maxi

Workshop Manual

INTRODUCTION

The presented repair manual is supposed to serve you as a reference book for repair- and adjusting jobs on your vehicle.

Please, read these instructions carefully to use our experiences we have collected for you.

This manual contents technical- and adjusting data, filling quantities and all hints for stripping and refitting a vehicle.

You should, however, consider for carrying out a perfect repair you need, except a repair manual, also the necessary tools.
Pay, therefore, attention to our special tools list.

We hope, this manual issued will be a valuable help for all Maxi friends.

Sincerely yours,

Puch- Service-Department

Austria

(Veith) (Deutsch)

INDEX

TECHNICAL DATA

ENGINE		
Maximum output		2.2 hp at 4500 rpm
Maximum torque		2.75 fl/lb (0,38 mkg) at 3600 rpm
Compression ratio		11 : 1
Number of cylinders		one
Bore x stroke		1,49 x 1,69 in.(38x43mm)
Displacement		48,8 cc
Cylinder material		light alloy bore chromium
Cylinder head		light alloy
Crankshaft		steel
Main bearings		two ball bearings
Crankcase		light alloy, pit
Scavenge system		loop scavenging
Inlets and outlets		parts
Control of inlet and outlet		piston
Lubrication		two-stroke mixture, 25:1
Cooling		air
Weight		17,64 lb (8 kg)
Air filter		oil film combined with induction silencer
Carburettor		Bing 1/14
Carburettor type		piston valve controlled
Lighting / ignition		six volt flywheel magneto

TRANSMISSON		
Primary transmission		helical toothed gears
Ratio		i = 5,05
Type of clutch		centrifugal
Type of gear box		automatically controlled single speed
Position of gear box		in unit with engine
Number of speeds		one
Secondary transmission		chain 1/2" x 3/16"
Starter		pedals and chain 1/2" x 1/8"

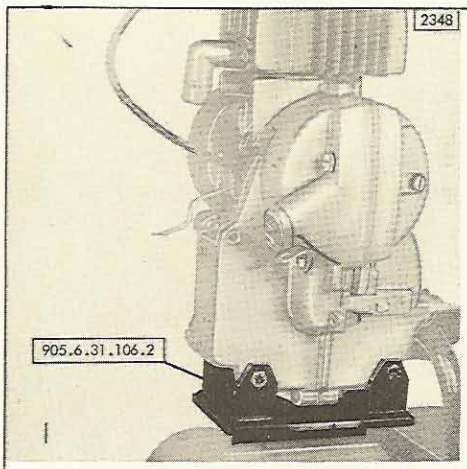
ADJUSTMENTS

ENGINE		
Carburettor		Bing 1/14
Main jet		68 (66) replace after appr. 300 miles
Needle jet		220
Needle position		2nd notch from the top
Electrical system		6 Volt
Breaker point gap		0,014-0,017 in. (0,35 - 0,45 mm)
Pole shoe interruption		0,275-0,433 in. (7 - 11 mm)
Ignition timing		0,630-0,709 in. (16 - 18 mm)
Spark plug		Bosch W 145 T 1
Spark gap		0,015-0,019 in. (0,4 - 0,5 mm)
BODY WORK	**TYPE :**	
Headlamp bulb	Permanently dipped light	6 V 15 W
	With main and dipped light	6 V 15/15 W
	With magneto 6 V 17/5 W	6 V 18/18 W
Tail lamp		6 V 2 Watt
	With magneto 6 V 17/5 W	6 V 3 Watt
Tyre size		21 " x 2,00
Type pressure front/ rear		25/32 psi (1,8 / 2,25 kg cm2)
CAPACITIES		
Fuel tank capacity		0,7 Imp.gal. (3.2 litres)
Engine (summer and winter)		mix petrol with a branded motor oil of SAE 40-50 in a ratio of 25 : 1
Gearbox		summer and winter, automatic transmission fluid. For new filling 150 cc by changing oil appr. 120 cc

TORQUES		
ENGINE		
Cylinder head		6,51 ft/lb (0,9 mkp)
Flywheel magneto		25,31 ft/lb (3,5 mkp)
Clutch hub		19,53 ft/lb (2, 7 mkp)
Crankcase bolts		5,78 ft/lb (0,8 mkp)
Engine suspension		23,14 ft/lb (3,2 mkp)
BODY WORK		
Suspension unit bearing		16,64 ft/lb (2,3 mkp)
Rear wheel mounting		19,53 ft/lb (2,7 mkp)
Brake cam mounting		50,6 ft/lb (0,7 mkp)
Handlebar mounting		19,53 ft/lb (2,6 mkp)
Twist grip mounting		5,78 ft/lb (0,8 mkp)

SPECIAL TOOLS

Fig.		Description	Part No.
		Tool kit complete (consisting of): +	905.6.90.901.0
I	+	Engine holder	905.6.31.106.2
II	+	Flywheel extractor	050.7012
III	+	Locking device flywheel	905.0.16.101.2
IV		Reaming and centering unit for conrod bush	905.6.17.101.0
V	+	Press in tool for conrod bush (0,4724 in. (12 mm) dia.	905.6.33.105.0
VI	+	Extractor for main and gear bearings and flywheel clutch	905.6.34.102.0
	+	Press sleeve for main bearing	350.1.70.012.0
VII	+	Support	905.0.33.103.0
VIII	+	Ignition timing device	905.0.12.101.0
		Gauge for bore	obtain locally
		Feeler	obtain locally
		Micrometer	obtain locally
		Torque wrench	obtain locally
	+	Spoke spanner	905.6.35.401.2
	+	Box	905.6.00.901.0
IX	+	Spanner for hub cones	905.6.35.402.1
X		Sprocket spanner	905.6.35.404.0
XI		Press tool for stearing bearing rings	to be made by yourself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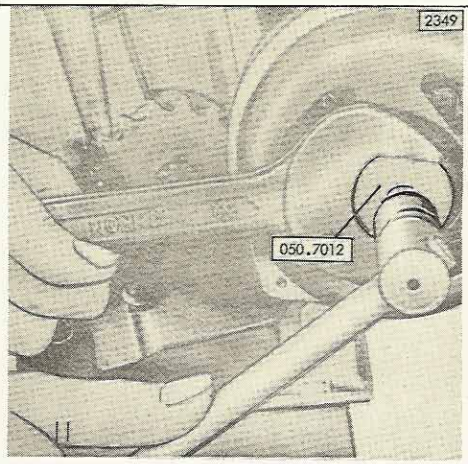
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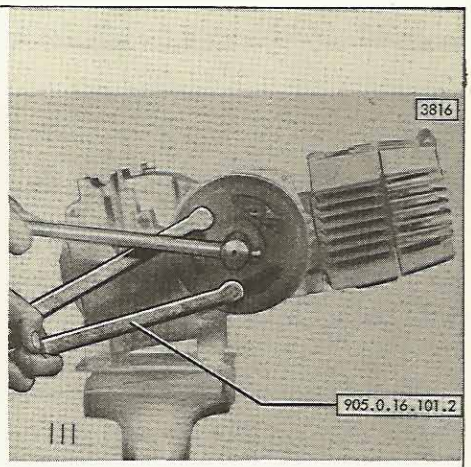
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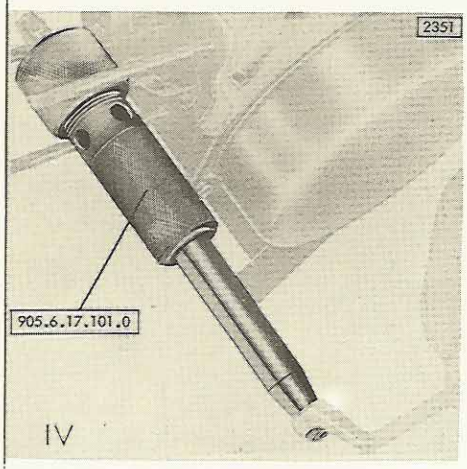
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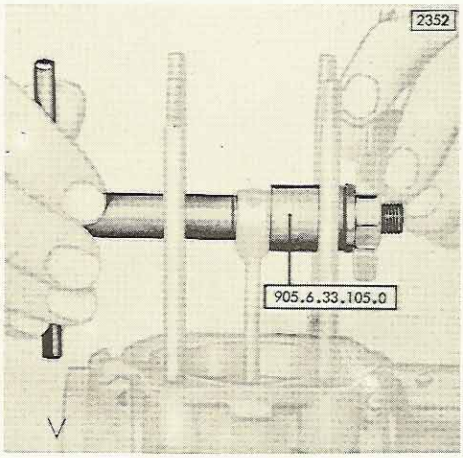
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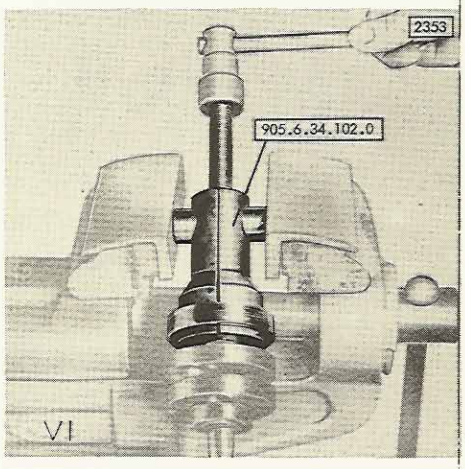
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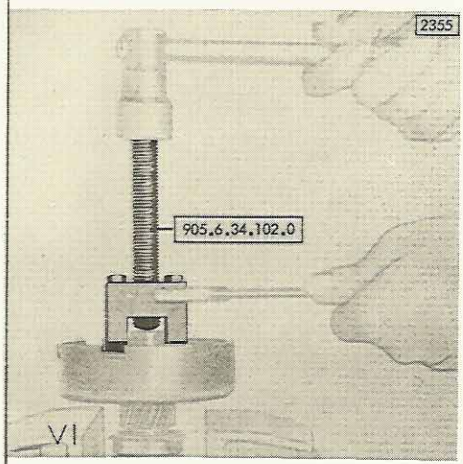
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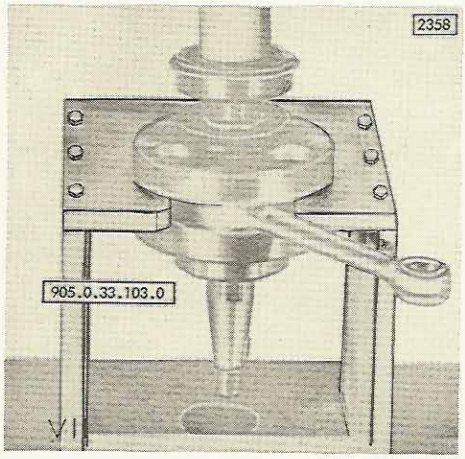
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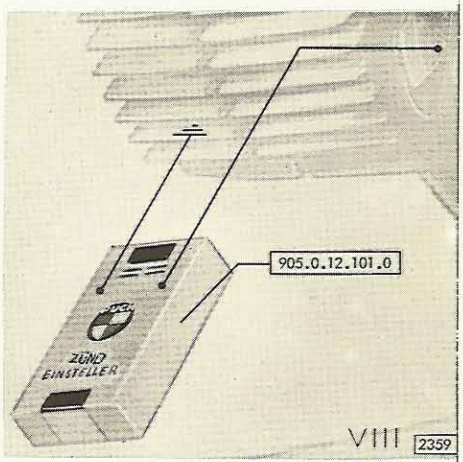
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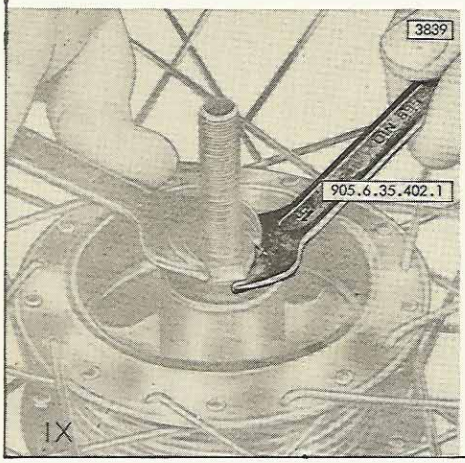
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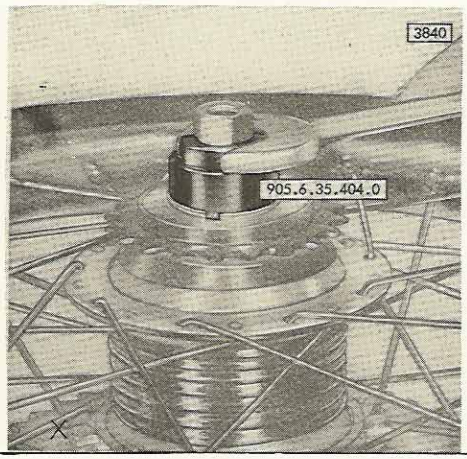
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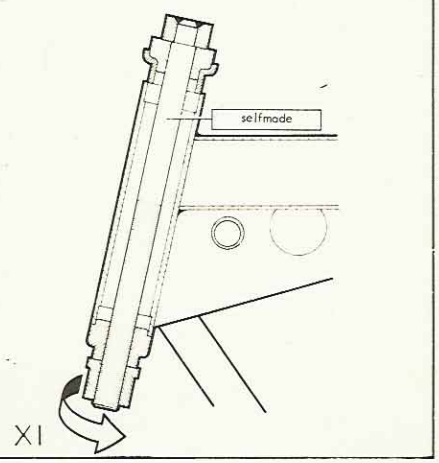
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XI

Removing the engine

Lift the machine onto assembly stand and rest on centre stand. The stand is fitted to the engine and is removed together with engine. It is therefore, adviseable to make a temporary stand (see fig.1).

