



Fagor Automation S. Coop.

Manual code: 14460160

Manual version 1512



# ENCODER HAP-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

20500 Arrasate/Mondragón

- Spain -

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

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

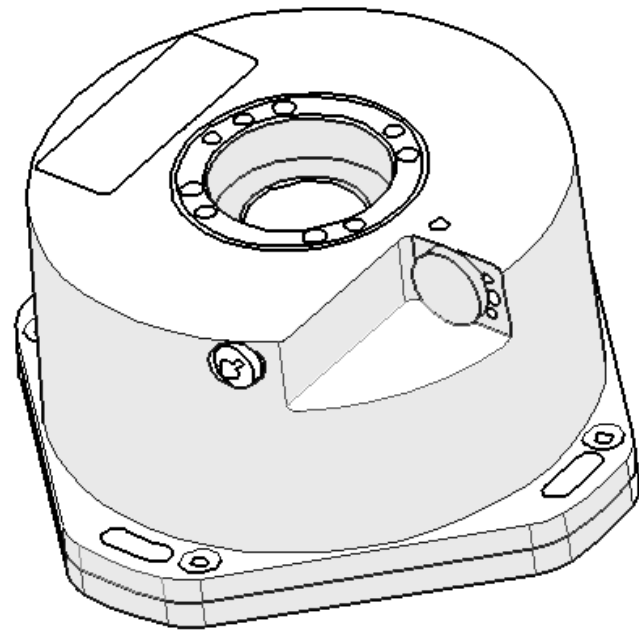
Tel.: (34) 943 719200

Fax: (34) 943 791712



Fagor Automation S. Coop.





MANUAL

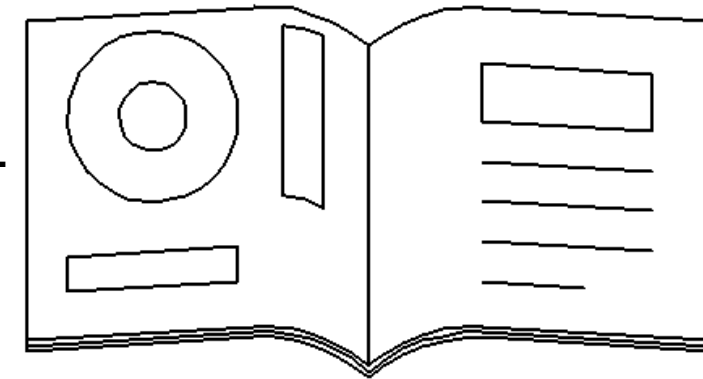
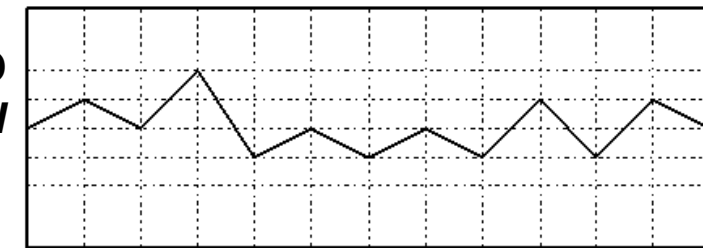
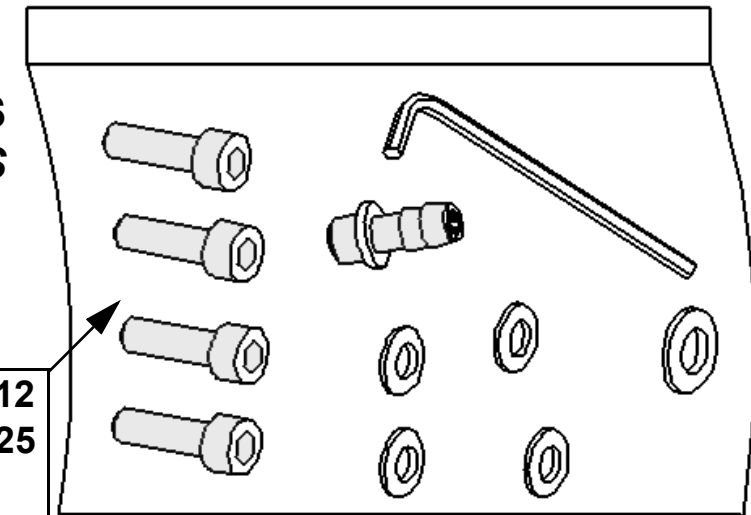


GRÁFICO  
GRAPH



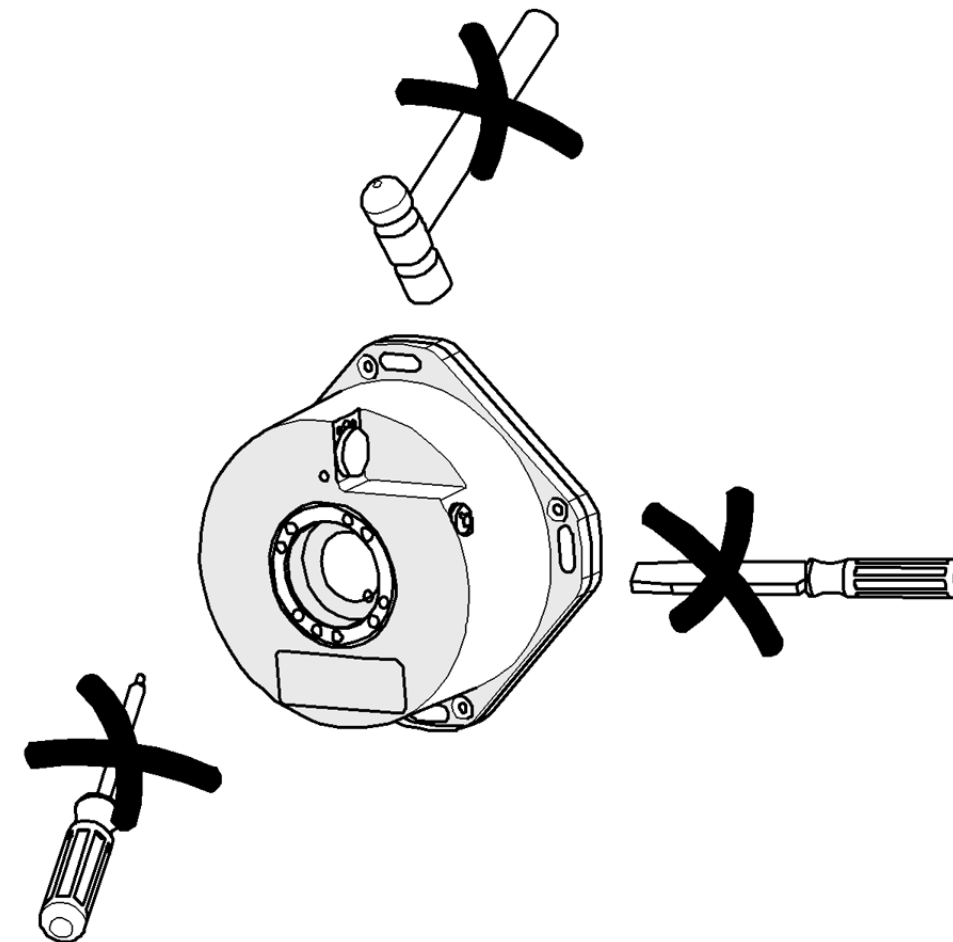
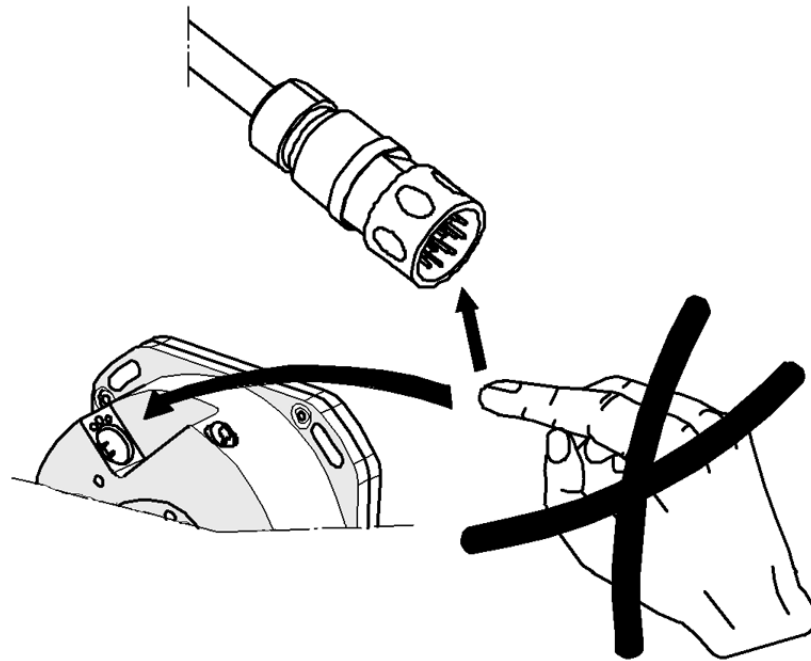
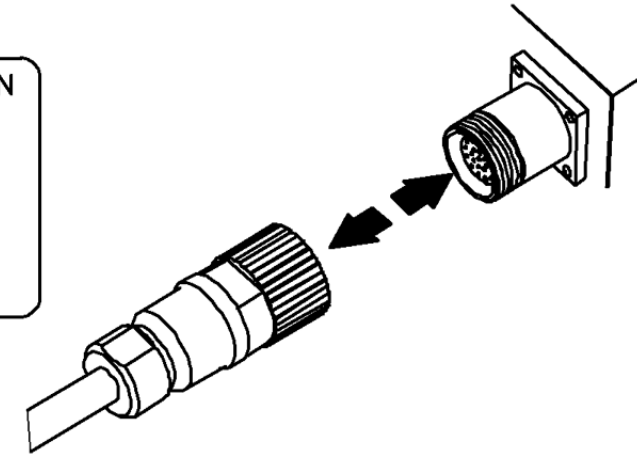
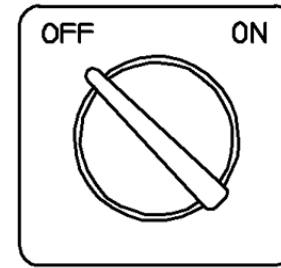
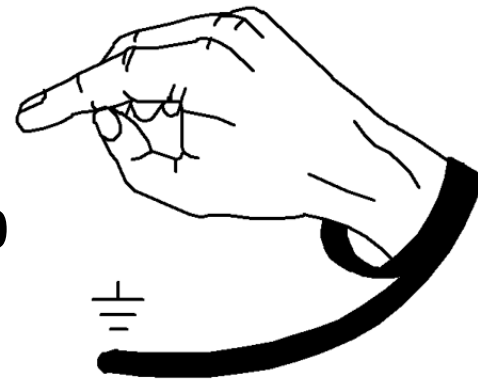
ACCESORIOS  
ACCESSORIES



