

SERIE H-CRB

Cilindros Hidráulicos de Bloque Compactos
Compact Block Hydraulic Cylinders

Presión de trabajo 210 BAR
Working pressure



ESPERIA S.A.

HIDROSTOCK®

PRESENTACIÓN

ESPERIA, S.A. - HIDROSTOCK proyecta y construye cilindros hidráulicos desde el año 1.979 con una vocación de integración con nuestros clientes, que se convierten así en colaboradores. Nuestra actuación viene marcada por esa colaboración, estrecha, que da como resultado una implicación en sus proyectos ofreciéndoles sinergias y economías de escala que pueden incorporar a sus proyectos.

Otro de nuestros objetivos es el de la calidad, tanto del producto en sí, como del servicio que prestamos. Todo nuestro proceso productivo, así como las pruebas finales, van encaminados a ese objetivo. Como resultado se obtuvo en el año 1997 el certificado de aseguramiento de calidad renovándose en sucesivas etapas (actualmente **ISO 9001:2008**).

Actualmente seguimos preparando, codo a codo con nuestros clientes, nuevos productos para nuevas necesidades. Fruto de este trabajo es el presente catálogo, en el que hemos querido plasmar nuestra filosofía y objetivos en unos cilindros normalizados, ampliamente demandados y con unos niveles de calidad muy altos. Igualmente hemos querido facilitar la elección de la opción más adecuada para cada cliente, estando siempre a su lado en esa elección y recogiendo sus sugerencias para mejorar cada día más.

INTRODUCTION

ESPERIA, S.A. - HIDROSTOCK projects and builds hydraulic cylinders since 1979 with the objective of the integration with our customers, who convert themselves in collaborators. Our acts come due to this collaboration, narrow, witch gives as a result an implication in their projects, offering better conditions and scale economies that can incorporate to their projects.

Another of our objectives is the quality, as the quality of the products than the service we offer. All our productive process and the final test follow this objective. As a result **ESPERIA S.A.** obtained in 1997 the quality certificate, witch we have renewed in successive steps (**ISO 9001:2008**).

Nowadays we continue preparing, always hand by hand with our customers, new products for the new necessities. That is the reason of this new catalogue, in witch we want to introduce our philosophy and objectives in these normalized cylinders, with an important demand and high quality level. Also we want to make easier the most adequate choice for each customer, being always close to them in this choice and having in mind their suggestions to improve everyday.



ÍNDICE *INDEX*

| | Pág. |
|--------------------------------------------------------------------------------------|------|
| - Presentación/ <i>Introduction</i> | 3 |
| - Índice / <i>Index</i> | 4 |
| - Características y Observaciones/ <i>Specifications and Remarks</i> | 5 |
| - Código de pedido/ <i>Ordering code</i> | 6 |
| - Despiece/ <i>Spare part list</i> | 6 |
| - Resumen de tipos de sujeción/ <i>Resume Fastening Type</i> | 7 |
| - Extremo Vástago/ <i>Stem End</i> | 8 |
| - Cil. Hid. Inductivo H-CRB-I/ <i>Cylinder Hydraulic Inductive H-CRB-I</i> | 9 |
| - Cilindro Hidráulico H-CRB Modelo A/ <i>Cylinder Hydraulic H-CRB Model A</i> | 10 |
| - Cilindro Hidráulico H-CRB Modelo AR/ <i>Cylinder Hydraulic H-CRB Model AR</i> ... | 11 |
| - Cilindro Hidráulico H-CRB Modelo B/ <i>Cylinder Hydraulic H-CRB Model B</i> | 12 |
| - Cilindro Hidráulico H-CRB Modelo BR/ <i>Cylinder Hydraulic H-CRB Model BR</i> | 13 |
| - Cilindro Hidráulico H-CRB Modelo C/ <i>Cylinder Hydraulic H-CRB Model C</i> | 14 |
| - Cilindro Hidráulico H-CRB Modelo CR/ <i>Cylinder Hydraulic H-CRB Model CR</i> ... | 15 |
| - Cilindro Hidráulico H-CRB Modelo D/ <i>Cylinder Hydraulic H-CRB Model D</i> | 16 |
| - Cilindro Hidráulico H-CRB Modelo DR/ <i>Cylinder Hydraulic H-CRB Model DR</i> | 17 |

**CARACTERÍSTICAS Y DIÁMETROS
SPECIFICATIONS AND PITCH DIAMETERS**

| | | | | | | | | | |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|-----|
| Camisa Sleeve | Acero calidad ST-52 con lapeado interior H-8 (DIN 2391) Steel, ST-52 quality, with inner lapping tube, H-8 (DIN 2391) | | | | | | | | |
| Vástago Stem | Acero cromado espesor 0,025 mm. f7 0,025 mm thickness, chromium plated steel, f7 | | | | | | | | |
| Velocidad Speed | Máxima 5 m/minuto Maximum 5 m/minute | | | | | | | | |
| Temperatura Temperature | de -20°C a +80°C Junta N · Hasta +160°C Junta V -20°C to +80°C N Joint · Until +160°C V Joint | | | | | | | | |
| Presión Pressure | Mínima de trabajo: 15 bar / Máxima de trabajo 210 bar Minimum working pressure: 15 bar / Maximum working pressure 210 bar | | | | | | | | |
| Presión de Prueba Test Pressure | 250 bar 250 bar | | | | | | | | |
| DIÁMETROS DIAMETERS | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
| VÁSTAGO STEM | 10 | 12 | 16 | 20 | 25 | 32 | 40 | 50 | 60 |
| Carrera Stroke | Sobre pedido On request | | | | | | | | |

**FUERZAS TEÓRICAS DE CILINDROS. PRESIÓN-BAR
THEORETICAL CYLINDER FORCES. PRESSURE-BARS**

| Ø | ØEje MM ØStem MM | Sección CrossSection (cm ²) | Sección Diferencial Differential CrossSection (cm ²) | 90bar | | 120bar | | 160bar | | 200bar | |
|-----|---------------------|-----------------------------------------------|---------------------------------------------------------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|
| | | | | EMPUJE PUSH | TRACCIÓN PULL | EMPUJE PUSH | TRACCIÓN PULL | EMPUJE PUSH | TRACCIÓN PULL | EMPUJE PUSH | TRACCIÓN PULL |
| 16 | 10 | 2,01 | 1,23 | 163 | 99 | 217 | 132 | 290 | 176 | 362 | 221 |
| 20 | 12 | 3,14 | 2,01 | 254 | 163 | 339 | 217 | 452 | 290 | 565 | 362 |
| 25 | 16 | 4,91 | 2,90 | 398 | 235 | 530 | 313 | 707 | 417 | 884 | 522 |
| 32 | 20 | 8,04 | 4,90 | 651 | 397 | 869 | 529 | 1.158 | 706 | 1.448 | 882 |
| 40 | 25 | 12,57 | 7,66 | 1.018 | 620 | 1.357 | 827 | 1.810 | 1.103 | 2.262 | 1.378 |
| 50 | 32 | 19,64 | 11,59 | 1.590 | 939 | 2.121 | 1.252 | 2.827 | 1.669 | 3.534 | 2.087 |
| 63 | 40 | 31,17 | 18,61 | 2.525 | 1.507 | 3.367 | 2.009 | 4.489 | 2.679 | 5.611 | 3.349 |
| 80 | 50 | 50,27 | 30,63 | 4.072 | 2.481 | 5.429 | 3.308 | 7.238 | 4.411 | 9.048 | 5.514 |
| 100 | 60 | 78,54 | 50,27 | 6.362 | 4.072 | 8.482 | 5.429 | 11.310 | 7.238 | 14.137 | 9.048 |

OBSERVACIONES

REMARKS

-Las juntas de los cilindros están diseñadas para presiones normales de trabajo (>15 BAR) y aceite hidráulico. Para presiones inferiores u otro tipo de fluidos, por favor, consulte nuestro departamento técnico.

