Piaggio - Piaggio X9 500 Service Station Manual (2002-ENGLISH-70 Pages)

SERVICE STATION
MANUAL
Piaggio & C. S.p.A.
Pontedera
After Sales Service
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Data subject to change without notice.
No responsibility is assumed for the use of non-genuine components and accessories other than those tested and approved by the Manufacturer. X9 500 cc

SERVICE STATION
MANUAL
X9 500 cc
This manual has been designed by Piaggio for use in authorized dealers' and subdealers' workshops.
It is assumed that those who use this publication for maintaining and repairing Piaggio vehicles are familiar with the principles of mechanics and with vehicle repairing procedures and techniques. Any significant changes to the characteristics of the vehicles or to specific repairing procedures will be covered in updates of this manual.
Since satisfactory results cannot be obtained without the necessary equipment and tooling, we recommend referring to the pages of this manual concerning the specific equipment required and to the catalogue of specific tools.
Pieces of particularly important information are identified as follows:
Note : Provides important information intended to simplify and clarify a procedure.
- Denotes specific procedures to be used to avoid damaging the vehicle.
- Identifies specific procedures to be followed to avoid injury to repairing personnel.
NOTE - For any intervention to the engine, refer to the Service Station Manual for 500 cc Engines.
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Cylinder Ø C 92 - 0.010A 91.990 - 91.997 91.947 - 91.954
Cylinder Ø B 91.997 - 92.004 91.954 - 91.961
Piston Ø P 91.961 + 0.014C 92.004 - 92.011 91.961 - 91.968
Piston Ø D 92.011 - 92.018 91.968 - 91.975 + 0.018
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0.036
-
0.050
Piston rings
PART DIMENSIONS CLEARANCE SEAT CLEARANCE
CODE CLEARANCE AFTER USE
1st Compression ring 92 x 1.5 A 0.15 - 0.35 0.5
2nd Compression ring 92 x 1.25 A 0.25 - 0.50 0.65
Scraper ring 92 x 2.5 A 0.25 - 0.50 0.65
(Values in mm)
The piston must be fitted so that the arrow faces the exhaust side. The piston rings must be fitted so that the marks face upwards.
DIAMETER
MEASURING
HEIGHT
A 43.2
B - 4 - 0.014
(Values in mm)
Ring opening
Arrange for the
piston rings
opening as shown
in the figure
A value of the ring
inside the cylinder
Assemble the rings
2 and 3 with the
Top writing facing
upwards.
(Values in mm)

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SHIMMING METHOD FOR LIMITING THE COMPRESSION RATIO: CR = 10.5 : 1
FIT THE GASKETS SHOWN IN THE TABLE
ACCORDING TO THE A MEASUREMENT

A MEASUREMENT
(WITH PISTON AT TDC)+
-
NOTE: THE A MEASUREMENT MUST BE TAKEN WITH NO GASKET FITTED BETWEEN CRANKCASE AND CYLINDER
Vehicle overhaul data

N.B.: The A measurement is referred to the piston projection or recess value; it indicates the type of gasket to be fitted on the cylinder to restore the compression ratio. Therefore the more the surface formed by the piston crown sticks out of the surface formed by the cylinder top, the thicker the gasket will be. Vice versa, the more the piston crown is hollow to the cylinder top, the less thick the gasket will be.
Crankshaft/crankcase axial clearance 0.1 - 0.5 mm (cold engine)

A MEASUREMENT THICKNESS OF BASE GASKET
- 0.185 - - 0.10 0.4 ± 0.05
- 0.10 - + 0.10 0.6 ± 0.05
+ 0.10 - + 0.185 0.8 ± 0.05

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Vehicle overhaul data
Crankshaft alignment and diameters
- Measure the housings on both axes x and y.

