



Fagor Automation S. Coop.

Manual code: 14460168

Manual version: 1312



ENCODER HAS-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

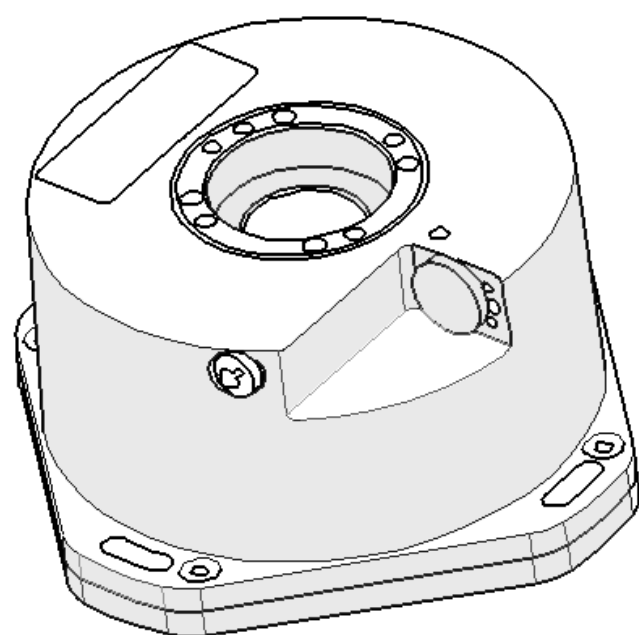
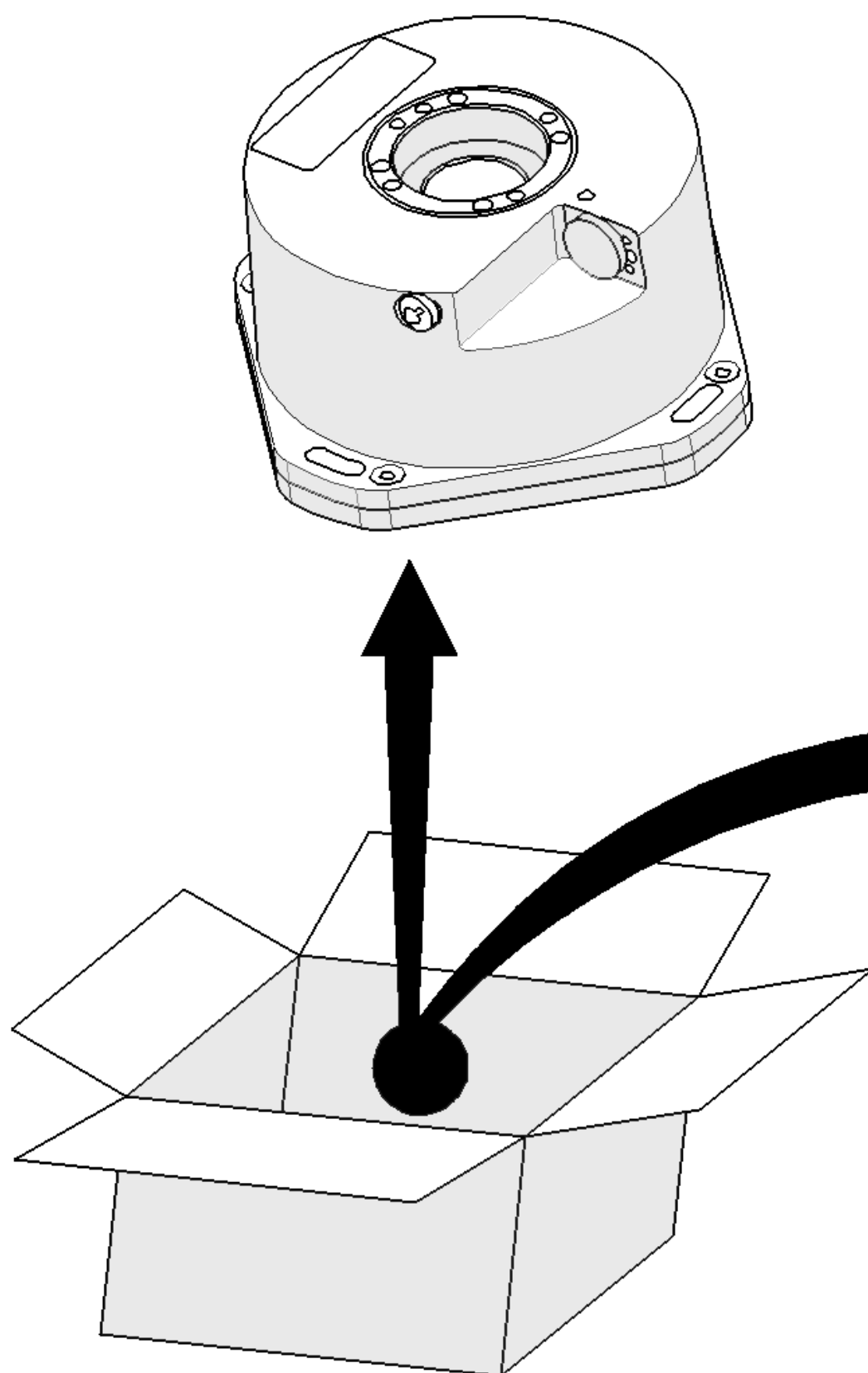
Tel.: (34) 943 719200

Fax: (34) 943 791712

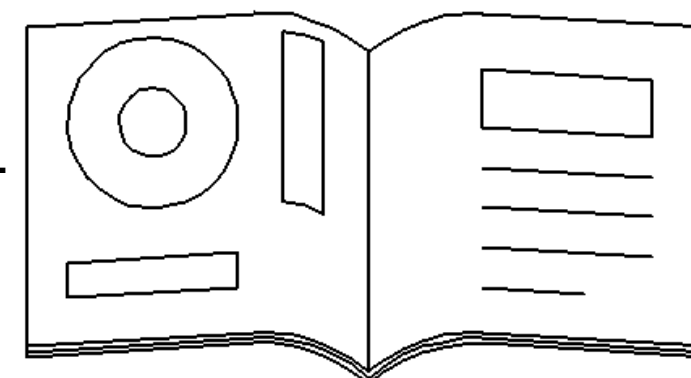


Fagor Automation S. Coop.

