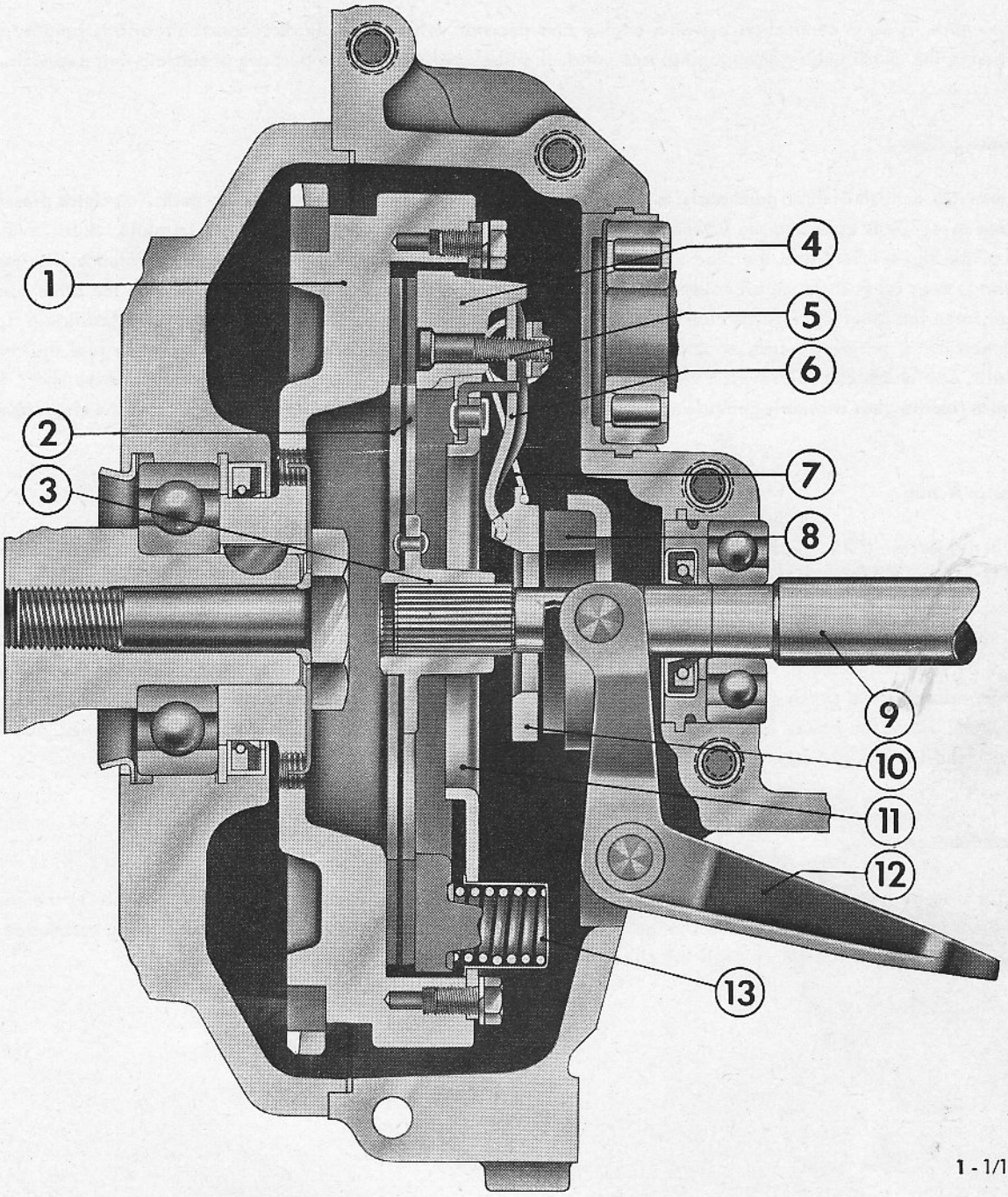
Main Group C

Clutch

C

Sectional View of Clutch K 5 E



1 - 1/1

1 – Flywheel
2 – Clutch lining (2 pces.)
3 – Clutch disc
4 – Pressure plate
5 – Adjusting bolt and adjusting nut (3 pces. each)
6 – Clutch release lever (3 pces.)
7 – Release lever spring (3 pces.)
8 – Graphite ring with clutch release gear
9 – Gearbox drive shaft
10 – Clutch release ring
11 – Clutch cover plate
12 – Clutch lever
13 – Main spring (9 pces.)

Description of clutch

General

The clutch forms a connection between engine and gearbox, which is easily disconnectable at any time by depressing the clutch pedal (disengaging) and which shall be used only for the purpose of starting and gearshifting.

Construction

The clutch consists of three main parts: clutch pressure plate, clutch disc and clutch release gear. The **clutch pressure plate** assembly is bolted to the flywheel. Its essential parts are clutch cover plate, pressure plate, clutch release ring, the three levers and the nine main springs equally distributed around the plate circumference. The main springs bear against the clutch cover plate, on the one hand, and against the pressure plate, on the other hand, and force the latter against the clutch disc and this, in turn, against the flywheel. In the engaged position a rigid connection is achieved which enables power from the engine to be transmitted to the gearbox and the drive shafts. The **clutch disc** is provided with linings and connected by its splined hub to the gearbox drive shaft. The **clutch release gear assembly** comprising the holder and graphite ring can be turned in its support in the clutch lever.

Clutch Action

When depressing the clutch pedal (disengaging) the clutch release gear is pressed against the clutch release ring of the clutch pressure plate. The pressure plate is lifted off the clutch disc by means of the levers by overcoming the pressure exerted by the main springs. The clutch disc becomes also separated from the flywheel and pressure plate. As the clutch disc is not driven any more from the engine, it decreases in speed. The desired gears may thus be shifted into mesh, whereas flywheel with clutch pressure plate continues rotating at engine speed. Only when releasing the clutch pedal (engaging) the main springs force the pressure plate against the clutch disc and flywheel. Now, the power flow from the engine is transmitted again through the pressed-on clutch disc and the clutch shaft to the gearbox and from there through the selected gears to the car wheels.

Maintenance

Care is to be given to the clutch pressure plate with its fixed adjustment feature. In the case of wear to the lining this fixed adjustment should not be changed. Apart from the necessity of the clutch clearance being readjusted in due time, no other maintenance of the clutch is required.

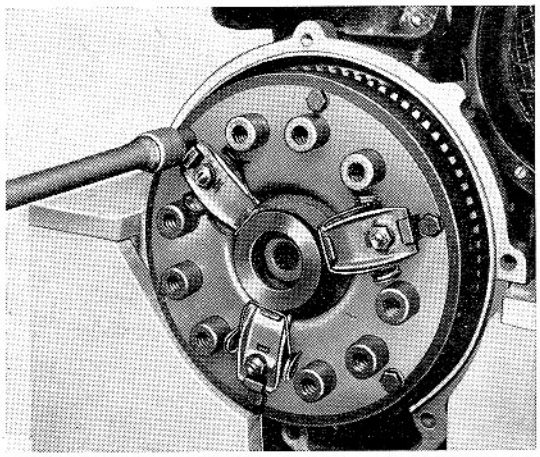
As regards the procedure "Removal and Installation of the Clutch" there are no differences between the two coupling types K 4.5 and K 5.

The following special tools are required:

WO 21 – Feeler for clutch assembly
WO 22 – Clutch assembly drift.

Removal

1. Dismantle power unit – engine/gearbox.
2. Disconnect gearbox flanges.
3. Loosen hex nuts SW 10 for attaching clutch pressure plate to flywheel. Back off bolts uniformly one turn at a time going from one bolt to the next until all are backed out evenly and spring pressure is relieved in order to avoid distortion of the clutch cover plate. (Fig. 2 - 1/1).



2 - 1/1

4. Remove clutch pressure plate.
5. Lift free clutch disc out of flywheel.

Reinstallation

Reinstallation must be made in the reverse order, giving care to the following points:

1. Clean pressure face for clutch disc in the flywheel and check for wear. If necessary, regrind pressure face or change flywheel by a new one.

Attention!

If the pressure face is being reground, the bearing surface to take the clutch cover plate on the flywheel must be touched up by the same value in order to maintain the flywheel height of 18 ± 0.1 mm (0.708 ± 0.039")! (See also Fig. 3 - 1/1).

2. Check graphite ring of clutch release gear for wear and cracks. In case of damage or heavy wear renew the complete graphite ring with its holder (See also under Section "Clutch Lever with Release Gear").
3. Check clutch disc. If the linings are worn close to the rivets or if the lining is sprung, oiled or burned, a new or a spare clutch disc is to be installed. Further check clutch disc for out-of-balance (max. 0.4 mm) (0.0157") and make sure that all lining segments are set evenly.
4. Check for proper seat or the clutch disc on the splined piece of the gearbox drive shaft. Be sure that the clutch disc is easily slideable but see that it has no exaggerated clearance! Worn parts must be renewed.

