

Power Unit Cooling System

General Description

Water Cooling System Description

CENDK1111601001

The cooling system uses a displacement type flexible vane impeller to supply cooling water to the powerhead assembly.

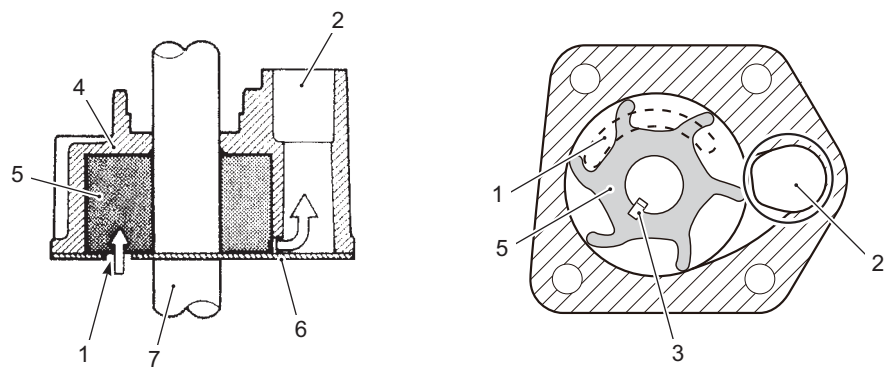
To prevent incomplete combustion due to an overcooled engine, and to ensure proper water flow during cold engine operation, there is a thermostat in the cylinder block.

Motor temperature and cooling system efficiency are monitored by cylinder temp. sensor in the cylinder. If temperature higher than normal is detected by a sensor, an advance caution of overheat condition is provided.

Displacement Type Water Pump Description

CENDK1111601002

In this displacement type water pump, the water pressure is increased by the change in volume between the impeller and the pump case. As a result, the increased water pressure enables the water pump to circulate the cooling water.



