



## DRI YAMAHA YFZ (Carb) 450/470/480 NATIONAL KIT ASSEMBLY TIPS

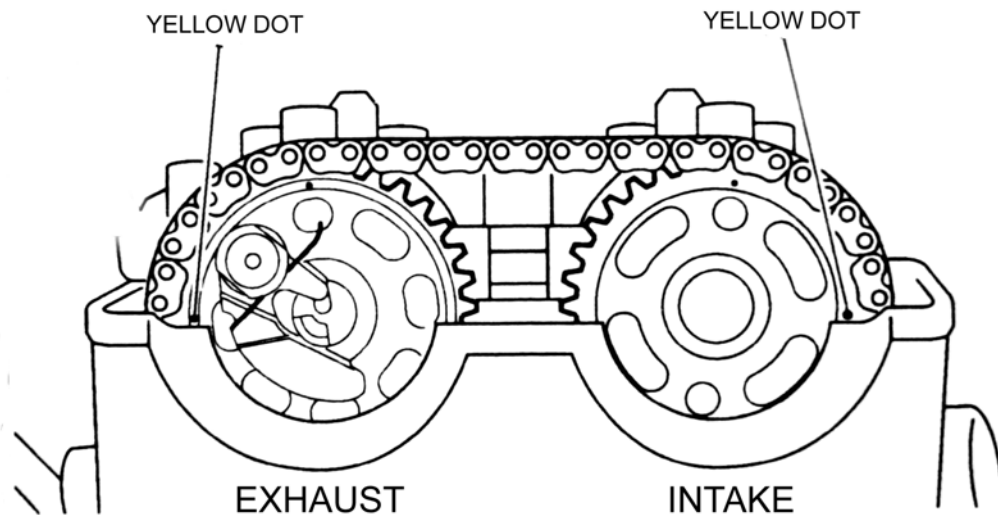
2004-09,12 Models (Carbureted Models)

*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

**SPECIAL NOTE:** The Yamaha YFZ 450 piston pin and top end of connecting rod are lubricated by oil splash only. This is a VERY poor design and can and will cause reliability problems with your YFZ engine. Especially when additional horsepower is extracted from it.

This lubrication deficiency can cause; piston pin failure, upper rod pin failure, piston cracking and damage, etc.

All other engine designs of this type lubricate these areas with a pressure oiler. (*Squirting oil directly on pin and top of rod on each engine revolution*)

DRI has designed a minor machining modification that will help lubricate the piston pin and upper rod end. DRI does not recommend modifying your YFZ engine for more horsepower unless you have made this modification.

To perform this modification DRI must have the Right Center Case and Clutch cover from your machine. (DRI can also perform this modification to complete engine if top end is off)

This Pin Oiler Modification costs less than \$100 and takes less than 3 business days to perform.



Contact DRI for additional details.

**LUBICATION SYSTEM:** DRI offers a bolt on oiler modification kit for 2004-06 model. The kit replaces the clutch cover and oil pump. The kit converts all 04-06 model YFZ 450 to the 07-09 YFZ 450 oiling system. This system has a spray nozzle in the clutch cover that slides through center case opening and consistently sprays a small stream of oil on to the piston pin, piston and top end of rod. The kit is a bolt-on unit *No Machining* is required.

**THIS OILER KIT IS RECOMMENDED FOR EVERY 04-06 YFZ 450. IT WILL MAKE ENGINE MORE RELIABLE.** 07 Oil Kit will work by itself or it will also work with DRI's pin oiler modification. Use of both is recommend for maximum reliability.

See DRI website [www.duncanracing.com](http://www.duncanracing.com) for more details

**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.

**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-Mid/Top
289 X34	.008"	.010"	XC-Bottom/Mid

**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

**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



**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.

**JETTING** *Base Line: (STOCK FCR CARBURETOR, FB4 Exhaust, Air box lid off and Pro Flow Kit w/ K&N. Higher compression will require Richer main Jet)*

2004-09 Model use Keihin 39mm FCR Carburetor

Pilot: # 48-#50,

Needle: Stock (#5 Position), ) ('04-'06 Needle is a NDSR)

Main: # 185

\*The 2007-09 model needle # NGNR has a non-adjustable needle clip. In most cases the stock needle is adequate. But if any symptoms of a lean condition occur it is recommended to install the '05 YFZ 450 needle (Yamaha part # 5TG-14916-V1-00)

This needle may be purchased from DRI or a Yamaha dealer.

2012 Model YFZ 450: '12 model uses 42mm Mikuni BSR Carburetor.

Pilot: #50,

Needle: Stock Richen 1 clip

Main: # 160-#170

*DRI also offers alternate carburetors set ups than stock. Call for details.*

## **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.



**CRANK SHAFT:** DRI recommend updating ALL 04-05 YFZ 450 engines to the 06-09 crank shaft. The 06-09 crank shaft is a superior design and will make your engine considerably more reliable than the 04-05 crankshaft. The 06-09 OEM crank shaft will bolt directly in the 04-05 engines with no machining required. Make your engine has crankshaft replaced by a trained professional

**\*NOTE: On 04-06 models make sure to install a '07 oiler modification kit.**

For Standard usage stock rod should be sufficient. Under serious performance conditions an upgraded connecting rod may be required. Contact DRI for additional details.

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

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


**IGNITION:** It is recommended to use a Vortex X10 CDI unit with all performance applications.

**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 and 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 manufactures 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 for 470cc/480cc. Use stock OEM gasket on standard bore machines.

	<b>Overhaul</b>
	<b>Total amount</b>
	1.95 L (1.72 Imp qt, 2.06 US qt)
	<b>Quantity in oil tank</b>
	1.55 L (1.36 Imp qt, 1.64 US qt)
	<b>Quantity in crankcase</b>
	0.40 L (0.35 Imp qt, 0.42 US qt)
	<b>Periodic oil replacement</b>
	<b>Total amount</b>
	1.75 L (1.54 Imp qt, 1.85 US qt)
	<b>Quantity in oil tank</b>
	1.55 L (1.36 Imp qt, 1.64 US qt)
	<b>Quantity in crankcase</b>
	0.20 L (0.18 Imp qt, 0.21 US qt)
	<b>With oil filter element replacement</b>
	<b>Total amount</b>
	1.85 L (1.63 Imp qt, 1.96 US qt)
	<b>Quantity in oil tank</b>
	1.55 L (1.36 Imp qt, 1.64 US qt)
	<b>Quantity in crankcase</b>
	0.30 L (0.26 Imp qt, 0.32 US qt)