   Before installation, lubricate splines with a mixture of viscous oil and graphite. Too abundant a lubrication, which might result in oiling of the friction disk linings, should be avoided at all events.

Attention! A repair of the clutch disc or a renewal of the friction-disc-linings shall be made only if no new or duplicate parts are available or cannot be procured for any reason whatever. In this case care should be given to the following repair hints:

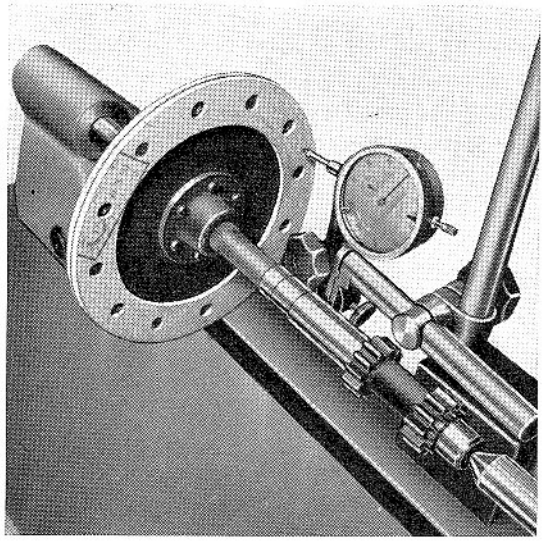
a) The rivets of the clutch-disc-linings should be removed only by drilling out. Use a 4 mm (0.157") drill for this job!

b) Only the clutch-disc-linings permitted for use by LLOYD must be used.
(At present Textar 50 and Jurid 511).

Removal and reinstallation of the clutch

c) In riveting-on the clutch-disc-linings give care that they are not get ruined due to excessive rivet pressures.

d) After finishing the work, check clutch disc for out-of-balance (max. 0.4 mm, 0.0157") (Fig. 2-2/1).



2 - 2/1

e) Protect clutch-disc-linings from oil and grease. Never touch friction-linings or friction-faces of lined clutch discs.

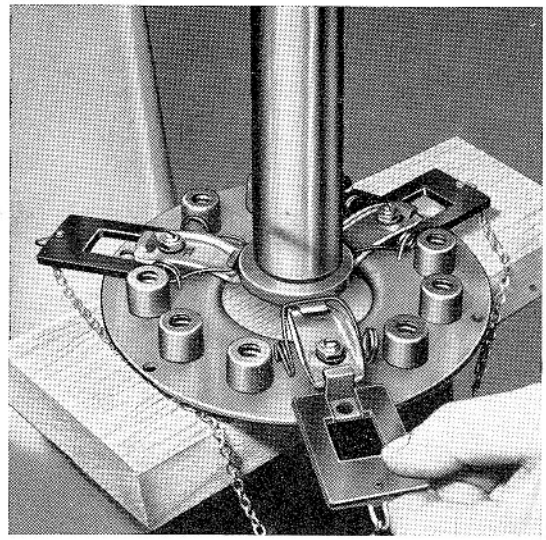
5. Clean clutch pressure plate and check for wear, distortion, cracks and friction pattern. A friction pattern revealing an excessively irregular contact may result in clutch grabbing! If necessary install a new or a duplicate part.

6. Check release lever and release springs (clutch K 5 E, release lever springs); if necessary, replace them.

7. Check clutch cover plate for wear and warpage. If necessary, straighten it. Any warping of the clutch cover plate is generally due to non-uniform unscrewing or screwing-on. A clutch cover plate not correctly fitted into the centering shoulder on the flywheel while being screwed on may likewise get easily distorted!

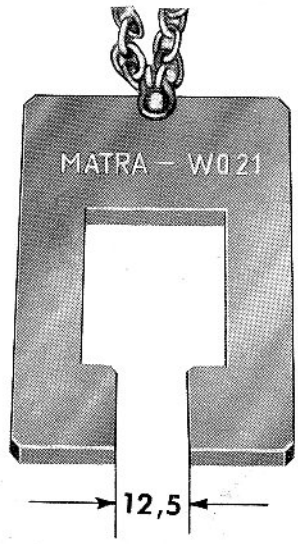
   If the pressure plate shows a bluish colour (due to excessive heating) a new complete clutch pressure plate must be installed.

8. Before installation place clutch feelers WO 21 below clutch release levers. For this purpose press down release ring into the clutch pressure plate in a hand lever press (or in a pillar drill press). Depress release ring until clutch feelers can be just pushed below the end of the levers! (Fig. 2 - 2/2).



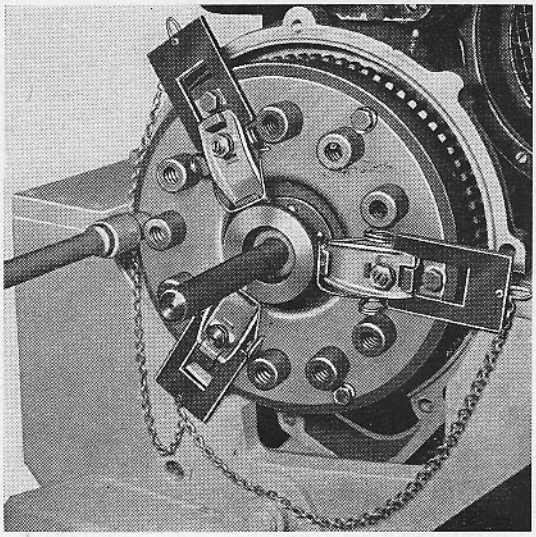
2 - 2/2

The clutch feelers WO 21 available in the repair shops may be used, after enlarging the feeler gap to 12.5 mm (0.492"), also for the clutch type K 5 E. (Fig. 2 - 2/3).



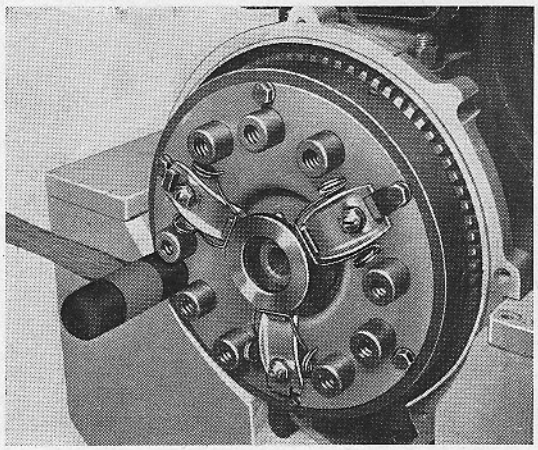
2 - 2/3

9. In installing the clutch pressure plate, the clutch disc has to be centered with clutch assembly drift WO 22. (Fig. 2 - 3/1).



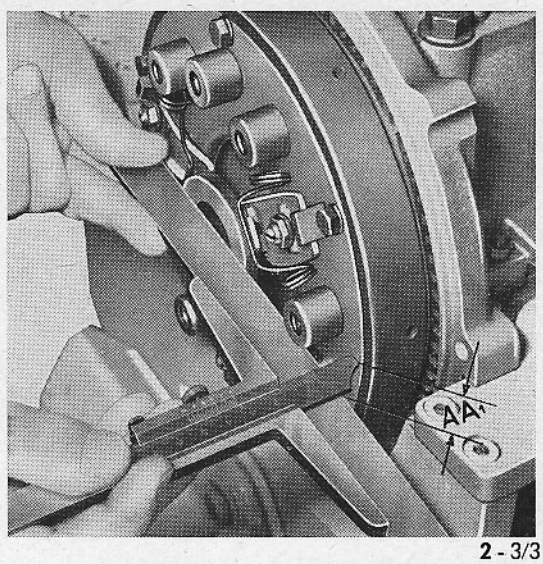
2 - 3/1

10. When attaching the clutch pressure plate give care to see that it properly fits into the centering shoulder provided on the flywheel. Tighten fastening screws crosswise in a uniform manner. Remove clutch feeler. By gentle blows with a hammer of plastic material cause clutch pressure plate to set all around and retighten again fastening screws. (Torque to be applied 1 mkg) (Fig. 2 - 3/2).



