

SERVO-THRUST SYNCHRONIZATION

Beginning with Gearbox No. 50 001

Figure 1 shows, in addition to component parts numbered 1 through 8, a cross-sectional view of the Porsche servo-thrust synchronization with the two corresponding gears, either of which couples with the output shaft by pushing the sliding sleeve to left or right, respectively.

The clutch carrier (3) is firmly attached to the gear and carries the synchronizing ring (4), slider (5a), stop (6), and the two brake band segments (7). The assembly is kept in place by the locking ring (8). Located between the two gears, which rotate freely on the output shaft, is the sliding sleeve (1); the sleeve is free to move sideways even though it is in constant lock with the output shaft by way of the three-pronged spider (2).

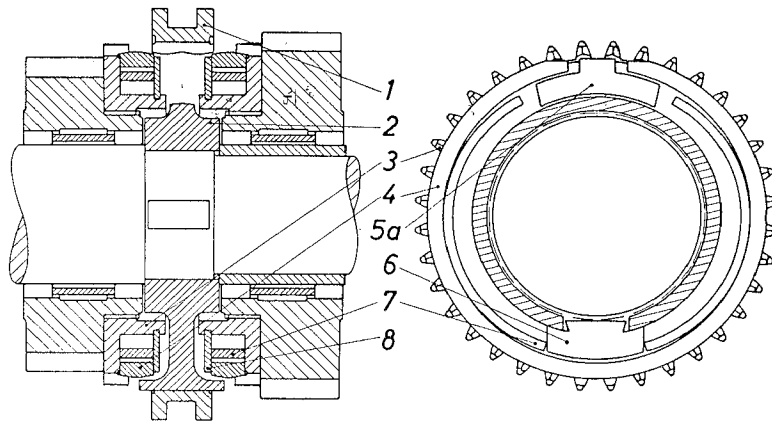


Fig. 1

The Porsche synchronization operates on the servo-thrust principle. The frictional force, which is created by pushing the sliding sleeve onto the synchronizing ring, is multiplied by the servo-thrust mechanism located within the synchronizing ring without creating additional resistance to the gearshift lever. The synchronization components automatically control the extent of the servo action required in each particular instance, thus resulting in quick shifts with little effort.

When a shift is made with the gears at standstill, the selector fork moves the synchronizing ring from the center position and engages it with the gear teeth in the synchromesh drive ring of the respective gear. In the above process the synchronizing ring compresses to fit inside the sliding sleeve and then comes to rest in a groove machined on the inner surface of the sliding sleeve. This requires only the amount of force needed to overcome the static resistance of the synchronizing ring, which results from the tension of the ring and the angle inclination of the cone.