



Fagor Automation S. Coop.

Manual code: 14460150

Manual version: 1501



ENCODER HAM-D90

**MANUAL DE INSTALACIÓN
INSTALLATION MANUAL**

FAGOR AUTOMATION S. COOP.

B^a San Andrés N° 19

Apdo de correos 144

20500 Arrasate/Mondragón

- Spain -

Web: www.fagorautomation.com

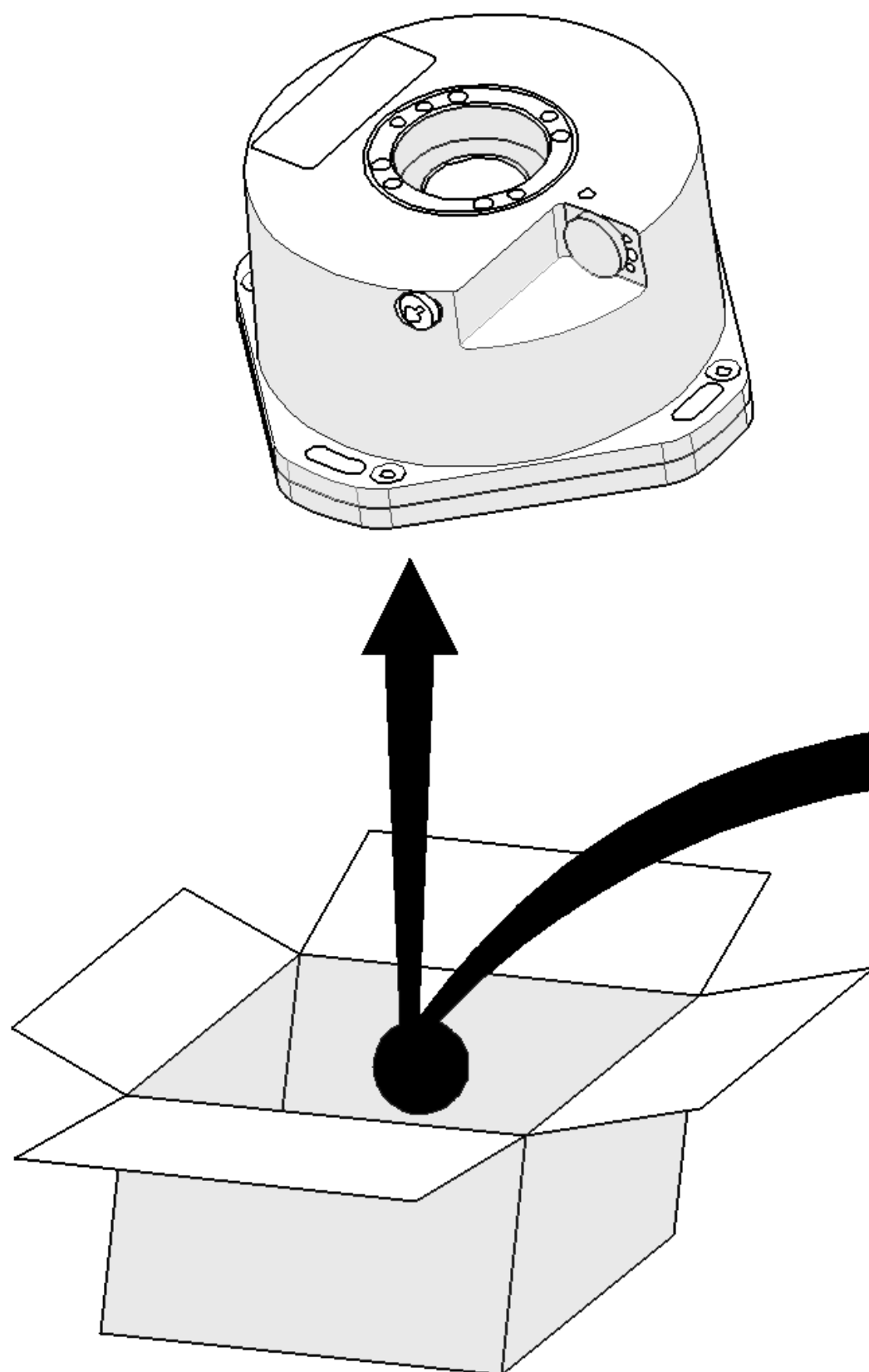
Email: info@fagorautomation.es

Tel.: (34) 943 719200

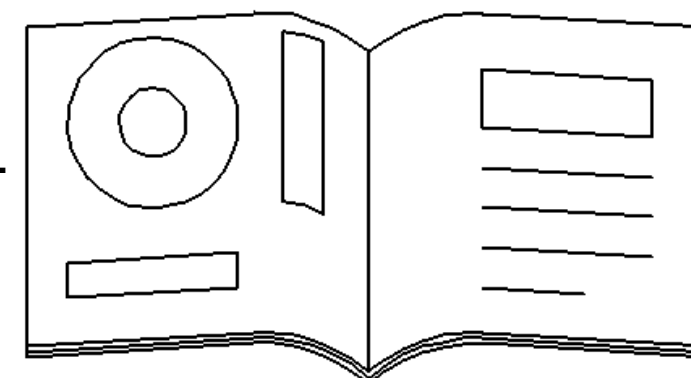
Fax: (34) 943 791712



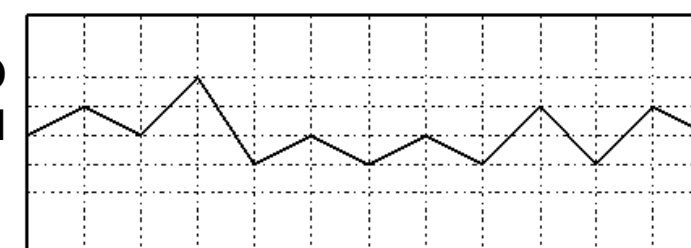
Fagor Automation S. Coop.



