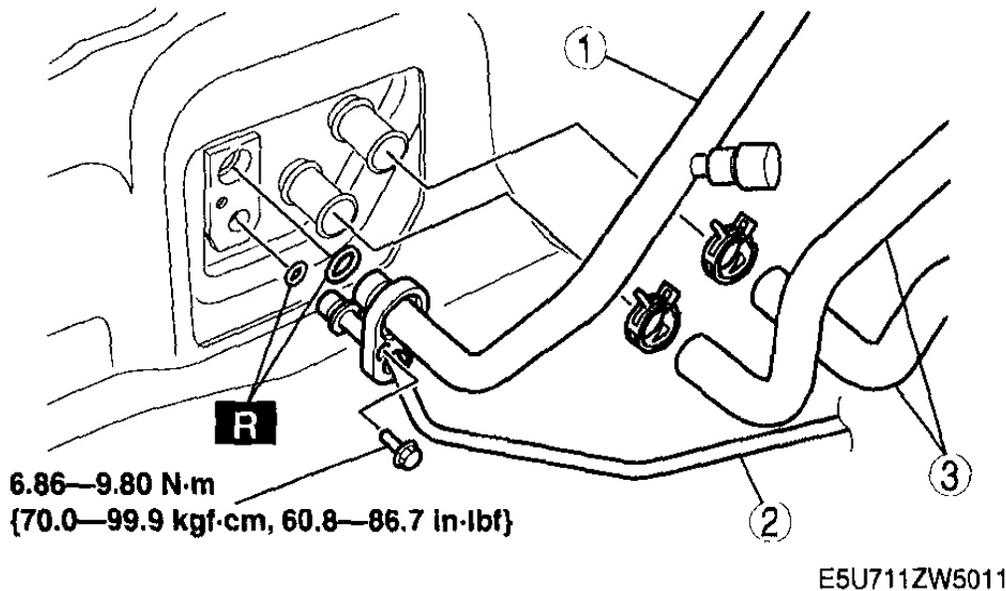
2. Assemble in the reverse order of disassembly.

A/C UNIT REMOVAL/INSTALLATION

1. Remove battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Discharge the refrigerant from the system. (See **REFRIGERANT RECOVERY** .) (See **REFRIGERANT CHARGING** .)
4. Drain the engine coolant. (See **ENGINE COOLANT REPLACEMENT [LF]** .)
5. Disconnect from A/C unit in the order in **Fig. 6** .

CAUTION:

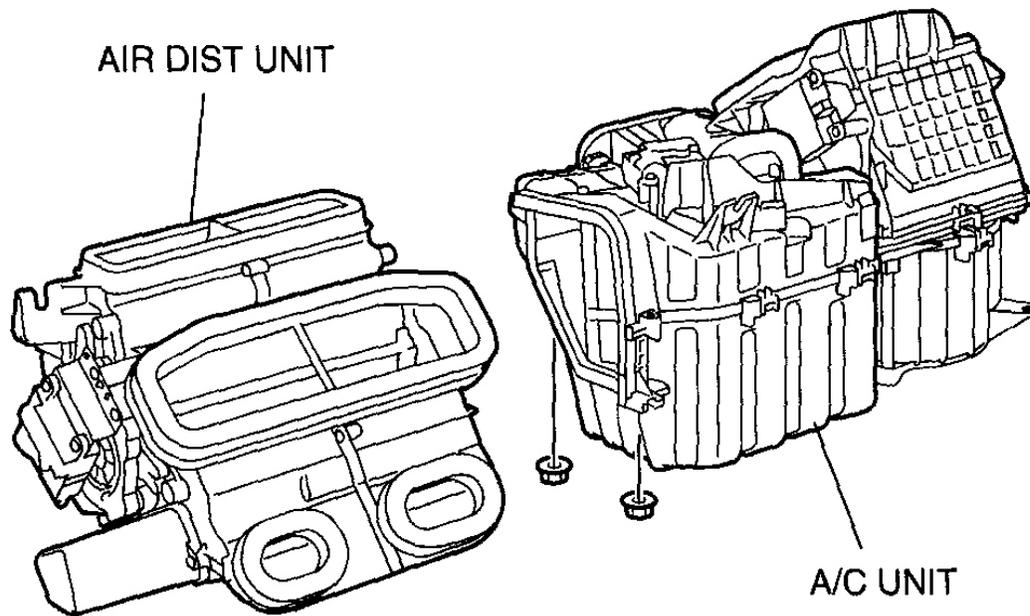
- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



1	Cooler pipe No.3 (LO)
2	Cooler pipe No.2 (HI)
3	Heater hose

Fig. 6: View Of Refrigerant Line From A/C Unit & Components (With Torque Specifications)
 Courtesy of MAZDA MOTORS CORP.

