



Fagor Automation S. Coop.

Manual code: 14460043  
Manual version: 1405



# ENCODER H-D90

## MANUAL DE INSTALACIÓN INSTALLATION MANUAL

**FAGOR AUTOMATION S. COOP.**

B<sup>a</sup> San Andrés N<sup>o</sup> 19

Apdo de correos 144

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- Spain -

Web: [www.fagorautomation.com](http://www.fagorautomation.com)

Email: [info@fagorautomation.es](mailto:info@fagorautomation.es)

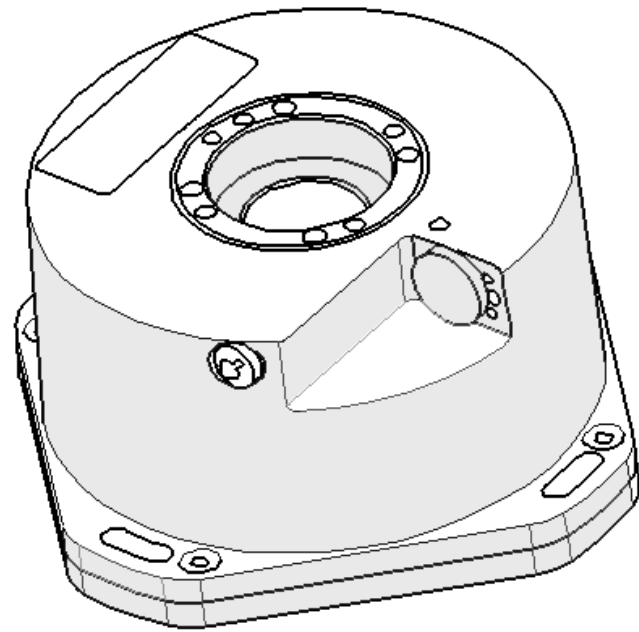
Tel.: (34) 943 719200

Fax: (34) 943 791712



Fagor Automation S. Coop.





MANUAL

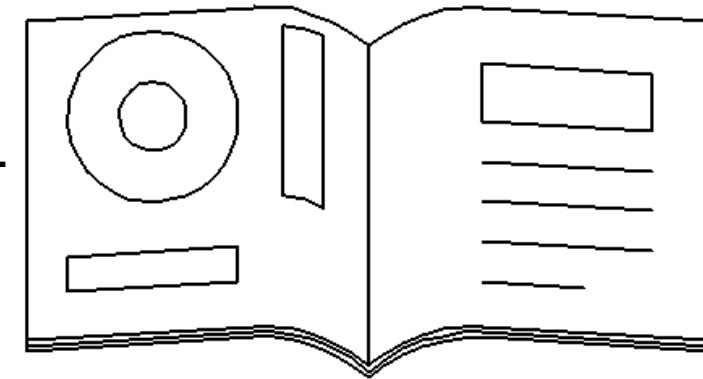
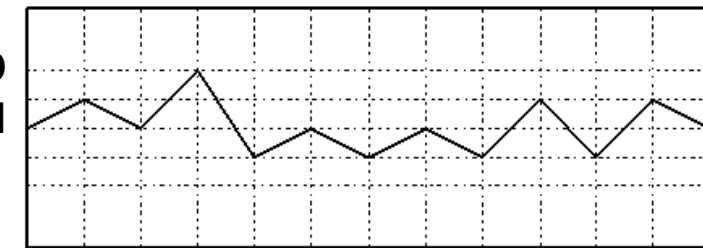
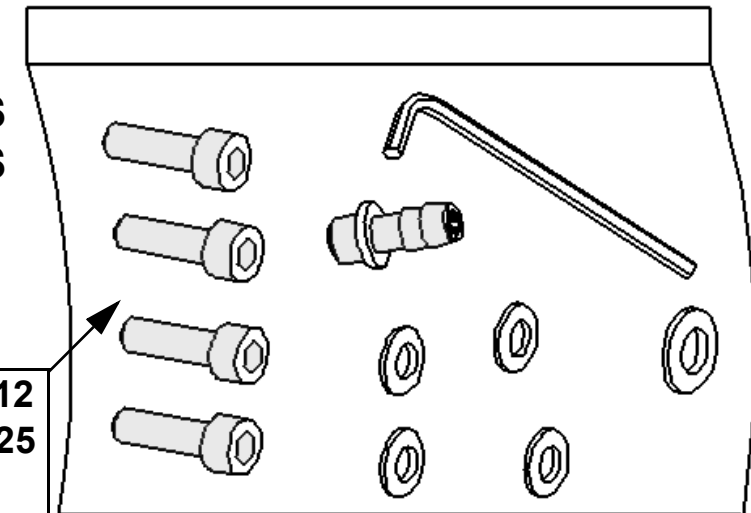