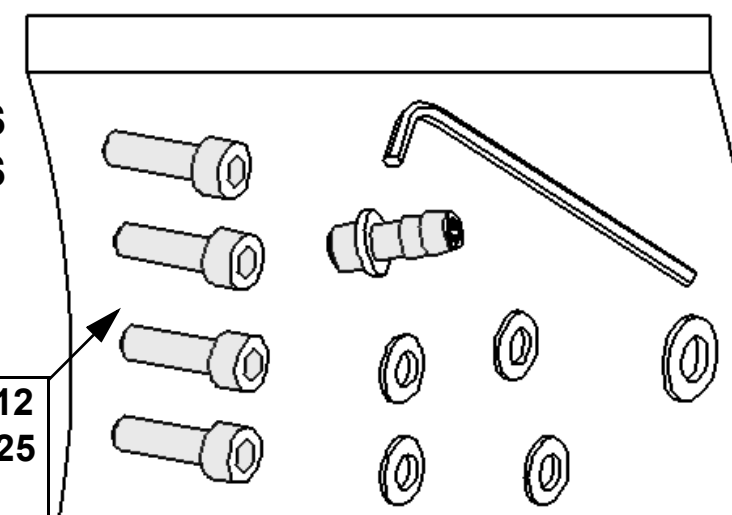
MANUAL



**GRÁFICO
GRAPH**



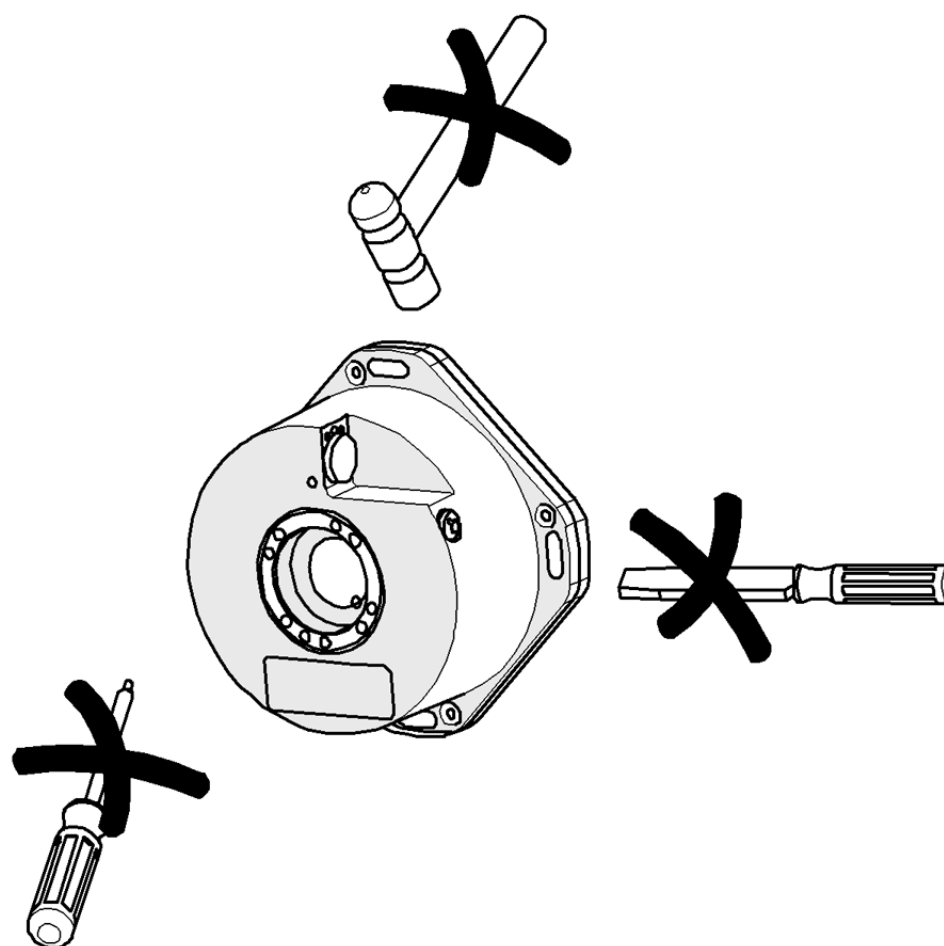
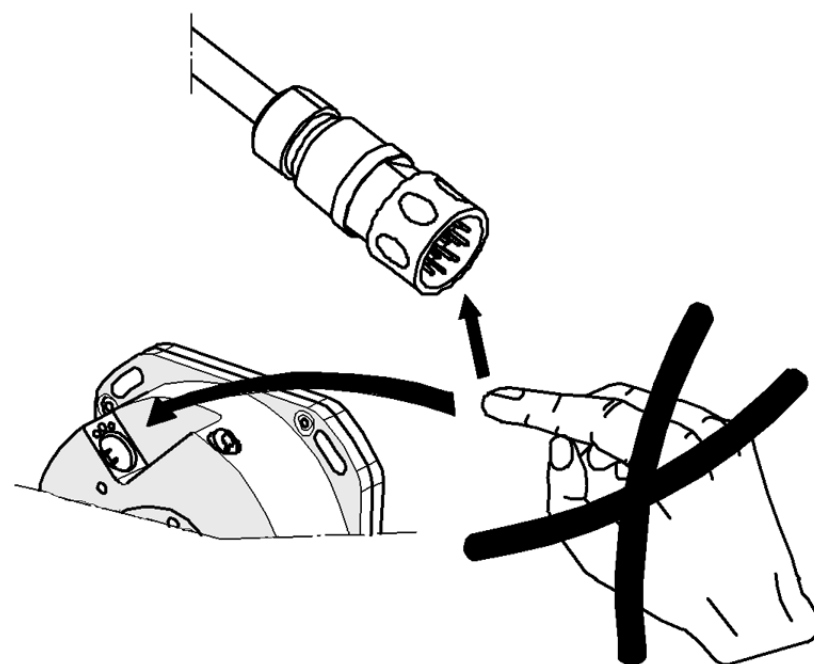
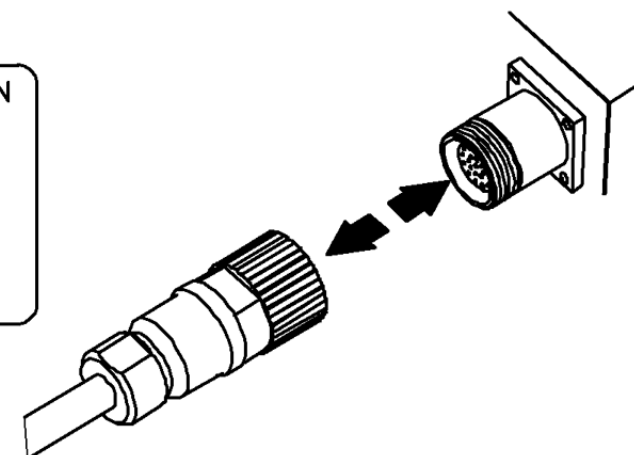
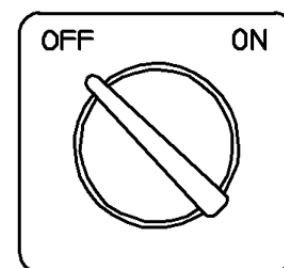
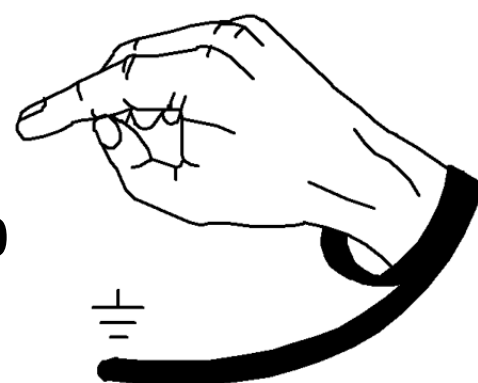