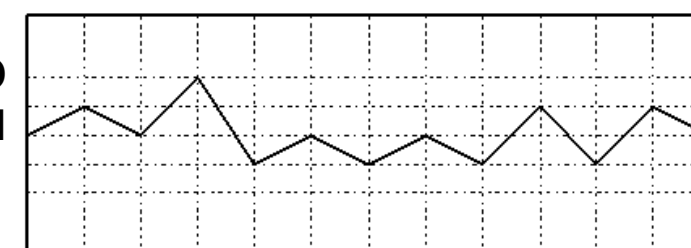




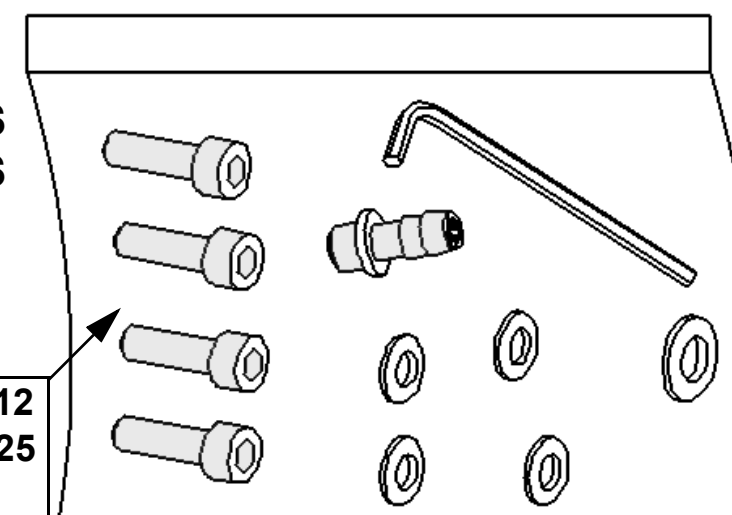
MANUAL



**GRÁFICO
GRAPH**



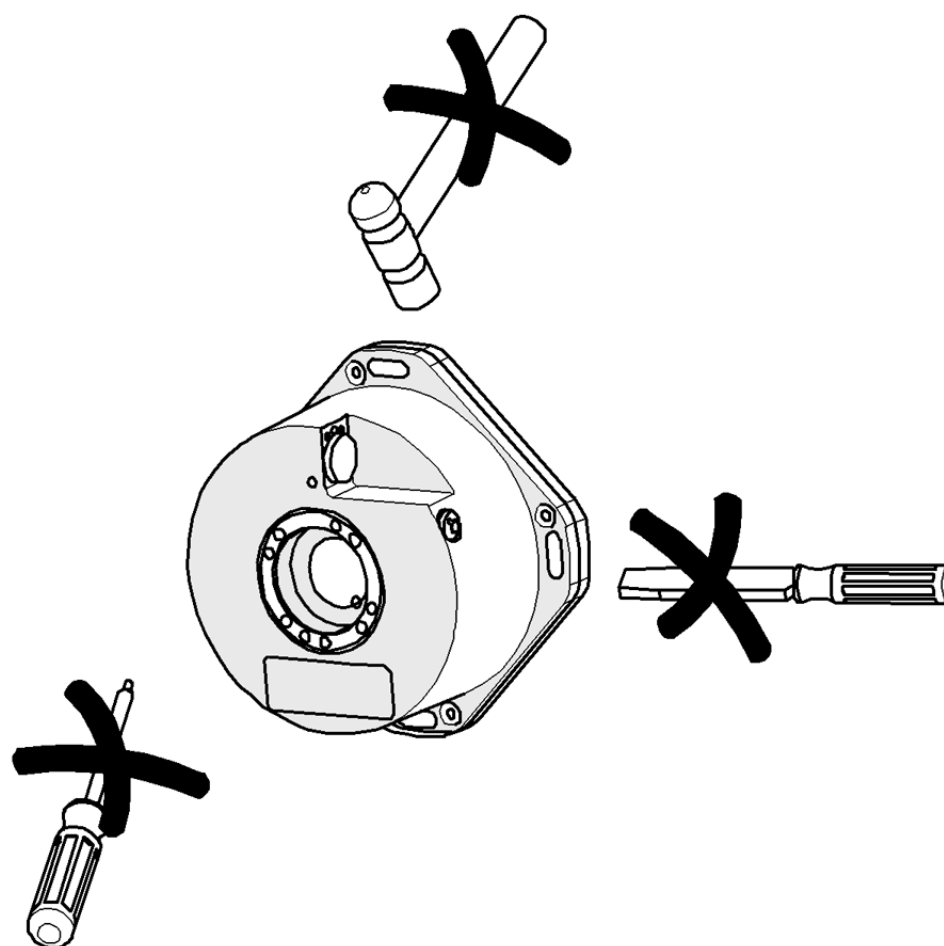
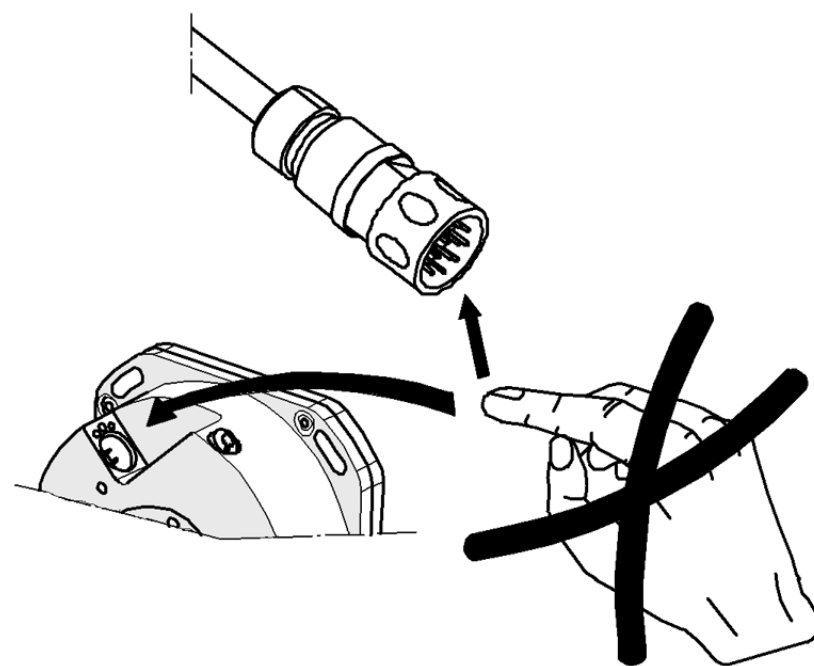
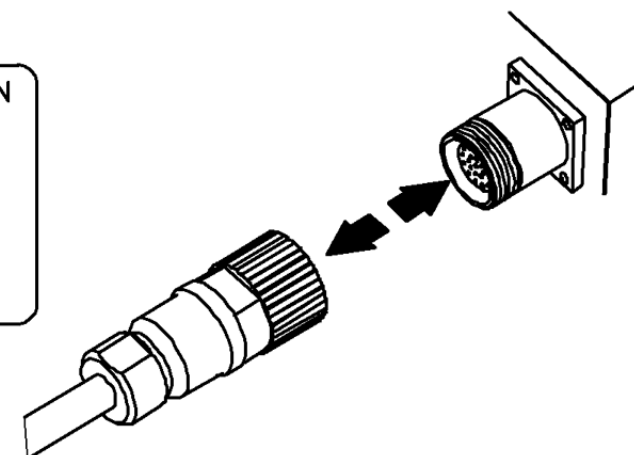
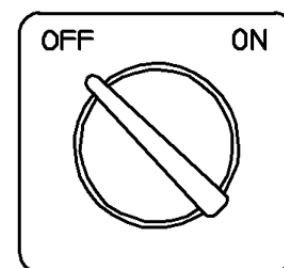
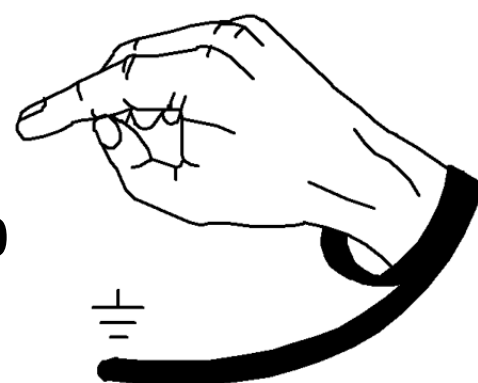
**ACCESORIOS
ACCESSORIES**



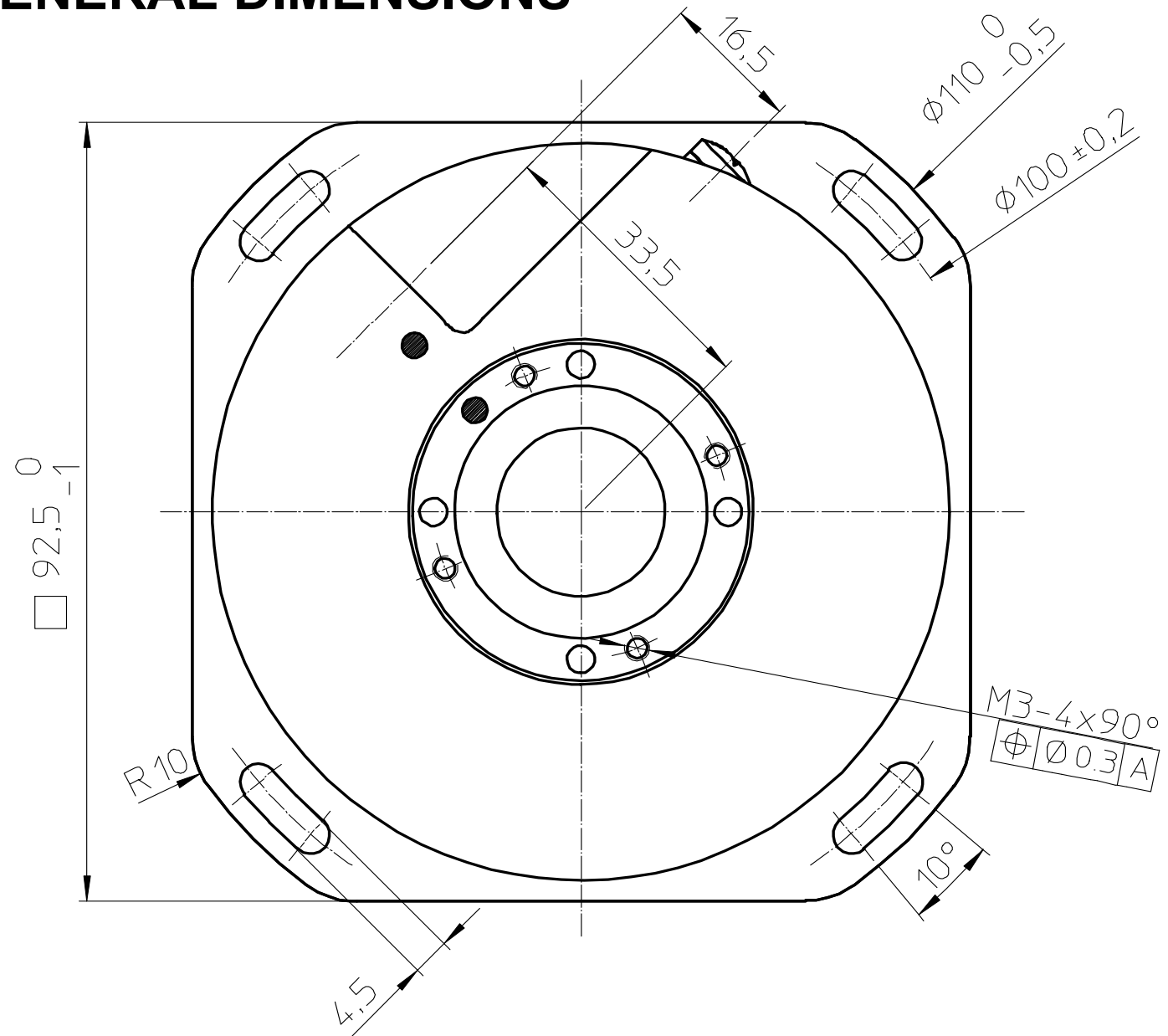
4 tornillos/bolts M4 x 16 DIN 912
4 arandelas/washers M4 DIN 125
1 racor de aire / air intake
1 arandela racor de aire /
air intake washer
1 llave Allen / Allen wrench



