

POWROLL PERFORMANCE KIT INSTALLATION

HONDA TRX 250EX



POWROLL

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Questions? Give us a call! Our technicians are always happy to help answer installation and tuning questions on Powroll products.

READ AND UNDERSTAND THESE INSTRUCTIONS COMPLETELY BEFORE BEGINNING YOUR PROJECT.

Your Powroll kit requires professional quality boring and installation to work properly. This kit is designed to work with like-new stock parts, and/or other Powroll components. Problems can arise due to variations in parts, worn parts, or use of other aftermarket parts. Carefully check fit and clearance during installation to avoid problems.

If you have any questions about these parts or instructions, please contact us.

ENGINE DISASSEMBLY

Let machine cool and clean it thoroughly around the engine and under the fuel tank. Disconnect the negative battery terminal.

Remove the body work and fuel tank to access the engine easily.

Be sure top cover area of engine is completely clean, then remove the motor mount and the top cover of the head (also called a rocker box).

Follow your Honda shop manual for instructions on removing the cylinder. After complete disassembly, remove all gasket material and dowel pins. Carefully clean all mating surfaces. Do not sand or file the gasket surfaces. Visually inspect the cylinder to see it is in good condition, without cracks or other flaws before proceeding to boring or resleeving.

MACHINING INSTRUCTIONS

KIT NUMBER: 00327

KIT DISPLACEMENT: 249cc

COMPRESSION RATIO: 10.8:1

SPECIAL REQUIREMENTS:

Cylinder Boring, Rejetting, Clay-check piston clearance with aftermarket cam

PISTON SIZE: 70.5mm

PISTON TO CYLINDER CLEARANCE: .002"

RING END GAP: .008" OR MORE

BORING THE CYLINDER

- ▶ Index the boring bar to the **BOTTOM** of the cylinder.
- ▶ Find the required piston to cylinder wall clearance specifications above. **WARNING** – Powroll pistons are designed with taper and cam engineered into them, and are **NOT** round. Take diameter readings to determine the widest cross-section of the piston (may be at the bottom of the skirt, or the middle, depending on piston design), use the widest reading to determine bore size. Powroll has determined correct clearance for your bore kit, not following the recommended clearance can cause decreased engine life.
- ▶ Underbore sufficiently to allow honing to remove all machining marks (using 320 to 360 grit) before arriving at final clearance.
- ▶ Re-check piston-to-cylinder clearance.

ENGINE ASSEMBLY

CLEAN PARTS

Wash all parts in solvent, then hot soapy water before assembly.

Clean the cylinder just prior to installation. Use hot soapy water, blow dry, or dry in oven at low temp for 1/2 hour. Using a clean, white, lint-free cloth with a small amount of engine oil, wipe the cylinder bore, keep using a clean area of the cloth, wiping until it comes away with no residue.

CHECK PISTON PIN END PLAY

Oil pin liberally. Before installing onto piston, test for correct piston pin end clearance. Lateral pin movement shouldn't exceed .040" between clip grooves or TPR (Teflon Pin Retainer).

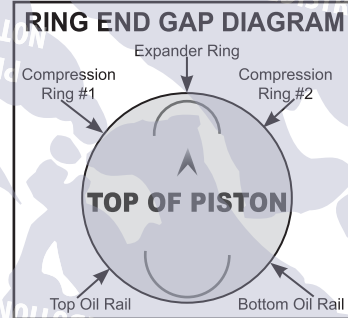
RING END GAP

If a machine shop bored your cylinder, rings may already be gapped.

Ring ends must usually be filed before installation, see page 2 for sizing information.

Compression & Scraper Rings, One Piece Oil Rings: Position each ring squarely in the cylinder (use the piston to push the rings into the cylinder from the bottom). Using a feeler gauge, measure the gap. File rings to the end gap listed. A little excess gap is not critical – insufficient gap is.

