



## A RESOURCEFUL RACING PHILOSOPHY

Nourish engines are built to meet the needs of the serious competitive motorcyclist looking for power and performance, with the in-built benefits of easy maintenance, robust construction and minimum weight.

Nourish have combined the advantages of the compact, low-weight power of the 4 valve per cylinder twin with a completely new and immensely strong crankcase/crankshaft assembly. From the earliest drawing board stage the new engine was designed with these factors in mind, plus the positive determination to keep the engineering as simple as possible to reduce the time and cost involved in maintenance, servicing and repair.

Much careful thought went into the design and construction of production tooling equipment to ensure that batch manufacture of the engines could be carried out quickly, efficiently and reliably. The result is that these engines are being marketed at a far lower price/performance ratio than might otherwise have been expected.

With their long-standing awareness of the precise needs of the racing motorcyclist Nourish have designed an engine that is adaptable to meet a multiplicity of racing requirements, from road-racing to grass track and moto-cross competition, in solo and sidecar versions, using petrol or dope fuels. From the variety of package options available the competitive clubman, the individual rider or the frame kit supplier can choose the specific combination of technical features that will slot perfectly into any 500cc, 750cc or 850cc motorcycle racing category. The Nourish engine is consciously and deliberately purpose built to improve standards in competitive sport. In addition, Nourish engines can also be supplied with alternator crankshafts for street use.

## POWER AND PERFORMANCE SPECIFICATIONS

**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 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 one-to-one 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 stellite tipped. Inlet valves in EN52 steel.

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

**CRANKCASE:** Two-piece castings in Aerospace grade heat treated alloy, extensively finned for rigidity and efficient cooling. Deep threaded studding to retain barrel firmly. Faced, with locating ring provided for chaincase fitting. Internal drillings for pressure oil feed to camshaft bearings. Two heavy-duty main bearings. Breathing by disc valve on crankshaft. Four bolt sump plate offers easy access to scavenge filter screen.

**CRANKSHAFT:** Machined in solid billet nitriding steel with 1.75" (44.45mm) diameter crankpins and 1.375" (34.925mm) roller main bearings. 360°, 180° or 90° crankpin location, large-bore oilway drillings. The engine crankshaft is of robust one-piece construction. A removable plug is provided to allow for in-situ balance factor adjustments. Also available in 180° and 90° configuration. 360° crankshafts balanced to 55% factor, adjustable up to 85%.

**CONNECTING RODS:** All engines are supplied with Carrillo connecting rods, with 6" or 6½" centres, with matched weight pairing of rods.

**PISTONS:** Forged alloy round skirt, to full racing specification. Fully floating gudgeon pin, two .040" thick compression rings, 750cc version has flat top piston with valve clearance pockets, 850cc version has dished crown and all pistons are fitted with either one piece or three piece oil control ring.

**OIL FILTER:** Disposable element filter can be fitted between oil pump and crankshaft for maximum protection.

**OIL PUMPS:** Pressure and scavenge. Twin gear type pump driven by skew gear from the crankshaft. Valve gear fed from scavenge. Filter screen fitted in sump plate.

**CAMSHAFTS:** Gear driven from crankshaft pinion. Manufactured in nitriding steel with pressure-fed oil to cam faces. Stellite-faced followers and pressure fed bearings. 305°, 320° and 'Z' profile camshafts available according to specification of engine.

**SPROCKETS:** A range of accurately broached top-fitting spline sprockets are available. 17 to 25 tooth ½" simplex, 26 and 28 tooth ⅜" triplex.

**TIMING COVER:** Carrying electronic ignition trigger shaft in separate bearings. Alternative provisions for oil take-off pipes to remote oil filter cooler. Timing cover also carries oil pressure relief valve.

**IGNITION SYSTEM:** 12 volt electronic coil module ignition system by Interspan for street use or Interspan battery-less system for racing.

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

**CARBURATION:** Can vary according to customer choice and application. A variety of carburettor types and sizes may be fitted (34mm, 36mm or 38mm) and these can be jetted for road racing, grass track, motocross etc.

**WINNING TECHNOLOGY:** This ultra-efficient 8 valve twin is winning and will win more. It has the unbeatable backing in the factory and in the field of many years engineering experience. It is in the forefront of motorcycle technology yet is still within the reach of the serious competitive motorcyclist who must keep capital outlay and maintenance costs down to the absolute minimum.



### GENERAL SPECIFICATION

These figures vary according to the wide diversity of specifications

	900cc	850cc	750cc	500cc
BORE	80.5mm	77.81mm	73.04mm	73.04mm
STROKE	88.5mm	88.5mm	80.5mm	58.75mm
CAPACITY	900cc	841cc	741.5cc	492.3cc
COMPRESSION RATIO NOMINAL	9.75:1 – 12:1 (According to fuel)	10.0:1– 12:1 (According to fuel)	10.25:1– 12:1 (According to fuel)	10.5:1– 12:1 (According to fuel)
BHP/RPM	83-88/7,200	82-85/7,500	78-80/7,800	58-60/9,000
TORQUE/ RPM	lb/ft 6,000	64 lb/ft 6,300	58 lb/ft 6,500	38 lb/ft 7,200
MAXIMUM RPM	7,500	8,500	8,500	9,500
WEIGHT OF ENGINE	89 lbs	89 lbs	89 lbs	84 lbs
SPARK PLUGS ROAD RACE	CHAMPION G55R or equivalent			
IGNITION	Interspan: Electronic or Batteryless			

Data for 500cc engines varies slightly from the figures above.  
 The crankshaft is redesigned and the weight is down by approx 3 lbs.  
 Balance factor on all 500cc 360° crankshafts is reduced to 55%.  
 Road race 360° 500cc engines are built with 320° profile camshafts.  
 Standard valve springs used set to 0.950" fitted length.

## **'K' TYPE ENGINES**

The 'K' engine was developed some twenty years ago. Being the same basic engine, it has 90° crankshaft, giving very smooth running; roller cam followers with new profile camshafts; needle roller idler gear and a trigger shaft coupling; and updated valve springs with a new top collar.

The 'K' engine is available in the following sizes:

500cc	Bore 73mm	Stroke 58.75mm
750cc	Bore 88.5mm	Stroke 72.6mm
850cc	Bore 80.5mm	Stroke 82.4mm
900cc	Bore 80.5mm	Stroke 88.5mm

These engines can be rebored to oversize and stay in capacity limits. They are also available in "street trim" with alternator crankshaft.

In view of continuous development and improvement, the Company reserves the right to alter specifications and options without notice.