6. Remove the A/C unit and air distribution unit. (See **AIR DISTRIBUTION UNIT REMOVAL/INSTALLATION** .)
7. Disassembly the A/C unit as shown in **Fig. 7** .
8. Install in the reverse order of removal.
9. Perform the refrigerant system performance test. (See **REFRIGERANT SYSTEM PERFORMANCE TEST** .)



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Fig. 7: Identifying A/C Unit
Courtesy of MAZDA MOTORS CORP.

A/C UNIT DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in **Fig. 8** .

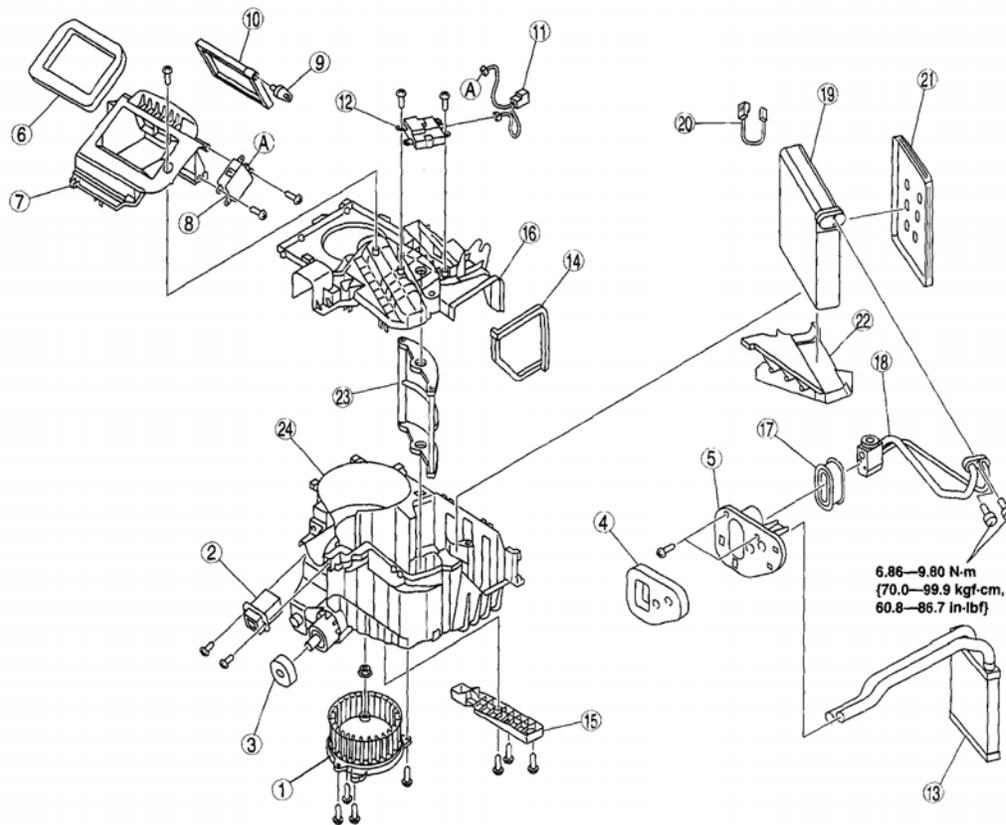
CAUTION:

- If a non-specified grease is used, it may result in abnormal noise or improper operation of the links. Apply only the specified grease to each link.
- If the air mix damper is removed and reinstalled improperly because the original installation position cannot be specified, the air mix damper and air mix actuator may be damaged when it is operated. Therefore, set the air mix to the middle position before disassembling so that the installation position can be specified.