Unscrew chainguard on either side, close tap and remove plastic hose from carburettor. Loosen air-filter clamping screw, pull rear brake Bowden cable out of filter housing and remove complete air-filter. Loosen carburettor clamping screw and remove carburettor by twisting. Disconnect the yellow and black cable from the engine terminal block. Turn back adjusting screw locknut on decompression Bowden cable, remove retaining washer from decompressor and unhook complete decompression Bowden cable. Loosen operating lever clamping screw, pull out cable and disconnect nipple from starter clutch lever.
Remove complete exhaust by unscrewing both nuts from cylinder and screw from silencer.

Open locks of both chains and remove the chains. Take off right foot pedal with sprocket after unscrewing nut (1/4") and removing key. Remove the three engine fixing screws and lift out engine forwards. Take off oil drain screw from the removed engine and drain oil.

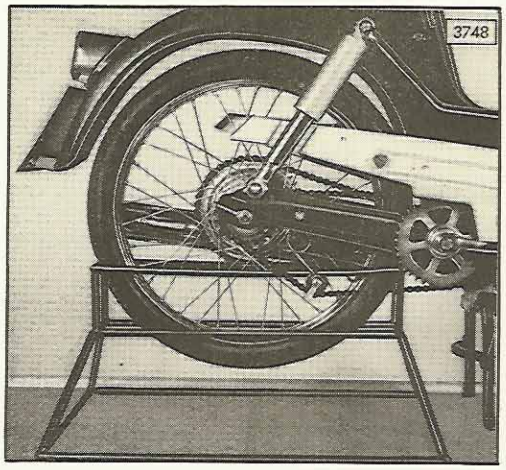


Fig. 1

Dismantling the engine

Insert engine upside down into the assembly stand (fig.2). Take off centre stand by disconnecting spring and unscrewing prop stand bearing cover. Remove flywheel magneto cover after unscrewing the fixing screws. Lock flywheel with locking unit part.no. 905.0.36.101.2 and remove fixing nut (fig.3). Use extractor 050.7012 to remove flywheel from crankshaft. Unscrew three fixing screws and take off magneto baseplate. Remove plug connector and pull H.T. lead out of grommet. Remove cylinder. Unscrew the four fixing nuts and pull off cylinder head and cylinder (note the washers). Unscrew the 14 engine screws and remove housing half; if necessary loosen by tapping lightly with mallet. All components are now visible (fig.4) and can be removed.

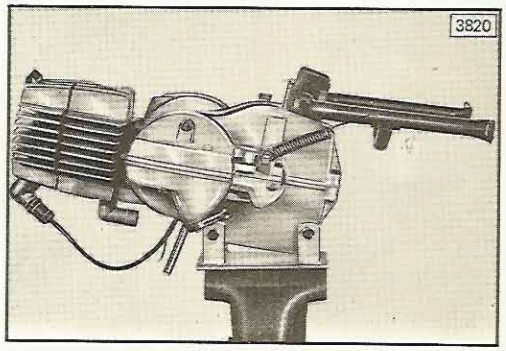


Fig. 2

Removing the gearbox and dismantling (if necessary)

Lift out gearshaft complete with primary gearwheel, sprocket, both ball bearings, oil seal and retaining ring. Remove outer circlip and take off sprocket.

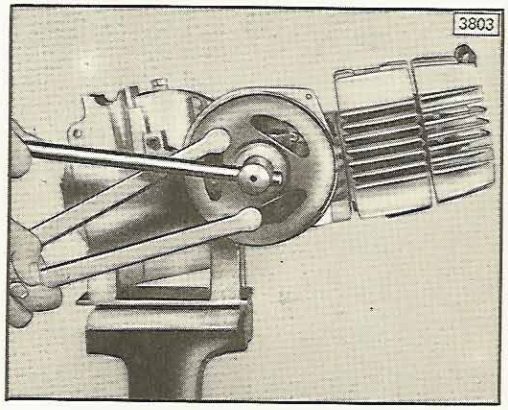


Fig. 3

Remove second circlip and take off oil seal and retaining ring. Both ball bearings are removed with extractor part no. 905.6.34.102.0.

Removing crankshaft, dismantling main bearing

Lift out crankshaft complete with piston, centrifugal clutch, both main bearings and oil seal. Remove retaining rings, press out gudgeon pin and take off piston. Remove retaining ring from centrifugal clutch (no tools necessary), and take off starter clutch cover complete with pressure bolt and bearing. Secure crankshaft in vice using aluminium or plastic jaws and remove nut of centrifugal clutch (fi g.5). Only the clutch-end crankweb must be clamped. Clamping the left or both webs could alter centering or balance of crankshaft. Use extractor part no. 905.6.34.102.0 to remove centrifugal clutch from crankshaft as illustrated in fig. 6. Press out key, remove circlip and lift off clutch drum with adjusting disc. Take off bearing bush, adjusting disc and circlip and remove ball bearing from crankshaft using extractor part no. 905.6.34.102.0 (see fig.7). Use the same extractor to remove second ball bearing.

Crankshaft

Crankshaft repairs are limited to replacing the small-end bush and to centering the crankshaft pins. Other crankshaft repairs call for special equipment beyond the scope of normal repair work.

Visual checking

A crankshaft. even a new one, must be checked prior to fitting. Check points and condition of big end bearing, small end bearing, gudgeon pin and contact surfaces for oil seals and bearings. Crankshafts with excessively worn conrods, bluish discolouration or serious mechanical damage must not be re-used - nor if the oil seal contact surfaces on crankshaft pins indicate any signs of seizing. Light traces of seizing can be removed with oiled paper (see fig.8). Grooved or oval gudgeon pins and small-end bearings must be replaced. Also check centre holes on end of crankshaft pins and ensure firm seating of keys in keyways. Omission to check crankshaft balance can cause engine to vibrate and necessitate further dismantling.

Big end bearing play

The easiest method to check the big end bearing play is a checking by touch, e.g. by lifting and lowering the connecting rod (fig. 9). If on lifting and lowering the connecting rod play is noticeable,connecting rod and bearing play are in order.

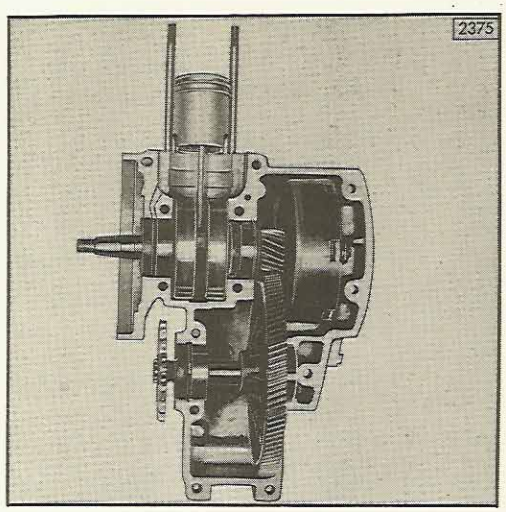


Fig. 4

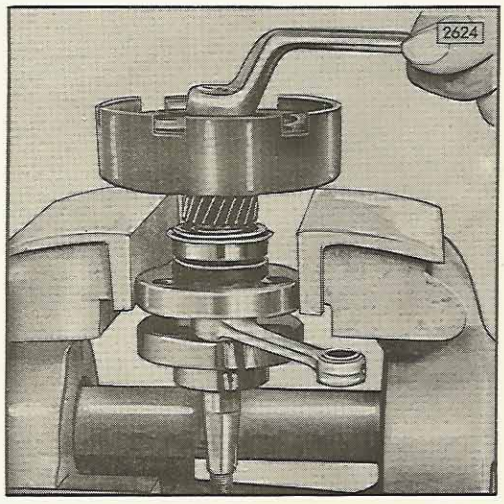


Fig. 5

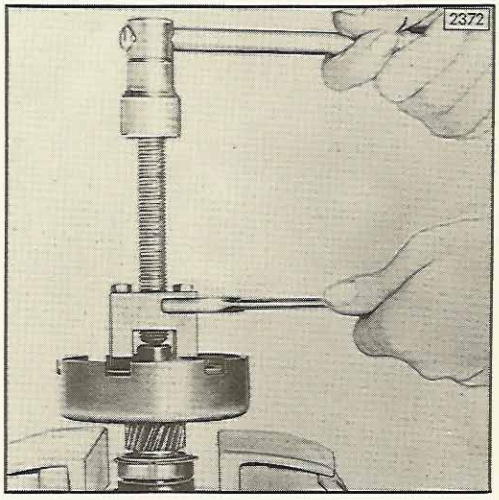


Fig. 6

Correction Sheet

The final sentence on page 7 of the Maxi Workshop Manual should read.
"If on lifting and lowering the connecting rod play is not noticeable,
connecting rod and bearing play are in order.

If however, owing to overheating , lack of oil etc. an apparent play or the suspicion of a lateral jamming of the connecting rod is traceable, the axial play need not be gauged, but the crankshaft be replaced.

Checking and fitting the ball bearing

Both crankshaft bearings and the gearshaft bearings must be checked carefully. Replace bearings if bearing surfaces or balls are rough or damaged. To fit bearings, always apply pressure to inner rings, using only the pressure sleeve part no. 350.1.70.012.0 (fig.10). Pressure to outer ring can damage the balls and the bearing is no longer useable.

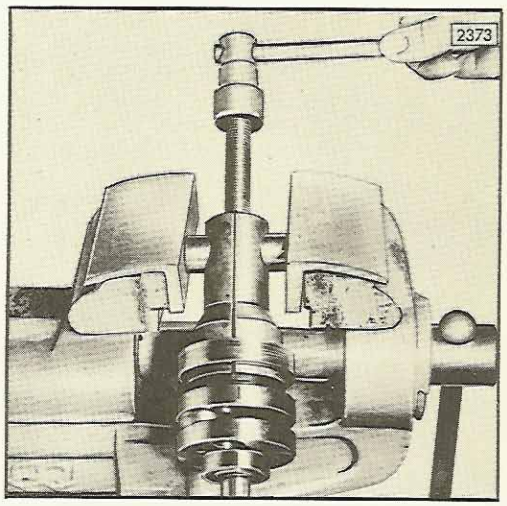


Fig. 7

Cylinder and piston

Cylinder and piston must be subject to careful visual checks.
Note the following points :

Cylinder: wear marks on bore (damaged chromium plating) , coked exhaust port, excessive wear (see chart)

Piston : wear marks on piston body, jamming of piston rings, fractured or badly worn piston rings, and coking of piston face.
Piston and cylinder must be replaced if worn above limits or if contact surfaces are damaged.

