



Fagor Automation S. Coop.

Manual code: 14460139
Manual version: 1405



ENCODER HA-D90

MANUAL DE INSTALACIÓN INSTALLATION MANUAL

FAGOR AUTOMATION S. COOP.

B^a San Andrés N^o 19

Apdo de correos 144

20500 Arrasate/Mondragón

- Spain -

Web: www.fagorautomation.com

Email: info@fagorautomation.es

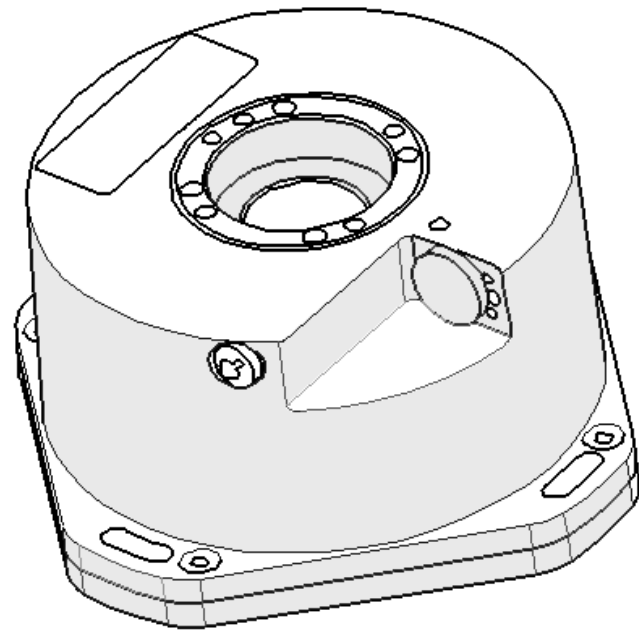
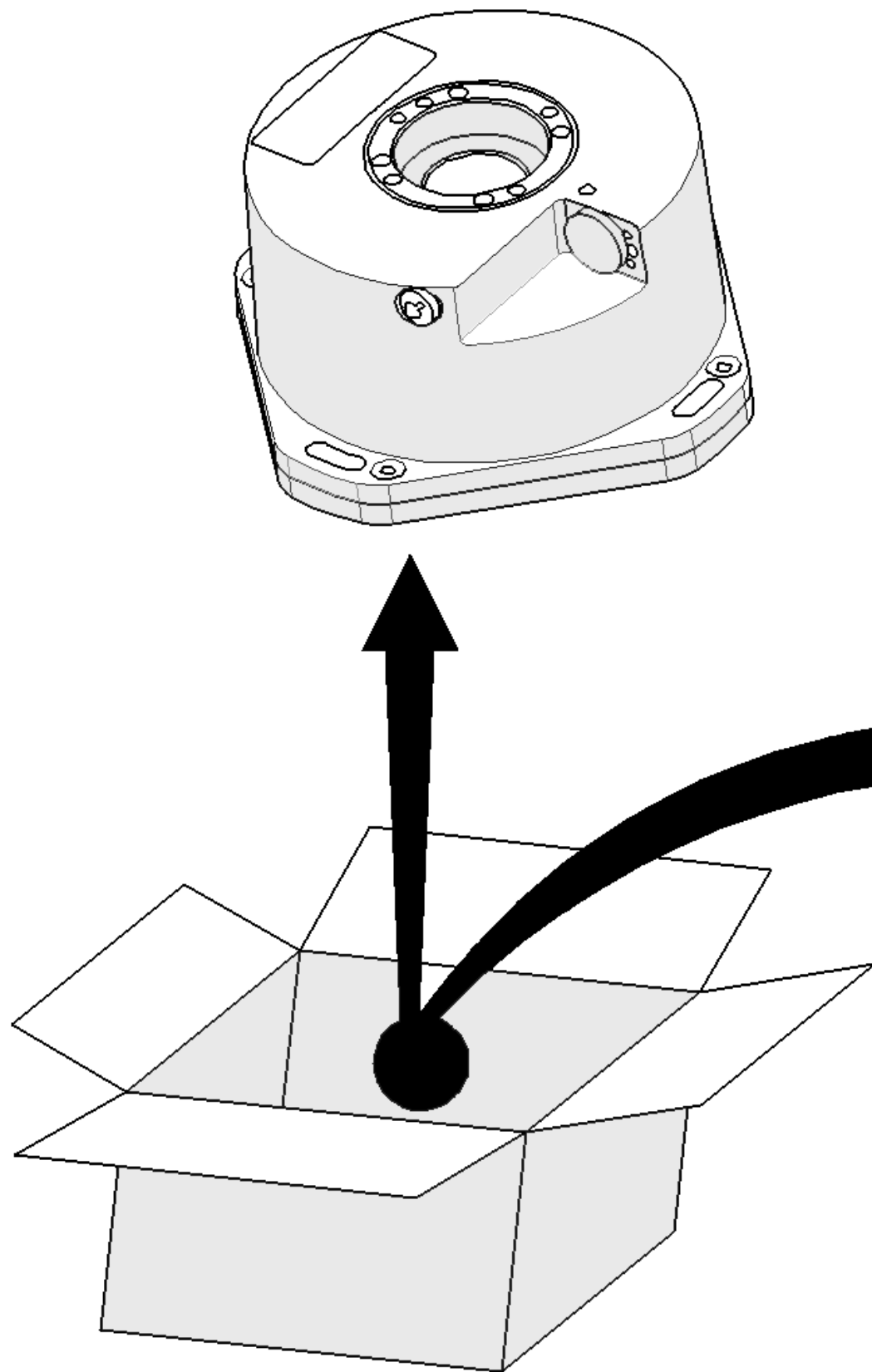
Tel.: (34) 943 719200

Fax: (34) 943 791712

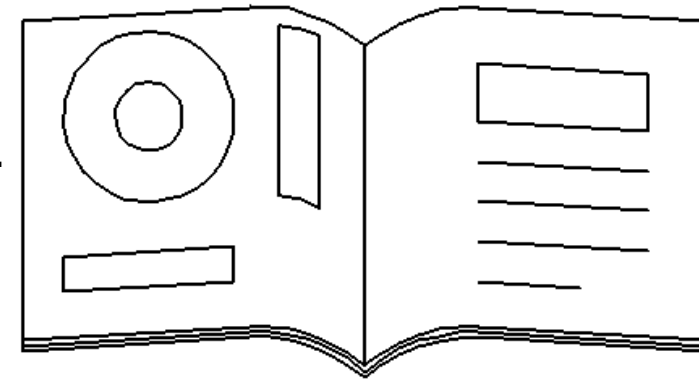


Fagor Automation S. Coop.

