

# B6 COOLING SYSTEM

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# B6-1

## 1KR 1 THERMOSTAT

### 1-1 REMOVAL AND INSTALLATION

#### WARNING

- Do not remove the radiator cap or drain plug when the coolant is hot.

#### 1-1-1 ARTICLES TO BE PREPARED

Instrument

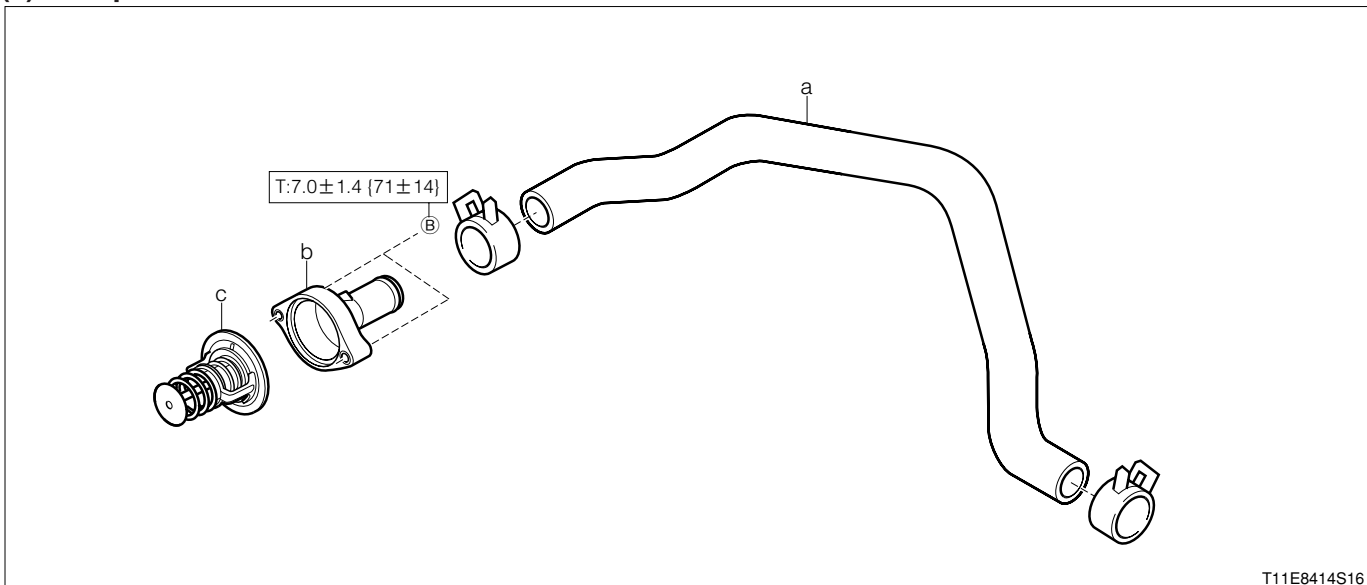
Torque wrench

#### 1-1-2 OPERATION BEFORE REMOVAL

1. Drain the coolant.

#### 1-1-3 REMOVAL AND INSTALLATION PROCEDURES

##### (1) Components



Unit: N·m {kgf·cm}

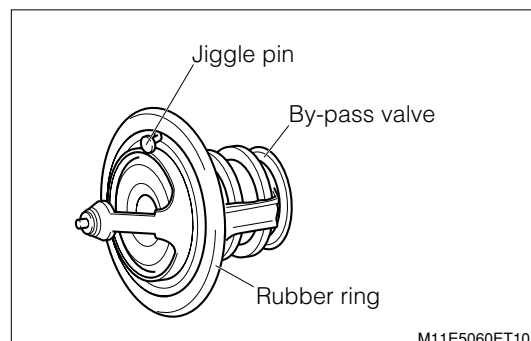
##### (2) Removal and installation procedures

- 1 a Hose, radiator No.2
- ▲ 2 b Inlet, water
- ▲ 3 c Thermostat

#### 1-1-4 INSPECTION

##### (1) Visual inspection

1. With the valve closed completely at a room temperature (20°C), ensure that the spring has a play.
2. Check the rubber ring for damage.
3. Check if the bypass valve and jiggle pin move smoothly.



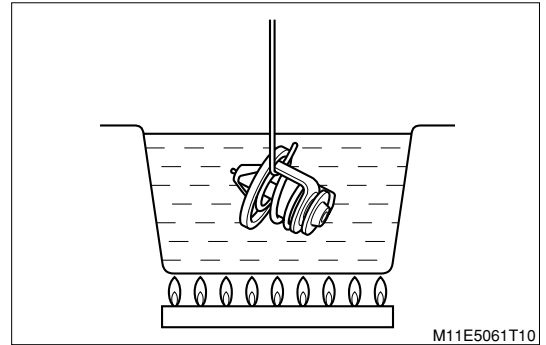
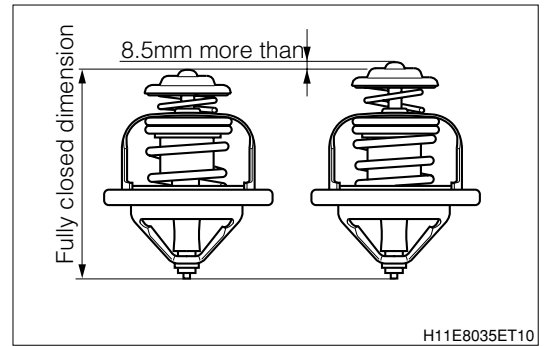
**(2) Open valve temperature check**

1. Measure the fully-closed dimensions before heating.
2. Put the thermostat in water and raise the water temperature gradually. Measure the temperature at the point when the valve starts to open.

