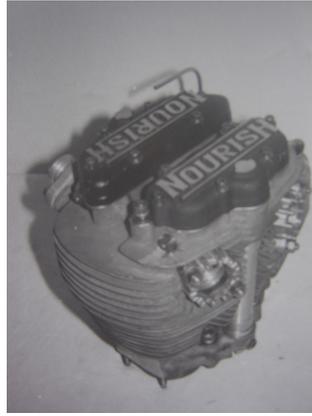


Nourish Engineering Limited



Ref 400 Conversion Kit

This popular 8 Valve Conversion Kit is for 650cc or 750cc Triumph engines (unit or pre-unit), which with an increase in bore size to 76mm gives an actual capacity of 749cc. Ports and combustion chambers are finished to racing standards, and manifolds can be supplied angled or straight to take 32mm to 38mm Amal Mk II carburettors. The kit consists of all the required parts except the exhaust front pipes.

Nourish own camshafts are available for unit or pre-unit engines with our 305°, 320° and 'Z' profiles. These are not re-worked Triumph cams but machined from forgings and nitrided, as in our complete racing engine.

Due to the differing condition and specification of the engines to which the kit is likely to be fitted, it is impossible to quote a standard performance figure, but due to the efficient 4 valve layout an increase up to 25% in BHP can be expected along with an increase in torque and flexibility. Raising the gearing by reducing the number of teeth on the rear sprocket by 3 is a very worthwhile consideration, especially for the touring rider.

Fitting the kit is straightforward and requires only the reshaping of the hole in the crankcase to allow the cam followers to move freely (this is due to the different angle of the follower block in the cylinder), which can be simply done with a file or a rotary cutter in an electric drill. The valve timing must also be reset, once again due to the followers striking the cam at a different angle to the originals. Use the standard timing for the cams in use. Ignition timing must be reset to give 28° full advance.

CYLINDER HEAD: One-piece cast in top quality 'Y' alloy, fixed with ten studs. Two cylinders with four valves to each. Bifurcated semi-downdraught inlet ports incorporating latest design technology. Combustion chamber developed to produce finest combustion results. Centrally situated spark plugs. Volume balanced to ensure equal compression ratios. Precision sealed by recessed Cooper-type copper ring.

BARREL: One-piece casting in robust cast iron, fixed to crankcase with eight studs. Liner is in cast iron of sufficient thickness to permit reboring within class limit. Tappet blocks are dural and locked to base flange.

VALVE GEAR: Dural pushrods with hardened steel caps operating forged steel Tufrided 'Y' shaped rockers of 1.1:1 ratio with hardened steel tappet adjusting screws. Flash-chromed hardened steel rocker shafts, oil-fed from scavenge return line. Reliable double valve springs of pre-set fitted length.

VALVES: Exhaust valves in 21.4 N steel stelite tipped. Inlet valves in EN52 steel.

VALVE GUIDES: Valve guides in Colsibro, with "Welltite" seat inserts.

CARBURATION: Here again it is impossible to give exact details due to the different condition and specification of engine and exhausts, but it must be remembered that the 4 valve cylinder head burns a leaner mixture than its 2 valve counterpart. As a rough guide, with an Amal Mk II carburettor, a 220 main jet is the starting point and it is unlikely that you should require a larger one.

VALVE TIMING: The angle of the tappets relative to the camshaft is not the same as on the stock Triumph engine. Therefore the original markings do not give the correct timing.

The correct method of timing camshafts is to set a degree disc to an accurate TDC, fix a dial indicator to the head with the probe on the valve spring cap in line with the valve stem, time the timing side cylinder first (inlet) with just one pushrod in place. Move the keyways in conjunction with a tooth on the cam wheel to get the correct timing and when satisfied, turn to top dead centre and mark the idler and cam wheel. Take the inlet

pushrod out and fit the exhaust pushrod, then proceed as with inlet, but remember to always go back to TDC to align inlet marks before moving the cam wheel, otherwise you will loose inlet timing.

CYLINDER HEAD NUT TORQUE:

Iron barrel: 22 lbs/ft cold (Early alloy barrels: 18 lbs/ft cold)

IGNITION SETTING: Fully advanced, the plugs should fire at 28° BTDC

EXHAUST: For Road Racing the exhaust system should be 1½“ diameter pipe (1³/₈“ ID), 26” long, with Nourish reverse cone megaphone.

SPARK PLUGS: For Road Use use Champion G59C or NGK Iridium
For Racing use Champion G55R

REPLACE TIMING COVER: If the machine is to be used for racing, set the valve timing as explained and then adjust cam timing and balancing between cylinders in accordance with the Triumph Technical Information Bulletin No 14, Method 2.