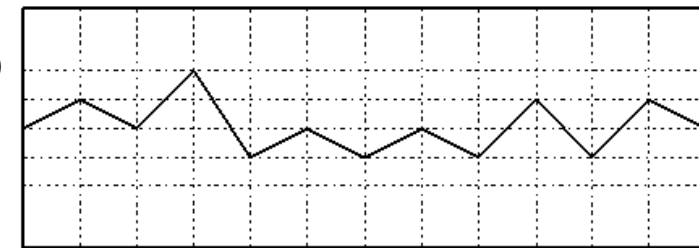




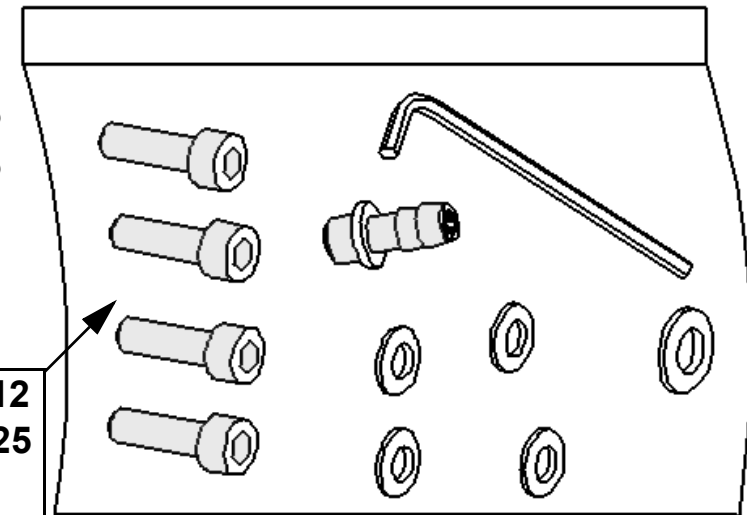
MANUAL



**GRÁFICO
GRAPH**



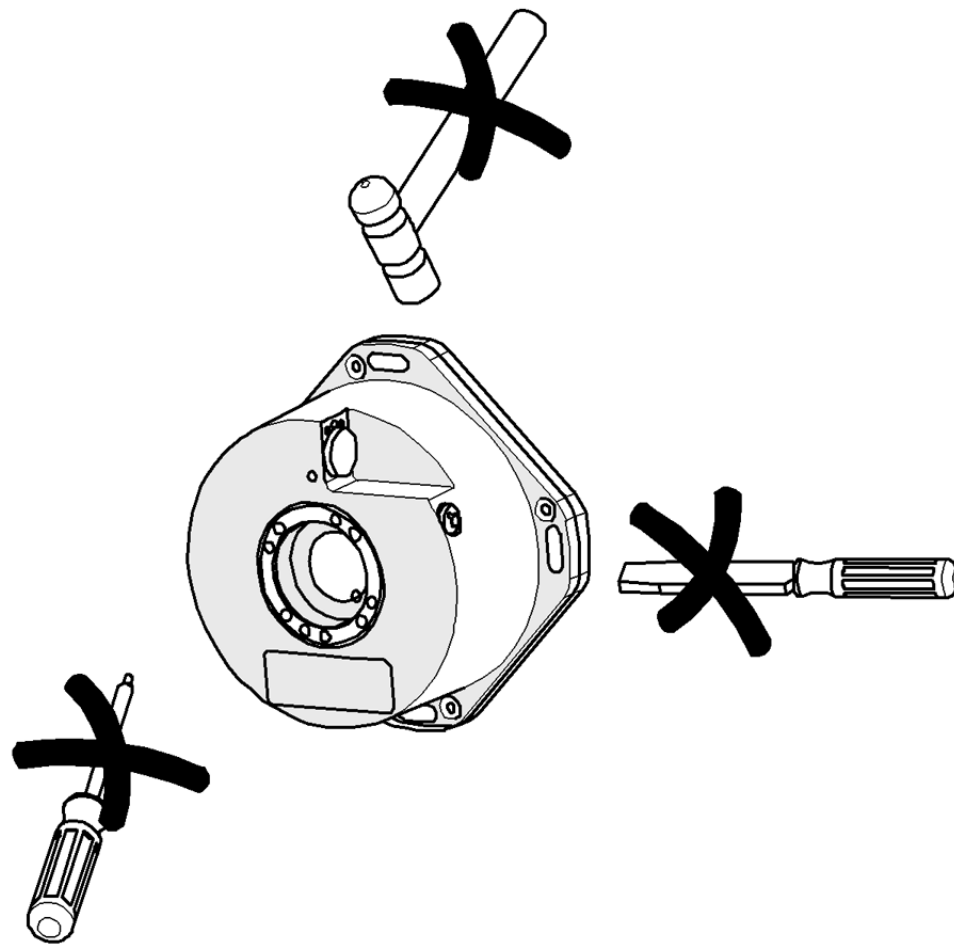
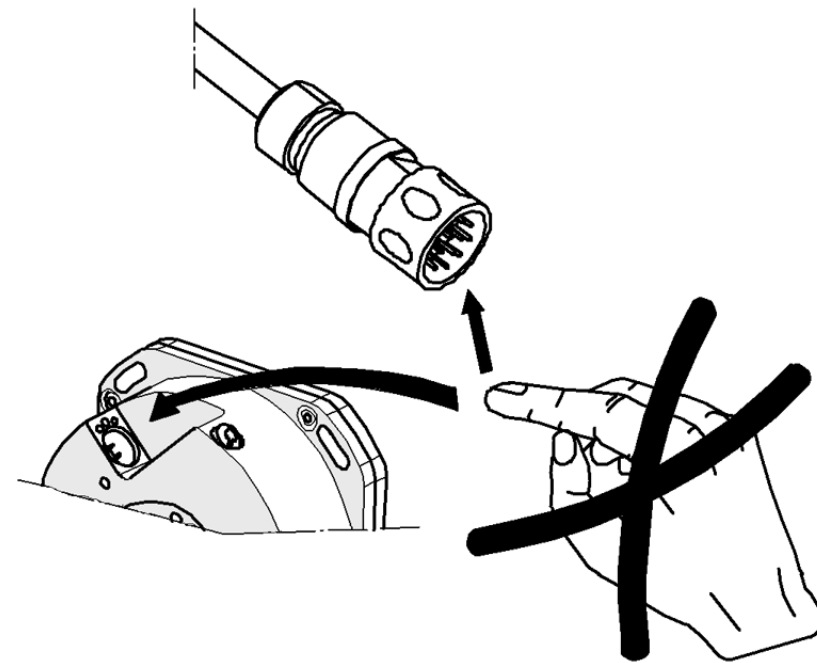
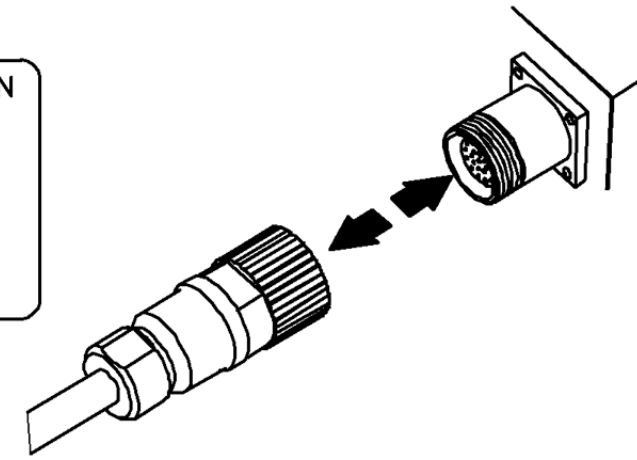
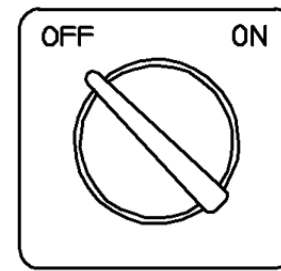
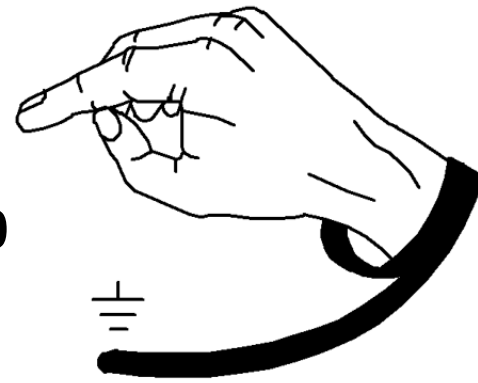
**ACCESORIOS
ACCESSORIES**



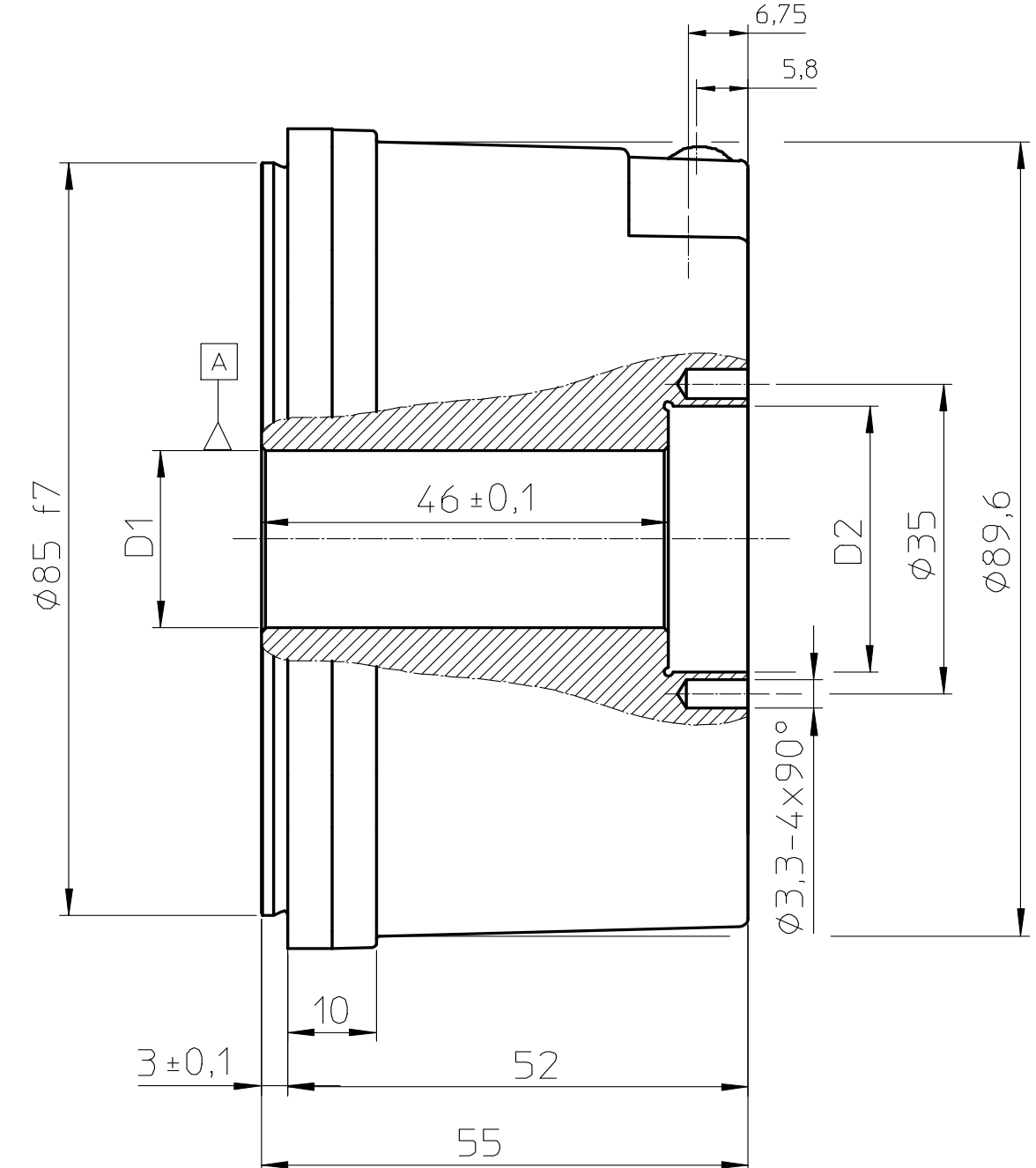
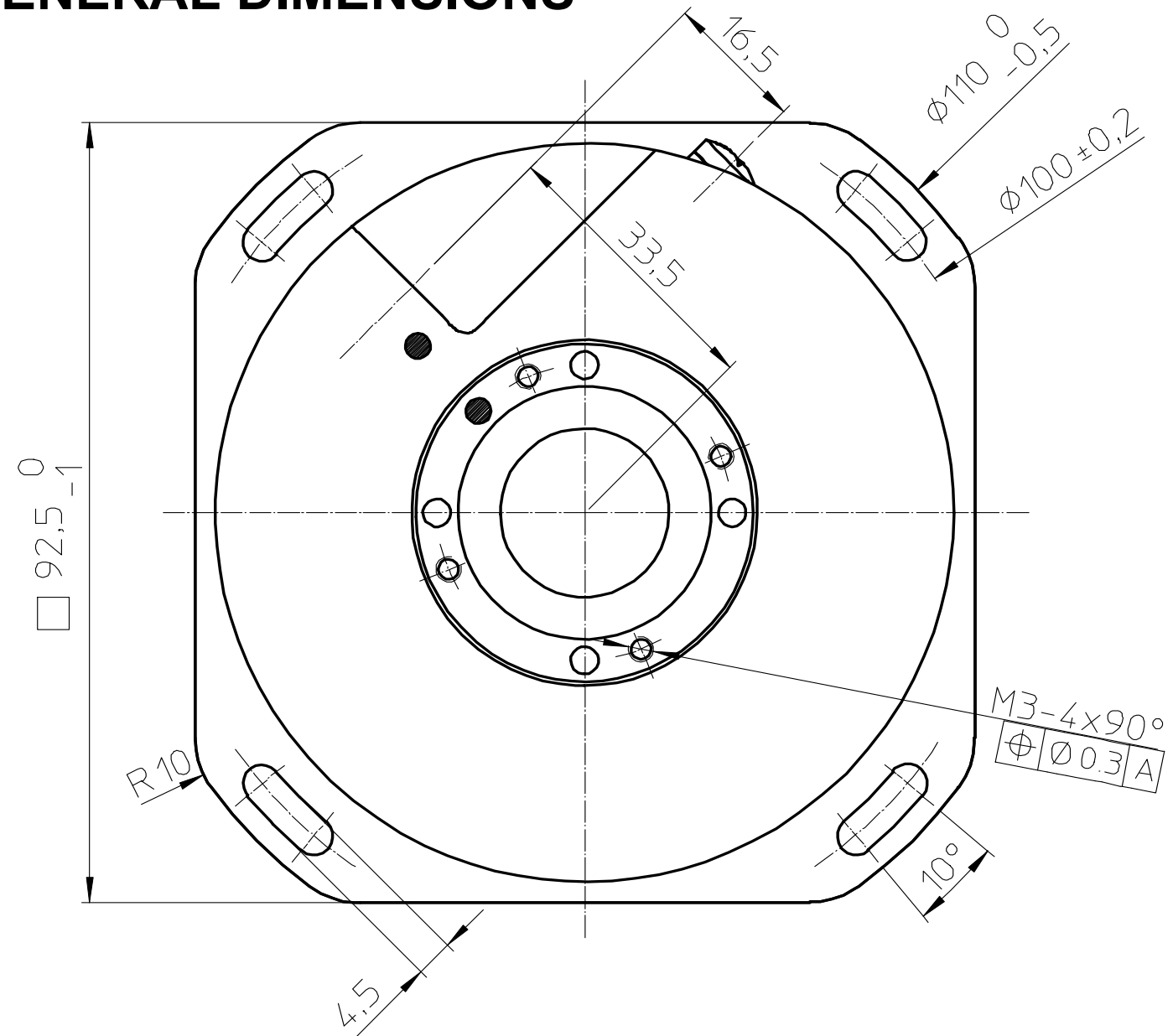
4 tornillos/bolts M4 x 16 DIN 912
4 arandelas/washers M4 DIN 125
1 racor de aire / air intake
1 arandela racor de aire /
air intake washer
1 llave Allen / Allen wrench



