JIM STEED.

sport 125

sport 175

WORKSHOPMANUAL

CONTENTS

LIST OF ILUSTRATIONS

ENGINE – CHASSIS

I. TECHNICAL DATA

Motor cycle model	476	477	

A. ENGINE

	air cooled two-stroke		
Number of cylinders	1	1	
Bore – mm	52	58	
Stroke – mm	58	65	
Swept volume – c. c.	123.2	172	
Compression ratio	1 : 8.6	1 : 8.6	
Engine power output	11 ± 8 % at 5,750 RPM	15 ± 6 % at 5,600 RPM	
1. Carburettor, model JIKOV	2924 SBD	2926 SBD	
Choke tube diameter – mm	24	26	
Main jet – Solex	88	96	
Idling jet – Solex	50	50	
a) throttle needle adjustment notch from top – for running-in	III	III	
– after run-in	II	II	
b) fast-idling screw turns from complete closing – for running-in	1/2	1/2	
– after run-in	3/4 – 1 1/4	3/4 – 1 1/4	
2. Ignition	battery ignition		
a) spark plug	PAL Super 14–9–R		
head range value	240–270		
air gap – mm	0.7		
threaded pin – mm	M 14 × 1.25		
b) breaker point gap – mm	0.4		
c) advance – mm	3.2	2.9	
3. Transmission			
a) primary transmission by sleeve chain	3/8" × 3/8"		
number of links	54	54	
transmission ratio	40/21	40/21	
b) secondary transmission by roller chain	1/2" × 5/16"		
number of links	126	128	
c) multiplate friction clutch in oil bath			
number of metal plates	5		
number of cork plates	5		
clutch release	manual and semi-automatic		
d) gearbox			
number of speed gears	4		
neutral between the 1st and 2and, the 3rd and 4th gear			
gear ratios:			
1st gear	25/12 × 23/14 = 3.42		
2nd gear	19/17 × 23/14 = 1.84		
3rd gear	16/21 × 23/14 = 1.25		
4th gear	direct drive = 1		
e) overall transmission ratio:			
1st gear	1 : 24.25	1 : 21.17	
2nd gear	1 : 12.89	1 : 11.38	
3rd gear	1 : 8.9	1 : 7.75	
4th gear	1 : 7.09	1 : 6.19	
f) starting mechanism ratio	1 : 3.04		
g) speedometer ratio	16/5	14/5	

B. FUEL

Petrol	octane No. 90		

C. CHASSIS

1. Frame	tubular
2. Wheel dimensions	
a) wheel rim – front	1.60 × 18"
wheel rim – rear	1.85 × 18"
b) tyre – front	2.75 × 18"
tyre – rear	3.00 × 18"
c) tyre inflation pressure for one person	
front tyre	1.1 kp/sq. cm (i. e. 16 lb/sq. in)
rear tyre	1.6 kp/sq. cm (i. e. 23 lb/sq. in)
tyre inflation pressure for two persons	
front tyre	1.2 kp/sq. cm (i. e. 18 lb/sq. in)
rear tyre	2.1 kp/sq. cm (i. e. 30 lb/sq. in)
3. Brakes	shoe-type
Brake drum diameter	160 mm
Shoe lining width	35 mm
Front brake control	bowden cable
Rear brake control	tie rod
4. Suspension	
a) front fork	telescopic with oscillation damper
front fork stroke – mm	127
b) rear swinging fork	with 2 telescopic shock-absorbers
rear swinging fork stroke – mm	100

D. ELECTRIC EQUIPMENT

1. Dynamo	6 V
Nominal output	55–60 W
2. Storage battery	6 V
Capacity	4.5 Ah
Electrolyte density	1.28 (32 °Be)
Earthing	– pole
3. Headlamp	
Main bulb	6 V 35/35 W
Parking light bulb	6 V 1.5 W
Bulbs of warning lights and instrument illumination	6 V 1.5 W
4. Tail/stop light	
Bulb of tail-light	6 V 5 W
Bulb of stop-light	6 V 15 W
5. Fuse	15 A

E. LUBRICATION – OILS

1. Gearbox-clutch-primary transmission	
Oil brand	SAE 80
Gearbox filling capacity	1,000 c. c.
2. Front fork	
Oil brand	60 c. c. damper oil + 60 c. c. SAE 40–50
One arm filling capacity	120 c. c.
3. Rear suspension	
Oil brand	damper oil
Filling capacity of one telescopic shock-absorber	47 c. c.
4. Engine lubrication	
Oil tank filling capacity	1,250 c. c.
Oil brand	SAE 40–50 Castrol Grand Prix

F. OTHER DATA

1. Dry weight of motor cycle	112 kg (i. e. 247 lb)	
2. Permissible motor cycle loading	160 kg (i. e. 352 lb)	
3. Peak speed		
a) driver sitting upright	90 km/h (i. e. 56 mph)	100 km/h (i. e. 62 mph)
b) driver bent forward	100 km/h (i. e. 62 mph)	110 km/h (i. e. 68.5 mph)

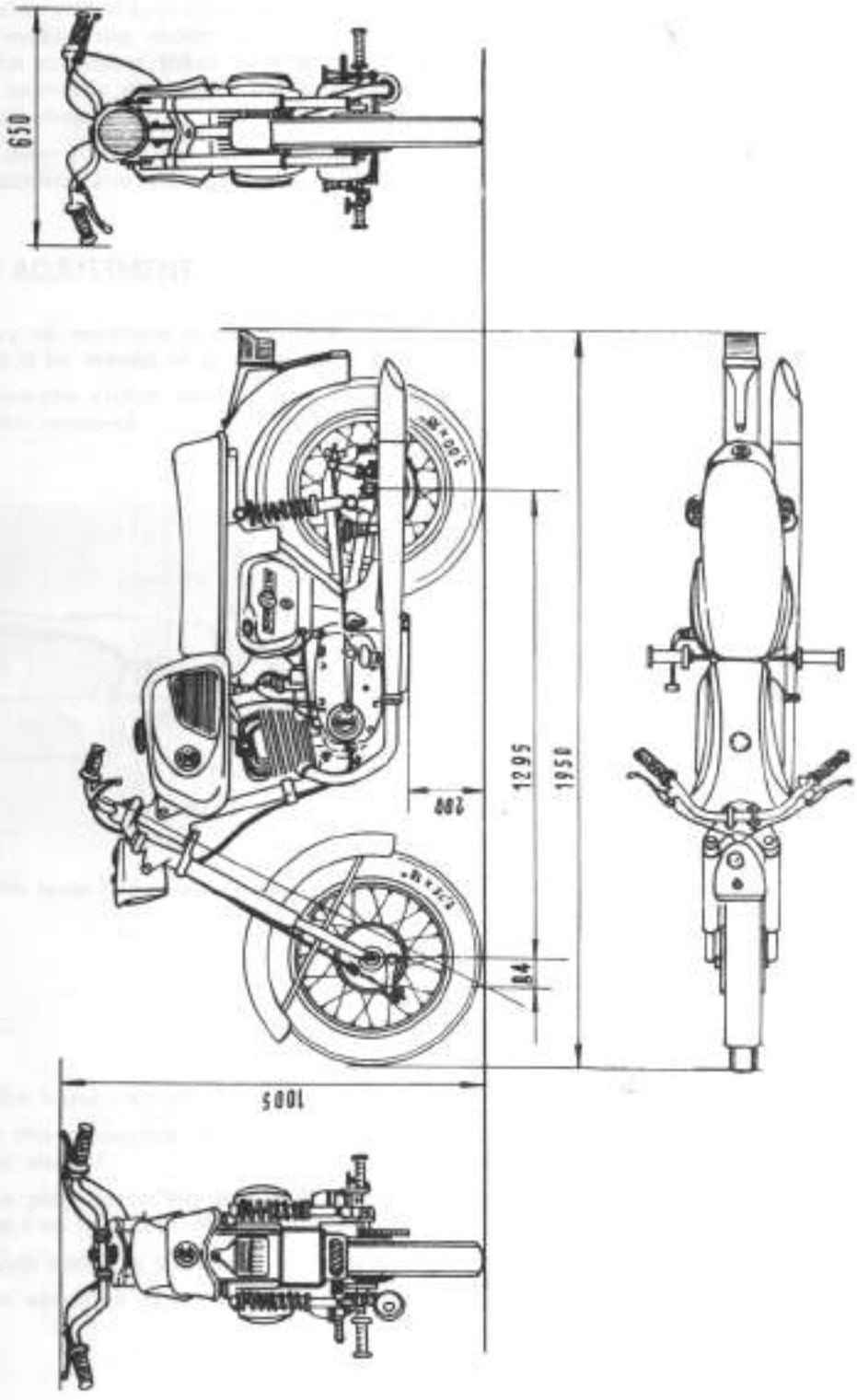


Fig. 2 – Dimensional drawing of motorcycle

II. ACCEPTANCE OF THE MOTORCYCLE

The motor cycles are dispatched from the factory in partially disassembled condition. The sales organization makes the motor cycle service-ready after its unpacking, assembly, and overall inspection. The customer takes over a complete and service-ready motor cycle. Defects which occur in the warranty period during the motor cycle operation are repaired by the respective warranty repair shop.

When taking over your motor cycle check the engine and frame Nos. for agreement with the papers. For starting the storage battery operation follow the manufacturer's instructions.

1. CLUTCH ADJUSTMENT

It is necessary to maintain a permanent minimum free play of the clutch lever of about 3 mm (0.12") Adjust it by means of a screw on the handlebar.

The semi-automatic clutch release is accessible for adjustment after the right-hand crankcase cover has been removed.

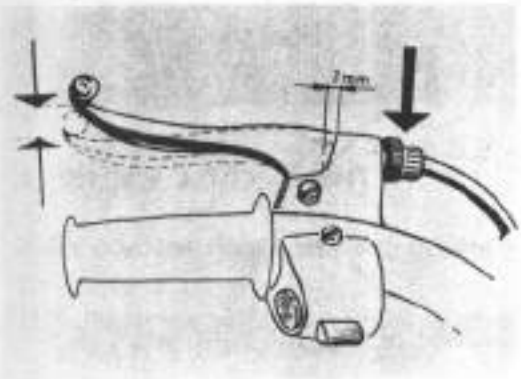


Fig. 3 – Clutch lever free play adjustment

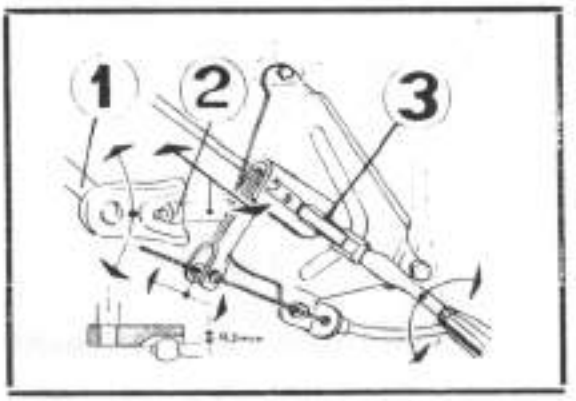


Fig. 4 – Semi-automatic clutch release adjustment

a) Release the hand control of the clutch by screwing in the adjusting screw on the handlebar;

b) Ascertain the clearance between the roller 2 of the semi-automatic release and the cam on the shifter shaft 1;

c) Adjust the play according to the illustration by tightening or loosening the screw 3. The roller should be free to rotate after adjustment;

d) If the clutch cable is stretched, shorten it on the semi-automatic release lever;

e) Adjust the specified play on the handlebars.

2. CHAIN

After having covered approximately 500 km (300 miles), check the chain sag on the motor cycle hitched on its stand. The correct chain sag should be 10–15 mm ($^1/_2$"–$^3/_4$"), if it is greater, tension the chain.

a) Loosen the shaft nut 22 (on the l. h. side) and the transmission gear nut 27 (on the r. h. side);

b) Loosen the front nuts of the tensioners 14 and tighten the rear nuts on each side uniformly while checking the chain sag;

c) Check the rear wheel track and retighten the front nuts of the tensioners together with the nuts 27 and 22;

d) Finally adjust the rear brake and the stop-light switch.

