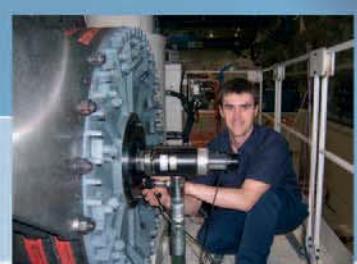
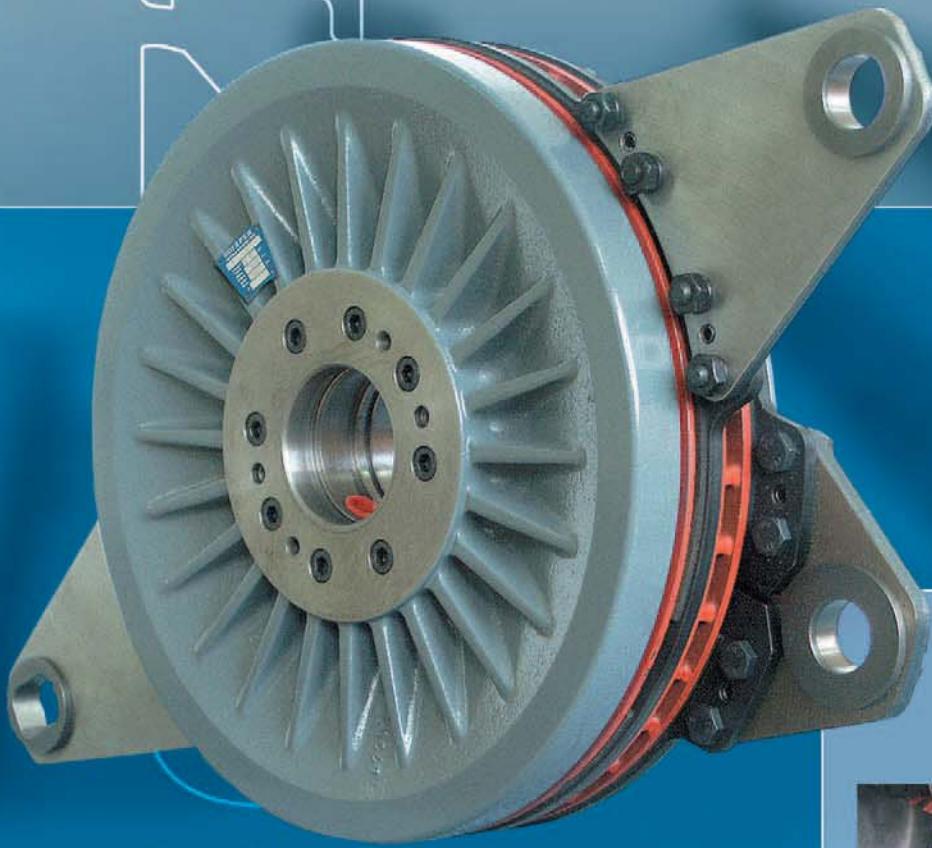


# GOIZPER

## 离合器制动器

### PNEUMATIC CLUTCH-BRAKES



# **GOIZPER**



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## 简介

本目录展示了全系列气动式标准Goizper离合器制动器组合和附件。

该产品可用于金属成形压力机、剪板机、冲压裁剪机、成型机和制罐机。

为了帮助客户挑选我们的产品，我们增加了技术信息。

本目录仅供参考。若想了解与这些产品相关的特殊用途，可随时与我们联系。

## INTRODUCTION

This catalogue shows the full range of the pneumatic standard Goizper clutch-brake combinations and accessories.

Applications include Metalforming Presses, Shears, Die Cutters, Forming Machines, and Can Body Makers.

We have added technical information to assist in the selection of our products.

This catalogue is a reference only. Please do not hesitate to contact us for special applications related to these products.



CLUTCH - BRAKES

## 技术信息

本章节解释各种用途离合器制动器的基本概念以及计算公式，以便于客户选择。

本目录中使用的所有公式均遵守 VDI 2241 和/或 DIN 1304 标准。

如果有任何疑问或者想了解更多信息，可随时与我们的技术部门联系。

## TECHNICAL INFORMATION

This chapter explains the basic concepts and formulas for the calculation and selection of clutch-brakes for each application.

All the formulas used in this catalogue are in accordance with VDI 2241 and/or DIN 1304 norm.

In case of any doubt or if any further information is required, please do not hesitate to contact our Technical Department.

## 定义

### 扭矩

定义和区分离合或者制动过程中所考虑的扭矩非常重要。

图表 1 中显示的扭矩值定义如下。

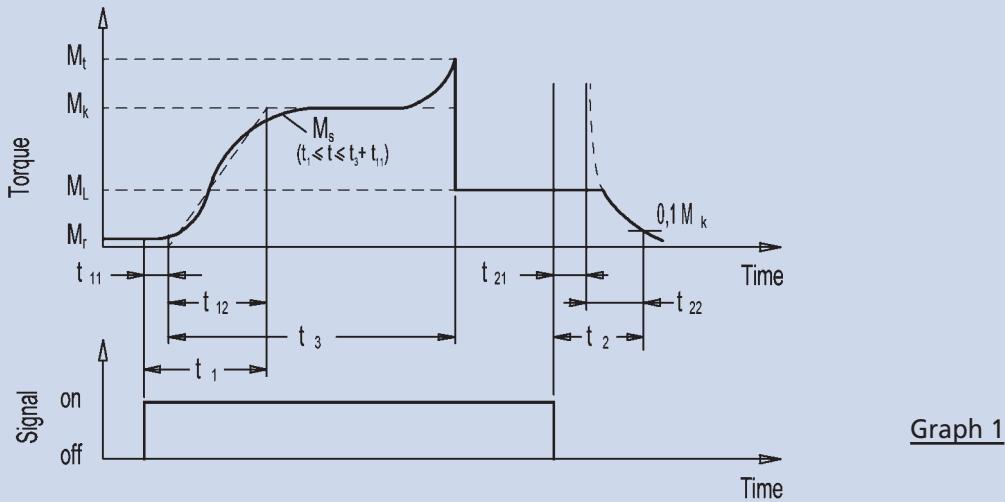
## DEFINITIONS

### TORQUES

It is important to define and difference the torques considered in the clutching or braking process.

The torque values shown in graph 1 are defined below.

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#### 滑移或动态扭矩 $M_s$ :

这是当扭矩增加时间 ( $t_{12}$ ) 结束时传递的扭矩。它在循环过程中发生变化并且取决于（除了其它因素之外）滑移速度和摩擦面的滑移时间和温度。

#### 可传递扭矩或静态扭矩 $M_t$ :

无滑移情况下最大容许扭矩，它取决于工作和设计条件

**Slip or dynamic torque  $M_s$ :** this is the torque transmitted once the torque increase time ( $t_{12}$ ) is finished. It changes within the cycle process and depends, apart from other factors, on the slip speed and the temperature of the friction surfaces.

**Transmissible torque or static torque  $M_t$ :** maximum admissible torque without slip, depending on the working and design conditions.

**残余扭矩  $M_r$ :**

系统启动时传递的扭矩。它取决于安装位置（水平、垂直或者倾斜）、与摩擦片表面相关联的速度、油流和粘度。  
垂直或者倾斜安装时，残余扭矩增加得非常快，因此产生的热量也相应增加。

**负载扭矩  $M_L$ :**

启动机器内部元件的必需扭矩，考虑其性能、动作速度等。

**特有扭矩  $M_k$ :**

这是本目录中指出的扭矩。

**加速扭矩  $M_a$ :**

（当此值为负数时为减速扭矩）：本目录中指出的扭矩。  
通常与动态扭矩相同。  
此扭矩利用下列公式计算出：

$$M_a = \frac{J(n_{10} - n_{20})}{9,56 \cdot t} \quad (\text{Nm})$$

其中：

$J$  = 转动惯量 ( $\text{kgm}^2$ )。

$n_{10}$  = 驱动轴速度 (每分钟转数)。

$n_{20}$  = 驱动轴速度 (每分钟转数)。

$t$  = 时间 (秒)

$M_a$  = 加速扭矩 (Nm)。

**Residual torque  $M_r$ :** torque transmitted when the system is not actuated. It depends on mounting position, (horizontal, vertical, or inclined), speed related to disc surface, oil flow, & viscosity.

When vertical or inclined mounting, the residual torque increases very much, so the generated heat is increased as well.

**Loading torque  $M_L$ :** necessary torque to activate the elements in the machine, taking into account its performance, the action speed, etc.

**Characteristical torque  $M_k$ :** It is the torque indicated in the catalogue.

**Acceleration torque  $M_a$  (deceleration torque when the value is negative):** torque indicated in the catalogue. Usually equal to dynamic torque. This torque is calculated by using the following formulation:

$$M_a = \frac{J(n_{10} - n_{20})}{9,56 \cdot t} \quad (\text{Nm})$$

Being:

$J$  = moment of inertia ( $\text{kgm}^2$ ).

$n_{10}$  = driver shaft speed (r.p.m.).

$n_{20}$  = driven shaft speed (r.p.m.).

$t$  = time (s).

$M_a$  = acceleration torque (Nm).

**摩擦系数**

若要计算不同的扭矩，应考虑下列系数。

$\mu$ : 滑动或动态摩擦系数。

$\mu_0$ : 静态摩擦系数。

下一章节将说明不同材料的这两个系数之间的比率。

**FRICTION COEFFICIENTS**

To calculate different torques, the following coefficients are considered.

$\mu$ : Sliding or dynamic friction coefficient.

$\mu_0$ : Static friction coefficient.

The ratio between both coefficients for the different materials will be indicated in next chapters.



CLUTCH - BRAKES

## 扭矩传递中的时间项

与扭矩相类似，定义和区分图表1中扭矩传递中存在的不同时间非常重要，如下：

**反应延迟  $t_{11}$ :**  
从控制器启动直到扭矩开始增加所经过的时间。

**上升时间  $t_{12}$ :**  
从扭矩开始增加直到达到静止状态所经过的时间。

**连接时间  $t_1$ :**  
反应延迟时间和上升时间的总和  
$$t_1 = t_{11} + t_{12}$$

**滑移时间  $t_3$ :**  
驱动机构摩擦表面之间的相对运动时间。

**总时间  $t_t$ :**  
从发出信号直到扭矩传递完成所经过的时间。  
$$t_t = t_{11} + t_3$$

## 中断扭矩传递的时间项（图表1）

我们采取上一段落中使用的类似方式来定义扭矩传递中断时间。

**中断传递时的反应时间  $t_{21}$ :**  
从控制器停用直到扭矩开始减少所经过的时间。

**减少扭矩  $t_{22}$ :**  
从扭矩减少直达到10% 特有扭矩所经过的时间。

**断开时间  $t_2$ :**  
反应延迟和减少时间的总和。

$$t_2 = t_{21} + t_{22}$$

## TIME TERMS IN THE TORQUE TRANSMISSION

Like in the torques, it is important to define different times existing in the torque transmission that appear in graph 1, which are:

**Reaction delay  $t_{11}$ :** time from the activation of the control until the beginning of the torque increase.

**Rising time  $t_{12}$ :** time from the beginning of the torque increase until reaching the stationary condition.

**Link time  $t_1$ :** sum up of the reaction delay time and the rising time.

$$t_1 = t_{11} + t_{12}$$

**Slip time  $t_3$ :** time of relative movement between friction surfaces of an actuated mechanism.

**Total time  $t_t$ :** Time from the signal until the torque transmission is accomplished.

$$t_t = t_{11} + t_3$$

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## TIME TERMS FOR INTERRUPTING THE TORQUE TRANSMISSION (Graph 1)

We define the torque transmission interruption times in a similar way than we have done in the previous paragraph.

**Reaction time when interrupting the transmission  $t_{21}$ :** Time from the deactivation of the control until the beginning of the torque decrease.

**Decrease torque  $t_{22}$ :** Time from the torque decrease until reaching 10% of the characteristical torque.

**Disconnection time  $t_2$ :** Sum up of the reaction delay and the decrease time.

$$t_2 = t_{21} + t_{22}$$



## 转动惯量 J

在进行下列计算之前，考虑转动惯量“J”非常重要。

例如，可以通过下列公式计算出厚度为100mm并且外径为D ( mm ) 的实心铁缸体的转动惯量：

$$J = 77 \cdot D^4 \text{ (kgm}^2\text{)}$$

当转动惯量与离合器轴无关时，必须将其折算到此轴。

使用下列公式。

$$J_{red} = J \cdot i^2 \text{ (kgm}^2\text{)}$$

J : 任意速度 ( kgm<sup>2</sup> ) 下的轴质量转动惯量。

$J_{red}$ : 折算到离合器轴 ( kgm<sup>2</sup> ) 的转动惯量。

i : 两个轴之间的速度比。

$$i = \frac{n_2}{n_1}$$

$n_1$ : 离合器速度 ( min<sup>-1</sup> )

$n_2$ : 带有惯量 J 的轴速度。 ( min<sup>-1</sup> )

根据下列公式，如果准备加速的质量带有线性运动，它们的转动惯量会折算到离合器轴。

$$J_{red} = 91 \cdot m \cdot \frac{v^2}{n_1} \text{ (kgm}^2\text{)}$$

m : 线性运动中的质量 ( kg ) 。

v : 上述质量的速度 ( m/s ) 。

$J_{red}$ : 折算到离合器轴的转动惯量 ( kgm<sup>2</sup> )

## 热容量

对于热传递，相关概念定义如下：

接合功Q: 它是由接合引起通过摩擦产生并转换为热量的能量。

$$Q = \frac{J \cdot (n_{10} \pm n_{20})^2}{182,4 \cdot 10^3} \cdot \frac{M_k}{M_k \pm M_L} \text{ (kJ)}$$

J : 转动惯量 ( kgm<sup>2</sup> ) 。

$M_k$  : 可传递扭矩 ( Nm ) 。

$M_L$  : 负载扭矩 ( Nm ) 。

## MOMENT OF INERTIA J

It is important to consider the moment of inertia “J” before making the following calculations.

For example, the moment of inertia of a solid iron cylinder which is 100mm thick with an outer diameter D (in mm) is obtained with the following formulation:

$$J = 77 \cdot D^4 \text{ (kgm}^2\text{)}$$

When the moment of inertia is not referred to the clutch shaft, it is necessary to reduce it to this shaft. The following formulation is used.

$$J_{red} = J \cdot i^2 \text{ (kgm}^2\text{)}$$

J : moment of inertia of the shaft masses at any speed. (kgm<sup>2</sup>).

$J_{red}$ : moment of inertia reduced to the clutch shaft (kgm<sup>2</sup>).

i : speed ratio between shafts.

$$i = \frac{n_2}{n_1}$$

$n_1$  : clutch speed (r.p.m.).

$n_2$  : speed of the shaft with inertia J.

If the masses to accelerate have a linear movement, their moments of inertia are reduced to the clutch shaft as per the following formulation:

$$J_{red} = 91 \cdot m \cdot \frac{v^2}{n^2} \text{ (kgm}^2\text{)}$$

m : masses in lineal movement (kg).

v : speed of the mentioned masses (m/s).

$J_{red}$ : moment of inertia reduced to the clutch shaft (kgm<sup>2</sup>).

## THERMAL CAPACITY

Concerning the heat transmission, the following concept is defined:

**Work per engagement Q:** It is the energy caused by friction and transformed into heat, as a consequence of engaging.

$$Q = \frac{J \cdot (n_{10} \pm n_{20})^2}{182,4 \cdot 10^3} \cdot \frac{M_k}{M_k \pm M_L} \text{ (kJ)}$$

J : moment of inertia (kgm<sup>2</sup>).

$M_k$  : transmissible torque (Nm).

$M_L$  : loading torque (Nm).



每次循环所产生的功，被转换为热量，必须将其消除并且不超过离合器制动器的热容量。

在气动离合器制动器中，热量被离合器制动器的元件吸收并且通过接触大气的表面传递给空气。

在液压离合器制动器中，通过润滑油散热。

可以通过喷油进行润滑，但是如果需要执行繁重的工作，则必须采取强制冷却，并且可以通过离合器制动器进行润滑。

The work produced by each cycle, which is transformed into heat, must be removed without surpassing the thermal capacity of the clutch-brake.

In the pneumatic clutch-brakes the heat is absorbed by the elements of the clutch-brake and transmitted to the air by the surfaces that are in contact with the atmosphere.

In the hydraulic clutch-brakes, the heat is dissipated by means of lubrication oil. Lubrication can be done by splash, but when an intense work is required a forced cooling will be necessary, and lubrication will be done through the clutch-brake.

## 根据某些因素（我们将在下文中详细说明），

摩擦系数可以在离合或者制动接合期间发生变化。这些因素还会对何时传递扭矩（在摩擦表面之间没有相对运动情况下）产生影响：

- 传递的功率。
- 摩擦表面的温度（冷却系统）。
- 滑移速度。
- 摩擦材料组合。
- 干或者湿运转。
- 摩擦表面的设计（槽 ...）
- 摩擦表面的压力
- 环境温度。
- ...

我们的离合器制动器中使用的材料组合如下：

## PERFORMANCE OF FRICTION MATERIALS

Depending on some factors, which we detail below, the friction coefficient can change during the clutch or brake engagement. These factors also affect when the torque is transmitted without relative movement among the friction surfaces:

- Transmitted power.
- Temperature on the friction surfaces (cooling system).
- Slip speed.
- Combination of friction materials.
- Dry or wet operation.
- Design of the friction surfaces (grooves...)
- Pressure in the friction surfaces
- Ambient temperature.
- .....

The combination of materials used in our clutch-brakes is the following:

离合器制动器的类型 <b>Type of clutch-brake</b>	运转 <b>Running</b>	材料组合 <b>Combination of materials</b>
气动 Pneumatic	干 Dry	钢、铸铁/有机材料 Steel, cast iron/organic material
液压 Hydraulic	湿 Wet	回火钢/烧结青铜 Tempered steel / sintered bronze



### 气动离合器制动器:

这些离合器制动器在干燥条件下运转，因此摩擦材料为衬以无石棉有机材料的铸铁或钢。

摩擦表面平整并且有机衬片粘结在摩擦片上，留出一些沿径槽，用来清除污染物和散热。有机摩擦块也可以使用。

为了获得最佳性能，摩擦表面不应有任何油脂或者润滑油。

### 摩擦系数

这种摩擦材料组合可以获得高摩擦系数（0.35 到 0.45）。

在这种情况下，动态和静态摩擦系数没有很大的区别。

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衬片会受到磨损。

当离合器制动器中与衬片接触的金属元件没有超出170°C时，磨损较低。高于这个温度，会显著增加磨损。

重要的是考虑离合器制动器工作环境的大气温度以及它在机器中的位置。必须在离合器制动器处留出足够的空间，以便新鲜空气流动。

### 热特性

有机衬片的额定温度为350°C。允许短时间内出现较高的温度，但是将遭受较高的磨损。

恒定循环的损耗能力在0.7到1.4 J/mm<sup>2</sup> min之间，具体取决于上文“摩擦材料的性能”标题中指出的因素。

每次循环和每个设备表面产生的能量不得超出2 J/mm<sup>2</sup>，在连续模式下运转时也应该考虑这个因素。

### PNEUMATIC CLUTCH-BRAKES:

These clutch-brakes work in dry condition and therefore the friction materials are casting or steel against organic asbestos-free material.

The friction surfaces are flat and the organic linings are bonded to the discs, leaving some radial slots free that permit the removal of contaminants and heat. Organic friction blocks can also be used.

For a proper performance, the friction surfaces should be free from grease and oil.

### FRICITION COEFFICIENT

High friction coefficients are obtained (0,35 to 0,45) with this combination of friction materials. In this case, there are no large differences between the dynamic and static friction coefficients.

### WEAR OF THE LININGS

Linings suffer wear. Wear is low when the temperature of the metallic elements of the clutch-brake that are in contact with the lining do not exceed a temperature of 170°C. Above this temperature, wear increases considerably.

It is important to take into account the atmosphere temperature where the clutch-brake works, as well as its position in the machine. There must be enough space to permit the flow of fresh air at the clutch-brake.

### THERMAL CHARACTERISTICS

Organic linings are rated for 350°C. Higher temperatures in short periods can be admissible but will incur in high wear.

The dissipation capacity with constant cycling can be between 0,7-1,4 J/mm<sup>2</sup> min depending on the factors indicated in the above heading called “performance of friction materials”.

The energy produced per cycle and per surface of the unit should not exceed 2J/mm<sup>2</sup>, consideration that will also be taken into account when working in continuous mode.



CLUTCH-BRAKES

## 液压离合器制动器和湿式:

适用于湿运转，采用回火钢并且衬上烧结青铜。

摩擦表面设计带有槽，并且考虑（除了其它因素之外）热负荷、摩擦系数和润滑油流量。

## 摩擦系数

采用这种摩擦材料组合时，静态和动态摩擦系数之间的关系如下：

$$\frac{\mu_0}{\mu} = 1,7$$

## 烧结摩擦片的磨损:

这种组合类型发生的磨损非常低。重要的是确保磨损表面的恰当润滑并且定期更换润滑油。

## 热特性

烧结摩擦片具有极佳的热传导性，可以让温度上升至大约350°C。（取决于滑动时间）

摩擦表面的润滑方式对于每次运转所产生的热消散产生很大的影响。最常用的值如下：

喷油润滑: 0.7 – 1 J/mm<sup>2</sup>min

强制润滑: 1-2 J/mm<sup>2</sup>min

每次运转和每个表面产生的能力不可超过1 – 2J/mm<sup>2</sup> ( VDI 2241 ) 。

## HYDRAULIC CLUTCH-BRAKES AND WET:

Designed for wet operation, using tempered steel against sintered bronze.

The friction surfaces have been designed with grooves, taking into account (among other factors) the thermal load, the friction coefficient and the lubrication oil flow.

## FRICTION COEFFICIENT

With this combination of friction materials, the following relation between the static and dynamic friction coefficient is obtained:

$$\frac{\mu_0}{\mu} = 1,7$$

## WEAR OF THE SINTERED DISCS:

Wear in this kind of combination is very low. It is important to assure appropriate lubrication of the friction surfaces and also to change oil regularly.

## THERMAL CHARACTERISTICS

The sintered discs have a very good thermal conductivity that allow temperatures up to 350 °C approx (depending on slipping time).

The lubrication means in the friction surfaces have a big influence in the heat dissipation produced in each operation. The most common values are the following:

*Splash lubrication: 0,7-1 J/mm<sup>2</sup>min*

*Forced lubrication: 1-2 J/mm<sup>2</sup>min*

The energy produced per operation and per surface unit cannot exceed 1-2 J/mm<sup>2</sup> (VDI 2241).



## 制动过程

若要计算制动接合过程中的滑移时间 $t_3$ ，  
可以使用下列公式：

$$t_3 = \frac{t_{12}}{2} + k \cdot \frac{J \cdot w}{M_k} \text{ (s)}$$

$t_{12}$ ：扭矩增加的时间。

$k$ ：校正系数。

$J$ ：参照离合器制动器轴的惯量 ( $\text{kgm}^2$ )。

$w$ ：离合器制动器的角速度 ( $\text{rad/s}$ )。

$M_k$ ：本目录中指出的制动扭矩 (Nm)。

对于气动离合器制动器装置，  
 $t_{12}$ 极度易变，它取决于系列、尺寸、扭矩率和气  
动回路 (2 - 80 ms)。

对于液压式装置，此值不值得考虑。  
系数 $K$ 是“摩擦材料的性能”章节中所指因素的  
应变量。

其值为变量，对于气动和液压离合器制动器装置，  
计算时考虑采用 $K = 1.25$ 。

因此，总制动时间将为：

$$t_t = t_{11} + t_3$$

在气动和液压离合器制动器中， $t_{11}$ 也是变量。

制动角  $\theta_f$ :

制动角可以分成两项：

1.- 反应角:  $\theta_r = w \cdot t_{11}$

2.- 机械制动角: ( $\theta_m$ ):

$$\theta_m = f(M, J, w, t_{12}, t_3)$$

$$\theta_f = \theta_r + \theta_m$$

若要简化计算，可以使用下列公式：

$$\theta_f = w \cdot t_{11} + \frac{w}{2} \cdot t_3 \text{ (rad)}$$

$$\theta_f = 6 \cdot n \cdot t_{11} + 3 \cdot n \cdot t_3 \text{ (°)}$$

$n$  = 离合器制动器转动速度 (每分钟转数)。

## BRAKING PROCESS

To calculate the slip time during the brake engagement  $t_3$ , the following formula is used:

$$t_3 = \frac{t_{12}}{2} + k \cdot \frac{J \cdot w}{M_k} \text{ (s)}$$

$t_{12}$  = time of torque increase.

$k$  = correction coefficient.

$J$  = Inertia referred to clutch-brake shaft ( $\text{kgm}^2$ ).

$w$  = Angular speed of clutch-brake (rad/s).

$M_k$  = Brake torque indicated in the catalogue (Nm).

In the case of the pneumatic clutch-brake units,  $t_{12}$  is very variable, depending on the series, sizes, torque rates and pneumatic circuit (2 - 80 ms.).

In the case of the hydraulic ones, this value is inconsiderable.

The K coefficient is function of the factors indicated in chapter "performance of friction materials"

Its value is variable, considering for calculation  $k=1.25$ , for both, pneumatic and hydraulic clutch-brake units.

