



Fagor Automation S. Coop.

Manual code: 14460144
Manual version: 1405



ENCODER SA-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

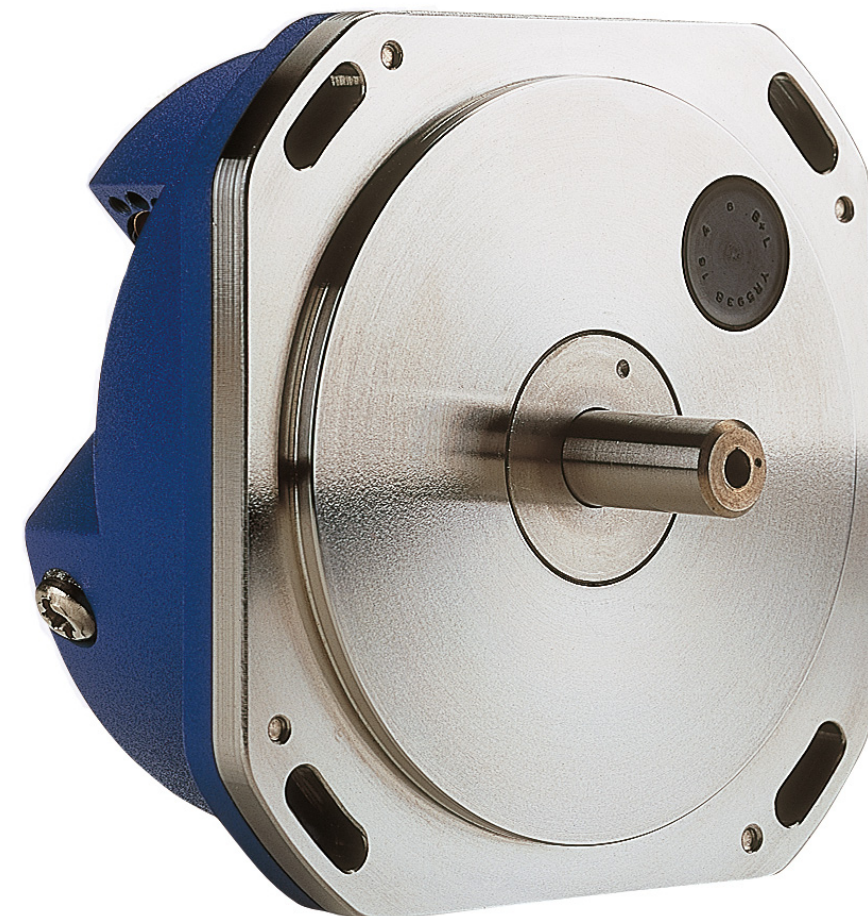
Email: info@fagorautomation.es

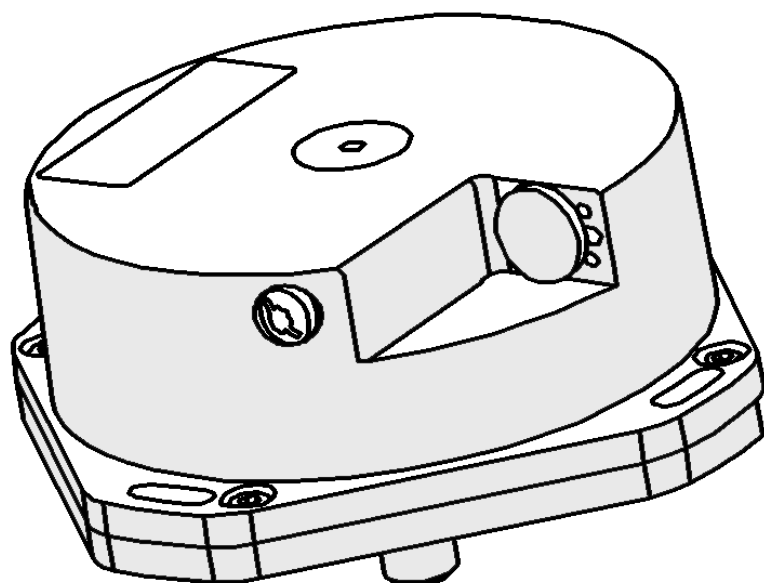
Tel.: (34) 943 719200

Fax: (34) 943 791712



Fagor Automation S. Coop.





MANUAL

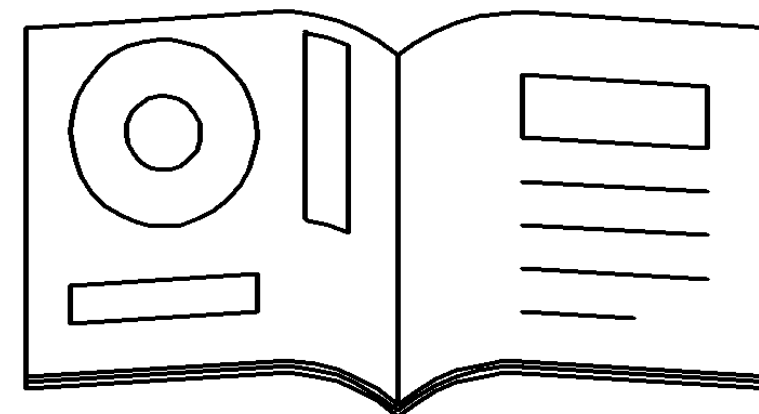
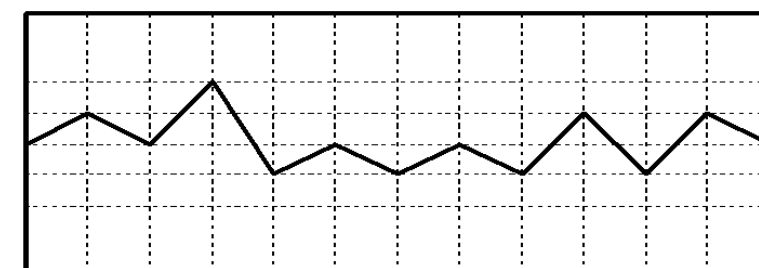
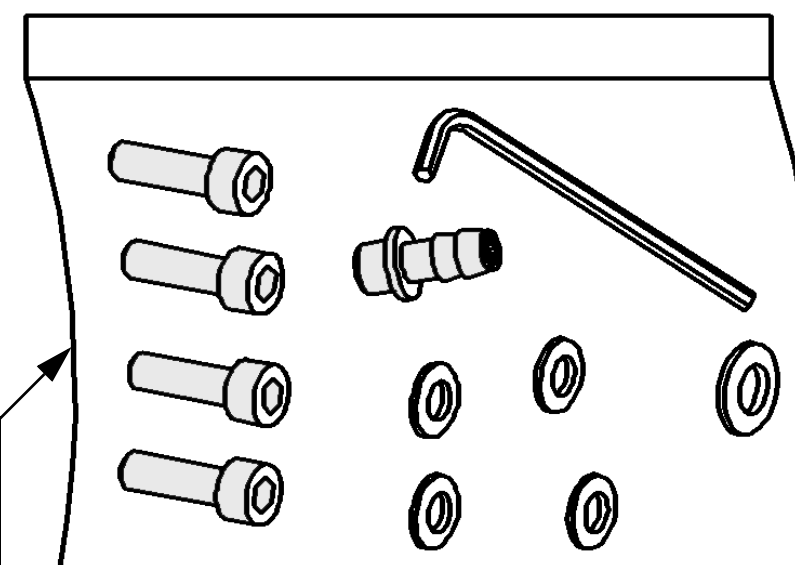