Three Piece Oil Rings: Center (corrugated) piece will not need to be gapped. Check and file rails in the same manner as the compression and scraper rings.



RING INSTALLATION

This ring sets contain a high performance oil control ring. We recommend using a quality ring compressor to avoid damage to the piston, ring, or cylinder during installation.

Install ring end gaps according to diagram.

1. Place Oil Ring Expander (wavy shaped ring segment) into the oil ring groove with the butted tips of the expander facing the exhaust side of the piston. Be sure tips of the expander are visible and properly butted (see below). Overlap of Oil Ring Expander tips will cause severe smoking and possible engine damage.
2. Oil Rail Rings can be installed either side up. One rail ring below oil expander ring and one above. Locate rail end gap according to diagram.
3. Once rails are installed, be sure the expander tips are still butted and not overlapped.
4. Middle (scraper) ring: Middle ring can be either silver or black. Markings face up.
5. Top (Compression) ring. Usually silver faced. Markings face up. If no markings are evident, ring can be installed with either side facing up.



PISTON INSTALLATION

Pistons have one of the following markings on the top of the piston indicating direction of installation:

- ➔ Faces exhaust
- IN Faces Intake

No Marking Install with larger pocket towards intake (Only if no other markings are visible).

Install piston in cylinder. Rotate crank until piston arrives at TDC. Piston deck area should not protrude above top of cylinder. Make sure piston also clears the crankshaft at BDC.

CLEARANCE CHECK

If you are installing components from various manufacturers, it is HIGHLY RECOMMENDED to check clearance by claying the top of the piston. MINIMUM valve to piston clearances are .040" - .060" Intake, and .060" - .080" Exhaust. Minimum piston to head clearance is .040"

HI-RATIO ROCKER INSTALLATION

High ratio rocker arms have been used for years in automotive racing engines. They cause the valves to open earlier, open further, and close later than standard rocker arms — this gives the engine more power. Basically, think of it as a 'performance' camshaft that's easy to install!

Remove the intake rocker shaft retaining bolt (it may be helpful to loosen it before removing the rocker box from the head) and slide out the intake rocker arm shaft. NOTE: Look carefully at the position of any shims and washers on the shaft or by the rocker arm.

Replace the stock intake rocker arm with the new Powroll Hi-Ratio rocker arm. Lubricate the shaft well.

Transfer the tappet adjuster from the original rocker arm to the Powroll Hi-Ratio rocker arm and check the free movement of the rocker. It must not bind or hit the rocker box. It may be necessary to lightly grind the rocker box for clearance.

Remove the original rocker box gasket and replace it with the new one supplied in the kit. The oval push rod guide hole in the gasket must be installed to the rear.

Lube the tips of the push rods and valves, then lower the rocker box into place, being sure the push rods have seated in the rocker arms (if the surfaces of the head and rocker box are properly realigned, additional sealer is NOT NEEDED! Powroll does not recommend the use of silicone type sealants).

Install the rocker box bolts. Tighten* in the following manner: Snug all bolts gently, then go back to the center bolts (between the rocker shafts) and tighten them fully. Then alternate between the left and right side bolts, tightening a bit each time. Work your way to the end bolts on the rocker box in a criss-cross pattern. Do not overtighten, and never completely tighten one bolt without first snugging* all others.

Adjust the valves to the factory specifications* (make sure the valves are closed) Remove the rear cover plate on the engine and, using a wrench, rotate the engine at least two full revolutions while checking for binding or interference in the valve train*.

If the engine turns freely, re-install the rear cover plate, motor mount, fuel tank and body work. Reattach the battery terminal. Start the engine and listen to it. There should be no loud clanking or clattering. A light tappet "click" is ok. Loud clattering could be caused by improper tappet adjustment or mechanical interference between parts. If it's making excessive noise, don't run the engine, check it out!