**ACCESORIOS
ACCESSORIES**



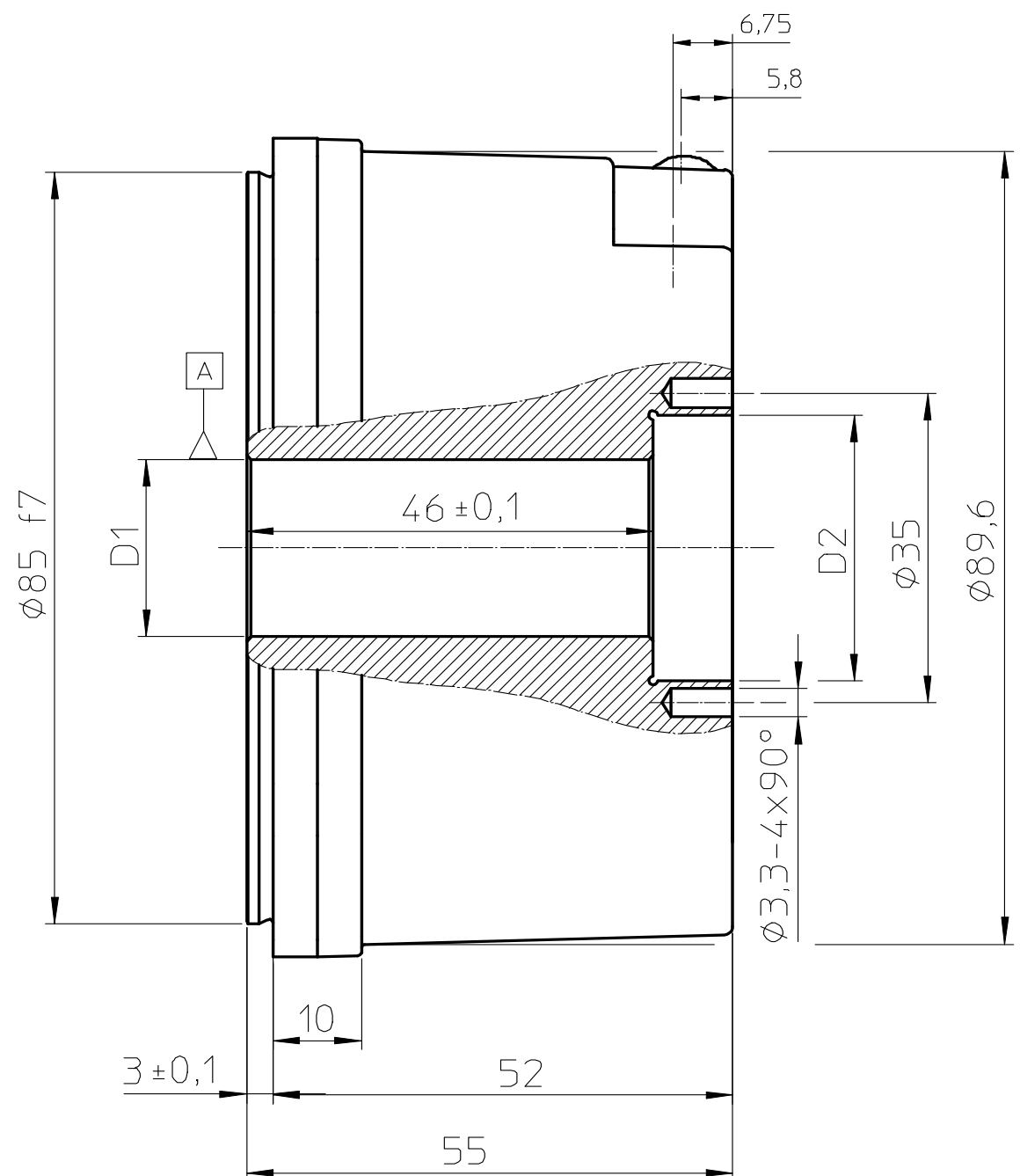
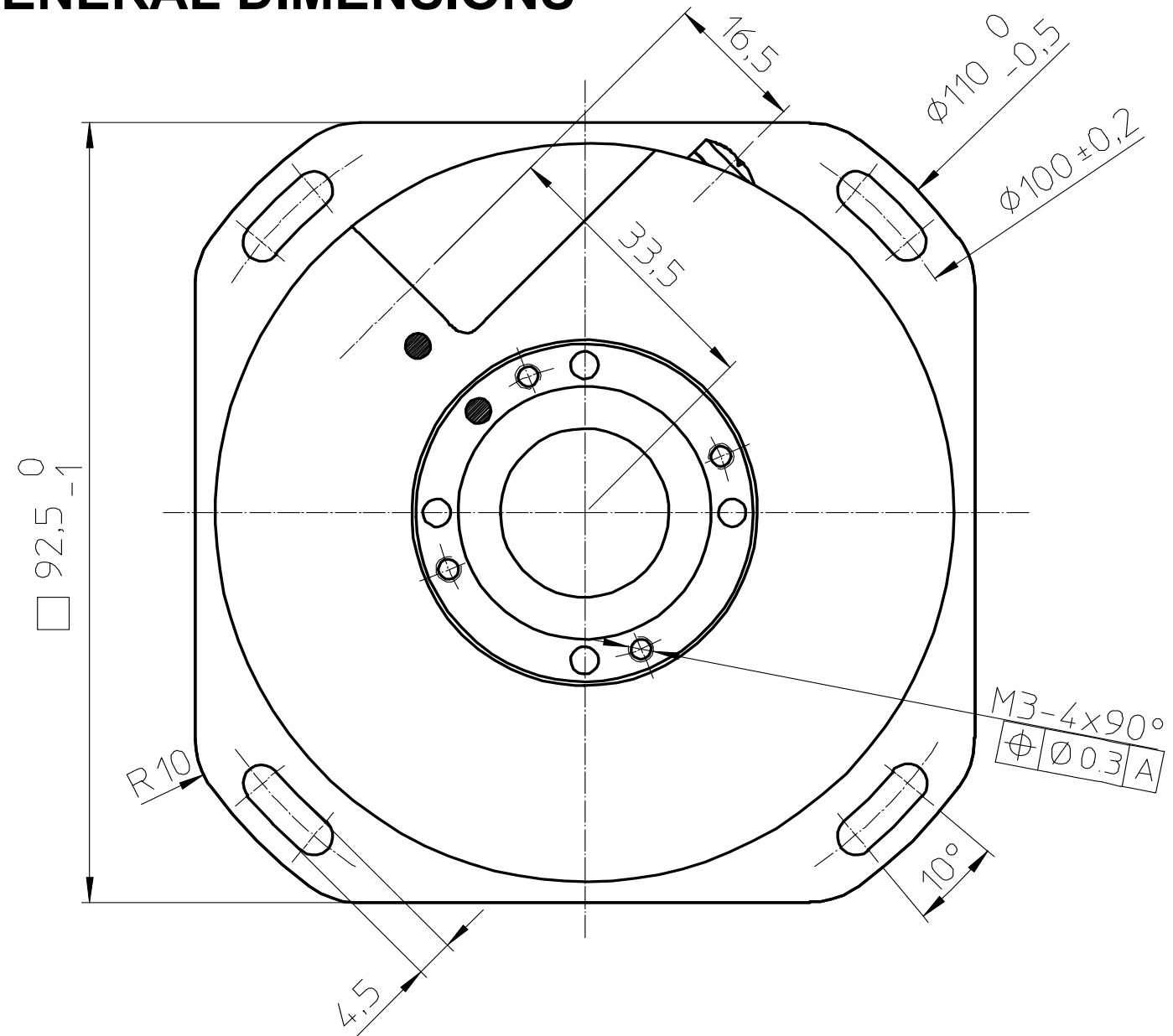
4 tornillos/bolts M4 x 16 DIN 912
4 arandelas/washers M4 DIN 125
1 racor de aire / air intake
1 arandela racor de aire /
air intake washer
1 llave Allen / Allen wrench