GRÁFICO
GRAPH



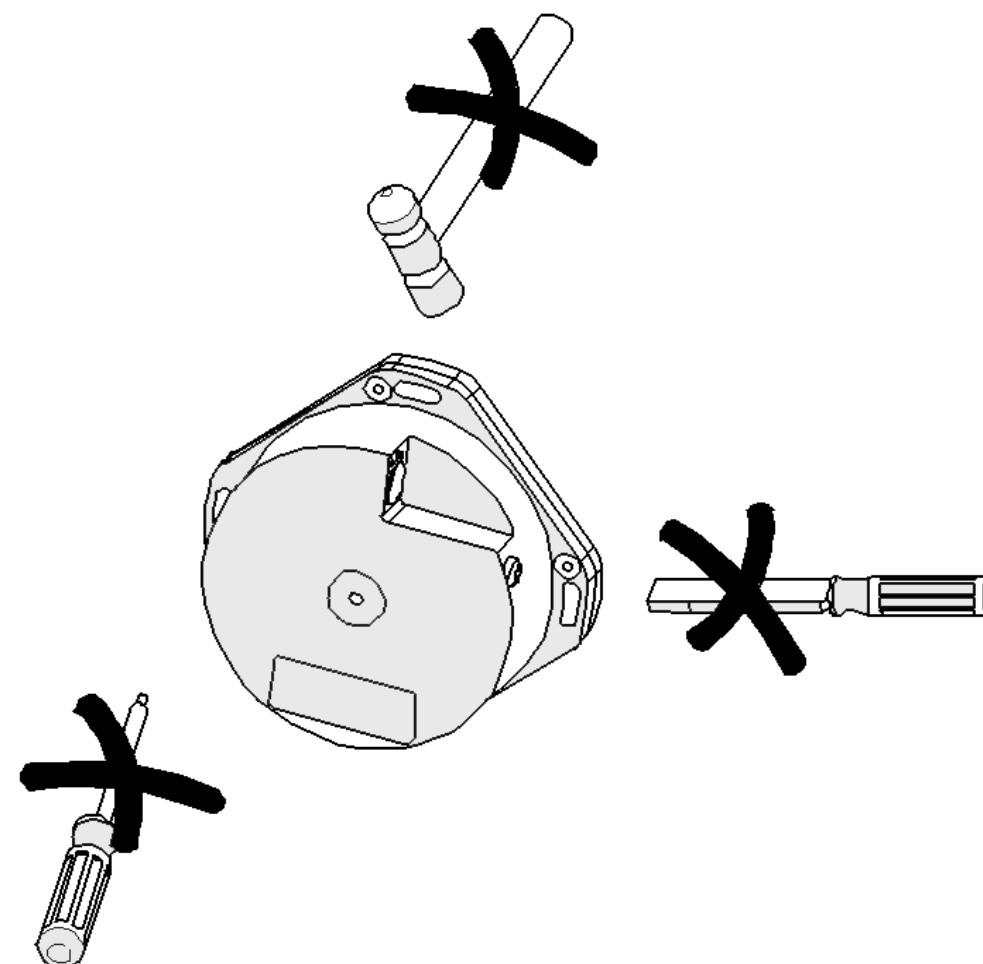
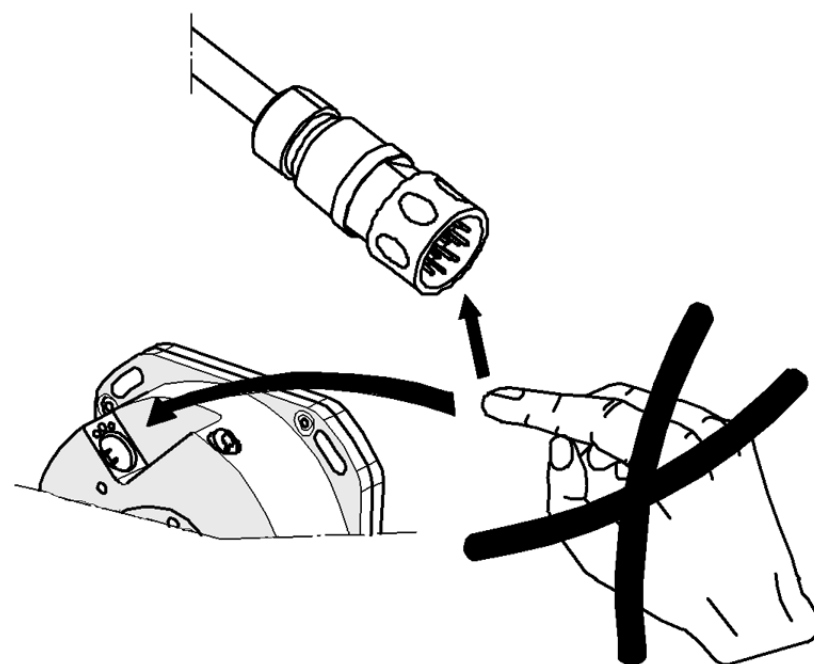
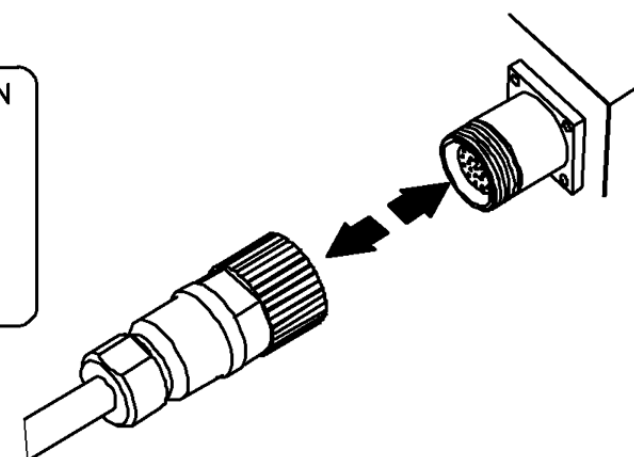
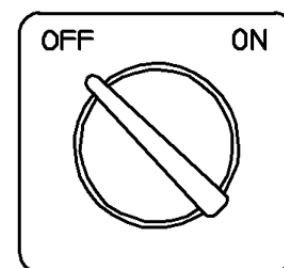
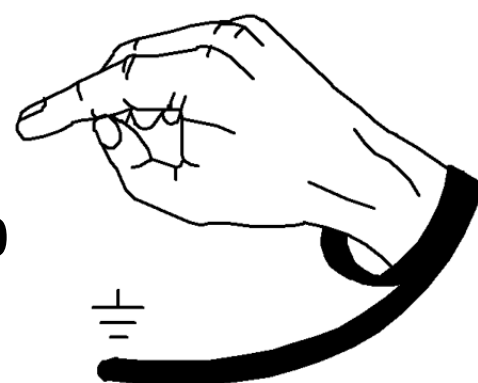
ACCESORIOS
ACCESSORIES