DIN EN 100



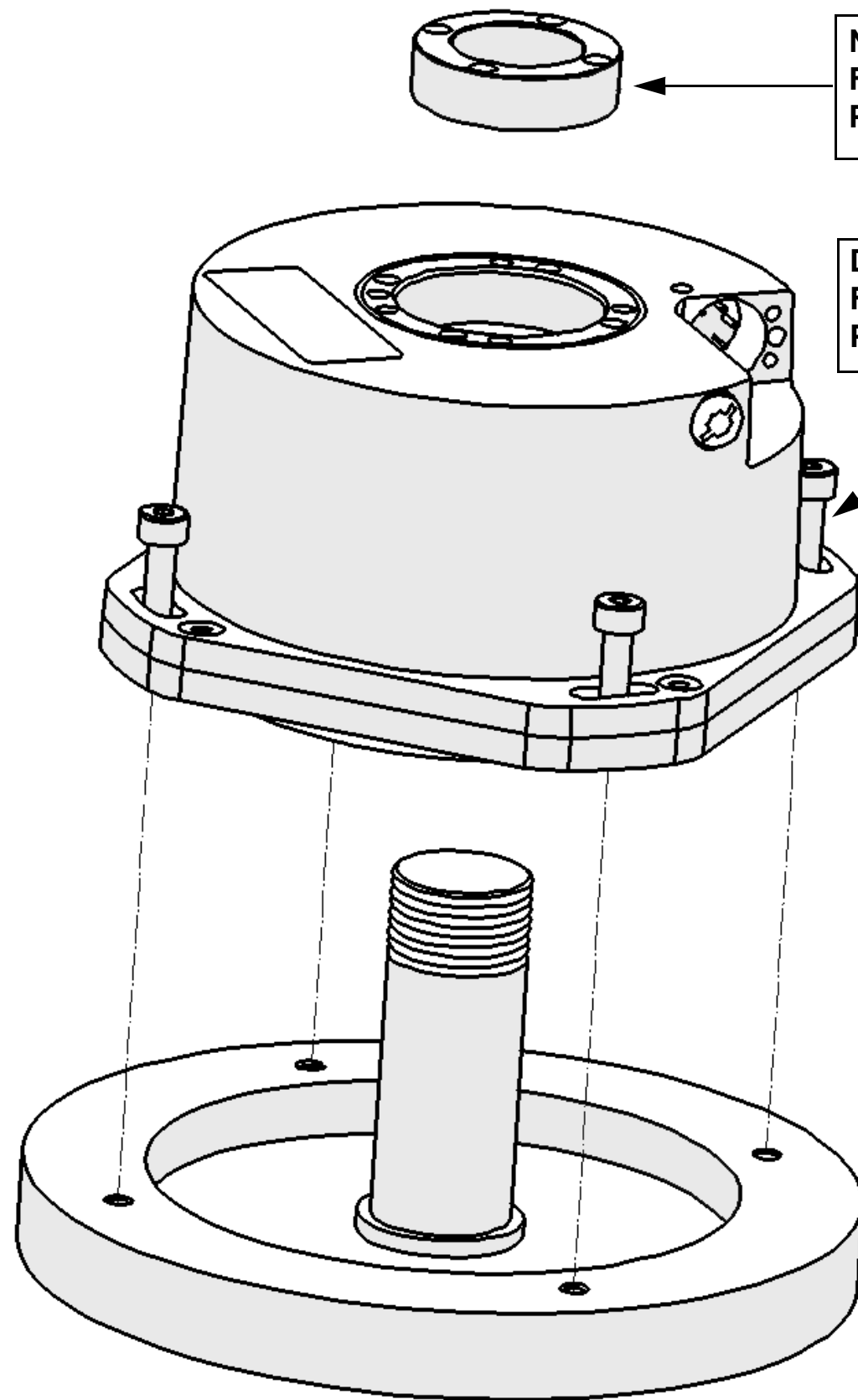
GENERAL DIMENSIONS



Precisión Accuracy	$\pm 2.5''$	$\pm 5''$
D1	$\phi 20 \text{ H6}$	$\phi 20 \text{ H7}$
D2	$\phi 30 \text{ H6}$	$\phi 30 \text{ H7}$

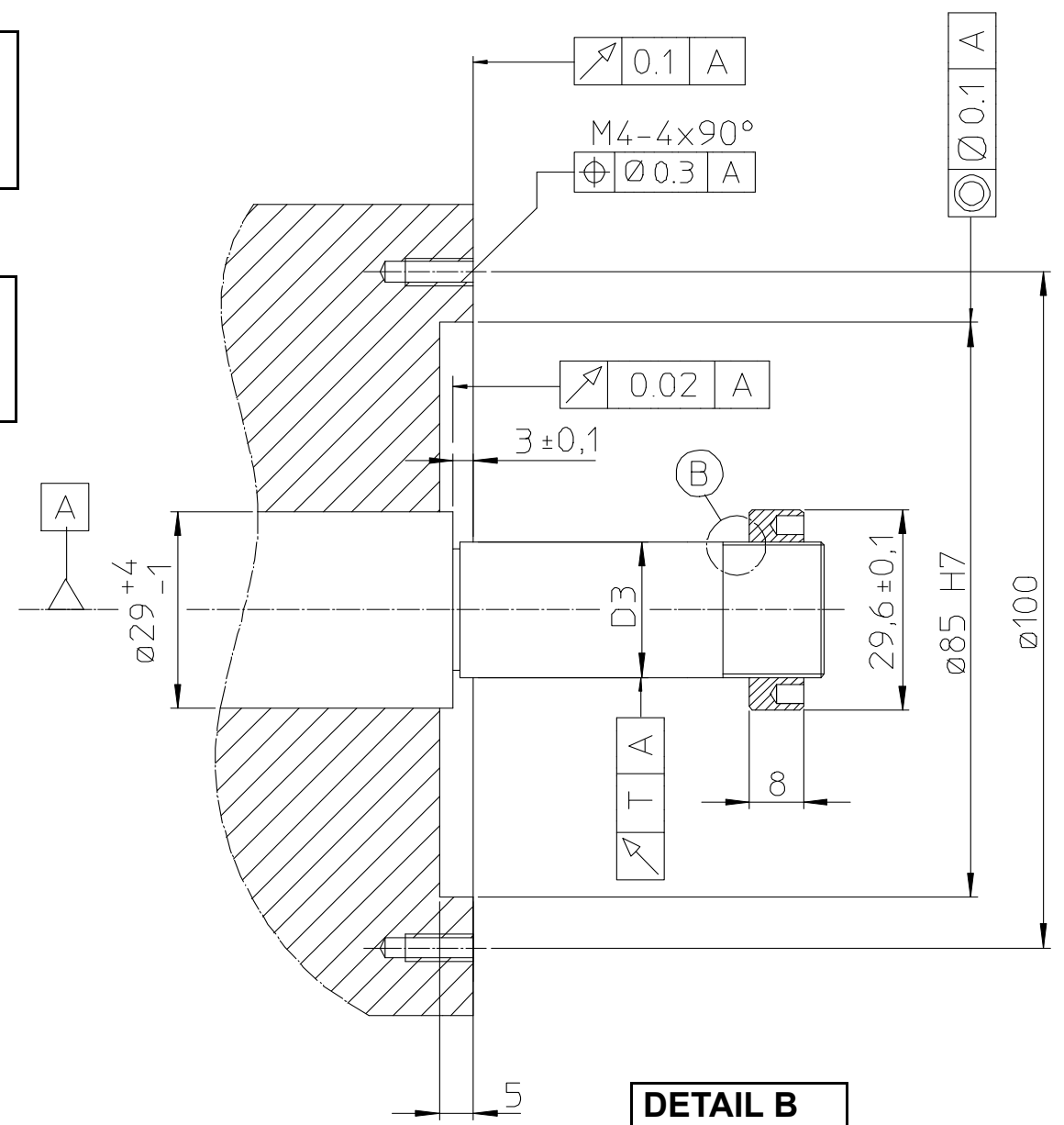
MONTAJE / MOUNTING

Cotas de montaje / Mounting dimensions



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

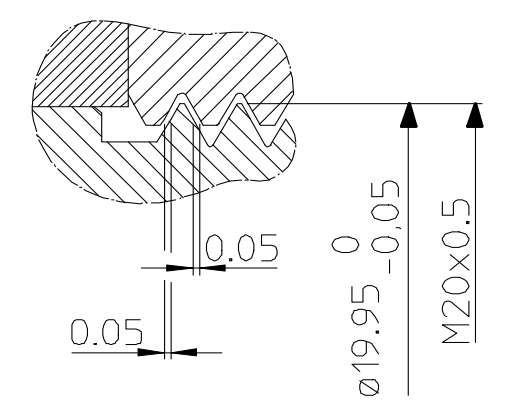
DIN 912 - M4x16
Fastening torque = 2.5 Nm
Par de apriete = 2.5 Nm