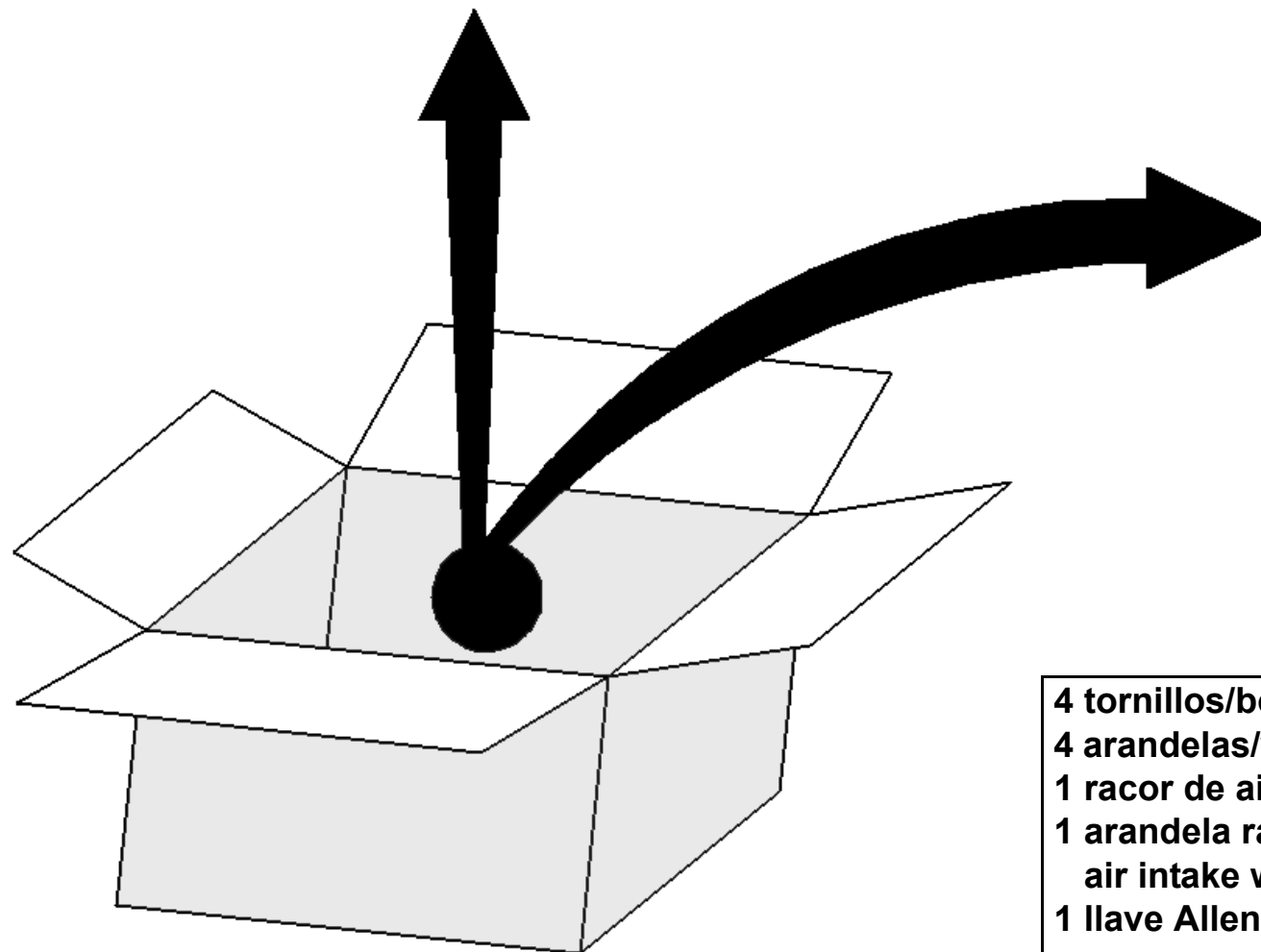
GRÁFICO  
GRAPH



ACCESORIOS  
ACCESSORIES

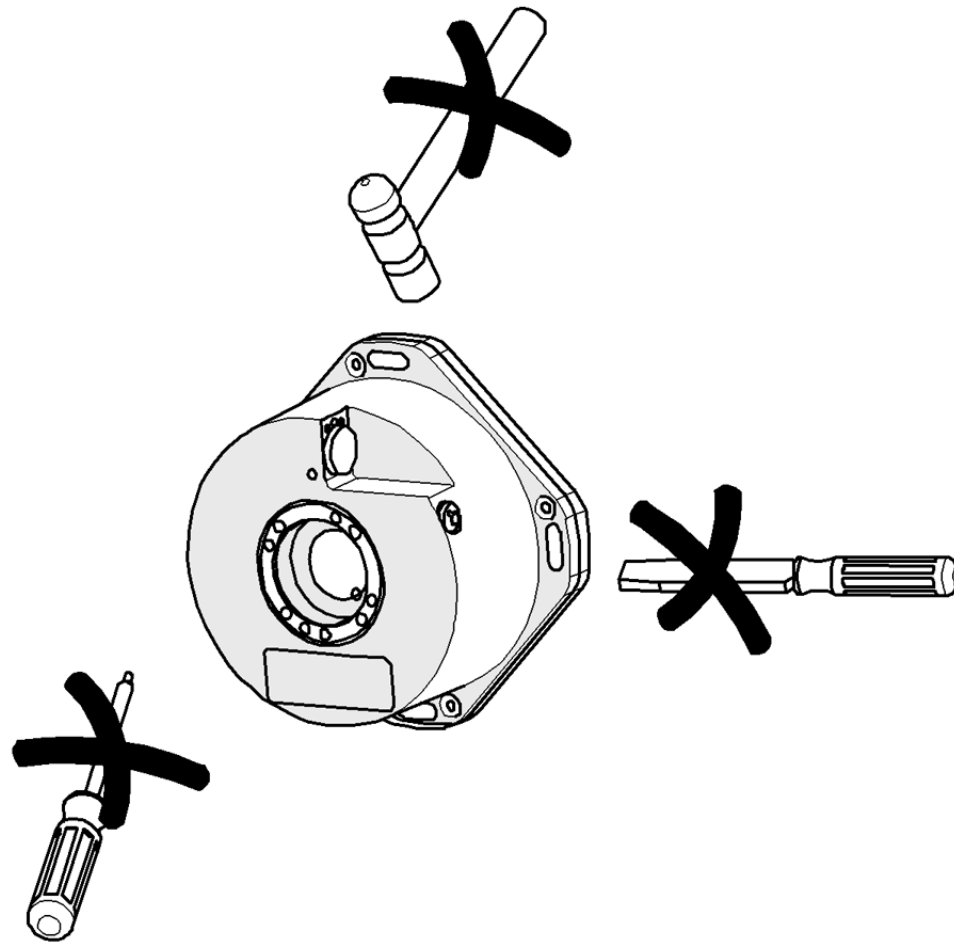
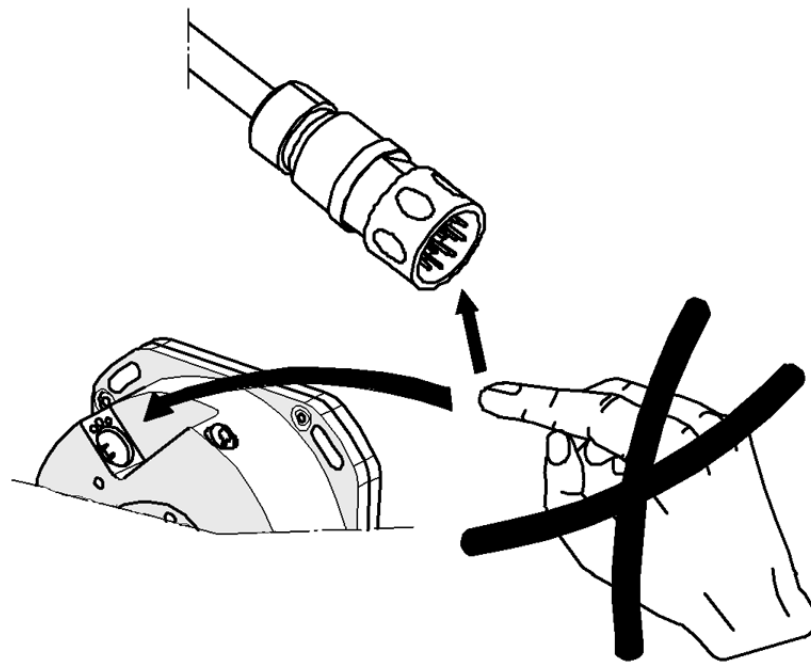
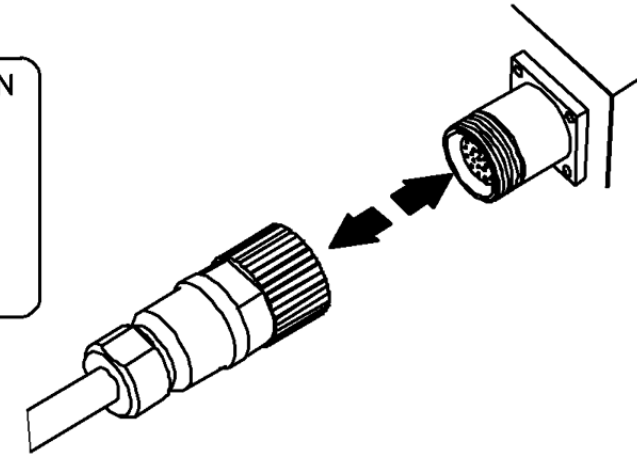
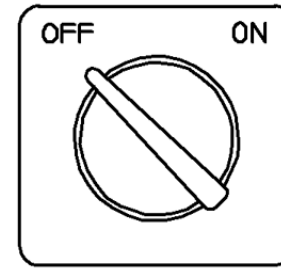
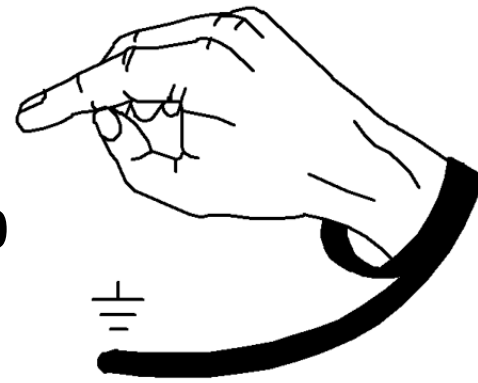


4 tornillos/bolts M4 x 16 DIN 912  
4 arandelas/washers M4 DIN 125  
1 racor de aire / air intake  
1 arandela racor de aire /  
air intake washer  
1 llave Allen / Allen wrench

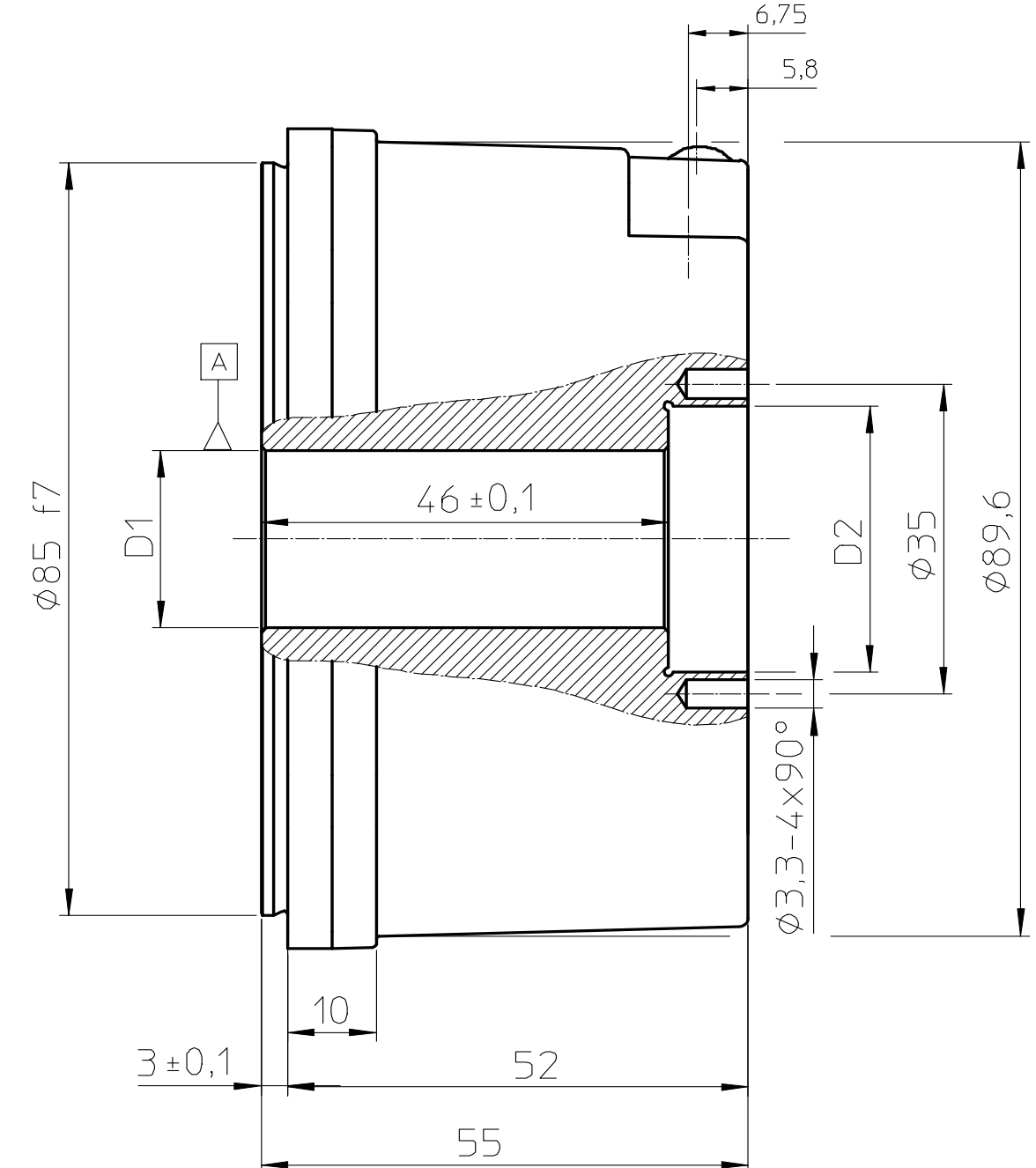
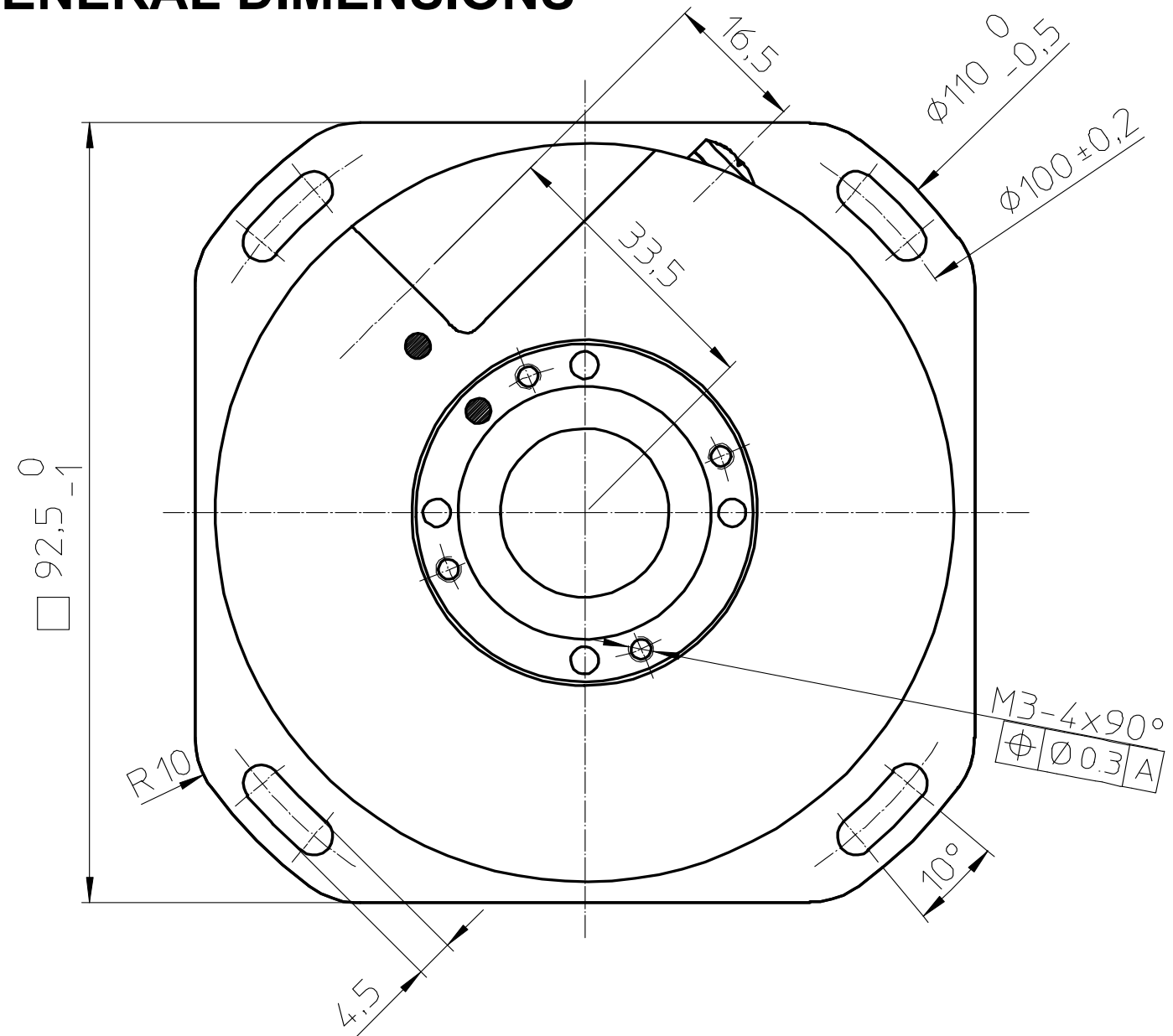