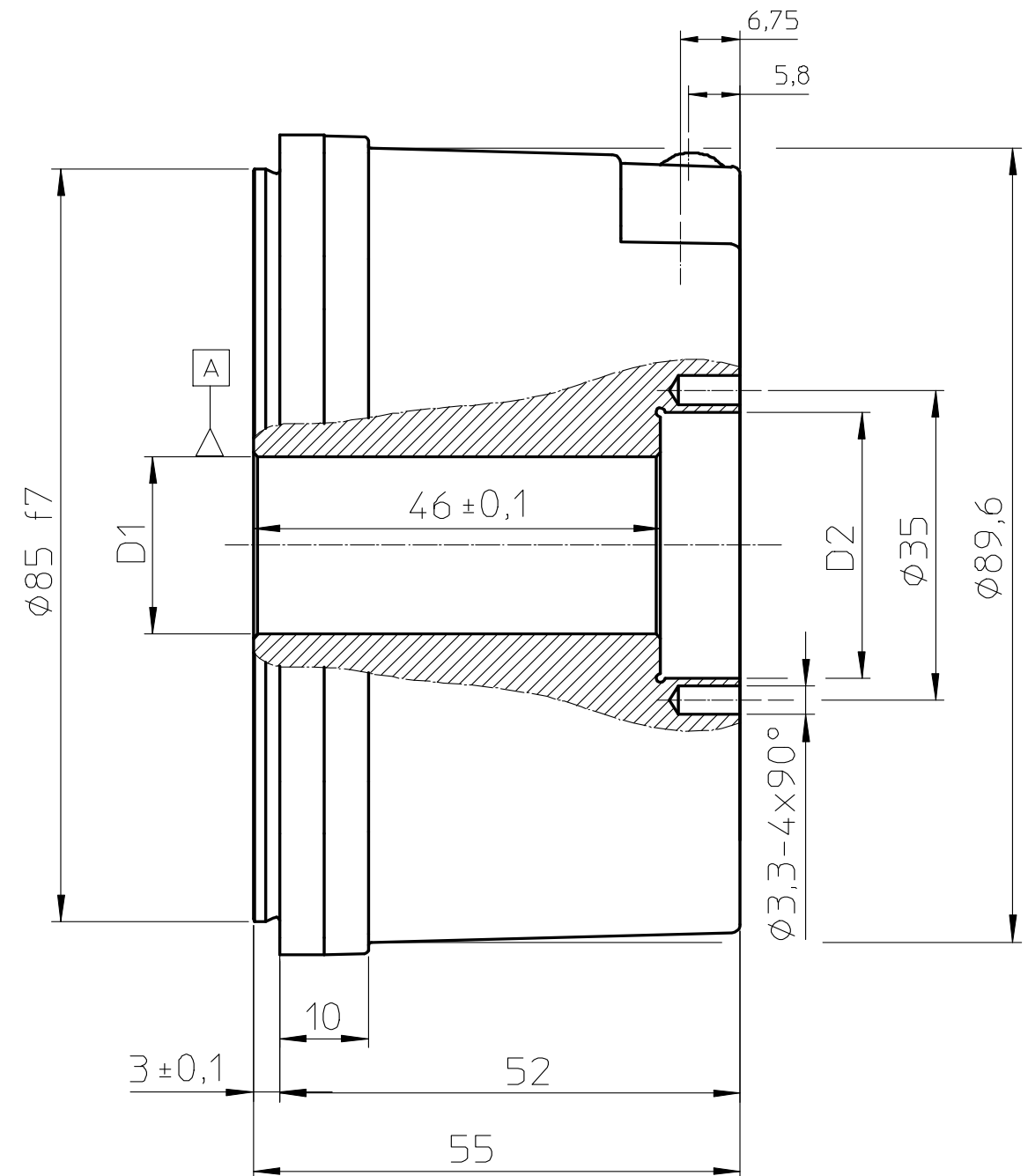
DIN EN 100



GENERAL DIMENSIONS

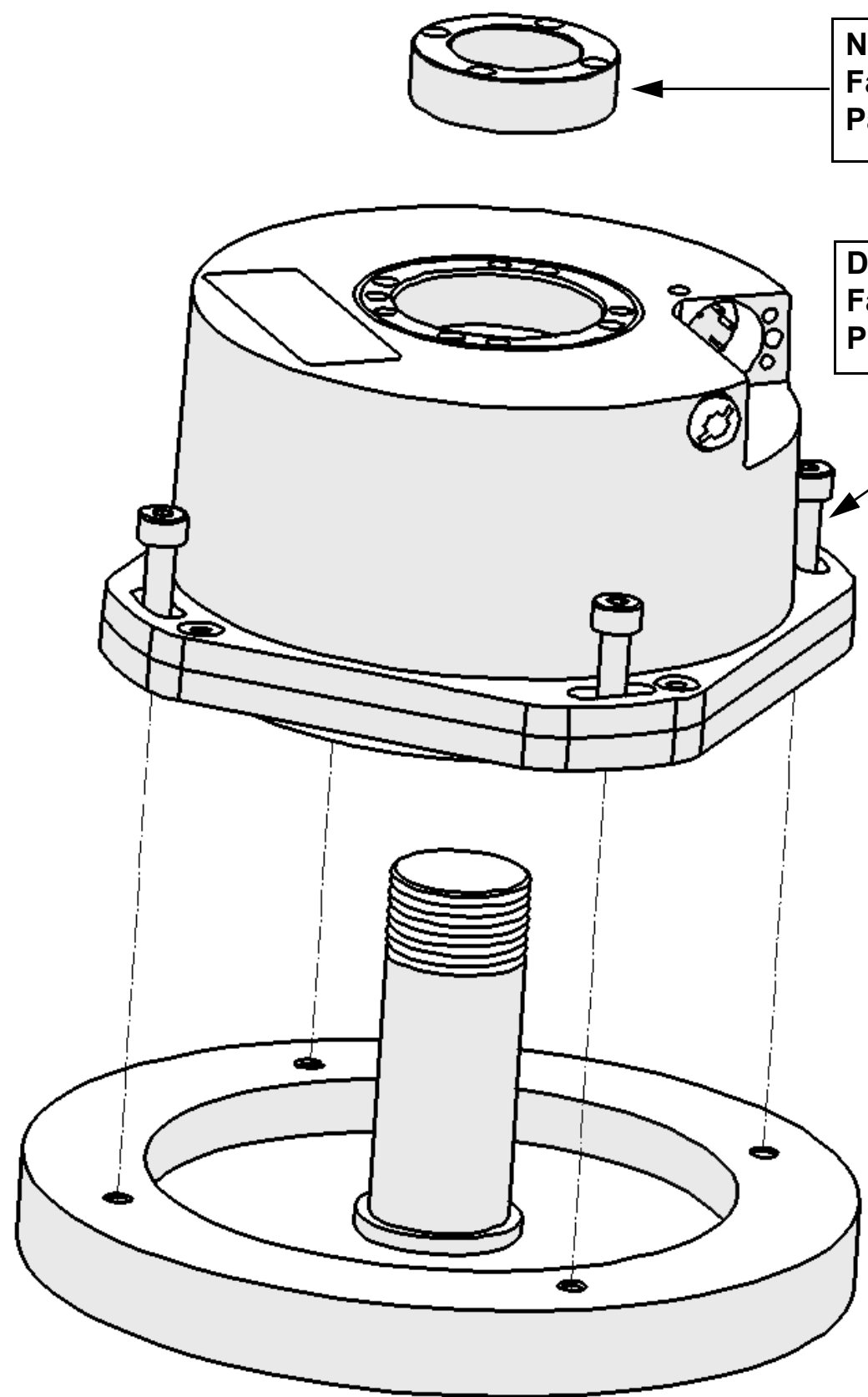


Precisión Accuracy	±2.5"	±5"
D1	Ø20 H6	Ø20 H7
D2	Ø30 H6	Ø30 H7



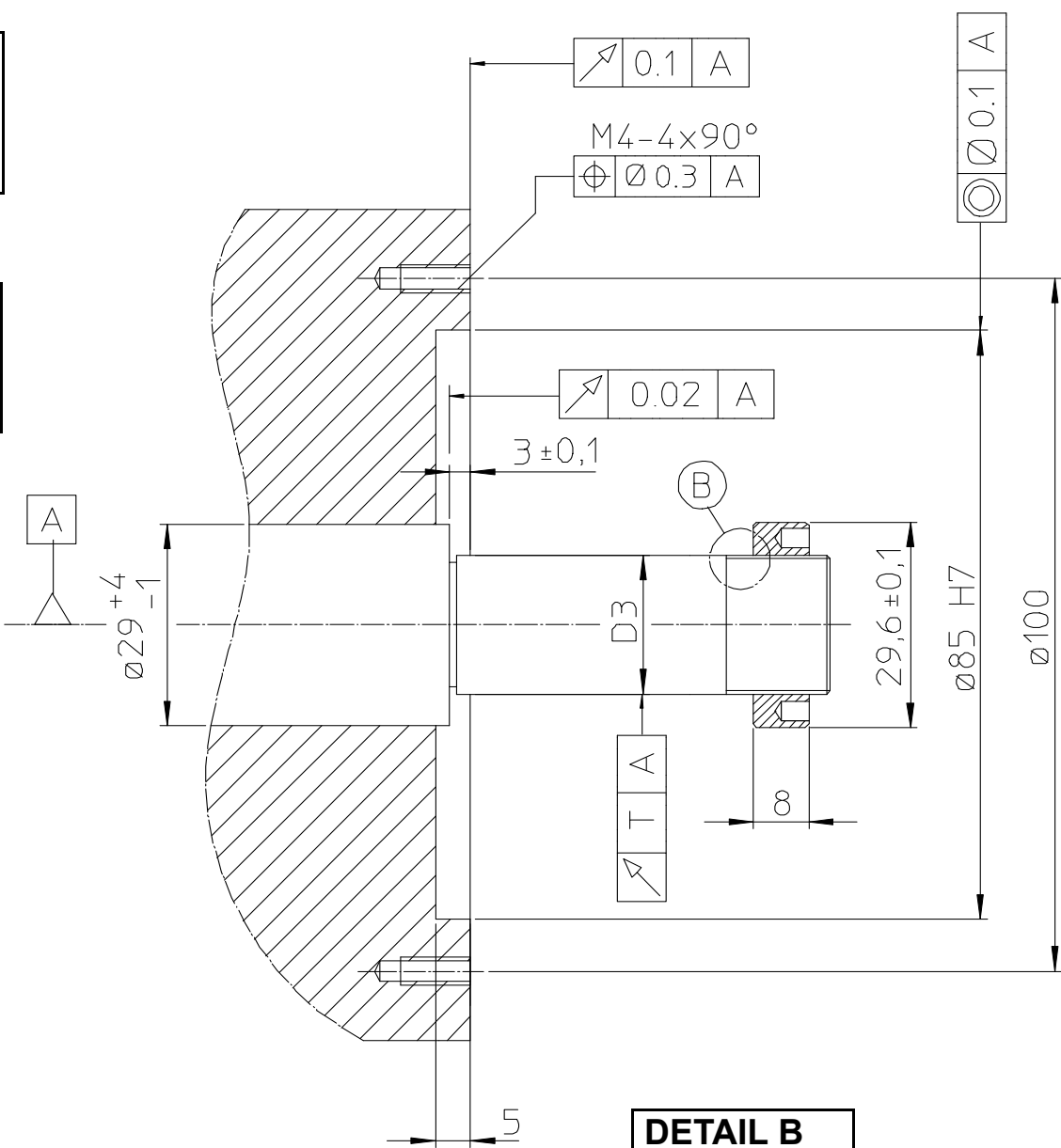
MONTAJE / MOUNTING

Cotas de montaje / Mounting dimensions



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

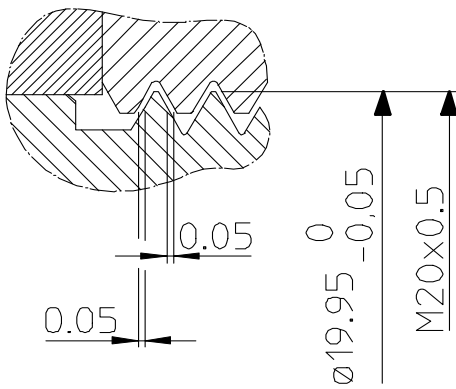
DIN 912 - M4x16
Fastening torque = 2.5 Nm
Par de apriete = 2.5 Nm