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

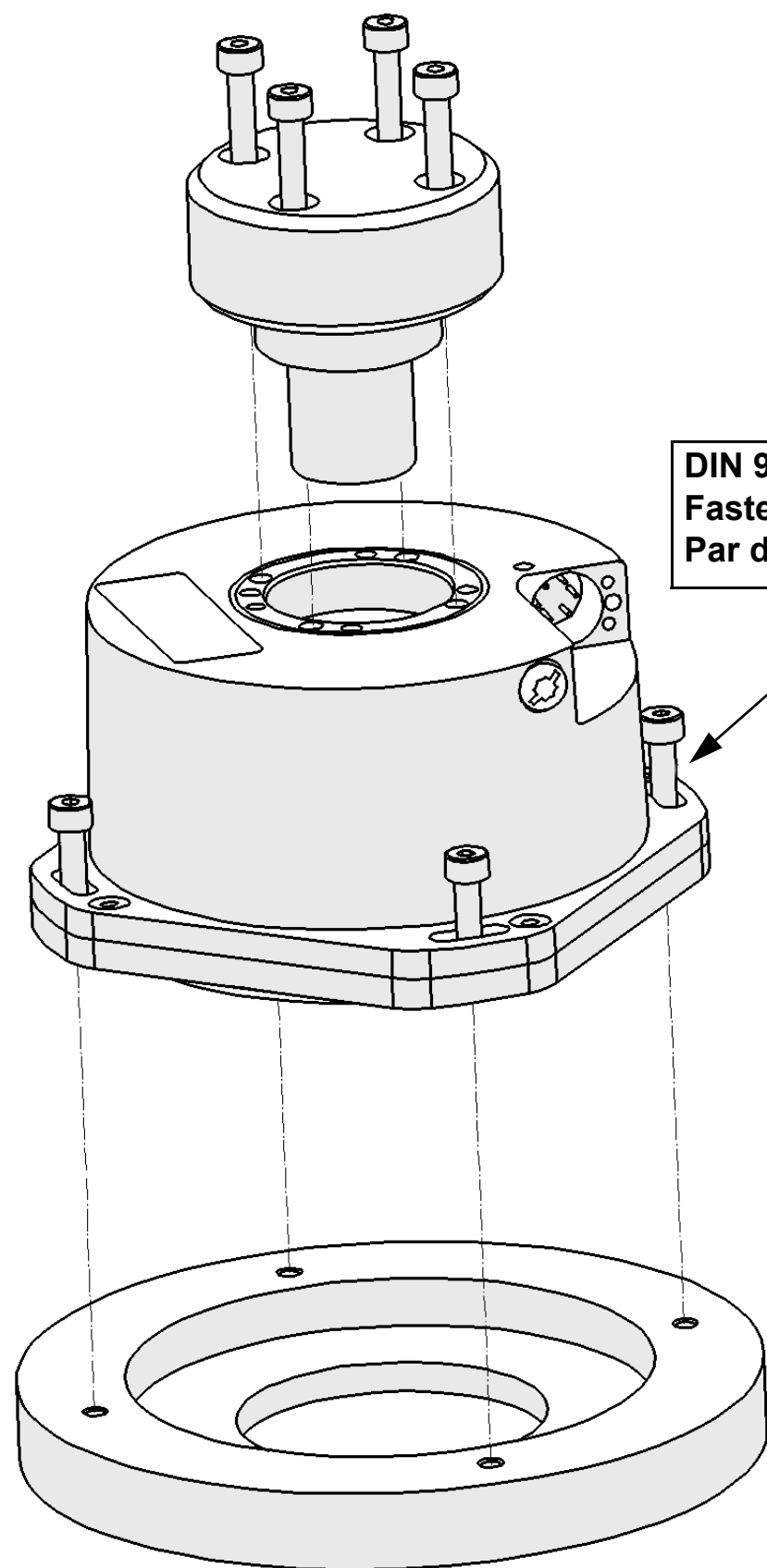
A Rodamiento / Roller bearing

**DETAIL B
 DETALLE B**

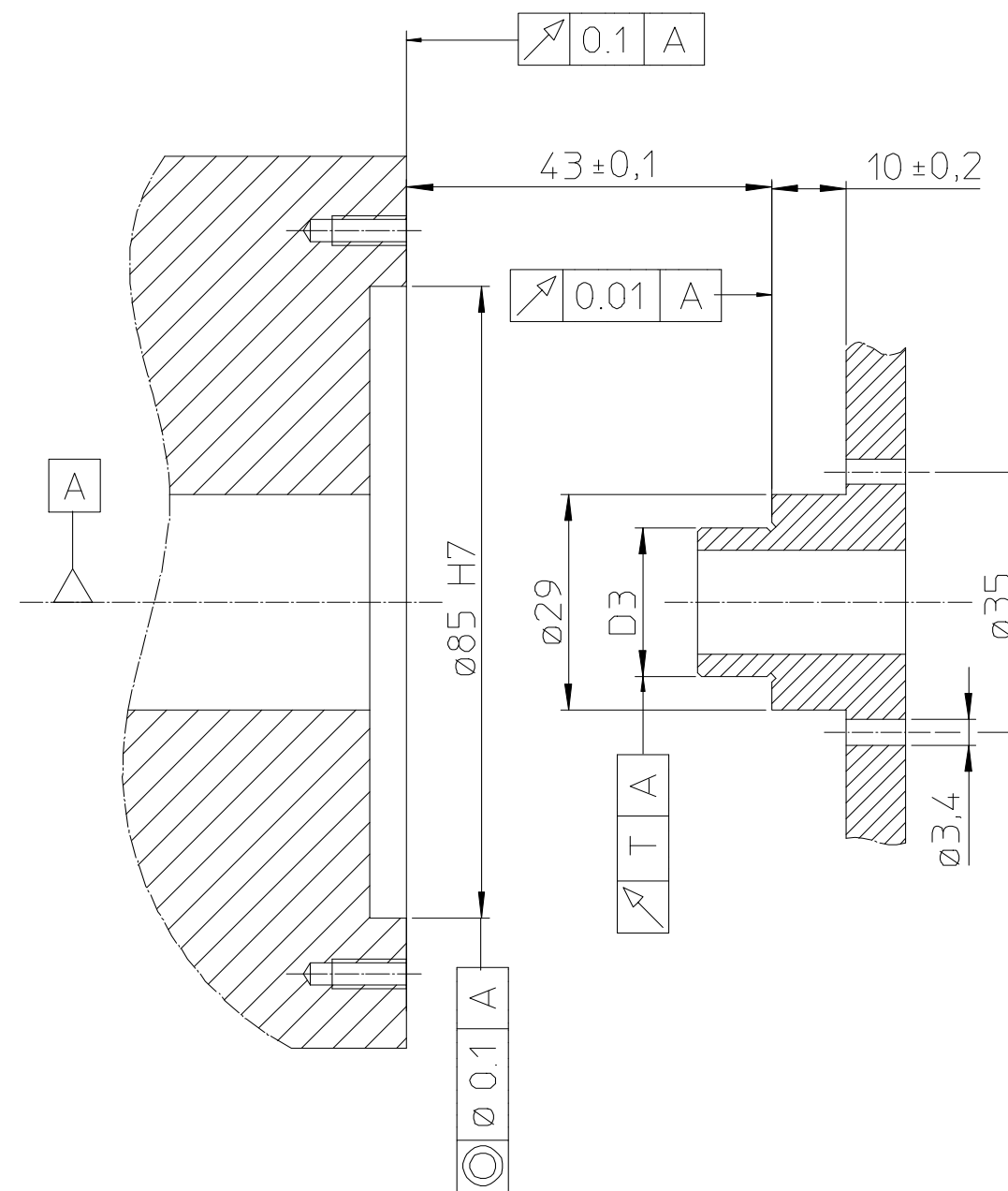


MONTAJE / MOUNTING

Cotas de montaje / Mounting dimensions



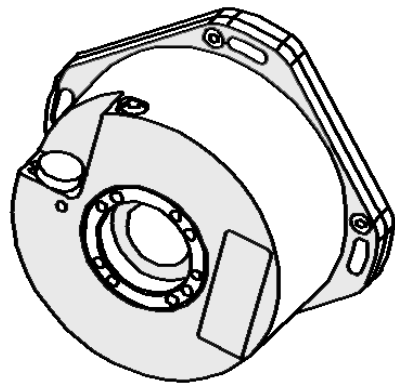
DIN 912 - M4x16
Fastening torque = 2.5 Nm
Par de apriete = 2.5 Nm



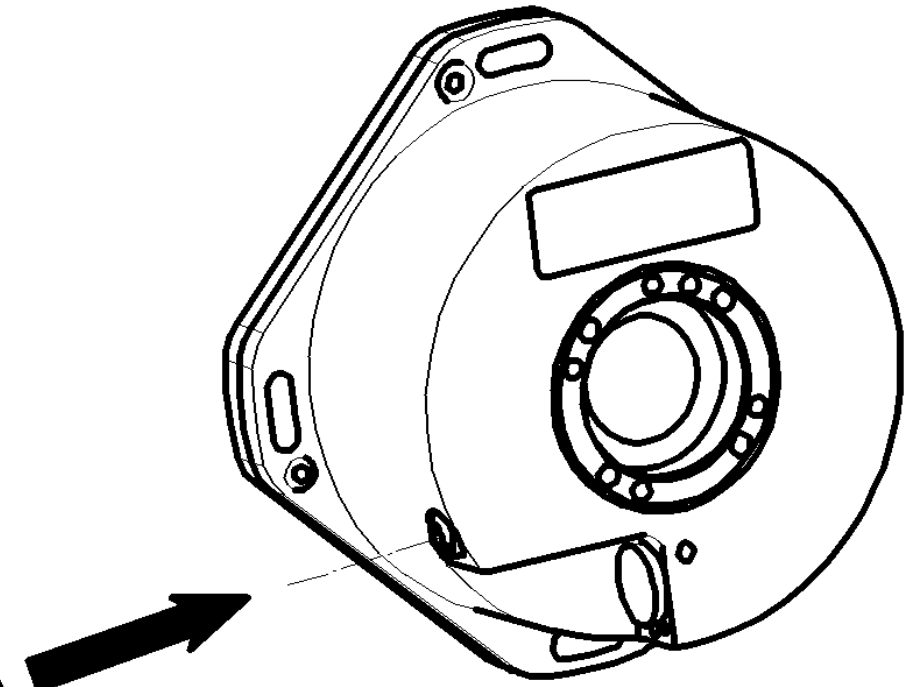
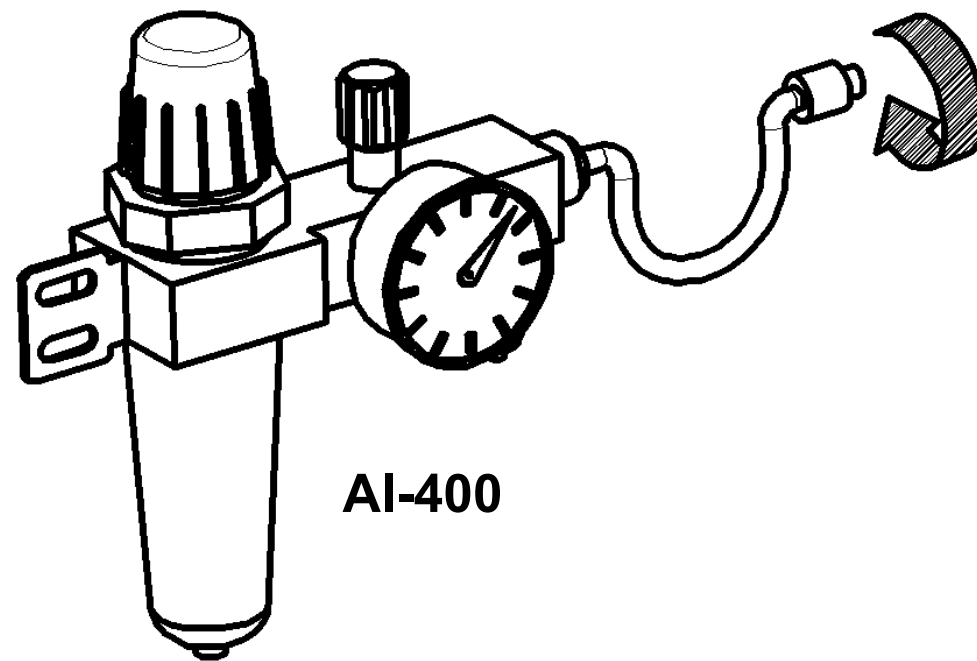
Precisión Accuracy	±2.5"	±5"
D3	∅20 g6	∅20 g7
T	0.01	0.02