The total braking time will therefore be:

$$t_t = t_{11} + t_3$$

$t_{11}$  is also variable in both, pneumatic and hydraulic clutch-brake units

### Braking angle $\theta_f$ :

The braking angle can be divided in two terms:

1.- Reaction angle:  $\theta_r = w \cdot t_{11}$

2.- Mechanical braking angle ( $\theta_m$ ):

$$\theta_m = f(M, J, w, t_{12}, t_3)$$

$$\theta_f = \theta_r + \theta_m$$

To simplify the calculation, the following formulation can be used:

$$\theta_f = w \cdot t_{11} + \frac{w}{2} \cdot t_3 \text{ (rad)} \quad \text{or}$$

$$\theta_f = 6 \cdot n \cdot t_{11} + 3 \cdot n \cdot t_3 \text{ (°)}$$

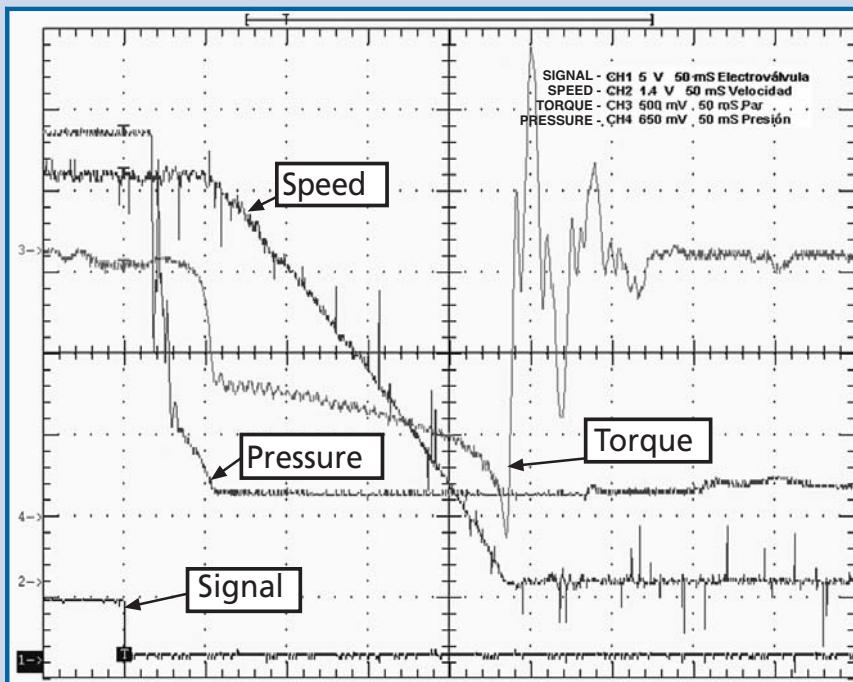
$n$  = Clutch-brake rotational speed (r.p.m.).



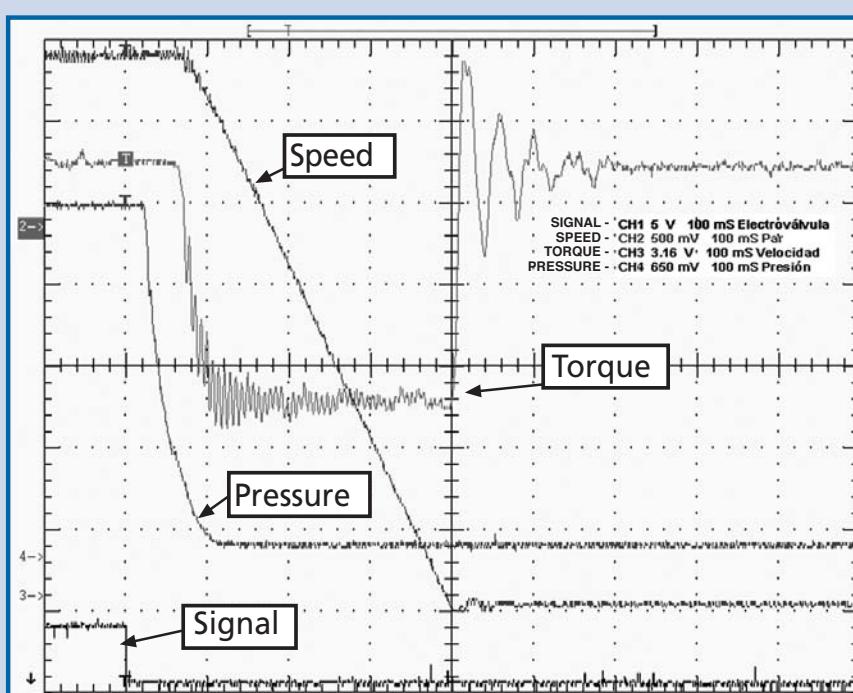
CLUTCH - BRAKES

请参阅下面由示波器获得的比较测量图表，  
相应为液压离合器制动器和气动离合器制  
动器的制动接合：

Please find below graphics showing  
comparasion measurements taken by an  
oscilloscope, of the brake engagement of a  
hydraulic clutch-brake and a pneumatic clutch-  
brake accordingly:



液压离合器制动器装置  
Hydraulic clutch-brake unit



气动离合器制动器装置  
Pneumatic clutch-brake unit



## 偏心压力机的扭矩计算

若要计算偏心压力机中的必需扭矩，  
使用下列公式：

$$M = \frac{\sin(\alpha + \beta)}{\cos \beta} \cdot P \cdot r$$

$M$ ：将被偏心轴传递的翻转扭矩。

$\alpha$ ：BDC（下死点）之前的最大作用力角。

$P$ ：施加的压力。

$r$ ：偏心轴的半径。

$\beta$ ：最大压力时连杆和撞击装置运动线之  
的角度。

$s$ ：从BDC到产生最大压力的点之间的距  
(在撞击装置处测量出)。

$h$ ：从BDC到产生最大压力的点之间的距  
(在偏心轴处测量出)。

若要获得“ $\alpha$ ”和“ $\beta$ ”角以及“ $h$ ”高度，  
可以使用下列公式：

$$\sin \alpha = \sqrt{1 - \left( \frac{r-h}{r} \right)^2}$$

$$h = \frac{L^2 - (L-s)^2}{2 \cdot (L-s+r)}$$

$$\frac{r}{L} = \frac{\sin \beta}{\sin \alpha}$$

如果不知道“ $r$ ”和“ $L$ ”值，  
可以通过下列公式估算可传递的扭矩：

$$M = F \cdot r = \frac{\sin(\alpha + \beta)}{\cos \beta} \cdot P \cdot r = K \cdot P \cdot r$$

采用  $\frac{L}{r} = 5$  (估算值) 时， $K$ 值为：

## TORQUE CALCULATION FOR AN ECCENTRIC PRESS

To calculate the necessary torque in an eccentric press, the following formulation is used:

$$M = \frac{\sin(\alpha + \beta)}{\cos \beta} \cdot P \cdot r$$

$M$ : turning torque to be transmitted by the eccentric shaft.

$\alpha$ : maximum effort angle before the BDC (bottom dead center).

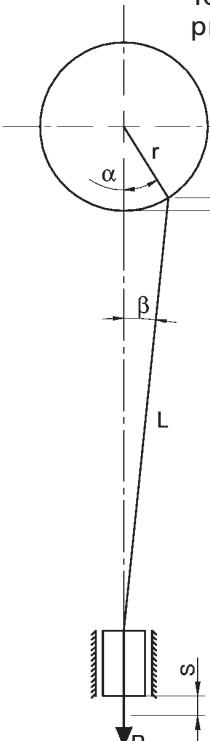
$P$ : force of the press.

$r$ : radius of the eccentric.

$\beta$ : angle between the connecting rod and the movement line of the ram in the moment of maximum force.

$s$ : distance from the BDC to the point where the maximum effort is produced (measured at the ram).

$h$ : distance from the BDC to the point where the maximum force is produced (measured at the eccentric).



(图1)(fig. 1)

To obtain angles “ $\alpha$ ” and “ $\beta$ ”, and “ $h$ ” height, the following formulations are used:

$$\sin \alpha = \sqrt{1 - \left( \frac{r-h}{r} \right)^2}$$

$$h = \frac{L^2 - (L-s)^2}{2 \cdot (L-s+r)}$$

$$\frac{r}{L} = \frac{\sin \beta}{\sin \alpha}$$

In the case where the “ $r$ ” and “ $L$ ” values are not known, an estimated calculation about the transmissible torque can be done by using the following formulation:

$$M = F \cdot r = \frac{\sin(\alpha + \beta)}{\cos \beta} \cdot P \cdot r = K \cdot P \cdot r$$

Taking  $\frac{L}{r} = 5$  (estimated), the  $K$  value is:



若 $\alpha = 30^\circ$ 系数	K = 0,587
若 $\alpha = 15^\circ$ 系数	K = 0,3
若 $\alpha = 40^\circ$ 系数	K = 0,74
对于剪力	K = 1

For $\alpha = 30^\circ$ the coefficient	K = 0,587
For $\alpha = 15^\circ$ the coefficient	K = 0,3
For $\alpha = 40^\circ$ the coefficient	K = 0,74
For shears	K = 1

当离合器在较快的轴中时:

$$M_{red} = \frac{M}{i} \quad \text{其中}$$

是离合器轴和偏心轴之间的传递比。

When the clutch is in a faster shaft:

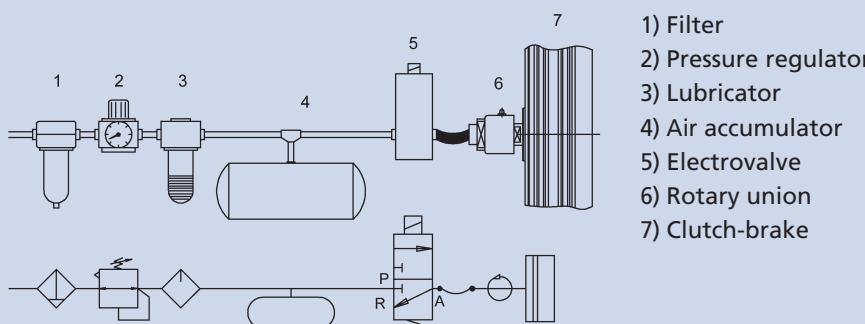
$$M_{red} = \frac{M}{i} \quad \text{Being } i \text{ the transmission ratio}$$

between the clutch shaft and the eccentric shaft.

## 气动配置方案

离合器制动器装配的标准气动配置方案如下:

- 1) 过滤器
- 2) 压力调节器
- 3) 润滑器
- 4) 空气蓄压器
- 5) 电子阀
- 6) 旋转装置
- 7) 离合器制动器



应该利用下列公式计算由压缩机供应的空气量:

$$Q = 1,5 \cdot V \cdot p \cdot F \quad (\text{l/min})$$

$Q$  = 必需的空气量。

$V$  = 离合器缸的体积加上离合器和阀门之间管道的体积 (如本目录中所指出的)。

$p$  = 最大工作压力 (巴)。

$F$  = 每分钟循环数。

1,5 = 系数 (泄漏损失的补偿值)。

通过下列公式计算推荐容器的体积:

$$V_{DC} = 4 \cdot p \cdot V$$

$V_{DC}$  : 蓄压器体积 (升)

## PNEUMATIC SCHEME

An standard pneumatic scheme of the assembly of a clutch-brake would be:

- 1) Filter
- 2) Pressure regulator
- 3) Lubricator
- 4) Air accumulator
- 5) Electrovalve
- 6) Rotary union
- 7) Clutch-brake

The quantity of air to be supplied by the compressor should be calculated with the following formulation:

$$Q = 1,5 \cdot V \cdot p \cdot F \quad (\text{l/min})$$

$Q$  = necessary air quantity.

$V$  = volume of the clutch cylinder plus the volume of the pipe between the clutch and the valve indicated in the catalogue.

$p$  = maximum service pressure (bar).

$F$  = cycles per minute.

1,5 = coefficient (compensation lost by leak).

The volume of the recommended vessel comes from the following formulation:

$$V_{DC} = 4 \cdot p \cdot V$$

$V_{DC}$  : accumulator volume (litres)





## 离合器制动器 5.8 系列

这个系列是GOIZPER 研制的最新型气动离合器制动器。

其主要特征之一是，因为其活塞达到最大直径，它可以在此装置的尺寸之内获得最大扭矩。

这些离合器制动器可以通过锁紧环或者键槽进行安装。

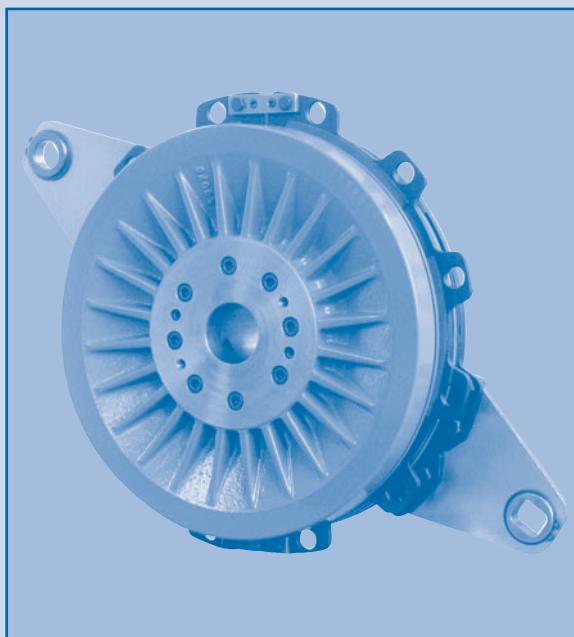
## CLUTCH-BRAKES SERIES 5.8

This series corresponds to the latest of the pneumatic clutch-brakes developed by GOIZPER.

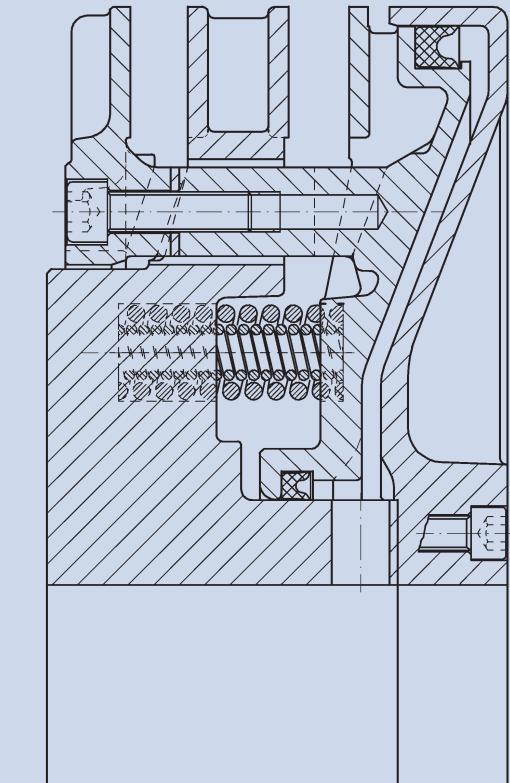
One of its main characteristics is that it obtains the maximum possible torque within the dimensions of the unit, due to the fact that the piston reaches the maximum diameter.

These clutch-brakes may be mounted with locking rings or keyways.

## 5.8 系列

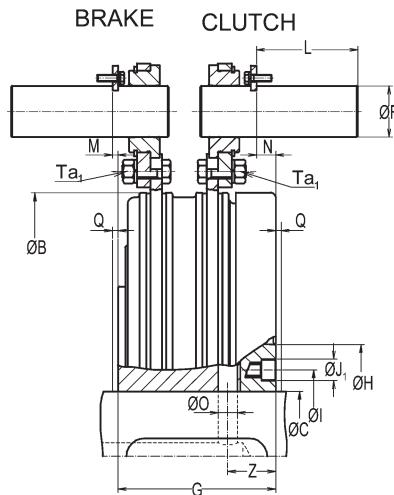
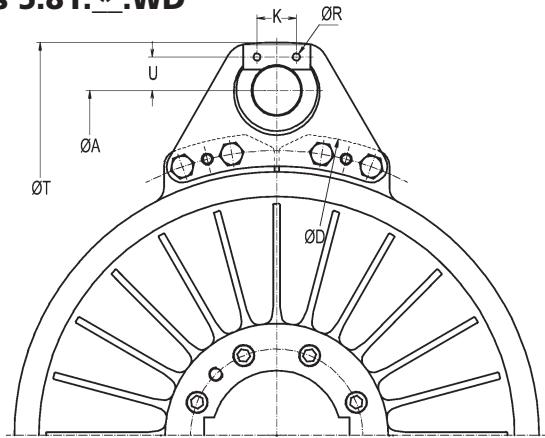


## Series 5.8

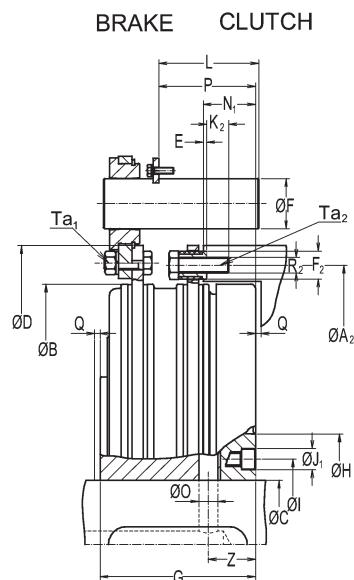
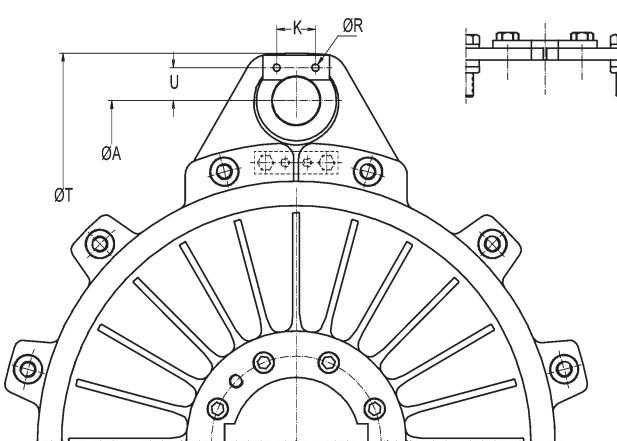




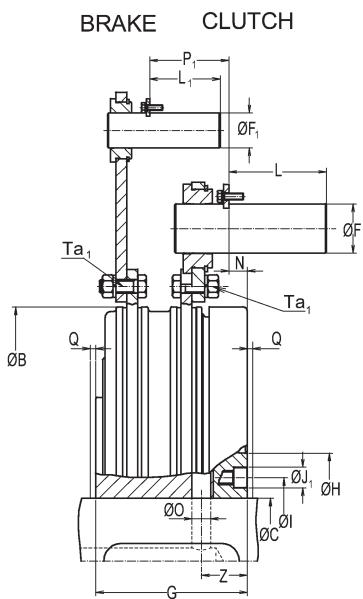
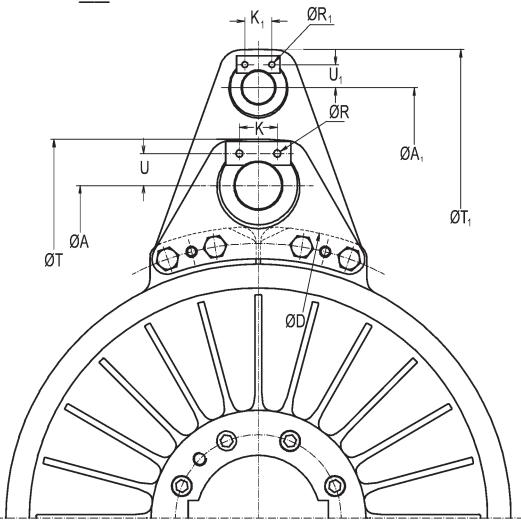
**Series 5.81.\*.WD**



**Series 5.82.\*.WD**



**Series 5.84.\*.WD**



\*标示尺寸的空格 / Space to indicate the size



## Series 5.81.\_.WD / 5.82.\_.WD / 5.84.\_.WD

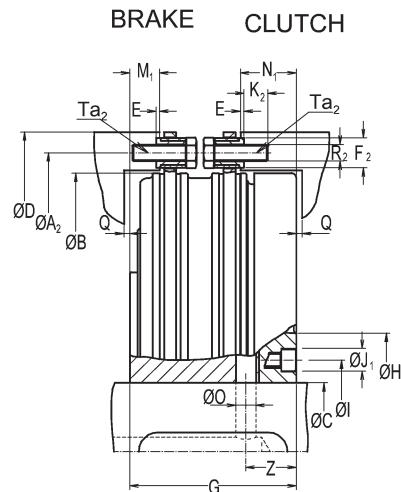
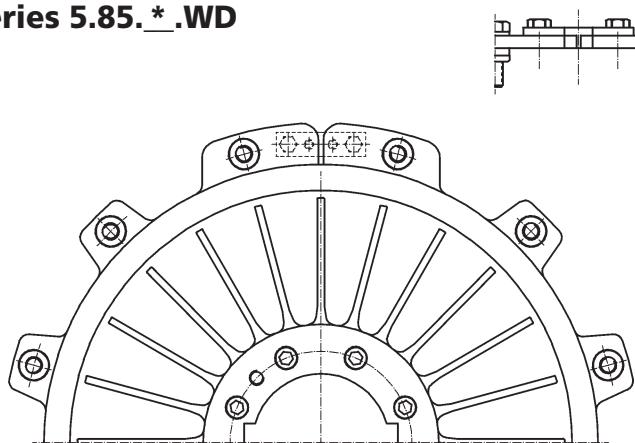
Size		23	50	10	18	36	55	75	76	77	78	80
Clutch torque	Nm	480	940	2000	4000	7550	11900	15500	22900	32000	42800	56600
Brake torque		345	665	1450	2850	5390	8500	11200	16300	22850	30500	38500
Pressure	bar						5,5					
Max speed	min <sup>-1</sup>	2750	2250	1750	1500	1250	1100	1000	850	750	700	630
5.81 WD	Kg	9.2	15.5	32	60	112	170	228	325	453	655	820
Weight 5.82 WD		9	15	30	58	106	163	220	313	437	615	774
5.84 WD		9.2	15.5	32	60	112	170	228	325	453	655	820
J. int.	Kg m <sup>2</sup>	0.026	0.07	0.25	0.72	1.85	4.24	6.6	12.2	21.1	31.5	51.4
5.81 WD	Kg m <sup>2</sup>	0.013	0.04	0.1	0.283	0.953	1.546	2.91	4.97	8.82	20	27.3
J. ext. 5.82 WD		0.008	0.027	0.062	0.202	0.615	1.031	1.55	3.34	6.51	10.5	12.8
5.84 WD		0.013	0.04	0.1	0.283	0.953	1.546	2.91	4.97	8.82	20	27.3
New Volum.	dm <sup>3</sup>	0.093	0.164	0.320	0.671	1.18	1.75	2.23	3.21	4.88	6.42	8.38
Max. wear Volum.		0.148	0.250	0.524	1.038	1.95	2.79	3.58	5.23	7.62	9.97	13.6
Ø A		250	315	390	495	610	695	770	880	970	1100	1180
Ø A <sub>1</sub>		325	410	490	635	790	885	990	1135	1235	1450	1525
Ø A <sub>2</sub>		205	255	325	408	500	584	640	725	810	890	965
Ø B		188	236	305	380	466	543	593	675	755	830	905
Ø C	Min	28	35	45	55	70	80	90	100	115	115	135
	Max	48	65	80	95	125	145	160	180	200	220	240
Ø D		226	275	347	435	535	620	680	775	865	950	1025
E		1.7	2	3	3	3	3	3	4	4	4	4
Ø F		15	22	30	32	45	45	60	60	65	75	80
Ø F <sub>1</sub>		15	15	22	30	32	32	45	45	60	65	65
Ø F <sub>2</sub>	12 x 30°	10	12	15	18	25	25	30	35	40	45	45
G		66	75	92	112	140	160	175	195	220	240	260
Ø H		85	105	141	168	198	224	250	294	324	354	390
Ø I		60	79	99	118	153	176	194	221	246	270	305
Ø J <sub>1</sub>		9.5	11	13.5	16.5	19	19	23	25	28	33	33
K		20	25	25	25	35	35	45	45	45	60	60
K <sub>1</sub>		20	20	25	25	25	25	35	35	45	45	45
K <sub>2</sub>		7.5	11	13	16	20	20	25	38	43	36	36
L		30	45	60	65	90	90	120	120	130	150	160
L <sub>1</sub>		30	30	45	60	65	65	90	90	120	130	130
M		3	4	4	5	5	5	5	5	5	20	15
N		7.5	8	10.5	13	17	22	24	26	28	17	28
N <sub>1</sub>		22	25.5	31.5	38	47	55	61	66	75	81	90
Ø O	2 a 180°	6	8	10	14	17	20	22	25	28	30	35
P		38	40	54	69	87	102	110	125	136	141.5	157
P <sub>1</sub>		32	38.5	45	58	73	84	86	100	114	121.5	132
Q <sup>(*)</sup>		3	4	4	5	5	5	5	5	5	5	5
Ø R		4.5	5.5	5.5	5.5	6.5	6.5	8.5	8.5	8.5	10.5	10.5
Ø R <sub>1</sub>		4.5	4.5	5.5	5.5	5.5	6.5	6.5	8.5	8.5	8.5	8.5
Ø R <sub>2</sub>	12 x 30°	M5	M6	M8	M10	M14	M14	M16	M20	M24	M24	M24
Ø T		284	360	446	565	695	785	880	1000	1110	1260	13340
Ø T <sub>1</sub>		359	444	535	691	860	955	1075	1220	1345	1595	1670
Ø U		11	16	20	21	29.5	29.5	41	41	43.5	52.5	55
Ø U <sub>1</sub>		11	11	16	20	21	21	29.5	29.5	41	43.5	43.5
Z		17	22	28	36	42.5	51	55	62.5	71	78	86
Ta <sub>1</sub>	Nm	6,6	11	27,5	54	95	148	230	230	450	780	780
Ta <sub>2</sub>	Nm	6	10	25	49	135	135	210	410	710	710	710