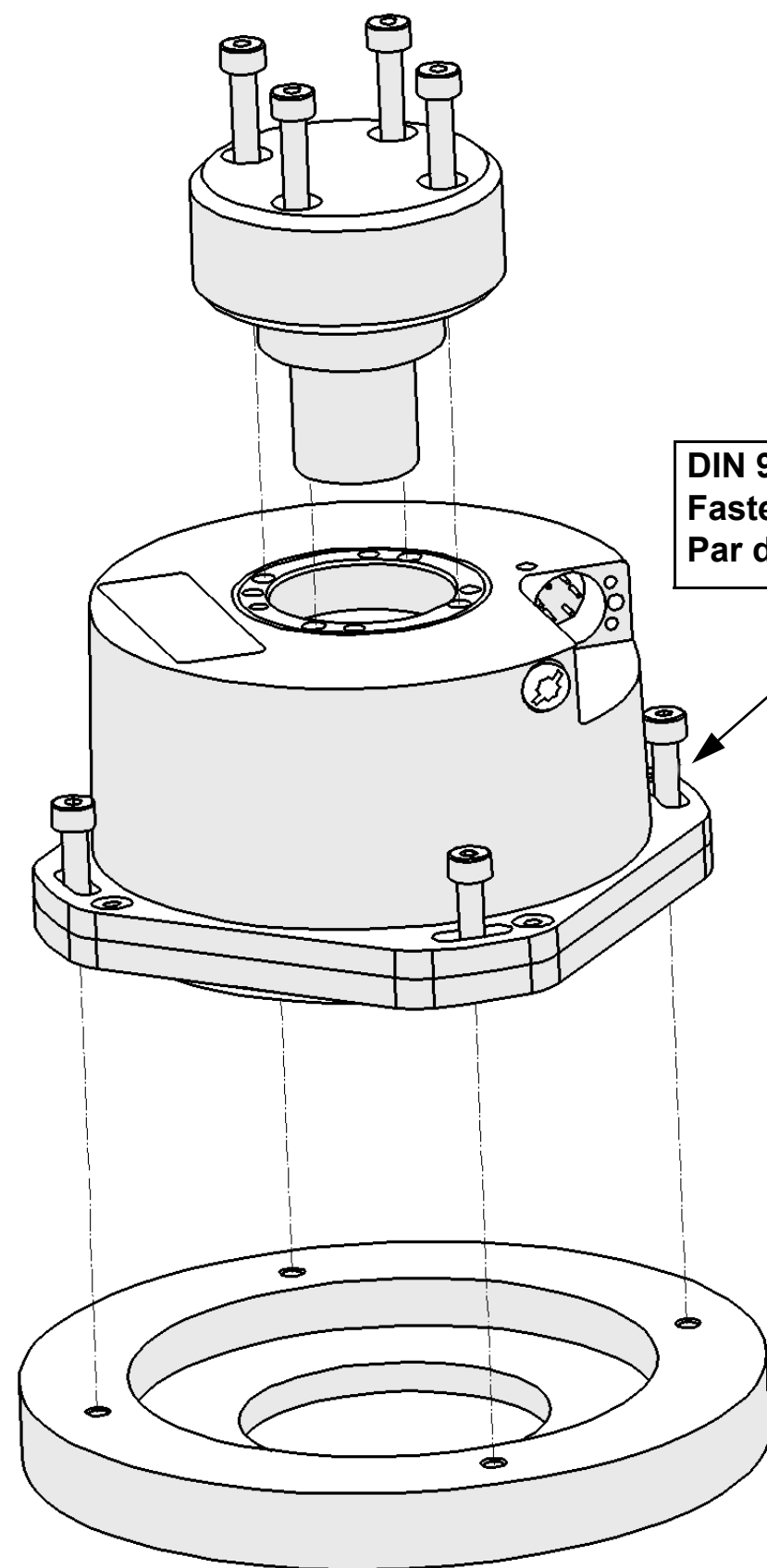
Precisión Accuracy	$\pm 2.5''$	$\pm 5''$
D3	$\varnothing 20\ g6$	$\varnothing 20\ g7$
T	0.01	0.02