A Rodamiento / Roller bearing

Nivel máximo: IP 64
Maximum level IP 64



> IP 64



(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 ³
Flujo / Flow	10 l. / min. / encoder

CARACTERÍSTICAS MECÁNICAS MECHANICAL CHARACTERISTICS

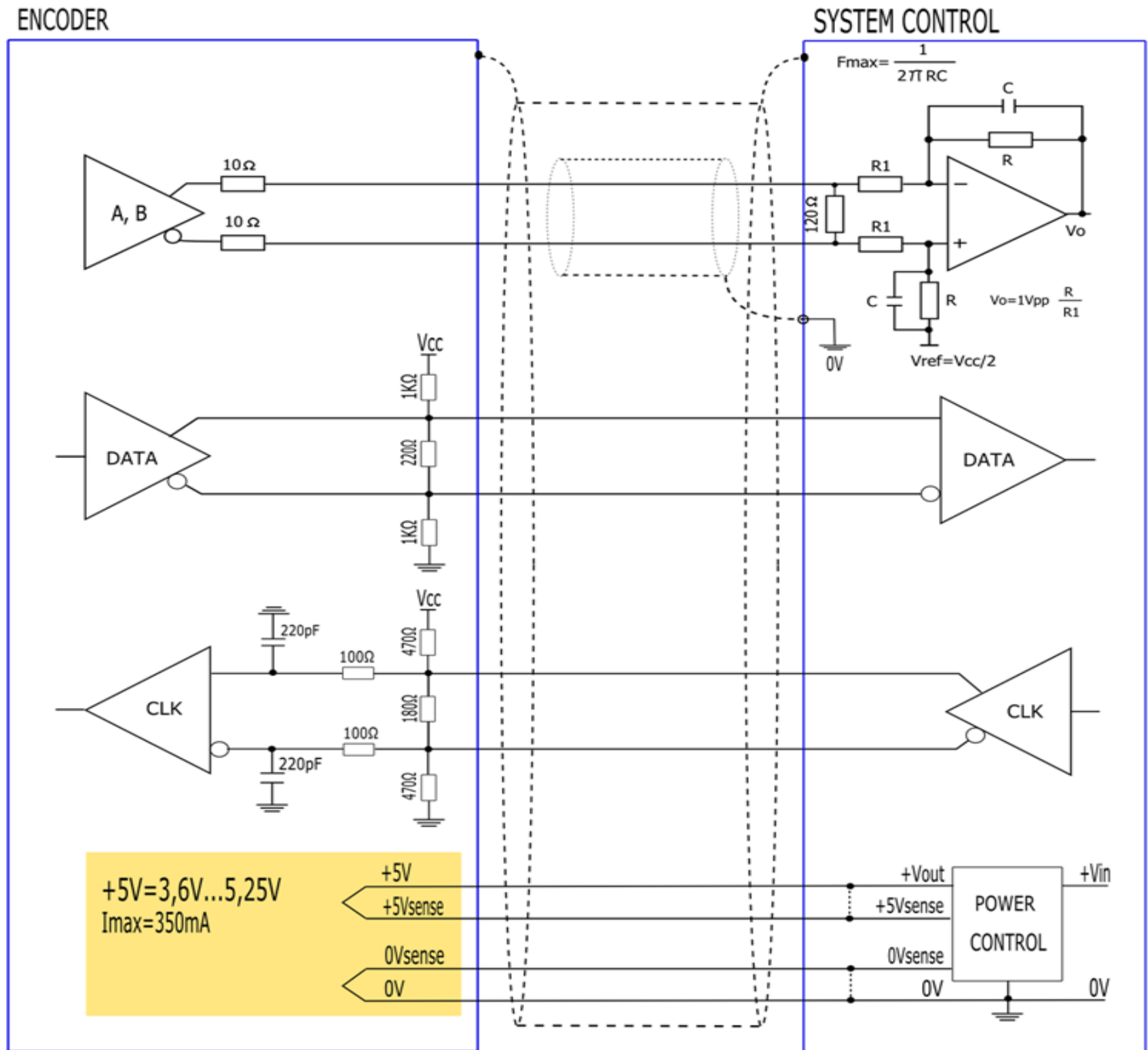
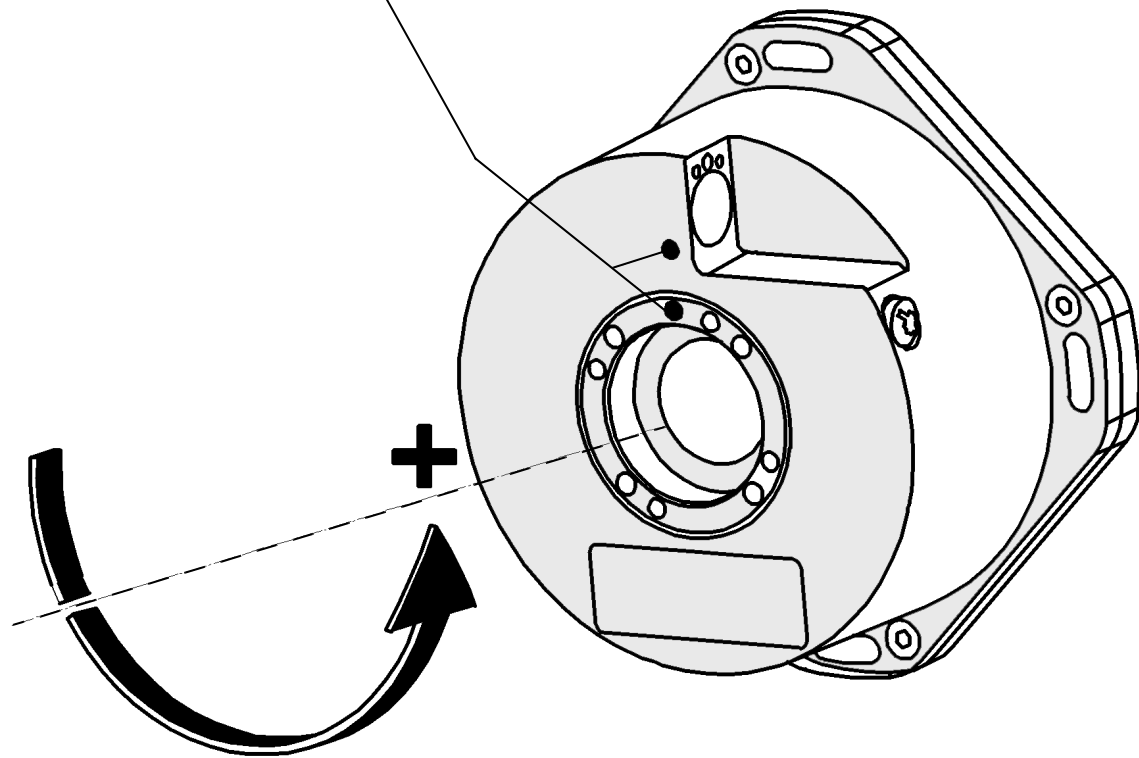
Modelo	HA-D90-23-2	HA-D90-23	Model
Precisión	±2.5"	±5"	Accuracy
Maxima velocidad de giro	3000 rpm *		Max. Turning speed
Momento de inercia del eje	650 gr.cm ²		Inertia of the rotor
Par (20°C)	< 0.08 Nm		Torque
Frecuencia natural	> 1000 Hz		Natural frequency
Peso	0.9 kg		Weight
Estanqueidad	IP-64 (DIN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