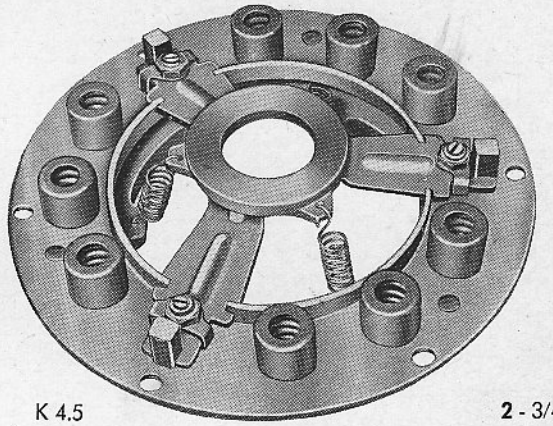
2 - 3/2

11. After attaching the clutch pressure plate, check distance and parallelism between release ring and clutch cover plate by using plane rule and depth gauge (Fig. 2 - 3/3).

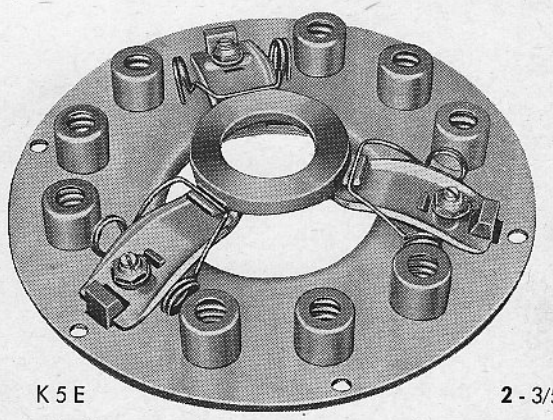


2 - 3/3

If the clutch linings are new, the measure "A" is 14.5 ± 1 mm (0.492 ± 0.03937").
When the friction linings are worn, this measure will increase. As soon as the distance between friction face of the release ring and clutch cover plate is increased to 21.5 mm (0.846") (measure A 1), the linings are worn and a new or a duplicate clutch disc must be installed.



K 4.5 2 - 3/4

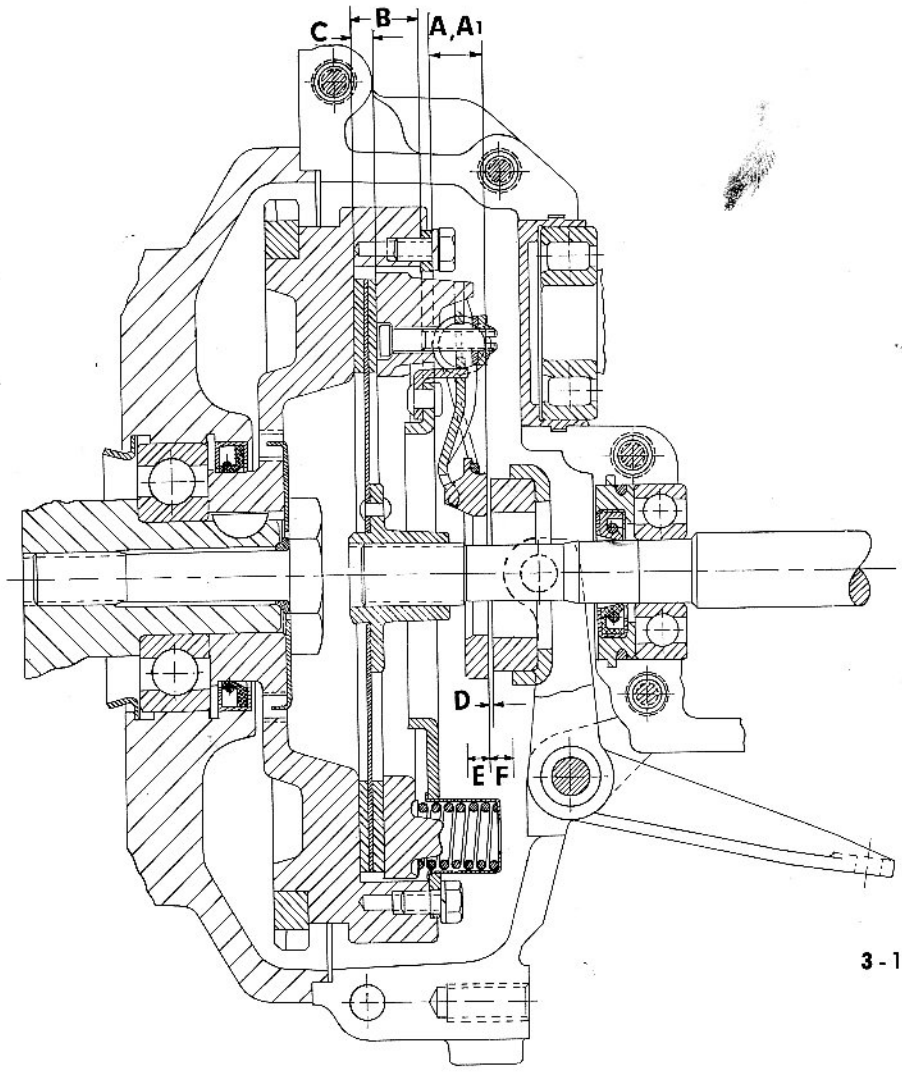


K 5 E 2 - 3/5

12. In building together engine and gearbox, care is to be given to see that a proper seat of these assemblies is ensured. Improper centering faces, dirt, bore chips or cracks in the housings and casings will cause a misalignment between engine and gearbox shaft!

Adjustment of Clutch

The figure shows a clutch of the K 5 E type
(The values indicated below are applicable also to Clutch K 4.5)



3 - 1/1

A = 14.5 ± 1 mm (0.570 ± 0.039") = Measure for the adjustment of a new clutch disc (clutch disc pressed 6.3 ± 0.3 mm [0.2480 ± 0.0118"]) this amount increases due to worn clutch disc linings

A 1 = 21.5 mm (0.846") = Maximum permissible measure in the case of worn clutch disc linings

B = 18 ± 0.1 mm (0.708 ± 0.0039") = Depth of flywheel (Measure between bearing surface-clutch cover plate and friction face-clutch disc)

C = 6.3 ± 0.3 mm (0.248 ± 0.0118") = Thickness of clutch disc fitted with new linings in pressed condition (unpressed 6.8 ± 0.3 mm [0.267 ± 0.0118"])

D = 2-3 mm (0.078-0.118") = Clearance between graphite ring and clutch release ring

E = 6 mm (0.236") = Clutch release travel

F = 7 mm (0.275") = Amount of wear

Disassembling, readjusting and reassembling clutch

Clutch K 4.5

(built-in up to Chassis-No. 6/288739 or 6/116093 inclusive)

Attention!

In the case of damaged clutches, use – as a matter of principle – new or duplicate clutch pressure plates. A repair shall be done only if new or duplicate parts are not available or cannot be get for any reason.

Only in this case the following repair hints are applicable.

The following special and shop tools are to be used:

WO 21 – Clutch feeler for clutch assembly

SW 19 – Distance plate for adjusting clutch pressure plate

SW 20 – Tool for the adjustment of the clutch pressure plate (final measure)

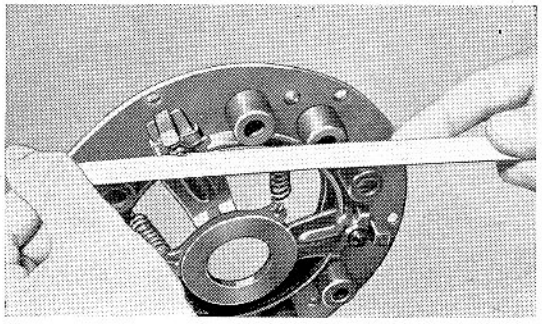
SW 21 – Tubular piece (3 pces.)

SW 22 – Pressure plate

Furthermore, for adjusting the clutch a new flywheel (Part-No. 13 13 301–0) is necessary.

Disassembling

1. Break seals of adjusting nuts with a saw blade (Fig. 3 - 2/1).

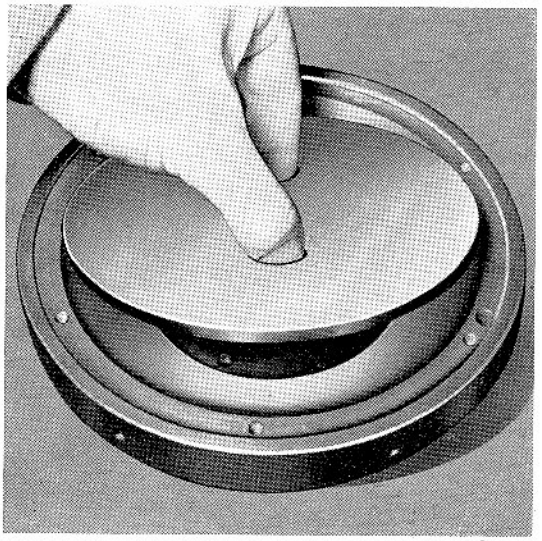


3 - 2/1

2. Press release ring by means of hand lever press (or pillar drill press) down into the clutch pressure plate. Place clutch feeler WO 21 under the lever ends.