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



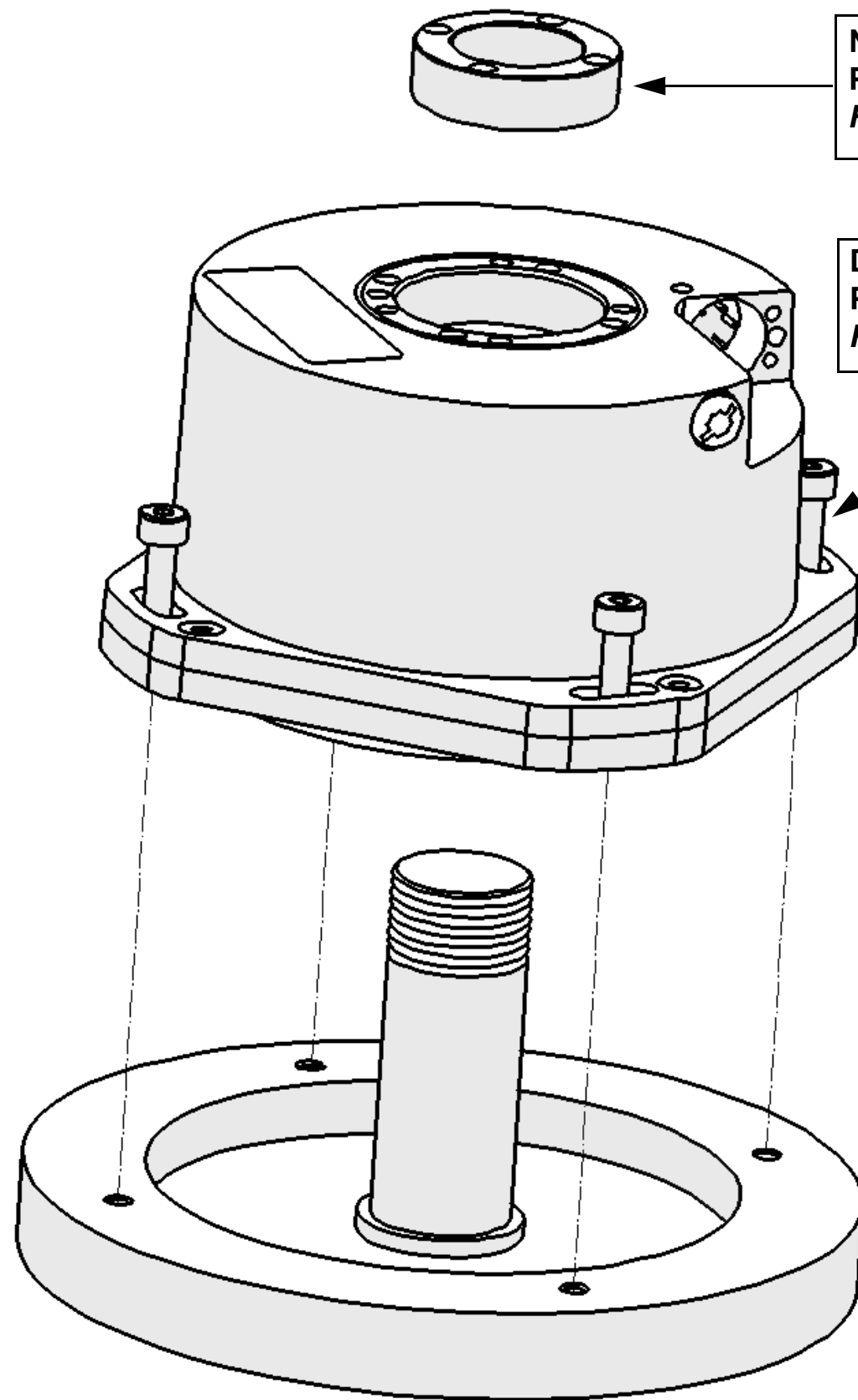
DIN EN 100





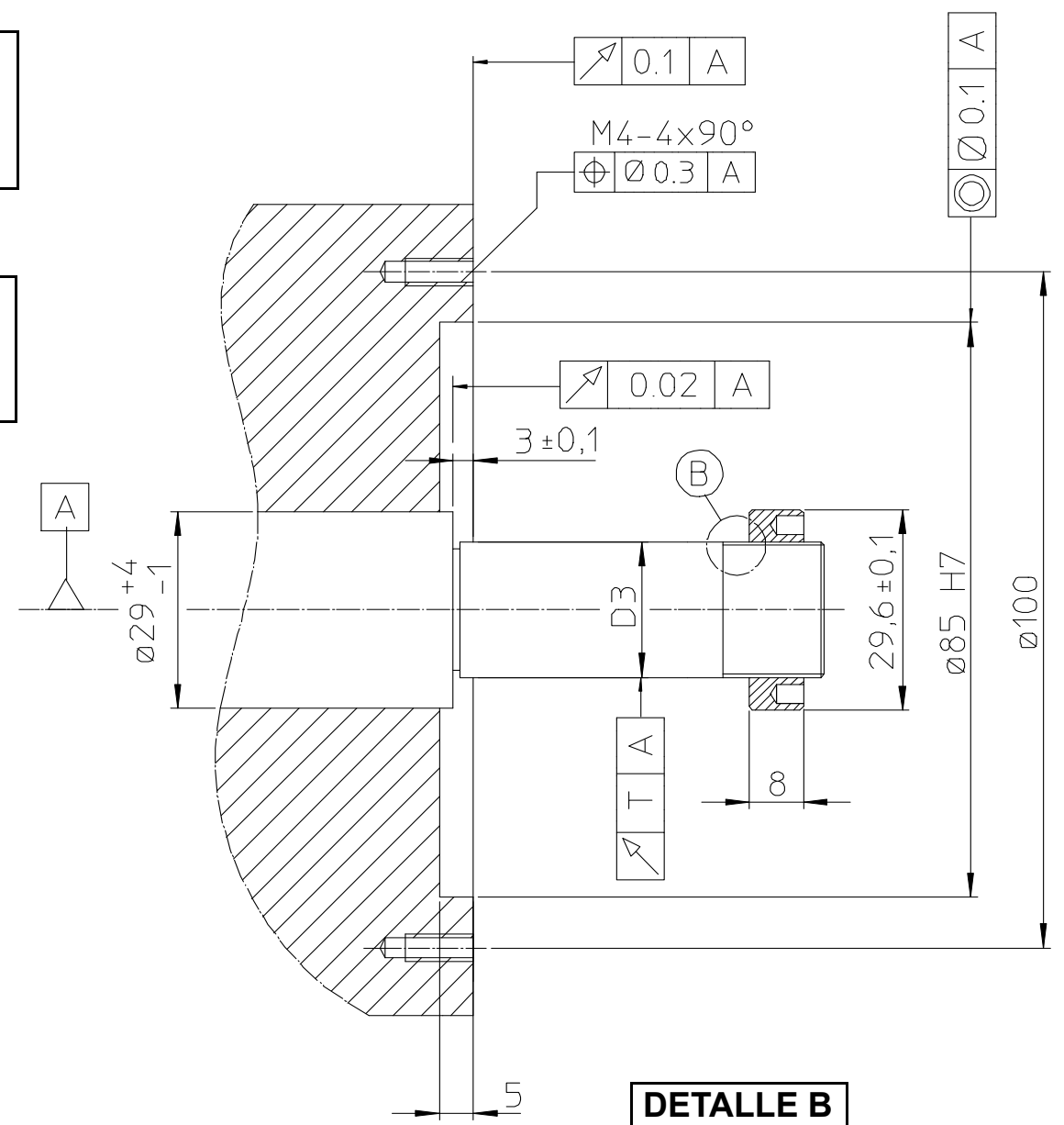
# MONTAJE / MOUNTING

# Cotas de montaje / Mounting dimensions

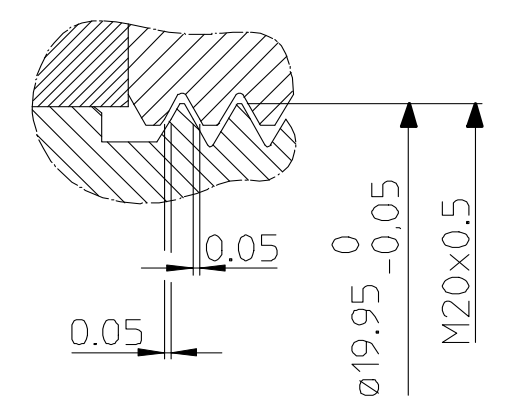