2. Assemble in the reverse order of disassembly.

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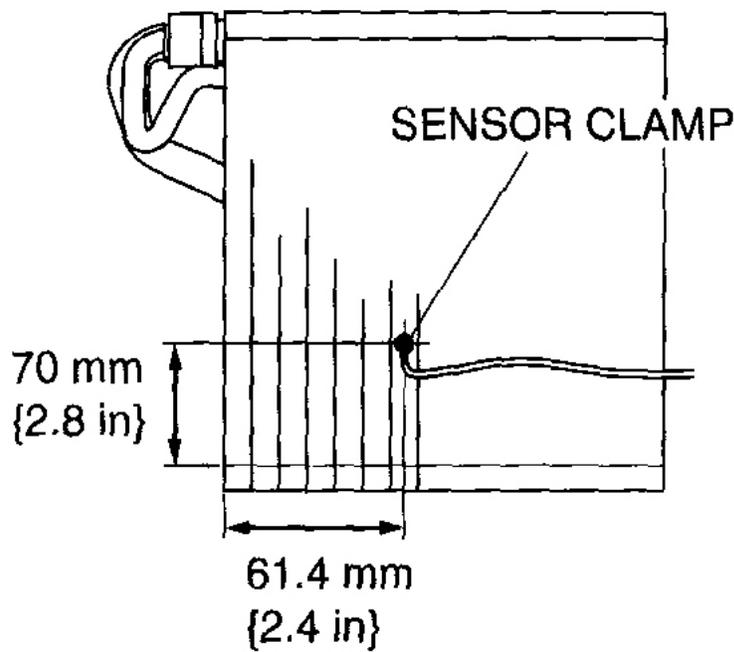
1	Blower motor
2	Power MOS FET
3	Polyurethane foam (1)
4	Polyurethane foam (2)
5	Cover (1)
6	Adhesive polyurethane (1)
7	Air intake box
8	Air intake actuator
9	Air intake crank
10	Air intake door
11	Harness
12	Air mix actuator
13	Heater core

14	Adhesive polyurethane (2)
15	Cover (2)
16	A/C case (1)
17	Cover (3)
18	Expansion valve
19	Evaporator
20	Evaporator temperature sensor
21	Cover (4)
22	Insulator
23	Air mix damper
24	A/C case (2)

Fig. 8: Exploded View Of A/C Unit Components (With Torque Specifications)
 Courtesy of MAZDA MOTORS CORP.

EVAPORATOR TEMPERATURE SENSOR ASSEMBLY NOTE

1. Assemble the evaporator temperature sensor as shown in **Fig. 9**.



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Fig. 9: Assembling Evaporator Temperature Sensor
Courtesy of MAZDA MOTORS CORP.

EVAPORATOR INSPECTION

1. Inspect the evaporator for damage, cracks and oil leakage.
 - If there is any malfunction, replace the evaporator.
2. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten the fins.

HEATER CORE INSPECTION

1. Inspect the heater core for damage, cracks and water leakage.
 - If there is any malfunction, replace the heater core.
2. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten the fins.
3. Visually inspect the heater hose for deformation.
 - Repair with pliers if there is deformation. If there is any malfunction, replace the heater core.

AIRFLOW MODE MAIN LINK REMOVAL/INSTALLATION

1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Remove the airflow mode actuator. (See **AIRFLOW MODE ACTUATOR REMOVAL/INSTALLATION** .)
4. Remove the airflow mode main link as shown in **Fig. 10** .
5. Install in the reverse order of removal.

