

1. Description

Oettinghaus starting clutches are supplied in different designs according to size and the purpose of use. For torque setting the clutches size 07 to 15 have one adjusting nut as shown in Fig. 1 and clutches size 23 and bigger have two adjusting nuts as shown in Fig. 2. The housing (10) is supported on both sides by centering bushes (3) running on the clutch hub (1) and is provided with internal slots or splines for holding the outer discs (6). The inner discs (7) are retained on the hub by slots or splines. The required operating pressure to transmit a specified torque is achieved in the case of the smaller clutches as in Fig. 1 through a central spring, for the larger clutches as in Fig. 2, through multiple springs located in the adjusting nut (5). The adjusting nut (8) and the centering bush (3) are counterlocked by socket head cap screws (4 resp. 4.1) and thereby secured against accidental turning.

On the smaller models 0-700-000/400-07 up to -25 (see Fig. 1) it is possible to set the adjusting nut whilst under pressure. On models 0-700-000/400-31 to -47 (see Fig. 2) the force required is greater. Therefore additional spring support plates (9) are built in, which can be retracted by the locking screws (4.1) before adjusting. The adjusting nut is then released from spring pressure and can be easily turned.

The size of a clutch can be established from this table

Outer diameter of the centering bush (3)	mm	65	80	90	115	125	142	160	200
corresponding 0-700-000 size		07	11	15	23	25	31	39	47

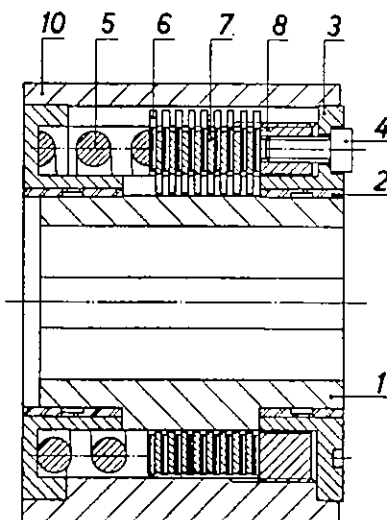


Fig. 1

To Fig. 1 and 2

1. clutch hub
2. bronze bush
3. centering bush
4. cap screw (Fig. 1)
- 4.1 cap screw with retaining nut (Fig. 2)
5. spring
6. outer disc
7. inner disc
8. adjusting nut
9. spring support plate (Fig. 2)
10. housing
11. locking screw

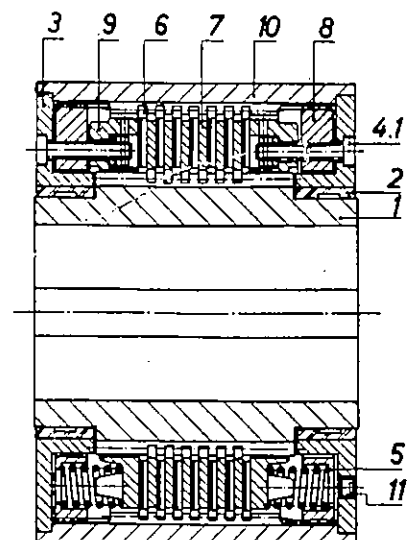


Fig. 2

2. Spare parts

When ordering spare parts, please state the factory number stamped on the outer housing or the clutch hub. For clutches dating back to 1943 or before spares can only be supplied against sample or drawing. To avoid delivery of incorrect parts, please always order in writing or by telex.

3. Installation

The clutch is normally mounted in a gearwheel or pulley and keyed to the shaft.

Model 0-700-000... with thin walled housing might expand slightly when the locking screws (4 resp. 4.1) are tightened. To ensure correct mounting of gearwheel or pulley the locking screws should be slightly loosened before assembly and then uniformly tightened.

If the correct torque setting cannot be calculated it is advisable to make the final setting after completed assembly by actual trial in the machine. When the clutch is used to reduce the starting shock from electric motors it should be set at approx. 1,5 of the nominal motor torque.