**SPECIFIED VALUE:  $82 \pm 2.0^{\circ}\text{C}$**

3. Further raise the temperature and pull out the thermostat at  $95^{\circ}\text{C}$  or above. Quickly measure the lift amount of the bypass valve.

**SPECIFIED VALUE: 8.5mm or more**



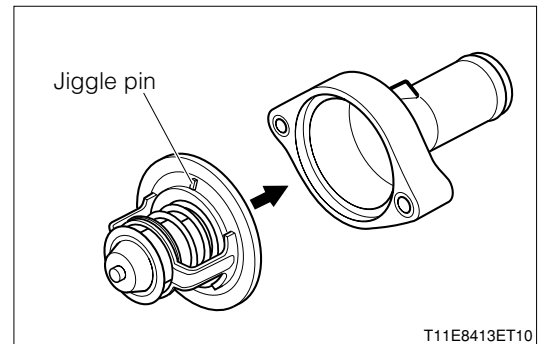
**1-1-5 POINTS OF INSTALLATION**

**(1) Thermostat, water inlet**

1. Assemble the thermostat to the water inlet as shown in the right figure.

**CAUTION**

- Assemble the water inlet to the cylinder head so that the jiggle pin of the thermostat will come to the upper side.



**1-1-6 OPERATION AFTER INSTALLATION**

1. Fill coolant and perform the water leakage check.  
Refer to Page B1-2.

## 2 WATER PUMP

### 2-1 REMOVAL AND INSTALLATION

Instrument

Torque wrench

#### 2-1-1 OPERATION BEFORE REMOVAL

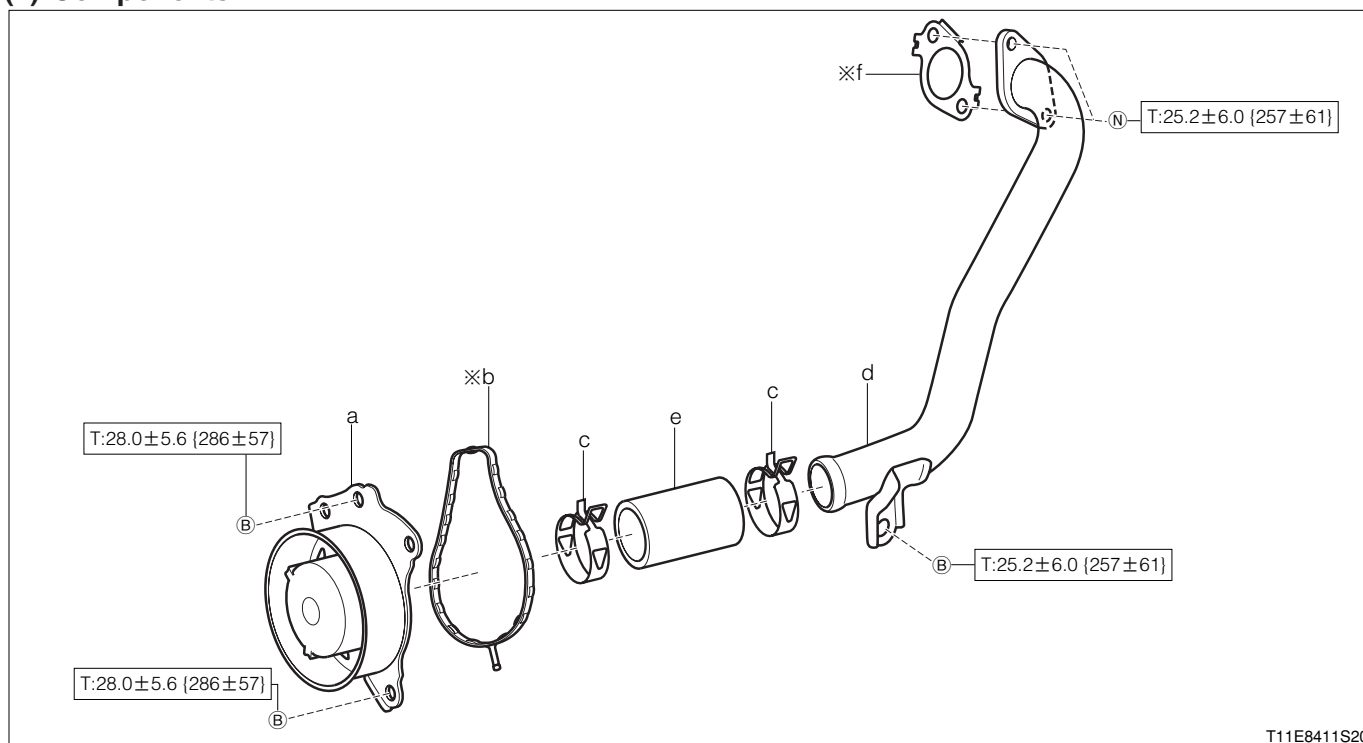
- 1.Remove the disc wheel. (Front)
- 2.Remove the engine under cover.
- 3.Drain the coolant.
- 4.Remove the exhaust manifold converter S/A. (Only when removing and installing the water bypass pipe)

Refer to Page B4-1.

- 5.Remove the V-ribbed belt

#### 2-1-2 REMOVAL AND INSTALLATION PROCEDURES

##### (1) Components



※:Non - reusable parts

Unit:N·m[kgf·cm]

##### (2) Removal and installation procedures

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>▲ 1 a Pump Ay, water</li> <li>2 b Gasket, water pump</li> <li>3 c Clip</li> <li>▲ 4 d Pipe, water by-pass</li> <li>5 e Hose, water by-pass</li> </ul> | <ul style="list-style-type: none"> <li>▲ 6 f Gasket</li> </ul> |
|--|--|

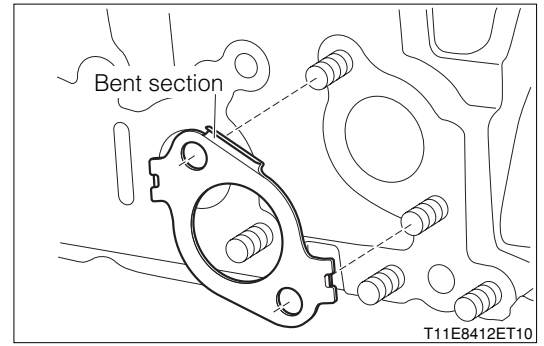
#### 2-1-3 INSPECTION

- 1.Check if the pulley rotates smoothly by turning it with hand.
- 2.Check the blades of the pump Ay for deformation and wear.