Note : The bore of the Maxi aluminium cylinder is chromium plated and cannot be rebored.

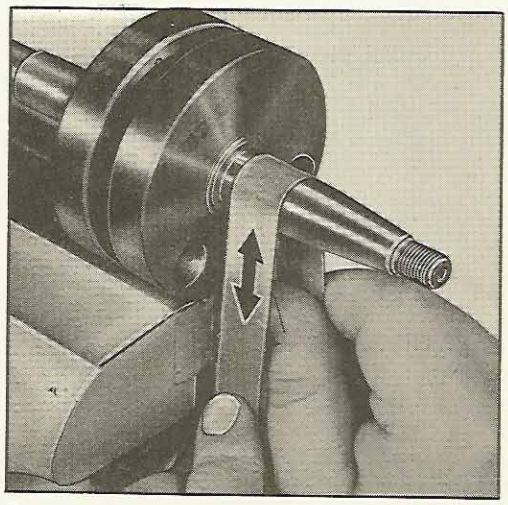


Fig. 8

Chart of the five limit groups for Maxi cylinder
Limits chart

Limits group	Cylinder	Piston	C learance
1	1.495078-1.495472 in dia. (37.975-37.985 mm Ø)	1.493897-1.494291 in dia. (37.945 - 37.955 mm Ø)	
2	1.495472-1.495866 in dia. (37.985-37.995 mm Ø)	1.494291-1.494685 in dia. (37.955 - 37.965 mm Ø)	.000787 in. (0.020 mm)
3	1.495866-1.496259 in dia. (37.995 - 38.005 mm Ø)	1.494685-1.495078 in dia. (37.965 - 37.975 mm Ø)	to
4	1.496259-1.496653 in dia. (38.005 - 30.015 mm Ø)	1.495078-1.495472 in dia. (37.975 - 37.985 mm Ø)	.001576 in. (0.040 mm)
5	1.496653-1.497047 in dia . (38.015 - 38.025 mm Ø)	1.495472-1.495866 in dia. (37.985 - 37.995 mm Ø)	

Max permissible oval shape of cylinder .000984 in. (0.025 mm)
piston ring play .00591 in.(0.15mm) wear limit .0197 in. (0.5 mm)

Measuring the cylinder

The cylinder bore ist measured with a standard dial micrometer fitted to bore measuring attachment (both available locally).

Measuring procedure :
Fit micrometer into bore measuring attachment, select distance and adjust nominal bore size (see chart) with gauge block (fig.11). Six measurements must be taken to check the cylinder bore. One measurement at each level (fig.12), across and along gudgeon pin position. The specified ambient temperature of +20° C is necessary to obtain accurate readings. The measuring device is swivelled to both sides in the direction of the measuring probe (fig. 13) and the lowest reading is the correct value. The cylinder is worn and must be replaced if the total wear at any level exceeds the wear limit or the permissible oval shape.
For production reasons, cylinders and pistons are classed into limits groups. Limits group numbers are marked on the cylinder head surface and on the piston floor (fig.14). For replacement, ensure both piston and cylinder have indentical markings.

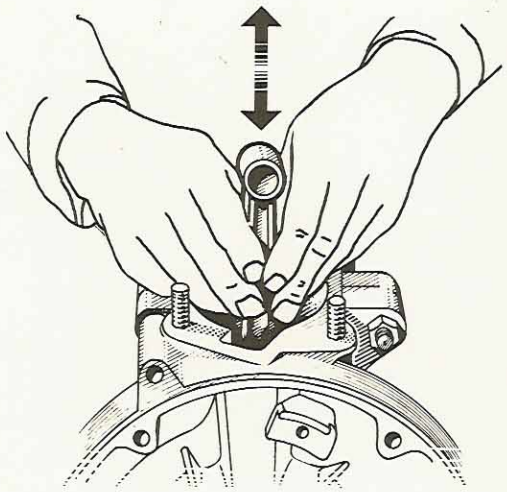


Fig.9

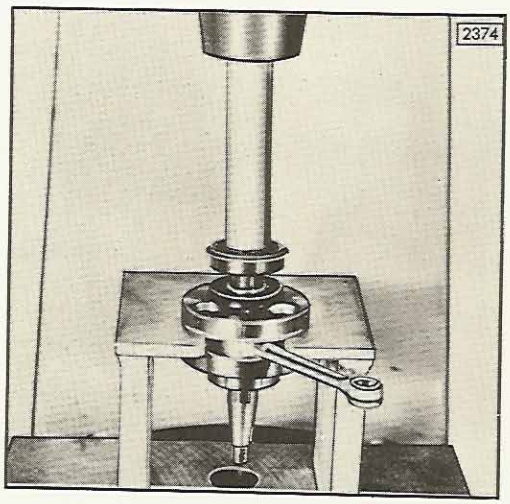


Fig. 10

Gudgeon pin

A bronze bush pressed into the conrod forms the small-end bearing.

Limits are as follows :

New .000315 to .000787 in. (0.008 to 0.020mm)
Wear limit .000984 in. (0.025 mm)

Gudgeon bore and gudgeon pin are matched. Marking of the piston is illustrated in fig. 15 and is either yellow or blue. Dimensions of matching sizes are quoted in the following chart.

Bore .4724 in.(12mm) diameter Group		Gudgeon pin .4724 in.(12mm) Group	diameter	Clearance
Yellow	.4727 to .4726 in.dia. (12.0085 to 12.0060 mm)	2	.47245 to .4724 in.dia. (12.003 to 12.000 mm)	.000118 to .000336 in. (0.0030 to 0.0085 mm)
Blue	.4726 to .4725 in. dia. (12.0060 to 12.0035 mm)	2	.47245 to .4724 in.dia. (12.003 to 12.000 mm)	.000019 to .000236 in. (0.0005 to 0.0060 mm)
		3	.4724 to .4723 in. dia. (12.000 to 11.997 mm)	.000137 to .000354 in. (o.0035 to 0.0090 mm)

Gudgeon pins are marked on the face according to groups 1 to 3 (see fig.15).

Replacing small end bearing

The small end bearing is a wear part und must be replaced as necessary.

The following special tools are required :

Press tool	part no. 905.6.33.105.0
Reaming unit	part no. 905.6.17.101.0
Reamers	Hunger P 11.5 - 12.5

Workshops already equipped with the Hunger-Puch 005.0 or 005.1 reaming and centering device require only the above mentioned additional reamer together with an appropriate guide bush.

Removing small end bearing (fig.16).

Remove small end bearing with press tool part no. 905.6.33.105.0. For set-up of press tool see fig 16.

Pressing in the small end bush (fig. 17)

To fit the new small end bush use the press tool according to figure 17. Lubricating holes are drilled after pressing in the bush and should be cleaned and deburred (fig.18).

When using unit part no. 905.6.17.101.0 proceed as follows :

Centering the conrod :

The conrod is centered in the unit for accurate reaming as follows :

Insert conrod into clamping nut (fig.19/1) and screw in guide bush (fig.19/2). Insert reamer (fig.2o) and center conrod with reamer taper. Clamp conrod by turning guide bush.

Reaming the small end bearing

The front adjusting nut of the reamer (fig. 20/1) is graduated. Each marking represents 0.0078 in. (0,2 mm) Loosen counternut, insert reamer and select with adjusting nut (fig.20/1) bush diameter. Withdraw reamer from bush and move on adjusting nut by one mark. Secure blades with counternut (fig. 20/3).
Carefully commence reaming of bearing bush lubricating oil. Use gudgeon pin to check seating. Proceed reaming until gudgeon pin has the required clearance (pin slides through bore without any play to be felt). Dimensions are quoted in the chart.

Cylinder head

The Maxi engine has an aircooled cylinder and cylinder head.

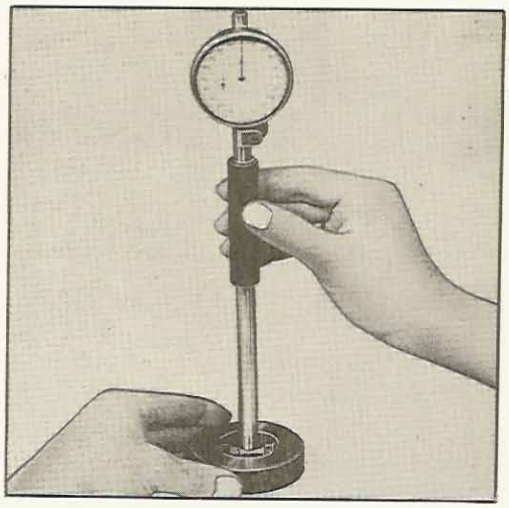


Fig. 11

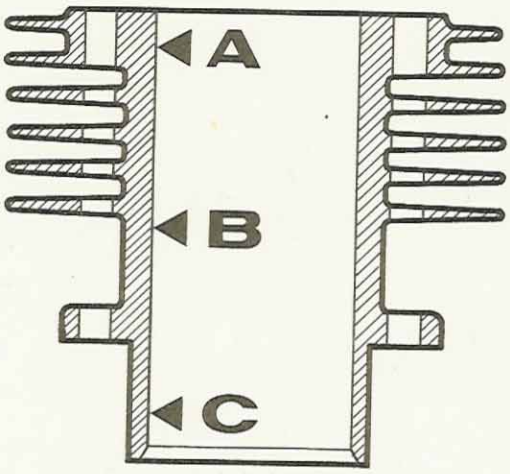


Fig. 12

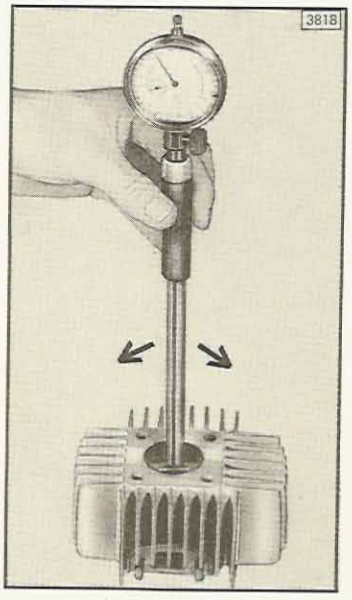


Fig. 13

Due to the horizontal design of the engine, the sparking plug is not in the traditional position but as illustrated in fig 21. This design also calls for a different shaped combustion chamber in the cylinder head.

The compressrion ratio of this head is 11:1.
The width of the collar (fig.22) can be used for checking. The diameter is approx.1 .416 in.(38,5mm). Because of the combustion chamber shape, this dimension is reduced if the compression ratio is modified at a later stage. The sparking plug thread is M 14 x 1.25, thread length 0.492 in. (12,5mm), (standard sparking plug).

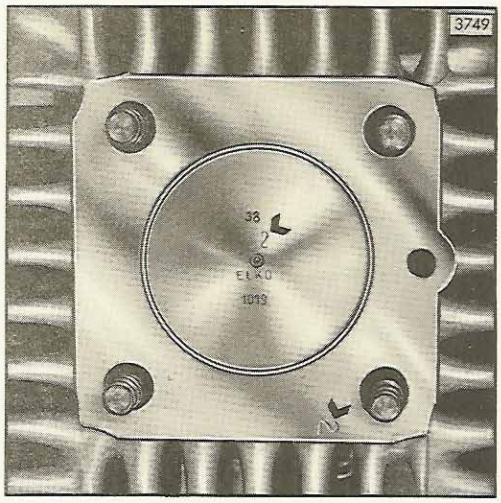


Fig. 14

Decompressor

A decompressor is fitted to the Maxi model for easier starting . The design is featured in fig. 21. Correct clearance (see fig. 21) on the decompressor is most important. None or insufficient clearance can cause leaks or burning of valves and valve seatings. Check valve and valve seating for wear or burn marks before fitting the cylinder head. If damaged, replace complete decompressor unit or valve only as required.
Use fine paste to regrind new valve into seating.
Always replace the decompressor sealing rings for re-assembling. Four aluminium foils of 0.0197 in. (0,5mm) total thickness are fitted for improved sealing between cylinder and cylinder head. Cylinder head nuts are tightened to a torque of 1 mkp, tighten nuts crosswise.