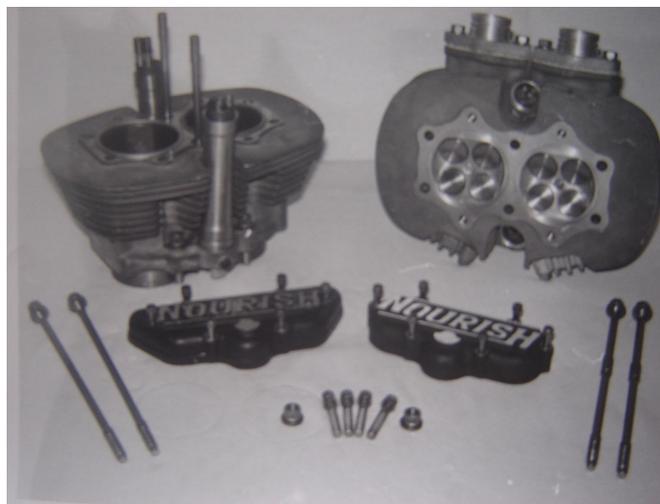
On the 750cc Meriden Triumph fitted with original cams, it is advantageous to reduce the valve overlap due to the 4 valve head not requiring as much overlap as the original 2 valve head. Therefore re-time valves to give:

- INLET: .151” lift at TDC, nil tappet clearance
- EXHAUST: .88” lift at TDC, nil tappet clearance
- FINAL TAPPET CLEARANCE: 0.006” cold, inlet & exhaust for Nourish cams

For other cams use original timings, and on all cams use original tappet clearance settings with COLD engine. After resetting valve timing always check with degree plate and dial indicator.

Before fitting cylinder block, the hole in the top face of the crankcase, which the cam followers and blocks pass through, MUST be reshaped to accept the new angle of followers. This is quite simple and can be done with a round file. After filing, but before bolting cylinder down, check that followers are free to move full travel.

Remainder of fitting is then straightforward assembly.



PARTS LIST

PART NO.	PER ENGINE	DESCRIPTION	PART NO.	PER ENGINE	DESCRIPTION
N113	4	Stud, barrel / crankcase, short	N178	1	Rocker cover, exhaust
N125	2	“O” ring, pushrod tube, internal	N179	1	Rocker cover, inlet
N126	4	Sealing ring, pushrod tube	N180	1	Rocker cover gasket, exhaust
N129	8	Cup end, pushrod	N181	1	Rocker cover gasket, inlet
N133	2	Tappet block	N182	12	Socket head cap screw, ¼”UNCx1½”long

N134	2	Securing screw, tappet block	N183	12	Washer, 1/4" x 1/2" OD
N137	1	Gasket, barrel/crankcase	N184	4	Exhaust stud
N140	10	12 point nut, 3/8" UNF	N185	2	Exhaust sealing ring
N141	4	Barrel flange washer, 3/8"x 5/8"x 3/32"	N186	2	Exhaust clamping ring
N143	1	Cylinder head	N187	4	Nut, 5/16" UNF
N144	4	Valve seat insert, inlet	N188	4	Washer, 5/16" ID, flat
N145	4	Valve seat insert, exh	N189	4	Stud, carb flange / head
N146	8	Valve guide, inlet / exh	N190	2	Carb flange
N148	4	Helicoil, 5/16"UNFx1 1/2"D	N273	2	Head sealing ring,
N149	4	Valve, inlet	N305	2	Inlet manifold gasket
N150	4	Valve, exhaust	N 404	2	Piston, complete, Std., + .015, +.030
N151	8	Valve spring platform	N405	4	Compression ring, std, + .015, +.030
N152	8 pairs	Valve spring, inner	N406	2	Oil control ring, std, + .015, + .030
N153		Valve spring, outer	N407	2	Gudgeon pin
N154	4	Valve stem seal, inlet	N408	4	Circlip
N155	8	Valve spring cap	N410	2	Stud, barrel / head
N156	16	Valve cotter	N412	4	Pushrod
N157	1	Rocker shaft pedestal, inlet	N413	1	Pushrod tube, exhaust
N158	1	Rocker shaft pedestal, exhaust	N414	1	Pushrod tube, inlet
N159	2	Rocker shaft pedestal dowel	N415	1	Cylinder barrel, c/w tappet blocks
N160	2	Socket head cap screw, 1/4"UNC x 1 1/2"long	N416	2	Stud, crankcase / head, plain
N161	2	Rocker shaft	N417	2	Stud, crankcase/ head, dowel
N162	4	"O" ring, rocker shaft	N419	2	Liner, 76mm
N163	2	Domed nut, 3/8" BSF	N420	4	Cap head screw, 5/16"UNF x 1 1/2"
N164	4	Copper sealing washer	WN102	1	Gasket set
N165	1	Oil feed pipe	N400	360°	Camshaft, exhaust, 320°, unit Triumph
N166	1	Rocker, exhaust, left	N401	360°	Camshaft, inlet, 320°, unit Triumph
N167	1	Rocker, exhaust, right	N402	360°	Camshaft, exhaust, 305°, unit Triumph
N168	1	Rocker, inlet, left	N403	360°	Camshaft, inlet, 305°, unit Triumph
N169	1	Rocker, inlet, right	N510	180°	Camshaft, inlet, 320°, unit Triumph
N170	4	Ball end, rocker	N511	180°	Camshaft, inlet, "Z" profile, unit Triumph
N171	8	Tappet adjusting screw	N512	180°	Camshaft, exhaust, 320°, unit Triumph
N172	8	Tappet lock nut, 1/4" UNF	N513	180°	Camshaft, exhaust, "Z" profile, unit Triumph
N173	4	Rocker spacer spring	N514	360°	Camshaft, inlet, "Z" profile, unit Triumph
N174	4	Rocker spacer washer	N515	360°	Camshaft, exhaust, "Z" profile, unit Triumph
N176	6	Head washer	N560	1	Oil pump

NOTE: ON PRE-UNIT ENGINES USE 2 INLET CAMSHAFTS

Price on application