MANUEL POUR STATION SERVICE
WORKSHOP MANUAL

GILERA

- **50 TOURING**
- **50 TRIAL**
- **50 TOURING RS**
- **50 TRIAL RS**

AZIENDA GILERA

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AZIENDA GILERA

FOREWORD

In order to undertake repairs quickly and efficiently, it is essential that the mechanic is properly acquainted with the machine to be repaired, in addition to having that technical knowledge which qualifies him as a mechanic.

This Manual has been prepared as a guide for mechanics dealing with the repair of "50 Touring - 50 Trial - 50 Touring RS - 50 Trial RS" motorcycles, by describing their features in detail, by indicating the most efficient methods to be adopted for the various operations as well as permissible wear limits.

The Manual has been divided into several sections for easy reference purposes.

Should modifications be introduced to the motorcycles in the future, which would necessitate the use of new equipment not shown in this Manual, amendments will be circulated.

INDEX

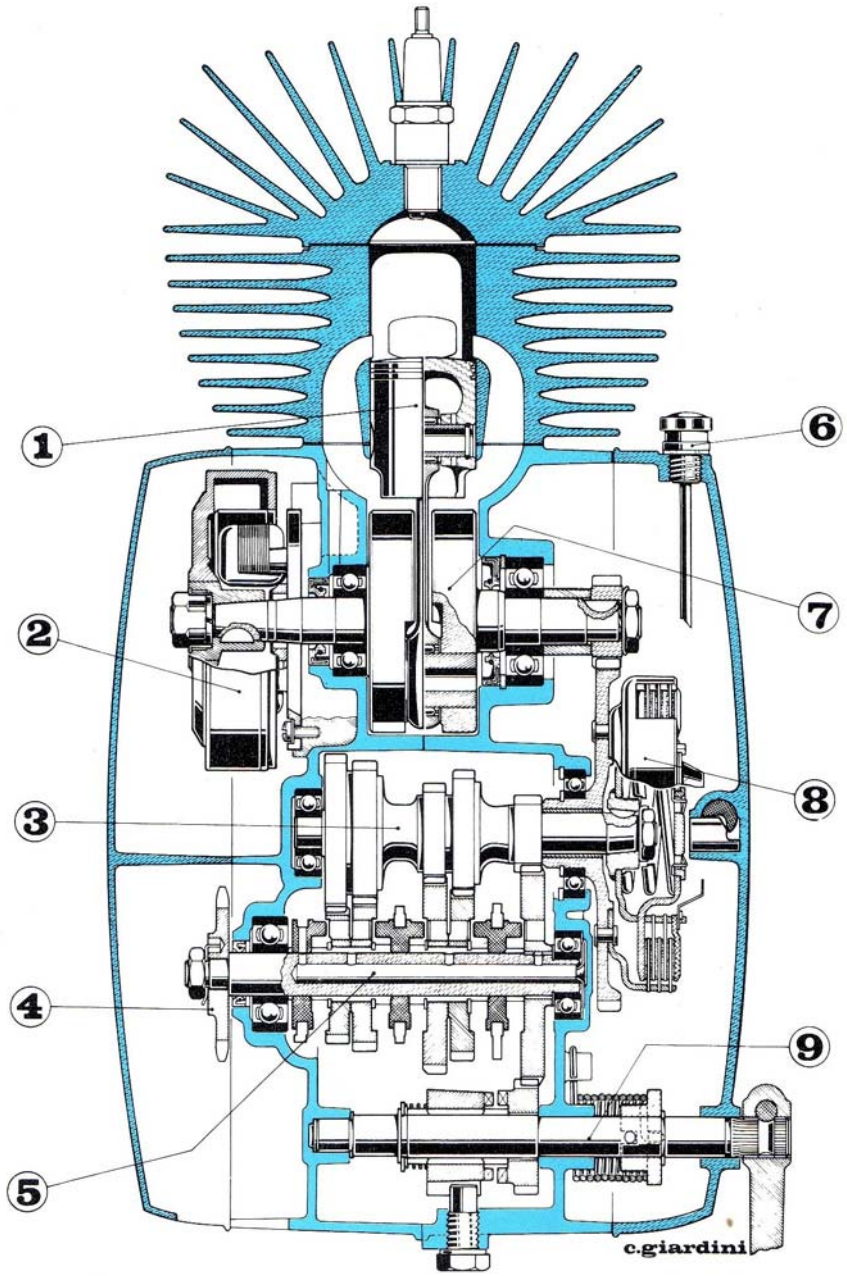
SECTION 1 - Specific data

General rules for maintenance and lubrication

SPECIFIC DATA OF MODELS GILERA 50				
Description	**Touring**	**Trial**	**Touring RS**	**Trial RS**
Bore Stroke Displacement	mm. 38.4 mm. 43 cc. 49.8			
Mixture	Oil-gasoline i. e. 4% Pure Mineral Oil SAE 30. The following oils can be used (Agip Speedy Mix; Esso 2-T Motor Oil; Shell Golden Motor Oil; Shell X-100 2-T; Total 2-T Castrol XL, Mobiloil A, B.P. Energol Two-stroke Oil): i. e. about 1/4 pint of oil per 1.5 gals of gasoline.			
Dell'Orto Carburettor	SHA 14/9		SHB 18/18 B	
Ignition (toler ± 1°)	15° (± 1°) B.T.D.C.			
Spark plug	Bosch W 240 T 2 Marelli CW 260 L			
Tyre pressures front: solo pillion	25 lbs — 2.1/4-19" ribbed	21.5 lbs — 2.50-19" standard	21.5 lbs 24 lbs 2.1/2-17" ribbed	21.5 lbs 24 lbs 2.50-19" standard
rear: solo pillion	32 lbs — 2.1/4-19" standard	28.5 lbs — 3.00-17" cross	28.5 lbs 35.5 lbs 2.75-17" standard	28.5 lbs 35.5 lbs 3.00-17" cross

SPECIFIC DATA OF MODELS GILERA 50				
Description	**Touring**	**Trial**	**Touring RS**	**Trial RS**
Primary transmission ratio	1 : 4.235 (Z=17/72)			
Gear ratios (see fig. 7)				
1st. speed	1 : 3.250 (Z=12/39)	1 : 3.250 (Z=12/39)		
2nd. speed	1 : 1.888 (Z=18/34)	1 : 2.058 (Z=17/35)		
3rd. speed	1 : 1.363 (Z=22/30)	1 : 1.430 (Z=21/30)		
4th. speed	1 : 1.080 (Z=25/27)	1 : 1.080 (Z=25/27)		
5th. speed	—	1 : 0.857 (Z=28/24)		
Secondary transmission ratio	1 : 3.333 (Z=12/40)	1 : 4.000 (Z=12/48)	1 : 2.92 (Z=14/41)	1 : 3.42 (Z=14/48)
Engine to wheel total ratios				
1st. speed	1 : 45.874	1 : 55.05	1 : 40.14	1 : 47.02
2nd. speed	1 : 26.649	1 : 34.86	1 : 25.42	1 : 29.77
3rd. speed	1 : 19.239	1 : 24.22	1 : 17.66	1 : 20.69
4th. speed	1 : 15.244	1 : 18.29	1 : 13.34	1 : 15.62
5th. speed	—	1 : 14.51	1 : 10.58	1 : 12.40

SCHEMA MOTEUR A 5 VITESSES
VIEW OF 5 SPEED ENGINE

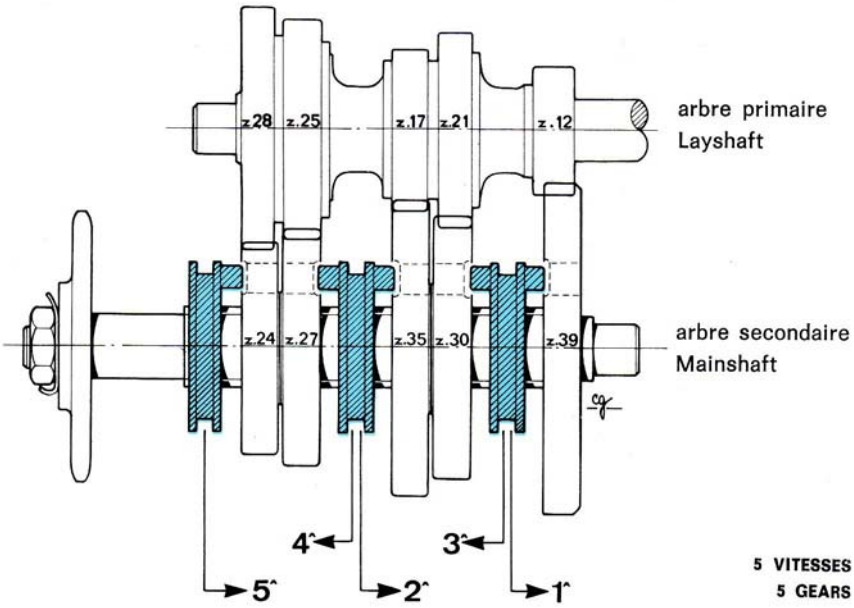


1 - Piston; 2 - Volant magnétique; 3 - Arbre principal; 4 - Pignon de la chaîne; 5 - Arbre secondaire du changement de vitesses avec engrenages et fourchettes d'enclenchement des vitesses; 6 - Jauge d'huile pour la boîte de vitesses; 7 - Vilebrequin; 8 - Embrayage; 9 - Arbre de démarrage.

1 - Piston; 2 - Flywheel Magneto; 3 - Gearbox Layshaft; 4 - Chain Sprocket; 5 - Mainshaft with sliding pinions; 6 - Dipstick; 7 - Crankshaft; 8 - Clutch; 9 - Kickstart Shaft.

Fig. 5

SCHEMA DU CHANGEMENT DE VITESSES
VIEW OF GEARBOX



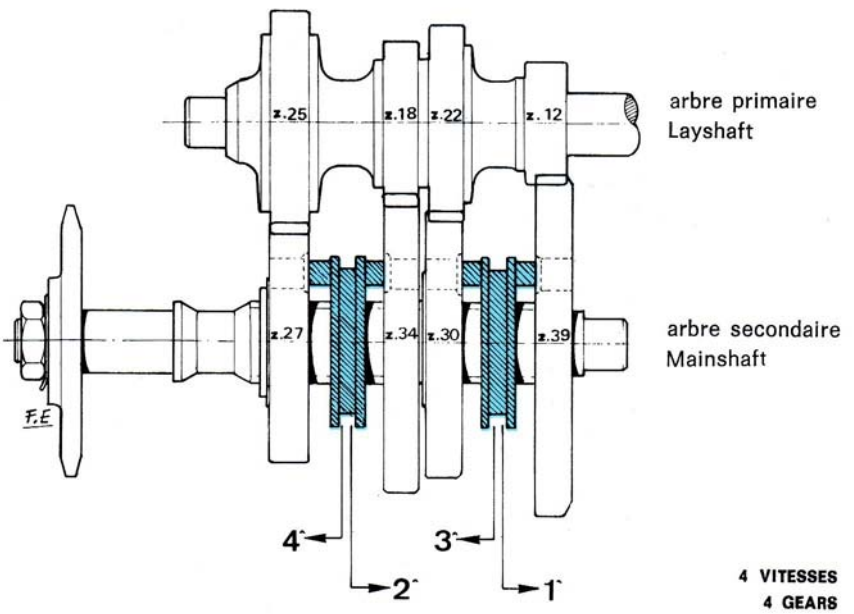


Fig. 6

GENERAL RULES FOR MAINTENANCE AND LUBRICATION

GROUP	OPERATIONS TO BE CARRIED OUT				Lubricants	Notes
	After the initial 500 km (300 m/s approx)	Every 4000 km. (2500 m/s)	Every 8000 km (5000 m/s)	In case of overhaul		
Gearbox	Change oil (A) if motorcycle is new	Check and top up oil level, Check with dipstick	Change oil (A)	Change oil (A)	AGIP F. 1 Woom Motor Oil HD SAE 30 Shell 2T Two-Stroke Oil or Shell X-100 30 B.P. Energol Two-Stroke Oil or Energol SAE. 30 Esso Extra Motor Oil 20W/30 Castrol XL Mobiloil A	(A) To be carried out when engine is warm. Quantity of fresh oil: 550 g.
All principle nuts & bolts	Check for security	—	—	Check security		
Air Filter	—	Clean with low pressure air jet	Replace with same type	Clean or replace if necessary	—	
Silencer and exhaust pipe	—	Cleaning (B)	—	Clean (B)	—	(B) Remove Silencer Exhaust Pipe End by turning to the left (Bayonet type Joint) and pulling it out. Separate silencer and exhaust pipe before loosening ring.
Engine	Check security of carburettor screw and nuts	Remove carbon from piston/ crown, cylinder ports and head. Clean exterior of cylinder.	—	Remove deposit from engine parts which can be used again	—	
Spark plug	Check plug gap (0.5 — 0.7 mm)	Clean plug and adjust gap	—	Replace spark plug	—	
Flywheel magneto	—	—	Clean and adjust C.B. gap to 0,40 mm (± 0,05 mm)	Replace C. B. points (if necessary) or clean and adjust	—	
Telescopic forks **50 Trial** **50 Touring RS and Trial RS**	—	Check (C) level	Change oil (D)	Carefully clean (D) and change oil	SHELL TELLUX 23 — We recommend to use an hydraulic oil having a Redwood viscosity of 75'' at 130 °F.	(C) When fork is fully extended, it must be 39 cm from handlebar support. (D) Quantity of oil for leg: 110 cm³. After carefully cleaning, for complete overhaul: 130 cm³.
With hydraulic front fork	—	—	—	Carefully clean (E) and change oil		
50 Touring **With mechanical front fork**	—	—	—	Grease	Agip F. 1 Grease 30 Esso Beacon 3 Shell Retinax A Mobilgrease MP Total Multis Esso Univis J 43 B.P. Energrease L. 2 Castrolease L. M.	(E) Quantity of oil for leg: 60 cm³.
Front and rear wheel bearings, rear fork pivots, steering head races	—	—	Greasing	Grease		
Control cables for: clutch, throttle, front brake. Brake fulcrum pins, brake pedal, centre stand pivots	—	Greasing	—	Grease		(F) Clean chain in the following manner: remove and wash in petrol. Then carefully dry. Immerse chain for half an hour in heavy oil-bath, in order to allow lubricant to penetrate between pins and rollers. Allow excessive oil to drain off.
Chain	—	—	Lubricate (F) (periodically)	Lubricate (F)	Agip F.1 Rotra Sae 140 Esso Motor oil 30 Shell X-100 Motor oil 2 T Shell X-100 Motor oil 30 Mobiloil « A » Total Super (Sae 30)	

If motorcycle is to be stored, proceed as follows: 1) Clean the motorcycle - 2) Drain fuel tank - 3) Pour 10 to 15 cm³ of AGIP F. 1 Woom Motor Oil HD SAE 30 oil into stationary engine through spark plug hole (piston at bottom dead centre). Then actuate kick start lever 3 to 4 times - 4) Smear unpainted areas with antrust grease. - 5) Support machine on blocks so as to keep wheels off ground.