3. STOP-LIGHT SWITCH

If the stop light does not glow after the brake pedal has been depressed (assuming the fuse or the bulb are not blown), adjust the stop-light switch.

a) Loosen the fixing screw of the stop-light switch body with a small screwdriver;

b) Depress the brake pedal and turn the switch body 1 anticlockwise until the stop light starts glowing;

c) In this position of the switch body retighten its fixing screw.

The stop-light must go out as soon as the brake is released.

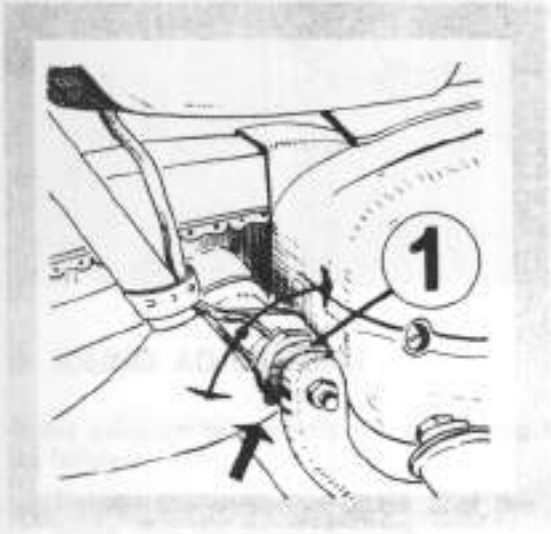


Fig. 5 – Adjustment of the stop-light switch

4. CARBURETTOR

On a new motor cycle, the carburettor is set for running-in. For a run-in motor cycle the carburettor should be set according to the Table.

Motor cycle model	Carburettor model	Needle position after run-in	Loosening of fast-idling screw after run-in
476	2924 SBD	II	3/4 – 1 1/4
477	2926 SBD	II	3/4 – 1 1/4

a) The fast-idling screw B control the mixture up to 1/3 of the engine speed (atomizer opened to 1/3 of its diameter). Rich mixture is obtained by tightening, lean mixture by loosening the screw. Setting according to the Table is effected by tightening the screw sensitively to full stop (forcible tightening can cause distortion of the needle valve seat) and then by backing off to the recommended values.

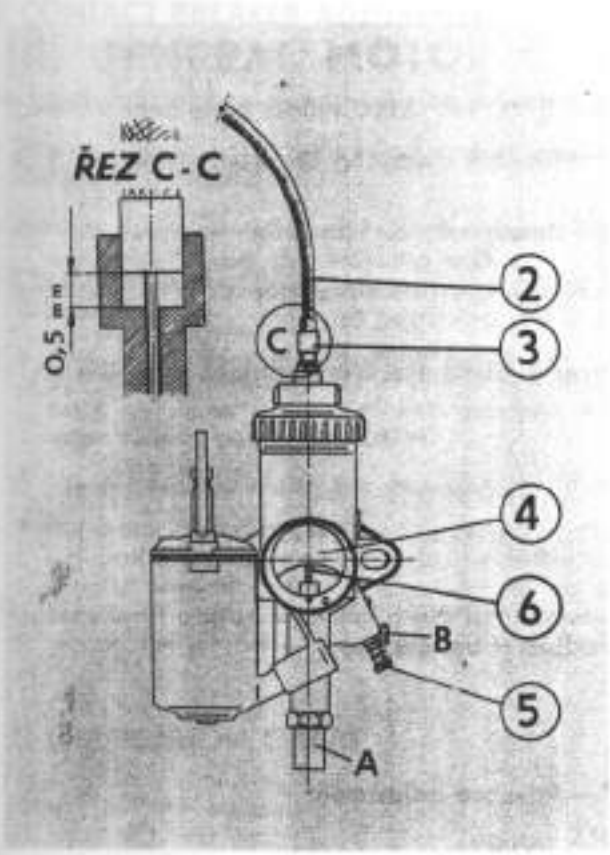


Fig. 6 — Adjusting elements of the carburettor

b) The position of the needle 6 is indicated above. The needle 6 controls the mixture from about 1/3 up to 2/3 of engine speed. By resetting the needle from the 4th to the 3rd notch a leaner mixture is obtained.

c) From 2/3 of the atomizer opening the mixture is controlled by the main jet.

5. IDLING ADJUSTMENT

If the advance is correctly set, according to the table adjust the idling on a warmed up engine as follows:

a) Tighten the adjusting screw 3 of the bowden cable so that a play is obtained between the screw and the bowden cable.

b) Set a higher engine speed by tightening the throttle stop screw 5 to prevent the engine stalling.

c) Start the engine and loosen the stop screw 5 to reduce the engine speed until the engine run becomes smooth (regular).

d) Adjust the play on the bowden cable to approx. 0.5 mm (0.2"). The idling should not be adjusted by means of the screw 3 on the throttle bowden cable.

6. IGNITION

Set the spark plug gap to 0.7 mm (0.028") after having covered approximately 3,000 km (2,000 miles). Clean the electrodes with a steel brush before their gap adjustment. If the engine is correctly tuned, the spark plug insulator should have a brick-red colouration.

7. CONTACT BREAKER ADJUSTMENT

The breaker point gap should also be adjusted after 3,000 km (2,000 miles) have been covered.

a) After removal of the right-hand engine cover thoroughly clean the breaker contacts or face them with a needle file;

b) Remove the spark plug and set the piston TDC;

c) Check the breaker point gap with the aid of feeler gauges – correct gap should be 0.4 mm (0.016");

d) If the gap is narrower (or wider), loosen the screw 2 fixing the fixed contact 3 to the end-plate and adjust the gap.

8. ADVANCE ADJUSTMENT

After having handled the dynamo or after a majo: resetting of the breaker point gap (replacement of the breaker contacts), check the advance and adjust it as follows:

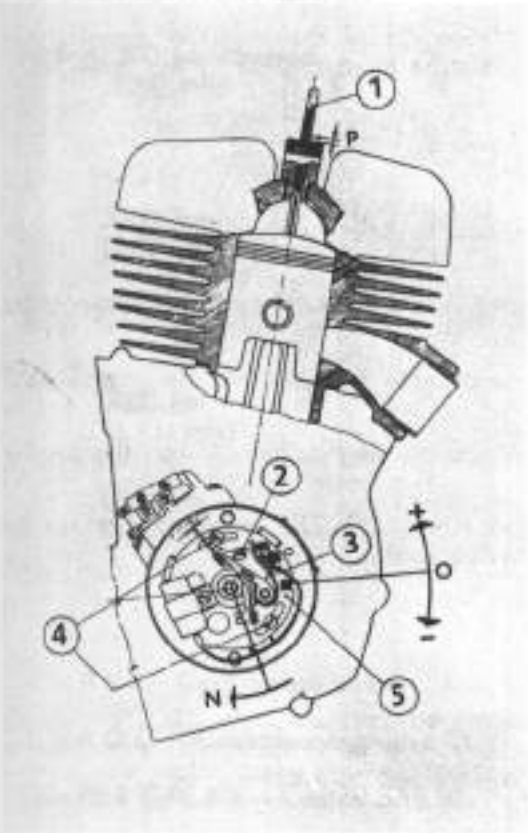


Fig. 7 – Advance adjustment

1. Feeler gauge
2. Contact breaker screw
3. Contact breaker
4. Armature end-plate screw
5. Armature end-plate

N – sense of engine rotation

a) With the aid of the screw 10 fixing the cam to the rotor turn the crank mechanism anti-clockwise (against the sense of engine rotation) until the piston descends from its TDC by P = 3.2 mm (0.126") in case of the 125 c. c. motor cycle, and by P = 2.9 mm (0.114") in case of the 175 c. c. model. At this point the contacts must close.
The closing of the contacts can be ascertained, at switched-on ignition, by a weak spark between the contact breaker points or by means of a bulb connected between the earthing and the contact breaker.

b) Should the contacts close sooner (small advance) or later (excessive advance), loosen two screws 4 fixing the base plate 5 to the dynamo and, by slightly tapping the screwdriver, turn the base plate 5. When turning it clockwise (in the senses of engine rotation) the advance decreases, by turning it anti-clockwise (against the sense of engine rotation) the advance is increased.

c) After having set the specified advance, retighten the screws 4 of the base-plate 5 and check the advance values. In case of a distorted plate 5, the advance values change after the screws 4 have been tightened.

III. GENERAL MOTOR CYCLE

1. WASHING AND CLEANING OF THE MOTOR-CYCLE

a) First, flush the finished and chromium-plated parts with a fine water spray to remove coarse impurities. Assist the washing with a sponge, rinsing it frequently to rid it of all hard dirt particles. When using detergents (shampoos), follow the manufacturers' instructions. Take care that water does not penetrate into the brake drums, the carburettor, etc.
After washing, wipe the motor cycle dry with chamois leather, if desired, polish the finished and chromium-plated parts with a soft flannel rag. Do not wash your motor cycle in hot sun since quick cooling down can produce cracks in the finish. Moreover, quickly evaporating water leaves permanent stains.

b) Use a brush to clean the engine with petrol and wipe it dry with a clean rag.

c) The motor cycles are finished in baked synthetic enamel. Polish the finished parts with polishing preparations according to the instructions of the respective manufacturer. The polishes usually remove various stains and fill up scratches and cracks in the finish thus serving two purposes – they clean and protect the motor cycle at the same time. We recommend protecting the chromium-plated parts with special wax for weather-proofing.

2. LUBRICATION CHART

After 500 km covered (300 mls)	1 swinging fork pin △ 2 brake pedal pin △ 3 leverage pins (brake, clutch) ○ 4 gearbox – oil change □ 5 front fork – oil change ●
3000 km (1,800 mls)	6 breaker arm pin ○ 7 breaker felt lip ○ 8 twist-grip △ ○ 9 speedometer drive ○ 10 semi-automatic clutch release △ 4 gearbox – oil change □
5000 km (3,100 mls)	11 brake cams △ 12 bowden cables ○ 5 front fork ●
8000 km (5,000 mls)	13 steering balls ▽ 14 wheel bearings ▽ 4 gearbox – oil change ● 15 rear suspension □

▽ = A V 2 – Castrolease heavy	– BP Energrease L2 – Shell Retinax A
△ = A O O – Castrolease grease CL	– BP Energrease No – Shell Retinax A
□ = PP 7 (SAE 80) – Castrol SAE 50	– BP Energol HD SAE 40 – Shell x 100
○ = M 2 T (SAE 40–50) – Castrol SAE 40–50	– BP Energol HD SAE 40–50 – Shell 2 T
● = damper oil – Castrol shock oil	– BP Visko-statick. – Shell Damper oil