DIN EN 100

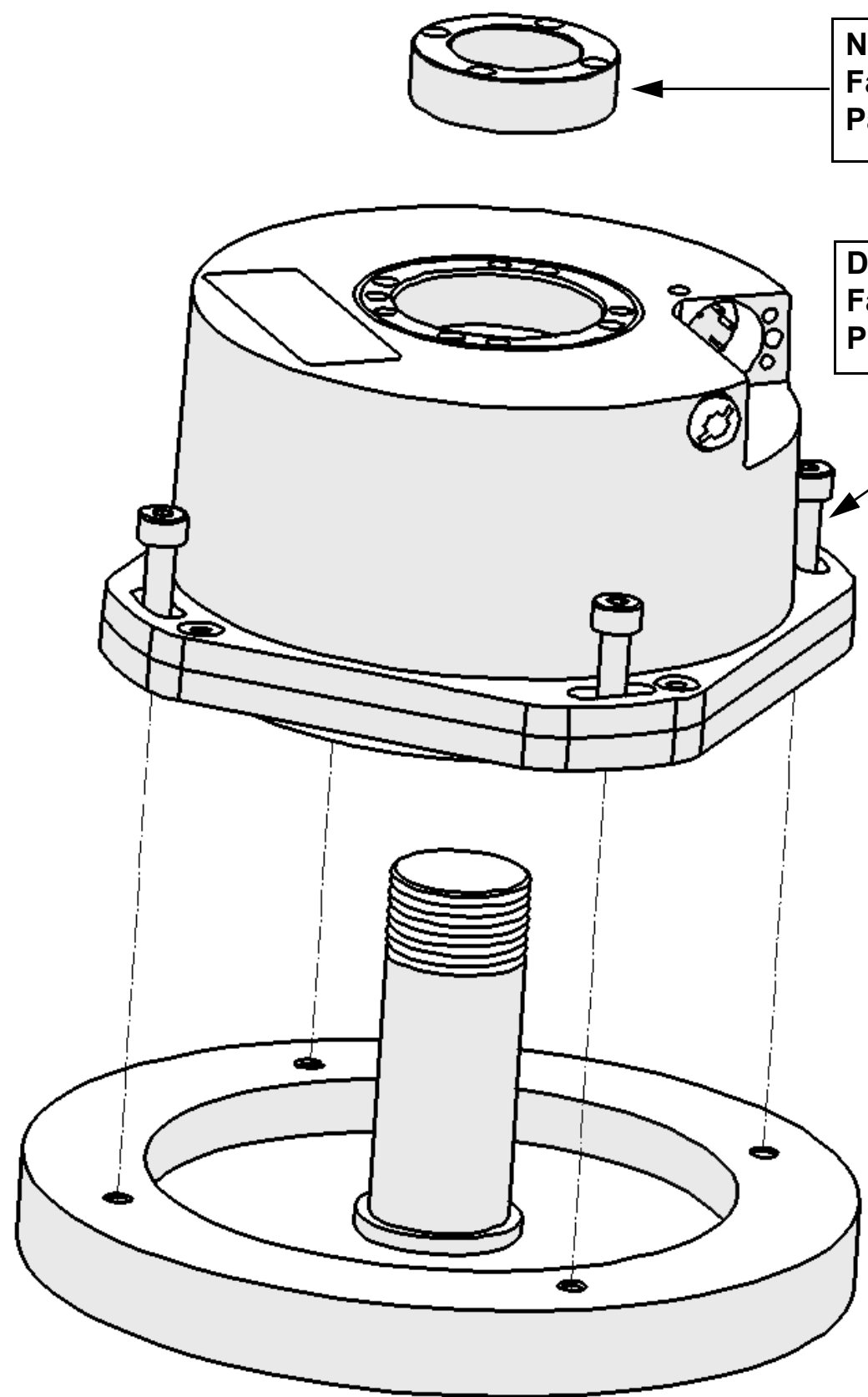


GENERAL DIMENSIONS



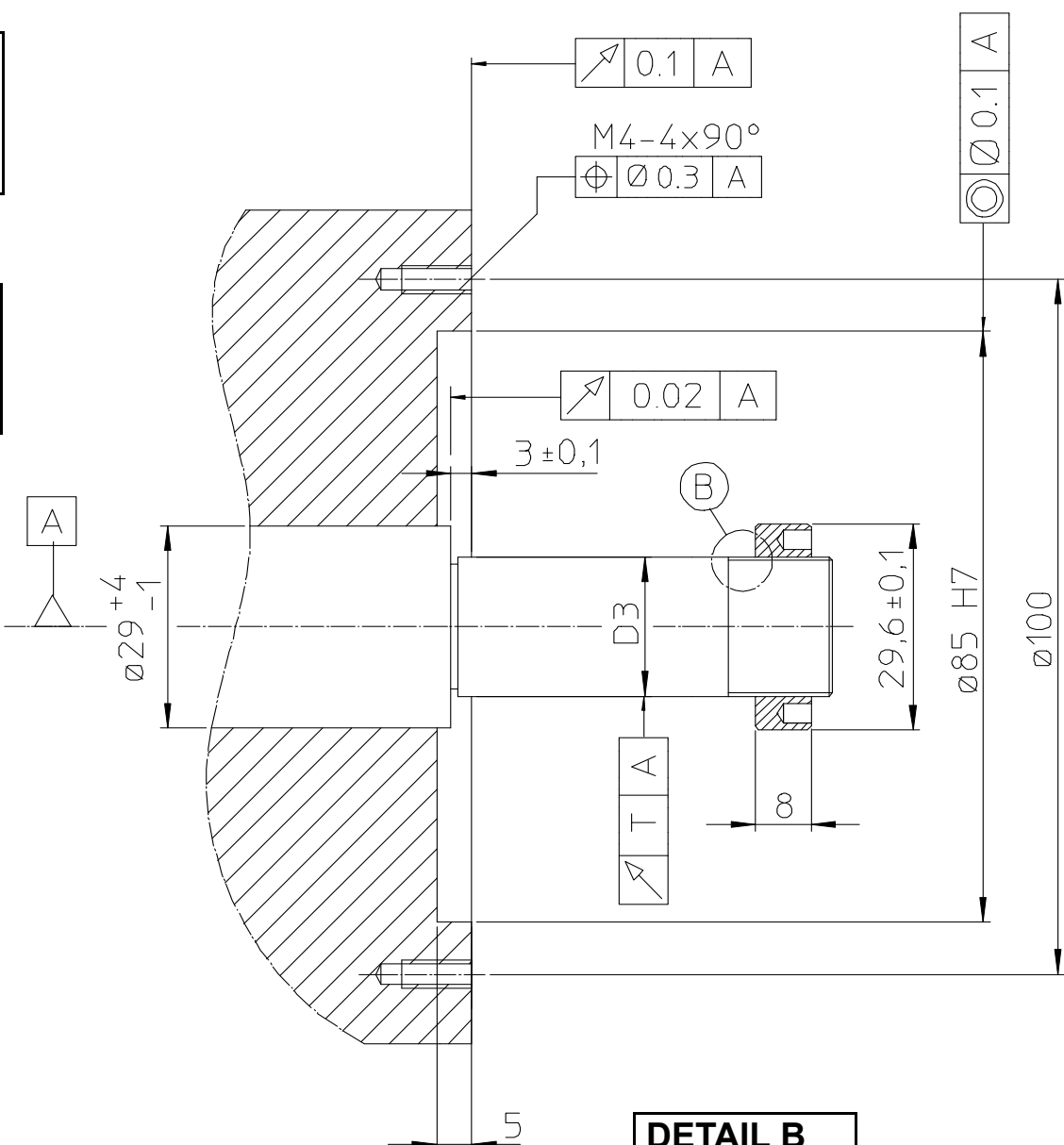
MONTAJE / MOUNTING

Cotas de montaje / Mounting dimensions



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

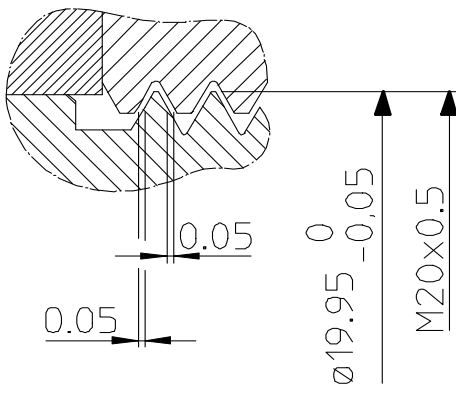
DIN 912 - M4x16
Fastening torque = 2.5 Nm
Par de apriete = 2.5 Nm



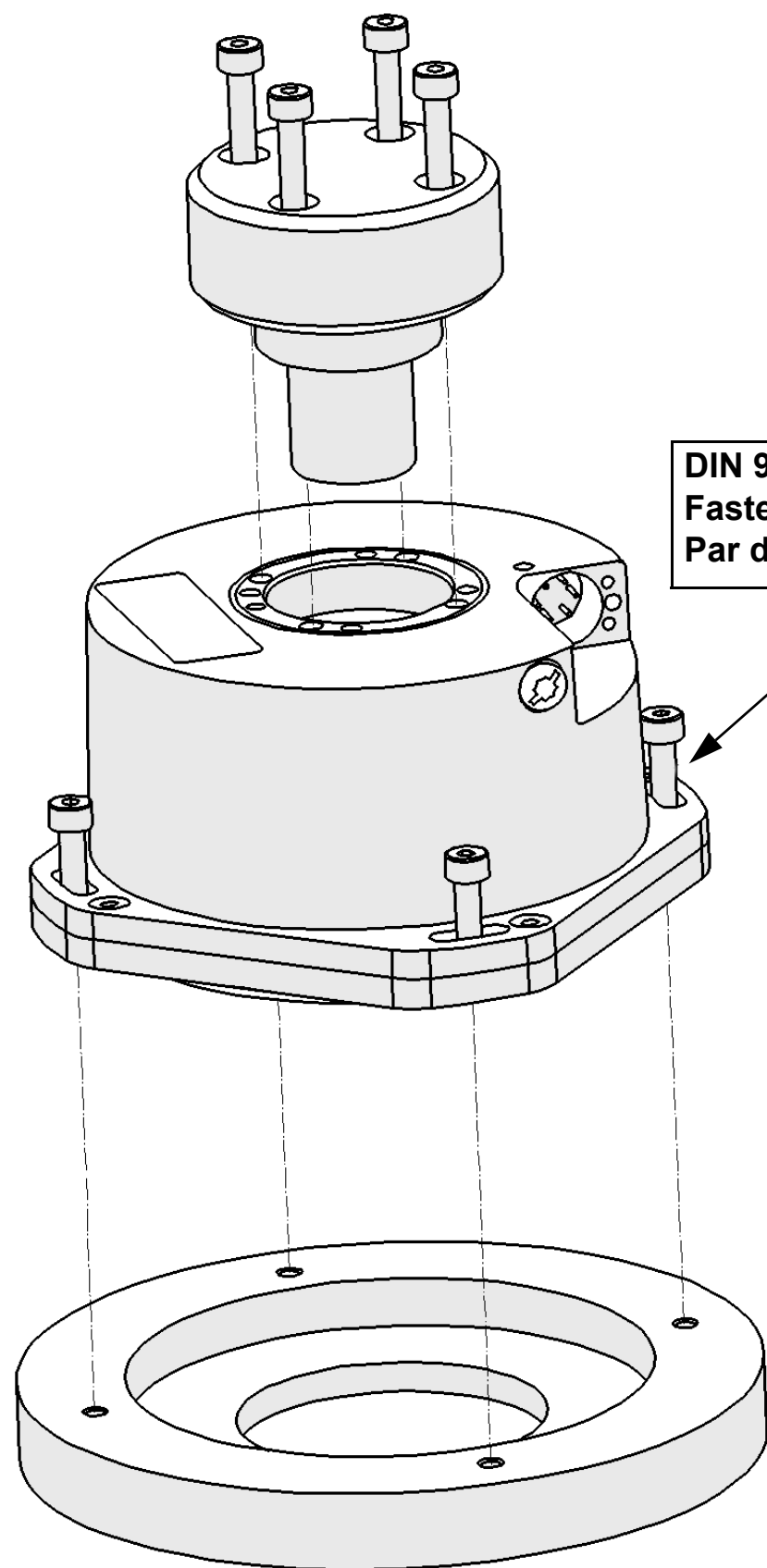
Precisión Accuracy	±2.5"	±5"
D3	ø20 g6	ø20 g7
T	0.01	0.02