\* 安装所需的空间

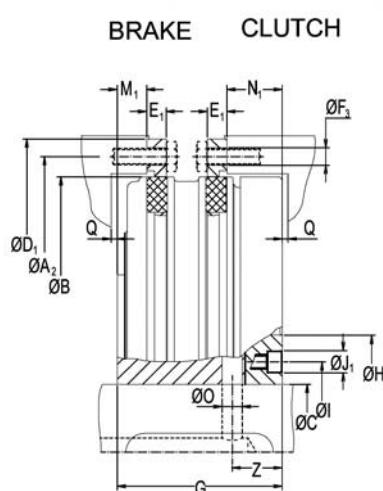
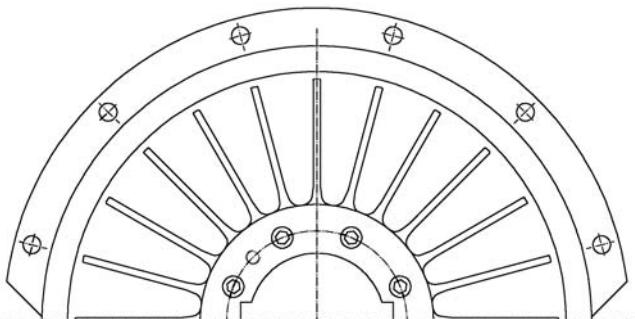
\* Space required for instalation



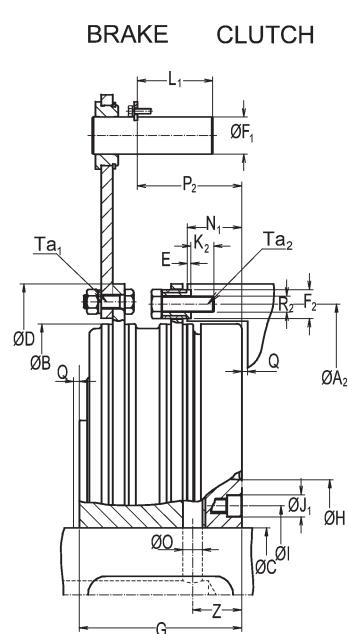
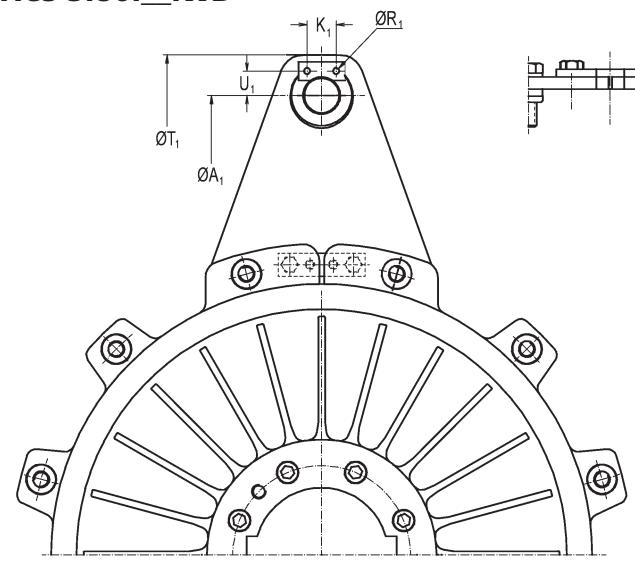
**Series 5.85.\*.WD**



**Series 5.85.\*.WA**



**Series 5.86.\*.WD**



\* 标示尺寸的空格 / Space to indicate the size



## Series 5.85.\_.WD / 5.85.\_.WA / 5.86.\_.WD

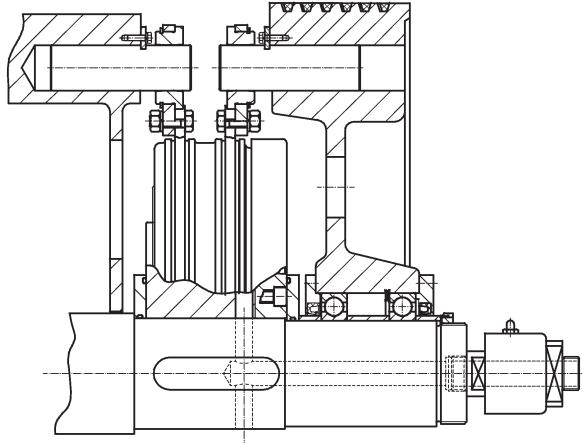
Size		23	50	10	18	36	55	75	76	77	78	80	
Clutch torque	Nm	480	940	2000	4000	7550	11900	15500	22900	32000	42800	56600	
Brake torque		345	665	1450	2850	5390	8500	11200	16300	22850	30500	38500	
Pressure	bar						5,5						
Max speed	min <sup>-1</sup>	2750	2250	1750	1500	1250	1100	1000	850	750	700	630	
Weight	Kg	5.85 WD 5.85 WA 5.86 WD	9 8.5 9.2	14 15 15	29 30 30	60 56 58	100 103 105	157 161 162	210 211 218	300 306 311	421 424 438	575 555 615	728 723 775
J. int.	Kg m <sup>2</sup>	0.026	0.07	0.25	0.72	1.85	4.24	6.6	12.2	21.1	31.5	51.4	
J. ext.	Kg m <sup>2</sup>	5.85 WD 5.85 WA 5.86 WD	0.008 0.008 0.008	0.027 0.020 0.027	0.062 0.057 0.062	0.202 0.170 0.202	0.615 0.535 0.615	1.031 1.047 1.031	1.55 1.50 1.55	3.34 3 3.34	6.51 5.33 6.51	10.5 9.2 10.5	12.8 12.6 12.8
New Volum. Max. wear Volum.	dm <sup>3</sup>	0.093 0.148	0.164 0.250	0.320 0.524	0.671 1.038	1.18 1.95	1.75 2.79	2.23 3.58	3.21 5.23	4.88 7.62	6.42 9.97	8.38 13.6	
Ø A <sub>1</sub>		325	410	490	635	790	885	990	1135	1235	1450	1525	
Ø A <sub>2</sub>		205	255	325	408	500	584	640	725	810	890	965	
Ø B		188	236	305	380	466	543	593	675	755	830	905	
Ø C	Min Max	28 48	35 65	45 80	55 95	70 125	80 145	90 160	100 180	115 200	115 220	135 240	
Ø D		226	275	347	435	535	620	680	775	865	950	1025	
Ø D <sub>1</sub>		220	275	345	430	530	620	680	770	860	945	1020	
E		1.7	2	3	3	3	3	3	4	4	4	4	
E <sub>1</sub>		8.5	9.5	11.5	13.5	18.5	19	18.5	23	27.5	31	32.5	
Ø F <sub>1</sub>		15	15	22	30	32	32	45	45	60	65	65	
Ø F <sub>2</sub>	12 x 30°	10	12	15	18	25	25	30	35	40	45	45	
Ø F <sub>3</sub>	12 x 30°	5.5	7	8.5	10.5	15	15	17	21	25	25	25	
G		66	75	92	112	140	160	175	195	220	240	260	
Ø H		85	105	141	168	198	224	250	294	324	354	390	
Ø I		60	79	99	118	153	176	194	221	246	270	305	
Ø J <sub>1</sub>		9.5	11	13.5	16.5	19	19	23	25	28	33	33	
K <sub>1</sub>		20	20	25	25	25	25	35	35	45	45	45	
K <sub>2</sub>		7.5	11	13	16	20	20	25	38	43	36	36	
L <sub>1</sub>		30	30	45	60	65	65	90	90	120	130	130	
M <sub>1</sub>		11	13.5	17	20	25	28	32	35	40	44	48	
N <sub>1</sub>		22	25.5	31.5	38	47	55	61	66	75	81	90	
Ø O	2 a 180°	6	8	10	14	17	20	22	25	28	30	35	
P <sub>2</sub>		39.5	46.5	55.5	71	90	106	110	126	142	138.5	160	
Q (*)		3	4	4	5	5	5	5	5	5	5	5	
Ø R <sub>1</sub>		4.5	4.5	5.5	5.5	5.5	5.5	6.5	6.5	8.5	8.5	8.5	
Ø R <sub>2</sub>	12 x 30°	M5	M6	M8	M10	M14	M14	M16	M20	M24	M24	M24	
Ø T <sub>1</sub>		359	444	535	691	860	955	1075	1220	1345	1595	1670	
Ø U <sub>1</sub>		11	11	16	20	21	21	29.5	29.5	41	43.5	43.5	
Z		17	22	28	36	42.5	51	55	62.5	71	78	86	
Ta <sub>1</sub>	Nm	6,6	11	27.5	54	95	149	230	230	450	780	780	
Ta <sub>2</sub>	Nm	6	10	25	49	135	135	210	410	710	710	710	

\* 安装所需的空间

\* Space required for instalation



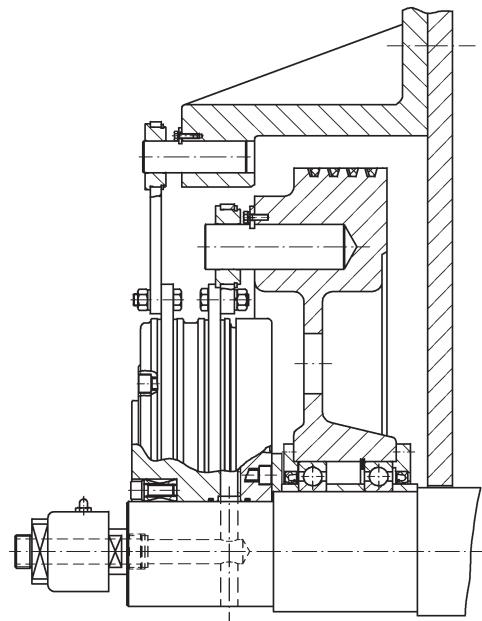
### 装配实例 / ASSEMBLY EXAMPLES



#### Series 5.81\_\_. WE 系列

通过离合器和制动器上的可互换销将其安装在框架和飞轮之间。

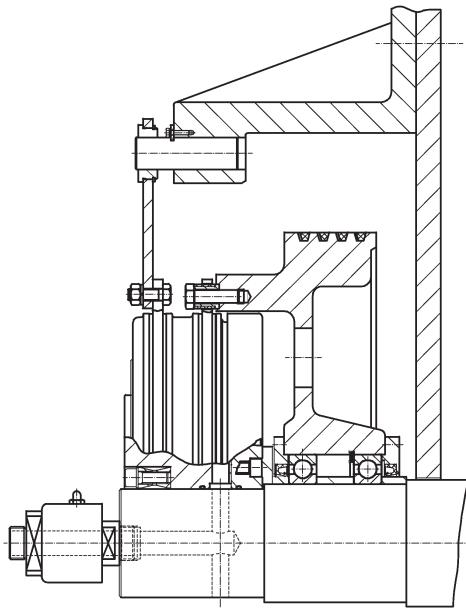
Mounting between frame and flywheel by means of identical pins on the clutch side as well as on the brake side.



#### Series 5.84\_\_. WD 系列

通过离合器和制动器上不同直径的销将其安装在轴端上。通过锁紧环固定在轴上。

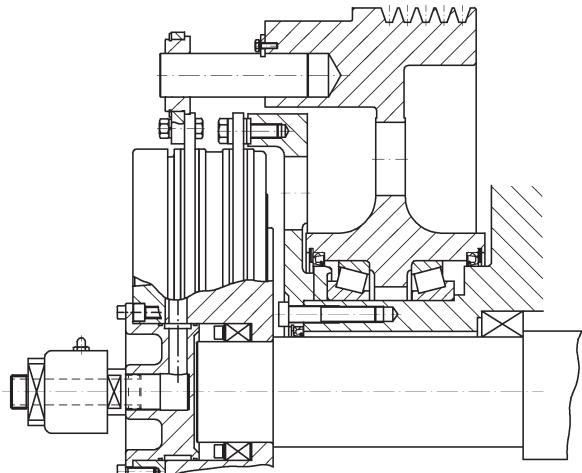
Mounting at shaft end by means of pins on different diameters on both clutch and brake side. Fixed in the shaft by locking ring.



#### Series 5.86\_\_. WE 系列

通过离合器中的衬垫和制动器中的销将其安装在轴端。通过锁紧环固定在轴上。

Mounting at shaft end by means of pads in clutch side and pins in brake side. Fixed on the shaft by locking ring.



#### Series 5.83\_\_. CD 系列

通过制动器上的12个衬套和离合器上的2个销将其安装在轴端。

通过锁紧环固定在轴上。

通过进气块供应特殊空气。

Mounting at shaft end by means of 12 bushings on the brake side and 2 pins on the clutch side. Fixed on the shaft by locking ring. Special air feeding via air inlet block.



## 扭矩额定值 5.8 / Torque Ratings 5.8

SIZE	QUANTITY OF SPRINGS	BRAKE TORQUE (N.m)	CLUTCH TORQUE (N.m)	
			5,5 bar	6 bar
23	18	410	410	485
	15	345	480	560
	12	275	555	630
	9	205	625	705
	6	135	700	775
50	18 + 18	800	800	950
	15 + 15	665	940	1090
	12 + 12	535	1080	1230
	9 + 9	400	1220	1370
	6 + 6	270	1360	1510
10	18 + 18	1750	1700	2050
	15 + 15	1450	2000	2350
	12 + 12	1150	2350	2650
	9 + 9	880	2650	2950
	6 + 6	580	2950	3290
18	18 + 18	3400	3450	4050
	15 + 15	2850	4000	4650
	12 + 12	2250	4600	5250
	9 + 9	1700	5200	5850
	6 + 6	1150	5800	6450
36	18 + 18	6450	6400	7600
	15 + 15	5390	7550	8700
	12 + 12	4300	8650	9840
	9 + 9	3200	9750	10900
	6 + 6	2150	10800	12000
55	21 + 21	9950	10450	12400
	18 + 18	8500	11900	13800
	15 + 15	7100	13400	15300
	12 + 12	5700	14900	16800
	9 + 9	4250	16400	18300
75	21 + 21	13000	13600	16100
	18 + 18	11200	15500	18000
	15 + 15	9300	17500	20000
	12 + 12	7400	19400	21900
	9 + 9	5600	21400	23800
76	21 + 21	19000	20000	23700
	18 + 18	16300	22900	26500
	15 + 15	13600	25700	29300
	12 + 12	10900	28500	32200
	9 + 9	8150	31400	35000
77	21 + 21	26700	28000	33100
	18 + 18	22850	32000	37100
	15 + 15	19000	36000	41100
	12 + 12	15200	40000	45100
	9 + 9	11400	44000	49100
78	21 + 21	35600	37500	44300
	18 + 18	30500	42800	49600
	15 + 15	25400	48100	54900
	12 + 12	20300	53400	60200
	9 + 9	15200	58700	65500
80	24 + 24	44000	50800	59700
	21 + 21	38500	56600	65500
	18 + 18	33000	62500	71300
	15 + 15	27500	68300	77100





## 离合器制动器5.7系列

这是Goizper设计的最新系列传统型离合器制动器，每个离合器制动器配备最大的活塞尺寸。尺寸10、18和36可以与5.0系列中的相应尺寸互换。

与5.0系列中的相应尺寸相比，尺寸55、75、76、77和78具有相同的直径，但是比较宽。它们具有极高的扭矩并且可以通过离合器和制动器上的锁紧环进行安装。提供垫片，以用于衬片磨损补偿。

## CLUTCH-BRAKES SERIES 5.7

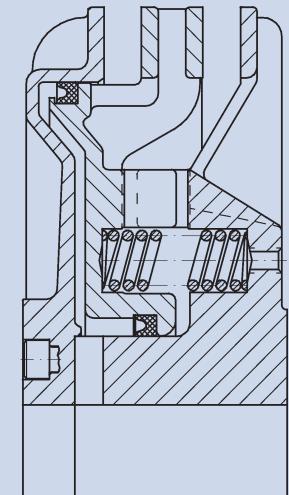
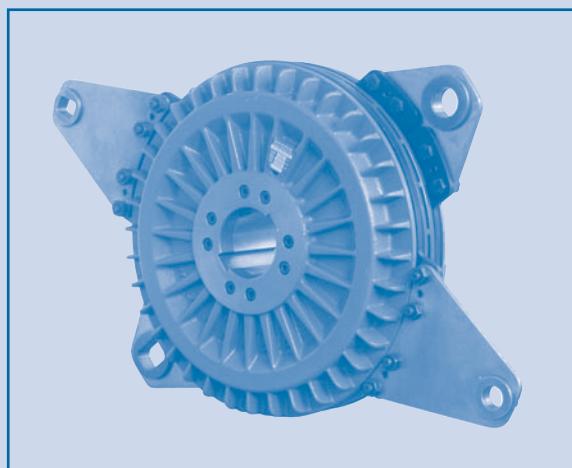
This is the latest series of traditional clutch-brakes designed by Goizper with maximum piston size for each clutch-brake.

Sizes 10, 18 and 36 are interchangeable with the corresponding sizes in series 5.0.

Sizes 55, 75, 76, 77 and 78 have the same diameters as their corresponding size from series 5.0 but are wider. They have very high torques and can be mounted with locking rings from both clutch and brake sides. Spacers are provided to allow lining wear compensation.

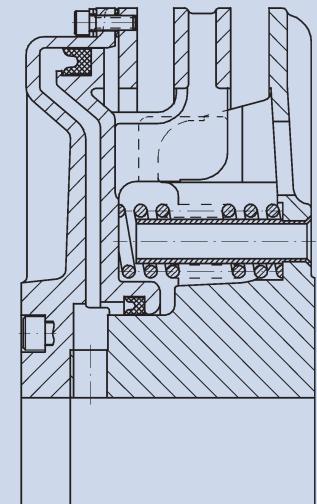
### 5.7 系列 / Series 5.7

/ Sizes: 05 / 11 / 16 / 23 / 50 / 10 / 13 / 18 / 36



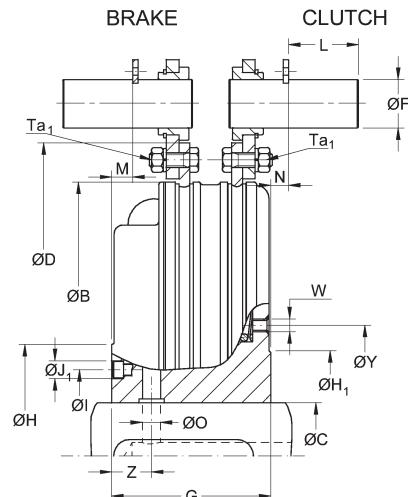
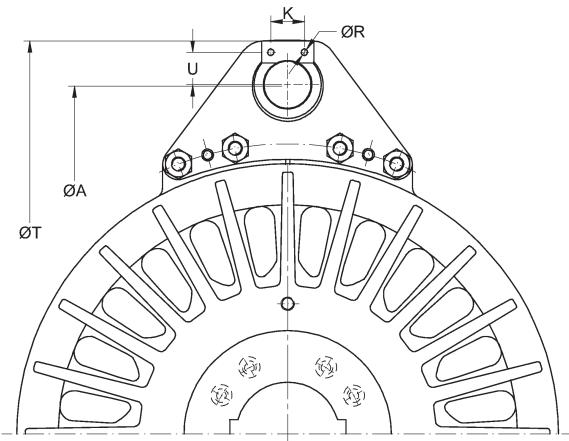
### 5.7 系列 / Series 5.7

/ Sizes: 19 / 25 / 37 / 55 / 75 / 76 / 77 / 78 / 80

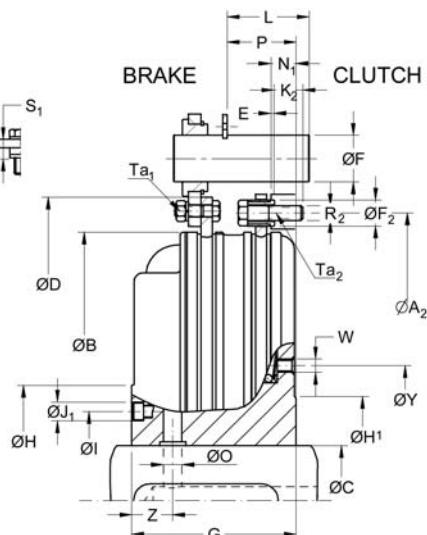
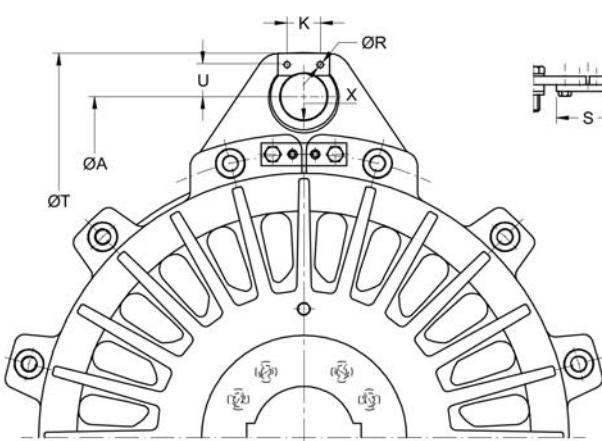




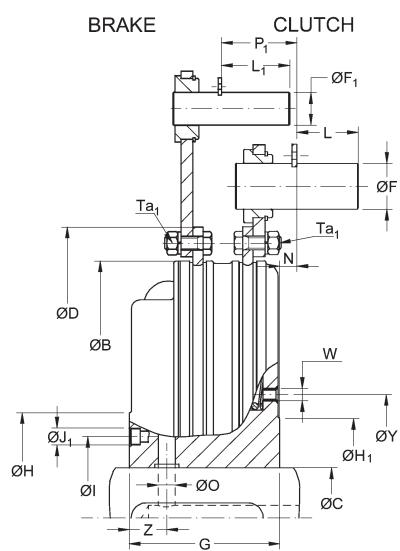
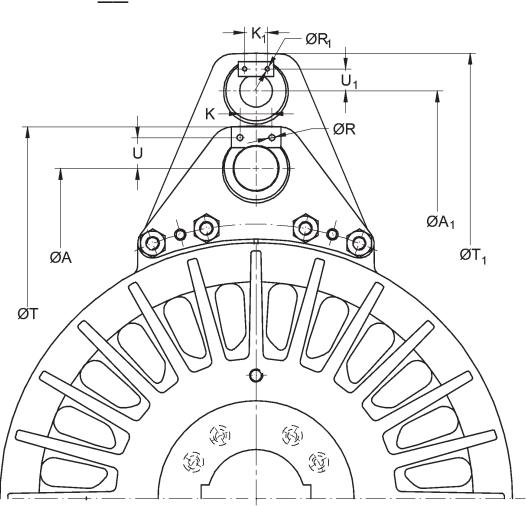
### Series 5.71.\*.WD



