

Separating the housing halves requires great care and patience, because you, the sealing surfaces, the only means of very thin liquid applied gasket sealed against each other are very easily damaged. Damaged sealing surfaces is a reliable seal hardly to be achieved.



Figure 5-63: Tightening of the body screws

5.6 REMOVING THE CRANKSHAFT AND TRANSMISSION

The two drive shafts can be single-fold-out from the upper housing be taken. If they are very stuck, they can be with slight Swings with a Belzerithhammer delete . sen Leaves in the same way, the Crankshaft from the upper housing part . found

This is followed by the dismantling of the switch roller. First, the Schaltgabel is dismantled Belnem. For this purpose, First, the pins (arrow mark on Figure 5-65) into the shift forks away. The pins can not as-be reused - therefore pinches they simply through a pincer and pulls the rest of the head of the pin out. The positioning of the pins is during reassembly important as a cotter pin mounted upside

the mean shift fork movement the shift fork disabled.

A little effort to dismantle the pins, the rotational movement of the Shift drum in a sliding motion implement the shift dogs, because the one Pins with a bad tool, such as e.g. a Pliers can grasp. One can here to help by putting a splint the same size as they apply to the Arretierung of the pins is used in the hole on the front page of the pins shifts (as in Figure 5-66 demonstriert) and then with a splint-Ner thin blade screwdriver to below puffs, as in the illustration To see 5-67. Now there is a sub-connection between the Cotter pin and the pin and the pin can as Figure 5-67 on the right to sehen, pull it out.



Figure 5-64: Crankshaft gear and the lower housing part

Now we have to spring (Figure 5-68) unmounted, and the two screws for locking the retaining plate of the Switch roller and the guide shaft of the Shift forks are resolved. The holding

sheet is removed to the bare- see Figure 5-69.

The shift drum and the shaft for guiding tion of the shift forks can now be used right side are pulled out.

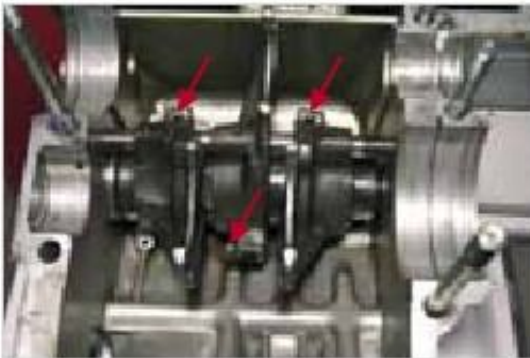


Figure 5-65: Stem with shift forks



Figure 5-66: Remove pins



Figure 5-67: Pull out the pins



Figure 5-68: Shift drum to expand



Figure 5-69: Unhook spring and Remove safety plate



Figure 5-69: Unhook spring and Remove safety plate

6th ASSEMBLING THE ENGINE



Figure 6-1: The mounted motor

Below describes how a
Engine that had broken down completely, as
is mounted.

In describing the assembly of the individual
Modules I'm going back to their short
Function, since under-elaboration of this
processing is impossible, really all steps
or graphically represent and enumerate the
Assembly so that without an understanding of the radio-
tion to take place.

To rule out errors, you should
Chapter 1 is the basis of "functional
description "with the function of building
groups have made familiar.

Also out of respect for the old technology
errors should be avoided, the
the destruction of spare parts after
to that purpose and not more than new
designed to be. The assembly
the motor should therefore only by someone
to be started, which is safe,
that he knows something. In general
my skills, such as assembly
of shaft seals (shaft seals)
Use of paper seals, etc.
I am therefore not elaborate.

Before the engine is assembled,
All parts should carefully on their to-
was to be examined. Particularly
the oil passages have to Consistently-
controlled speed. It must surely
be that the error, the reason for the
Repair was found and fixed
and not just new parts installed
are to be broken again soon,
when the actual cause of the off-
if - like for example a clogged oil duct
- Was not removed.

Before the assembly of the Mon-
tor starts, you control whether all
Small items, e.g. Paper seals
Shaft seals and standard components like
Screws, nuts and washers
ben in stock. But it is not
necessary, after the dismantling of a
In principle, all engine seals to
. renew Should in any case, the

Shaft sealing rings on the left crank
blunt and the shaft oil seal
who replaced the clutch push rod-
the, as these on the outer circumference
a holding nose and have therefore
only in separate halves of the housing pro-
WinCC, install. All other
Shaft sealing rings can be assembled in-
mengebautem and in the frame-
assembled state of the engine change,
so it is not absolutely necessary here
dig is to replace these.