DIN EN 100



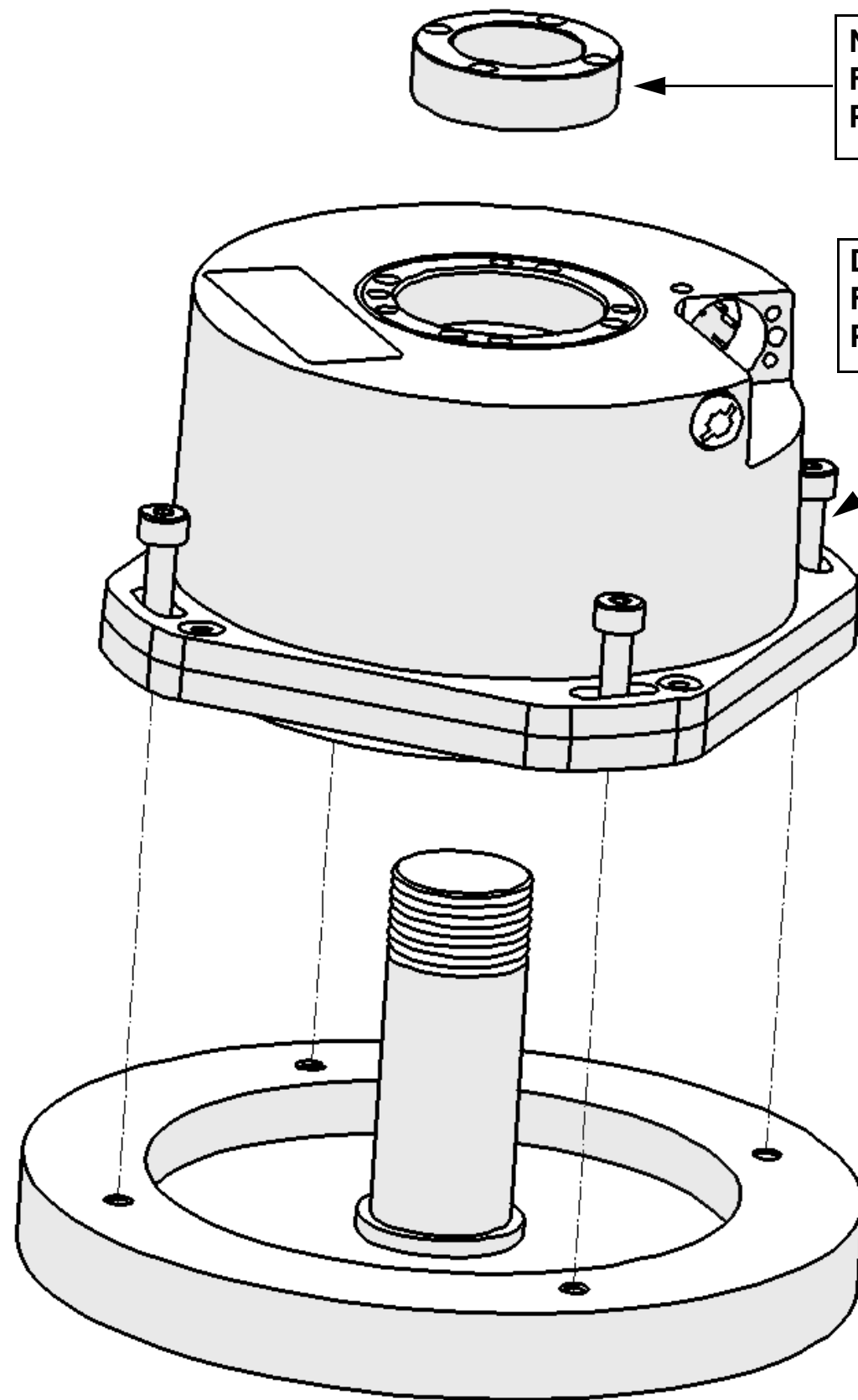
# GENERAL DIMENSIONS



Precisión Accuracy	±2.5"	±5"
D1	φ20 H6	φ20 H7
D2	φ30 H6	φ30 H7

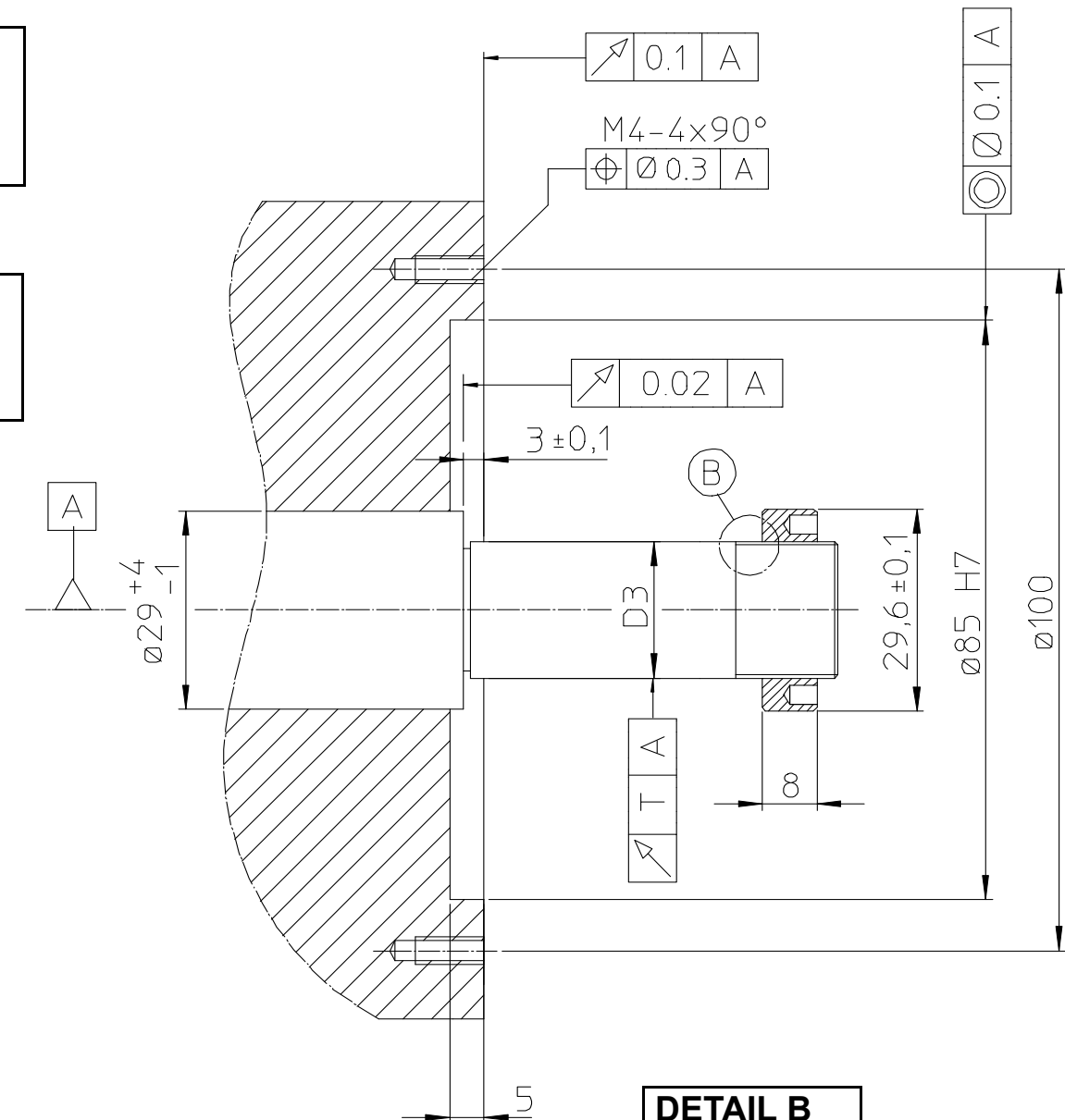
# MONTAJE / MOUNTING

# Cotas de montaje / Mounting dimensions

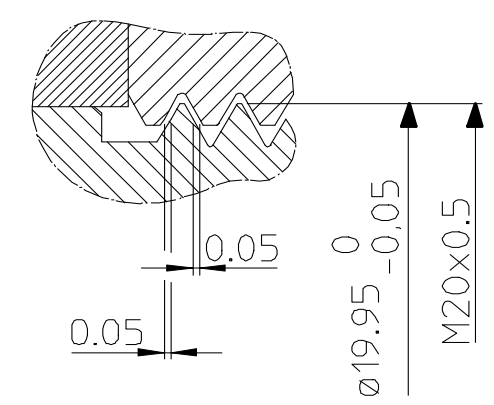


**Nut / Tuerca Ref. T-20**  
**Fastening torque = 20 Nm**  
**Par de apriete = 20 Nm**

**DIN 912 - M4x16**  
**Fastening torque = 2.5 Nm**  
**Par de apriete = 2.5 Nm**



**DETAIL B**  
**DETALLE B**

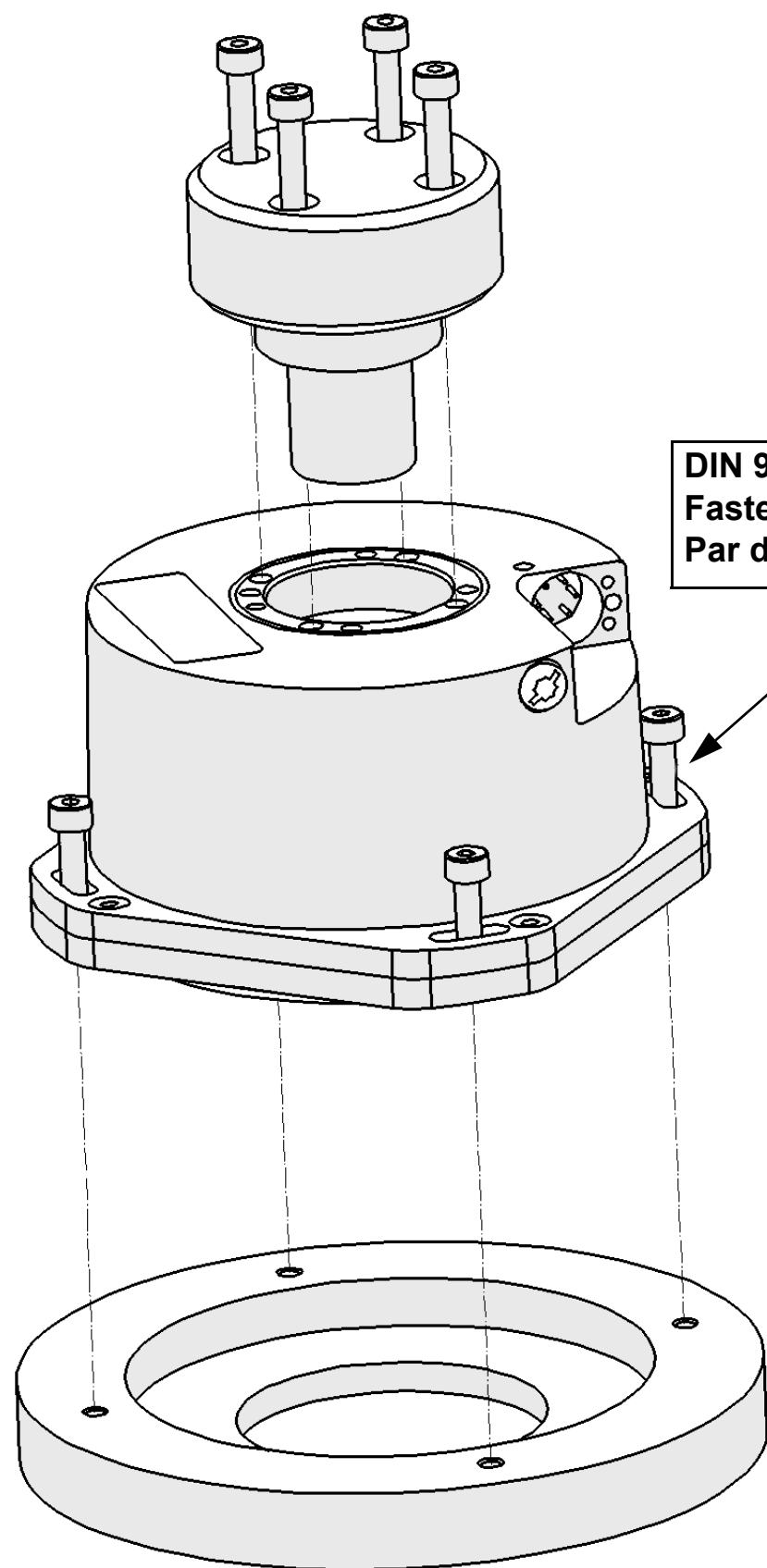