[A] Rodamiento / Roller bearing

**DETAIL B
DETALLE B**

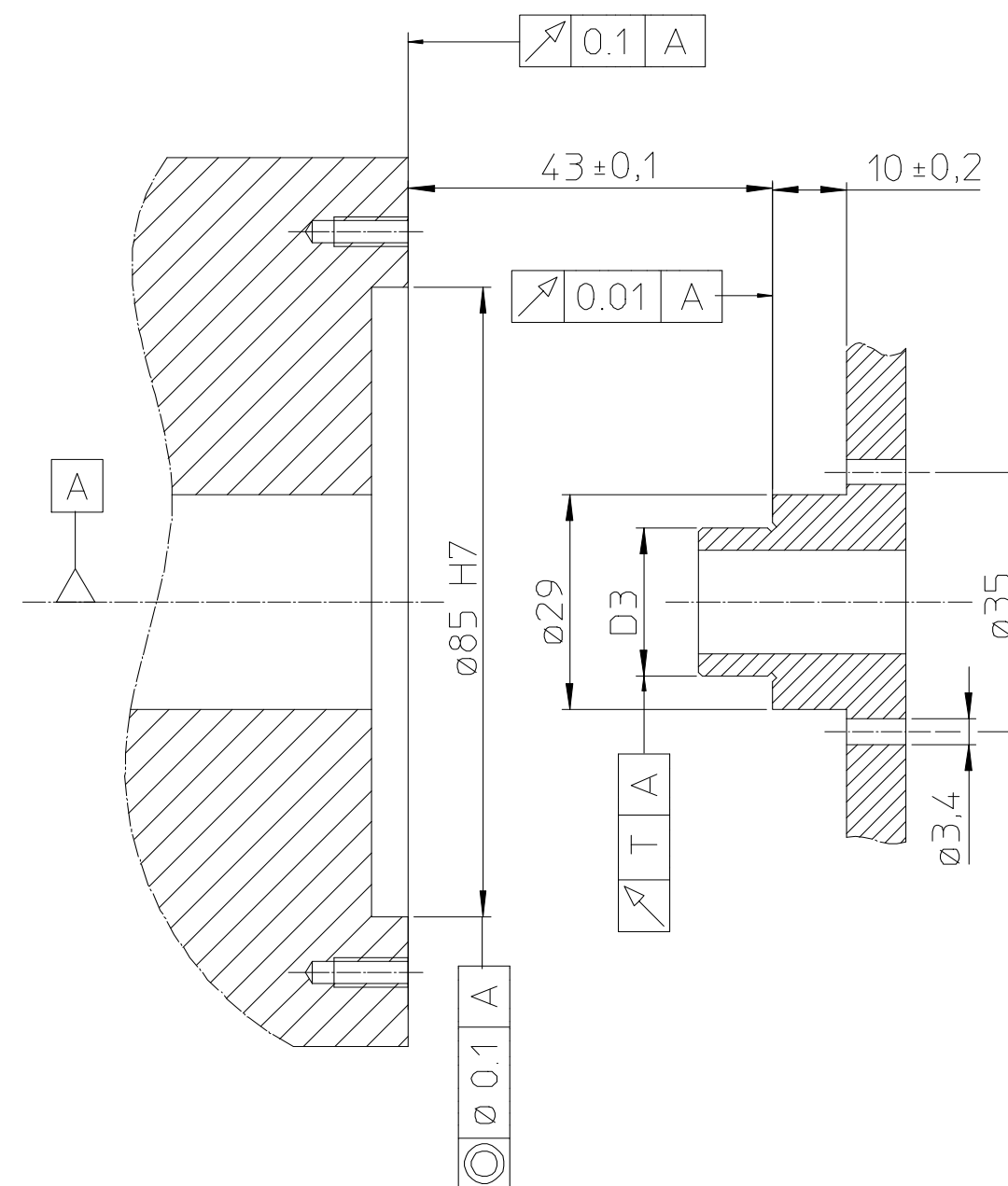


MONTAJE / MOUNTING



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

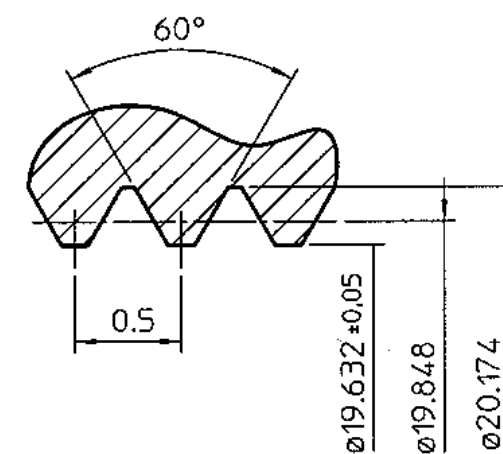
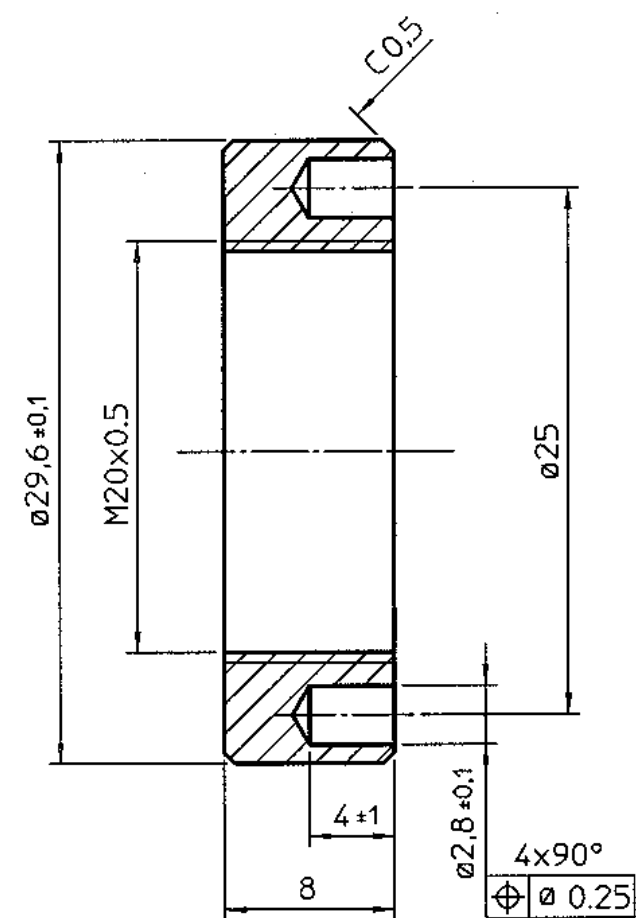
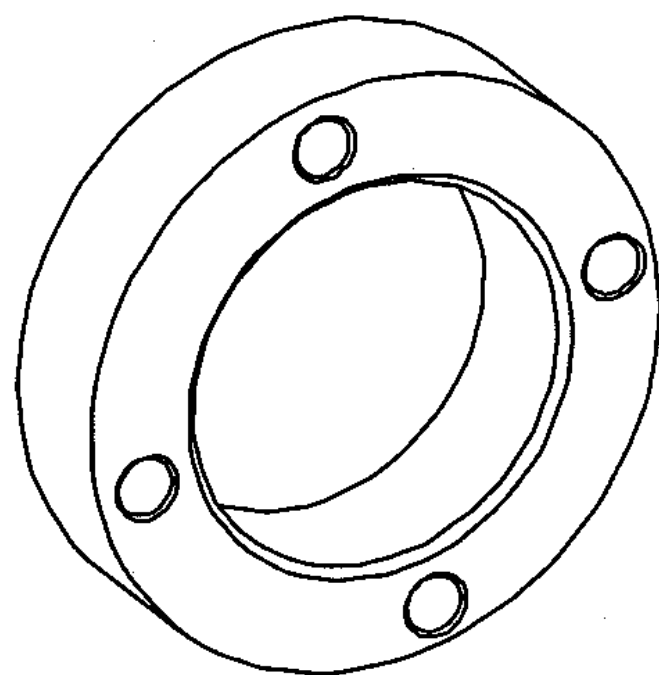
Cotas de montaje / Mounting dimensions



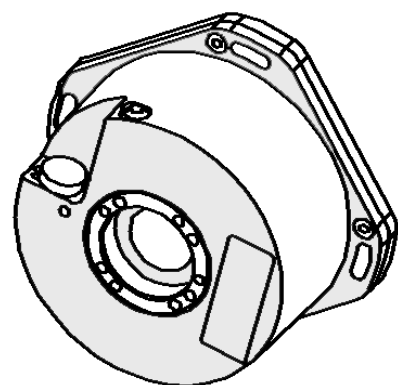
Precisión Accuracy	±2.5"	±5"
D3	∅20 g6	∅20 g7
T	0.01	0.02

A Rodamiento / Roller bearing

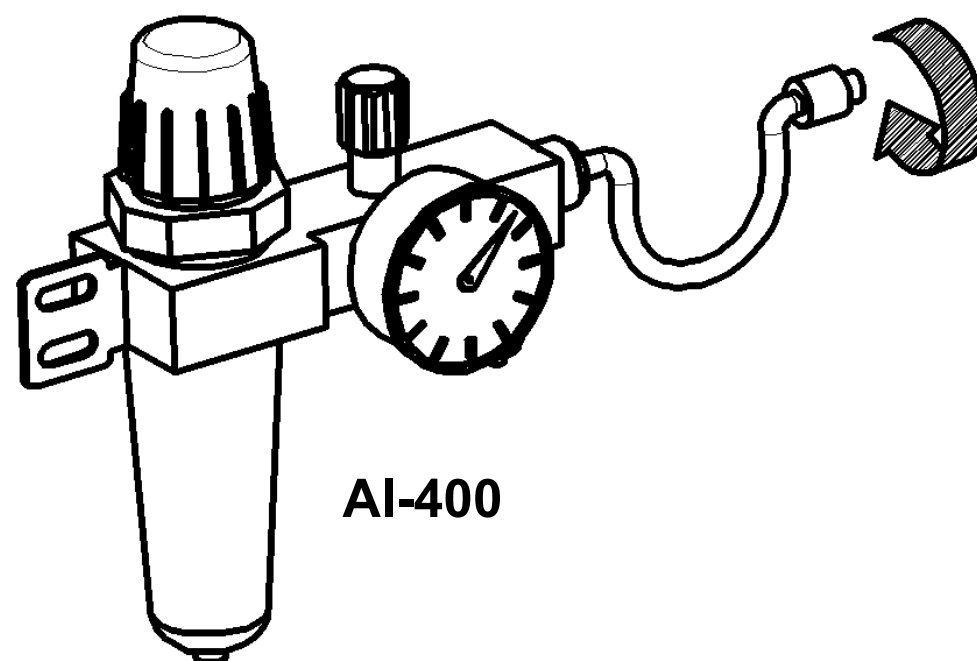
TUERCA T-20 / T-20 NUT



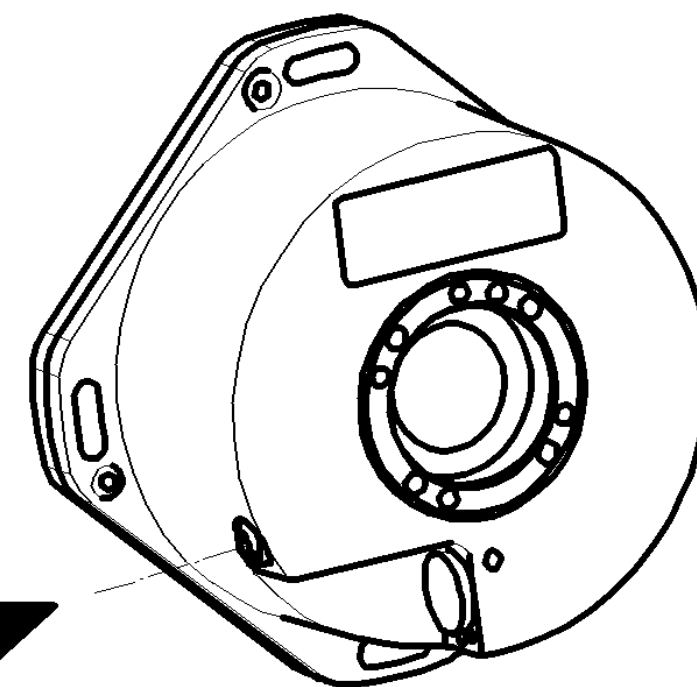
Nivel máximo: IP 64
Maximum level IP 64



> IP 64

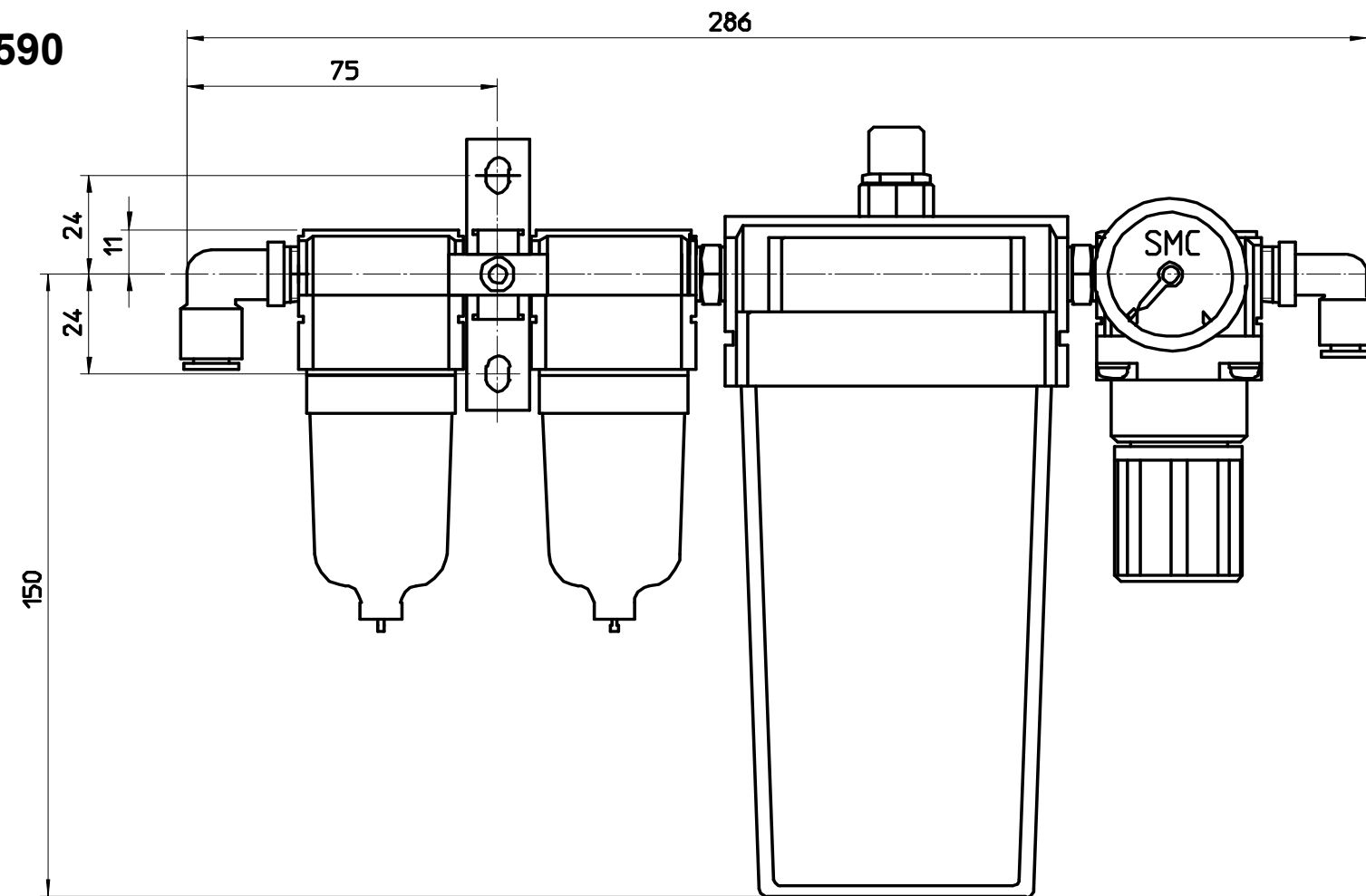


(A)