### Series 5.72.\*.WD



### Series 5.74.\*.WD



\* 标示尺寸的空格 / Space to indicate the size

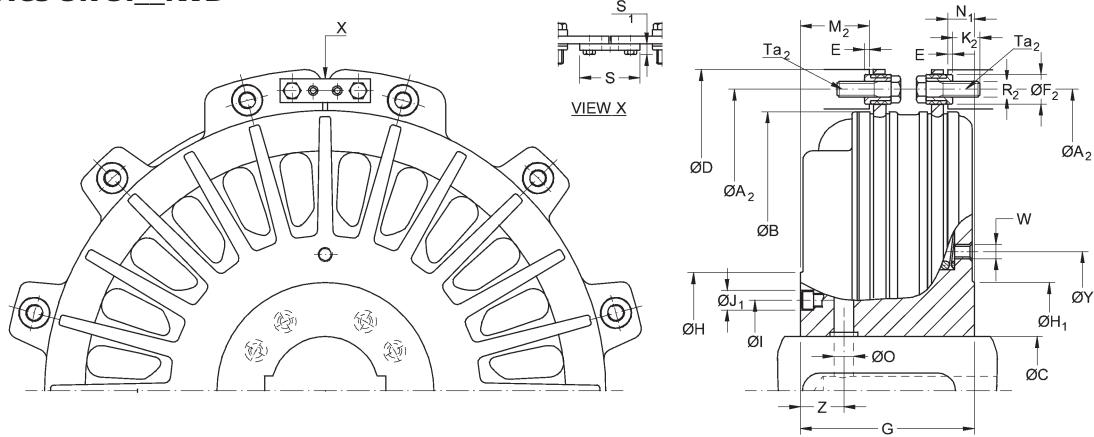


## Series 5.71.\_.WD / 5.72.\_.WD / 5.74.\_.WD

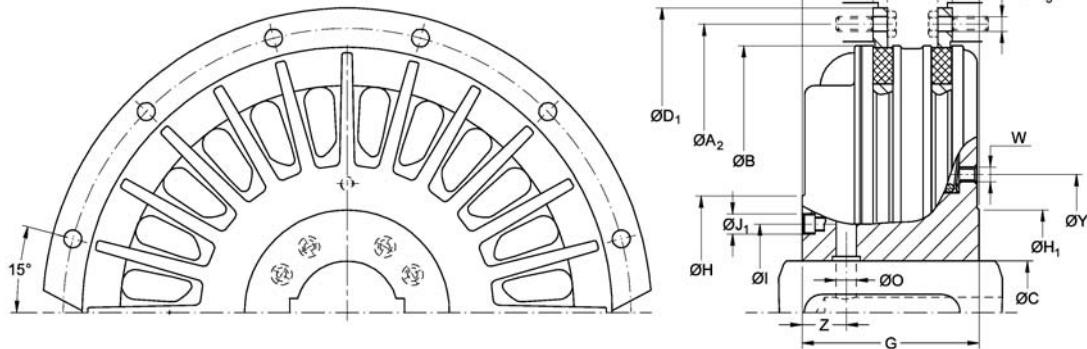
Size		05	11	16	23	50	10	13	18	19N	25N	36	37N	55	75	76	77	78	80	81	82	
Clutch torque	Nm	65	175	205	265	695	1465	1465	2760	3430	4785	5710	6720	9500	13400	19100	29300	39000	50000	70000	98000	
Brake torque	Nm	28	75	125	185	490	1030	1030	1960	2495	3410	4060	4780	8000	10000	15800	20500	27600	36000	50000	71500	
Pressure	bar																				5,5	
Max speed	min <sup>-1</sup>	3500	3200	3200	2700	2250	1750	1750	1450	1450	1300	1200	1200	1000	900	800	750	700	630	560	500	
5.71 WD	Kg	3,5	7	6,5	9	17	26	27	47	57	74	86	107	149	197	273	443	655	765	953	1360	
Weight 5.72 WD	Kg	3	6,5	6	8,5	16	25	26	45	55	73	85	106	143	185	264	432	615	723	916	1280	
5.74 WD	Kg	3,5	7	6,5	9	17	26	27	47	57	74	86	107	149	197	273	443	655	768	963	1346	
J. int.	Kg m <sup>2</sup>	0,004	0,013	0,014	0,022	0,05	0,173	0,173	0,5	0,65	1,06	1,41	1,72	3,81	5,58	10,5	19,27	30,65	45,55	80,6	139	
5.71 WD	Kg m <sup>2</sup>	0,003	0,005	0,009	0,032	0,043	0,114	0,114	0,274	0,274	0,56	0,768	0,847	1,35	2,14	4,57	7,51	20	26,6	33,6	29,2	
J. ext. 5.72 WD	Kg m <sup>2</sup>	0,002	0,003	0,005	0,008	0,027	0,062	0,062	0,202	0,202	0,382	0,53	0,609	1,04	1,55	3,34	6,51	10,7	13,1	20	17,3	
5.74 WD	Kg m <sup>2</sup>	0,003	0,005	0,009	0,032	0,043	0,114	0,114	0,274	0,274	0,56	0,768	0,847	1,35	2,14	4,57	7,51	20	26,6	33,5	29,2	
New Volum.	dm <sup>3</sup>	0,02	0,035	0,04	0,072	0,145	0,276	0,276	0,43	0,58	0,78	0,74	0,98	1,45	1,76	2,84	4,45	5,2	6,9	9,3	12,5	
Max. wear Volum.	dm <sup>3</sup>	0,045	0,075	0,06	0,12	0,273	0,462	0,462	0,74	0,98	1,36	1,26	1,76	2,5	3,12	5,2	8,26	10,2	11,7	16,4	21,9	
Ø A		180	220	230	250	315	390	390	495	495	550	610	610	695	770	880	970	1100	1180	1300	1465	
Ø A <sub>1</sub>		-	-	305	325	410	490	490	635	635	710	790	790	885	990	1135	1235	1450	1525	1645	1855	
Ø A <sub>2</sub>		135	173	182	205	255	325	325	408	408	450	500	500	584	640	725	810	890	965	1080	1215	
Ø B		120	158	166	188	236	305	305	380	380	420	466	466	543	593	675	755	830	905	1015	1140	
Ø CH7	Min	14	19	19	25	30	35	35	45	45	45	50	50	64	90	100	125	125	140	150	170	
	Max	24	35	35	35	52	65	65	90	90	95	110	110	150	165	180	180	200	220	240	300	
Ø D		151	192	198	226	275	347	347	435	435	482	535	535	620	690	775	865	950	1025	1145	1276	
E		2	2	2	2	2	3	3	3	3	3	3	3	3	5	5	10	10	10	10	10	
Ø F		12	12	14	14	22	22	22	30	30	32	40	40	40	45	55	55	75	75	90		
Ø F <sub>1</sub>		-	-	14	14	14	14	14	22	22	30	30	30	30	40	45	45	65	65	65	75	
Ø F <sub>2</sub>	12 x 30°	9 (6)	10 (6)	10	10	12	15	15	18	18	22	25	25	25	30	35	40	45	45	50	55	
G		42	50	46	58	66	82	82	100	112	125	125	140	160	185	205	230	248	260	295	330	
Ø H		60	65	75	70	97	125	125	153	172	192	190	210	245	270	310	320	345	395	450	490	
Ø H <sub>1</sub>		60	65	121	70	90	130	130	145	160	166	180	190	250	270	290	320	350	370	450	490	
Ø I		35	47	51	47	65	81,5	81,5	109	129	142	133	156	192	214	240	256	285	319	366	417	
Ø J <sub>1</sub>		9	9,5	9	9,5	10,5	13,5	13,5	13,5	13,5	17	19	16,5	20	26	26	26	30	30	42		
K		16	16	20	20	25	25	25	25	25	25	35	35	35	35	45	45	60	60	60	60	
K <sub>1</sub>		-	-	20	20	20	20	20	25	25	25	25	25	35	35	45	45	45	45	60		
K <sub>2</sub>		8	8	8	8	12	13	14	16	16	20	20	23	24	28	38	43	45	45	46	55	
L		18	22	25	28	45	45	45	60	60	65	80	80	80	90	110	110	150	150	150	180	
L <sub>1</sub>		-	-	25	28	28	28	28	45	45	60	60	60	60	80	90	90	130	130	130	150	
M		2	1	0,5	0	0	1	2,5	3	19	25	4	22,5	25	39,5	38	48,5	34,5	38,5	57,5	59,5	
N		6	8	5,5	10	8,5	12,5	10	15	12	7	15	10,5	13	12,5	18	12,5	26,5	22,5	16,5	19,5	
N <sub>1</sub>		5	6	8	9	11	14	14	14,5	16	18	17	22	25	27	29	34	38	42	46	52	
Ø O 2 a 180°		4	5	4	6	6	10	10	12	13	14	14	16	18	20	21	23	25	32	35		
P		6	13	18	18	24	27	27	39	39	48	58	58	63	65	80	95	99	99,5	120,5	142,5	
P <sub>1</sub>		-	-	26,5	27	39	46,5	49	53	52	54	74	66,5	80,5	81	98,5	107,5	120,5	124,5	134,5	158	
Ø R		4,5	4,5	4,5	4,5	5,5	5,5	5,5	5,5	5,5	5,5	6,5	6,5	6,5	6,5	8,5	8,5	10,5	10,5	10,5	10,5	
Ø R <sub>1</sub>		-	-	4,5	4,5	4,5	4,5	4,5	5,5	5,5	5,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5	8,5	10,5		
Ø R <sub>2</sub>	12 x 30°	M4(6)	M5(6)	M5	M5	M6	M8	M8	M10	M10	M12	M14	M14	M14	M16	M20	M24	M24	M24	M27	M30	
S		30	38	38	38	46	56	56	70	70	75	75	75	84	96	110	120	138	138	138		
S <sub>1</sub>		6	5,8	5,8	5,8	6,5	9,5	9,5	10,5	10,5	13,5	13,5	13,5	17	17	20	21	24	24	24		
Ø T		203	242	262	280	360	435	435	560	560	622	695	695	780	870	1000	1090	1260	1340	1460	1650	
Ø T <sub>1</sub>		-	-	337	361	446	527	527	680	680	775	855	855	950	1075	1220	1335	1595	1670	1790	2015	
U		10,5	10,5	11	11	16	16	16	20	20	21	27	27	27	29,5	38,5	38,5	52,5	52,5	52,5	60	
U <sub>1</sub>		-	-	11	11	11	11	11	16	16	20	20	20	27	29,5	29,5	43,5	43,5	43,5	52,5		
W		M5	M5	M6	M6	M6	M8	M8	M8	M8	M10	M12	M12	M16	M16	M16	M18	M18	M20	M24		
Ø Y		35	47	67	47	113	146	146	182	205	240	226,5	268	290	329	373	290	320	500	570	628	
Z		12	16	15	17	18,5	21	23	26	27	30	31	33	37,5	44	47	55	60	68	76	85	
Ta <sub>1</sub>	Nm	6,6	6,6	6,6	6,6	11	27,5	27,5	54	54	54	95	95	148	230	230	450	780	780	780	1500	
Ta <sub>2</sub>	Nm	2,9	6	6	6	10	25	25	49	49	86	135	135	135	210	410	710	710	1050	1450		



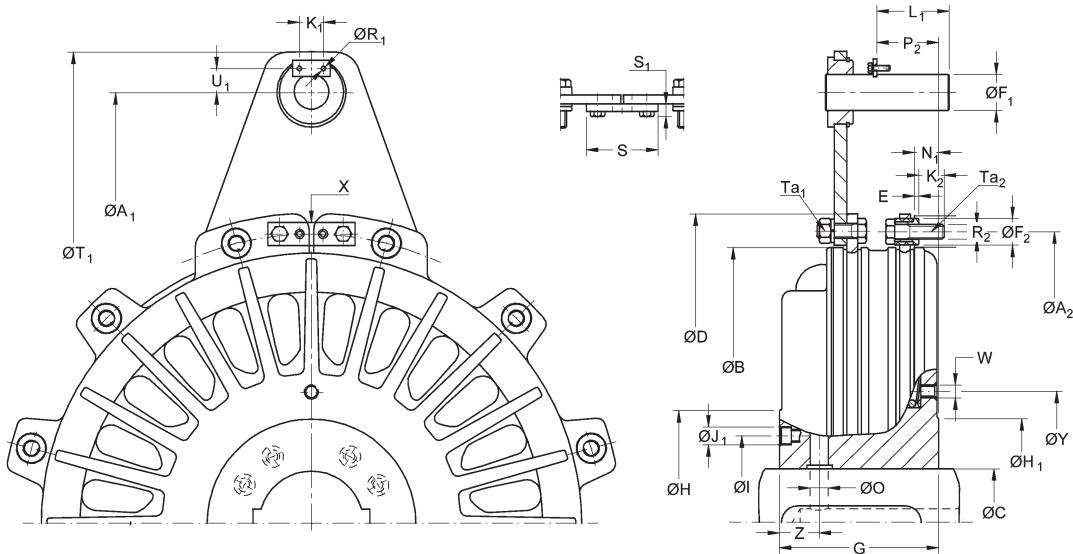
### Series 5.75.\*.WD



### Series 5.75.\*.WA



### Series 5.76.\*.WD



\* 标示尺寸的空格 / Space to indicate the size

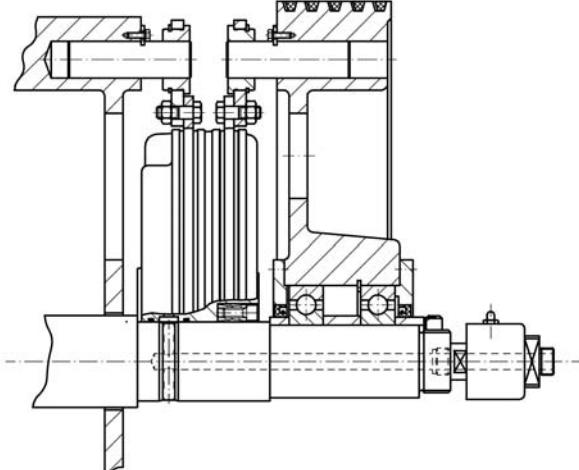


## Series 5.75.\_.WD / 5.75.\_.WA / 5.76.\_.WD

Size		05	11	16	23	50	10	13	18	19N	25N	36	37N	55	75	76	77	78	80	81	82	
Clutch torque Brake torque	Nm	65 28	175 75	205 125	265 185	695 490	1465 1030	1465 1030	2760 1960	3430 2495	4785 3410	5710 4060	6720 4780	9500 8000	13400 10000	19100 15800	29300 20500	39000 27600	50000 36000	70000 50000	98000 71500	
Pressure	bar	5,5																				
Max speed	min <sup>-1</sup>	3500	3200	3200	2700	2250	1750	1750	1450	1450	1300	1200	1200	1000	900	800	750	700	630	560	500	
5.75 WD	Kg	5,5	6,5	6	8	15	24	25	43	53	70	80	100	138	185	255	421	575	681	879	1215	
Weight 5.75 WA	Kg	-	-	-	-	15	24	25	45	55	72	82	102	139	191	265	406	570	653	846	1170	
5.76 WD	Kg	5,5	6,5	6	8,5	16	25	26	45	55	73	84	104	144	195	262	418	615	727	926	1280	
J. int.	Kg m <sup>2</sup>	0,006 0,002 0,002	0,013 0,003 0,003	0,014 0,005 0,005	0,022 0,008 0,008	0,05 0,027 0,027	0,173 0,062 0,062	0,173 0,062 0,062	0,5 1,45 0,276	0,65 0,276 0,43	1,06 0,43 0,58	1,41 1,72 0,78	1,72 1,72 0,74	3,81 5,58 0,98	10,5 19,27 1,45	19,27 30,65 4,45	30,65 45,55 5,2	45,55 80,6 6,9	80,6 139 9,3	139 12,5		
J. ext.	Kg m <sup>2</sup>	5.75 WD 5.75 WA 5.76 WD	- -	- -	- -	0,027 0,045 0,027	0,045 0,131 0,062	0,131 0,131 0,202	0,202 0,341 0,382	0,382 0,535 0,53	0,609 0,881 0,609	1,04 1,26 1,04	1,55 2,24 1,55	3,34 2,24 3,34	6,51 9,5 6,51	10,7 9,5 10,7	13,1 10,2 13,1	20 17,7 20	33 29,2 33	20 17,7 20		
New Volum. Max. wear Volum.	dm <sup>3</sup>	0,02 0,045	0,035 0,075	0,04 0,06	0,072 0,12	0,145 0,273	0,276 0,462	0,276 0,462	0,43 0,74	0,58 0,98	0,78 1,36	0,74 1,26	0,98 1,76	1,45 2,5	1,76 3,12	2,84 5,2	4,45 8,26	5,2 10,2	6,9 11,7	9,3 16,4	12,5 21,9	
Ø A <sub>1</sub>		-	-	305	325	410	490	490	635	635	710	790	790	885	990	1135	1235	1450	1525	1645	1855	
Ø A <sub>2</sub>		135	173	182	205	255	325	325	408	408	450	500	500	584	640	725	810	890	965	1080	1215	
Ø B		120	158	166	188	236	305	305	380	380	420	466	466	543	593	675	755	830	905	1015	1140	
Ø CH7	Min Max	14 24	19 35	19 35	25 35	30 52	35 65	35 65	45 90	45 90	50 95	50 110	50 110	64 150	90 150	100 180	125 180	125 200	140 220	150 240	170 355	
Ø D		151	192	198	226	275	347	347	435	435	482	535	535	620	680	775	865	950	1025	1145	1276	
Ø D <sub>1</sub>		-	-	-	-	275	345	345	430	430	480	530	530	620	680	770	860	945	1020	1140	1280	
E		2	2	2	2	2	3	3	3	3	3	3	3	3	5	5	5	10	10	10	10	
E <sub>1</sub>		-	-	-	-	7	9	7	10,5	9	10	12	14	14	14,5	17	18,5	24	24	27	28	
Ø F <sub>1</sub>		-	-	-	14	14	14	14	22	22	30	30	30	30	40	45	45	65	65	65	75	
Ø F <sub>2</sub>	12 x 30°	9 (6)	10 (6)	10	10	12	15	15	18	18	22	25	25	25	30	35	40	45	45	50	55	
Ø F <sub>3</sub>	12 x 30°	-	-	-	-	7	8,5	8,5	10,5	10,5	12,5	15	15	15	17	21	25	25	25	28	33	
G		42	50	46	58	66	82	82	100	112	125	125	140	160	185	205	230	248	260	295	330	
Ø H		60	65	75	70	97	125	125	153	172	192	190	210	245	270	310	320	345	395	450	490	
Ø H <sub>1</sub>		60	65	121	70	90	130	130	145	160	166	180	190	250	270	290	320	350	370	450	490	
Ø I		35	47	51	47	65	81,5	81,5	109	129	142	133	156	192	214	240	256	285	319	366	417	
Ø J <sub>1</sub>		9	9,5	9	9,5	10,5	13,5	13,5	13,5	13,5	17	19	16,5	20	20	26	26	26	30	42		
K <sub>1</sub>		-	-	20	20	20	20	20	25	25	25	25	25	25	35	35	35	45	45	45	60	
K <sub>2</sub>		8	8	8	8	12	13	14	16	16	20	20	23	24	28	38	43	45	45	50	42	
L <sub>1</sub>		-	-	25	28	28	28	28	45	45	60	60	60	60	80	90	90	130	130	150		
M <sub>1</sub>		-	-	-	-	20	27	26,5	33	47	50	38,5	55	63	79	85	95	99	103	120	131	
M <sub>2</sub>		13	15	12	18	20	24	26,5	31,5	47	50	32	55	63	79	85	95	99	103	120	131	
N <sub>1</sub>		5	6	6	9	11	14	14	14,5	16	18	17	22	25	27	29	34	38	42	46	52	
N <sub>2</sub>		-	-	-	-	11	14,5	14	15	16	18	21	22	25	27	29	34	38	42	46	52	
Ø O 2 a 180°		4	5	4	6	6	10	10	12	13	14	14	16	18	20	21	23	25	32	35		
P <sub>2</sub>		-	-	21	16	30,5	34	39	38	40	47	59	56	67,5	68,5	80,5	94	102	118	138,5		
Ø R <sub>1</sub>		-	-	4,5	4,5	4,5	4,5	4,5	5,5	5,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5	8,5	10,5			
Ø R <sub>2</sub>	12 x 30°	M4 (6)	M5 (6)	M5	M5	M6	M8	M8	M10	M10	M12	M14	M14	M16	M20	M24	M24	M24	M27	M30		
S		30	38	38	38	46	56	56	70	70	75	75	75	84	96	110	120	138	138	138		
S <sub>1</sub>		6	5,8	5,8	5,8	6,5	9,5	9,5	10,5	10,5	13,5	13,5	13,5	17	17	20	21	24	24	24		
Ø T <sub>1</sub>		-	-	337	361	446	527	527	680	680	775	855	855	950	1075	1220	1335	1595	1670	1790	2015	
U <sub>1</sub>		-	-	11	11	11	11	11	16	16	20	20	20	20	27	29,5	29,5	43,5	43,5	43,5		
W		M5	M5	M6	M6	M6	M8	M8	M8	M10	M12	M12	M16	M16	M16	M16	M18	M18	M20	M24		
Ø Y		35	47	67	47	113	146	146	182	205	240	226,5	268	290	329	373	290	320	500	570	628	
Z		12	16	15	17	18,5	21	23	26	27	30	31	33	37,5	44	47	55	60	68	76	85	
Ta <sub>1</sub>	Nm	6,6	6,6	6,6	6,6	11	27,5	27,5	54	54	54	95	95	148	230	230	450	780	780	780	1500	
Ta <sub>2</sub>	Nm	2,9	6	6	6	10	25	25	49	49	86	135	135	210	410	710	710	710	1050	1450		



### 装配实例 / ASSEMBLY EXAMPLES

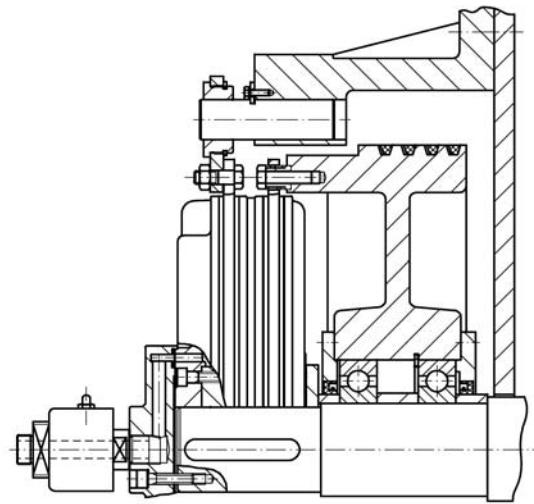


#### Series 5.71\_.WD 系列

通过离合器和制动器上的可互换销将其安装在框架和飞轮之间。通过锁紧环固定在轴上。

Mounting between frame and flywheel by means of identical pins on the clutch side and on the brake side.

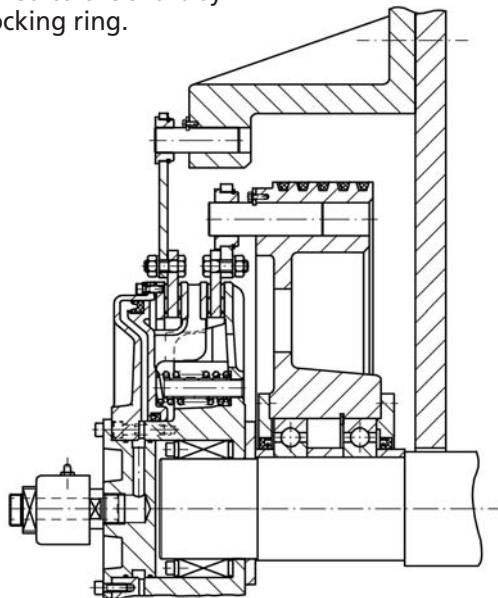
Fixed to the shaft by locking ring.



#### Series 5.72\_.AD 系列

通过制动器上的12个衬套和离合器上的2个销进行安装。横向供气。

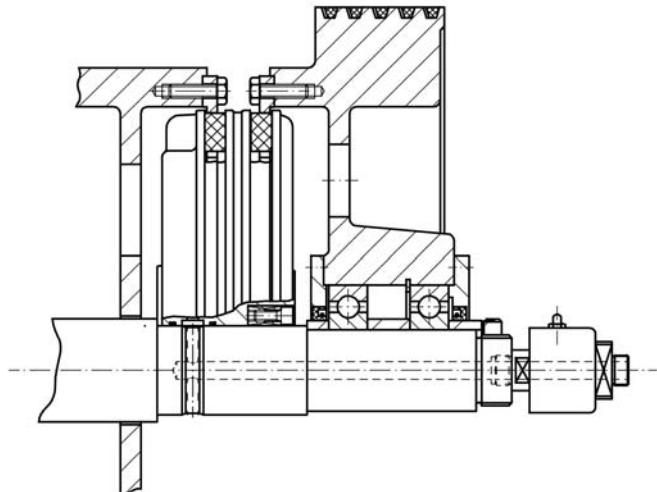
Mounting by means of 12 bushings on the clutch side and two pins on the brake side. Lateral air feeding.



#### Series 5.74\_.CD (\*) 系列

通过离合器和制动器上不同直径的销将其安装在轴端上。通过锁紧环固定在轴上。通过进气块供应特殊空气。

Mounting at shaft end by means of pins on different diameters on both clutch and brake side. Fixed in the shaft by locking ring.  
Special air feeding, via air inlet block.



#### Series 5.75\_.WA 系列

通过离合器和制动器中的衬垫将其安装在框架和飞轮之间。通过锁紧环固定在轴上。

Mounting between frame and flywheel by means of pads in both clutch and brake side.  
Fixed to the shaft by locking ring.

