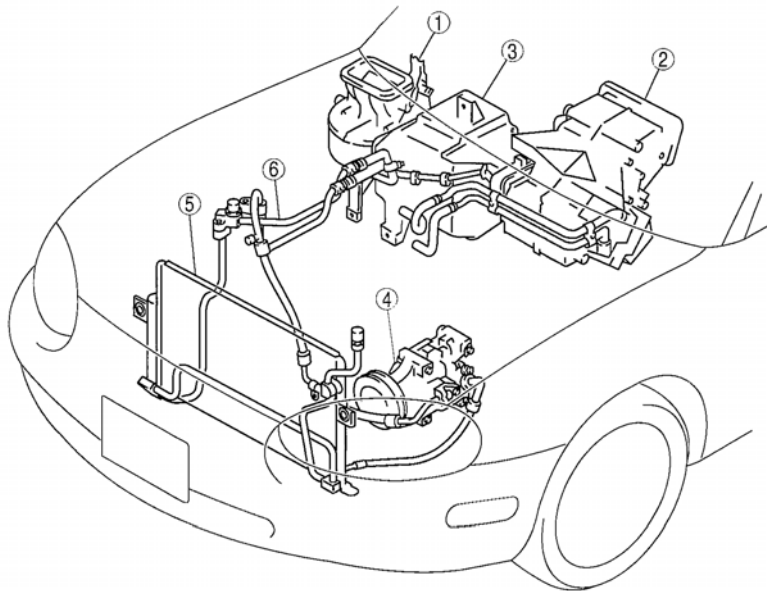


2005 HVAC

Basic System - MX-5 Miata

BASIC SYSTEM LOCATION INDEX



1	Blower unit (See BLOWER UNIT REMOVAL/ INSTALLATION.) (See BLOWER UNIT DISASSEMBLY/ ASSEMBLY.)
2	Heater unit (See HEATER UNIT REMOVAL/ INSTALLATION.) (See HEATER UNIT DISASSEMBLY/ ASSEMBLY.)
3	Cooling unit (See COOLING UNIT REMOVAL/ INSTALLATION.) (See COOLING UNIT DISASSEMBLY/ ASSEMBLY.)

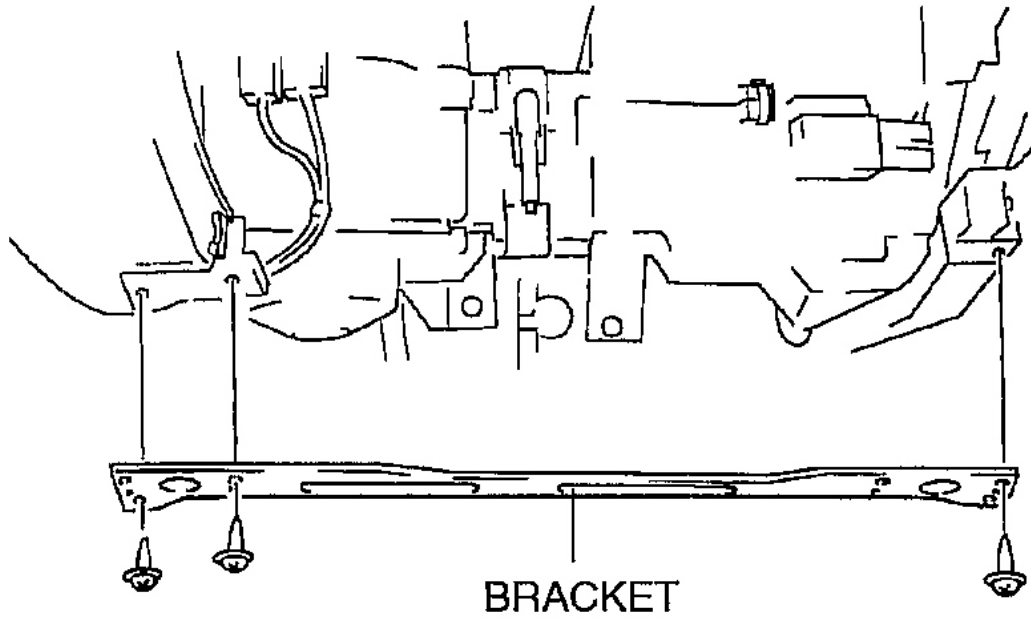
4	A/C compressor (See A/C COMPRESSOR REMOVAL/ INSTALLATION.)
5	Condenser (See CONDENSER REMOVAL/ INSTALLATION.) (See CONDENSER INSPECTION.)
6	Refrigerant lines (See REFRIGERANT LINES REMOVAL/ INSTALLATION.)

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

BLOWER UNIT REMOVAL/INSTALLATION

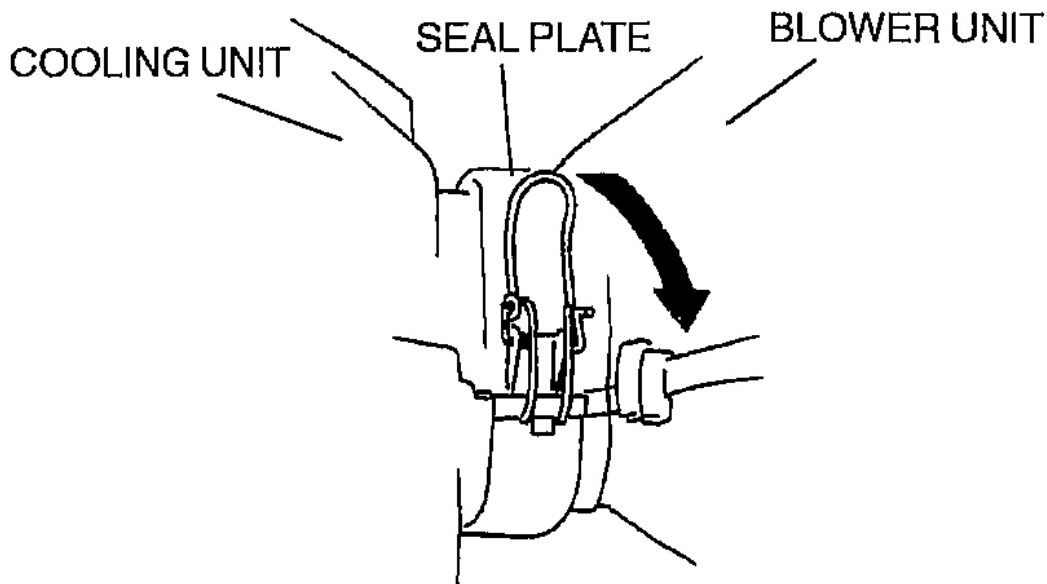
1. Disconnect the negative battery cable.
2. Remove the glove compartment.
3. Remove the bracket.



