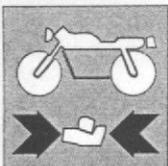


Section

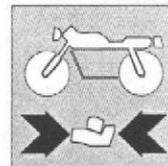
**G**





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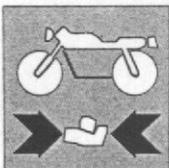
**Particulars cleaning.**

All particulars have to be cleaned with petrol and dried with compressed air.



**During this operation, inflammable vapours are developed and metallic particles may be ejected at high speed, therefore we recommend to operate in a room free from open flames or sparks and the operator wearing protective glasses.**

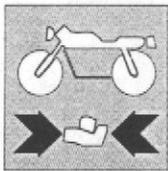




## ENGINE OVERHAUL

### **Couplings.**

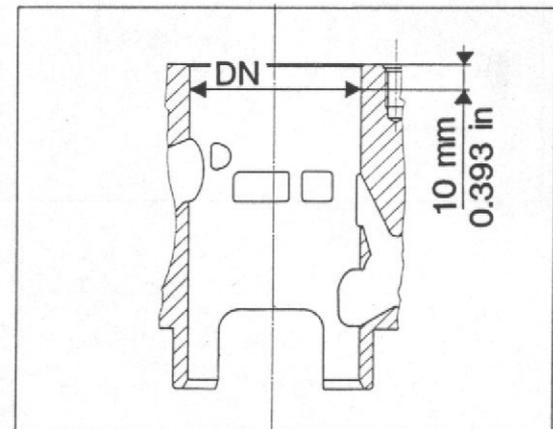
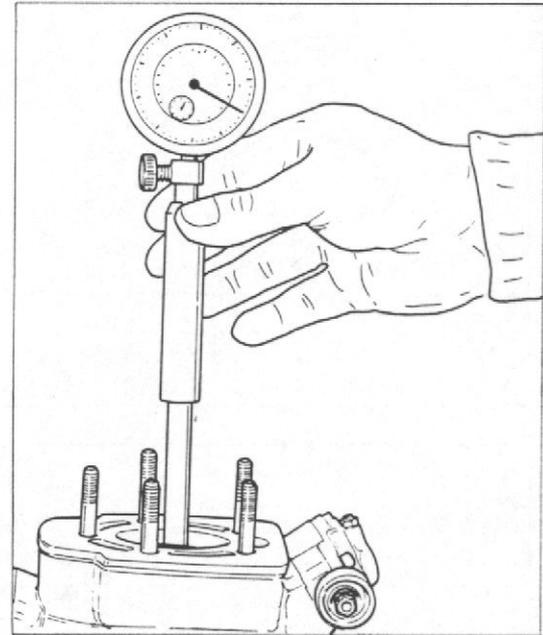
In order to allow the engine an operation under the best conditions, giving the highest performances, it is absolutely necessary that all couplings are made within the prescribed tolerances. In fact, a "tight" coupling is the reason for very harmful seizures as soon as moving parts are heated up; while a "loose" coupling will cause vibrations which increase wear of moving parts, in addition to give annoyance.

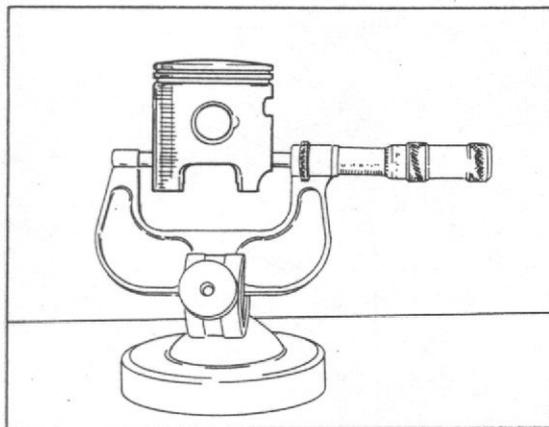
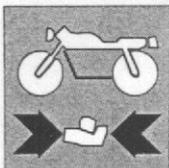
**Cylinder.**

Light alloy cylinder with "NIKASIL" coating liner.  
 After cylinder operation, ovalisation admitted is 0.00059 in. max.  
 In case of damage or excessive wear cylinder has to be renewed.  
 Cylinders are marked with a letter stating their class.