## 2-1-4 POINTS OF INSTALLATION

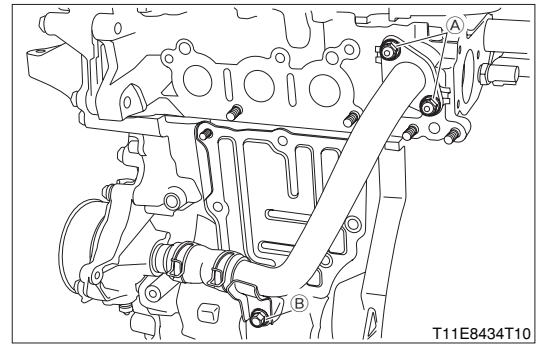
### (1) Gasket

1. Install the gasket as shown in the right figure.



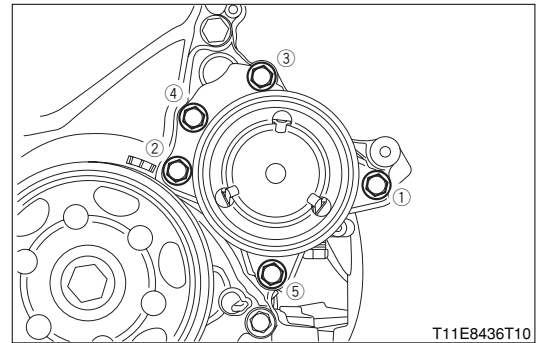
### (2) Pipe, water by-pass

1. Temporarily tighten the bolt ⑥ to set the stay to the block.
2. After tightening the nut ⑤, connect the pipe by tightening the bolt ⑥.



### (3) Pump Ay, water

1. Clean the installation section of the pump Ay. Then, install the water pump gasket.
2. Install the pump Ay by tightening the bolts in the sequence shown in the right figure.



## 2-1-5 OPERATION AFTER INSTALLATION

1. Install the V-ribbed belt and adjust the belt tension.  
Refer to Page B1-5.
2. Install the exhaust manifold converter S/A. (Only when removing or installing the water bypass pipe)  
Refer to Page B4-1.
3. Install the engine under cover.
4. Install the disc wheel. (Front)
5. Fill coolant and perform the water leakage check.  
Refer to Page B1-2.

## 3 RADIATOR

### 3-1 REMOVAL AND INSTALLATION

#### 3-1-1 ARTICLES TO BE PREPARED

Instrument

Torque wrench
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#### 3-1-2 OPERATION BEFORE REMOVAL

##### WARNING

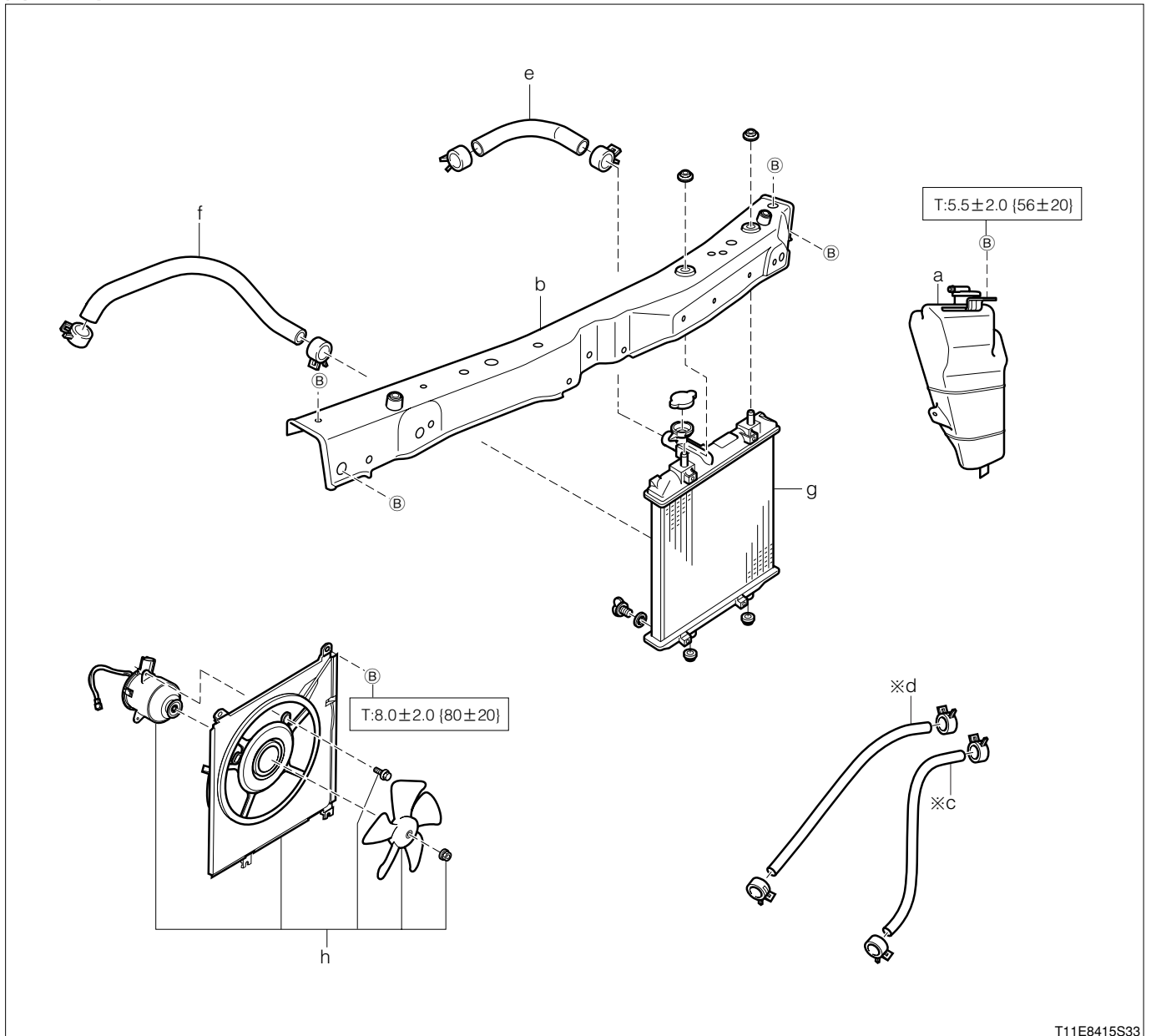
- Do not remove the radiator cap or drain plug when the coolant is hot.

