TW

DUCATI

5 - speed
250 cc. single-shaft MOTORCYCLES 196

Distributor for USA
BERLINER MOTOR CORPORATION

DUCATI MECCANICA BOLOGNA

Instructions for use and maintenance

PRINTED IN ITALY

TW

5 - speed ***Single - shaft***

DUCATI
MOTORCYCLES 196

scrambler 250

monza 250

FEATURES - USE - MAINTENANCE

1 st. ISSUE - PRINTED DM - Mod. 4.063 May 1964 - 10.000

Every Motorcycle receives one copy of the present booklet.

GUARANTEE CARD

Every DUCATI MOTORCYCLE is supplied with a « Guarantee Card » which will be found in the sealed tool box.
The seal may be broken only by the purchaser.

The contents of this booklet are not binding and though the main features of the motorcycle described and illustrated in this booklet remain unchanged, the DUCATI MECCANICA S.p.A. will be free to introduce modifications of some details, or of some accessories, if these modifications will be judged necessary, or if they can improve the motorcycle, or finally for some technical-economical exigencies, but without being obliged to bring this booklet up-to-date.

Dear Sir,

We are very glad to welcome you among our clients, and feel sure that you will not fail to appreciate the magnificent performance of the DUCATI Motorcycles.

The magnificent performance and reliability of our machines reflect the experience gained throughout many years of successful racing both on track and road.

In order to obtain the fine service that the Ducati machine is capable of giving, it is essential that the instructions contained in this book should be religiously adhered to.

If these instructions are followed closely, particularly during the running-in period of the machine then you will be assured of many years trouble-free enjoyable riding.

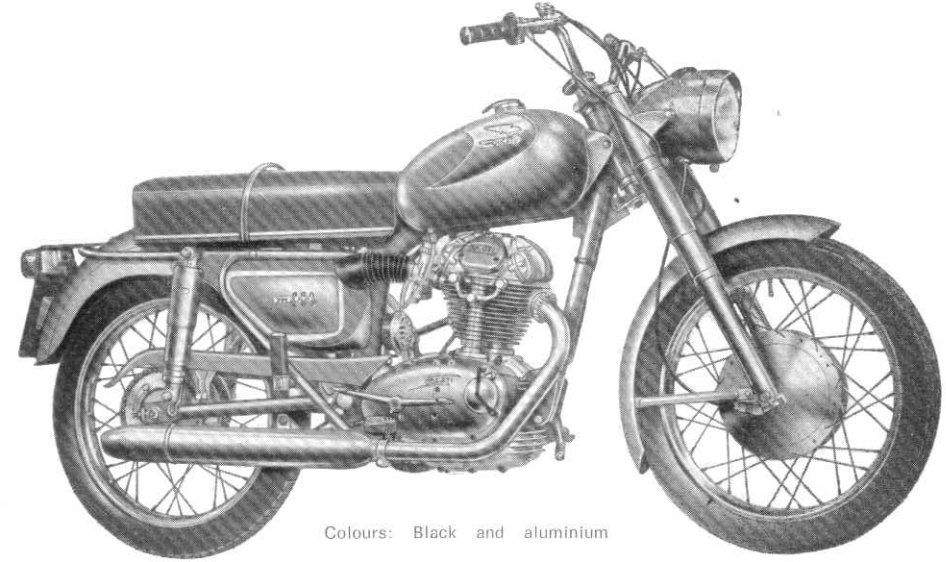
We thank you for your patronage and congratulate you on your wise choice of such a fine machine with its unequalled performance.

DUCATI MECCANICA S.p.A.

MOTORCYCLE DUCATI 250 scrambler

Colours: Black and aluminium

MOTORCYCLE DUCATI 250 monza



Colours: Black and aluminium

A FOREWORD

The main goal of the present instruction booklet is to enable the owner of a single-shaft DUCATI Motorcycle to use his vechicle in the best possible way.

The following notices are therefore only simple recommendations suggestions, advices, and terms of reference, sufficient to enable anyone, having no experience or ignoring any special technical knowledge, to use his vehicle and to maintain it for a long time in perfect working condition.

DUCATI SERVICING GARAGE

It is advisable when taking the machine to a garage for repairs to ensure that the garage is a Ducati agent as the staff will have been specially trained and the garage will have been equipped with the necessary tools to carry out any repair required. They will also carry a full stock of genuine Ducati spares.

SPARE PARTS

It is absolutely necessary that each order of spare parts clearly states the following data:

1) The catalogue classification of the spare part (obtained from the Spare Parts Catalogue of the model wanted).
2) Serial number of the engine (when ordering spare parts for the engine).
3) Serial number of the frame (when ordering spare parts for the frame).

IDENTIFICATION NUMBERS

Every DUCATI single-shaft motorcycle can be identified by its frame and engine serial number.
The same serial number is stamped on the central girder near the battery.
The engine serial number is stamped on the crankcase near the front connection between the engine and the frame.

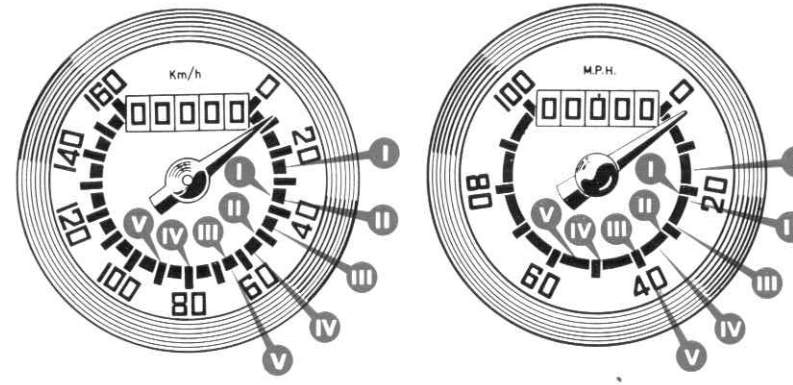
1 - Engine serial number

2 - Frame serial number

PRECAUTIONS

to be followed during the initial running-in period

The modern engine construction calls for very close tolerances between moving parts. It is essential that care is exercised during the running-in period, a process which has already been started by the factory. The engine should never be over-revved or allowed to « slog » during this time and recommended maximum speeds in gears should be strictly observed.



DISTANCE TRAVELLED	MAXIMUM SPEED IN MILES AND KM. PER HOUR				
	in bottom gear	in 2nd speed	in 3rd speed	in 4td speed	in top speed
Up to 300 miles Up to 500 Km.	16 25	22 36	29 46	35 56	40 64
From 300 to 600 miles From 500 to 1000 Km.	21 34	31 50	40 64	49 79	56 90

Moreover it is advisable:

— not to indulge too long at the maximum speed.

— not to force the engine, by indulging too long at high revolutions, especially when travelling uphill.

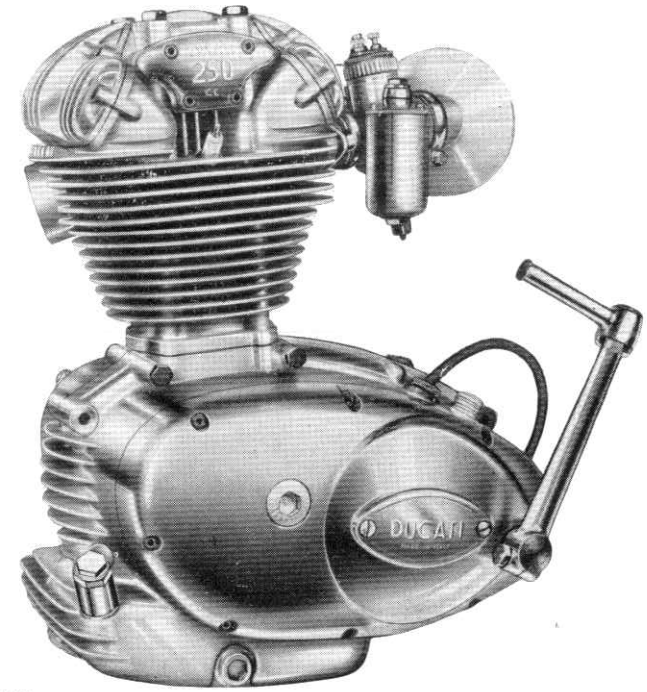
— to change after the first 300 miles and after the first 600 miles and only when the engine is still warm, the oil contained in the oil - sump of the engine; to readjust the tappets acting on the adjusting screw, for the 250 Monza, and fitting the rocker in the appropriate thickness for the 250 Scrambler, to control the tightness of the nuts which fix the cylinder head and cylinder barrel to the crankcase and all the other screws; to readjust the contact breaker.

The more regularly and accurately the foregoing recommendations are followed, the longer will be the life of the engine and the fewer the overhauls and adjustments needed.

In order to ensure careful running-in the carburetter has been fitted with a distance piece which restricts the full use of the accelerator. After 600 miles this should be removed by your Ducati dealer.

Failure to comply with the above recommendations absolves the manufacturer from all liability of guarantee and any damage that may result.

MAIN FEATURES



ENGINE

— Single cylinder, four stroke, with cylinder inclined forward 10° from the vertical. The engine is supported by a cradle formed frame.

— bore: 74 mm. (2.9134")

— stroke: 57,8 mm. (2.27559")

— cylinder capacity: 248.589 c.c. (15.1698 cu. m.)

— compression ratio: 8 : 1 for the Monza and 9,2 : 1 for the Scrambler;

— combustion chamber with hemispherical ceiling:

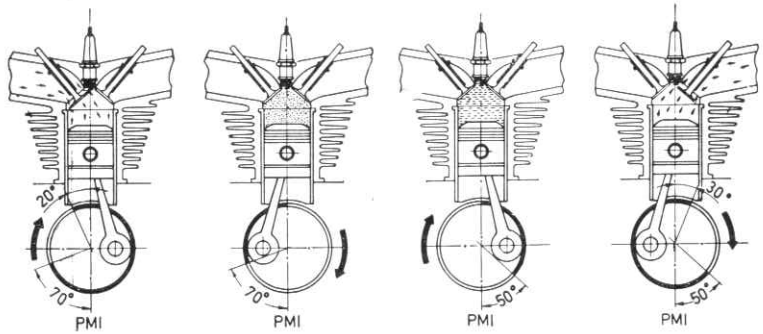
— cylinder barrel of light alloy, deeply finned and with inserted special cast-iron liner;

— connecting rod of special steel with big-end assembled on a cage roller bearing and little-end bushed to take the gudgeon pin;
— pistons of light alloy, convex topped and in one piece, with four piston rings, two of which are slotted oils scrapers;
— cylinder head cast in light alloy and closely finned with inserted valve seats.

250 MONZA

TIMING

The timing system is provided with overhead valves, inclined at 80° timed by an overhead camshaft. The valves are made of special steel.



Features

The timing values, with a clearance of 0.20 mm. (0.0079") between the valve and the rocker are the following:

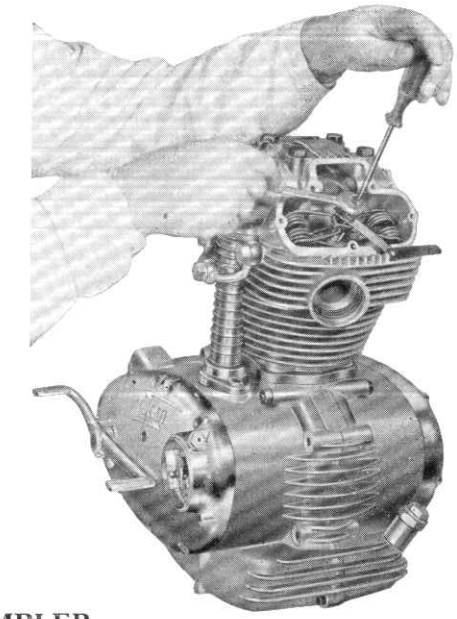
Valve	Opening ± 5°	Closing ± 5°
Inlet.	20° before TDC	70° after BDC *
Exhaust	50° before BDC	30° after TDC **

* BDC = Bottom dead center.
** TDC = Top dead center.

Adjustment

The tappets are adjusted by means of the adjustment screws on the rockers.

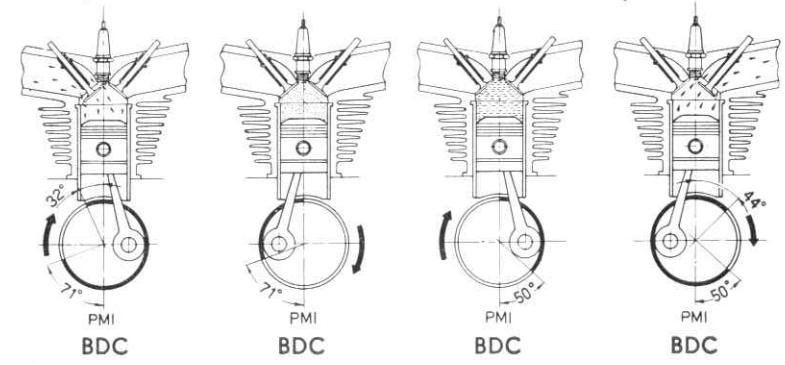
250 Monza



250 SCRAMBLER

TIMING

The timing system is provided with overhead valves, inclined at 80°, timed by an overhead camshaft. The valves are made of special steel.



Features

The timing values, with a clearance of 0.15 mm (0.0059") between the valve and the inlet rocker, and of 0.20 mm. 0.0079") between the valve and the exhaust rocker, are the following:

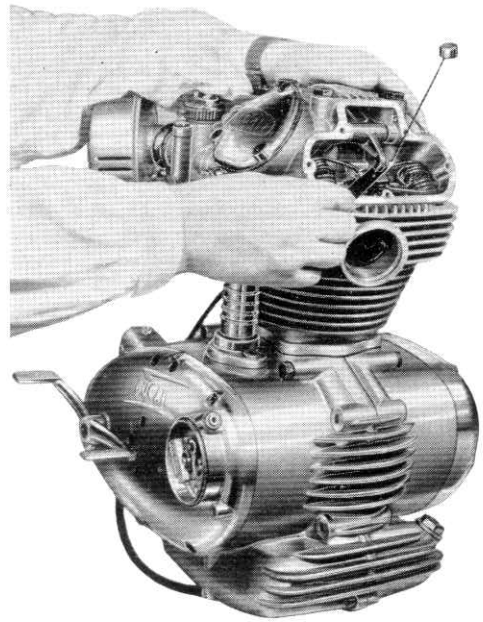
Valve	Opening ± 5°	Closing ± 5°
Inlet	32° before TDC	71° after BDC*
Exhaust	50° before BDC	44° after TDC*

* BDC = Bottom dead center.
** TDC = Top dead center.

Adjustment

The tappets are adjusted by fitting the adjusting rocker of the appropriate thickness at the end of the valve.

250 Scrambler



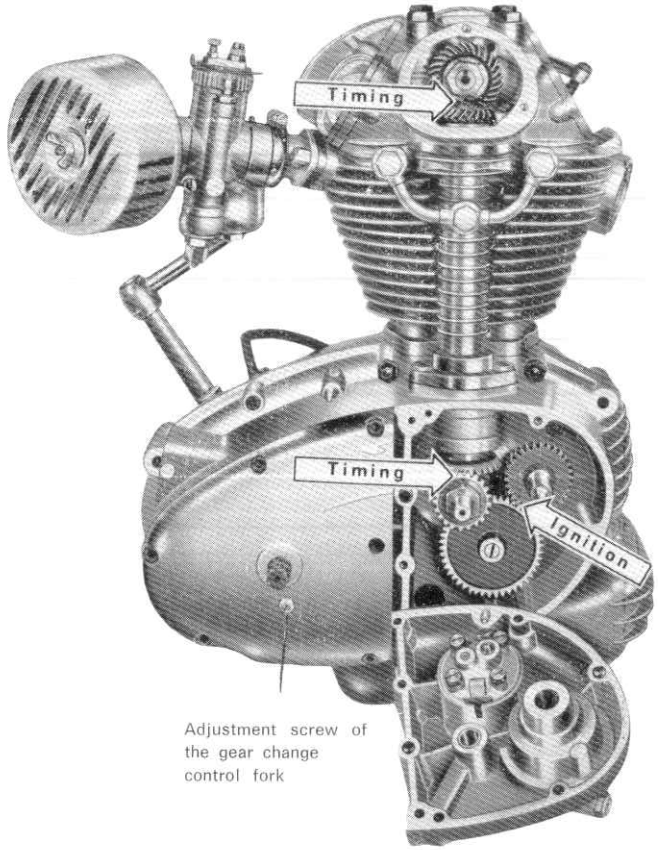
Clearance

The working clearance between valves and rockers, when the engine is cold, is of 0.05 (0.0020") to 0.07 mm. (0.0028") for the 250 Monza, and 0,15 mm (0.0059") between valve and inlet valve, and 0,20 mm. (0.0079") between valve and exhaust rocker, for the 250 scrambler.
The clearance has to be adjusted and checked with a feeler gauge, after the said timing data have been controlled.