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Fig. 2: Removing Bracket
Courtesy of MAZDA MOTORS CORP.

4. Remove the seal plate.

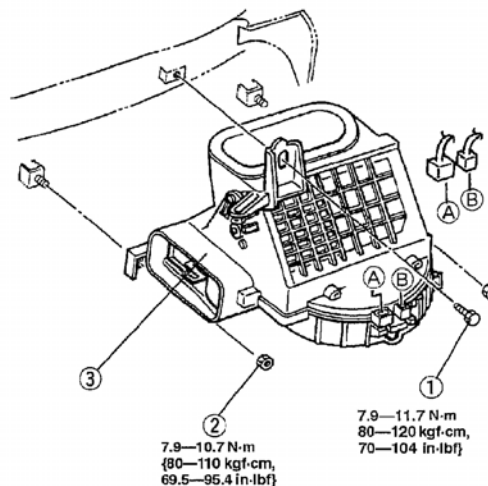


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Fig. 3: Removing Seal Plate
 Courtesy of MAZDA MOTORS CORP.

5. Remove in the order indicated in the table.

1	Bolt
2	Nut
3	Blower unit



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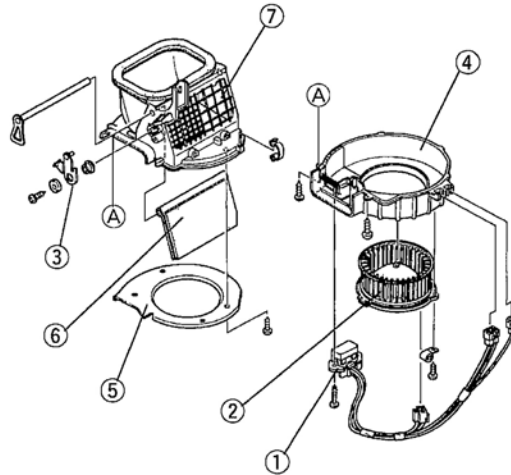
Fig. 4: Removing Blower Unit Bolts - With Torque Specifications
 Courtesy of MAZDA MOTORS CORP.

6. Install in the reverse order of removal.

BLOWER UNIT DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.

1	Resistor
2	Blower motor
3	Air intake link
4	Case (bottom)
5	Air guider
6	Air intake door
7	Case (top)



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Fig. 5: Disassembling Blower Unit
 Courtesy of MAZDA MOTORS CORP.

2. Assemble in the reverse order of disassembly.

COOLING UNIT REMOVAL/INSTALLATION

1. Discharge the refrigerant from the system. (See **REFRIGERANT CHARGING** .)
2. Disconnect the negative battery cable.
3. Remove the glove compartment.
4. Disconnect cooler pipe No.1 and No.2. (See **REFRIGERANT LINES REMOVAL NOTE.**) (See **REFRIGERANT LINES INSTALLATION NOTE.**)

CAUTION:

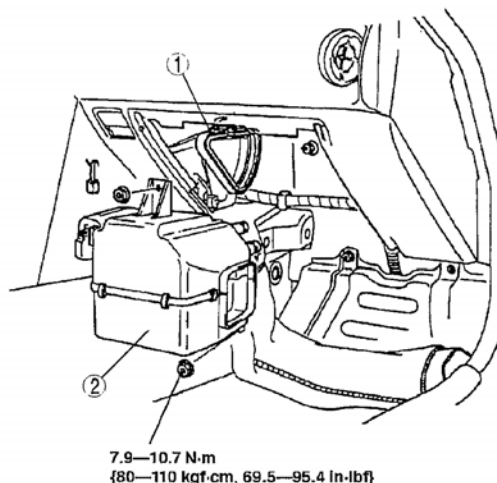
- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.

5. Remove in the order indicated in the table. Do not allow compressor oil to spill.

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1	Seal plate
2	Cooling unit (See Cooling Unit Installation Note.)



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Fig. 6: Removing Cooling Unit - With Torque Specifications
Courtesy of MAZDA MOTORS CORP.

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

COOLING UNIT INSTALLATION NOTE

1. When installing a new cooling unit, add DENSO OIL8 compressor oil into the refrigeration cycle.

Supplemental amount (approx.quantity)

40 ml {40 cc, 1.4 fl oz}

COOLING UNIT DISASSEMBLY/ASSEMBLY

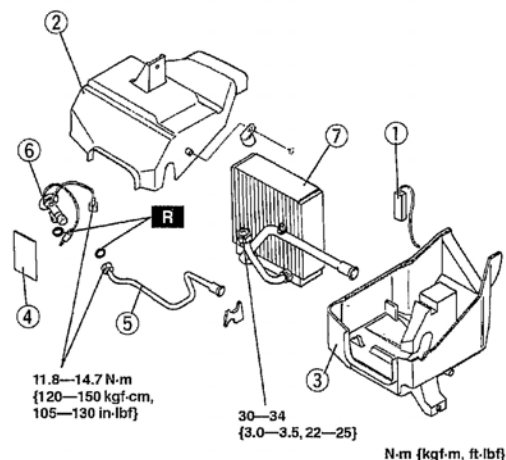
- CAUTION:**
- If moisture of foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.