**Cylinder measurement.**

Check that the inner surface is perfectly smooth and exempt from scores.  
 Arrange measurement of the liner diameter at 0.3937 in. from top surface, as shown in figure, in the admission and exhaust axis direction.

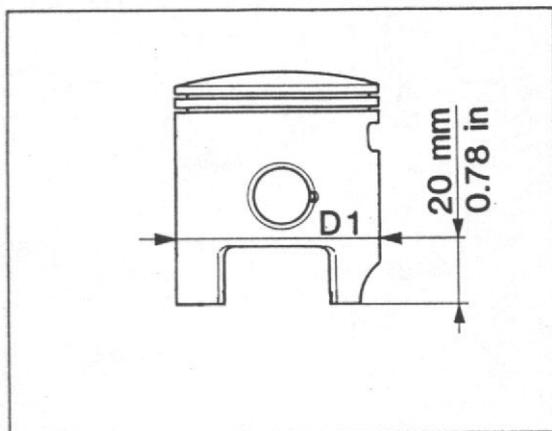




**Piston.**

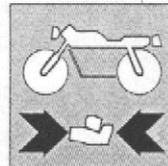
Carefully clean the piston ceiling and the piston ring grooves from carbon deposits. Effect a careful visual and dimensional checking of piston: no traces of shrinkage, score, crack or damage must be remarked.

Piston diameter has to be measured at 0.78 in. from the skirt base, perpendicularly to the pin axis.



**Piston groove height.**

Standard / Standard Standard / Standard / Standard	Limite max. di usura / Max. wear limit Limite max. d'usura / Max. Verschleissgrenze / Limite máx. de desgaste
1,250+1,230 (0.0492+0.0484)	1,33 mm (0.052 in.)

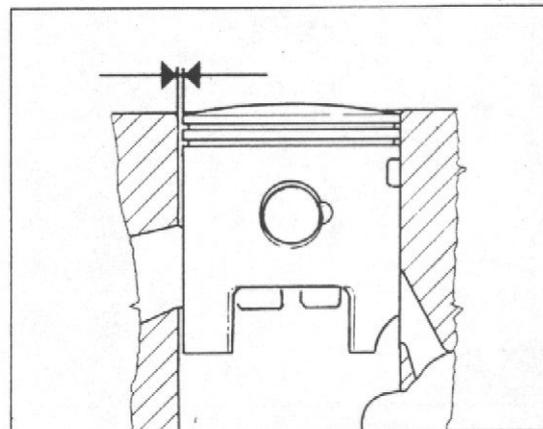


**Cylinder-piston assembly**

Cylinder-piston assemblies are supplied already coupled and in case that different class cylinders and pistons have been exchanged, it is necessary to carry out diameters measurement as shown in figures at pages G.6-G.7.

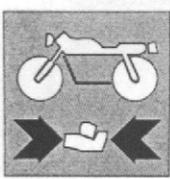
Arrange these measurements at a stablized temperature of 68°F.

Best mating clearance  $DN-D1 = 0.00157 \pm 0.00019$  in. Wear limit 0.00275 in.

