



**DRI YAMAHA YFZ R (EFI) 450/480 NATIONAL KIT ASSEMBLY TIPS**

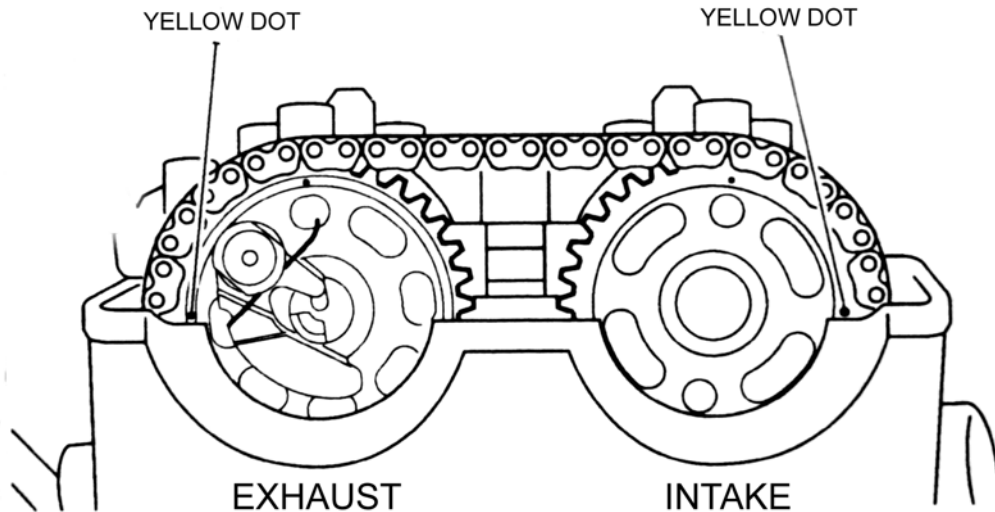
2009-13 Models (Fuel Injected Models)

*SPECIAL NOTE: DRI does not recommend working on the engine of your Yamaha YFZ 450 without the assistance of the Genuine OEM Yamaha Service Manual.*

**ASSEMBLY**

It is MANDATORY that the cylinder head and cam tower bolts are torqued properly. Consult the OEM Yamaha Service Manual for specific instruction and torque settings. Head bolts must be torqued exactly as per specified in OEM service manual.

*Note: On Exhaust Cam, there are 7 ½ teeth between Dots.*



**CAM TIMING**

Start with Piston at TDC, Set like manual, see picture. Yellow dots should be 90° from top. Exhaust points to EX, Intake points to IN, Both flush with the top of head surface

**VALVE SETTINGS:** Valves should be checked initially every 3-4 hours for first 12-hour period after initial set-up and every 20 hours after that. Consult your camshaft specification card for correct clearances. Stock clearances no longer apply after camshaft has been upgraded to a DRI camshaft. **DRI CAM SETTINGS (Clearances must be set and checked with engine cold)**

Cam Profile Number	Intake	Exhaust	Power Emphasis
289 X12	.008"	.010"	MX: Midrange/Top
289 X34	.008"	.010"	XC : Bottom/Mid

**BREAK-IN:** Read and follow instructions for DRI TECH Sheet 4-STROK BREAK-IN.

\*NOTE: Engine will run better after it has 3-5 hours on it. See DRI website [www.duncanracing.com](http://www.duncanracing.com) for more details



**PISTON RINGS:** Piston ring installation is a very delicate procedure and should be performed by a trained professional. All rings **MUST** have gap checked.

\*DRI recommends consulting their 4-STROKE PISTON RING ASSEMBLY TIPS install sheet before attempting to install your rings.

**COMPRESSION RELEASE:** DRI recommends using the factory compression release system that is attached to the EX cam sprocket. DRI installs the OEM cam sprockets onto the billet camshafts used for the YFZ.

**SPARK PLUG:** NGK CR9E (colder plug than stock)      Gap: 0.028" – 0.031"

**AIR INTAKE:** DRI recommends using a Pro Flow Air Cleaner kit, with K&N Filter. For best performance it is recommended to use stock air box with lid removed.

**EXHAUST:** For maximum performance use Fat Boy 4 Complete Stainless Exhaust System. When a quieter exhaust is required use a Fat Boy 4 HQ. Turndown and or spark arrester are optional

**OIL:** Maxima Premium 4 10W40

\*Consult Yamaha OEM Service Manual for oil capacity specifications.

Be careful not to run engine low on oil, engine damage will occur.

**OIL BREATHER:** It is also advisable to re-route the exit breather line going from the oil breather catch tank (mounted LH side of sub-frame), it is no longer advisable to have it vent into air box.

It is NOT recommended to remove this breather catch tank.

It is recommended to install a longer hose on the OUT line of the catch tank and route it over top of engine but below fuel tank to front of engine and have it stop in front of radiator. It is also advisable to install a universal type paper filter on end of this vent hose. These types of filters are commonly used on 4-stroke engines of all types.

Make sure that ALL of the engines breather hose lines are free of kinks or any other types of obstructions.

**OIL PRESSURE:** It is necessary to verify that the engine is receiving oil to the top end. Upon on start up loosen and remove if necessary the 6mm bolt oil pressure check bolt located on the RH front side of head. (consult oem service manual for additional information). The oil pressure should be 1.4psi.

**CARBURETION:** This machine is NOT carburetated. This machine is equipped with fuel injection. Read EFI information regarding tuning/adjusting air fuel mixture

**AIR FUEL RATIO/IGNITION:** Stock ECU should be replaced with Vortex X10 ECU. The Vortex ECU is preprogrammed with new fuel and ignition maps to work with modified engines.