(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/m3	
Presión / Pressure	1 Kg / cm3
Flujo / Flow	10 l. / min. / encoder

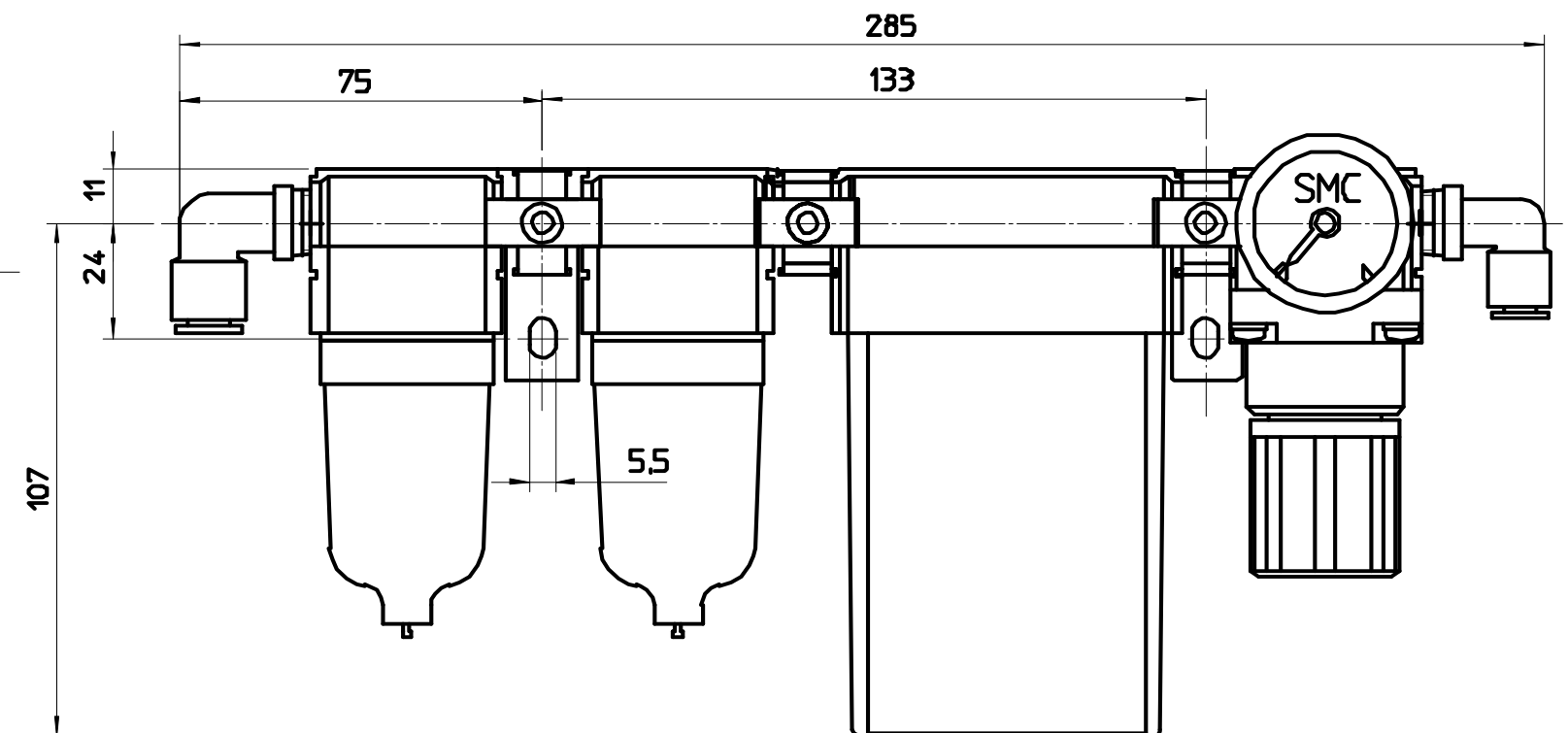
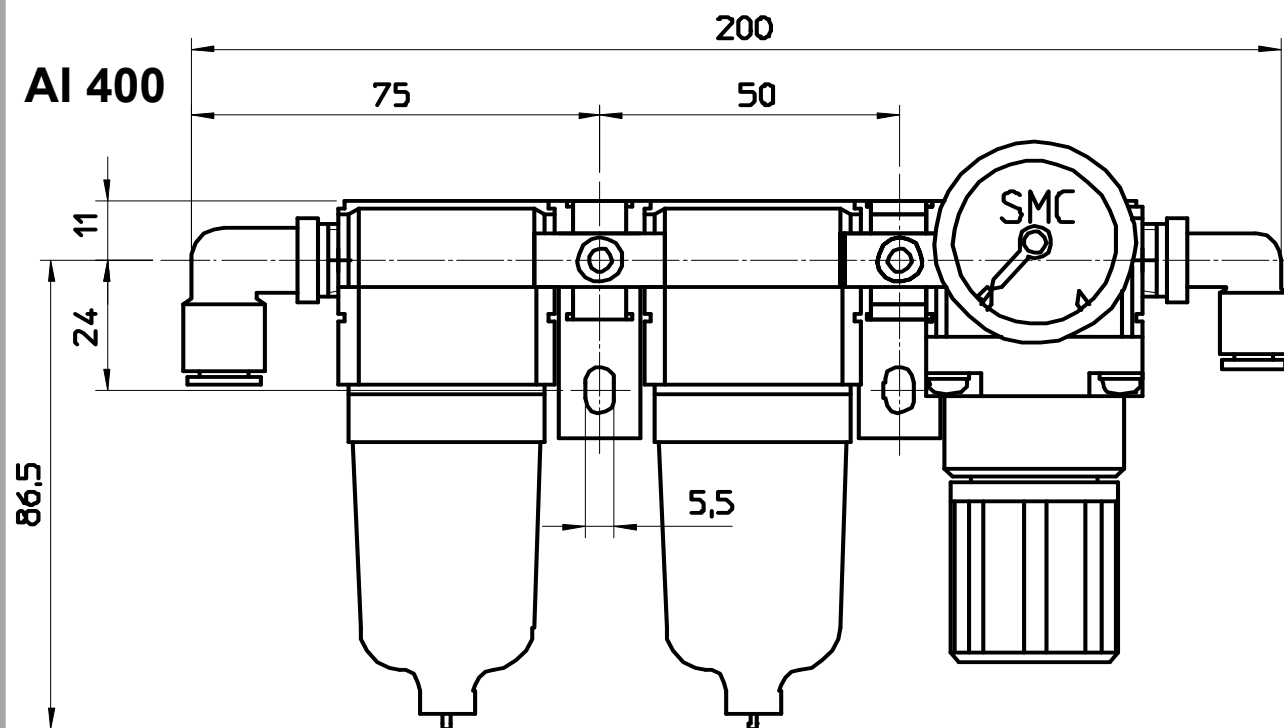
AI 590



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

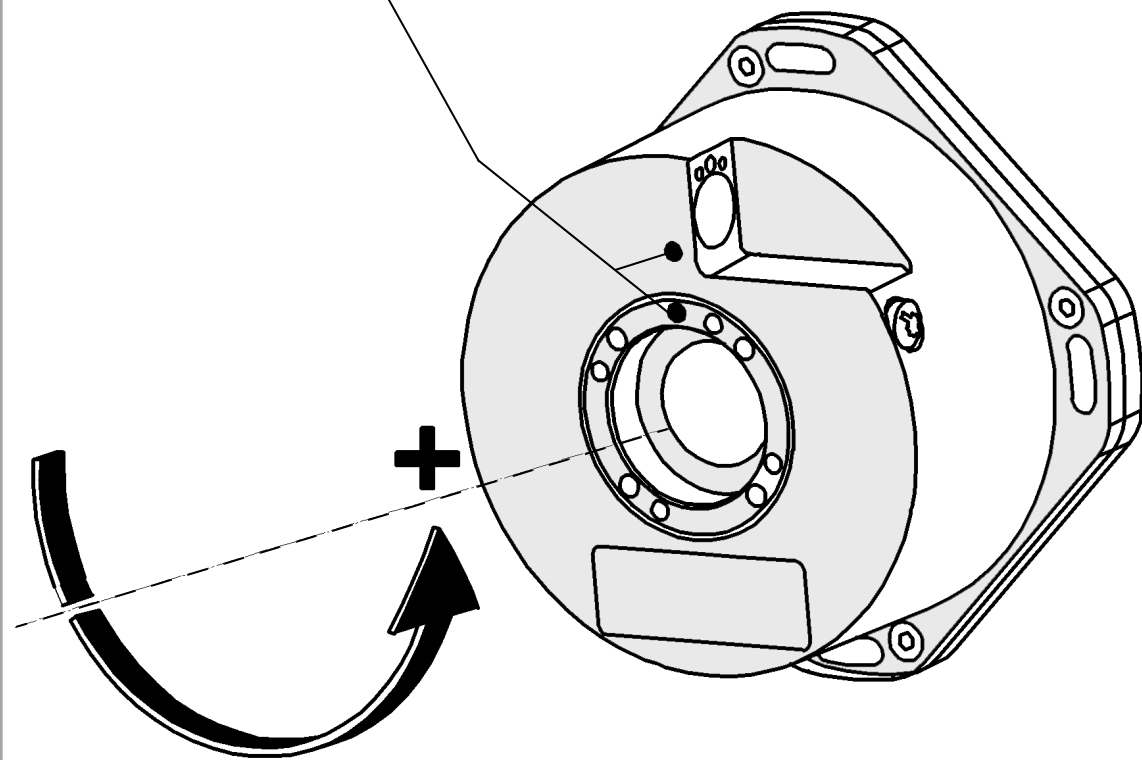
Modelo	HAS-D90-2	HAS-D90	Model
Precisión	±2.5"	±5"	Accuracy
Maxima velocidad de giro	3000 rpm *		Max. Turning speed
Momento de inercia del eje	650 gr.cm2		Inertia of the rotor
Par (20°C)	< 0.08 Nm		Torque
Frecuencia natural	> 1000 Hz		Natural frequency
Peso	0.9 kg		Weight
Estanqueidad	IP-64 (DIN 40050)		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

