

# Disassembly and Reconditioning of Clutch

Types 220 and 220a

Operation No.
Ku 3

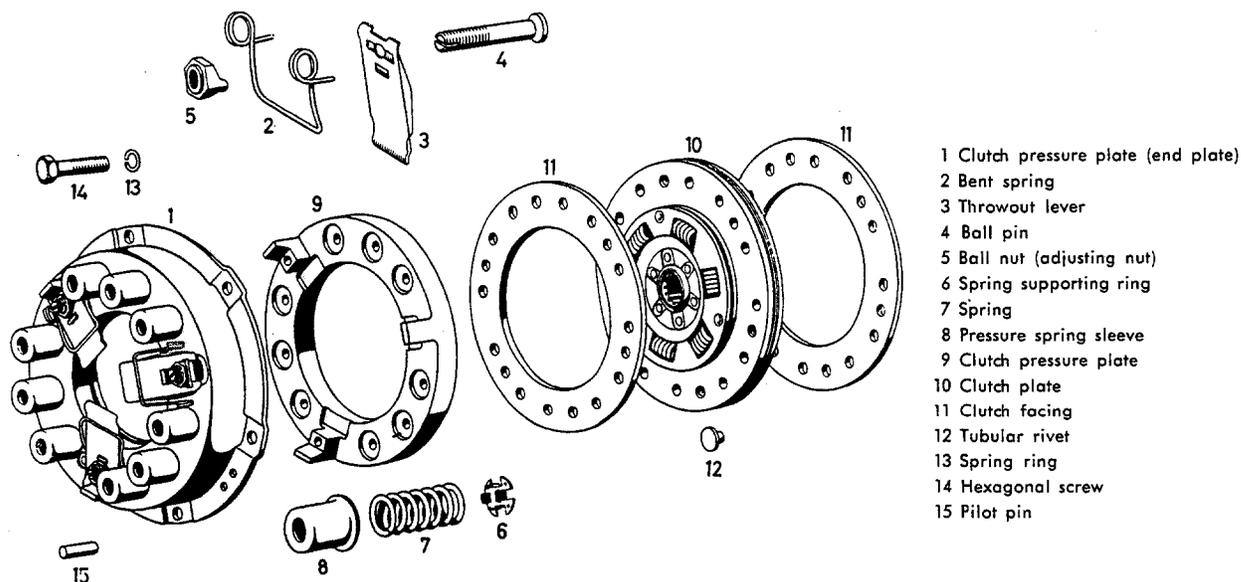


Fig. Ku 3/01

## Special Tools:

3 compressing yokes

136 589 23 61

Max. permissible unbalance: 20 cmg (0.28 oz. in.).

## Procedure:

1. Place clutch pressure plate on a suitable support. Use a piece of wood and three uniform lengths of tubing and press the clutch pressure plate against the end plate by means of a screw press until the throwout levers are released (Fig. Ku 3/1). Note that no pressure must be exerted on the throwout levers and that the end plate must not contact the support.
2. Saw the three adjusting nuts open and pry them apart. Release clutch slowly and disassemble it.  
When disassembling the clutch mark the various parts, such as pressure plate, throwout levers, springs, etc. against the end plate. Return the parts to their original position, as otherwise excessive unbalance of the clutch may result.