1. Disassemble in the order indicated in the table.

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1	Thermoswitch (See Thermoswitch Assembly Note.)
2	Case (top)
3	Case (bottom)
4	Tar patty
5	Pipe
6	Expansion valve (See Expansion Valve Assembly Note.)
7	Evaporator (See Evaporator Assembly Note.)



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Fig. 7: Disassembling Cooling Unit - With Torque Specifications
Courtesy of MAZDA MOTORS CORP.

2. Assemble in the reverse order of disassembly.

EVAPORATOR ASSEMBLY NOTE

1. When installing a new evaporator, add DENSO OIL8 compressor oil into the refrigeration cycle.

Supplemental amount (approx.quantity)

40 ml {40 cc, 1.4 fl oz}

EXPANSION VALVE ASSEMBLY NOTE

1. Apply compressor oil to the O-rings and connect the joints.
2. Install the heat-sensing tube to its proper position.

THERMOSWITCH ASSEMBLY NOTE

1. Insert the thermoswitch probe in location as shown in **Fig. 8**.

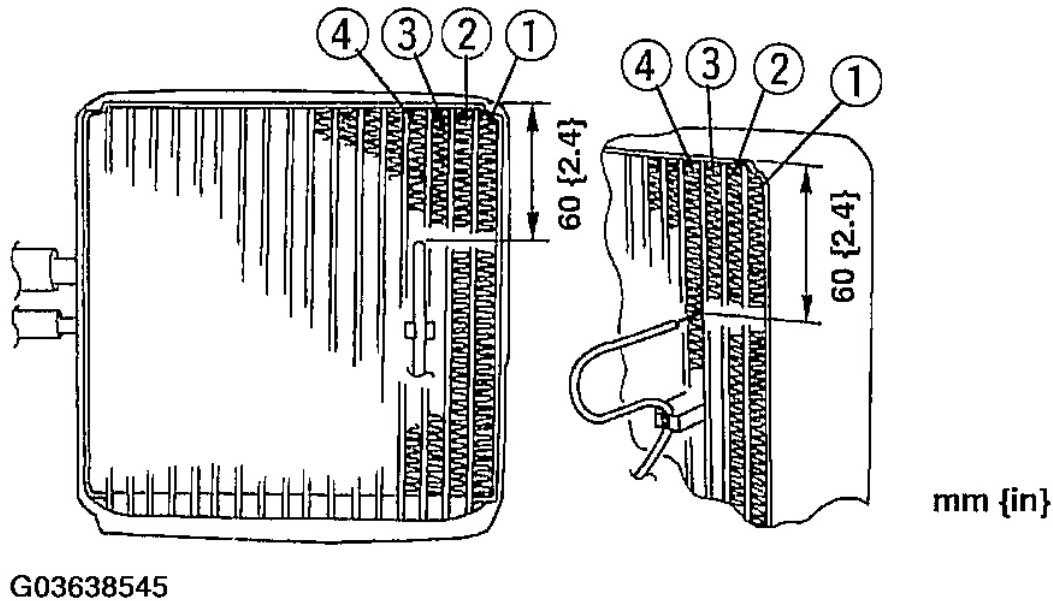


Fig. 8: Identifying Thermoswitch Assembly
 Courtesy of MAZDA MOTORS CORP.

EVAPORATOR INSPECTION

1. Inspect for cracks, damage, and oil leakage. If any are found, replace the evaporator.
2. Inspect for bent fins.
 - If any are bent, use a flathead screwdriver to straighten them.

HEATER UNIT REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Drain the engine coolant. (See **ENGINE COOLANT REPLACEMENT** .)
3. Remove the dashboard. (See **DASHBOARD REMOVAL/INSTALLATION** .)
4. Remove the seal plate.

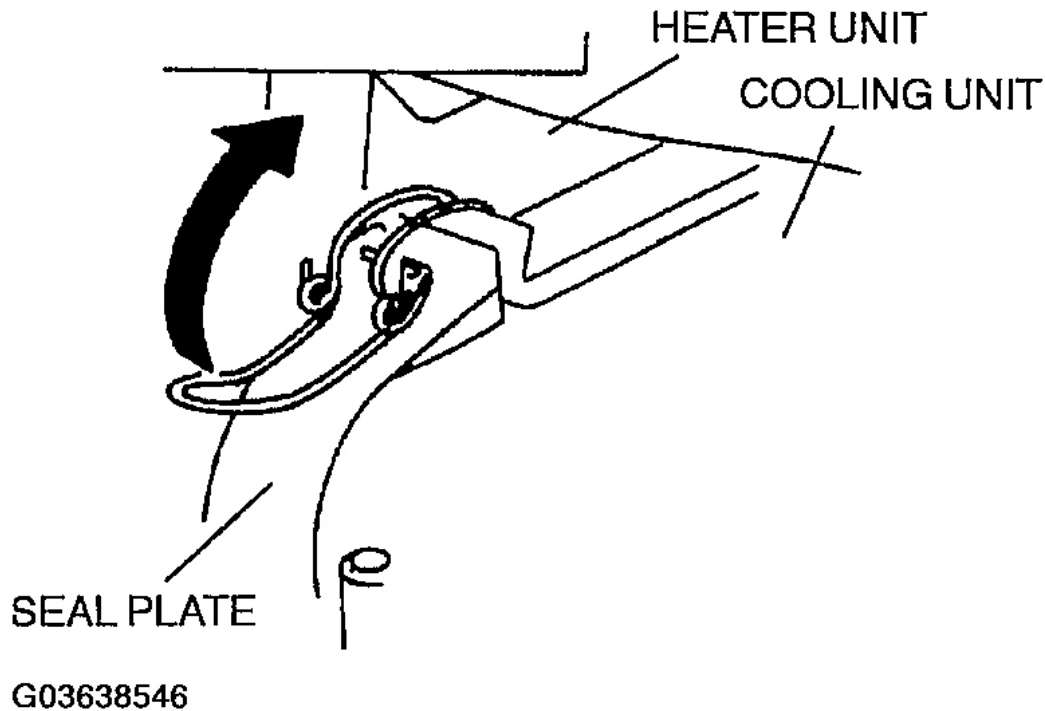
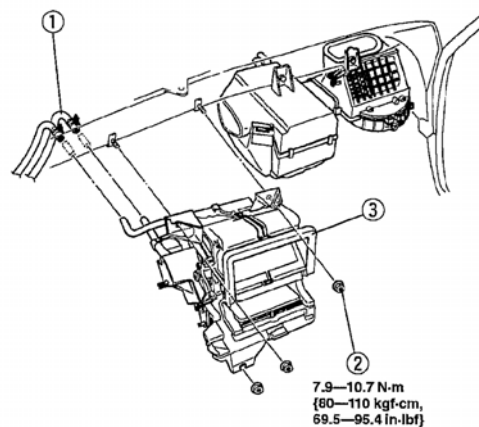


Fig. 9: Removing Seal Plate
Courtesy of MAZDA MOTORS CORP.