**Nut / Tuerca Ref. T-20**  
**Par de apriete = 20 Nm**  
**Fastening torque = 20 Nm**

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



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

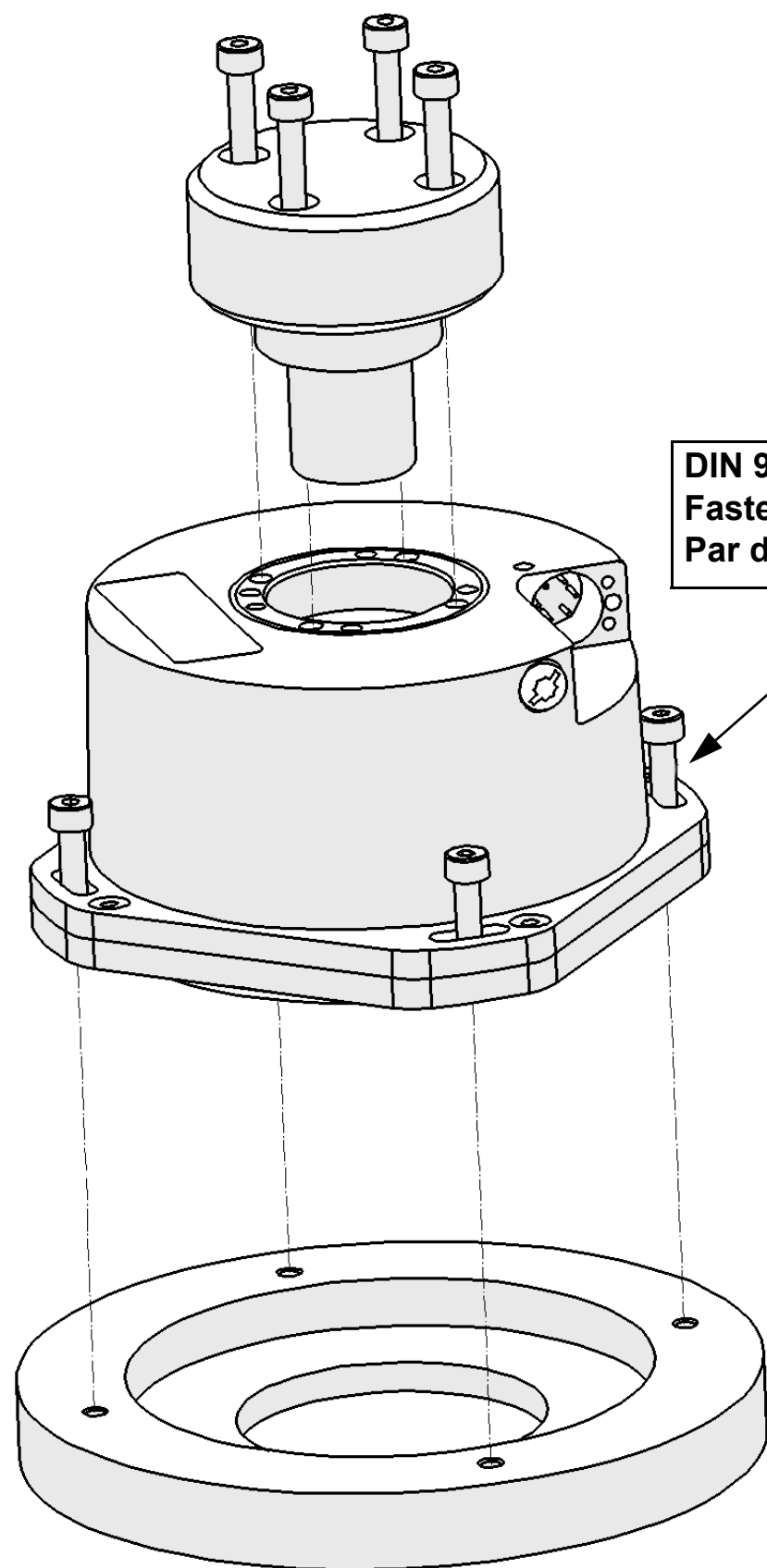


Precisión Accuracy	±2.5"	±5"
D3	ϕ20 g6	ϕ20 g7
T	0.01	0.02

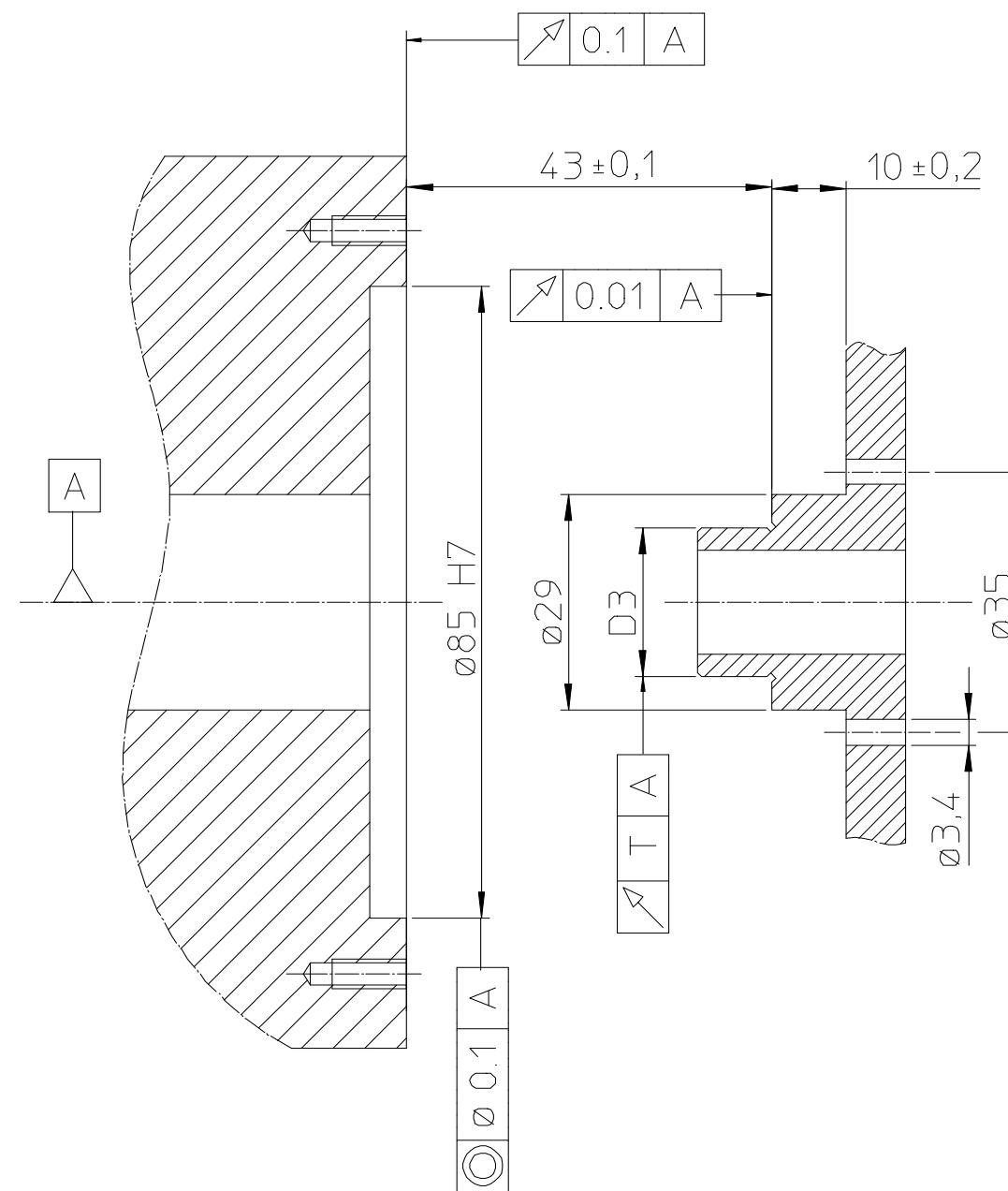