Engine Timing

The timing gears in the crankshaft and on the camshaft, are provided with reference marks engraved on the toothed periphery.

The engine is timed when the above mentioned marks are disposed as indicated by the arrows in the following illustration.



Adjustment screw of the gear change control fork

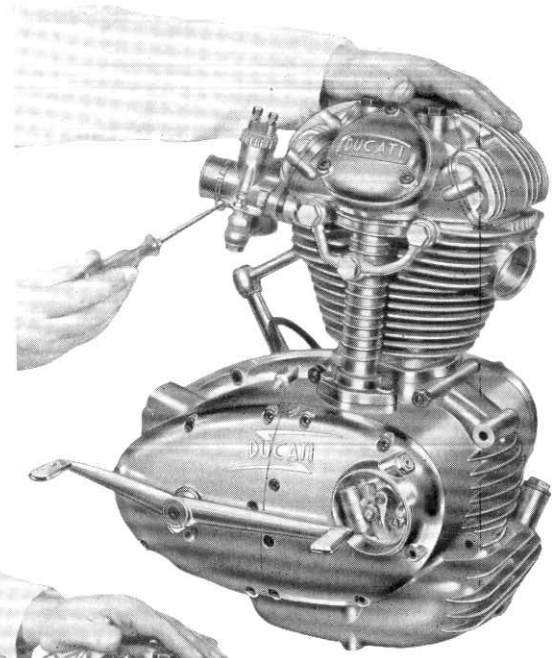
PETROL FEED

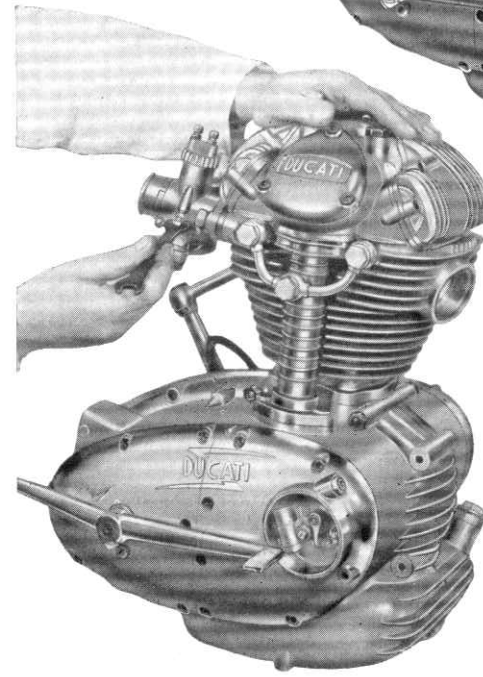
The petrol is fed to the carburetter by gravity.

The carburetter is Dell'Orto with quiet air intake on the tool-box, for the 250 Monza, with normal intake in the 250 scrambler.

250 MONZA

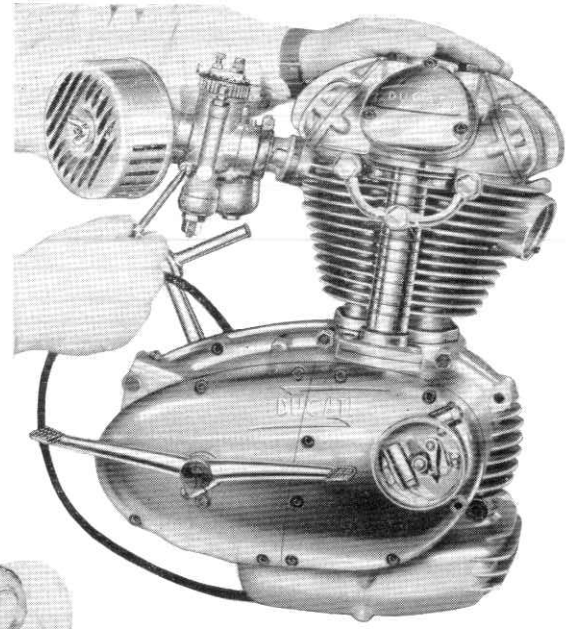
Adjustment of minimum air intake

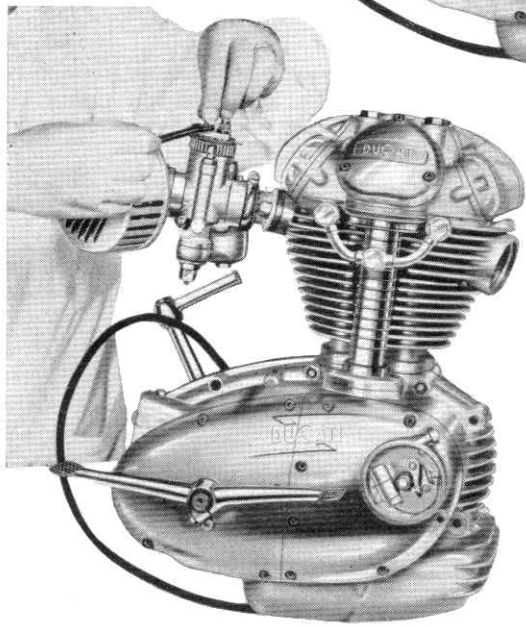




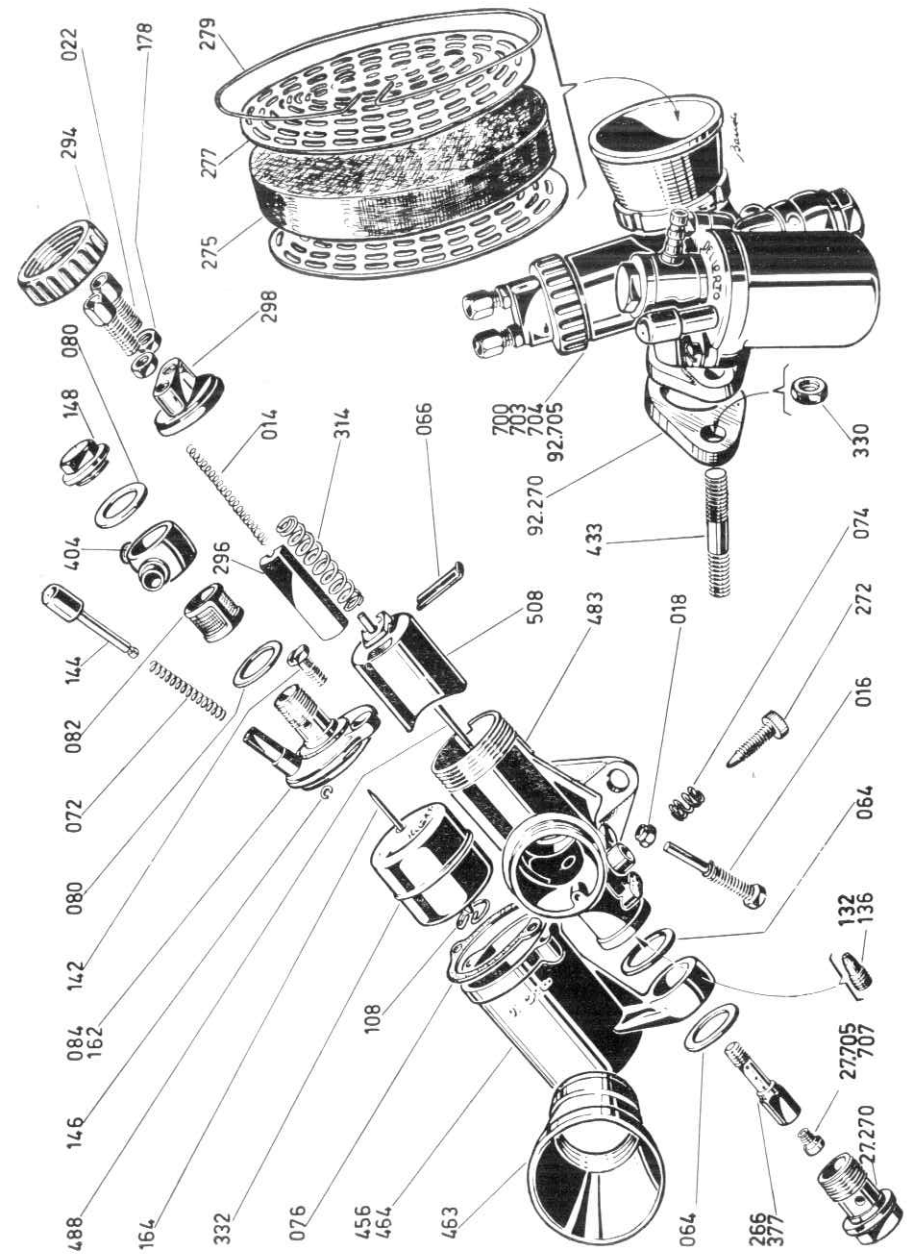
Adjustment of the throttle

Adjustment of minimum air intake





Adjustment of the throttle



Carburetter Dell'orto UBF 24 BS - Spare parts in the 250 Monza

Model	Carburetter	Atomizer	Choke	Main jet	Idling jet
250 Monza	UBF 24 BS	260 B	24	108	40
250 Scrambler	SS 127 A	265	27	112	50

The petrol tank (for capacities and numbers of taps see the list) is provided with a three position tap: closed - open - reserve.

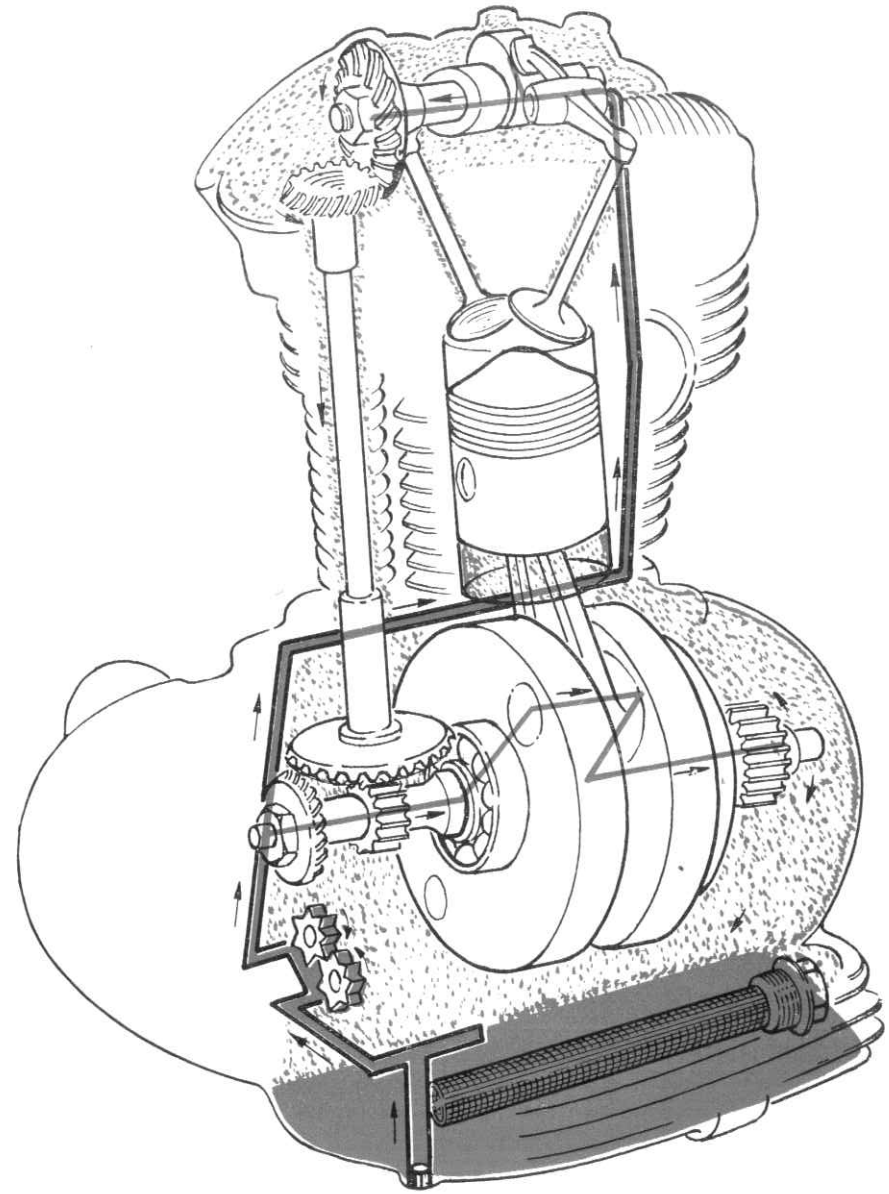
Models	Petrol tank capacity lt.	Taps number	Reserve lt.
250 monza	13 (imp. gal. 2.8597 = USA gal. 3.4342)	2	1.6 (imp. gal. 0.35196 = USA 0.4227)
250 scrambler	11 (imp. gal. 2.4197 = USA gal. 2.9059	1	0.8 (imp. gal. 0.17598 = USA gal. 0.2114)

LUBRICATION

The engine is pressure lubricated, by means of a gear pump driven by the shaft; this pump takes the oil through a filter, from the lowest point of the crank-case which acts as an oil sump, and forces it through proper oil-ways, to all parts of the engine which have to be lubricated.

The oil returns by gravity.

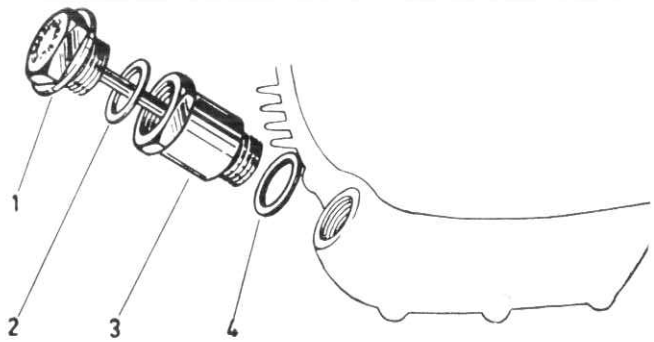
The sump capacity is of about 2 Kg. (4.409 lb) = lt. 2.400 (0.634 gall. USA = 0.5279 imp. gall.).



An Oil-filler with stick consisting of.

1) Stick-provided filler plug;
2) Sealing gasket;
3) Filler;
4) Sealing gasket;

allows the oil level measurement.

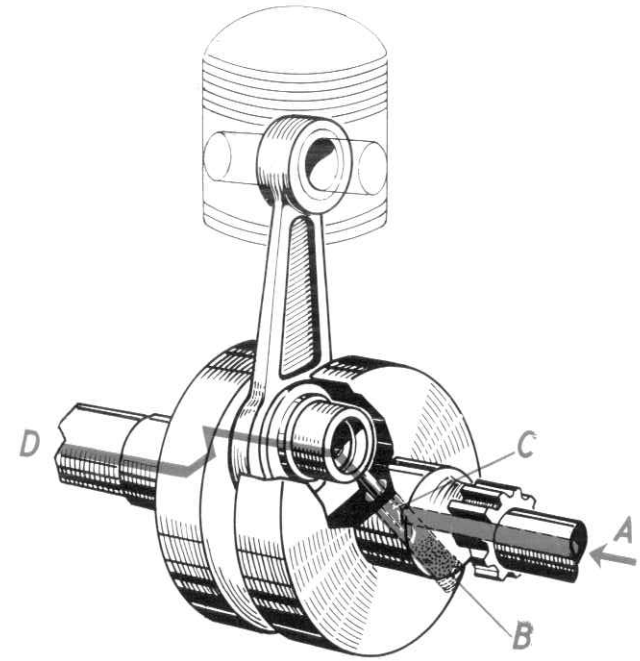


The filler plug stick is marked by two notches in the spots where the oil level is respectively at its lowest and at its highest point.