SECTION 2 - Electrical Equipment

SCHEMA EQUIPMENT ELECTRIQUE
50 TOURING et 50 TRIAL
(mono-lumière avec volant magnetique 6 V - 18 W)

WIRING DIAGRAM
MODELS 50 TOURING and 50 TRIAL
(single light with flywheel magneto 6 V - 18 W)

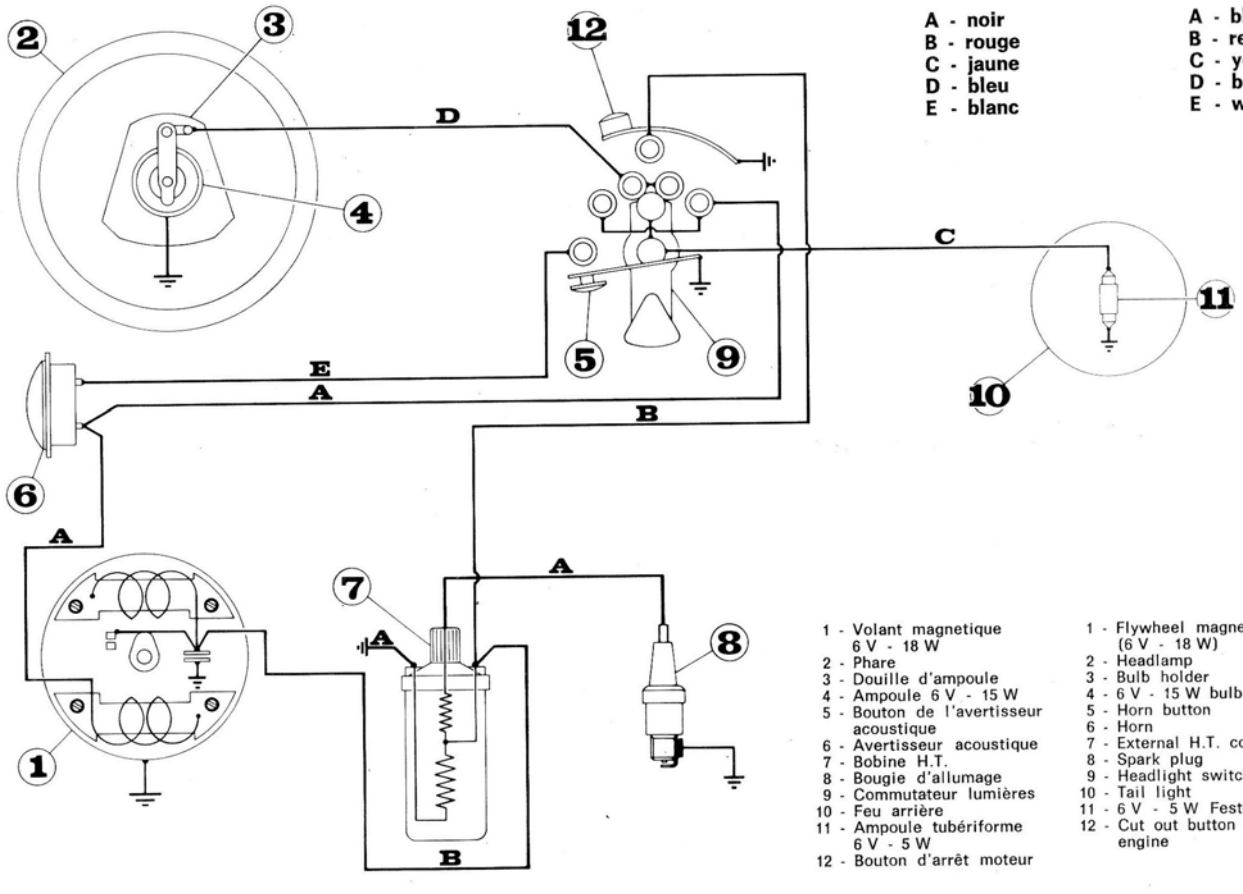


Fig. 7

SCHEMA EQUIPEMENT ELECTRIQUE
50 TOURING et 50 TRIAL
(bi-lumière avec volant magnetique 6 V - 18 W)

WIRING DIAGRAM
50 TOURING and 50 TRIAL
(two lights with flywheel magneto 6 V - 18 W)

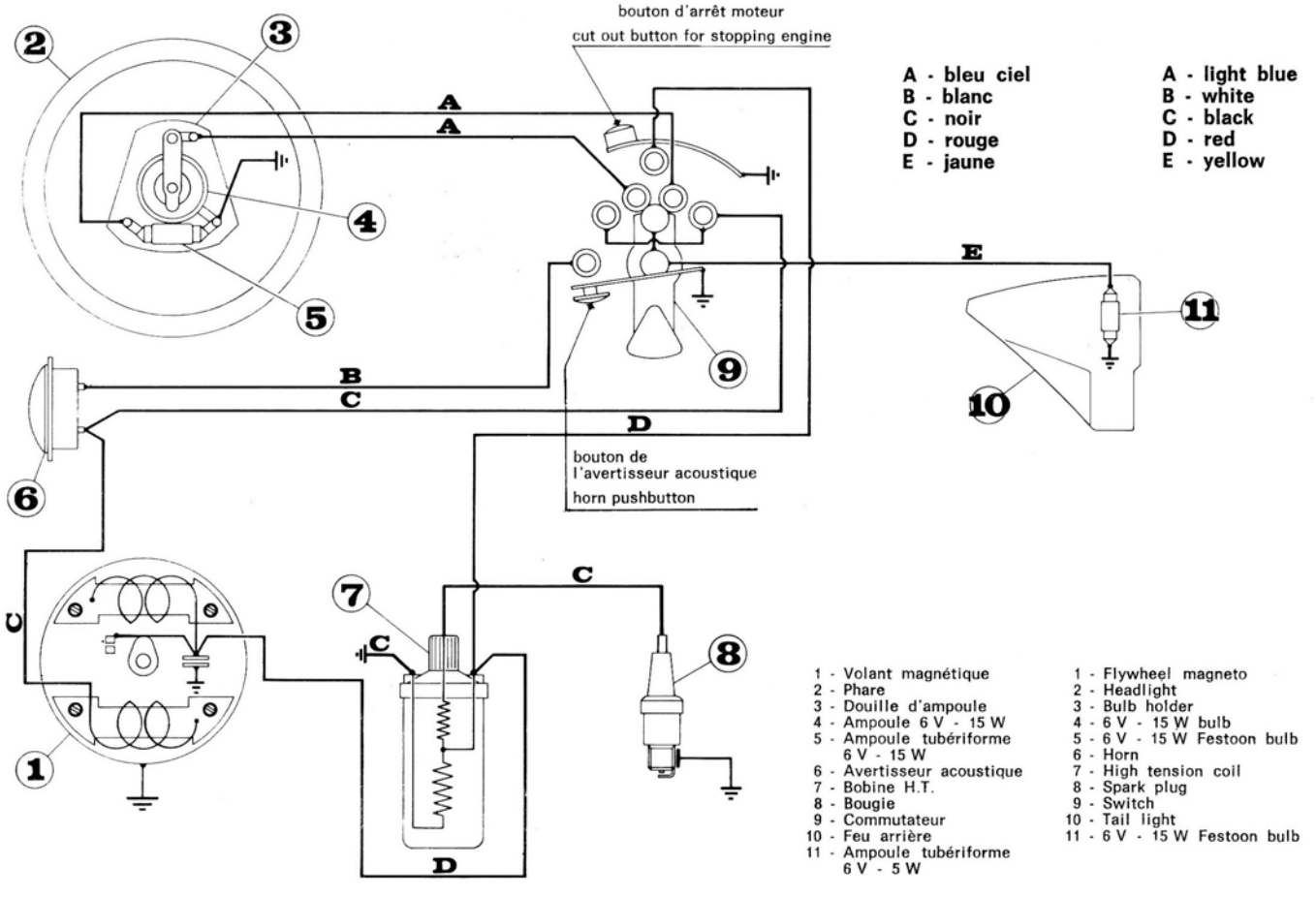


Fig. 8

SCHEMA EQUIPEMENT ELECTRIQUE
50 TOURING RS et 50 TRIAL RS
(bi-lumière avec volant magnetique 6 V - 28 W)

WIRING DIAGRAM
50 TOURING RS and 50 TRIAL RS
(two lights with 6 V - 28 W flywheel magneto)

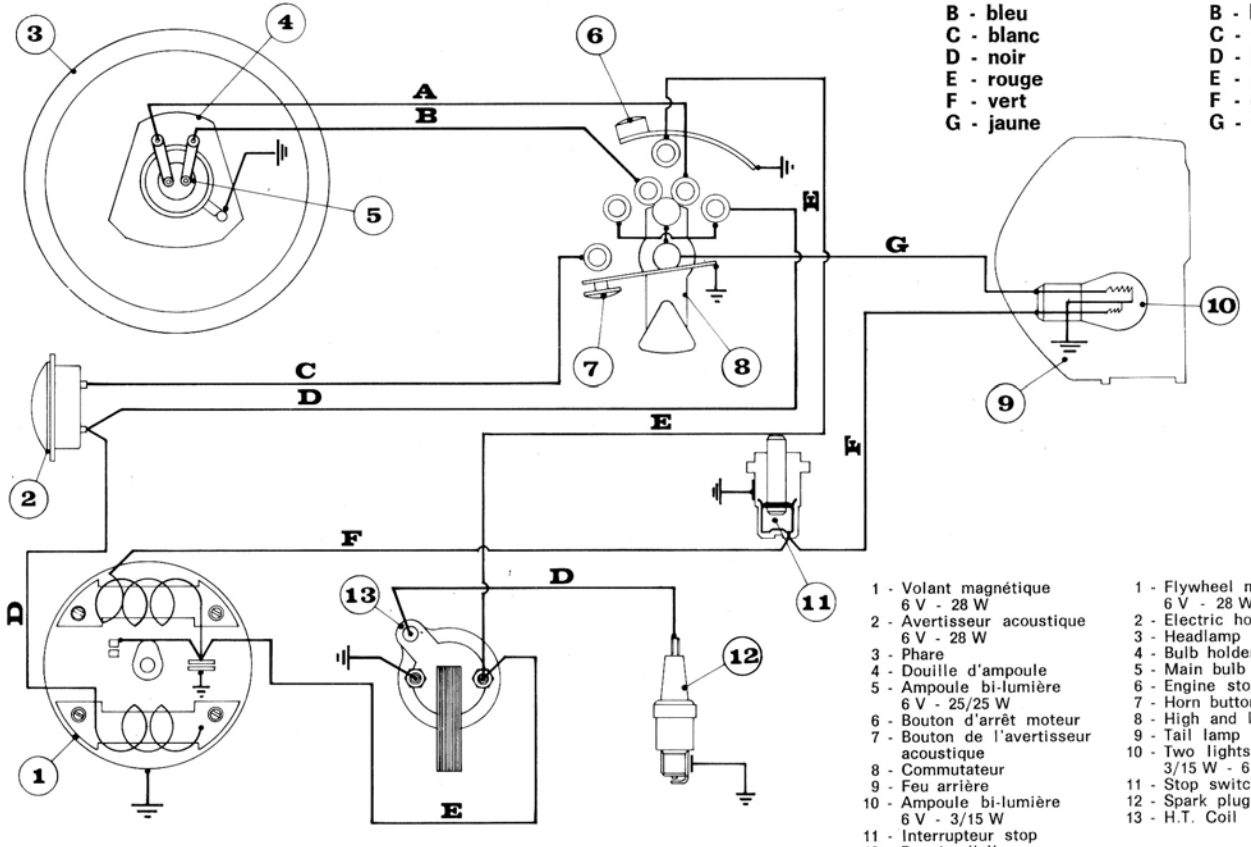


Fig. 9

SCHEMA EQUIPEMENT ELECTRIQUE
50 TOURING RS et 50 TRIAL RS
(trois-lumières avec volant magnetique 6 V - 28 W)

WIRING DIAGRAM
50 TOURING RS and 50 TRIAL RS
(three lights with 6 V - 28 W flywheel magneto)

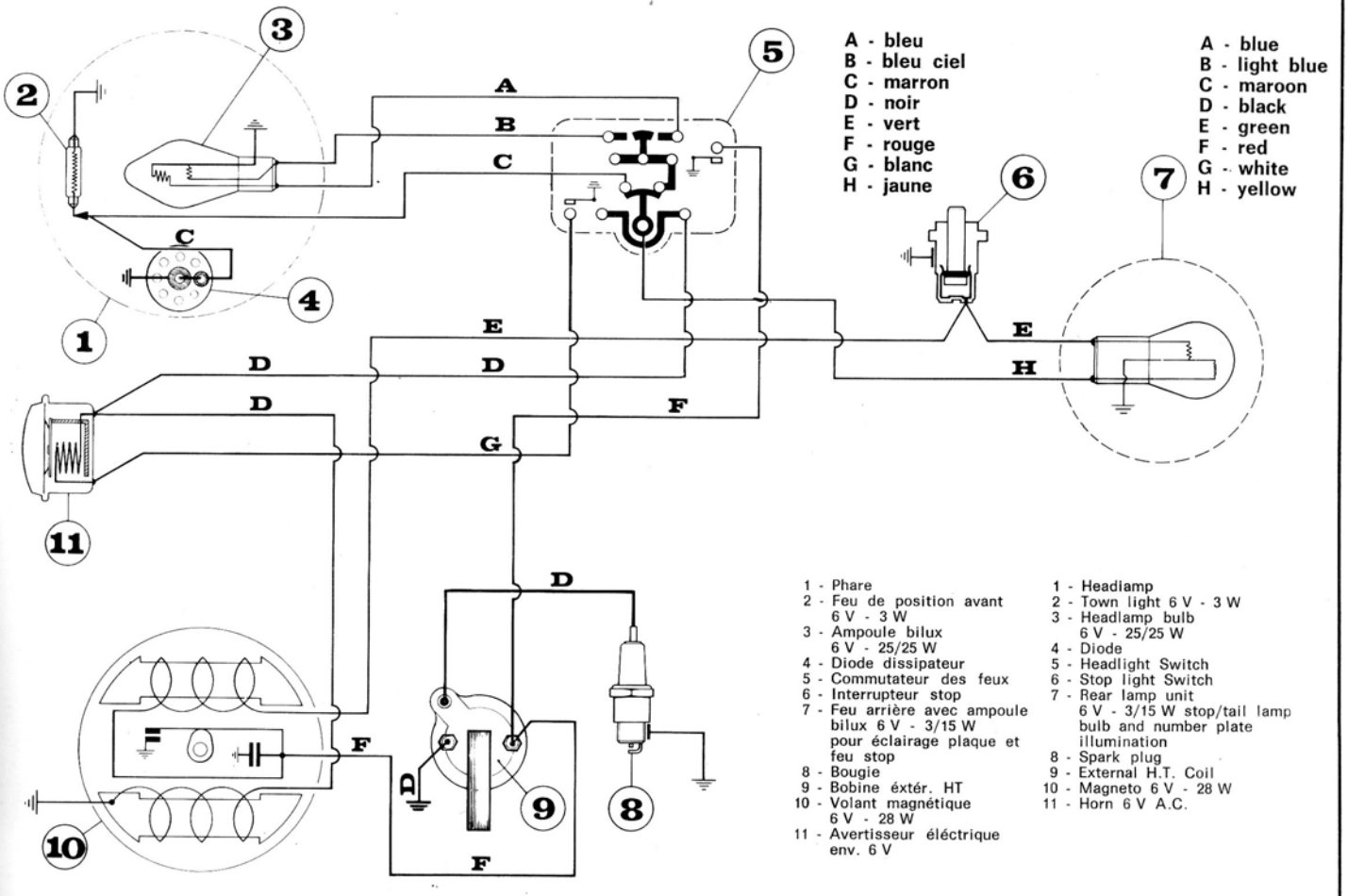
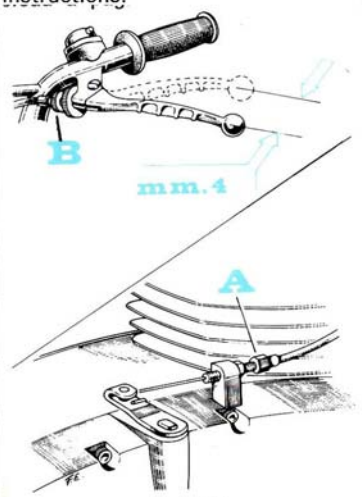


