



1000 **Le Mans**

II

**ADDITIONS AND CHANGES TO THE WORKSHOP MANUAL
FOR V 7 SPORT - 750 S - 850 T - 850 LE MANS**

MAIN FEATURES

Engine

Cylinder disposition	2-cylinder, 4-stroke "V" 90°
Bore	mm 88
Stroke	mm 78
Displacement	cc 952
Compression ratio	10,8 to 1
Max. torque	8,7 kgm at 6,000 rpm

VALVE GEAR

O.H.V. push rod operated.

CARBURETION

2 Dell'Orto Carburetors type PHM 40 (D) right PHM 40 (S) left.

LUBRICATION

Pressure, by gear pump.
Normal lubrication pressure, $3,8 \div 4,2$ Kp/cm² (controlled by relief valve).
Wire gauze and cartridge oil filters.
Electrically controlled oil pressure gauge.

GENERATOR

(14 V - 20 A) Front on the crankshaft.

IGNITION

By battery, with double contact breaker and automatic advance.
Ignition data:
Initial advance (fixed) 8°
Automatic advance 26°
Full advance 34°
Contact breaker point gap mm $0,37 \div 0,43$
n. 2 spark plugs
n. 2 ignition coils, on the left side of frame.

STARTING

Electric starter with electromagnetic ratchet control. Ring gear bolted on flywheel.
Starter button (START) right on the handlebar.

TRANSMISSION

Clutch: Dry type, multiplates. Lever controlled from the L/H side of the handlebar.
Primary drive: via the gearbox ratio: 1 : 1,290 (Z = 17/22).
Gearbox: Five speeds. Frontal engagement, constant mesh gears Cush drive incorporated. Pedal controlled from the L/H side of the motorcycle.

Ratio:

tow gear	1 : 1,825 (Z = 16/26)
2nd gear	1 : 1,260 (Z = 19/24)
3rd gear	1 : 1 (Z = 22/22)
4th gear	1 : 0,833 (Z = 24/20)
5th gear	1 : 0,760 (Z = 25/19)

Secondary Drive: cardan shaft (bevel gear set) ratio: 1 : 4,714 (Z = 7/33)

Overall gear ratio (engine/wheel)

low gear	1 : 9,914
2nd gear	1 : 7,703
3rd gear	1 : 6,100
4th gear	1 : 5,080
top gear	1 : 4,634

CYCLE

Frame: Duplex cradle, tubular structure.

Suspension: Telescopic front fork incorporating sealed hydraulic dampers.
Rear swinging fork with externally adjustable springs.

Wheels: in light alloy with rims
WM 3/2,15 - 18" front and rear.

Tyres:

Front	3,50 H - 18" or 100/90 H - 18"
Rear	4,00 H - 18" or 110/90 H - 18"
	or 4,10 V - 18"

Brakes:

Front: Hydraulic disc brake, twin braking cylinder caliper. Hand lever controlled from the R/H side of the handlebar. Hydraulic transmission free from rear braking system.

Disc	Ø 300 mm
Braking cyl.	Ø 38 mm
Master cyl.	Ø 12,7 mm

Rear: Hydraulic disc brake, twin braking cylinder caliper. Pedal lever controlled from the R/H side of the motorcycle.

Disc	Ø 242 mm
Braking cyl.	Ø 38 mm
Master cyl.	Ø 15,875 mm

The rear brake is bound by a hydraulic transmission to a twin front brake featured and dimensioned like the hand controlled one.

Dimensions and weights

Wheelbase (under load)	m 1,470
Max. length	m 2,190
Max. width	m 0,720
Max. height	m 1,030
Min. ground clearance	m 0,150
Dry weight	kg 198

PERFORMANCES

Max. speed, solo	240 km/h
Fuel consumption	lt 8 x 100 km

FUEL AND OIL CAPACITIES

GROUP OR PART	QUANTITIES	RECOMMENDATION
Fuel Tank (Reserve 3 lt)	lt 22,5	Petrol 98/100 NO-RM
Sump	lt 4	Agip SINT 2000 SAE 10 W/50
Gearbox	lt 0,750	Agip F. 1 Rotra MP SAE 90
Rear drive box (bevel set lubrication)	{ lt 0,230 { lt 0,020	Agip F. 1 Rotra MP SAE 90 Agip Rocol ASO/R
Front fork (p. leg)	lt 0,120	Agip F. 1 Dexron
Front and rear brakes		Agip F. 1 Brake Fluid SAE - J 1703

ENGINE INSPECTION AND OVERHAULING

Cylinder head covers - Cylinder heads - Valves - Springs - Valve guides

To take the valve guides off the cylinder heads use the proper punch (see fig. 22). The valve guides are to be replaced when the clearance between valve and valve guide is not avoided by replacing the valves only.

To press the valve guides onto the cylinder heads use the proper punch (see fig. 23). Heat first the cylinder heads and lubricate the valve

guides. The valve guides pressed, ream properly the inner bores (where the valve stems slide) using a proper tool in such a way to bring the inner \varnothing at the exact measure and data which are given in the table hereunder (see Drwg. fig. 348). The negative clearance between valve guides and cylinder heads must be within mm $0,046 \div 0,075$.