Precisión Accuracy	±2.5"	±5"
D3	ϕ20 g6	ϕ20 g7
T	0.01	0.02

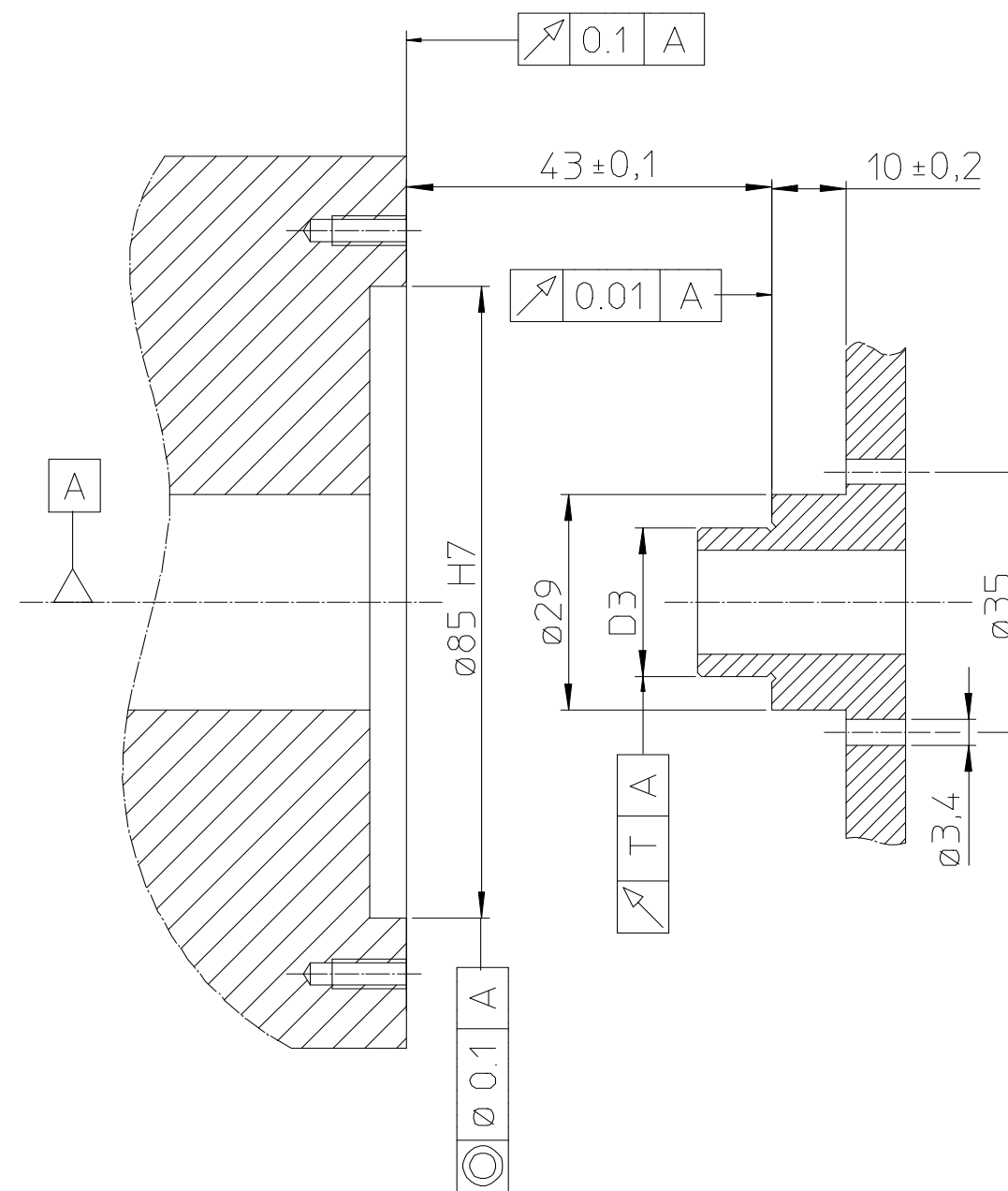
[A] Rodamiento / Roller bearing

# MONTAJE / MOUNTING

# Cotas de montaje / Mounting dimensions



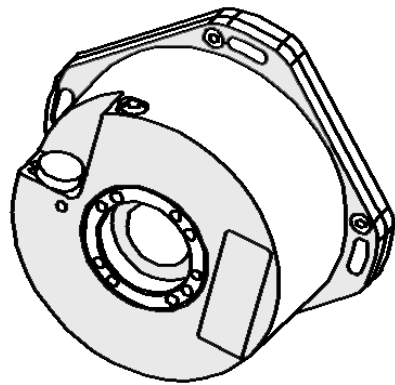
**DIN 912 - M4x16**  
**Fastening torque = 2.5 Nm**  
**Par de apriete = 2.5 Nm**



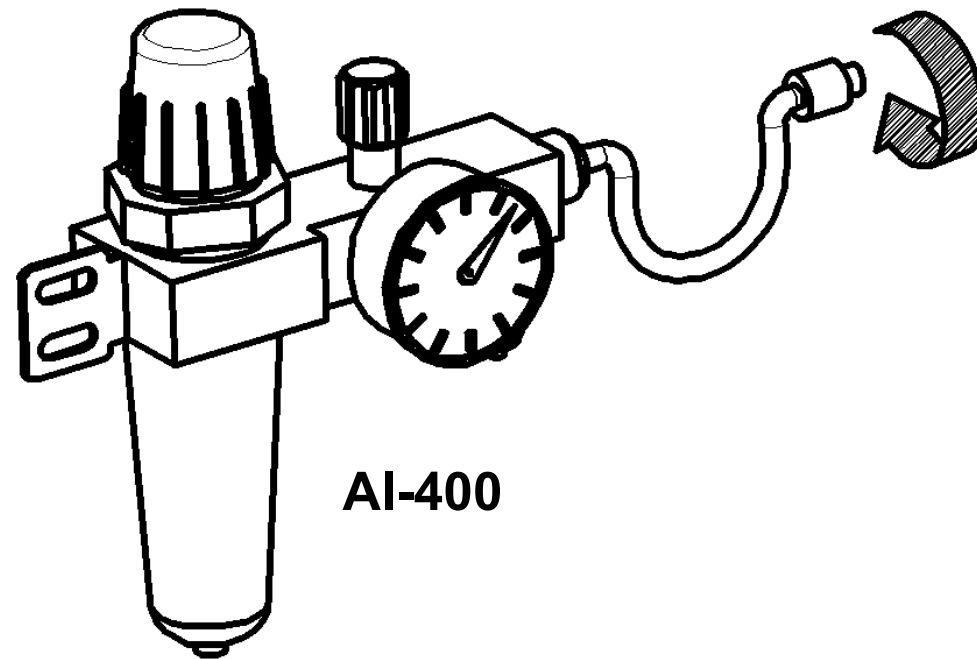
Precisión Accuracy	±2.5"	±5"
D3	∅20 g6	∅20 g7
T	0.01	0.02