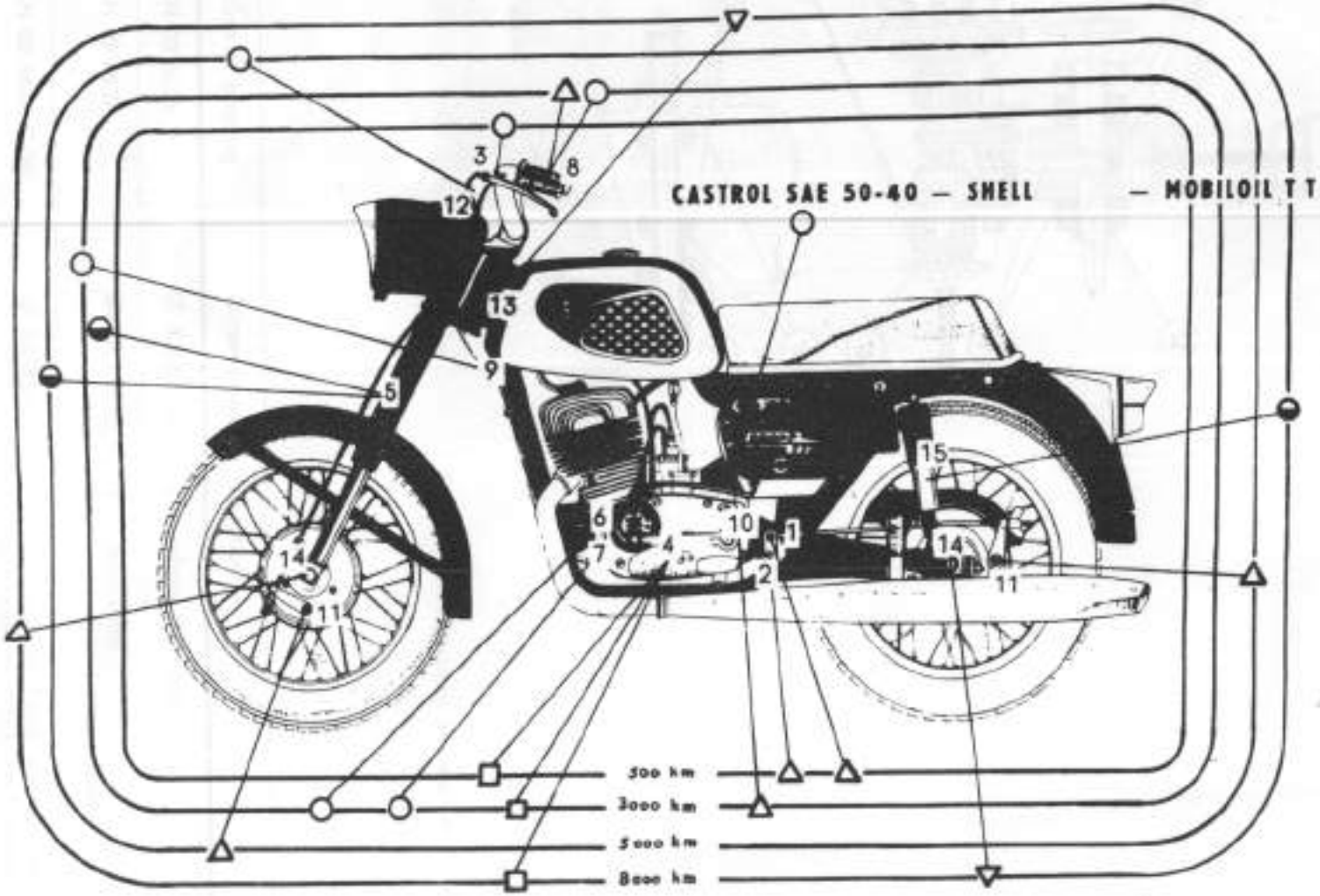


Fig. 8 – Lubrication chart

3. LIST OF BEARINGS AND SEALS

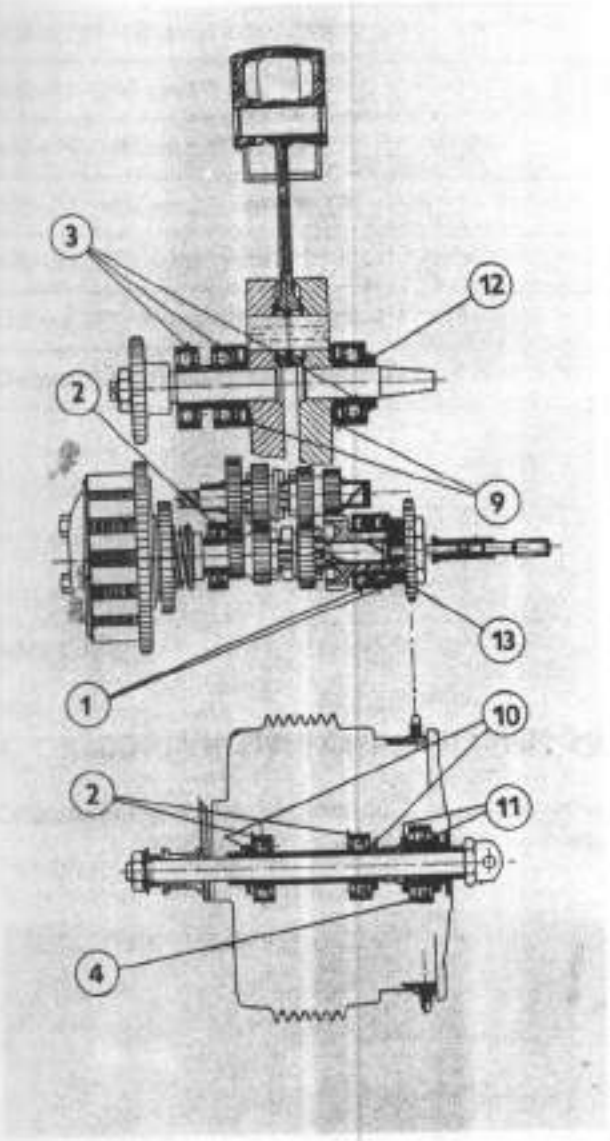


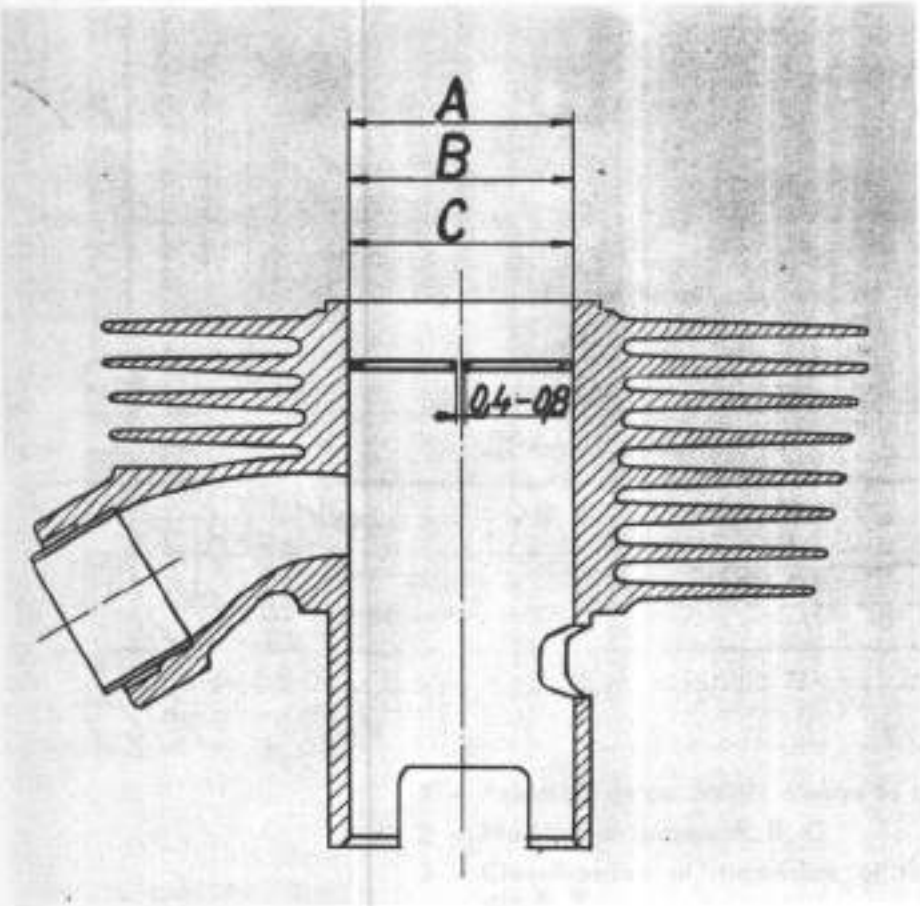
Fig. 9 – Designation of bearings and seals

Designation of bearing	Dimensions	Location	Total
6005 ČSN 02 4633	Ø 47/25×12	2 – wheel with hub	2
6302 ČSN 02 4637	Ø 42/15×13	1 – mainshaft 2+2 – front and rear wheel	5
6304 ČSN 02 4637 C-36	Ø 52/20×15	2 – l. h. side of crank mechanism 1 – r. h. side of crank mechanism	3
6304 ČSN 02 4637	Ø 52/20×15	1 – transmission gear	1
Ball 6.35 (1/4") ČSN 02 3680		2×19 – steering hub 1 – clutch release	39

Designation of seal – gufero	Location	Total
355–11–208 seal	1 – speedometer drive gear wheel	1
403–7731–00 seal	1+1 – rear suspension	2
450–41–260 seal assy.	1+1 – front fork plunger	2
613–11–140 ring 25×52×7	1+1 – crankcase interior	2
620–51–126 seal	2+2 – front and rear wheel	4
620–56–215 seal	2 – rear wheel transmission gear	2
Gufero 20×30×7 UN 02 9401	1 – r. h. side of crank mechanism	1
Gufero 30×40×7 UN 02 9401	1 – chain sprocket	1

4. GRADING OF CYLINDERS, PISTONS, GUDGEON PINS, AND PISTON RINGS

Cylinder – for bores and rebores the overall tolerance limit is 0.03 mm. Further classification is into three groups identified by letters A, B, C on the bottom mating face.



0.4–0.8 (0.016"–0.032")

Fig. 10
Classifing of cylinders

Grading of cylinders for model 476

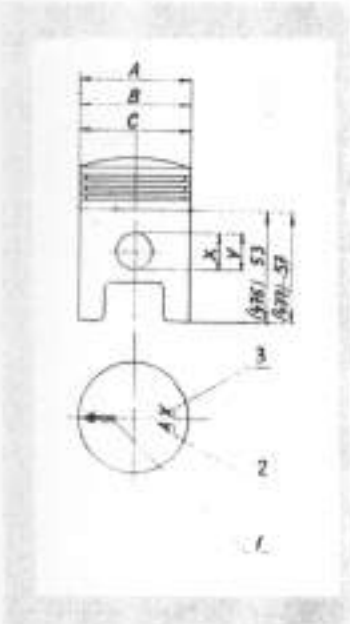
Dimension	Overall tolerance limit	Group A	Group B	Group C
Normal	Ø $52^{+0.03}$	$52^{+0.01}$	$52.01^{+0.01}$	$52.02^{+0.01}$
Rebore I	Ø $52.25^{+0.03}$	$52.25^{+0.01}$	$52.26^{+0.01}$	$52.27^{+0.01}$
Rebore II	Ø $52.50^{+0.03}$	$52.50^{+0.01}$	$52.51^{+0.01}$	$52.52^{+0.01}$
Rebore III	Ø $52.75^{+0.03}$	$52.75^{+0.01}$	$52.76^{+0.01}$	$52.77^{+0.01}$
Rebore IV	Ø $53^{+0.03}$	$53^{+0.01}$	$53.01^{+0.01}$	$53.02^{+0.01}$

Grading of cylinders for model 477

Dimension	Overall tolerance limit	Group A	Group B	Group C
Normal	Ø $58^{+0.03}$	$58^{+0.01}$	$58.01^{+0.01}$	$58.02^{+0.01}$
Rebore I	Ø $58.25^{+0.03}$	$58.25^{+0.01}$	$58.26^{+0.01}$	$58.27^{+0.01}$
Rebore II	Ø $58.50^{+0.03}$	$58.50^{+0.01}$	$58.51^{+0.01}$	$58.52^{+0.01}$
Rebore III	Ø $58.75^{+0.03}$	$58.75^{+0.01}$	$58.76^{+0.01}$	$58.77^{+0.01}$
Rebore IV	Ø $59^{+0.03}$	$59^{+0.01}$	$59.01^{+0.01}$	$59.02^{+0.01}$

Pistons are graded according to the grading diameter into three groups A, B, C. The hole for the gudgeon pin is classified into two groups, identified by letters X, Y.