5. Remove in the order indicated in the table.

1	Heater hose
2	Nut
3	Heater unit



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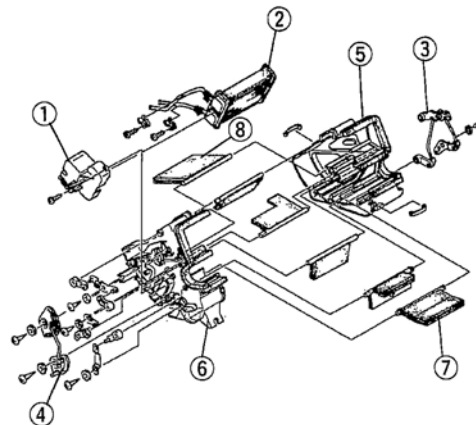
Fig. 10: Removing Heater Unit - With Torque Specifications
Courtesy of MAZDA MOTORS CORP.

6. Install in the reverse order of removal.
7. Refill the engine coolant. (See **ENGINE COOLANT REPLACEMENT** .)

HEATER UNIT DISASSEMBLY/ASSEMBLY

1. Disassemble in the order indicated in the table.

1	Cover
2	Heater core
3	Air mix link
4	Airflow mode link
5	Case (RH)
6	Case (LH)
7	Air mix door
8	Airflow mode door



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Fig. 11: Disassembling Heater Unit
 Courtesy of MAZDA MOTORS CORP.

2. Assemble in the reverse order of disassembly.

HEATER CORE INSPECTION

1. Inspect for cracks, damage, and coolant leakage.
 - If any are found, replace the heater core.
2. Inspect for bent fins.
 - If any are bent, use a flathead screwdriver to straighten them.
3. Verify that the heater core inlet and outlet are not distorted or damaged. Repair with pliers if necessary.

A/C COMPRESSOR REMOVAL/INSTALLATION

1. Discharge the refrigerant from the system. (See **REFRIGERANT CHARGING** .)
2. Disconnect the negative battery cable.
3. Remove the under cover.
4. Remove the drive belt (P/S+A/C).

CAUTION: • If moisture or foreign material enters the refrigeration cycle,

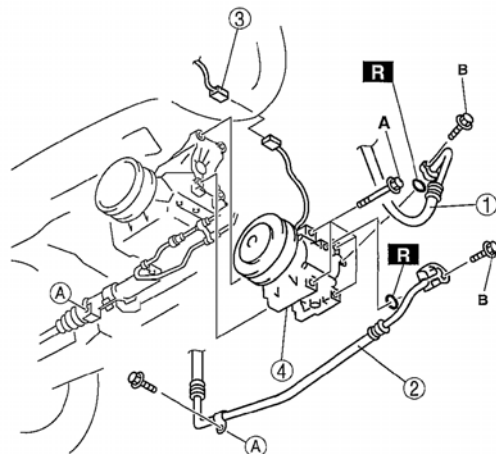
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cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.

5. Remove in the order indicated in the table. Do not allow compressor oil to spill.

1	Flexible hose (HI) (See Refrigerant Lines Removal Note.) (See Refrigerant Lines Installation Note.)
2	Flexible hose (LO) (See Refrigerant Lines Removal Note.) (See Refrigerant Lines Installation Note.)
3	Connector
4	A/C compressor (See A/C Compressor Installation Note.)



A: 11.8—14.6 N·m (1.3—1.4 kgf·m, 8.8—10.8 ft·lbf)
B: 7.9—10.7 N·m (80—110 kgf·cm, 69.5—95.4 in·lbf)

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Fig. 12: Removing A/C Compressor - With Torque Specifications
Courtesy of MAZDA MOTORS CORP.

6. Install in the reverse order of removal.
7. Adjust the drive belt (P/S+A/C). (See **DRIVE BELT ADJUSTMENT** .)
8. Perform 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 collecting 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 collecting refrigerant oil in a separate, clean measuring device.

