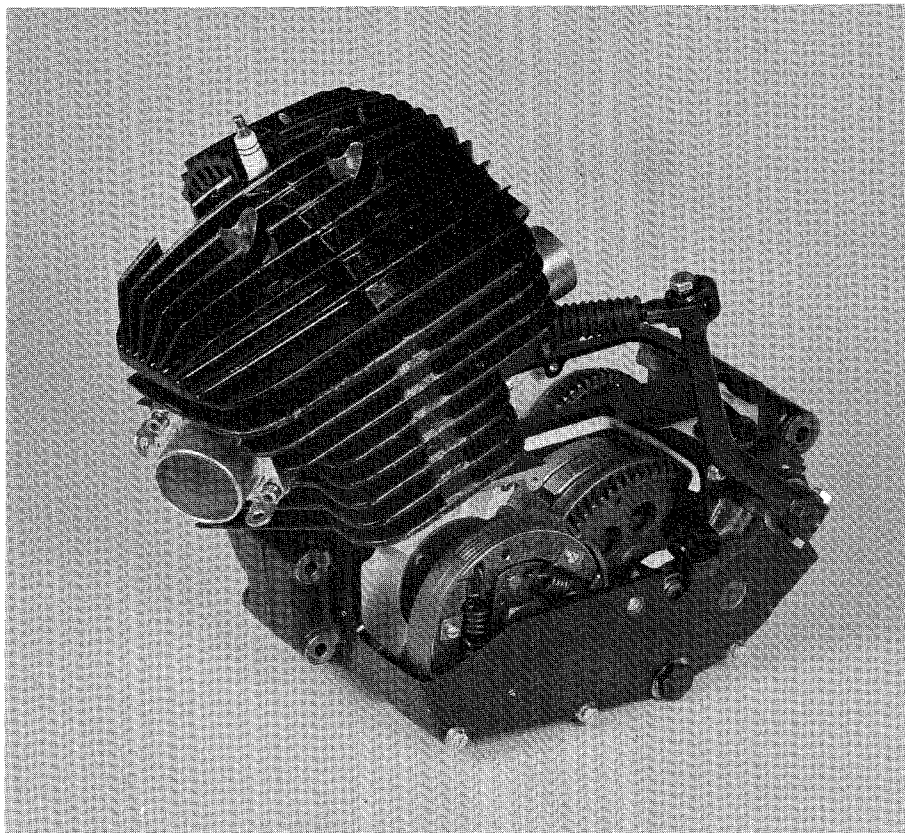


**Husqvarna  
motorcycles**

**WORKSHOP MANUAL  
THE AUTOMATIC**

# WORKSHOP MANUAL

## THE AUTOMATIC-ENGINE



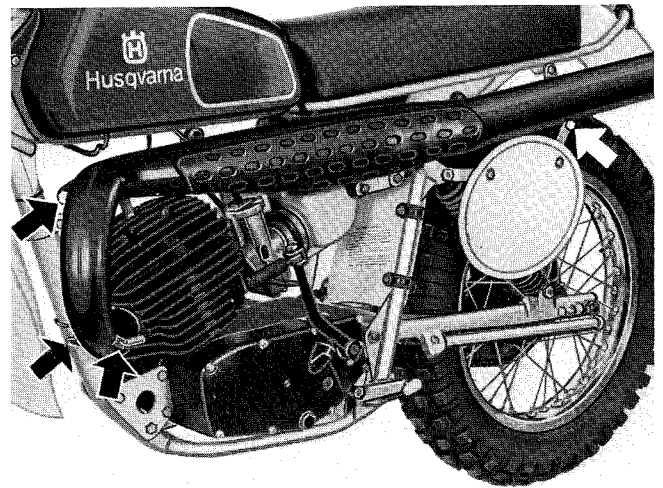
### Contents:

- |  |   |
|--|---|
| 1 REMOVAL OF ENGINE                                | 18 CRANKCASE, LEFT; KICK-STARTER                          |
| 3 REMOVAL AND INSTALLATION OF MAGNETO-FLYWHEEL     | 19 CRANKCASE, RIGHT                                       |
| 4 Searching ignition point                         | 20 DISASSEMBLING AND ASSEMBLING OF TRANSMISSIONCOVER      |
| 6 TRANSMISSION                                     | 20 Disassembling of kick-starter                          |
| 7 REMOVAL OF CLUTCH NUMBER ONE                     | 22 Mounting of kickstart-pedal                            |
| 7 Disassembling                                    | 23 Removal and mounting of intermediate gear              |
| 8 Installation                                     | 24 Removal and mounting of clutch-brake                   |
| 8 Changing springs                                 | 25 DISASSEMBLING AND ASSEMBLING OF CRANKCASES             |
| 9 REMOVAL OF CLUTCHDRUM (Crankshaft)               | 26 Disassembling and assembling of crankshaft             |
| 9 Bearings, freewheel                              | 27 REMOVAL AND MOUNTING OF TEFLON-BUSHINGS                |
| 10 Disassembling and assembling of clutchdrum      | 29 REMOVAL AND MOUNTING OF BEARINGS                       |
| 11 REMOVAL AND MOUNTING OF THE MAINSHAFT-UNIT      | 31 REMOVAL OF CLUTCH-SHOES AND SPRINGS, 1:st GEAR         |
| 11 Disassembling and assembling of main-shaft-unit | 32 REMOVAL OF CLUTCH-SHOES AND SPRINGS, 2:nd TO 4-th GEAR |
| 13 Disassembling and assembling of clutchdrum      | 33 TIME FOR REPAIR CLUTCH-SHOES                           |
| 14 REMOVAL OF SPROCKET SHAFT                       | 34 SCREW-SCHEDULE   |
| 14 Disassembling and assembling of sprocket shaft  |   |
| 17 REMOVAL OF DISENGAGING-SHAFT                    |   |
| 17 Adjusting start lever                           |   |



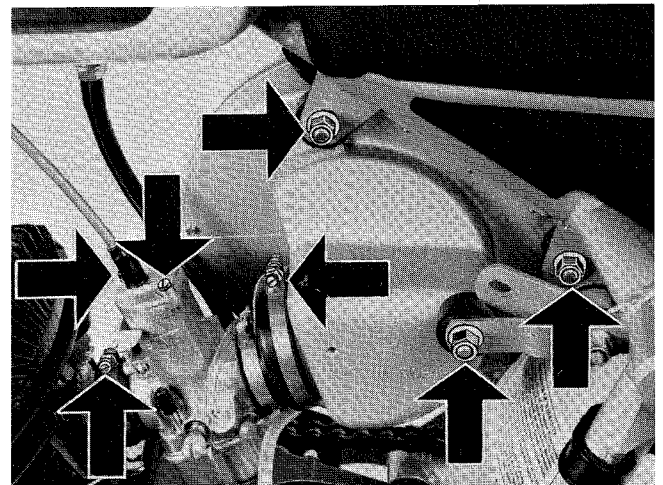
## REMOVAL OF ENGINE

Remove the exhaust system by loosening the two screws and unhook the springs.



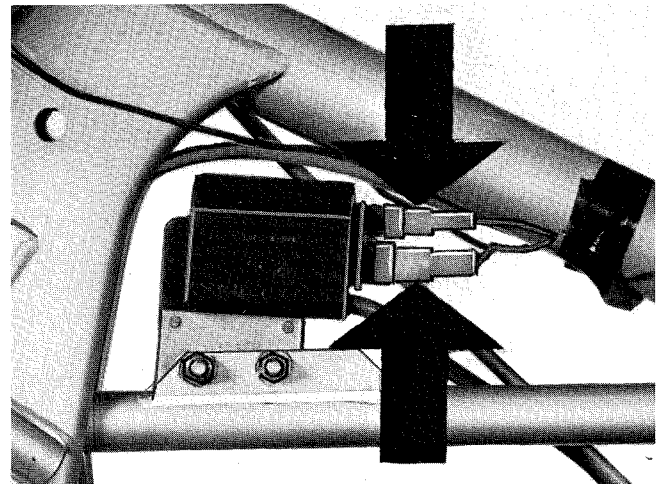
Screw out the 3 nuts, loosen the clamp and take out the whole air filter.

Remove the carburettor by loosening the clamp and the two screws on the top of the throttle.



Remove the rear tank holder and lift the rear end of the tank in order to be able to loosen the contacts from the ignition coil.  
Remove the kill-button.

NOTE! Blue cable to large connection. Black cable to small connection.

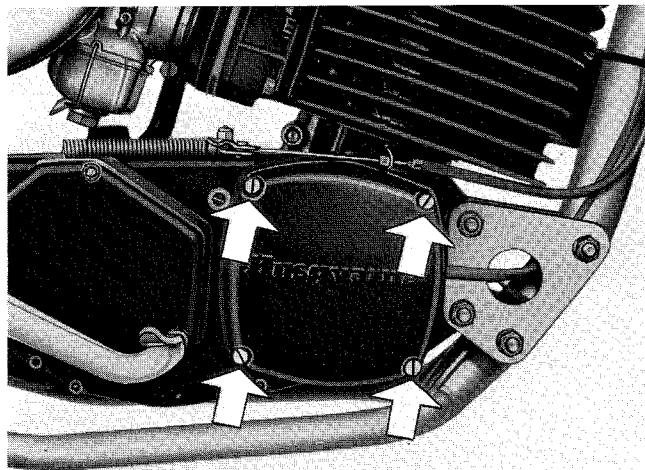






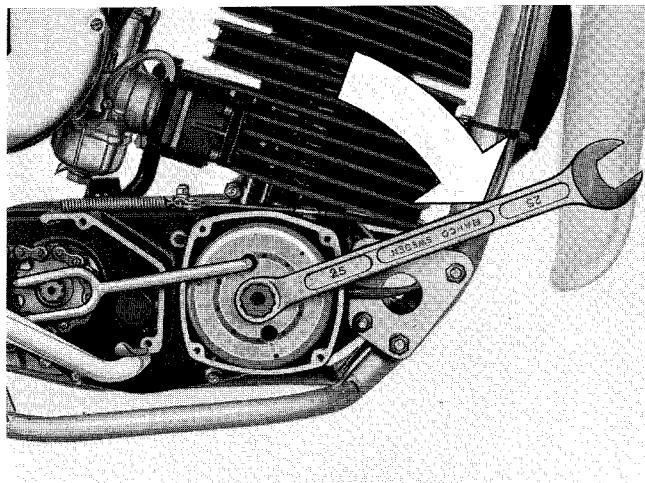
## REMOVAL AND INSTALLATION OF MAGNETO-FLYWHEEL

Unscrew the four screws holding the magnetocover, and the two screws holding the chaincover.



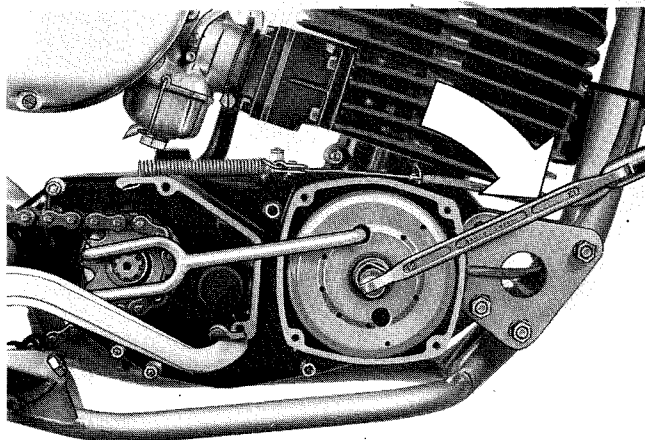
Use holder 15 19 334-01 and a 25 mm spanner to loosen the nut.

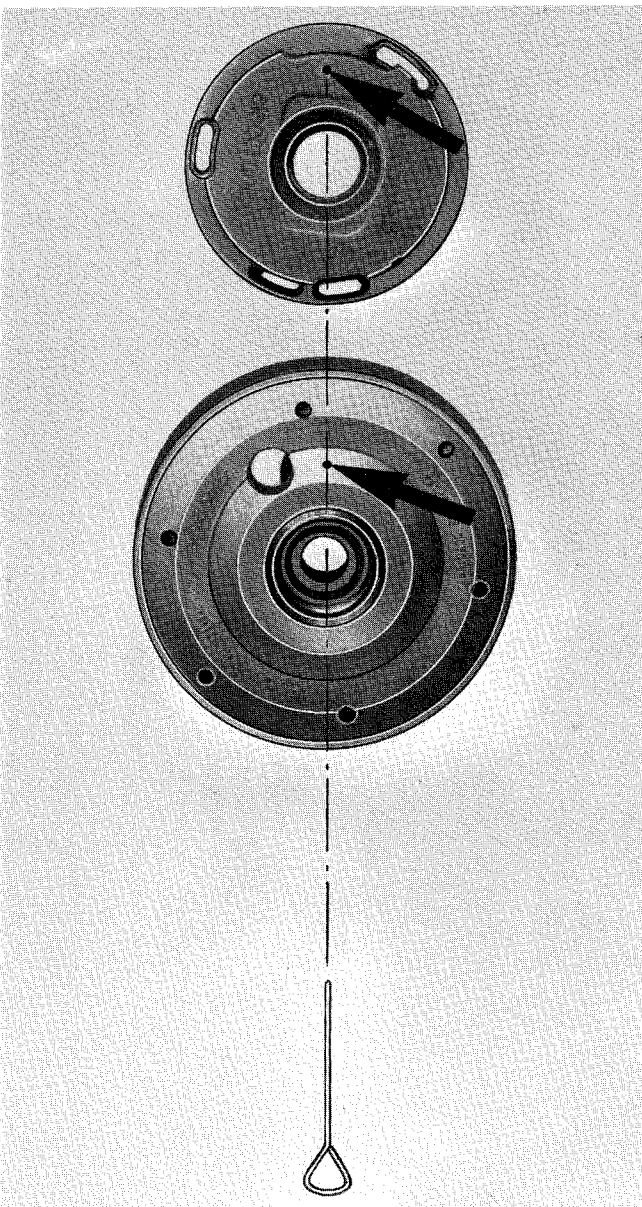
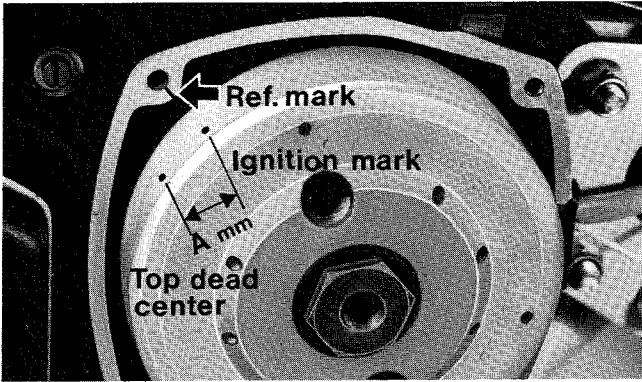
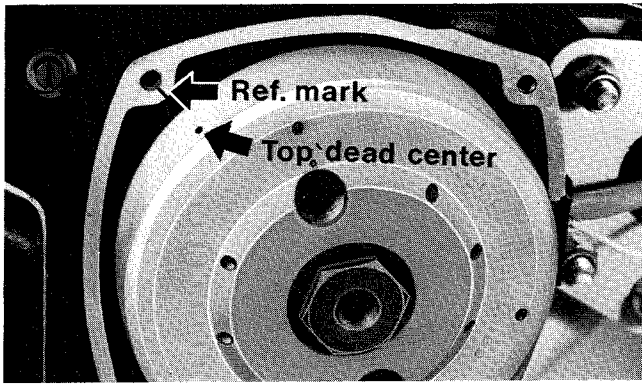
Note! Left hand thread.