Paper seals can also re-
be used if it is not-
torn edges. You can paper seals
but also very easy - and cheap - even
from sealing paper, as is used in the
known dealers buy accessories
can produce.

You need some sealant for the
Body parts, for which no paper gasket
processing is provided. I've got good
Experience with the red sealant from
Dirko made. Paper seals
Covers, the more often maintenance
must be dismantled, you can
the blue Hylomar thin . reap
In this way, the stick-Papierdichtun
gene does not tear-resistant and also when
Do not remove the lid, so that
I use the seals again
can. This is often the fault-GE
makes that the processing instructions
be ignored by Hylomar and
the sealant is applied too thick.
This must be avoided at all-who
the because of the swelling sealant
Can clog oil passages.

To secure the piston pin needs
one then new retaining rings,
if the piston were removed and
new cotter pins if the shift forks as-
the need to be re-assembled.

I strongly recommend an assembly
bock, as in Section 2 Tools be-
attributed to use, in particular,
if the removal without appropriate
Problems are already mounting bracket
has. It of course depends on the skill of
From individual, if he possibly even without the Mon-
bock is clear days. Who but the
first bolted to an engine,
should ensure that only under optimum
len conditions and possibly begin
Later, when the screws for routine
has become, even under less than optimal
paint work conditions.

As a rule, not always Neutei-
le are available when an engine
remounting. While compo-
le of the actual engine such as pistons,
Liners and the Crank
a defect with new parts or
reconditioned by a specialist
Parts are replaced, according to a
Transmission damage to almost always be carried
needed spare parts, the one before the
Installation must be carefully controlled to-
re used to, not because new parts
are available.

What I Should Look here, especially
must, after that I'm in the individual
Sections indicate. Examples will
one also in the "Typical damage
the ".

6.1 CRANKSHAFT, SWITCHING MECHANISM GEAR AND KICK STARTER



Figure 6-2: Upper housing part



Figure 6-3: Insert the crankshaft

When assembling the engine begins to with the upper housing portion in which the Crankshaft is inserted. It must we are careful that the Centering, the crankshafts-bearings in the motor housing in place, properly are positioned. The centering positionieren the outer rings of the crankshaft bearing such that the engine oil in the bearing can get. Do wrong can be nothing here, if the storage

are not positioned properly, can not close the case halves.

If the crankshaft on the basis of Zen trier tap into the allocated La-gersitzen of the upper motor housing part positioned, the timing chain to-loose next to the gear of the crank-launched wave and the timing chain of the other side - eg with wire - secured chert.



Figure 6-4: Placing the control chain



Figure 6-5: Upper half of the housing (transmission side)



Figure 6-6: Insert the shift forks



Figure 6-7: Guide tube using

First, the shift forks in the correct order and orientation screwed into the upper crankcase part lays. (PICS 6-6). After that, the leadership extension tube through the sides of the upper Motor housing part is pushed, the Shift forks are "strung" (PICS 6-7). Previously, we verified that the guide tube perfectly clean, straight and free of scratches. Through the leadership extension tube for lubricating oil from entering and cooling to the gears and clutch side bearings of the gear-shafts. Contamination of the guide tube can obstruct the flow of oil, causing further damage.

Next, the drum controller by the large holes in the side panels of the upper motor housing part is pushed into the holes provided the shift forks inserted. The guide-tion pins are split pins (3.2 x 32 DIN 94 secured), in Figs To see 6-8 and 6-9.

Next, the drum controller by a crescent-shaped plate and two Skt-screws with lock washer or liquid thread lock secured are chert (Fig. 6-10 and mounted 6-11).

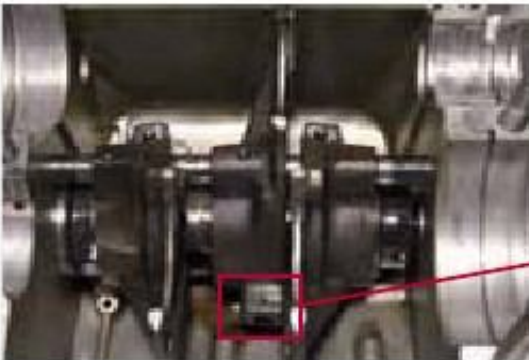


Figure 6-8: Stem Slide



Figure 6-9: Cotter pins and use

Make sure that the pins do not hinder the movement of the shift forks.