The oil level is measured by just resting the plug on the filler.

— The lubricating system of the DUCATI motorcycles with single shaft engine is of the simplest and requires no special maintenance except the renewal of the oil level (Esso) ESSO EXTRA MOTOR OIL 20 W - 30-40 or RACER 40) each 500 Km. (about 310 miles) and the total change of the oil, including the cleaning of the filter every about 2000 Km. (about 1240 miles).

CENTRIFUGAL OIL FILTER INSERTED IN THE MAIN-SHAFT



How it works

The oil which is to be filtered, is brought to the filter through the pipe A; from here, the centrifugal force eliminates all the impurities (which are heavier than the oil), which accumulate all around the threaded plug B of the main shaft.

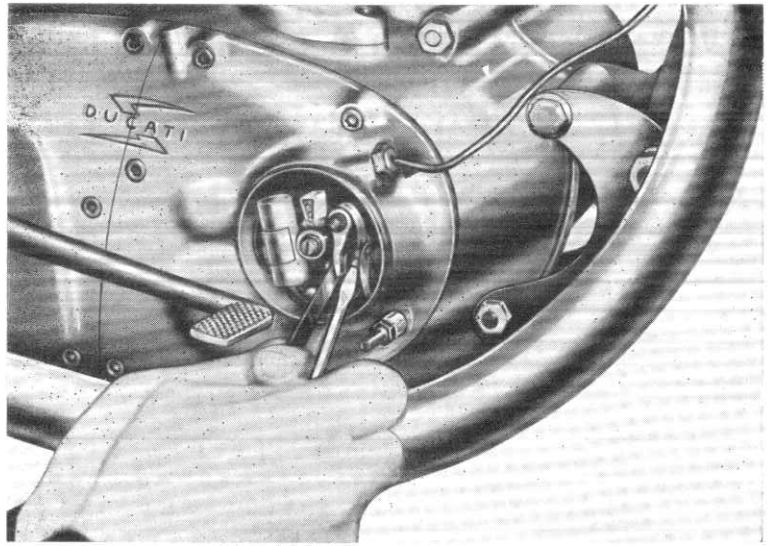
The filtered oil, goes through the tube C to lubricate the big end, and through the duct D, to lubricate the engine-clutch housing gear.

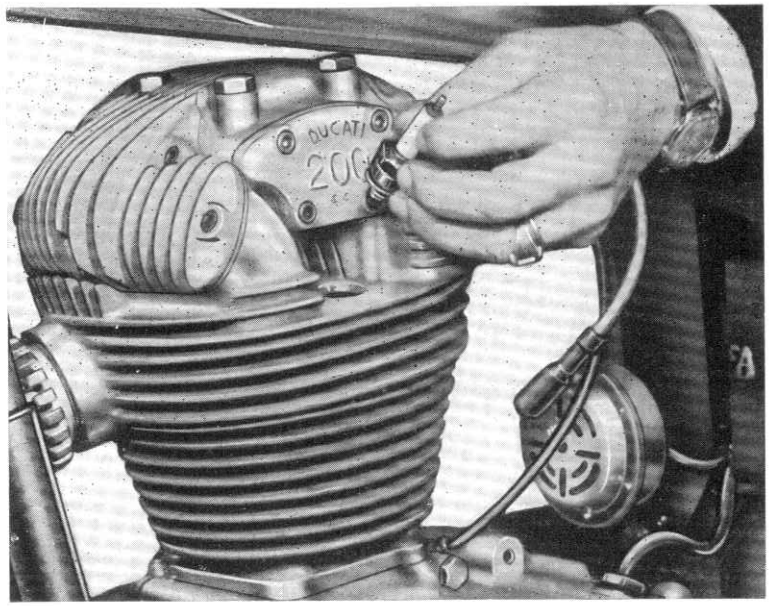
COOLING

Cooling of the engine is achieved by close finning of both the cylinder and cylinder head.

IGNITION

The ignition is battery-coil in the 250 Monza and battery-coil in alternated current in the 250 Scrambler.



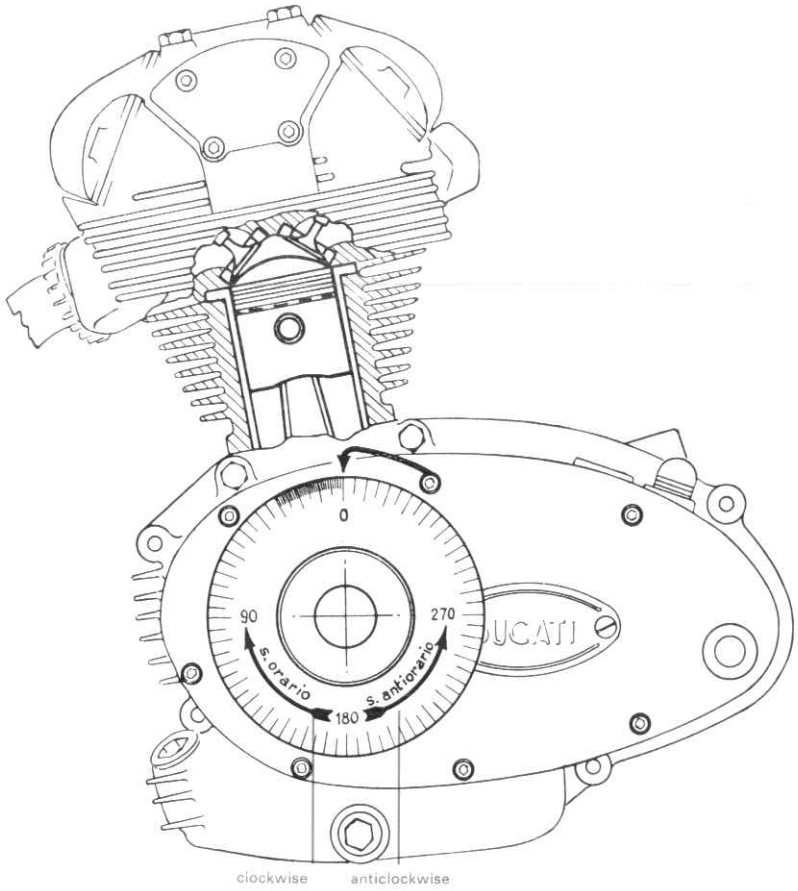


The ignition advance is fix and corresponds to 38° to 41° in the 250 Scrambler while in the 250 Monza the advance ignition is partially automatic.
The advance when the engine is stopped: 5° to 8°;
Amplitude of automatic advance: 28°;
Total advance with engine running at 3,000 r.p.m. 33° to 36°.
For setting up the ignition, see figure on page 16.
The clearance between the platinum plated contacts is of 0.3 to 0.4 mm. (0.0118" to 0.0157") and has to be checked by means of the feeler gauge (see figure page 24).
The ignition plug is a Marelli CW 260 N, or a similar model and is located on the left side of the top of the cylinder head.
When replacing the sparking plug make sure the angle of the plug, relative to the plughole, is correct otherwise there is a risk of stripping the thread in the cylinder head. Screw the plug lightly at first then tighten it.

HOW TO CHECK IGNITION SPARK ADVANCE

Check periodically the ignition spark advance (after the first 600 and, after, every 1200 miles) be sure that the automatic device works properly, that it is well lubricated and that the springs are neither out of shape nor out of place.
The rotary amplitude of the automatic advance must be 14° equal to 28° on the driving shaft in the 250 Monza. If you have any doubt, get it checked by a specialized workshop. To check the spark advance in both the models proceed as follows:

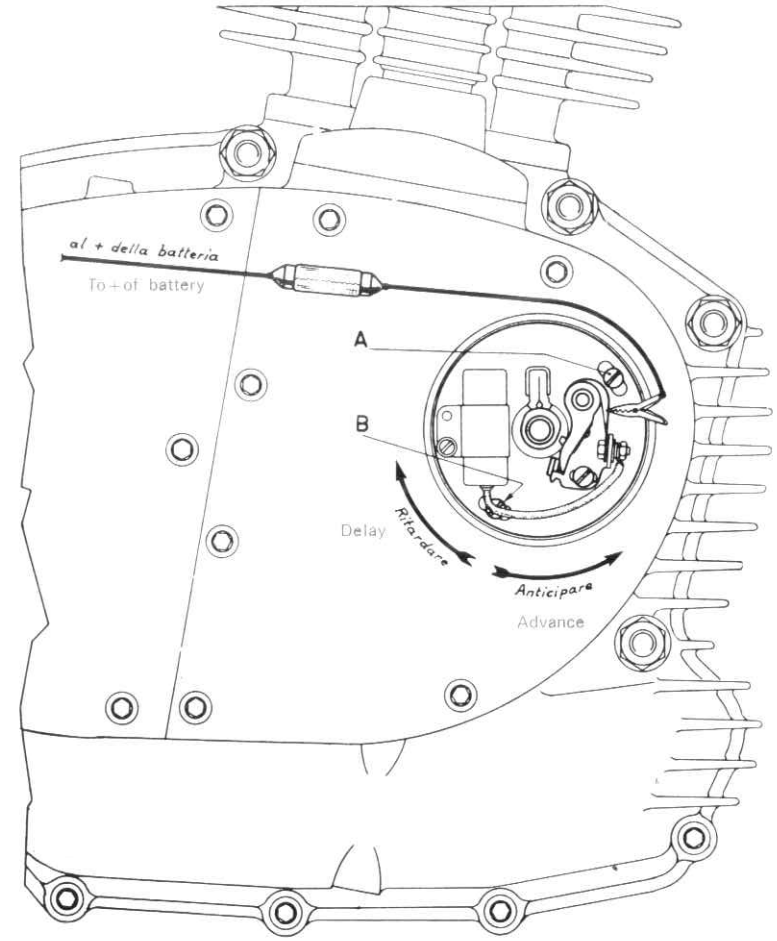
1st. - Remove the threaded plug which is at the driving shaft level, and fit a suitable timing chart (Fig. 1).
2nd. - Fit an indicator on one of the screws that secure the cover (Fig. 1).
3rd. - Bring engine to TDC of compression stage and set the indicator at « O » of the timing chart.
4th. - Rotate the driving shaft clockwise for about a quarter of a turn.
5th. - To the spring of the mobile part of the contact breaker connect a 6V. - 3W. lamp in series with the + of the battery (Fig. 2). The lamp should light up.



(Fig. 1)

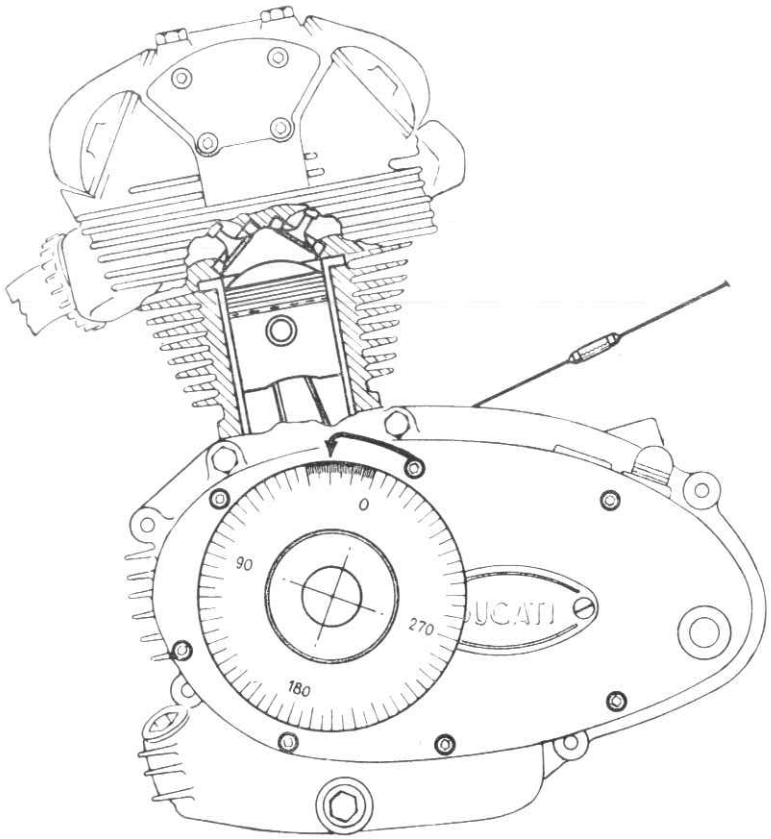
6th. - Rotate the driving shaft slowly, anticlockwise, till the light goes out.
At that very moment, the indicator should give on the goniometer the advance degrees you will find on page 25.

7th. - To be on the safe side, it is advisable to repeat the test.



(Fig. 2)

8th. - If the reading should not tally with the requested numbers, then loosen the two screws (A and B) which secure the plate, and rotate it, advancing or delaying ignition until the right number found at page 25 is obtained.
For the 250 scrambler, bear in mind that, the elon-



(Fig. 3)

gated holes of the moving plate are based on the flywheel tuning up amplitude degree. For the case the prescribed advance cannot be obtained, do not elongate the holes, but replace the hammer, with a view to avoid to overpass the said amplitude.

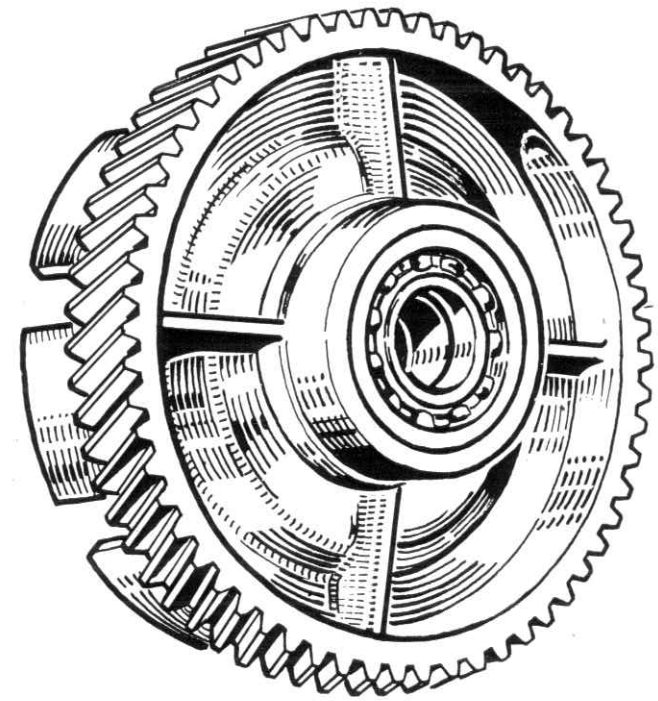
9th. - Bear in mind that if you let go dry the felt which lubricates the cam, the fibrous slipping block (that operates the opening of the moving part of the contact breaker arm), will tend to wear out, lowering thus, the value of the gap.

STARTING

The kick-starter is located on the left hand side of the engine. The first tooth on the kick-start quadrant must be lined up with the mark on the starting gear.

TRANSMISSION

The transmission components comprise a clutch and a gear box. The clutch is of the multiple plate type with steel and phenol resin disks. It turns in an oil bath and is mounted on the primary shaft on the gear box.



The clutch housing, made of special wear resisting cast iron turns on two inner bearings which are set at an adequate distance. It is lubricated together with the engine sprocket as already explained in the paragraph of the centrifugal filter.
This system ensures smooth movement, solidity and long wearing; it has been fitted and tested on the 200 cc. motorcycles, since 1960.
The clutch is operated by a handlever placed on the left hand side of the handlebar.
The transmission between the engine and the primary shaft of the gearbox is obtained by means of gears and the reduction ratio is:
2.500 to 1
The gearbox is mounted in the crankcase; the gears for the 4 speed gearbox are constantly meshed and are operated by a foot pedal.
The transmission ratios of the gears are the following:

— in bottom gear	1 to 2.53
— in second gear	1 to 1.73
— in third gear	1 to 1.35
— in fouth gear	1 to 1.10
— in top gear	1 to 0.97

The transmission between the gearbox and the rear wheel is made by means of a chain and the speed ratio is:
2.647 : 1 for the 250 Monza and
3.929 : 1 for the 250 scrambler.