[A] Rodamiento / Roller bearing

**DETAIL B
DETALLE B**

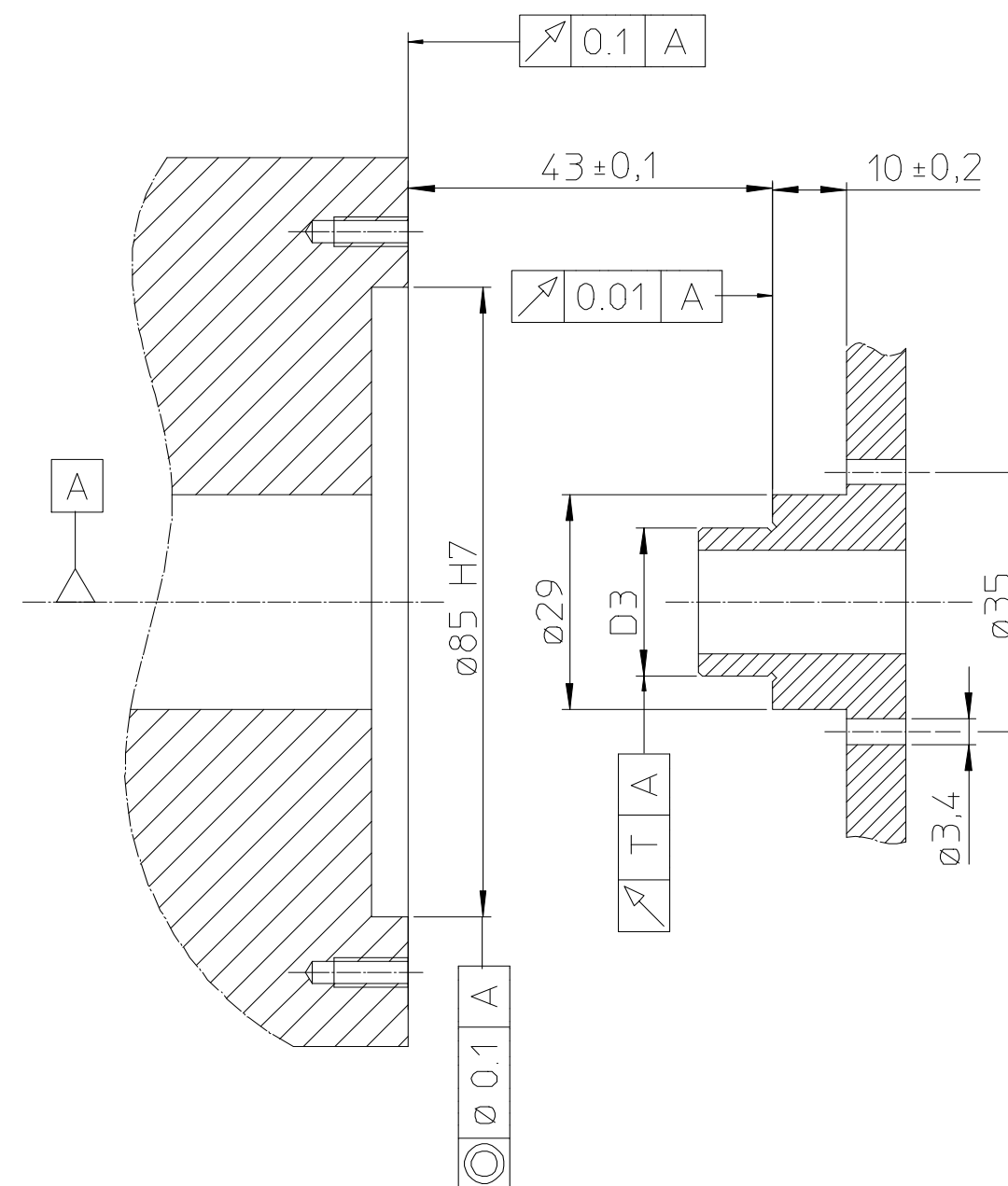


MONTAJE / MOUNTING



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

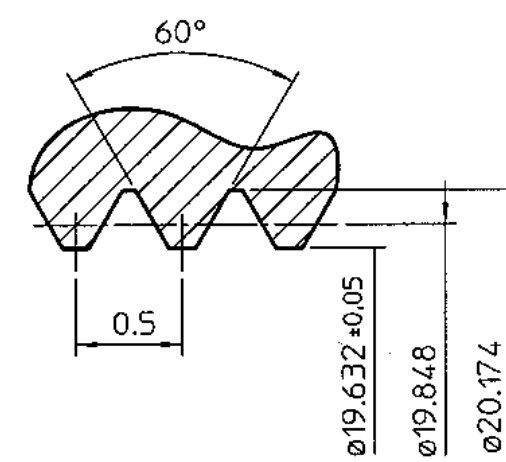
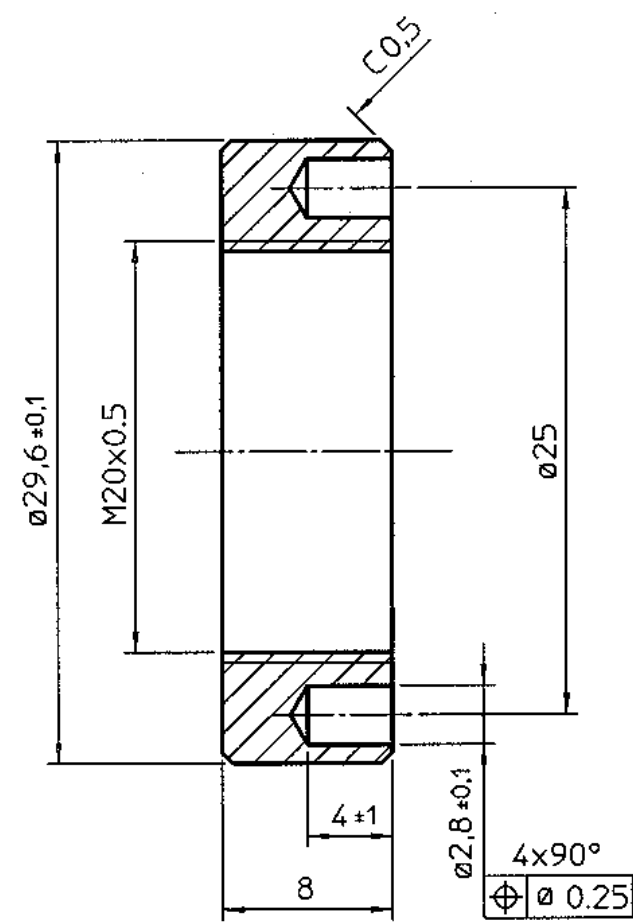
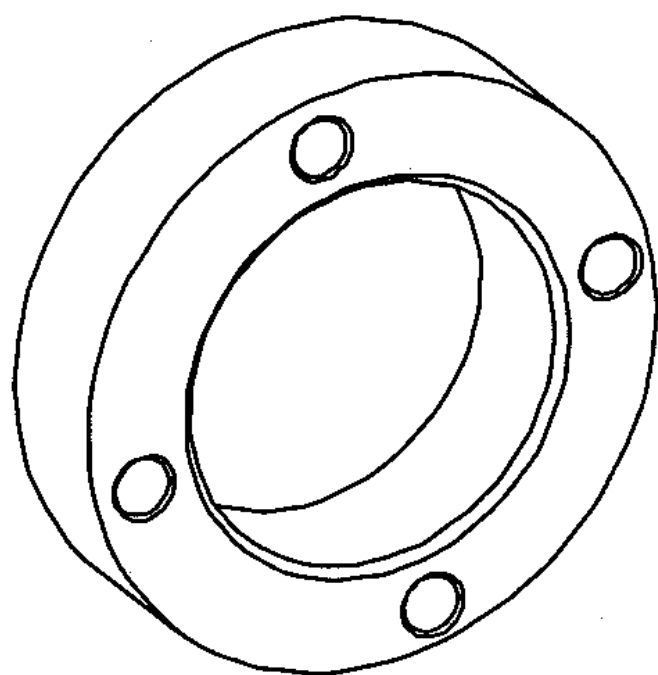
Cotas de montaje / Mounting dimensions



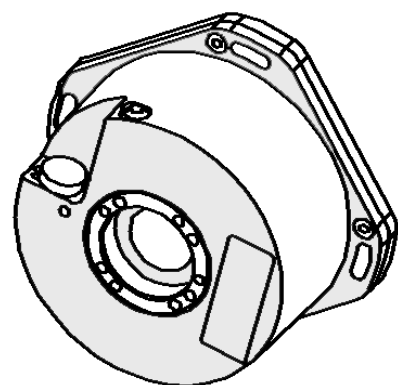
Precisión Accuracy	±2.5"	±5"
D3	∅20 g6	∅20 g7
T	0.01	0.02