IAJ311160002-01

1. Water inlet	3. Key	5. Water pump impeller	7. Driveshaft
2. Water outlet	4. Water pump case	6. Under panel	

Schematic and Routing Diagram

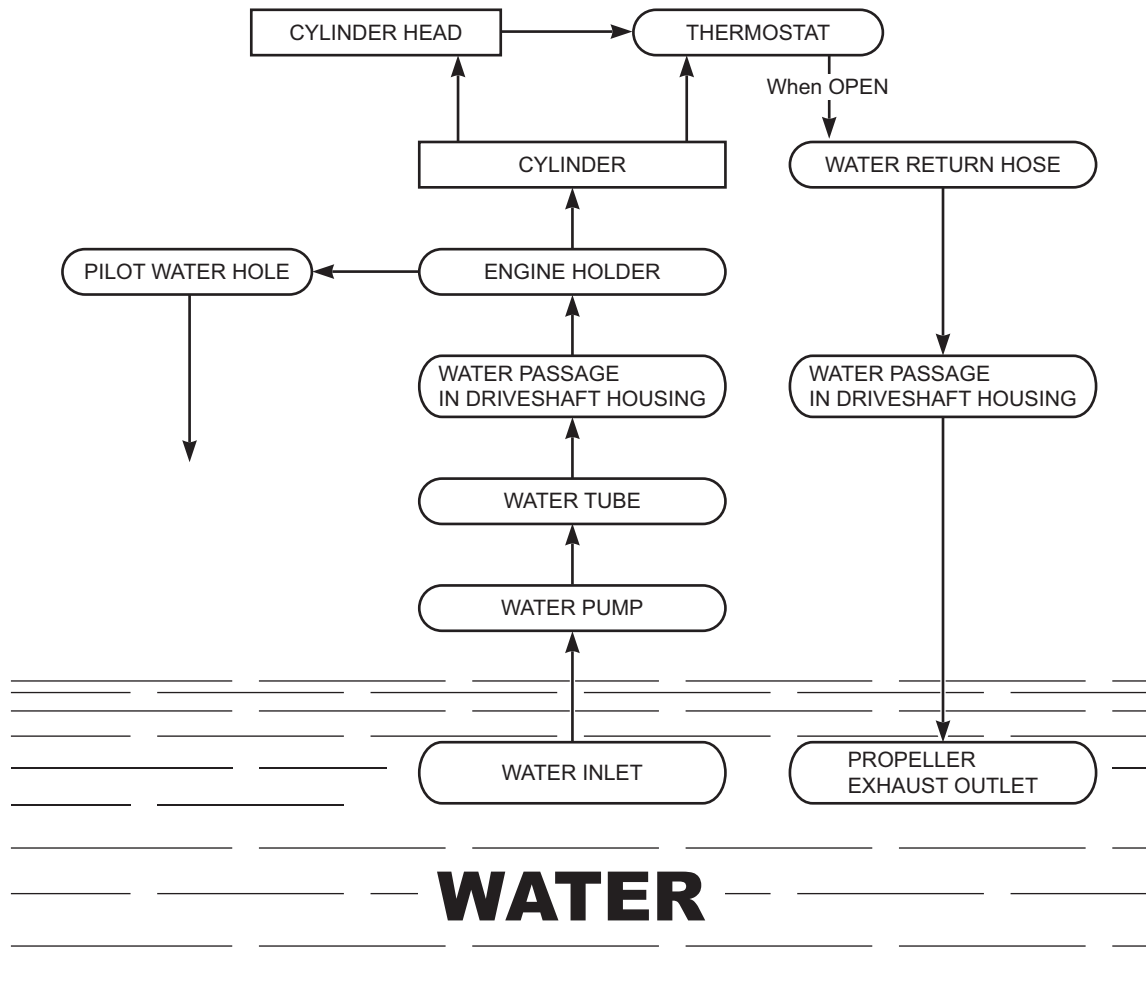
Cooling Water Circulation Chart

CENDK1111602001

The water cooling system includes the lower unit water pump, lower unit to power unit water supply tube, power unit water passages and thermostat.

This system cools both the power unit and exhaust and is shown in schematic form below.

If overheating occurs, the components of the cooling system must be inspected for blockage, corrosion build-up or component damage.



Diagnostic Information and Procedures

Powerhead Cooling System Diagnosis

CENDK1111604001

Condition	Possible cause	Correction / Reference item
Overheating powerhead	Water inlet screen obstructed.	Clean.
	Water passage obstructed.	Clean or replace.
	Pump plate not sealing.	Check and repair.
	Water pump impeller damage.	Replace.
	Water pump housing and/or plate worn.	Replace.
	Water pump housing seal worn.	Replace.
	Water tube grommet damaged.	Replace.
	Thermostat damaged / defective.	Replace.
	Water tube obstructed.	Clean.
	Water tube defective.	Replace.
Overcooling powerhead	Thermostat damaged / defective.	Replace.

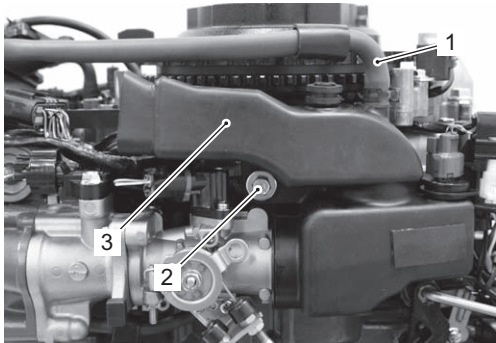
Service Instructions

Thermostat Removal and Installation

CENDK1111606001

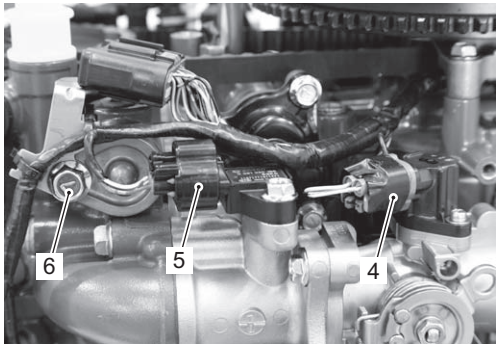
Removal

- 1) Remove the recoil starter.
Refer to “Recoil Starter Removal and Installation” in Section 1J (Page 1J-3).
- 2) Disconnect the breather hose (1) from silencer case. Remove the bolt (2) and silencer case (3).