3. Bend open eye of the release springs on the release ring and unhook springs. Remove release ring.

4. Install distance plate SW 19 in the flywheel (Fig. 3 - 2/2).



3 - 2/2

5. Install clutch pressure plate and screw tight. Uniformly and crosswise draw home 6 fastening screws SW 10. Remove clutch feeler.

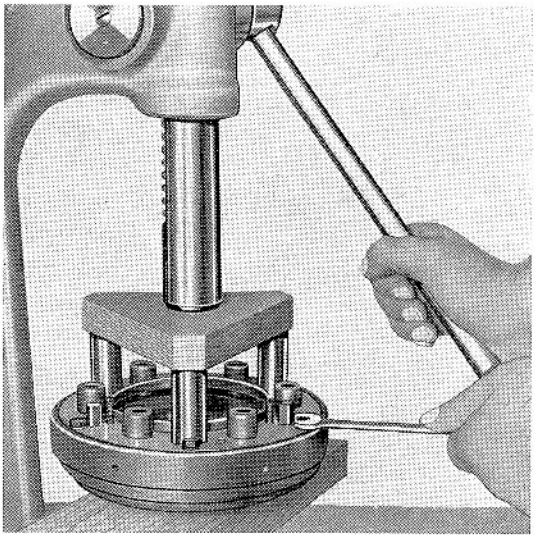
6. Unscrew adjusting nuts. In doing so rotate adjusting bolt with an appropriate screw driver. Hold fast nuts with a fork spanner SW 11.
   Adjusting nuts cannot be used a second time.

7. Remove links, levers and lever supports.

8. Place clutch pressure plate bolted to the flywheel in a press and compress clutch cover plate by using the 3 tubular pieces SW 21 and pressure plate SW 22.

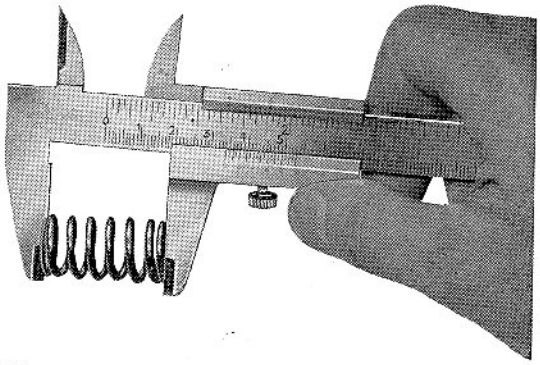
   Draw fastening screws up; thereafter relieve tension slowly and disassemble clutch.

   Under no circumstances loosen riveted connections on the clutch cover plate (Fig. 3 - 2/3).



3 - 2/3

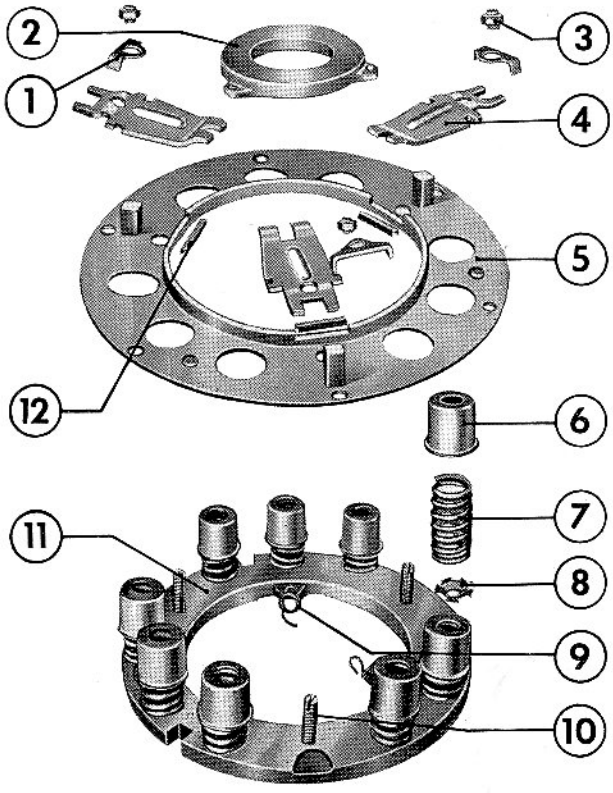
9. Clean all parts and check for wear. Measure length of main springs (Fig. 3 - 3/1).



3 - 3/1

The length of a slack main spring is 34 ± 1 mm (1.338 ± 0.039") when new. If a measure of 32 mm (1.259") or below will be found, the spring must be replaced. Use only original springs! The springs have no coloured marking.

Spring pressure for a fitting length of 21.5 mm (0.846") : 21 (0.826") + 2 kg (4.4 lb.). Maximum wear 20 + 3 kg (0.787 + 6.6 lb.).



3 - 3/2

1 – Articulated joint
2 – Release ring
3 – Adjustment nut
4 – Release lever
5 – Cover plate
6 – Spring socket
7 – Main spring
8 – Spring retainer
9 – Release spring
10 – Adjustment bolt
11 – Pressure plate
12 – Lever support

Reassembling and Readjusting Clutch Pressure Plate

1. Place distance plate SW 19 in the flywheel which serves for adjustment (previously blow out flywheel with compressed air)
2. Hook release springs into pressure plate and close eye by bending.
3. Place pressure plate with hooked-in release springs and fitted adjusting bolts in the flywheel. When dismantling replace all damaged adjusting bolts.
4. Put into place spring retainer, main springs and spring sockets.
5. Put into place clutch cover plate.
6. Give clutch – as under 8 (Disassembling) – an initial tension with a press by using shop tools SW 21 and SW 22. Care is to be given to ensure that the clutch cover plate is accurately placed centrically to the flywheel fitted.
7. Put levers and articulated joints into place. Do not forget the 3 lever supports!
8. Screw new adjusting nuts on the adjusting bolts. In doing so, hold fast nuts with a forked spanner and turn bolts with a screw driver. Adjust clutch provisionally.

9. Bolt clutch cover plate to flywheel; lift clutch pressure plate out of the press.

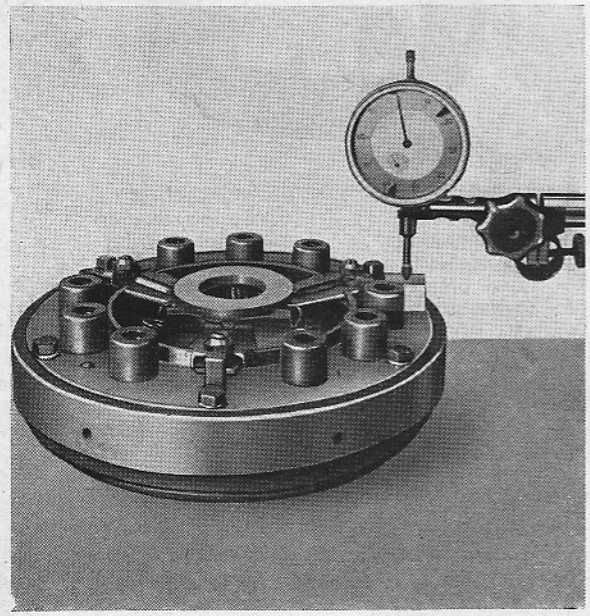
10. Place release ring on the levers. Hook release springs into release ring and bend over eye.

    Do not overstretch release spring while hooking in!

Adjustment of Clutch

Now, the correct adjustment of the clutch (measure "A" see Fig. page K 3-1) should be made with a dial gauge, if possible, on a measuring table.