[A] Rodamiento / Roller bearing

# MONTAJE / MOUNTING

# Cotas de montaje / Mounting dimensions



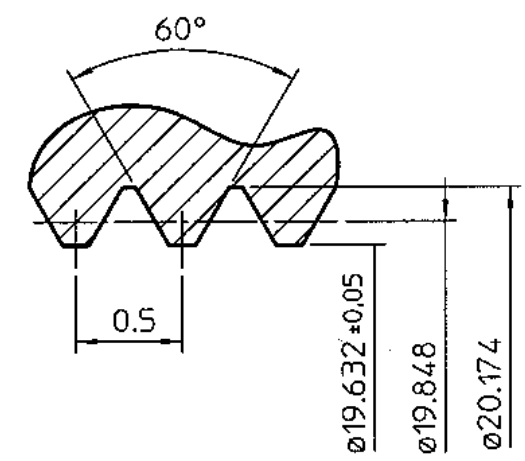
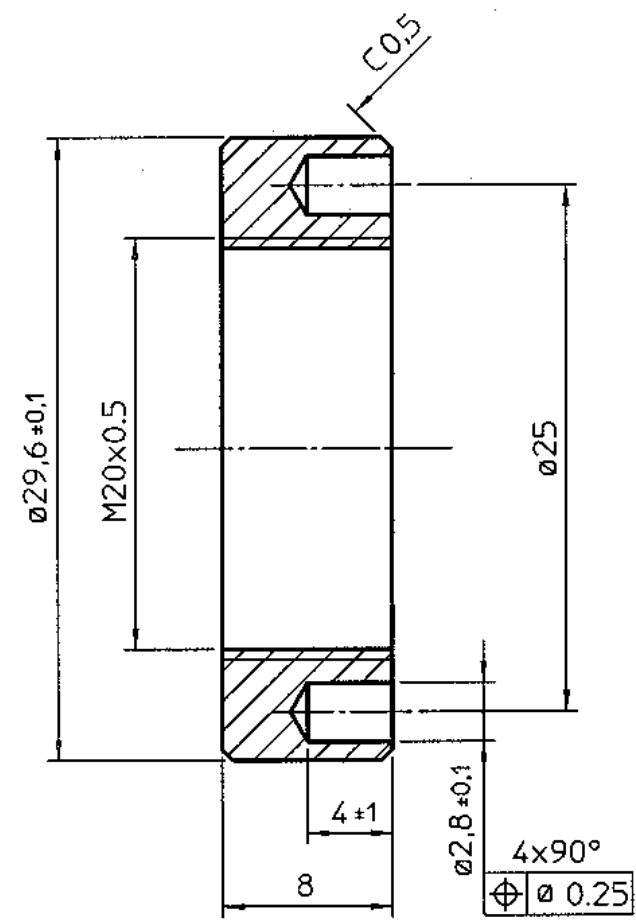
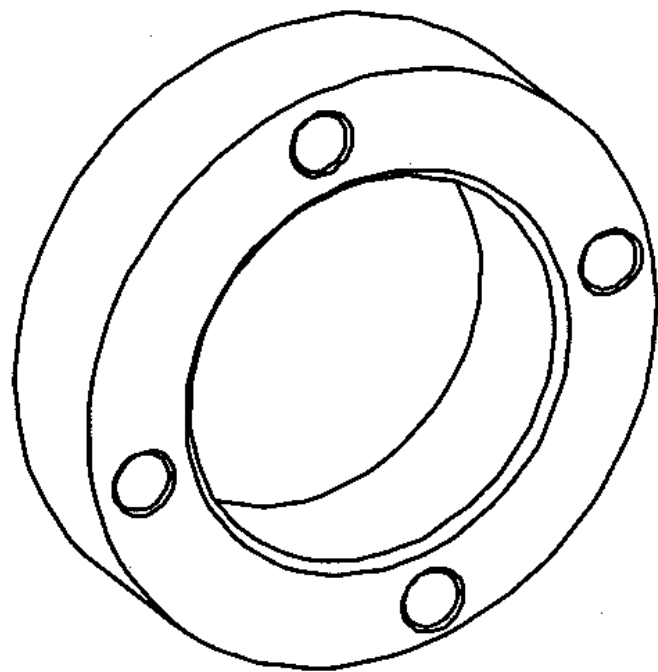
DIN 912 - M4x16  
 Fastening torque = 2.5 Nm  
 Par de apriete = 2.5 Nm