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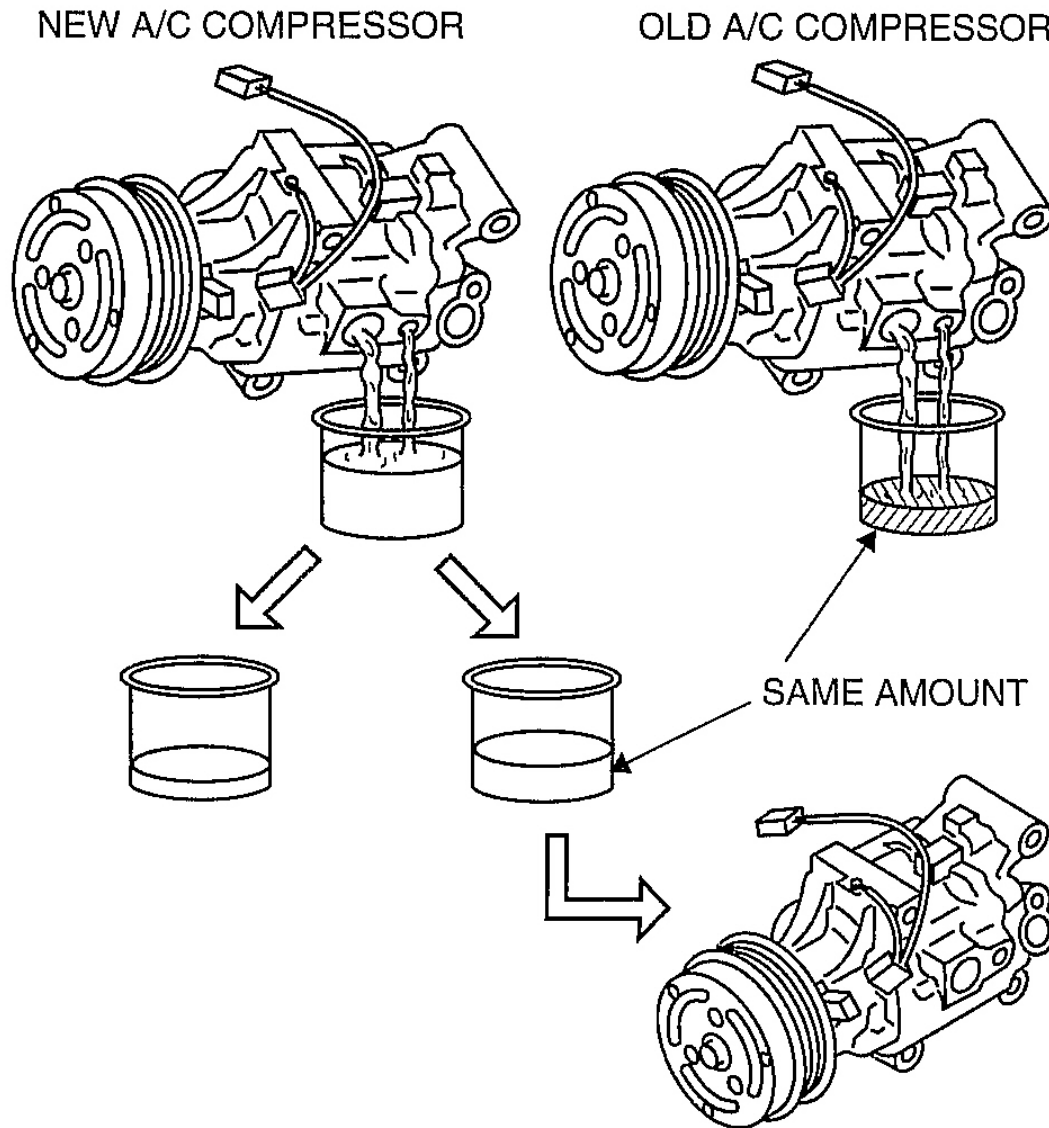
3. Compare those oil amounts. The amount of the oil drained from the new A/C compressor should be greater than the old one.
4. Pour the same amount oil of drained from the old A/C compressor back into the new A/C compressor.

A/C compressor oil type

DENSO OIL8

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

60 ml {60 cc, 2.03 fl oz}



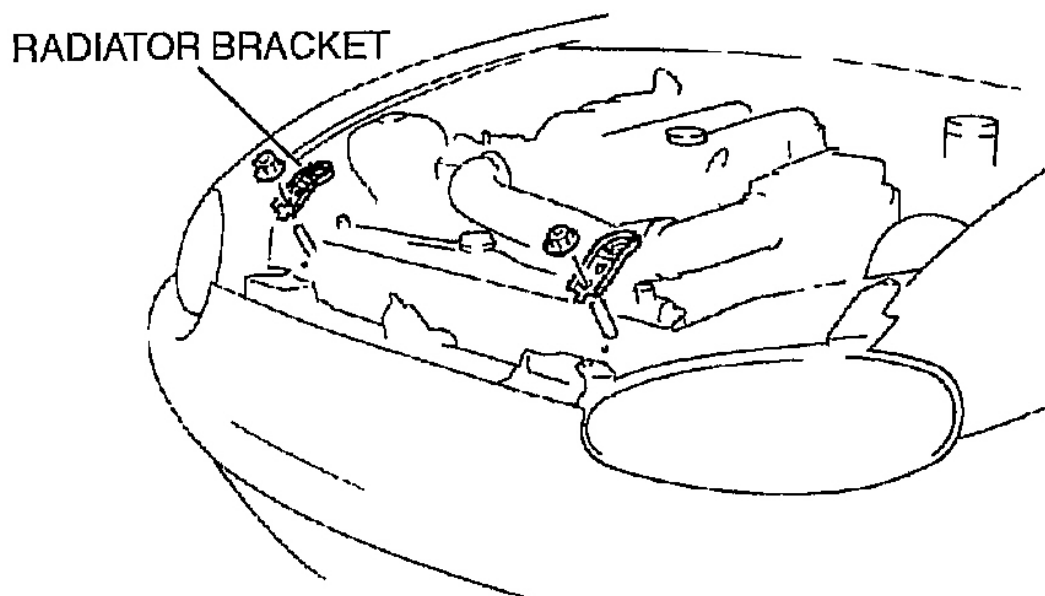
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Fig. 13: Exchanging A/C Compressor Oil
Courtesy of MAZDA MOTORS CORP.

CONDENSER REMOVAL/INSTALLATION

1. Discharge the refrigerant from the system. (See **REFRIGERANT CHARGING** .)
2. Disconnect the negative battery cable.
3. Remove the cooling fan. (See **RADIATOR REMOVAL/INSTALLATION [BP]** .) (See **RADIATOR REMOVAL/INSTALLATION [BP WITH TC]** .)