Fig. 11 – Piston dimensions marking



1 – Assembly arrow points always to the exhaust port
2 – Marking of groups A, B, C
3 – Classification of dimension of the hole for the gudgeon pin X, Y

Classification of pistons into groups according to grading dimensions

ČZ 125, model 476

Dimension	Group A	Group B	Group C
Normal	Ø 51.84	51.85	51.86
Rebore I	Ø 52.09	52.10	52.11
Rebore II	Ø 52.34	52.35	52.36
Rebore III	Ø 52.59	52.60	52.61
Rebore IV	Ø 52.84	52.85	52.86

ČZ 175, model 477

Dimension	Group A	Group B	Group C
Normal	Ø 57.83	57.84	57.85
Rebore I	Ø 58.08	58.09	58.10
Rebore II	Ø 58.33	58.34	58.35
Rebore III	Ø 58.58	58.59	58.60
Rebore IV	Ø 58.83	58.84	58.85

The gudgeon pin is classified into two groups I and II, marked on the piston head.

Classification of piston and gudgeon pin

Piston marking	Gudgeon pin marking	Dimension of hole in piston	Gudgeon pin dimension
X	II	Ø 18 + 0.0005 / − 0.0020	Ø 18 − 0.0025 / − 0.0005
Y	I	Ø 18 + 0.0030 / + 0.0005	Ø 18 − 0.0 / 0.0025

Piston rings are made with the same diameter and thickness of 2 mm for all the three A, B, C.

Marking	Diameter for model 476	Diameter for model 477
Normal	52	58
Rebore I	52.25	58.25
Rebore II	52.50	58.50
Rebore III	52.75	58.75
Rebore IV	53.00	59.00

IV. DISASSEMBLY PROCEDURE ENGINE FROM FRAME

ENGINE:

1. Remove right cover
2. Disconnect clutch cable
3. Disconnect chain
4. Remove chain guard extension
5. Disconnect throttle cable
6. Disconnect oil hose
7. Disconnect speedometer drive
8. Remove exhaust pipe from cylinder

FRAME:

1. Remove seat
2. Remove right-hand box
3. Disconnect + cable from storage battery
4. Remove fuel tank
5. Remove horn
6. Remove ignition coil
7. Disconnect connectors
8. Remove micromesh filter
9. Remove right-hand and left-hand cowling (4 bolts)
10. Remove intake silencer (2 bolts intake silencer) frame, 2 bolts intake silencer (rear mudwing. 1 bolt intake silencer/engine).
    Remove the intake silencer together with the oil tank to the left.
11. Loosen bolts engine/frame
12. Remove engine from rear mountings to the left

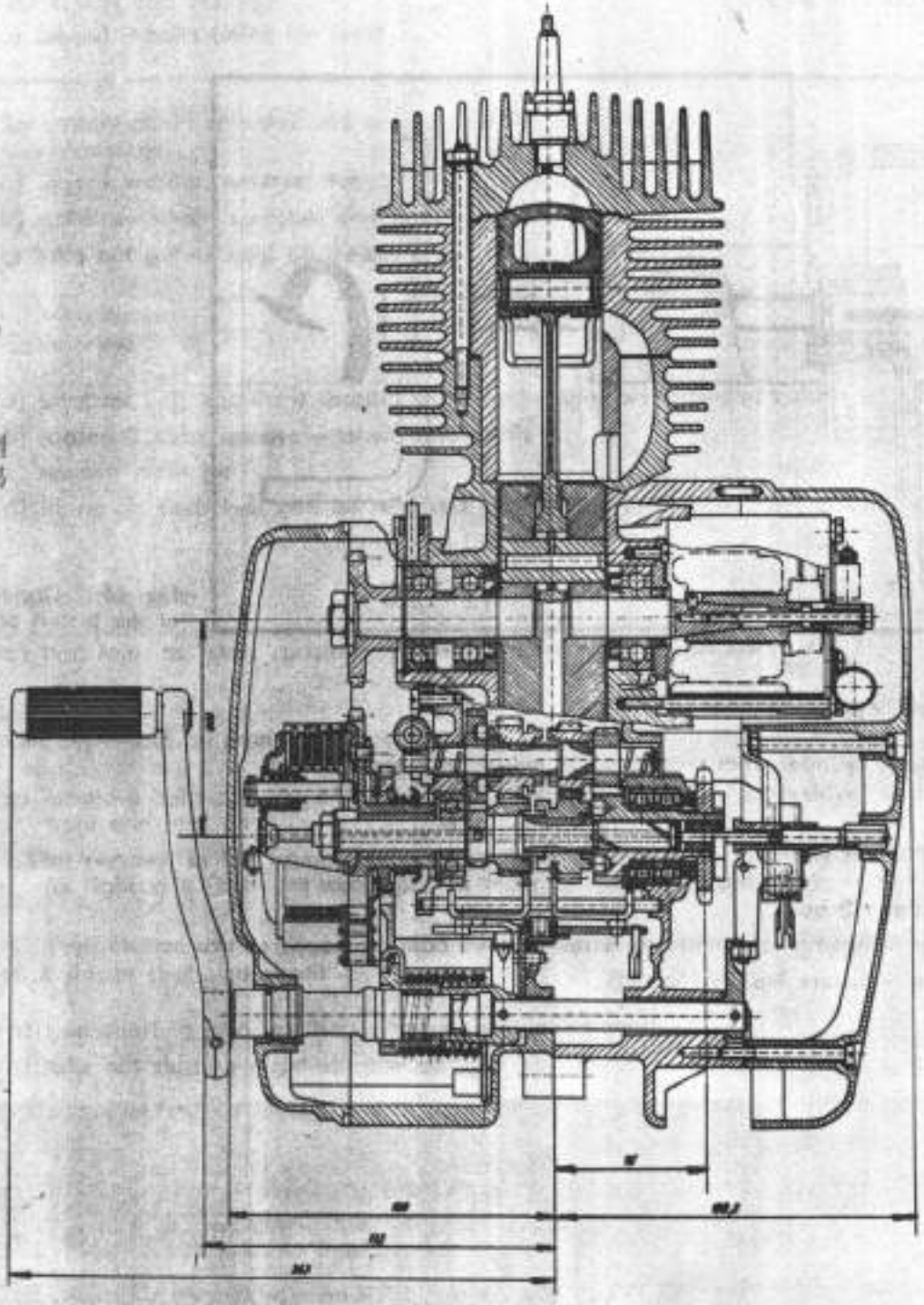


Fig. 12 – Cross section view of engine and transmission

A. ENGINE - DISASSEMBLY PROCEDURE

+ 1. Cylinder head c/w gasket

a) 4 nuts and washers

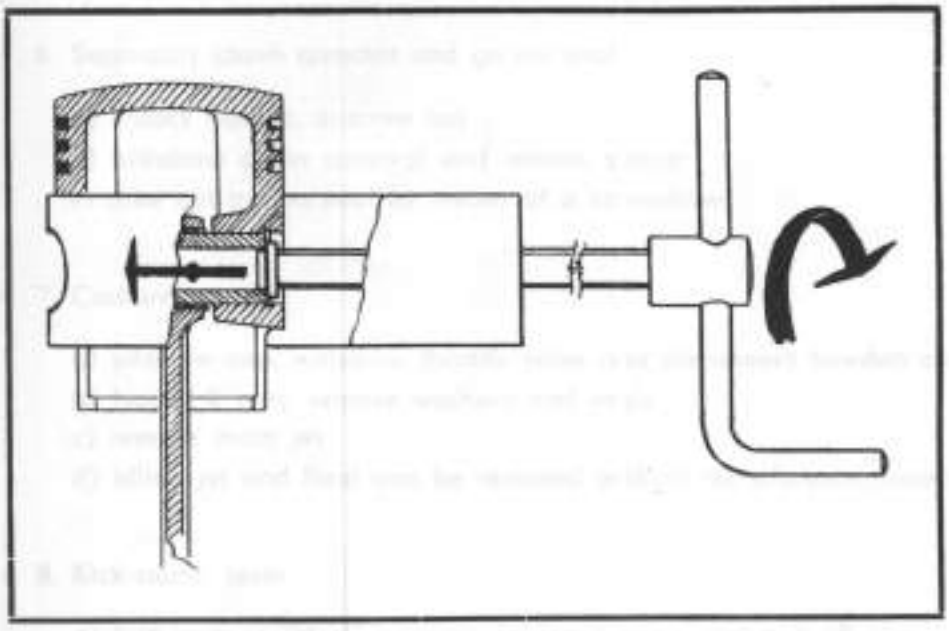


Fig. 13 – Drawing of the piston pin

+ 2. Cylinder, cylinder gasket

a) detach cylinder from crankcase by means of 2 screwdrivers

+ 3. Dynamo, complete

a) stator – 2 bolts
b) cam – having loosened one screw remove cam by means of two screwdrivers
c) rotor – fixture No. 09 (fig. 14)

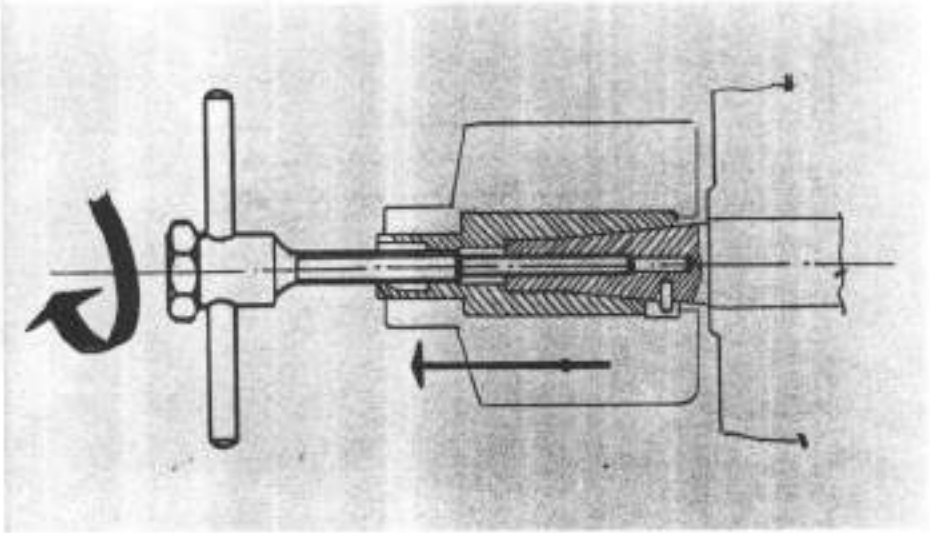


Fig. 14 – Extraction of generator rotor

+ 4. Right gufero seal of crankcase

a) loosen 3 bolts (remove rotor pin)

+ 5. Semi-automatic clutch release

a) loosen 3 bolts (mind the ball)

+ 6. Secondary chain sprocket and gufero seal

a) unlock washer, unscrew nut
b) withdraw chain sprocket and remove spacer
c) take out gufero seal by means of a screwdriver

+ 7. Carburettor

a) unscrew cap, withdraw throttle valve and disconnect bowden cable
b) loosen 2 nuts, remove washers and seals
c) remove main jet
d) idling jet and float can be removed without the aforementioned tasks

+ 8. Kick-starter lever

a) turn lever to "start" position, loosen 1 screw and pull off lever

+ 9. Left cover with oil pump

a) loosen 8 bolts and pry off cover with a screwdriver (apply screwdriver under the cover front and rear part)
b) for removal in the frame, first remove the storage battery and lay the motor cycle on its right side (it is not necessary to drain oil from the crankcase)

+ 10. Kick-starter shaft, quadrant

a) turn shaft to gear shifting position and withdraw it
b) take out starting quadrant c/w spring