1. Drain the coolant.
2. Drain the transaxle oil.
3. Disconnect the negative (-) terminal of the battery.
4. Remove the front bumper cover.

Refer to Page I2-2.

3-1-3 REMOVAL AND INSTALLATION PROCEDURES

(1) Components



※:Non - reusable parts  
Unit:N·m{kgf·cm}

(2) Removal and installation procedures

- |     |                                |       |                      |
|-----|--------------------------------|-------|----------------------|
| 1   | a Tank Ay, radiator reserve    | ▲ 6   | f Hose,radiator No.2 |
| 2   | b Radiator support upper       | ▼ ▲ 7 | g Radiator Ay        |
| ▲ 3 | c Hose, oil cooler inlet(A/T)  | ▲ 8   | h Fan Ay, w/motor    |
| ▲ 4 | d Hose, oil cooler outlet(A/T) |       |                      |
| ▲ 5 | e Hose, radiator No.1          |       |                      |

3-1-4 POINTS OF REMOVAL

(1) Radiator Ay

- 1.Disconnect the connector for the fan Ay with motor.
- 2.Remove the radiator Ay together with the fan Ay with motor

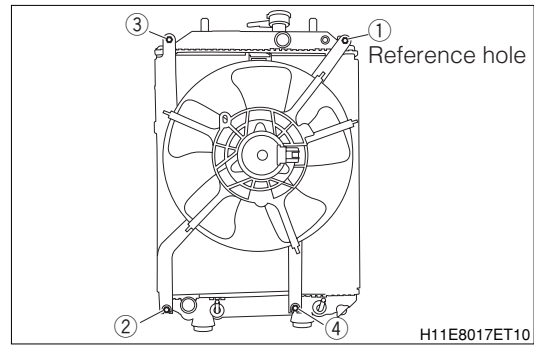
**CAUTION**

- Be careful not to scratch or damage the fin when removing the radiator Ay.

## 3-1-5 POINTS OF INSTALLATION

### (1) Fan Ay, w/motor

- 1.Install the fan Ay to the radiator Ay.
- 2.Temporarily tighten the bolt to the reference hole 1.
- 3.Tighten the bolts ②→③→④→① to the specified torque.

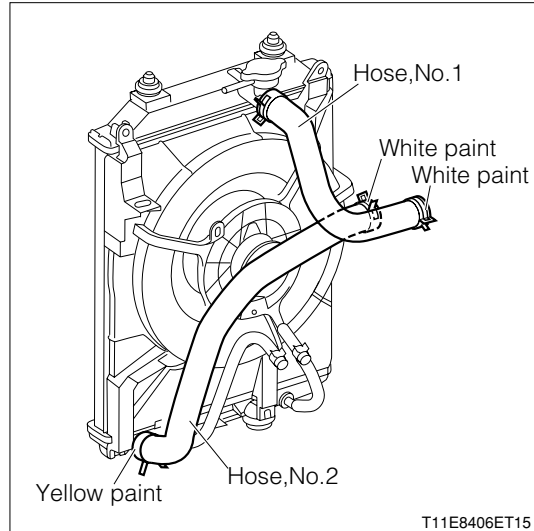


### (2) Radiator hose No.1, radiator hose No.2 (Radiator side)

- 1.Connect the hose No.1 at the radiator side to the radiator Ay.  
At this time, perform the installation in a such way that the tab of the clamp would face left of the vehicle.
- 2.Connect the hose No.2 at the radiator side to the radiator Ay so that its identification paint would face downward of the vehicle.  
At this time, perform the installation in a such way that the tab of the clamp would face downward of the vehicle.

#### Identification mark

Hose,No.1(Radiator side)	Not provided
Hose,No.2(Radiator side)	Yellow



### (3) Radiator Ay

- 1.Install the radiator Ay to the vehicle.

#### CAUTION

- Be very careful not to allow the vehicle harness to come in contact with the core (Including the tank staked section). (Water leakage will be caused by electro-corrosion.)
- Be careful not to scratch or damage the fin when removing the radiator Ay.

### (4) Radiator hose No.1, radiator hose No.2 (Engine side)

- 1.Connect the hose No.1 at the engine side so that its identification paint would face upward of the vehicle.  
At this time, perform the installation in a such way that the tab of the clamp would face upward of the vehicle.
- 2.Connect the hose No.2 at the engine side so that its identification paint would face upward of the vehicle.  
At this time, perform the installation in such a way that the tab of the clamp would not interfere with the EGR valve and heater hose.