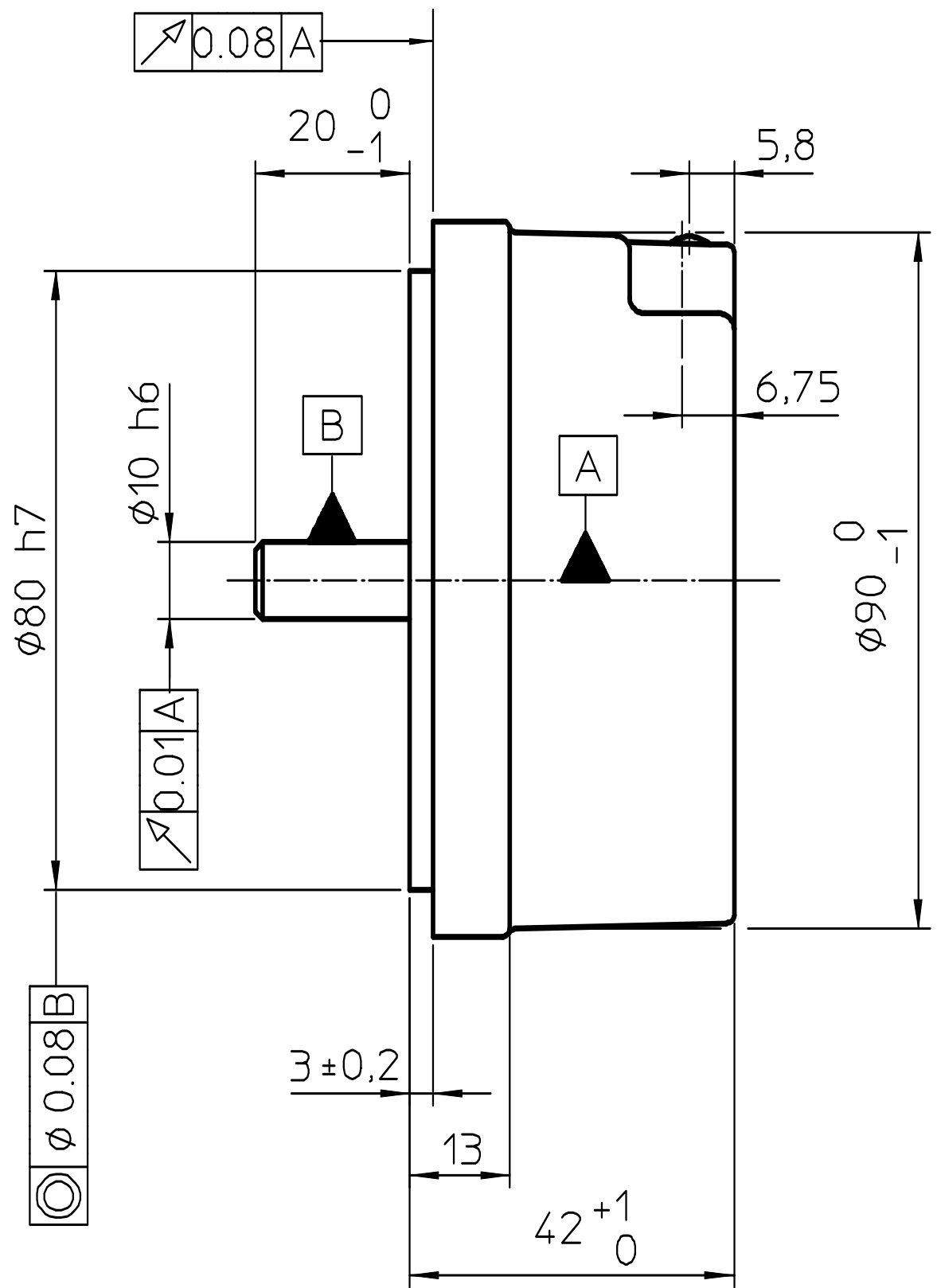
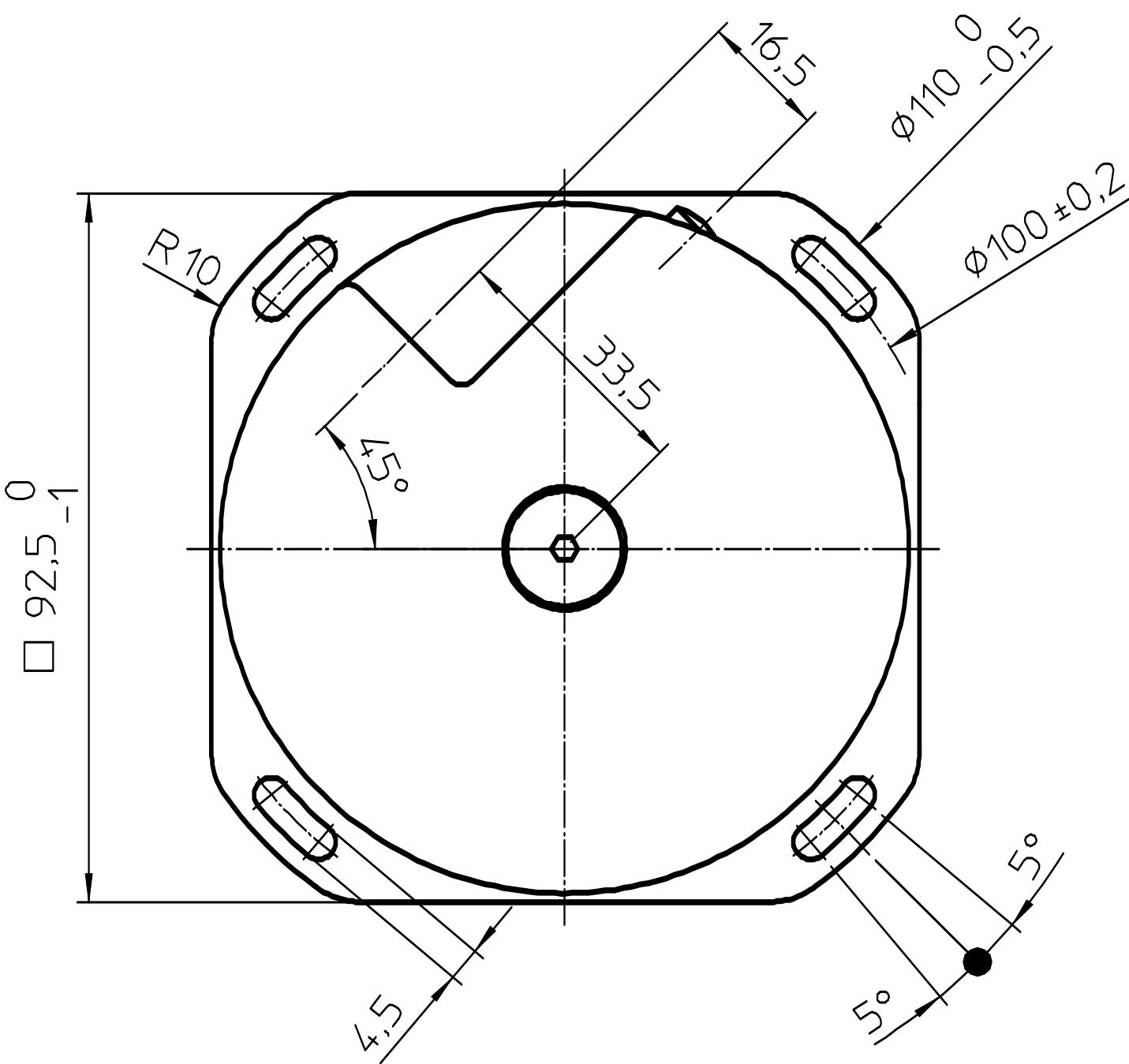
4 tornillos/bolts M4 x 16 DIN 912
4 arandelas/washers M4 DIN 125
1 racor de aire / air intake
1 arandela racor de aire /
air intake washer
1 llave Allen / Allen wrench