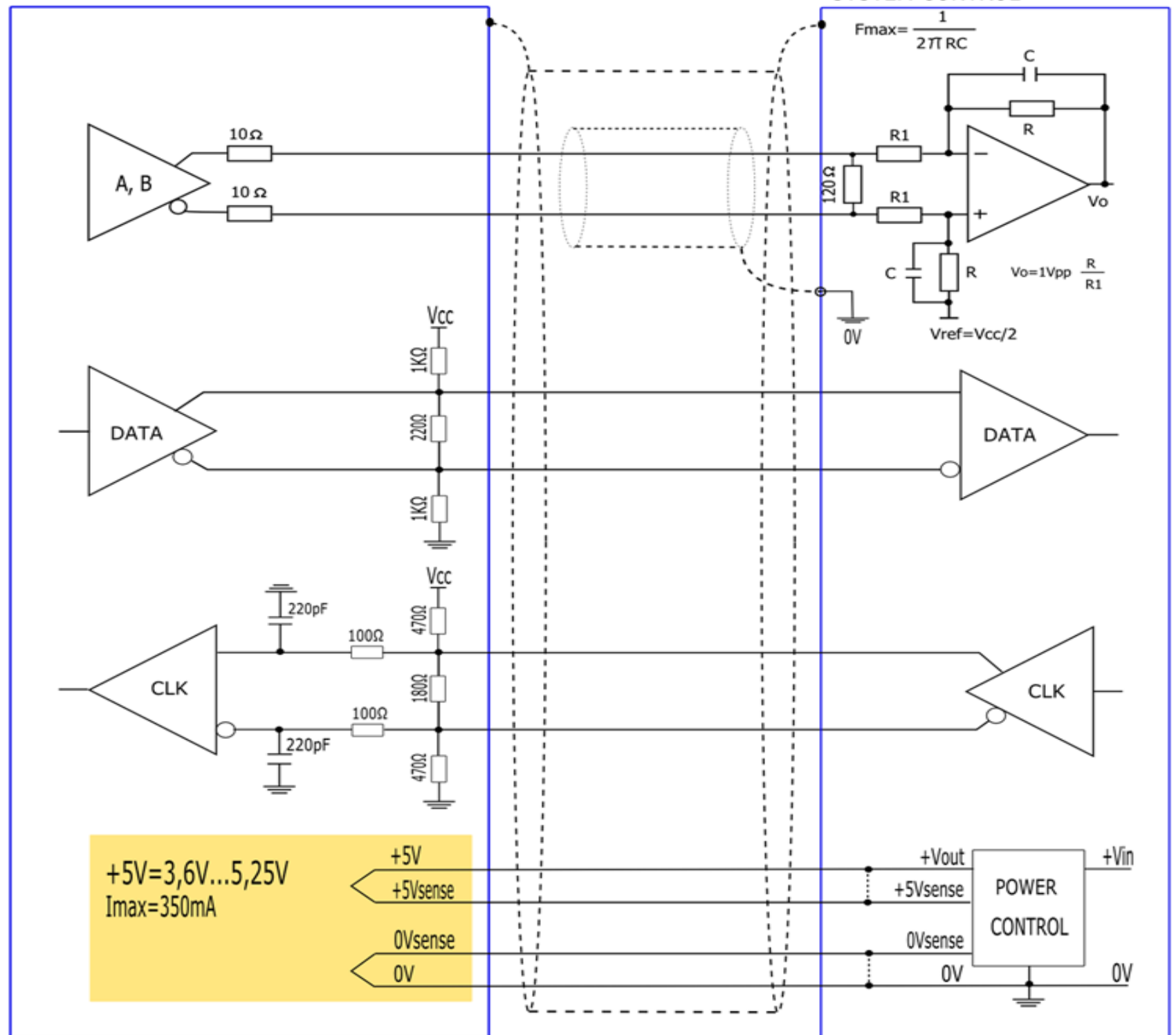
Posición del origen 0°
0° origin position