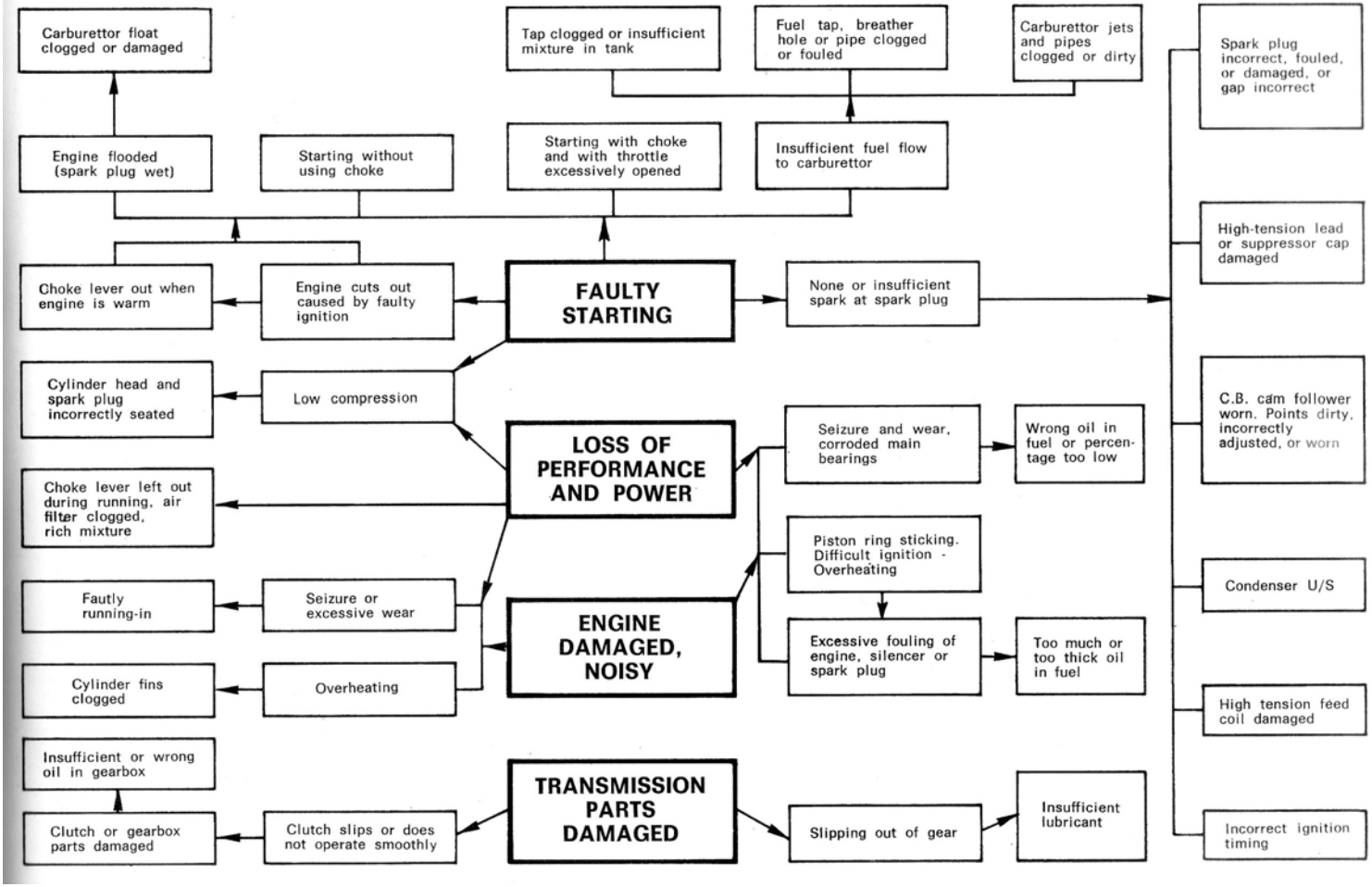
Fig. 10

SECTION 3 - Fault finding

FAULT DIAGNOSIS AND REMEDY

Unit	Fault and Remedy	Notes
ENGINE (see chart on page 3 - 5)	— In case of poor performance, low compression or petrol leaks, check the tightness of screws and nuts of engine parts concerned (carburettor, cylinder head, silencer joint). — To replace spark plug, use types recommended on chart page 1 - 3. **REMEMBER THAT MANY ENGINE FAULTS ARE CAUSED BY USING AN INCORRECT SPARK-PLUG, OR A FUEL CONTAINING EITHER INSUFFICIENT OIL OR A WRONG PERCENTAGE MIXTURE.** — The maximum gap of the C.B. points must be 0,40 mm (± 0,05 mm). Ignition timing must correspond to that shown on chart page 1 - 3 (see heading « overhaul » for timing and instructions). — Clutch unit, it is important to check free play at clutch lever (see fig. 11), and the cable adjustment. If slipping or fierce action, check springs, linings and oil level in gearbox. — If dismantling parts for overhauling or replacement purposes, always use new gaskets and split pins when reassembling.	See chart on page 1 - 11 for motorcycle general maintenance instructions.  Fig. 11

MAIN ENGINE FAULTS AND LIKELY CAUSES



FAULT DIAGNOSIS AND REMEDY

Unit	Fault and Remedy	Notes
	Reconnect the C.B. lead to the coil, disconnect the spark-plug lead and position it near a head fin at about 3 mm distance, again do press the kickstart lever. If there is no spark between the H.T. lead and earth, the coil is inefficient.	
WARNING (for Gilera 50 RS only)	— Should the ignition fail when operating the rear brake, the faulty may be due to: — stop lamp bulb faulty or missing — lead between stop switch and lamp broken — faulty stop switch. To repair, replace the stop lamp, repair the lead or replace the damaged part.	
Brakes	— If adjustment of brake cables do not have desired effect check shoes and drums for wear. — If wear or scoring is found replace as necessary. — If rear brake pedal proves hard to operate, dismantle and lubricate. Should lever travel be excessive, adjust at control end. Remember that in order to obtain a good breaking performance, the brakes should begin to take effect immediately the relevant controls begin to move.	

FAULT DIAGNOSIS AND REMEDY

Unit	Fault and Remedy	Notes
	— Should the front brake cable become rusted, lubricate or replace as necessary.	The adjustment of the brakes is carried out by adjusting the controls, by using the relative adjusters shown on the fig. 12.
	— After repair, or adjustment of the braking system, road test.	
	— To prevent the cables from becoming hard or rusted, carry out the lubrication prescribed on chart, page 1 - 10.	
Steering head Bearings	— If steering becomes stiff or has excessive play, check the tightness of the upper cone. Should fault still be evident, check the head races for pitting. Replace if faulty.	
Suspension	— The telescopic forks require no particular maintenance, except for lubrication as prescribed on chart page 1 - 10.	
	— The rear shock absorbers require neither maintenance nor lubrication.	

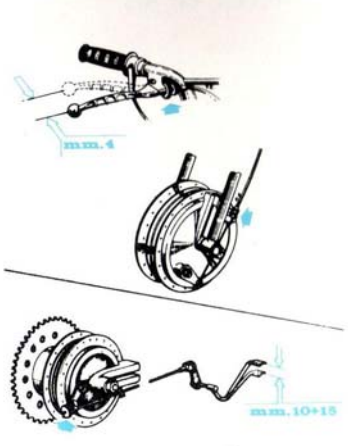


Fig. 12

FAULT DIAGNOSIS AND REMEDY

Unit	Fault and Remedy	Notes
Electrical equipment	— Should faults occur, which are not listed in chart on page 3-5 (e.g.: abnormal noise, failure or excessive wear of mechanical parts etc.) one must locate the fault and if necessary proceed to replace or repair the parts concerned. Ensure that joints, couplings of main components (piston to cylinder, piston ring, a.s.o.) must operate with clearances specified on charts page 6-2 and following. — When checking ignition, ensure the magneto flywheel timing is correct (see page 6-11) and the ignition coils are undamaged. — Should lights, warning lights, or horn fail to operate, check wiring for breaks etc. — Check that terminals are not loose. — Check the bulbs and sockets. — Check all connections, and switch contacts. — In order to check coil efficiency, proceed as follows: disconnect C.B. lead from H.T. coil (below tank) and position it near a head fin (earth), at about 3 cm. Depress kickstart pedal. If there is a spark between terminal and head fin, the flywheel magneto is efficient.	

SECTION 4 - Tools

Dismantling, repair and reassembly tools

Chart Ref	Drawing No.	Tool	Use shown on page
1	90/20	« C » **SPANNER** for exhaust pipe threaded ring	5 - 4
2	13959/30	**WRENCH** for steering head races	5 - 3
3	20847/30	12 x 32 x 10 bearing remover	5 - 11
4	22128/30	**FLYWHEEL** extractor	5 - 6
5	23499/30	**FLYWHEEL** holding plate	5 - 6
6	26939/30	**ENGINE** stand	5 - 5
7	27117/30	**CHAIN** sprocket dismantling and reassembly tool	5 - 7
8	27118/30	**TOOL** for dismantling crankshaft from left half crankcase	5 - 10
9	27121/30	**TOOL** for reassembly crankshaft on left half crankcase with parts N. 1-2-3-4-5 (corresponding to T.0018119 with parts 1-2-3-4-5 and 6 as per dwg. N. 27121/31)	7 - 7
10	27130/30	**CLUTCH** holding tool	5 - 8
11	27175/30	**CLUTCH** extractor (corresponding to T.0029551)	5 - 8
12	27176/30	**CLUTCH** unit assembling and dismantling tool (corresponding to T.0020322)	6 - 4
13	T.0014499	**EXTRACTOR** for 17 x 40 x 12 crankshaft bearing with Collet drwg. N. T.0014499/8	5 - 12
14	T.19559/C	**CRANKSHAFT** alignment checking fixture	7 - 6
15	0019978	**HEATER** (220 V - 50 HZ or 260 V - 50 HZ)	7 - 5
16	T.0027533	**IGNITION** timing checking attachment	6 - 12

N.B. - For the dismantling and reassembling of the crankshaft the relative tooling as per drawing No. T.0013460 - T.0014208 - T.0021472 - T.0021472/2 is available and is supplied together with detailed instructions as an optional item.

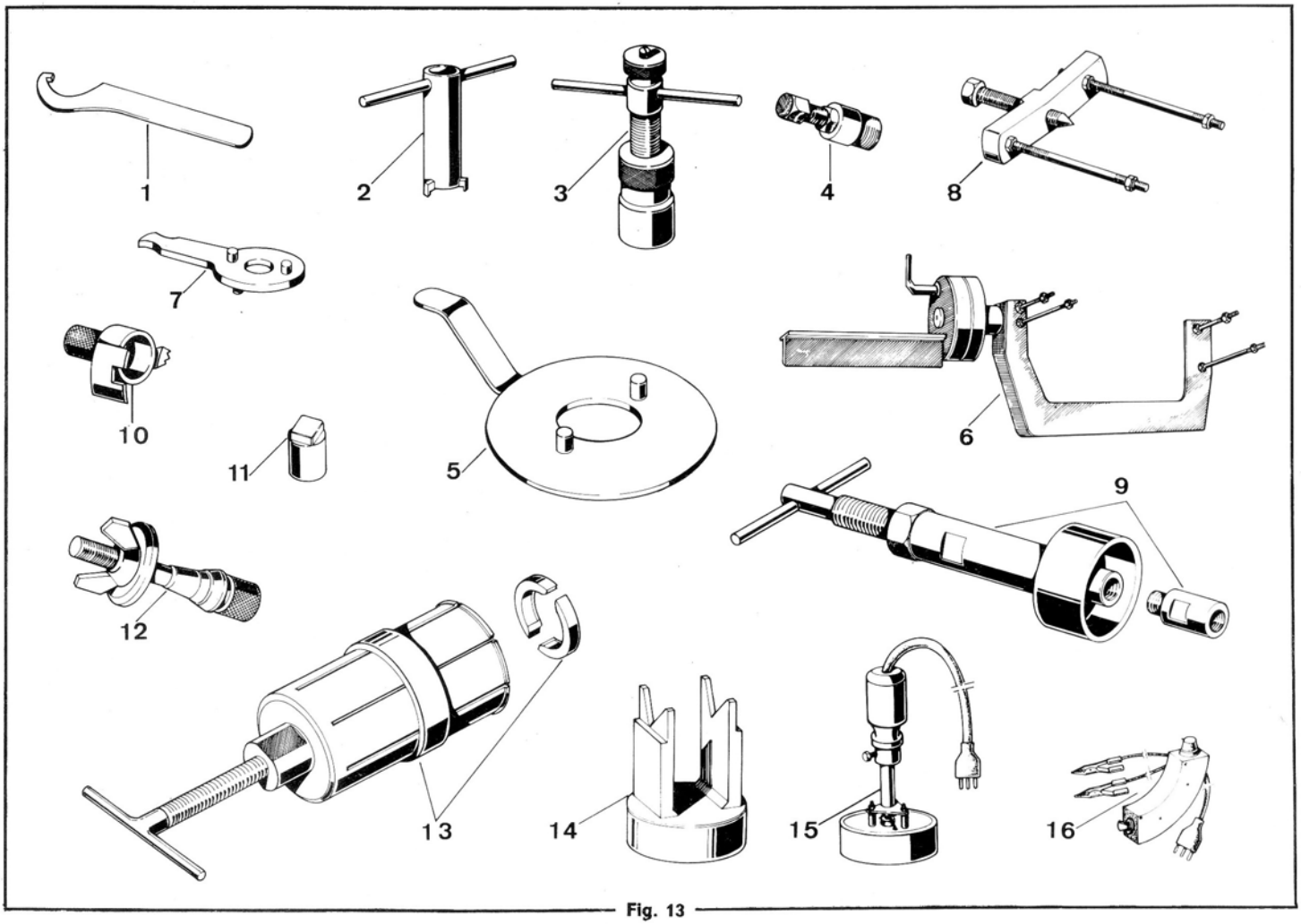
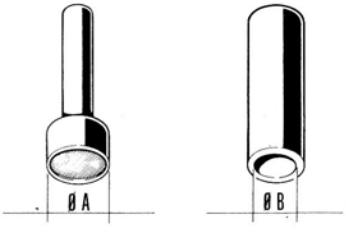


Fig. 13

Use standard punches for dismantling and reassembling of the bearings and oil rings. For sizes, use the following chart:



Description	Sizes	Punches sizes		
		Dismantling Ø A	Reassembling	
			Ø A	Ø B
BEARINGS				
Crankshaft bearing, right half crankcase	17 x 47 x 14	25	46.8	—
Multiple gear bearing, right half crankcase	25 x 47 x 8	35	46.8	—
Layshaft bearing, right half crankcase, multiple gear bearing, left half crankcase and brake drum bearing	12 x 32 x 10	(°)	31.8	—
Crankshaft bearing, crankshaft flywheel side	17 x 40 x 12	(*)	—	17.2
Layshaft, left half crankcase	15 x 42 x 13	25	41.8	—
OIL SEALS				
Crankshaft seal, right half crankcase	23 x 47 x 7	—	46.8	—
Crankshaft seal, left half crankcase	17 x 32 x 7	—	31.8	—
Layshaft, left half crankcase	15 x 24 x 5	—	23.8	—
Selector shaft, left half crankcase	13 x 19 x 3	—	18.8	—

(°) Extractor part no. T.20847/30
(*) Extractor part no. T.0014499 with collets T.0014499/8

N.B. - For dismantling the oil seals, use a screwdriver as a wedge.