Mount the flywheel puller 15 19 324-01 and make sure that the puller is screwed in fully.

Place a 12 mm spanner in position and pull off the flywheel.





### Searching ignition point

1. Place the piston in the upper dead centre.
2. Put a mark on the flywheel and a reference mark on the crankcase.
3. Turn the flywheel  $16^\circ$  backwards ( $A = 16 \text{ mm}$ ) and put a new mark in the flywheel, beside the reference mark in the crankcase.

Timing will be done by introducing the attached 2 mm pin through the hole in the flywheel and the hole in the stator. As these holes coincide this will indicate the moment at which the spark jumps.

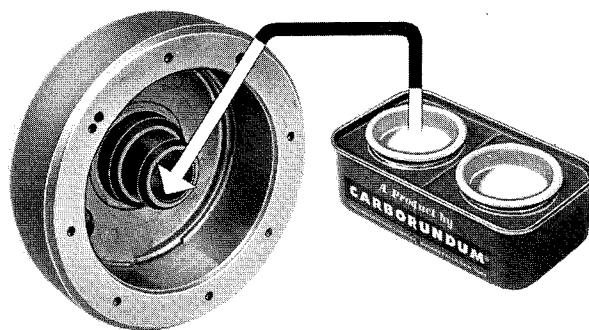
1. Put the pin through the flywheel into the hole of the armature plate and turn the whole ignition system until the ignition mark in the flywheel and the reference mark in the crankcase are beside each other.

**NOTE!** See to it that the armature plate moves easily so that the pin is not being deformed.

2. Remove the flywheel and fix the armature plate in this position.

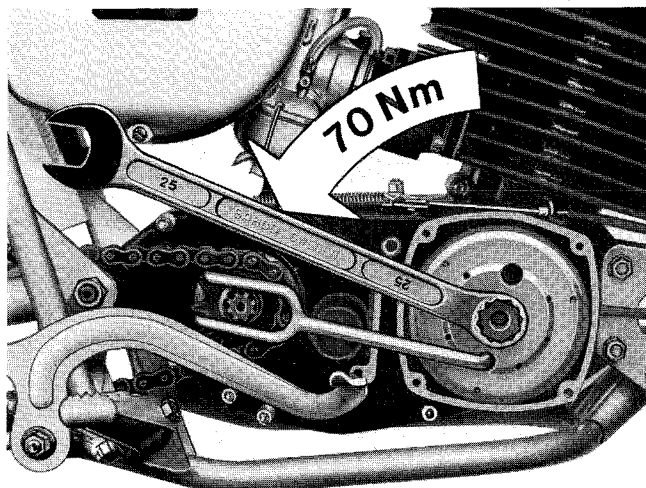
Before fitting a new flywheel, grind it in with grinding compound.

**NOTE!** Don't forget to wipe the cone on shaft and flywheel free from grinding compound.



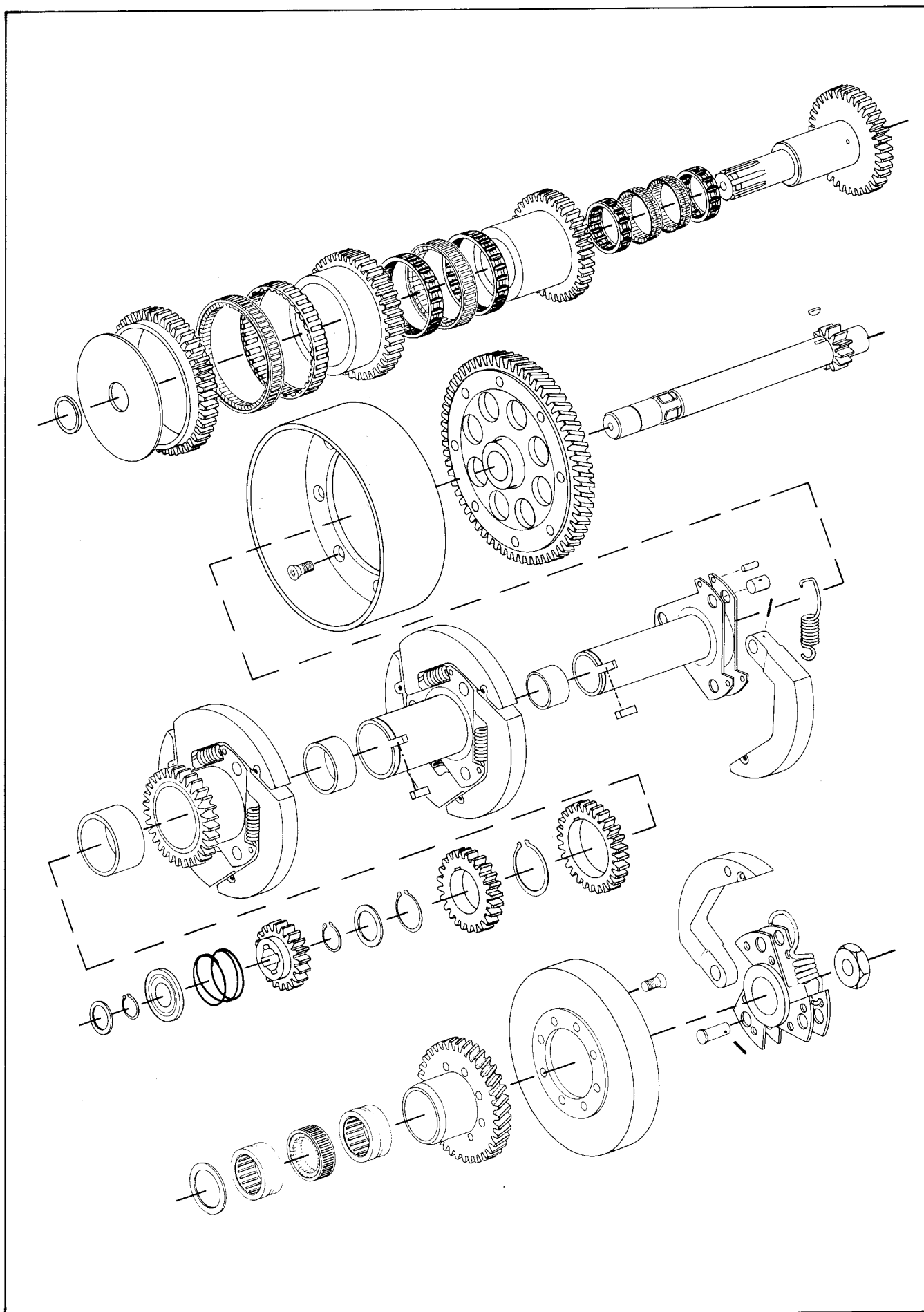
Fit in the reverse order and tighten the flywheel nut to a torque of 70 Nm.

**NOTE!** Tighten the flywheel nut three times, by assembling, after about 2 min running and then after about 2 hours.





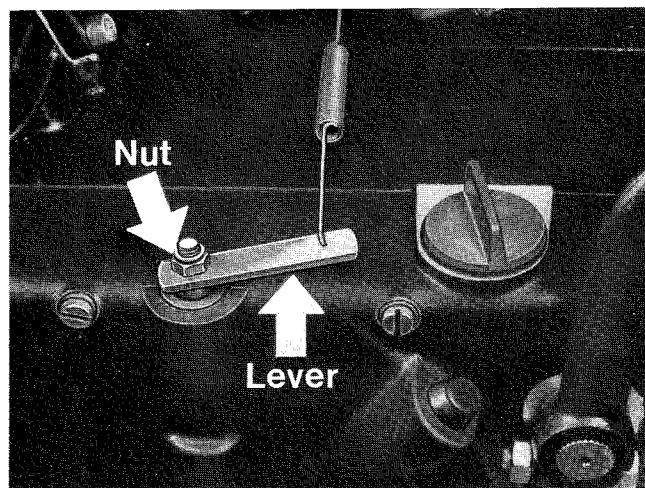
# Transmission



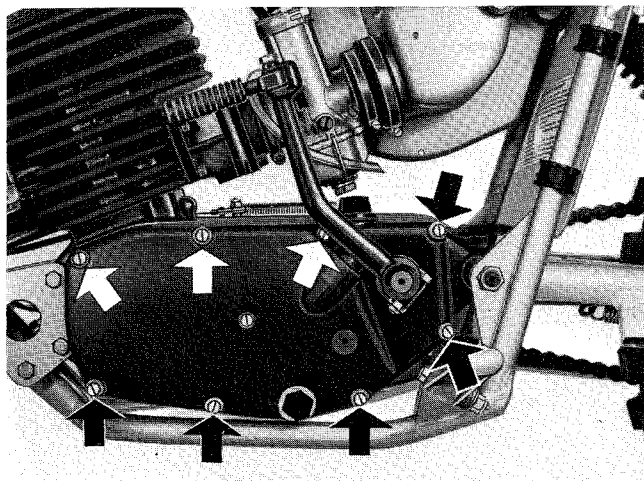
## REMOVAL OF CLUTCH NUMBER ONE

### Disassembling

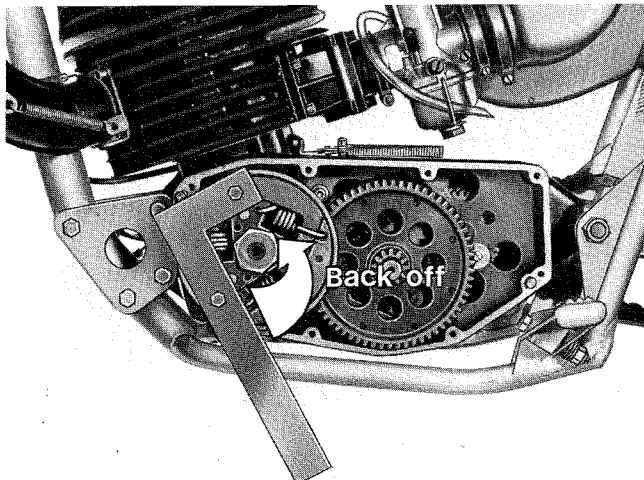
Remove the nut and the washer. Take off the lever and unhook it from the spring.

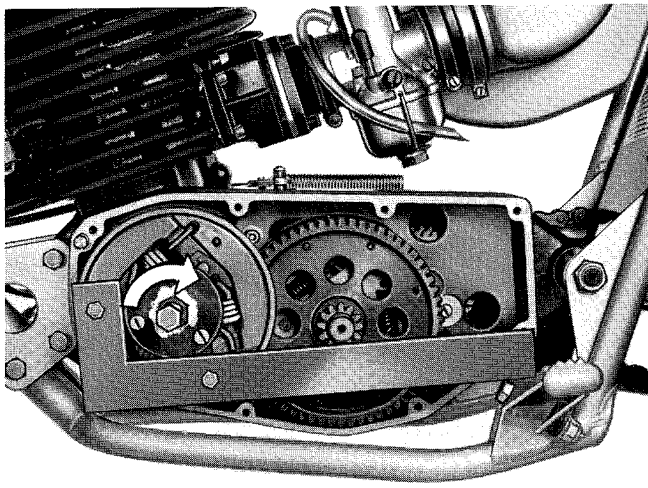


Remove the transmission-cover by loosening the eight screws (M 6 × 60).



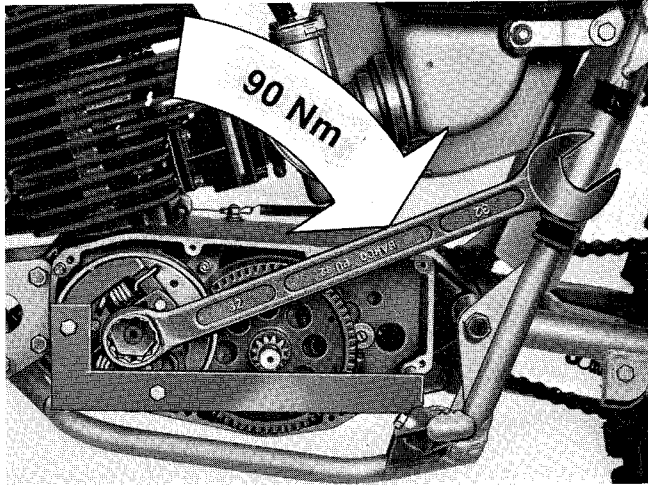
Mount the holding tool 15 19 843-01 and remove the transmission clutch centre nut with a 32 mm spanner.





Mount the puller 15 19 840-01 and a 19 mm spanner and remove the clutch.

NOTE! The screws of the puller must be screwed in both parts of the clutch-centre.



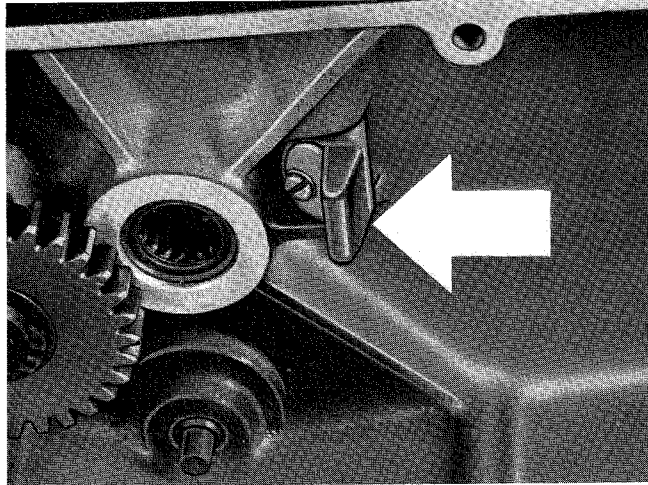
#### Installation

When mounting, the tightening torque of clutch-hub nut must be 90 Nm.

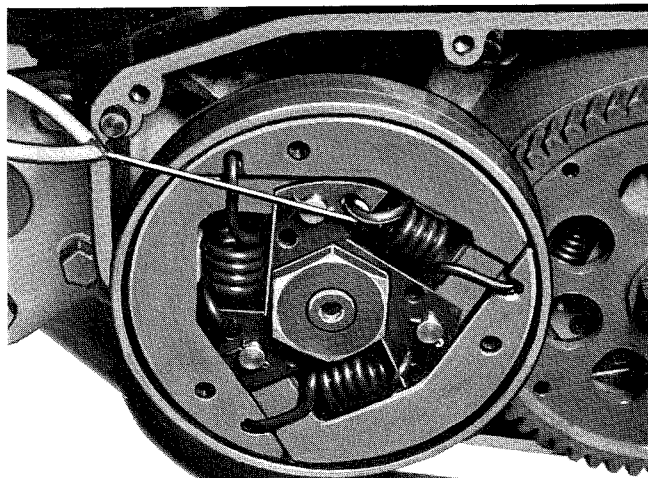
NOTE! If a new clutch-centre is installed it must be lapped in with fine grinding paste.

NOTE! The clutch-drum inside the clutch-centre shall have an axial play.

NOTE! Tighten the clutch-centre nut three times, by assembling, after about 2 min running and then after about 2 hours.



Before mounting the transmission cover, check that the brake shoe on the cover is turned as shown in fig.