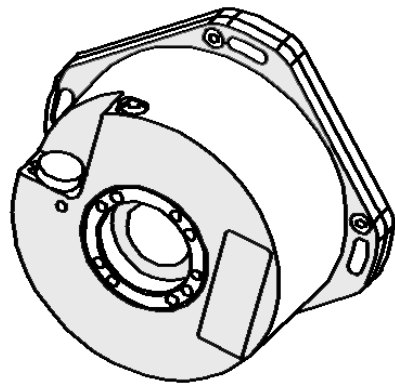
Precisión Accuracy	±2.5"	±5"
D3	∅20 g6	∅20 g7
T	0.01	0.02

A Rodamiento / Roller bearing

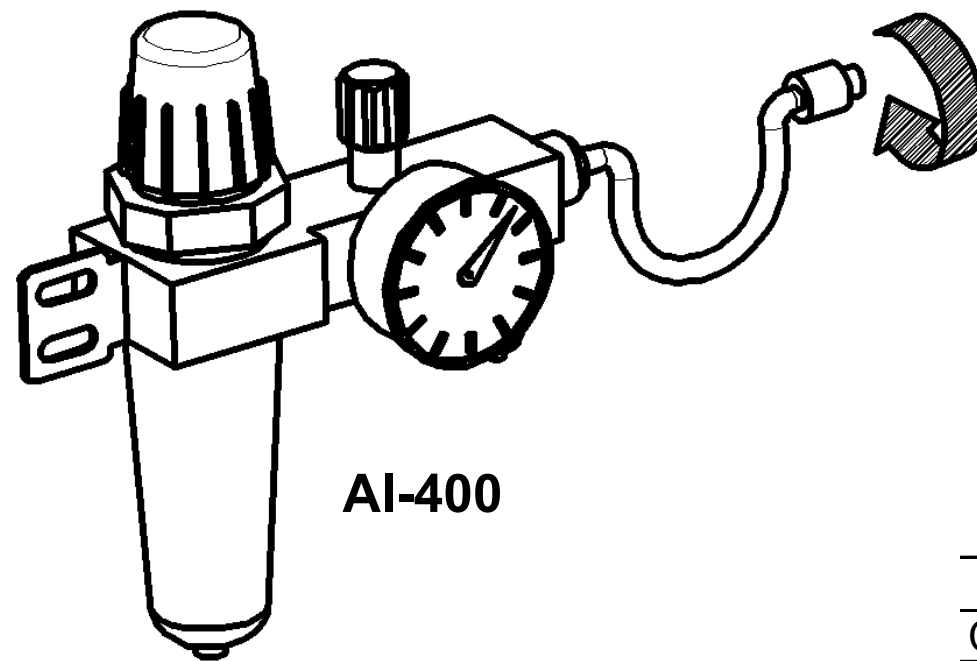
# TUERCA T-20 / T-20 NUT



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

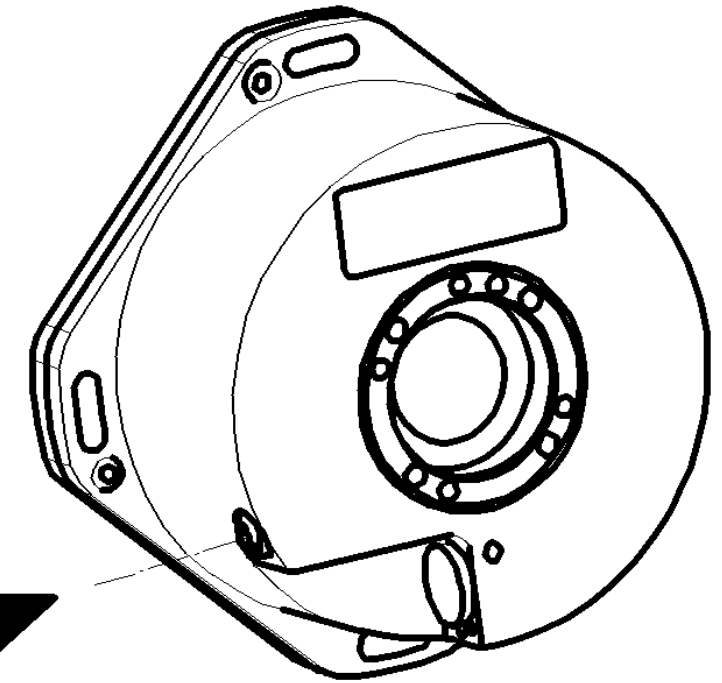


**> IP 64**



**AI-400**

**(A)**

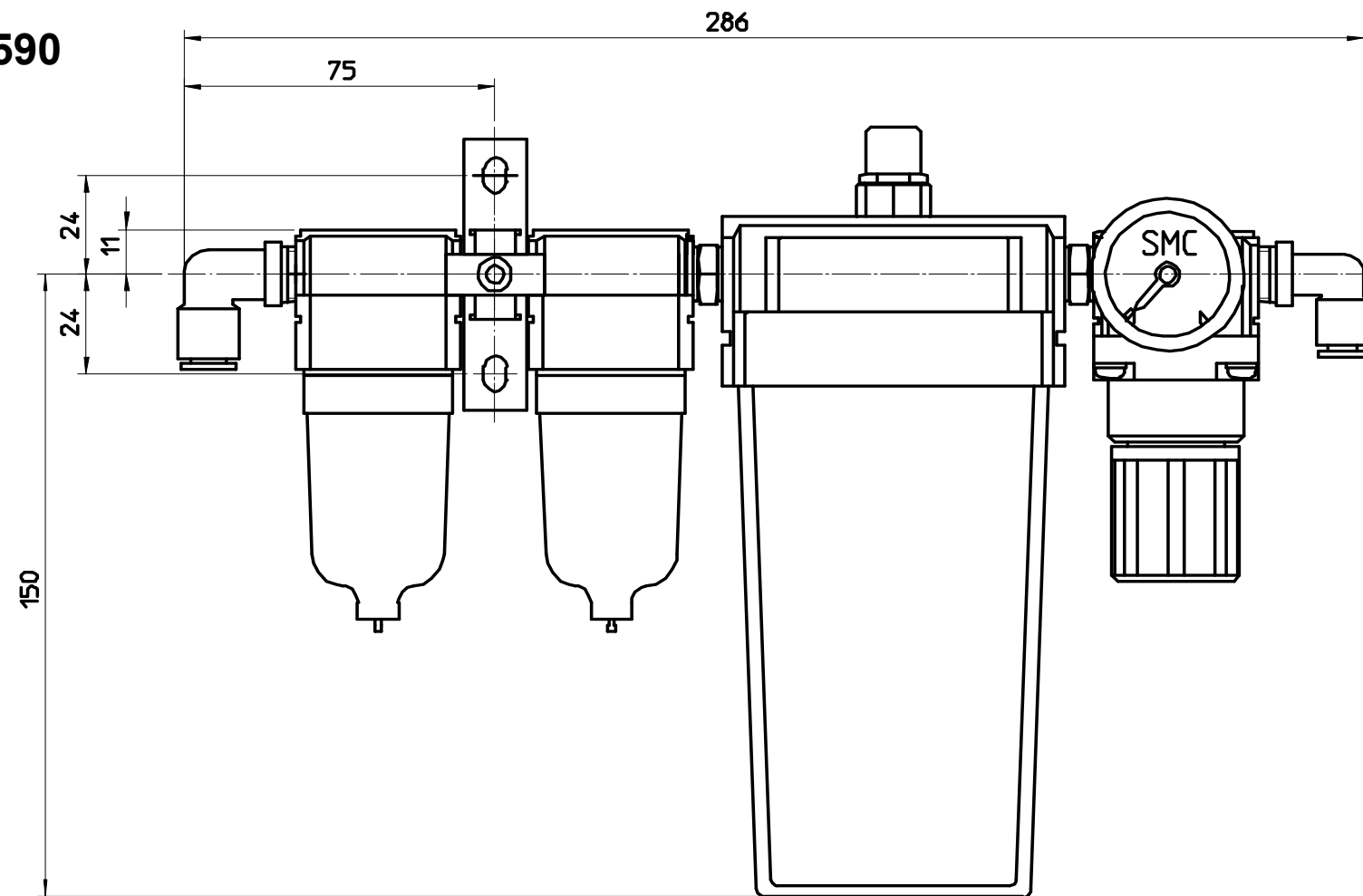