**A** Rodamiento / Roller bearing

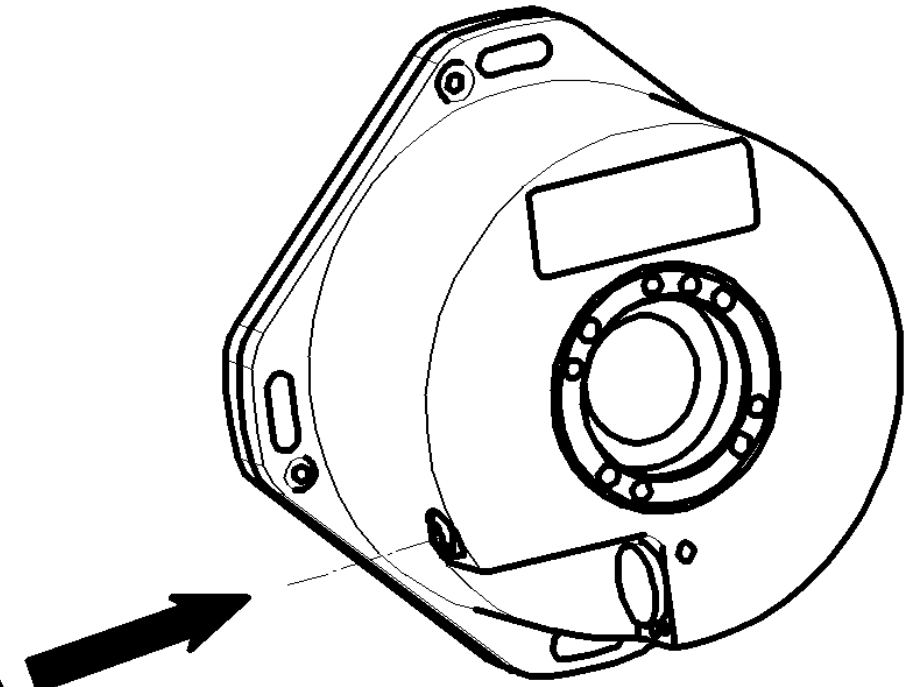
**Nivel máximo: IP 64**  
**Maximum level IP 64**



**> IP 64**



**AI-400**

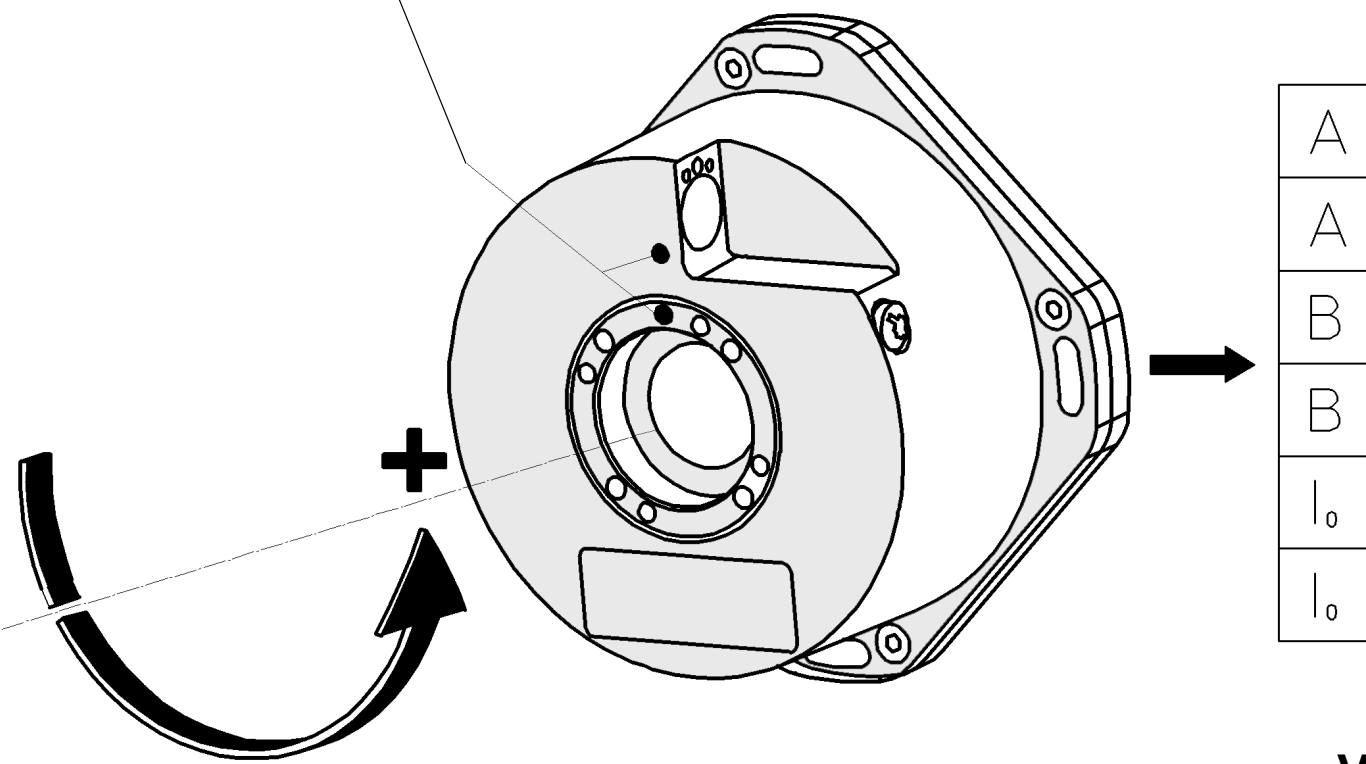


<b>(A) AIR CONDITIONS</b>	
<b>DIN ISO 8573 -1</b>	
Class 1 - Particule Max. 0.1 $\mu$	
Class 4 (7 bar) - Punto rocío / dewpoint 3 °C	
Class 1 - Max. Concentration oil 0.01 mg/m <sup>3</sup>	
<b>Presión / Pressure</b>	1 Kg / cm <sup>3</sup>
<b>Flujo / Flow</b>	10 l. / min. / encoder

# CARACTERÍSTICAS ELÉCTRICAS / ELECTRICAL CHARACTERISTICS

Orientación del impulso de referencia (I<sub>o</sub>)  
Reference mark (I<sub>o</sub>) orientation

Girar eje para alinear puntos  
Turn the shaft ligning up the dots

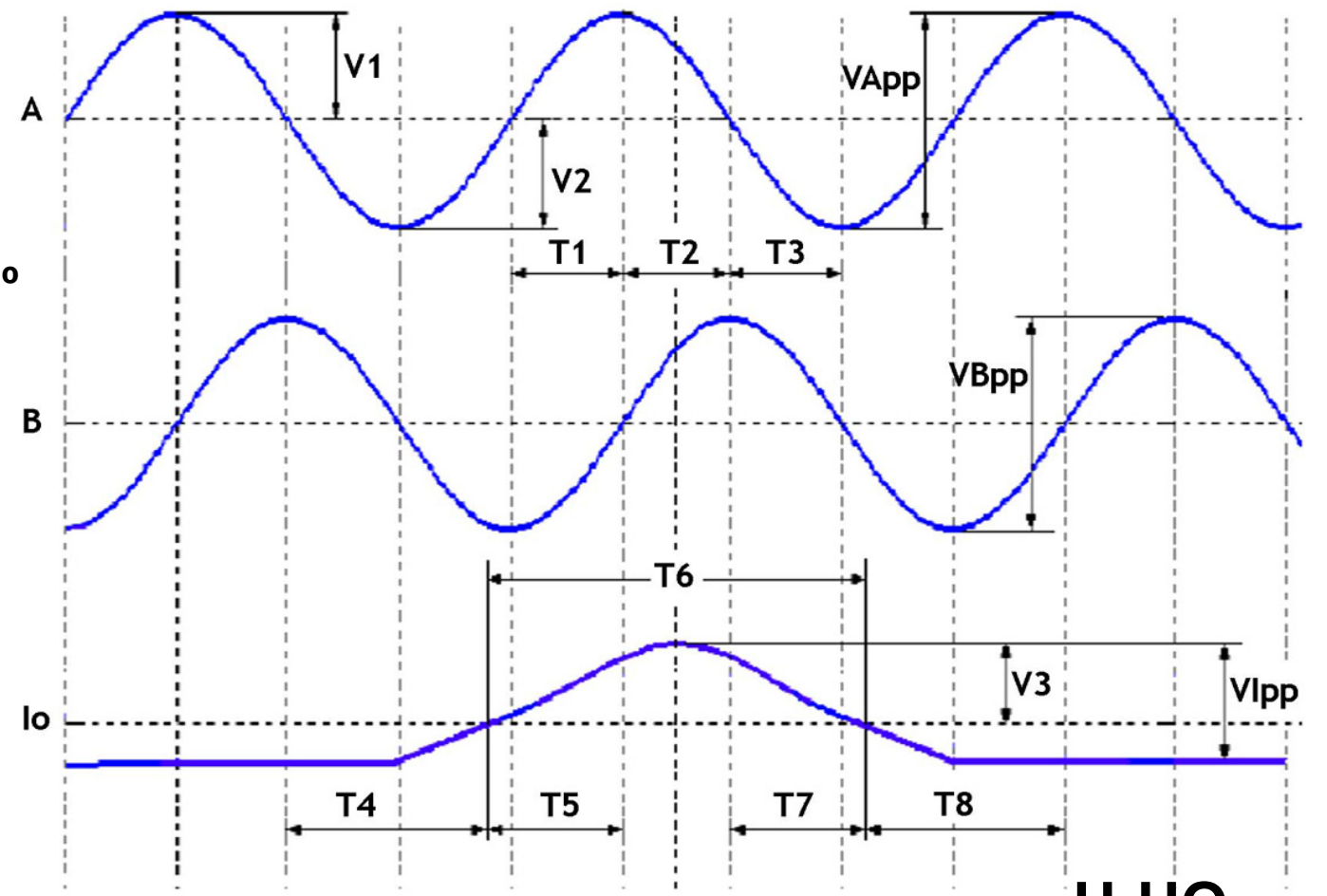


$V_{App} = V_{Bpp} = 1 V_{pp}$   
 $V_{I_o}: 0.2 V \div 0.85 V$   
 $T_{I_o}: T - 180^\circ \leq I_o \leq T + 180^\circ$   
 $f_{max} = 180 kHz$