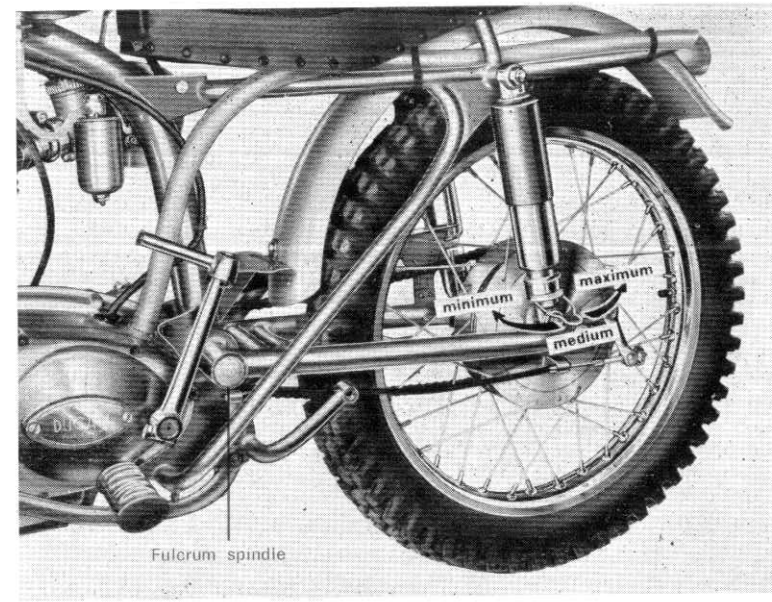
FRAME

The frame of the DUCATI motorcycles is of a very smart and modern design, is manufactured with high tensile steel and is of the central girder type.

SUSPENSION

The front suspension is the DUCATI telescopic - hydraulic long-stroke fork, with steering rod.
Each fork leg contains 100÷110 cu. cm. (cu. inch 6.1025 to 6.7127) of (Esso) ESSO COUPLING FLUID 5420 oil.

The rear suspension consists of a robust hinged fork with double action hydraulic dampers, (shock-absorbers), which can be adjusted for three differentt loads: Minimum - Medium - Maximum.
On these machines the fork fulcrum-spindle is fixed to the frame while the fork with bronze bush rotates on it.
This gives the machines greater solidity and stability.



WHEELS

The wheels are of the spoke type with rims as follows:

Model	Wheel Rim		Wheel rim size	
	Material	Profile	Front	Rear
250 scrambler	Steel	Normal	18x2½	18x2½
250 monza	Steel	Normal	18x2½	18x2½

The front wheel has a detachable spindle.
The rear wheel has a special cushion drive.
Tyre pressures are as follows:

Model	Front wheel		Rear wheel	
	Tyre	Pressure	Tyre	Pressure
250 scrambler	3.00 - 19 block tread for motocross	2,25 Kg/cm² (32,01 lb/sq. inc.)	3.00-18 grooved for motocross	2.25 Kg/cm² (32.01 lb/sp. inc.)
250 monza	2.75-18 ribbed	2,25 Kg/cm² (32,01 lb/sq. inc.)	3.00-18 grooved	2.25 Kg/cm² (32.01 lb/sq. inc.)

BRAKES

The brakes are of the expanding type with two brake-shoes, — hand operated the front and pedal operated the rear — with finned brake drums of large diameter width, and with non fade brake linings.
The diameter of the front brake drum is 180 mm (7.0866"), the diameter of the rear drum is 160 mm (6.2992").

NEW ELECTRICAL SYSTEM (250 MONZA)

The lighting is provided by a storage battery which is recharged by the DUCATI flywheel alternator and rectifier.
The head-lamp APRILIA of large diameter carries 3 lights.
A speedometer VEGLIA with dial of 160 Km (99.420 ml.) is incorporated in the same headlamp.
The 3-way switch for the light control is situated on the head lamp. A removable key, placed on the headlamp provides the contact for the ignition. By removing the key the engine in stopped.
Alongside the lefthand grip of the handlebar is the switch for the diplight, the antidazzle light, and the button for the horn.
In the normal position on the rear mudguard are placed the number-plate carrier, the rear light, the reflector, the numberplate lighting and the Stop-light.

When the engine is stopped, the electrical current for the position lights (town light and rear light) is provided by an acid cell storage battery SAFA, mod. 3L3, of 6 V - 13.5 Ah; the charge is maintained by means of the flywheel alternator and rectifier.

To avoid ruining the efficiency of the rectifier, never run the engine without battery. (In case the battery is discharged, see remedy on page 50.

ADVANTAGES OF THE NEW ELECTRICAL EQUIPMENT (250 MONZA)

The electrical system with static regulator of current offers real advantages in comparison with the system employed till now.
The advantages can be summarised as follows:

1) Regulation of the automatic charge.
2) There are no electrical contacts with the regulator and therefore there is a greater surety in the working.
3) Simplified commutator system which is limited to the sole lights section.
4) Possibility of controlling the charge through the red pilot light.
5) Protection of the electrical system on 3 fuses and then, possibility to briefly locate the eventual breakdown and allow the remainding part of the equipment to be operative: the fuse (7) protects the equipment of the front and rear parking lights; the fuse (13) protects the equipment of the head light (dazzling and anti-dazzling); the fuse (14), the horn and the stop indicator (see the electrical scheme).
6) Greater simplicity of operation and wiring.

WIRING SYSTEM OPERATION (250 MONZA)

1) **Key inserted:**

the red ignition light lights up when the engine is started and revs at tick over. The light should go out and stay out all the time the engine is running faster than tickover.

commutator:

position 0 - light switched out
position 1 - switched on the rear and front parking lights as well as the green warning light.
position 2 - switched on projector light commutable in dazzling and anti-dazzling lights.

the battery charge is well-balanced in all conditions.

the horn is operating
the stop indicator is operating

2) **Key not-inserted:**
the machine cannot be run
the red warning light does not lit

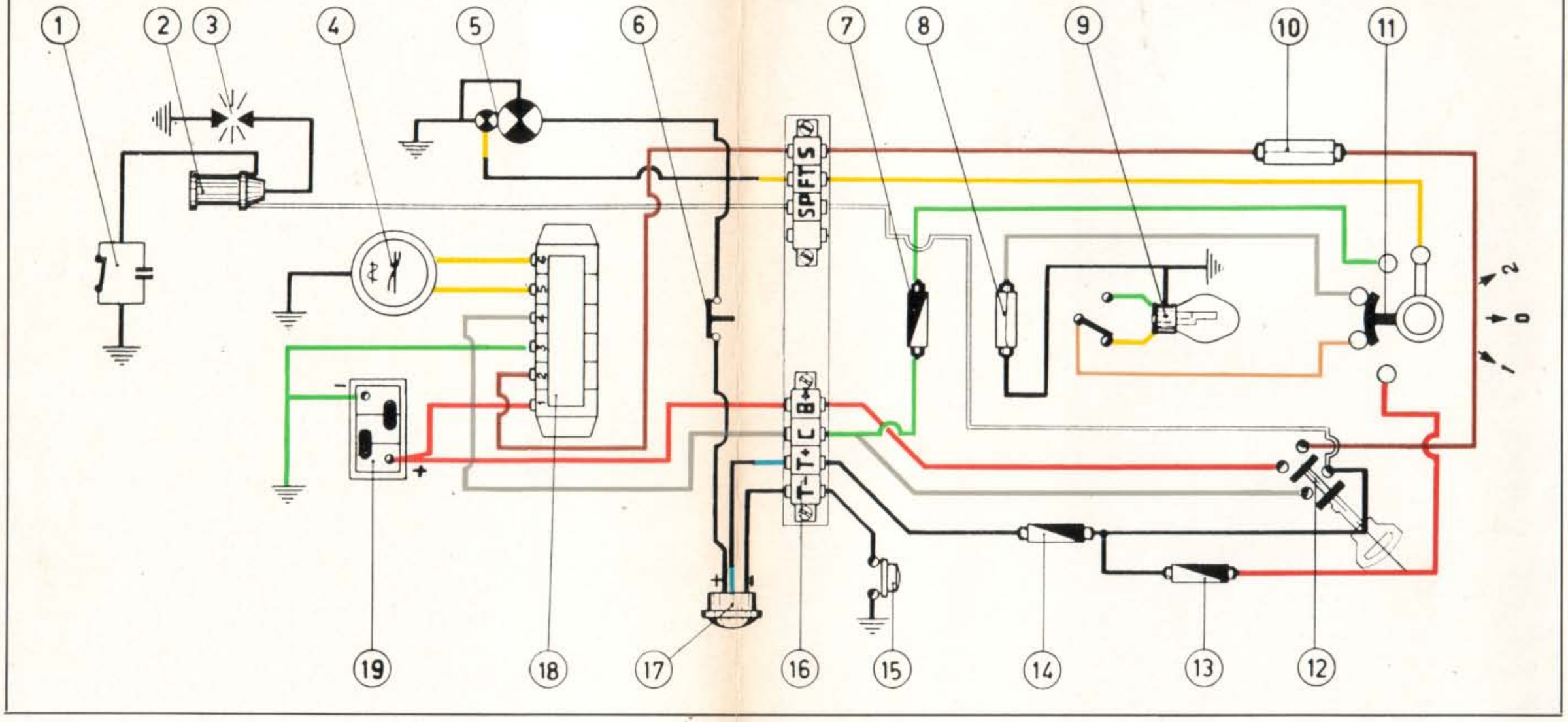
commutator:

position 0 - lights switched out
position 1 - switched on the rear and front parking lights as well as the green warning light.
position 2 - projector light does not lit.

the battery cannot be charged.

The connection between the static regulator of current and rectifier-battery is cut-out.
The horn does not operate.
The stop light indicator does not operate.

ELECTRICAL SCHEME (250 Monza)



KEY TO PARTS OF THE ELECTRICAL SCHEME

1 - Contact breaker-condenser

2 - Ignition coil in cc. 6 V

3 - Sparking plug

4 - Generator 6V-60W

5 - Plate carrier and Stop Light 6V - 3/15W

6 - Stop light switch

7 - Fuse protecting the system of the front and the rear parking lights.

8 - Bulb for front parking light 6V - 3W - warning green light.

9 - Bulb of the headlamp 6V - 25/25W

10 - Bulb for the charge warning red light 6V - 1.5W

11 - Three position commutator

12 - Extractable 4 contact-key

13 - Fuse protecting the projector light equipment (dazzling and anti-dazzling)

14 - Fuse protecting the horn and the Stop

15 - The horn push button

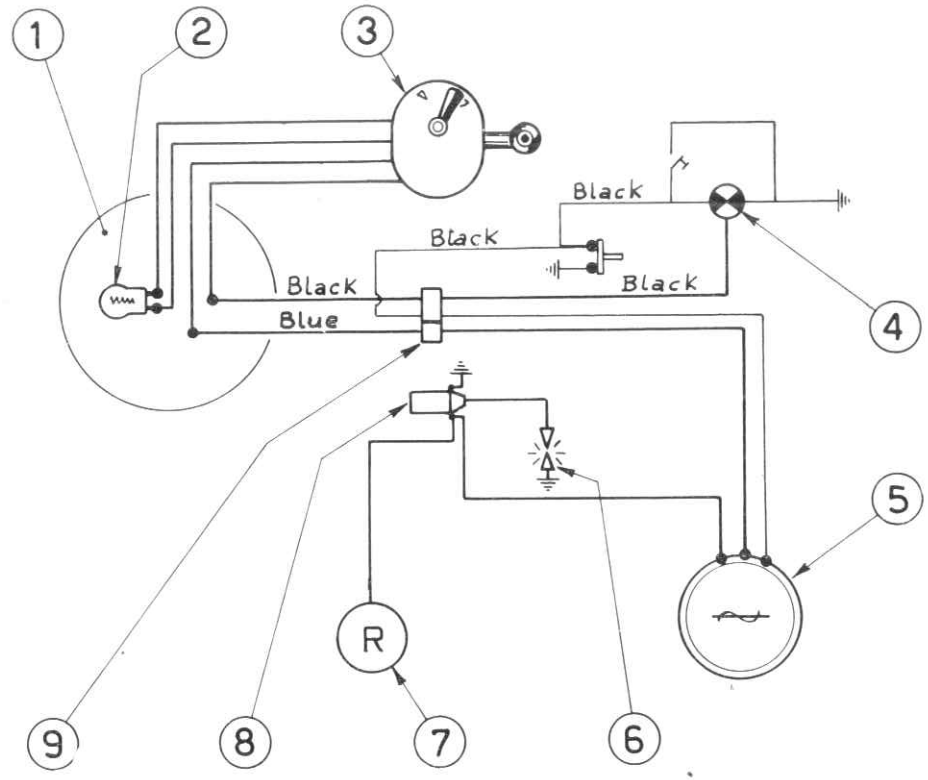
16 - Terminal block for headlamp

17 - Horn 6V cc

18 - Static regulator of current and rectifier 6V - 10A indicator

19 - Battery SAFA 3L3 - 13.5 Ah - 6V

ELECTRICAL SCHEME (250 SCRAMBLER)



KEY TO PARTS OF THE ELECTRICAL SCHEME

1 - Headlamp Aprilia mod. 130 ASN.
2 - 2-Filament bulb 6 V-25/25W.
3 - Switch and deviator Aprilia 59/N.
4 - Tail light 6V-3W
5 - Flywheel alternator 6V-60W.
6 - Ignition sparking plug.
7 - Contact breaker-condenser.
8 - Alternated current ignition coil 6V.
9 - 3-way terminal block.

ELECTRICAL SYSTEM (250 Scrambler)

The engine of the DUCATI 250 Scrambler is provided of an alternator-flywheel magnet of the outer H.T. coil type.

The coil supplies the lighting plant with 30 W.

The components of this generator are:

1) the rotating flywheel, comprising the magnets with their polar expansion, the drum sustaining the magnets and the hub.
2) the stator plate comprising the 3 inductors with their corresponding magnet cores.

NOTE!

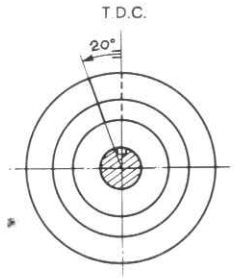
When the flywheel is to be fitted on the driving shaft, be careful it is in perfect phase. To carry it out, proced as follows:

Having the piston at the Top Dead Center (T.D.C.) and the driving shaft key and flywheel mark (dashed) in the position shown in the figure, let the flywheel rotate anticlockwise, for 20°, till it attains the new position (continuous, non dashed mark).

The headlamp carries 2 lights: the dip light (6 V. - 25 W.) and the anti-dazzle (6 V. - 25 W.).

On the handlebar, near the left handgrip, is fitted the 2-way light switch (in-out) with the deviator for the dip and anti-dazzle lights.

On the rear mudguard, is fitted the tail light with the 6 V. - 5/20 W. bulb, the catarefractor and the stop switch. The latter helps to fastly restore the massbalance when the bulbs turn burnt.

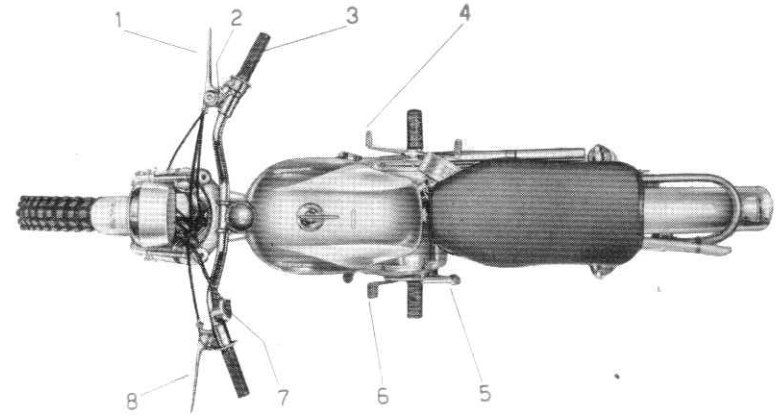


CONTROLS

As mentioned in the foregoing paragraph, alongside the left hand fixed handlebar grip will be found the two switches for the dip light and the antidazzle light, the button for the horn (this only in the 250 Monza) the hand operated clutch lever; and above grip is located the little air-regulating lever.

The righthand handlebar grip rotates for accelerating and decelerating the engine. In front of the grip is placed the operating lever for the front brake and the air control lever.