#### Identification mark

Hose,No.1(Engine side)	White
Hose,No.2(Engine side)	White

### (5) Hose, oil cooler inlet and Hose, oil cooler outlet

Refer to Page F3-21.



**3-1-6 OPERATION AFTER INSTALLATION**

1. Install the front bumper cover.

Refer to Page I2-2.

2. Connect the negative (-) terminal of the battery.

3. Fill coolant and perform the water leakage check.

Refer to Page B1-2.

4. Replenish transaxle oil. After the engine has warmed up, check the fluid level.

## ■ K3

### 1 THERMOSTAT

#### 1-1 REMOVAL AND INSTALLATION

##### WARNING

- Do not remove the radiator cap or drain plug when the coolant is hot.

##### 1-1-1 ARTICLES TO BE PREPARED

Instrument

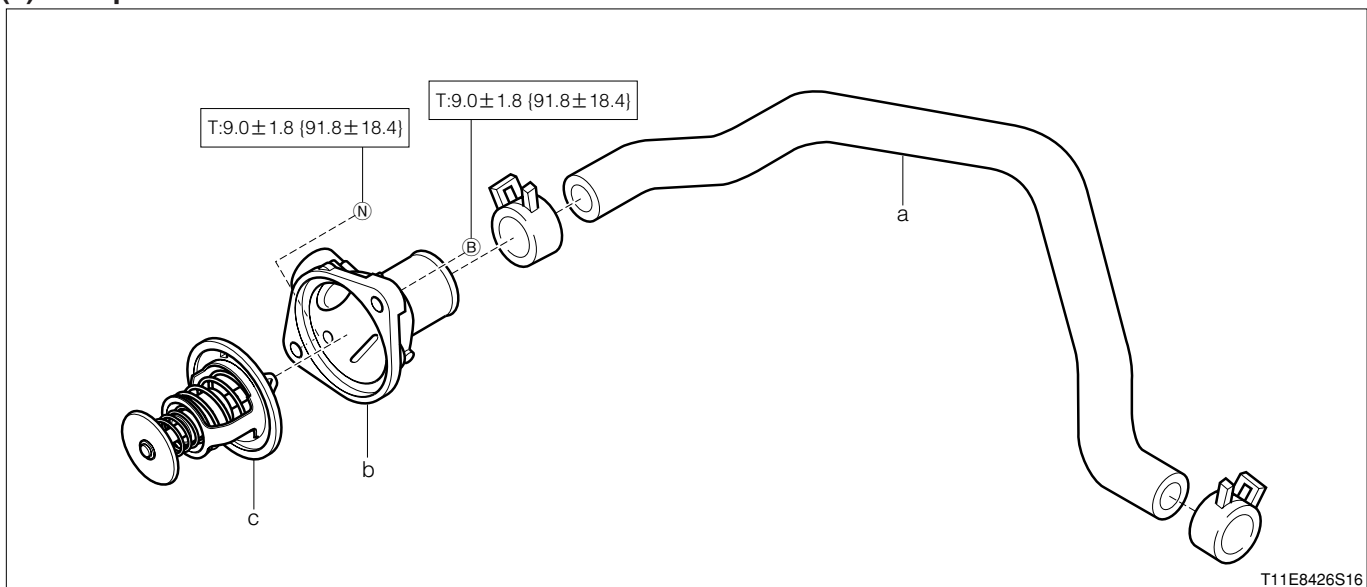
Torque wrench

##### 1-1-2 OPERATION BEFORE REMOVAL

1. Drain the coolant.

##### 1-1-3 REMOVAL AND INSTALLATION PROCEDURES

###### (1) Components



Unit:N·m{kgf·cm}

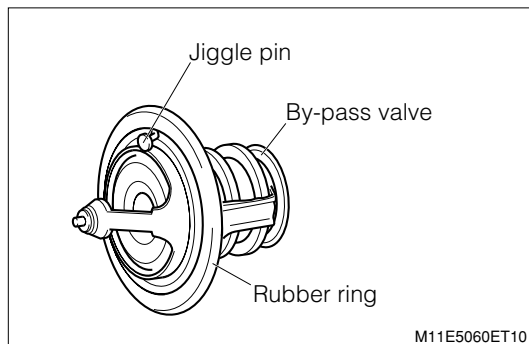
###### (2) Removal and installation procedures

- 1 a Hose,radiator No.2
- ▲ 2 b Inlet, water
- ▲ 3 c Thermostat

##### 1-1-4 INSPECTION

###### (1) Visual inspection

1. With the valve closed completely at a room temperature (20°C), ensure that the spring has a play.
2. Check the rubber ring for damage.
3. Check if the bypass valve and jiggle pin move smoothly.



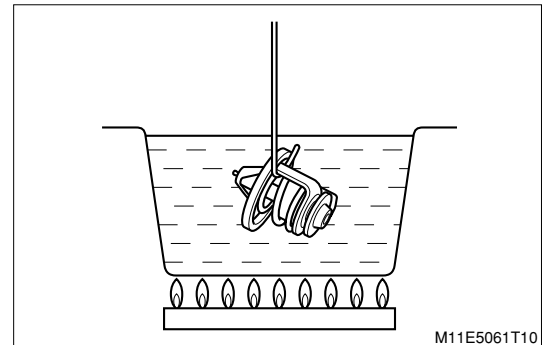
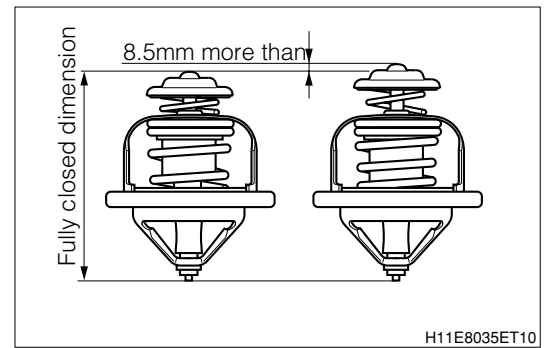
## (2) Open valve temperature check

1. Measure the fully-closed dimensions before heating.
2. Put the thermostat in water and raise the water temperature gradually. Measure the temperature at the point when the valve starts to open.