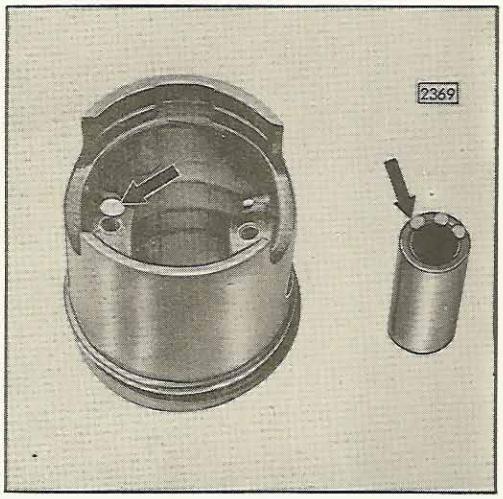


Fig. 15

Maxi Automatic

The automatic consists of a centrifugal clutch and a single speed gearbox. The centrifugal clutch controls the starting operations, the driver only operates the throttle. The machine starts off smoothly at 1,200 to 1,500 rpm crankshaft speed. Full clutch engagement is reached at approx. 2,600 to 3,000 rpm. When reducing engine speed - less acceleration and braking - the centrifugal clutch disengages at 1,400 to 1,500 rpm, the power flow from engine to gearbox is cut and the machine stops.

To start engine, a separate starter clutch temporarily connects the power flow from gearbox to engine through the rear wheel. The starter clutch is controlled from a manual lever fitted to the handlebar (see power flow diagram).

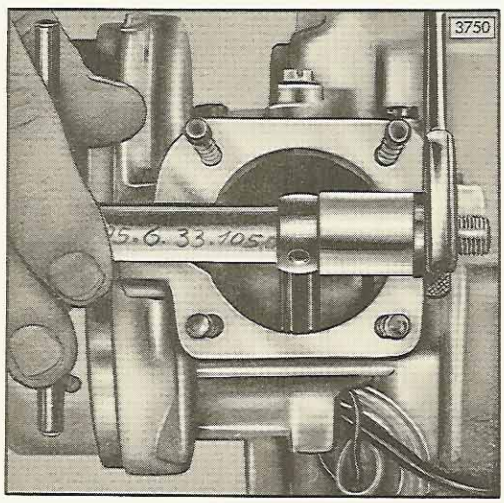
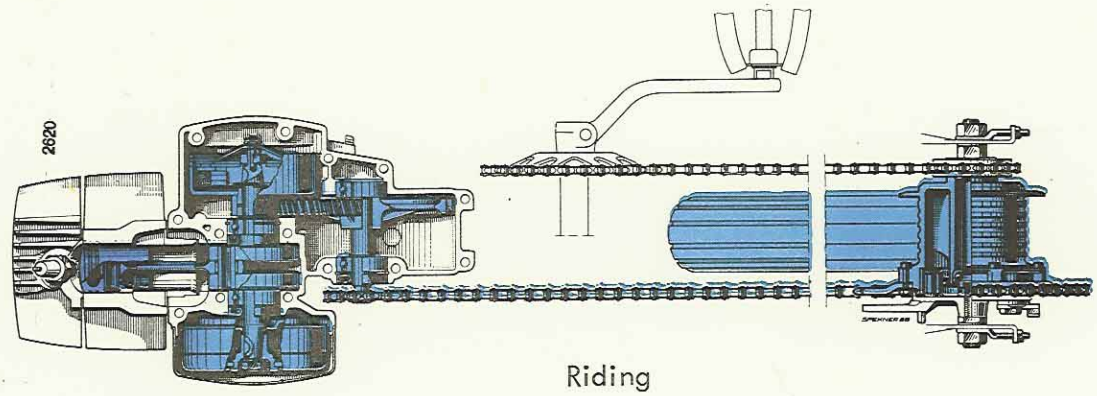
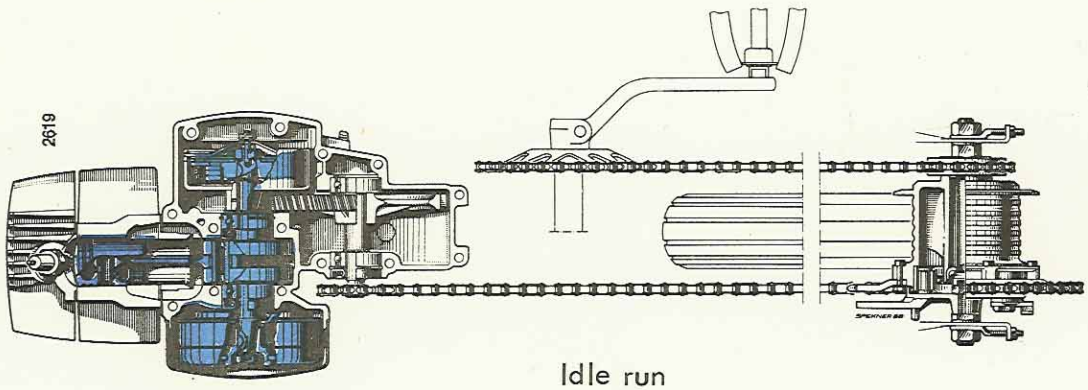


Fig. 16

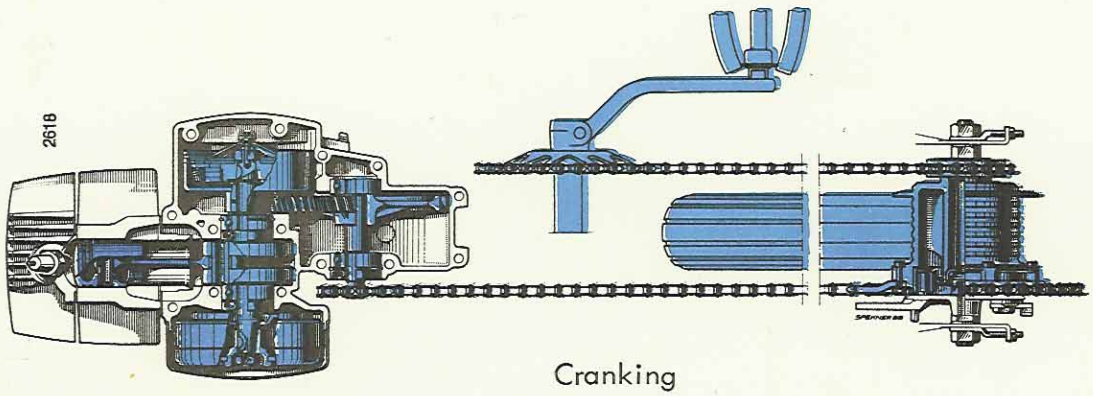
POWER FLOW DIAGRAM



Riding



Idle run



Cranking

Adjusting and assembling the centrifugal clutch

Clamp crankshaft with assembled ball bearings, retaining rings and oil seals into vice using aluminium or plastic jaws. Clamp only the clutch end crank web.
Fit lower circlip. Add bush, clutch drum and upper circlip. Fit centrifugal clutch, corrugated washer and hexagon nut. Tighten the nut to 2,7 mkp.

Note : The two shim washers must be omitted for measuring.

Fit pressure bolt, needle bearing, washer and retaining ring to clutch cover and lock cover into position with retaining spring.

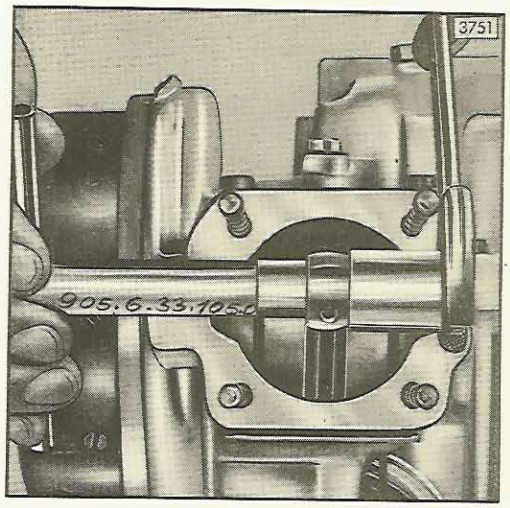


Fig. 17

Measuring for shimming

Press the assembled centrifugal clutch downwards to the crankshaft bearing and check distance between primary gearwheel and circlip with feeler gauge (fig .23). To ensure proper clutch disengaging, a clearance of 0.0118 to 0.0197 in. (0.30 to 0.50 mm) is required between clutch cover and clutch lining. Therefore, 0.0157 in. (0.40mm) must be added to the distance already established with the feel gauge. The result is the required thickness for the lower shim washer,
Lift up clutch cage as far as possible (maximum distance between primary gearwheel and circlip) and check again distance with feeler gauge (fig. 23). Deduct from this distance the already established required thickness for the lower shim washer and deduct a further 0.0078 in. (0.20 mm) for clutch basket clearance. The result is the required thickness of the upper shim washer (smaller hole dia.). The shim washers are available in 0.0078 in. (0.20 mm) graduation, the smaller washer 22/15 dia. from 0.0433 in. to 0.0827 in. (1.1 mm to 2.1 mm) and the larger washer 24/17 dia. from 0.0433 in. to 0.0669 in. (1.1 mm to 1.7 mm).
If the calculation requires an in-between thickness (for instance 0.0472 in. (1.2 mm), reduce axial clearance of clutch cage to minimum 0.0039 in. (0.10 mm).

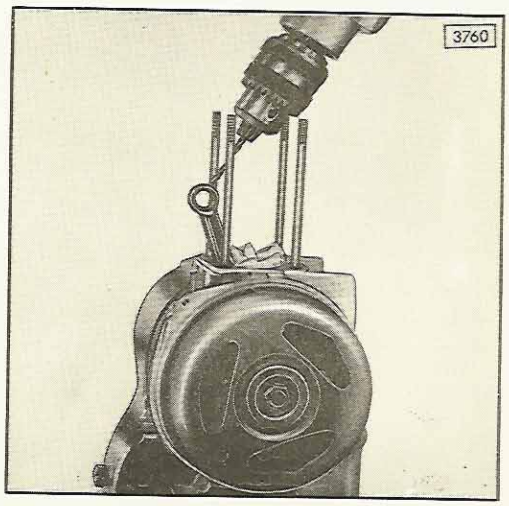


Fig. 18

Example :

Clutch cage pressed downwards, feeler gauge clearance		0.0433 in. (1.10 mm)
Distance between clutch cover and clutch lining	+	0.0157 in. (0.40 mm)
Thickness of lower shim		0.0591 in. (1.50 mm)
Clutch cage lifted up, feeler gauge clearance		0.1339 in. (3.40 mm)
Thickness of lower shim	-	0.0591 in. (1.50 mm)
Clutch cage clearance	-	0.0078 in. (0.20 mm)
Thickness of upper shim	=	0.0669 in. (1.70 mm)

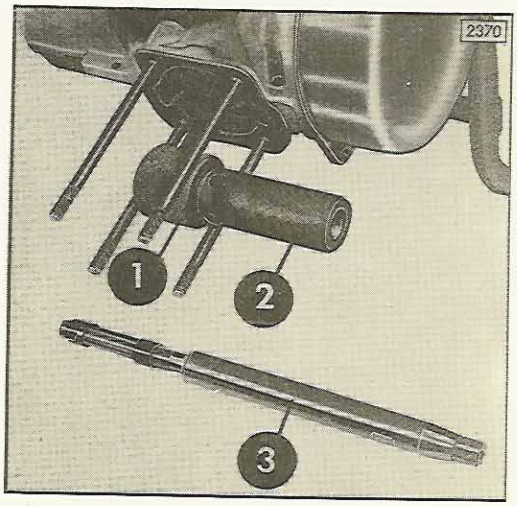


Fig. 19

Note :

Due to production limits of clutch components, it is at present not possible to adjust the distance between clutch lining and clutch cover to 0.0118 to 0.0197 in. (0,3 to 0,5 mm) - see fig. 24. In other words the actual distance is in excess of the specified maximum of 0.0197 in. (o,5 mm). Until modified, adjust to the possible minimum even if above 0.0197 in. (0,5 mm).
The clutch basket clearance remains unchanged and must be adjusted to 0.0039 to 0.0078 in. (0,1 to 0,2 mm).