4. Remove the condenser fan. (See **CONDENSER FAN REMOVAL/INSTALLATION** .)
5. Remove the radiator brackets.



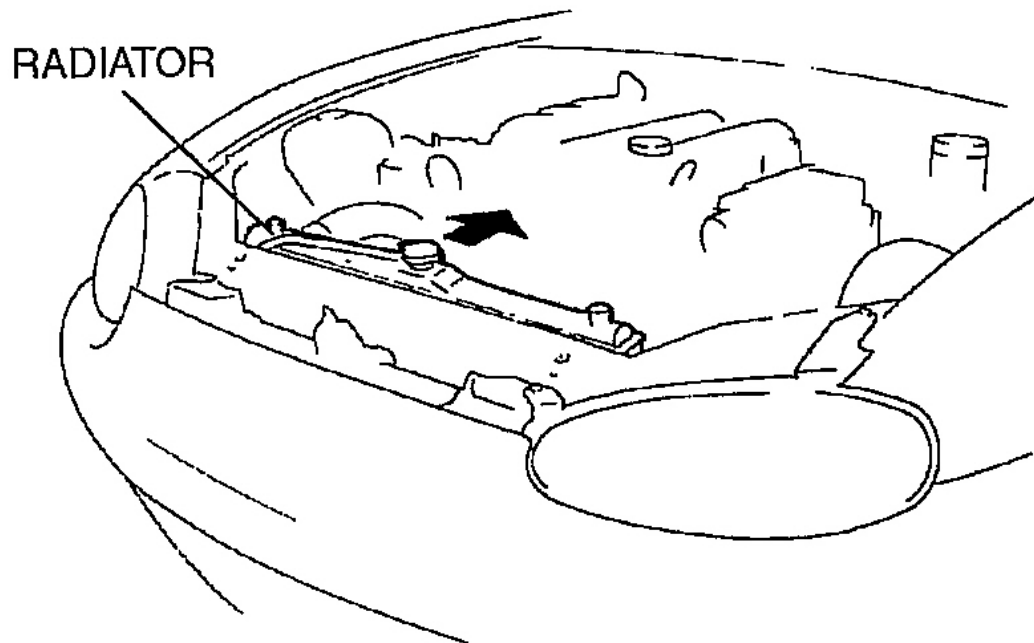
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Fig. 14: Removing Radiator Brackets
Courtesy of MAZDA MOTORS CORP.

6. Keep pushing the radiator fully backward to remove the condenser.

CAUTION:

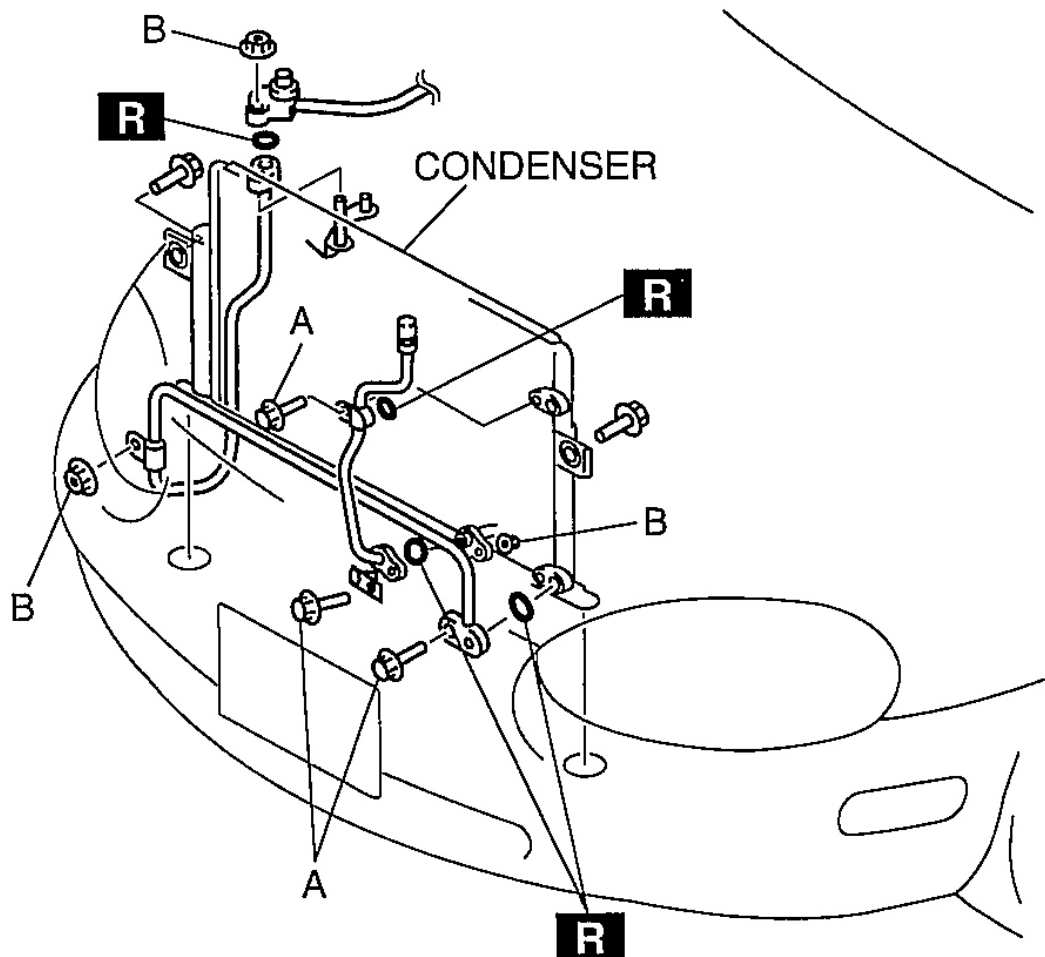
- If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.



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Fig. 15: Identifying Radiator
Courtesy of MAZDA MOTORS CORP.

7. Remove the splash shield.
8. Remove the condenser. Do not allow compressor oil to spill. (See **CONDENSER INSTALLATION NOTE.**)



A:7.9—10.7 N·m {80—110 kgf·cm, 69.5—95.4 in·lbf}
 B:8.9—12.7 N·m {90—130 kgf·cm, 79—112 in·lbf}

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Fig. 16: Removing Condenser - With Torque Specifications
 Courtesy of MAZDA MOTORS CORP.

9. Install in the reverse order of removal.
10. Perform the refrigerant system performance test.

(See **REFRIGERANT SYSTEM PERFORMANCE TEST** .)