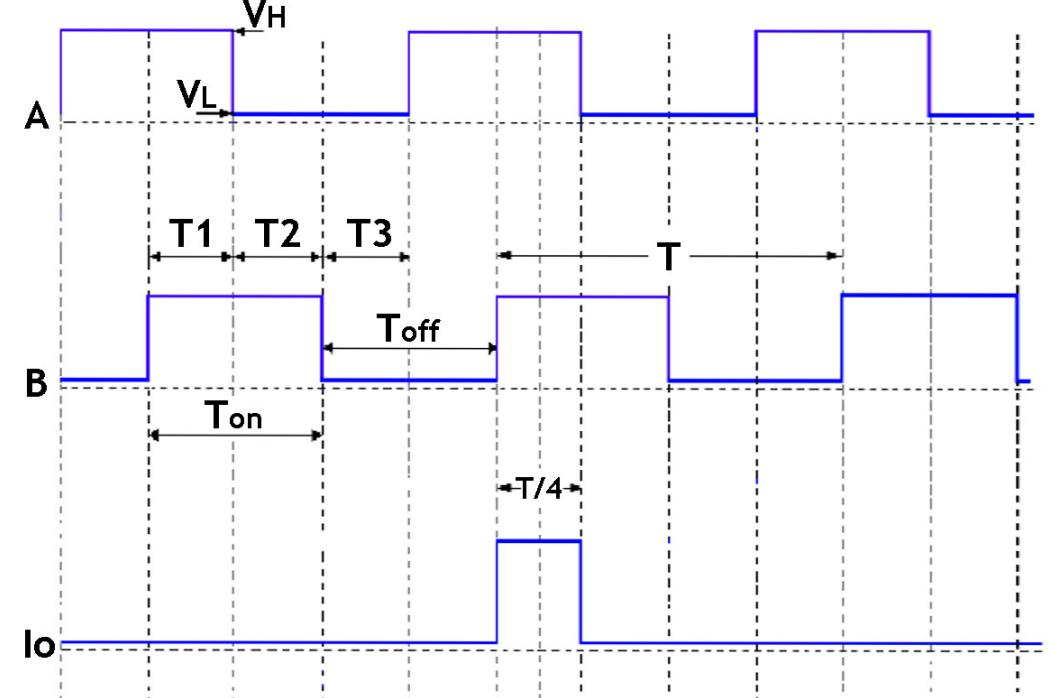
$V_{dc} = 5 V \pm 10\%$  ,  $I_{max} = 150 mA$

$V_{oL} \leq 0.5 V$  ,  $V_{oH} \geq 2.5 V$   
 $T_{I_o}: 90^\circ$   
 $f_{max} = 1 MHz$



## HP-HOP...

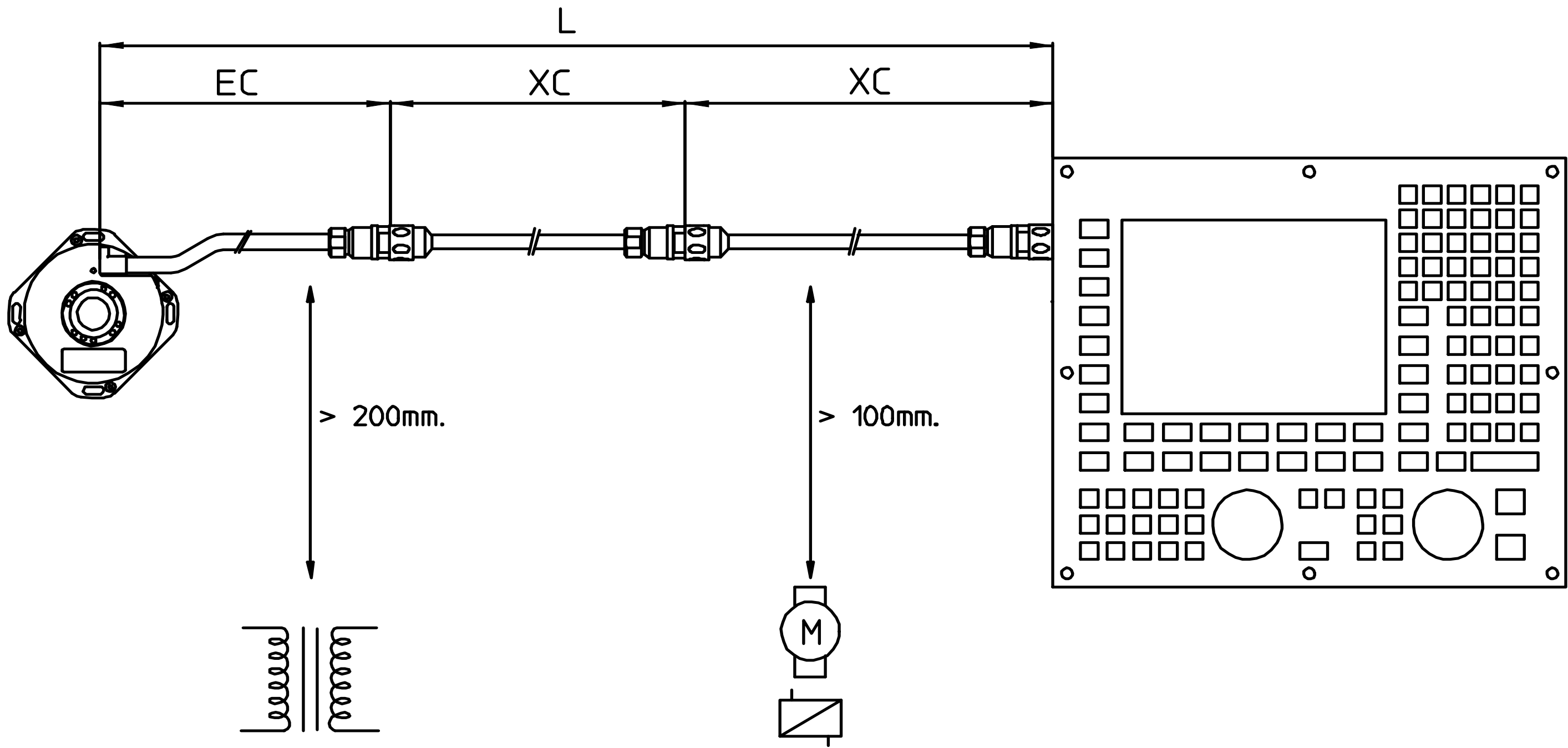


## H-HO...





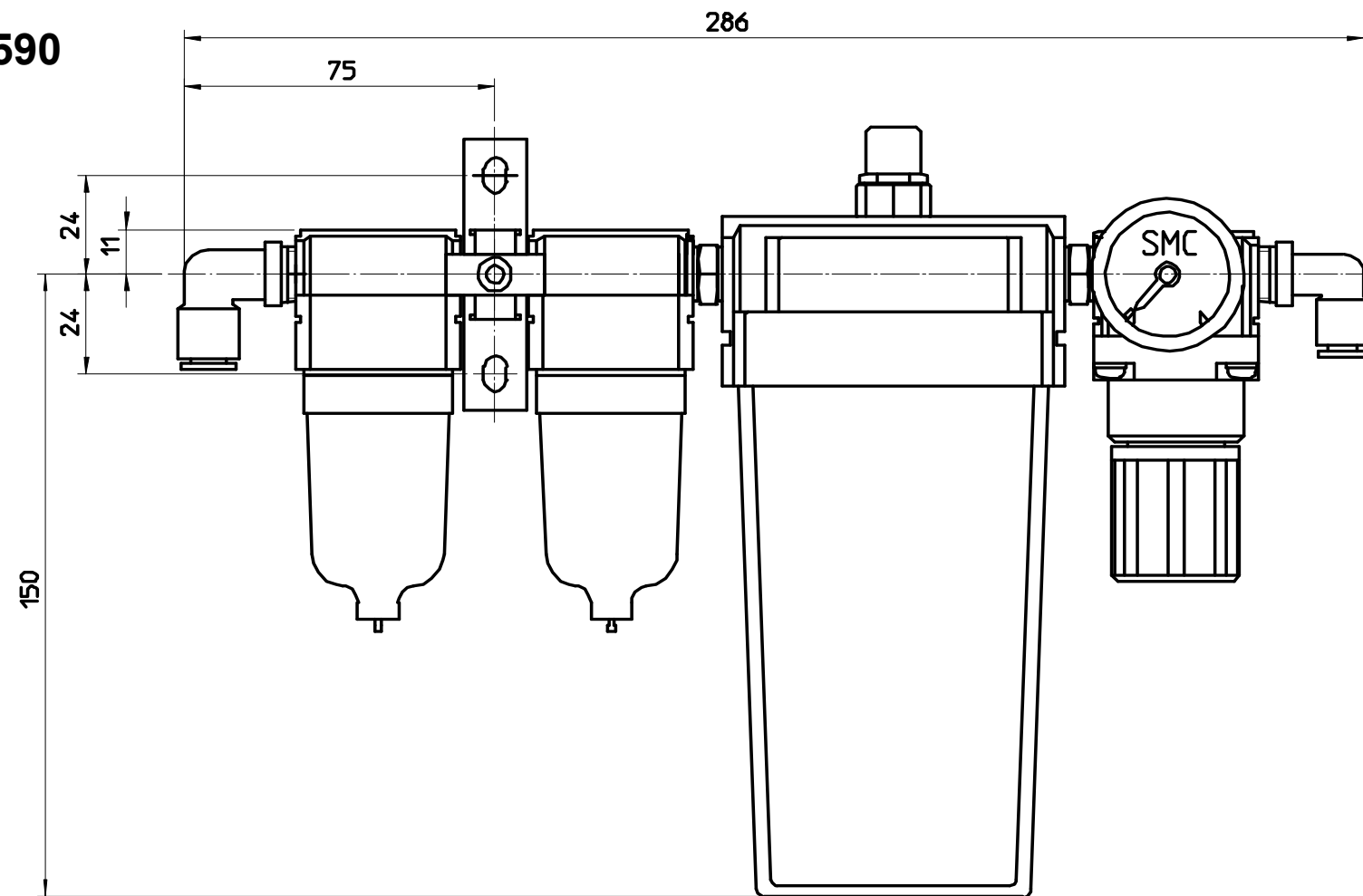
1 V<sub>pp</sub>  L<sub>max</sub> = 150 m  
 TTL  L<sub>max</sub> = 50 m  
 Detalle de cables: página 11  
 Cable details: page 11