Wear Limits

The starter clutch lining can be worn to 0.0394 in. (1,00 mm) thickness.
The centrifugal clutch is usable until the metal is almost through. However, if clutch drum or clutch lining is grooved, both parts must be replaced.

Note :

A special oil is used for this automatic model. Details of this oil are quoted in the operating and lubricating instructions.

Incorrect oil can cause the following :

Clutch slipping or engaging too late .
Centrifugal clutch not disengaging of disengaging too late because of sticking lining.
Centrifugal clutch not disengaging due to expanded linings.
The last fault also occurs if oil is thinned by, for instance, fuel entering through leaking oil seals.

Assembling the engine

The engine is assembled in reversed procedure to dismantling, noting the following points :

All parts must be checked visually after cleaning. All wear parts, such as clutch components, bushes, bearings and the like must be checked. How to check and to what sizes and limits is explained in the various paragraphs. Gaskets, oil seals and retaining rings must always be replaced. Coat contact surfaces of both housing halves thinly with sealing compound (no gasket). Do not use sealing compound on gaskets. Use "loctite" for any slightly damaged threads, for instance in housings.
Do not enlarge hole for larger tap.
Damaged threads can be repaired by fitting "Heli coil" inserts as illustrated in fig. 25.
Oil bearing and oil seal contact surfaces.

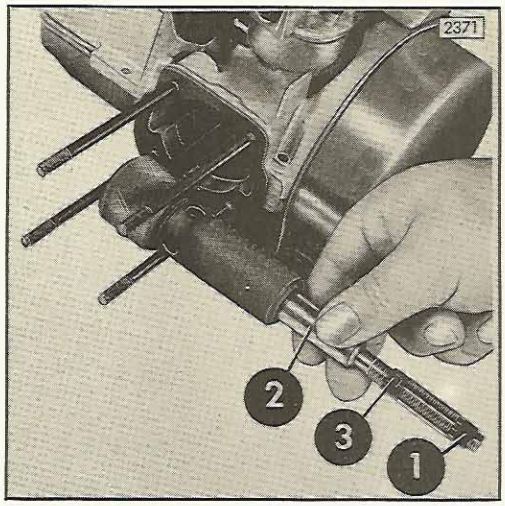


Fig. 20

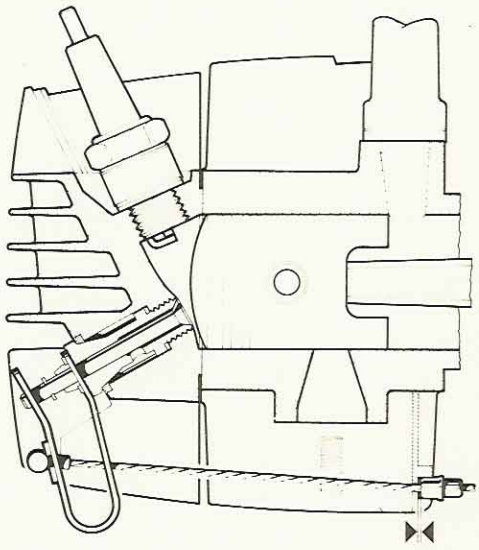


Fig. 21

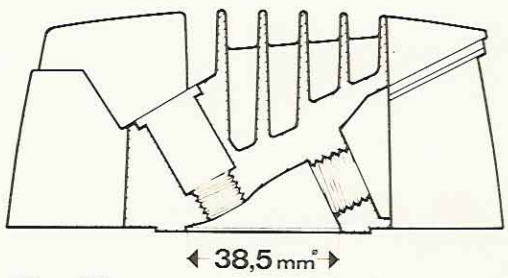


Fig. 22

Rotate crankshaft after adding the cylinder to line up piston. Tighten cylinder head nuts crosswise to 1 mkp. A torque spanner must be used to tighten the various screws and nuts. For tightening torques see the chart on page 3. Add 150 cc automatic oil to engine prior to fitting into frame (winter and summer).

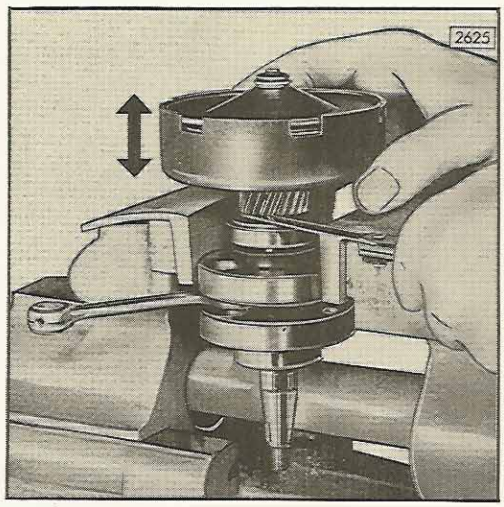


Fig. 23

Checking and adjusting the ignition

The following points must be checked for timing.

a) contact gap and condition of contacts
b) timing
c) pole shoe break gap

Contact breaker contacts

Check condition of contacts prior to adjusting of gap see fig. 26. Worn and burnt contacts must be replaced together with the condenser. Checking and adjusting of contacts is done through the flywheel windows. To change contact gap, loosen fixing screw (fig.26/3) and move the fixed contact (fig.26/1) by inserting a screwdriver into the slot provided (fig.26/4). Always re-check timing after altering the contact gap.

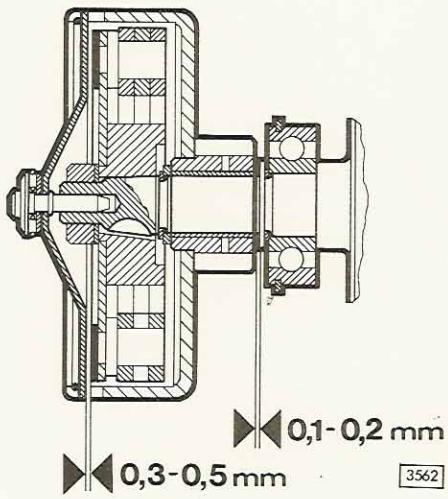


Fig. 24

Timing

To simplify, mark t.d.c. position on flywheel opposite housing joint (fig.27). Remove sparking plug and insert a pin. T.d.c. can now be found by turning the flywheel. Mark t.d.c. on flywheel. The timing is 0.630 in. to 0.709 in. (16 to 18 mm) against operating direction on the circumference of flywheel from t.d.c.
An electric timing is required for accurate timing (see special tools). One cable of the istrument, is connected to earth, the second cable is clipped to a small screwdriver which is held through the flywheel window onto the moving contact. Rotate engine on flywheel from t.d.c. approx. 1.181 in. (30mm) against operating direction, buzzing of timing device reduces (contacts closed). Now turn flywheel slowly clockwise until buzzing sound increases. This point is the timing and should be between 0.630 to 0,709 in. (16 to 18 mm) from t.d.c. (fig. 28). If the contacts open before 0,709 in. (18mm) (ignition advanced), loosen the three fixing screws and turn magneto base-plate clockwise. If the contacts open after 0.630 in. (16 mm), turn base plate anticlockwise.
The three fixing screws must be tightened after moving the base plate to keep the timing.

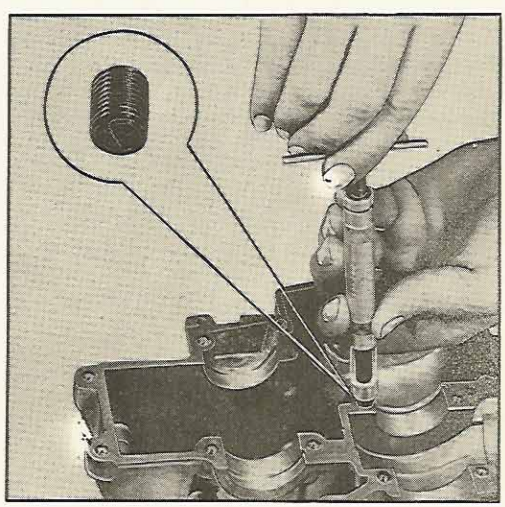


Fig. 25

c) Break gap 0.275 to 0.433 in. (7 to 11 mm)

The break gap is the distance between the passing magnet edge and the nearest ignition coil lamination edge.

The correct break gap ensures maximum ignition output. Adjust break gap to the specified limit by altering the contact gap within the specified 0.0138 to 0.0177 in. (0,35 to 0,45 mm).

Reduced contact gap gives larger break gap

Increased contact gap gives smaller break gap

The timing must be rechecked after altering the contact gap. The break gap can no longer be adjusted to the specified limits if the contacts are badly worn. Such contacts must be replaced.

Fitting the engine

Insert engine from below into frame and position with the three fixing screws (longest screw to protection bracket).Fit right pedal with sprocket wheel and secure with key. Lift machine out of assembly stand and rest on prop stand. Add both chains and fit locking plates. Connect yellow and black cables to terminal block. Add carburettor to flange , push completely forward (to prevent air entering) and tighten clamping screw. Connect fuel hose, fit air filter and locate rear brake Bowden cable on filter housing. Fit exhaust. Connect nipple of starter Bowden cable to engine and clamp other cable end to operating lever on handlebar. Adjust Bowden cable to operate starter clutch after approx. 1.181 in. (30 mm) lever movement. The clutch acts as brake if too tightly adjusted (when pushing the machine). Too much play causes slipping of clutch when starting. The decompressor control is functioning from the starter clutch control and can now be fitted. Connect decompressor spring, locate with washer and secure cable sleeve to holder on cylinder. Adjust Bowden cable to actuate decompressor in advance of starter clutch. Ensure that at completely engaged starter clutch position the valve shaft circlip is not pressed into valve guide but has a cleanrance of apprx. 0.0039 to 0.0078 in. (0.1 to 0.2 mm) see fig. 29.
Fit right and left chain guard.

Carburettor tuning

Correct tuning is only possible if the carburettor specified in section "technical data" is fitted (see page 1) because all valves have been established during test bed and operational trials.The engine must also reach operating temperature.

Adjusting the idling speed

The required idling speed is adjusted with the throttle adjusting screw to 800 to 1,200 rev/min (fig.30).

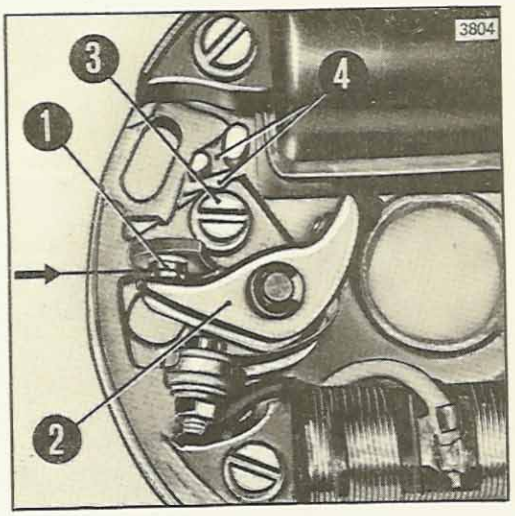


Fig. 26

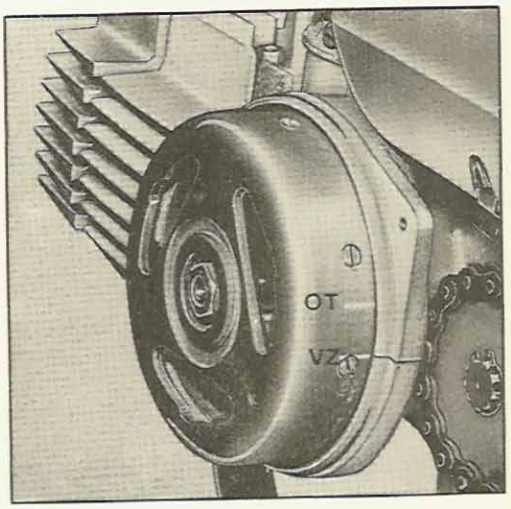


Fig. 27

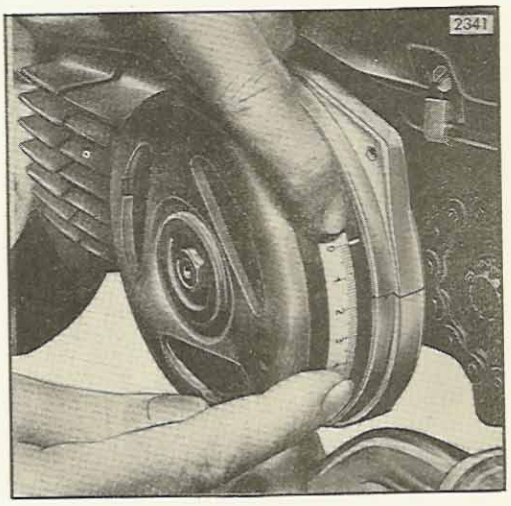


Fig. 28

Ensure the throttle cable has sufficient play (0.0078 in.= 0.2 mm) Insufficient play causes throttle to foul on cable and the adjusting screw cannot function.