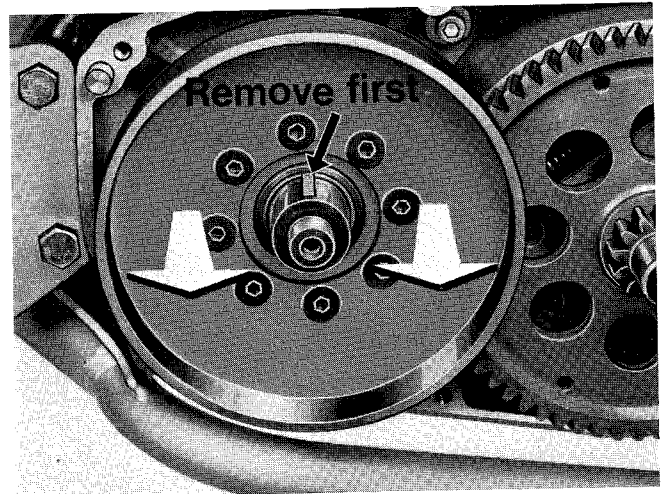
#### Changing springs

The springs on first gear are removed and installed by using hook 15 19 847-01.



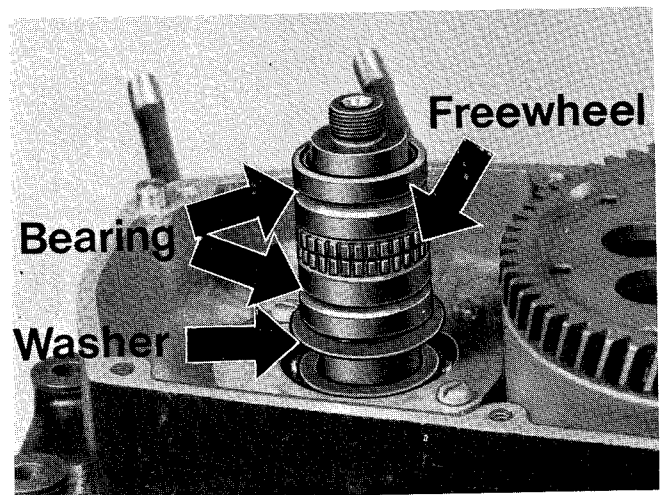
## REMOVAL OF CLUTCH-DRUM (CRANKSHAFT)

Before you take out the clutch drum, remove the key.

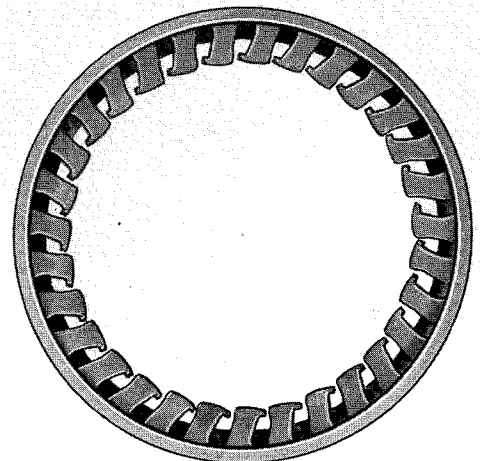


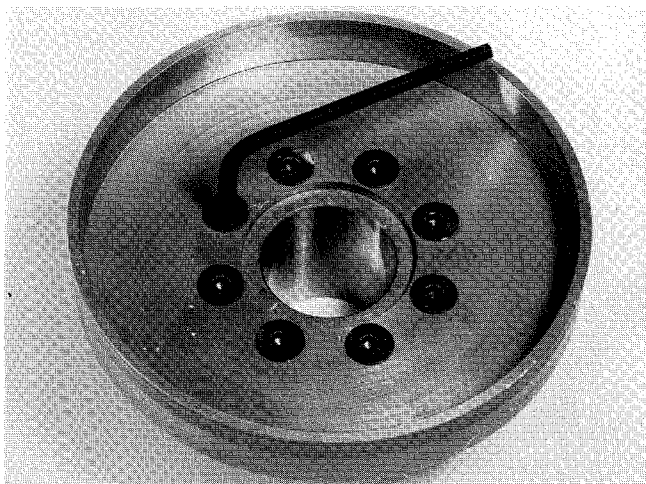
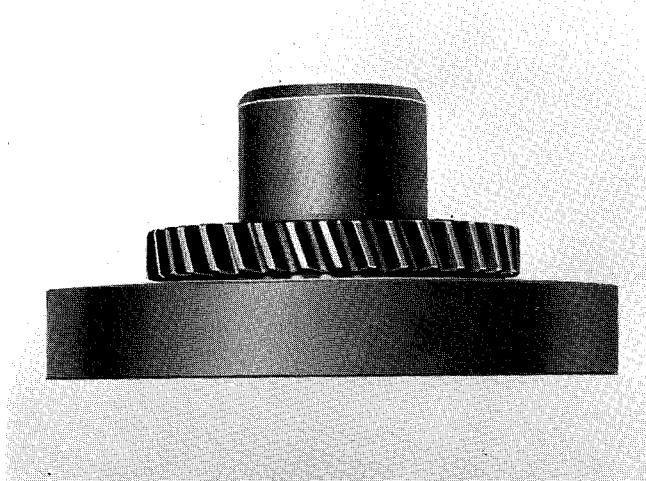
### **Bearings, free-wheel.**

Inside the clutch-drum, there are two bearings, one free-wheel and one washer and they are mounted as shown in fig.



The free-wheel on the crankshaft shall be mounted as shown in figure.





#### **Disassembling and assembling of clutch-drum.**

The clutch-drum is mounted to the primary transmission-gearwheel by 8 screws.

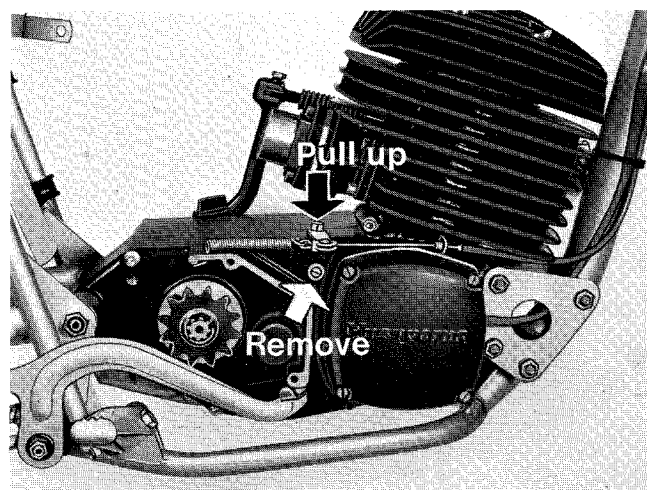
Remove the gear-wheel from the clutchdrum with the help of a 4 mm hexagon-key and loosen the 8 screws. (See fig.)

Mount new screws and use Loctite 640, and a tighten torque of 15 Nm.

In some engines there are star-quads instead of hexagon screws.

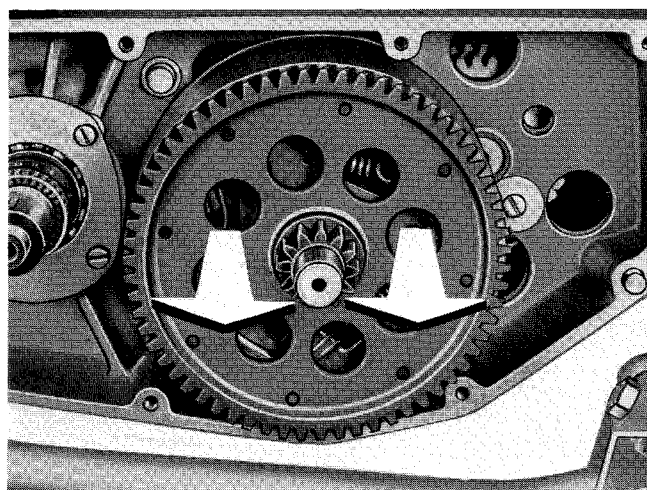
## REMOVAL AND MOUNTING OF THE MAIN SHAFT-UNIT

Remove the stop screw on the right hand side and pull up the lever shaft. See fig.



Remove the transmission-cover and clutch number one, according to previous instructions.

Pull out the main shaft unit.

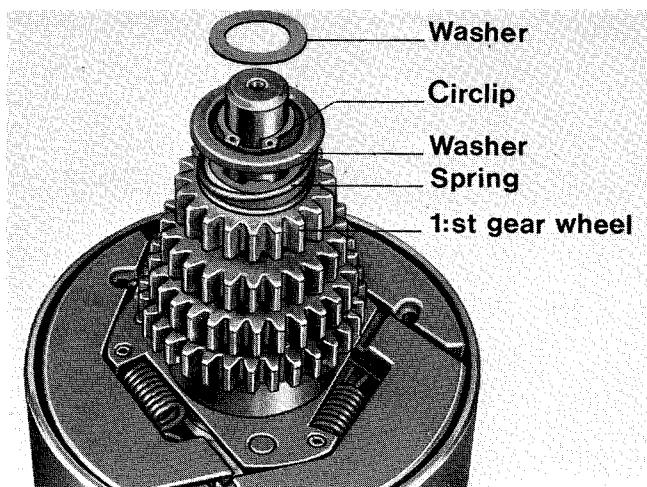


### Disassembling and assembling of mainshaft-unit

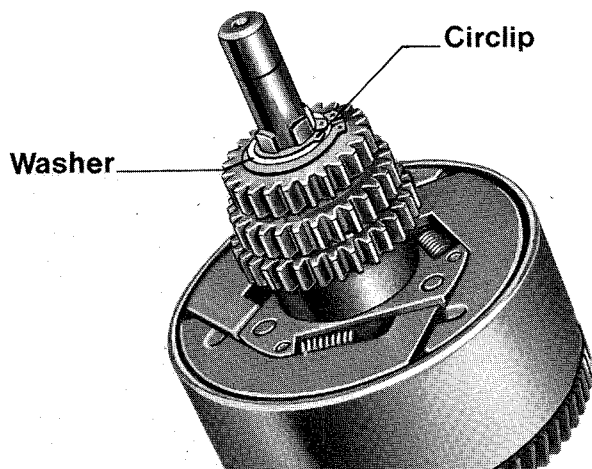
Take away the washer, circlip, washer, spring and 1:st gear wheel.

If it's difficult to remove the 1:st gear wheel. Don't use a puller. Use grinding compound between the wheel and the shaft and pull and twist the wheel until it comes off.

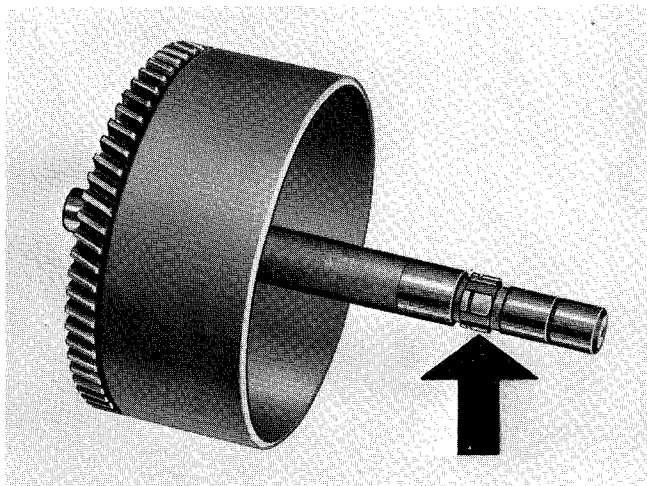
**NOTE!** If there is any burr on the splines in the 1:st gear wheel. Remove the burr with a piece of emery paper.



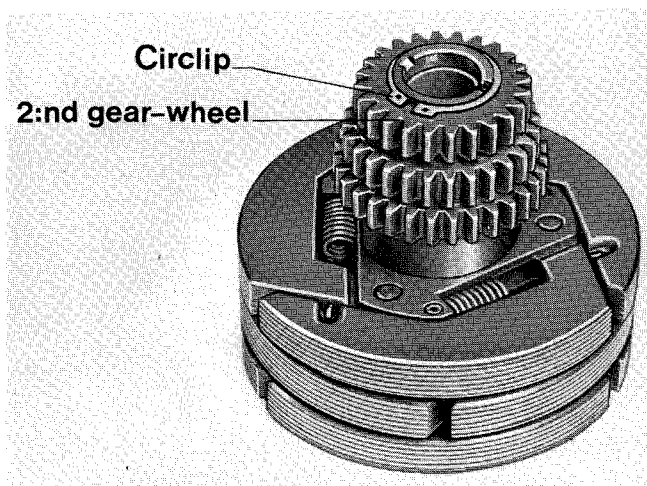




Take away the circlip and washer.



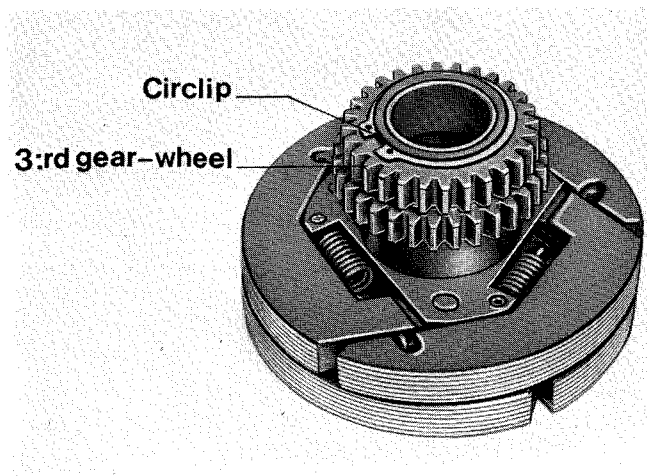
If there is any burr on the shaft (see fig.) take a piece of emery paper and remove it. This must be done before lifting the gear-unit out of the clutch-drum. These burrs can damage the teflon-bushings into the 2:nd gear shaft.



Remove the circlip and 2:nd gearwheel (with the help of two screw-drivers), and pull out the clutch hub.

NOTE! Push in the two screw-drivers under 2:nd gearwheel but not so far that the ends of the screw-drivers hit the circlip groove and damage it.

NOTE! The key!



Remove the circlip and 3:rd gear wheel (with the help of two screw-drivers), and pull out the clutch hub.

NOTE! Push in the two screw-drivers under 3:rd gearwheel, but not so far that the ends of the screw-drivers hit the circlip groove and damage it.

NOTE! The key!

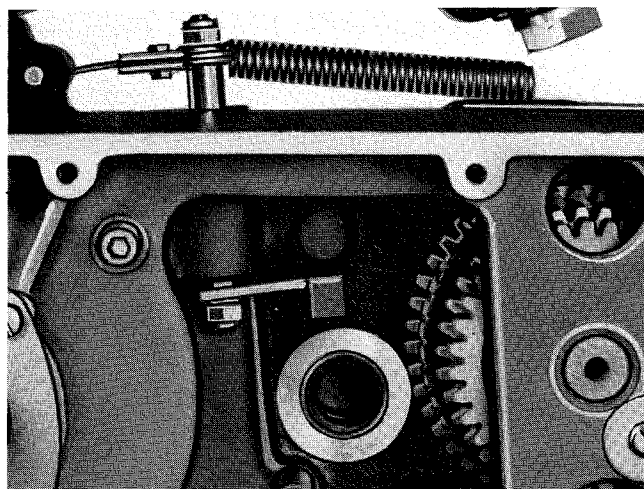
Mounting is done in the reverse order, but note the following.