(\*) 如果您对CD类型感兴趣, 请咨询GOIZPER

(\*) If you are interested in CD type, please consult to GOIZPER



# 扭矩额定值 5.7 / Torque Ratings 5.7

SIZE	QUANTITY OF SPRINGS	BRAKE TORQUE (N.m)	CLUTCH TORQUE (N.m)	
			5,5 bar	6 bar
5	8	28	65	75
11	10	75	175	200
16	16	125	205	235
	14	110	220	250
	12	90	240	270
	8	62	270	300
23	12	185	265	310
	9	135	315	360
	6	92	365	405
50	10 + 10	490	695	805
	10 + 5	385	805	915
	10 + 0	275	920	1030
	5 + 5	245	950	1060
10	12 + 12	1030	1465	1695
	12 + 6	860	1645	1875
	12 + 0	690	1820	2050
	6 + 6	515	1995	2225
13	12 + 12	1030	1465	1695
	12 + 6	860	1645	1875
	12 + 0	690	1820	2050
	6 + 6	515	1995	2225
18	12 + 12	1960	2760	3190
	12 + 8	1690	3040	3480
	9 + 6	1265	3480	3910
	6 + 6	980	3770	4200
19N	16	2495	3430	3980
	14	2180	3755	4300
	12	1870	4080	4625
	8	1245	4730	5275
25N	16	3410	4785	5540
	14	2985	5225	5980
	12	2555	5665	6420
	8	1700	6545	7200
36	18	4060	5710	6620
	15	3380	6410	7310
	12	2710	7110	8010
	9	2030	7810	8710
37N	16	4780	6720	7785
	14	4180	7340	8400
	12	3585	7965	9025
	8	2380	9200	10270
55	16	8000	9500	11100
	14	7000	10500	12200
	12	6000	11600	13200
	8	4000	13600	15300
75	16	10000	13400	15600
	14	8700	14700	16900
	12	7500	16000	18200
	8	5000	18600	20700
76	16 + 16	15800	19100	22300
	12 + 16	13500	21400	24700
	10 + 10	9900	25300	28500
	8 + 8	7900	27300	30500
77	18	20500	29300	34000
	15	17100	32900	37500
	12	13700	36500	41100
	9	10250	40000	44700
78	20 + 20	27600	39000	45200
	16 + 20	23600	43200	49400
	10 + 20	17500	49500	55600
	10 + 10	13800	53400	59500
80	24 + 24	36000	50000	58000
	20 + 20	30000	56500	64500
	16 + 16	24000	63000	71000
	12 + 12	18000	69000	77500
81	24 + 24	50000	70000	81000
	20 + 20	41000	79000	90000
	16 + 16	33000	87000	99000
	12 + 12	25000	96000	107000
82	24 + 24	71500	98000	113500
	20 + 20	59500	110500	126000
	16 + 16	47500	122500	138500
	12 + 12	35500	135000	151000

气 动 离 合 器 制 动 器



0



## 离合器制动器5.0系列

5.0系列是我们传统离合器制动器设计的最新版本，装配时通过销拧紧两个盖板，避免盖板变形和受压破裂。

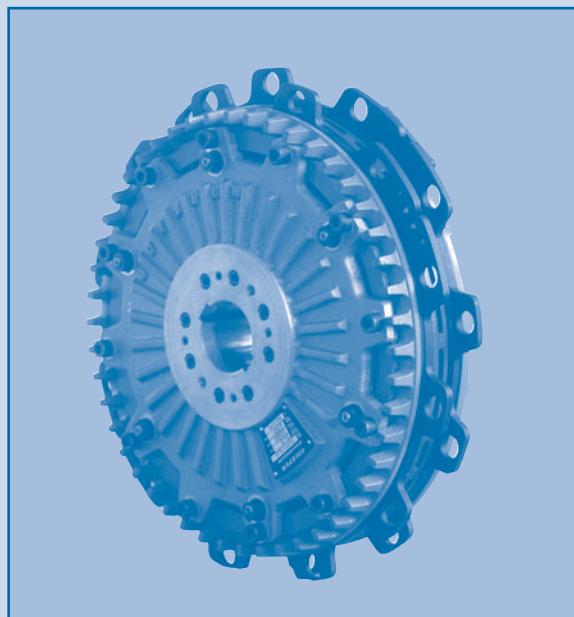
制动器盖板利用铝制造而成，具有低惯性。

## CLUTCH-BRAKES SERIES 5.0

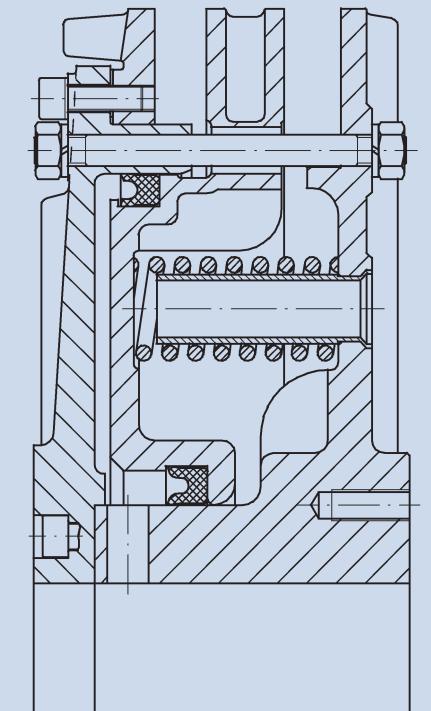
Series 5.0 is the latest version of our traditional design of clutch-brakes assembled by pins that tighten both covers for avoiding their deformation and breakage due to stress.

The brake side cover is manufactured in aluminium, obtaining a low inertia.

## 5.0 系列

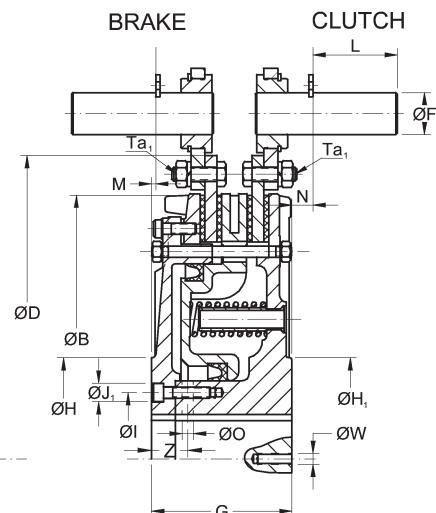
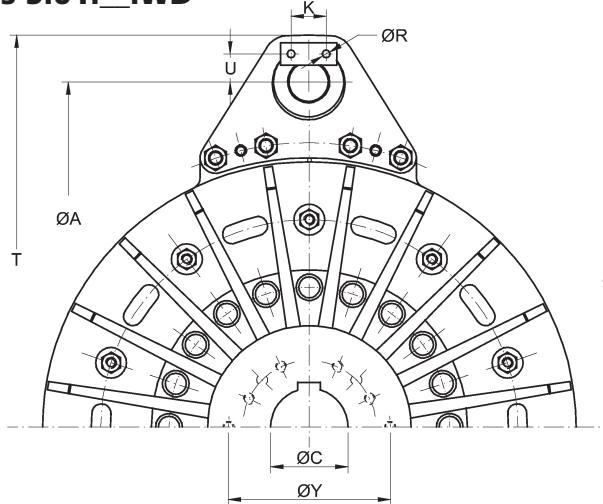


## Serie 5.0

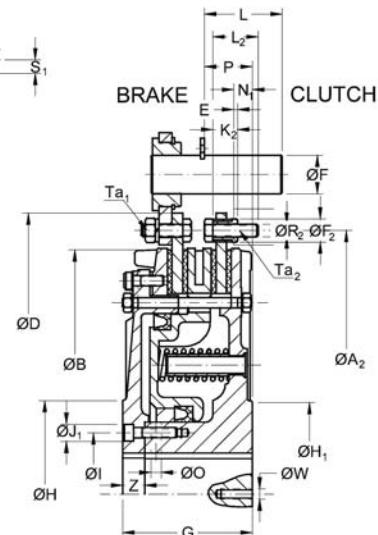
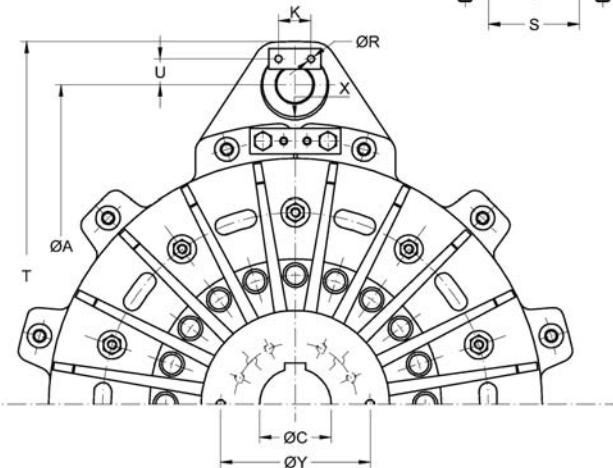




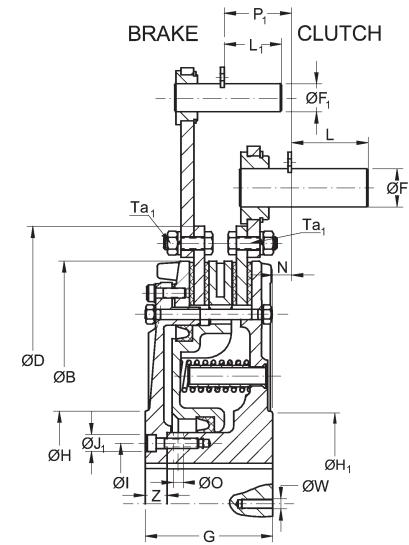
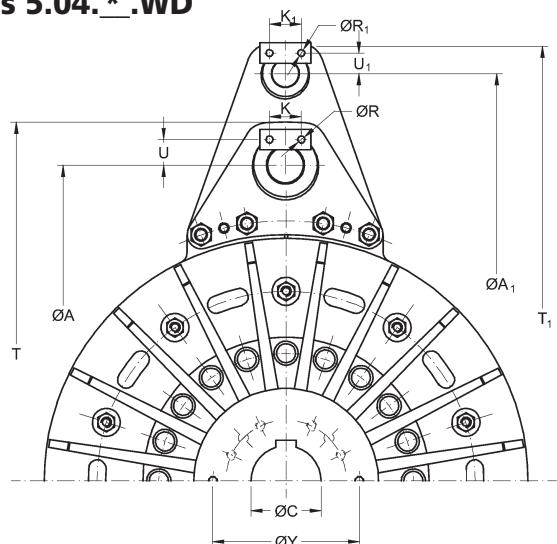
**Series 5.01.\*.WD**



**Series 5.02.\*.WD**



**Series 5.04.\*.WD**



\* 标示尺寸的空格 / Space to indicate the size

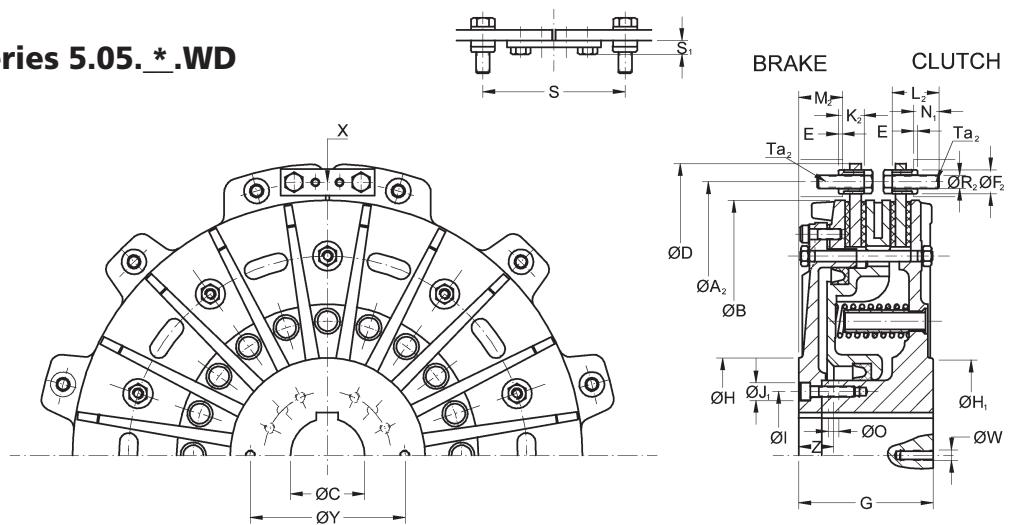


## Series 5.01.\_.WD / 5.02.\_.WD / 5.04.\_.WD

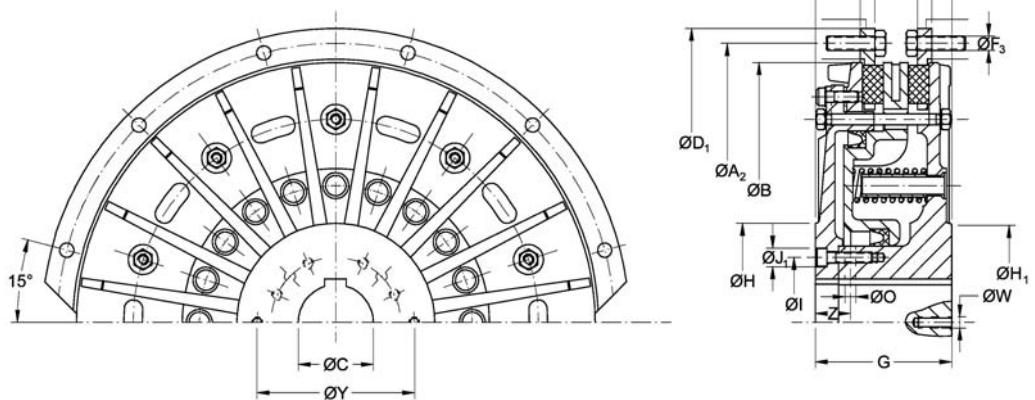
Size		60	10	18	36	55	75	76	77	78	79
Clutch torque	Nm	690	1100	2100	4500	7000	10200	14300	19200	30800	45100
Brake torque		430	585	1370	2930	4250	5900	8700	11500	17700	27800
Pressure	Bar			5,5							
Max speed	min <sup>-1</sup>	2300	1750	1450	1200	1000	900	800	760	600	450
Weight	Kg	5.01 WD 5.02 WD 5.04 WD	16 15 16	24 23 24	43 41 43	79 77 79	122 117 122	175 163 175	238 229 238	324 312 324	537 515 537
J	Kg m <sup>2</sup>	0,08 0,043 0,027 0,043	0,19 0,114 0,062 0,114	0,46 0,274 0,202 0,274	1,23 0,768 0,53 0,768	2,73 1,354 1,044 1,354	4,55 2,144 1,555 2,144	7,37 4,57 3,342 4,57	13,25 7,51 6,51 7,51	29,88 16,78 12,6 16,78	62 32 - -
New volum.	dm <sup>3</sup>	0,136	0,23	0,482	0,797	1,15	1,47	2,25	2,83	5,37	7,3
Max. wear Volum.		0,255	0,385	0,792	1,37	1,9	2,44	3,86	4,98	8,7	11
Ø A		345	390	495	610	695	770	880	970	1140	1300
Ø A <sub>1</sub>		440	490	635	790	885	990	1135	1235	1450	-
Ø A <sub>2</sub>		283	325	408	500	584	640	725	810	945	1080
Ø B		265	305	380	466	542	599	675	755	885	1000
Ø CH7	Min	32	35	45	50	60	60	75	90	115	140
	Max	52	65	80	108	114	125	145	160	180	220
Ø D		305	347	435	535	620	680	775	865	1000	1145
E		2	3	3	3	5	5	5	5	5	-
Ø F		22	22	30	40	40	45	55	55	65	75
Ø F <sub>1</sub>		14	14	22	30	30	40	45	45	55	-
Ø F <sub>2</sub>		12	15	18	25	25	30	35	40	42	-
G		72	82	100	125	145	160	185	203	255	295
Ø H		105	125	145	190	206	225	265	276	300(330)	376
Ø H <sub>1</sub>		110	130	145	180	200	220	265	276	300	376
Ø I		66	82	95	123	136	150	168	186	212	290
Ø J <sub>1</sub>		10,5	10,5	13,5	13,5	16,5	16,5	18,5	22,5	28	32
K		25	25	25	35	35	35	45	45	45	60
K <sub>1</sub>		20	20	25	25	25	35	35	35	45	-
K <sub>2</sub>		14	17	19	25	30	32	36	40	48	-
L		45	45	60	80	80	90	110	110	130	150
L <sub>1</sub>		28	28	45	60	60	80	90	90	110	-
L <sub>2</sub>		25	30	35	45	50	60	70	80	90	-
M		1	1	3	4	4	8	8	14	20	57,5
N		10	12,5	15	15	15	17,5	20	20	20	16,5
N <sub>1</sub>		12	14	14,5	17	19	20	22	25	33	-
Ø O	2 x 180°	8	10	12	14	16	16	20	20	28	32
P		27	27	39	58	61	58	83	94	114	-
P <sub>1</sub>		39	46,5	53	74	86	84	103	115	147	-
Ø R		5,5	5,5	5,5	6,5	6,5	6,5	8,5	8,5	8,5	10,5
Ø R <sub>1</sub>		4,5	4,5	5,5	5,5	5,5	6,5	6,5	6,5	8,5	-
Ø R <sub>2</sub>	12 x 30°	M6	M8	M10	M14	M14	M16	M20	M24	M24	-
S		46	56	70	75	84	96	110	120	138	-
S <sub>1</sub>		6,5	9,5	10,5	13,5	17	17	20	21	24	-
T		390	435	560	695	780	870	1000	1090	1285	1460
T <sub>1</sub>		475	527	680	855	950	1075	1220	1335	1570	-
U		16	16	20	27	27	29,5	38,5	38,5	43,5	51
U <sub>1</sub>		11	11	16	20	20	27	29,5	29,5	38,5	-
W		M8	M8	M8	M10	M12	M12	M14	M16	M18	-
Ø Y		66	82	115	145	160	170	210	220	250	-
Z		20	21	26	31	36,5	41	48	53	67	76
Ta <sub>1</sub>	Nm	11	27,5	54	95	148	230	230	450	450	780
Ta <sub>2</sub>	Nm	10	25	49	135	135	210	410	710	710	-



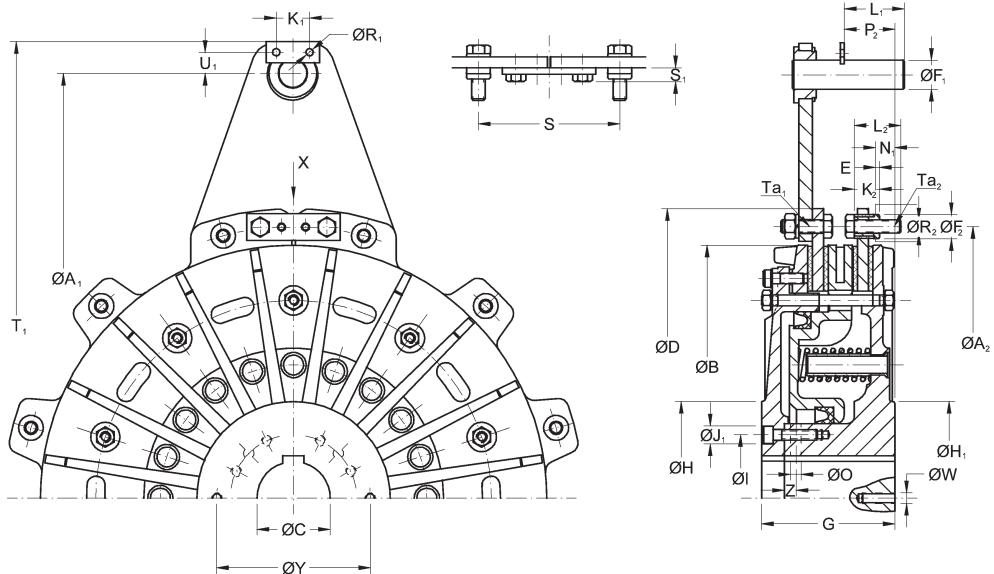
**Series 5.05.\*.WD**



**Series 5.05.\*.WA**



**Series 5.06.\*.WD**



\* 标示尺寸的空格 / Space to indicate the size

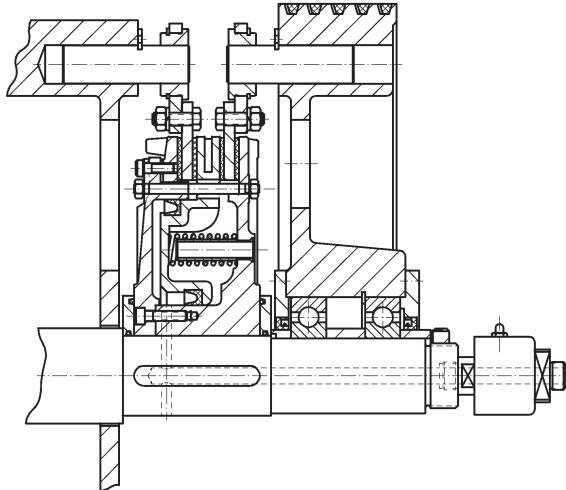


## Series 5.05.\_.WD / 5.05.\_.WA / 5.06.\_.WD

Size		60	10	18	36	55	75	76	77	78	79
Clutch torque	Nm	690	1100	2100	4500	7000	10200	14300	19200	30800	45100
Brake torque		430	585	1370	2930	4250	5900	8700	11500	17700	27800
Pressure	bar				5,5						
Max speed	min <sup>-1</sup>	2300	1750	1450	1200	1000	900	800	760	600	450
Weight	Kg	5.05 WD 5.05 WA 5.06 WD	14 - 15	22 22 23	39 41 41	73 75 77	111 112 117	153 159 163	220 230 229	301 292 312	494 482 515
J	Kg m <sup>2</sup>	Int. 5.05 WD Ext. 5.05 WA 5.06 WD	0,08 0,027 - 0,027	0,19 0,062 0,045 0,062	0,46 0,202 0,131 0,202	1,23 0,53 0,341 0,53	2,73 1,044 0,881 1,044	4,55 1,555 1,261 1,555	7,37 3,342 2,24 3,342	13,25 6,513 3,87 6,513	29,88 12,6 8,46 12,6
New volum.	dm <sup>3</sup>	0,136	0,23	0,482	0,797	1,15	1,47	2,25	2,83	5,37	7,3
Max. wear Volum.		0,255	0,385	0,792	1,37	1,9	2,44	3,86	4,98	8,7	11
Ø A <sub>1</sub>		440	490	635	790	885	990	1135	1235	1450	-
Ø A <sub>2</sub>		283	325	408	500	584	640	725	810	945	1080
Ø B		265	305	380	466	542	599	675	755	885	1000
Ø CH7	Min	32	35	45	50	60	60	75	90	115	140
	Max	52	65	80	108	114	125	145	160	180	220
Ø D <sub>1</sub>		-	345	430	530	620	680	770	860	995	-
Ø D		305	347	435	535	620	680	775	865	1000	1145
E		2	3	3	3	5	5	5	5	5	-
E <sub>1</sub>		-	9	10,5	12	16	16,5	17	18,5	24	-
Ø F <sub>1</sub>		14	14	22	30	30	40	45	45	55	-
Ø F <sub>2</sub>		12	15	18	25	25	30	35	40	42	-
Ø F <sub>3</sub>	12 x 30°	-	8,5	10,5	15	15	17	21	25	25	-
G		72	82	100	125	145	160	185	203	255	295
Ø H		105	125	145	190	206	225	265	276	300(330)	376
Ø H <sub>1</sub>		110	130	145	180	200	220	265	276	300	376
Ø I		66	82	95	123	136	150	168	186	212	290
Ø J <sub>1</sub>		10,5	10,5	13,5	13,5	16,5	16,5	18,5	22,5	28	32
K <sub>1</sub>		20	20	25	25	25	35	35	35	45	-
K <sub>2</sub>		14	17	19	25	30	32	36	40	48	-
L <sub>1</sub>		28	28	45	60	60	80	90	90	110	-
L <sub>2</sub>		25	30	35	45	50	60	70	80	90	-
M <sub>1</sub>		-	27	33	38,5	45,5	57	59	66	83,5	-
M <sub>2</sub>		21	24	31,5	32	41	50	50	57	73	-
N <sub>1</sub>		11	12	14,5	17	19	20	22	25	33	-
N <sub>2</sub>		-	14,5	15	21	24,5	26	31	34	42,5	-
Ø O	2 x 180°	8	10	12	14	16	16	20	20	28	32
P <sub>2</sub>		29	34	38	59	71	66,5	83	95	127	-
Ø R <sub>1</sub>		4,5	4,5	5,5	5,5	5,5	6,5	6,5	6,5	8,5	-
Ø R <sub>2</sub>	12 x 30°	M6	M8	M10	M14	M14	M16	M20	M24	M24	-
S		46	56	70	75	84	96	110	120	138	-
S <sub>1</sub>		6,5	9,5	10,5	13,5	17	17	20	21	24	-
T <sub>1</sub>		475	527	680	855	950	1075	1220	1335	1570	-
U <sub>1</sub>		11	11	16	20	20	27	29,5	29,5	38,5	-
W		M8	M8	M8	M10	M12	M12	M14	M16	M18	-
Ø Y		66	82	115	145	160	170	210	220	250	-
Z		20	21	26	31	36,5	41	48	53	67	76
Ta <sub>1</sub>	Nm	11	27,5	54	95	148	230	230	450	450	780
Ta <sub>2</sub>	Nm	10	25	49	135	135	210	410	710	710	-



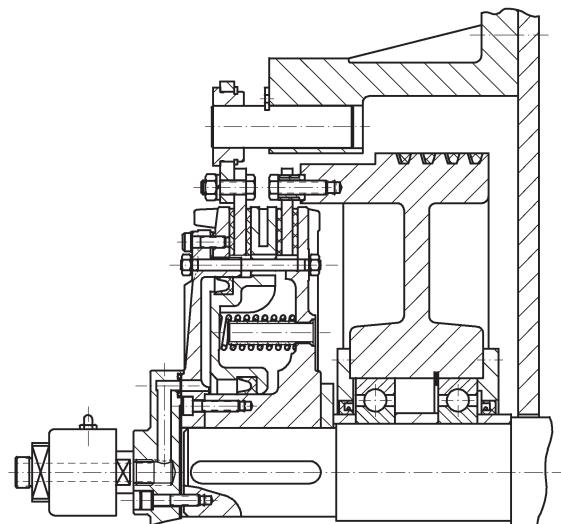
### 装配实例 / ASSEMBLY EXAMPLES



#### Series 5.01\_.WD 系列

通过离合器和制动器上的可互换销将其安装在框架和飞轮之间。

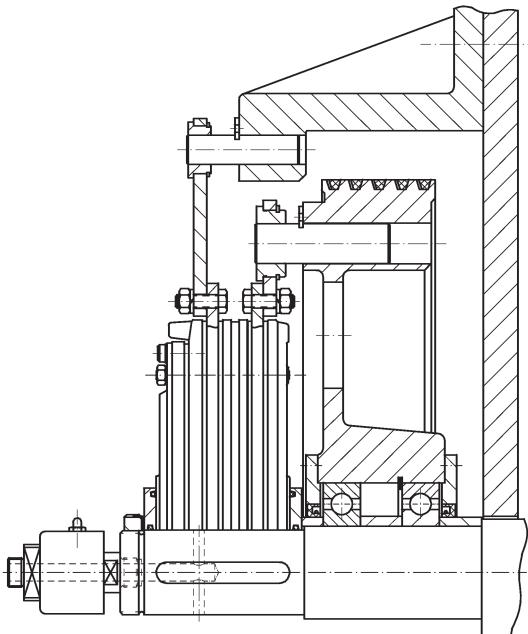
Mounting between frame and flywheel by means of identical pins in both clutch and brake side.