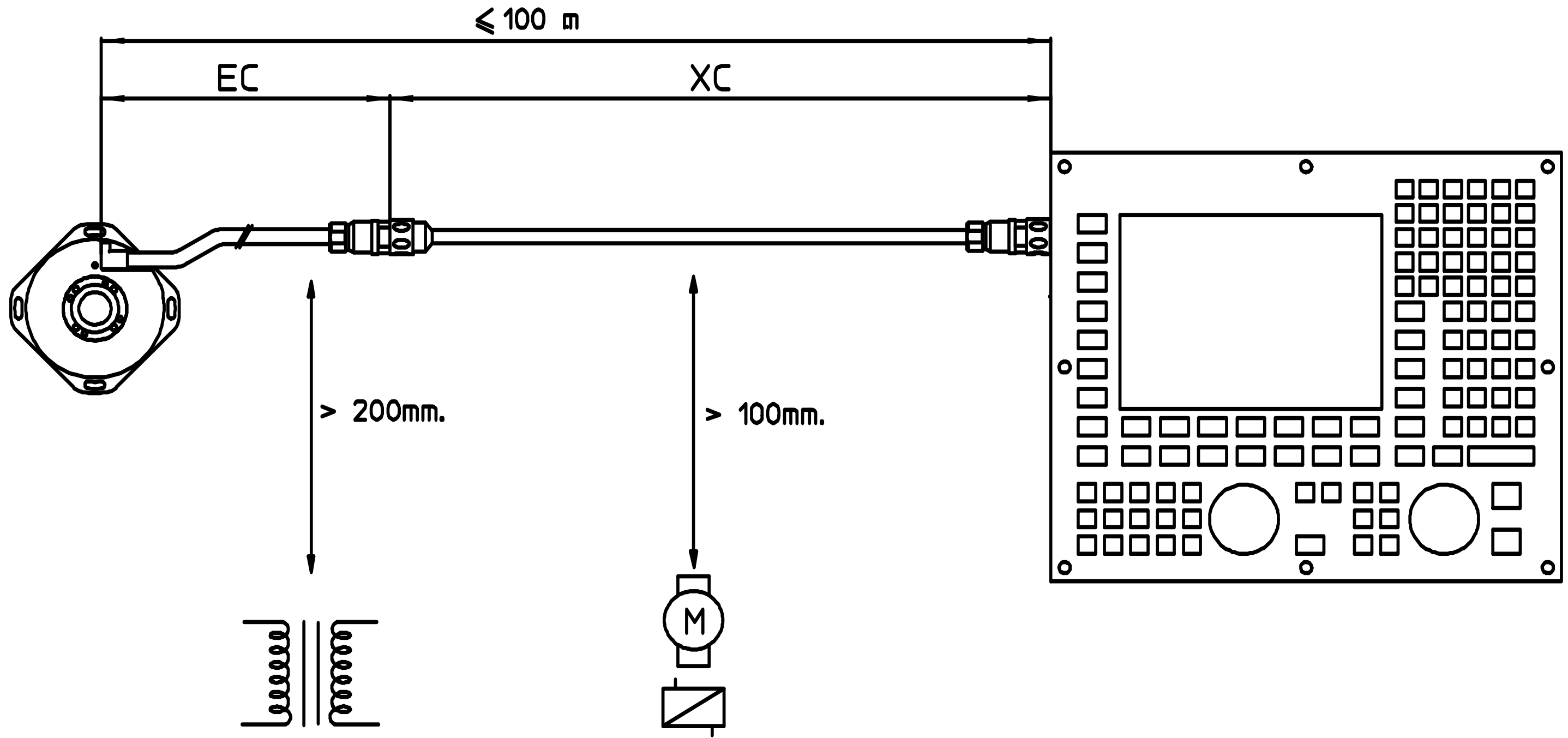
CARACTERÍSTICAS ELÉCTRICAS / ELECTRICAL CHARACTERISTICS

Posición del origen 0°
0° origin position

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



CONEXIÓN / CONNECTION



INFORMACIÓN ELÉCTRICA / ELECTRICAL DATA



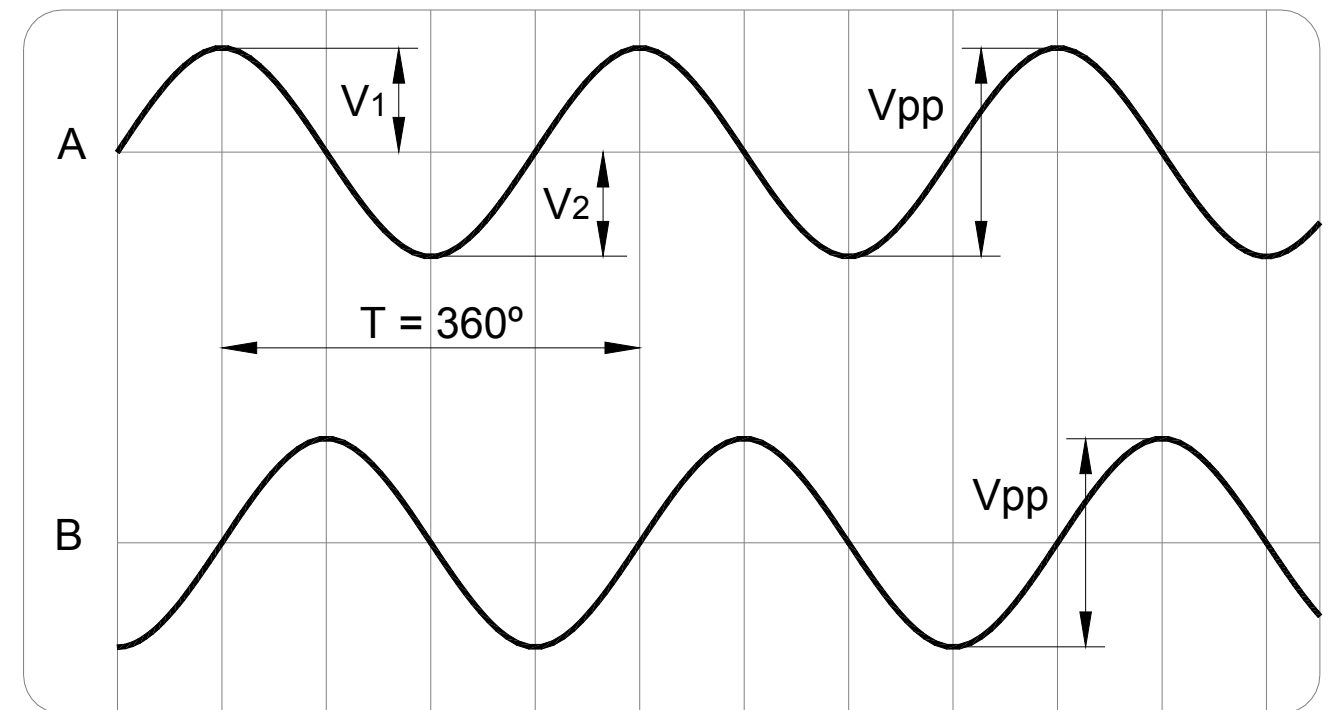
1 Vpp
1 Vpp

SEÑALES DIFERENCIALES
DIFFERENTIAL SIGNALS

HA-D90

Características - Characteristics

Señales Signals	A, /A, B, /B
V _{App}	1 V +20%, -40%
V _{Bpp}	1 V +20%, -40%
DC offset	2.5V ± 0.5V
Impulsos por vuelta Pulses per turn	16384
Alimentación V Supply V	3.6 - 5.25
Máx. longitud de cable Max. cable length	100 metros 328 feet
A, B centrado: Centered A, B:	$ V_1 - V_2 / 2V_{pp} \leq 0.065$
Relación A&B: A&B Relationship:	$V_{App} / V_{Bpp} = 0.8 \div 1.25$
Desfase A&B A&B phase shift	$90^\circ \pm 10^\circ$



INFORMACIÓN ELÉCTRICA / ELECTRICAL DATA

SEÑALES ABSOLUTAS ABSOLUTE SIGNALS

HA-D90

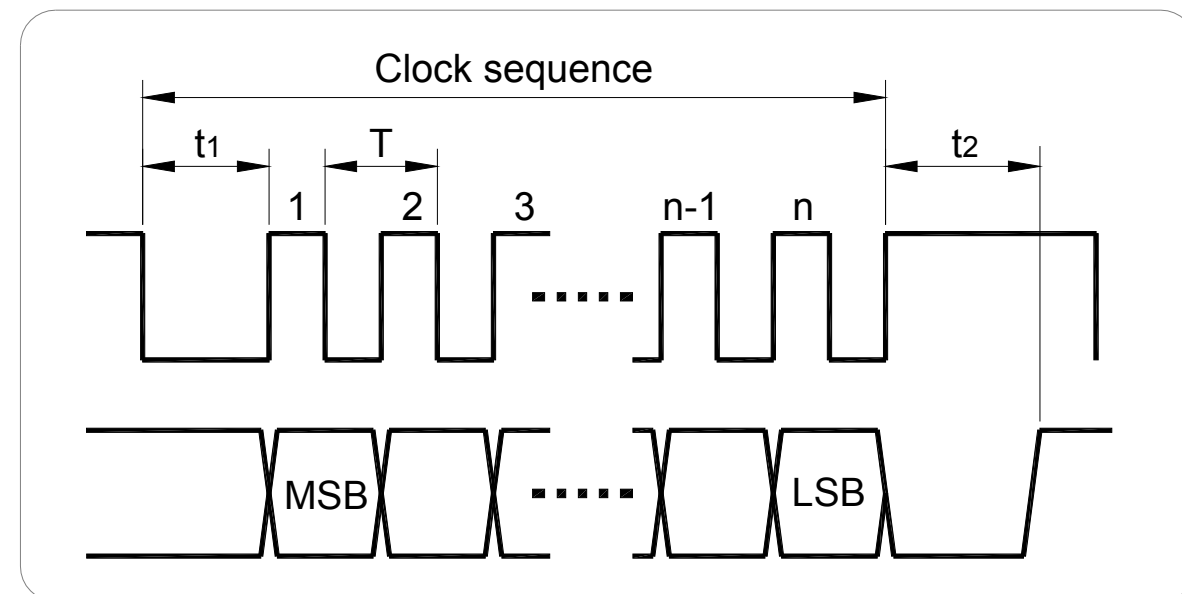
Especificaciones - Specification

Transmisión / <i>Transmission</i>	SSI transferencia serie síncrona vía RS 485. <i>SSI synchronous serial data transfer via RS 485.</i>
Niveles / <i>Levels</i>	EIA RS 485
Frecuencia Reloj / <i>Clock Frequency</i>	100 kHz - 1000 kHz
Max. bit (n)	32 (Configurable)
T	1 μ s ÷ 10 μ s
t ₁	> 0.5 μ s
t ₂	20 μ s ÷ 35 μ s
SSI	Grey o Binario (Configurable) <i>Grey or Binary (Configurable)</i>
Paridad / <i>Parity</i>	Totalmente configurable <i>Fully configurable</i>

Valores por defecto para el protocolo SSI

Default values for SSI protocol

Número de bits / <i>Number of bits</i>	23
Tipo de datos / <i>Data type</i>	Binario / <i>Binary</i>
Paridad / <i>Parity</i>	NO
Time out	450 μ s



NOTA: Para la configuración de los parámetros es necesario el adaptador Fagor PD-U-ENC.

Para más información contacte con Fagor Automation.

NOTE: For the parameters configuration Fagor PD-E-ENC adapter is needed.


For further information contact Fagor Automation.

CABLES

CABLES PARA CONEXION DIRECTA DE ENCODERS ABSOLUTOS FAGOR A SISTEMAS FAGOR CABLES FOR DIRECT CONNECTION OF FAGOR ABSOLUTE ENCODERS TO FAGOR SYSTEMS

HASTA 9 METROS - UP TO 9 METERS

EC - ...B - D Conector SUB D 15 HD macho en longitudes de 1, 3, 6 y 9 metros.
SUB D 15 HD male Connector available in 1, 3, 6 and 9 meters.


PIN 	1	2	3	4	5	6	7	8	9	10	11	12	15	Carcasa/Housing
SEÑAL / SIGNAL	A	/A	B	/B	Data	/Data	Clock	/Clock	+5V	+5V sensor	0V	0V sensor	Tierra /Ground	Tierra /Ground
COLOR	Verde <i>Green</i>	Amarillo <i>Yellow</i>	Azul <i>Blue</i>	Rojo <i>Red</i>	Gris <i>Gray</i>	Rosa <i>Pink</i>	Negro <i>Black</i>	Violeta <i>Purple</i>	Marrón <i>Brown</i>	VerdeClaro <i>LigthGreen</i>	Blanco <i>White</i>	Naranja <i>Orange</i>	Malla Interna <i>Internal Shield</i>	Malla Externa <i>External Shield</i>

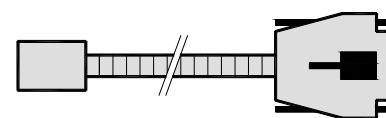
A PARTIR DE 9 METROS - FROM 9 METERS

- * Longitudes hasta 25 metros; (EC -...B - C9) + (XC - C8 -...F - D).
- * Superiores a 25 metros; (EC -...B - C9) + (XC - C8 -...F - C9) + (XC - C8 -...F - D).