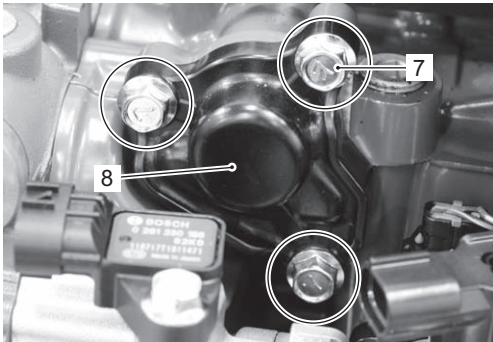
IDK111160006-02

- 3) Disconnect IAC valve lead wire connector (4) at IAC valve.
Disconnect MAP sensor lead wire connector (5) at sensor.
Remove the bolt (6) securing anode cover.

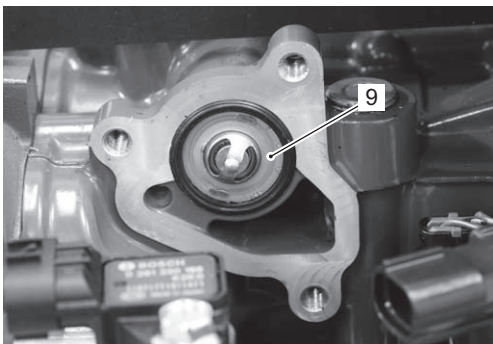


IDK111160007-02

- 4) Remove the three bolts (7) securing the thermostat cover (8), then remove the cover and thermostat (9).



IDK111160001-02

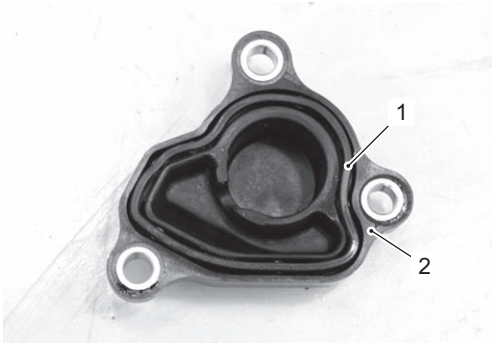


IDK111160002-02

Installation

Installation is reverse order of removal with special attention to the following steps.

- 1) Install seal (1) to thermostat cover (2).

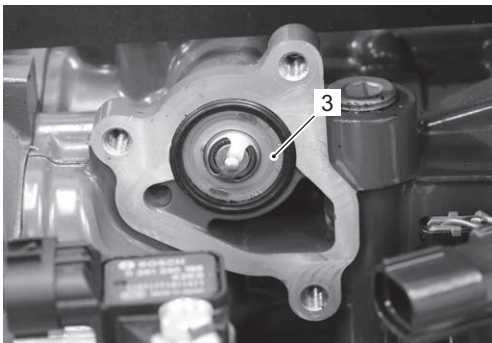


IDK111160003-02

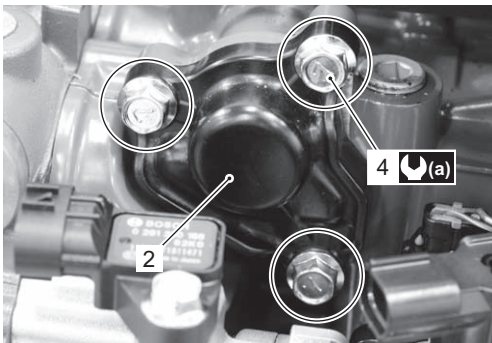
- 2) Assemble thermostat (3) and thermostat cover (2) to cylinder block and secure with bolts (4).