When 2:nd, 3:rd and 4:th gear-wheel are mounted, take a screw-driver and press the wheels one by one against the circlip in fig. above. Do it in this order, 2:nd, 3:rd and 4:th.

Before mounting the mainshaft-unit, check that the gear lever shaft is in the upper position and turned anti-clockwise.

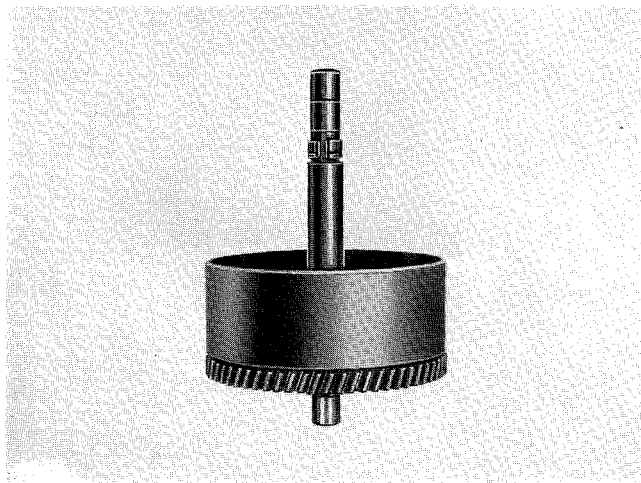
Mount the mainshaft-unit, first clutch-hub and the transmission-cover.

NOTE! When the transmission-cover has been mounted, check through the oil-filling-hole that the mainshaft-unit has an axial play and rotates freely.



#### Disassembling and assembling of clutchdrum

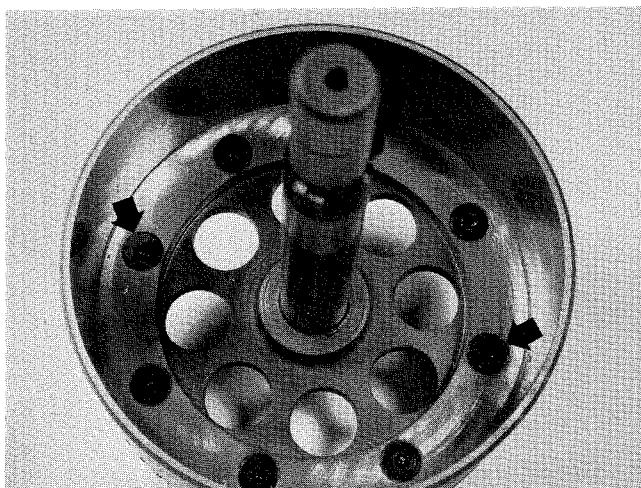
The clutchdrum is connected to a gear-wheel and a shaft. (see fig.)



Remove the gear-wheel from the clutchdrum with the help of a 4 mm hexagon-key and loosen the 8 screws. (See fig.)

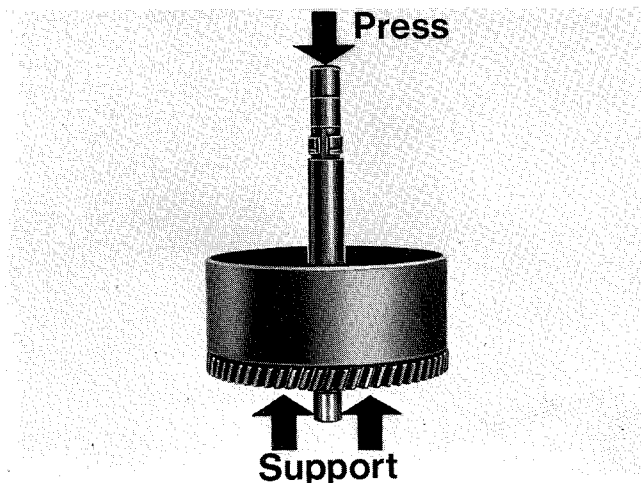
NOTE! Mount new screws and use Loctite 640 and a tighten torque of 15 Nm.

In some engines there are star-quads instead of hexagon screws.

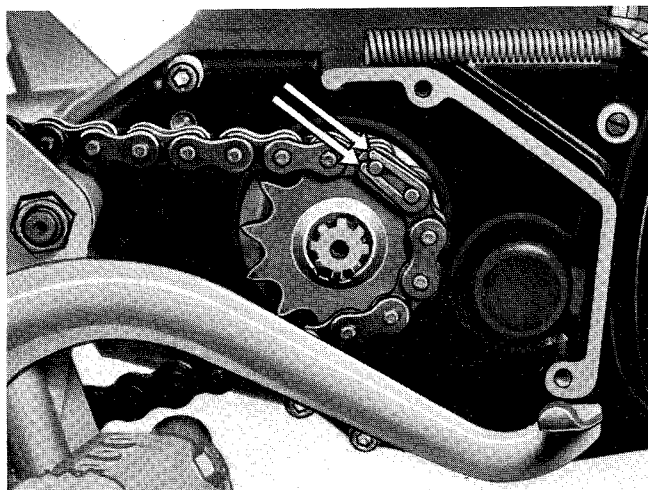


Remove the shaft from the gear-wheel with help of a support (under) and press with help of a hydraulic press on the top.

NOTE! The key, between shaft and gear-wheel.

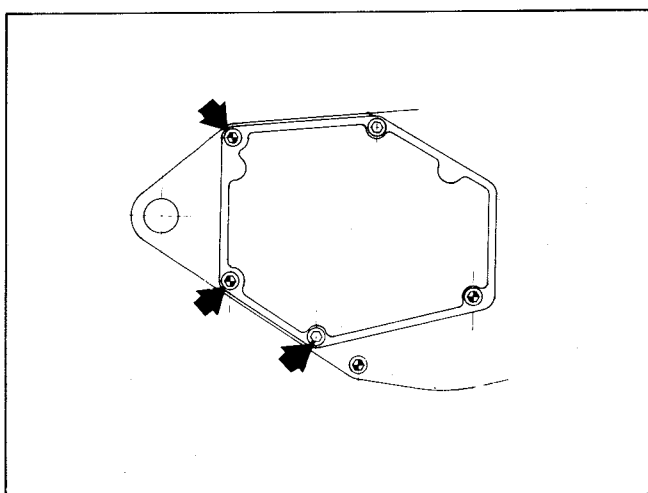


## REMOVAL OF SPROCKET SHAFT



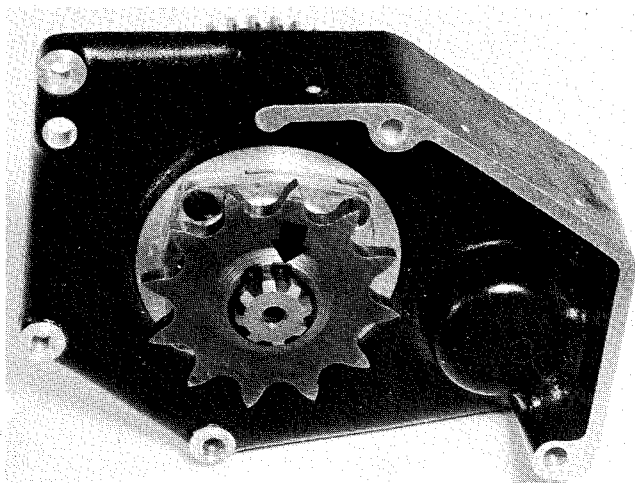
Remove the sprocket cover by loosening the two screws.

Remove the chain masterlink and take off the chain.



Remove the three remaining screws (see fig.) and take out the sprocket-shaft-unit.

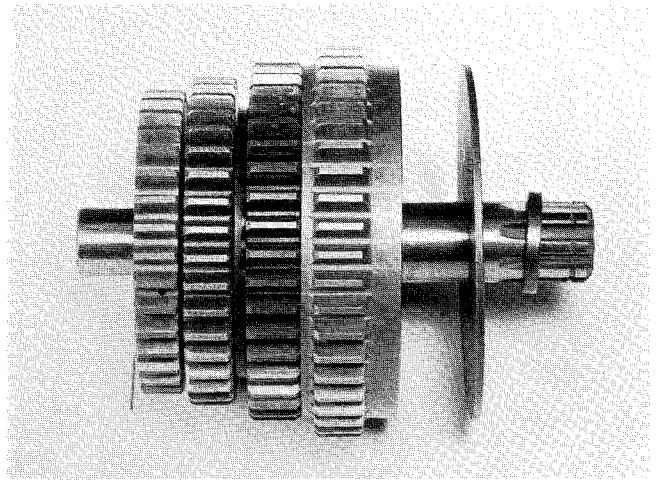
**NOTE!** The seal at the end of the shaft.



**Disassembling and assembling of the sprocket shaft**  
Remove the circlip, sprocket, distance and apart the shaft-unit from the cover.

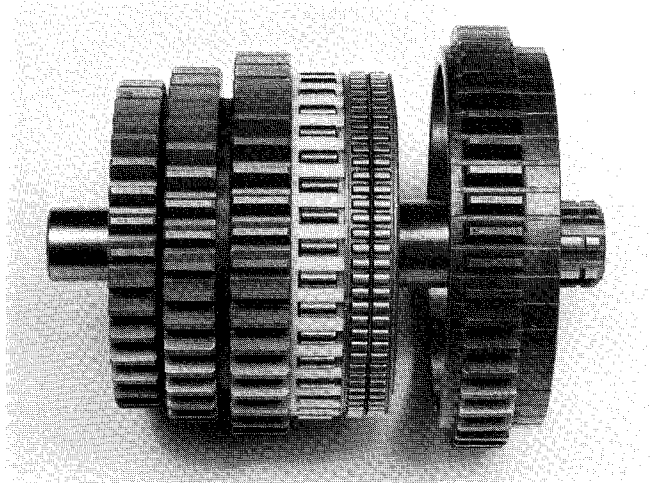


Remove the distance and the support washer.

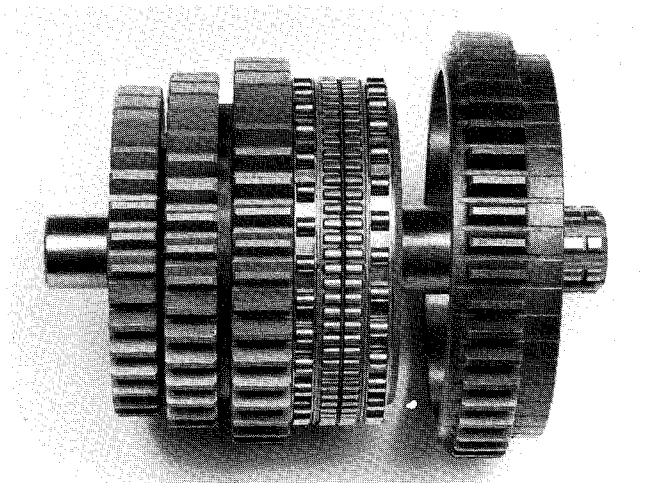


By pulling and twisting anti-clockwise in the same moment, gear-wheel number one is removed.

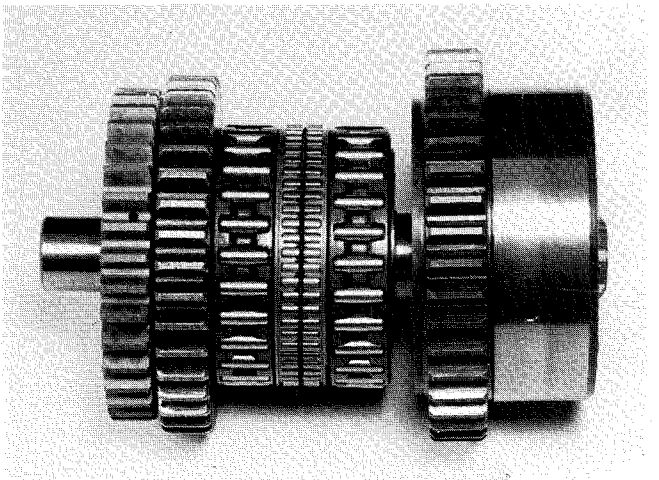
Remove the rollerbearing and the freewheel.

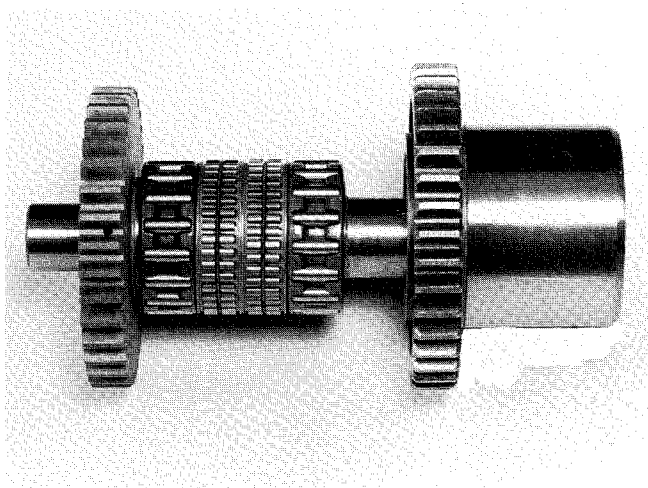


In some engines there are two rollerbearings, and they should be mounted as shown in fig.

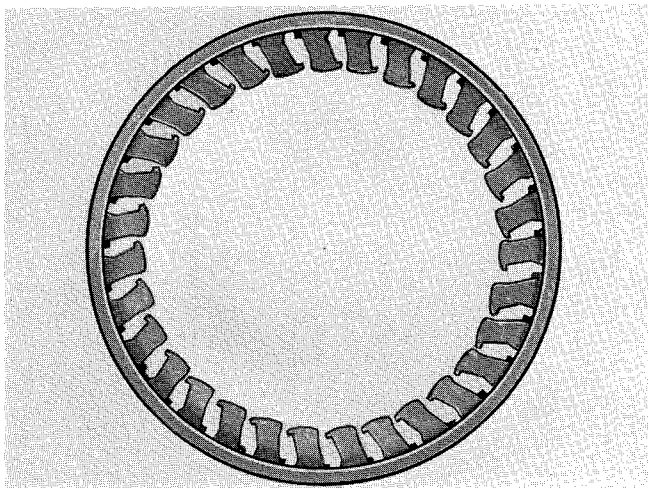


Remove the second gearwheel in the same manner as gearwheel number one.  
Remove the two needlebearings and the freewheel.





The third gearwheel is removed in the same manner as number one and two.  
Remove the two needlebearings and the two free-wheels.



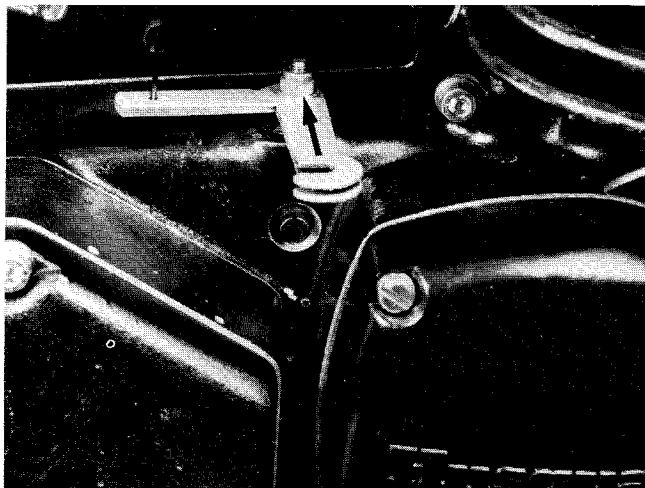
**When assembling.**

NOTE! All freewheels on the sprocket-shaft shall be mounted according to fig. If not, the gear-box will not functionate.