Note : Too large contact or sparking plug gap can also be the cause of irregular tick-over at low idling speeds.

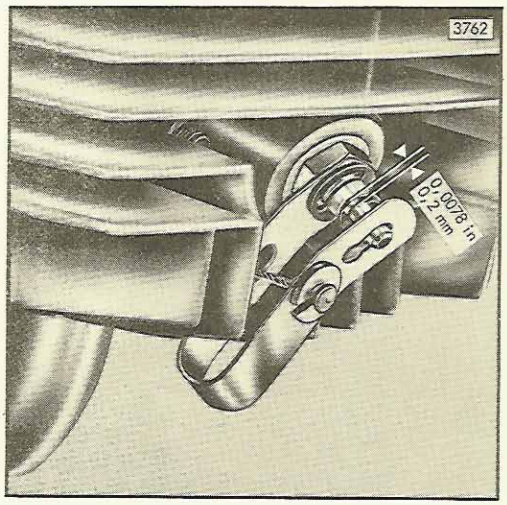


Fig. 29

Tuning at operational conditions

If the main jet is not suitable for the climatic conditions, a new jet must be found by test riding. Starting from the specified main jet, test ride the next larger and next smaller jet size and check top speed on speedometer or with stopwatch. Test ride on road which allows full-throttle operation without throttle changes. Constant engine temperature is also important. Select the jet size which gives slightly less top speed than the best. Adjust medium speed range by lowering or raising the carburettor needle by one notch each time. Select the position giving the best test ride results.

Note : The needle position effects only lower and medium speed but not the top speed. Proper carburettor tuning is indicated by brown colouring of sparking plug face at any speed.

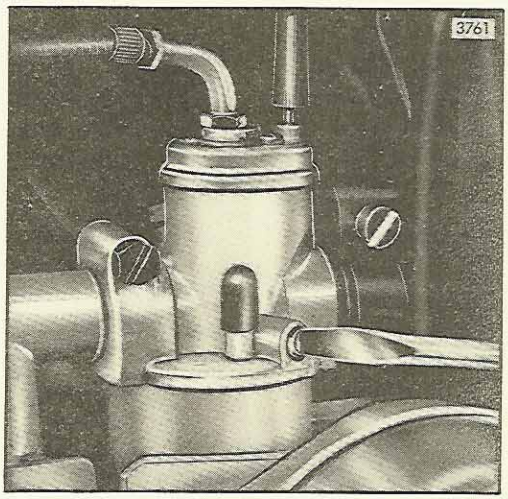


Fig. 30

The following faults are due to incorrect carburettor tuning :

Mixture too weak.

Engine pinking constantly or when accelerating.

Overheating of engine

Bright sparking plug face (can also be caused by petrol and oil additives)

Sparking plug forming melted pearls of metal or excessive burning of electrodes.

Reduced engine output at top speed.

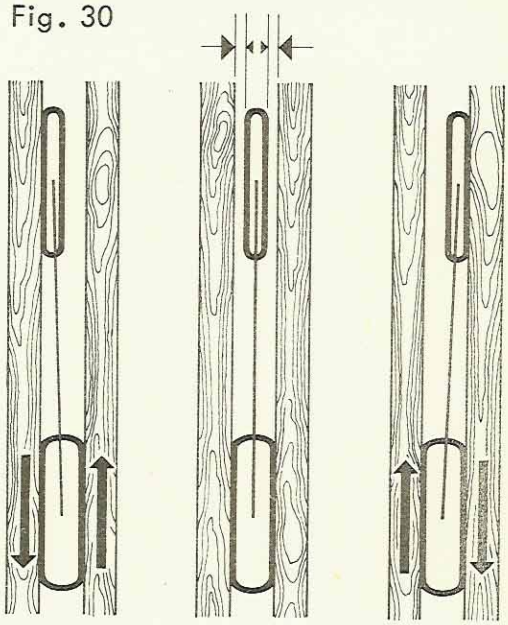


Fig. 31

Mixture too rich

Irregular running of engine

Overheating of engine

Dark spraking plug face

Sparking plug wet and whiskering

Engine pulls and accelerates badly

The following chart indicates possible fault sources

Faults not caused by carburettor	mixture too weak		mixture too rich	
	partial throttle	full throttle	partial throttle	full throttle
Coking			x	x
Air filter not cleaned			x	x
Clutch and oil seal leaking			x	x
Magneto end oil seal leaking	x	x		
Crankhousing leaking	x	x		
Air filter leaking	x	x		
Air-inlet port gasket leaking	x	x		
Air-inlet flange distorted	x	x		
Wear on cylinder, piston, piston rings	x			
Faults caused by carburettor				
Main jet too large				x
Main jet loose			x	x
Main jet too small		x		
Main jet blocked		x		
Float leaking			x	x
Float needle or needle seating leaking			x	x
Needle jet worn			x	x
Needle jet loose			x	x
Needle too low	x			
Needle too high			x	
Carburettor not seated properly	x	x		
Choke not opening properly			x	x

Frame and Cycle Parts

Frame

Repairs to frame and pivoted rear fork are limited to replacing wear parts like bearings and bushes. Only accidents necessitate checking for twisting or fractures or repairs. The Maxi frame and fork are made from pressed sheet metal and serious damage is not repairable. Even the manufacturing plant cannot entertain such repairs because a new frame is considerably cheaper. Straightening of frame and rear fork is only possible if not fractured and only minor damages are apparent. It is important to know that the load carrying sections of a pressed steel frame lose strength if heated excessively (welding, hot straightening). Smaller welding and straightening jobs on frame are, of course, possible. Check wheel alignment prior to dismantling machine.

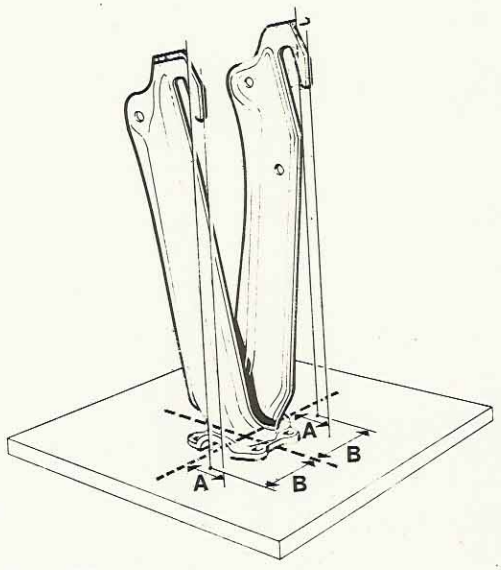


Fig. 32

Wheel Alignment

Ensure wheels are aligned whenever fitting a rear wheel. Checking and adjustment is simple and is as follows:

Checking

Place machine on floor without stand and bring front wheel to forward position . Place two approx. 8 ft-long battens, 4 in above floor level, to both sides of the rear wheel ensuring contact on front and rear of rear tyre. Now check that both sides of front wheel have an equal distance in front and back (fig.31, centre illustration). Adjust rear wheel as required until front wheel is in the centre of the two battens.

Adjusting

Loosen rear wheel spindle and adjust rear wheel with the two chain tensioners (see fig. 31, illustrations on left and right).

Note : Ensure correct driving chain tension after correcting the rear wheel. The vertical position of the wheels to the frame should now also be checked. Check with plumb line, machine resting on both wheels. Use ruler or vernier to check distance between plumb line and top and bottom of rim. Variation in distances on the two wheels is usually caused by twisted rear or front fork.

Pivoted rear fork

If during the above check a twisted rear fork is noticed, the engine must be removed for further checks and straightening. Remove engine and rear wheel, unscrew telescopic legs from the fork and the four screws from the bearing shell . Take out fork.

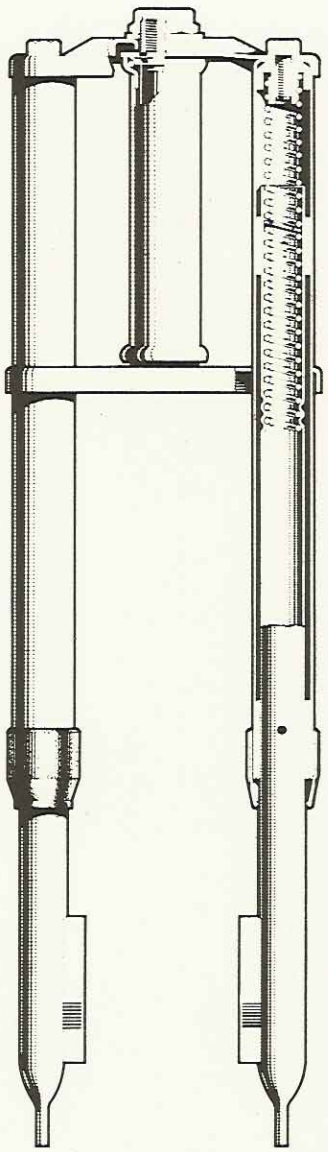


Fig. 33

Checking the fork

Clamp bearing flange of fork onto levelling block. Scribe datum line as illustrated in fig. 32. Use a square to find dimension "A" and dimension "B" on both sides. The difference in the relevant dimensions is the twist of the fork. If no difference is measured, the frame fork bearing is twisted. Straightening is not possible and the frame must be replaced.
Furthermore, check fork rubber bush and both plastic bushes for the pedal axle for wear.

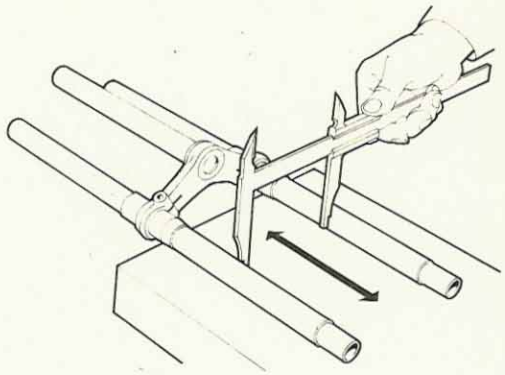


Fig. 34

Fitting the rear fork

Fit in reversed procedure but note the following points. The four bearing shell screws must only be tightened after fitting of telescopic legs to prevent excessive pre-tension of rubber bearing (excessive wear).

Front fork (see fig. 33)

The front fork on this model is a simple, maintenace free telescopic fork. Only the plastic guide bushes require lubrication. The lower end of the spring is screwed to the sliding tube, the upper end is held by a threaded piece screwed into the spring. A rubber ring limits the telescopic movement and acts as buffer between sliding tube and threaded piece. Spar and sliding tube are sealed by a rubber sleeve. Both spars are welded to the lower fork bridge.

Dismantling

Remove front wheel and mudguard. Remove hexagon screws from upper fork bridge and take out sliding tube complete with spring, threaded piece, guide bushes and rubber sleeve. For further dismantling, clamp wheel end of sliding tube into vice using aluminium jaws. Take out spring by turning clockwise to disconnect from holder. The two plastic guide bushes are slotted and can be removed by expanding the slots. Remove rubber sleeve.