A Rodamiento / Roller bearing

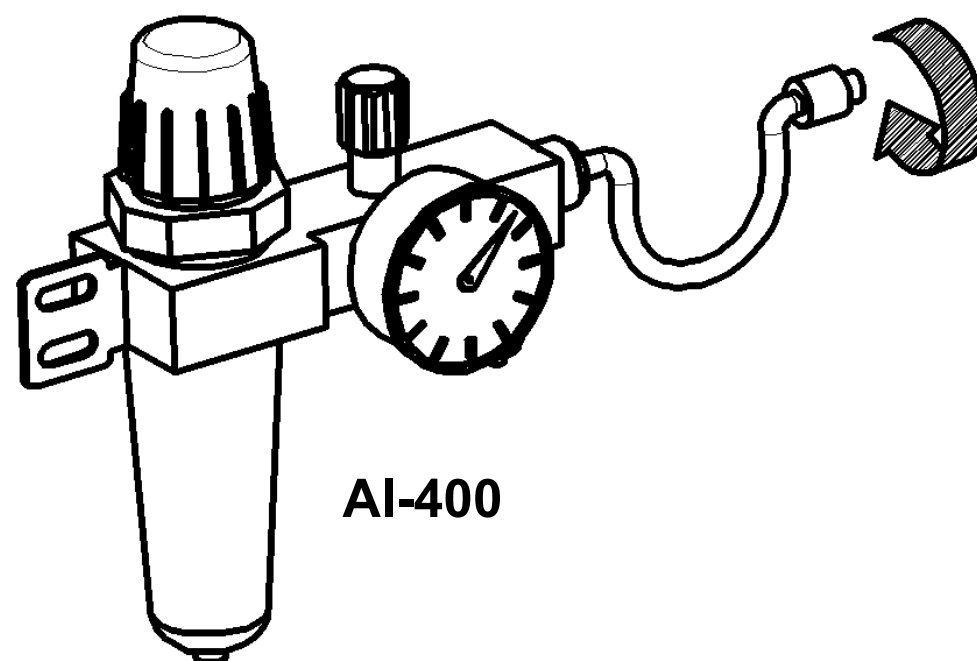
TUERCA T-20 / T-20 NUT



Nivel máximo: IP 64
Maximum level IP 64

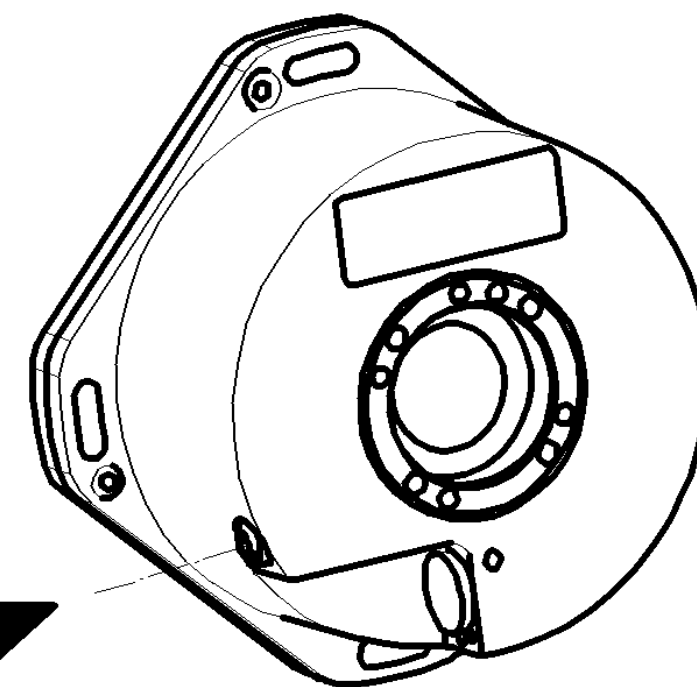


> IP 64



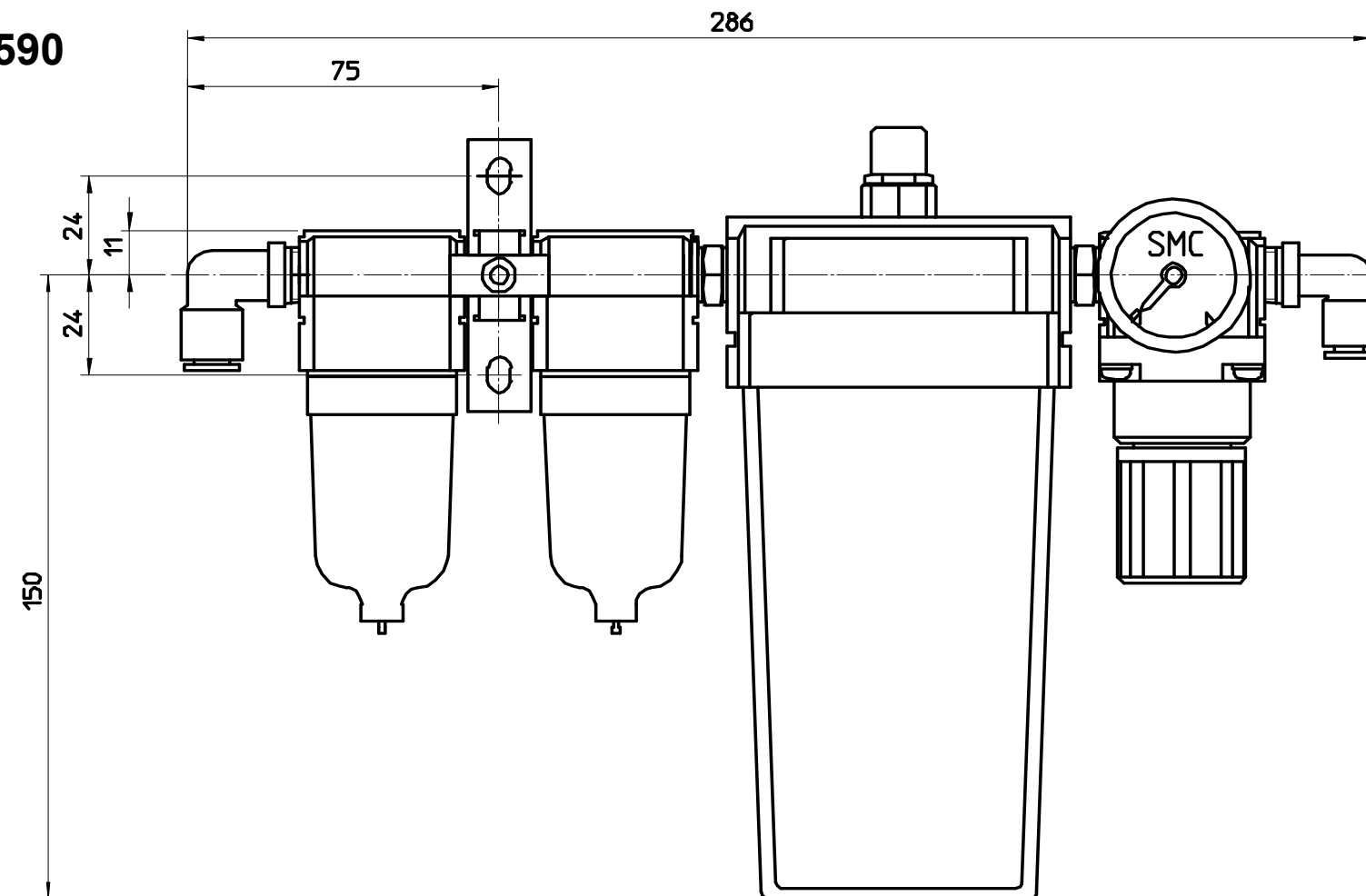
AI-400

(A)



(A) AIR CONDITIONS	
DIN ISO 8573 -1	
Class 1 - Particule Max. 0.1 μ	
Class 4 (7 bar) - Punto rocío / dewpoint 3 °C	
Class 1 - Max. Concentration oil 0.01 mg/m ³	
Presión / Pressure	1 kg/cm ²
Flujo / Flow	10 l/min./encoder

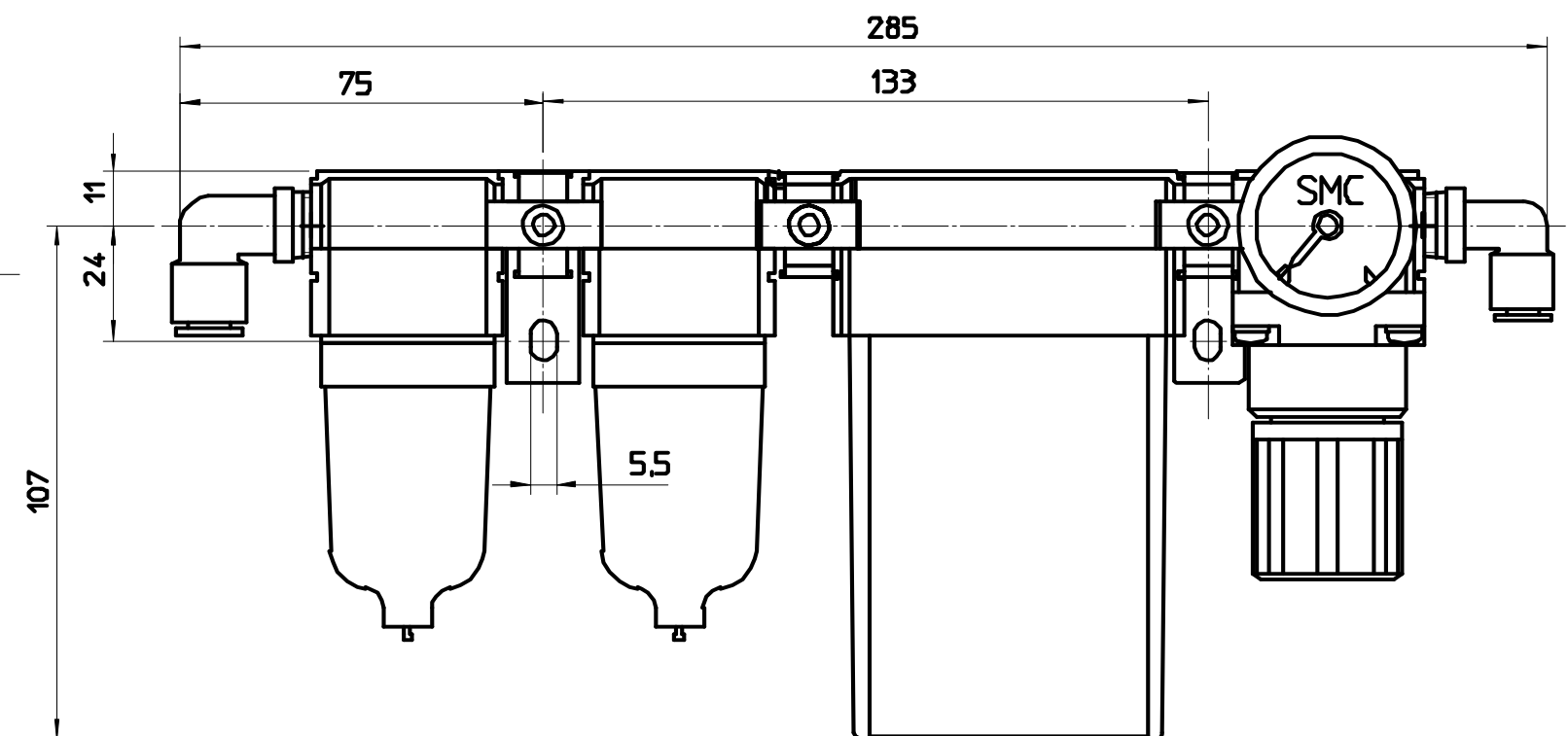
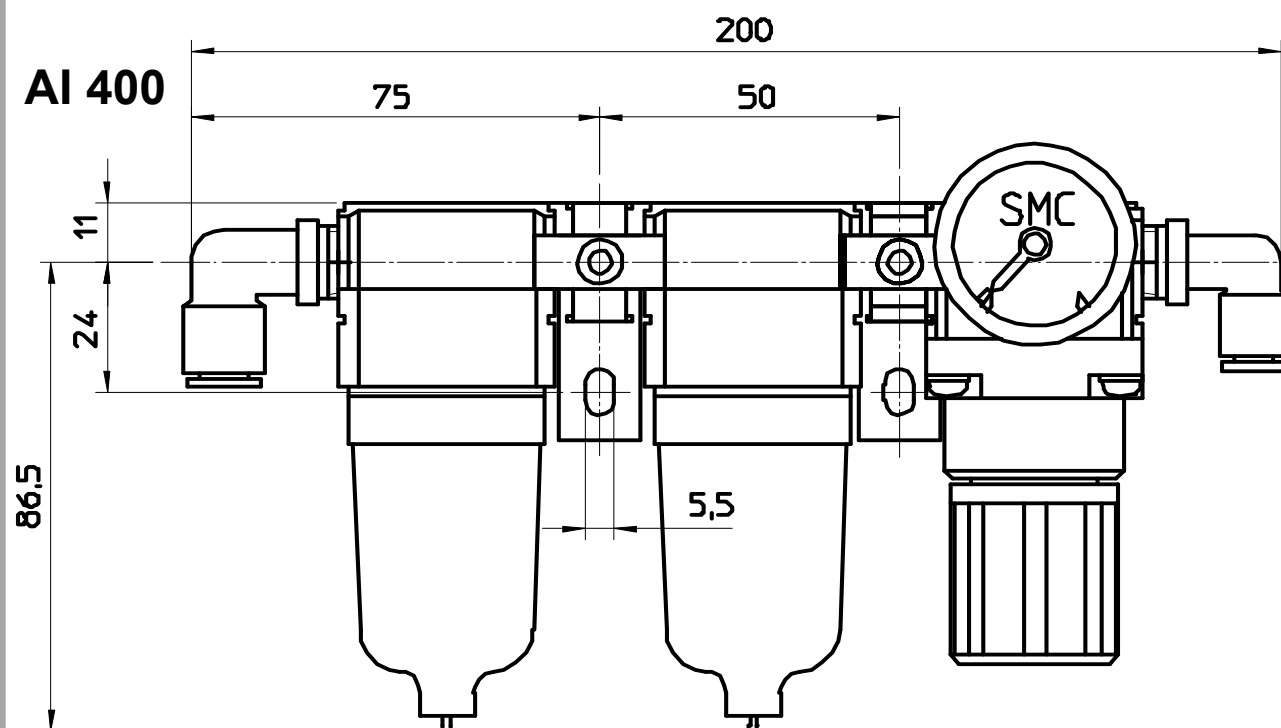
AI 590