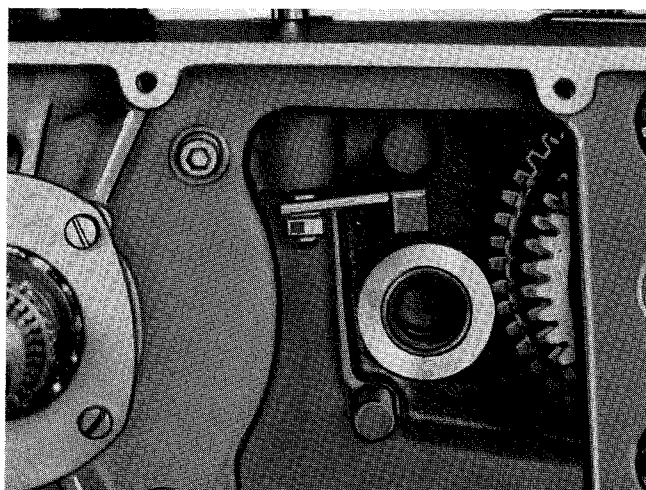
## REMOVAL OF DISENGAGING-SHAFT

Transmission-cover, primary transmission and mainshaft-unit are removed.

Unhook the clutch-cable. Remove the nut, washer and lever on the upper part of the shaft.

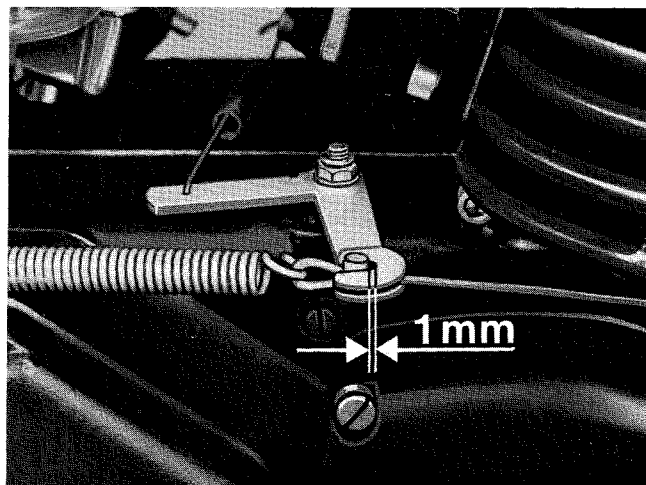


Press the shaft down, and remove it.



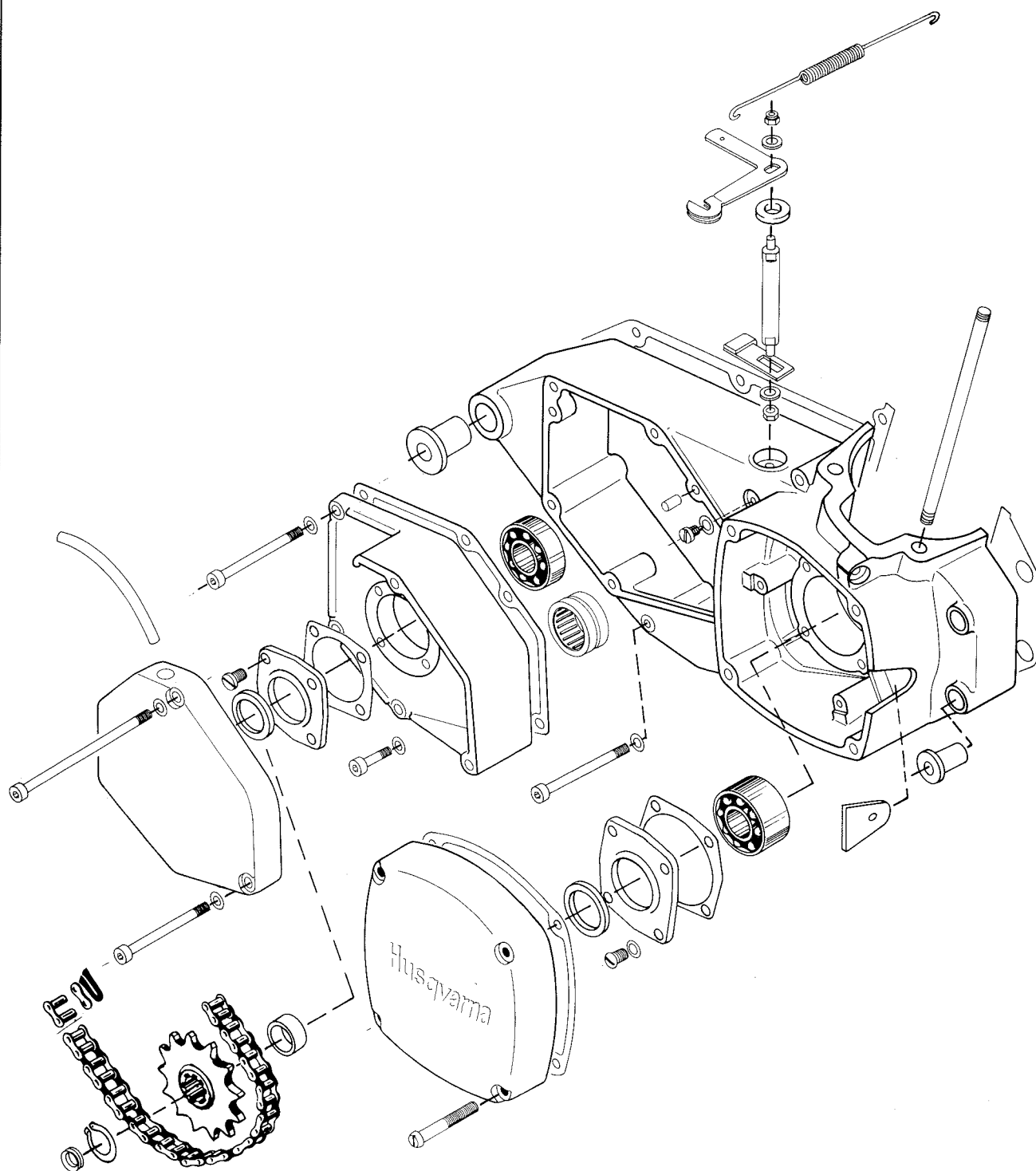
### Adjusting start lever

When the start lever on the handlebar is actuated, the play between gear-lever and gear-cable should be 1 mm.



## This is a detailed exploded view diagram of a mechanical assembly, likely a motorcycle engine or transmission housing. The diagram shows the main housing components at the top and bottom, with various internal parts like gears, shafts, and bearings positioned between them. Dashed lines indicate the assembly path for each part. Key components include: a large gear at the top left; a shaft with a pinion gear; a crankshaft or output shaft; a housing cover with a latch mechanism; and various smaller parts like bolts, washers, and seals. The diagram is a technical line drawing with no shading or color.

## CRANKCASE, RIGHT





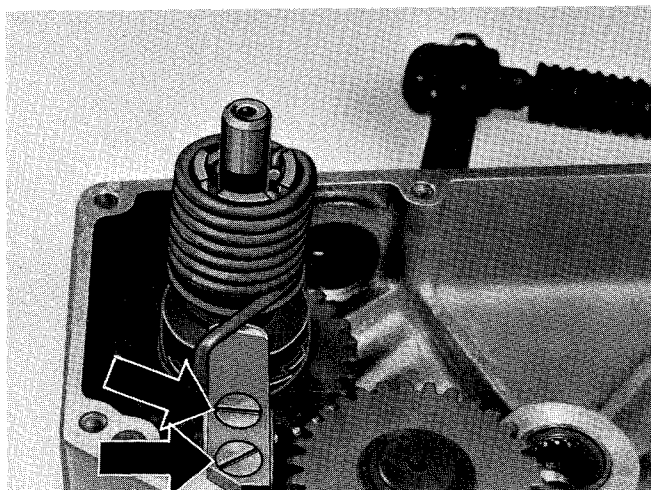
## DISASSEMBLING AND ASSEMBLING OF TRANSMISSION-COVER

### Disassembling of kick-starter

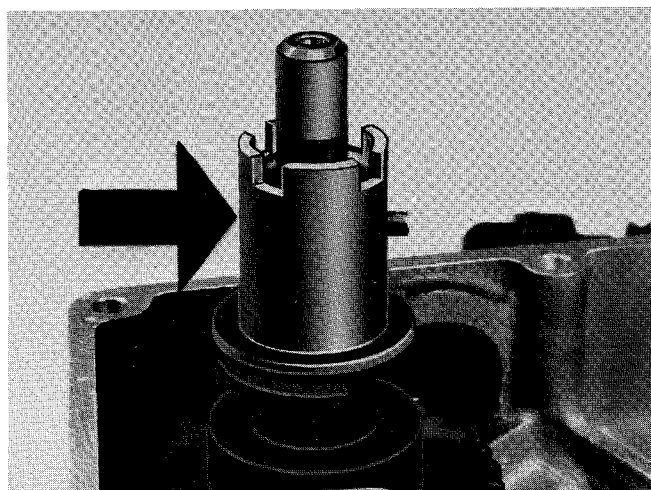
Unhook the returnspring.

Remove the stop by loosening the two screws.

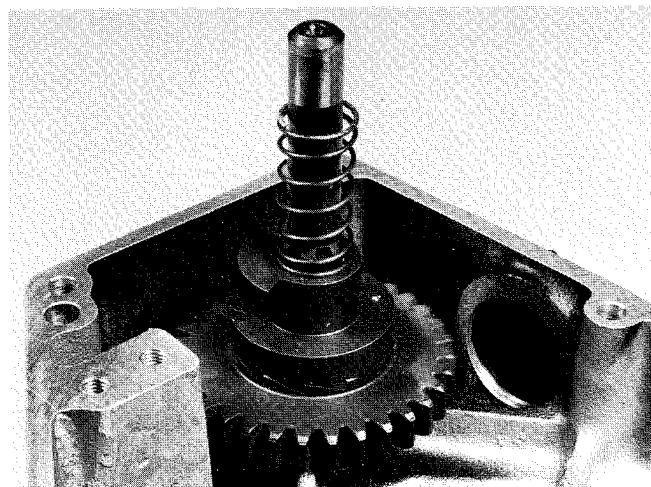
NOTE! By mounting use Loctite 241 on the screws.



Use a drift and remove the spring action pin.

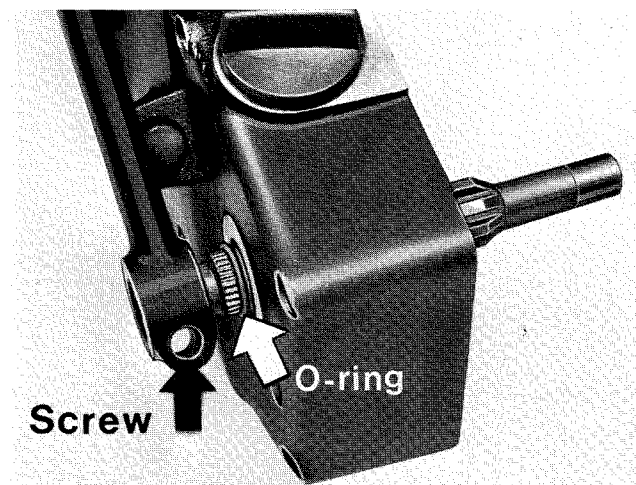


Remove distance sleeve, spring and ratchet wheel.

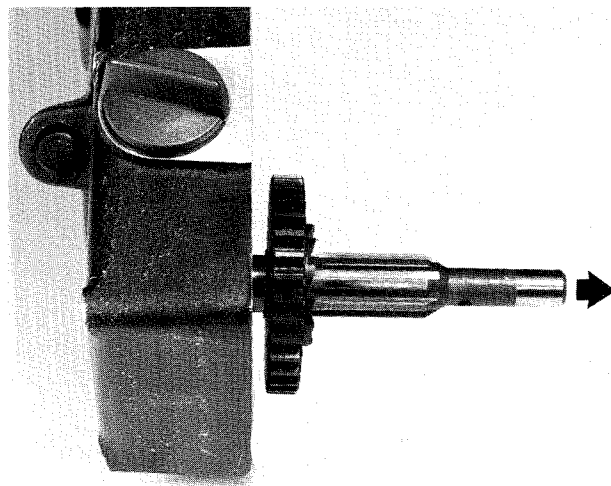


Remove the nut and the screw and loosen the kick-start pedal from its splines on the shaft.

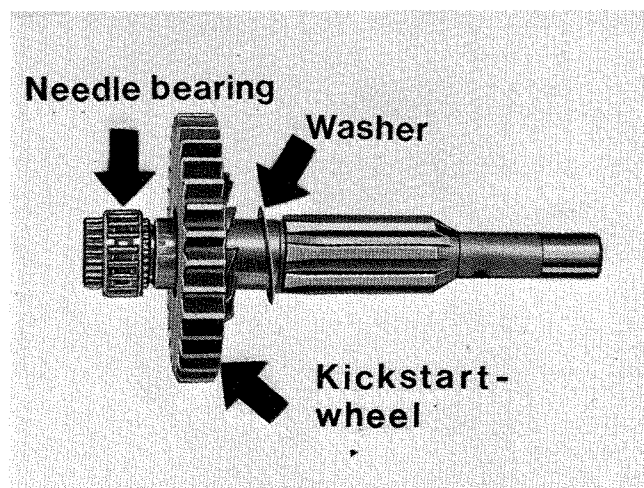
Remove the O-ring inside the pedal.



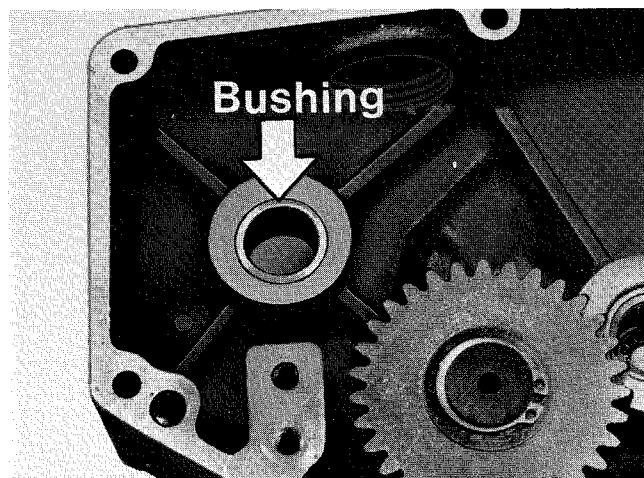
Remove the kick-start shaft.