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

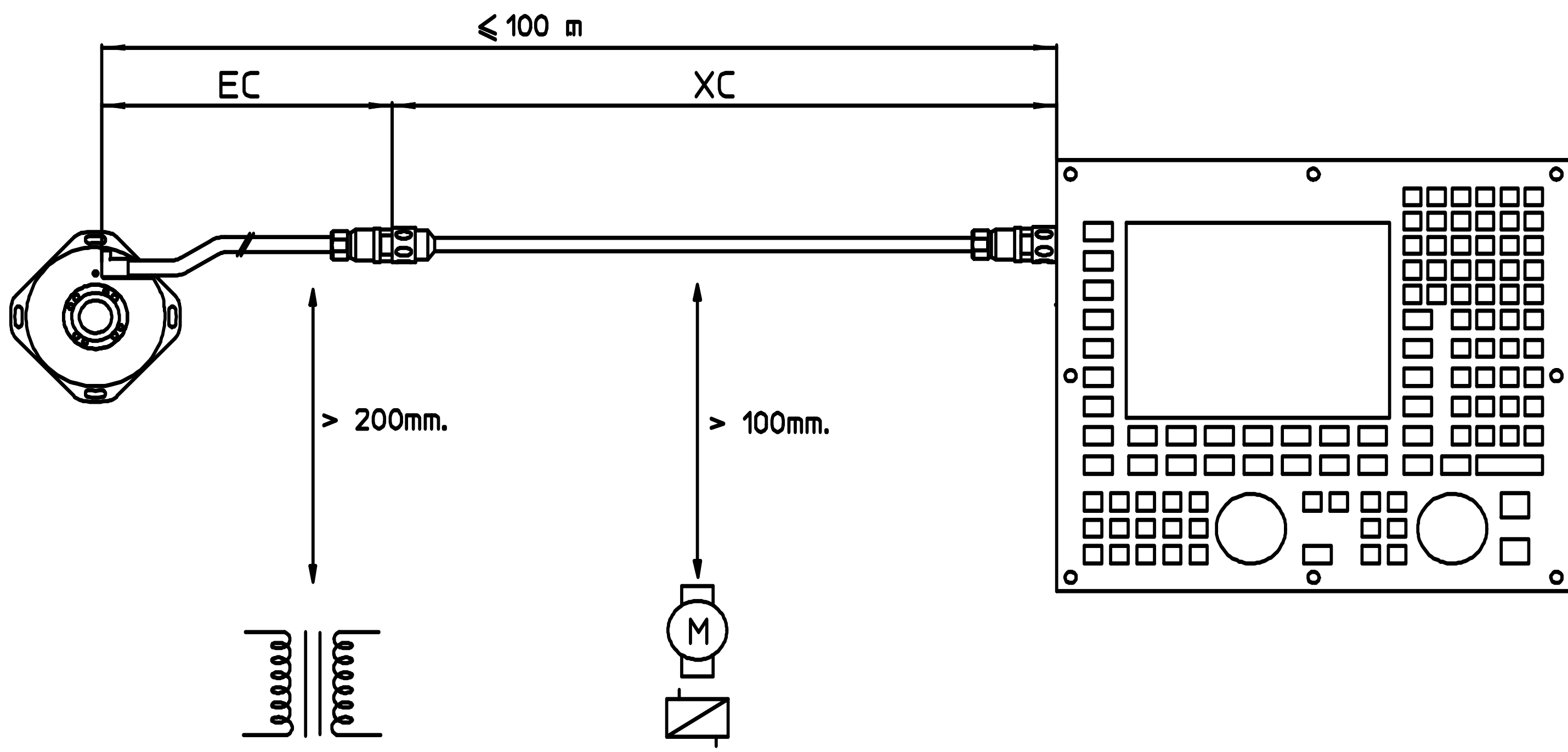


ENCODER

SYSTEM CONTROL



CONEXIÓN / CONNECTION



INFORMACIÓN ELÉCTRICA / ELECTRICAL DATA



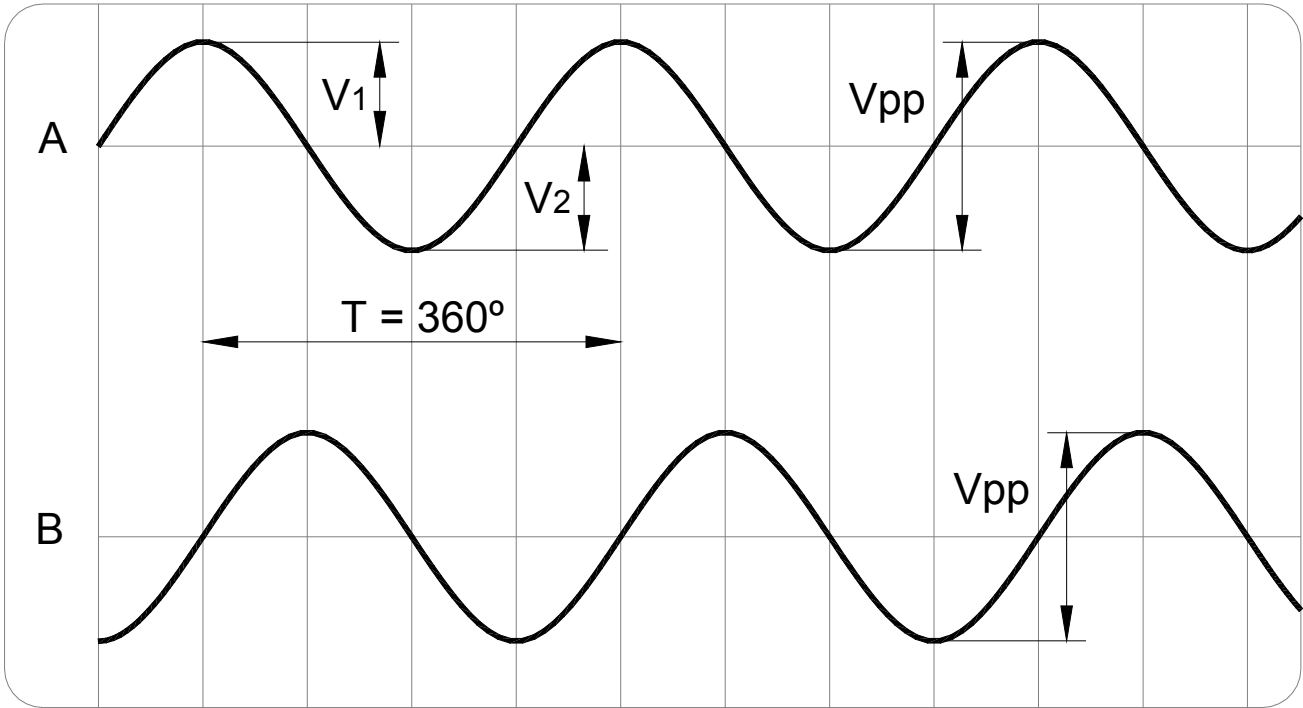
1 Vpp
1 Vpp

SEÑALES DIFERENCIALES
DIFFERENTIAL SIGNALS

HAS-D90

Características - Characteristics

Señales Signals	A, /A, B, /B
VApp	1 V +20%, -40%
VBpp	1 V +20%, -40%
DC offset	2.5V ± 0.5V
Impulsos por vuelta Pulses per turn	16384
Alimentación Supply	3.6 V - 5.25 V Imax: 350 mA
Máx. longitud de cable Max. cable length	100 metros 328 feet
A, B centrado: $ V_1-V_2 / 2V_{pp}$ Centered A, B: $ V_1-V_2 / 2V_{pp}$	≤ 0.065
Relación A&B: V_{App} / V_{Bpp} 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

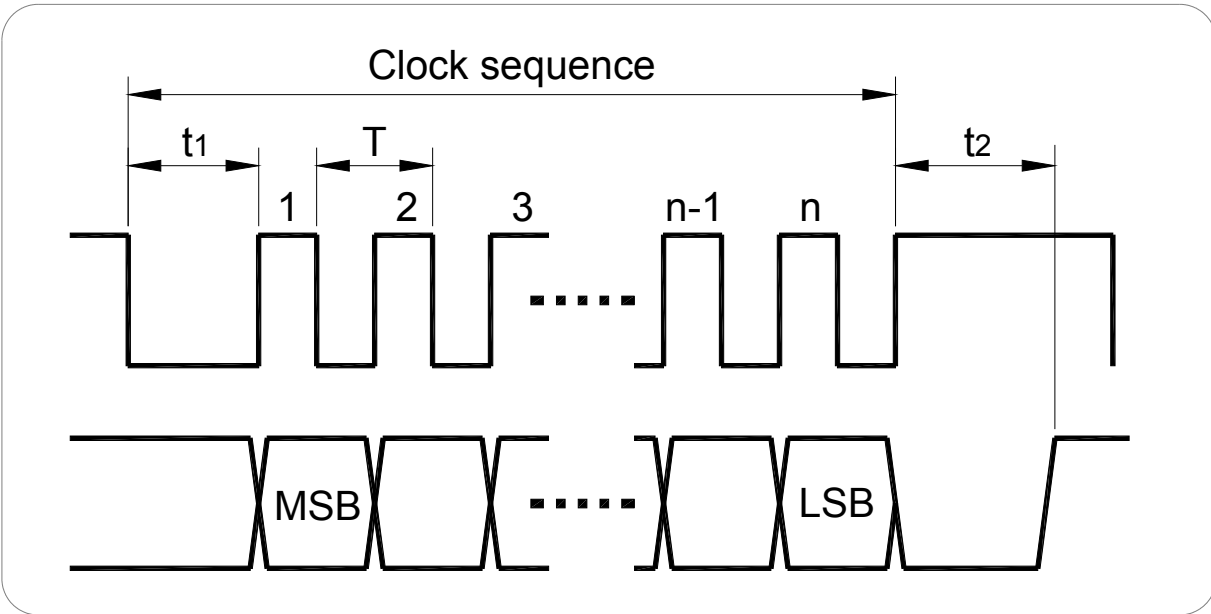
HAS-D90

Especificaciones - Specification

Transmisión / <i>Transmission</i>	SSI transferencia serie sin- crona 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 µs ÷ 10 µs
t1	> 0.5 µs
t2	20 µs ÷ 35 µs
SSI	Gray o Binario (Configurable) <i>Gray or Binary (Configurable)</i>
Paridad / <i>Parity</i>	Totalmente configurable <i>Fully configurable</i>

Valores por defecto para el protocolo SSI
Default values of SSI protocol

Número de bits / <i>Number of bits</i>	23
Tipo de datos / <i>Data type</i>	Gray
Paridad / <i>Parity</i>	Impar / <i>Odd</i>
Time out	450 µs



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 CONEXIÓN DIRECTA DE ENCODERS ABSOLUTOS FAGOR A SISTEMAS SIEMENS
CABLES FOR DIRECT CONNECTION OF FAGOR ABSOLUTE ENCODERS TO SIEMENS SYSTEMS

SIEMENS SMC 20
HASTA 9 METROS - UP TO 9 METERS

Table with 16 columns: EC-...B-S1, PIN, SEÑAL/SIGNAL, COLOR, and 12 signal pins. It details the wiring for the Siemens SMC 20 encoder connection, including pin numbers, signal names (e.g., +5V, 0V, A, /A), and corresponding colors (e.g., Marrón, Blanco, Verde).

A PARTIR DE 9 METROS- FROM 9 METERS

* Longitudes hasta 25 metros (EC- ...B - C9) + (XC - C8 - ... F- S1)
* Superiores a 25 metros (EC- ...B - C9) + (XC - C8 - ...F - C9) + (XC - C8 - ... F- S1)

Table with 16 columns: EC-...B-C9, PIN, SEÑAL / SIGNAL, COLOR, and 12 signal pins. It details the wiring for the Siemens SMC 20 encoder connection for lengths up to 9 meters, including pin numbers, signal names, and colors.

SIEMENS SME 25
HASTA 9 METROS - UP TO 9 METERS

Table with 16 columns: EC-...B-C9, PIN, SEÑAL / SIGNAL, COLOR, and 12 signal pins. It details the wiring for the Siemens SME 25 encoder connection, including pin numbers, signal names, and colors.

A PARTIR DE 9 METROS- FROM 9 METERS

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



CABLES

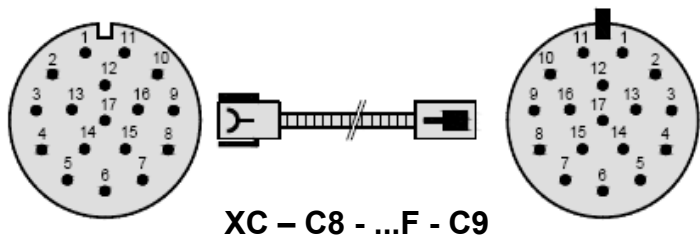
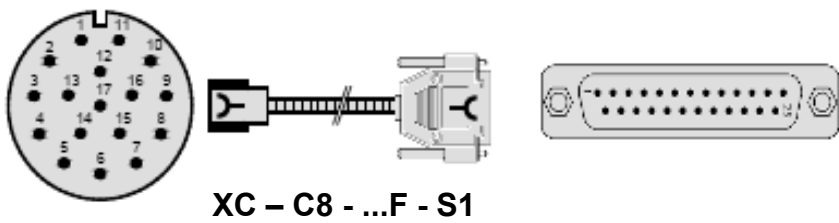
ALARGADERAS PARA CONEXIÓN DIRECTA DE ENCODERS ABSOLUTOS FAGOR A SISTEMAS SIEMENS
EXTENSION CABLES FOR DIRECT CONNECTION OF FAGOR ABSOLUTE ENCODERS TO SIEMENS SYSTEMS

SIEMENS SMC 20

XC – C8 - ...F – S1	Alargadera con Conector Circular 17 hembra / Conector SubD 25 hembra. En longitudes de 5, 10, 15, 20 y 25 metros. Extension cable with Circular 17 female Connector / SubD 25 femail Connector. Available in 5, 10, 15, 20 and 25 meters.													
PIN 	15	16	12	13	14	17	8	9	7	1	10	4	11	Carcasa / Housing
PIN 	3	4	6	7	15	23	10	12	1	14	2	16	5	Carcasa / Housing
SEÑAL / SIGNAL	A	/A	B	/B	DATA	/ DATA	CLOCK	/Clock	+5 V	+5 V sensor	0V	0V sensor	Tierra / Ground	Tierra / Ground
COLOR	Verde-Negro Green-Black	Amarillo-Negro Yellow-Negro	Azul-Negro Blue-Black	Rojo-Negro Red-Black	Gris Grey	Rosa Pink	Violeta Purple	Amarillo Yellow	Marrón-Verde Brown-Green	Azul Blue	Blanco-Verde White-Green	Blanco White	Malla interna Internal shield	Malla externa External shield

SIEMENS SME 25

XC – C8 - ... F– C9	Alargadera con Conector Circular 17 hembra / Conector Circular 17 macho. En longitudes de 5, 10, 15, 20 y 25 metros. Extension cable with Circular 17 female Connector / Circular 17 male Connector. Available in 5, 10, 15, 20 and 25 meters.													
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
SEÑAL / SIGNAL	A	/A	B	/B	DATA	/ DATA	CLOCK	/Clock	+5 V	+5 V sensor	0V	0V sensor	Tierra / Ground	Tierra / Ground
COLOR	Verde-Negro Green-Black	Amarillo-Negro Yellow-Negro	Azul-Negro Blue-Black	Rojo-Negro Red-Black	Gris Grey	Rosa Pink	Violeta Purple	Amarillo Yellow	Marrón-Verde Brown-Green	Azul Blue	Blanco-Verde White-Green	Blanco White	Malla interna Internal shield	Malla externa External 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 2013

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 2013