**(A) AIR CONDITIONS**  
**DIN ISO 8573 - 1**

Class 1 - Particle	Max. 0.1 µm
Class 4 (7 bar) - Punto rocío / Dewpoint	3 °C
Class 1 - Max. Oil concentration	0,01 mg/m <sup>3</sup>
<b>Presión / Pressure</b>	1 kg/cm <sup>2</sup>
<b>Flujo / Flow</b>	10 l./min/encoder



AI 590

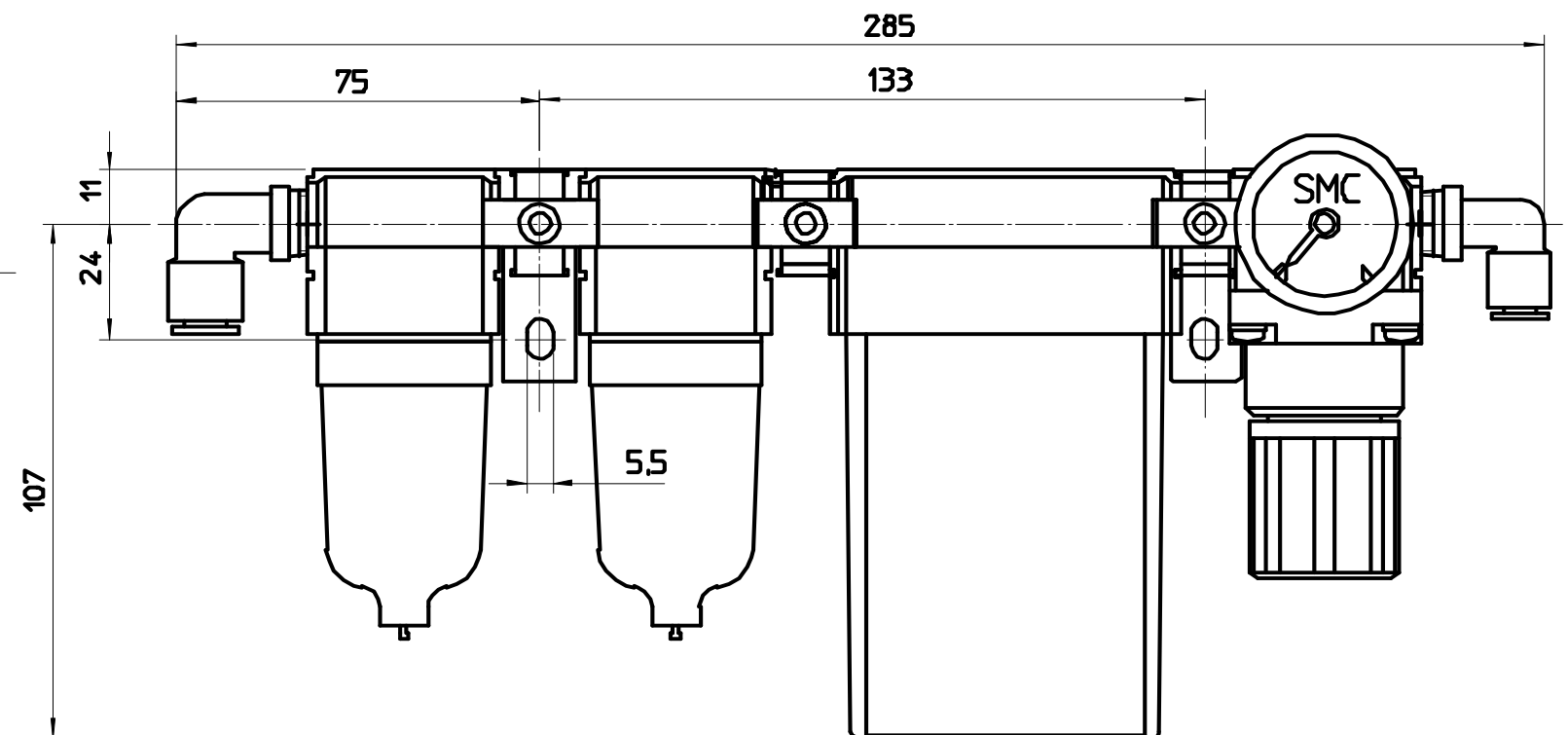
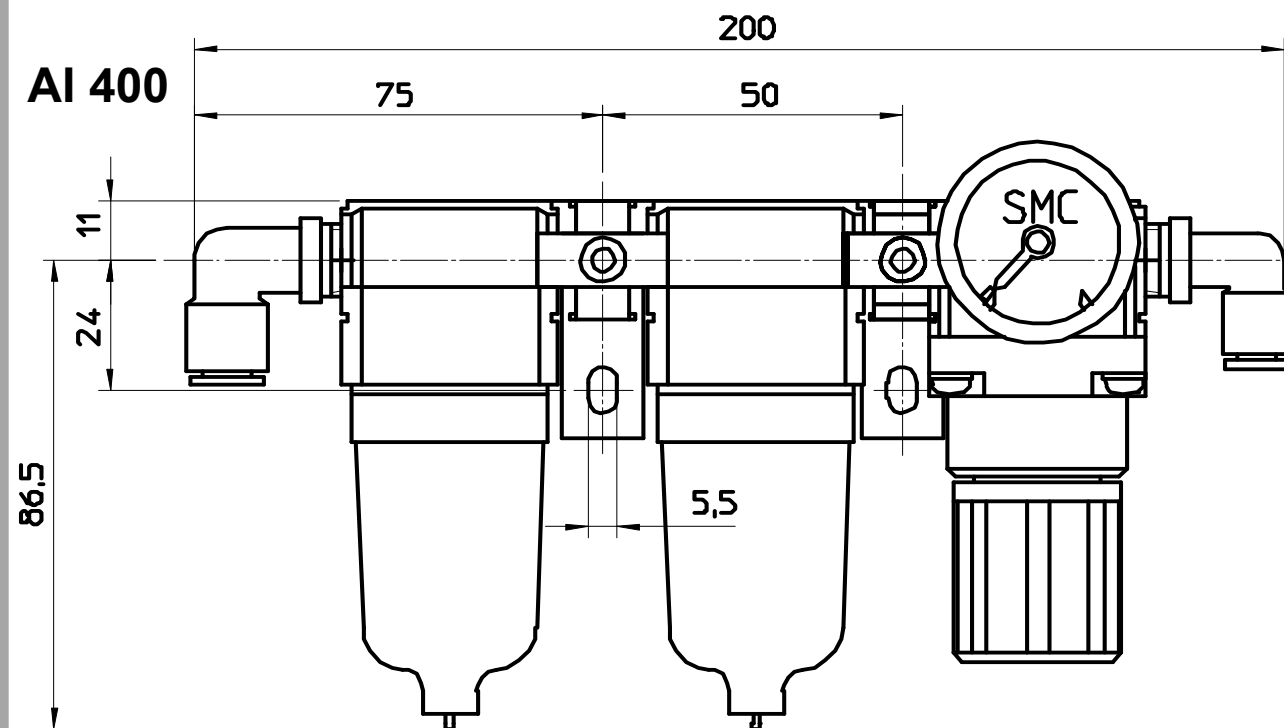