SECTION 5 - Dismantling

Foreword to dismantling

The principal dismantling operations are shown in this section. These require specific tooling or particular skill. Easy operations are not described, such as tasks which can be performed with standard screwdrivers, spanners, pliers etc.

It is advisable not to dismantle parts not requiring repair or check, with special mention of gaskets, joints etc., pin and bronze bearings, locating studs, a.s.o.

Each tool is shown with own drawing number.

Cône supérieur de direction
Steering upper race

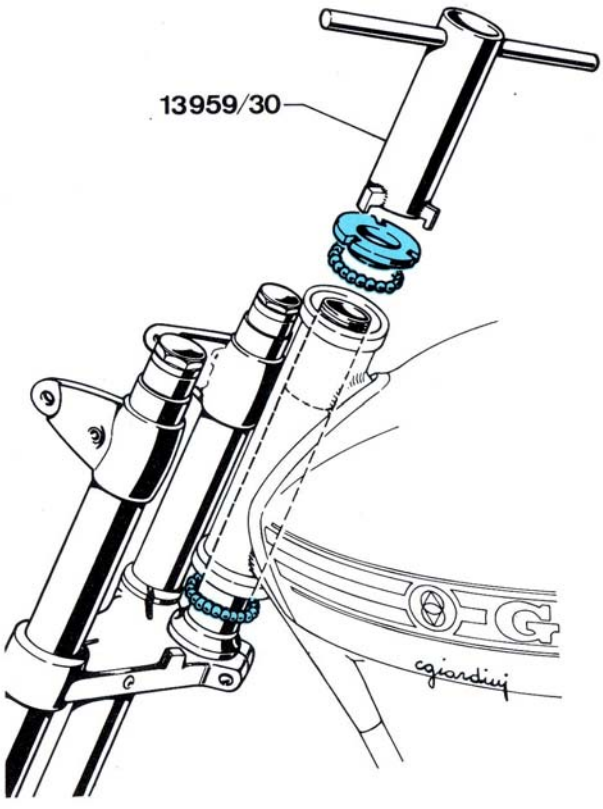


Fig. 14

Procédé Procedure
— Dévisser le cône supérieur du tube de direction, en employant la clé à becs 13959/30. N.B. - Sortir la fourche complète, en ayant soin de ne pas perdre les billes.
— Unscrew the upper cone of the steering tube, using wrench 13959/30. N.B. - Remove the complete fork, taking care not to loose the steel balls.

Tuyau d'échappement
Exhaust pipe

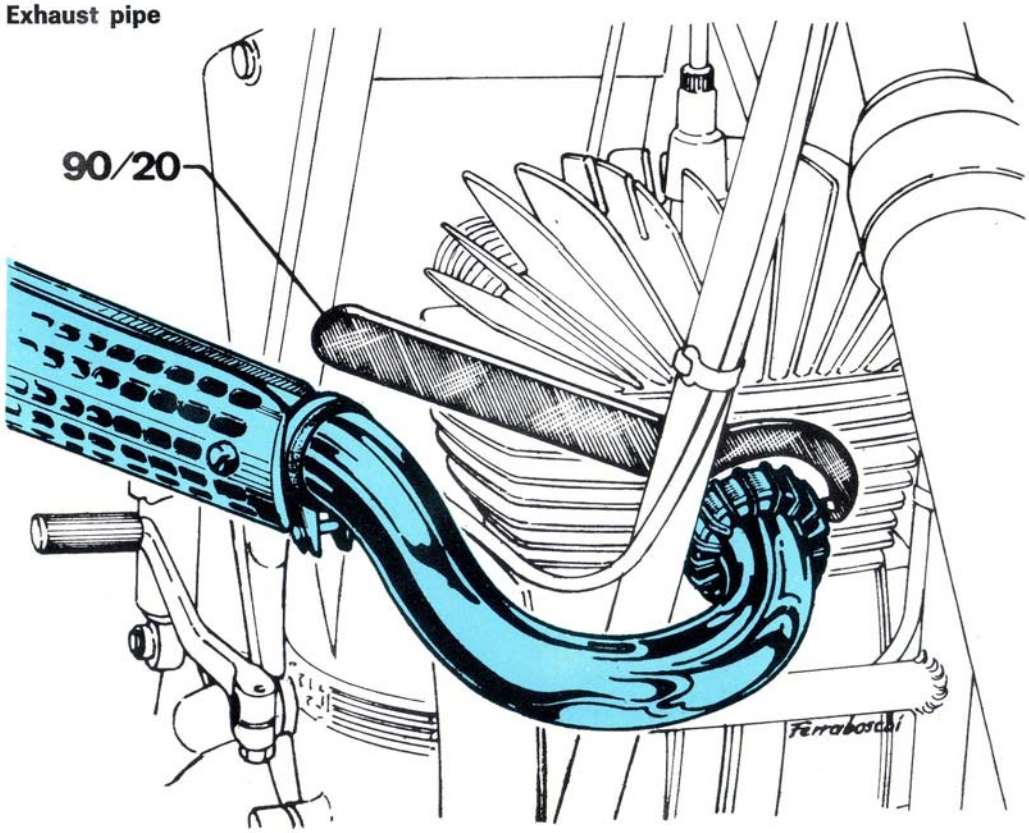


Fig. 15

Procédé Procedure
— Dévisser le collier de fixation du tuyau d'échappement du moteur, en employant la clé à secteur 90/20.
— Unscrew exhaust pipe threaded ring from engine using « C » spanner 90/20.

Vidange d'huile de la boîte de vitesses
Gearbox Oil Drain

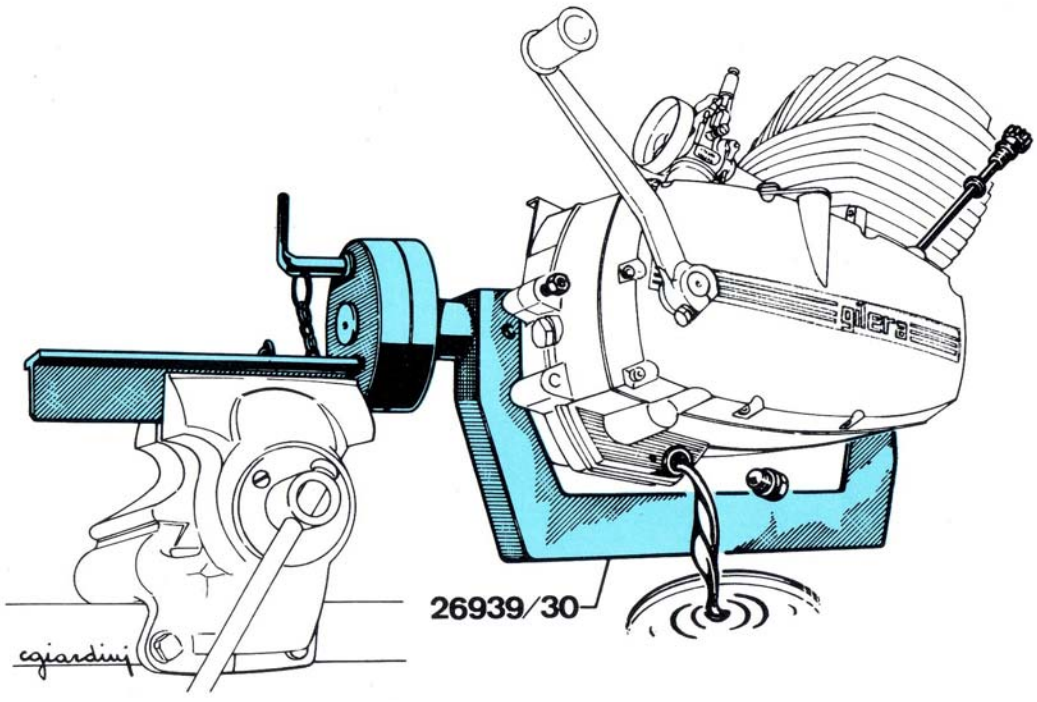


Fig. 16

Procédé Procedure
— Fixer le moteur sur le support 26939/30. — Dévisser le bouchon et faire écouler l'huile dans une cuve. N.B. - Si vous possédez l'outil Piaggio T.0025095 (support pour moteur), vous pouvez l'utiliser en ajoutant la pièce T.0041930.
— Clamp engine to bench using engine stand 16939/30. — Remove plug and let oil drain into tray. N.B. - Piaggio tool T.0025095 may be used together with part T.0041930.

Volant magnétique
Magneto Flywheel

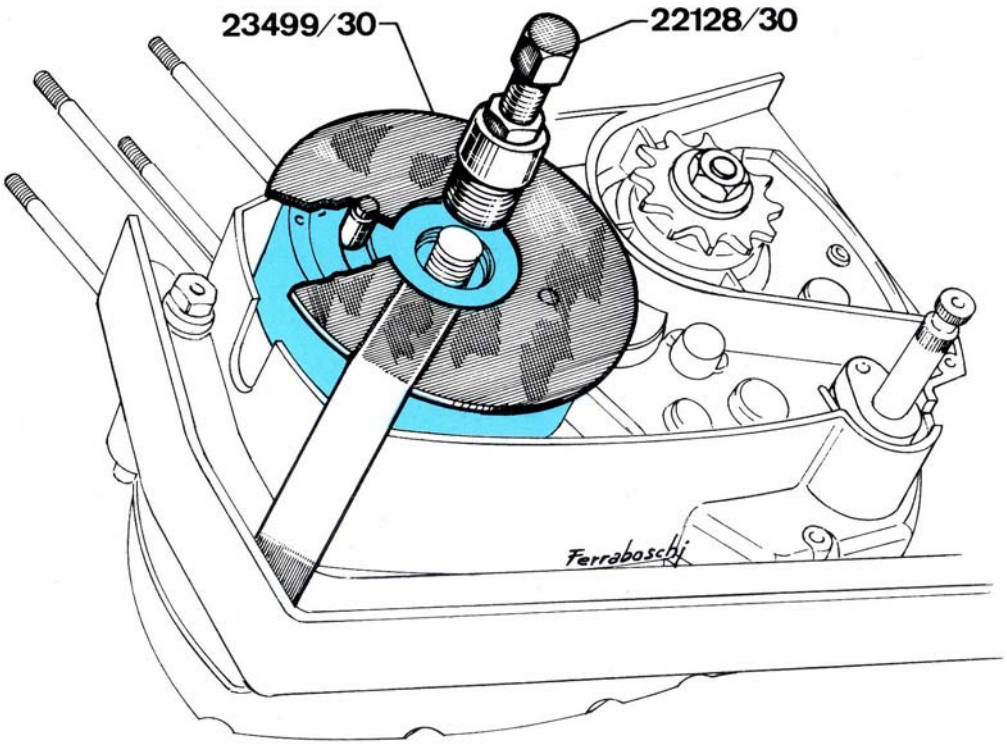


Fig. 17

Procédé
Procedure

— Bloquer le rotor du volant avec le crampon 23499/30. (o)
— Dévisser l'écrou de serrage du rotor avec une clé à tube normale.
— Démonter le rotor par moyen de l'extracteur 22128/30.
— Tracer deux signes de référence, l'un sur le carter et l'autre à la position correspondante sur la plaque support de bobine, pour avoir ensuite une référence au moment du remontage.
— Après avoir desserré les trois vis de serrage, enlever la plaque support de bobine.
(o) Comme alternative on peut employer l'outil Piaggio T.0031760, en raccourcissant de 4 mm le crochet qui doit entrer dans les anneaux du rotor pour ne pas interférer sur les bobines HT et BT.

— Clamp flywheel rotor with holding plate 23499/30. (o)
— Unscrew rotor retaining nut with normal box spanner.
— Remove rotor using tool 22128/30.
— Mark coil baseplate and housing as reference marks for reassembling.
— Remove coil baseplate after loosening the 3 securing screws.
(o) Alternatively, one may use the Piaggio T.0031760 tool after shortening hook by 4 mm. Such hook must fit in rotor slots so as not to interfere with the low or high-tension coils.

Pignon
Chain Sprocket

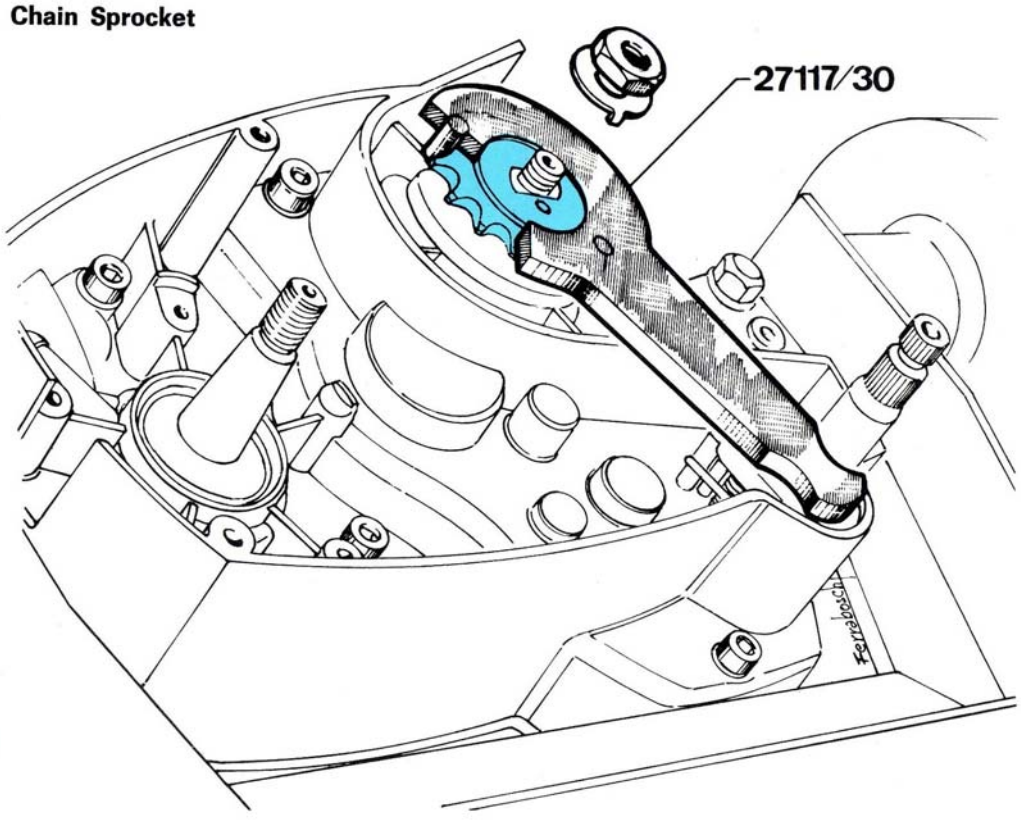


Fig. 18

Procédé
Procedure

— Aplatir la rondelle d'arrêt.