+ 11. Clutch

compress clutch springs with fixture No. 11 and withdraw 3 pins (fig. 15)

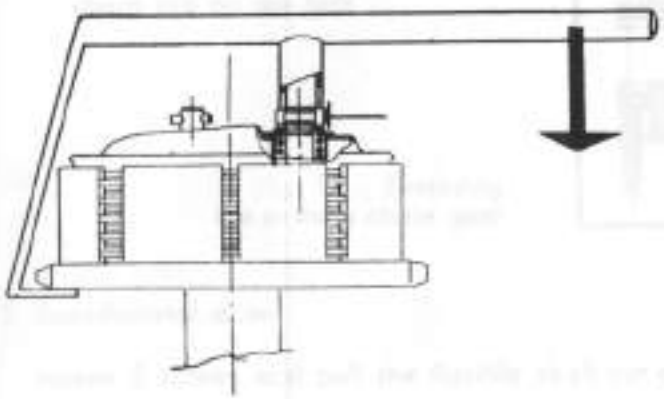


Fig. 15 – Compressing of the clutch spring

b) remove pressure plate, plates and clutch release rod

c) unlock nut on mainshaft

d) lock inner driver in position against turning with the aid of fixture No. 12 (fig. 16) and unscrew nut

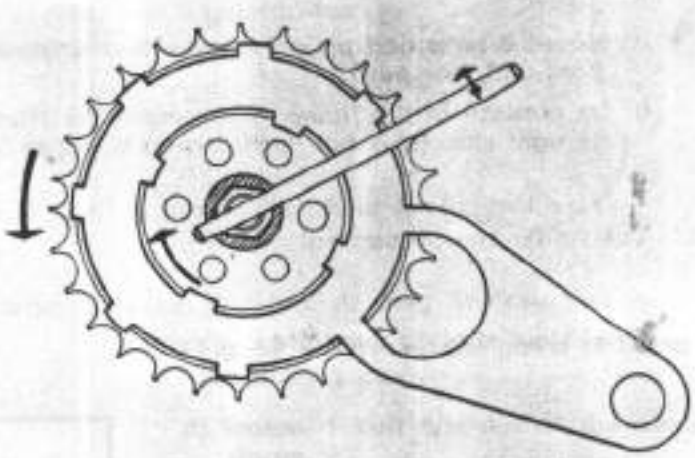


Fig. 16 – Holding of the clutch drum

e) pull inner plate off the mainshaft by means of 2 screwdrivers

f) remove spacer sleeve (disengage from the chain sprocket by means of a small screwdriver)

g) remove sprocket c/w primary chain

+ 12. Primary chain sprocket

a) simultaneously with operation per 11d) loosen the crankshaft nut

b) pull off chain sprocket with the aid of fixture No. 02 (fig. 17) having tightened the fixture, loosen the sprocket from the cone by a sharp tap on the bolt

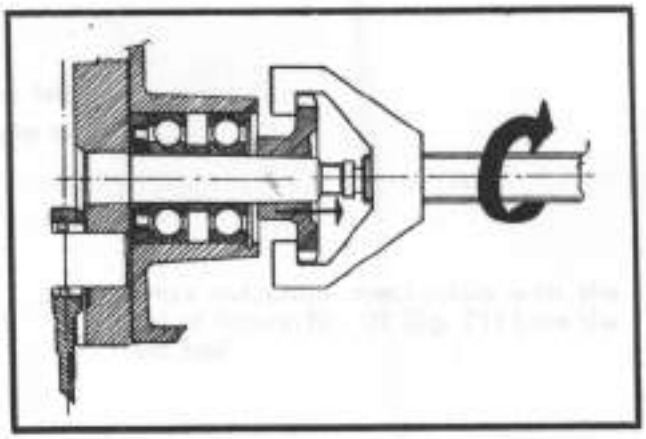


Fig. 17 – Removing the primary chain gear

+ 13. Speedometer drive

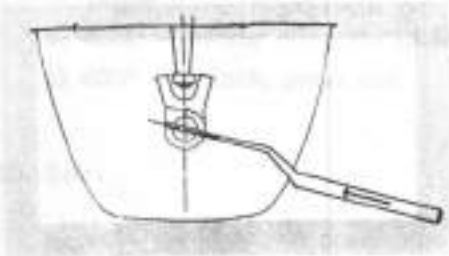
loosen 2 screws and pull the flexible shaft out of the crankcase

+ 14. Shaft c/w driver

a) drive out the pin by means of fixture No. 10 (fig. 18) and pull off cam

b) secure catches against disengagement and withdraw the shaft from the left-hand side (fig. 19)

Fig. 18 – Draving out of the semiautomatic clutch cam pin



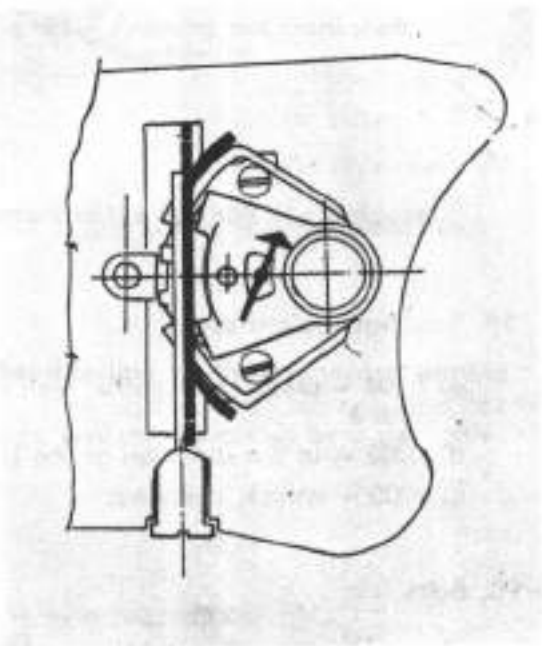


Fig. 19 – Securing the pawls at fitting the shifting shaft

+ 15. Disconnecting of crankcase

a) loosen 1 bolt c/w nut of the centring sleeve

b) drive out 2 centring sleeves

c) loosen 12 bolts

d) disconnect crankcase halves with the aid of fixture No. 01 (fig. 20)

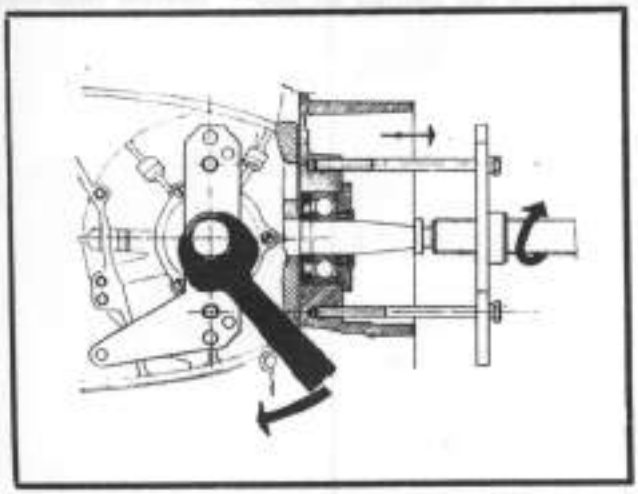


Fig. 20 – Parting of the crankcase

16. Gearbox

a) remove shifter fork guides
b) remove layshaft, shifter forks, gears
c) drive out mainshaft with gear II from the left half
d) press out the gear c/w hub from the right half

17. Crank mechanism – l. h. half

press out crank mechanism with the aid of fixture No. 01 (fig. 21) from the left half

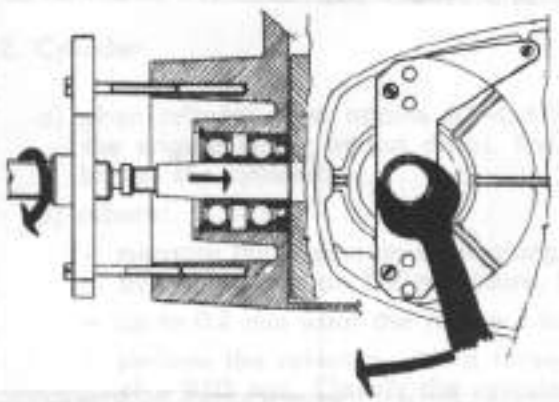


Fig. 21 – Pressing out crankshaft mechanism

18. Gear-shift interlock

a) loosen arrester screw and 4 bolts fixing the interlock to the left half of crankcase

19. Bearings, gufero seals

a) 6304 – press out together with gufero seal in the direction of the crankcase parting plane
b) 6302 – in the direction of the parting plane
c) 6005 – unlock, press out

+ 20. Bolts

a) unscrew from the crankcase with the aid of 2 nuts

Operations marked + can be carried out wihout the engine being removed from the frame.

INSPECTIONS AND RECONDITIONING OF PARTS BEFORE ENGINE INSTALLATION

1. Cylinder head

   a) check the thread for the spark plug for condition (do not rectify a stripped thread with an insert – impaired heat transfer)
   b) check the gasket for damage or burning

2. Cylinder

   a) when cylinder wear attains 0.3–0.4 % of the cylinder bore (0.3 % of 58 mm = 0.174 mm) the engine power output drops. Rectify by replacing the cylinder c/w piston or by re-boring the cylinder.
   b) rebore:
      – measure the maximum wear along the entire bore and determine the respective rebore by adding approx. 0.2 mm (bore, honing)
      – up to 0.2 mm wear the rebore I is made by honing
      – perform the reboring with a larger number of cylinders for an overall tolerance limit of + 0.03 mm. Classify the cylinders according to the Table and match with their resp. pistons.
   c) at minor seizing of the piston (in the cylinder), aluminium should be removed from the cylinder (by scraping or with a fine whetstone).

3. Piston

   a) check for general wear (outer surface)
   b) check whether gudgeon pin ports are not pitted
   c) slightly seized piston below the piston rings – clean with a whetstone, or with a fine file. If the seized surface reaches over the piston rings, replace the piston by a new one.

4. Gudgeon pin

   a) check for wear and surface smoothness (refrain from reconditioning).

NOTICE!

Install the gudgeon pin in a warmed up piston. Replace distorted snap rings.

5. Piston rings

   a) the basic piston ring gap is 0.4 mm; if the gap is smaller, file off the locks
   b) when the gap increases to 0.8 mm, replace the piston rings

0.4–0.8 (0.016"–0.032")

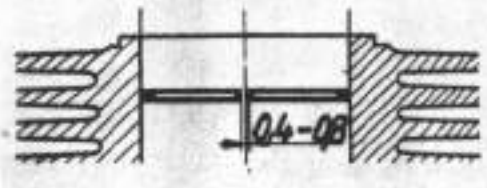


Fig. 22 – Clearance of piston rings ends cylinder

NOTICE!

When re-installing the old piston rings observe their original sequence and do not turn them upside down (the bright surface must be always turned downwards).