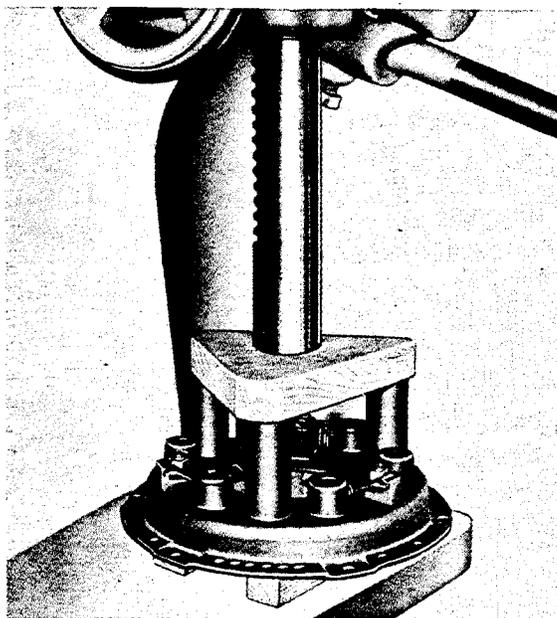


Fig. Ku 3/1

## Checking and Reconditioning of Clutch:

3. Check clutch pressure springs. The clutch is provided with six long springs taking a greater load in compressed condition and three shorter springs taking a smaller load (see Spring Test Table). The difference between springs of the same colour code should be as small as possible.

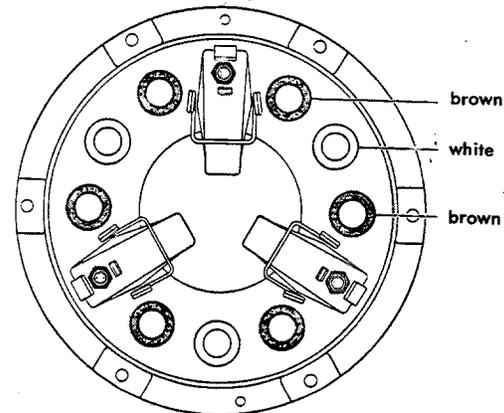
**Spring Test Table**

Colour Code	Number of springs	Outer dia mm (in.)	Wire thickness mm (in.)	Length un-loaded mm (in.)	Length loaded	
					mm (in.)	kg (lb.)
Brown	6	25.6 (1.01)	3.6 (0.14)	51.7 (2.035)	29.4 (1.16)	57.5 ± 2.5 (127 ± 5.5)
White	3	25.6 (1.01)	3.6 (0.14)	44.5 (1.75)	29.2 (1.15)	45 + 4 (99 + 8.8)

**Total spring pressure 480 kg (1,060 lb.)**

4. Check end plate for cracks and deformation. Make sure that the holes for the two pilot pins are not worn out.
5. Check pressure plate for scores and heat cracks. If necessary, regrind or re-turn (precision turn) the plate. When reworking the pressure plate be careful to remove as little material as possible. Experience has shown that the scores are not deeper than 0.2 mm (0.008"). The plate can be reground until an overall amount of 1 mm (0.04") has been removed. In new condition the thickness of the clutch pressure plate is 15 mm (0.6").
6. Check all the other parts, such as throwout levers, pressure spring sleeves, bent springs and spring supporting rings for perfect condition and replace them, if necessary.
7. Reassemble clutch. Be careful to install the springs in the correct order.

Between two springs marked with brown colour one spring marked with white colour is installed (Fig. Ku 3/7). Be sure that the springs are properly seated.



**Fig. Ku 3/7**

Turn new nuts on the adjusting screws and adjust throwout levers temporarily. Compress clutch by placing compressing yokes 136 589 23 61 under the outer ends of the throwout levers.

## Adjustment of Clutch:

8. To adjust the throwout levers critically, mount the clutch on a flywheel using a new clutch plate or a ring having a thickness of 9.1 mm = 0.36" (equal to the thickness of a new compressed clutch plate).

Remove compressing yokes.

9. Adjust the three throwout levers with the aid of the adjusting screws to  $9.1 + 41.5 = 50.6$  mm ( $0.36 + 1.63 = 1.99$ "). Critical adjustment is, however, only possible on a plane table. Before bolting the clutch to the flywheel, place a 50.6 mm (1.99") high gauge block on the clutch surface of the flywheel and set the dial gauge to 0 (Fig. Ku 3/9).