-The cylinder seals are designed for normal working pressures (>15 BAR) and hydraulic oil.

For smaller pressures or other kind of fluids, please consult our technical department.

-Es aconsejable, cuando sea posible, añadir a la carrera algunos milímetros respecto al necesario para evitar que se utilice el émbolo como final de carrera.

-Whenever possible, it is recommended to add some mm to the stroke with respect to that necessary to prevent the cylinder head to be used as stop for the end of stroke.

-Utilizar racor cónico si las utilizaciones son roscadas.

-Use a conical connection if the applications are threaded.

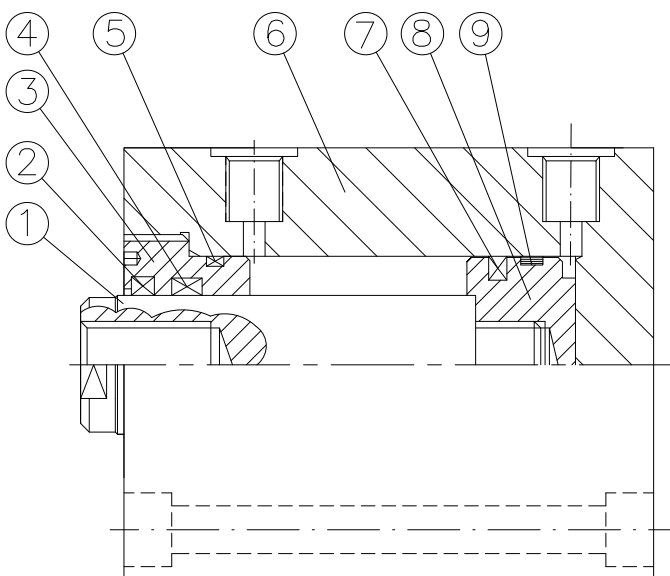
CÓDIGO DE PEDIDO - ORDERING CODE

| H-CRB- | | | | | | |
|----------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| | ØPISTÓN PISTON Ø | MODELO MODEL | VÁSTAGO STEM | TIPO JUNTAS JOINT TYPE | CARRERA STROKE | OPCIONES OPTIONS |
| N | Normal Normal | A Modelo A Model A AR Modelo AR Model AR B Modelo B Model B BR Modelo BR Model BR C Modelo C Model C CR Modelo CR Model CR D Modelo D Model D DR Modelo DR Model DR | 1 Rosca Macho Male Terminal 2 Rosca Hembra Female Thread 3 Cabeza Martillo Hammer Head | N Standard (-20°C - 80°C) Standard (-20°C - 80°C) V Vitón (Hasta 160°C) Viton (Until 160° C) A Agua-Glicol Glicol Water | AD Amortiguación DELANTERA FIJA FIX FRONT Cushioning AT Amortiguación TRASERA FIJA FIX REAR Cushioning | Para amortiguación consultar medidas For cushioning consult the dimensions |
| M | Magnético Magnetic | | | | | |
| I | Inductivo Inductive | | | | | |
| S | Especial Special | | | | | |

Ejemplo - Example:

H-CRB-N 63 AR 2 N 50 AD AT

DESPIECE - SPARE PART LIST



| N° No. | Denominación Name | Material Material |
|--------|----------------------------|---------------------------------------------------------------|
| 1 | Vástago Stem | Acero Cromado Chromium Plated Steel |
| 2 | Rascador Scraper | Goma nitrílica Nitrile Rubber |
| 3 | Casquillo Guía Jig Bushing | Hierro fundido Cast Iron |
| 4 | Junta Vástago Stem Joint | Poliuretano Polyurethane |
| 5 | Junta tórica OR O-ring | Goma nitrílica Nitrile Rubber |
| 6 | Cuerpo Body | ST-52 DIN 2448/1629 |
| 7 | Junta Pistón Piston Joint | Acrilnitrilo butadileno+PTFE Acrylonitrile butadylene+PTFE |
| 8 | Pistón Piston | Acero (F-114) Steel (F-114) |
| 9 | Cinta guía Guide Belt | PTFE + BRONCE PTFE + BRONZE |

RESUMEN DE TIPOS DE SUJECIÓN - RESUME FASTENING TYPE

ver página 10
see page 10



ver página 11
see page 11



AR

ver página 12
see page 12



ver página 13
see page 13



BR

ver página 14
see page 14



ver página 15
see page 15



CR

ver página 16
see page 16



ver página 17
see page 17



DR

INDUCTIVO/INDUCTIVE

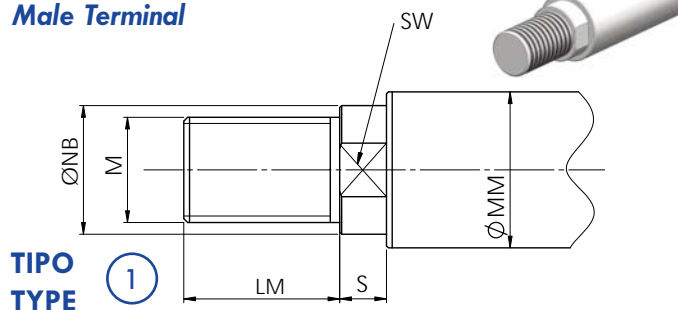
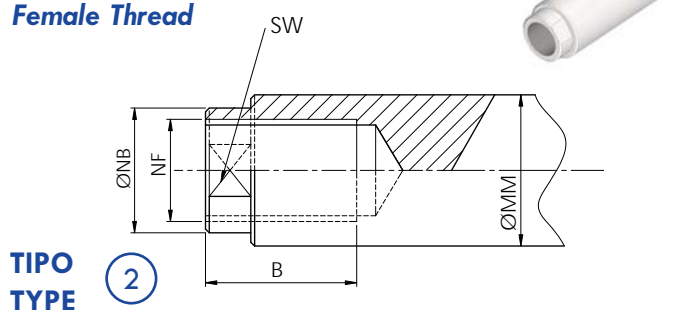
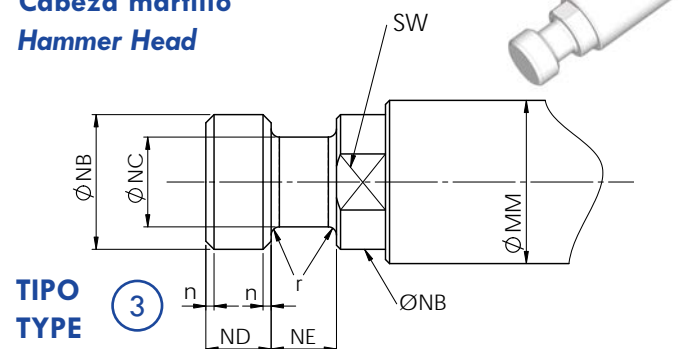
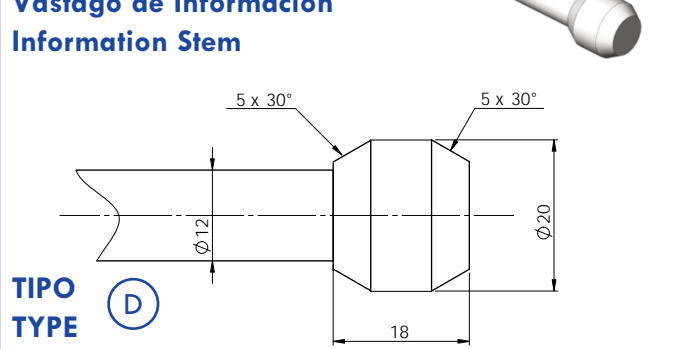
ver página 9
see page 9



Posibilidad de Magnético e Inductivo en todos los modelos, consultar nuestro Departamento Técnico.
Possibility of Magnetic and Inductive in all models, consult our Technical Department.

Para cilindros con diseño y aplicaciones especiales, consultar con nuestro departamento técnico
For cylinders with design and special applications, consult our technical department.