## CARACTERÍSTICAS MECÁNICAS MECHANICAL CHARACTERISTICS

Modelo	H- HO- HP- HOP- ... -2.5	H- HO- HP- HOP- ...	Model
Precisión	±2.5"	±5"	Accuracy
Maxima velocidad de giro	3000 rpm		Max. Turning speed
Momento de inercia del eje	650 gr.cm <sup>2</sup>		Inertia of the rotor
Par (20°C)	< 0.08 Nm		Torque
Frecuencia natural	> 1000 Hz		Natural frequency
Peso	0.9 Kg		Weight
Estanqueidad	IP-64 (DIN 40050)		Sealing protection
Vibración (50-2000 Hz)	100 m/sec <sup>2</sup> (IEC 68-2-6)		Vibration (50-2000 Hz)
Impacto (6ms)	1000 m/sec <sup>2</sup> (IEC-68-2-27)		Impact (6 ms)
Temperatura de almacenamiento	-30 °C ... 80 °C (-22 °F ... 176 °F)		Storage temperature
Temperatura de funcionamiento	0 °C ... 50 °C (32 °F ... 122 °F)	-20 °C ... 70 °C (-4 °F ... 158 °F)	Operating temperature

**AI 590**

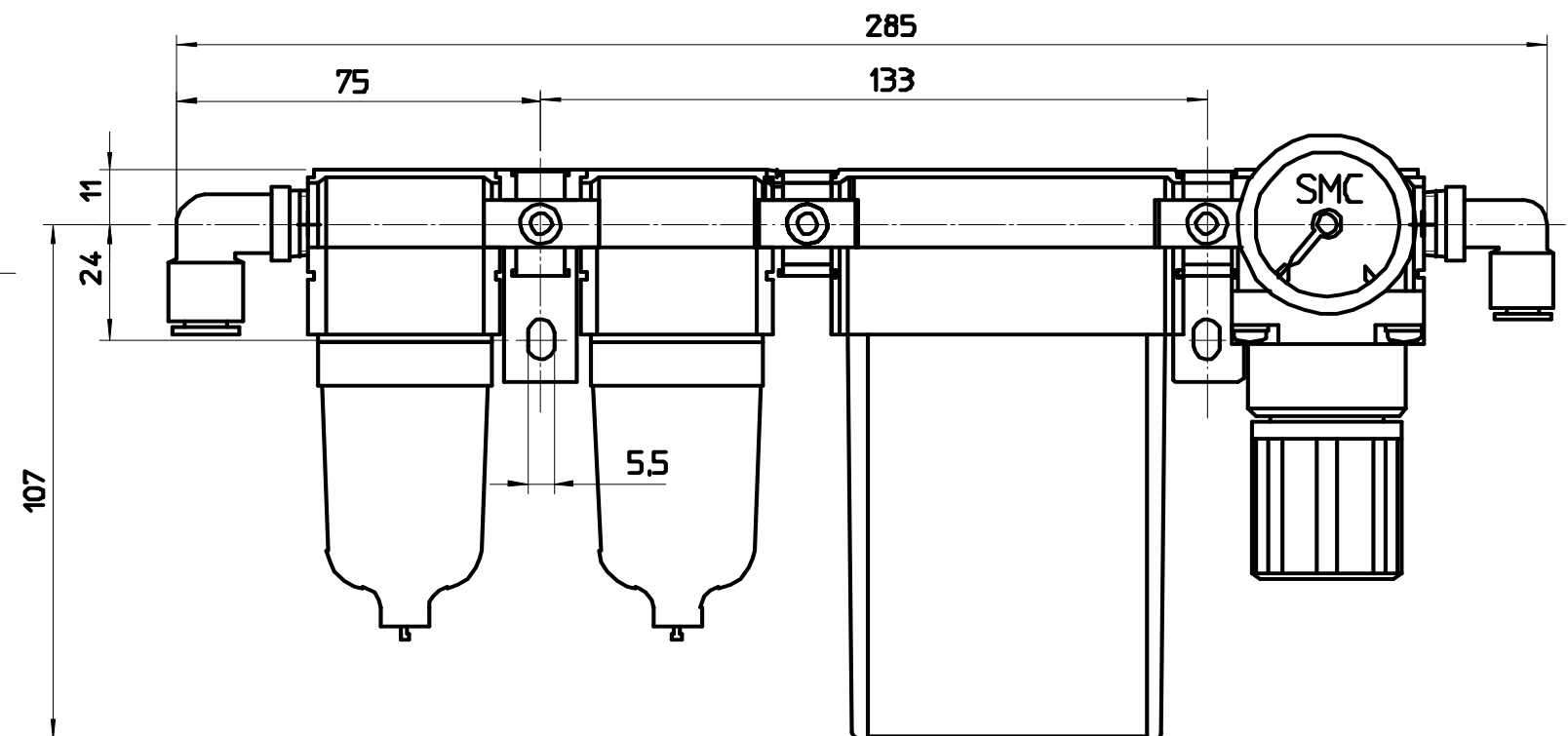
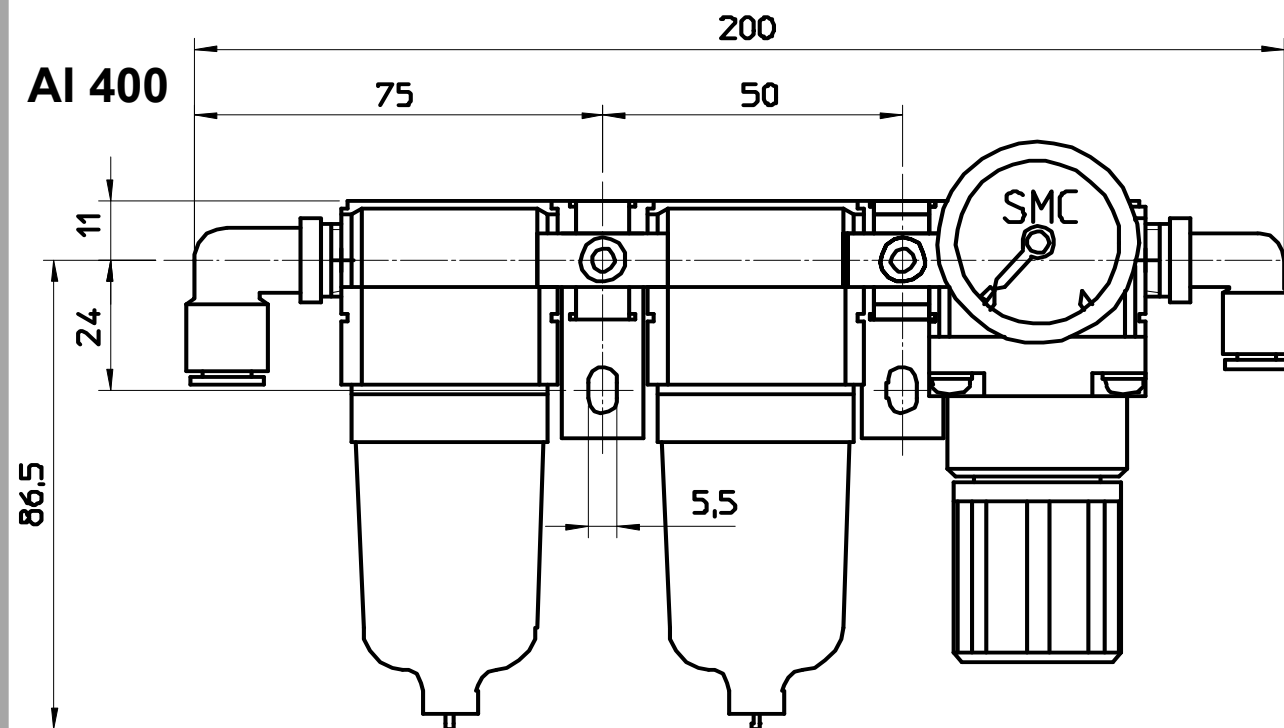


**FILTROS DE AIRE / AIR FILTERS**

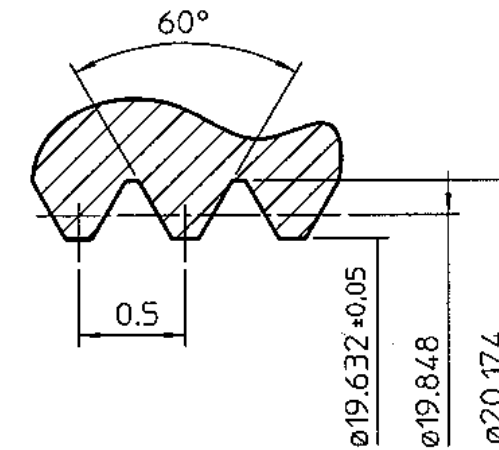
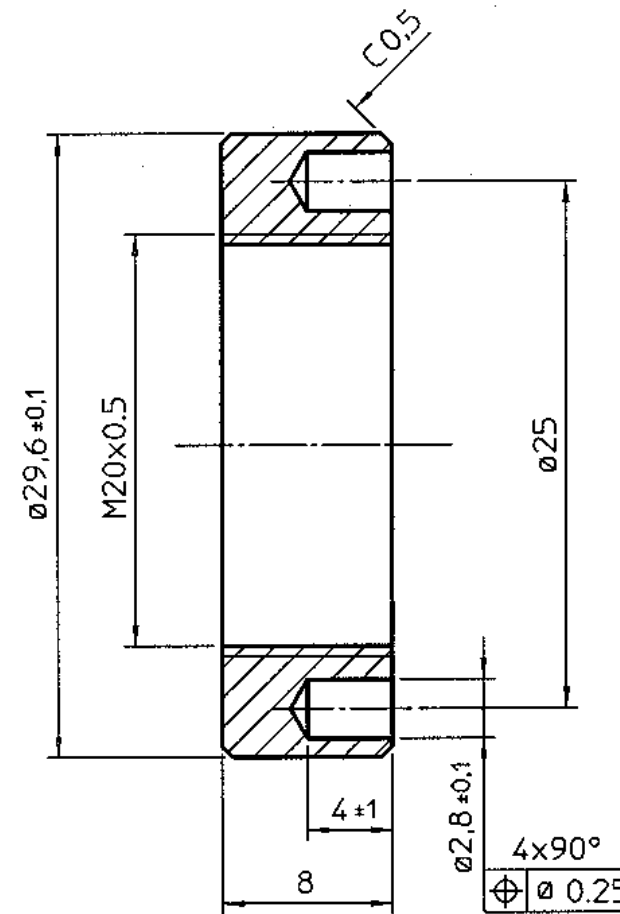
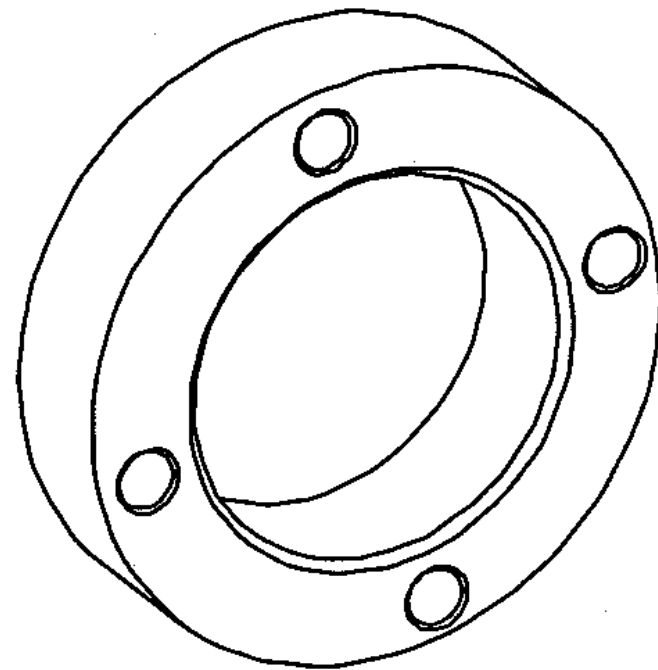
2200000	AI 400	25 l/min
2200001	AI 525	(25l/min)
2200002	AI 550	(50 l/min)
2200003	AI 590	(90 l/min)