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



CARACTERÍSTICAS MECÁNICAS
MECHANICAL CHARACTERISTICS

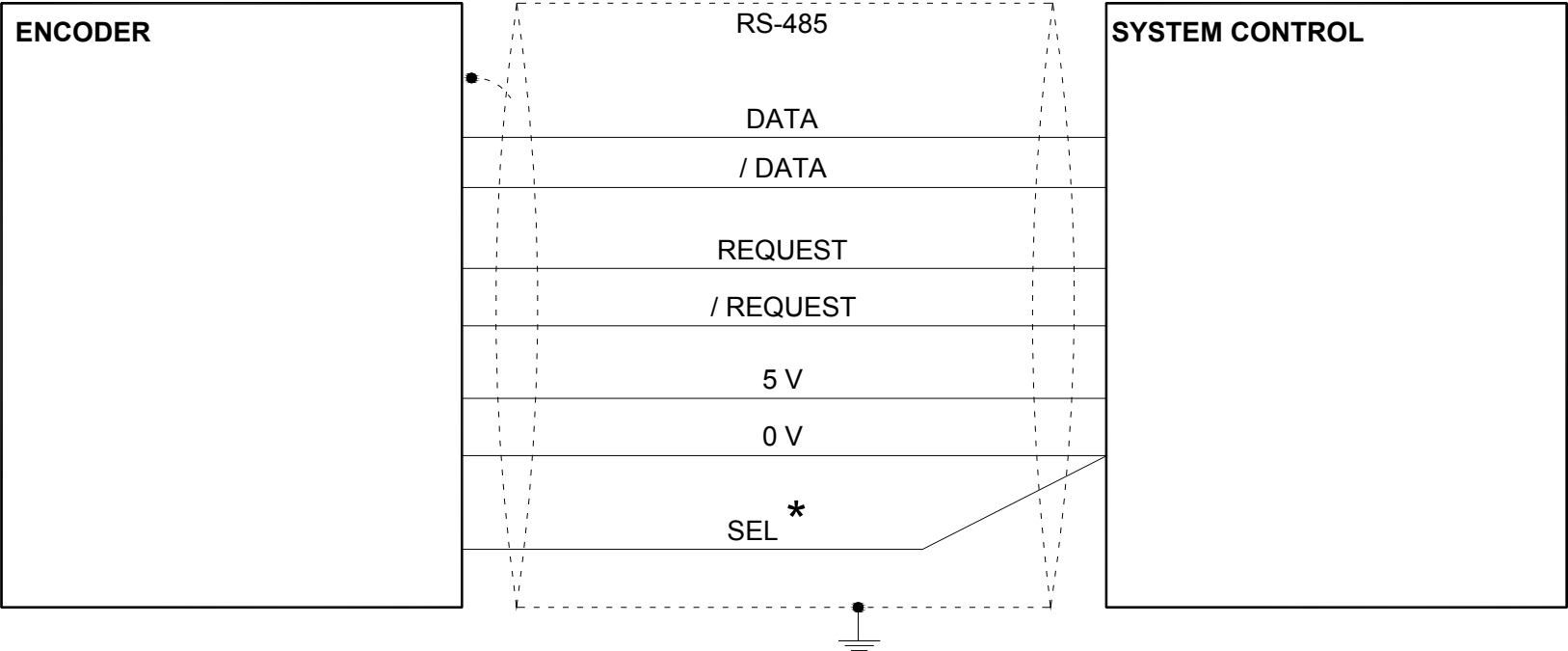
Modelo	HAM-27-D90	HAM-23-D90	Model
Precisión	±2.5"	±5"	Accuracy
Maxima velocidad de giro	3000 rpm *		Max. Turning speed
Momento de inercia del eje	650 gr.cm2		Inertia of the rotor
Par (20°C)	< 0.08 Nm		Torque
Frecuencia natural	> 1000 Hz		Natural frequency
Peso	0.9 kg		Weight
Estanqueidad	IP-64 (DIN 40050)		Sealing protection
Vibración (50-2000 Hz)	100 m/sec2 (IEC 68-2-6)		Vibration (50-2000 Hz)
Impacto (6ms)	1000 m/sec2 (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

HAM-D90-23: 2²³ (8,388,608) impulsos por vuelta/pulses per turn
HAM-D90-27: 2²⁷ (134,217,728) impulsos por vuelta/pulses per turn

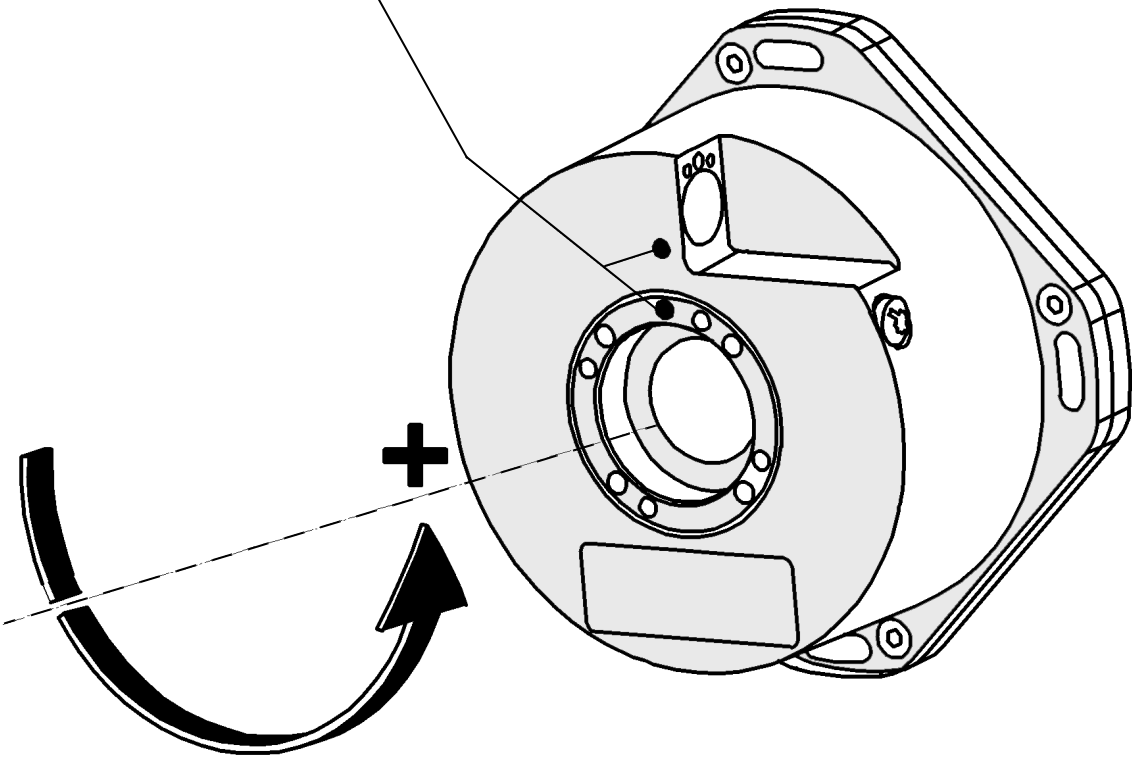
	Min	Max
Tensión de alimentación y Consumo <i>Power supply and Consumption</i>	3.6V	5.25V
Corriente / <i>Current</i>	-	300 mA
RPM eléctricas / <i>Electrical RPM</i>	-	1500
Máx. longitud de cable <i>Max cable length</i>		30 m / 100 ft.