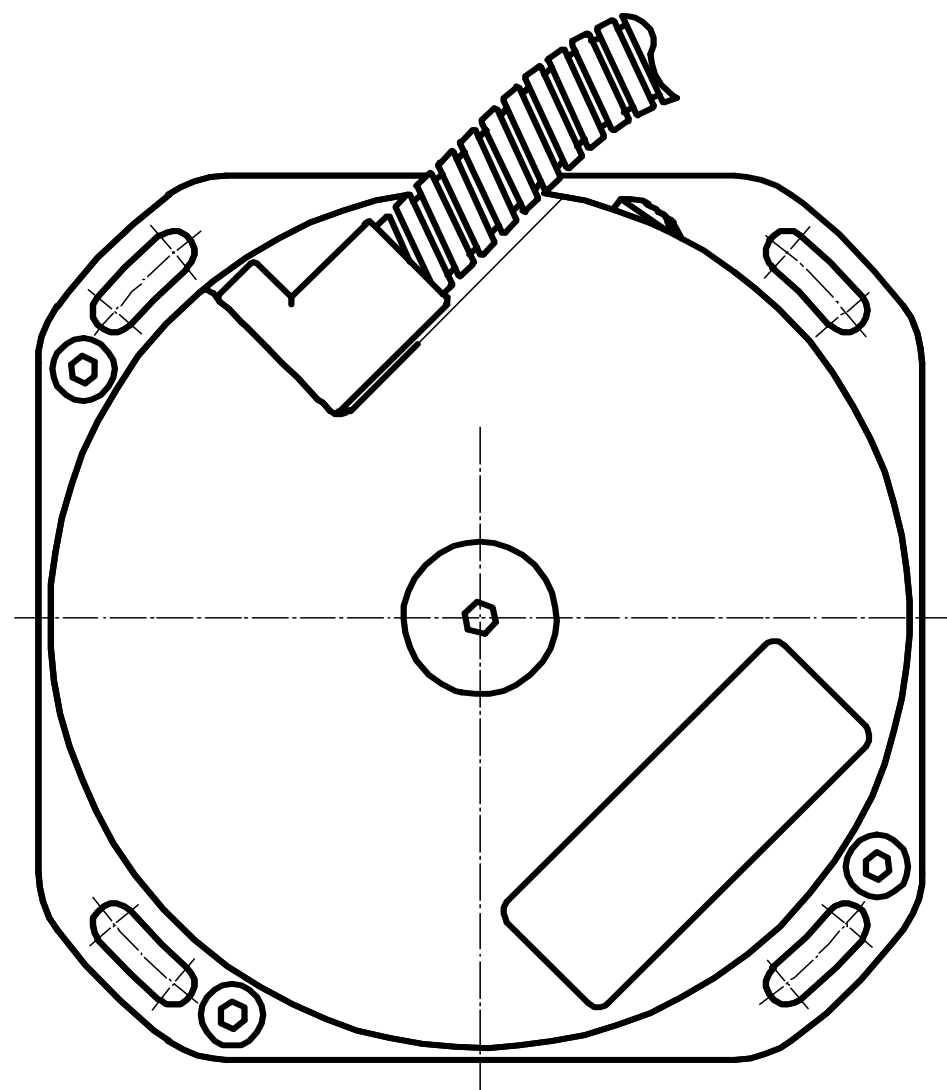
DIN EN 100



GENERAL DIMENSIONS



MONTAJE / MOUNTING

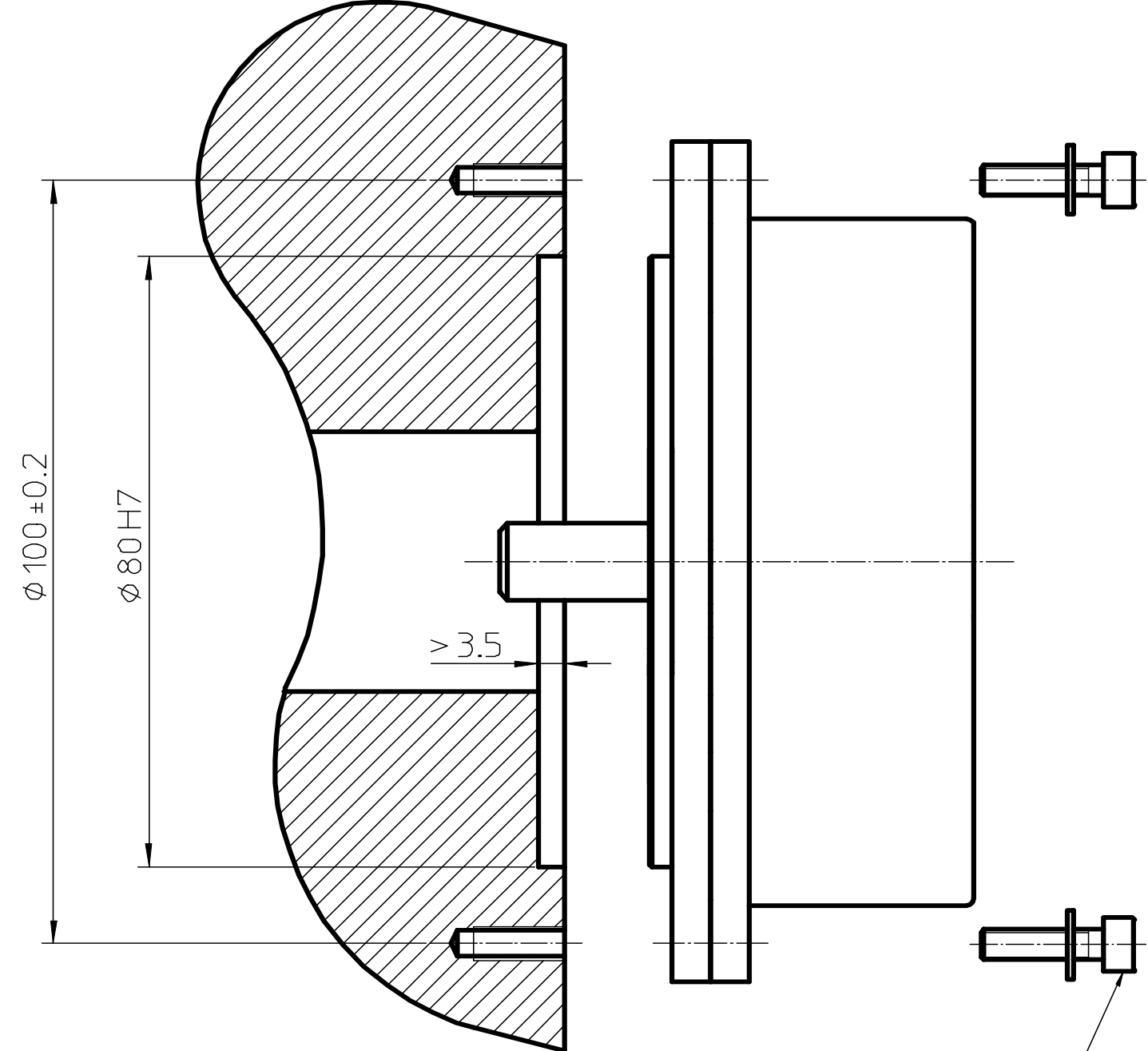


Dimensions in mm.

Tolerance ISO 8015
ISO 2768 - m H

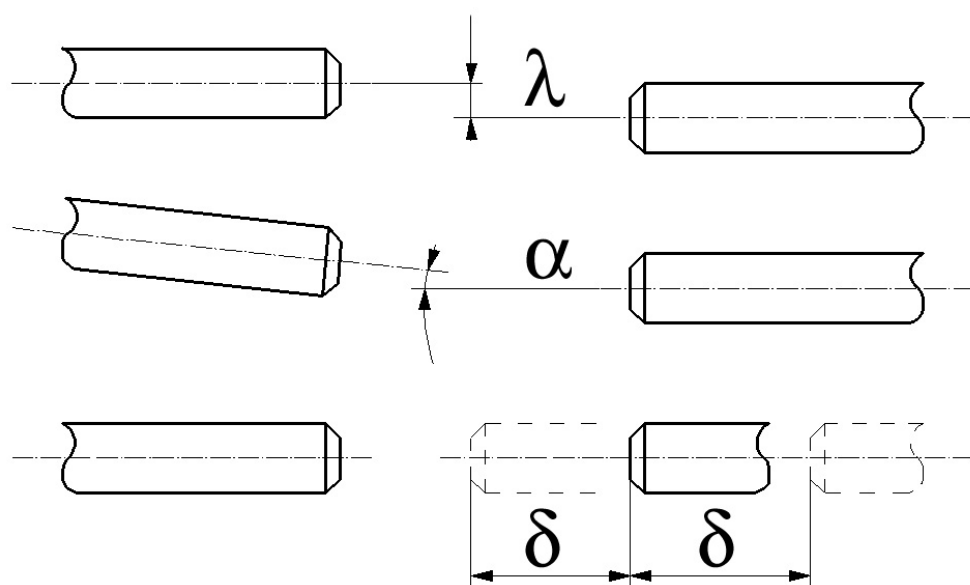
Cotas de montaje / Mounting dimensions



DIN 912 - M4x16
Par de apriete 2,5 Nm
Tightening torque 2.5 Nm

MONTAJE / MOUNTING

Acoplamiento / Coupling



Error cinemático de transferencia:

Kinematic error of transfer:

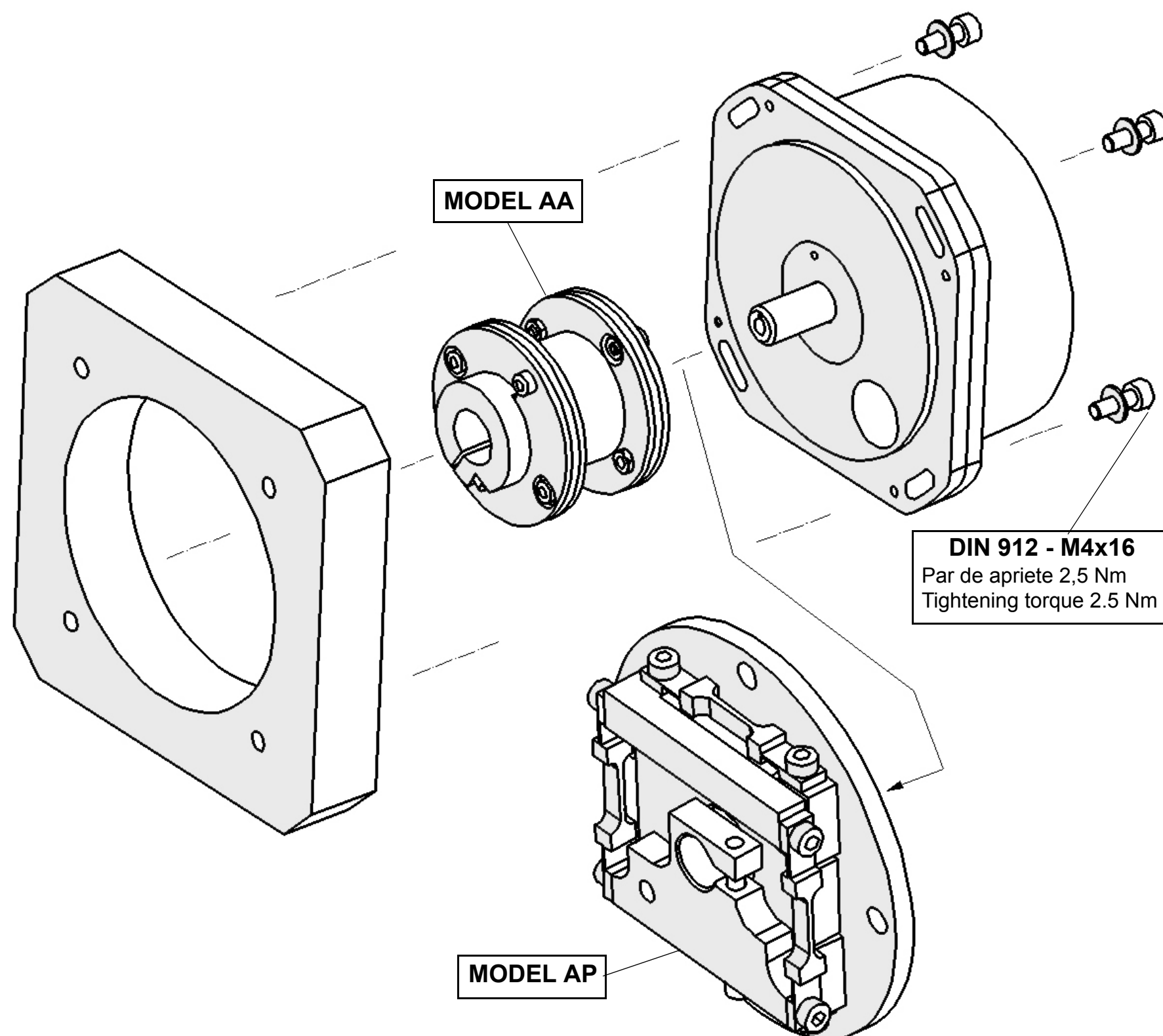
Model AA: $\pm 2''$ at $\lambda \leq 0.1 \text{ mm}$ & $\alpha \leq 0.09^\circ$