Figure 6-10: Used gear drum



Figure 6-11: Retaining bar mounted

After that, the first-Gangarre tierrad (red arrow on image 6-12) is mounted. This should be after Offer a new spring (yellow arrow- Figure 6-12 mark in use), If you are not sure whether the existing spring lost tension has. Next, mount the empty lauffarretierung (Figure 6-13). Here is the Same as in the spring for the course arrettierrad. If there are doubts whether the Fe has enough tension, increases be better to use a new pen.

Figure 6-13 on spring holds the shift drum in neutral position while the spring Figure 6-12 on the shift drum in positions holds that the switching state transitions correspond to the individual. Is the bias of the spring-Gangar retierrades too low, the tooth-pairs of wheels is not the individual gears more secure in their positions on the each shaft of the gearbox kept. This involves the risk that the corresponding speaking courses "pop out". What happens so frequently, it is then not only with the replacement of Fe countries do, because every "Herausspringene" of a gear, the shift dogs and the corresponding recesses of the Counter gear damaged.

While there had been problems before, during running and the engine is warm To find neutral, then it was on to- Interaction of two springs. The



Figure 6-12: Gangarretierrad and spring mount



Figure 6-13: Plunger for first Transitional use

Functional test:

Now you should try by turning the star wheel, whether shift drum can be rotated freely and whether can move the shift forks.



Figure 6-14: Insert the gear shafts

The gearbox is straightforward-sheet, since the gear shafts just one-be placed (Figure 6-14). In this respect you on the correct positioning of the Retaining rings on the clutch side the transmission input shaft (Pfeilmarking on Figure 6-15). Since almost no fabrikneues gearbox is fitted, controlled one before installation, whether all gears freely and fairly play on the respective shaft rotate to look at whether the movable gear wheels can freely move and the front especially if the shift dogs and recess-

provisions in the Counter-Sirnseiten cogs are not worn. A

For example, like worn shift dogs look can be found in Chapter 7, "Ty-scopie damage. "

The retaining ring on the fixed bearing side of the pinion-Getriebeausgangswel le consists of only one half, and must be inserted so that he in both genders häusehälften intervenes (Figures 6-16 and 6-17).



Figure 6-15: Bearing on the clutch side with locking ring



Figure 6-16: Bearing on the output side

Then, on the teeth of the output pinion gearing is on the input shaft, a ring (red-Pfeilmarkie- tion to Figure 6-18) will be deferred. The Faces of the ring and the Au-

outer diameters must be absolutely clean be safe and free from marks a re proper seal. If the Ring already slightly broken in, as in The example in Figure 6-18 (yellow arrow-



Figure 6-17: Bearing on the output side with locking ring



Figure 6-18: Bearing of the gearbox output shaft



Figure 6-19: Bearing of the gearbox output shaft with shaft seal



Figure 6-20: Transmission input shaft with the sealing ring Clutch push rod



Figure 6-21: Kick starter mechanism used in the lower half of the housing

mark) to see, so you can the Ring mounted so that the sealing lip Simmering not on the already-overflowed land runs.

The next step is the Wellendichtringe (oil seals) on the output side of the Gearbox output shaft is pushed (the blue Arrow markings on Figure 6-19) and the The clutch shaft seal pressure rod in the manner provided for these

Opening positioned (green-Pfeilmarkie changes in the images 6-19 and 6-20)

Since the kick starter mechanism (red Arrow on Figure 6-21) normal- was not removed as required, this only in the intended bore tion in the lower engine housing section one- be set. The spring before the Inserting at least one rotation increase preloaded.

Functional test:

Now is your last chance, before closing the housing halves the function of the switching mechanism and to examine the gear. By turning the star wheel, shift shaft must be with some force resolu- wall, but still let alone by hand, rotate, whereby the shift forks in the axial direction move to the shift drum and the guide tube. The claws of the individual switching gears must completely into the appropriate recesses of the counter gears engage.

02.06 CLOSE OF THE CABINET



Figure 6-22: Lower half of the housing with sealant

If you are sure that the gear switching mechanism and function, The housing can be closed. Before assembling the housing part-le must have the shaft sealing ring (Sim-merring) on the generator side the crankshaft on the crankshaft be postponed blunt (red arrow-mark on Figure 6-23).