CONDENSER INSTALLATION NOTE

1. When installing a new condenser, add DENSO OIL8 compressor oil into the refrigeration cycle.

Supplemental amount (approx.quantity)

30 ml {30 cc, 1.0 fl oz}

CONDENSER INSPECTION

1. Inspect for cracks, damage, and oil leakage.
 - If any are found, replace the condenser.
2. Inspect for fins clogged by dust.
 - If any are clogged, remove the dust from the fins.
3. Inspect for bent fins.
 - If any are bent, use a flathead screwdriver to straighten them.

REFRIGERANT LINES REMOVAL/INSTALLATION

1. Discharge the refrigerant from the system. (See **REFRIGERANT CHARGING** .)
2. Disconnect the negative battery cable.
3. Remove the under cover.

CAUTION:

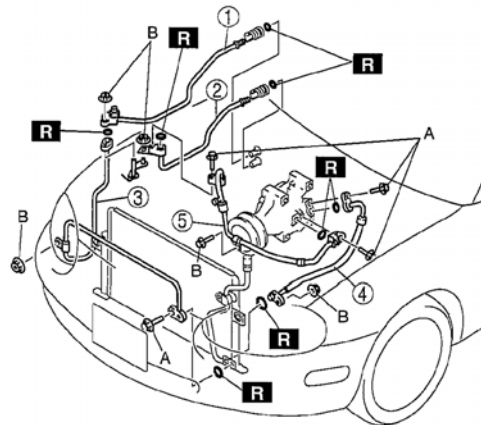
- **If moisture or foreign material enters the refrigeration cycle, cooling ability will be lowered and abnormal noise will occur. Always immediately plug all open fittings after removing any refrigeration cycle parts to keep moisture or foreign material out of the cycle.**
- **To prevent the pipe from breaking, loosen the joint using two open-end wrenches.**

4. Remove in the order indicated in the table.

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1	Cooler pipe No.1 (See Refrigerant Lines Removal Note.) (See Refrigerant Lines Installation Note.)
2	Cooler pipe No.2 (See Refrigerant Lines Removal Note.) (See Refrigerant Lines Installation Note.)
3	Cooler pipe No.3 (See Refrigerant Lines Installation Note.)
4	Flexible hose (HI) (See Refrigerant Lines Installation Note.)
5	Flexible hose (LO) (See Refrigerant Lines Installation Note.)



A:7.9—10.7 N·m {80—110 kgf·cm, 69.5—95.4 in·lbf}
B:8.9—12.7 N·m {90—130 kgf·cm, 79—112 in·lbf}

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Fig. 17: Removing Refrigerant Lines - With Torque Specifications
Courtesy of MAZDA MOTORS CORP.

5. Install in the reverse order of removal.
6. Perform the refrigerant system performance test.

(See **REFRIGERANT SYSTEM PERFORMANCE TEST** .)

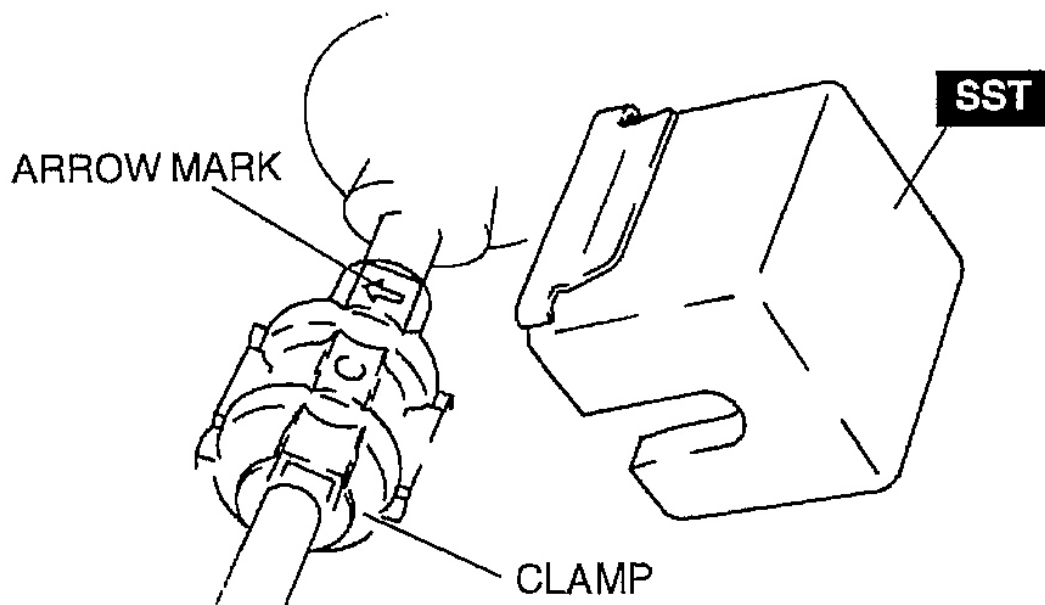
REFRIGERANT LINES REMOVAL NOTE

NOTE:

- There are two types of SSTs:

49 N061 001 (high-pressure) and 49 N061 002 (low-pressure).

1. Set the **SST** into the clamp with the arrow mark on the clamp facing the **SST** .



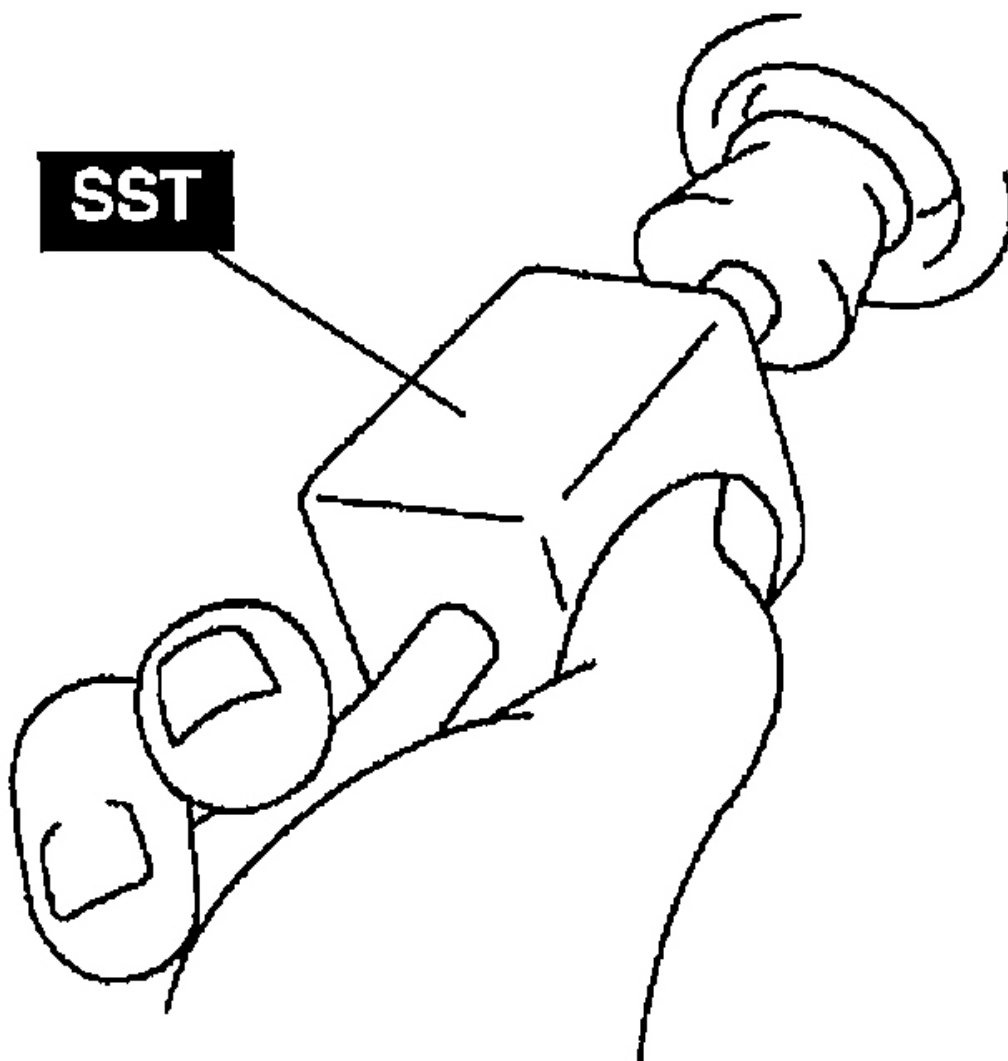
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Fig. 18: Setting SST Into Clamp
Courtesy of MAZDA MOTORS CORP.

2. Push the SST with your thumb until the clamp clicks.

CAUTION:

- If the SST is pushed with excessive force, the clamp will deform. Be careful when pushing the SST into the clamp.



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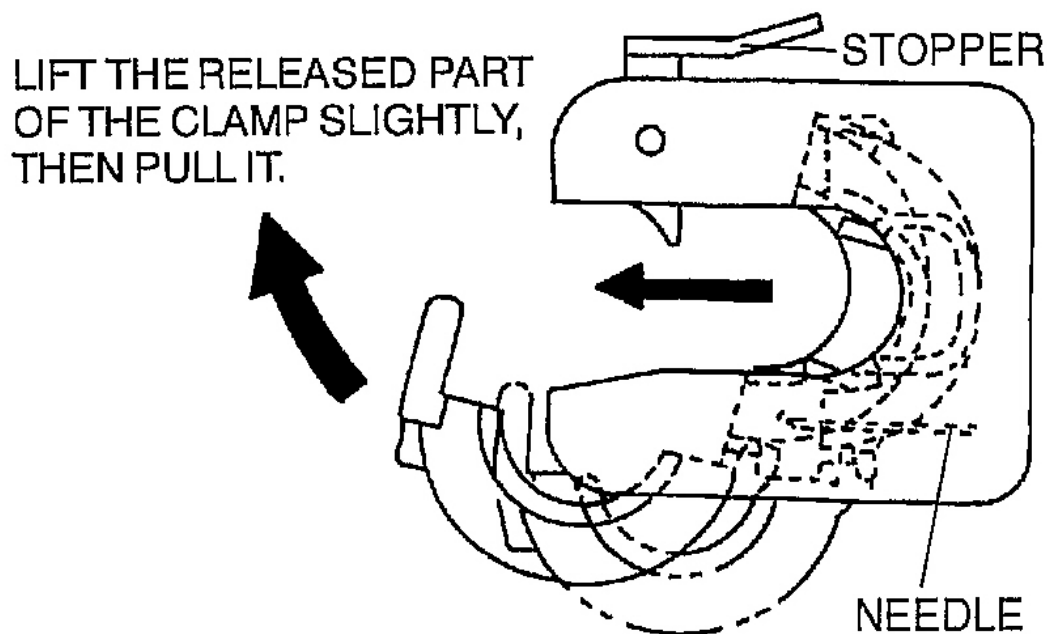
Fig. 19: Pushing SST With Your Thumb
Courtesy of MAZDA MOTORS CORP.

3. Pull up the stopper, then pull the SST from the pipe.
4. Remove the SST from the clamp.

CAUTION:

- Be careful not to bend the SST needles when performing a clamp removal. If the needles are bent, the clamp can not be

unlocked.



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Fig. 20: Removing SST
Courtesy of MAZDA MOTORS CORP.

REFRIGERANT LINES INSTALLATION NOTE

1. Apply compressor oil to the O-rings and connect the joints.
2. When installing a new cooler hose or pipe add DENSO OIL8 compressor oil into the refrigeration cycle.

Supplemental amount (approx.quantity)

10 ml {10 cc, 0.3 fl oz}

3. Tighten the joints.
 1. Tighten the nut or bolt of the joint by hand.
 2. Tighten the joint to the specified torque.
 - If it is a nut joint, tighten the nut using a spanner and torque wrench.