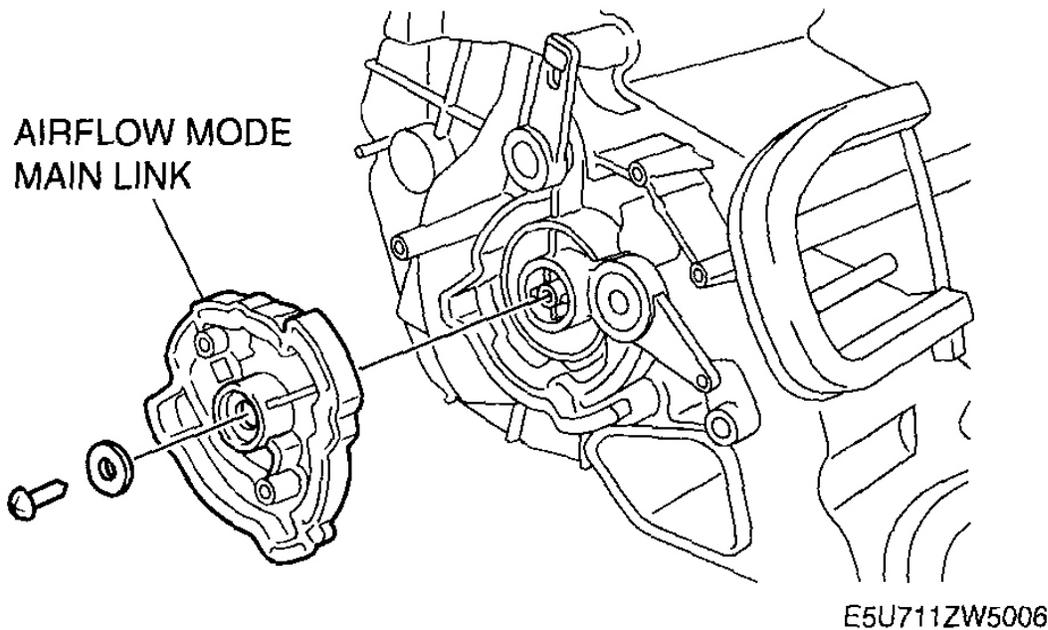
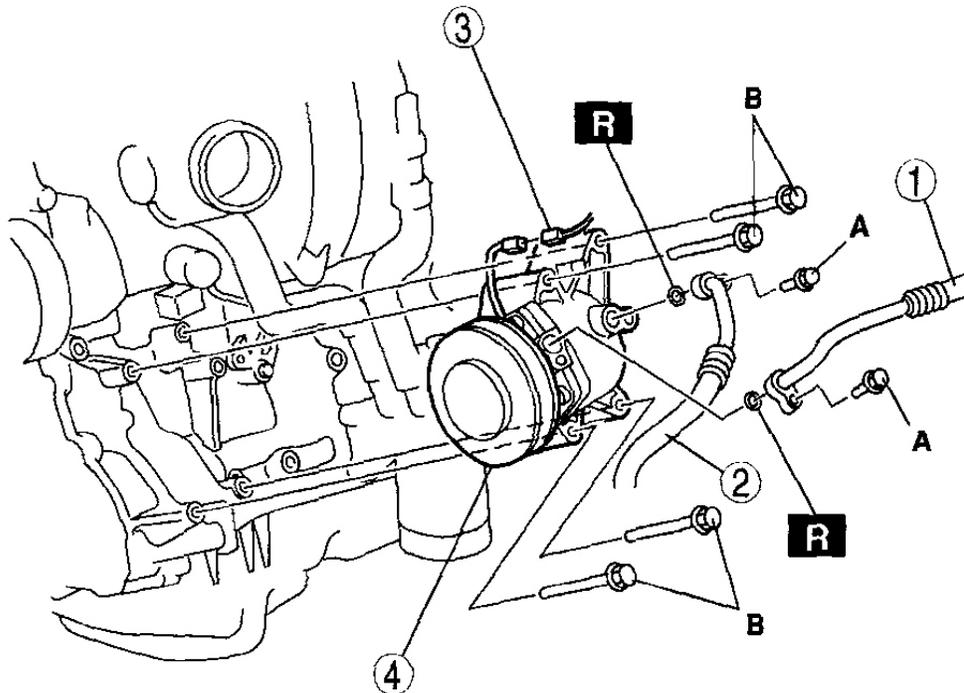


Fig. 10: View Of Airflow Mode Main Link
Courtesy of MAZDA MOTORS CORP.

A/C COMPRESSOR REMOVAL/INSTALLATION

1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Discharge the refrigerant from the system. (See **REFRIGERANT CHARGING** .)
4. Remove the air cleaner. (See **INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF]** .)
5. Remove the PCM. (See **PCM REMOVAL/INSTALLATION [LF]** .)
6. Remove the drive belt. (See **DRIVE BELT REPLACEMENT [LF]** .)
7. Do not allow remaining compressor oil in the A/C compressor and pipes to spill, and remove in the order indicated in **Fig. 11** .

- CAUTION:**
- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.



A: 6.86—9.80 N·m {70.0—99.9 kgf·cm, 60.8—86.7 in·lbf}

B: 17.6—26.5 N·m {1.80—2.70 kgf·m, 13.0—19.5 ft·lbf}

E5U711ZW5007

1	Cooler hose (LO)
2	Cooler hose (HI)
3	A/C compressor connector
4	A/C compressor

Fig. 11: View Of A/C Compressor Pipe Hose & Lines (With Torque Specifications)
 Courtesy of MAZDA MOTORS CORP.

8. Install in the reverse order of removal.
9. Perform the refrigerant system performance test. (See **REFRIGERANT SYSTEM PERFORMANCE TEST** .)