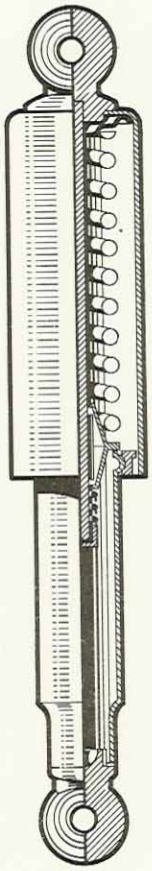


Fig. 35

Checking

Check all components visually, replace plastic guide bushes rubber ring and if necessary check spring by measuring or weight loading.

spring wire	length of spring		spring tension 2.284 in.(58mm) tensioned	
dia.	new	wear limit	new	wear limit
.1181 in. (3 mm)	7.244 in. (184 mm)	6.889 in. (175 mm)	121.27 lb (55 kp)	110.25 lb (50 kp)

Plastic guide bush

new	wear limit
1.0609 in.(26.95 mm) dia.	1.0433 in. (26.5 mm) dia.

Alignment of the lower fork bridge must be checked if damage of fork due to accident is suspected. Check from spar to steering tube and from spar to spar. If any twist is apparent (see fig.34), the fork bridge must be replaced. The upper fork bridge is checked by placing on flat surface. Replace a twisted fork bridge.

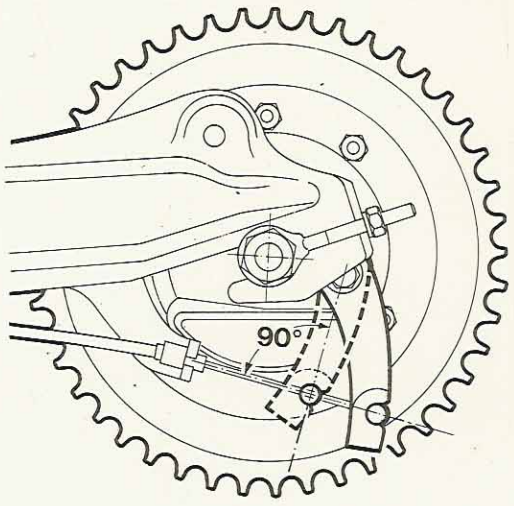


Fig. 36

Assembling

Assemble in reversed procedure. The plastic washer must be fitted with the spring to prevent noisy spring action. Lubricate plastic guide bushes and springs prior to assembling.

Suspension Units (fig.35).

The Maxi telescopic suspension units are virtually maintenance free. Dismantle only to clean and lubricate guide bush and plastic protection ring. No spare parts are available and faulty units must be replaced. Only the upper and lower rubber bearings and bearing bushes are available.

Dismantling the telescopic leg :

Use clamp to secure lower part of telescopic leg in vice. Unscrew lower end cap. Clamp unit at upper end cap and use socket spanner to unscrew nut from guide rod (watch out for clamping spring). Lift out lower leg part with guide bush and plastic ring and cover tube with spring rest and spring. Clean and check all components, lubricate guide bush as plastic ring and assembling telescopic leg in reversed procedure.

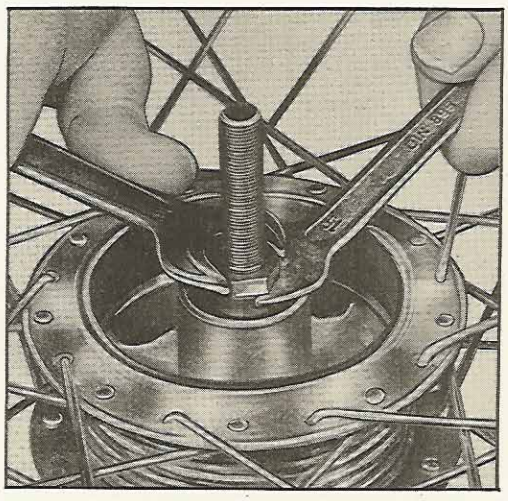


Fig. 37

Hubs, Brakes

Brake linings of Maxi brake hubs are glued-on. Brake shoes must be replaced if linings are excessively worn. Low brake efficiency due to polished lining surfaces (dust and the like) can be improved by roughening lining and brakedrum. This is also necessary when fitting new linings. The position of the brake lever is most important for proper functioning of the brakes. The lever position at full contact should not exceed 90° (see fig. 36). Worn linings affect the lever position. The lever position can be adjusted to compensate for lining wear within wear limits (see wear limits).

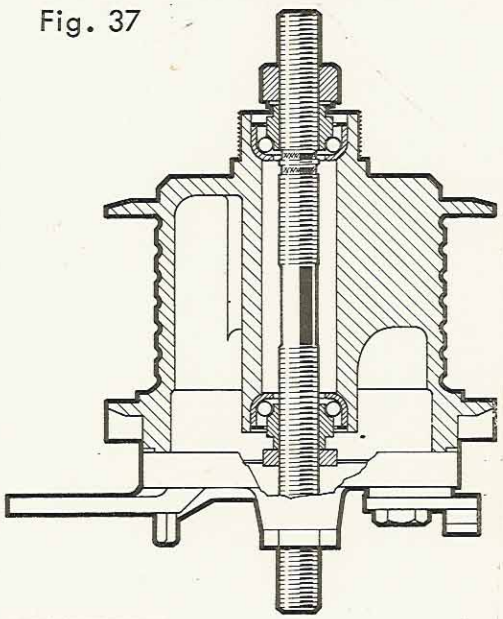


Fig. 38

Adjust on teeth between brake lever and brake cam. The hubs are grease packed to last for approx. 6.000 operating miles. The hubs should be dismantled, cleaned and regreased every 6.000 miles.

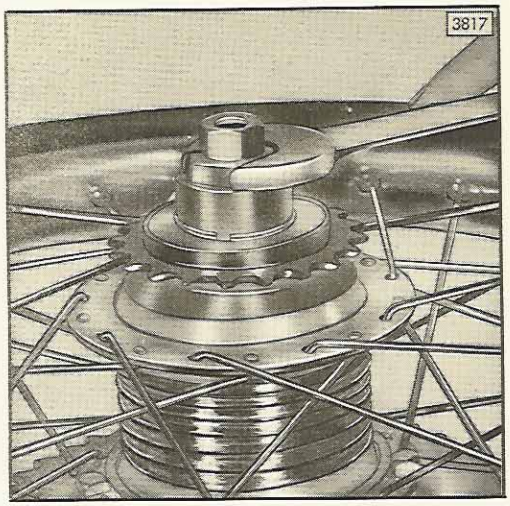


Fig. 39

Dismantling the front hub

Dismantling the front hub as follows :
Secure axle counternut on speedo end in vice using aluminium jaws. Unscrew counternut and lift off carrier plate with washer. The brake jaws are dismantled by disconnecting both brake springs with a screwdriver. Remove counternut and adjusting taper and lift hub from axle. To replace bearing shells, lift off cover washer, remove balls (22 off) and press-out bearing shells. The bearing shells are pressed in with a suitable arbor.

Assembling

Assemble in reversed procedure to dismantling. The tapers must be adjusted with a special spanner part no. 905.6.35.402.1 - see fig. 37.
It is recommended to make up a suitable sleeve to aid fitting of cover washers. Adjust bearing play from drum end. The other taper is tightened on the axle. The axle is splined to locate the taper.
To adjust, tighten right taper until axle can only be turned with difficulty. Loosen taper by 1/4 or 1/2 turn until axle moves freely without any play. Finally, tighten counternut.

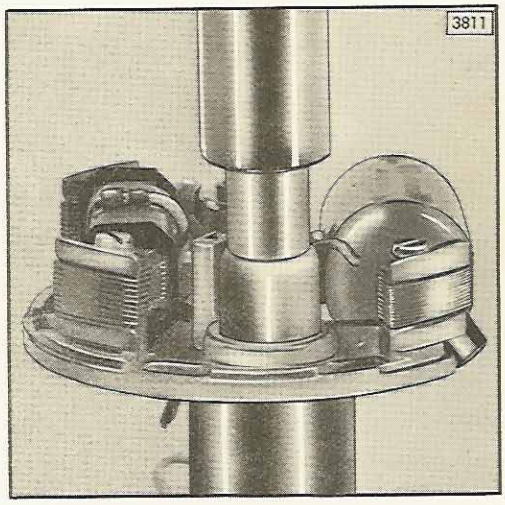


Fig. 40

Rear wheel hub - fig. 38

The rear wheel hub is dismantled and assembled in the same fashion as the front hub.
Note the following additional points :
It is not necessary to dismantle rear hub to change sprocket wheels. The complete idling sprocket wheel is unscrewed with the special tool part no. 905.6.35.404.0 (fig.39). Dismantling is not intended. Replace complete idling sprocket if necessary. The large sprocket wheel is fitted with six screws and can be removed easily.

Wear limits

Drum diameter		Pair of brake jaws, assembled	
nominal size	Wear limit	New	Wear limit
3.1500 in. dia. (80 mm Ø)	3.1893 in. dia. (81.0 mm Ø)	3.1103-3.1300 in. dia. (79.0 - 79,5 mm Ø)	3.0394 in. dia. (77,2 mm Ø)

Electrical Equipment

Three different lighting systems are used on Maxi models as follows :

A 6 V 17 W system using a dipping headlamp bulb 15W/15W.
A 6 V 17 W system using a permanently dipped headlamp bulb 15 W and 2 W tail light bulb.
And a 6 V 21 W system using a dipping headlamp bulb 18 W/18 W and a 3 W tail light bulb.

Work on the flywheel magneto

To remove flywheel use extractor part no.050.7012 and locking device part no. 905.0.16.101.2. Disconnect cables, remove sparking plug connector and take off complete baseplate after unscrewing the three fixing screws. Replacing ignition or lighting coil (flywheel removed). Unscrew coil fixing screw and take off coil. Unsolder primary lead of ignition coil from condenser. Fit new coil and tighten fixing screws hand tight. Resolder ignition coil lead to condenser,
Replacing the condenser (flywheel removed)
Unsolder contact breaker and ignition coil leads. Use wood dowel to press faulty capacitor out of baseplate. Use scraper to clean off calking marks in hole for condenser.
Press home new condenser (fig.40), and calk carefully. Resolder contact brakes and ignition coil leads. For change of contacts see para "timing". Fit baseplate, connect cables and add sparking plug connector. Slide on flywheel, (clean cone surfaces using an effective degreasing agent). If the ignition armature or lighting armature was changed remeasure air gap between the pole shoes (fig.41). The gap should be 0.0059 to 0.0079 in . (0.15 - 0.20 mm).
This check is important because only the specified gap will give full ignition or light output. A larger gap must only be selected if the output voltage is too high. To adjust this gap, tap or push lamination with suitable piece of wood or plastic. Tighten coil fixing screws and check gap again.
Use torque spanner to tighten flywheel (fig.42), using locking device part no. 905.0.16.101.2. The required torque is 3 to 3.5 mkp. Check earth connection of dip switch first if faults occur on horn or short circüiting button. Use the enclosed wiring diagrams for further checking or rewiring.
Ignition timing and other work on the ignition system is described in para "timing", page 15.

