Constructora Española de Maquinaria, S.A.

Renom

C.I.F. A-08-047-300
Ctra de Ribes, 50 – 08591 AIGUAFREDA (Barcelona)
Apdo. 1255 – Tef +34 93 844 00 00 y +34 93 844 22 44 – Fax: +34 93 844 21 12
http://www.cemsa-renom.com e-mail: info@cemsa-renom.com

# ENDM MULTIPLE DISCS PNEUMATIC CLUTCH
# - DESCRIPTION AND OPERATION -

## DESCRIPTION:

ENDM multiple discs pneumatic clutch has a toothed sleeve (1) which gear to the outsid discs (6) forming a single set for the torsional movement but leaving freely the axial movement.

When having parallel shafts, the sleeve is commonly fixed to a pulley or wheel which has been mounted on bearings in a similar way as it is shown in the picture number 6 of the "ways of assembling" section. It can also be fixed to a flange when working with coaxial shafts, as it is shown in the picture number 1 of the same section. The pulley or flange, depending on the assembly, the sleeve (1) and the outside discs (6), constitute one of the two independent parts of the clutch; it is often used as the driving part, with a continuous rotation movement, but it can also be used as the driven part.

The core is the piece which contains the elements of the other independent part of the mechanism, and there, the pneumatic device in charge of clutching and declutching. This core has a cylindrical and stepped shape. Its first stretch (from outside to inside) is cylindrical and flat. On its end, the glass-shape lid (4) is coaxially mounted by means of screws. The inside profile formed by the internal part of the lid and the core act as pneumatic cylinder. The moving plate located between the lid and the core is built with its corresponding pneumatic blocking joints (17 and 18) and acts as the piston, moving in the axial direction but not rotating. It cannot rotate because its inside tooth gear to the core diameter which is also toothed. In the core's toothed diameter the inside discs (7) are found. Such discs are internally toothed and gear to the core's toothed diameter remaining together for the torsional movement but having free axial movement. They are positioned in an alternated way with the outside discs (6) and between them there is a certain distance which let them rotate when the mechanism is declutched. The springs (11) help to keep the same distance between friction pairs and avoid the residual torque creation when the mechanism is declutched. The reaction disc is mounted on the core's short diameter which comes after the toothed diameter. This disc is fixed to the core by means of screws (13) in order to neutralize the axial push received from both the piston and the springs placed in the core's holes to make the declutch easy.

The ring (10), fixed to the pushing plate with screws, is a good protection against corrosion and dirt of the locking surfaces. This ring, on its interior part, has circular groves that constitute the obturation.

The air intake is carried out by means of a rotatory racord placed in the shaft at the center of the free end of the shaft containing the clutch, so it is necessary to drill the center of the shaft to connect the pipe to the piston chamber.

Information regarding to our rotatory racords is given apart

Constructora Española de Maquinaria, S.A.

C.I.F. A-08-047-300
Ctra de Ribes, 50 – 08591 AIGUAFREDA (Barcelona)
Apdo. 1255 – Tef +34 93 844 00 00 y +34 93 844 22 44 – Fax: +34 93 844 21 12
http://www.cemsa-renom.com e-mail: info@cemsa-renom.com

Renom

**OPERATION:**

Our "ENDM" series pneumatic clutch is a coupling by closing of force that clutches when there is a pressure emission and declutches when there is a lack of pressure.

As we have previously said, among the lid (4), the core (2) and the pushing piston (3), a real press is created, whose enegy is the compressed air, being its pushing capacity, directly proportional to the its section and the air pressure.

When the clutch has no pressure, the driving body of the mechanism, generally constituted by the sleeve, is constantly moving together with the outside discs (6) which rotate pulled by the sleeve among the inside discs. As it has been said, there is a distance or play between each friction pair that let the free rotation without residual torque creation since such distance is rightly kept by the springs.

Air or pressure emission through a distributor or a similar mechanism is enough to clutch; when such air reach the pressure chamber which is hermetically sealed with the joints 16, 17 and 18, exerts a pushing action on the recipient's walls forcing the piston to move axially defeating the springs (12 and 11). The piston, on moving, push all the discs against the reaction disc with such a force that inside and outside discs move together transmitting the twisting moment from the driving part to the driven part.

It is only necessary to cut off the air supply in order to declutch the driven part. The springs (12) let the mechanism return to its initial position and the separation left by the piston on going back is divided into the friction pairs which also return to its initial position due to springs betweem the discs (11). The mechanism remains declutched.