Near the left hand footrest is placed the rear wheel brake lever which also operates the stoplight and the kickstart. Alongside the right hand footrest is the double lever for the gear change.



LEGEND

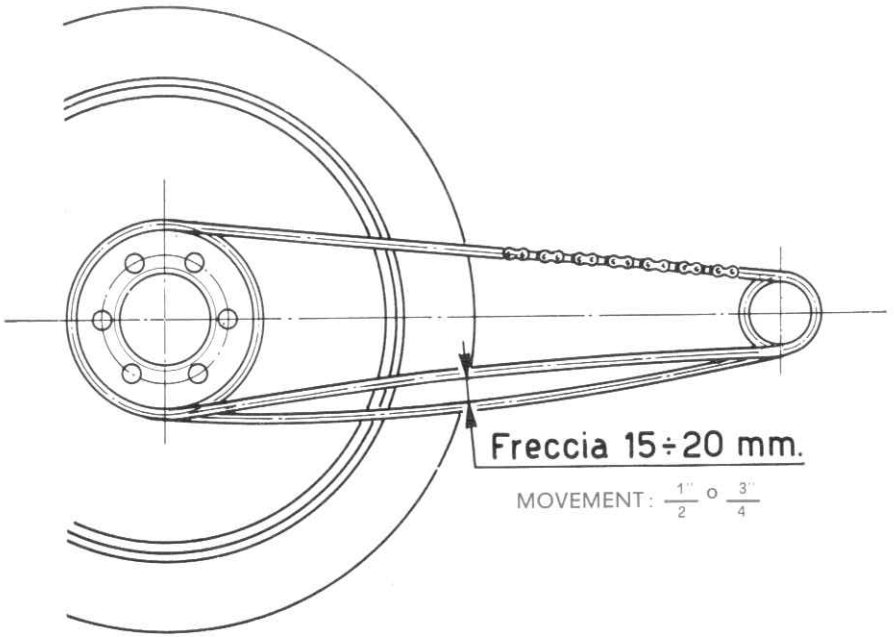
1 - Front brake control lever
2 - Air regulating control lever
3 - Rotating throttle control grip
4 - Change double lever
5 - Kickstarter
6 - Rear brake control lever
7 - 2 switches for dip light and antidazzle light
8 - Clutch control lever

SADDLE

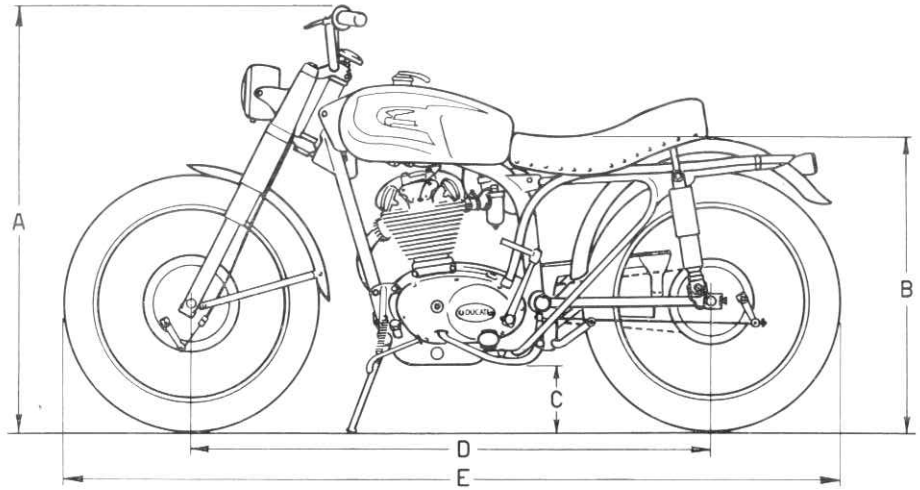
The motorcycles are provvided with a dual-seat, a hand grip and footrests for pillion rider in the 250 Monza; the saddle is wide and comfortable in the 250 Scrambler.

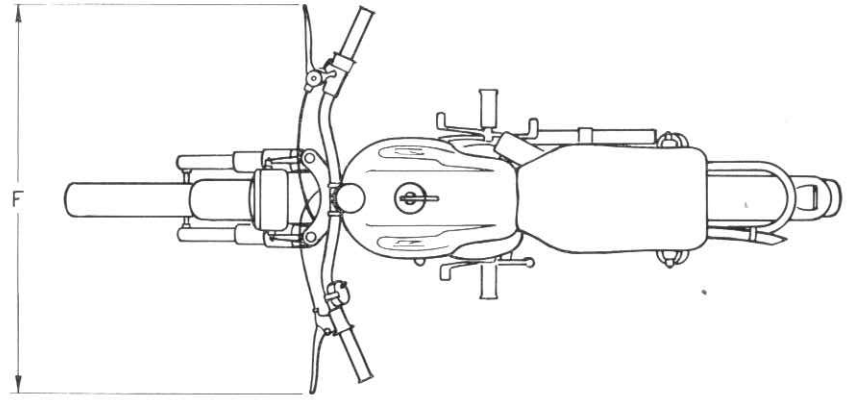
ADJUSTING OF THE CHAIN TENSION

For the correct chain adjustment up and down movement should be no more than ½" to ¾".



OVERALL DIMENSIONS AND WEIGHT

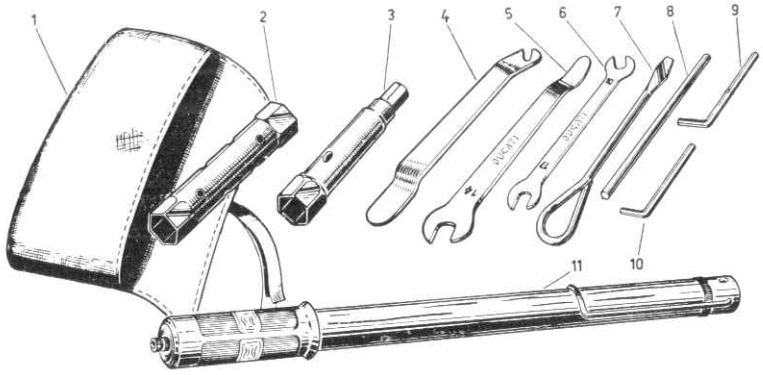




Model	A	B	C	D	E	F	Weight
250 scrambler	1050 mm.	750 mm. 29.5275"	130 mm. 5.1181"	1350 mm.	2020 mm.	820 mm.	109 Kg. lb. 264.552
monza 250	40.945" 1040 mm.	31.496" 800 mm.	5,1181" 130 mm.	51.968" 1320. mm.	78.740" 2000 mm.	31.496" 800 mm.	lb. 275.575 125 Kg.

TOOL BOX

In the Monza a large tool box of ample capacity, is placed under the saddle at the left side of the rider and contains the spanners and the tools supplied with the motorcycle for the normal inspections of the engine, which can be executed by the rider himself (see fig. page 31). In the scrambler, a tool pouch is supplied separately.

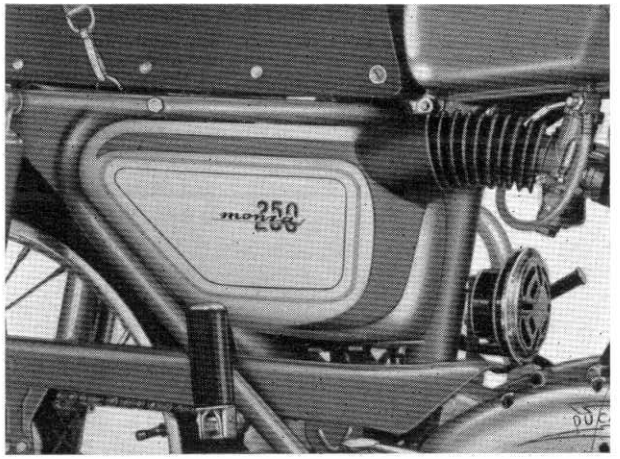


1 - Tool bag
2 - Double box spanner 19-22 (0.7480 — 0.8661")
3 - Double box spanner 21 for hexagon 14 (0.8268 — — 0.5512")
4 - Tyre lever
5 - Hexagon spanner 14 with tyre puller (=0.5512")
6 - Double hexagon spanner 10-11 (=0.3937" — 0.4331")
7 - Screw driver
8 - Tommy-bar for box spanner 21-22 (=0.8268" — 8661")
9 - Spanner for hollow hexagon 6 (= 0.2362")
10 - Spanner for hollow hexagon 6 (= 0.1968")
11 - Tyre inflator (only for the Monza)

On the right side of the Monza, is the air cleaner for the carburetter.

In the inlet duct of the carburetter, is the engine breather which sends oil vapours to the valves for their lubrication.

The battery is located between the tool box and air cleaner.

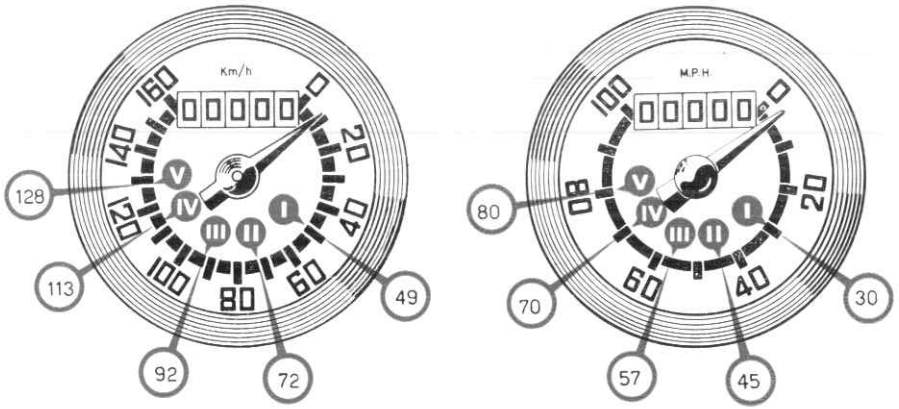


PERFORMANCE

The maximum speeds allowed for each of the gears, correspond to the figures recorded in the red circles of the Kms and mile-speedometers reproduced on next page.

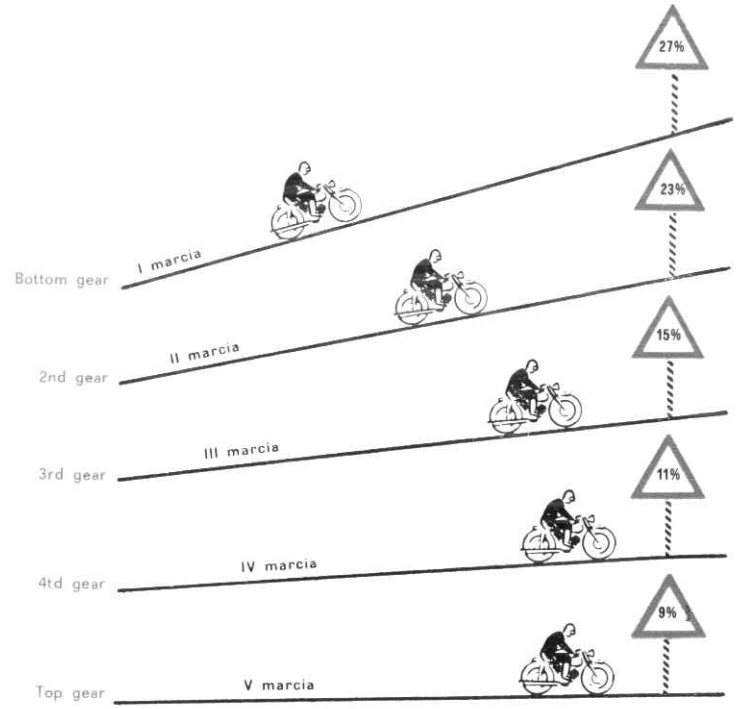
These speeds are obtainable only strictly following the recommendations for the tuning up, mentioned at pages 12 and 13 and periodically carrying out the maintenances described at pages 47 and 53.

250 monza
(In lowered position race type).



For the 250 Scrambler the maximum gradient which can be overcome is limited only by the roadholding.

Maximum gradient which can be overcome with rider only, in the different gears, in the 250 Monza.



CONSUMPTION AND DISTANCE

250 Scrambler

The consumption at an economical speed of 65÷70 Km/h (40 to 44 m.p.h.) about 1 liter (= imp. gal. 0.2200 = gall. USA 0.2642) petrol (Esso) ESSO EXTRA per 28 Km. (ml. 17).
Maximum distance of cruising with one tankful, 308 Km. (ml. 191).

250 monza

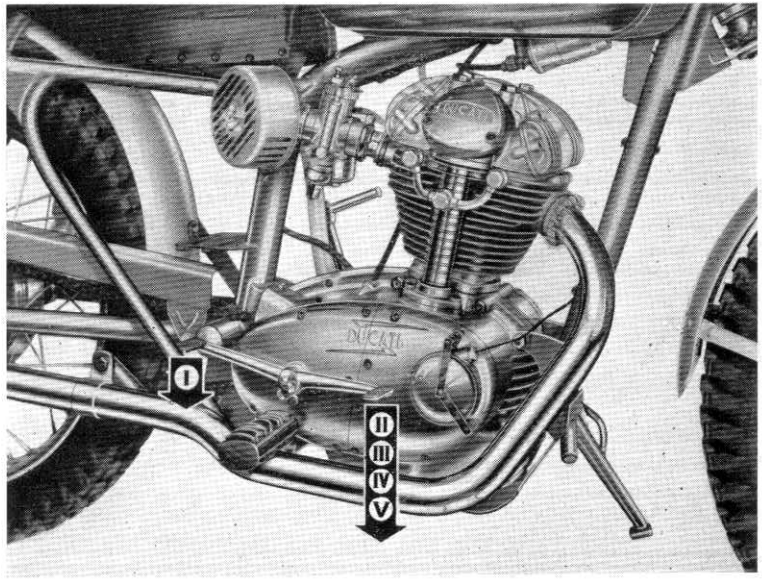
The consumption at an economical speed of 85 ÷ 90 Km/h (52 to 56 m.p.h.) about 1 liter (=gall. USA 0.2642 ÷ imp. gall. 0.2200) petrol (Esso) ESSO EXTRA per 31 Km. (ml. 19.2624).
Maximum distance of cruising with one tankful, 403 Km. (ml. 250.416).

HOW TO USE THE SINGLE-SHAFT MOTORCYCLES

FILLING UP AND STARTING THE ENGINE

Before starting the engine make sure that there is sufficient petrol in the tank, for the distance you wish to travel. See that the petrol tap is on and that the engine lubricating oil is at the right level.

For the lubrification it is advisable to use ESSO EXTRA MOTOR OIL 20W - 30-40 or RACER 40.
Having refueled and checked the oil, see that gear lever is in neutral position and press down the carburetter tickler to ensure the correct level of petrol in the float chamber. Now, after having inserted the contact-key into its place on the headlamp, turn the righthand handlebar grip (accelerator) for about one-eighth of its travel



and thrust the kickstarter energically downward, in the 250 Monza.

It the engine does not start repeat this operation, varying at the same time more or less the opening of the throttle by means of the handlebar grip. **Once the engine is started, do not race it immediately, especially when the engine is cold, but before accelerating the engine let the lubricating oil warm up to facilitate its circulation throughout the engine, so as to reach all moving parts.**

RIDING AWAY AND RUNNING OF THE MOTORCYCLE

With the engine running, disengage the clutch and using your heel, push down the rear arm of the gearchange lever. When this lever is left to itself it returns to its original position. With this move the bottom gear is now engaged. Now turn the righthand grip little by little and release gradually your hold on the clutch lever; the motorcycle begins slowly to go under way. With the clutch lever completely released let the motorcycle increase its speed until about 15/20 Km/h (9-12 m.p.h.). To pass now from bottom gear in second gear, turn back righthand grip fully and quickly; and after having disengaged the clutch follow up at once by pressing down the front arm of the gearchange lever, with the toe of your shoe. Now turn forward the righthand grip again, releasing at the same time the clutch lever. Similar operations are carried out in order to change from second gear into third gear or from third gear to the fourth and from the fourth into top gear.

To change down from a high gear to a lower one, operate as follows: close the throttle, disengage the clutch, accelerate the engine momentarily, thus synchronizing the gear about to be engaged, engage the lower gear and then let go off the clutch control.

