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EQUIPMENT

VOLUME 2

WORKSHOP INSTRUCTIONS

STARTER DRIVES "RUBBER COUPLING" PATTERNS



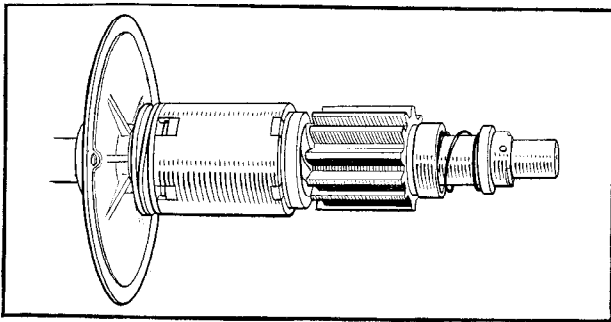
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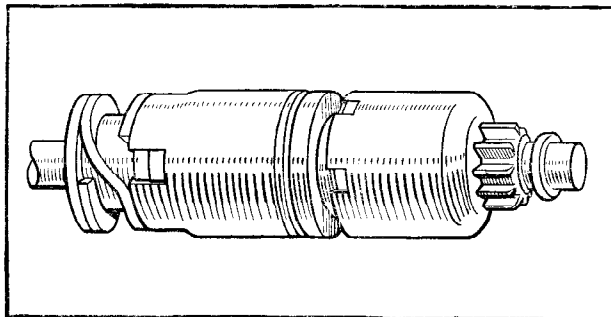
STARTER DRIVES "RUBBER COUPLING" PATTERNS

1. GENERAL

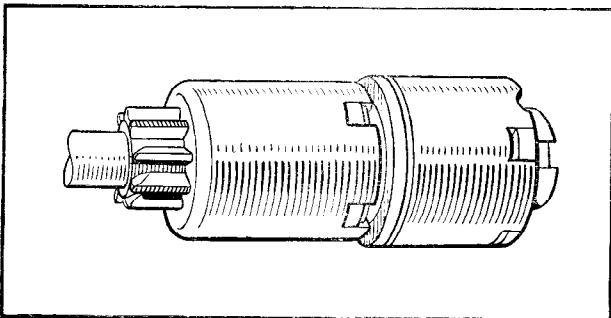
There are three different designs of this pattern of drive ("RS," "RSB" and "RE" illustrated below) in which a rubber coupling is used to transmit the drive from the starter shaft to the engine, but the basic principle of operation is the same in each case.



"RS" Pattern



"RSB" Pattern



"RE" Pattern

Fig. 1.

The drive embodies a combination of rubber torsion member and friction clutch in order to control the torque transmitted from the starter to the engine flywheel and to dissipate the energy in the rotating armature of the starter at the moment when the pinion engages with the flywheel.

It also embodies an overload release mechanism which functions in the event of extreme stress, such as may occur in the event of a very heavy backfire, or if the starter is inadvertently meshed into a flywheel, rotating in the reverse direction.

When the starter is energised, the torque is transmitted by two paths, one via the outer sleeve of the rubber coupling and through the friction washer to the screwed sleeve, while the other path is from the outer to the inner sleeve through the rubber coupling and then directly to the screwed sleeve.

The torque through the rubber limits the total torque which the drive transmits and since the rubber is bonded to the inner sleeve, under overload conditions slipping will occur between the rubber bush and the outer sleeve of the coupling. Slipping does not take place under normal engagement conditions, when the rubber acts merely as a spring with a limiting relative twist on the two members of approx. 30° .

Under conditions of unduly severe overload which might cause damage to the drive or its mounting, however, the rubber slips in its housing so that a definite upper limit is set to the torque transmitted and to the stresses which may occur.

2. ROUTINE MAINTENANCE

If any difficulty is experienced with the starting motor not meshing correctly with the flywheel, it may be that the drive requires cleaning. The pinion should move freely on the screwed sleeve; if there is any dirt or other foreign matter on the sleeve it must be washed off with paraffin.

In the event of the pinion becoming jammed in mesh with the flywheel, it can usually be freed by turning the starter motor armature by means of a spanner applied to the shaft extension at the commutator end. This is accessible by removing the cap which is either a push fit or is secured by two screws.