4. Torque setting

4.1 Model 0-700-000/400-07 to 25 (Fig. 1)

Loosen the locking screws (4) in the centering bush (3) by turning them anti clockwise. By turning the centering bush with a key the threaded adjustment nut (8) will move in axial direction. Turning to the right compresses the spring and turning to the left releases the spring. This alters the spring pressure

and subsequently the torque setting. After completed adjustment the locking screws (4) must be tightened, clamping the centering bush (3) and the adjustment nut (8) to prevent movement. Note that there must remain a gap of at least 0,5—1 mm to effect the interlocking between the centering bush and the adjustment nut. The screws should be tightened firmly and uniformly.

4.2 Model 0—700—000/400—31 to 47 (Fig. 2)

The locking screws (4.1) with retaining nut and crosspin pull the spring support plate (9) towards the adjustment nut (8) when loosened crosswise and turned left. The spring pressure is then retained within the adjusting assembly which can then be easily turned with subsequent axial movement of the nut, as described under 4.1.

Turning to the left reduces and turning to the right increases the torque setting.

Note It is only possible to unscrew the locking screws until the spring support plate (9) touches the adjustment nut (8). Further turning will break the crosspin.

After completed adjustment the locking screws should be screwed in crosswise to release the spring pressure and then uniformly tightened to clamp the assembly.

To effect the clamping it is important that a gap of 0,5-1 mm remains between adjustment nut and centering bush. The locking screws should be firmly and uniformly tightened to prevent accidental movement.

At very low torque settings the adjustment nut may possibly be drawn too close to the centering bush. In this case some springs or a pair of discs should be removed.

Setting of a specific torque

The clutch can be set to a specified torque in the following way.

The clutch is mounted on a stationary shaft and a weighted fixed length lever is attached to the housing. (See Fig. 3)

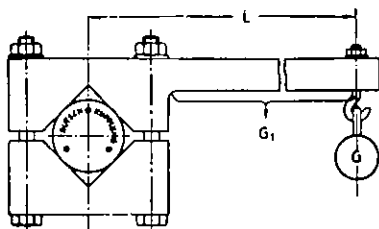


Fig. 3

Example

A clutch to be used as starting clutch on an electric motor 10 hp at 1450 rpm in a machine tool drive is to be adjusted. The nominal motor torque is

$$\frac{716 \cdot \text{hpm}}{\text{rpm}} = \frac{716 \cdot 10}{1450} \approx \text{approx. } 5 \text{ kpm}$$

Acc. to para. 3 the clutch torque should be approx. 1,5 times the nominal motor torque = 7,5 kpm. The product of lever and weight required to make the clutch slip should be 7,5 kpm. If the weight of the lever is not negligible it must be compensated by

$$\frac{G_1 \cdot L}{2}$$

5. Lubrication

5.1 Clutches with „Konstant“ sinter lining/steel friction mating.

These clutches are suitable for dry as well as wet running. The grease chambers in the bearing bushes provide lubrication during slipping.

When the clutch is exposed to corrosive conditions it is recommended to fill the clutch with a low viscosity oil of 3,9 E/50° C (e.g. SHELL Tellus 129) or a non acid grease (e.g. SHELL Alvania Grease R 2) to prevent corrosion of the plates.

Smaller clutches can be filled with lubricant by removing one of the locking screws (4). After completed lubrication the screw must be replaced and properly tightened. Larger clutches have a lubrication hole in the centering bush which is sealed by a screw (11). The screw can be replaced by a suitable lubrication nipple. Spray or splash lubrication is sufficient for clutches located in gearboxes.

5.2 Clutches with „Ortex“ organic lining/steel friction mating.

These clutches must not be lubricated, and oil or grease must be prevented from penetrating the plate stack.

6. Installation and maintenance faults and their rectification.

6.1 The clutch is slipping too frequently and does not transmit the required torque.

The torque setting is too low and should be increased as described in para. 4.

6.2 The clutch is overheating

The heat is due to excessive slipping and the torque setting must be increased as above.

It should be noted that the permissible slipping time is limited according to clutch size and transmitted power. The input power is converted to heat when the clutch is slipping and must be dissipated by cooling air or, in the case of gearboxes, by cooling oil.