— Bloquer le pignon par moyen du crampon 27117/30.

— Désserrer l'écrou et extraire le pignon.

— Flatten tab washer.

— Clamp sprocket with tool 27117/30.

— Loosen nut, and remove sprocket.

Groupe embrayage
Clutch Unit

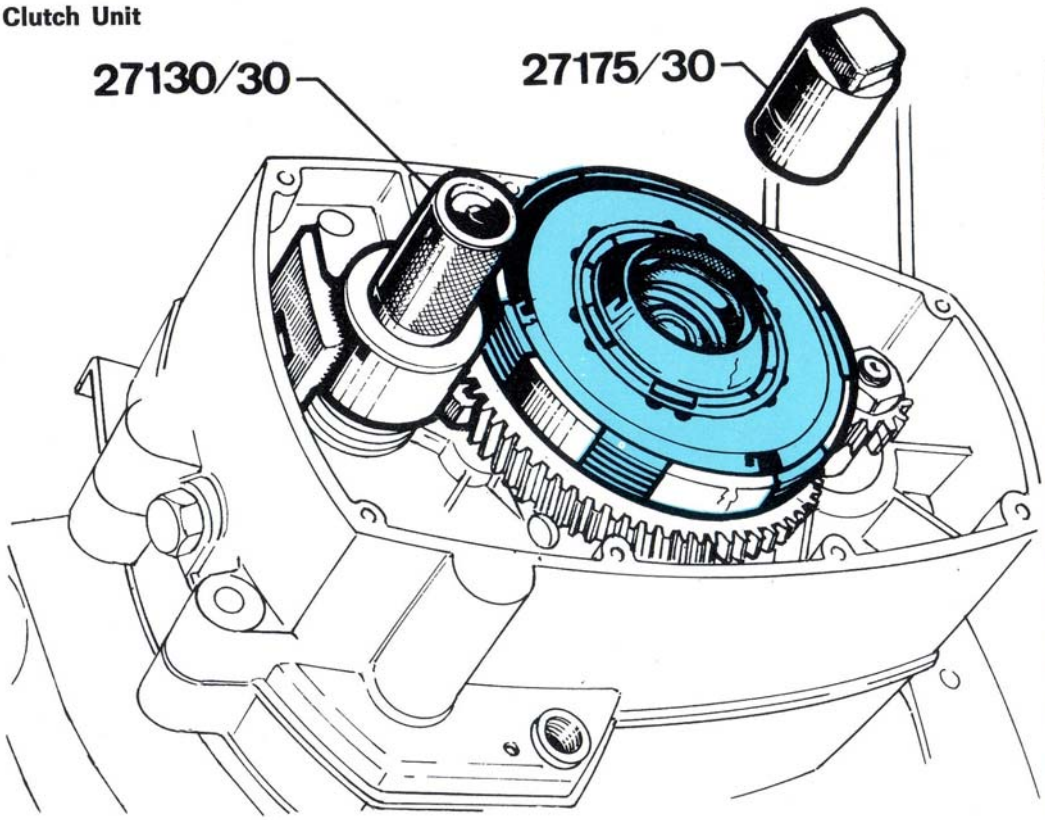


Fig. 19

Procédé
Procedure

— Bloquer le groupe avec l'outil 27130/30. (°)

— Enlever l'écrou de fixation et opérer avec l'extracteur 27175/30.

(°) Comme alternative on peut faire usage de l'outil Piaggio T.0031729.

— Lock unit using tool 27130/30. (°)

— Remove clutch retaining nut, and use extractor 27175/30.

(°) One can use alternatively tool Piaggio T.0031729.

Ouverture Carter du moteur
Crankcase Separation

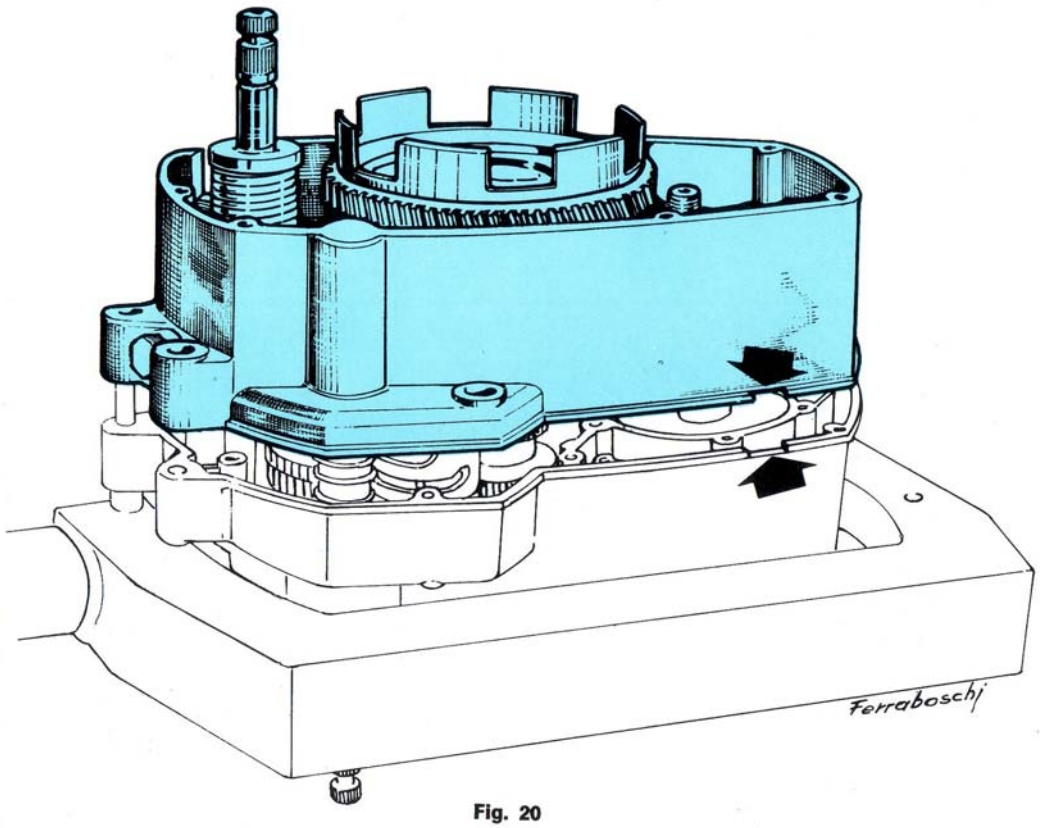


Fig. 20

Procédé
Procedure

— Dévisser les boulons du demi-carter gauche.

— Tourner le support du moteur à la position horizontale.

— Faire sortir le demi-carter droit au moyen du tourne-vis à insérer dans la entaille faite expressément sous le carter, en laissant tous les organes intérieurs dans le demi-carter gauche.

N.B. - Lors de l'ouverture des demi-carters prendre bien garde de la position, des dimensions et de la quantité des rondelles d'entretoises et d'épaulement, qui doivent être placées avec soin à leur place au remontage.

— Remove bolts from left half crankcase.

— Rotate engine stand to horizontal position.

— Withdraw right half crankcase, using a screwdriver as a wedge inserted into slot underneath crankcase, leaving all inner components on left half crankcase.

N.B. - When separating the half crankcase, note the position, the size and the number of the clearance shims which must be carefully replaced when reassembling.

Vilebrequin du carter
Crankshaft from Crankcase

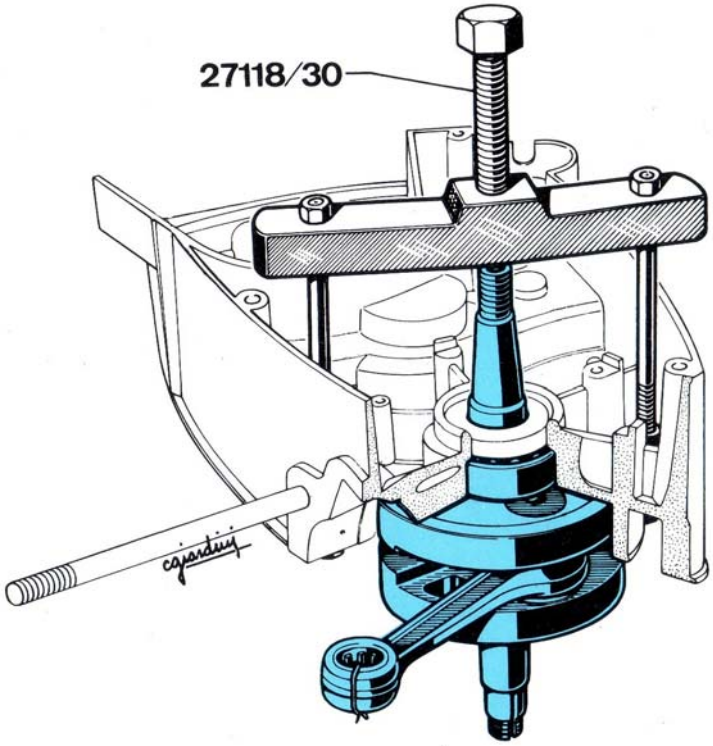


Fig. 21

Procédé Procedure
— Appliquer l'outil 27118/30 sur le carter gauche. — Visser le boulon central jusqu'à faire sortir complètement le vilebrequin de son siège. — Mount tool 27118/30 on left crankcase. — Screw central bolt until crankshaft is completely pressed out of housing.

Roulement arbre principal sur le carter droit
Main shaft bearing on right Crankcase

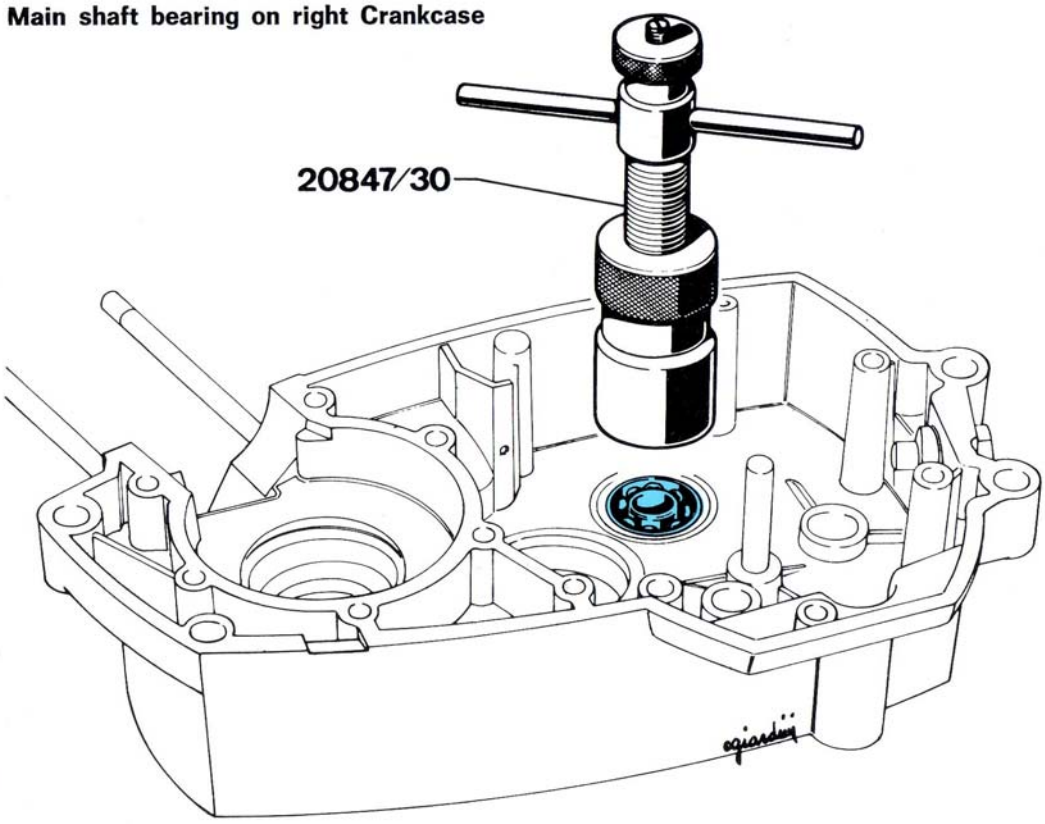


Fig. 22

Procédé Procedure
— Aplatir le fond du déflecteur d'huile. — Enlever le roulement avec l'extracteur 20847/30. N.B. - En remontant le roulement dans son siège, se rappeler de mettre un fond neuf au déflecteur d'huile. — Flatten oil retainer with a punch. — Remove bearing using extractor 20847/30. N.B. - When reassembling bearing on seat, remember to mount new oil retainer.

Roulement sur le vilebrequin du côté pignon
Bearing on crankshaft, pinion side

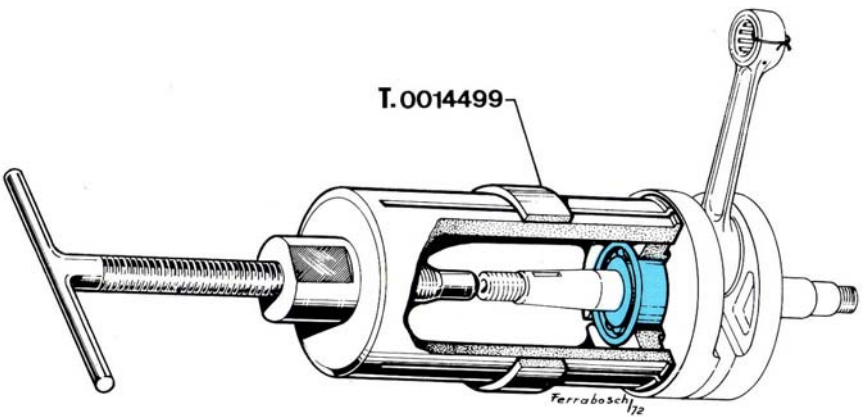


Fig. 23

Procédé Procedure
— Enlever le roulement en employant l'extracteur T.0014499 et la réduction T.0014499/8. — Remove bearing using extractor T.0014499 and collets T.0014499/8.