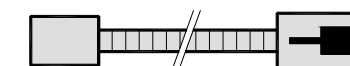
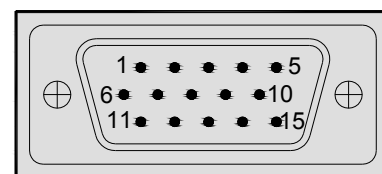
- * Lengths up to 25 meters; (EC -...B - C9) + (XC - C8 -...F - D).
- * Lengths longer than 25 meters; (EC -...B - C9) + (XC - C8 -...F - C9) + (XC - C8 -...F - D).

EC - ...B - C9 Conector Circular 17 macho en longitudes de 1 y 3 metros (otras longitudes consultar a Fagor).
Circular 17 male Connector available in 1 and 3 meters (contact Fagor for other lengths).

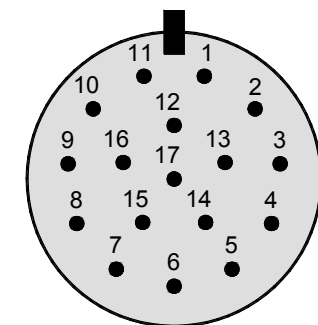
PIN 	15	16	12	13	14	17	8	9	7	1	10	4	11	Carcasa/Housing
SEÑAL / SIGNAL	A	/A	B	/B	Data	/Data	Clock	/Clock	+5V	+5V sensor	0V	0V sensor	Tierra /Ground	Tierra /Ground
COLOR	Verde <i>Green</i>	Amarillo <i>Yellow</i>	Azul <i>Blue</i>	Rojo <i>Red</i>	Gris <i>Gray</i>	Rosa <i>Pink</i>	Negro <i>Black</i>	Violeta <i>Purple</i>	Marrón <i>Brown</i>	VerdeClaro <i>LigthGreen</i>	Blanco <i>White</i>	Naranja <i>Orange</i>	Malla Interna <i>Internal Shield</i>	Malla Externa <i>External Shield</i>



EC - ...B - D



EC - ...B - C9





CABLES

ALARGADERAS PARA CONEXIONES DE LOS ENCODERS ABSOLUTOS FAGOR A SISTEMAS FAGOR EXTENSION CABLES FOR CONNECTING FAGOR ABSOLUTE ENCODERS TO FAGOR SYSTEMS



XC - C8 - ...F - D Alargadera con Conector Circular 17 hembra / Conector SUB D 15 HD macho. En longitudes de 5, 10, 15, 20 y 25 metros.
Extension cable with Circular 17 female Connector / SUB D 15 HD male Connector. Available in 5, 10, 15, 20 and 25 meters.

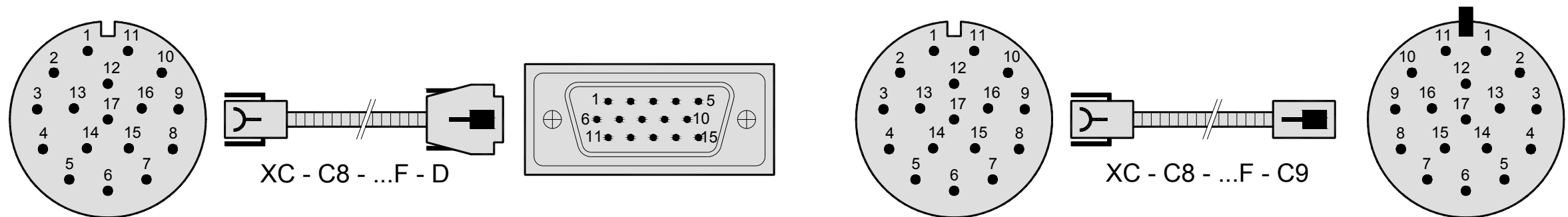
[(4x0.14mm²) + 4x2x0.14mm² + 4x0.5mm²]; con doble apantallamiento / *with double shield*

PIN 	15	16	12	13	14	17	8	9	7	1	10	4	11	Carcasa/Housing
PIN 	1	2	3	4	5	6	7	8	9	10	11	12	15	Carcasa/Housing
SEÑAL SIGNAL	A	/A	B	/B	Data	/Data	Clock	/Clock	+5V	+5V sensor	0V	0V sensor	Tierra Ground	Tierra Ground
COLOR	Verde- Negro <i>Green- Black</i>	Amarillo- Negro <i>Yellow- Black</i>	Azul- Negro <i>Blue- Black</i>	Rojo- Negro <i>Red- Black</i>	Gris <i>Grey</i>	Rosa <i>Pink</i>	Violeta <i>Purple</i>	Amarillo <i>Yellow</i>	Marrón- Verde <i>Brown- Green</i>	Azul <i>Blue</i>	Blanco- Verde <i>White- Green</i>	Blanco <i>White</i>	Malla Interna <i>Internal Shield</i>	Malla Externa <i>External Shield</i>

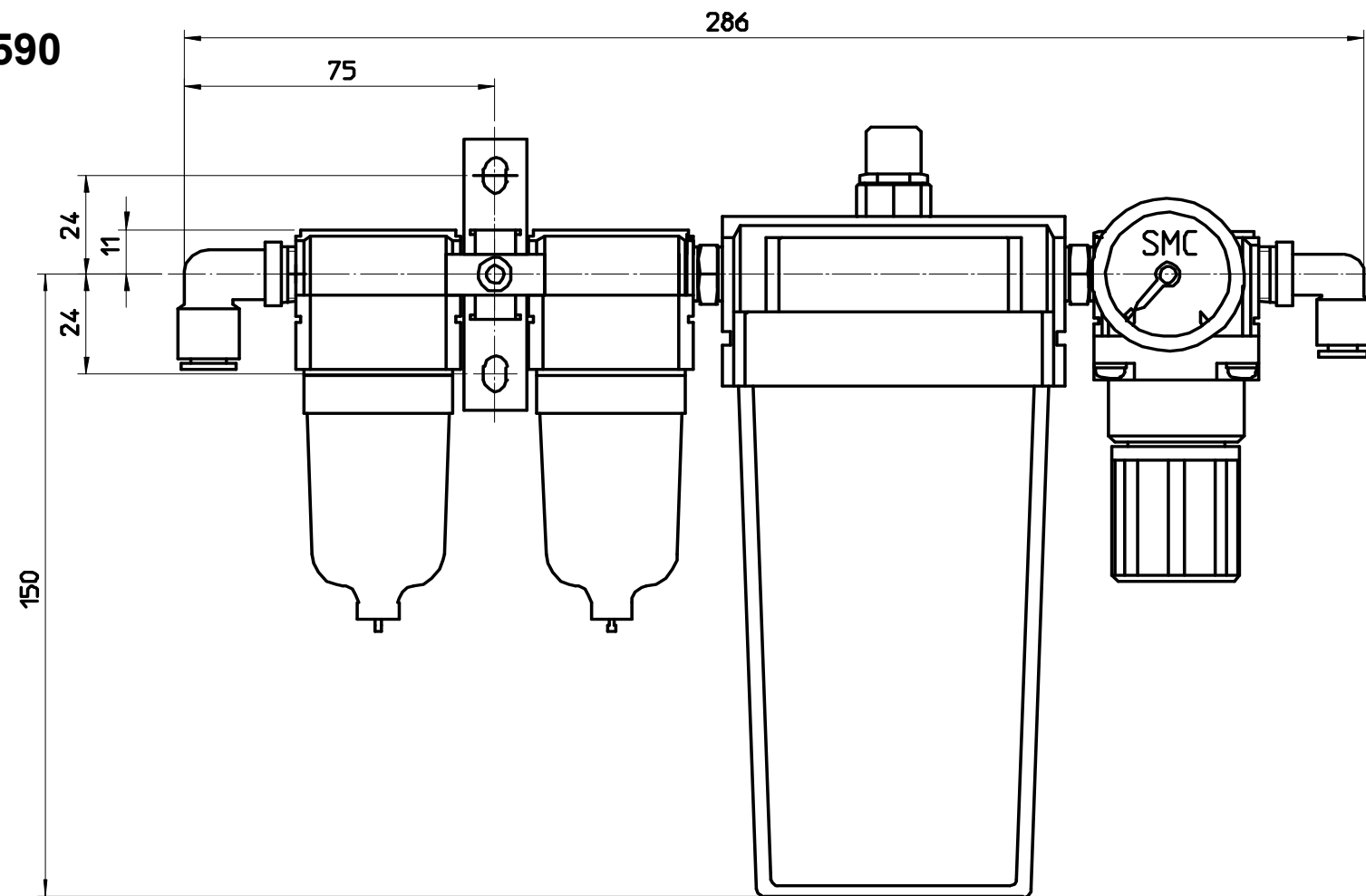
XC - C8 - ...F - C9 Alargadera intermedia con Conector Circular 17 hembra / Conector Circular 17 macho. En longitudes de 5, 10, 15, 20 y 25 m.
Intermediate extension cable with Circular 17 female Connector / Circular 17 male Connector. Available in 5, 10, 15, 20 and 25 m.

