

HONDA MCHP 1.2U

6K, 12K & 18K

Hour Service

Instructions for

freewatt®

POWERED by **HONDA**™

Kits # 550002024 & 550002045



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1. PERIODIC MAINTENANCE

MAINTENANCE SCHEDULE

Item	Maintenance intervals (1)				Ref. page
	Monthly	Every 6,000 operating hours or every 3 years	Every 12,000 operating hours	Every 24,000 operating hours	
Perform visual checks. (2)	Check	○			See owner's manual
Engine starting condition, abnormal noise, abnormal vibration.	Check	○(3)			—
Engine lubricant leaks.	Check	○(3)			—
Engine coolant leaks.	Check	○(3)			—
Cracks in the crankcase breather tube.	Check	○(3)			—
Fuel gas and Exhaust gas leaks.	Check	○(3)			3-43
Condition of discharged condensate.	Check	○(3)			—
Air cleaner element. (Clean the element, if not clean.)	Check	○(3)			4-5
(Replace the air cleaner unit.)	Replace			○(3)	4-5
Engine lubricant and drain washer.	Replace	○(3)			4-2
Engine lubricant filter cartridge.	Replace	○(3)			4-2
Spark plug.	Replace	○(3)			4-6
Valve clearance.	Adjust	○(3)			4-7
Crankcase breather separator.	Replace		○(3)		4-9
Crankcase breather tube.	Replace			○(3)	4-9
Engine coolant.	Replace			○(3)	See Furnace manual
O2 sensor.	Replace			○(3)	5-49
Fuel hose.	Replace			○(3)	5-17, 21
Check leaks after replacement					
Fuel inlet hose.	Replace			○(3)	5-53
Check leaks after replacement					
Heat exchanger.	Replace			○(3)	5-50 thru. 52

- (1) Complete the routine maintenance at either the designated operating hours or years, whichever comes first.
- (2) This check should be performed at the beginning of each heating season in addition to the monthly check during the season.
- (3) These items must be serviced by a qualified service professional as they require special knowledge and tools.

ENGINE OIL/OIL FILTER REPLACEMENT

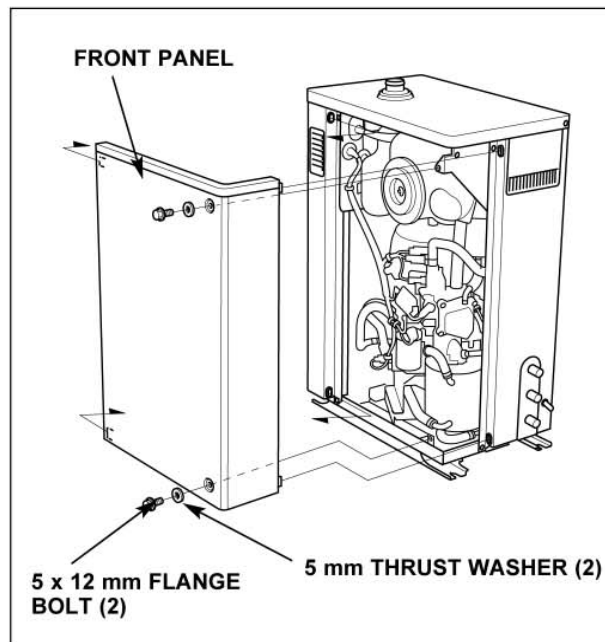
⚠ CAUTION

The engine and engine oil are very hot right after stopping the engine and they remain hot for a while. You could be burned.