EXTREMO VÁSTAGO - STEM END

**Rosca Macho
Male Terminal**

**Rosca Hembra
Female Thread**

**Cabeza martillo
Hammer Head**

**Vástago de Información
Information Stem**


| Dimensiones Dimensions | Ø MM | B | LM | M | ØNB | ØNC | ND h13 | NE H11 | n | r | NF | S | SW |
|---------------------------|------|----|----|---------|-----|-----|-----------|-----------|-----|---|----------|----|----|
| 16 | 10 | 18 | 16 | M8x1,25 | 8 | 5 | 4 | 4 | 0,5 | 1 | M6x1 | 6 | 8 |
| 20 | 12 | 19 | 18 | M10x1,5 | 12 | 6 | 6 | 6 | 0,5 | 1 | M8x1,25 | 5 | 10 |
| 25 | 16 | 25 | 18 | M14x1,5 | 14 | 8 | 6 | 6 | 0,5 | 1 | M10x1,5 | 8 | 13 |
| 32 | 20 | 28 | 22 | M16x1,5 | 18 | 10 | 8 | 8 | 1 | 1 | M12x1,75 | 10 | 17 |
| 40 | 25 | 35 | 28 | M20x1,5 | 23 | 13 | 10 | 10 | 1 | 1 | M16x2 | 11 | 21 |
| 50 | 32 | 30 | 36 | M27x2 | 31 | 16 | 13 | 13 | 1 | 1 | M20x2,5 | 8 | 28 |
| 63 | 40 | 40 | 40 | M33x2 | 39 | 22 | 16 | 16 | 2 | 2 | M27x3 | 12 | 34 |
| 80 | 50 | 40 | 50 | M42x2 | * | 30 | 20 | 20 | 2 | 2 | M30x3,5 | 12 | 44 |
| 100 | 60 | 60 | 60 | M52x2 | * | 36 | 30 | 30 | 2 | 2 | M42x4,5 | 12 | 50 |

Vástagos opcionales:

F-115 (Templado y cromado) - **CONSULTAR**
 F-125 (Bonificado y cromado) - **CONSULTAR**
 Inox. AISI 304 Cromado- **CONSULTAR**

Stem Possibilities:

F-115 (Templado and chromed) - **CONSULT**
 F-125 (Bonificated and chromed) - **CONSULT**
 Stainless AISI 304 Chromed Steel - **CONSULT**

* **Consultar** / ***Consult**

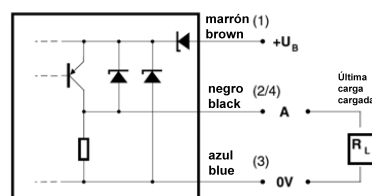


H-CRB-I

CILINDRO INDUCTIVO INDUCTIVE CYLINDER

Diagrama eléctrico / Electric drawing

PNP

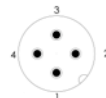


2 N.C./4 N.O.



S12

PIN



Vista desde el dispositivo
View onto device

DATOS TÉCNICOS TECHNICAL DATA

| | |
|-------------------------------------------------------|-----------------------|
| Presión de Operación Operating Pressure | 500 bar máx |
| Distancia de trabajo Rated Operating Distance | 1,5 mm |
| Histéresis Hysteresis | 10% |
| Rango tensión de trabajo Supply voltage range | 10-30 VDC |
| Intensidad de salida Output Current | <200 mA |
| Frecuencia de Conmutación Switching frequency | <600 Hz |
| Rango de Temperatura Temperature Range | -25° C +80° C |
| Grado de Protección Protection class | IP 68 |
| Protección cortocircuitos Short-circuit protection | Integrada Built-in |

| Ø | Ø Vast. Ø Stem | A | B | C | ØD | E | F | G | L | NF | T | SW | Y |
|-----|-------------------|-----|----|----|--------|-----|-----|----|---|-----|--------|----|----|
| 16 | 10 | 60 | 12 | 18 | 4x6,5 | 44 | 45° | 18 | * | M6 | 1/4" G | 8 | 6 |
| 20 | 12 | 60 | 12 | 18 | 4x6,5 | 46 | 45° | 20 | * | M8 | 1/4" G | 10 | 7 |
| 25 | 16 | 65 | 15 | 18 | 6x6,5 | 50 | 30° | 20 | * | M10 | 1/4" G | 13 | 7 |
| 32 | 20 | 75 | 15 | 19 | 6x9 | 58 | 30° | 24 | * | M12 | 1/4" G | 17 | 10 |
| 40 | 25 | 90 | 25 | 19 | 6x11 | 70 | 30° | 25 | * | M16 | 1/4" G | 21 | 10 |
| 50 | 32 | 100 | 30 | 19 | 6x11 | 80 | 30° | 30 | * | M20 | 1/4" G | 26 | 10 |
| 63 | 40 | 125 | 40 | 23 | 6x13,5 | 100 | 30° | 33 | * | M27 | 1/2" G | 32 | 14 |
| 80 | 50 | 160 | 40 | 25 | 6x17 | 130 | 30° | 41 | * | M30 | 1/2" G | 41 | 14 |
| 100 | 60 | 200 | 60 | 28 | 6x21 | 160 | 30° | 44 | * | M42 | 1/2" G | - | 15 |