### FILTROS DE AIRE / AIR FILTERS

02200000	AI 400	25 l/min
02200001	AI 525	25 l/min
02200002	AI 550	50 l/min
02200003	AI 590	90 l/min

AI 525 / AI 550

AI 400



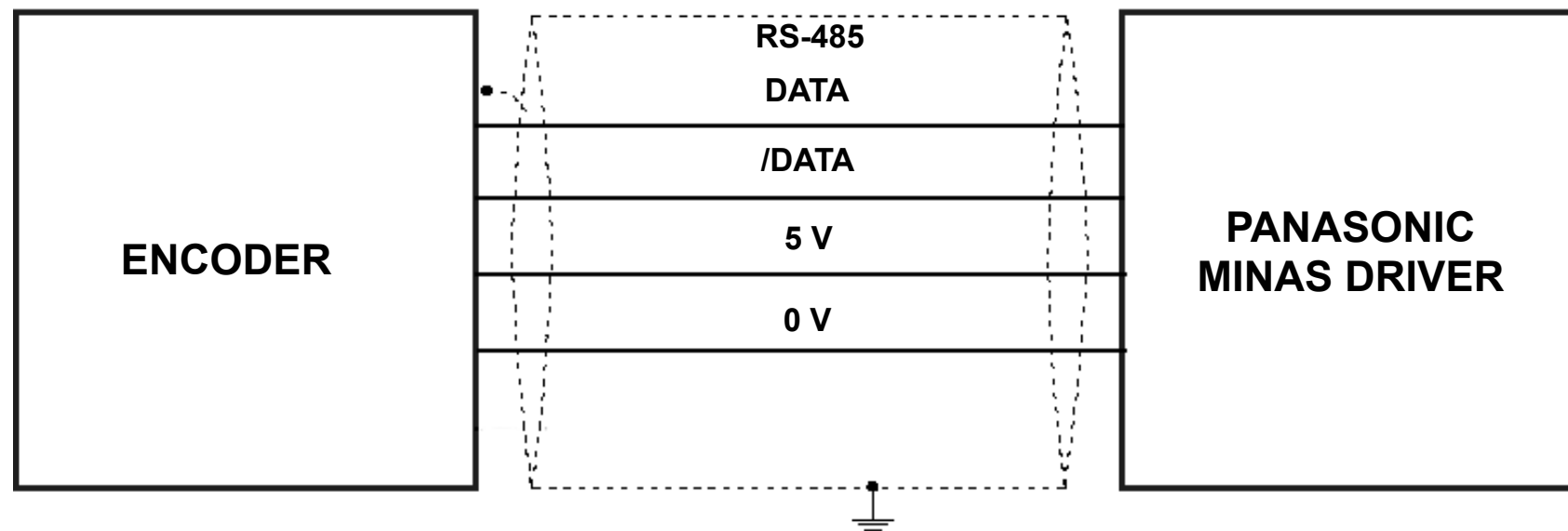
## CARACTERÍSTICAS MECÁNICAS MECHANICAL CHARACTERISTICS

Modelo	HAP-23-D90-2	HAP-23-D90	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