Tightening torque

Thermostat cover bolt (a): 10 N·m (1.0 kgf-m, 7.2 lbf-ft)

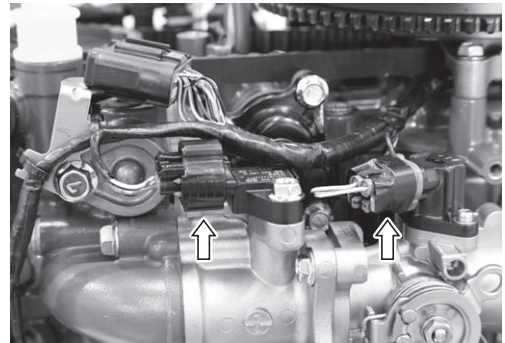


IDK111160004-02



IDK111160005-02

- 3) Connect the lead wire connector to IAC valve.
Connect the lead wire connector to MAP sensor.
Securely tighten anode cover with bolt.



IDK111160008-02

- 4) Install the silencer case, then securely tighten it with bolt.
- 5) Install the recoil starter.
Refer to "Recoil Starter Removal and Installation" in Section 1J (Page 1J-3).
- 6) Check to ensure that all removed parts are back in place.

Thermostat and Related Items Inspection

CENDK1111606002

Inspect the thermostat in the following procedures:

- 1) Remove the thermostat.
Refer to "Thermostat Removal and Installation" (Page 1F-3).
- 2) Inspect the thermostat.
If salt deposits, corrosion, wear or other damage is found, clean or replace.

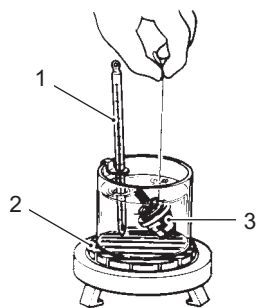


IAJ311160008-01

1F-5 Power Unit Cooling System:

- 3) Check thermostat opening temperature as follows:
- a) Insert a length of thread between thermostat valve / body and suspend thermostat in a container filled with water.
 - b) Place thermometer in container and heat water. Observe water temperature when thermostat valve opens and releases thread.

Thermostat operating temperature
Standard: 48 – 52 °C (118 – 126 °F)

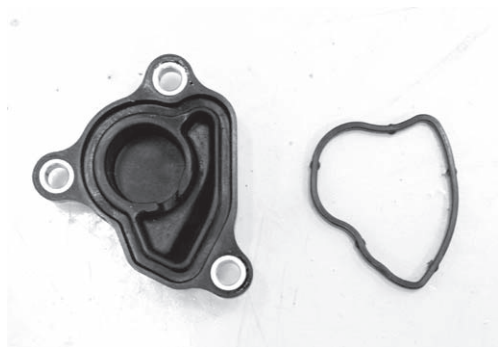


19J011160002-01

1. Thermometer	3. Thermostat
2. Heater	

If thermostat valve does not open as specified above, or sticks in any position, replace it.

- 4) Inspect thermostat cover. Replace if cracked, distorted or other abnormal conditions are noted. Check condition of seal. Replace seal if nicked, cut, worn or other abnormal condition are noted.



IDK111160009-02

- 5) Install the thermostat.
Refer to “Thermostat Removal and Installation” (Page 1F-3).

Water Pump Removal and Installation

CENDK1111606003

Refer to “Water Pump Removal and Installation” in Section 3A (Page 3A-6).

Water Pump Related Item Inspection

CENDK1111606004

Refer to “Water Pump and Related Items Inspection” in Section 3A (Page 3A-8).

Water Tube Removal and Installation

CENDK1111606005

Removal

Refer to “Engine Holder / Driveshaft Housing / Mounts Disassembly” in Section 2A (Page 2A-14).

Installation

Refer to “Engine Holder / Driveshaft Housing / Mounts Assembly” in Section 2A (Page 2A-15).

Water Tube Related Item Inspection

CENDK1111606006

Refer to “Engine Holder / Driveshaft Housing / Mounts Related Component Inspection” in Section 2A (Page 2A-18).