A/C COMPRESSOR INSTALLATION NOTE

CAUTION:

- **Due to the high moisture-absorption characteristics of the compressor oil, it may absorb moisture if left over a long period of time thereby negatively affecting A/C operation. Drain the compressor oil and refill within 10 min. of each other.**

1. Rotate new A/C compressor shaft six to eight revolutions while draining new refrigerant oil in a clean measuring device. Use this refrigerant oil to refill new compressor. Do not allow refrigerant oil to become contaminated.
2. Rotate old A/C compressor shaft six to eight revolutions while draining old refrigerant oil in a separate, clean measuring device.
3. Compare those oil amounts. The amount of the oil drained from the new A/C compressor should be greater than the old one.
4. Pour the same amount oil of drained from the old A/C compressor back into the new A/C compressor.

A/C compressor oil type

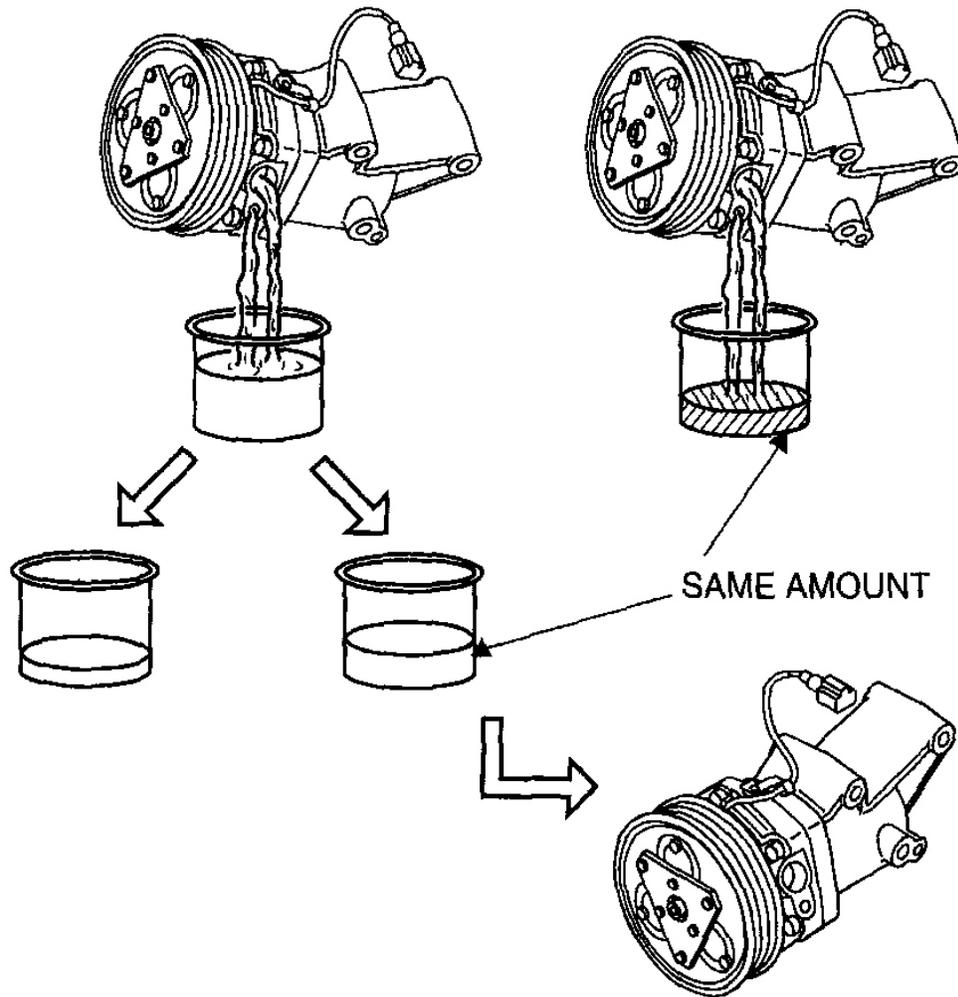
DH-PR

A/C compressor oil sealed volume (approx. quantity)

130 ml {130 cc, 4.39 fl oz}

NEW A/C COMPRESSOR

OLD A/C COMPRESSOR



E5U711ZW5008

Fig. 12: Pouring Drained Oil From Old A/C Compressor Into New A/C Compressor
Courtesy of MAZDA MOTORS CORP.

CONDENSER REMOVAL/INSTALLATION

1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Discharge the refrigerant from the system. (See **REFRIGERANT CHARGING** .)
4. Remove the splash shields.
5. Remove the under cover.