Model AP: $\pm 3''$ at $\lambda \leq 0.1 \text{ mm}$ & $\alpha \leq 0.09^\circ$

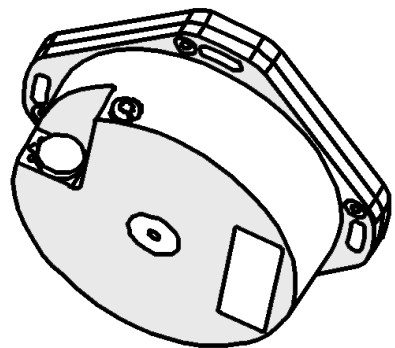
λ max.: 0.3 mm

α max.: 0.5°

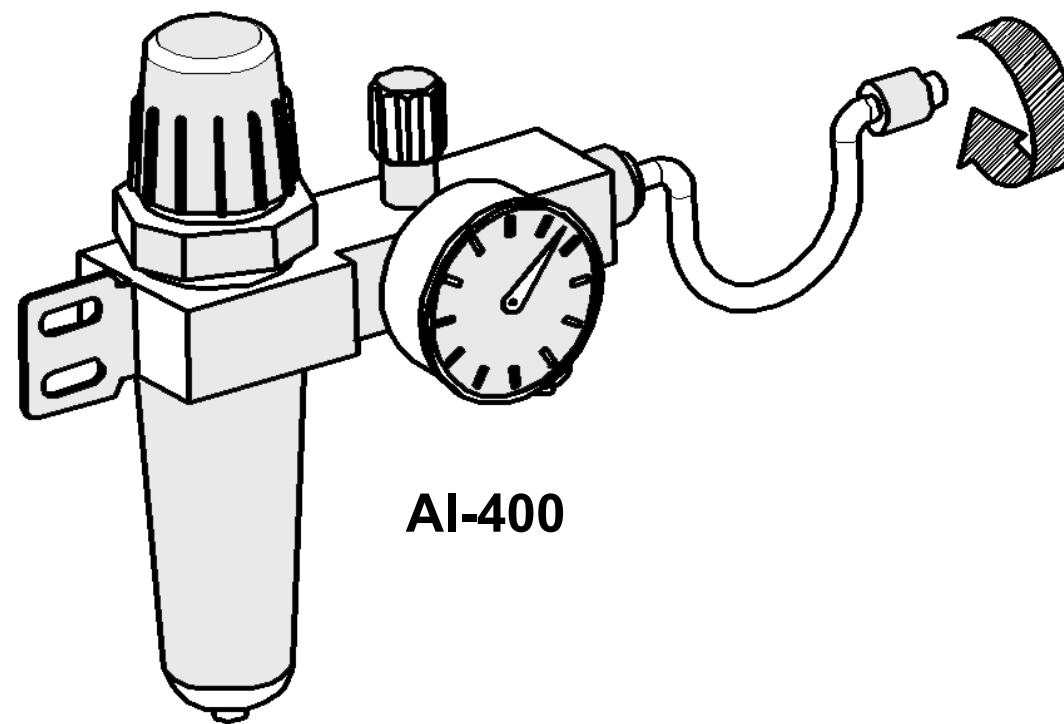
δ max.: 0.2 mm



Nivel máximo: IP 64
Maximum level IP 64

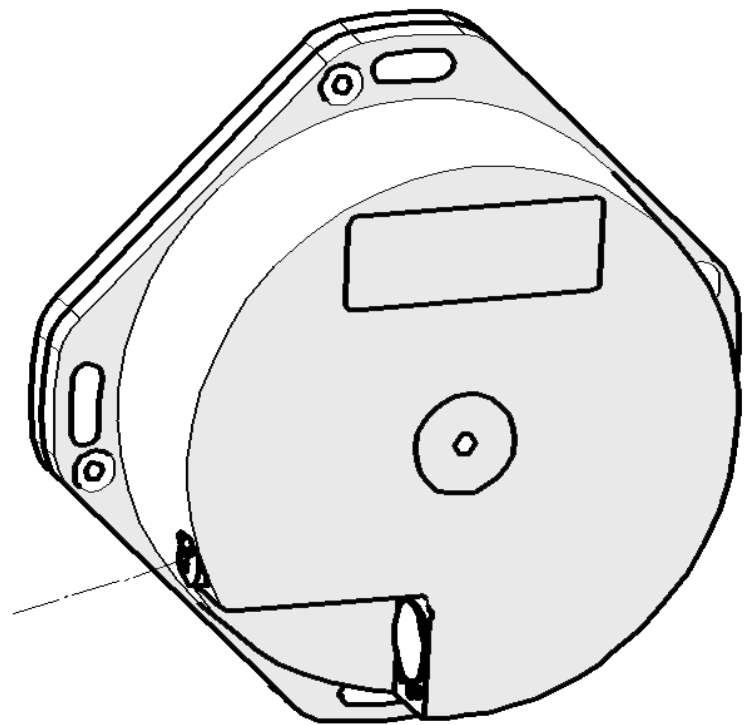


> IP 64



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

CARACTERÍSTICAS MECÁNICAS MECHANICAL CHARACTERISTICS

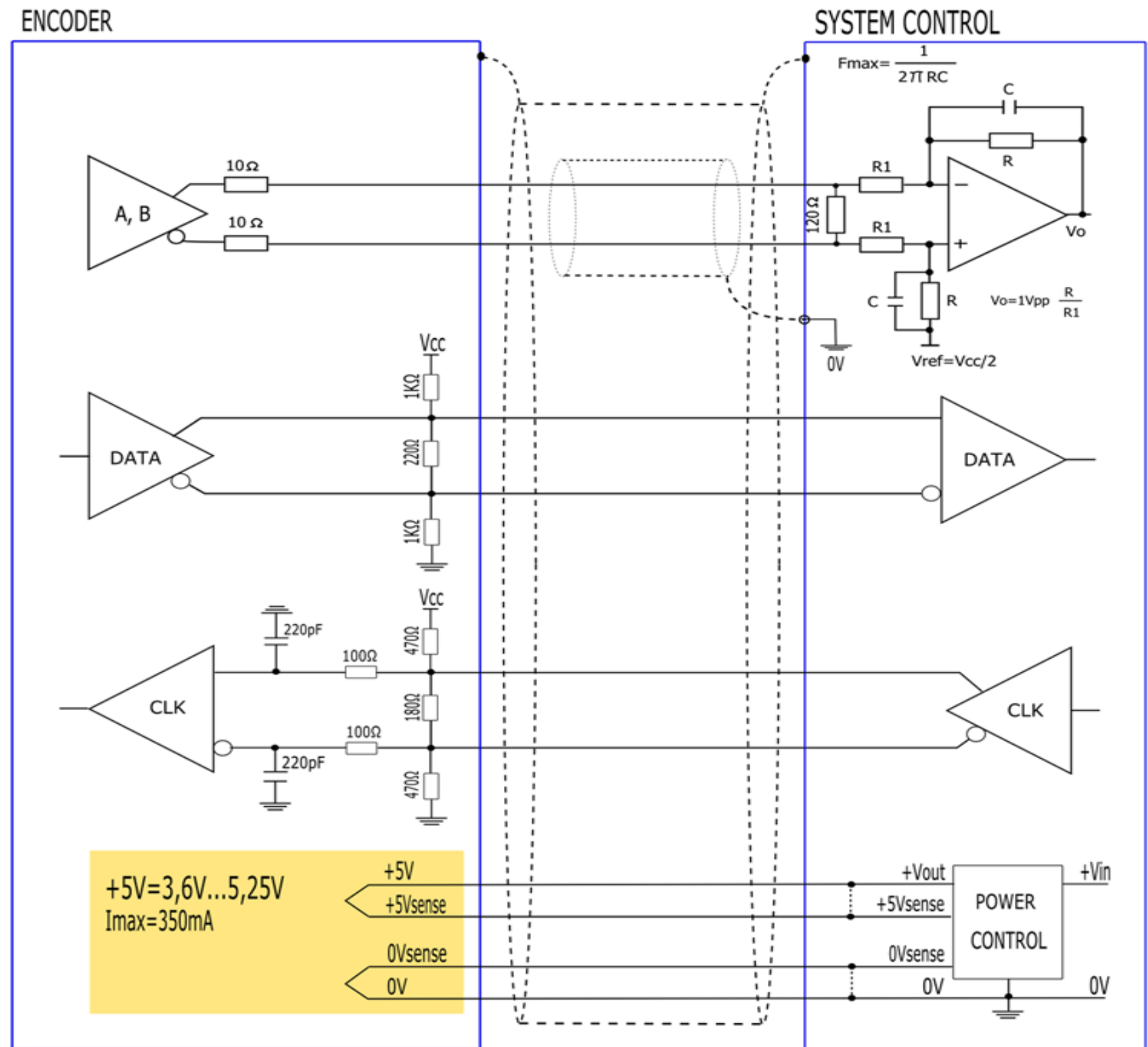
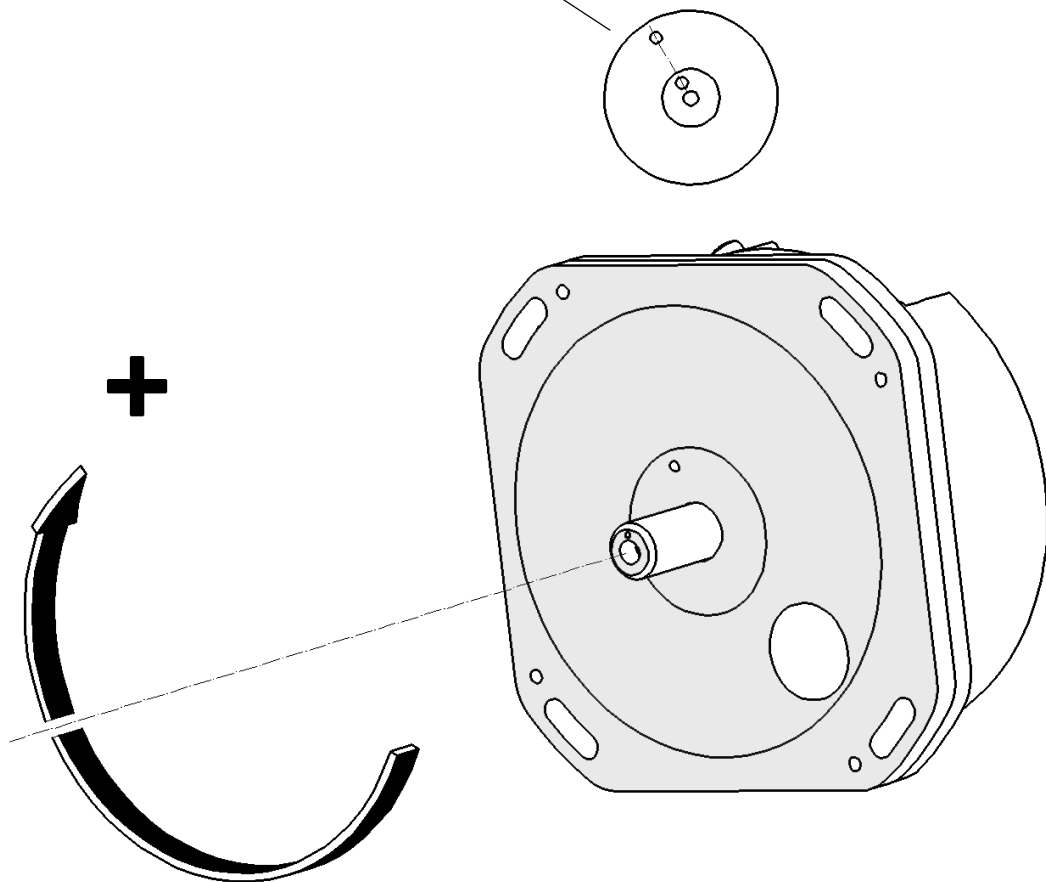
Modelo	SA-D90-23-2	SA-D90-23	Model
Precisión	±2.5"	±5"	Accuracy
Maxima velocidad de giro	10000 rpm *		Max. Turning speed
Momento de inercia del eje	240 gr.cm2		Inertia of the rotor
Par (20°C)	≤ 0.01 Nm		Torque
Carga axial en el eje	10 N		Axial shaft load
Carga radial al final del eje	10 N		Radial load at the end of the shaft
Peso	1.2 kg		Weight
Estanqueidad	IP64 (DIN 40050)		Sealing protection
Vibración (50-2000 Hz)	100 m/s2 (IEC 68-2-6)		Vibration (50-2000 Hz)
Impacto (6ms)	1000 m/s2 (IEC-68-2-27)		Impact (6 ms)
Temperatura de funcionamiento	0 °C ... 50°C (32 °F ... 122 °F)	-20°C ... 70°C (-4°F ... 158°F)	Operating temperature
Temperatura de almacenamiento	-30 °C ... 80 °C (-22 °F ... 176 °F)		Storage temperature