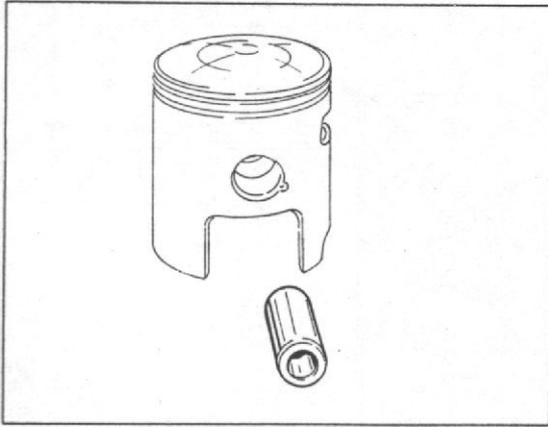


Cylinder		Piston		Clearance mm (in.)	Piston code (spare part)
Mark	Dimensions DN mm	Mark	Dimensions D1 mm		
A opp. NERO A or BLACK A ou NOIRE A od. SCHWARZ A o NEGRO	55,990+56,000 (2.2043+2.2047)	A	55,950+55,960 (2.2027+2.2031)	da 0,03 (0,00118) σ 0,05 (0,00196)	8A00 54888/1
B opp. BIU B or BLUE B ou BLEU B od. BLAU B o AZUL	56,000+56,010 (2.2047+2.2051)	B	55,960+55,970 (2.2031+2.2035)	da 0,03 (0,00118) σ 0,05 (0,00196)	8A00 54888/2
C opp. ROSA C or PINK C ou ROSE C od. ROSA C o ROSADO	56,010+56,020 (2.2051+2.2055)	C	55,970+55,980 (2.2035+2.2039)	da 0,03 (0,00118) σ 0,05 (0,00196)	8A00 54888/3



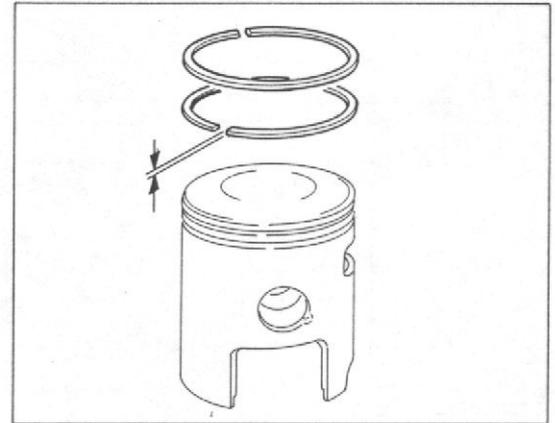
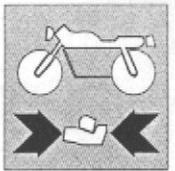


## ENGINE OVERHAUL



### **Piston pin.**

It must be perfectly smooth, without any scores, steps or blueings due to overheating. Renewing the piston pin it is necessary to replace also the roller cage (in accordance with the selections laid out on page G.11).

**Piston rings.**

Visually inspect the piston ring and its piston groove state. If the piston ring is worn up or damaged it must be renewed (spares come in couple).

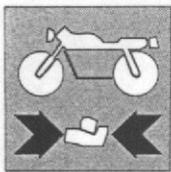
If the piston ring groove on piston is in the same conditions, piston and piston ring have to be replaced, both of them.

When a new piston ring is installed on the used piston, check that the piston groove is not worn up in an uneven manner.

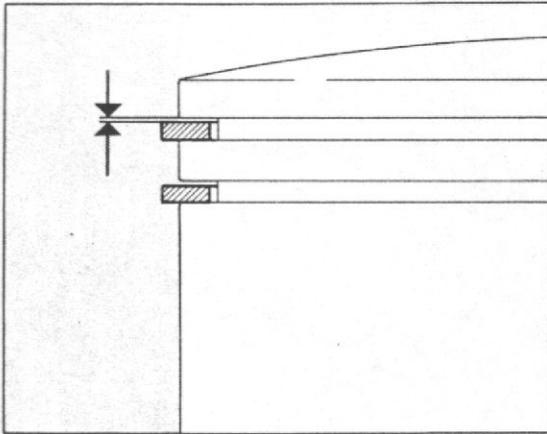
Piston ring has to stay perfectly parallel to the piston groove surfaces. If it is not the cause, piston must be renewed.

**Piston ring height.**

Standard / Standard Standard / Standard / Standard	Limite max. di usura / Max. wear limit Limite max. d'usure / Max. Verschleissgrenze / Limite max. de desgaste
1,190+1,178 (0.0468+0.0463)	1,15 mm (0.045 in.)