A good motorcyclist will make use of the controls intelligently and at the right time. When riding uphill and the engine tends to slow down, change to a lower gear at

once; do not "hang on" to a high gear when the effort required from the engine advises to use a lower gear.

When the engine turns at a low number of revolutions, do not accelerate its turning at once: thus you avoid any oversupply of fuel and too harsh drive to the transmission.

The clutch should not be held long disengaged with a gear engaged, because the clutch plates will become overheated, causing rapid wear by friction.

Except in case of emergency, never use the brakes brutally when you are already near behind the obstacle, but throttle down the engine in right time and then make use of the brakes.

Bear in mind that insufficiently inflated tyres are detrimental to the roadholding qualities of the motorcycle, cause a greater tyre wear and lower efficiency.

STOPPING THE MOTORCYCLE

To stop the engine, close the throttle completely (the engine will then act as a gentle brake) disengage the clutch and put the gear pedal in neutral. A slight use of the brakes will then stop the motorcycle.

To stop the engine pull out the contact key of the switch placed on the headlamp in the 250 Monza.

MAINTENANCE

On good maintenance depends the good condition of the motorcycle.

By following these fundamental rules you can avoid serious trouble and obtain an excellent performance from your motorcycle.

The operations to be carried out are subdivided in accordance with the order on which depends the mileage run by the motorcycle. The recommendations which follow are, of course, merely indicative, because lubricating, checking and adjustments depend also on the nature of the road, the seasonal temperature, the length of the intervening period.

EVERY 500 Km (about 310 miles)

— Restore the oil-level in the crankcase;
— Check the tyre pressure with a pressure-gauge;
— Tighten the cylinder head holding down bolts;
— Readjust the brakes;
— Check the clearance beween valves and rockers, adjusting it to 0.002" to 0.0028" (0.05 to 0.07 mm.) by means of the screws and nuts placed on the rockers, in the 250 Monza.
— Check the clearance between valves and rockers, by fitting the adjusting rocker of an appropriate thickness at the end of the valve stalk letting the clearance be 0,15 mm (0.0059") for the inlet valve and 0,20 mm (0.0079") for the exhaust valve, in the 250 Scrambler.

EVERY 1000 Km (about 620 miles)

— Check and adjust the distance between the sparking plug electrodes to about 0.5 mm (0.02") and clean them with a small wire brush and some petrol;

— Clean the contact breaker platinum plates with a rag damped in petrol and check the distance between the platinum plates, which opening should be 0.3 to 0.4 mm. (0.0118" to 0.0157");
— Check the clearance between valves and rockers as mentioned in the above paragraph.

EVERY 1500 Km (about 930 miles) in the 250 Monza

— Lubricate the speedometer drive with (Esso) ESSO MULTIPURPOSE GREASE H.

EVERY 2000 Km (about 1240 miles)

— Change the oil in the crankcase draining it while the engine is hot, make sure that the oil drains off completely.
— Remove the carburetter oil filter and wash it in petrol or paraffin oil, in order to remove all impurities from the gauze.
— Clean out the carburetter float chamber, the main jet and the idle jet.
— Readjust the clutch because the wear on its linings might otherwise cause slip.
— Lubricate the hinge of the rear fork.
— Dampen with 2 drops (not more) of thin mineral oil the lubricating wick of the contact breaker cam.
— Tighten uniformly the nipples of the spokes and check whether the screws and the nuts of the wheels have been firmly tightened.

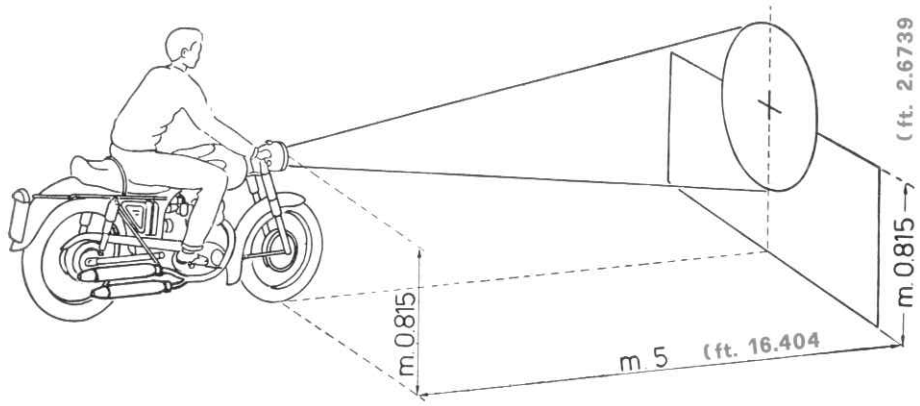
EVERY 20.000 Km (about 12400 miles)

— Dismantle the exhaust pipe and the cylinder, in order to remove the carbon deposits on the cylinder head and on the piston (this should be done by a Ducati Servicing Garage).

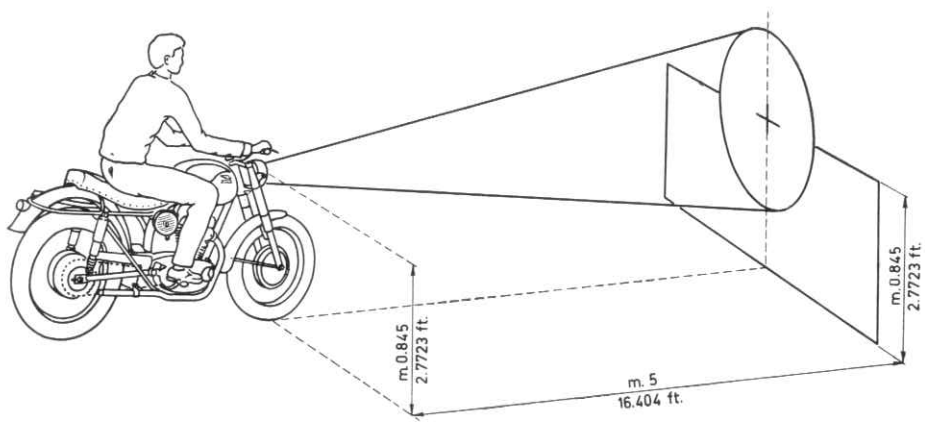
HEADLAMP ALIGNMENT

It is advisable to check periodically the alignment of the headlight as follows:
— place the motorcycle at a distance of 5 meters (ft. 16.404 from a bright wall;
— make sure that the ground be even and that the optic axis of the headlamp be perpendicular to the wall;
— the motorcycle with its rider must rest on the wheels, not on the central stand;

250 MONZA



250 SCRAMBLER



— trace a cross in the intersections between the optic axis and the wall, that is at a height of 0.815 meter (ft. 2.6739) from the ground for the 250 Monza and 0.845 meter (ft. 2.7723) for the 250 Scrambler.
— when the depthlight is lighted up, the cross must be in the center of the circular light-beam hitting the wall.
— to rectify eventually the alignment of the headlamp, operate by means of the two fixing screws or of the two nuts of the headlamp on the front fork.

OVERALL CLEANING

The motorcycle should be washed and cleaned periodically, according to the length of time it has been used and the state of the road.
— Clean the engine with parafin and wipe it dry with a clean rag;
— wash down the painted parts of the frame with water, using a sponge for washing and a shammy leather for drying;
— never use solvents, petrol, spirit or parafin, otherwise the paint will look flat;
— grease the chromium plated parts with vaseline and polish with shammy leather.

PROLONGED REST OF THE MOTORCYCLE

If the motorcycle has to be put at rest for several months, it is advisable to proceed as follows:
— clean the motorcycle thoroughly;
— empty the petrol tank;
— take out the battery and keep it efficient, as per instructions at page 52 (in the model 250 Monza).
— squirt through the hole of the sparking plug, several drops of oil into the cylinder and turn the engine by hand for several revolutions, distributing a thin oil-film on the walls;
— put the motorcycle upon two pieces of wood, lifting the machine from the ground and empty the air out of the inner tube;
— cover the machine with a canvas, or water-proof cover.

INSTRUCTIONS FOR THE FIRST CHARGE AND FOR THE MAINTENANCE OF THE BATTERY (250 MONZA)

Type

— Tension . . . . . 6 V
— Capacity at 20 hours . . . . 13.5 Ah
— Capacity at 10 hours . . . . 12 Ah
— Normal charging current . . 1.2 Amp
— Max. recharging current . . . 2 Amp
— External dimensions . . . . 120 x 90 x 165 mm. = 4.7244x3.5433x6.3960"

Warning

The battery, be it empty or charged, must always be preserved in a fresh but dry place. It is important to check frequently the level and the density of the electrolyte.
Never let the accumulators completely without charge.
Keep always the plugs well closed and screwed down.
Clean always well the oxyde from the terminals and connections, and protect them with a thin layer of pure vaseline. Never use grease. The battery must always be preserved well cleaned and dry, especially the top part.

Electrolyte

The electrolyte consists of sulphuric acid of regular purity, diluted with distilled water, so that the density, referred to a temperature of 15° C. (59° F.), corresponds to the following values:

CONDITIONS PLACE	DENSITY OF THE ELECTROLYTE		Max. temperat. of the electrolyte during charge
	dry battery	charged battery	
Temperate climate	1.28÷1.29	1.27÷1.28	50°C (122°F)
Tropical climate	1.21÷1.22	1.20÷1.21	60°C (140°F)

The level of the electrolyte within the elements must be of 1 cm (0.3937") above the rim of the separators.
When all elements have been filled with the electrolyte,

let the battery at rest for about 6 hours to allow the cooling of the plates.
A certain part of the electrolyte will be absorbed by the separators and by the plates, so that it will be necessary to add more electrolyte to establish the right level.
To check the electrolyte level use only glass sticks or ebonite.

First charge

Take down the breathers and connect the battery with a source of direct current, having an intensity equal to 1/10 of the normal 10 hours capacity, for a period of at least 50 consecutive hours.
Take care that during the charge the temperature of the electrolyte does not overpass 50° C (122° F).
The charge has to be interrupted:

a) when the above mentioned effective number of hours is elapsed, reckoning of course also the eventual interruptions;
b) in case of an intense ebullition in all the elements;
c) in case if for at least 3 consecutive readings at intervals of one hour each, the density of the electrolyte, and the voltage of each element remain the same.

At the end of the charge, the electrolyte should have recovered the initial density, and the voltage of each element should arrive at a minimum of 2.7 Volts under charge, that is 8.1 Volts for a battery of 2 elements and of 16.2 Volts for a battery of 6 elements.
At this point the battery is ready to be put in service.

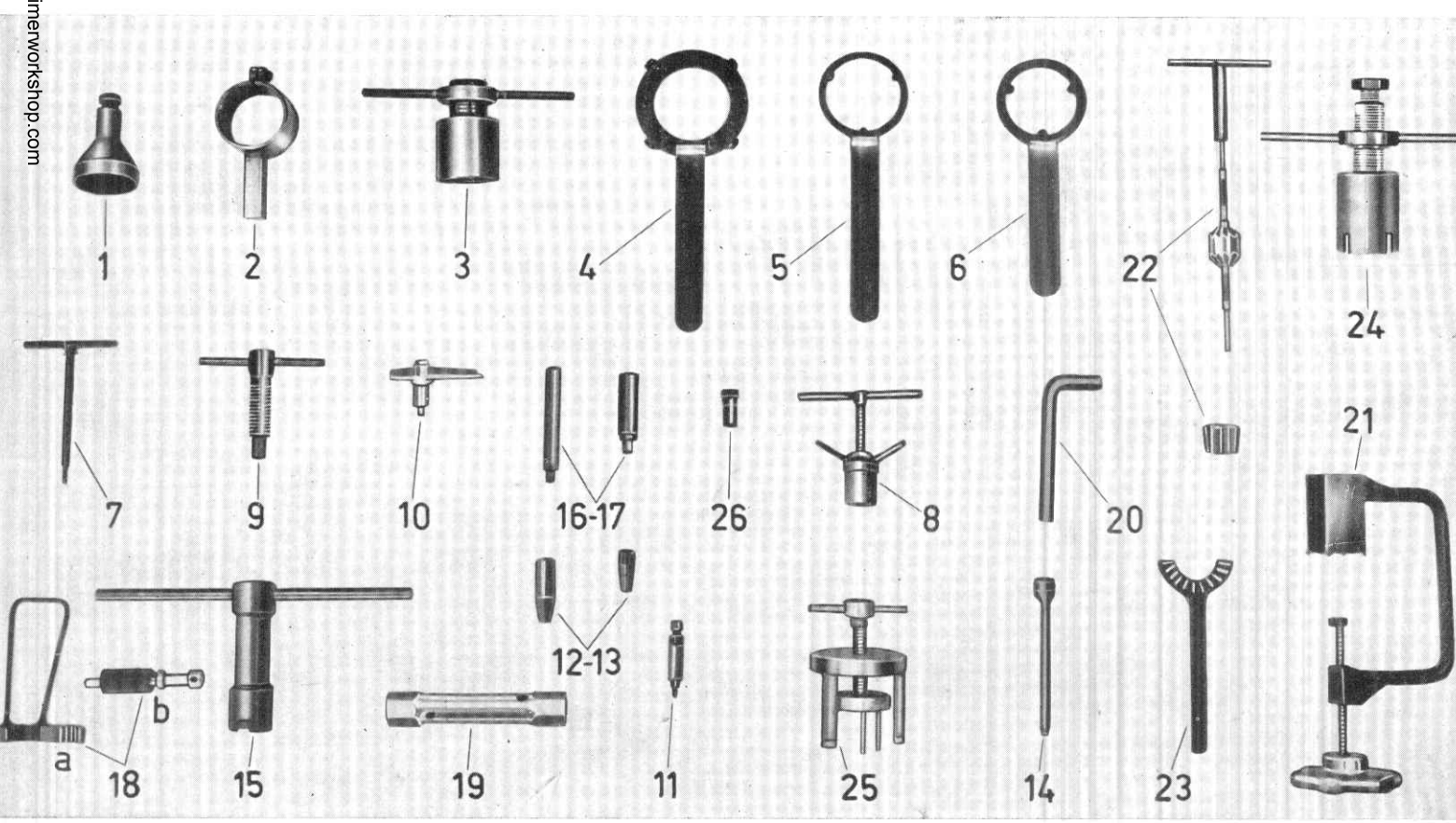
SUCCESSIVE CHARGES

The successive charges have to be made preferably with a current having an intensity in Amp. equal but not greater than 1/10 of the normal 10 hours capacity.
If during the charge the temperature, checked with a suitable thermometer immerged into the electrolyte should reach 50° C, (122° F), it will be necessary to reduce or to interrupt the charge until the temperature falls at least below 40° C (104° F).

The charge must continue until the density of the electrolyte results to be constant during 3 consecutive readings made at intervals of one hour each, and until the voltage reaches the value of 2.7 Volts for each element.
Never and for no reason refill the battery with sulphuric acid of whatever density. The refilling has to be made only with distilled water, chemically pure, taking care that the vessel used on this behalf be absolutely clean, to avoid the spoiling of the electrolyte by noxious substances and compromise so the efficiency of the battery.
In case the accumulators remain temporarily inactive, it is necessary to recharge the battery at least one time each month, and each time the battery will be put in service.

INSTRUCTIONS FOR THE MAINTENANCE OF THE ELECTRICAL SYSTEM (250 MONZA)

In case of inspections or repairs, it is extremely important to know the working of the electrical system and to follow with care the scheme on page 34.
To avoid demagnetizing of the rectifier, be careful never to send electrical current (direct or alternated current) in the opposite direction.
Every inspection should be made with a convenient Ohmmeter.
To avoid ruining the efficiency of the rectifier, never run the engine without battery.
For no reason, the rectifier and static regulator of current should be opened: if it does not work, send it to the CONCESSIONAIRES of the DUCATI MECCANICA for replacement.