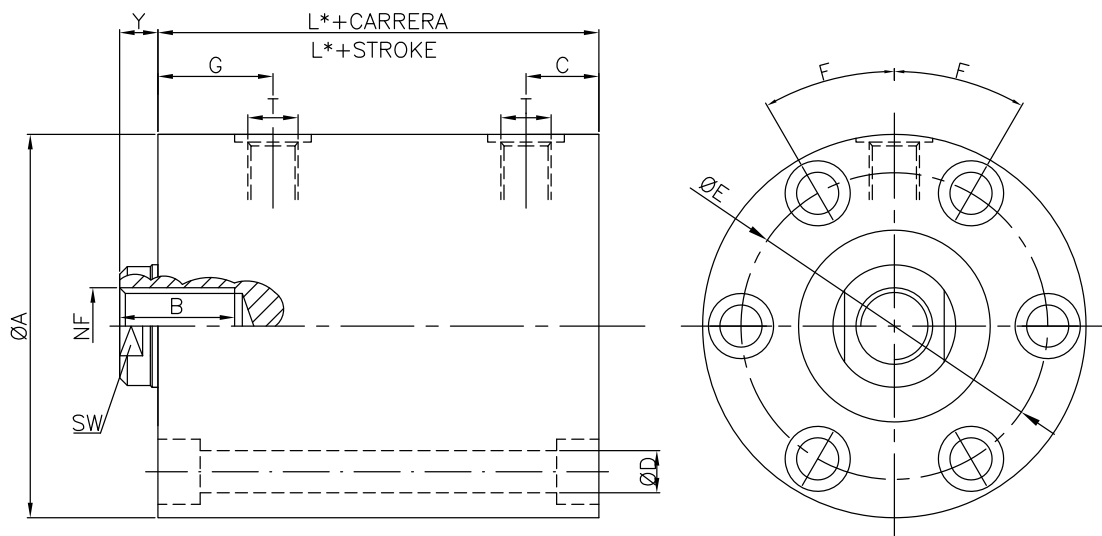
Carrera mínima
Minimum Stroke

*Cota L especial

*Cota L special

CONSULTAR CON EL DEPARTAMENTO TÉCNICO
ASK TO THE TECHNICAL DEPARTMENT

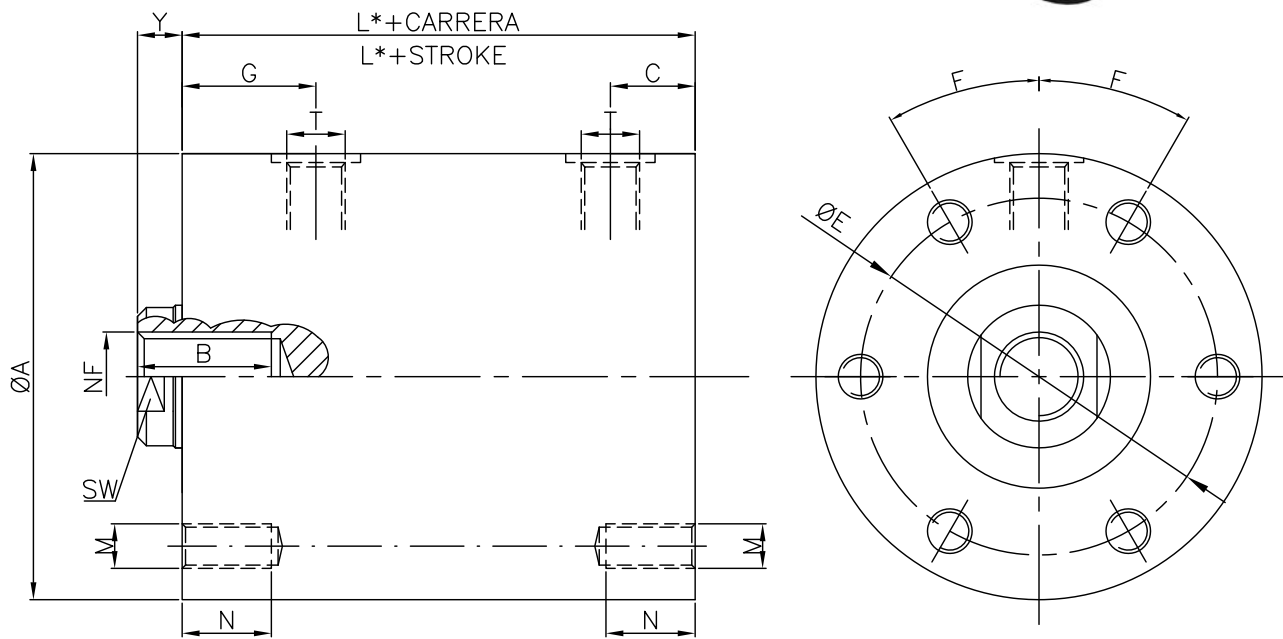
MODELO A / MODEL A



| Ø | Ø Vast. Ø Stem | A | B | C | ØD | E | F | G | L* | NF | T | SW | Y |
|-----|-------------------|-----|----|----|--------|-----|-----|----|-----|-----|--------|----|----|
| 16 | 10 | 60 | 12 | 18 | 4x6,5 | 44 | 45° | 18 | 50 | M6 | 1/4" G | 8 | 6 |
| 20 | 12 | 60 | 12 | 18 | 4x6,5 | 46 | 45° | 20 | 52 | M8 | 1/4" G | 10 | 7 |
| 25 | 16 | 65 | 15 | 18 | 6x6,5 | 50 | 30° | 20 | 54 | M10 | 1/4" G | 13 | 7 |
| 32 | 20 | 75 | 15 | 19 | 6x9 | 58 | 30° | 24 | 58 | M12 | 1/4" G | 17 | 10 |
| 40 | 25 | 90 | 25 | 19 | 6x11 | 70 | 30° | 25 | 62 | M16 | 1/4" G | 21 | 10 |
| 50 | 32 | 100 | 30 | 19 | 6x11 | 80 | 30° | 30 | 72 | M20 | 1/4" G | 26 | 10 |
| 63 | 40 | 125 | 40 | 23 | 6x13,5 | 100 | 30° | 33 | 83 | M27 | 1/2" G | 32 | 14 |
| 80 | 50 | 160 | 40 | 25 | 6x17 | 130 | 30° | 41 | 95 | M30 | 1/2" G | 41 | 14 |
| 100 | 60 | 200 | 60 | 28 | 6x21 | 160 | 30° | 44 | 100 | M42 | 1/2" G | - | 15 |

* Para carreras superiores a 150 mm, la longitud del cilindro aumentará en 50mm..
* For longer strokes that 150 mm, the length of cylinder was incremented in 50 mm.

MODELO AR / MODEL AR

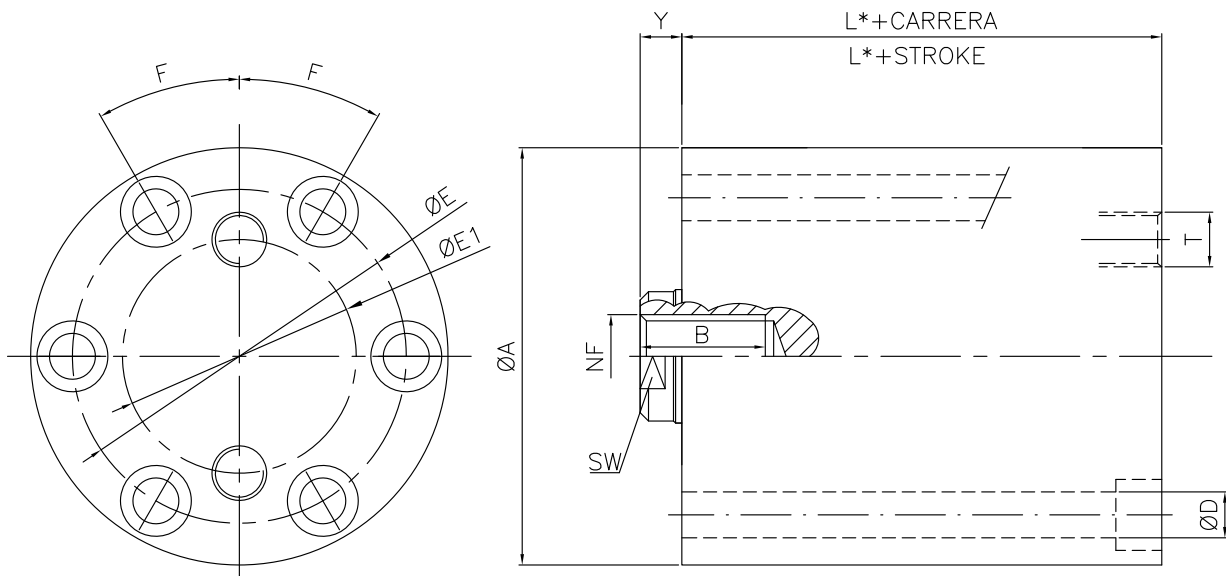
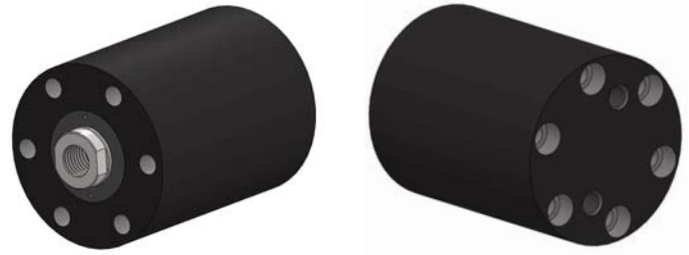


| Ø | Ø Vast. Ø Stem | A | B | C | E | F | G | L* | M | N | NF | T | SW | Y |
|-----|----------------|-----|----|----|-----|-----|----|-----|-------|----|-----|--------|----|----|
| 16 | 10 | 60 | 12 | 18 | 44 | 45° | 18 | 50 | 4xM6 | 15 | M6 | 1/4" G | 8 | 6 |
| 20 | 12 | 60 | 12 | 18 | 46 | 45° | 20 | 52 | 4xM6 | 15 | M8 | 1/4" G | 10 | 7 |
| 25 | 16 | 65 | 15 | 18 | 50 | 30° | 20 | 54 | 4xM6 | 15 | M10 | 1/4" G | 13 | 7 |
| 32 | 20 | 75 | 15 | 19 | 58 | 30° | 24 | 58 | 6xM8 | 18 | M12 | 1/4" G | 17 | 10 |
| 40 | 25 | 90 | 25 | 19 | 70 | 30° | 25 | 62 | 6xM10 | 18 | M16 | 1/4" G | 21 | 10 |
| 50 | 32 | 100 | 30 | 19 | 80 | 30° | 30 | 72 | 6xM10 | 20 | M20 | 1/4" G | 26 | 10 |
| 63 | 40 | 125 | 40 | 23 | 100 | 30° | 33 | 83 | 6xM12 | 20 | M27 | 1/2" G | 32 | 14 |
| 80 | 50 | 160 | 40 | 25 | 130 | 30° | 41 | 95 | 6xM16 | 25 | M30 | 1/2" G | 41 | 14 |
| 100 | 60 | 200 | 60 | 28 | 160 | 30° | 44 | 100 | 6xM20 | 30 | M42 | 1/2" G | - | 15 |

* Para carreras superiores a 150 mm, la longitud del cilindro aumentará en 50mm.