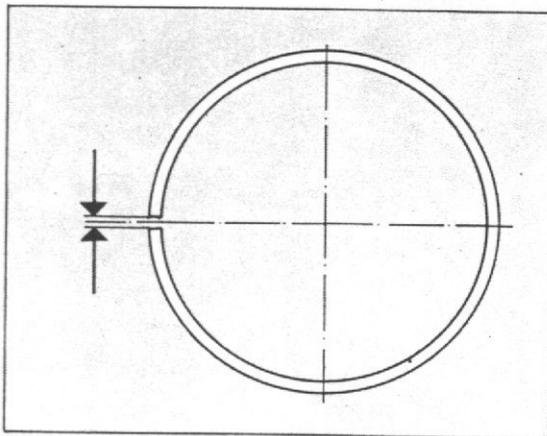
## ENGINE OVERHAUL



This table shows the axial play between lower piston ring, upper piston ring and groove in the piston.

### Piston-rings - grooves play.

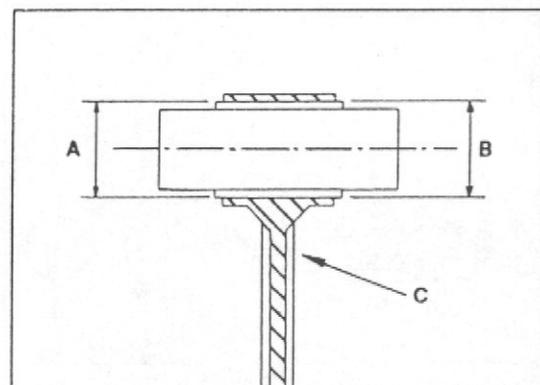
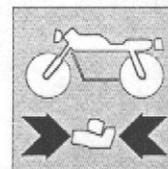
Standard / Standard Standard / Standard / Standard	Limite max. di usura / Max. wear limit Limite max. d'usura / Max. Verschleissgrenze / Limite máx. de desgaste
0,040±0,072 mm (0.0015±0.0028 in.)	0,20 mm (0.0078 in.)



### Cylinder-piston rings play.

Insert the piston ring into the cylinder bottom (where wearing is the lowest) and position it well in "square" and measure the distance between the two ends.

Standard / Standard Standard / Standard / Standard	Limite max. di usura / Max. wear limit Limite max. d'usura / Max. Verschleissgrenze / Limite máx. de desgaste
0,15±0,35 mm (0.0059±0.0137 in.)	1,00 mm (0.0039 in.)



#### Coupling among gudgeon, piston and connecting rod end.

The following table shows the possible couplings which allow to get the right radial clearance of 0.000078 to 0.000393 in.

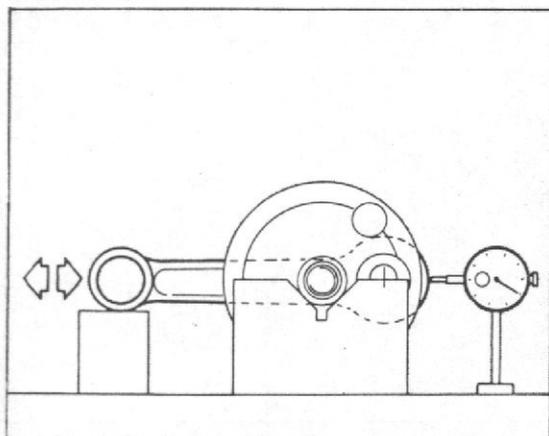
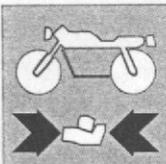
If, during engine overhaul, a clearance higher than the allowed limit of 0.00059 is obtained and if the color mark (C) on the connecting rod is not visible, check the connecting rod small end diameter "A" and, according to this one, install the correct needle cage.