**AI 525 / AI 550**

**AI 400**



## TUERCA T-20 / T-20 NUT



## CABLES

	< 12 m	< 26 m	26 - 150 m	SA
Application	Cable EC*	Cable EC + XC**	Cable EC + XC + XC	
8070, 8040, 8055i, AXD, SPD, MCP	EC-...-P-D	EC-1A-C1+ XC-C2-...-D	EC-1A-C1+ XC-C1 + XC-C2-...-D	
8055, 8050, 8030, 8025	EC-...-P-D	EC-1A-C1+ XC-C2-...-D	EC-1A-C1+ XC-C1 + XC-C2-...-D	+ SA-P-FS
11 $\mu$ A applications using CONNEI 9	EC-...-P-D	EC-1A-C1+ XC-C2-...-D	EC-1A-C1+ XC-C1 + XC-C2-...-D	+ SA-P-C
1 Vpp applications using CONNEI 12	EC-...A-C1	EC-1A-C1+ XC-C2-...-C1	EC-1A-C1+ XC-C1 + XC-C2-...-C1	
TNC 1 Vpp	EC-...AS-H	EC-1A-C1+ XC-C2-...-H	EC-1A-C1+ XC-C1 + XC-C2-...-H	
Aplicaciones de terceros (conector indefinido) 3rd party applications (undefined connector)	EC-...P-O	EC-1A-C1+ XC-C2-...-D***	EC-1A-C1+ XC-C2-C1 + XC-C2-...-D***	

\* Cables EC: 1, 3, 6, 9, 12 m

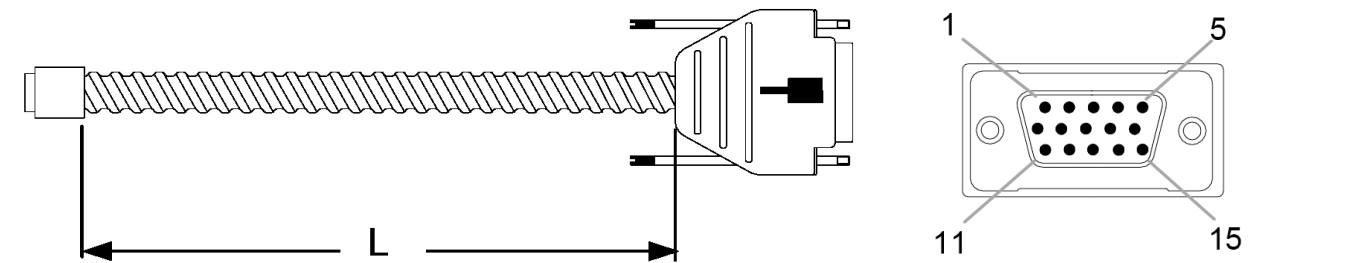
\*\* Cables XC: 5, 10, 15, 20, 25 m

\*\*\* Quitar conector / Remove connector

# CONEXIONES / CONNECTIONS

## EC-P-D

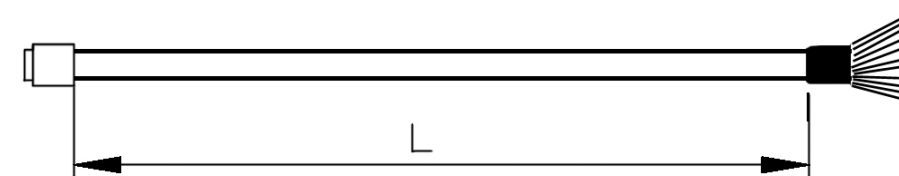
A	/A	B	/B	Io	/Io	+5 V	0 V	Malla / Shield
1	2	3	4	5	6	9	11	15 / Caperuza 15 / Housing
Verde Green	Amarillo Yellow	Azul Blue	Rojo Red	Gris Grey	Rosa Pink	Marrón Brown	Blanco White	Rosa / Malla Pink / Shield



L = 1, 3, 6, 9 & 12 m con o sin tubo metálico / with or without armor

## EC-P-O

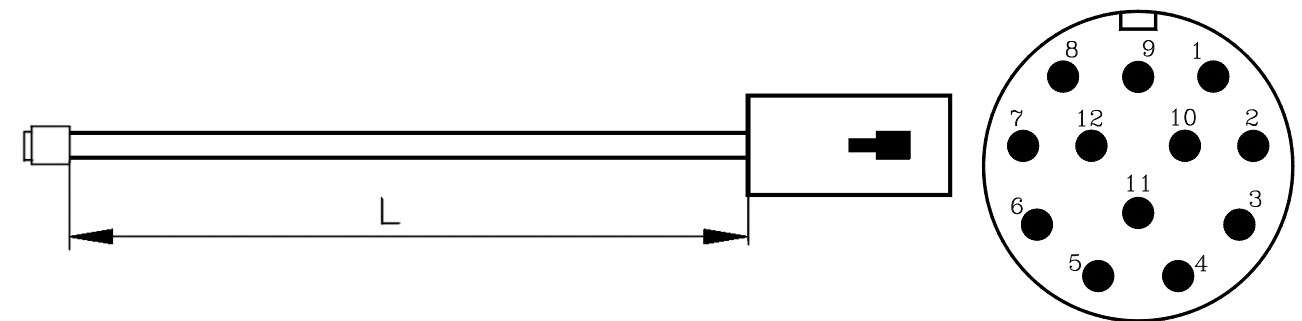
A	/A	B	/B	Io	/Io	+ 5 V	0 V
4	5	6	7	8	9	1	2
Verde Green	Amarillo Yellow	Azul Blue	Rojo Red	Gris Grey	Rosa Pink	Marrón Brown	Blanco White



L = 1, 3, 6, 9 & 12 m con o sin tubo metálico / with or without armor

## EC-...A-C1

A	/A	B	/B	Io	/Io	/Alarm	+ 5 V	0 V	
5	6	8	1	3	4	7	2, 12	10, 11	Caperuza Housing
Verde Green	Amarillo Yellow	Azul Blue	Rojo Red	Gris Grey	Rosa Pink	Violeta Purple	Marrón Brown	Blanco White	Malla Shield



L = 1, 3 & 6 m con o sin tubo metálico / with or without armor

## GARANTIA

- \*Plazo: 12 meses a partir de la fecha de expedición de fábrica.
- \*Cubre gastos de Materiales y Mano de Obra de reparación en FAGOR AUTOMATION.
- \*Los gastos de desplazamiento son a cargo del cliente.
- \*No cubre averías por causas ajenas a FAGOR AUTOMATION, como: golpes, manipulación por personal no autorizado, etc.

## DECLARACION DE CONFORMIDAD

**Fabricante: Fagor Automation, S. Coop.**  
Barrio de San Andrés 19, C.P. 20500, Mondragón -Guipúzcoa- (ESPAÑA)

Declaramos bajo nuestra exclusiva responsabilidad la conformidad del producto al que hace referencia este manual

**Nota.** Algunos caracteres adicionales pueden seguir a las referencias de los modelos indicados en este manual. Todos ellos cumplen con las siguientes normas:


### COMPATIBILIDAD ELECTROMAGNÉTICA:

EN 61000-6-2:2005 Norma de Inmunidad en entornos industriales  
EN 61000-6-4:2007 Norma de Emisión en entornos industriales

De acuerdo con las disposiciones de la Directiva Comunitaria: 2004/108/CE de Compatibilidad Electromagnética.

Mondragón a 1 de Septiembre de 2009

Fagor Automation, S. Coop.

  
Director Gerente  
Pedro Ruiz de Aguirre

## WARRANTY

- \*Term: 12 months from factory invoice date.
- \*It covers parts and labor at FAGOR AUTOMATION.
- \*Travel expenses are payable by the customer.
- \*Damages due to causes external to FAGOR AUTOMATION, such as unauthorized handling, blows, etc. are not covered.

## DECLARATION OF CONFORMITY

**Manufacturer: Fagor Automation, S. Coop.**  
Barrio de San Andrés 19, C.P. 20500, Mondragón -Guipúzcoa- (SPAIN)

We declare under our exclusive responsibility the conformity of the product referred to in this manual.

**Note.** Some additional characters may follow the model references indicated in this manual. They all comply with the following regulations:

### ELECTROMAGNETIC COMPATIBILITY:

EN 61000-6-2:2005 Standard on immunity in industrial environments  
EN 61000-6-4:2007 Standard on emission in industrial environments

According to the European Directive: 2004/108/CE on electromagnetic compatibility.

Mondragón September 1st 2009



## NOTAS DE USUARIO / USER NOTES

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# NOTAS DE USUARIO / USER NOTES

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