* For longer strokes that 150 mm, the lenght of cylinder was incremented in 50 mm.

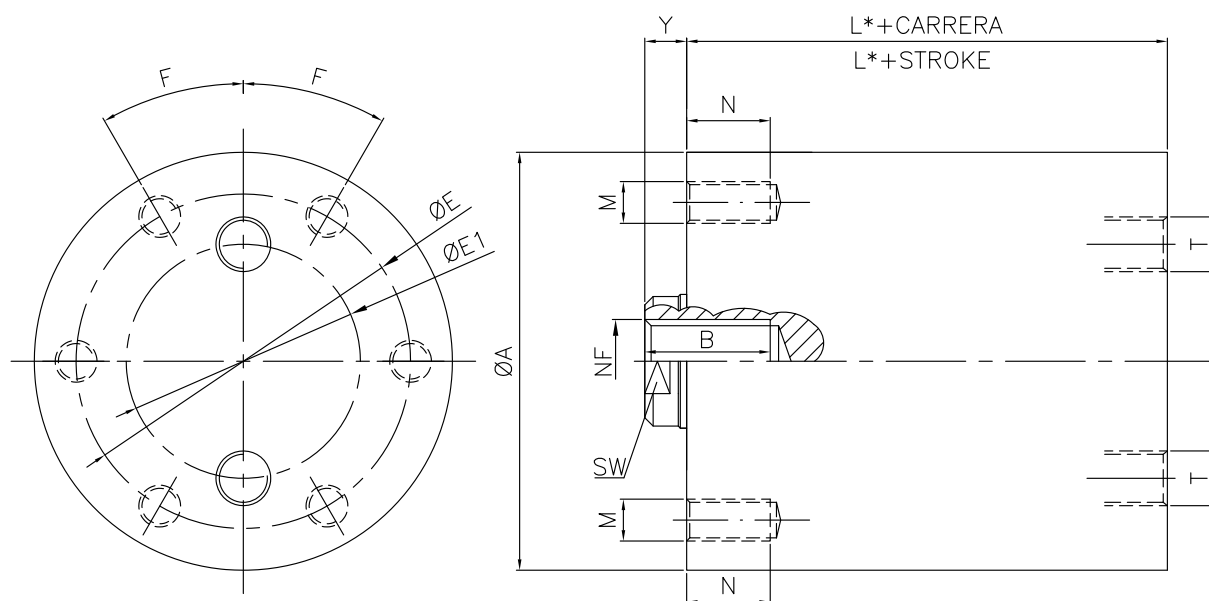
MODELO B / MODEL B



| Ø | Ø Vast. Ø Stem | A | B | ØD | E | E1 | F | L* | NF | T | SW | Y |
|-----|-------------------|-----|----|--------|-----|-----|-----|-----|-----|--------|----|----|
| 16 | 10 | 60 | 12 | 4x6,5 | 44 | 28 | 45° | 50 | M6 | 1/4" G | 8 | 6 |
| 20 | 12 | 60 | 12 | 4x6,5 | 46 | 32 | 45° | 52 | M8 | 1/4" G | 10 | 7 |
| 25 | 16 | 65 | 15 | 6x6,5 | 50 | 26 | 30° | 54 | M10 | 1/4" G | 13 | 7 |
| 32 | 20 | 75 | 15 | 6x9 | 58 | 36 | 30° | 58 | M12 | 1/4" G | 17 | 10 |
| 40 | 25 | 90 | 25 | 6x11 | 70 | 44 | 30° | 62 | M16 | 1/4" G | 21 | 10 |
| 50 | 32 | 100 | 30 | 6x11 | 80 | 56 | 30° | 72 | M20 | 1/4" G | 26 | 10 |
| 63 | 40 | 125 | 40 | 6x13,5 | 100 | 68 | 30° | 83 | M27 | 1/2" G | 32 | 14 |
| 80 | 50 | 160 | 40 | 6x17 | 130 | 98 | 30° | 95 | M30 | 1/2" G | 41 | 14 |
| 100 | 60 | 200 | 60 | 6x21 | 160 | 110 | 30° | 100 | M42 | 1/2" G | - | 15 |

* Para carreras superiores a 150 mm, la longitud del cilindro aumentará en 50mm.
 * For longer strokes that 150 mm, the length of cylinder was incremented in 50 mm.

MODELO BR / MODEL BR



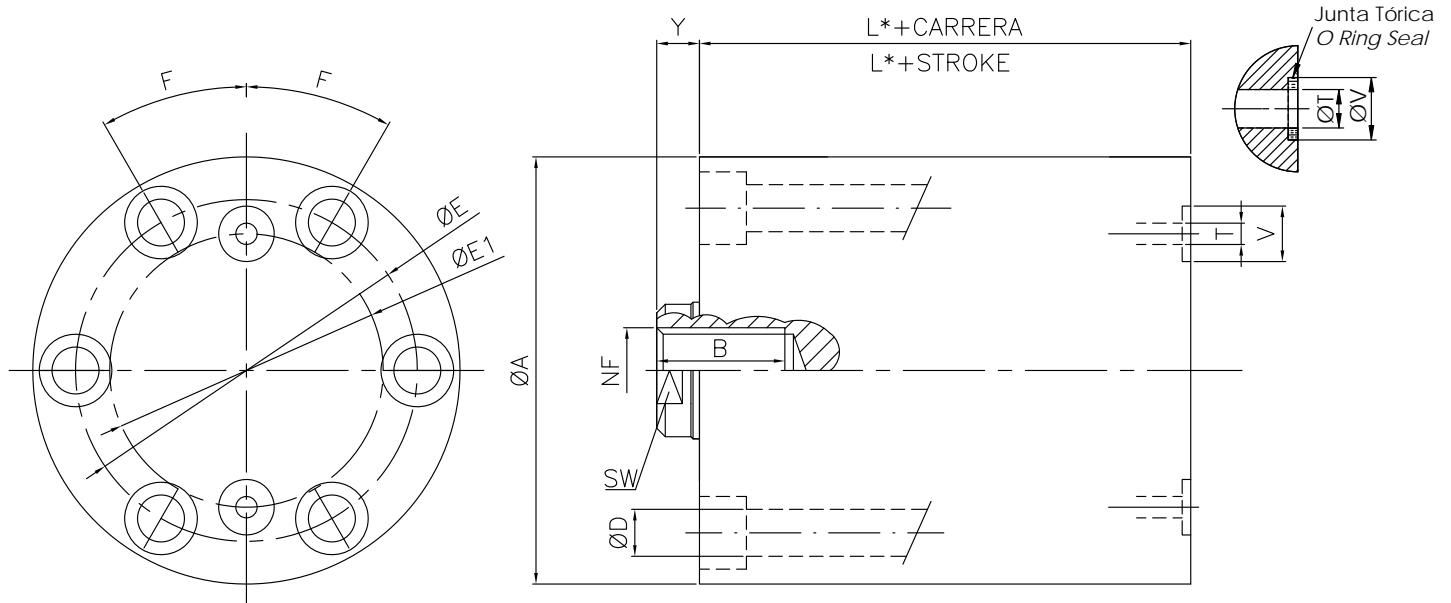
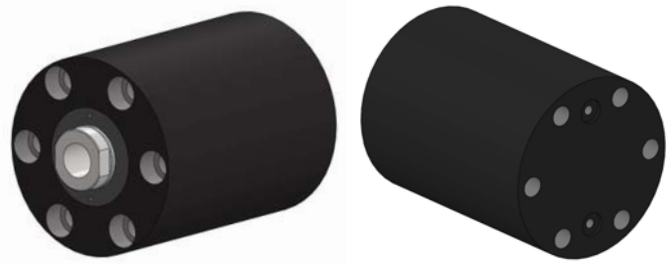
| Ø | Ø Vast. Ø Stem | A | B | E | E1 | F | L* | M | N | NF | T | SW | Y |
|-----|-------------------|-----|----|-----|-----|-----|-----|-------|----|-----|--------|----|----|
| 16 | 10 | 60 | 12 | 44 | 28 | 45° | 50 | 4xM6 | 15 | M6 | 1/4" G | 8 | 6 |
| 20 | 12 | 60 | 12 | 46 | 32 | 45° | 52 | 4xM6 | 15 | M8 | 1/4" G | 10 | 7 |
| 25 | 16 | 65 | 15 | 50 | 26 | 30° | 54 | 6xM6 | 15 | M10 | 1/4" G | 13 | 7 |
| 32 | 20 | 75 | 15 | 58 | 36 | 30° | 58 | 6xM8 | 18 | M12 | 1/4" G | 17 | 10 |
| 40 | 25 | 90 | 25 | 70 | 44 | 30° | 62 | 6xM10 | 18 | M16 | 1/4" G | 21 | 10 |
| 50 | 32 | 100 | 30 | 80 | 56 | 30° | 72 | 6xM10 | 20 | M20 | 1/4" G | 26 | 10 |
| 63 | 40 | 125 | 40 | 100 | 68 | 30° | 83 | 6xM12 | 20 | M27 | 1/2" G | 32 | 14 |
| 80 | 50 | 160 | 40 | 130 | 98 | 30° | 95 | 6xM16 | 25 | M30 | 1/2" G | 41 | 14 |
| 100 | 60 | 200 | 60 | 160 | 110 | 30° | 100 | 6xM20 | 30 | M42 | 1/2" G | - | 15 |