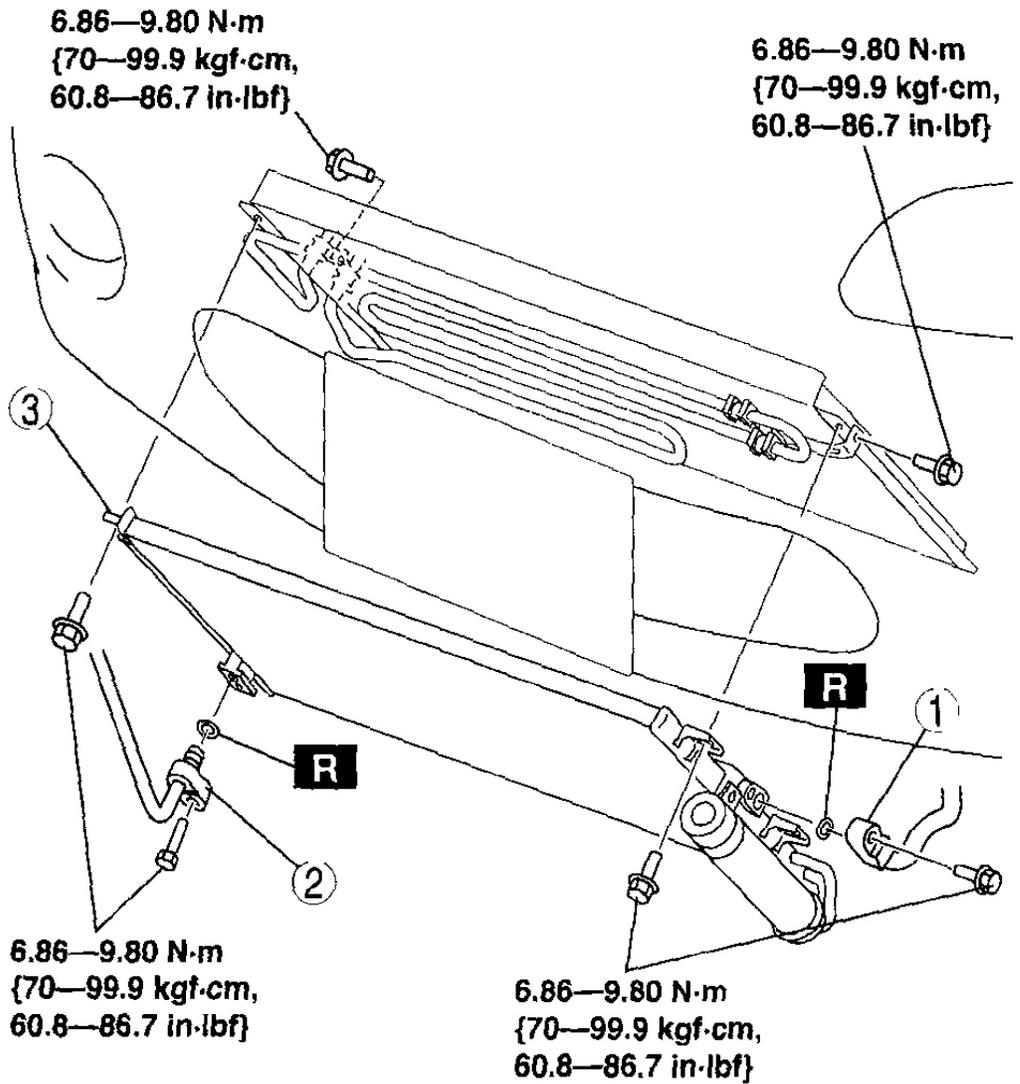
6. Remove the cooling pipe installation bolts.
7. Do not allow remaining compressor oil in the condenser and pipes to spill, and remove in the order indicated in **Fig. 13**.

CAUTION:

- **If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.**

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1	Cooler hose (Hl)
2	Cooler pipe No.1 (Hl)
3	Condenser

Fig. 13: View Of Cooling Pipe & Components (With Torque Specifications)
 Courtesy of MAZDA MOTORS CORP.