Since the bearing seats of the crankshaft and the transmission shafts for each one half-te in the upper and lower housing some are, here is to seal no paper gasket should be used.

The sealing compound (eg Dirko red) may on Do not be applied thick, be seen as on the Figure 6-22. For applying sealant cleans

Check before sealing the buffed surfaces, if the housing halves without Force are close to - if not, the correct fit of all parts, particularly the crankshaft bearings, check again.

be the first sealing surfaces with brake cleaners, and then carries the seal-mass with the finger tip, whereby they are simultaneously on the sealing surface even and especially different thin-shares. Excess sealant on the Must be inside before joining the Gehäusehälften be completely removed (for Example, with a cotton swab).

out) are tightened. Advantageous it is, if you are already at the Demon-days the numbers of the order of loosening and tightening of the housing Screw in the vicinity of the screw has written, as in Figure 6-24 to see. It is important that any housing seschrauben be forgotten. Therefore are in the pictures 6-29 to 6-35 all Screws must be tightened sen, demonstrated.

The housing screws must be equal-required standard and in a Reihenfolge (spiral from the inside

Caution: Excess sealant can clog oil passages!



Figure 6-23: Lower half of the housing mounted



Figure 6-24: Gehäusefuge and studs with attached signed numbers in Tightening



Figure 6-25: Clutch side



Figure 6-26: Right crankshaft bearing with locking ring

Are in the pictures 6-25 to 6-28 on the clutch and the output side, the Shaft ends of the crankshaft, and the the transmission input and Ausgangswelle and the sealing ring of the clutch pressure to see rod. Of the shaft sealing wrestle on the output side of the engine can the clutch push rod and the crankshaft (arrow marks on the Figure 6-27 and 6-28) because of a

Holding his nose with no extra effort only with removed engine and getrennth body parts to be replaced.

When mounting the engine should These two seals (Simmer rings) is therefore always replaced, if the. All others are also incorporated in-To switch installed engine and can therefore be used again.

The order in which the housing screws are mounted, is also on the Figure 5-63 Demonstrated "Tightening the housing bolt" on page 83.



Figure 6-27: Transmission shafts with shaft sealing rings Figure 6-28: Crankshaft bearings with shaft sealing ring on the generator side



Figure 6-29: Studs with attached signed Numbers in the tightening sequence



Figure 6-30: Studs with attached signed Numbers in the tightening sequence



Figure 6-31: Studs with attached signed Numbers in the tightening sequence



Figure 6-32: Studs with attached signed Numbers in the tightening sequence



Figure 6-33: Studs with attached signed Numbers in the tightening sequence



Figure 6-34: Studs with attached signed Numbers in the tightening sequence



Figure 6-35: Studs with attached signed Numbers in the tightening sequence



Figure 6-36: Assembled housing halves

6.3 Installation of the control shaft AND THE CLUTCH

6.3.1 STEM

The stem is of the clutch side of the engine in front of the pre-see ne hole in the lower engine housing section inserted (arrow mark on screen 6-37). With the teeth of the Schaltwelle, with the shift lever is fixed, be damaged quite easily, the seal-lip of the shaft sealing ring (Pfeilmarking on Figure 6-38). Can prevent this one by the teeth with adhesive tape (for example, Scotch tape) abklebt.

If the shaft seal nevertheless be- have been damaged, which is not further ter bad. The shaft seal can be easily with built-in motor . change

On the output side of the engine then the stem with a slice and an E-clip in the axial direction secured (Figs. 6-38 and 6-39). To Finally, the upper fork of the Stem with welded Arms Star of the shift drum connected (Figures 6-40 and 6-41).



Figure 6-37: Assembly of the signal wave



Figure 6-38: Axial securing the stem



Figure 6-39: E-mounted clip



Figure 6-40: Shift fork and shift drum connect

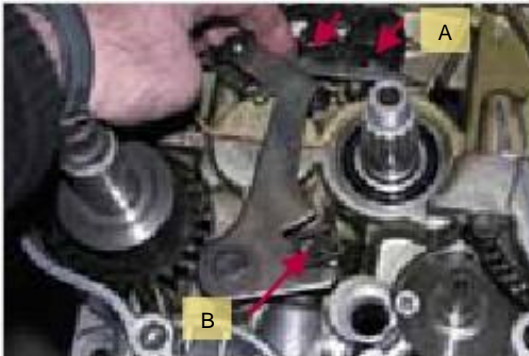


Figure 6-41: Shift fork and shift drum connect



Figure 6-42: Thrust washers of the clutch

The pins of the switch star must be located centrally between the arrows "A" indicated hook. If this is not the case, can the Excenterschraube "B" may be corrected.