* Para carreras superiores a 150 mm, la longitud del cilindro aumentará en 50mm.

* For longer strokes that 150 mm, the length of cylinder was incremented in 50 mm.

MODELO C / MODEL C

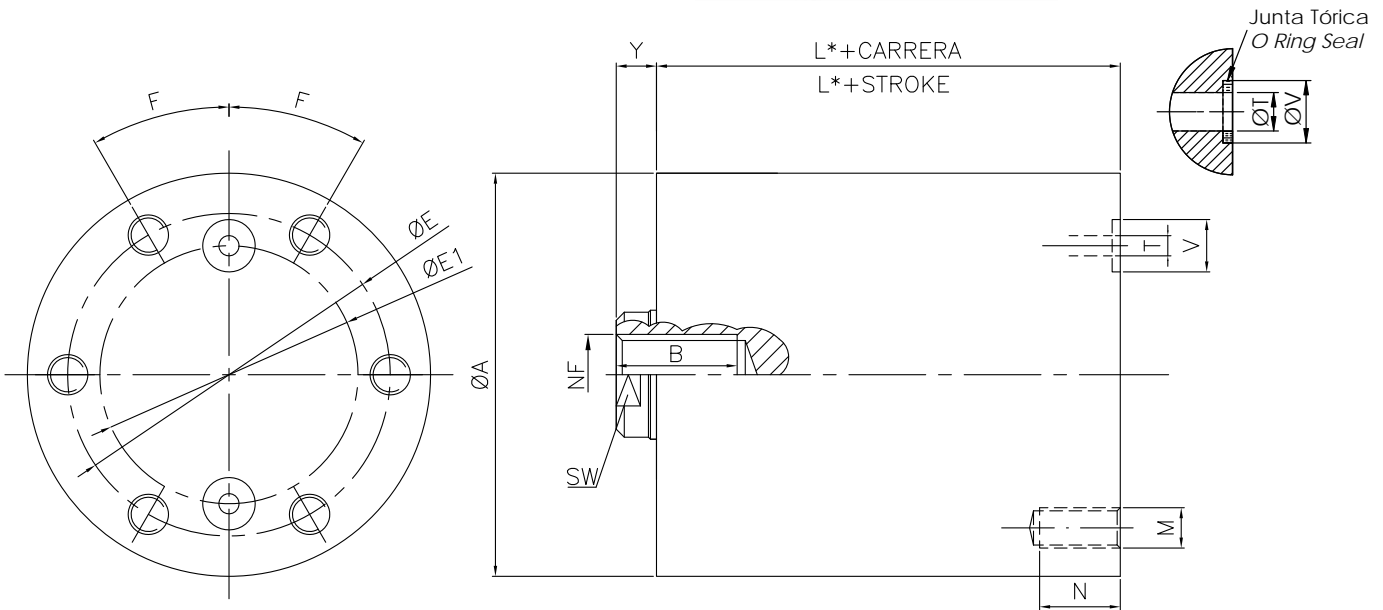
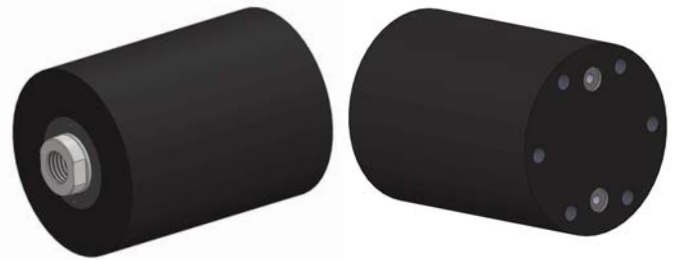
Modelo Estándar "S 3" - TORICAS TRASERAS
Standard Model "S 3" - REAR O-RING



| Ø | Ø Vast. Stem | A | B | ØD | E | E1 | F | L* | NF | T | V | SW | Y |
|-----|--------------|-----|----|--------|-----|-----|-----|-----|-----|-----|------|----|----|
| 16 | 10 | 60 | 12 | 4x6,5 | 44 | 28 | 45° | 50 | M6 | 3,5 | 10,6 | 8 | 6 |
| 20 | 12 | 60 | 12 | 4x6,5 | 46 | 30 | 45° | 52 | M8 | 4 | 12 | 10 | 7 |
| 25 | 16 | 65 | 15 | 6x6,5 | 50 | 40 | 30° | 54 | M10 | 4 | 13 | 13 | 7 |
| 32 | 20 | 75 | 15 | 6x9 | 58 | 44 | 30° | 58 | M12 | 4 | 13 | 17 | 10 |
| 40 | 25 | 90 | 25 | 6x11 | 70 | 52 | 30° | 62 | M16 | 4 | 13 | 21 | 10 |
| 50 | 32 | 100 | 30 | 6x11 | 80 | 64 | 30° | 72 | M20 | 5 | 13 | 26 | 10 |
| 63 | 40 | 125 | 40 | 6x13,5 | 100 | 80 | 30° | 83 | M27 | 6 | 13 | 32 | 14 |
| 80 | 50 | 160 | 40 | 6x17 | 130 | 100 | 30° | 95 | M30 | 6 | 13 | 41 | 14 |
| 100 | 60 | 200 | 60 | 6x21 | 160 | 120 | 30° | 100 | M42 | 8 | 15 | - | 15 |

* Para carreras superiores a 150 mm, la longitud del cilindro aumentará en 50mm.
* For longer strokes that 150 mm, the length of cylinder was incremented in 50 mm.