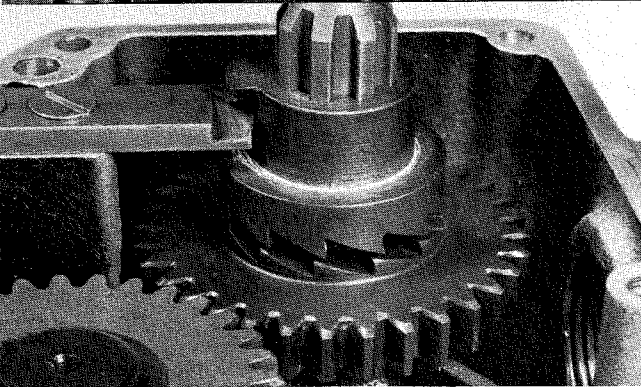
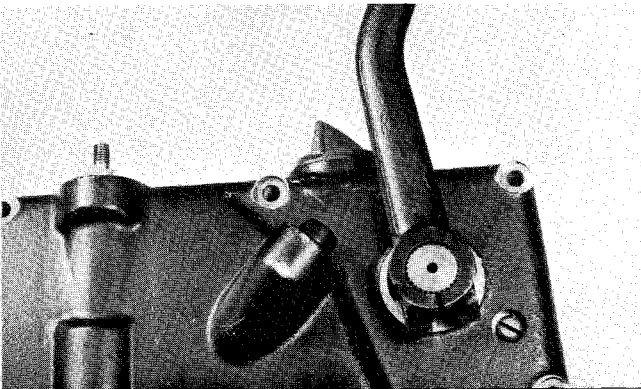
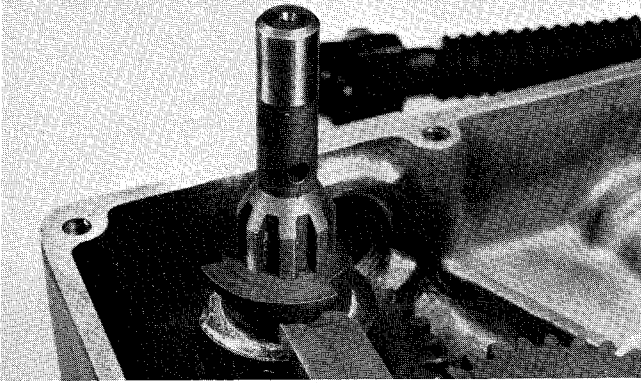
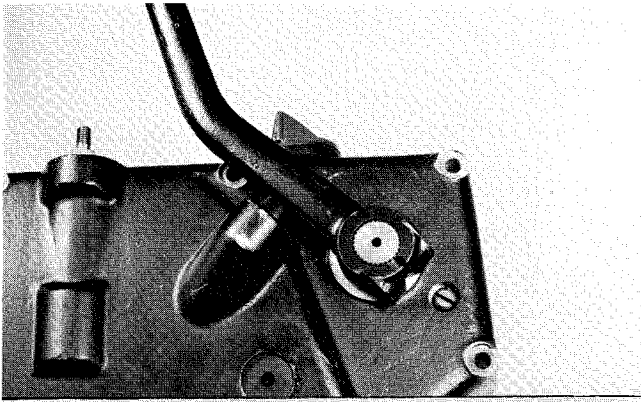


Inside the kickstart-wheel there are one needle bearing and one washer. See fig.



In the cover there is also one bushing.  
If a new bushing shall be mounted press out the old by help of a hydraulic press.  
Press in a new bushing, but first heat the cover to 225°. The bushing shall be mounted flush to the inner-edge of the cover.





### **Mounting of kickstart-pedal**

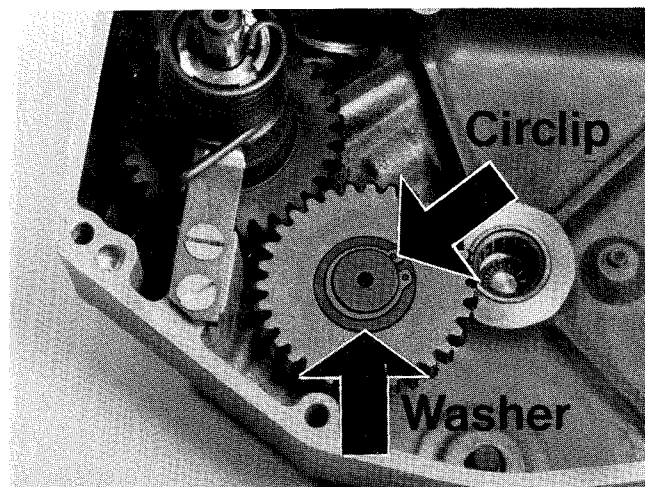
When the kickstart-pedal stops against its rubber-stop (see fig.), the ratchet wheel shall be mounted on the shaft as shown in fig.

NOTE! The position of ratchet wheel and the pawl (stop).

When the kickstart-pedal is in the position shown in fig., the ratchet wheel and kickstart-wheel shall just engage. (see fig.)

### Removal and mounting of intermediate gear

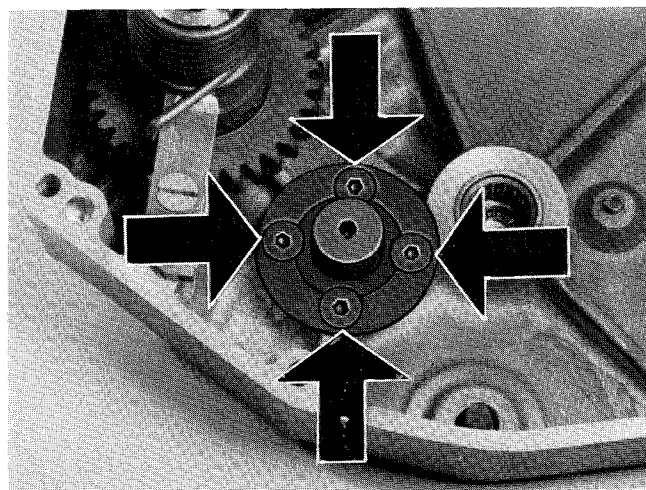
Remove the circlip and washer and take off the gear wheel.

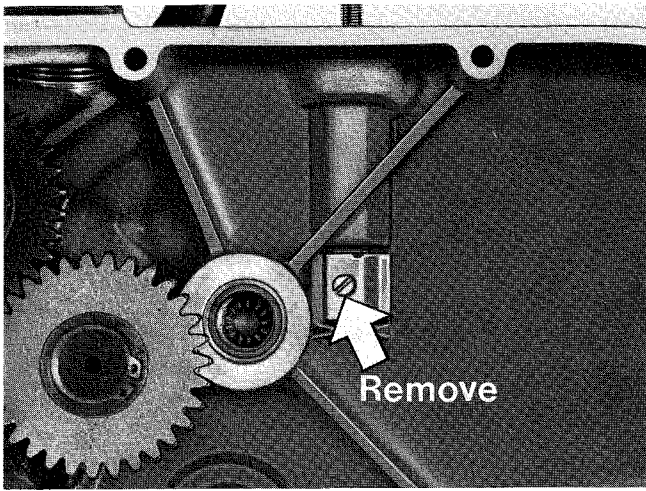


Loosen the four screws. Use a hydraulic press and press out the shaft.

When mounting a new shaft heat the cover to 225° C.

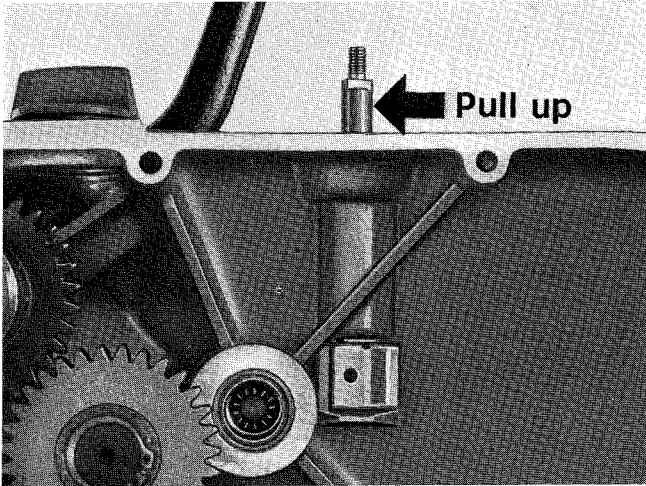
**NOTE!** Lock the screws with Loctite 241, and use a tighten torque of 5 Nm.



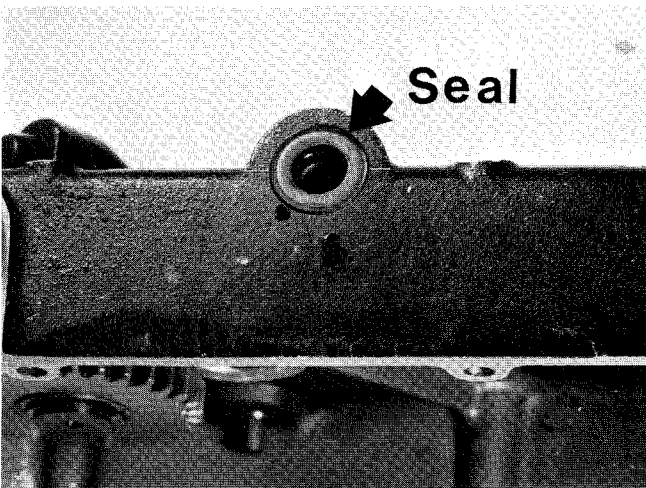


**Removal and mounting of clutch-brake**  
 Remove the screw which holds the brake-shoe.

NOTE! By mounting, lock the screw with Loctite 241, and 4 Nm tightening torque.



Pull up the shaft and remove the brake-shoe.

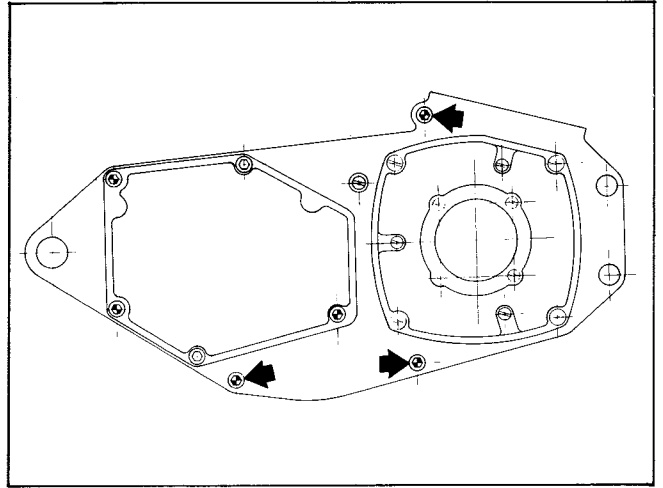


On the upper side of the cover there is also a seal.  
 (see fig.)

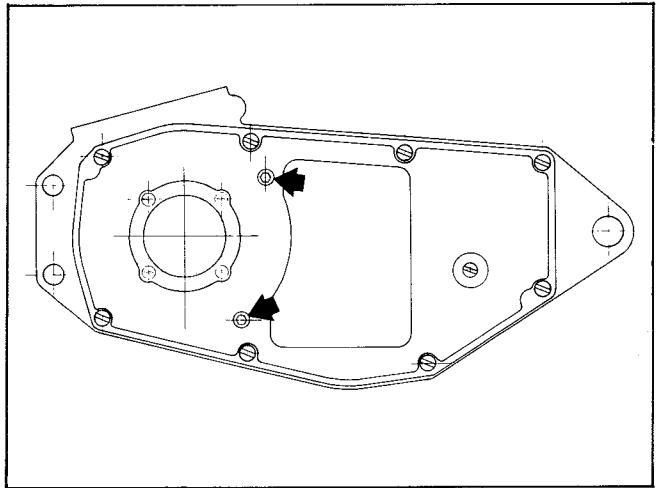


## DISASSEMBLING AND ASSEMBLING OF CRANKCASES

Loosen the three screws on the right crankcase.

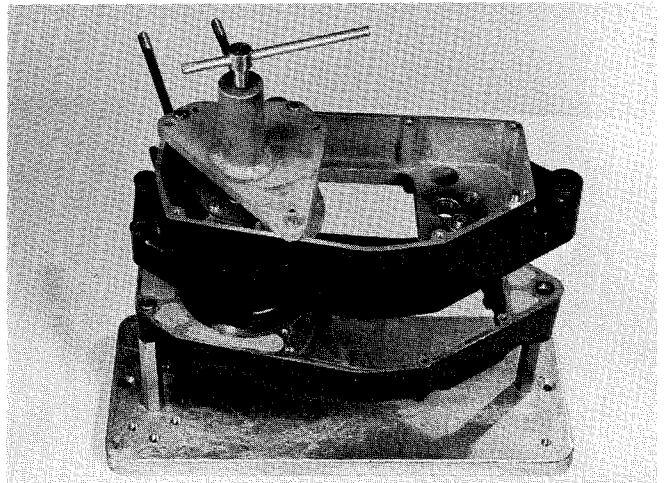


Loosen the two screws on the left crankcase.

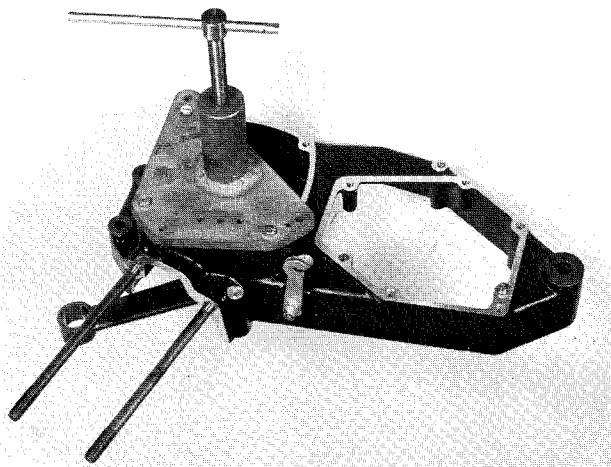


Mount crankcase tool 15 19 837-01 and press the crankcases apart.

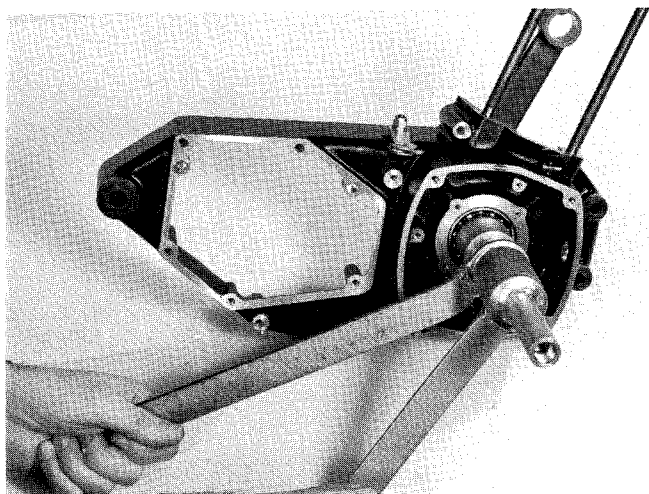
NOTE! The two steering sleeves.