SECTION 6 - Assembly clearances and overhaul

ASSEMBLY CLEARANCES

A) Cylinders and pistons

1) The pistons and cylinders supplied by our company as spare parts are marked with letters. Where both piston and cylinder is replaced one must match parts marked with the same letter (see chart).

2) When fitting the piston in the cylinder, ensure that the arrow punched on the piston crown is fitted towards cylinder exhaust port.

Cylindre « A » **Cylinder « A »**		**Piston « B »**	
Classe Class	Ø mm	Classe Class	Ø mm
A	38,395 ÷ 38,400	A	38,370
B	38,400 ÷ 38,405	B	38,375
C	38,405 ÷ 38,410	C	38,380
D	38,410 ÷ 38,415	D	38,385
E	38,415 ÷ 38,420	E	38,390
F	38,420 ÷ 38,425	F	38,395
G	38,425 ÷ 38,430	G	38,400
H	38,430 ÷ 38,435	H	38,405

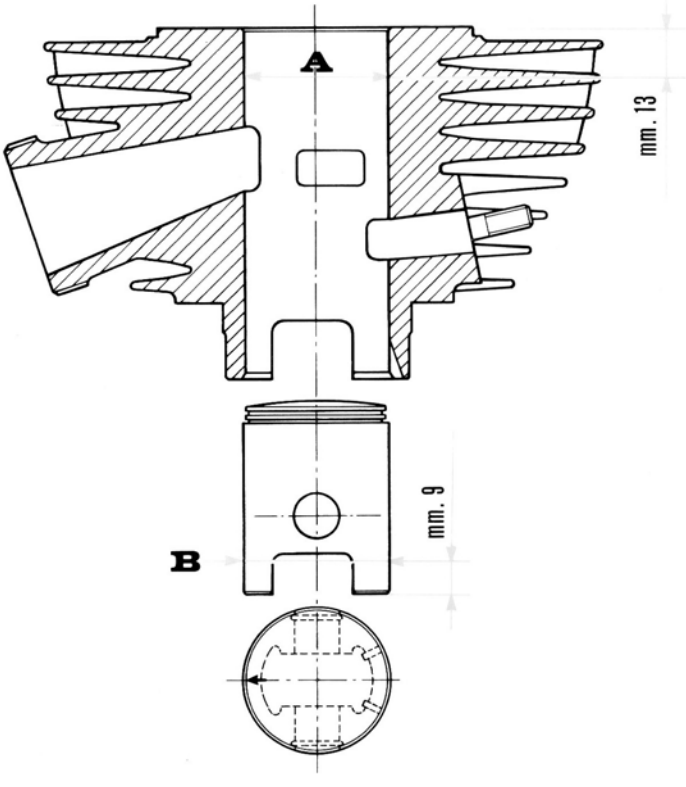


Fig. 24

Jeu de montage 0,025 mm ÷ 0,030 mm.
Jeu max. admis à la limite d'usure 0,070 mm.

Clearance at fitting 0.025 - 0.030 mm.
Max. clearance accetable after use 0.070 mm.

B) Connecting rod small end - Gudgeon pin - Roller cage

Connecting rods and cages are divided into 4 categories (marked by a cut near connecting rod small end and roller cage.

Connect:

Fit a 1st Cat. connecting rod with a 4th cat. cage
Fit a 2nd Cat. connecting rod with a 3rd cat. cage
Fit a 3rd Cat. connecting rod with a 2nd cat. cage
Fit a 4th cat. connecting rod with a 1st cat. cage

N.B. - In case of noise, use cages of next lower category.

N.B. - Maximum side play of connecting rod after use (longitudinal sliding on the crank pin) 0,7 mm.

C) Piston Rings

DENOMINATION NAME	∅ mm	Jeu « A » « A » Clearance	
		au montage at assembly	admis à la limite d'usure acceptable after use
Ségment élast. (sup. et infér.) Piston ring (upper a. lower)	38,4	0,1 ÷ 0,25	1,6

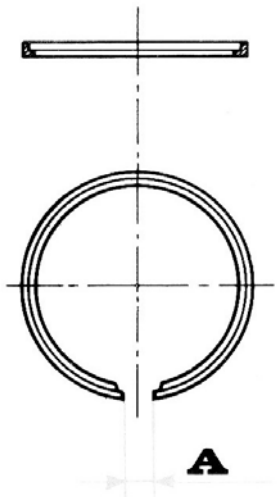


Fig. 25

D) Coussinets oscillation fourche AR (arrière)

D) Rear fork pivot bronze bearings

Diamètre intérieur coussinet Bronze bearing inside diameter Ø A	14,790 ÷ 14,808
Diamètre extérieur entretoise Spacer outside diameter Ø B	14,722 ÷ 14,740
Jeu de montage Maximum fitting clearance C	0,076
Jeu max. admis après usage Max. clearance accepted after use C	0,15

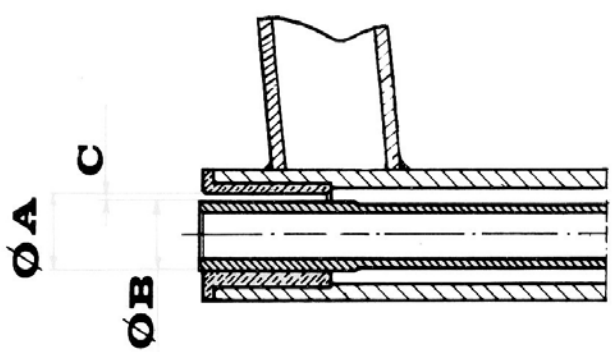


Fig. 26

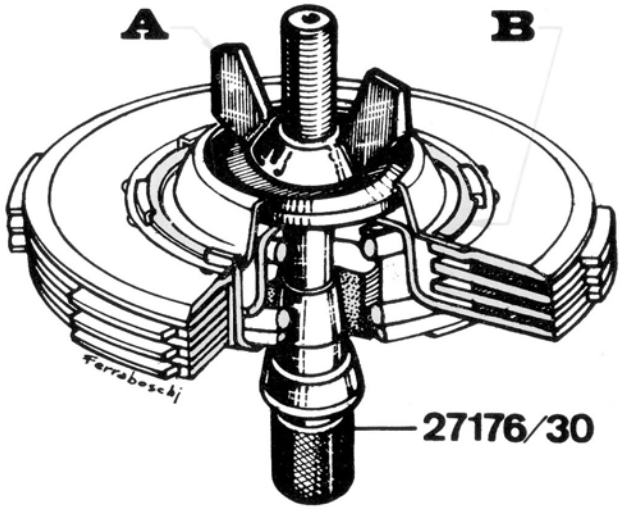


Fig. 27

ENGINE OVERHAUL

Kickstart

Check that gears are not excessively worn, and engage well with start gear.

Gears selector

Il foot pedal gearchange has any travel without feeling the spring resistance, replace spring.

Clutch

Check wear on plate linings, of inserts on plates, and of the helical gear teeth. Replace if worn.

N.B. - Be sure that split ring is properly located in it's seat on clutch inner bell.

Clutch plates replacement

— To dismantle the clutch unit, it is necessary to proceed as follows, using tool 27176/30 shown on fig. 27.
— When tool is fitted to clutch, tighten wing nut « A » thus compressing the springs until it is possible to remove « B » split ring which holds the plates.
The tool may be used in a like manner for reassembly.

Gears

Check there are no gears with broken teeth, cracked or excessively worn. If necessary, replace parts.

Ball Bearings

Any wear on the ball bearings is indicated by noise. Note any excessive play between the inner and the outer track (compare with a new bearing).

N.B. - Never clean bearings with air jet.

Rear Transmission

Check wear on teeth of sprocket and crown-gear. It is necessary to replace the parts whenever wear is excessive. It is advisable to replace crown-gear, sprocket and chain at the same time. If chain adjuster reaches max. adjustment, remove one link from the chain and adjust again.

4) **FLOAT CHAMBER:** it is absolutely necessary that this part of the carburettor functions correctly for a good carburation. To obtain this, check that weight of float is not excessive with possible infiltration of petrol (exact weight is embossed on float top) and that the needle valve is not excessively worn, thus preventing a good seal. If necessary replace float and/or needle valve.

5) **PETROL FILTER:** it is advisable to check and clean frequently.

6) **AIR FILTER:** observe instructions on page 1 - 11 for cleaning and maintenance of the filter unit.

N.B. - When frequently driving across dusty country clean or replace more frequently.

CARBURETTOR

Dismantle the carburettor completely, wash carefully with petrol, and clean all drillings and ducts with a jet of air. Make sure all ducts are perfectly clean. Carefully check each part, and particularly the following:

1) **THROTTLE VALVE:** ensure it slides freely in the mixing chamber, and in case of excessive play due to wear, replace it with a new one. If mixing chamber shows signs of wear, which would prevent a good seal or a free travel of the valve (even though new) replace carburettor.

2) **NEEDLE VALVE:** ascertain whether needle valve is worn on the tapered section. If necessary replace with one of the same type.

3) **JETS:** never modify the jets to change the calibration and never clean them with wire. If there is any doubt regarding their original calibration, or any evidence of damage, replace them with the correct type (see chart on page 6 - 8).

FRAME OVERHAUL

Rear forks

No particular maintenance. If excessive wear of the bronze bearings is noticed, with consequent decrease of stability of the vehicle, replace the bronze bearings (see chart page 6 - 4).

Wheel Alignment

Mount the wheel on a suitable stand. Tighten loose nipples with a spoke key, until the wheel is centered axially as well as radially, using the stand as a gauge. Some practice is required to undertake this operation. This operation may also be performed with wheel mounted on motorcycle. Deflate the tyre when adjusting the wheel.

CARBURATEURS - Caractéristiques
CARBURETTORS - Features

Caractéristiques des carburateurs Carburettor features	50 Touring 50 Trial	50 Touring RS 50 Trial RS
Type Dell'Orto (voir Fig. 28 - 29) Dell'Orto type (see Fig. 28 - 29)	SHA 14/9	SHB 18/18 B
Gicleur maxi Main Jet	50/100 (*) 55/100	90/100
Gicleur min. Pilot Jet	—	50/100
Soupape gaz Throttle valve	6108.2	7939.3
Flotteur Float	6122.1	6122.1
Gicleur starter Starter Jet	—	50/100
Soupape air Air valve	50/100	—

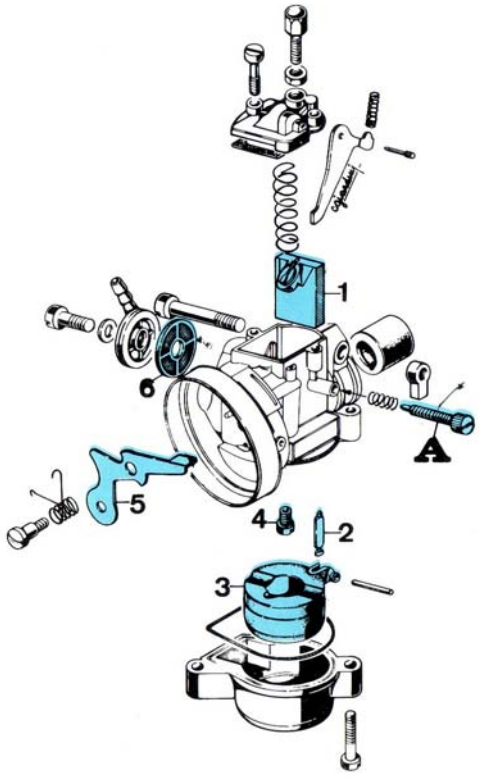
(*) Avec filtre à air fixé au carburateur.

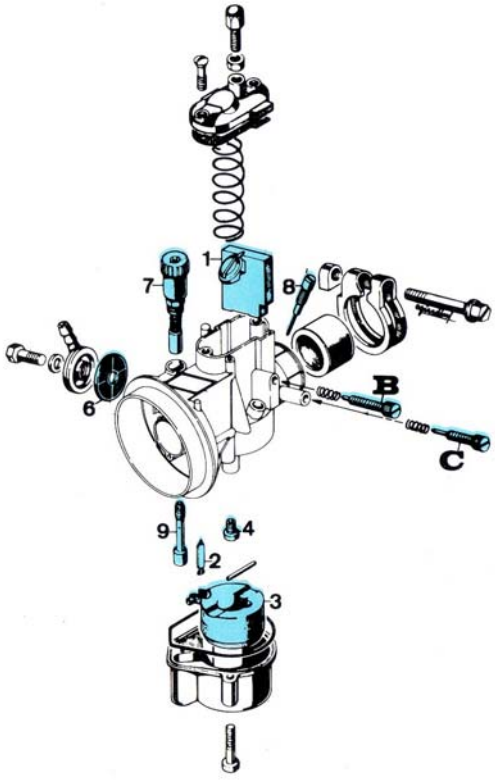
(*) With air filter close to the carburettor.

Notes

— Idling adjustment must be carried out when **ENGINE IS WARM.**
— For motorcycles 50 Touring and Trial, tighten or loosen screw (« A ») of fig. 28..
— For motorcycles RS Touring and Trial, tighten or loosen screws « B » and « C » of fig. 29, which respectively regulates the position of the valve and the air flow through the pilot jet.

SCHEMA CARBURATEURS
CARBURETTOR DIAGRAMS





1. Soupape des gaz - 2. Pointeau - 3. Flotteur - 4. Gicleur maxi - 5. Soupape air - 6. Filtre de l'essence - 7. Dispositif de démarrage - 8. Gicleur min. - 9. Gicleur starter

1. Throttle valve - 2. Needle valve - 3. Float - 4. Main Jet - 5. Air Valve - 6. Petrol filter - 7. Starting attachment - 8. Pilot Jet - 9. Starter Jet

Fig. 28 - Carburateur type SHA 14/9
Fig. 28 - Carburettor model SHA 14/9

Fig. 29 - Carburateur type SHB 18/18 B
Fig. 29 - Carburettor model SHB 18/18 B

ELECTRICAL EQUIPMENT CHECK

Flywheel Magneto

Whenever the coils are replaced, press them towards the inside of the stator while tightening the relative screws. Then check that gap (space between coil ends and pole shoe) is 0.40 (± 0.05 mm).

Contact Breaker Check

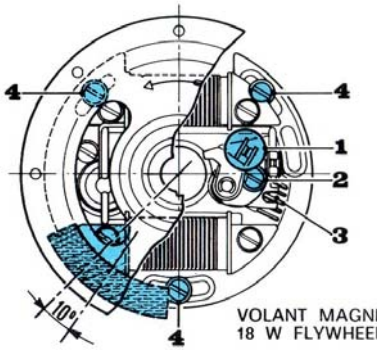
For proper functioning of the flywheel magneto it is necessary that clearance between contacts « 1 » (see fig. 30) is set at 0.40 (± 0.05 mm). To check use a feeler gauge through the slots on the rotor after rotating same to T.D.C. position (« 0 » marking on rotor corresponding to reference mark « A » on crankcase, (see fig. 31). To set the clearance, loosen clamping screw « 2 » (see fig. 30) of the breaker, move notch « 3 » with a screw-driver. Then tighten screw again. Clean contacts with fine abrasive cloth and petrol.