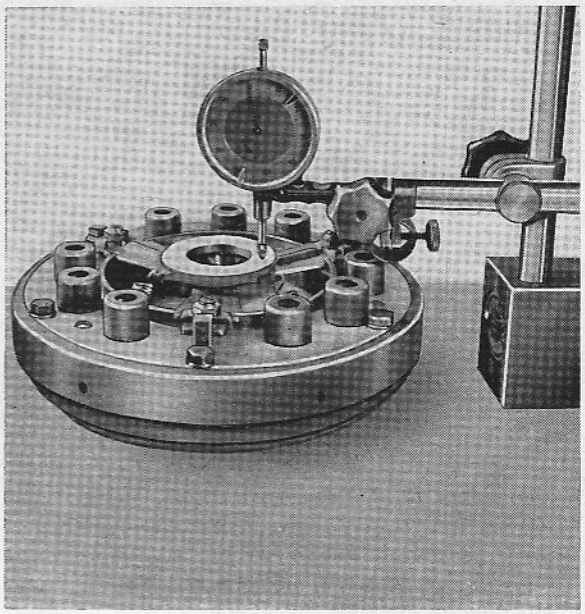
11. Place adjustment piece SW 20 on the cover plate and adjust the dial gauge which is held in a support, to zero. (Fig. 3 - 4/1)



3 - 4/1

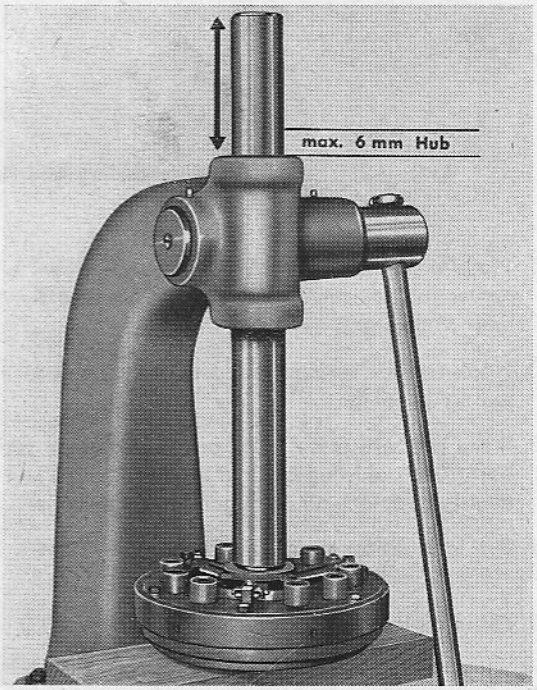
12. With the dial gauge thus adjusted restore the measure 14.5 + 0.5 mm (0.570 + 0.0197") of the release ring by correspondingly turning the adjustment bolt.

    Track clutch release ring face round about, a possible vertical excentricity of the release ring of max. 0.3 mm (0.0118") being permissible (Fig. 3 - 4/2).



3 - 4/2

13. After adjusting, force release ring by means of a press several times into the clutch pressure plate. In doing so, give care that the ring will not be pressed in deeper than 6 mm (0.236"). This is the permissible clutch release travel (Fig. 3 - 4/3).



3 - 4/3

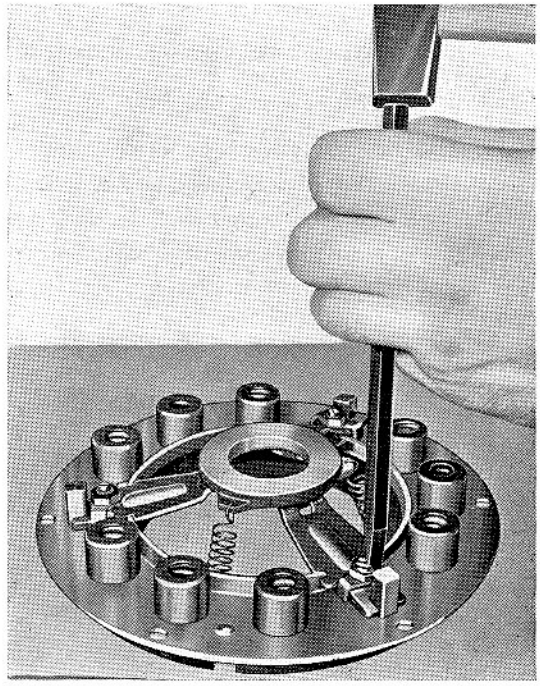
14. Check adjustment and correct, if necessary.

15. Operate clutch pressure plate still several times and check proper adjustment each time. Are the permissible tolerances exceeded, the adjustment should be corrected. This operation must be repeated until the adjustment remains constant!

16. Draw the fastening screws on the clutch pressure plate up evenly a turn at a time, going crosswise from one screw to another and then screw them out.

    Take clutch pressure plate from the adjusting flywheel.

17. Lock adjusting bolt by driving the edge of the adjusting nut into the slot on the adjusting bolts. (Fig. 3 - 5/1).



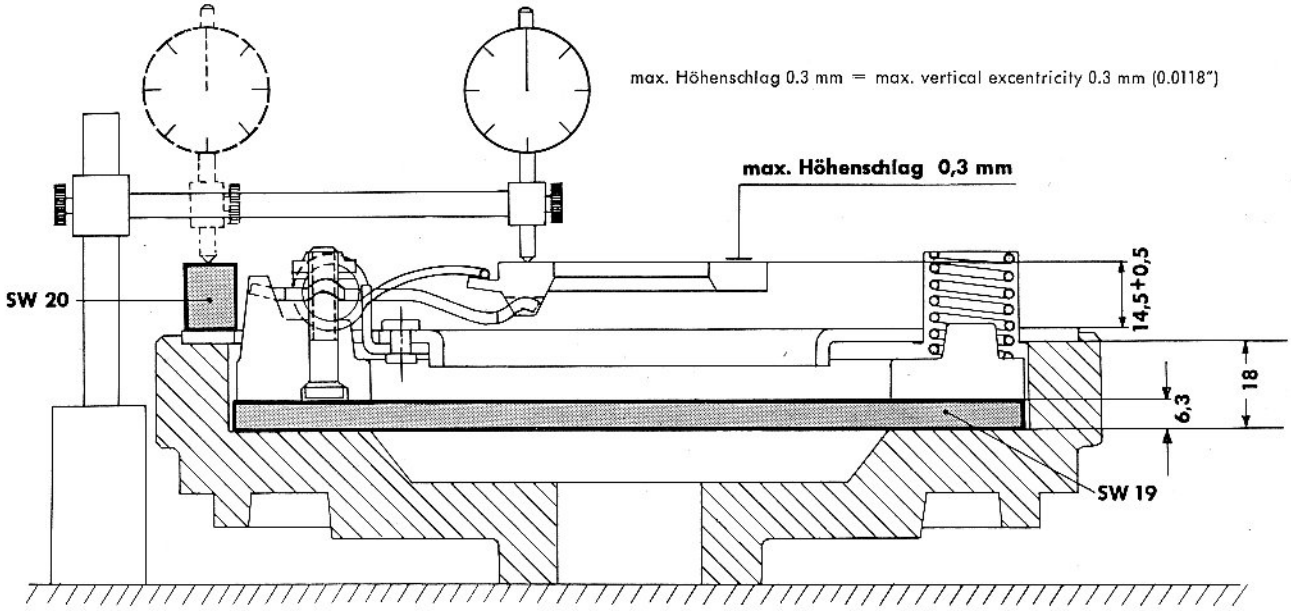
3 - 5/1

Attention!

The driving-in of the nut edge on all 3 adjusting nuts should be done with the same force. Furthermore, the respective adjusting bolt must be supported at the head by a bolt as otherwise the blow becomes ineffective owing to the clutch main springs, which would eventually result in a change of the adjustment.

18. After the locking operation reinstall clutch pressure plate in the flywheel (use clutch feeler) and check adjustment again.
    If the adjustment corresponds to the specified value, the clutch pressure plate is in good working order.

Fig. 3 - 5/2 shows the adjusting operation by using tools SW 19 and 20. In this figure you see a clutch K 5 E. For clutch K 4.5 the same values are applicable.



3 - 5/2

Disassembling, readjusting and reassembling clutch

Clutch K 5 E

(built-in from Chassis-No. 6/288 740 or 6/116 094)

Attention! In the case of damage to the clutch use always – as a matter of principle – a new or a duplicate clutch pressure plate. A repair shall be done only in case new or duplicate parts are not available or cannot be procured for any reason whatever.

Only in this case the following repair hints are applicable:

WO 21 – Clutch feeler for clutch assembly

SW 19 – Distance plate for adjusting clutch pressure plate

SW 20 – Tool for adjusting clutch pressure plate (final measure)

SW 21 – Tubular piece (3 pces.)

SW 22 – Pressure plate

Furthermore, for adjusting the clutch a new flywheel (Part-No. 13 13 301–0) is necessary.

Disassembling

1. Break seal on adjusting nuts with a saw blade (see also Fig. 3 - 2/1).

2. Press release ring by means of a hand lever press, (or pillar drill press) down into the clutch pressure plate. Set clutch feeler WO 21 under the lever ends.