6.3.2 CLUTCH

Next, the clutch is mounted (Figures 6-42 - 6-71). The graphics 6-45 "Rei-
order of the disks and storage "shows
basis of characteristic colors, the order
the components from the inside out. The
yellow / green progress symbolizes
the outer clutch basket.

Before the outer clutch basket mon-
benefits, will ensure that the An-
wheel-running on the kick starter shaft
is mounted (Figure 6-44).

Is on the pictures below, the Sun-
days of the individual parts of the coupling in the
Order of the steps documented
mented.



Figure 6-43: Washers mounted the clutch



Figure 6-44: Thrust washer on
Kick starter mechanism set up

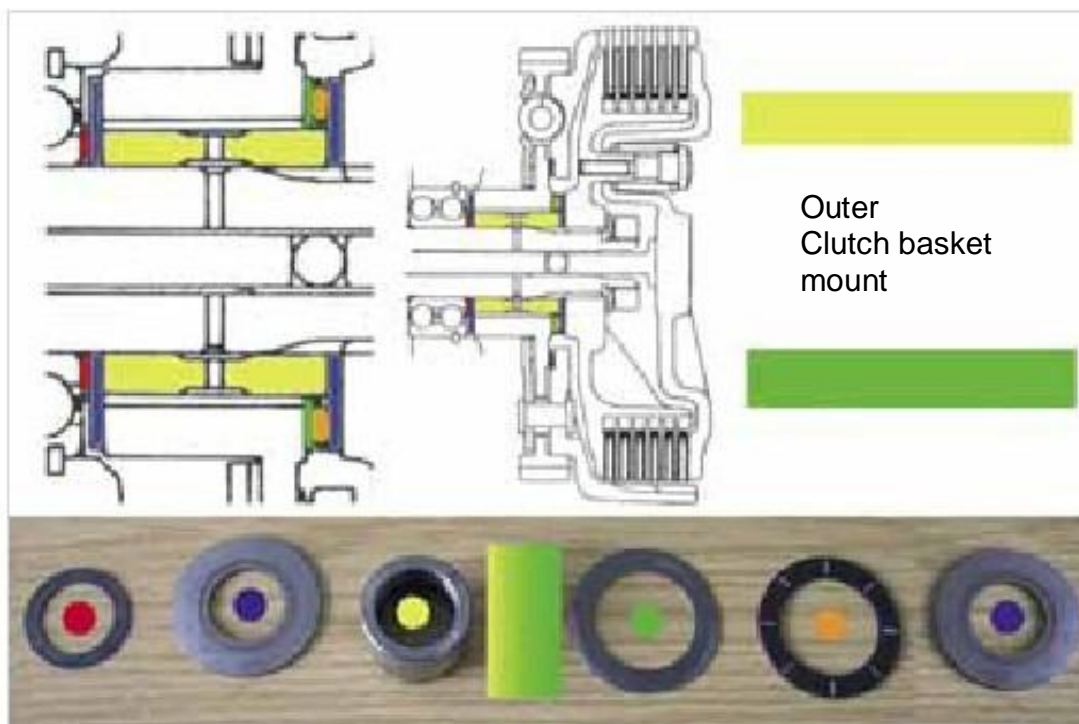


Figure 6-45: Order of the disks and storage

Features, look out for
would, it is in the assembly of

Coupling with the exception of the orientationAs with the disassembly (Figures 6-60 and
processing of the clutch discs (Figure 6-63) 6-61).

and the installation of the compression springs

(Bil-

of 6-69 and 6-70) do not.

For reaction of the central mother-different
used, a suitable tool

As with the disassembly (Figures 6-60 and
6-61).

During assembly, lubricate everything well.



Figure 6-46: Put sleeve on transmission input shaft



Figure 6-47: Clutch basket on gear
Put the input shaft



Figure 6-48: Clutch basket on
Put gearbox input shaft



Figure 6-49: Clutch basket on
Put gearbox input shaft



Figure 6-50: Clutch basket placed



Figure 6-51: Insert bearings and thrust washer



Figure 6-52: Thrust bearing oil



Figure 6-53: Insert bearings and thrust washer