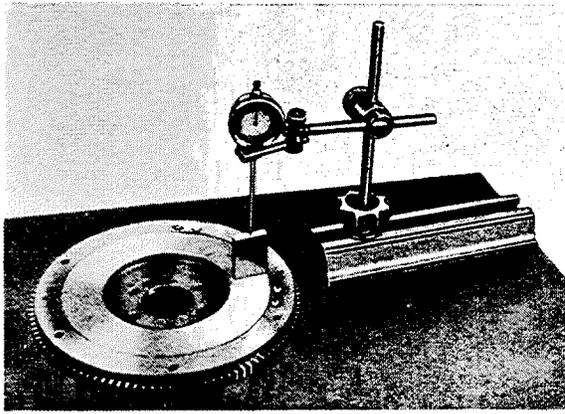


Fig. Ku 3/9

After the clutch has been mounted on the flywheel, adjust the three throwout levers to the desired value of 50.6 mm (1.99") by means of the dial gauge set to zero position (see Fig. Ku 3/9a).

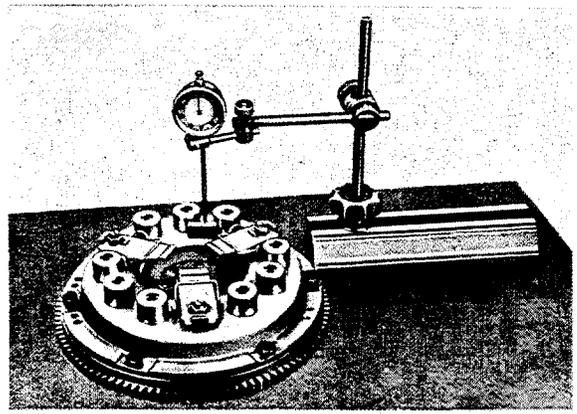


Fig. Ku 3/9b

levers (17 mm = 0.67") on a dial gauge (Fig. Ku 3/9b).

10. The adjusting nuts are secured by prying them over (see arrow in Fig. Ku 3/10).

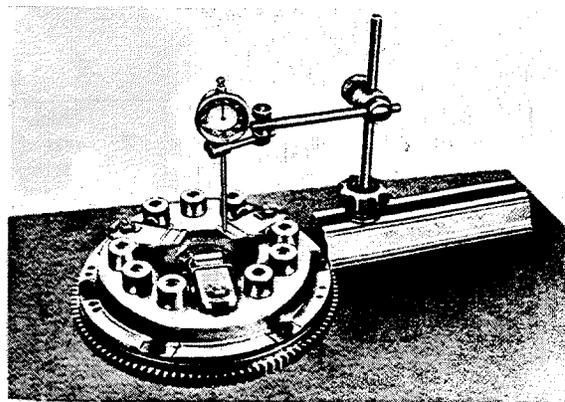


Fig. Ku 3/9a

After the throwout levers have been adjusted, depress them several times and check the distance again. In actual practice it will suffice to set the distance between end plate and throwout

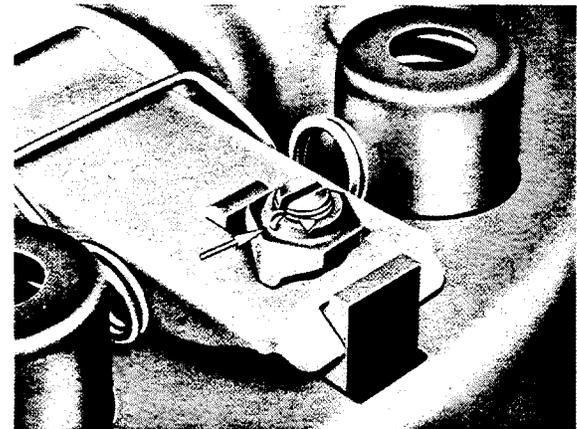


Fig. Ku 3/10

11. After adjustment has been completed, put the compressing yokes again under the ends of the throwout levers so the clutch can be mounted in compressed condition.