3. Insert distance plate SW 19 in the adjusting flywheel (see also Fig. 3 - 2/2).

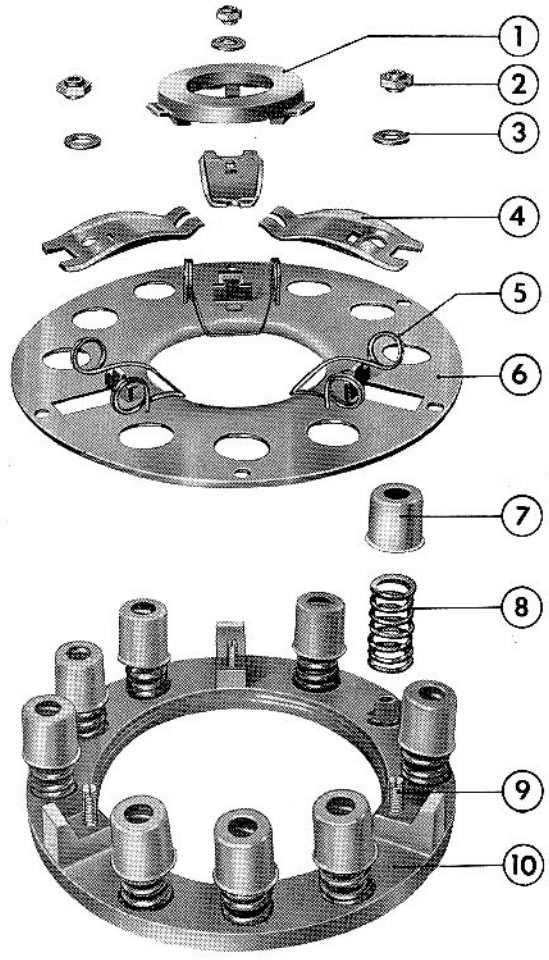
4. Install clutch pressure plate screw down. Evenly and crosswise screw down 6 fastening screws SW 10; remove clutch feeler.

5. Draw adjusting nuts up (in doing so turn adjusting bolt with an appropriate screw driver; hold fast nuts with a forked spanner SW 11. Adjusting nuts have interposed thrust washers which must not be forgotten when reassembling! The old adjusting nuts cannot be reused.

6. Remove lever and release ring.

7. Place clutch pressure plate, bolted to the flywheel, in the hand press and press it down with the aid of the 3 tubular pieces SW 21 and of the pressure plate SW 22. (See also Fig. 3 - 2/3).

8. Screw out fastening screws. Thereafter, unstretch clutch slowly and disassemble. Bent open the ends of the springs. Take out springs. Do not loosen rivet joints of the clutch cover plate!



3 - 6/1

1 – Release ring	6 – Cover plate
2 – Adjusting nut	7 – Spring socket
3 – Pressure ring	8 – Main spring
4 – Release lever	9 – Adjusting bolt
5 – Release lever spring	10 – Pressure plate

9. Clean all parts and check for wear. Measure length of main springs. When new, their length is 34 ± 1 mm (1.33 ± 0.0394"). If a measure of 32 mm (1.259") or eblow is stated, new springs should be fitted. The springs show no coloured mark and are the same for both clutch types (K 4.5 and K 5).

Reassembling and Readjusting Clutch Pressure Plate

1. Place distance plate SW 19 in the adjustment flywheel (first blow out flywheel with compressed air).

2. Place pressure plate with inserted adjusting bolts in the flywheel. When dismantling, replace damaged adjusting bolts!

3. Put main springs and spring sockets on the pressure plate.

4. Insert springs in the cover plate and bent over ends of springs.

5. Push cover plate over the spring sockets.

6. Give clutch as in Item 7 (Disassembling) an initial tension with a press by using tools SW 21 and SW 22. In doing so, give care that the centered seat of the cover plate will suffer no damage.

7. Screw tight pre-loaded clutch pressure plate to the flywheel and take the assembly out of the press.

8. Put on lever and pressure rings. Screw into place new adjusting nuts and provisionally adjust clutch or release lever.

9. Put on release ring. Stretch release lever springs. Give care that the guide noses on the release ring properly engage in all 3 levers!

Adjusting Clutch

Now, the correct adjustment of the clutch (measure "A" see Fig. page 3-1) should be made with the aid of a dial gauge, if possible, on a measuring table.

10. Place adjusting piece SW 20 on the clutch cover plate and adjust the dial gauge clamped in a stand to zero. (See also Fig. 3 - 4/1).

11. Once the dial gauge thus adjusted, restore the measure 14.5 ± 0.5 mm (0.570 ± 0.0197") for the release ring by correspondingly turning the adjusting bolts.
    Trace clutch release ring face round about, a vertical excentricity of the release ring of max. 0.3 mm being permissible.
    (See also Fig. 3 - 4/2).

12. After adjusting, force release ring by a press several times into the clutch pressure plate. In doing so, give care that the ring will not be pressed in more than 6 mm (0.236"). This is the permissible release travel of the clutch! (See also Fig. 3 - 4/3).

13. Check for proper adjustment and correct, if necessary.

14. Operate clutch pressure plate several times and check always for adjustment.
    If the tolerable limits are exceeded, the adjustment should be corrected. This must be repeated until the adjusting measure remains constant!

15. Draw up evenly fastening bolts of the clutch pressure plate a turn, going crosswise from one to the next and screw them out. Take clutch pressure plate out of the adjusting flywheel.

16. Secure adjusting bolts by driving the edge of the adjusting nuts into the slot on the respective adjusting bolts. (See also Fig. 3 - 5/1).

    Attention!

    Driving-in of the edge should be done with the same force with all three adjusting nuts. Furthermore, the respective adjusting bolt should be supported at the head by a bolt as otherwise the blow would be paralyzed by the main springs, which would result in a change of the adjustment.

17. After locking, reinstall clutch pressure plate in the flywheel (use clutch feeler) and check adjustment again.
    If the adjustment corresponds to the instructions, the clutch pressure plate will work properly.

Dismantling and Reinstalling Release Gear with Graphite Ring

Dismantling

1. Dismantle power unit – engine/gearbox.

2. Separate gearbox flange.

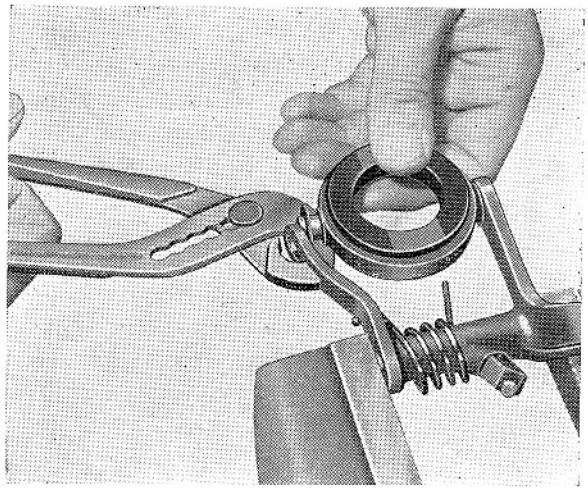
3. Dismantle clutch lever.

   a) Remove upper Seeger retaining ring from bolt for clutch lever (by means of Seeger pliers) *)
   (See also Fig. G 2 - 2/2).

   b) Drive out bolt downward with a drift.

   c) Take out clutch lever with release ring through the opening in the casing.

4. Bent open clutch lever; take out release gear with graphite ring (Fig. 4 - 1/1).



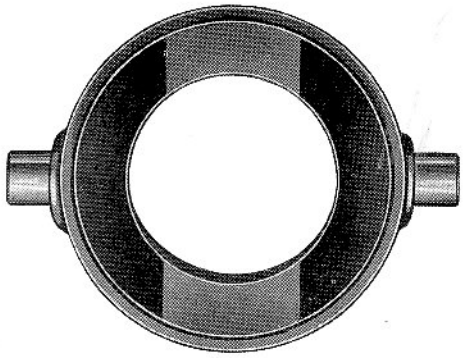
4 - 1/1

Installation

Installation should be made in the reverse order, giving care to the following points:

1. Check graphite ring for wear, cracks and damage. If necessary, replace the complete release gear. Replacing of the graphite ring should be avoided, if possible, as the ring can be easily damaged when forcing into the holder.

   If in special cases there is no complete release gear at disposal, the graphite ring must be driven out of the holder. The bore of the holder serving to take the graphite ring should be in a perfect condition. The new ring is to be inserted so that its chamfers come to lie against the carrying pins of the holder (Fig. 4 - 1/2).



4 - 1/2

The forcing-in operation should be done with care. Be sure the ram of the press works in a parallel plane with the bottom surface. The graphite ring must not be tilted!