[(4x0.14mm²) + 4x2x0.14mm² + 4x0.5mm²]; con doble apantallamiento / *with double shield*

PIN 	15	16	12	13	14	17	8	9	7	1	10	4	11	Carcasa/Housing
PIN 	15	16	12	13	14	17	8	9	7	1	10	4	11	Carcasa/Housing
COLOR	Verde- Negro <i>Green- Black</i>	Amarillo- Negro <i>Yellow- Black</i>	Azul- Negro <i>Blue- Black</i>	Rojo- Negro <i>Red- Black</i>	Gris <i>Grey</i>	Rosa <i>Pink</i>	Violeta <i>Purple</i>	Amarillo <i>Yellow</i>	Marrón- Verde <i>Brown- Green</i>	Azul <i>Blue</i>	Blanco- Verde <i>White- Green</i>	Blanco <i>White</i>	Malla Interna <i>Internal Shield</i>	Malla Externa <i>External Shield</i>



AI 590

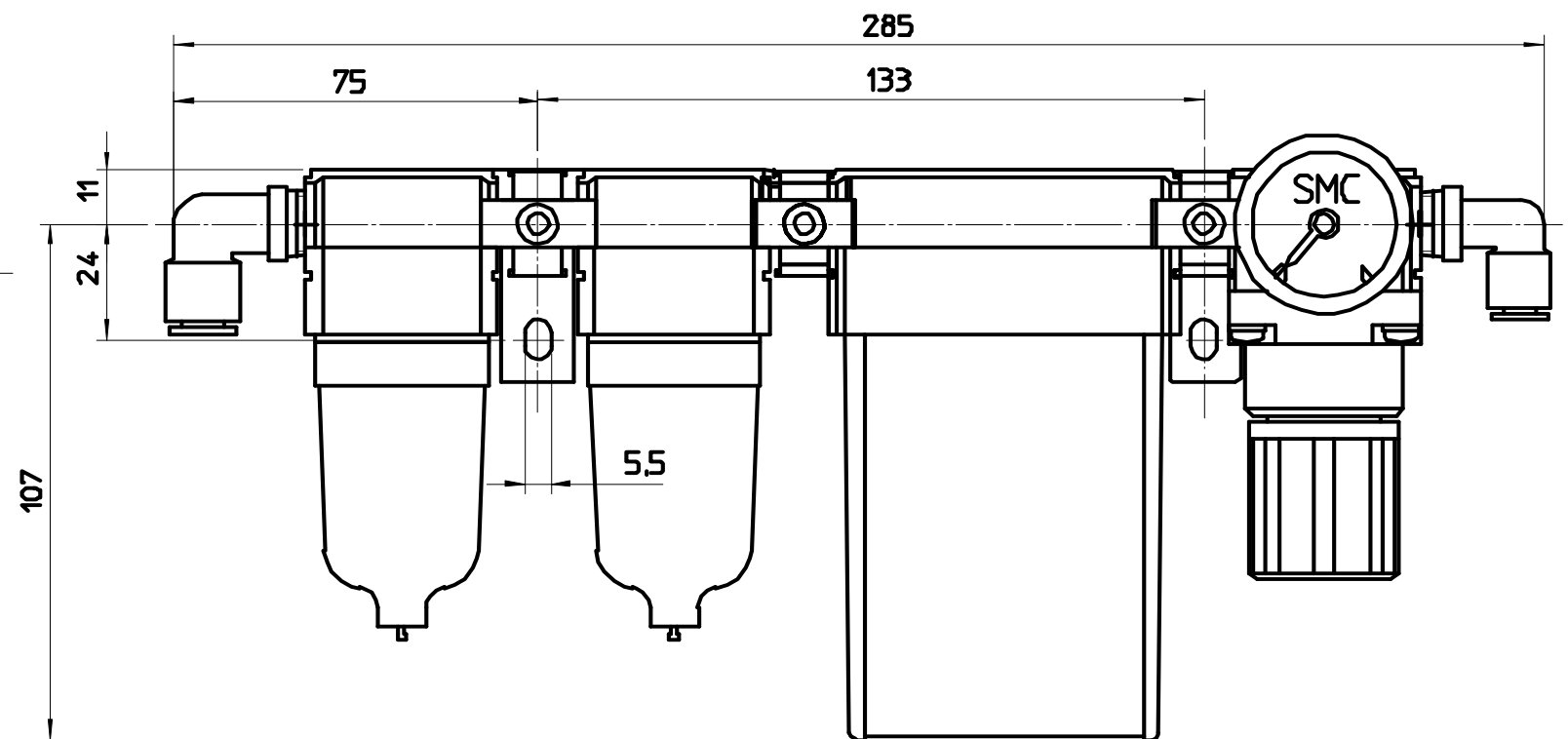
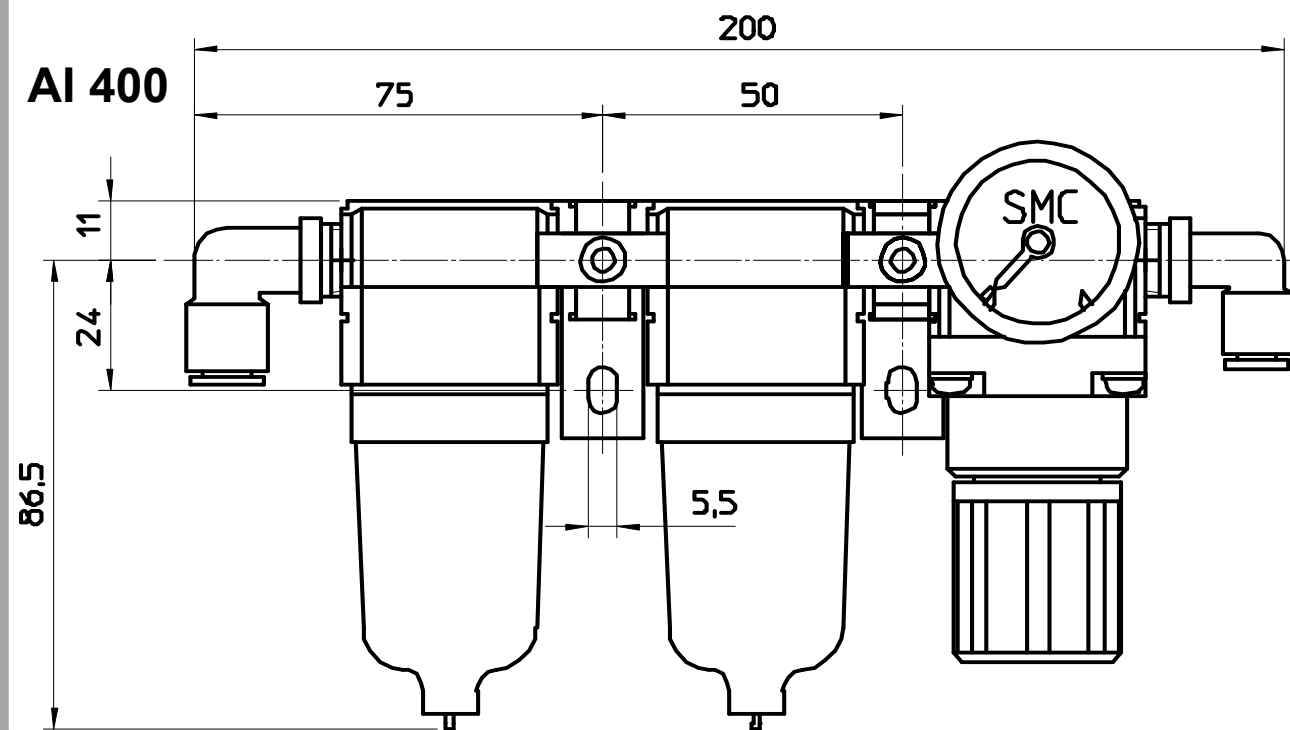


FILTROS DE AIRE / AIR FILTERS

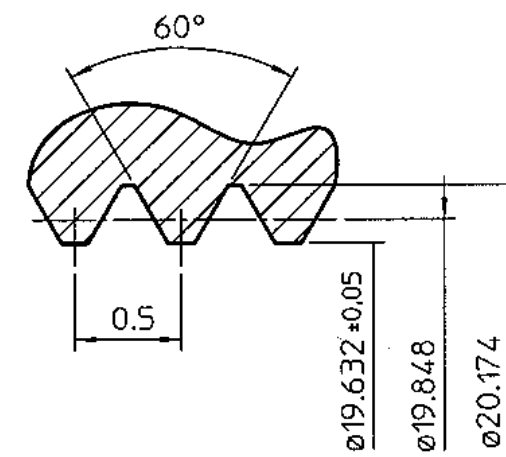
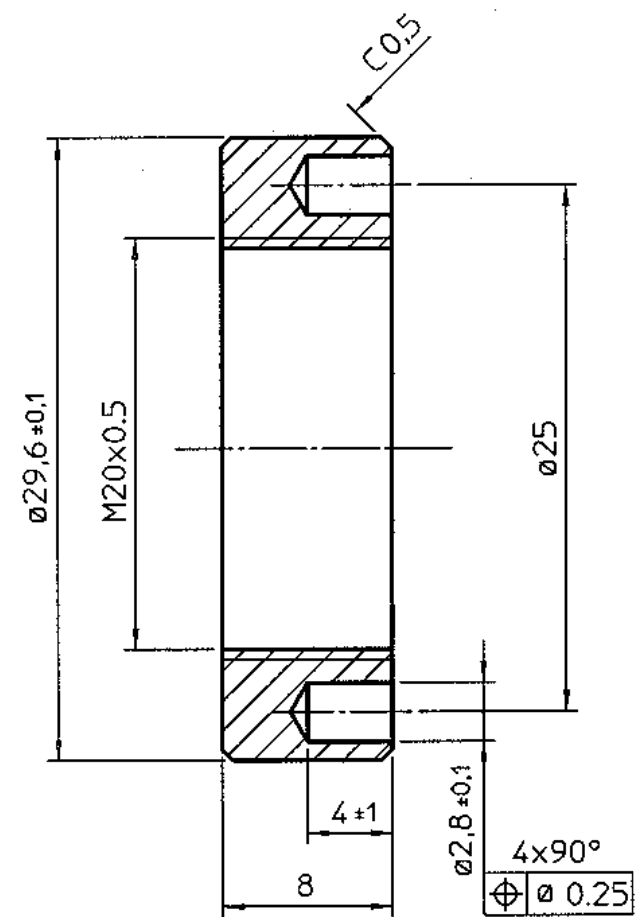
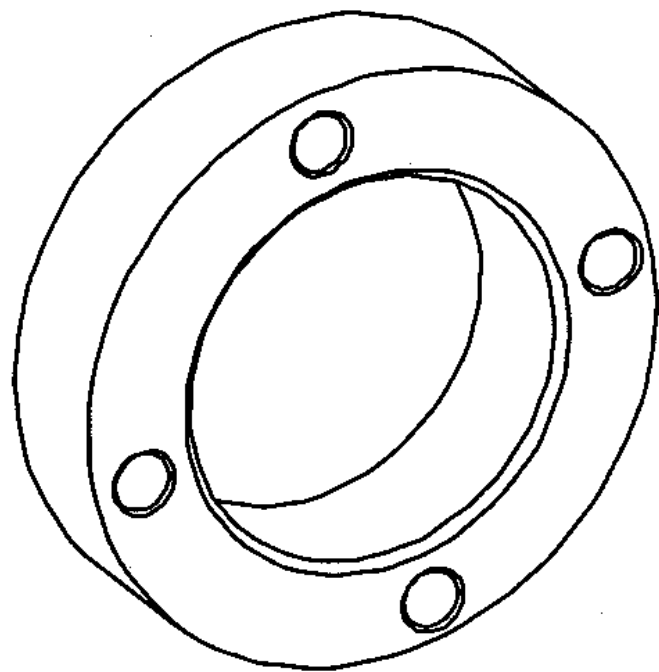
2200000	AI 400	25 l/min
2200001	AI 525	(25l/min)
2200002	AI 550	(50 l/min)
2200003	AI 590	(90 l/min)

AI 525 / AI 550

AI 400



TUERCA T-20 / T-20 NUT



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 Noviembre de 2010

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 November 1st 2010