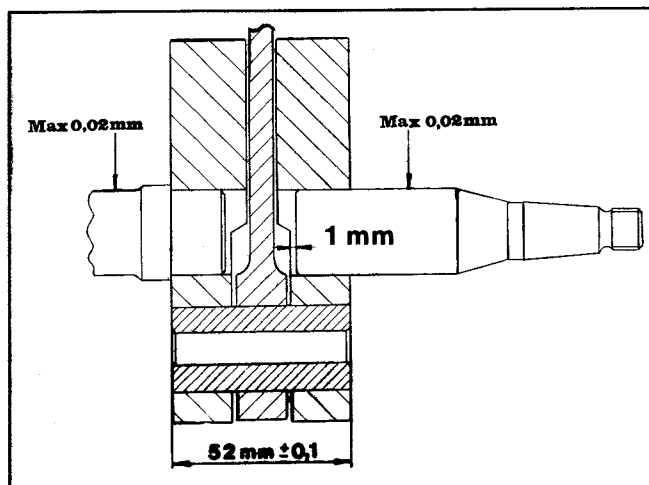
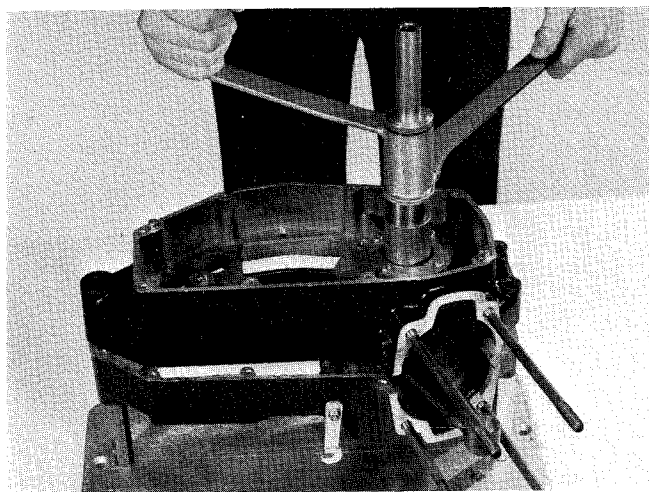
Mount the tool on the right crankcase-half and press out the crankshaft.



Mounting the crankshaft is done like other Husqvarna models, by using tool 15 19 280-01.



Assembling of the crankcases is done with help of tool 15 19 280-01, and three distance pieces.



#### Disassembling and assembling of crankshaft

is like other Husqvarna crankshafts except the following:

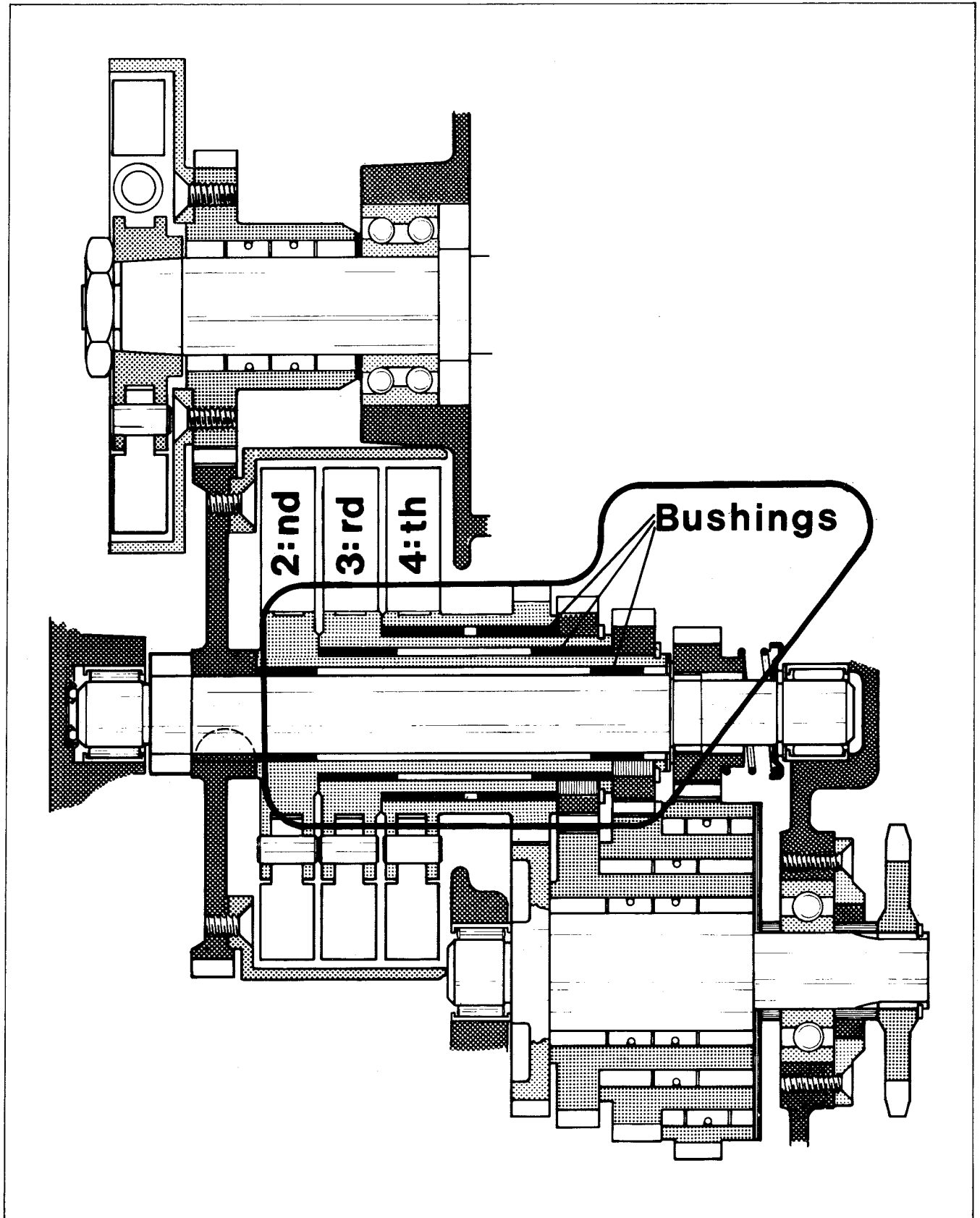
The distance between the right crankdisc and the shaft shall be 1 mm. (See fig.)

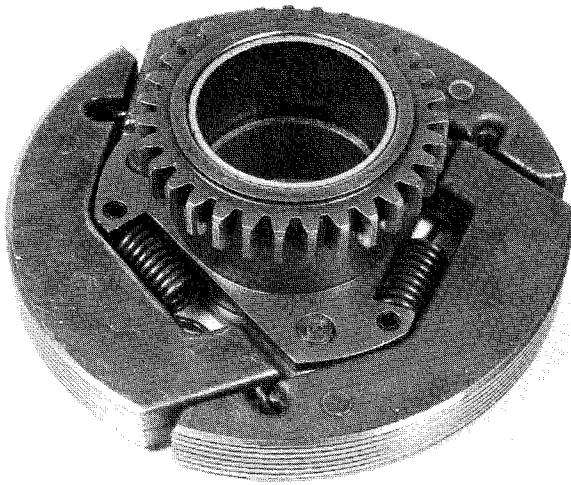
The radial play between the shafts shall be max 0.02 mm.

The total measure over the disks shall be 52 mm  $\pm$  0,1.

## REMOVAL AND MOUNTING OF TEF- LONBUSHINGS

In the manishaft-unit there are 6 teflon-coated bushings. See fig below, where the bushings are placed.

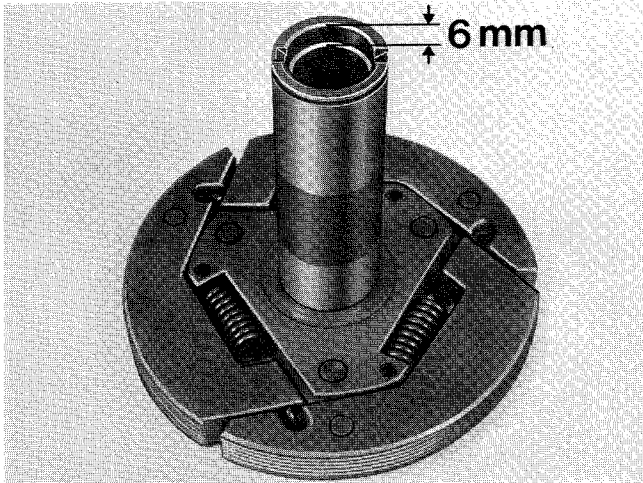




Removal of bushings is done by using a drift and a hammer.

Mounting is done by using a drift and a hydraulic press.

In every gear there are two teflonbushings. The bushings in 3:rd and 4:th gear are mounted flush to the shaft-end. The fig. beside shows the bushing in 4:th gear. Also see fig. on previous page.



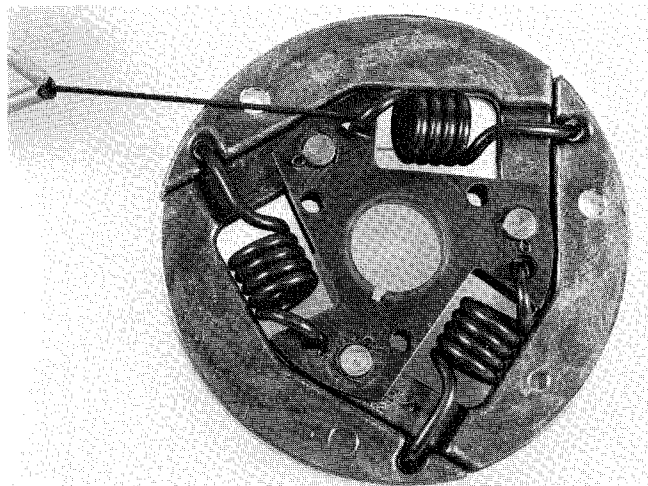
The teflonbushings in the 2:nd gear are mounted flush in the bottom and 6 mm under the edge at the top. Also see fig. on previous page.

**NOTE!** Don't try to broach the teflon-bushings. If the shafts don't rotate freely in the bushings, change to new teflon-bushings.

## REMOVAL OF CLUTCH-SHOES AND SPRINGS, 1:ST GEAR

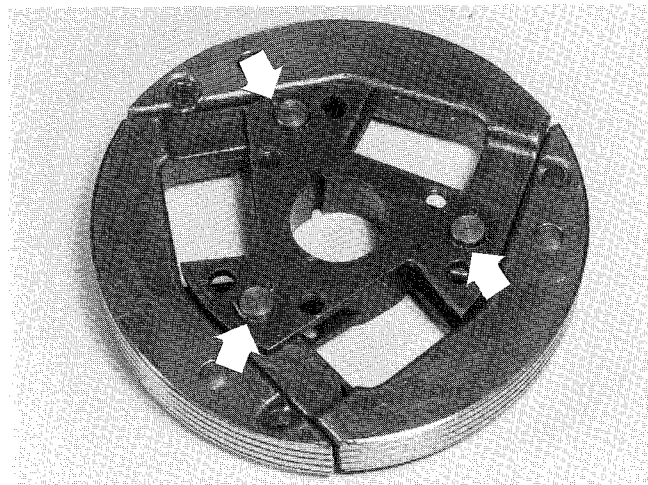
Remove the 1:st gear clutch-centre (see page 7).

Unhook the springs by using the hook 15 19 847-01 and then remove the three springs.



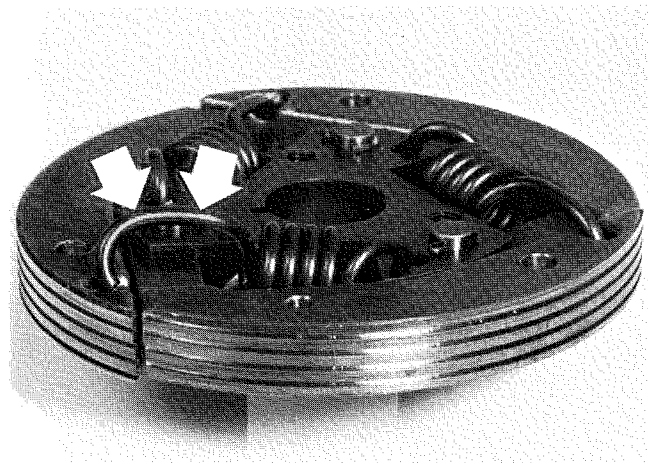
Remove the split-pins. On some models there are spring-action pins instead of split-pins.

Remove the pegs on which the shoes are journalled.



### Mounting of springs

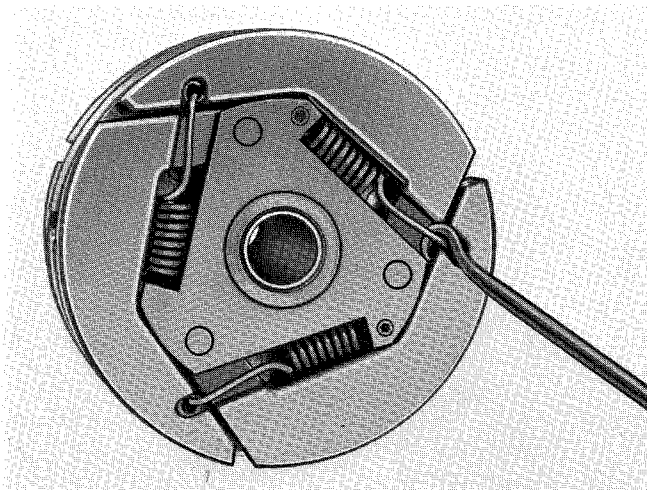
Place the spring in its position and with the short end first. Take your thumbs and press in the long end in its hole. See fig.



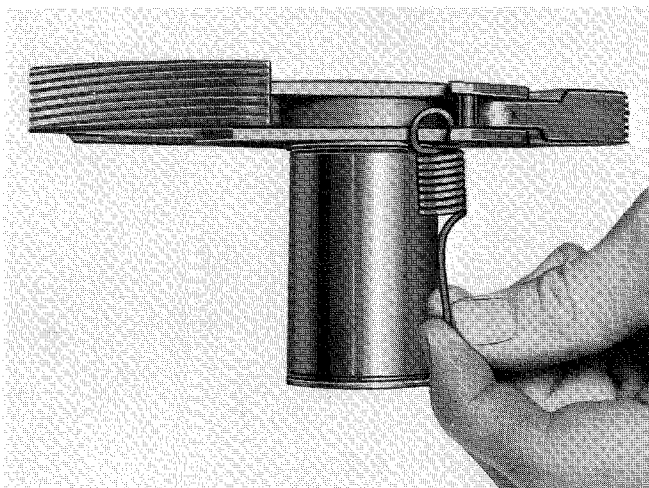


## REMOVAL OF CLUTCH-SHOES AND SPRINGS, 2:ND TO 4:TH GEAR

Unhook the springs by using a hook.

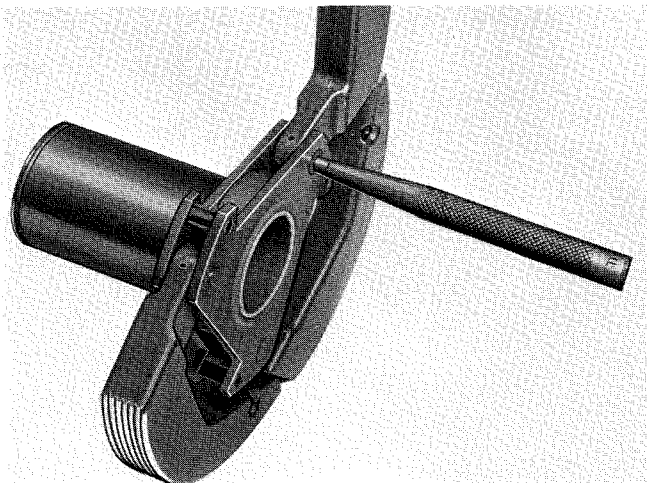


The springs can be mounted or removed as shown in figure.