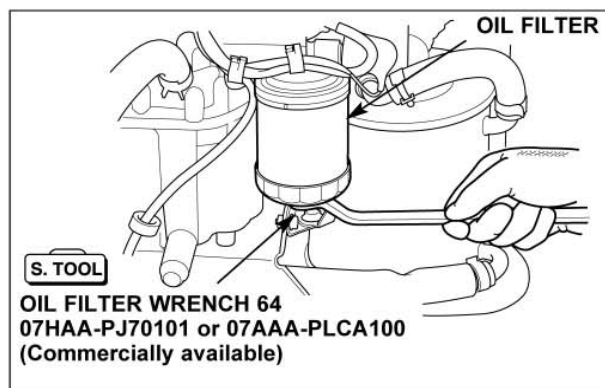
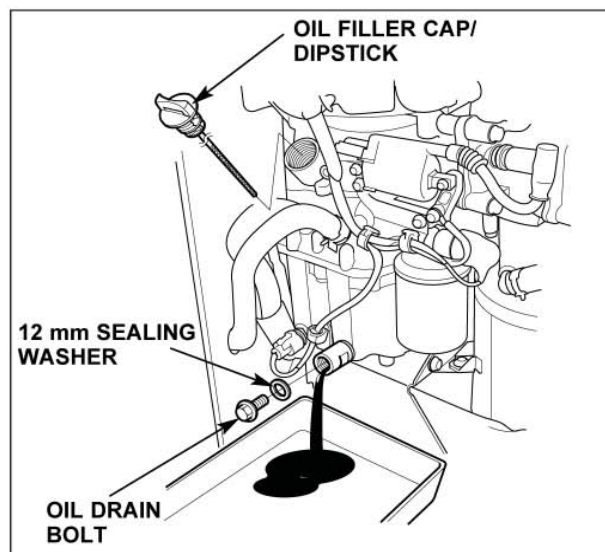
NOTICE

Take care not to spill the engine oil on the hoses and harnesses when replacing the engine oil/oil filter. Wipe up any spilled oil thoroughly.

- 1) Turn OFF the gas and power supply to the MCHP. Do not use the MCHP rotary switch to turn the power OFF.
- 2) Remove the 5 x 12 mm flange bolts and 5 mm thrust washers, and remove the front panel.
- 3) Remove the oil filler cap/dipstick.
- 4) Place a shop towel under the drain bolt and set the tray or equivalent container on the shop towel.
- 5) Drain the engine oil by removing the oil drain bolt and 12 mm sealing washer.

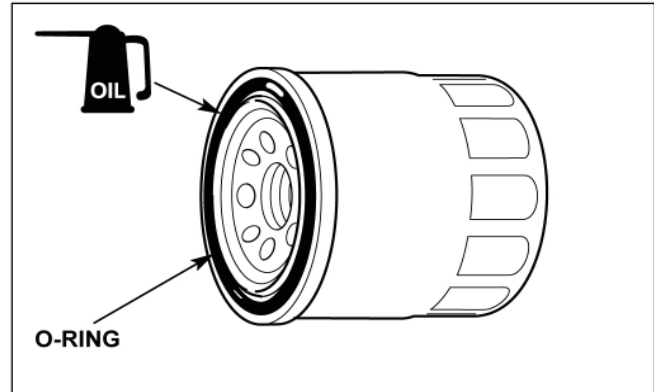


- 6) Place a shop towel under the oil filter, then remove the oil filter using the oil filter wrench.
 - Catch any leaking oil during removal of the oil filter.

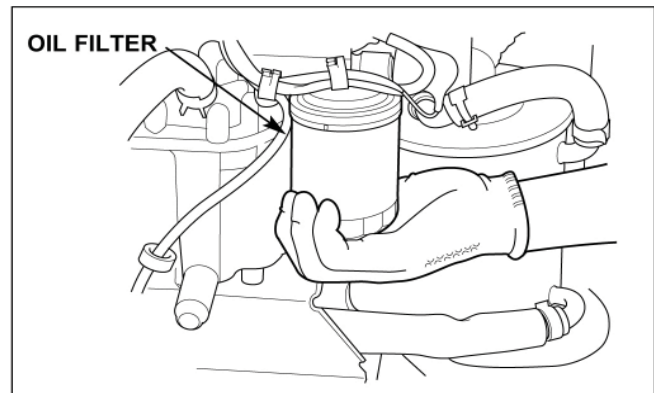


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- 7) Clean the oil filter mounting surface on the engine side and apply the engine oil to the surface.
- 8) Apply MCHP lubricant to the O-ring on the new oil filter.