MODELO CR / MODEL CR

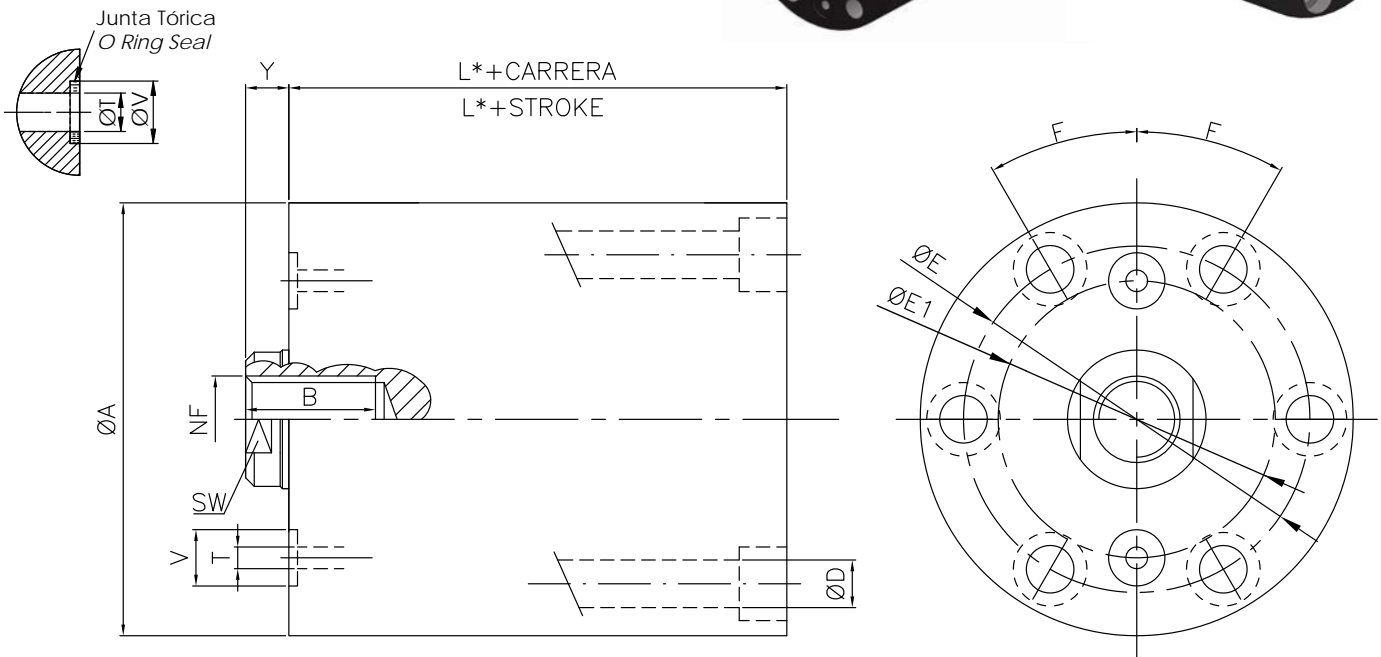
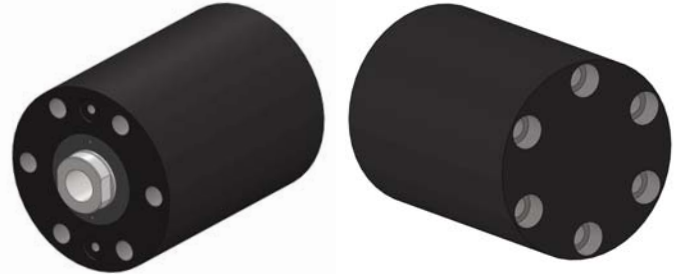


| Ø | Ø Vast. Ø Stem | A | B | E | E1 | F | L* | M | N | NF | T | V | SW | Y |
|-----|-------------------|-----|----|-----|-----|-----|-----|-------|----|-----|-----|------|----|----|
| 16 | 10 | 60 | 12 | 44 | 28 | 45° | 50 | 4xM6 | 15 | M6 | 3,5 | 10,6 | 8 | 6 |
| 20 | 12 | 60 | 12 | 46 | 32 | 45° | 52 | 4xM6 | 15 | M8 | 4 | 12 | 10 | 7 |
| 25 | 16 | 65 | 15 | 50 | 26 | 30° | 54 | 6xM6 | 15 | M10 | 4 | 13 | 13 | 7 |
| 32 | 20 | 75 | 15 | 58 | 36 | 30° | 58 | 6xM8 | 18 | M12 | 4 | 13 | 17 | 10 |
| 40 | 25 | 90 | 25 | 70 | 44 | 30° | 62 | 6xM10 | 18 | M16 | 4 | 13 | 21 | 10 |
| 50 | 32 | 100 | 30 | 80 | 56 | 30° | 72 | 6xM10 | 20 | M20 | 5 | 13 | 26 | 10 |
| 63 | 40 | 125 | 40 | 100 | 68 | 30° | 83 | 6xM12 | 20 | M27 | 6 | 13 | 32 | 14 |
| 80 | 50 | 160 | 40 | 130 | 98 | 30° | 95 | 6xM16 | 25 | M30 | 6 | 13 | 41 | 14 |
| 100 | 60 | 200 | 60 | 160 | 110 | 30° | 100 | 6xM20 | 30 | M42 | 8 | 15 | - | 15 |

* Para carreras superiores a 150 mm, la longitud del cilindro aumentará en 50mm.

* For longer strokes that 150 mm, the length of cylinder was incremented in 50 mm.