Max. allowable runout: A = 0.15 mm
B = 0.01 mm
C = 0.010 mm
D = 0.10 mm
Standard diameter
Class 1 40.010 - 40.016
Class 2 40.016 - 40.022
PART DIMENSIONS CLEARANCE
Web, transmission side A =0.8 ± 0.025
Shaft section, transmission side B =19.6 + 0.05
Connecting rod C =22 - 0.10
Shaft section, flywheel side E =19.6 + 0.05
Web, flywheel side F =13 ± 0.025
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Steering thrust ring removing drift 020004Y
Crankshaft aligning tool 020074Y
Support for METABO HG 1500/2 air heater 020150Y
METABO HG 1500/2 air heater 020151Y
Mityvac-type vacuum pump 020329Y
Stroboscopic gun for two- and four-stroke engines 020330Y
Digital multimeter 020331Y
Single battery charger 020333Y
Multiple battery charger 020334Y
Magnetic stand and dial gauge 020335Y
Engine support connection 020482Y
Engine mount base 020527Y
Engine mount revolving base 020604Y
= New tools

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NECESSARY TOOLS
TOOL NAME PART NO.
STEERING SEAT FITTING TOOL, to be fitted with parts 9 - Lower 001330Y
bearing adaptor, 10 - Upper bearing adaptor
Bell Ø 80 mm 001467Y002
20 mm pliers 001467Y006
Bell Ø 63 mm 001467Y007
18 mm pliers 001467Y008
Bell Ø 45 mm 001467Y017
Bell Ø 60 mm 001467Y031
15 mm pliers 001467Y034
Hub bearing extraction bell 001467Y035
Steering tube ring spanner 020055Y
Oil pressure gauge 020193Y
Valve seal rings assembly tool 020306Y
37x40 mm adaptor 020358Y
42x47 mm adaptor 020359Y
52x55 mm adaptor 020360Y
20 mm guide (Driven pulley bearings) 020363Y
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Ø 28x30 mm adaptor 020375Y
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15 mm guide 020412Y
Valve oil seal extractor 020431Y
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17 mm guide (countershaft bearings) 020439Y
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Ø 24 mm adaptor 020456Y
Steering tube lower bearing extractor 020458Y
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Piston fitting band 020468Y
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Clutch bell housing retaining tool 020473Y
Drive pulley stop spanner 020474Y
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Maintenance
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Check and replacement
- Remove the spark plug when the engine
is cold. Replace the spark plug every 12,000 km. The use of unsuitable ignition control units and spark plugs other than those specified can seriously damage the engine.
Recommended spark plug: CHAMPION RG 6 YC
NGK CR 7 EKB
- Put the vehicle on the central stand.
- Open the door on the left side of the vehicle by levering in the recess in the lower part of the door after removing the screw.

- Disconnect the spark plug HV cable cap.
- Unscrew the spark plug with the spanner provided.
- Check the spark plug to see if the insulator is cracked, the electrodes are worn out or excessively sooty. Also check the condition of the seal washer and measure the spark gap with a suitable thickness gauge.
Spark gap: 0,7 - 0,8 mm
- If necessary adjust the spark gap by carefully bending the side electrode.
If the spark plug has any of the defects mentioned above, replace it with a plug of the recommended type.
- Insert the plug into the hole with the proper inclination, screw it in fully by hand and then tighten it with the specially designed spanner.
Tightening torque: 10 N·m (1 Kg·m)
- Push the spark plug cap all the way down onto the spark plug and then proceed to the reassembly.

Warning
Air filter
- Remove the left-hand lower side panel as described in Chapter 8-Bodywork.
- Remove the cleaner cap after loosening the eight fixing screws, including one screw of the knob type.
- Pull out the filter element.
- Replace the air filter with a new one.
Note : Check and if necessary blow the air filter every 6,000 km. Direct the air jet from the inside to the outside of the filter (i.e. in the opposite direction to the air flow during normal engine operation).
- If the vehicle is mostly used on dusty roads, the air filter needs to be cleaned and replaced at shorter intervals than indicated in the Maintenance Schedule.
- Do not run the engine if the air filter is not in place as this would result in excessive wear of the cylinder and piston as well as in damage to the throttle body.

Warning
Warning