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3. CONSTRUCTION, DISMANTLING AND REASSEMBLY

"RS" PATTERN

CONSTRUCTION

The construction of the drive will be clear from the illustration. A screwed sleeve carries the pinion, the screwed sleeve being keyed to the inner sleeve of the rubber coupling by the centre coupling plate. The outer sleeve of the rubber coupling unit is keyed to the end plates, while the end plate nearest the starter armature (known as the transmission plate) is keyed to the shaft. A friction washer is fitted between the centre coupling plate and the end plate of the outer sleeve, and a pinion restraining spring fitted over the shaft prevents the pinion vibrating into mesh when the engine is running.

DISMANTLING

Having removed the armature as described in the section dealing with starting motors, the drive and intermediate bracket can be dismantled as follows :— Remove the pin (A) from the bearing collar (B) at the end of the starter drive. Hold the squared starter shaft extension at the commutator end by means of a spanner and unscrew the bearing collar.

Remove the restraining spring sleeve (C), restraining spring (D) and collar (E). Withdraw key from armature shaft and then remove pinion and sleeve assembly (F), centre coupling plate (G), friction

washer (H), end plate (J) and rubber coupling (K). Remove the key (L) and then withdraw the transmission plate (M) and intermediate bracket (N).

REASSEMBLY

The reassembly of the drive is a reversal of the dismantling procedure.

"RSB" PATTERN

CONSTRUCTION

The construction of the drive will be clear from the illustration overleaf. The pinion is carried on a barrel type assembly which is mounted on a screwed sleeve.

The screwed sleeve is secured to the armature shaft by means of a location nut and is also keyed to the inner sleeve of the rubber coupling by a centre coupling plate. A friction washer is fitted between the coupling plate and rubber assembly and the outer sleeve of the rubber coupling is keyed at the armature end of the starter by means of a transmission plate.

A pinion restraining spring is fitted in the barrel assembly to prevent the pinion vibrating into mesh when the engine is running.

DISMANTLING

Having removed the armature as described in the section dealing with starting motors, the drive can be dismantled as follows :—

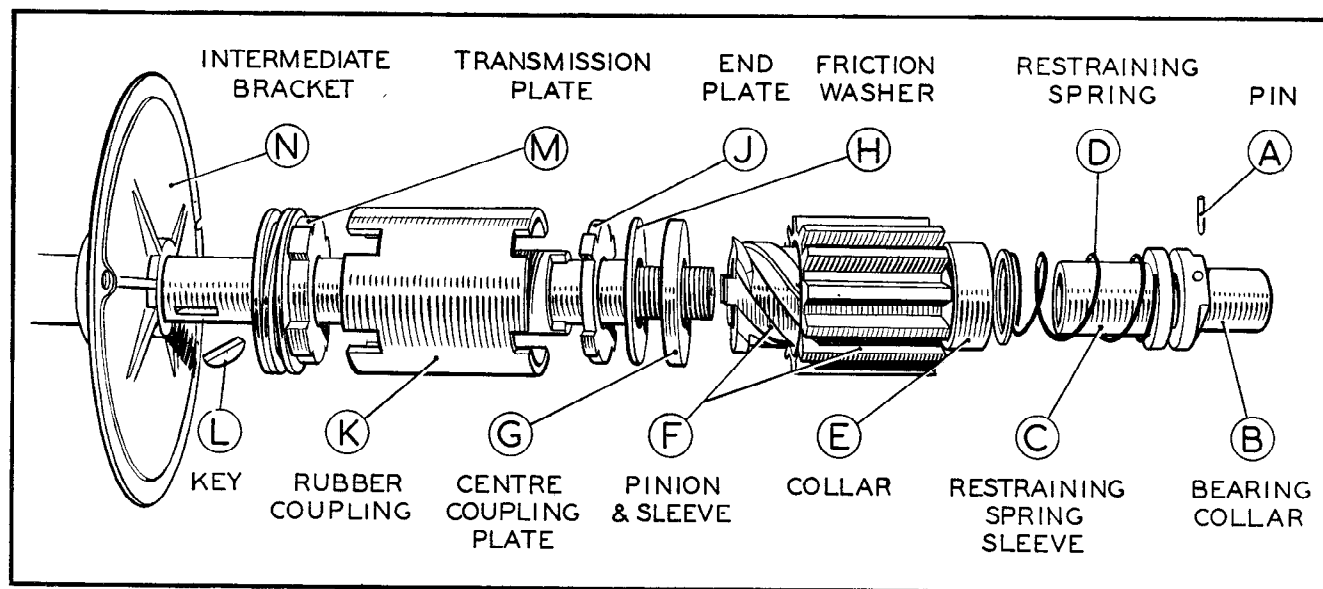


Fig. 2. "RS" Pattern



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Remove the locating cover (A) and then withdraw the locating ring (B) from the starter shaft at the end of the starter drive.