Note: The tools nrs 3 and 25 are deleted

TOOL EQUIPMENT

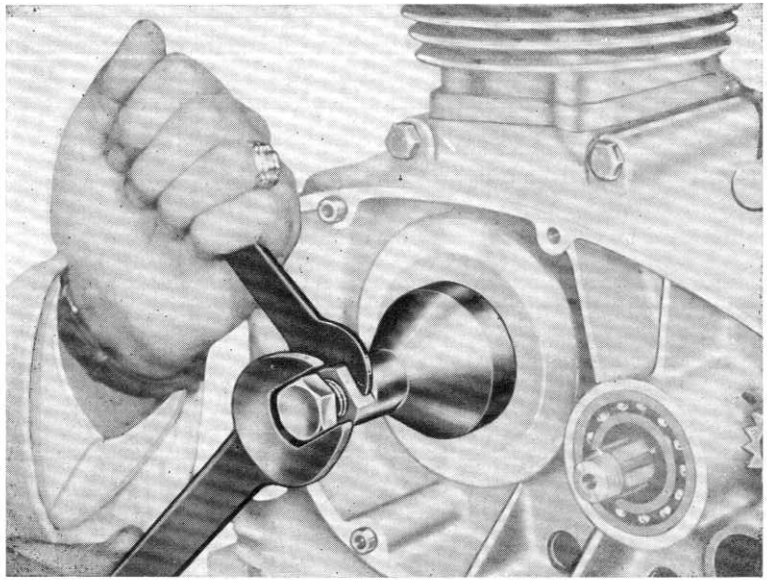
LEGEND

1) Flywheel puller
2) Piston cleaning tool
4) Housing-holding key for tightening the engine shaft gear
5) Drum-holding key for tightening the drum nut
6) Gear-holding key for tightening the pinion nut
7) Spanner for nuts with hollow hexagon (ch. 5 (0.1968'') or ch. 6 - (0.2362'')
8) Valve seats grinding tool
9) Puller for clutch side cover
10) Piston position indicator
11) Rocker pin puller
12- 13) Assembly cones for circular or square sectioned spring rings
14) Line-up pin for rocker bushing or washer assembly
15) Timing camshaft holding key for tightening of the bevel gear Z = 28
16- 17) Pin for assembling and dismantling of gudgeon pin
18) Engine shaft holding tool for tightening of the bevel gear Z = 21
a) with assembled cylinder head b) with dismantled cylinder head
19) Spanner for bevel gear Z=28 (see 15)
20) Plug assembly spanner for plugs with hollow hexagon (ch. 12 (0.4724'') or ch. 14 (0.5512'')
21) Valve assembling and dismantling tool
22) Grinder for valve seats (one for the inlet and one for the exhaust)
23) Key for threaded ring of exhaust pipe
24) Ball bearing puller (3 types)
26) Bush for the assembly of the advance ignition cover

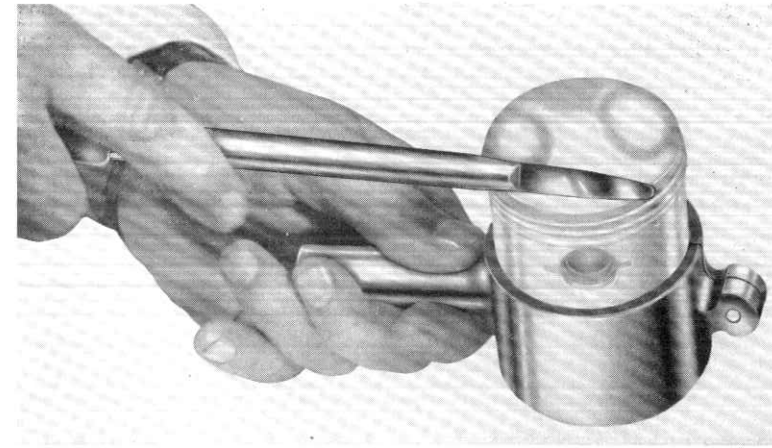
SERVICE STATION

TOOL EQUIPMENT

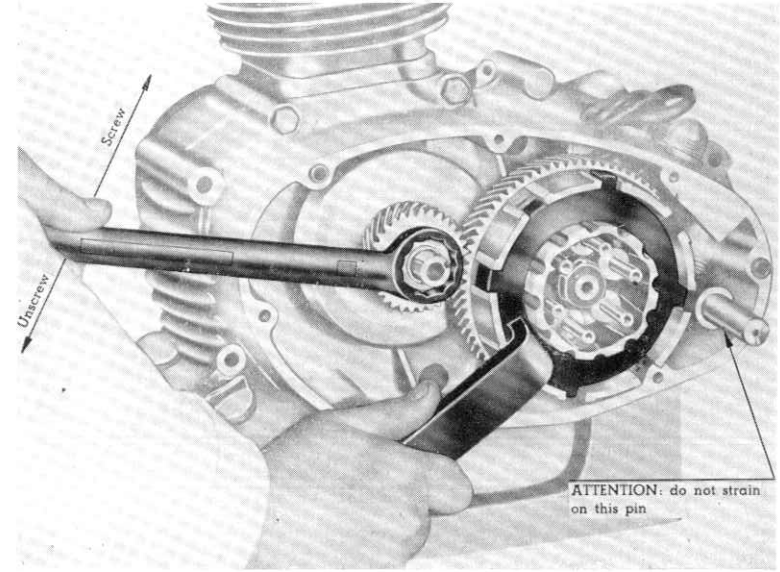
DIRECTIONS FOR USE



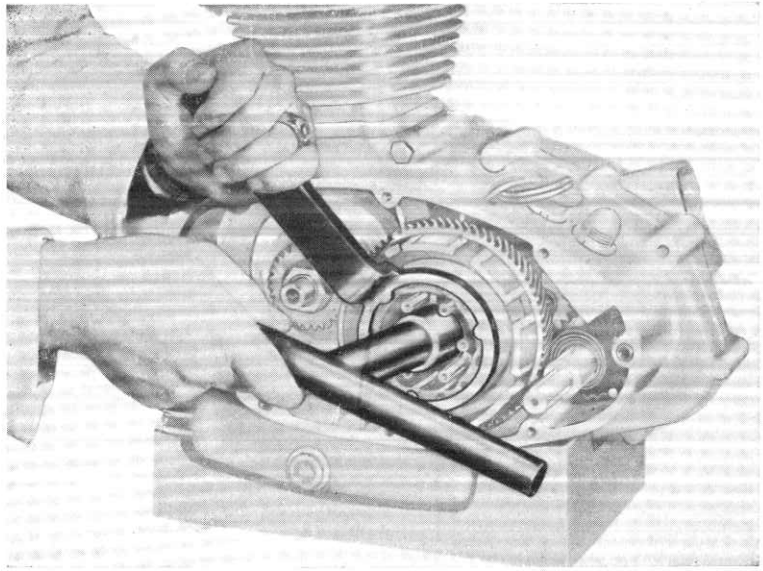
1 - Flywheel puller



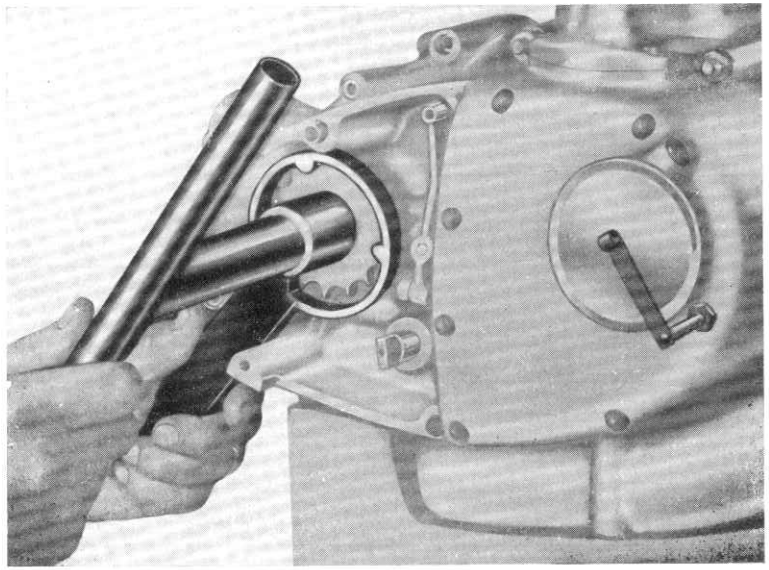
2 - Piston cleaning tool



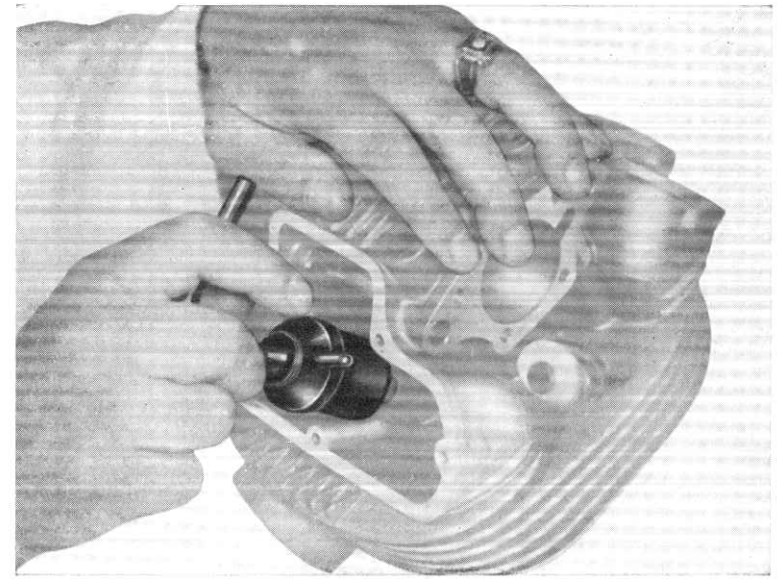
4 - Housing-holding key for tightening the engine shaft gear



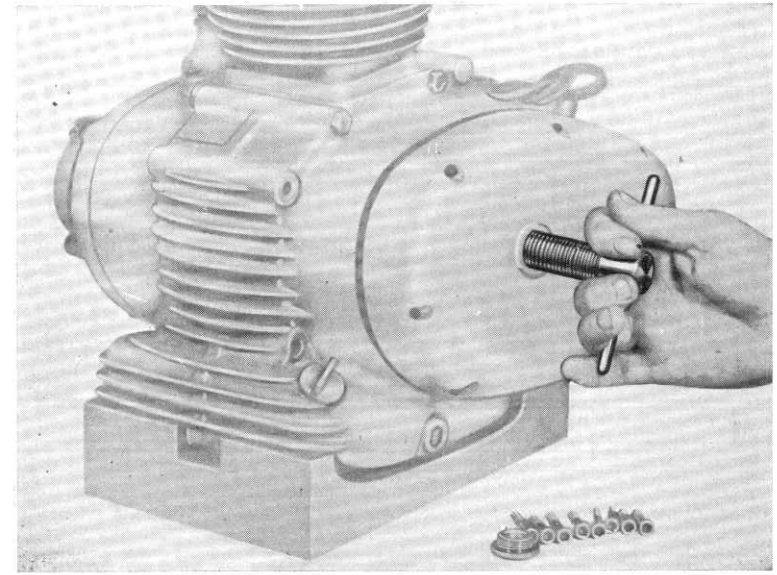
5 - Drum-holding key for tightening the drum nut



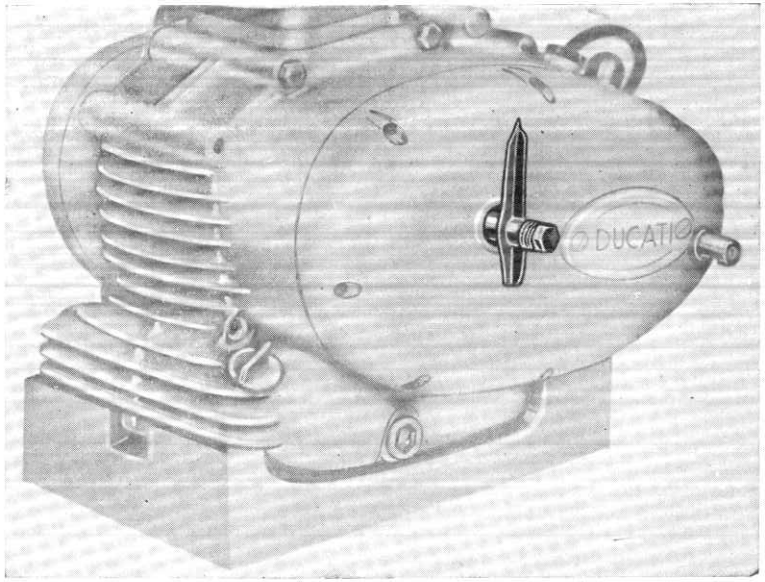
6 - Gear-holding key for tightening the pinion nut