**SPECIFIED VALUE:  $80 \pm 2^{\circ}\text{C}$**

3. Further raise the temperature and pull out the thermostat at  $93^{\circ}\text{C}$  or above. Quickly measure the lift amount of the bypass valve.

**SPECIFIED VALUE: 8.5mm or more**



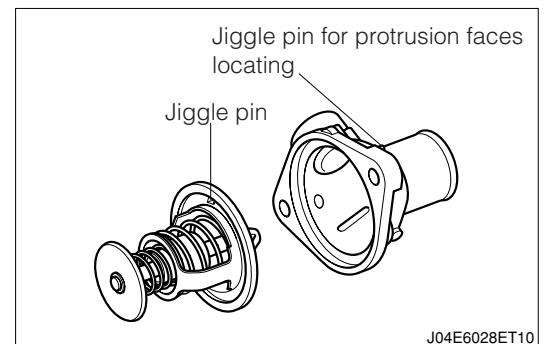
## 1-1-5 POINTS OF INSTALLATION

### (1) Thermostat, water inlet

1. Assemble the thermostat to the water inlet as shown in the right figure.

#### CAUTION

- Assemble the water inlet to the cylinder head so that the jiggle pin of the thermostat will come to the upper side.



## 1-1-6 OPERATION AFTER INSTALLATION

1. Fill coolant and perform the water leakage check.  
Refer to Page B1-18.

# B6-11

## 2 WATER PUMP

### 2-1 REMOVAL AND INSTALLATION

Instrument

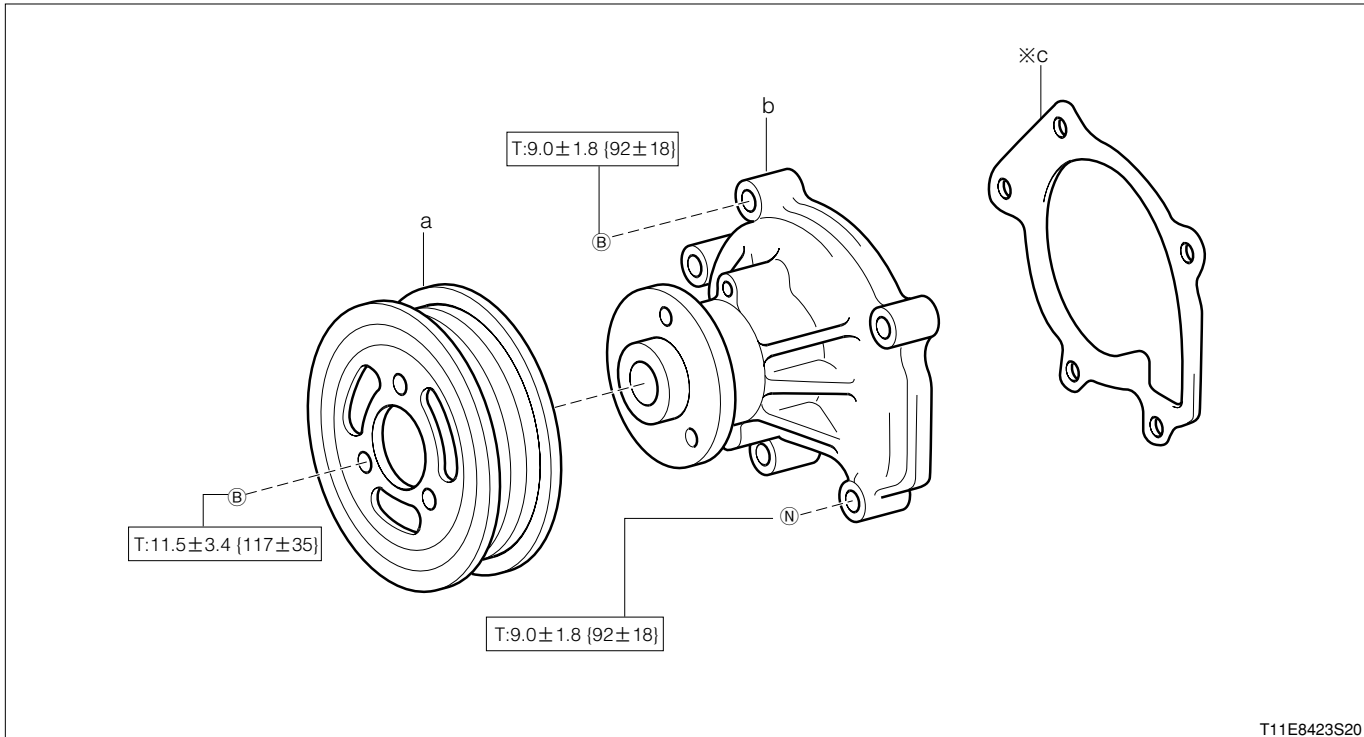
Torque wrench

#### 2-1-1 OPERATION BEFORE REMOVAL

- 1.Remove the disc wheel. (Front)
- 2.Remove the engine under cover.
- 3.Drain the coolant.
- 4.Remove the V-ribbed belt