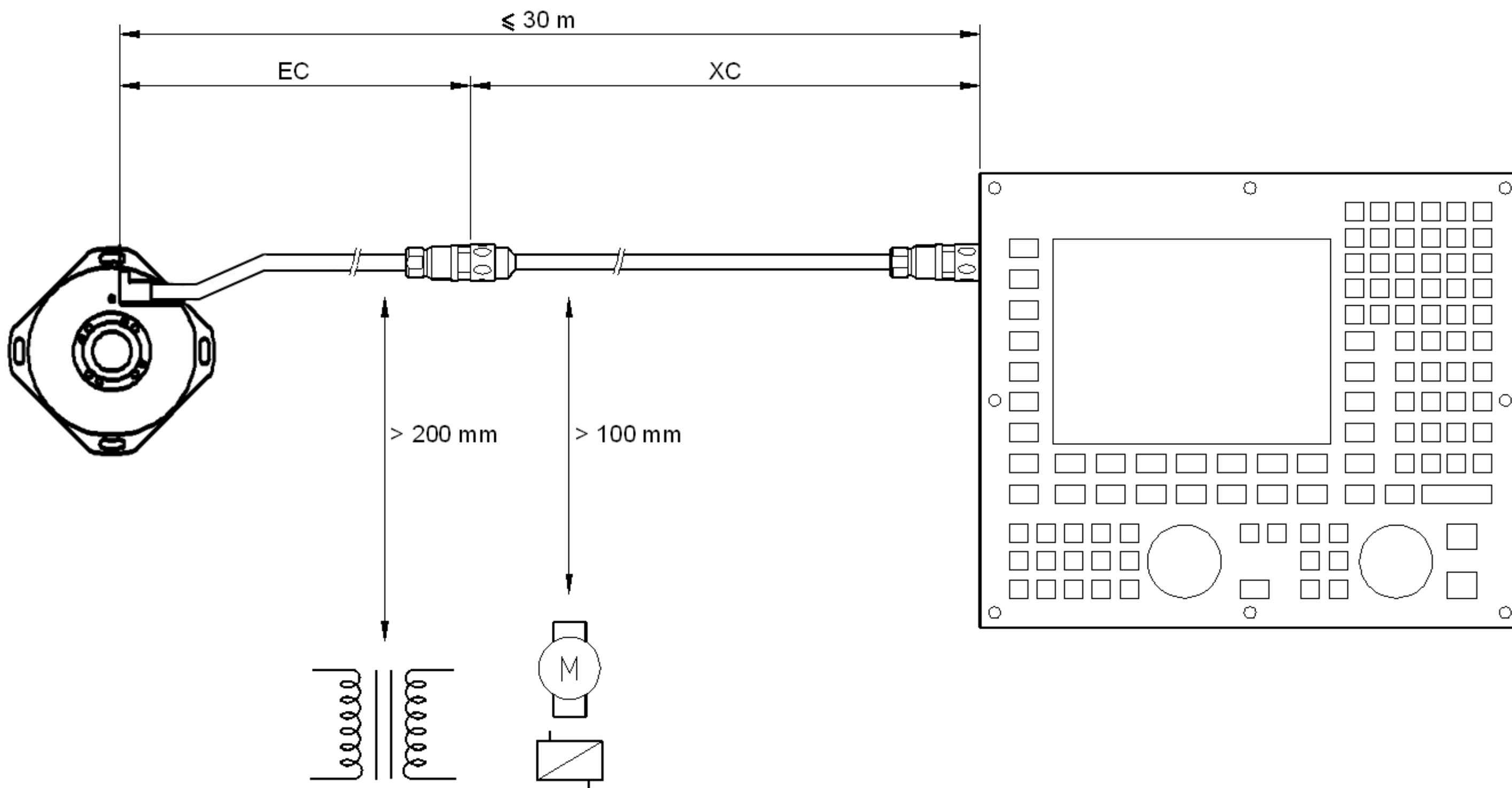


* La comunicación por defecto es full duplex.
Full duplex is the default communication.
Para comunicación half duplex contactar con Fagor.
Contact Fagor for half duplex communication.

Posición del origen 0°
0° origin position

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



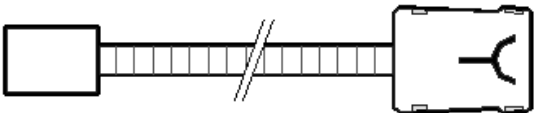


MITSUBISHI: CONEXIONES / CONNECTIONS

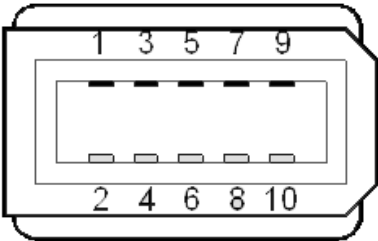
EC...AM...MB :

Cable para **conexión directa** a sistemas absolutos MITSUBISHI full duplex. Con ferrita. Disponible en 1, 3, 6 and 9 metros.
Cable for **direct connection** to full-duplex MITSUBISHI absolute systems. With ferrite. Available in 1, 3, 6 and 9 meters.

PIN	7	8	3	4	1	2	Carcasa / Housing
SEÑAL SIGNAL	SD	/SD	REQ	/REQ	+5V	0V	Tierra / Ground
COLOR	Verde Green	Amarillo Yellow	Gris Grey	Rosa Pink	Marrón + Violeta Brown + Purple	Blanco+Negro+Azul White+Black+Blue	Malla / Shield



EC - ...AM - MB



Alargaderas / Extension cables

CABLE		EXTENSION CABLE / ALARGADERA			TOTAL LENGTH LONGITUD TOTAL
Reference	Connector	Connector	Reference	Connector	
EC-1B-C9-F	C9	C8	XC-C8-x-MB	Mitsubishi	* 30 m
EC-1B-C9-N-F	Round 17-PM/RM	Round 17-PH/RH	XC-C8-xF-C9	C9-Round 17-PM/RM	

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

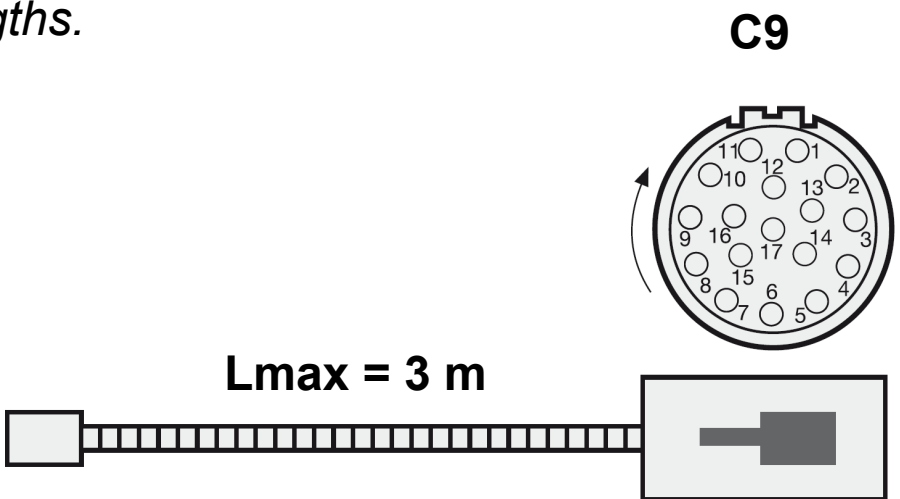
MITSUBISHI: CONEXIONES / CONNECTIONS

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

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

Conector (C9) macho circular 17 male connector

PIN	14	17	8	9	7	1	10	4	Caperuza Housing
SEÑAL SIGNAL	DATA	/DATA	REQ	/REQ	+5V	+5V sensor	0V	0V sensor	Tierra Ground
COLOR	Gris Grey	Rosa Pink	Negro Black	Violeta Purple	Marrón Brown	Verde claro Light green	Blanco White	Naranja Orange	Malla externa External shield



XC...C8...MB

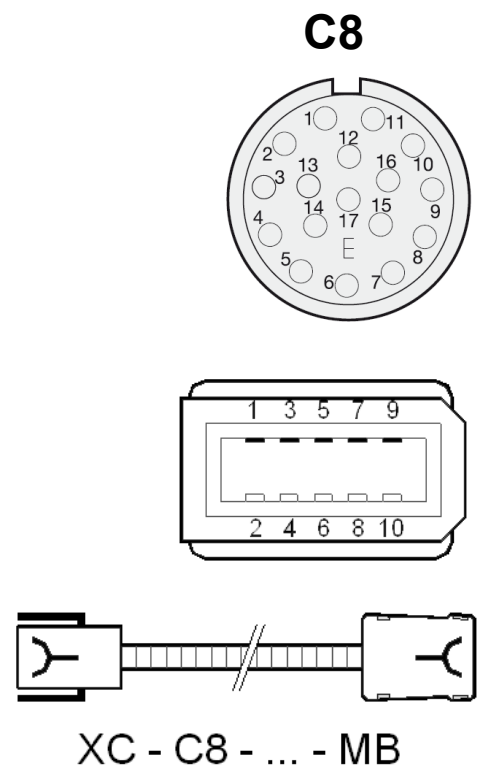
Alargadera para conexión directa a sistemas absolutos MITSUBISHI full duplex.
Disponibile en 5, 10, 15, 20 y 25 metros.
Extension cable for direct connection to MITSUBISHI full-duplex absolute systems.
Available in 5, 10, 15, 20 and 25 meters.

Conector (C8) hembra circular 17 female connector

PIN	8	9	14	17	7	1	10	4	12	Caperuza Housing
-----	---	---	----	----	---	---	----	---	----	---------------------

Conector (MB) hembra rectangular female rectangular connector

PIN	7	8	3	4	1	1	2	2	2	16
SEÑAL SIGNAL	SD	/SD	REQ	/REQ	+5V	+5V Sensor	0V	0V sensor	SEL	Tierra Ground
COLOR	Gris Grey	Rosa Pink	Violeta Purple	Amarillo Yellow	Marrón-verde Brown-green	Azul Blue	Blanco-verde White-green	Blanco White	Negro Black	Malla 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.

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.

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 noviembre de 2011

Fagor Automation, S. Coop.


Director Gerente
Pedro Ruiz de Aguirre

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 November 1st 2011

[illegible]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.