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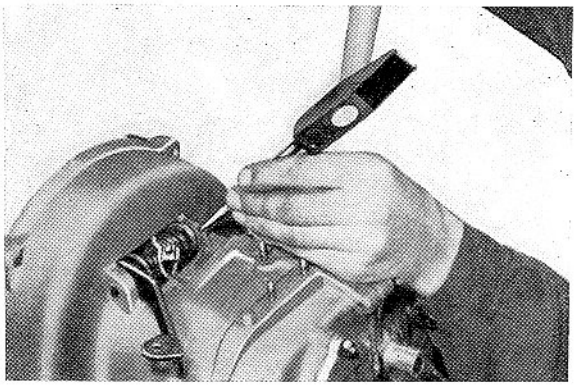
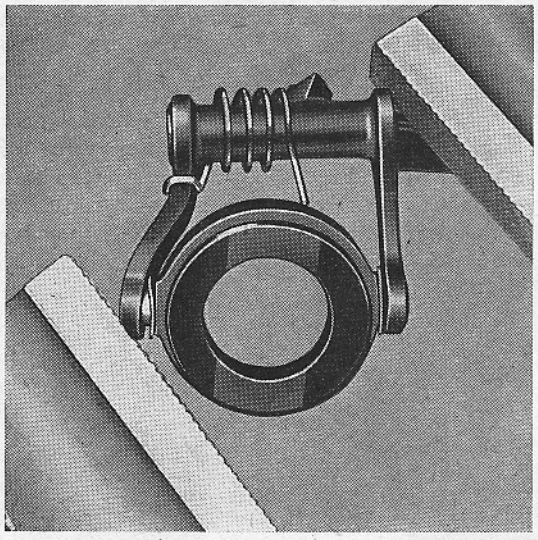
*) **Attention!**

Up to Chassis-No. 6/263 021 or 6/114 277 the bolt for the clutch lever is secured in the casing with a clamping pin. For dismantling drive out clamping pin with a 4 mm (0.157") drift (Fig. 4 - 1/3).



4 - 1/3

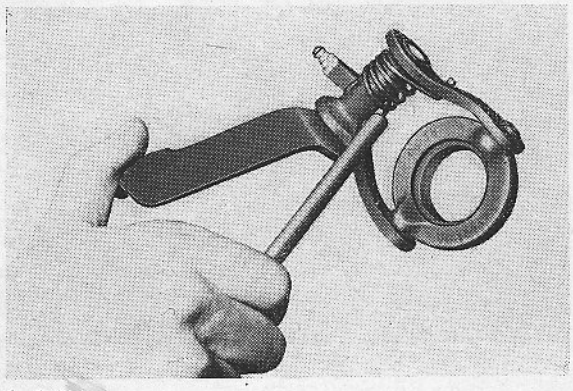
2. After installation of the release gear compress in a parallel vice the clutch lever which is bent outwards. Hold clutch lever alternately in the vice so that each time a pressure is exerted in diagonal direction on the lever ends. The release gear shall allow to be easily turned without any intolerable clearance being felt. On both sides, between lever and holder, do not forget interposing elastic washers!(Fig. 4 - 2/1).



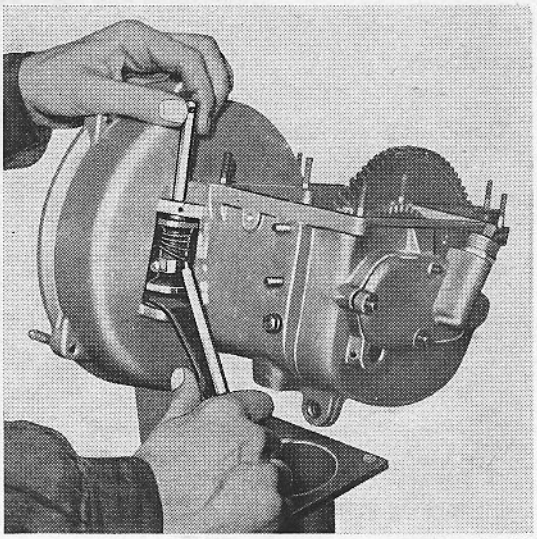
4 - 2/1

3. In order to install the release spring into proper position when replacing, all operations should be made in the following order:

   Put a suitable tubular piece on the free end of the release spring and tension the spring with this tubular piece back until tube and clutch lever are in a parallel plane. In this position put lever and tubular piece through the opening in the housing and drive bolt home.
   After this, draw the tube off the spring end (Fig. 4-2/2 and 2/3).

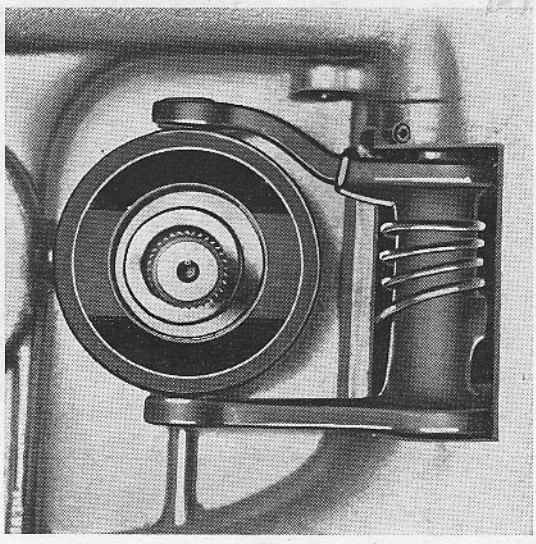


4 - 2/2



4 - 2/3

4. After installation of the clutch lever, check for proper position of the release gear to the gearbox drive shaft. Be sure the release gear is centrically positioned to the drive shaft. Correct inadmissible deviations. (If necessary, dismantle lever again). (Fig. 4 - 2/4).



4 - 2/4

5. After installation of the power unit, readjust clutch lever.

General

The clutch travel (clearance between release ring and graphite ring, measure "D", Fig. page K 3-1) shall be 2-3 mm (0.078-0.118") with the clutch engaged. This ensures that the clutch disc in the engaged position is always under the full pressure of the main springs.

The clutch clearance is equivalent to a free travel of the clutch pedal – measured from upper edge of pedal pad – of at least 30 mm (1.181") in the LP/LS 600 and Alexander or of at least 45 mm (1.771") in the LT/LTK 600.

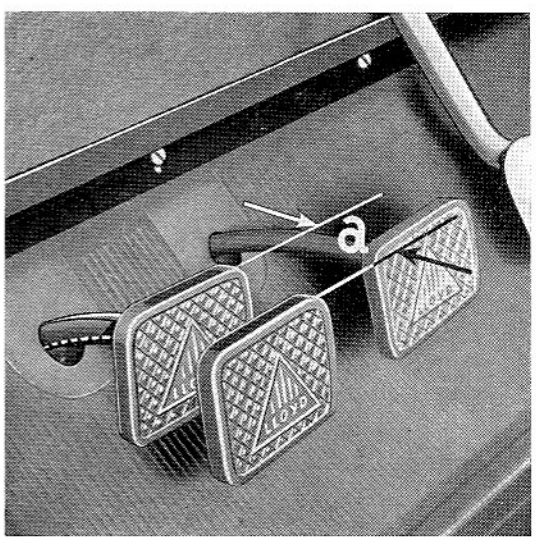
1. Owing to the wear of the linings a change in the position of the clutch release ring takes place: The ring travels in the direction of the gearbox; it approaches therefore the release gear. The clutch travel decreases more and more until finally the release ring – even with the clutch engaged – bears against the graphite ring. Then the main springs cannot any more press the pressure plate against the clutch disc with the necessary amount of pressure so that the clutch commences to slip. This results not only in a progressive wear of the clutch linings and of the graphite ring, but only in a destruction of the clutch pressure plate itself. The excessive heat produced by a slipping clutch disc is being transferred to the clutch springs as well as to the elastic segments of the clutch disc. The springs anneal, the segments of the clutch disc loosing their elasticity. Thus both parts become unserviceable for ever.

2. Furthermore, care is to be given that the specified clutch release travel (measure "E" see Fig. page K 3 - 1) will not be exceeded. This travel is 6 mm (0.236") max., that is, the release levers must not – in the case of new linings – be pressed into the clutch more than indicated while declutching as otherwise there is the risk of the clutch being damaged when applying the clutch pedal too excessively. (In the case of progressive wear of the linings, the permissible clutch release travel increases. Measure "E" + measure "F" = max. 13 mm (0.511"). **Should the specified free travel exist at the pedal, guarantee is given that the permissible clutch travel will not be exceeded with the pedal pad depressed against the toe board.**

For the reasons indicated under items 1 and 2 it is necessary to check permanently the clutch clearance – at least together with every specified servicing job. **Should thereby a smaller free travel than 30 or 40 mm (1.181 or 1.574") be measured on the clutch pedal, the clutch operating mechanism requires to be readjusted!**

Readjusting clutch clearance:

1. Unscrew lock nut on clutch cable.
2. Move clutch lever towards the toe board, therefore against the pressure exerted by the release spring until resistance is felt at the moment the declutching operation begins.
3. Hold lever fast in this position and adjust lock nut on the clutch cable so that the free travel on the clutch pedal is **35** or **50** mm (**1.377** or **1.968"**). Measure "a" Fig. 5 - 1/1.