#### Series 5.02\_.AD 系列

通过制动器上的12个衬套和离合器上的2个销将其安装在轴端。横向供气。

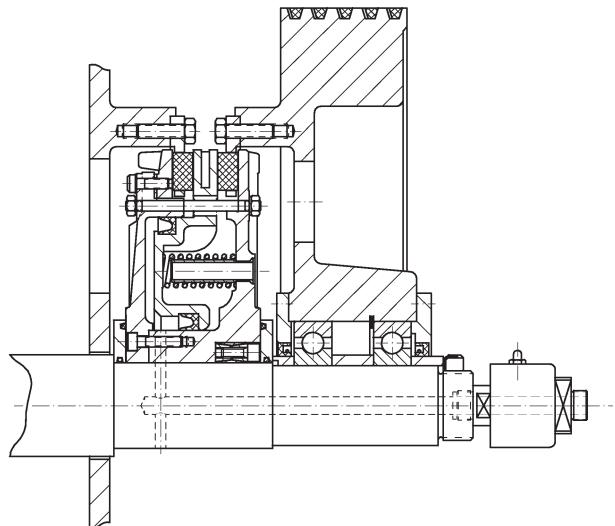
Mounting at shaft end by means of 12 bushings on the clutch side and two pins on the brake side. Lateral air feeding.



#### Series 5.04\_.WD 系列

通过离合器和制动器上不同直径的销将其安装在轴端上。

Mounting at shaft end by means of pins on different diameters on both clutch and brake side.



#### Series 5.05\_.WA 系列

通过离合器和制动器中的衬垫将其安装在框架和飞轮之间。通过锁紧环固定在轴上。

Mounting between frame and flywheel by means of pads in both clutch and brake side. Fixed in the shaft by locking ring.



## 扭矩额定值 5.0 / Torque Ratings 5.0

SIZE	QUANTITY OF SPRINGS	BRAKE TORQUE (N.m)	CLUTCH TORQUE (N.m)	
			5,5 bar	6 bar
60	12	430	690	800
	9	320	800	900
	6	215	900	1000
10	18	585	1100	1200
	15	485	1200	1300
	12	390	1300	1400
	9	290	1400	1500
18	16	1370	2100	2400
	12	1025	2400	2800
	10	855	2600	2900
	8	685	2800	3100
36	18	2930	4500	5200
	15	2445	5000	5700
	12	1955	5500	6200
	8	1465	6000	6700
55	18	4250	7000	8000
	15	3550	7700	8700
	12	2850	8400	9500
	9	2125	9200	10200
75	24	5900	10200	11700
	20	4900	11200	12700
	16	3900	12300	13800
	12	2950	13300	14800
76	18	8700	14300	16500
	15	7200	15800	18000
	12	5800	17400	19500
	9	4300	18900	21000
77	18	11500	19200	22000
	15	9600	21200	24000
	12	7700	23200	26000
	9	5750	25200	28000
78	18	17700	30800	35300
	15	14800	33900	38300
	12	11800	36900	41400
	9	8850	40000	44400
79	18	27800	45100	51800
	15	23200	49900	56700
	12	18500	54700	61500
	9	13900	59600	66300





## 离合器制动器5.5和5.6系列

5.5系列相当于离合器带有双摩擦片的离合器制动器，可获得较低的惯性。它们的外部盖板和轮毂由电焊钢制成。

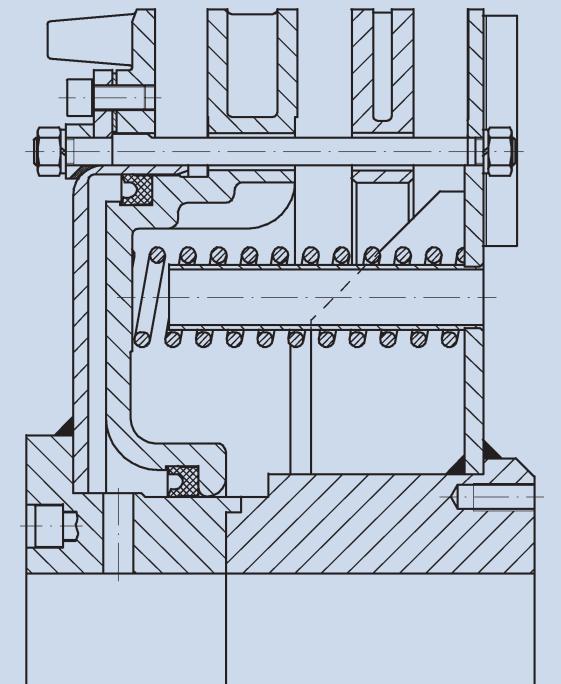
5.6系列类似于5.5系列，但是离合器和制动器上都有双摩擦片，可提高扭矩惯性比。

## CLUTCH-BRAKES SERIES 5.5 and 5.6

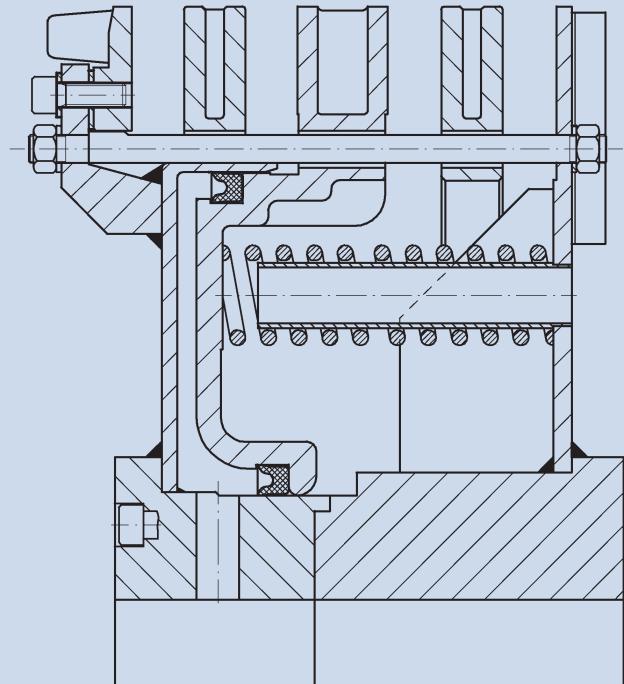
Series 5.5 corresponds to clutch-brakes with double disc in the clutch side, in order to get a lower inertia. Their external covers and hubs are made of electro-welded steel.

Series 5.6 is similar to 5.5 but has double disc in both sides, improving the torque-inertia rate.

### 5.5 系列 / Series 5.5

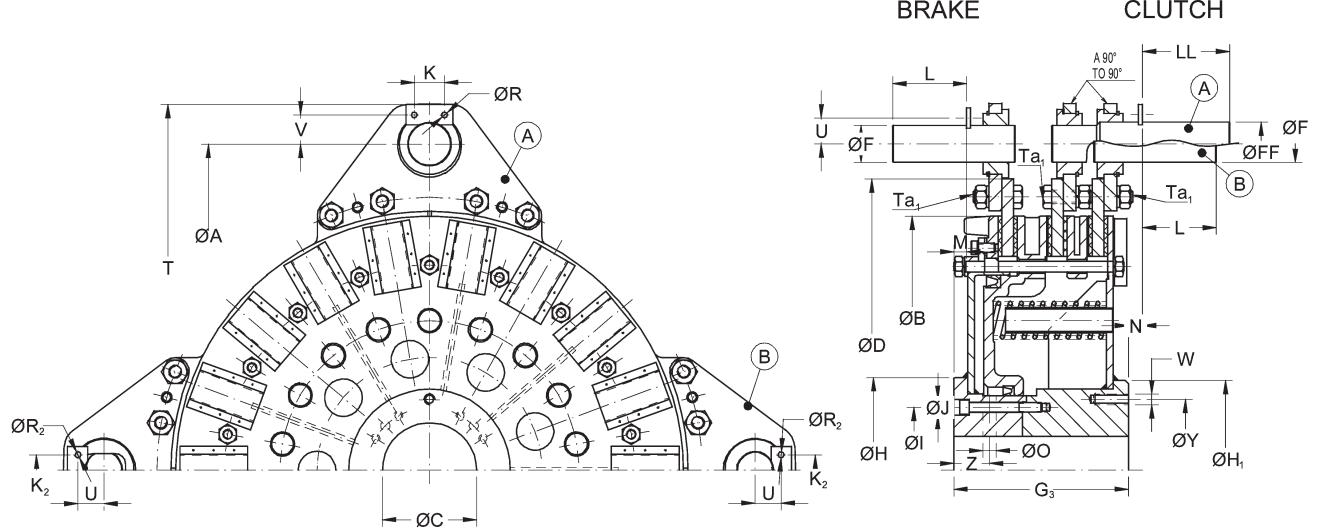


### 5.6 系列 / Series 5.6

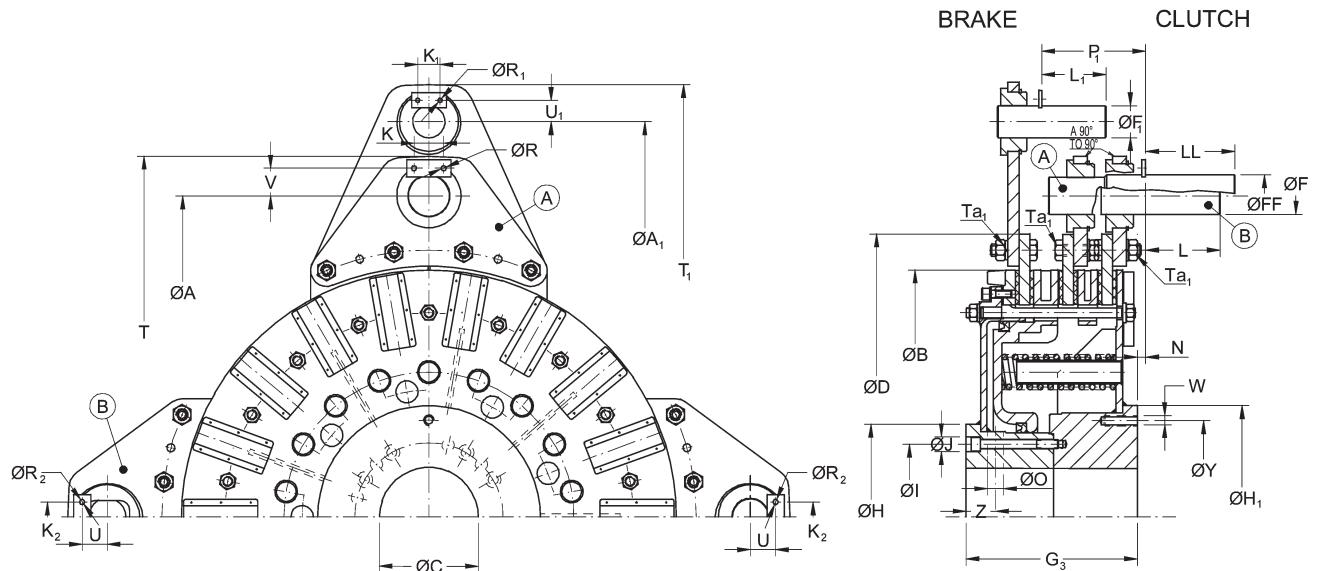




### Series 5.51.\*.WD



### Series 5.54.\*.WD



\*标示尺寸的空格 / Space to indicate the size



## Series 5.51.\_.WD / 5.54.\_.WD

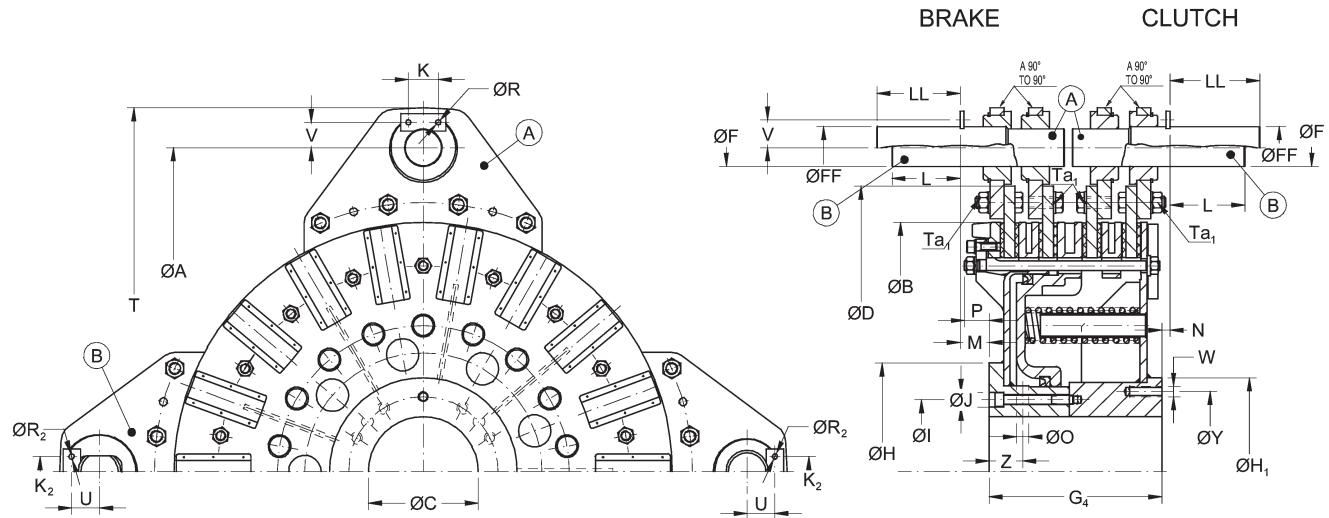
Size		18	36	55	75	76	77	78	79	81
Clutch torque	Nm	4200	9000	14000	20400	28600	38400	61600	90200	138000
Brake torque		1370	2930	4250	5900	8700	11500	17700	27800	35500
Pressure	bar					5,5				
Max speed	min <sup>-1</sup>	1400	1100	950	850	750	700	550	400	350
Weight	Kg	66	112	158	211	313	424	722	1120	1680
J Int. Ext.	Kg m <sup>2</sup>	0,71 0,637	1,83 1,775	3,2 3	5,9 4,745	10,4 10,1	17,7 16,27	39 36,36	80 65	155 150
New volum. Max. wear Volum.	dm <sup>3</sup>	0,7 1,2	1,1 2,2	1,5 3	1,9 3,9	2,4 5,2	2,9 6,8	4,3 10,3	6 13	10,9 17,5
Ø A		495	610	695	770	880	970	1140	1300	1465
Ø A <sub>1</sub>		635	790	885	990	1135	1235	1450	-	1855
Ø B		380	466	542	599	675	755	885	1000	1140
Ø CH7	Min	45	50	60	60	75	90	115	140	150
	Max	80	108	114	125	145	160	180	220	260
Ø D		435	535	620	680	775	865	1000	1145	1276
Ø F		30	40	40	45	55	55	65	75	90
Ø F <sub>1</sub>		22	30	30	40	45	45	55	-	75
Ø FF		40	50	50	55	65	65	75	85	100
G <sub>3</sub>		134	169	190	209	242	260	331	361	400
Ø H		140(145)*	160(190)*	180(206)*	190(225)*	225(265)*	240(276)*	300(330)*	376	428
Ø H <sub>1</sub>		140	160	180	190	225	240	300	376	428
Ø I		95	123	132	150	168	186	212	290	340
Ø J		13,5	13,5	17	17	18,5	22,5	28	32	40
K		35	35	35	45	45	45	45	60	60
K <sub>1</sub>		25	25	25	35	35	35	45	-	60
K <sub>2</sub>		25	35	35	35	45	45	45	60	60
L		60	80	80	90	110	110	130	150	180
L <sub>1</sub>		45	60	60	80	90	90	110	-	150
LL		80	100	100	110	130	130	160	180	210
M		4	6	7,5	12,5	14	14	20	57,5	57,5
N		15	15	15	17,5	20	20	20	16,5	19,5
Ø O	2 a 180°	12	14	16	16	20	20	28	32	35
P <sub>1</sub>		90	120	133	135	160	174	225	-	217,5
Ø R		6,5	6,5	6,5	8,5	8,5	8,5	8,5	10,5	10,5
Ø R <sub>1</sub>		5,5	5,5	5,5	6,5	6,5	6,5	8,5	-	10,5
Ø R <sub>2</sub>		5,5	6,5	6,5	6,5	8,5	8,5	8,5	-	10,5
T		560	695	780	870	1000	1090	1285	1460	1650
T <sub>1</sub>		680	855	950	1 075	1220	1335	1570	-	2015
U		20	27	27	29,5	38,5	38,5	43,5	51	60
U <sub>1</sub>		16	20	20	27	29,5	29,5	38,5	-	52,5
V		27	32	32	38,5	43,5	43,5	48,5	-	65
W		M8	M12	M12	M12	M16	M16	M18	-	24
Ø Y		110	132	155	165	185	210	250	-	340
Z		26	31	36,5	41	48	53	67	76	85
Ta <sub>1</sub>	Nm	54	95	148	230	230	450	450	780	1590

\*括号之间的测量值适用于横向供气的情况

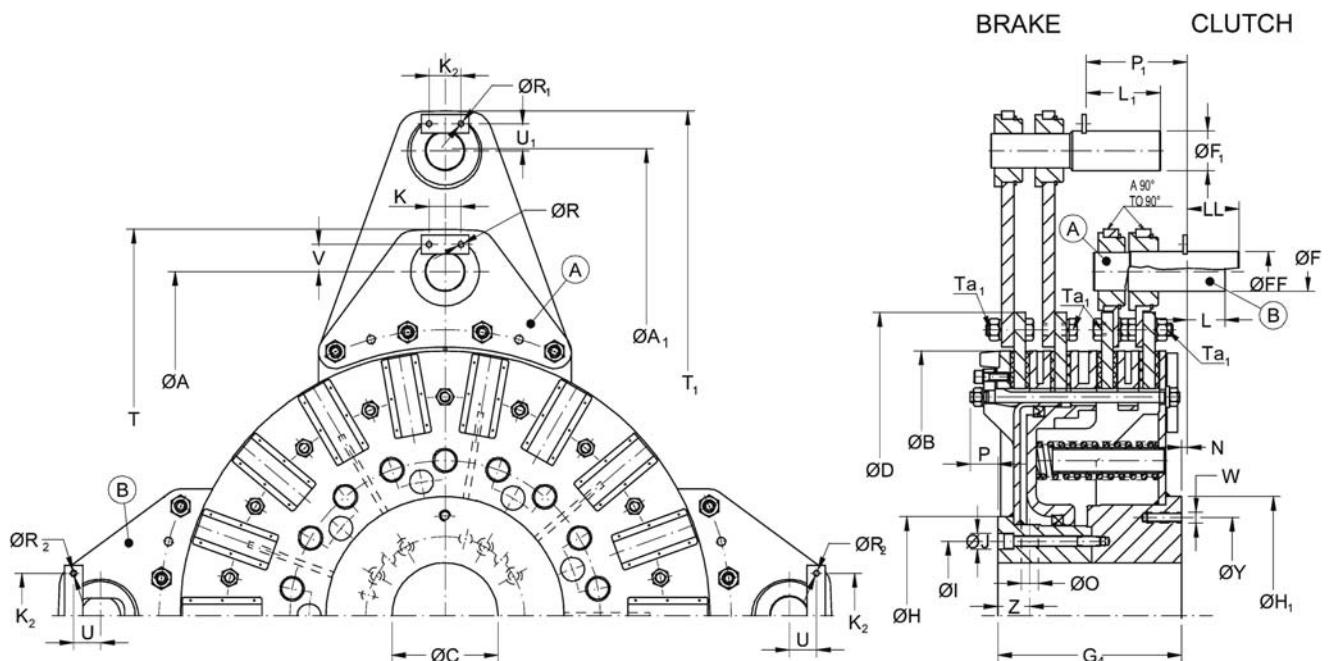
\*The measurements between brackets are in the case of lateral air feeding



### Series 5.61.\*.WD



### Series 5.64.\*.WD



\* 标示尺寸的空格 / Space to indicate the size



## Series 5.61.\_.WD / 5.64.\_.WD

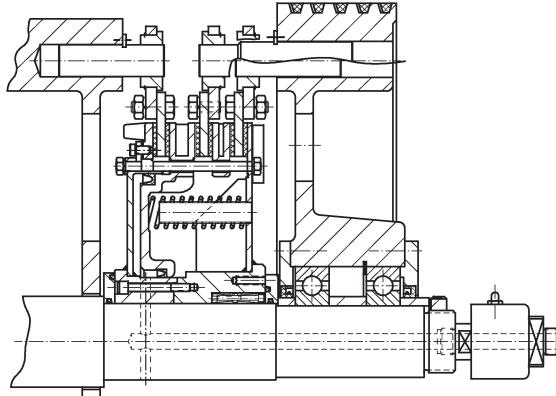
Size		18	36	55	75	76	77	78	79	81
Clutch torque	Nm	4200	9000	14000	20400	28600	38400	61600	90200	138000
Brake torque		2740	5860	8500	11800	17400	23000	35400	55600	71000
Pressure	bar				5,5					
Max speed	min <sup>-1</sup>	1400	1100	950	850	750	700	550	400	350
Weight	Kg	66	138	194	257	377	519	880	1340	1900
J Int. Ext.	Kg m <sup>2</sup>	0,71 0,63	2,3 1,77	4 3	7,4 4,74	12,6 10,1	22,1 16,27	49 36,36	99 65	190 140
New volum. Max. wear Volum.	dm <sup>3</sup>	0,7 1,2	1,1 2,2	1,5 3	1,9 3,9	2,4 5,2	2,9 6,8	4,3 10,3	6 13	10,6 18,2
Ø A		495	610	695	770	880	970	1140	1300	1465
Ø A <sub>1</sub>		635	790	885	990	1135	1235	1450	-	1855
Ø B		380	466	542	599	675	755	885	1000	1140
Ø CH7	Min Max	45 80	50 108	60 114	60 125	75 145	90 160	115 180	140 220	150 260
Ø D		435	535	620	680	775	865	1000	1145	1276
Ø F		30	40	40	45	55	55	65	75	90
Ø F <sub>1</sub>		20	50	50	55	65	65	75	-	75
Ø FF		40	50	50	55	65	65	75	85	100
G <sub>4</sub>		134	169	190	209	242	260	331	361	400
Ø H		140(145)*	160(190)*	180(206)*	190(225)*	225(265)*	240(276)*	300(330)*	376	428
Ø H <sub>1</sub>		140	160	180	190	225	240	300	376	428
Ø I		95	123	132	150	168	186	212	290	340
Ø J		13,5	13,5	17	17	18,5	22,5	28	32	40
K		35	35	35	45	45	45	45	60	60
K <sub>1</sub>		35	35	35	45	45	45	45	-	60
K <sub>2</sub>		25	35	35	35	45	45	45	60	60
L		60	80	80	90	110	110	130	150	180
L <sub>1</sub>		70	90	90	100	110	110	130	-	150
LL		80	100	100	110	130	130	160	180	210
M		33	38	38	38	48	48	58	-	30
N		15	15	15	17,5	20	20	20	16,5	19,5
Ø O	2 a 180°	12	14	16	16	20	20	28	32	35
P		28,5	39	36,5	35	42,5	47	56,5	-	50
P <sub>1</sub>		90	120	133	135	160	174	225	-	217,5
Ø R		6,5	6,5	6,5	8,5	8,5	8,5	8,5	10,5	10,5
Ø R <sub>1</sub>		5,5	6,5	6,5	8,5	8,5	8,5	8,5	-	10,5
Ø R <sub>2</sub>		5,5	6,5	6,5	6,5	8,5	8,5	8,5	-	10,5
T		560	695	780	870	1000	1090	1285	1460	1650
T <sub>1</sub>		680	875	970	1075	1220	1355	1600	-	2015
U		20	27	27	29,5	38,5	38,5	43,5	51	60
U <sub>1</sub>		27	32	32	38,5	43,5	43,5	48,5	-	52,5
V		27	32	32	38,5	43,5	43,5	48,5	-	65
W		M8	M12	M12	M12	M16	M16	M18	-	24
Ø Y		110	132	155	165	185	210	250	-	340
Z		26	31	36,5	41	48	53	67	76	85
Ta <sub>1</sub>	Nm	54	95	148	230	230	450	450	780	1590

\*括号之间的测量值适用于带有横向供气的离合器制动器

\*The measurements between brackets refer to clutch-brakes with lateral air feeding



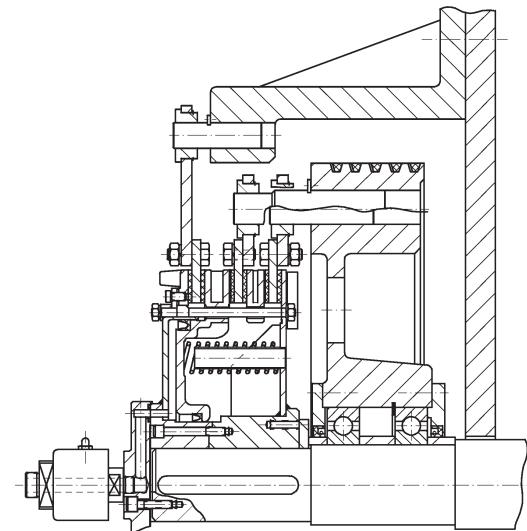
### 装配实例 / ASSEMBLY EXAMPLES



#### Series 5.51. WD 系列

通过离合器上4个呈90°的销和制动器上的2个销（它们均在相同直径上）将其安装在框架和飞轮之间。通过锁紧环固定在轴上。

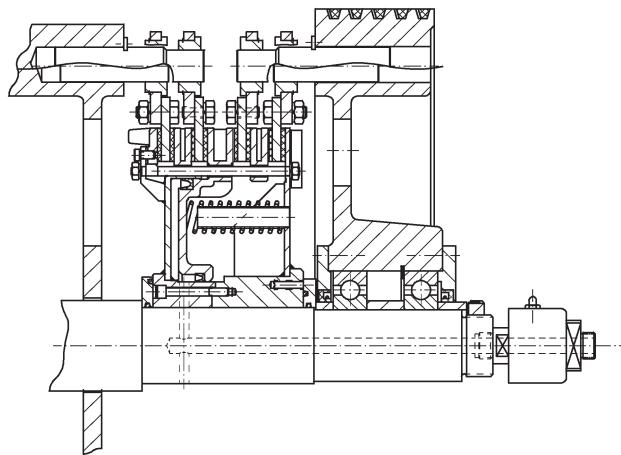
Mounting between frame and flywheel by means of 4 pins at 90° on the clutch side and 2 pins on the brake side all of them on the same diameter. Fixed in the shaft by locking ring.