8. Install in the reverse order of removal.

9. Perform the refrigerant system performance test. (See **REFRIGERANT SYSTEM PERFORMANCE TEST** .)

CONDENSER INSTALLATION NOTE

1. When replacing the new condenser, add compressor oil to the refrigeration cycle.

Supplemental amount (approx. quantity)

20 ml {20 cc, 0.7 fl oz}

CONDENSER INSPECTION

1. Inspect the condenser for cracks, damage, and oil leakage.
 - If there is any malfunction, replace the condenser.
2. Visually inspect the fins for clogging of foreign material.
 - If any fins are clogged, remove the foreign material.
3. Visually inspect the fins for bending.
 - If there is any bending, use the end of a flathead screwdriver to straighten fins.

REFRIGERANT LINES REMOVAL/INSTALLATION

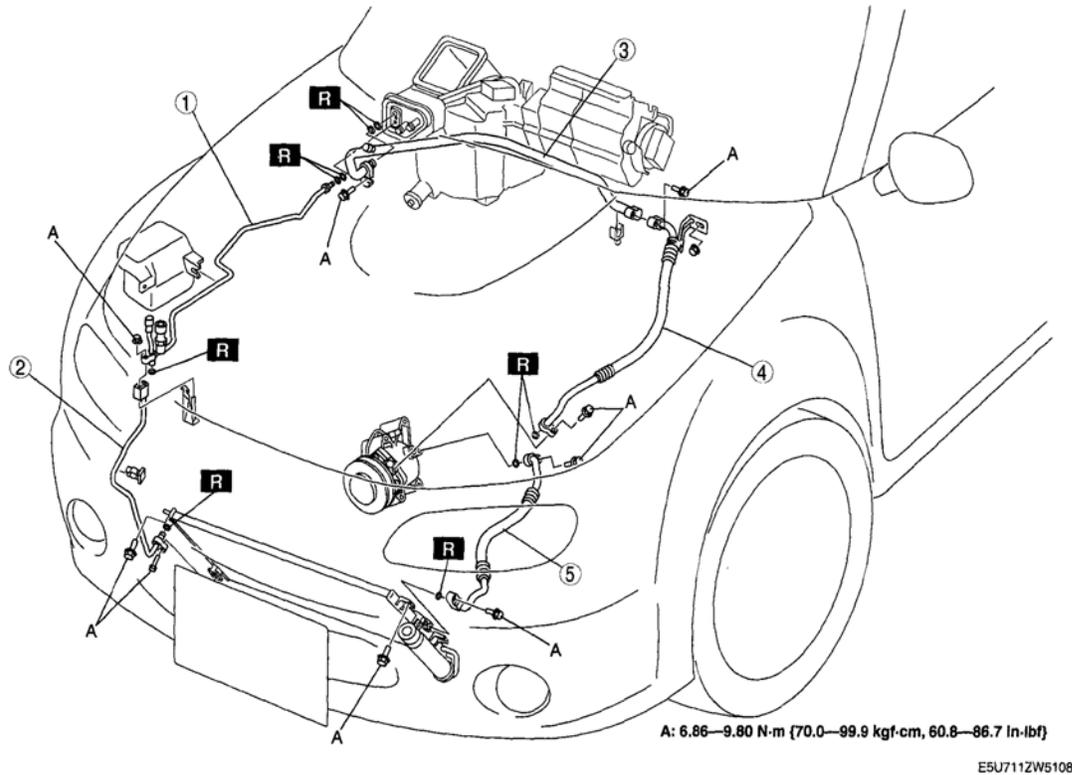
1. Remove the battery cover.
2. Disconnect the negative battery cable. (See **BATTERY REMOVAL/INSTALLATION [LF]** .)
3. Discharge the refrigerant from the system. (See **REFRIGERANT CHARGING** .)
4. Remove the air cleaner. (See **INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [LF]** .)
5. Remove the splash shield.
6. Remove the under cover.
7. Do not allow remaining compressor oil in the piping and connecting parts to spill, and remove in the order indicated in **Fig. 14** .

CAUTION:

- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise or other malfunction could occur. Always plug open fittings immediately after removing any refrigeration cycle parts.

