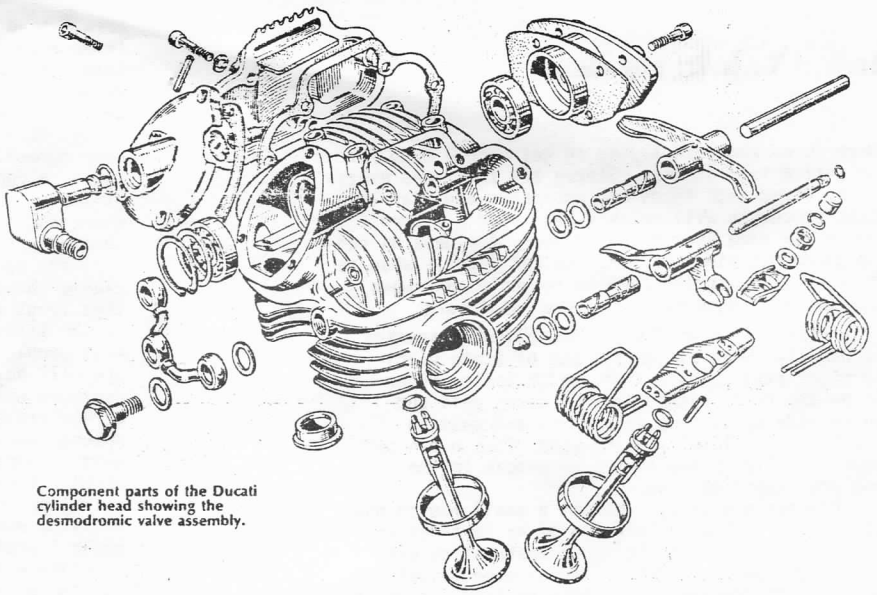
DESMO SINGLES

ENGINE REBUILD SERIES



Component parts of the Ducati cylinder head showing the desmodromic valve assembly.

ENGINE REBUILD - DUCATI DESMO SINGLES

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Do you get worried if someone mentions the word--DESMODROMIC? If you own a 250, 350, or 450 Desmo Ducati and have at some time removed the rocker covers, you'll know that there is nothing more interesting than a couple of extra rocker arms which pull the valves shut -- even the valve springs are still there to help things along a bit.

The extra work involved in removing the engine either. Remove the gas tank and seat, disconnect the wires from the engine at the regulator under the seat and take off the coil. Undo all the usual connections at the carb and the clutch--wire up the clutch lever on the engine to stop it dropping down and getting damaged when you remove the engine. Apart from little things like draining the oil, you're ready to remove the six bolts which hold the engine in the frame. A bolt and a bracket stay in place on the engine--this will pop in from the other side if you forget to slot it back on the rebuild. By the way, you'll find it much easier to undo the 23mm drive sprocket nut before you remove the chain rather than struggle with it off the bike later.

Our engine was cleaned and hosed down and as we examined it on the bench, the general conclusion was that rather too much gasket cement proved to be the tip of the iceberg of troubles which we were to find-- much of it caused by faulty assembly.

The first thing that was noticed was that the points plate was right at the end of its slots, the plate was removed which revealed that the auto advance was scrap -- nonstandard screws holding the points were so long that they had wiped out some of the more important bits sticking out on the mechanism, including one of the bobweight springs.

Anyway, we concentrated on the job in hand and started by removing the head and barrel. If you were just doing a top end job, the timing dots on the cam bevel gears could be lined up to save having to line up dots on the drive gears below on reassembly, but on a complete rebuild this is unimportant.

The head and barrel may need tapping with a soft mallet to loosen them off -- the head pulls off bringing the cam drive shaft with it and the tube which locates into an "O" ring in the drive tube base. As you pull the barrel off, hold the spigot of the barrel to brab the piston as it slides off to stop the con-rod hitting the mouth of the crankcase--this wouldn't have mattered much in our case as there was a damned great flake of metal cracking off the con-rod. Nobody could ever recall seeing such a nasty on a Duke before. Support the rod as you tap the gudgeon pin through and warming the piston helps here.

Once the top is off, we can get down to the head. Strip off all the covers except the cam bearing retaining plate. To remove the cam and the rocker shafts, ideally, you need special tools, but these can be made up.

To remove the four rocker shafts, which are usually tight, you'll need a 4mm bolt to fit the end of the shaft and this will have to be attached to a length of studding or a bolt with plenty of thread on it. Screw it into the end of the shaft and fit a tube of suitable dimensions over this along with a nut and a wahser on top. Tighten up the nut on the end, and all things being equal, it should draw the rocker shaft out. The bottom shafts are fitted with "O" rings which should be renewed.

The camshafts is a bit tricky on the Desmo because the large lobe at the end of the shaft limits the chances of popping something over the end to hold the lobes while you undo the nut at the other end. The tool which is normally used locates into the holes in the side of the lobe with a couple of pegs. The second best way to hold the cam is to place a lever with a bit of cardboard round it in the top of the head so the lobes wedge up against it -- please be very careful if you do it this way, we wouldn't like you to do something nasty to the head or cam, and don't take the cam bearing plate out until you've done this job, or you will damage the drive-side bearing.

Removing the valve springs needs either a rather expensive Ducati compressor, or you could try some wide-spaced prongs bolted or welded to the end of an ordinary compressor. The other approach is some strong wire tied tightly around the meeting point of the two hairpin springs. The choice is yours, but make sure you make a good job of tying down the springs if you use the wire method. Clean all the parts you have removed from the head and check for wear -- scuffing and scoring on any of the moving parts will make them candidates for replacement, but you can allow a bit of wear on the underside of the valve collar and the face of the returning rocker fork.

All that will be left in the head now will be the guides which should be checked for undue sloppiness and the drive-side cam bearing which should only be removed if it needs replacing.

Right now the bottom end. Undo the allen screws holding the side casings -- have a rag or two handy to mop up the oil from the primary drive side. The first things we discovered on the timing side was the oilway in the casing partally blocked with gasket cement, and the timing pinion which operates the points was one tooth out of line with the timing dot on the idler gear -- this accounted for the points plate being so far out of line.

The oil pump is on the inside of the timing case, the body should be held down as you remove the last screw to make sure that the ball and spring beneath doesn't suddenly escape. These don't give much trouble, just check for ob-