#### Series 5.54. AD 系列

通过离合器上呈90°的4个销和制动器上的2个销（在不同的直径上）将其安装在轴端。横向供气。

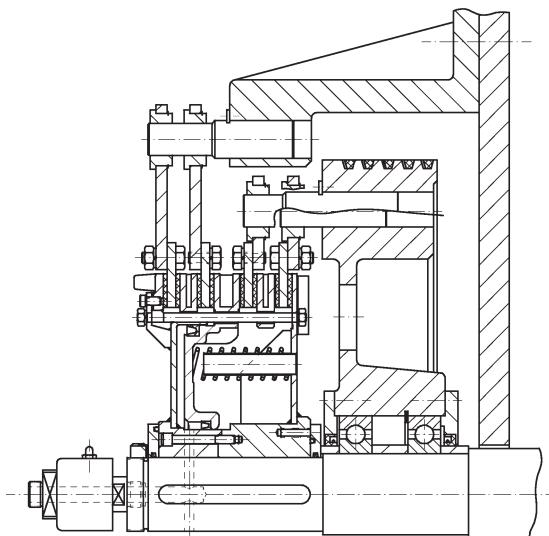
Mounting at shaft end by means of 4 pins at 90° on the clutch side end and 2 pins on the brake side on different diameters.  
Lateral air feeding.



#### Series 5.61. WD 系列

通过离合器上4个呈90°的销和制动器上4个呈90°的销（它们均在相同直径上）将其安装在框架和飞轮之间

Mounting between frame and flywheel by means of 4 pins at 90° on the clutch side and 4 pins at 90° on the brake side, all of them on the same diameter.



#### Series 5.64. WD 系列

通过离合器上呈90°的4个销和制动器上连接至双摩擦片的2个销（在不同的直径上）将其安装在轴端。

Mounting at shaft end by means of 4 pins at 90° on the clutch side and 2 pins connected to double discs on brake side, on different diameters.



## 附件

### 进气片

当离合器制动器安装在轴端时，可以通过横向进气口供气。

因此，轴比较短并且无需在轴上钻孔。

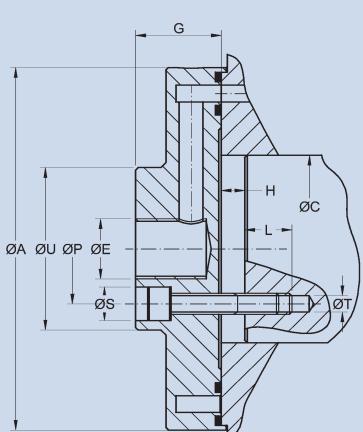
## ACCESSORIES

### AIR INLET DISC

When the clutch-brake is mounted at the shaft end, it can be fed by a lateral air inlet.

In this way, the shaft is shorter and it eliminates the need to drill the shaft.

Series 5.7   Size	50	10-13	18	19N	25N	36	37N	55	75	76	77	78	80	81	82	
Ø A	101	128	156	175	196	193	214	250	275	315	312	346	395	448	502	
Ø C	Min. Max.	44 52	50 65	60 90	45 95	45 100	68 110	70 115	70 130	90 155	100 172	125 180	125 200	140 220	150 240	170 270
Ø E	M 22 x 1,5		M 27 x 1,5				M 35 x 1,5		M 50 x 1,5			M 65x1,5				
G	31	31	34	34	34	37,5	37,5	39,5	47	47	47	53	60	60	66	
H	1,5	2,5	3	3	3	3	3	3	3	3	3	3	3	3	3	
L	16	16	20	20	20	25	25	35	35	35	35	35	35	35	41	
Ø P	36	36	44	44	48	56	56	56	80	80	80	80	98	98	100	
Ø S	10,5	10,5	13,5	13,5	13,5	16,5	16,5	18,5	18,5	25	25	25	25	25	25	
Ø T - 4 x 90°	M 6	M 6	M 8	M 8	M 8	M 10	M 10	M 12	M 12	M 16	M 16	M 16	M 16	M 16	M 16	
Ø U	52	52	65	65	70	80	80	80	112	112	112	112	132	132	135	
Weight kg.	1	1,8	2,5	3,75	4,8	4,8	6	9,13	13,55	17,2	15,4	22	29,4	58,3	57	
J kgm <sup>2</sup>	0,0018	0,0044	0,0096	0,014	0,021	0,024	0,032	0,078	0,136	0,232	0,209	0,317	0,596	0,88	1,644	



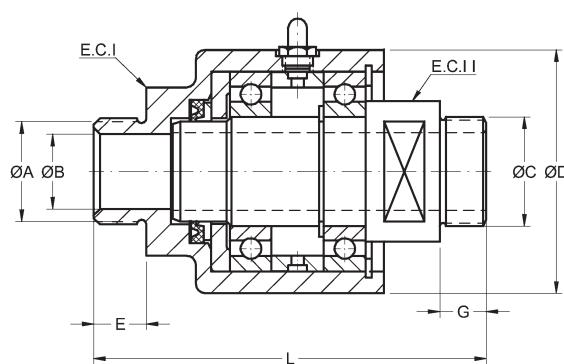
Series 5.0   Size	60	10	18	36	55	75	76	77	78	
Ø A	105	126	145	188	205	225	265	275	330	
Ø C	Min. Max.	44 52	44 65	55 80	68 108	70 114	70 125	75 145	100 160	115 180
Ø E	M 22 x 1,5		M 27 x 1,5		M 35 x 1,5		M 50 x 1,5			
G	31	31	34	37,5	39,5	41	44	47	53	
H	1,5	2,5	3	3	3	3	3	3	3	
L	16	16	20	25	35	35	35	35	35	
Ø P	36	36	44	56	56	56	56	80	80	
Ø S	10,5	10,5	13,5	16,5	18,5	18,5	18,5	25	25	
Ø T - 4 x 90°	M 6	M 6	M 8	M 10	M 12	M 12	M 12	M 16	M 16	
Ø U	52	52	65	80	80	80	80	112	112	
Weight kg.	1,1	1,8	2,3	4,6	5,5	6,6	11	12	19	
J kgm <sup>2</sup>	0,0020	0,0040	0,0068	0,023	0,031	0,058	0,116	0,125	0,302	

横向供气同样适用于5.5系列和5.6系列

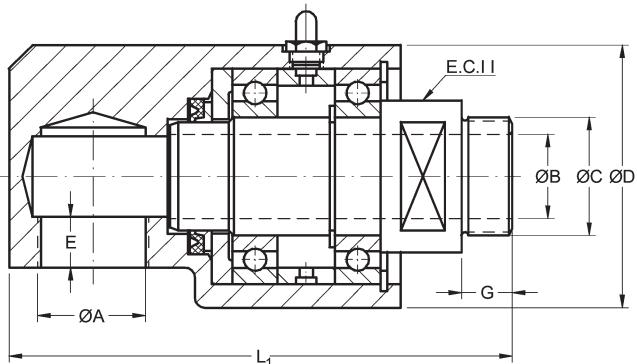
The lateral air feeding can be also used in the series 5.5 and 5.6



## 旋转式进气口 / ROTORSEAL



7.01



7.02

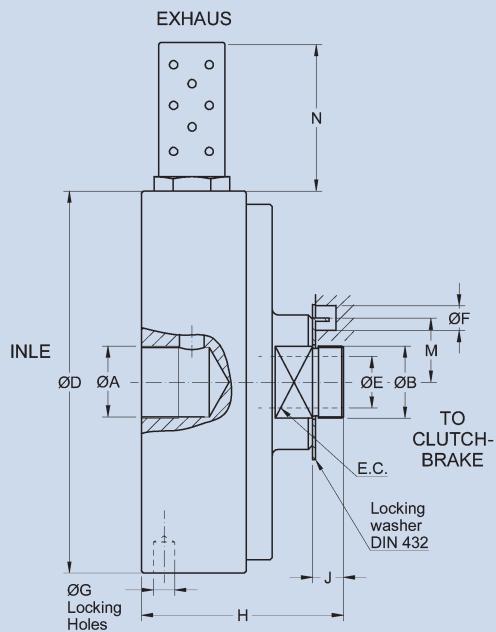
## Series

## 7.01 - 7.02

Size	00	02	12	03	04	06
Ø A	R 1/4"	R 1/2"	R 3/4"	R 1"	R 1 1/2"	R 2"
Ø B	7	13	18	25	38	48
Ø C	M14 x 1,5	M22 x 1,5	M27 x 1,5	M35 x 1,5	M50 x 1,5	M65 x 1,5
Ø D	46	62	70	80	100	125
E	12	12	15	17	22	25
G	13	12	15	15	22	25
L	82	95	114	127	165	199
L <sub>1</sub>	95	111	133	149	198	240
E.C.I	27	41	46	55	75	95
E.C.II	17	24	28	32	50	65
For sizes	Series 5.0 5.5 y 5.6		60-10	18-36	55-75-76	77-78
	Series 5.7	05-11	23-50-10-13	18-19N 25N-36-37N	55-75	76-77-78
	Series 5.8		23-50-10	18	36-55-75	76-77-78
						80

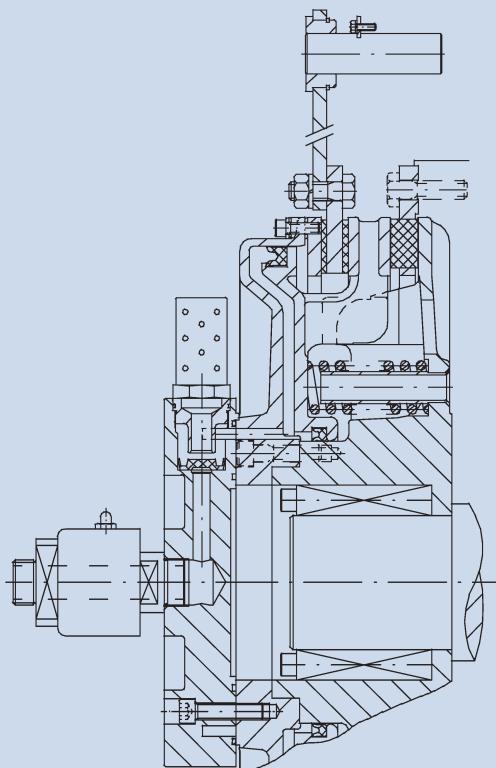
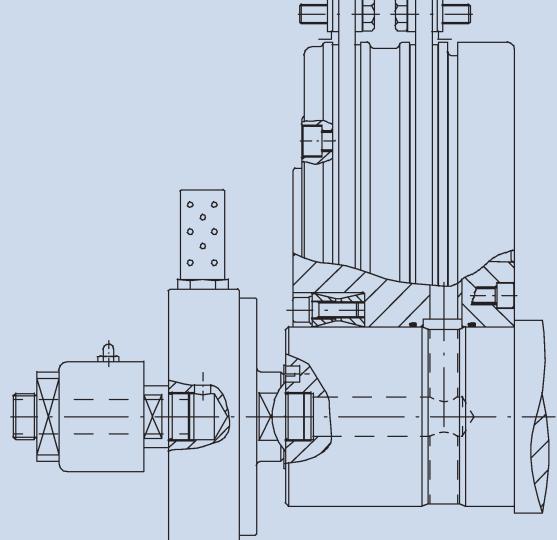


## 快速排气附件 / QUICK EXHAUST ACCESSORY



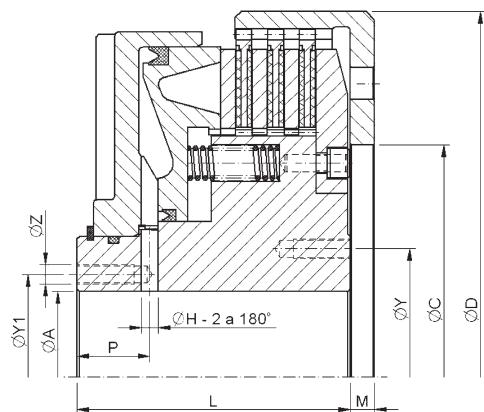
Series		7.06				
Size		02	12	03	04	06
Ø A	M 22 x 1,5	M 27 x 1,5	M 35 x 1,5	M 50 x 1,5	M 65 x 1,5	
Ø B	M 22 x 1,5	M 27 x 1,5	M 35 x 1,5	M 50 x 1,5	M 65 x 1,5	
Ø D	123	160	185	230	250	
Ø E	13	18	25	36	48	
Ø F	8	9	12	14	19	
Ø G	10.25	10.25	10.25	12.25	12.25	
H	72	91	98	119	134	
J	12	15	15	22	25	
K	14	18	18	18	21	
L	7	9	10	14	14	
M	20	23	31	40	52	
N	45,5	47,5	47,5	45	41,5	
E.C.	32	41	55	75	95	
Weight kg	1,7	3,8	5,5	9,6	15,7	
Inertia Kgm <sup>2</sup>	0,0037	0,0154	0,0293	0,0738	0,214	
For sizes	Series 5.0	60-10	18-36	55-75-76	77-78-79	
	Series 5.7	50-10	18-25-36	55-75	76-77-78	80
	Series 5.8	23-50-10	18	36-55-75	76-77-78	

## 装配实例 / ASSEMBLY EXAMPLES



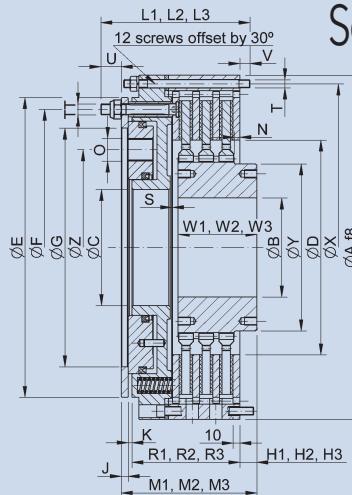
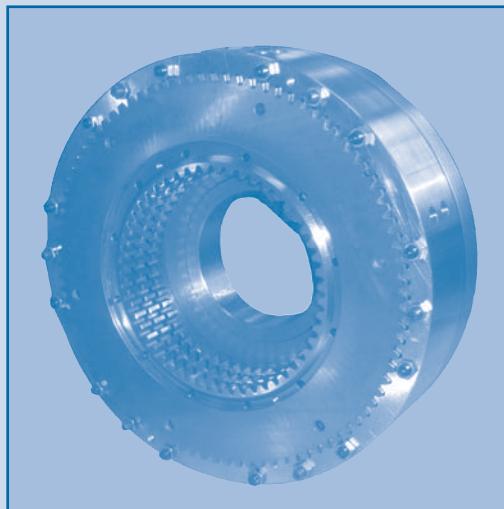


Series 5.35



**气动多片离合器**  
**PNEUMATICALLY ACTUATED MULTI DISC CLUTCHES**

Series		5.35											
Size		16	32	64	90	12	18	36	55	75	76	77	81
Torque	Nm	160	320	640	900	1.280	1.800	3.600	5.500	7.500	10.000	15.000	22.000
Pressure	Bar	5,5											
Speed max.	min-1	3.500	3.500	2.800	2.100	2.000	1.900	1.900	1.900	1.500	1.400	1.000	1.000
Weight	kg	10	12	20	25	32	50	56	72	85	120	300	340
J Int. Ext.	Kg cm <sup>2</sup>	0,019 0,01	0,027 0,012	0,112 0,03	0,140 0,06	0,3 0,15	0,47 0,19	0,5 0,21	0,9 0,25	1,3 1,3	1,8 1,8	7 3	7,5 4
New volum. Max. wear volum.	dm <sup>3</sup>	0,06 0,13	0,08 0,20	0,12 0,35	0,20 0,48	0,35 0,85	0,70 1,40	0,70 1,70	1,30 2,40	1,40 2,60	1,40 3	2,30 4	2,50 4,50
Ø A min. Ø A max.		20 50	25 50	30 70	30 70	30 90	50 100	50 100	70 130	70 130	70 130	50 150	100 150
Ø C min. Ø C max.		50 110	50 110	85 160	85 160	100 230	90 260	120 260	180 340	180 340	180 340	200 480	200 480
Ø D Ø H L		165 8 80	165 8 87	225 10 100	225 10 110	295 10 115	345 10 130	345 12 140	444 14 145	444 14 160	444 14 167	600 14 200	600 14 225
M P		10 22	10 22	10 25	10 25	10 30	15 35	15 35	20 40	20 40	20 40	20 60	20 60
Ø Y <sub>1</sub> Ø Y Ø Z 2x180°		- 60 M6	- 60 M6	- 80 M6	- 80 M6	110 110 M12	120 120 M12	120 120 M12	146 180 M12	152 180 M12	152 180 M12	186 210 M12	186 210 M16



Series 5.36

气动安全制动器  
PNEUMATIC SAFETY BRAKES

Series		5.36										
Size		05	10	25	30	74	75	76	77	78	79	
Dynamic brake torque (Nm)	Spring return pressure (bar)	4 3 1 friction disc 2	185 140 90	365 255 185	710 535 355	1310 945 640	1820 1310 910	2830 2000 1415	4240 2890 2120	5550 3890 2830	8080 5555 4040	11110 7780 5555
Md (Nm)	J Int. Weight	4 2 2 3 3 2	365 280 185 535 415 265	720 510 365 1110 780 555	1415 1055 675	2525 1890 1265	4040 2780 2020	5655 4445 2830	8080 5890 4240	12625 16160 10600	23230 11670 16160	22220 16670 10700
Max. Speed n min <sup>-1</sup>	2800	2240	1700	1450	1250	1120	1000	850	750	670		
Max. Stroke volume dm <sup>3</sup>	0,052	0,102	0,169	0,34	0,507	0,603	0,66	0,694	1,268	2,23		
J Int.	1 friction disc 2 friction discs 3 friction discs	0,004 0,008 0,009	0,01 0,021 0,022	0,031 0,061 0,07	0,069 0,134 0,165	0,146 0,285 0,317	0,216 0,43 0,553	0,451 0,819 1,04	1,090 1,849 2,400	1,364 2,706 4,143	2,615 5,207 6,531	
Weight	1 friction disc 2 friction discs 3 friction discs	6,3 9,2 10,1	10,3 15 16,5	19 27,5 30,5	30,5 43 49,5	42 60,5 67	56 85 94,5	114 146 165	114 168 201	161 233 277	226 329 386	
Ø A	195	235	300	360	405	455	505	590	670	740		
Ø B max	55	75	100	130	155	170	200	225	285	285		
Ø C	66	75	115	130	140	170	170	250	313	325		
Ø D	118	140	185	220	255	285	315	360	440	460		
Ø E	167	200	260	309	354	394	440	507	590	650		
Ø F	156	188	240	286	325	365	405	470	542	592		
Ø G	130	156	205	240	270	320	350	420	490	530		
H1	11,5	11,5	18	22,25	21,75	17,75	49	22	26,75	32		
H2	15,00	15,50	18,25	21,75	19,00	17,00	26,00	18,75	22,00	33,00		
H3	14,5	15	17	20,5	20	19	24,75	23,75	27,5	37,5		
J	4	5	7	10	10	12	15	18	20	20		
K	3,5	3,5	4	4,5	5,5	5,5	5,5	6	7	7,5		
L1	84,5	95	112	129,25	142,25	156,75	164,5	182,75	212,75	229		
L2	95,17	106,83	118,42	145,00	159,83	175,83	194	203,33	236,17	257,67		
L3	108,5	122	136	164	182,5	200	223,5	235	272,5	294		
M1	77,5	86,5	106	122,25	133,5	138,5	168,5	167,25	188	214,5		
M2	91,67	101,83	112,92	136,00	149,33	158,83	174,5	191,08	212,17	248,67		
M3	105	117	129	155	172	183	201,5	222,75	248,5	285		
N	4,5	5	4,5	5	7	8,5	2	9,25	3,5	13,5		
O (3x120°)	R 1/8"	R 1/4"	R 1/4"	R 1/2"	R 3/4"	R 1"	R 1"	R 1"	R 1"	R 1 1/4"		
R1	58	66	77	86,5	97,25	105,25	99	125,75	139,75	159,5		
R2	69,17	77,83	83,67	101,75	114,83	124,33	125,5	148,33	163,17	188,17		
R3	82,5	93	101	118,75	137,5	148,5	155	180	199,5	224,5		
S (Gap)	0,5	0,5	1	1,2	1,2	1,2	1,2	1,2	1,5	1,5		
TT	M6	M8	M10	M12	M14	M16	M16	M16	M20	M20		
T	M5	M6	M8	M10	M12	M12	M12	M14	M16	M16		
U	12,5	12,5	14	17,5	18,5	21	30	19,5	31,5	26,5		
V	6,5	7,5	10	12	12	15	15	18	20	20		
W1	32	35	45	52	57	56	82	70	80	90		
W2	46	50	58	65	72	76	88	97	104	124		
W3	59	65,5	75	84	95	100	115	128	140	160		
Ø X	185	223	284	340	385	430	480	562	637	708		
Ø Y	75	95	144	160	190	200	245	270	330	330		
Ø Z	114	132,5	180	207	232	270	287	360	430	462,5		



气 动 离 合 器 制 动 器



## 液压-气动式离合器制动器 5.W系列

这个系列的离合器制动器是气动式和液压冷冻式多盘离合器。

它把气动离合器制动器的接合与液压离合器制动器的冷冻能力接合起来。结果，我们获得了可以实现高接合频率的离合器制动器。

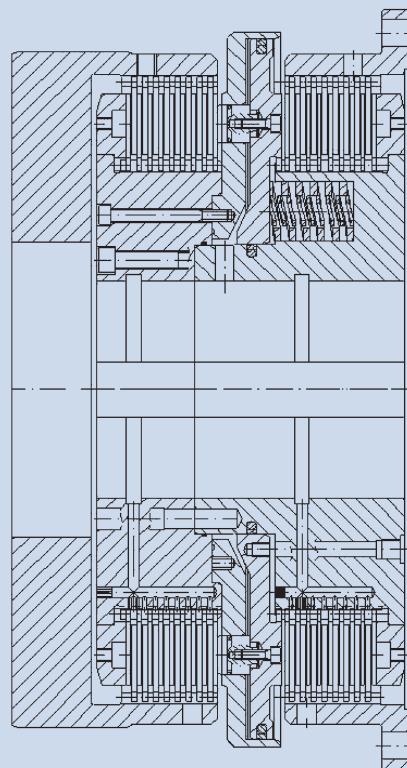
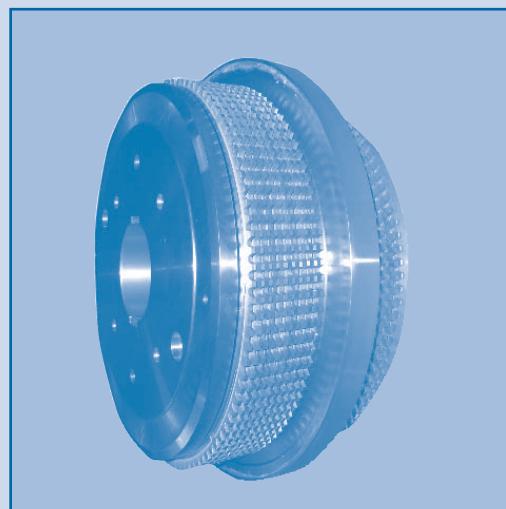
摩擦片冷冻可以投入油中（没有外部电路）或者采用强制冷冻或者外部电路，取决于此应用所需的耗能。

## WET CLUTCH-BRAKE SERIES 5.W

This series of clutch-brake is the version of the pneumatic actuated and hydraulically refrigerated multiplate clutch-brake.