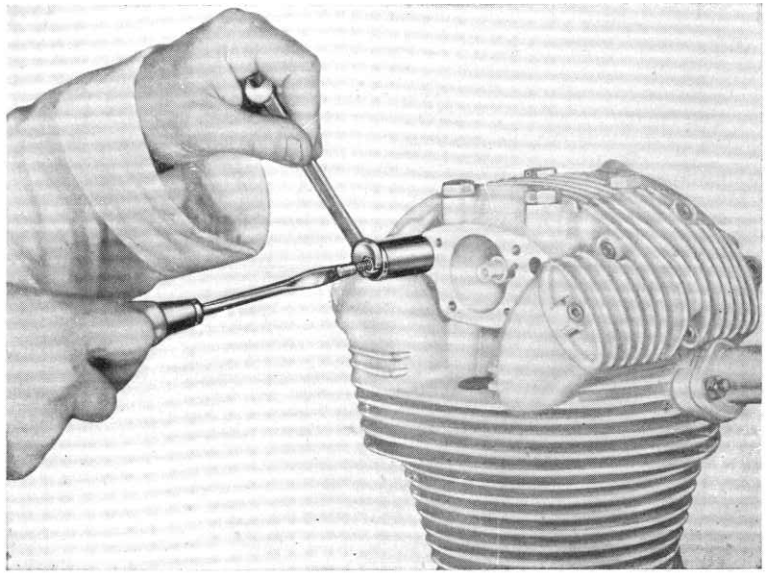
8 - Valve seats grinding tool



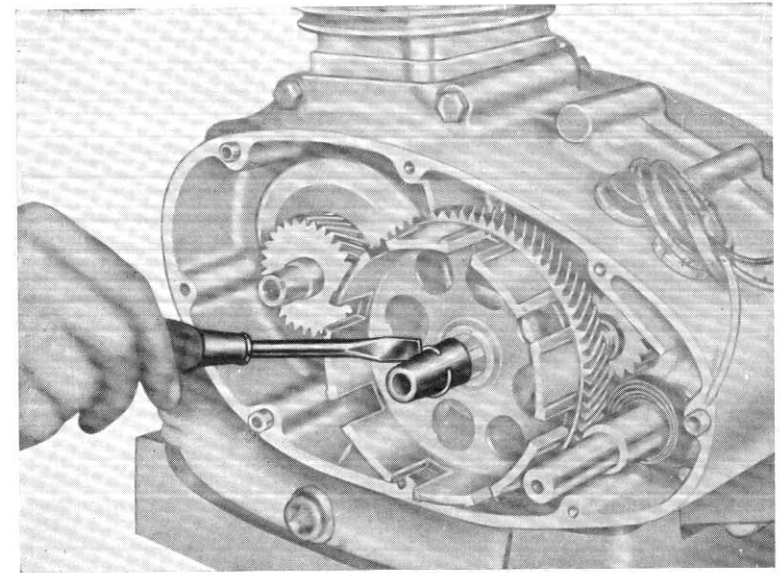
9 - Puller for clutch side cover



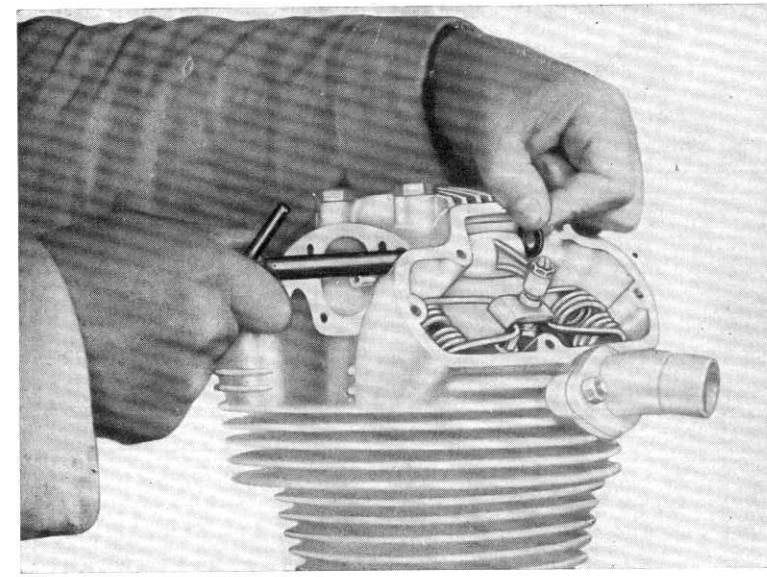
10 - Piston position indicator



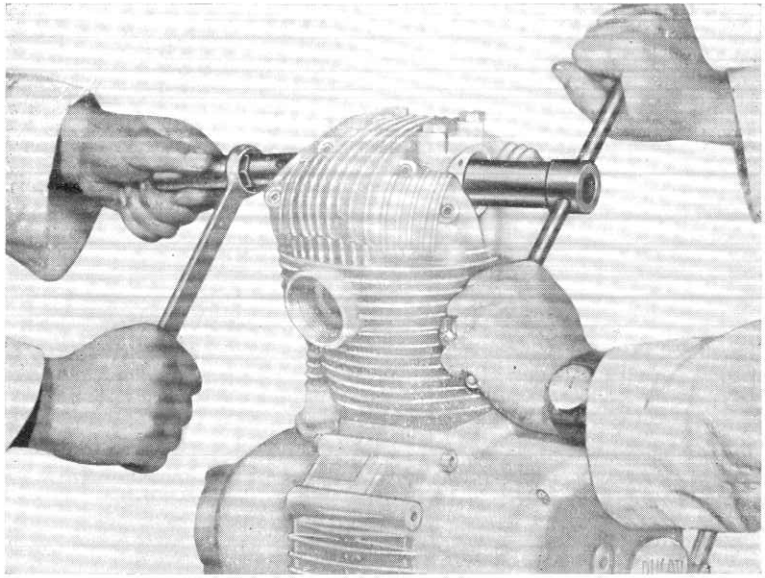
11 - Rocker pin puller



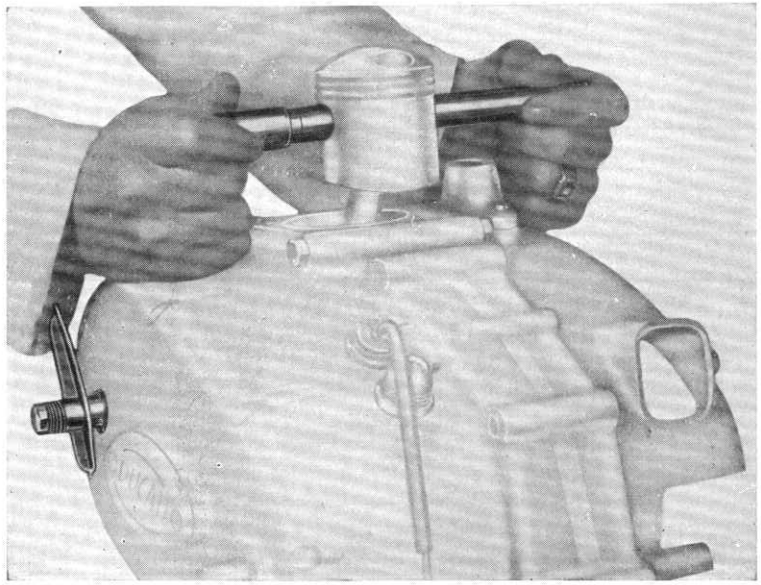
12-13 - Assembly cones for circular or square sectioned spring rings



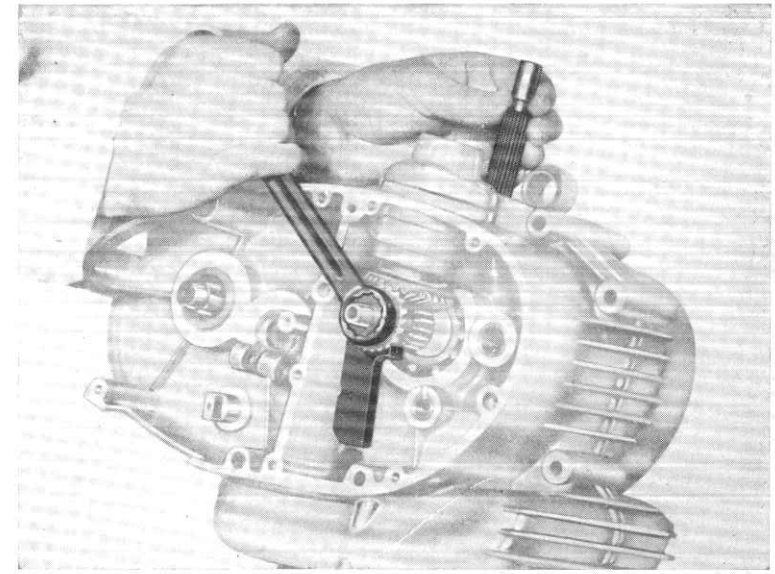
14 - Line-up pin for rocker bushing or washer assembly



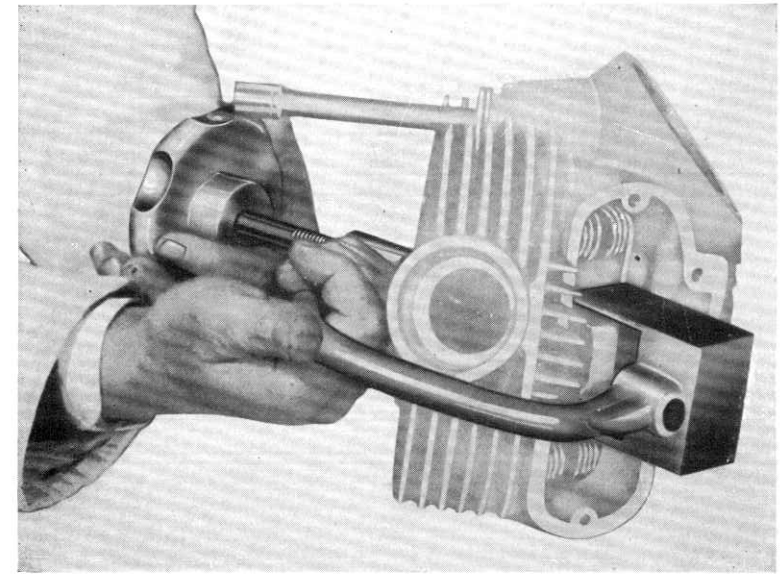
15 - Timing camshaft holding key for tightening of the bevel gear



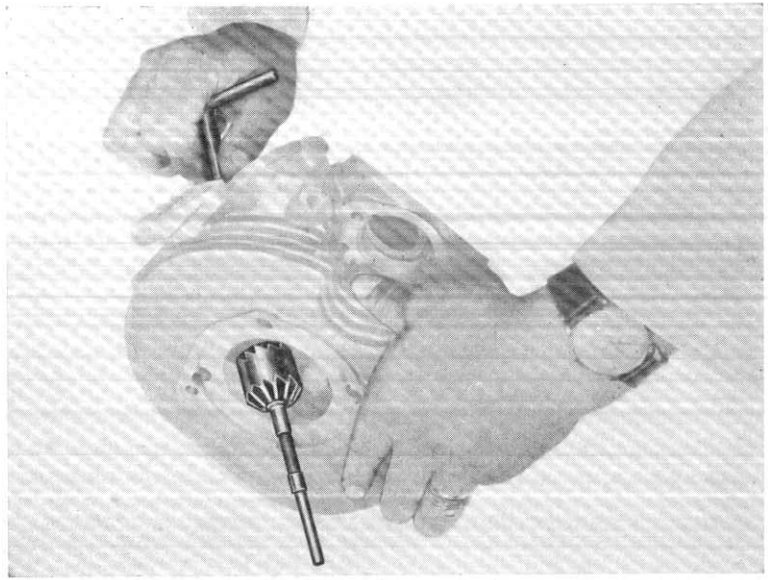
16-17 - Pins for assembling and dismantling of gudgeon pin



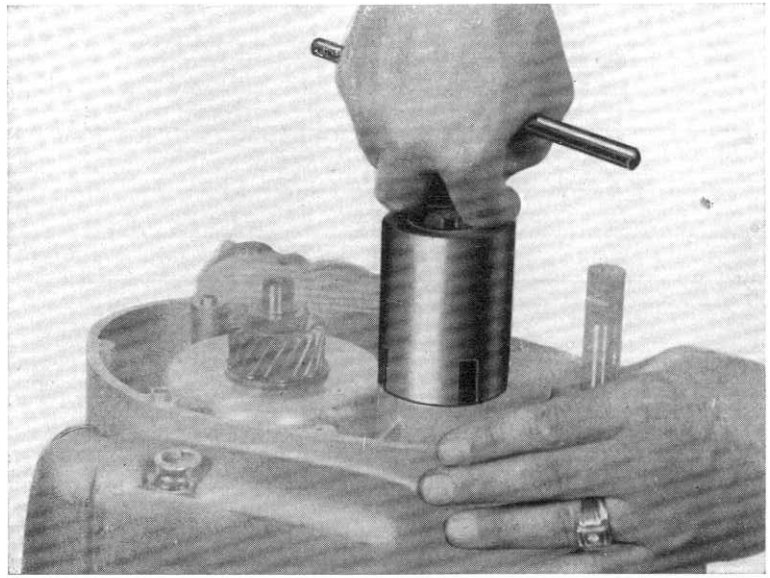
18 - Engine shaft holding tool for tightening of the bevel gear Z=21



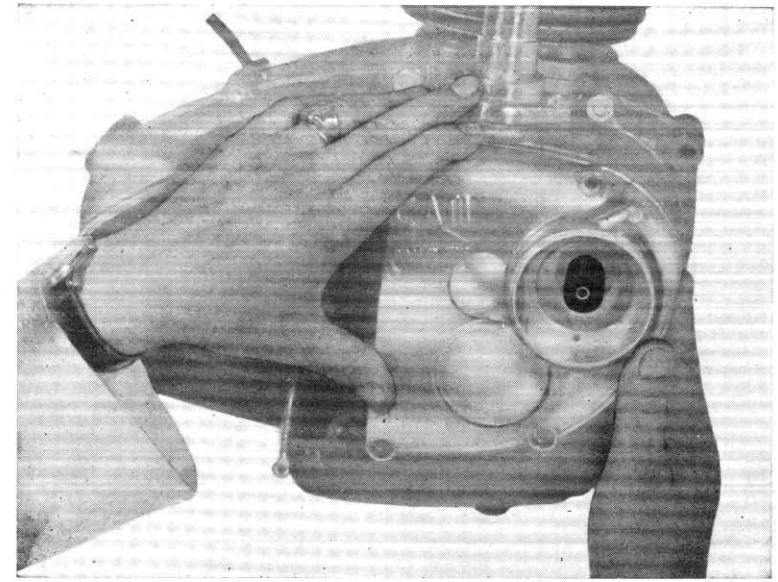
21 - Valve assembling and dismantling tool



22 - Grinder for valve seats



24 - Ball bearing puller



26 - Bush for the assembly of the advance ignition cover

LOCATING AND REMEDYING FAULTS

The following list contains several of the most frequent faults which may arise and advice on remedying them.

ENGINE DOES NOT START EASILY

First of fall, ascertain that there is enough petrol and that the cock is turned on. (A = open; R = reserve). If these are in order, the fault may be one or more of the following:

CAUSE	REMEDY
Petrol pipe is clogged.	Blow through it until the obstacle is removed.
Petrol filter dirty.	Dismantle the filter and clean the gauze by air blast.
Petrol cock filter is dirty.	Dismantle the filter and clean it by a blast of air through the gauze.
Carburetter float stuck.	Remove the float and clean out the float chamber (this should be done by a DUCATI Servicing Garage).
Carburetter float leaking.	Change the float (at a DUCATI Servicing Garage).
Jet is clogged.	Remove the obstacle by a strong blast of air.
The cable of the ignition coil is broken or sparking externally.	Inspect the cable insulation for faults and if necessary change the cable at a DUCATI Servicing Garage.
Defective sparking plug	Change or clean the plug, making sure that the insulation core is not damaged, that there are no carbon deposits on the electrodes and that the spark gap does not exceed 0.5 mm. (0.0197").

CAUSE	REMEDY
The contact breaker points do not open.	Check the position of the fixed contact point (at a Ducati Servicing Garage).
The contact breaker arm seized on its pivot.	Check movement between rocker arm and pivot and if necessary lubricate the pivot.
The contact breaker points are dirty.	Clean the contact breaker points with a rag damped in petrol.
The capacitor has broken down or is short circuit.	Change the capacitor (at a Ducati Sevicing Garage).
Compression lacking.	Check if the sparking plug has been tightly screwed in, check the valves for gas-tightness and the tightness of the piston rings (at a Ducati Servicing Garage).
A valve spring is broken.	Change the broken spring (at a Ducati Servicing Garage).
Valve sticking.	Dismantle the valve, clean the valve stem and the bore of the valve guide, and make sure that the clearance between stem and bore does not exceed 0.08 mm. (0.0032") (at a Ducati Servicing Garage).
The adjustment screw for the tappet clearance is loose (250 Monza).	Readjust the clearance and tighten the set-nut properly.
The adjustment rocker has worn out.	Readjust the clearance by fitting the adjusting rocker of the appropriate thickness at the end of the valve stalk.
The battery is discharged. (250 Monza).	Recharge the battery according with the instructions of page 52 (at a Ducati Servicing Station).

CAUSE	REMEDY
The battery quickly discharges for a fault or an interruption in the recharging circuit. (250 Monza).	Disjoin the wire from the + terminal block of the battery. — Insert a moving coil ammeter in continuous current between the terminal block and the wire. — Insert the ignition key and let the engine turn. — Make sure that during the engine turning 1000 rev./min. the red pilot light of the headlight is gradually cut down.
Check the electric balance.	Make sure that all the bulbs are efficient. 1) With cut-down lights (running during the day), the ammeter should mark «O» when the engine runs at 1200 r.p.m. approximately. 2) With town lights switched on (during the night) the ammeter should mark «O» when the engine runs at 1400 r.p.m. approximately. 3) With anti-dazzle lights switched on (during the night) the ammeter should mark «O» when the engine runs at 2200 r.p.m. approximately.

INEFFICIENT ENGINE

CAUSE	REMEDY
Irregular feed of petrol to the carburetter.	Clean the carburetter filter, the petrol cock filter and the petrol pipe.
Main jet partly clogged.	Clean the main jet by means of an air blast.
Carburetter butterfly valve does not open completely.	Readjust the valve travel by means of the adjustment screw of the carburetter Bowden cable (at a Ducati Service Garage).
The float needle does not close properly.	Clean out the carburetter and especially the needle seat (at a Ducati Servicing Garage).
Petrol of bad quality.	Empty the petrol tank and refill at a reliable garage.
The spark is not of the right type	If the sparking plug overheats, you will have preignition, knocking, and misses, especially at high revs. If the sparking plug remains too cold, you will have no ignition, because the electrodes will short-circuit. Use the right type of sparking plug; we advise the use of a plug having a thermal figure of 260 of the Bosch international scale.
The sparking plug works loose.	Tighten the plug down well. A copper washer should always be placed between the sparking plug and its seating in the cylinder head.
The sparking plug cable sparks externally.	Change the cable or repair the insulation (at a Ducati Servicing Garage).

CAUSE	REMEDY
The spark gap between the electrodes of the sparking plug is too wide.	Adjust the gap to the proper width of about 0,5 mm. (0.0197").
The sparking plug electrodes are dirty.	Clean the electrodes with a wire brush.
The contact breaker opening is excessive.	Readjust the exact opening of the contact which is 0.3÷0.4 mm. = 0.0118" to 0.0157" (at a Ducati Servicing Garage).
The secondary winding of the coil is short-circuited or broken.	Change the coil (at a Ducati Servicing Garage).
The silencer is or the exhaust pipe are almost completely clogged-up.	Clean them to ensure the free discharge of the spent gases.

INDEX

INDEX

STUDIO LUCY

POLIGRAFICA BODONIANA

DUCATI MECCANICA S.p.A. - BOLOGNA
(BORGO PANIGALE) CASELLA POSTALE 313
TELEFONO N. 491601 (quattro linee) TELEGRAMMI: "DUCATIMEC„ - BOLOGNA