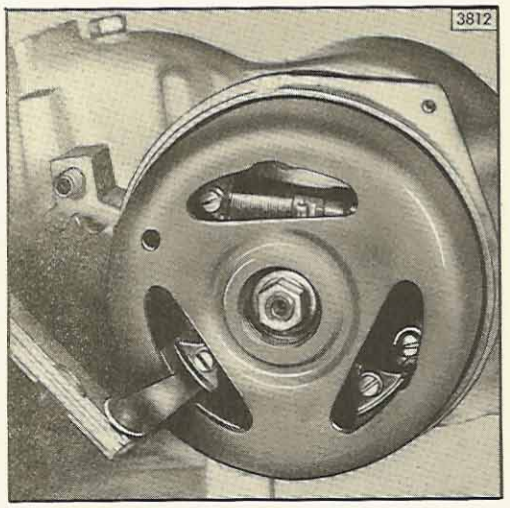


Fig. 41

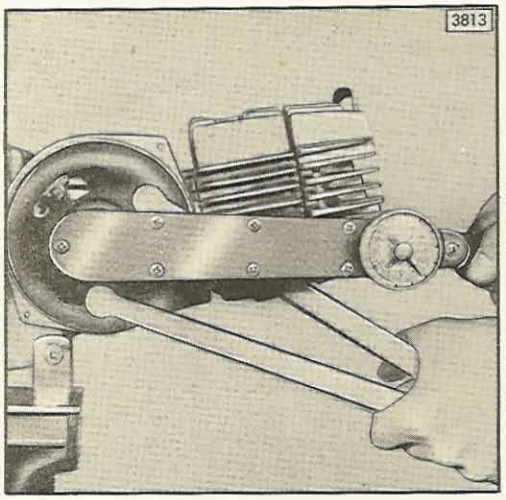
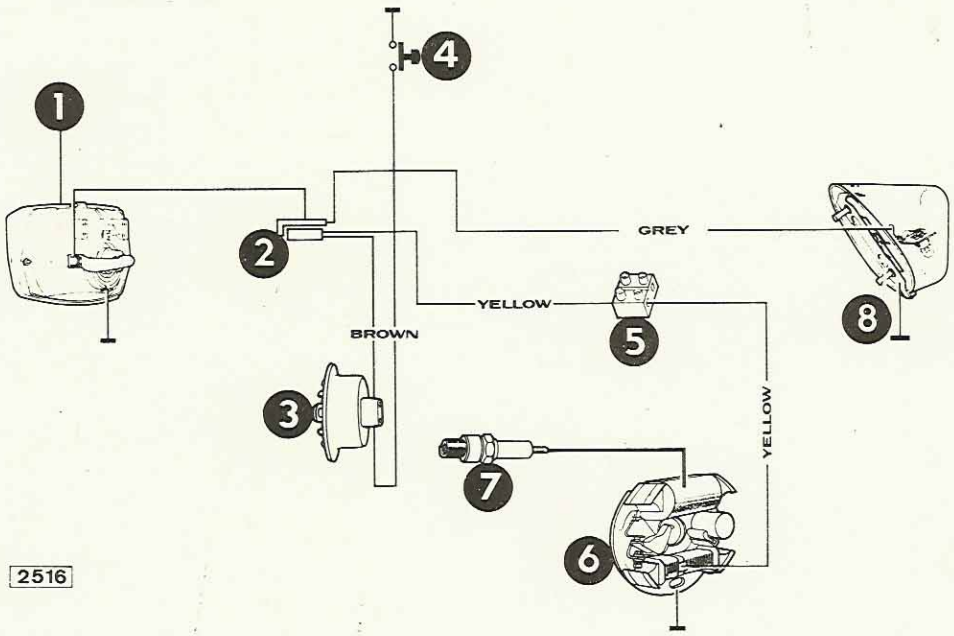


Fig. 42

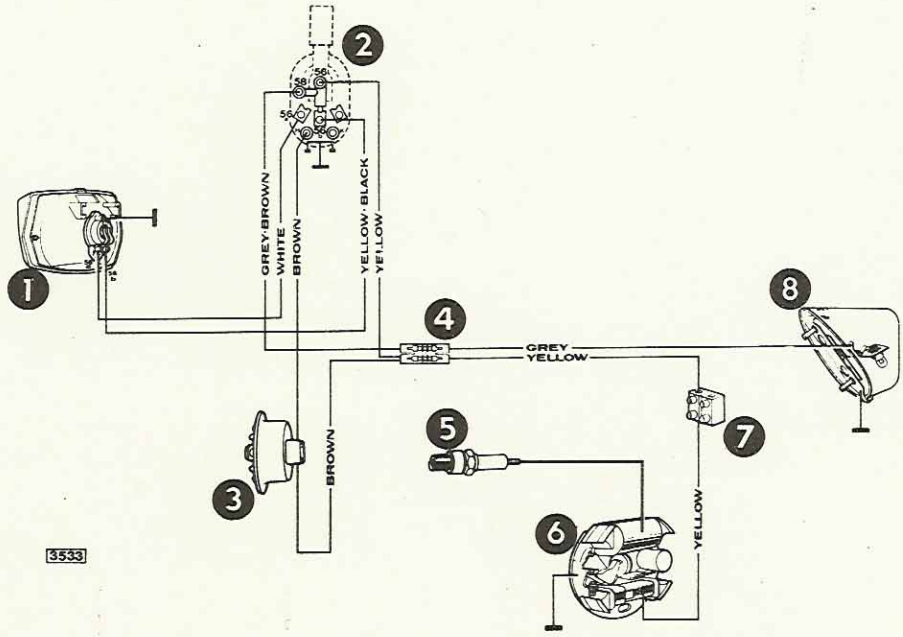
WIRING DIAGRAMMS

Model with permanently dimme light. 6 V/17 W (Angular headlamp).



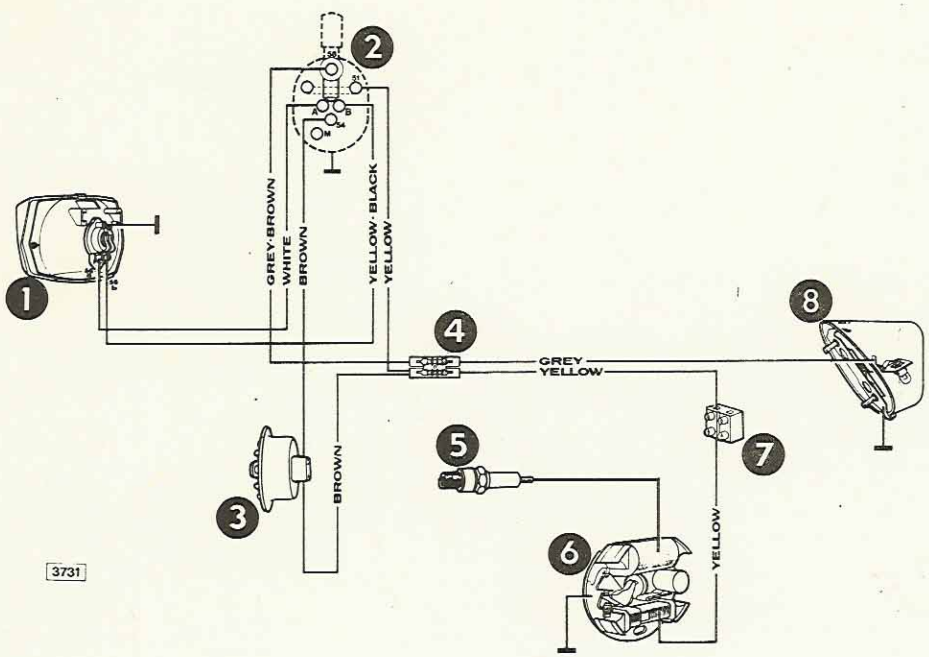
1 Headlamp
2 Light switch
3 Horn
4 Horn button
5 Rubber terminal
6 Flywheel magneto
7 Spark plug
8 Tail lamp

Model with main- and dimmer light 6 V/17 W (angular headlamp and Merit switch)



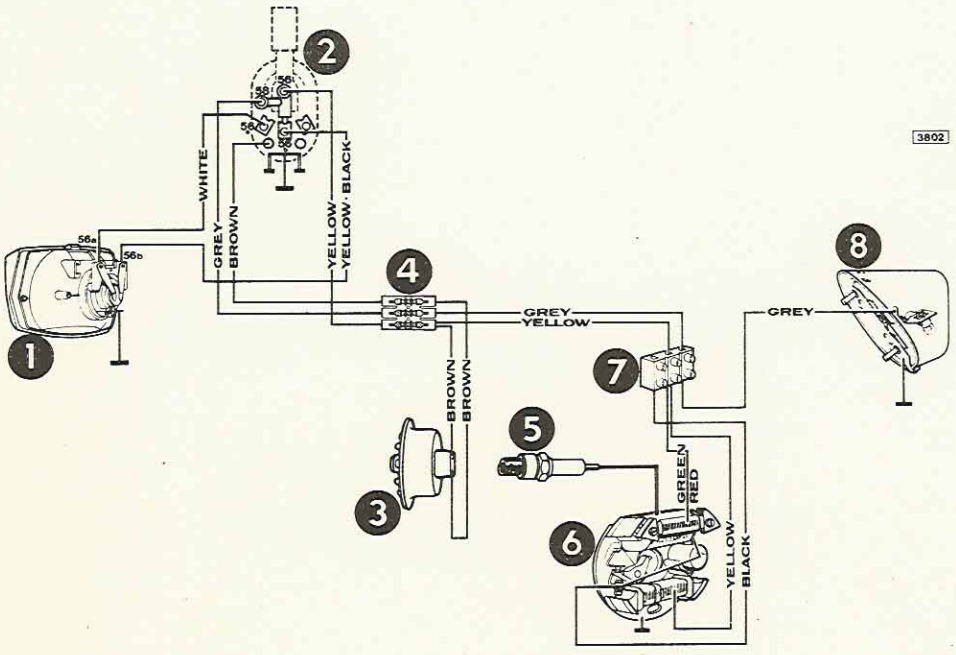
1 Headlamp
2 Combined switch
3 Horn
4 Rubber terminal
5 Spark plug
6 Flywheel magneto
7 Rubber terminal
8 Tail lamp

Model with main- and dimmer light 6 V/17 W (angular headlamp and C.E.V. switch)



1 Headlamp
2 Combined switch
3 Horn
4 Rubber terminal
5 Spark plug
6 Flywheel magneto
7 Rubber terminal
8 Tail lamp

Model with main- and dimmer light 6 V/17/5 W (angular headlamp and Merit switch)



1 Headlamp
2 Combined switch
3 Horn
4 Rubber terminal
5 Spark plug
6 Flywheel magneto
7 Rubber terminal
8 Tail lamp

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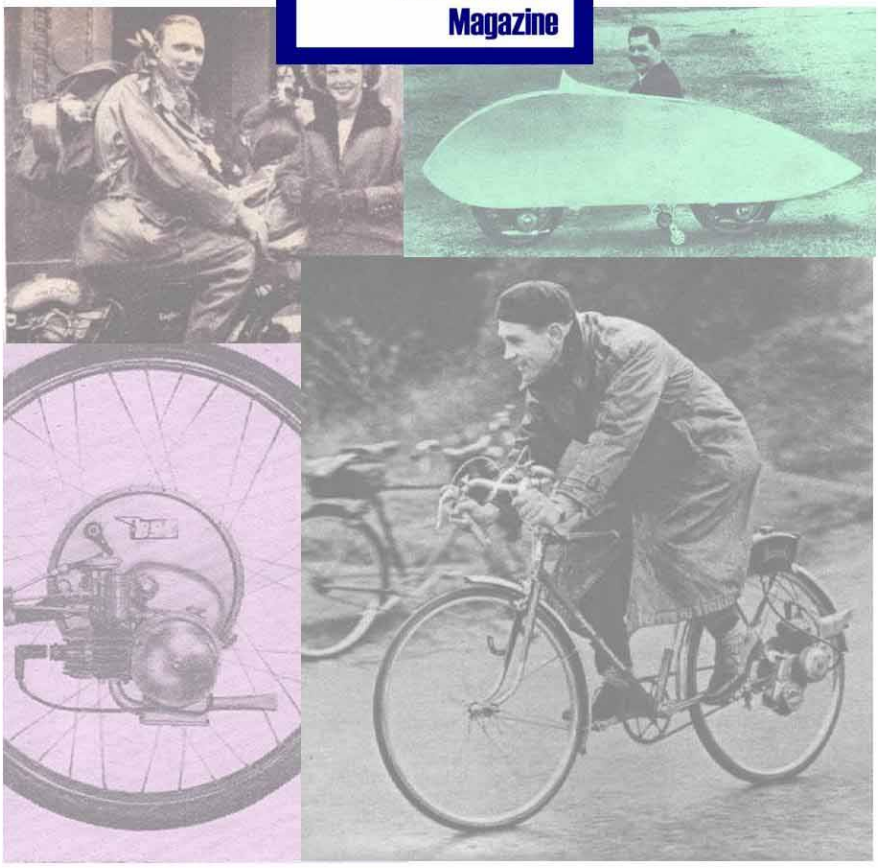

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