Remove the retaining ring (C) from inside the end of the pinion and barrel assembly (D) and then withdraw the pinion and barrel assembly.

Take out the peg (E) securing the locating nut (F) to the shaft, hold the squared starter shaft extension at the commutator end by means of a spanner and unscrew the locating nut.

Withdraw the friction washer (G), restraining spring (H). Slide the sleeve (J) and control nut (K) off the splined shaft.

Finally remove coupling plate (L) friction washer (M) and rubber unit assembly (N).

NOTE.—On some models the locating nut is secured by caulking the nut into the keyway provided in the shaft and therefore no peg (E) is fitted. When re-assembling it will be necessary to fit a new locating nut.

REASSEMBLY

The reassembly of the drive is a reversal of the dismantling procedure.

"RE" PATTERN

CONSTRUCTION

The construction of the drive will be clear from the illustration overleaf. The pinion is carried on a barrel assembly which is mounted on a screwed sleeve. This

sleeve is carried on a centre sleeve and is secured to the armature shaft by means of a peg and key. The screwed sleeve is also keyed to the inner sleeve of the rubber coupling by means of a centre coupling plate.

A friction washer is fitted between the coupling plate and rubber assembly and the outer sleeve of the rubber coupling is keyed at the armature end of the starter by means of a transmission plate. A pinion restraining spring is fitted in the barrel assembly to prevent the pinion vibrating into mesh when the engine is running.

DISMANTLING

Having removed the armature as described in the section dealing with starting motors, the drive can be removed from the armature shaft as follows :—

Remove the retaining pin (A) from the centre sleeve (B), and then slide the drive back along the shaft and remove the key (C). Withdraw the drive unit from the shaft. **Note.**—On outboard types to withdraw the drive it is only necessary to take out the retaining pin.

The drive can be dismantled as follows :—

Remove the retaining ring (D) from inside the end of the pinion and barrel assembly (E) and then withdraw the pinion and barrel assembly and washers (F).

Unscrew the location nut (G). This nut is held in position on the centre sleeve (B) by caulking. When re-assembling therefore, it will be necessary to fit a new sleeve.