6. Crankshaft

a) press out the gudgeon pin bush and press it in with the aid of fixture No. 08 (fig. 23). Having pressed the bush in, reream it to the diameter $18\ ^{+0.035}_{+0.025}$

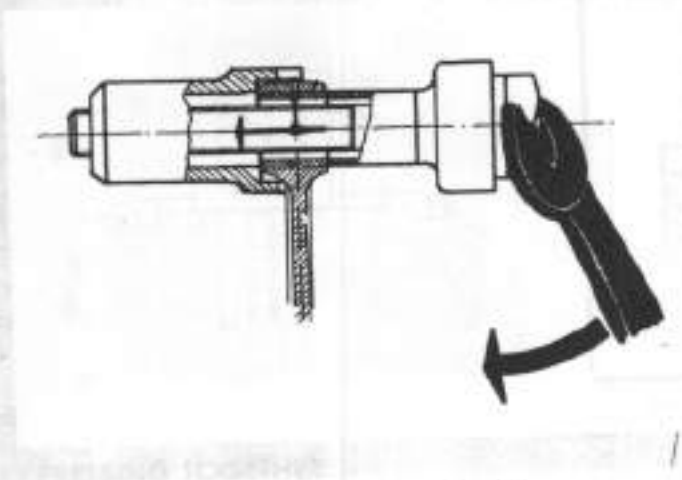


Fig. 23 – Reinstalling the piston pin bushing

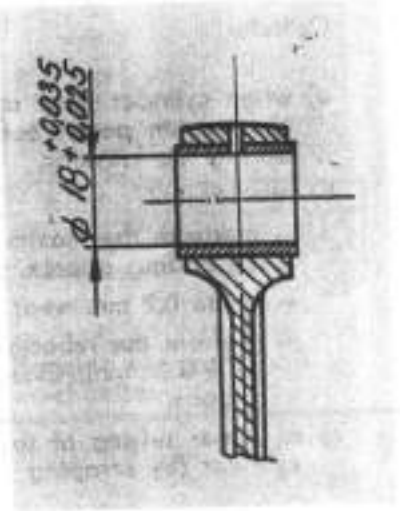


Fig. 24 – Dimensions of piston pin bushing

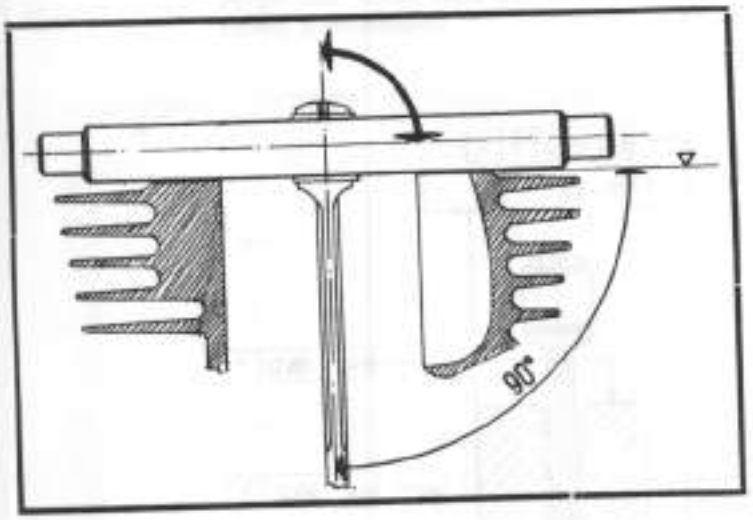


Fig. 25 – Alignment of the connecting rod

b) check the connecting rod alignment with the fixture No. 06 (fig. 25)

c) if the big end bearing is excessively worn, replace the connecting rod, the pin, and the rollers as follows:

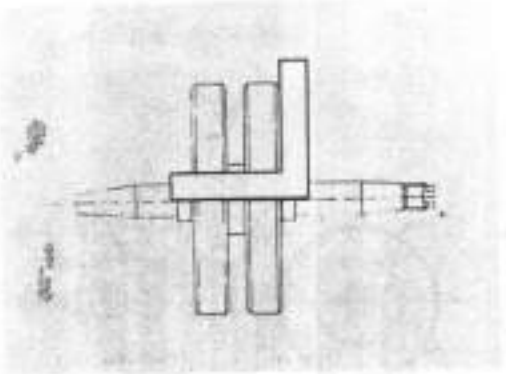
PRESSING APART

— draw an index line on the opposite side of the crank pin over both the webs with the aid of a square

— insert fixture No. 05 (fig. 26) between the webs (padding the fixture under the press) and press the pin out of the right-hand web

— turn the crankshaft and press the pin clear off the left-hand web.

Fig. 26 – Marking of flywheels the crankshaft before disassembling



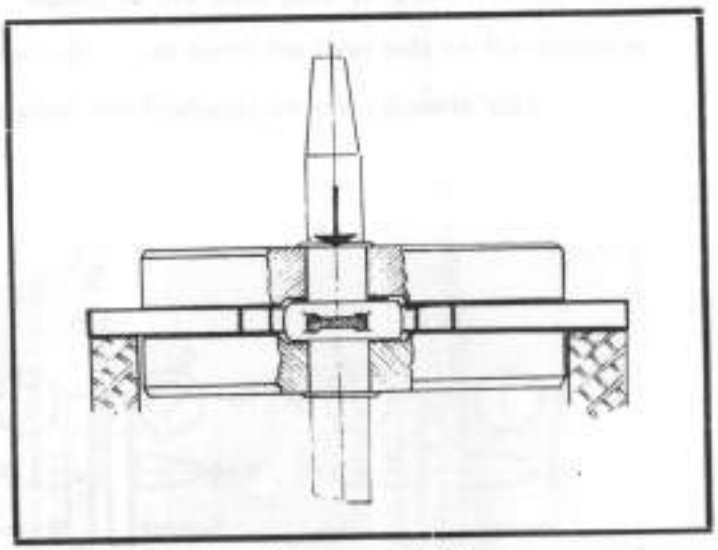


Fig. 27 – Parting of the crankshaft

PRESSING TOGETHER

— having cleaned the parts, press a new crank pin c/w the connecting rod and rollers in the left-hand web. The pin oilway must point to the web outer circumference.

— Align the other half of the web according to the index lines and press to the specified dimensions.

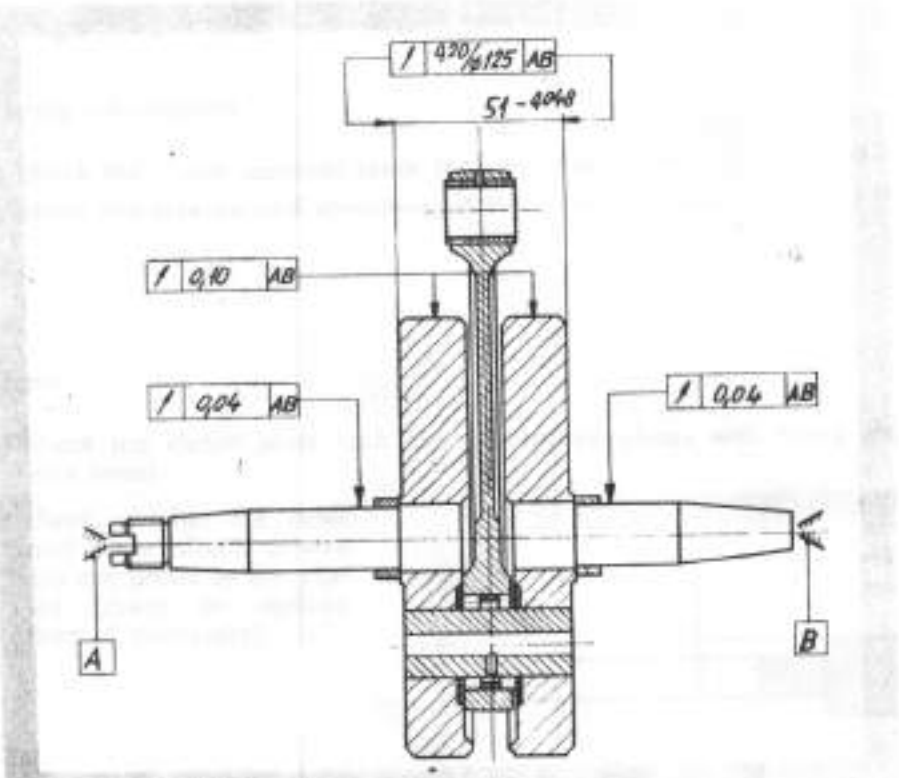


Fig. 28
Control dimensions of crankshaft and eccentricity of flywheels and main journals

CENTRING

a) Clamp the crankshaft between the measuring points so that the crank pin is aligned with the side pins (vertical in respect to the dial indicator).
Set the dial to zero and turn the crankshaft through 180°.
It the values differ on the left-hand and right-hand pin, tap the crankshaft half with a copper mallet where the pin shows a + deviation (by tapping the flywheel is turned on the crank pin).

b) Turn the crank pin to vertical position in respect to the side pins (aligned with the dial indicator centre line).
If both side pins show a higher value towards +, set apart the flywheels on the opposite sides.
If the value deviates towards −, press together the flywheels on the opposite side.

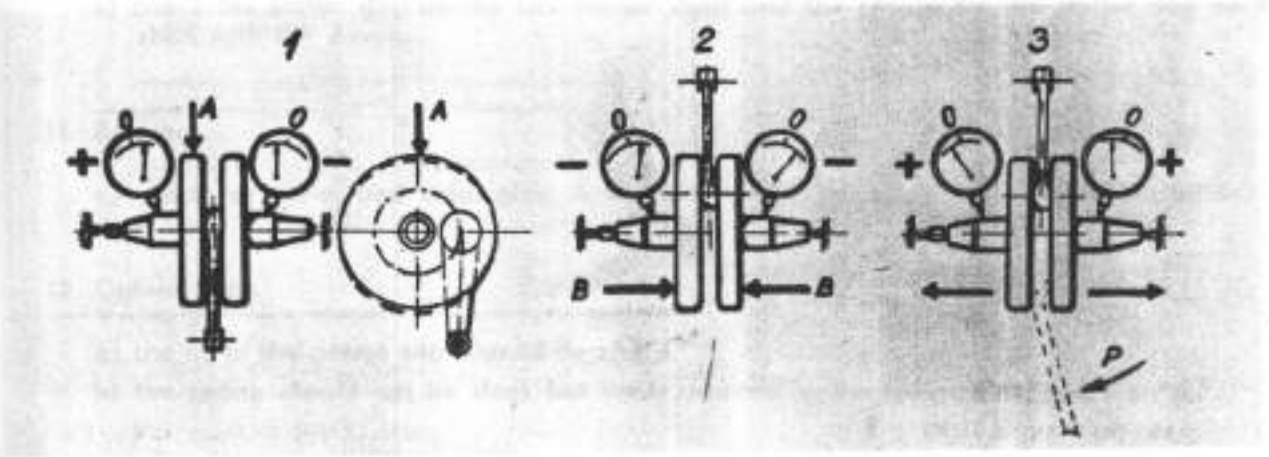


Fig. 29a, b, c – Flywheel adjustment (turning), setting apart and pressing together of the flywheels.

7. Primary transmission

a) check the chain sprocket teeth for condition
b) check the sleeves and stretching of the primary chain

8. Clutch

a) check the clutch plate cork facing (replace plates with burnt and worn out facing by new ones)

b) check whether the inner and outer clutch drivers are not pitted by the plates (dress or replace them if necessary)

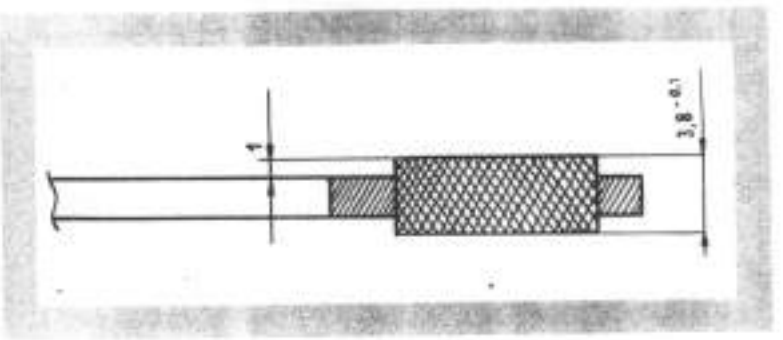


Fig. 30 – Friction plate thickness

9. Gearbox

a) inspect the teeth surfaces and spur gears
b) if a tooth is chipped, replace both gears of the respective speed gear
c) check the mainshaft and the layshaft for untrue run

10. Gear shifting

a) check the shifter forks for wear and alignment
b) check the interlock pin for excessive end play and radial clearance. Reduce the end play by clinching the pin
c) replace fatigued springs
d) replace worn dogs
e) check the shifter dog on the kick-starter shaft and the proove for the shifter dog on the shaft with the driver.

11. Bearings

a) check for radial and axial play. A washed bearing, dipped in oil, should not bind

12. Gufero seals

a) the lip of the gufero seal should be sharp
b) the spring should not be slack but firmly retained in the recess.

13. Crankcase halves

a) carry out the colour check of the mating faces of the crankcase halves (max. out-of-true 0.05 mm). If necessary, grind in with the aid of grinding paste on a plate.

14. Carburettor

a) check the carburettor seating flange and true up, if necessary
b) check the neddle and its seat (fuel inlet) for condition
c) replace the throttle valve if worm, replace the float if cracked.

1. Warm up the crankcase halves to 90–100 °C.

2. In the crankcase right-hand half:

   a) press in:
   2 bearings 6005 ($+37.7^{+0.1}$)
   1 bearing 6304 ($+34.4^{+0.07}$)
   1 gufero seal, dia. 25×52×7

   b) lock the bearing 6005 in position with circlips and press on the gear with hub

   c) install a spacer ring on the gear with hub, drive in the gufero seal, dia. 30×40×7, the chain sprocket, and secure with a circlip and nut

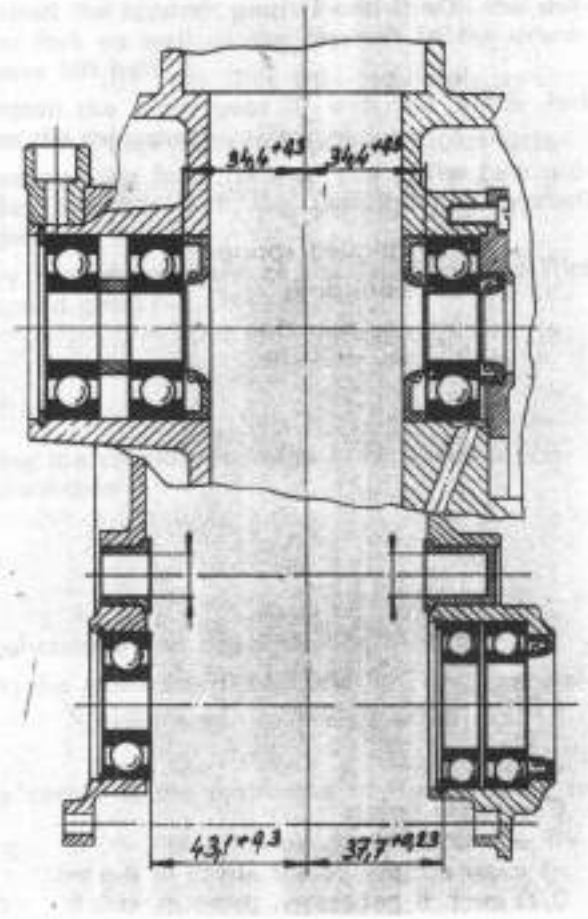
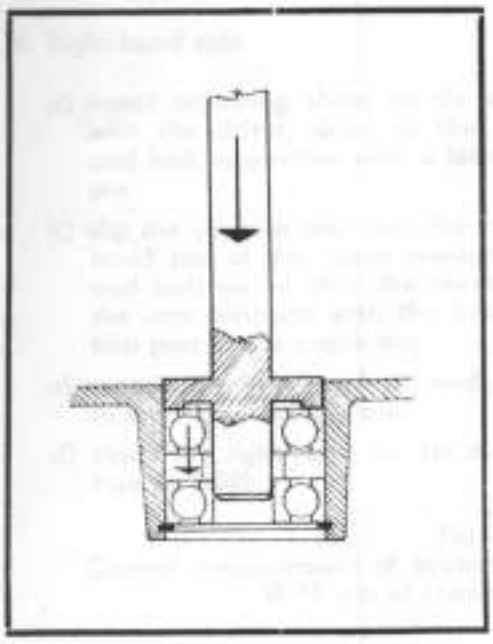


Fig. 31
Dimensions for press-fitting of bearings in crankcase

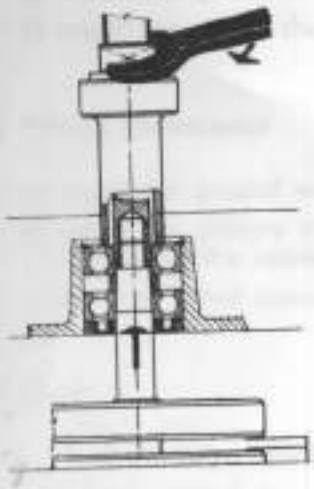
3. In the crankcase left-hand half:



a) press in: 2 bearings 6304 with spacer ($+34.4^{+0.3}$)
1 bearing 6302 ($+43.1^{+0.3}$)
1 gufero seal, dia 25×52×7
Lock the bearings in position with circlips

b) bolt on the complete bracket by means of 4 bolts. Set the neutral position and tighten the arrester screw and the oil drain plug

Fig. 32 – Reinstalling of bearing



c) install the crank mechanism in the crankcase left-hand half with the aid of fixture No. 04, (fig. 33). If the fixture is not available, preheat the inner races of the bearings

d) press the mainshaft c/w the IInd speed gear in the bearing 6302

e) install the layshaft gears I and II with the shifter fork as well as the layshaft in the crankcase left half

f) install the main gear III with the shifter fork on the mainshaft

g) arrange the forks, slip on the shifter fork guides together with the remaining 2 layshaft gears

h) try the engagement of the Ist, IInd and IIIrd speed gear.

Fig. 33 – Fitting the crankshaft in the L. H. part of crankcase

4. Crankcase left-hand and right-hand halves

a) clean the partition faces with the aid of a whetstone and apply sealing cement

b) preheat the inner race of the bearing 6304 in the crankcase right-hand half and assemble both crankcase halves

c) drive in the centring sleeves

d) tighten 13 connecting bolts starting from the centre of the crankcase and proceeding towards its both ends.

5. Left-hand side

a) screw down the speedometer drive

b) install the shaft with the driver
Lock the dogs in position with the aid of fixture No. 13.

6. Right-hand side

a) install adjusting shims on the shaft with the driver, drive in the cam and lock in position with a locating pin

b) slip the cap c/w seal over the right-hand pin of the crank mechanism and bolt on so that the recess in the cap connects with the lubrication port in the crankcase

c) support the right-hand pin and drive in the rotor locating pin

d) check the right-hand pin for out-of-true (+ 0.02).

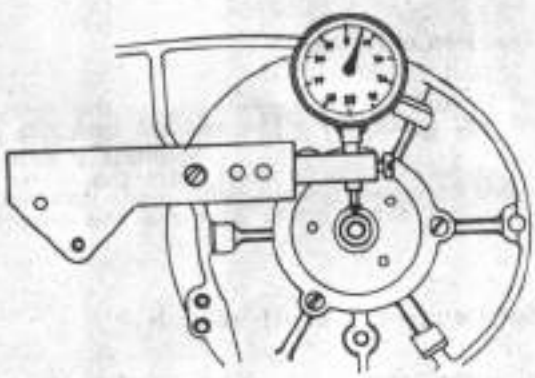


Fig. 34 – Control measurement of eccentricity R. H. pin of crankshaft

7. Starting mechanism

a) install the quadrant with the spring in the crankcase left half
b) insert the starter shaft c/w spring in the quadrant and turn to position "start"

8. Primary transmission

a) install the ground washer on the mainshaft
b) install the primary transmission (primary chain sprocket, chain, chain sprocket with the starter) on the crank pin and the main shaft
c) insert an oiled spacer in the sprocket with the starter

9. Clutch

a) install the inner clutch driver on the mainshaft
b) lock the clutch in position by means of fixture no. 12 and tighten both nuts (M 16×1.5, M 12×1.25)
c) lock the nut on the mainshaft by bending the washer
d) install alternately 5 cork and 5 metal friction plates (the first plate should be of cork, the last of metal)
e) install the oiled clutch release rod in the mainshaft
f) lock the clutch pressure plate (3 bushes, springs, washers) in position by means of 3 locating pins – fixture No. 11.

10. Piston

a) warm up the piston to 40–50 °C
b) set the piston with the aid of the fixture No. 06
c) dip the gudgeon pin in oil before inserting it in the piston
d) lock it in position with circlips
e) install the piston ring on the piston, setting the ring locks opposite the pins

11. Cylinder, cylinder head

a) install the cylinder gasket
b) screw in the bolts
c) install the cylinder
d) glue the gasket in the cylinder head with mineral jelly and tighten the head crosswise.

12. Dynamo assembly

a) install the rotor c/w cam on the right-hand pin and tighten while retaining the nut on the left-hand side of the crank mechanism with a spanner
b) withdraw the brushes from the stator and reinstall them after having mounted the stator
c) adjust the breaker gap and the advance.

13. Semi-automatic clutch release

a) install the clutch release rod in the mainshaft
b) screw down and adjust the semi-automatic clutch release (the clearance between the cam and the roller is 0.4 mm).

14. Left-hand cover

a) clean the mating faces of the left-hand cover and the crankcase
b) drive 2 centring bushes in to the crankcase
c) glue the gasket to the crankcase with mineral jelly and bolt on the cover

15. Carburettor

a) screw in 2 stud bolts fixing the carburettor
b) install the seal and screw down the carburettor

B. FRAME

I. FRONT FORK

Fig. 35 – Cross sectional view of front suspension

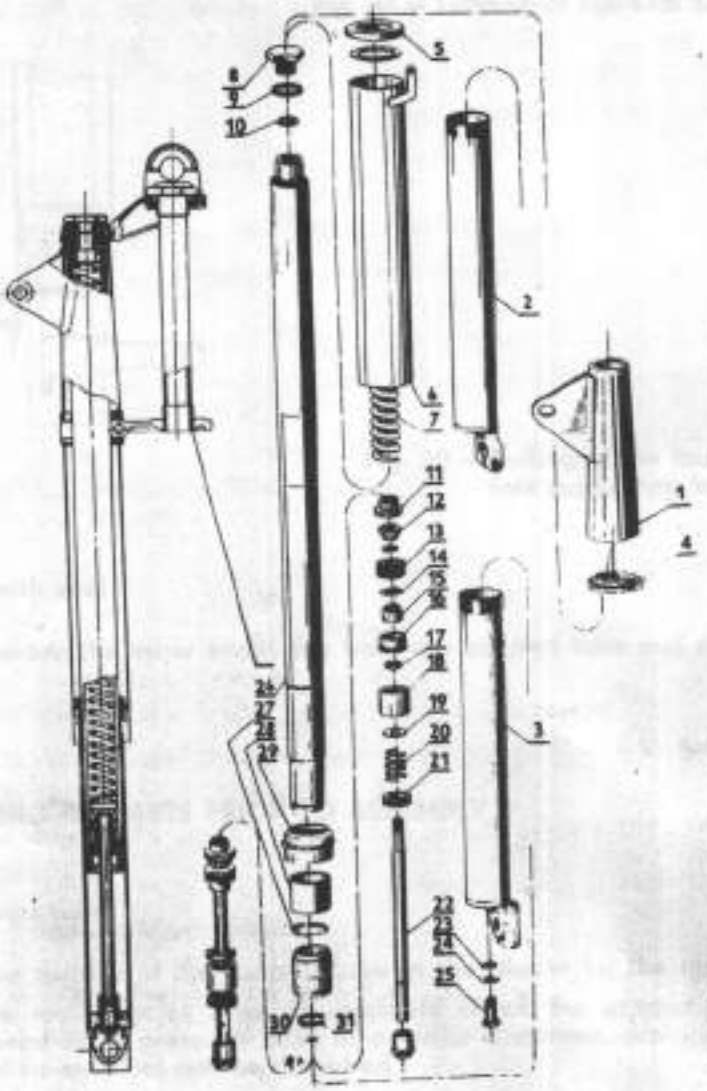
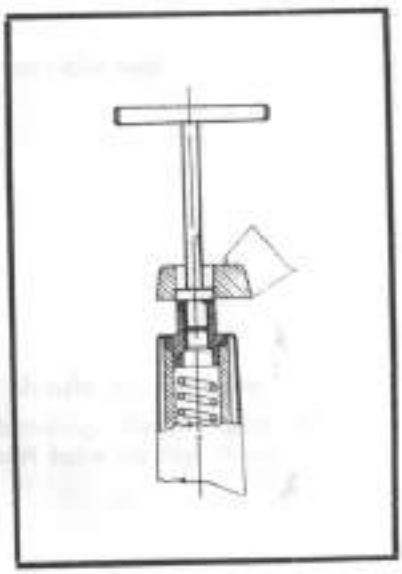