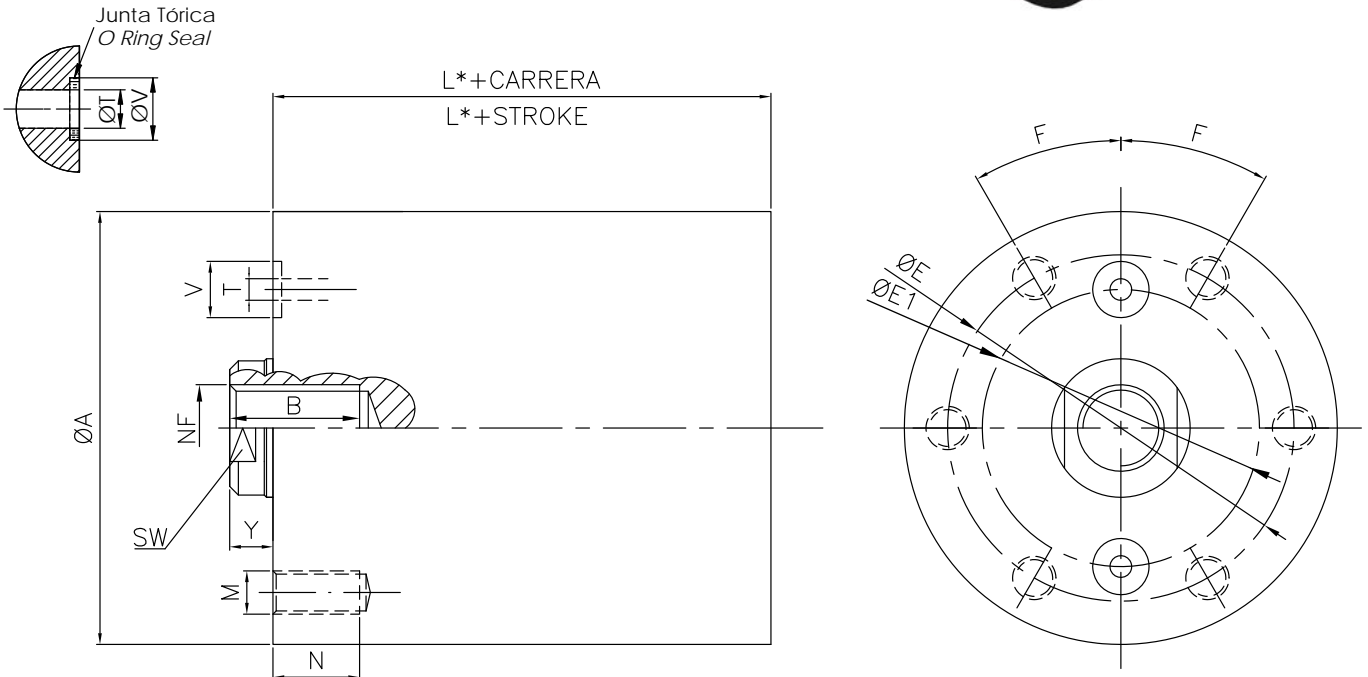
MODELO D / MODEL D



| Ø | Ø Vast. Stem | A | B | ØD | E | E1 | F | L* | NF | T | V | SW | Y |
|-----|--------------|-----|----|--------|-----|-----|-----|-----|-----|-----|------|----|----|
| 16 | 10 | 60 | 12 | 4x6,5 | 44 | 42 | 45° | 50 | M6 | 3,5 | 10,6 | 8 | 6 |
| 20 | 12 | 60 | 12 | 4x6,5 | 46 | 46 | 45° | 52 | M8 | 4 | 12 | 10 | 7 |
| 25 | 16 | 65 | 15 | 6x6,5 | 50 | 50 | 30° | 54 | M10 | 4 | 13 | 13 | 7 |
| 32 | 20 | 75 | 15 | 6x9 | 58 | 58 | 30° | 58 | M12 | 4 | 13 | 17 | 10 |
| 40 | 25 | 90 | 25 | 6x11 | 70 | 70 | 30° | 62 | M16 | 4 | 13 | 21 | 10 |
| 50 | 32 | 100 | 30 | 6x11 | 80 | 76 | 30° | 72 | M20 | 5 | 13 | 26 | 10 |
| 63 | 40 | 125 | 40 | 6x13,5 | 100 | 100 | 30° | 83 | M27 | 6 | 13 | 32 | 14 |
| 80 | 50 | 160 | 40 | 6x17 | 130 | 130 | 30° | 95 | M30 | 6 | 13 | 41 | 14 |
| 100 | 60 | 200 | 60 | 6x21 | 160 | 160 | 30° | 100 | M42 | 8 | 15 | - | 15 |

* Para carreras superiores a 150 mm, la longitud del cilindro aumentará en 50mm.
* For longer strokes that 150 mm, the length of cylinder was incremented in 50 mm.

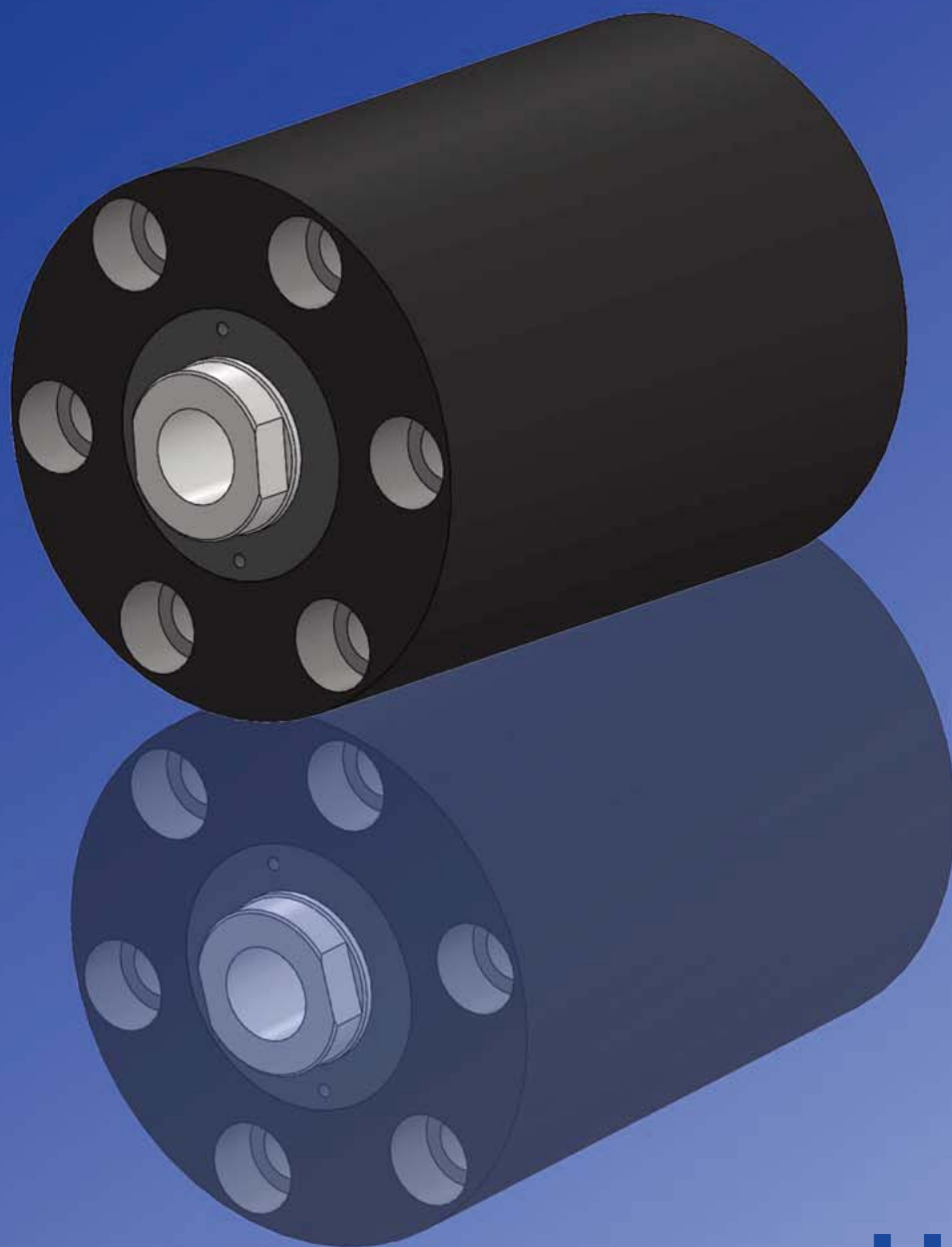
MODELO DR / MODEL DR



| Ø | Ø Vast. Ø Stem | A | B | E | E1 | F | L* | M | N | NF | T | V | SW | Y |
|-----|-------------------|-----|----|-----|-----|-----|-----|-------|----|-----|-----|------|----|----|
| 16 | 10 | 60 | 12 | 44 | 42 | 45° | 50 | 4xM6 | 15 | M6 | 3,5 | 10,6 | 8 | 6 |
| 20 | 12 | 60 | 12 | 46 | 46 | 45° | 52 | 4xM6 | 15 | M8 | 4 | 12 | 10 | 7 |
| 25 | 16 | 65 | 15 | 50 | 50 | 30° | 54 | 6xM6 | 15 | M10 | 4 | 13 | 13 | 7 |
| 32 | 20 | 75 | 15 | 58 | 58 | 30° | 58 | 6xM8 | 18 | M12 | 4 | 13 | 17 | 10 |
| 40 | 25 | 90 | 25 | 70 | 70 | 30° | 62 | 6xM10 | 18 | M16 | 4 | 13 | 21 | 10 |
| 50 | 32 | 100 | 30 | 80 | 76 | 30° | 72 | 6xM10 | 20 | M20 | 5 | 13 | 26 | 10 |
| 63 | 40 | 125 | 40 | 100 | 100 | 30° | 83 | 6xM12 | 20 | M27 | 6 | 13 | 32 | 14 |
| 80 | 50 | 160 | 40 | 130 | 130 | 30° | 95 | 6xM16 | 25 | M30 | 6 | 13 | 41 | 14 |
| 100 | 60 | 200 | 60 | 160 | 160 | 30° | 100 | 6xM20 | 30 | M42 | 8 | 15 | - | 15 |

* Para carreras superiores a 150 mm, la longitud del cilindro aumentará en 50mm.

* For longer strokes that 150 mm, the lenght of cylinder was incremented in 50 mm.



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