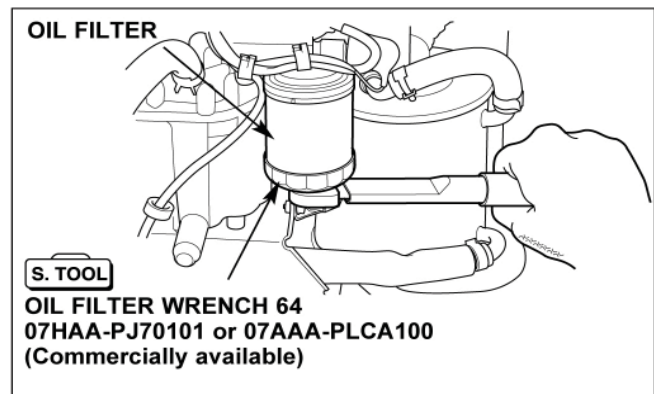


- 9) Tighten the oil filter by hand until the O-ring contacts the mounting surface on the engine.



- 10) Tighten the oil filter to the specified torque.

TORQUE: 11 N·m (1.1 kgf·m, 8 lbf·ft)

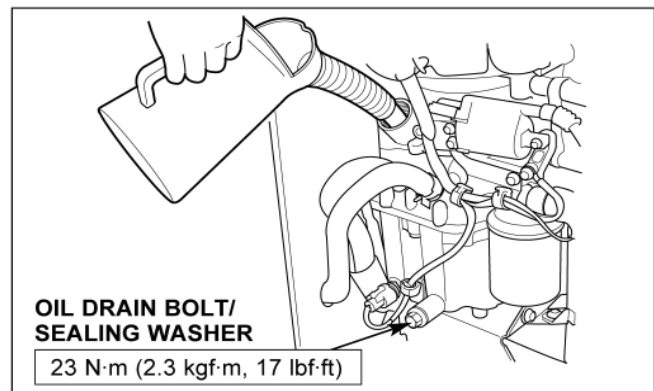


- 11) Place a new sealing washer on the oil drain bolt and tighten the oil drain bolt to the specified torque.

TORQUE: 23 N·m (2.3 kgf·m, 17 lbf·ft)

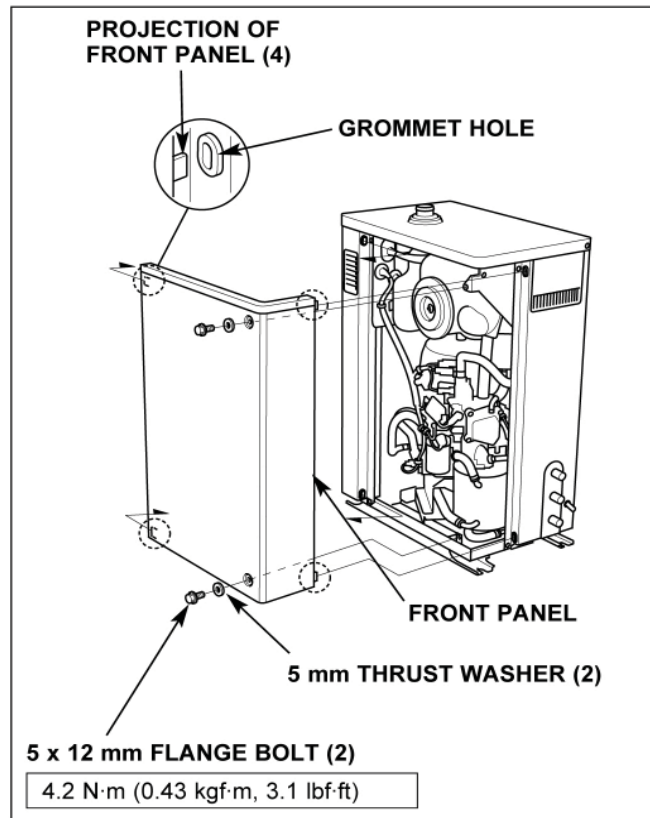
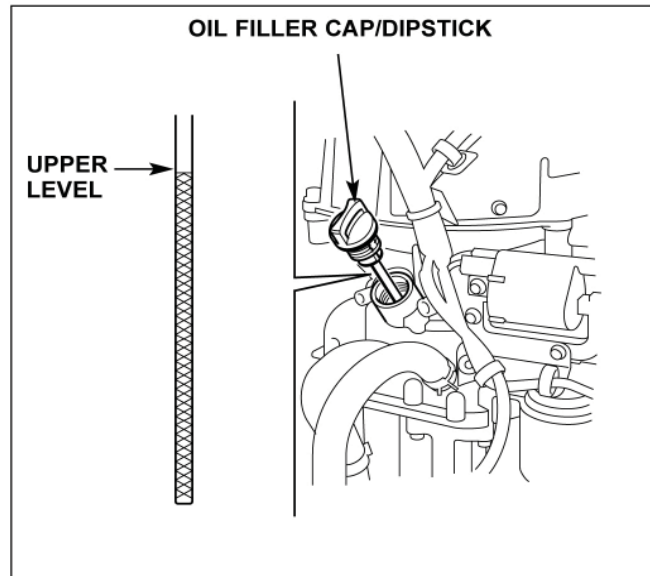
- 12) Add MCHP oil up to the specified level on the oil filler cap/dipstick and tighten the oil filler cap/dipstick securely.

ENGINE OIL CAPACITY	3.5 ℓ (3.70 US qt, 3.08 Imp qt)
	With oil filter change:
	3.7 ℓ (3.91 US qt, 3.26 Imp qt)



- 13) Trial start the engine (see page 3-4 for trial operation). Check the oil drain bolt and oil filter for leakage.
- 14) Turn OFF the power supply to the MCHP (Do not use the MCHP rotary switch to turn the power OFF.) to prevent the accidental start of the engine.
- 15) Remove the oil filler cap/dipstick. Wipe the oil off the dipstick with a shop towel.
- 16) Insert the oil filler cap/dipstick into the oil filler port. Do not screw it in.
- 17) Remove the oil filler cap/dipstick again. Check that the oil is at or close to the upper level mark on the dipstick.
- 18) If the oil level is low, add the recommended engine oil up to the upper level mark on the dipstick. Reinstall the oil filler cap/dipstick securely.
- 19) Install the front panel aligning the four projections of the front panel with the grommet holes.
- 20) Install the two 5 x 12 mm flange bolts and 5 mm thrust washers and tighten the flange bolts to the specified torque.

TORQUE: 4.2 N·m (0.43 kgf·m, 3.1 lbf·ft)



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AIR CLEANER INSPECTION

CAUTION

The engine is very hot right after stopping and it remains hot for a while. You could be burned.

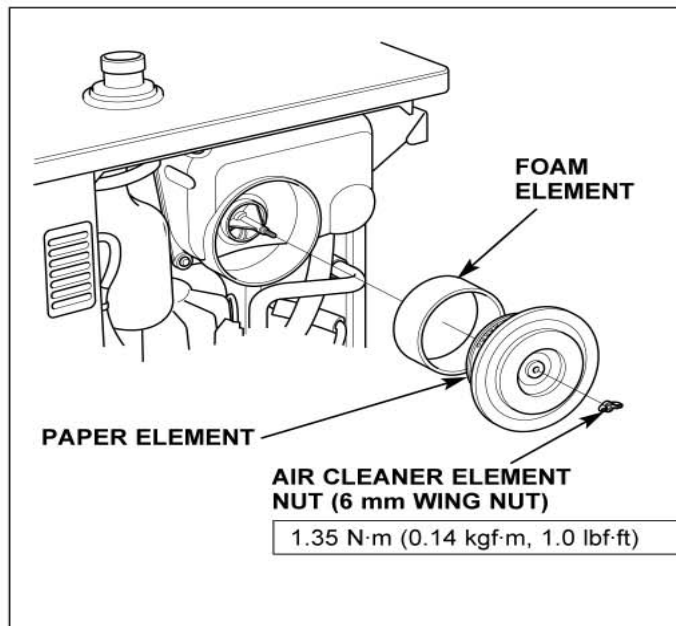
- 1) Turn OFF the gas and power supply to the MCHP.
- 2) Remove the front panel (P. 4-2).
- 3) Loosen the air cleaner element nut that secures the air cleaner elements. Remove the air cleaner elements.
- 4) Remove the foam element from the air cleaner element.
- 5) Check each element for holes and tears. Replace the foam and paper elements as a set if necessary.
- 6) Check the element for contamination by lightly tapping on it. If contamination is severe, replace the element.
- 7) Check inside the air cleaner case for contamination. If necessary, clean inside the air cleaner case with care not to let the dust and dirt enter the air duct.
- 8) Set the foam element on the paper element and install it in the air cleaner case. Tighten the air cleaner element nut to the specified torque.

TORQUE: 1.35 N·m (0.14 kgf·m, 1.0 lbf·ft)

NOTICE

Install the air cleaner element securely. Failure to install the air cleaner element properly may allow dirt to enter the engine, causing rapid engine wear. This type of damage is not covered by the Distributor's Limited Warranty.

- 9) Install the front panel (P. 4-4).



SPARK PLUG REPLACEMENT

⚠ CAUTION

The engine and spark plug are very hot right after stopping the engine and they remain hot for a while. You could be burned.

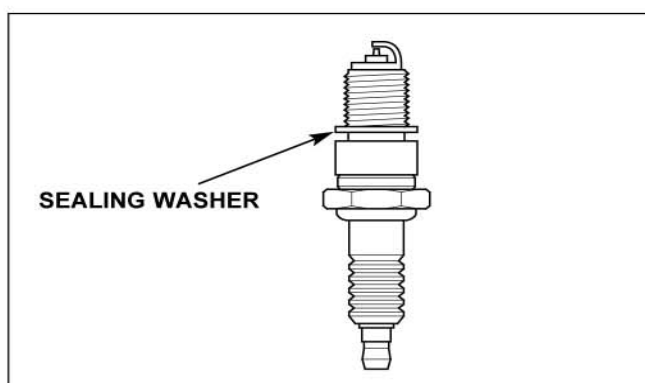
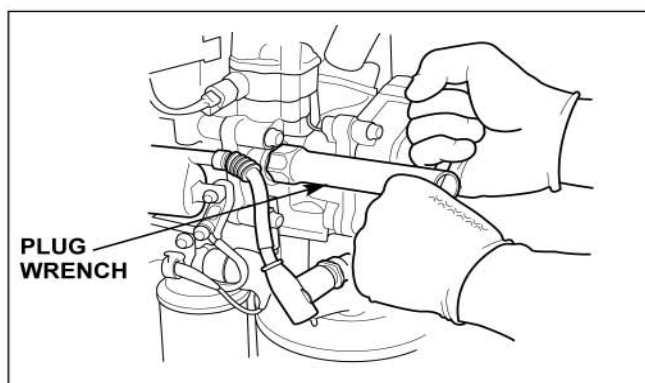
- 1) Turn OFF the gas and power supply to the MCHP.
- 2) Remove the front panel (P. 4-2).
- 3) Remove the spark plug cap and clean the area around the spark plug.
- 4) Use the spark plug wrench to remove the spark plug.

STANDARD SPARK PLUG	6G (NGK)
NEW SPARK PLUG GAP	0.3 – 0.4 mm (0.012 - 0.016 in)

- 5) Tighten a new spark plug by hand until the sealing washer sets on the sealing surface. Take care not to cross-thread the spark plug. Then, tighten the spark plug to the specified torque with a wrench.

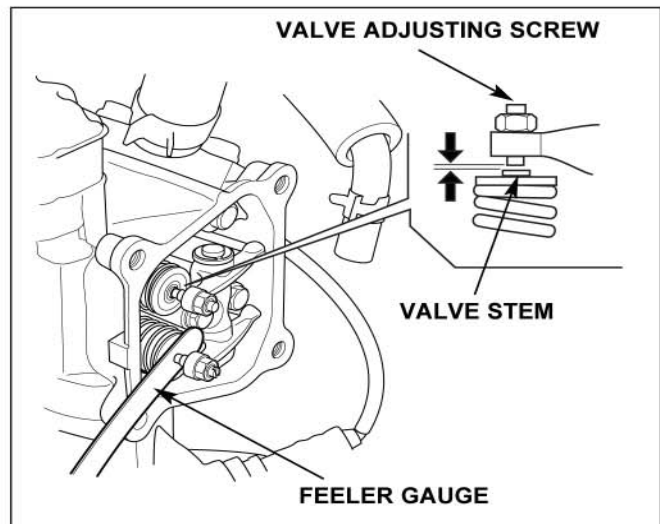
TORQUE: 20 N·m (2.0 kgf·m, 14 lbf·ft)

- 6) Install the spark plug cap.
- 7) Install the front panel (P. 4-4).



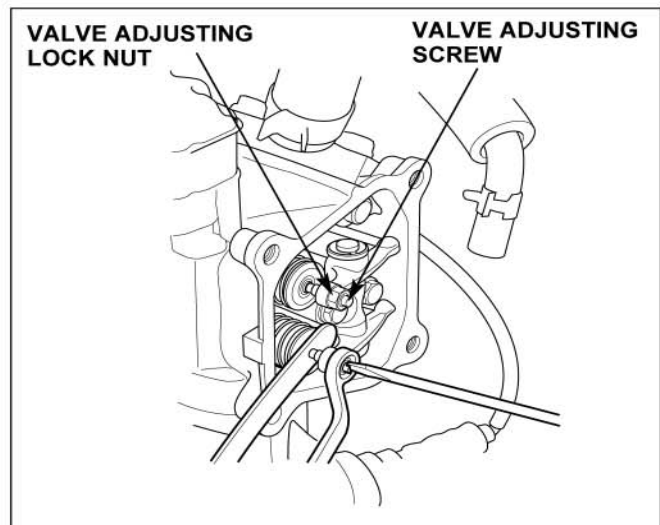
- 8) Insert a feeler gauge between the valve adjusting screw and valve stem and measure the valve clearance.

VALVE CLEARANCE		
With engine cold	IN	0.15 ± 0.02 mm
	EX	0.20 ± 0.02 mm
With engine warm (Reference)	IN	0.20 ± 0.02 mm
	EX	0.25 ± 0.02 mm



- 9) If adjustment is necessary, loosen the valve adjusting lock nut while holding the valve adjusting screw with a screwdriver.
- 10) Loosen the valve adjusting screw and adjust the intake and exhaust valve clearances.
- 11) After adjustment, loosely tighten the valve adjusting lock nut while holding the valve adjusting screw with a screwdriver.
- 12) Check the valve clearance again and tighten the valve adjusting lock nut to the specified torque.

TORQUE: 7.4 N·m (0.75 kgf·m, 5.4 lbf·ft)



- 13) Install the cylinder head cover and head cover gasket. Tighten the four bolts to the specified torque.

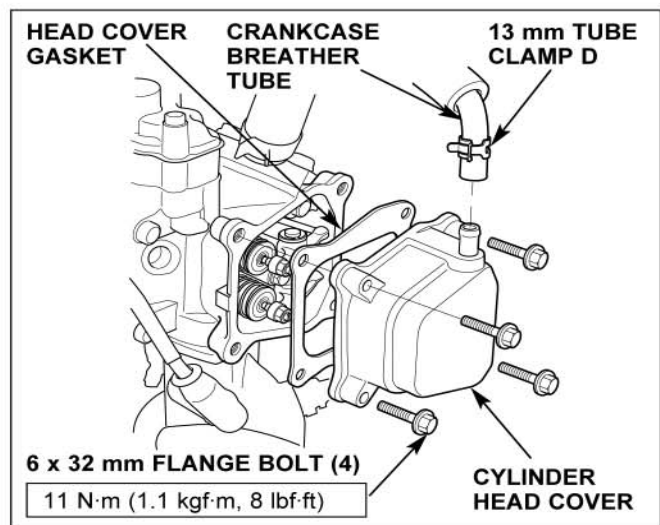
TORQUE: 11 N·m (1.1 kgf·m, 8 lbf·ft)

- Check the head cover gasket for damage and deformation before reinstallation. Replace the head cover gasket with a new one if necessary.
- Tighten the bolts diagonally in two or three steps.

- 14) Connect the crankcase breather tube to the cylinder head cover.

- 15) Install the spark plug (P. 4-6).

- 16) Install the front panel (P. 4-4).



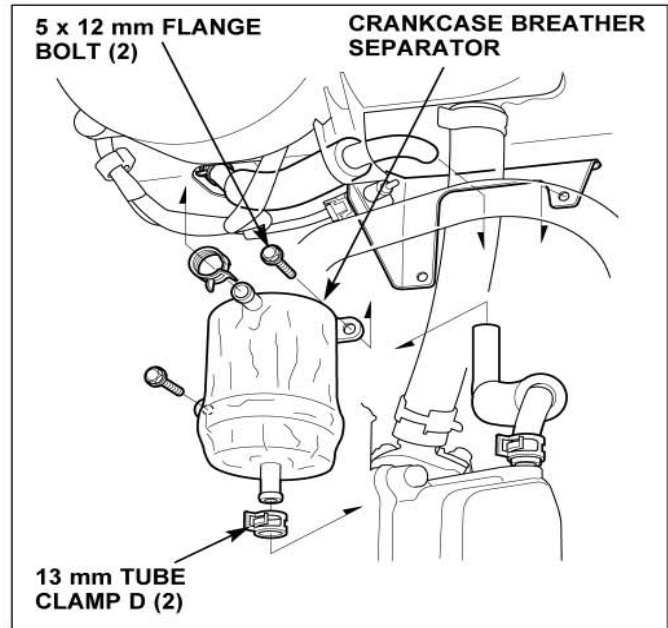
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CRANKCASE BREATHER SEPARATOR REPLACEMENT

CAUTION

The engine is very hot right after stopping and it remains hot for a while. You could be burned.

- 1) Turn OFF the gas and power supply to the MCHP.
- 2) Remove the front panel (P. 4-2).
- 3) Slide the two 13 mm tube clamp D up the tube and disconnect the crankcase breather tube from the crankcase breather separator.
- 4) Remove the two 5 x 12 mm flange bolts and remove the crankcase breather separator.
- 5) Install a new crankcase breather separator in the direction shown. Tighten the two 5 x 12 mm flange bolts securely.
- 6) Connect the crankcase breather tube to the crankcase breather separator and secure it with the 13 mm tube clamp D.
- 7) Install the front panel (P. 4-4).

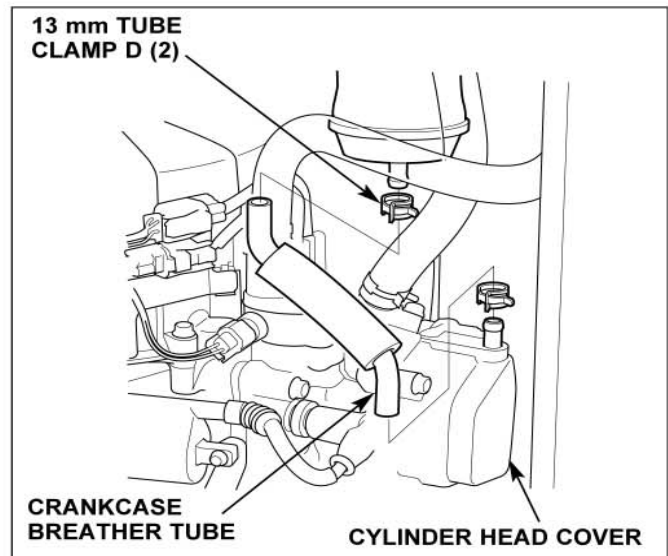


CRANKCASE BREATHER TUBE REPLACEMENT

CAUTION

The engine is very hot right after stopping and it remains hot for a while. You could be burned.

- 1) Turn OFF the gas and power supply to the MCHP.
- 2) Remove the front panel (P. 4-2).
- 3) Slide the two 13 mm tube clamp Ds up the tube and remove the crankcase breather tube from the space between the crankcase breather separator and cylinder head cover.
- 4) Install a new crankcase breather tube in the reverse order of removal.
- 5) Secure the crankcase breather tube with the 13 mm tube clamp Ds.
- 6) Install the front panel (P. 4-4).



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Check our website frequently for updates: www.ecrinternational.com

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