Fig. 36 – Driving of the supporting tube



THE FRONT FORK ARMS SHOULD BE DISMANTLED AS FOLLOWS:

1. Front wheel
2. Front mudwing
3. Front fork arms, left and right
   a) remove top plugs
   b) loosen two nuts M 8 on the bottom front fork bracket
   c) drive the support tube out of the bracket with the fixture No. 17 (fig. 36)

4. Support tube, shock-absorber

a) unscrew the nut c/w seal by means of fixture No. 18 (fig. 37)

b) loosen the screw in the plunger bottom part and pull the plunger off the support tube

c) remove the snap ring locking the sleeve and the shock-absorber. Withdraw the shock-absorber and the spring from the support tube

d) remove the bronze bush from the support tubes by means of fixture No. 19 (fig. No. 36)

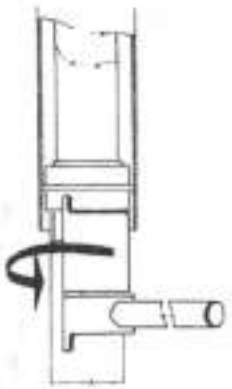


Fig. 37 – Tichting of nut with seal ring

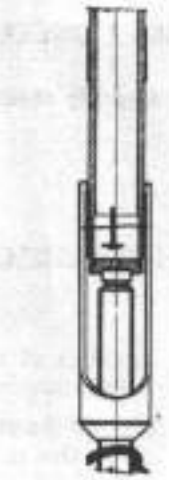


Fig. 38 – Pulling of the bush of the front fork supporting tube

5. Nut with seal

a) remove the other snap ring from the support tube and pull off the nut c/w seal

CHECKING OF PARTS PRIOR TO ASSEMBLY

1. Support tube

a) the surface of the support tube in the places for the nut c/w seal should not be worn

b) on motor cycles after an accident check the support tube for bending. Rectify a slight bend on a press. In case of a major distortion, replace the support tube as the structure of its material can be disturbed.

2. Plunger

a) check the internal diameter for deformation (seizing of the sleeves)

b) check for condition the thread for the nut with seal and the bolts for fixing the mudwing.

3. Shock-absorber

a) check the transfer valves for position

b) check the nut tightening

4. Bushes

a) check the bronze bushes for wear or seizing

5. Nut with seal

a) check the gufero seal lip and the spring of the seal ring for condition
b) check the "O" seal ring, the dust caps, and the silon ring for condition

NOTICE CONCERNING ASSEMBLY

For assembly reverse the dismantling procedure. In the course of assembly check:

I. SHOCK-ABSORBER:

a) position of transfer valves (assemble after having pressed the circlip on the piston – the valve cannot fall out)
b) correct position of piston rod (the cut-out in the bottom part of the piston rod should engage the projection on the plunger)

Front fork top bracket – disassembly

1. Handlebars assy. – 4 nuts M 6
2. Top nuts – fixture No. 20
3. Two plugs of support tubes

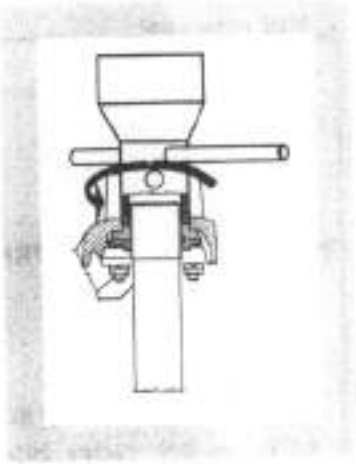


Fig. 39 – Tichting of steering head

Bottom bracket – two disassembly methods

A – 1. Top bracket
2. Headlamp c/w bracket
3. Bearing nuts – fixture No. 20 (fig. 39)
4. Bottom bracket with front wheel

B – 1. Top bracket
2. Arm, right and left
3. Headlamp c/w bracket
4. Bearing nuts – fixture No. 20 (fig. 39)
5. Bottom bracket

When removing the bottom bracket from the frame, the balls of the bearings can fall out. Hold a cup under the bottom bracket to prevent them from spilling all over the place.

Checking of parts before their installation

a) after an accident, check the bottom part of the bracket for deformation
b) check the surface of the cones on the fork and the cups in the frame (replace the broken or pitted parts)

ASSEMBLY

1. During assembly, fill the cups in the frame with mineral jelly and arrange the balls in the same.
2. Tighten the bearings of the steering so that they are free to turn without any play whatever.

II. STAND AND FOOT-RESTS

They are attached by a single through-bolt to the frame.

Removal of the stand

a) loosen the nut on the right-hand foot-rest
b) swing down the stand and withdraw the through bolt with the left-hand foot-rest.

III. FOOT-OPERATED BRAKE

a) loosen the nut on the right-hand side of the shaft and take off the foot lever (pedal)
b) loosen the screw on the stop-light switch body and remove the body and the inner contact of the stop-light switch
c) turn the rear brake shaft so as to enable removal of the link from the left-hand lever
d) remove the shaft of the rear brake.

IV. REAR SWINGING FORK – DISASSEMBLY

1. Remove the rear brake – par. III
2. Remove the rear wheel
3. Disconnect the rear telescopic shock-absorbers from the swinging fork
4. Disconnect the chain guard from the swinging fork
5. Loosen the nut of the swinging fork pin on the righthand side and drive out the pin to the left

Prior to the installation of the swinging fork pin, align the swinging fork sleeves with the frame and with the rear bracket distance tube.

V. REAR TELESCOPICS SHOCK-ABSORBER – DISASSEMBLY

1. Compress the main spring with the aid of the fixture No. 21 (fig. 40) and remove two locking half-rings.
2. Having removed the main spring, clamp the shock-absorber by its bottom yoke in a vice and remove the nut M 30×1 from the outer cylinder by means of spanner 22.
3. By pulling the piston rod release the working cylinder from the outer cylinder.

4. Clamp the top yoke in the vice and remove the working cylinder. It is inadmissible to clamp the working cylinder since this would result in its deformation.

5. Remove the nut M 6 from the piston rod with the aid of the box spanner 10, the nut being locked in position by means of a centre punch.

6. Then remove the piston with its top and bottom valves, together with the thrust plate, the guide, the spring, the washer, and the nut from the piston rod.

Fig. 40 – Compressing the spring of rear suspension

NOTICE!

Guard the piston rod, the piston and the working cylinder against damage during dismantling and assembly.

Before reassembly check:

1. The piston rod surface for smoothness
2. The gufero seal in the nut for condition
3. The piston and cylinder for wear
4. The valve mating faces for condition

Oil change

After the disassembly as per 1–4 fill 25 g of damper oil in the working cylinder and a further 25 g in the outer cylinder. Having tightened the nut M 30x1, spring the shock-absorber several times to pump the oil into the working cylinder.

Try the shock-absorber without the main spring. On quick depression, a slight damping can be felt. To lift a properly filled shock-absorber a three-fold effort is required for the same speed.

VI. REAR MUDGUARD – REMOVAL

a) loosen 2 bolts in the rear part of the frame, 1 bolt in the space under the seat, 2 bolts for the intake silencer

b) disconnect the connectors of the tail-light under the seat and remove the mudwing.

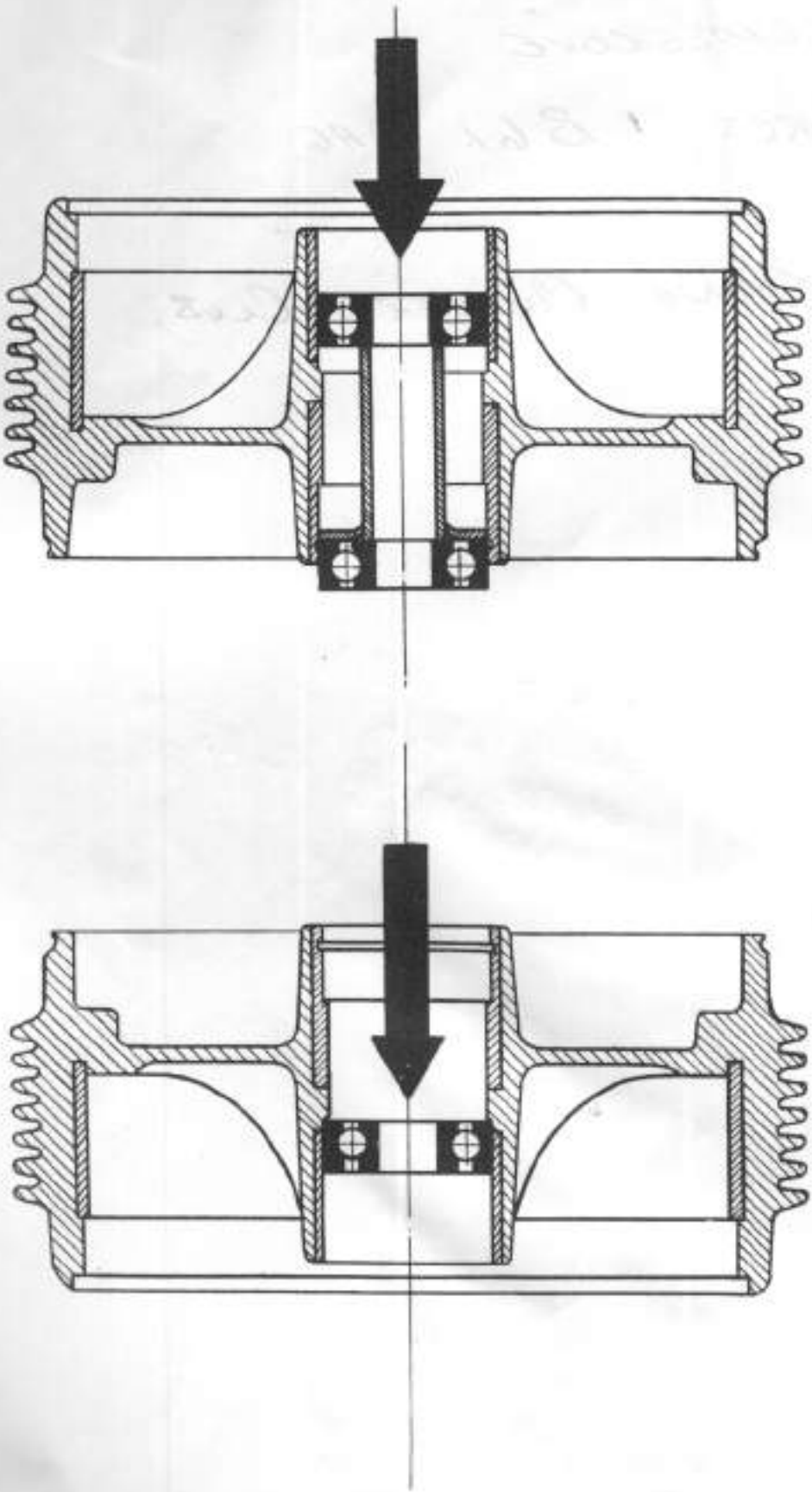


Fig. 41 – Removing of the bearing from whells