#### 2-1-2 REMOVAL AND INSTALLATION PROCEDURES

##### (1) Components



※:Non - reusable parts

Unit:N·m{kgf·cm}

##### (2) Removal and installation procedures

- ▼ ▲ 1 a Pulley, water pump
- ▲ 2 b Pump Ay, water
- 3 c Gasket, water pump

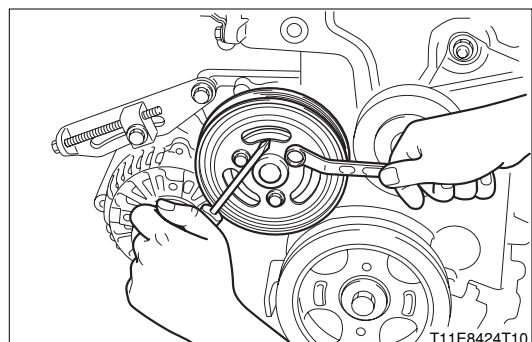
#### 2-1-3 INSPECTION

- 1.Check if the rotor rotates smoothly by turning it with hand.
- 2.Check the blades of the pump Ay for deformation and wear.

#### 2-1-4 POINTS OF REMOVAL

##### (1) Pulley, water pump

- 1.While preventing rotation, with a screwdriver or the like, as shown in the right figure, remove the pulley.

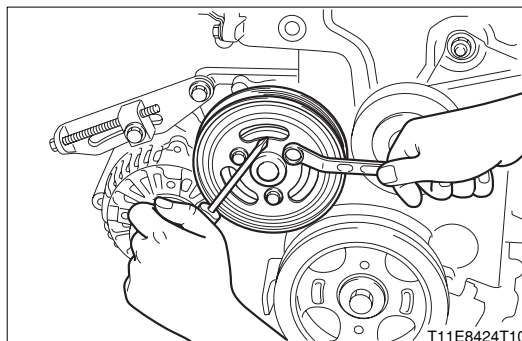


**2-1-5 POINTS OF INSTALLATION****(1) Pump Ay, water**

1. Clean the installation section of the pump Ay.
2. Install the pump Ay with a water pump gasket interposed.

**(2) Pulley, water pump**

1. While preventing rotation, with a screwdriver or the like, as shown in the right figure, install the pulley.

**2-1-6 OPERATION AFTER INSTALLATION**

1. Install the V-ribbed belt and adjust the tension.  
Refer to Page B1-21.
2. Install the engine under cover.
3. Install the disc wheel. (Front)
4. Fill coolant and perform the water leakage check.  
Refer to Page B1-18.

## 3 RADIATOR

### 3-1 REMOVAL AND INSTALLATION

#### 3-1-1 ARTICLES TO BE PREPARED

Instrument

Torque wrench
---------------

#### 3-1-2 OPERATION BEFORE REMOVAL

##### WARNING

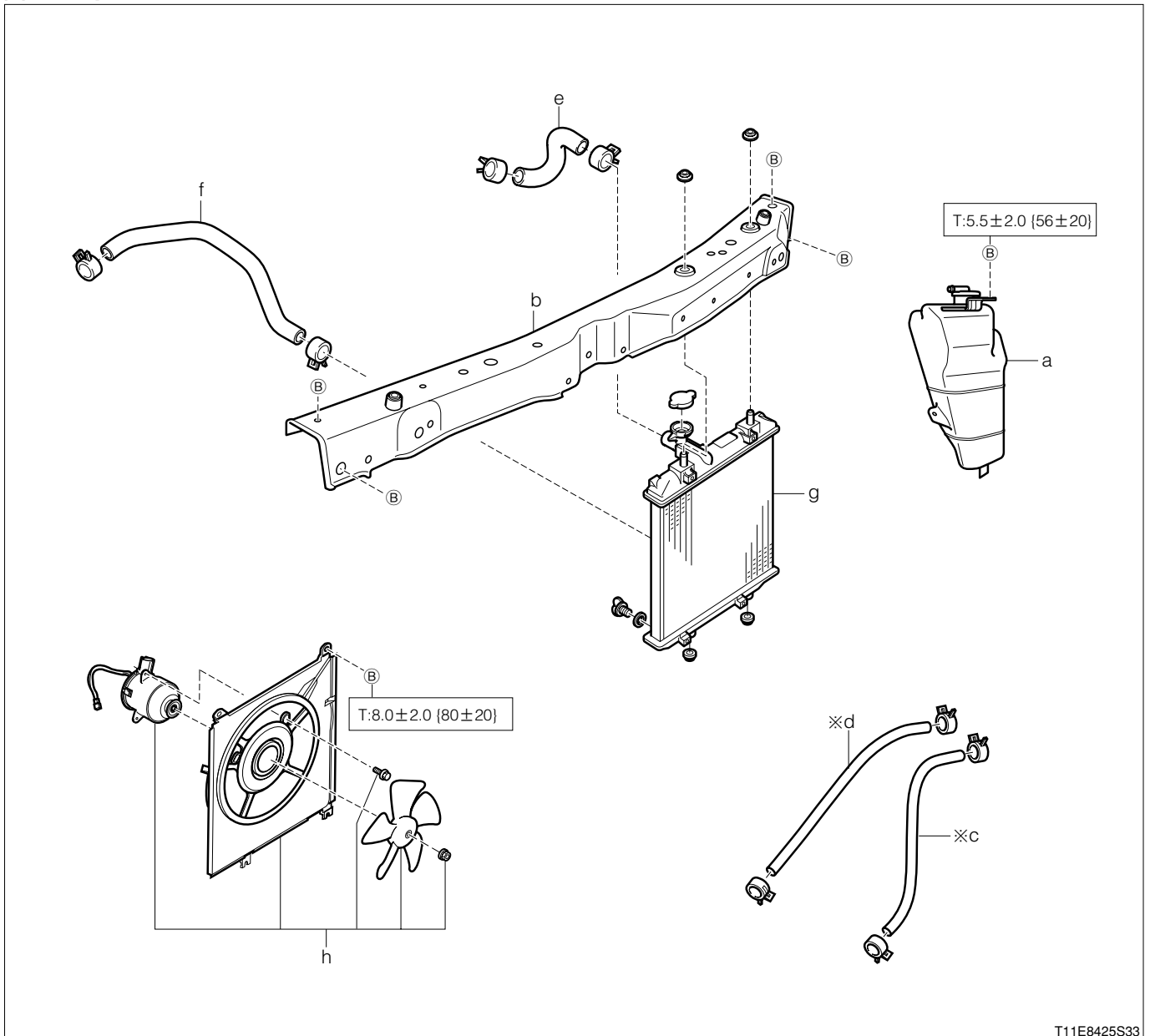
- Do not remove the radiator cap or drain plug when the coolant is hot.