Ignition check

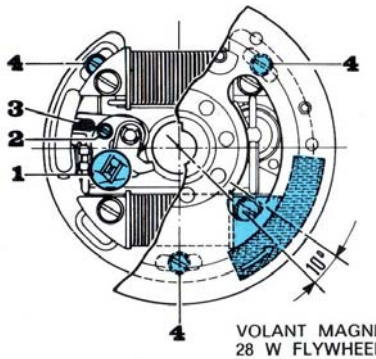
Set the contact breaker gap to 0.40 mm (± 0.05 mm). Point separation must occur 10° (± 2°) after a magnetic split (which occurs exactly when the centre line of a pole shoe is aligned with that of a coil (see fig. 30). For further check of the 28 W flywheels, if a test bench available, measure spark intensity with a test box shunted to the ends of a third point spark gap.
The intensity must be over 2 micro-siemens between 500 r.p.m. and 6000 r.p.m. with lights on or off. If intensity is lower than above, replace the high-tension coil and recheck.

Light check

Make sure that the bulbs used are of correct voltage, and check voltage at the terminals of one of the filaments of the main two light bulb (6 V - 25/25 W), possibly with a thermocouple voltmeter.



VOLANT MAGNETIQUE 18 W
18 W FLYWHEEL MAGNETO



VOLANT MAGNETIQUE 28 W
28 W FLYWHEEL MAGNETO

Fig. 30

Ignition Timing Check

To check ignition timing with T.0027533 tool (cf fig. 31) proceed as follows:

a) Connect timing attachment plug into a mains supply.

b) Connect red lead of the attachment to the wire connecting rotor and high-tension coil (below tank) and green wire to a fin of the cylinder (earth).

c) Rotate rotor to T.D.C. mark (mark « 0 » on rotor, corresponding to reference mark « A » on crankcase).

d) Check gap of contact breakers, which must be 0.40 mm (± 0.05 mm).

e) Rotate rotor anti-clockwise until mark « B » on rotor corresponds exactly with reference mark « A » on crankcase. If attachment lights up, the phase is correct.

f) If lamp should light after mark « B » on rotor has gone past reference mark « A » on crankcase (going anti-clockwise) spark is **retarded.** In this case, proceed as follows:

1 - Remove rotor (see fig. on page 5-6) and loosen screws « 4 » (see fig. 30) clamping the baseplate to the crankcase.

2 - Rotate the bracket clockwise by approximately half the distance between mark « B » on rotor and reference mark « A » on crankcase.

3 - Thoroughly tighten the three screws clamping the baseplate, fit the rotor, and repeat operations.

g) In case of **advancved** spark, proceed in reverse as indicated under points 1-2-3.

Warning horn

Normally requires no maintenance. If horn does not work, the trouble may be due to:

— faulty horn

— connections between horn and hornbutton are broken

— the hornbutton is defective.

In such cases, repair or replace defective parts.

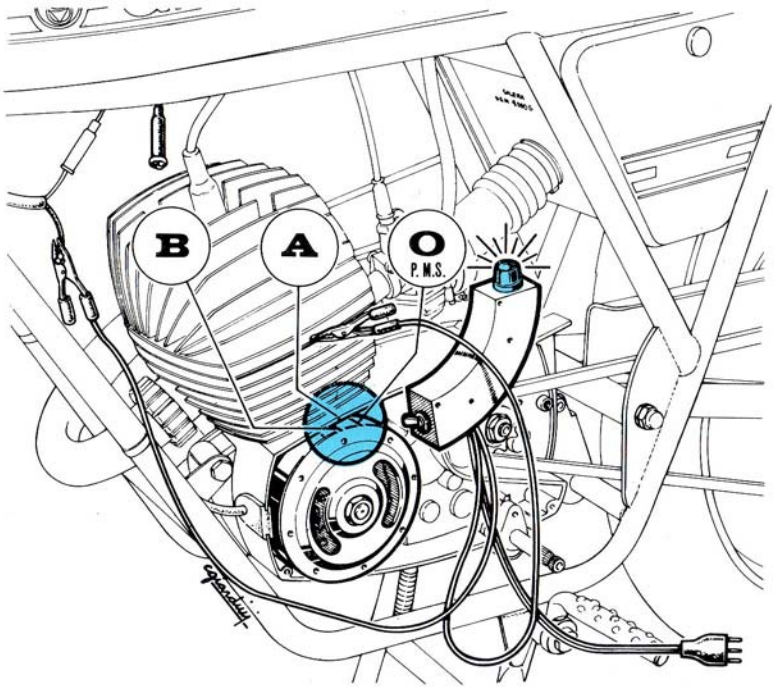


Fig. 31

Consumption on the road

To carry out a correct test, it is advisable to use an auxiliary tank which can be used separately from the main fuel supply:

a) Carry out the test with only the rider on the motorcycle. The rider should not be less than 1.60 m tall. He must sit up right, and use top gear.
b) Make a 30 km run, approximately (of which 15 km one way and 15 km back) on a level road, like a clearway, dry.
c) Maximum wind intensity accepted: 2 meter p.sec., outside temperature 5° ÷ 25° C.
d) Pressure of tyres:

— 50 Touring
front: 1.75 kg/cm² (25 lb./sq.ins.)
rear: 2.25 kg/cm² (32 lb./sq.ins.)

— 50 Trial
front: 1.50 kg/cm² (21,5 lb./sq.ins.)
rear: 2.00 kg/cm² (28,5 lb./sq.ins.)

— 50 Touring RS
front: 1.50 kg/cm² (21,5 lb./sq.ins.)
rear: 2.00 kg/cm² (28,5 lb./sq.ins.)

— 50 Trial RS
front: 1.50 kg/cm² (21,5 lb./sq.ins.)
rear: 2.00 kg/cm² (28,5 lb./sq.ins.)

N.B. - The fuel consumption acceptable for each type of motorcycle, after running-in and under good general conditions of efficiency, indicated in the following chart.

Véhicule Motorcycle	50 Touring 50 Trial	50 Touring RS	50 Trial RS
Consommation Consumption	30 ÷ 38 km/lt	35 ÷ 42 km/lt	30 ÷ 48 km/lt
Vitesse pendant l'essai Test speed	26 km/h	52 km/h	45 km/h

N.B. - The fuel consumption of overhauled motorcycles will be in relation to their general condition and that of their engines. The consumption figures for motorcycles which have been in use for some time will be in proportion to the mileage run and the manner in which they have been maintained.

SECTION 7 - Reassembly

Foreword to reassembly

In this section we have described the principal reassembling operations for which specific tooling or particular skill is necessary. We have not described operations, which can be easily achieved with standard screw-drivers, spanners, pliers a.s.o. In the same manner, the operations described in the section « Dismantling » are not repeated. For these, just reverse the process. Torque readings see page 7 - 4.
When reassembling carefully check and clean every single part, in particular, pay special attention to the following.

— **THE HALF CRANKCASES** must not be cracked or warped. The bearing seats must not be worn or scored.

— **BALL BEARINGS.** Check they are in good condition, and that no excessive axial or radial play exists. It is good practice to check the smoothness by spinning them manually. Replace them if they show traces of roughness after cleaning (washing in petrol). When reassembling lubricate the bearings with grease Agip F.1 Grease 30 - Esso Beacon 3 - Shell Retinax A - Mobilgrease MP - Total Multis - Esso Univis J 43 - B.P. Energrease L.2 - Castrolease L.M.

— **SHAFTS AND AXLES.** Sliding and rolling surfaces must present no indentation or roughness which will effect smooth operation, and they must be adequately lubricated.

— Always use new **SEALS AND SPLIT PINS.**

N.B. - For the tightening of the screws and nuts, it is advisable to use a torque wrench.

Bolts and nuts: Torque readings in kg/m

PART NAME	TORQUE IN kg/m
Engine unit	
Coil bracket clamping screw	0.3 — 0.5
Bolt for kickstart lever	0.5 — 0.7
Clutch unit retaining nut	4 — 4.5
Flywheel magneto retaining nut	4 — 4.5
Timing gear nut	5 — 5.5
Inlet coupling clamping nut	0.5 — 0.7
Cover retaining bolt, clutch side	0.4 — 0.6
Cylinder head retaining nut	2 — 2.5
Chain sprocket retaining nut	4 — 4.5
Suspension unit	
Shock absorber retaining nut	2 — 3
Upper steering race threaded ring	5 — 6
Front and rear wheel axle retaining nut	4.5 — 5

REMONTAGE
REASSEMBLY

Echauffement demi-carter
Crankcase Half Heating

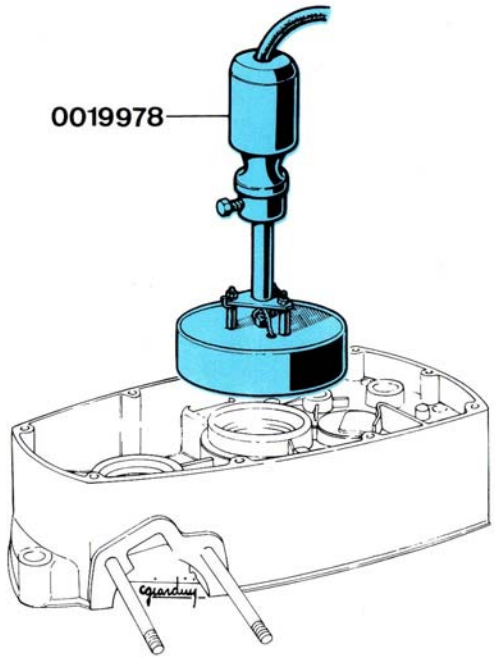


Fig. 32

Procédé Procedure
— Pour le montage correct des anneaux d'étanchéité et des roulements il faut échauffer convenablement les sièges correspondants en employant le rechaud N. 0019978.
— To assemble correctly the bearings into the crankcase seatings it is necessary to adequately heat up the relative seats using the heater N. 0019978.

REMONTAGE
REASSEMBLY

Contrôle de l'alignement du vilebrequin
Crankshaft alignment check

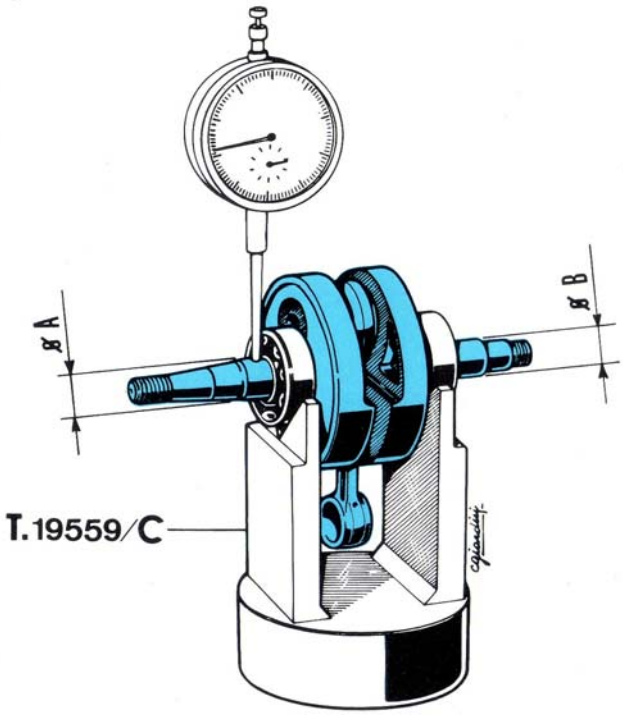


Fig. 33

Procédé Procedure
— Avec l'appareillage spécial il faut contrôler les excentricités des surfaces Ø « A » et « B » ne soient pas supérieures à 0,02 mm, c.à.d. la limite maxi de lecture sur le comparateur. Si les excentricités ne surpassent que de peu celles de rigueur, il faut corriger l'arbre en agissant avec une clavette entre les masses d'équilibrage ou bien en le serrant dans un étau (équipé de bagues en aluminium) selon la nécessité.
— Using the relevant fixture check that the degree of eccentricity on the surfaces of the outer diameters « A » and « B » are within 0.02 mm, which is the maximum limit. Slight mal-alignment can be corrected by actuating the crank webs with a wedge or by tightening them in a vice (using aluminium jaws) accordingly.

REMONTAGE
REASSEMBLY

Remontage du vilebrequin
Crankshaft in crankcase

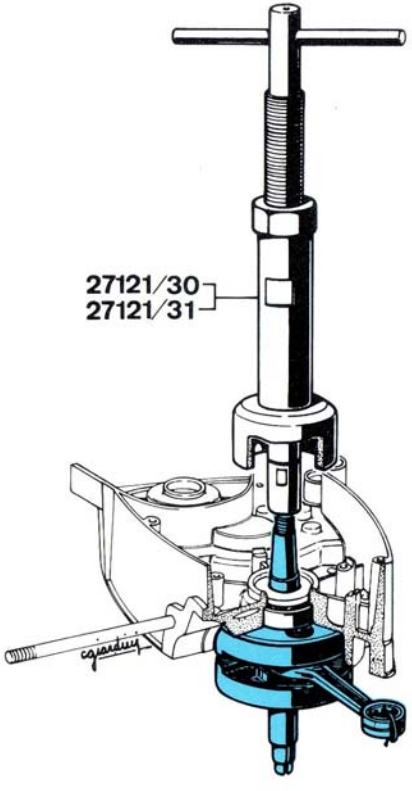


Fig. 34

Procédé Procedure
— Remonter au moyen de l'outil 27121/30 et du particulier 27121/31 le vilebrequin du côté du volant dans le demi-carter gauche.
— Assemble the crankshaft, flywheel side, in the left half crankcase by means of tool 27121/30 complete with part 27121/31.