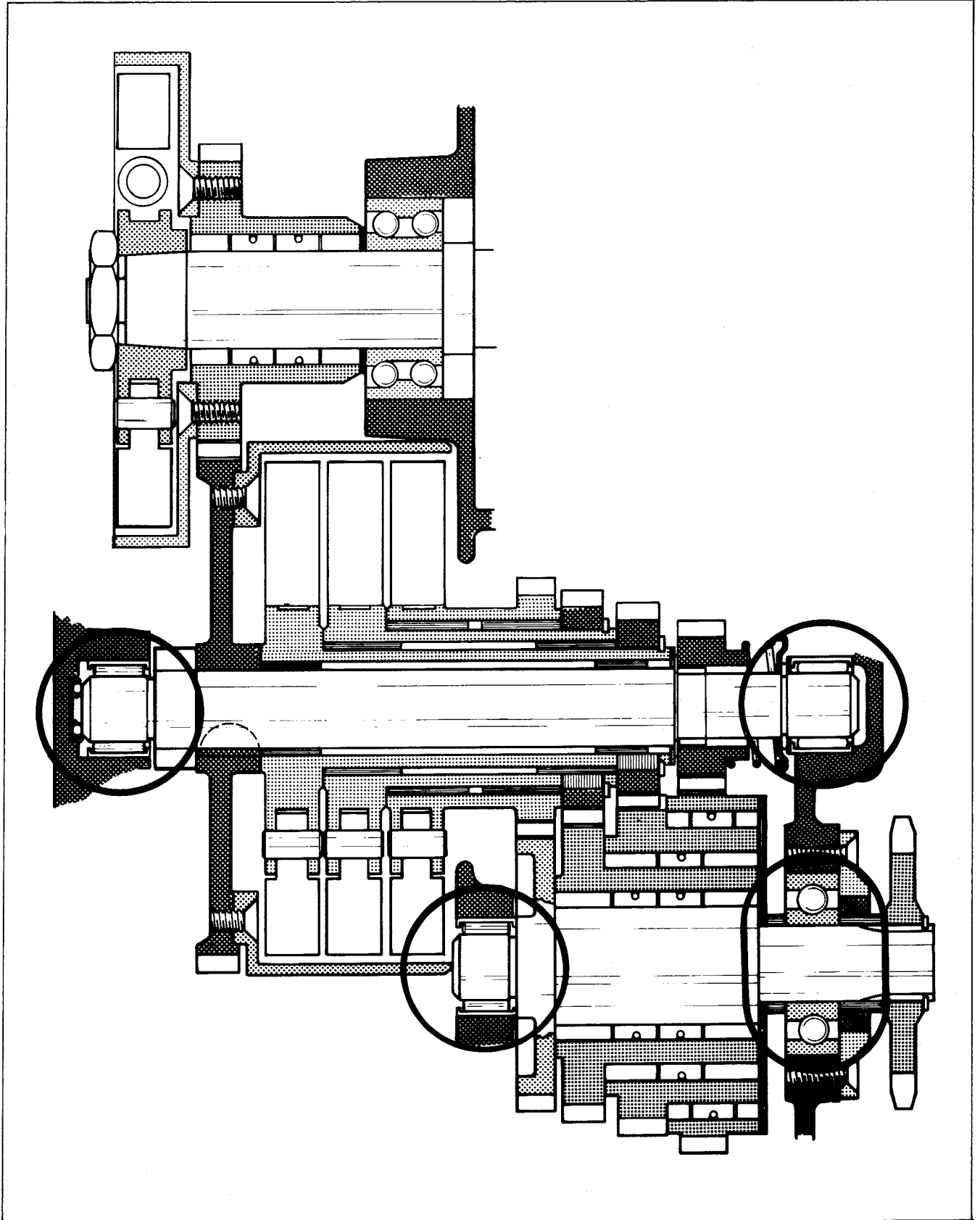
Remove the shoes by removing the pegs on which the shoes are journalled. Use a drift and break the spring-action pins in the middle of the shoes.

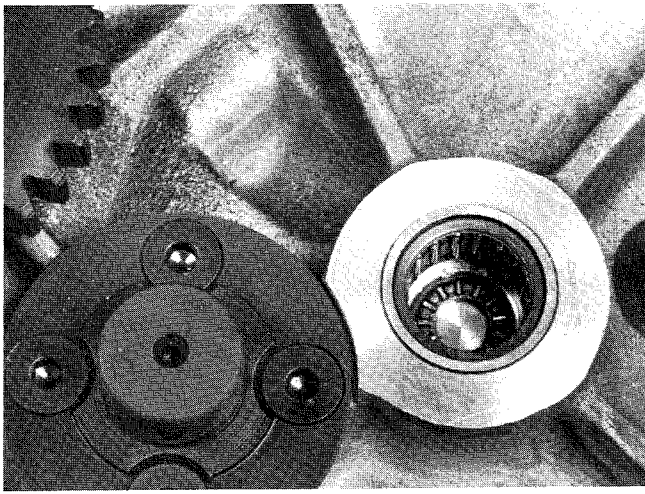
Change to new spring-action pins.



## REMOVAL AND MOUNTING OF BEARINGS

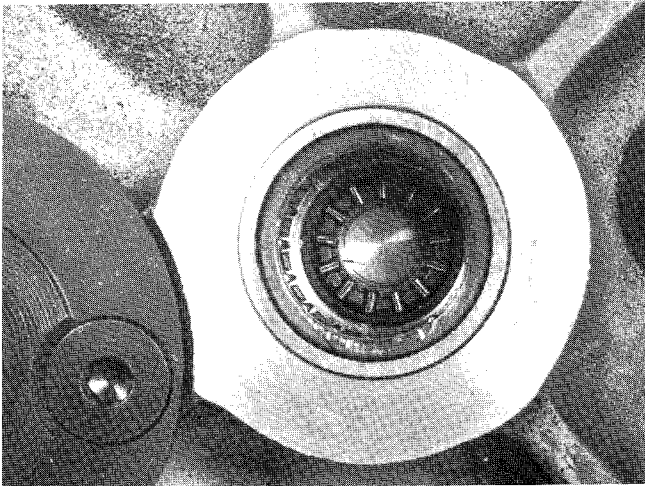
The gearbox is equipped with three radial-needle-bearings, one axial-bearing and one ball-bearing, and they are placed as shown in fig. below.



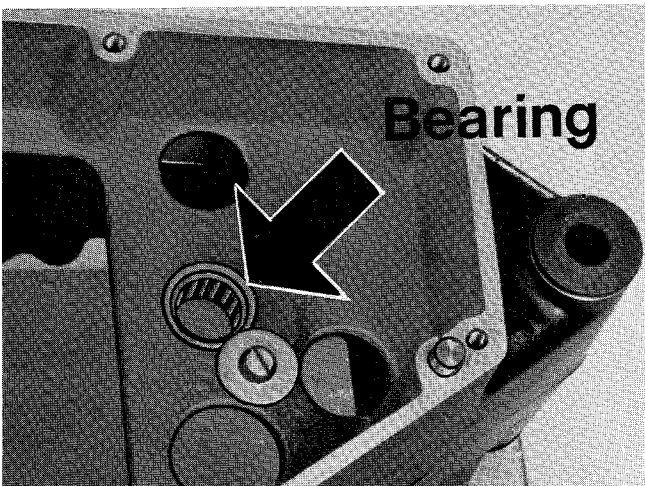


The needle-bearings in transmission-cover, and gearbox-cover are removed by using puller 15 19 105-01.

Mounting new needle-bearings is done by using a drift. Use a hydraulic press. Heat the cover to 225° C before mounting.



The axialbearing in the transmission-cover is removed by using a screw-driver with an angle. By installation make two notches to secure the bearing.

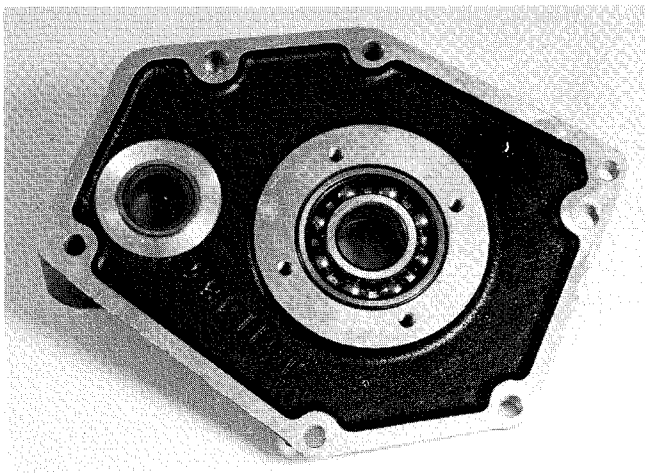


The needle-bearing placed in the middle wall is pressed out by using a drift, with a diameter of 24 mm.

NOTE! Remove screw and washer first.

Before mounting, heat the crankcase half to 225° C, and then use a drift and a hydraulic press.

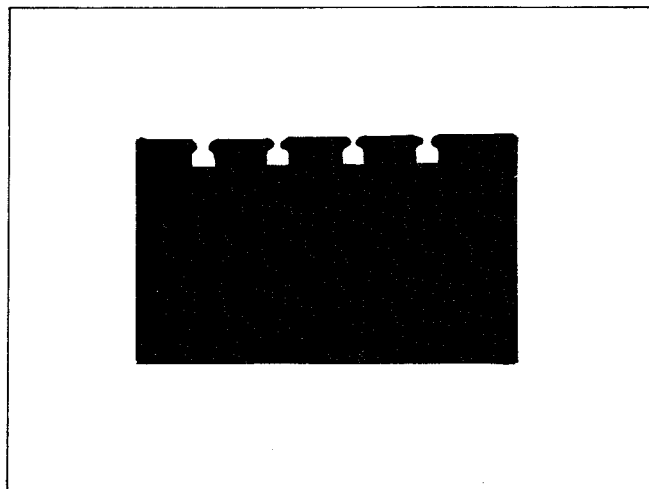
NOTE! Secure the screw, which holds the bearing and the washer with Loctite 241.



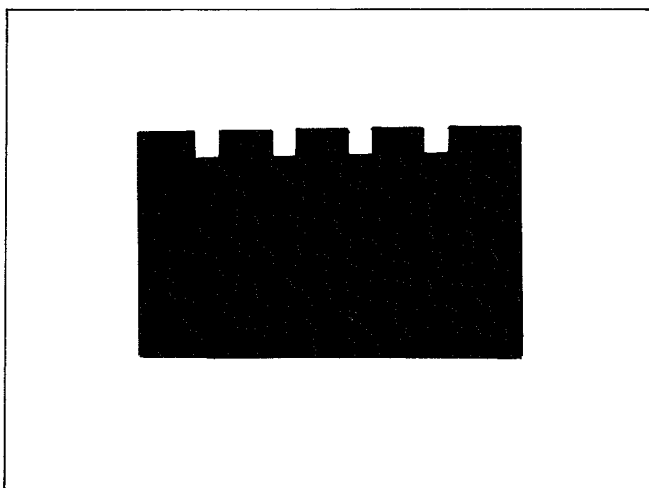
In the gearbox cover there is also a ball bearing. Remove the bearing with help of a hydraulic press. Before mounting heat the cover to 225°C.

## TIME FOR REPAIR CLUTCH-SHOES

The clutch shoes can be worn down so that the grooves get closed.



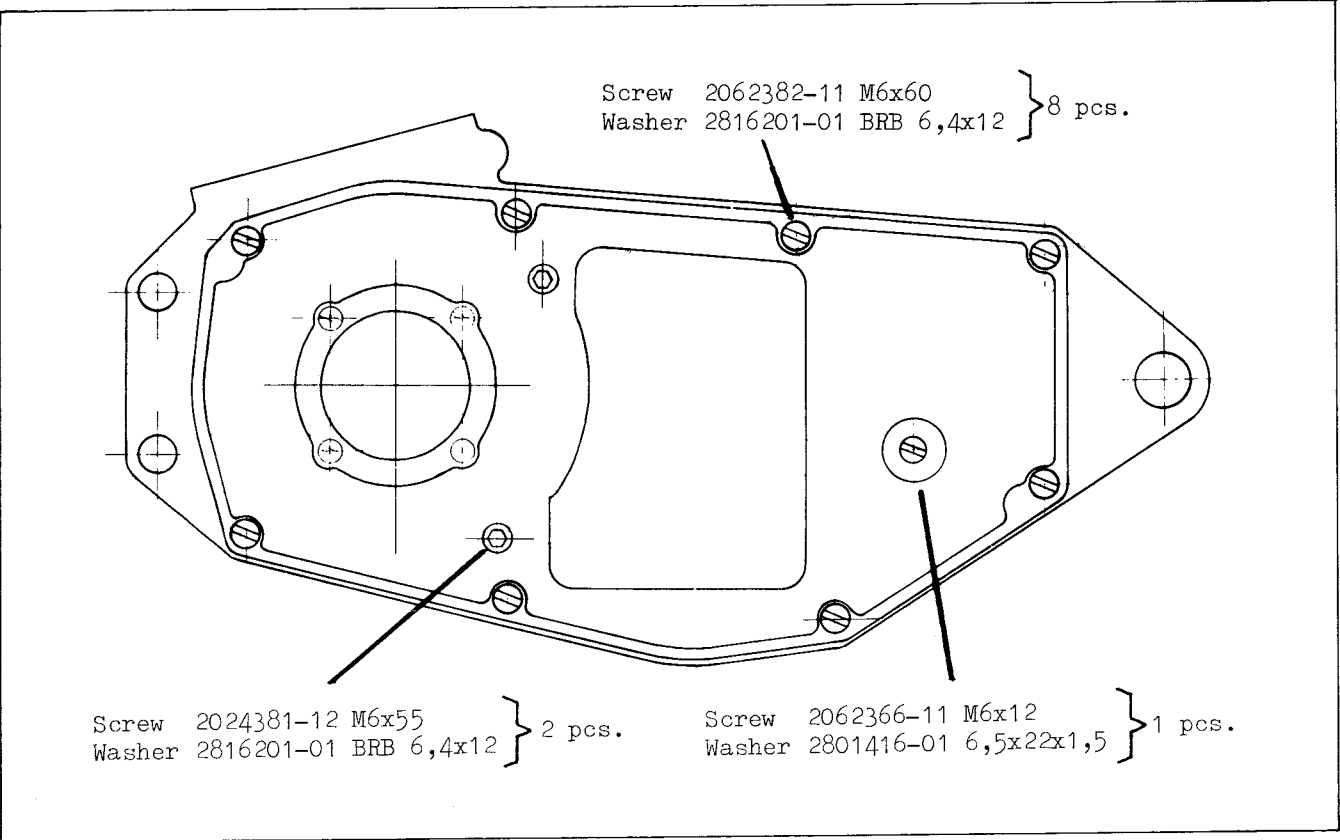
The grooves can be opened with help of a hacksaw. The grooves should have the shape as shown in the figure.



SCREW-SCHEDULE

There are different kinds of screws and washers mounted on the engine. Here is a help to find where they are placed.

Crankcase left:



Crankcase right:

