

2019 – 2022 Honda CRF250F Service Info

Document created by: Road and Trail (<https://roadandtrail.net>)

Document last updated: Oct 25, 2022

Sources: 2019-2022 Honda CRF250F Factory Service Manual, 2021 (61K9903) and 2022 Honda CRF250F Owner's manual.

Use this document at your own risk.

Torque Values

Item	Thread Dia. (mm)	N.m	lbf.ft	Remark
General / Standard Torque Values				
5 mm bolt and nut		5.2	3.8	
6 mm bolt and nut		10	7	Includes SH flange bolt
8 mm bolt and nut		22	16	
10 mm bolt and nut		34	25	
12 mm bolt and nut		54	40	
5 mm screw		4.2	3.1	
6 mm screw		9.0	6.6	
6 mm flange bolt		12	9	8 mm head, large flange
8 mm flange bolt and nut		27	20	
10 mm flange bolt and nut		39	29	
Specific Fasteners (incomplete list)				
Front fuel tank mounting bolt	8	27	20	
Spark plug	10	16	12	
Engine oil drain bolt	12	24	18	
Oil filter cover bolt		12	9	
Cylinder head (valve) cover	6	10	7	
Rocker arm shaft stopper bolt	5	5.2	3.8	
Timing hole cap		10	7	Apply oil to threads, seating surface
Crankshaft hole cap		15	11	Apply oil to threads, seating surface
Clutch center lock nut	16	108	80	
Clutch spring bolt	6	12	9	
Change pedal mounting bolt	6	12	9	ALOC bolt; replace with a new one
Drive sprocket fixing plate bolt				
Drive sprocket fixing plate bolt	6	10	7	
Driven sprocket nut	8	32	24	Self-lock
Rear axle nut	16	108	80	Self-lock
Rim lock	8	12.2	9	
Exhaust pipe band bolt				
Exhaust pipe band bolt	8	20	15	Connects to muffler
Muffler mounting bolt	8	26	19	
Muffler mounting nut	8	26	19	
Exhaust pipe joint nut	8	27	20	At engine

Item	Thread Dia. (mm)	N.m	lbf.ft	Remark
Exhaust pipe protector mounting bolt	6	14	10	Heat shield
Muffler tail cover bolts	6	12	9	
Side stand pivot bolt	10	10	7	
Side stand pivot nut	10	39	29	Self-lock
Front axle shaft	12	59	44	
Axle holder nut	6	12	9	Self-lock
Front brake disc bolt	6	20	15	ALOC bolt; replace with new one
Fork socket bolt	8	20	15	Apply thread locker
Fork cap	-	22.5	17	
Fork top bridge pinch bolt	8	27	20	
Fork bottom bridge pinch bolt	8	31.5	23	
Front brake caliper mounting bolt	8	30	22	ALOC bolt; replace with new one
Handlebar holder bolt	8	26	19	
Front master cylinder holder bolt	6	9.8	7.2	
Steering stem adjusting nut	26	3.5	2.6	
Steering stem nut	24	108	80	
Front brake hose clamp bolt	6	10	7	
Rear brake disc bolt	8	42	31	ALOC bolt; replace with new one
Shock absorber mounting nuts	10	44	32	Self-lock
Shock arm nut (swingarm side)	12	78	58	Self-lock
Shock link rod nut	10	44	32	Self-lock
Drive chain guide bolt	6	11.9	9	ALOC bolt; replace with new one
Drive chain slider screw	5	4.2	3.1	ALOC screw; replace with new one
Chain guide slider mounting nut	6	2.5	1.8	Self-lock
Swingarm pivot nut	14	88	65	Self-lock
Rear brake hose guide bolt	6	10	7	
Brake caliper bleed valve	8	5.4	4.0	
Brake caliper pad pin	10	17.2	13	
Front brake caliper pad pin plug	10	2.5	1.8	
Front brake caliper pin bolt A	8	22	16	Apply thread locker
Rear brake caliper pin bolt A	8	27	20	
Rear brake caliper guard mounting bolt	6	11.9	9	
Brake lever pivot bolt	6	1.0	0.7	
Brake lever pivot nut	6	5.9	4.4	
Brake hose oil bolt	10	34	25	
Brake pedal mounting bolt	8	27	20	ALOC bolt; replace with new one

ALOC bolts have a pre-applied locking agent on them.

Spark Plug Gap

0.8 – 0.9 mm (0.03 – 0.04 in)

Tightening the Spark Plug

The service manual specifies hand tightening the plug until it seats, then tightening it with a torque wrench to 16 N.m (12 lbf.ft). The owner's manual specifies an alternate method. For an old plug, tighten it 1/5 turn after it seats. For a new plug, tighten it 1/4 turn after it seats, loosen it, and then tighten it 1/5 turn after it seats.

Oil and Oil Filter Change

The Owner's Manual describes the procedure, but I just want to mention a few things. You may want to consider using a magnetic drain plug or an oil filter magnet. After most of the oil appears to have drained from the engine while on the side stand, tip the motorcycle to the right to drain additional oil. Do this before you open up the oil filter cover. You may want to wipe out the oil filter housing in case there is any sediment or metal bits present (use a clean, lint-free cloth). Inspect the oil filter cover O-ring and replace if damaged. Install the drain plug with a sealing washer (often you can reuse a flat drain plug washer) and torque to spec. I like to pour fresh oil into the new oil filter before installing. Make sure you install the oil filter spring before the filter, and make sure you install the oil filter the correct way. Apply a bit of fresh oil to the oil filter cover O-ring and install the cover. Torque the oil filter cover bolts to spec. Add the correct amount of oil of the correct type. Check the oil level and check for leaks. Dispose of the used oil and filter in a responsible way (recycle).

Valve Clearances (per Honda service manual)

Engine cold: below 35C (95F)

Intake: 0.10 +/- 0.03 mm (0.004 +/- 0.001 in)

Exhaust: 0.15 +/- 0.03 mm (0.006 +/- 0.001 in)

Valve Clearances (per 2022 owner's manual)

Engine cold: below 35C (95F)

Intake: 0.10 +/- 0.02 mm (0.004 +/- 0.001 in)

Exhaust: 0.15 +/- 0.02 mm (0.006 +/- 0.001 in)

Valve Clearance Inspection

You will need an accurate torque wrench (5 to 27 N.m range), feeler gauges, assorted metric sockets (8, 10, 12, 17 mm), hex (Allen) bits (6, 10 mm), a ratchet, flex-bar or T-handle (easier for rotating the crankshaft), short extension, 12 mm wrench (for seat bolts), motor oil, shop rags, and possibly high temperature resistant silicone sealant (Three bond 5211, SS KE45, or equivalent) and a couple of small, clean plastic bags and twist ties, zip ties or tape (if removing the fuel tank). You'll need to be able to record measured valve clearances, so a pen and paper will be required. You may also want to take photos to aid you later. As for parts, you may need a couple of new O-rings, a valve cover gasket and valve cover bolt seals, but it's likely that you'll be able to reuse all of these.

1. It is a good idea to clean the motorcycle first, especially the top of the engine and the area above it like the underside of the fuel tank. You don't want dirt falling into the engine. It's also nicer to work on a clean motorcycle.
2. Remove the side covers.
3. Remove the seat.
4. Remove the fuel tank shrouds.
5. Lift the fuel tank. Remove the front fuel tank mounting bolt, lift the tank a bit and support it. With the fuel tank lifted, the access for checking and adjusting the valve clearances is quite good. You can remove the rear tank mounting bolts (support the tank) to increase the access to the valves even more. If you want even better access, you can completely remove the fuel tank, but it's not necessary. To remove the fuel tank, disconnect the fuel pump 5P connector, relieve fuel pressure (run bike until it stalls, then turn off), disconnect the negative wire on the battery, put a rag under fuel line connector to catch gas, disconnect the fuel line at the fuel pump (push retainer tab forward), wrap fuel pipe end and fuel line end with clean plastic bags, and remove the 2 rear tank mounting bolts. Lift fuel tank off of bike and place on a secure surface with no weight on the fuel pipe or connectors.
6. If you haven't already done so, consider disconnecting the negative wire from the battery.
7. Disconnect the spark plug cap from the spark plug and move it out of the way. Do not pull on the spark plug wire.
8. Remove the cylinder head cover (valve cover) by removing the two valve cover bolts. If possible, leave the rubber gasket on the cylinder head. In particular, if you can leave the semicircle shaped portion attached to the cylinder head, it may save you a step later on. If the valve cover is stuck, you can tap it lightly with a rubber mallet.
9. Remove the timing hole cap.
10. Remove the crankshaft hole cap.
11. Rotate the crankshaft **counterclockwise** until the "T" mark on the flywheel aligns with the notch on the crankcase cover (on right side of hole). It's easier if you use a flex bar or T-handle rather than a ratchet. Removing the spark plug can also make things easier. If you go past the "T" mark, keep rotating the crankshaft **counterclockwise** until the "T" mark lines up again. If the index lines on the camshaft sprocket don't align with the top edge of the cylinder head, rotate the crankshaft **counterclockwise** a full revolution and align the "T" mark again. The piston should be at TDC on the compression stroke. The camshaft lobes should be generally pointing downwards, and you should be able to wiggle the rocker arms a bit.
12. Check the valve clearances with a feeler gauge. Insert the feeler gauge between the rocker arm and the shim. There should be light drag on the feeler gauge. If the valve clearances are out of spec, adjust the valve clearances (see below), otherwise put things back together as follows.

13. To install the valve cover gasket, apply sealant (Three bond 5211, SS KE45, or equivalent) to the half-circle cutout in the cylinder head (top, outer sides) corresponding to the semi-circle portion of the rubber gasket if it was removed previously. The service manual states to use a new rubber gasket, but as long as the old one is not damaged or deteriorated and is clean, you can probably reuse it (I have reused the rubber valve cover gasket on other motorcycles without issue).
14. After ensuring that the mating surfaces of the valve cover and cylinder head are clean as well as the recesses for the valve cover bolt seals, install the cylinder head cover (valve cover) ensuring that the rubber gasket is in place.
15. Ensure that the rubber seals for the valve cover bolts are clean and in good condition. Insert the rubber seals into the valve cover with the “UP” marks facing up.
16. Insert and tighten the cylinder head cover (valve cover) bolts to **10 N.m (7 lbf.ft)**.
17. Install the timing hole cap. Apply oil to the threads and O-ring and tighten to **10 N.m (7 lbf.ft)**. The service manual states to use a new O-ring, but if the old one is in good condition, you can likely reuse it.
18. Install the crankshaft hole cap. Apply oil to the threads and O-ring and tighten to **15 N.m (11 lbf.ft)**. The service manual states to use a new O-ring, but if the old one is in good condition, you can likely reuse it.
19. If the fuel tank was removed, reconnect the fuel line. When reconnecting the fuel line, the connector retainer should click when completely pushed onto the fuel pump pipe end. You can put a bit of oil on the pipe end to make it easier to push the connector on. Reconnect the fuel pump 5P connector. Install the rear mounting bolts. Reconnect the negative battery wire. If the fuel tank was only raised, just lower the fuel tank into position.
20. If the rear fuel tank mounting bolts were removed, reinstall them if you haven't already, but don't tighten them yet.
21. Insert and tighten the front fuel tank mounting bolt to **27 N.m (20 lbf.ft)**.
22. Tighten up the rear fuel tank mounting bolts if they were loosened previously.
23. If the fuel line was disconnected, ensure that there are no fuel leaks (check again later).
24. Reconnect the spark plug if previously disconnected.
25. Reconnect the negative battery wire if previously disconnected.
26. Install the tank shrouds
27. Install the seat.
28. Install the side covers.
29. The service manual states to check the idle speed after this procedure.

Valve Clearance Adjustment

In addition to the required items and supplies listed for the valve clearance inspection, you will need a micrometer to measure shim thickness, a magnet for removing the old shims, possibly flat-bladed tweezers for installing new shims, a bit of molybdenum grease (mix a small amount with motor oil in a 1:1 ratio), and of course, new shims (size to be determined).

Follow the applicable steps in the **Valve Clearance Inspection** section. After determining that the valve clearances need adjustment, do the following.

1. Block any holes in the cylinder head with clean shop rags to prevent bolts, shims, etc. from falling into the engine.
2. Remove the rocker arm shaft stopper bolts. **Be careful not to drop the bolts into the engine.**
3. Thread a 6 mm bolt (valve cover bolt) into the hole in the rocker arm shaft(s) and remove the shaft(s) from the cylinder head while holding the rocker arm(s). Maybe do just one at a time.
4. Remove the shims for the valves whose clearances need adjustment. Shims can be removed from the valve spring retainer with a magnet. **Be careful not to drop the shims into the engine.** Note the location of the removed shims.
5. Determine the correct size of replacement shims: **new shim thickness = (measured valve clearance minus specified valve clearance) plus old shim thickness.** Confirm the thickness of the shims by measuring them with a micrometer.
6. Get the required shims if you don't have them. Confirm the thickness of the shims by measuring them with a micrometer.
7. Install the new shims in the correct location. Flat-bladed tweezers may help. **Be careful not to drop the shims into the engine.**
8. Apply molybdenum oil mixture (1 to 1 ratio of molybdenum grease and motor oil) to the rocker arm inner surfaces, thrust surface and rocker arm shaft outer surface. Install the rocker arm(s), rocker arm shaft(s) and rocker arm shaft stopper bolts. Tighten the rocker arm shaft stopper bolts to **5.2 N.m (3.8 lbf.ft).**
9. Rotate the crankshaft counterclockwise several times and recheck the valve clearances.
10. If all is good, put things back together as described in the **Valve Clearance Inspection** section. Remember to first remove any shop rags, etc. from the cylinder head area.