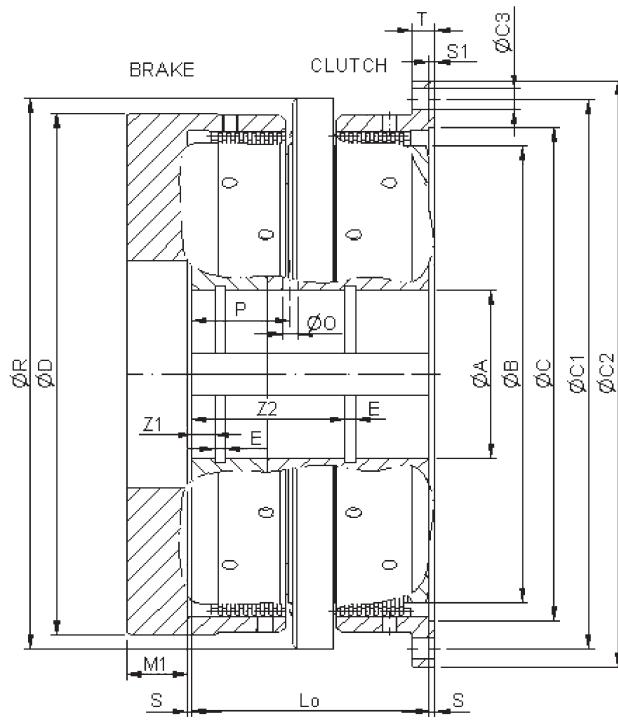
It combines the engagement of the pneumatic clutch-brake, with the refrigeration capacity of the hydraulic clutch-brakes. As a result, we obtain a clutch-brake with the possibility of a high frequency of engagements.

The disc refrigeration could be plunged in oil, (no external circuit) or with a forced refrigeration or external circuit, depending on the required disipation energy of the application.

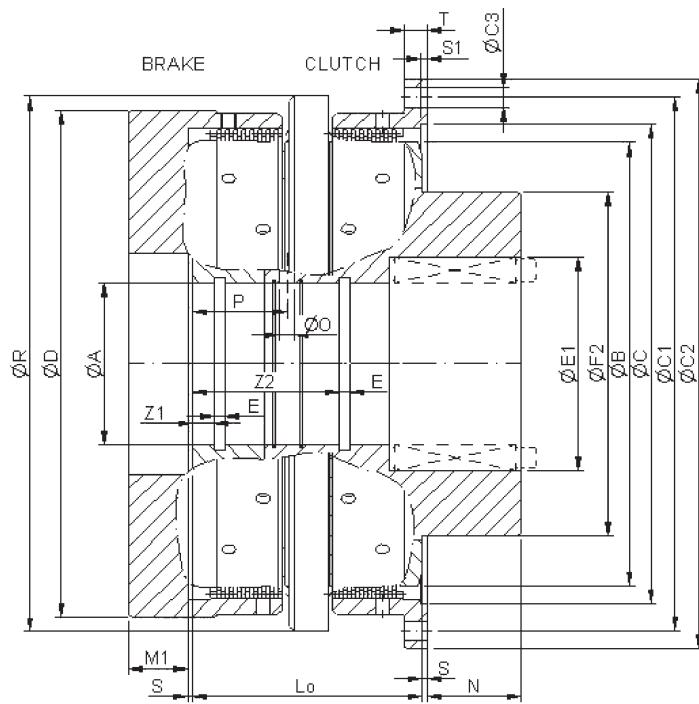




## Series 5.W1



## Series 5.W5





## Series 5.W1 / 5.W5

Series			5.W1	5.W5	5.W1	5.W5	5.W1	5.W5	5.W1	5.W5
Size			75	77	78	81	82			
DYNAMIC BRAKE TORQUE	Brake side discs= 5	Nm	1460	2700	5400	10800	20600			
	Brake side discs= 6		1760	3300	6500	13000	24700			
	Brake side discs= 7		2050	3800	7600	15200	28800			
	Brake side discs= 8		2350	4400	8700	17300	32900			
	Brake side discs= 9		2640	4900	9800	19500	37000			
	Brake side discs= 10		2930	5500	10900	21700	41200			
STATIC CLUTCH TORQUE	Clutch side discs= 5	Nm	3270	6300	10000	21300	45900			
	Clutch side discs= 6		3910	7600	12000	25500	54700			
	Clutch side discs= 7		4540	8800	13900	29600	63400			
	Clutch side discs= 8		5150	10000	15800	33600	72000			
	Clutch side discs= 9		5770	11300	17600	37700	80600			
	Clutch side discs= 10		6370	12500	19500	41600	89200			
Max speed		min <sup>-1</sup>	1300	1000	850	700	500			
Pressure		bar			5,5					
Weight (8+8 discs)		Kg	91	101	174	202	284	319	530	613
J.int	Total discs= 10	Kg m <sup>2</sup>	0,44	0,51	1,13	1,41	2,92	3,48	8,54	10,38
	Total discs= 20		0,57	0,64	1,47	1,75	3,75	4,31	10,87	12,71
Volum (8+8 discs)		dm <sup>3</sup>	0,25	0,47	0,77	1,38	2,77			
Ø A		min.	70	80	105	120	160			
		max.	95	115	150	180	250			
Ø B			260	320	390	490	630			
Ø C (H7)			277	350	415	530	670			
Ø C <sub>1</sub>			310	400	470	590	750			
Ø C <sub>2</sub> (g7)			330	425	500	630	800			
Ø C <sub>3</sub> (12X30°)			11	13,5	17,5	22	26			
Ø D			296	380	440	560	710			
E			8	12	12	12	15			
E <sub>1</sub> max			135	155	200	235	305			
F <sub>2</sub>			200	250	300	380	475			
L <sub>0</sub>	Total discs= 10		131	136	176	204	270			
	Total discs= 12		143	149	192	222	294			
	Total discs= 14		155	162	208	240	318			
	Total discs= 16		167	175	224	258	342			
	Total discs= 18		179	188	240	276	366			
	Total discs= 20		191	201	256	294	390			
M <sub>1</sub>			40	50	60	65	75			
N			70	108	116	132	174			
Ø O			8	10	13	16	20			
P	Brake side discs= 5		46	48,5	64	78	106			
	Brake side discs= 6		52	55	72	87	118			
	Brake side discs= 7		58	61,5	80	96	130			
	Brake side discs= 8		64	68	88	105	142			
	Brake side discs= 9		70	74,5	96	114	154			
	Brake side discs= 10		76	81	104	123	166			
R			311	388	468	592	755			
S			5	5	5	5	5			
S <sub>1</sub>			6	6	6	6	6			
T			12	16	20	25	30			
Z <sub>1</sub>			14	14,5	26,5	24	32			
Z <sub>2</sub>	Brake side discs= 5		91	96,5	129	141	186			
	Brake side discs= 6		97	103	137	150	198			
	Brake side discs= 7		103	109,5	145	159	210			
	Brake side discs= 8		109	116	153	168	222			
	Brake side discs= 9		115	122,5	161	177	234			
	Brake side discs= 10		121	129	169	186	246			

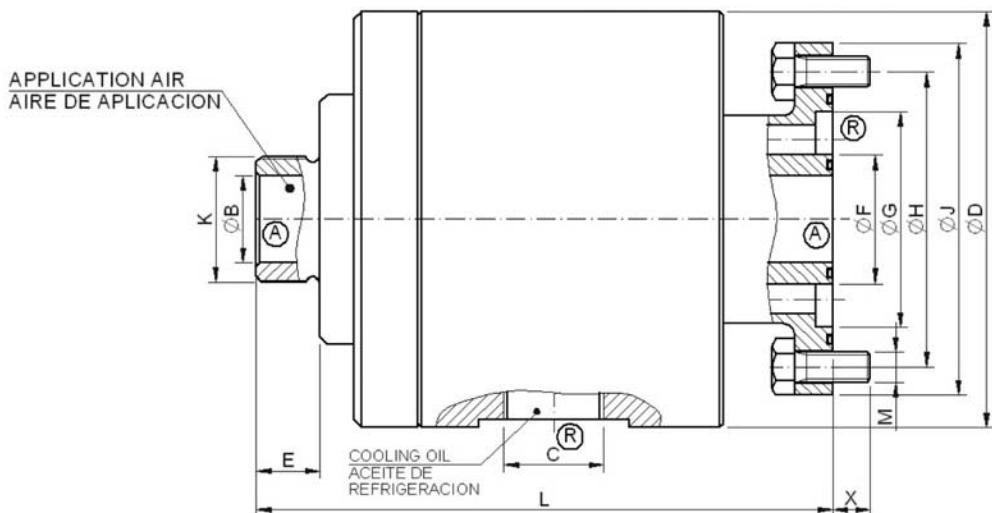
(\*) 选型计算时,需要考虑冷却系统的参数。

(\*) To calculate the application, cooling system should be taken in consideration.



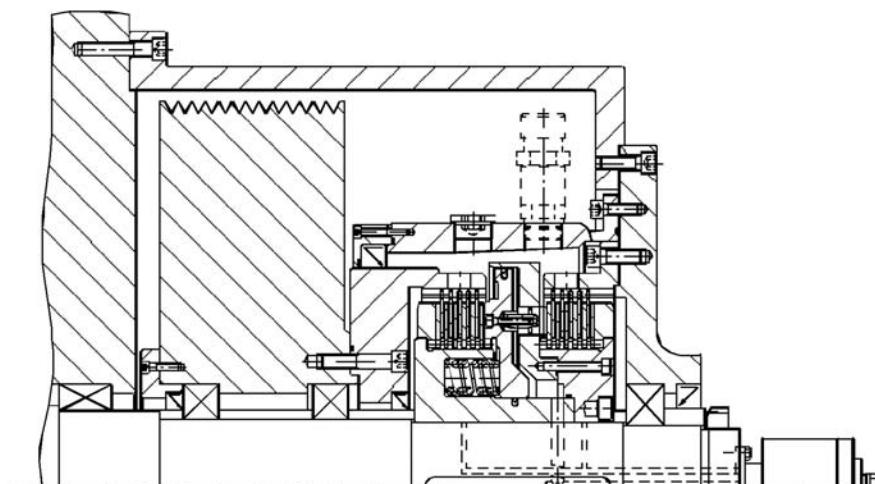
气动离合器制动器

## 旋转式进气口 / AIR ROTARY INLET



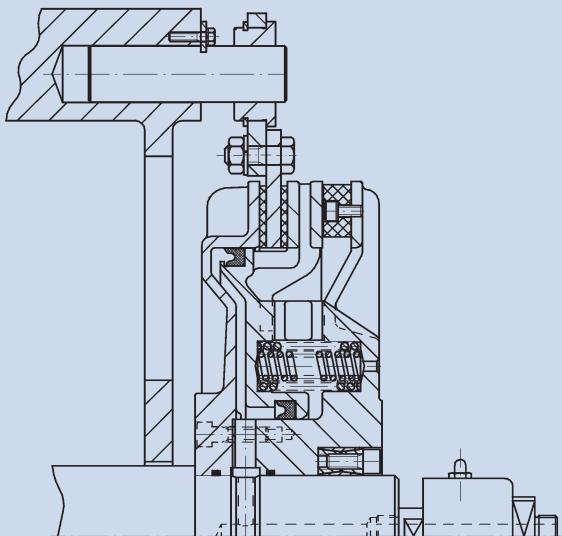
Series	7.07.12.908	7.07.03.912	7.07.04.909
Ø B	14	23	32
C	1/2" Gas	3/4" Gas	1" Gas
Ø D	90	110	136
E	15	17	22
Ø F	26	34	43
Ø G	44	57	72
Ø H	64	78	100
Ø J (g6)	75	93	118
K	3/4" Gas	1" Gas	1 1/2" Gas
L	140	153	184
M	M6 (4x90°)	M8 (4x90°)	M10 (4x90°)
X	10	10	16
For Sizes	75-77	78-81	82

## 装配实例 / ASSEMBLY EXAMPLES





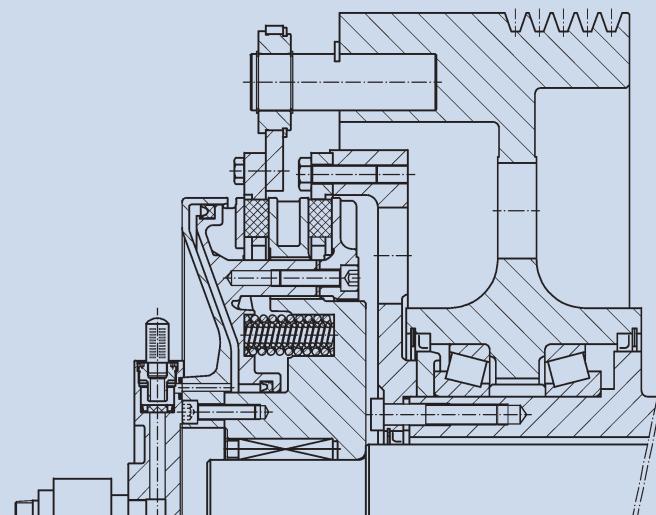
## 特殊离合器制动器装置



只带制动器的版本。这实际上是一个安全的气动式制动器。

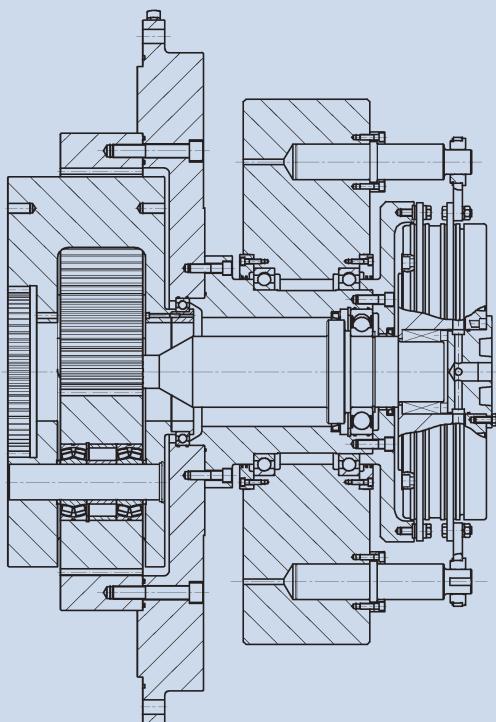
Only brake version. It is in fact a safety pneumatic brake.

## SPECIAL CLUTCH-BRAKE UNITS



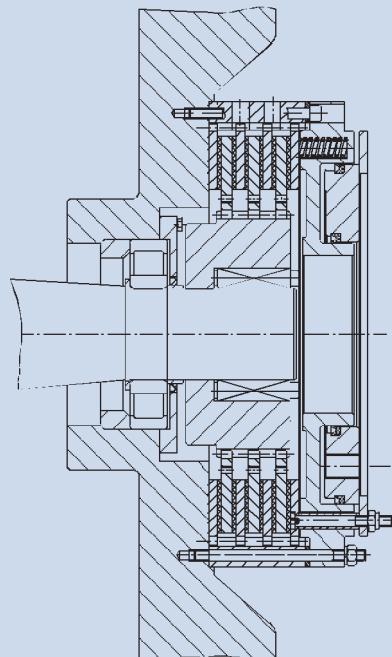
带有快速排气的离合器制动器装置。具有极快的制动响应时间

Clutch-brake unit with quick exhaust. To get very quick braking response time.



带有行星齿轮的离合器制

Pneumatically released spring applied brake.



气动式安全制动器。

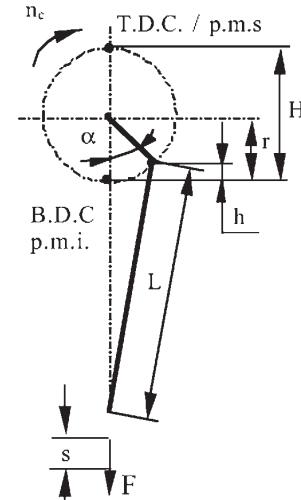
Hydro-pneumatic clutch-brake unit. Pneumatically actuated. Wet running.



## 选型表 / QUESTIONNAIRE FOR PRESSES

FAX N°. \_\_\_\_\_

<b>GOIZPER Koop.Elk.</b>	机械压力机CL-BR装置选择的数据表。 <i>Data form for mechanical presses CL-BR unit selection</i>	
客户 / CUSTOMER 负责人 / Responsible 电话 / Phone	部门: / Dpt. 传真 / Fax:	日期 / Date
压力机的特征: <i>Characteristics of the press:</i>	类型 / Type 1 工程运转 / Single Stroke <input type="checkbox"/>	モデル / Model 型号 / Continuous run <input type="checkbox"/>
CL-BR取付位置 <i>CL-BR mounting:</i>	装配: / End of the shaft 轴端框架和飞轮之间 / Between frame and flywheel <input type="checkbox"/>	<input type="checkbox"/>
所需CL-BR (离合器制动器) 的类型: <i>Type of CL-BR unit required:</i>	气动式 / Pneumatically actuated <input type="checkbox"/>	液压式 / Hydraulically actuated <input type="checkbox"/>
<b>压力机的技术数据</b> <b>TECHNICAL DATA OF THE PRESS</b>		
1. 压力机的最大压力 <i>Max force of the press.</i>	$F = \dots \text{ kN}$	
2. 曲轴半径 <i>Crankshaft radius</i>	$r = \dots \text{ mm}$	
3. 连杆长度 <i>Side rod length</i>	$L = \dots \text{ mm}$	
4. B.D.C.之前的操作角度 <i>Working angle before B.D.C.</i>	$\alpha = \dots ^\circ$	
或者有效工作长度 <i>Or effective working length</i>	$h = \dots \text{ mm}$	
或者工作长度 <i>Or working length</i>	$s = \dots \text{ mm}$	
5. 曲轴最大速度 <i>Crankshaft max speed</i>	$n_c = \dots \text{ min}^{-1}$	
6. CL-BR (离合器制动器) 最大速度 <i>CL-BR max speed</i>	$n_c = \dots \text{ min}^{-1}$	
7. 所有待制动质量的转动惯量折算到CL-BR (离合器制动器) 轴 (CL-BR惯量除外) <i>Moment of inertia of all the masses to be braked, reduced to the cl-br shaft (CL-BR inertia excluded)</i>	$J_m = \dots \text{ kg m}^2$	
8. 继电器和阀门的延时 <i>Delay of relay and valve</i>	$t_r = \dots \text{ sec}$	
9. 单冲程操作时, 最大速度时的每分钟接合次数. <i>Number of engagements per minute at max. speed, working at single stroke.</i>	$N = \dots \text{ min}^{-1}$	
制动值 <b>BRAKING VALUES</b>		
10. 曲轴中所需的最大总制动角度 (包括继电器和阀门的延时) <i>Max.tot braking angle req. in the crankshaft (delay of relay and valve incl.)</i>	$\alpha_{fe} = \dots ^\circ$	
11. 所需的最大总制动时间 (包括继电器和阀门的延时) <i>Max total braking time required (delay of relay and valve included)</i>	$t_f = \dots \text{ sec}$	

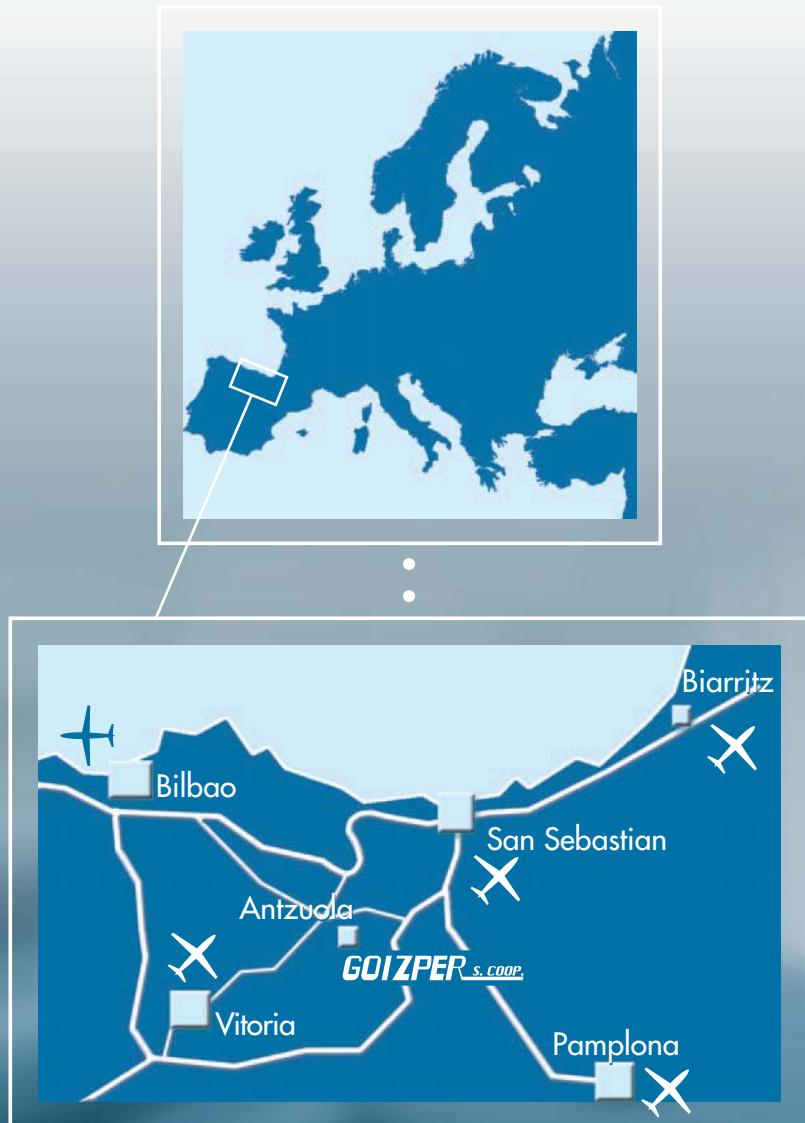




## 综合选型表 / QUESTIONNAIRE FOR APPLICATIONS IN GENERAL

FAX N°. \_\_\_\_\_

<b>GOIZPER Koop.Elk.</b>	<b>CL-BR 离合器制动器参数表</b> Data form for CL-BR unit selection
<p><b>客户 / CUSTOMER</b> _____  <b>电话 / Phone</b> _____ <b>传真 / Fax:</b> _____ <b>日期 / Date:</b> _____</p> <p><b>要求的CL-BR 类型 / Type of CL-BR unit required:</b>  <input checked="" type="checkbox"/> 气动 / Pneumatic: <input type="checkbox"/>  <input type="checkbox"/> 电磁 / Electromagnetic: <input type="checkbox"/> <b>液压 / Hydraulic:</b> <input type="checkbox"/> <b>机械 / Mechanic:</b> <input type="checkbox"/></p> <p><b>机器类型 / Machine Type:</b> _____  <b>动力装置 / Drive machine:</b> _____  <b>类型 / Type:</b>  <input type="checkbox"/> 电机 / Electric Motor: <input type="checkbox"/>  <input type="checkbox"/> 内燃机 / Combustion engine: <input type="checkbox"/>  <input type="checkbox"/> 液压马达 / Hydraulic motor: <input type="checkbox"/>  <input type="checkbox"/> 其他 / Other: _____</p> <p><b>功率 / Power:</b> <math>P =</math> _____ <b>Kw</b>  <b>速度 / Speed:</b> <math>n =</math> _____ <b>min<sup>-1</sup></b>  <b>折算到离合器制动器轴上 / Reduction to CL-BR:</b> _____</p> <p><b>安装 / Mounting:</b>  <b>转动轴 / Rotary axis:</b>  <input type="checkbox"/> <b>水平 / Horizontal:</b> <input type="checkbox"/> <b>垂直 / Vertical:</b> <input type="checkbox"/></p> <p><b>CL-BR 状态 / CL-BR situation:</b>  <input type="checkbox"/> <b>裸露安装 / Exposed:</b> <input type="checkbox"/> <b>在闭合的外壳里 / Closed housing:</b> <input type="checkbox"/>  <b>轴直径 / Shaft diameter:</b>  <b>驱动侧 / Driver side:</b> _____ <b>mm.</b>  <b>从动侧 / Driven side:</b> _____ <b>mm.</b></p> <p><b>离合器或制动器所要求的扭矩 / Required torque on clutches or brakes:</b>  <b>动态扭矩 / Engaging dynamic torque:</b> <math>M_s =</math> _____ <b>Nm</b>  <b>可传递的静态扭矩 / Transmissible static torque:</b> <math>M_t =</math> _____ <b>Nm</b>  <b>负荷扭矩值或者曲线 / Curve or value of load torque:</b> <math>M_L =</math> _____ <b>Nm</b></p> <p><b>初始从动速度 / Operating conditions:</b>  <input type="checkbox"/> <b>静止 / Stationary:</b> <input type="checkbox"/> <b>满载 / Full load:</b> <input type="checkbox"/> <b>空载 / Without load:</b> <input type="checkbox"/>  <b>驱动轴初速度 / Initial driver speed:</b> <math>n_{10} =</math> _____ <b>min<sup>-1</sup></b>  <b>从动轴初速度 / Initial driven speed:</b> <math>n_{20} =</math> _____ <b>min<sup>-1</sup></b>  <b>最大速度 / Max. Speed:</b> <math>n_{max} =</math> _____ <b>min<sup>-1</sup></b></p> <p><b>折算到离合器制动器上的转动惯量 / Moments of inertia reduced to CL-BR:</b>  <b>驱动侧 / Driver side:</b> <math>J_A =</math> _____ <b>kgm<sup>2</sup></b>  <b>从动侧 / Driven side:</b> <math>J_L =</math> _____ <b>kgm<sup>2</sup></b></p> <p><b>时间 / Times:</b>  <b>制动时间 / Braking time:</b> <math>t_3 =</math> _____ <b>s</b>  <b>离合时间 / Clutching time:</b> <math>t_3 =</math> _____ <b>s</b></p> <p><b>运行频率 / Operating frequency:</b> <math>N =</math> _____ <b>min<sup>-1</sup></b></p>	



**GOIZPER s. coop.**

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