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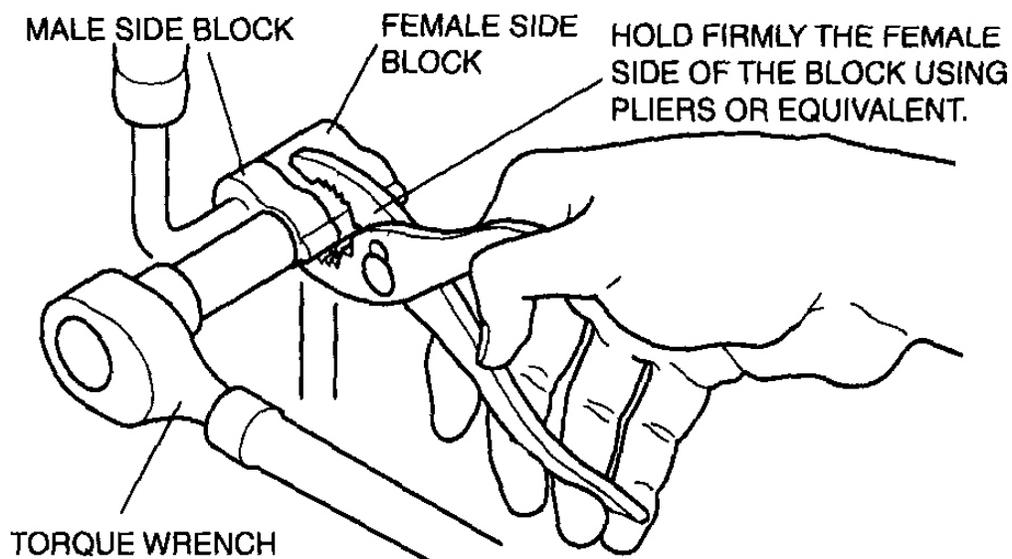
1	Cooler pipe No.2 (HI)
2	Cooler pipe No.1 (HI)
3	Cooler pipe No.3 (LO)
4	Cooler hose (LO)
5	Cooler hose (HI)

Fig. 14: View Of Refrigerant Lines & Components (With Torque Specifications)
Courtesy of MAZDA MOTORS CORP.

8. Install in the reverse order of removal.
9. Perform the refrigerant system performance test. (See **REFRIGERANT SYSTEM PERFORMANCE TEST** .)

REFRIGERANT LINE REMOVAL NOTE

1. Disconnect the block joint type pipes by grasping the female side of the block with pliers or similar tool and holding firmly, and then remove the connection bolt or nut.

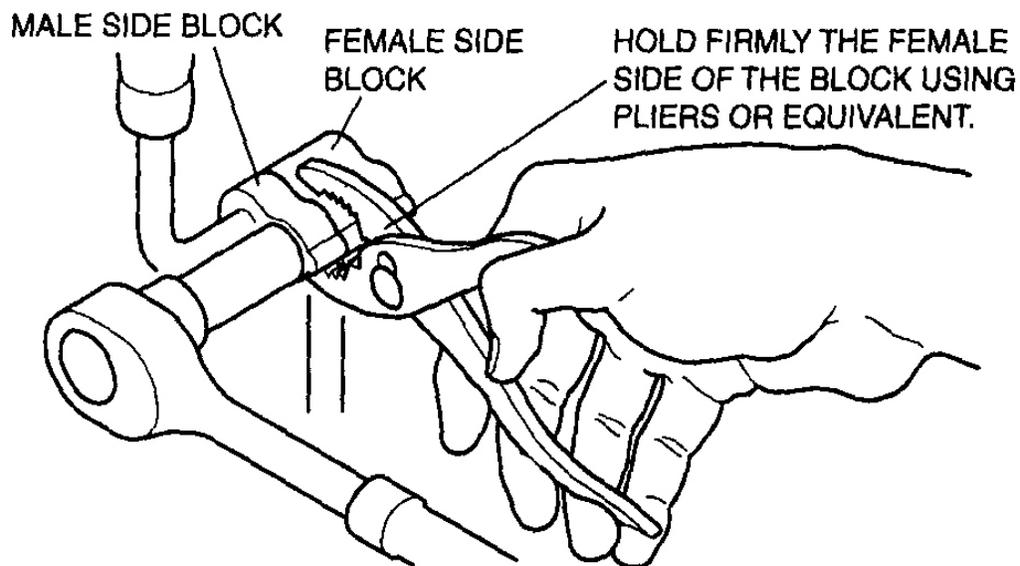


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Fig. 15: Disconnecting Block Joint Type Pipes
Courtesy of MAZDA MOTORS CORP.

REFRIGERANT LINE INSTALLATION NOTE

1. Temporarily tighten the joint bolt by hand.
2. Connect the block joint type pipes by grasping the female side of the block with pliers or similar tool and holding firmly, and then tighten the connection bolt or nut with a torque wrench.



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Fig. 16: Connecting Block Joint Type Pipes
Courtesy of MAZDA MOTORS CORP.