REMONTAGE
REASSEMBLY

Groupe changement de vitesse (1ère phase)
Gearbox unit (1st phase)

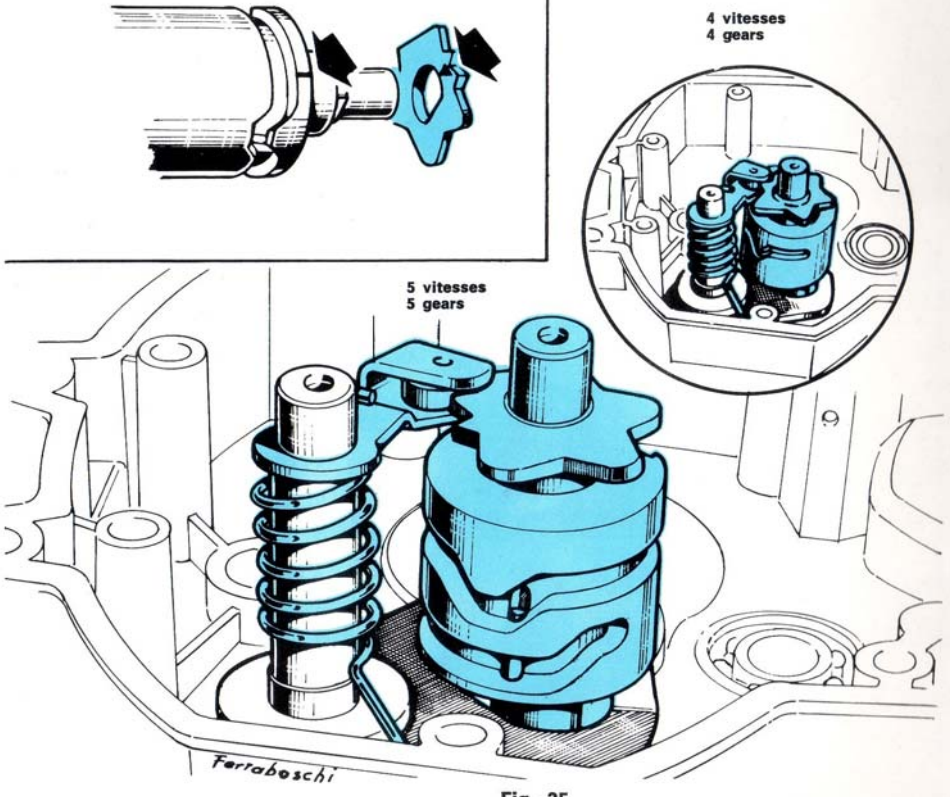


Fig. 35

Procédé Procedure
— Monter sur l'arbre sélecteur le ressort et le petit levier. — Charger le ressort et insérer le tambour désmodromique. Le levier, dans la position de la 1ère vitesse, doit s'appuyer sur le disque denté. N.B. - Quand on remonte le disque denté sur le tambour désmodromique, il faut faire attention à ce que les entailles se correspondent.
— Fit spring and sector on selector shaft. — Load the spring and insert the selector drum. The lever must rest in first gear position on the cam plate. N.B. - When reassembling the cam plate on the selector drum, ensure that appropriate notches correspond.

REMONTAGE
REASSEMBLY

Groupe changement de vitesse (2ème phase)
Gearbox unit (2nd phase)

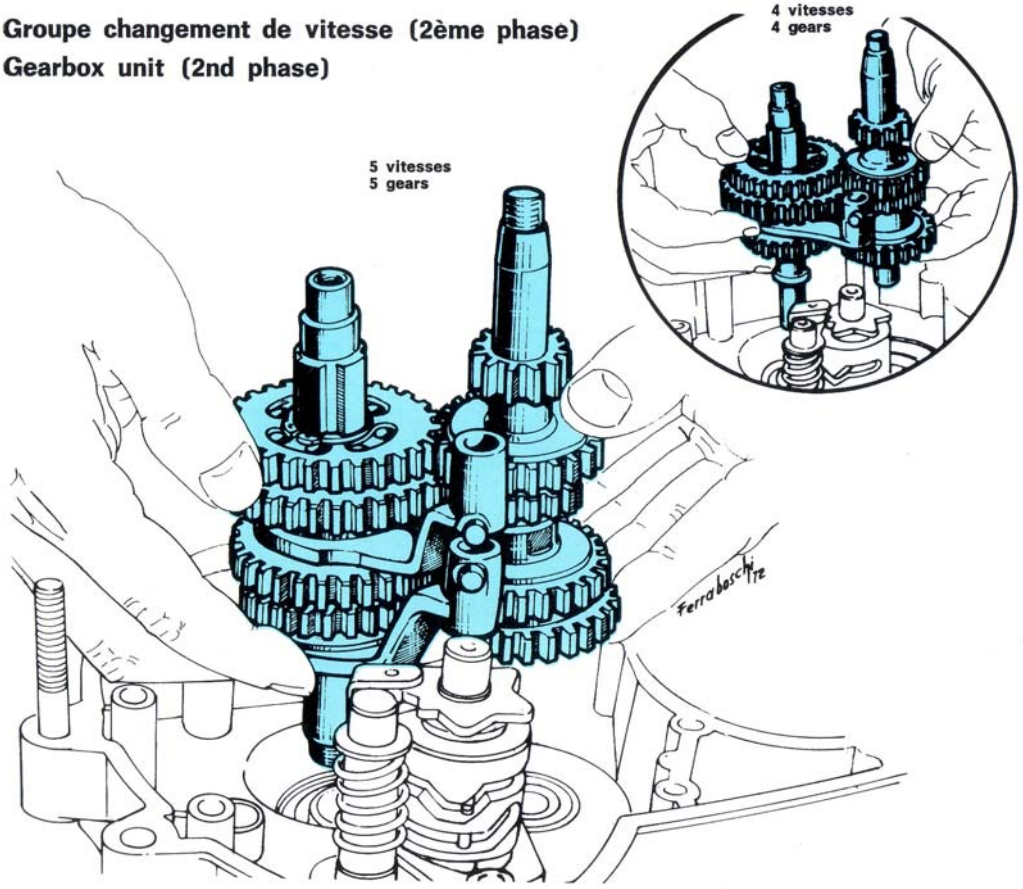


Fig. 36

Procédé Procedure
— Insérer le groupe entier des vitesses avec les fourchettes de la 2ème, 4ème et 5ème vitesse. — Insérer les points relatives des fourches dans les cavités du tambour désmodromique. — Insérer le pivot de guide dans les fourches.
— Assemble the gearbox unit complete with 2nd/4th and 5th gear selector forks. — Insert the relevant pins of the forks into the slots of the selector drum. — Insert the guide shaft into the forks.

REMONTAGE
REASSEMBLY

Groupe changement de vitesse (3ème phase)
Gearbox unit (3rd phase)

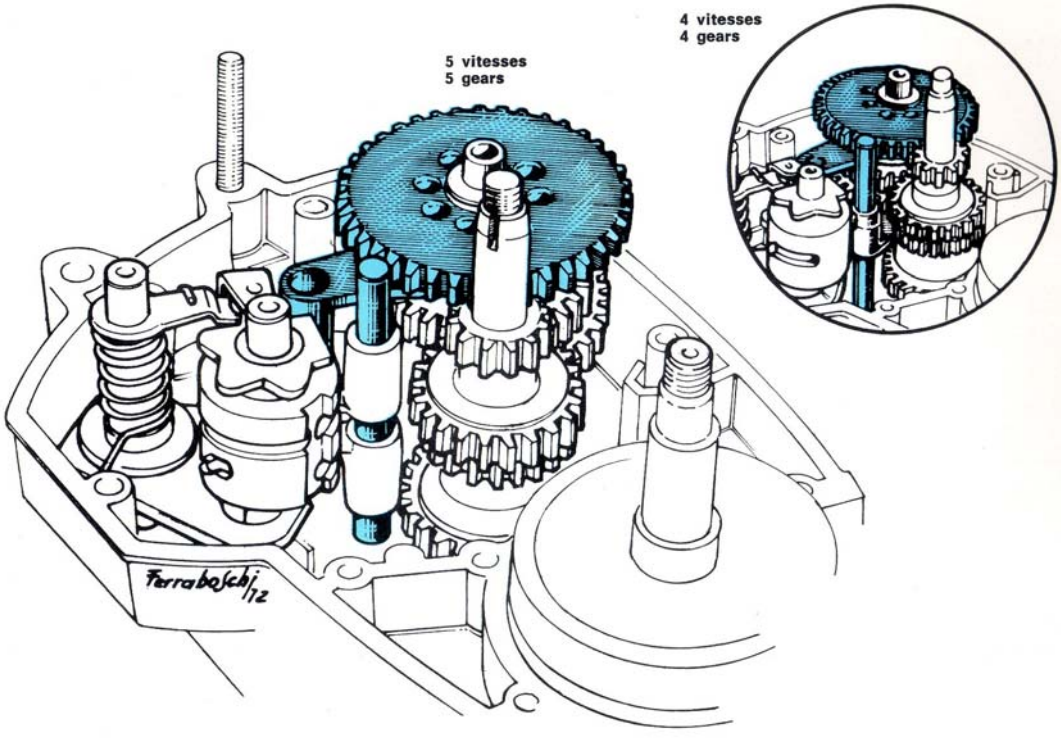


Fig. 37

Procédé
Procedure

— Monter le glisseur et la fourchette 1ère/3ème vitesse.

— Insérer l'engrenage 1ère vitesse avec le coussinet correspondant.

— Remonter sur les arbres les rondelles.

N.B. - Pour remonter le changement de vitesse à 4 vitesses, le procédé est le même. Il faut considérer cependant que les pièces suivantes manqueront:
engrenage glissant et fourchette 5ème vitesse.

— Assemble sliding gear and 1st/3rd gear fork.

— Insert 1st gear with relative bronze bearing.

— Reassemble the shims on the shafts.

N.B. - As regards the reassembly of the 4 speed gearbox, the procedure remains unchanged. Remember that the following parts will be missing:
sliding gear and 5th gear fork.

REMONTAGE
REASSEMBLY

Démarrage
Kick Start

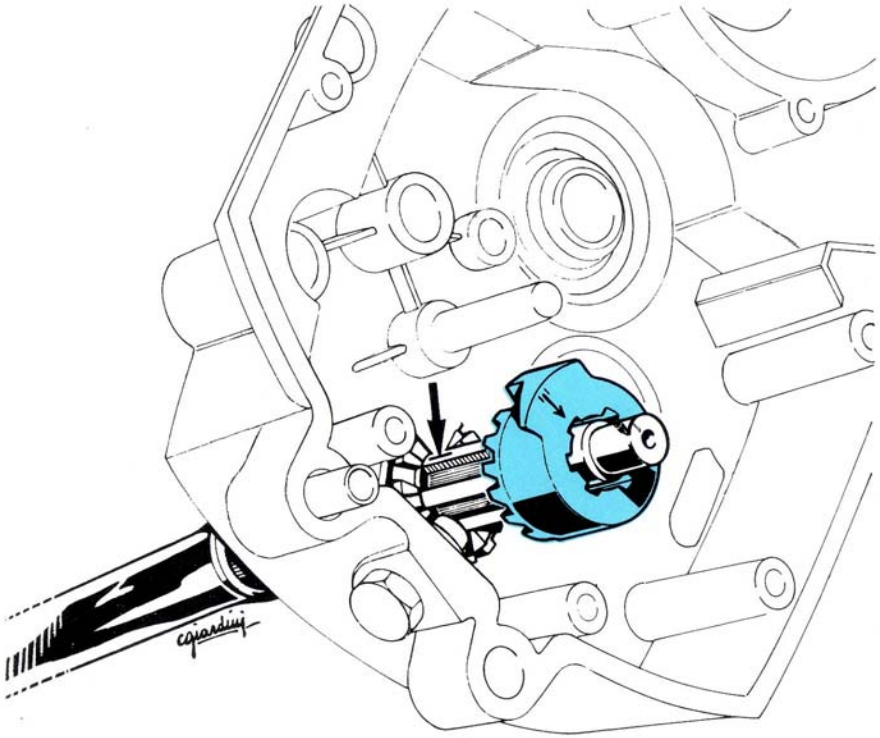


Fig. 38

Procédé Procedure
— Monter l'arbre de mise en route avec le ressort de rappel de la pédale sur le carter droit, côté embrayage. — Pour charger le ressort aligner la trace sur le rochet de démarrage avec la trace sur la partie cannelée de l'arbre de démarrage. N.B. - En fermant les carters il faut faire attention de tourner l'arbre de mise en route afin de permettre à son engrenage de s'accoupler avec l'engrenage de la 1ère vitesse sur l'arbre secondaire.
— Fit the kickstart spindle with the return spring, on right crankcase, clutch side. — To load the spring, carefully align the mark on insert with the mark on the groove of the spindle. N.B. - When assembling the crankcase halves remember to rotate the kickstart spindle in order to allow its gearing to engage with 1st gear on the lay-shaft.

REMONTAGE
REASSEMBLY

Cylindre et piston
Cylinder and piston

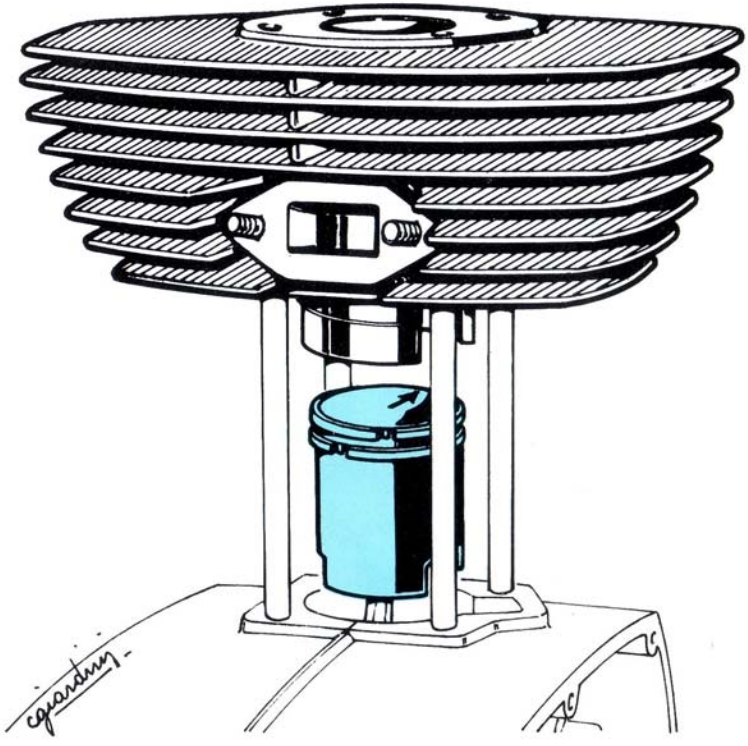


Fig. 39

Procédé Procedure
— En remontant le piston faire attention que la flèche sur le piston soit dirigée vers l'avant. — S'assurer que les ségments de piston soient bien placés dans leur position exacte d'arrêt dans leur siège. — Monter le cylindre et la culasse en serrant les écrous de fixation avec une clé dynamométrique, uniformément, à 2 ÷ 2,5 kg/m par écrou (8 x 1 mm).
— When reassembling the piston, remember that the arrow on the piston crown must point forwards. — Ascertain that the piston rings are properly located in their grooves. — Assemble cylinder and head by tightening the clamping nuts with a torque wrench in an even manner, at 2 - 2.5 kg/m for each nut (8 x 1 mm).

PREPARING MACHINE FOR THE ROAD

When engine overhauling, or overhauling of other parts of the motorcycle is complete, carry out the following checks before handing machine back to customer, after bench testing of flywheel magneto and engine :

1 — Check security of all nuts and bolts.
2 — Oil level in gearbox: check with dip stick.
3 — No fuel or oil leak.
4 — Check pressure of tyres (see chart page 1 - 3).
5 — Efficiency of electrical equipment.
6 — Carburation check.
7 — Brakes for efficiency.
8 — Clutch control adjustment.
9 — Steering without hands on handlebars.
10 — Steering lock. This attachment must not be greased.
11 — Motorcycle cleanliness. Use petrol for engine outer area. Use water for painted areas, and chamois for drying.

Note: Distributors and representatives should also carry out the above checks, on new motorcycles before handing them to the customer.

1st Edition

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