1. Drain the coolant.
2. Drain the transaxle oil.
3. Disconnect the negative (-) terminal of the battery.
4. Remove the front bumper cover.

Refer to Page I2-2.

## 3-1-3 REMOVAL AND INSTALLATION PROCEDURES

### (1) Components



※:Non - reusable parts

Unit:N·m{kgf·cm}

### (2) Removal and installation procedures

- |     |                                |       |                      |
|-----|--------------------------------|-------|----------------------|
| 1   | a Tank Ay, radiator reserve    | ▲ 6   | f Hose,radiator No.2 |
| 2   | b Radiator support upper       | ▼ ▲ 7 | g Radiator Ay        |
| ▲ 3 | c Hose, oil cooler inlet(A/T)  | ▲ 8   | h Fan Ay, w/motor    |
| ▲ 4 | d Hose, oil cooler outlet(A/T) |       |                      |
| ▲ 5 | e Hose, radiator No.1          |       |                      |

## 3-1-4 POINTS OF REMOVAL

### (1) Radiator Ay

- 1.Remove the connector for the fan Ay with motor.
- 2.Remove the radiator Ay together with the fan Ay with motor

#### CAUTION

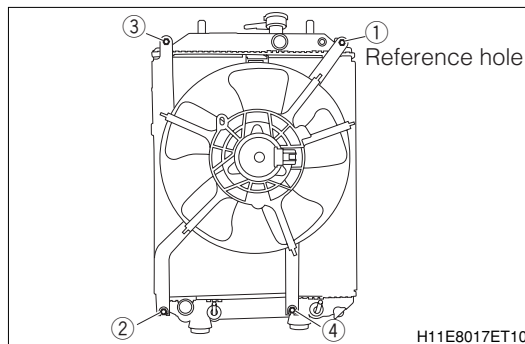
- Be careful not to scratch or damage the fin when removing the radiator Ay.

# B6-15

## 3-1-5 POINTS OF INSTALLATION

### (1) Fan Ay, w/motor

- 1.Install the fan Ay to the radiator Ay.
- 2.Temporarily tighten the bolt to the reference hole 1.
- 3.Tighten the bolts ②→③→④→① to the specified torque.

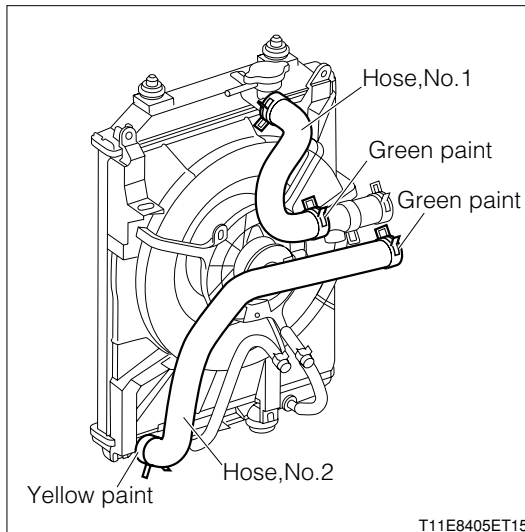


### (2) Radiator hose No.1, radiator hose No.2 (Radiator side)

- 1.Connect the hose No.1 at the radiator side to the radiator Ay.  
At this time, perform the installation in a such way that the tab of the clamp would face left of the vehicle.
- 2.Connect the hose No.2 at the radiator side to the radiator Ay so that its identification paint would face downward of the vehicle.  
At this time, perform the installation in a such way that the tab of the clamp would face downward of the vehicle.

#### Identification mark

Hose,No.1(Radiator side)	Not provided
Hose,No.2(Radiator side)	Yellow



### (3) Radiator Ay

- 1.Install the radiator Ay to the vehicle.

#### CAUTION

- Be very careful not to allow the vehicle harness to come in contact with the core (Including the tank staked section). (Water leakage will be caused by electro-corrosion.)
- Be careful not to scratch or damage the fin when removing the radiator Ay.

### (4) Radiator hose No.1, radiator hose No.2 (Engine side)

- 1.Connect the hose No.1 at the engine side so that its identification paint would face upward of the vehicle.  
At this time, perform the installation in a such way that the tab of the clamp would face upward of the vehicle.
- 2.Connect the hose No.2 at the engine side so that its identification paint would face upward of the vehicle.  
At this time, perform the installation in a such way that the tab of the clamp would face upward of the vehicle.

#### Identification mark

Hose,No.1(Engine side)	Green
Hose,No.2(Engine side)	Green

### (5) Hose, oil cooler inlet and hose, oil cooler outlet

Refer to Page F3-21.



**3-1-6 OPERATION AFTER INSTALLATION**

1. Install the front bumper cover.

Refer to Page I2-2.

2. Connect the negative (-) terminal of the battery.

3. Fill coolant and perform the water leakage check.

Refer to Page B1-18.

4. Replenish transaxle oil. After the engine has warmed up, check the fluid level.