\* Limitación eléctrica = 1500 rpm / *Electrical limitation = 1500 rpm*

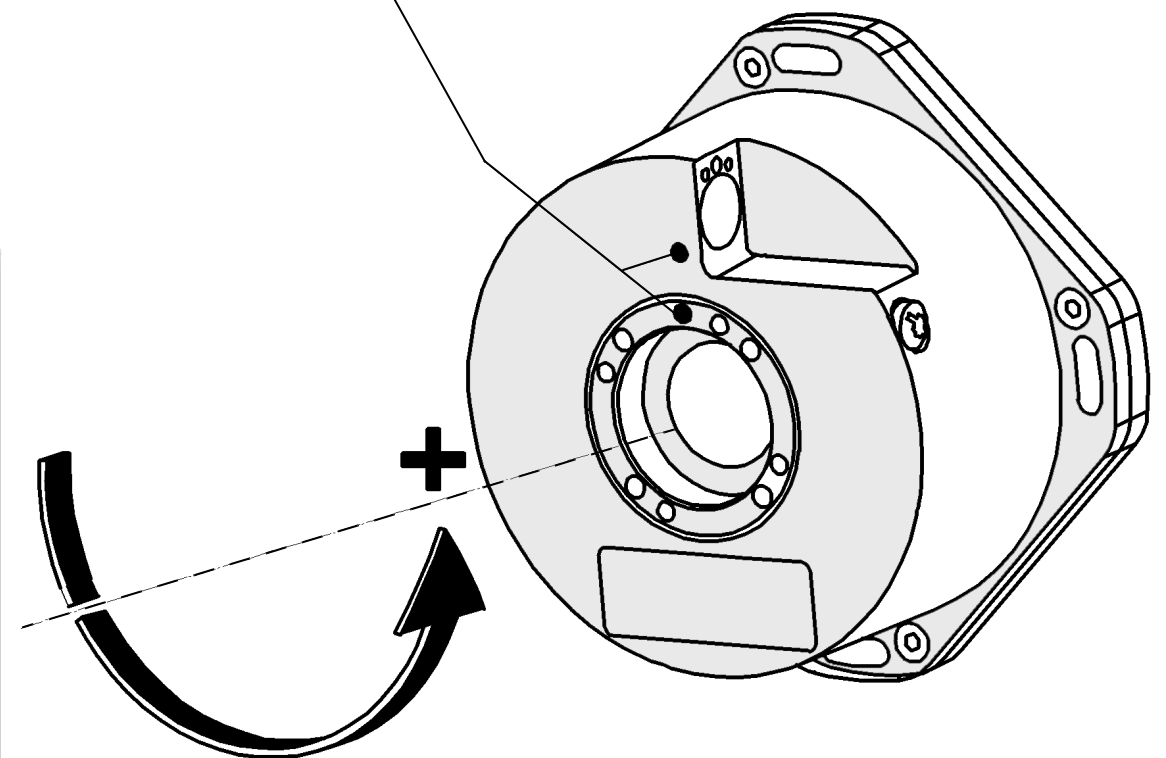
# CARACTERÍSTICAS ELÉCTRICAS / ELECTRICAL CHARACTERISTICS

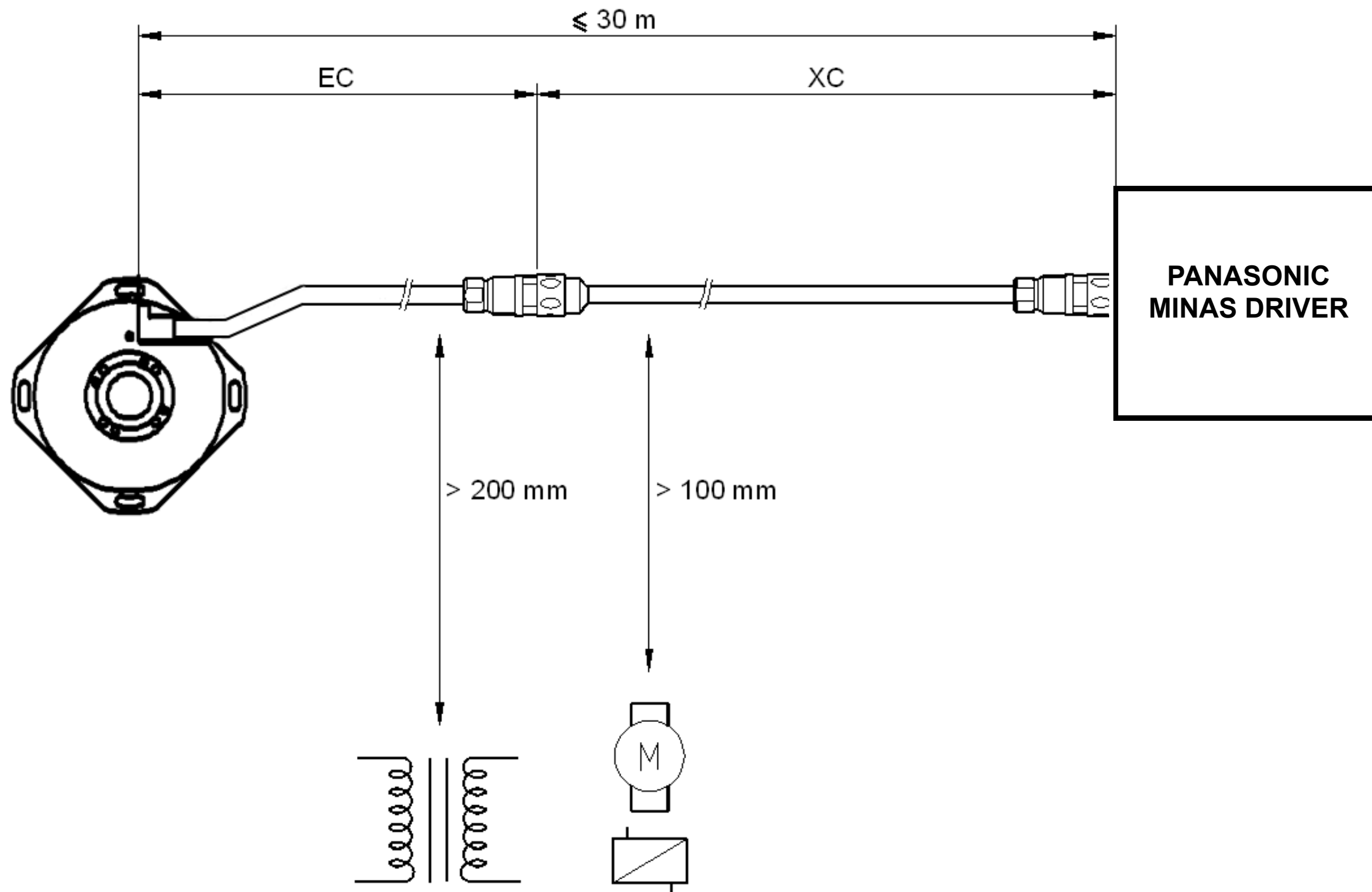
Resolución <i>Resolution</i>	23 bit (8 388 608) Pulsos / vuelta <i>pulses / turn</i>
Alimentación <i>Power supply</i>	3.6 V ... 5.25 V, <300 mA
Conexión <i>Connection</i>	Con conector incorporado <i>With built-in connector</i>
Longitud de cable <i>Cable length</i>	30 m 99 feet



Posición del origen 0°  
*0° origin position*

Girar eje para alinear puntos  
*Turn the shaft lining up the dots*





## PANASONIC: CONEXIONES / CONNECTIONS

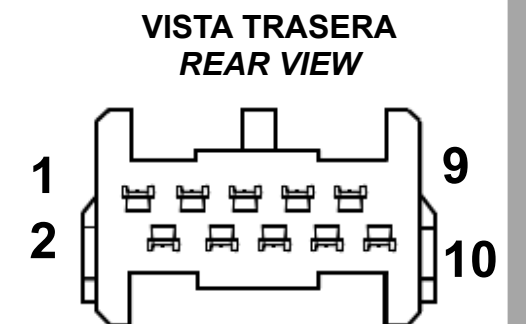
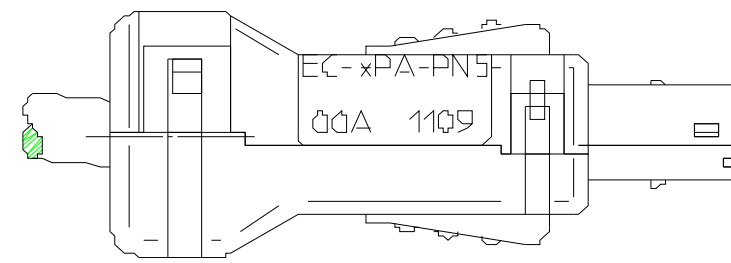
### EC...PA...PN5

Cable para **conexión directa** a sistemas MINAS. Disponible en 1, 3, 6 and 9 metros.

*Cable for **direct connection** to MINAS systems. Available in 1, 3, 6 and 9 meters.*

#### EC-PA-PN5

PIN	3	4	1	2	Carcasa / Housing
SEÑAL SIGNAL	DATA	/DATA	+5V	0V	Tierra / Ground
COLOR	Verde Green	Amarillo Yellow	Marrón + Gris Brown + Gray	Blanco + Rosa White + Pink	Malla Shield



# PANASONIC: CONEXIONES / CONNECTIONS

## Alargaderas / Extension cables

CABLE		ALARGADERA / EXTENSION CABLE			LONGITUD TOTAL TOTAL LENGTH
Reference	Connector	Connector	Reference	Connector	
EC-1B-C9	C9	C8	XC-C8-xA-PN5	Panasonic	* 30 m
EC-1B-C9-N	Round 17-PM/RM	Round 17-PH/RH	XC-C8-xF-C9	C9-Round 17-PM/RM	

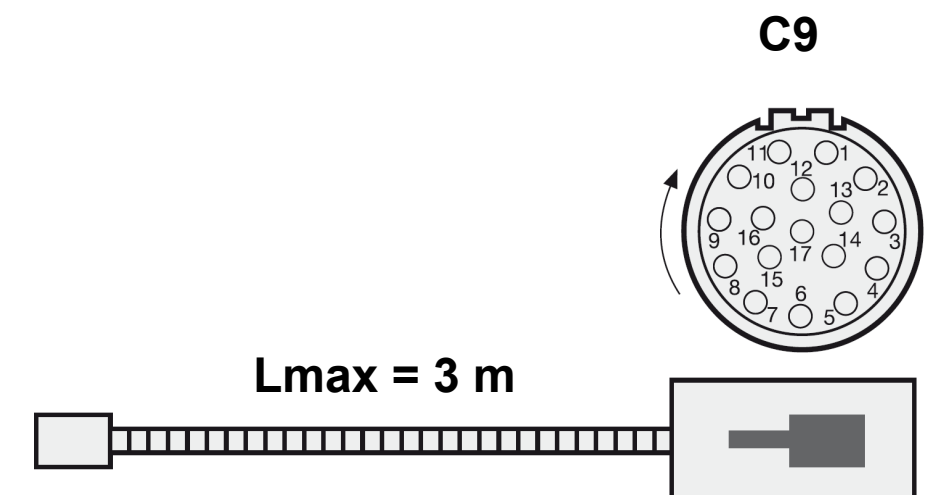
PM = Pines macho, RM = Rosca Macho, PH = Pines hembra, RH = Rosca hembra, M= Macho, H = Hembra  
 Round = Circular, PM = Male pins; RM = Male thread, PH = Female pins, RH = Female thread, M = Male, H = Female

También se puede utilizar la combinación de un cable **EC...B...C9** con una alargadera **XC...C8...A-PN5** para otras longitudes.  
 A combination of **EC...B...C9 cable** and an **XC...C8...A-PN5 extension cable** may be used for other lengths.

**EC...B...C9** Cable disponible en 1 y 3 metros. Contactar con FAGOR para otras longitudes.  
 Cable available in 1 and 3 meters. Contact FAGOR for other lengths.

### Conector (C9) macho circular 17 male connector

PIN	14	17	7	1	10	4	Caperuza Housing
SEÑAL SIGNAL	DATA	/DATA	+5V	+5V sensor	0V	0V sensor	Tierra Ground
COLOR	Gris Grey	Rosa Pink	Marrón Brown	Verde claro Light green	Blanco White	Naranja Orange	Malla interna Internal shield



## 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 diciembre de 2015

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 December 1st 2015