5 - 1/1

Adjustment of clutch travel

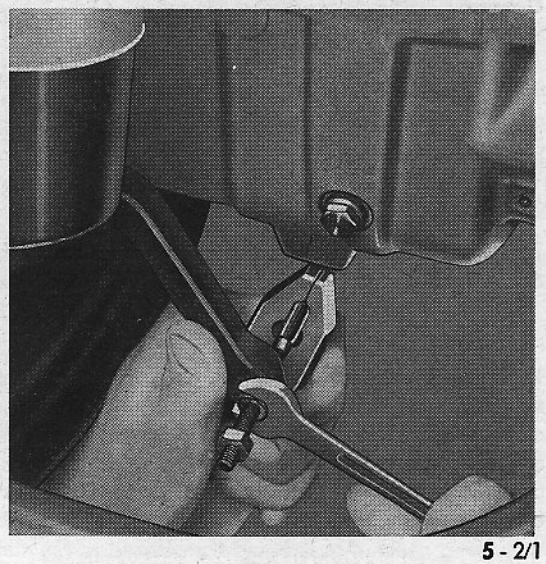
In order to avoid unnecessary corrections or even misadjustments, a possible transmission clearance must be eliminated, while adjusting, by strongly drawing forth the clutch cable (Fig. 5 - 2/1).

4. Safeguard adjusting nut by lock nut.

5. Give threaded piece of clutch cable and nuts a coat of grease.

6. Test the care on a trial run and after it check again clutch clearance.

   (See also schematic arrangement opposite).



5 - 2/1

Dismantling

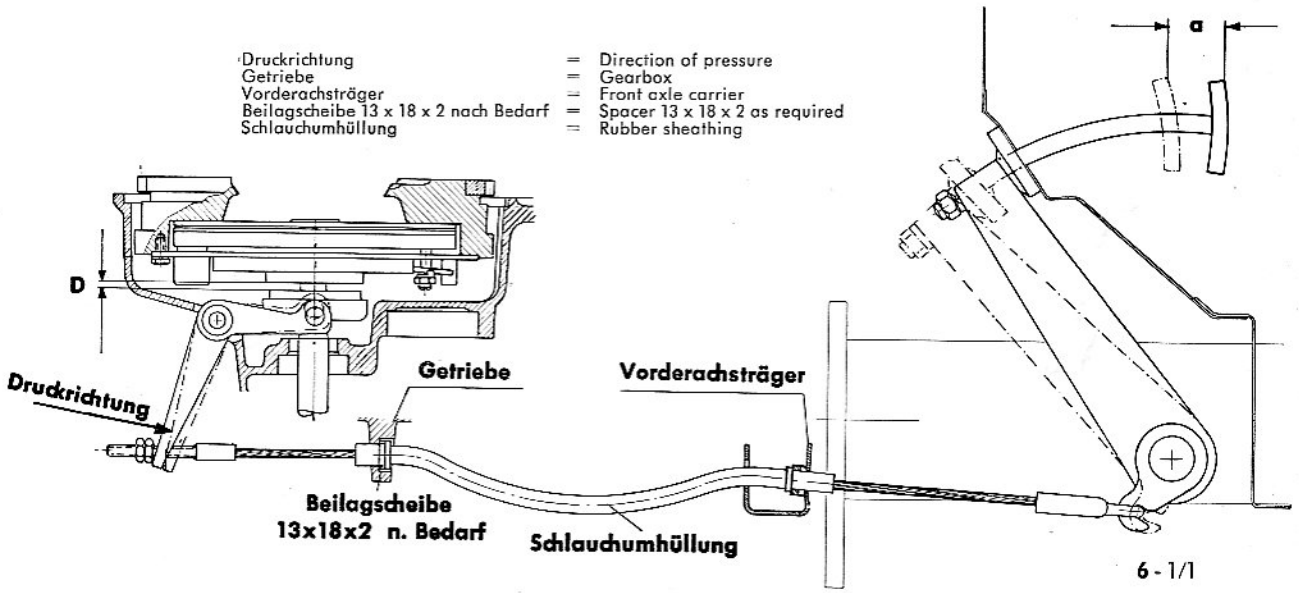
1. Unscrew adjusting and lock nut.
2. Unhook cable eye from the clutch pedal hook.
3. Pull out clutch cable with rubber sheathing between abutments on gearbox and on front axle carrier arm of shock absorber.

Reinstalling

Reinstalling should be made in the reverse order.
After installation of the cable, readjust clutch clearance.

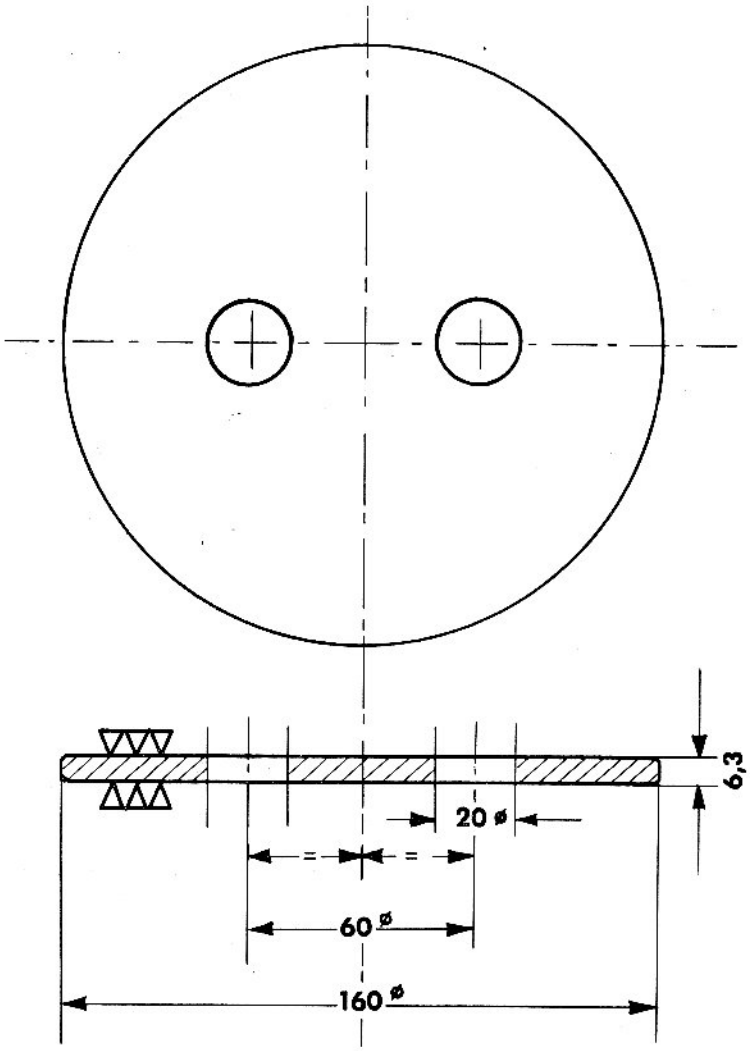
Attention! Care is to be given to see that the rubber sheathing on the clutch cable has always a sufficient curvature and pre-load in order to avoid oscillating movements of the engine being transferred to the clutch – especially when starting.

If the hose shows an insufficient curvature or has a defective pre-load (hose allows to be moved between its abutements in axial direction) grabbing of the clutch may occur! In any such case it is necessary to restore the tension either by interposing spacers 13 x 18 x 2 or by exchanging the clutch cable (Fig. 6 - 1/1).



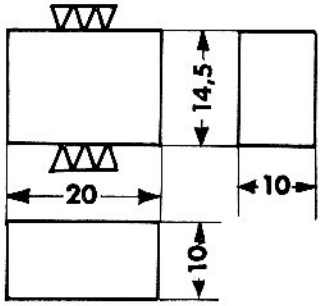
6 - 1/1

Measure "a" LP/LS 600 and Alexander: 35 mm (1.377") (at least 30 mm [1.181"])
LT/LTK 600: 50 mm (1.968") (at least 45 mm [1.772"])



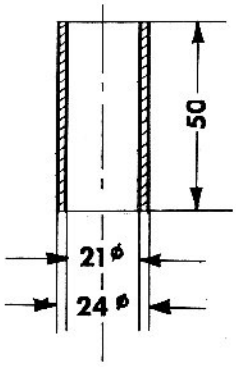
SW 19

Distance Plate
for adjusting clutch
pressure plate



SW 20

Piece for adjusting clutch
pressure plate
(Final measure)



SW 21

Tubular piece (3 pces.)

SW 22 Pressure Plate Material: Hard Wood