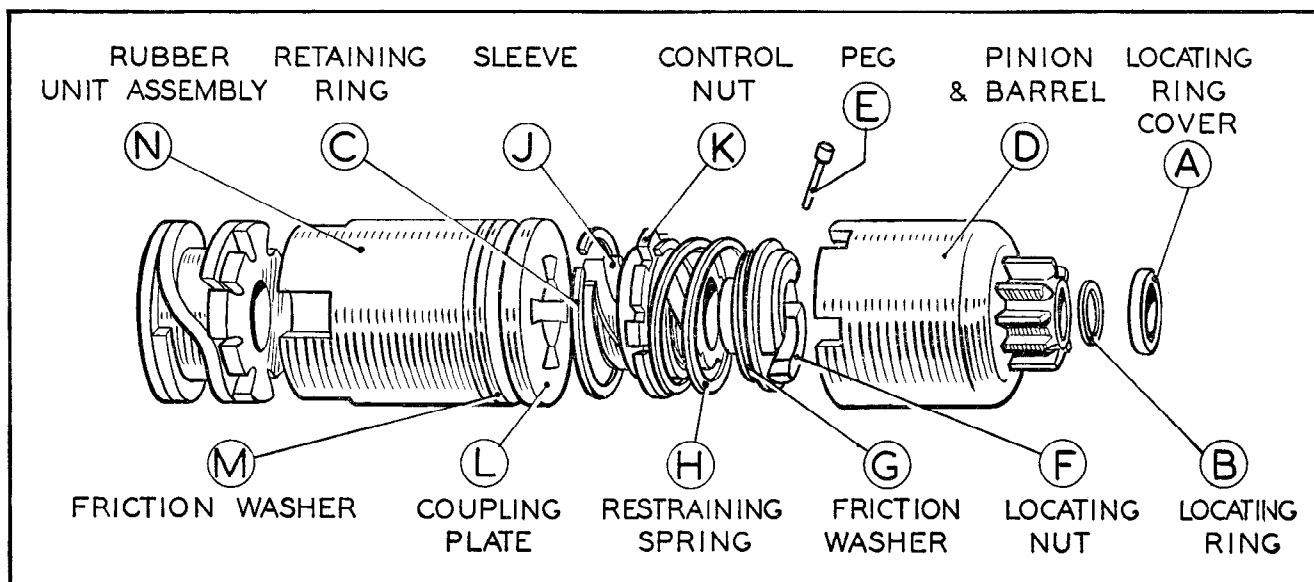


Fig. 3. "RSB" Pattern



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Remove the washer (H), restraining spring (J), control nut (K) and withdraw the screwed sleeve (L).

Remove the centre coupling plate (M), friction washer (N) and rubber unit assembly (O).

Finally remove cushioning spring (P) and transmission plate (Q).

REASSEMBLY

The drive must be re-assembled and fitted to the starter shaft by reversing the above procedure.

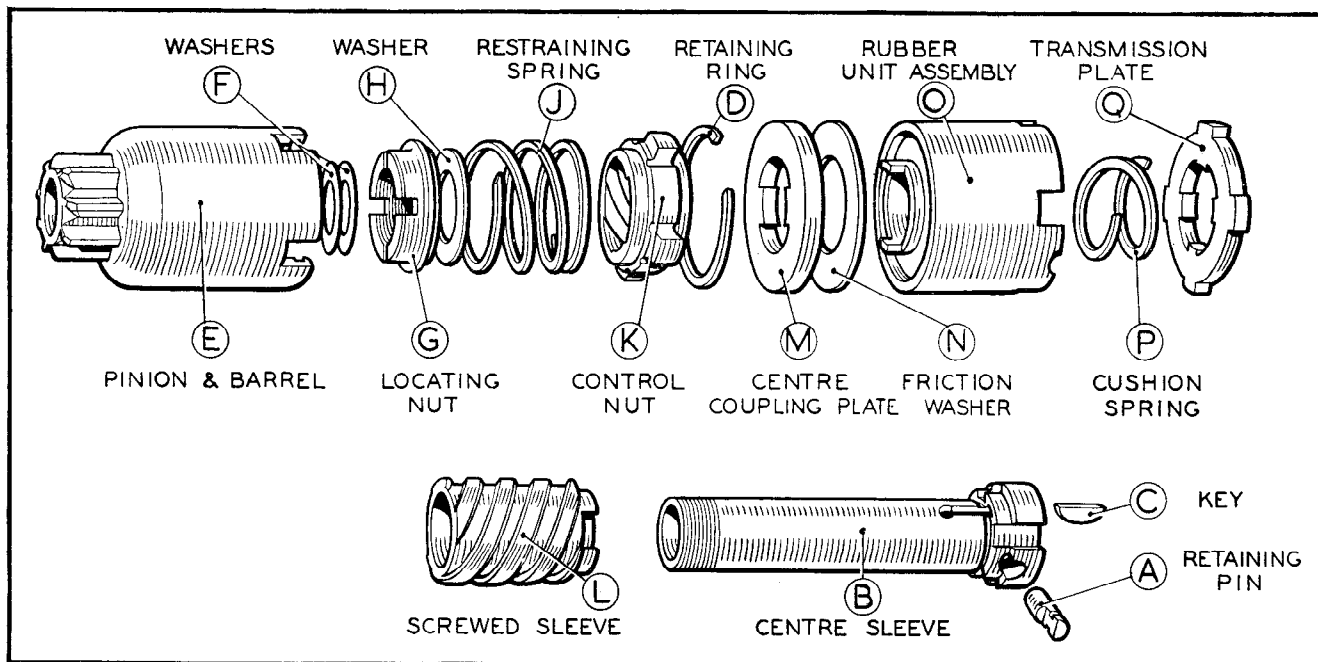


Fig. 4. "RE" Pattern