**NOTE: The ECU(Engine Control Unit) controls all fuel (jetting equivalent in carbureted engine) and all spark (CDI equivalent on carbureted engines)**



**ELECTRONIC FUEL INJECTION:** To adjust the air fuel mixture on this machine (which is required with ALL performance engine modifications) a VORTEX X10 ECU- Engine Control Unit or VORTEX Interceptor is required.

**VORTEX ECU:** Pre Programmed with 10 Performance Fuel & Ignition maps developed on the Dyno & Track - all the work is done for you! · Instant Plug in Performance (replaces standard ECU with no mods to wiring required) · Additional 3 fuel trim switches to adjust fuel mapping by +12.5% to minus 10% in Lo , Mid and Hi throttle opening· Adjustments made using a screwdriver and switches provide visual feedback as to changes made· Rubber Mounting Boot + Brackets supplied (where required)  
· V-Boost - Programmable Voltage Boost Circuit for maximizing Spark Energy across the entire rev range· Higher Rev Limit (where required) · Robust design -fully waterproof - o-ring sealed switches  
· Diagnostic Flash codes - tests for sensor faults and flashes codes to FI light  
· Re Programmable (Software and Interface hardware not Included)

**VORTEX Interceptor:** The Interceptor is a plug in module that taps into the fuel injector drive circuit from the standard ECU(Engine Control Unit) whilst monitoring the Throttle Position Sensor (TPS) then remaps the injector pulses thus the fuel flow to better match the increased air flow created by the addition of the modified engine components being installed. This is done over all throttle positions and RPM. The pre-programmed fuel map is developed by Vortex Performance/ DRI and is intended to work your hi performance engine combinations. In addition we have included three rotary switches which represent 0-33%, 34-66% and 67-100% Throttle Openings. Each switch allows the user to richen or lean the pre programmed Vortex Fuel Map by up to +/- 8% in 2% increments per click. The microprocessor controlled Interceptor re calculates the fuel maps and controls the fuel injector in accordance with the Vortex Fuel Map as well as the position of the switches. The switches act in a similar way to previously understood carburetor jets of, Pilot, Needle and Main. This is done by dividing the fuel adjustment controlled by the switches into three bands of throttle position 0 - 1/3, 1/3 - 2/3 and 2/3 – Full. The Interceptor does not control spark.

The Interceptor is also commonly referred to as a “Piggy Back” type tuner. Don’t be misled, while a good “Piggy Back” tuner like an Interceptor can get the job. There is no comparison for any “Piggy back” type tuner when matched against a fully programmed and developed Hi Performance ECU. The Vortex ECU out performs the Piggy Back” system everytime.

**EFI TROUBLE SHOOTING:** Both the stock OEM ECU and the VORTEX X10 ECU have a flash code system that works with the OEM dash lights. It is essential to keep the original Yamaha dash in tack and in good working condition.

For information on trouble shooting dash codes consult OEM Yamaha Service Manual or Vortex X10 ECU instructions.

\*Call DRI for additional technical support 619-258-6306

**FUEL:** Use VP Racing Fuel type C-12 ([www.vpracingfuels.com](http://www.vpracingfuels.com)). Motor Octane 108 or Sonoco Race Fuel type “The Standard” ([www.racegas.com](http://www.racegas.com)) 105 motor Octane

\*\*\*For extreme Racing performance VP U4.2 Fuel



### TOP END SERVICE

For maximum performance, top end should be serviced at least every 15-20 hours.

For standard usage, top end should be serviced at least every 35-40 hours.

A top end service includes checking valves, valve sealing, piston clearance, piston pin, cam chain and tensioner, upper and lower rod bearings, etc.

Piston clearance should be kept between .0015" - .0025" not recommended to exceed .004"

Ring end gap should be kept .015" - .020" not to exceed .020"

Consult DRI or a qualified technician for additional assistance.

**GASKETS:** It is recommended to use OEM Yamaha Genuine gaskets on all engine rebuilds. Only exception is when installing a big bore piston.

**CRANKSHAFT:** The OEM YFZ R crankshaft is a strong component. But it is necessary to keep track of the hours put on the crankshaft. In most recreational applications crankshaft replacement should occur prior to 100 hours. For racing applications that number can be greatly accelerated.


**GEARING:** OEM Gearing 14/38, Dune Riding 15/38, MX Racing 15/36-38

**CLUTCH:** The clutch must be kept in excellent condition for maximum performance to be delivered. Call DR Tech department with any questions regarding clutch performance or upgrades.

**HOUR METER:** It is recommended to install an hour meter on your machine. This device can come in very handy keeping track of packing life, valve adjustments, oil changes, top end service, etc. A number of manufacturers offer them for under \$ 50.00. Installation is simple

### NOTES

1. Valve clearance and Deck height must be checked. Valve to Piston clearance should be minimum .060", Piston to Head clearance should be .040".
2. Must use special modified DRI steel head gasket on 480cc Kits

	<b>Engine oil quantity</b>
	<b>Without oil filter element replacement</b>
	<b>1.40 L (1.48 US qt, 1.23 Imp.qt)</b>
	<b>With oil filter element replacement</b>
	<b>1.45 L (1.53 US qt, 1.28 Imp.qt)</b>
	<b>Total amount</b>
	<b>1.65 L (1.74 US qt, 1.45 Imp.qt)</b>