**Refer to your Honda Shop Manual for proper torque and valve adjustment specifications.*

PRE-FLIGHT CHECKLIST

First, double check to be certain all timing, valve and pushrod adjustments are correct, then do the following:

Fill crankcase to correct level with oil. We recommend using good quality non-synthetic motorcycle specific oil. We have not seen good results from standard automotive and/or synthetic oils.

Install oversize carburetor jets (see page 5). For initial operation, be sure jetting is rich.

Remove valve adjustment cap or cover. Remove the spark plug. Crank the engine over until oil is seen reaching the rocker assembly. DO NOT START ENGINE UNTIL OIL IS OBSERVED FLOWING INTO THE HEAD.

Add fuel. Premium pump fuel can be used with this kit.

ENGINE BREAK IN

Start bike and hold engine at a fast idle until warm. Riding, run through the gears, accelerating slowly. Do not over-rev or lug the engine. Ride for about 20 minutes. Never allow a new air-cooled engine to sit still except during initial warm-up.

Stop, shut off the engine and allow it to cool. Re-torque head bolts and check all other fasteners.

Complete step "a" again, this time running engine off and on for an hour. Stop and allow engine to cool. Change the oil. Re-check valve lash settings, timing, etc.

Run the engine at least 1 ½ hours before jetting for power.

JETTING

These jetting specifications are designed as a rule of thumb. They are in no way absolute.

You will need to purchase jets from your Honda dealer. Specifications are designed to work with JUST the Powroll Performance kit. If you have other modifications, your jetting needs will be different.

Stock Main Jet is a 95

Stock Pilot Jet is a 38

For engine break in, we recommend installing a main jet at least 4 sizes larger than stock. Pilot jet should remain stock. Move needle clip down one position (richer).

HONDA MAIN JET PART NUMBERS

98 MAIN JET #99101-GHB-0980

100 MAIN JET #99101-GHB-1000

102 MAIN JET #99101-GHB-1020

105 MAIN JET #99101-GHB-1050 - If you have no other modifications, start here.

108 MAIN JET #99101-GHB-1080

110 MAIN JET #99101-GHB-1100 - Start here if you have other modifications.

Usually the pilot jet will remain stock. In some rare instances, you may need a smaller or larger pilot jet. Below are Honda part numbers for larger and smaller pilot jets.

HONDA PILOT JET NUMBERS

35 PILOT JET (SMALLER THAN STOCK) #99103-MT2-0350

40 PILOT JET #99103-MT2-0400

JETTING FOR POWER - AFTER ENGINE BREAK-IN

It is the responsibility of the owner to determine proper jetting for their engine.

Variations in air density, specific gravity of fuel, altitude and other engine modifications play a large part in jetting.

Newly built engines need rich jetting during break-in. Do not jet for power until an engine is broken-in.

Plug reading may not work. Revving the engine while it's sitting in the garage doesn't work. Other than Dyno testing, the steps below are the simplest way you can jet your engine.

1. Find a gentle slope that you can ride in 2nd or 3rd gear. Look for something that will put a reasonable load on the engine. This will be your "dyno".
2. A basic outline of which jet is active at a particular throttle setting:
Pilot Jet = 0 to 1/4 throttle. Needle = 1/4 to 3/4 throttle. Main Jet = 3/4 to Full Throttle.
 - Changing the Main Jet size won't affect how your engine idles or runs at 1/4 throttle.
 - Engine RPM isn't what determines which jet is active - throttle position does.
3. Make the recommended jetting changes. Always start rich and work leaner.
4. Start and warm up the engine, then ride your 'dyno hill'. Any point where you feel the engine stumble or hesitate indicates a tuning problem. Note the throttle position and modify the corresponding jet (1/4 to 1/2 throttle = needle. 3/4 throttle or more = main jet).
5. Only change jetting by 1 step at a time, and 1 circuit at a time (don't change needle and main at the same time). Re-check after every change.
6. Once the engine runs smoothly throughout, you're jetted!

If you ever notice an abrupt loss of power, or engine sounds change, shut it down.