**NOTE:** When ordering the needle cage, specify its selection.

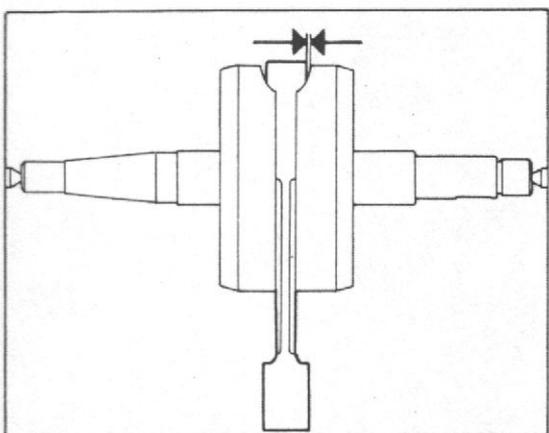
Hole selection colour «A» connecting rod small end (in.)	Cage selection «B»
Giallo - Yellow - Jaune - Gelb - Amarillo 19,994+19,996 (0.7871+0.7872)	-3 + -5
Verde - Green - Vert - Grün - Verde 19,996+19,998 (0.7872+0.7873)	-3 + -5
Bianco - White - Blanc - Weiss - Blanco 19,998+20,000 (0.7873+0.7874)	-1 + -3 -2 + -4
Nero - Black - Noir - Schwarz - Negro 20,000+20,002 (0.78740+0.78747)	0 + -2 -1 + -3
Rosso - Red - Rouge - Rot - Rojo 20,002+20,004 (0.78747+0.78757)	0 + -2





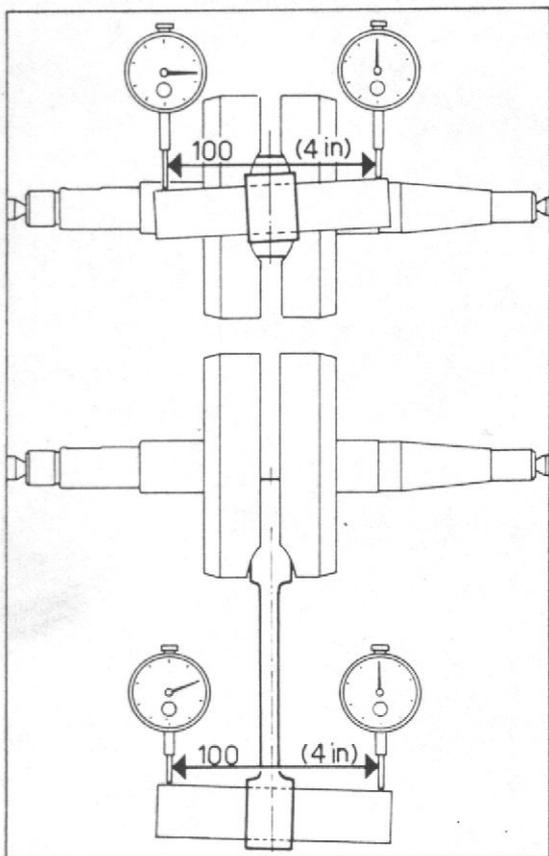
**Con.rod big end radial play.**

Standard / Standard Standard / Standard / Standard	Limite max. di usura / Max. wear limit Limite max. d'usura / Max. Verschleissgrenze / Limite máx. de desgaste
0,014±0,022 mm (0.00055±0.00086 in.)	0,050 mm (0.0019 in.)



**Crankshaft out-of-axis.**

Standard / Standard Standard / Standard / Standard	Limite max. di usura / Max. wear limit Limite max. d'usura / Max. Verschleissgrenze / Limite máx. de desgaste
0,50±0,60 mm (0.019±0.023 in.)	0,75 mm (0.029 in.)



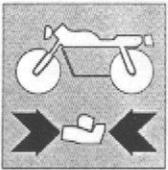
**Connecting rod.**

The connecting rod, due to the stresses it is submitted to, is subject to modify in a more or less evident way its initial dimensions. Tests of the connecting rod will try to check its integrity.

When the verified figures are not within the max. wear limits it will be necessary to replace it.