COUPLING DATA BETWEEN VALVE AND VALVE GUIDES (see Drwg. fig. 348)

VALVE GUIDE INNER \varnothing	VALVE STEM \varnothing	ASSEMBLING CLEARANCE
Inlet 8,000 \div 8,022	7,972 \div 7,987	0,013 \div 0,050
Outlet	7,965 \div 7,980	0,020 \div 0,057

Valve seats

The valve seats have to be reground with a proper grinder with valves. The valve seat inclination angle is $45^{\circ}30' \pm 5$.

Valves (see Drwg. fig. 348)

Ensure the clearance between valve stem and valve guide is within the right limits. The inclination angle of the valve plate is $45^{\circ}30' \pm 5$. The plate \varnothing of inlet valve is 44 mm while the plate \varnothing of outlet valve is $37,000 \div 37,100$ mm.

CYLINDERS - PISTONS - PISTON RINGS

Cylinders (see Drwg. fig. 349)

inspection

Measure the cylinder bore at the top, middle and

bottom on both transversal and longitudinal directions. In case off limits of values re-bore the cylinder considering that pistons and piston rings are available with the following oversizes: 4/10 and 6/10.

CYLINDER Ø

STANDARD VALUE	4/10 oversize	6/10 oversize
88,000 ÷ 88,016	88,400 ÷ 88,416	88,600 ÷ 88,618

SELECTION OF CYLINDER Ø

CLASS «A»	CLASS «B»
88,000 ÷ 88,009	88,009

Note: Class «A» cylinders must be matched with class «A» pistons; the same for class «B» cylinders and pistons.

Pistons (see Drwgs. fig. 349-350)

At the time the engine is overhauled, clean the

piston crown and the piston ring slots of all carbon deposits. Check then the clearance between cylinders and pistons relating to Ø selection. If such clearance is over the table values, it will be necessary to re-bore the cylinder considering that the piston is available with the following oversize: 4/10 and 6/10.

Pistons must be balanced; a weight difference of 1,5 gr is allowed. The selection measure must be taken at 22 mm from the piston bottom. (see Drwg. fig. 349 and Selection Table).

When fitting a piston pay attention that both the piston selection mark and the wording «SCA» (exhaust) face the cylinder exhaust hole.

PISTON Ø SELECTION

CLASS «A»	CLASS «B»
87,936	87,945 ÷ 87,954

Note: Class «A» piston must be matched with class «A» cylinders; the same for class «B» pistons and cylinders.

Fitting of a piston onto a con-rod

Before fitting a piston on to a con-rod, it is necessary to heat it in oven in oil bath at about 60 °C; this will allow a light dilatation of piston holes, thus making the introduction of the piston pin easier.

COUPLING DATA BETWEEN PISTON PIN AND PISTON HOLES (see Drwg. fig. 350)

PISTON RINGS

Each piston fits three types of pistons rings:

1 - Upper seal ring

standard Ø	mm 88,000
4/10 oversize	mm 88,400
6/10 oversize	mm 88,600
ring thickness	mm 1,490 ÷ 1,478
ring gap	mm 0,30 ÷ 0,45
slot clearance	mm 0,30 ÷ 0,62

2 - Middle seal ring, step oil scraper

standard Ø	mm 88,000
4/10 oversize	mm 88,400
6/10 oversize	mm 88,600
ring thickness	mm 1,490 ÷ 1,478
ring gap	mm 0,30 ÷ 0,45
slot clearance	mm 0,30 ÷ 0,062

3 - Oil scraper ring

standard Ø	mm 88,000
4/10 oversize	mm 88,400
6/10 oversize	mm 88,600
ring thickness	mm 3,900 ÷ 3,878
ring gap	mm 0,25 ÷ 0,40
slot clearance	mm 0,042 ÷ 0,060

CON-RODS = CRANKSHAFT

Con-rods (see Drwgs. fig. 351-532)

Loading torque for con-rod cap securing nuts:
4,6 ÷ 4,8 kpm.
Allowed con-rod weight imbalance: gr 3.

CON-ROD SELECTION

CLASS «A»	CLASS «B»
«Blue» mark on the rod 47,130 ÷ 47,136	«White» mark on the rod 47,136 ÷ 47,142

CRANKSHAFT (see Drwg. fig. 353)

CRANKPIN Ø STANDARD VALUE	BEARING UNDERSIZES		
	0,254	0,508	0,762
44,008 ÷ 44,020	43,754 ÷ 43,766	43,500 ÷ 43,512	43,246 ÷ 43,256

CRANKSHAFT SELECTION

CLASS «A»	CLASS «B»
«Blue» mark on the shoulder, flywheel side 44,008 ÷ 44,014	«White» mark on the shoulder flywheel side 44,015 ÷ 44,020

Clearance between crankpin and bearing: Min. 0,030 Max. 0,054.

Inspecting the crankshaft balance

Static balancing of the crankshaft is obtained by applying a weight of kg 1,586 ÷ 1,616 onto the pin.