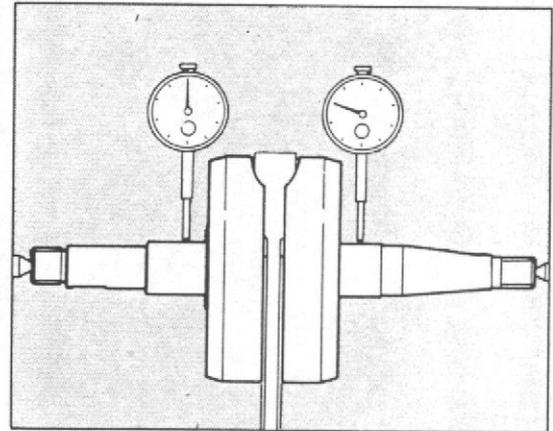
To carry out these tests it is not necessary to disassemble con.rod from the crankshaft.





**Con.rod bending.**

Standard	Max. wear limit
max. 0,025/100 mm (max. 0.00098 in./4 in.)	0,05/100 mm (0.0019 in./4 in.)



**Crankshaft.**

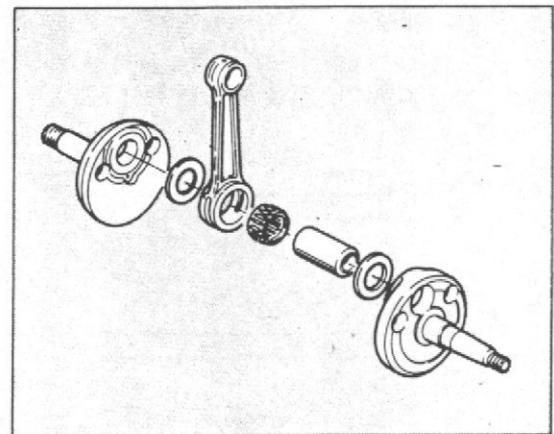
Main journals must not present any scores, or grooves; their threads, key seats and slots have to be in good conditions.

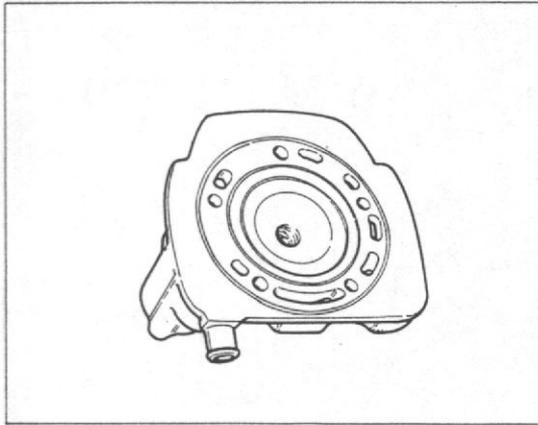
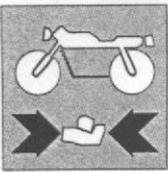
**Crankshaft out-of-axis.**

Standard	Max. wear limit
under 0.00078 in. 0.02 mm	0,05 mm (0.0019 in.)

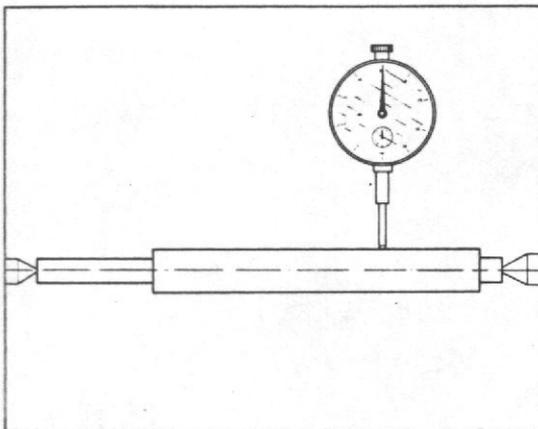
To disassemble the crankshaft use a press and proper punches.  
When re-assembling respect the prescribed tolerances.

■ Install the crankpin in the half-flywheels using oil of viscosity ENGLER 50°C=3 (cSt 40°C=32 viscosity).



**Head.**

Remove the carbon deposits from the combustion chamber. Check that no crack is remarkable and that sealing surfaces are without any scores, steps or damages. Planarity must be perfect and the spark plug seat thread as well.

**Checking straightness of various shafts.**

By positioning the shaft between two counterpoints and measuring with a dial gauge, check that the index displacement is not higher than 0.00196 in.