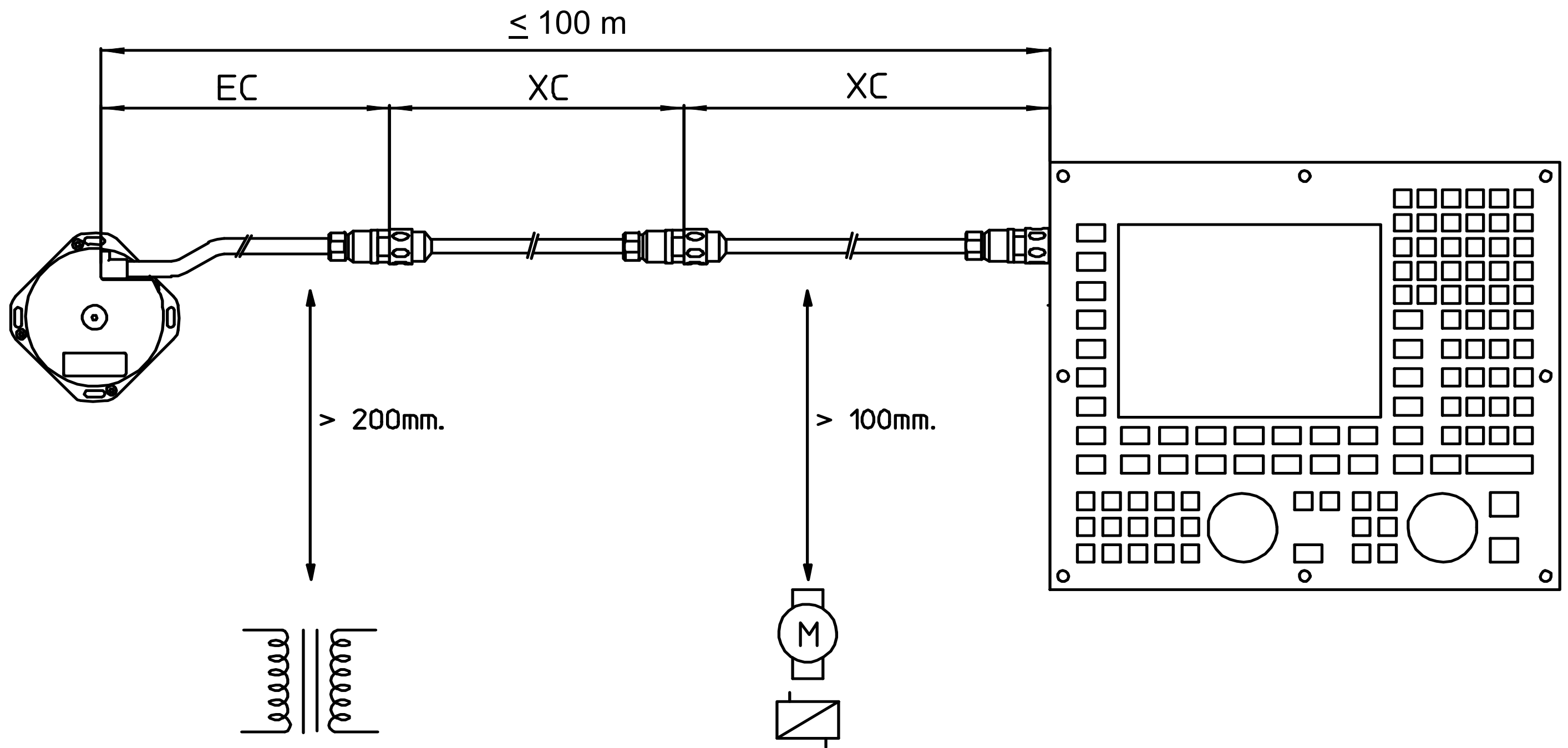
* Limitación eléctrica = 1500 rpm / *Electrical limitation = 1500 rpm*

CARACTERÍSTICAS ELÉCTRICAS / ELECTRICAL CHARACTERISTICS

Posición del origen 0°
0° origin position

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





INFORMACIÓN ELÉCTRICA / ELECTRICAL DATA



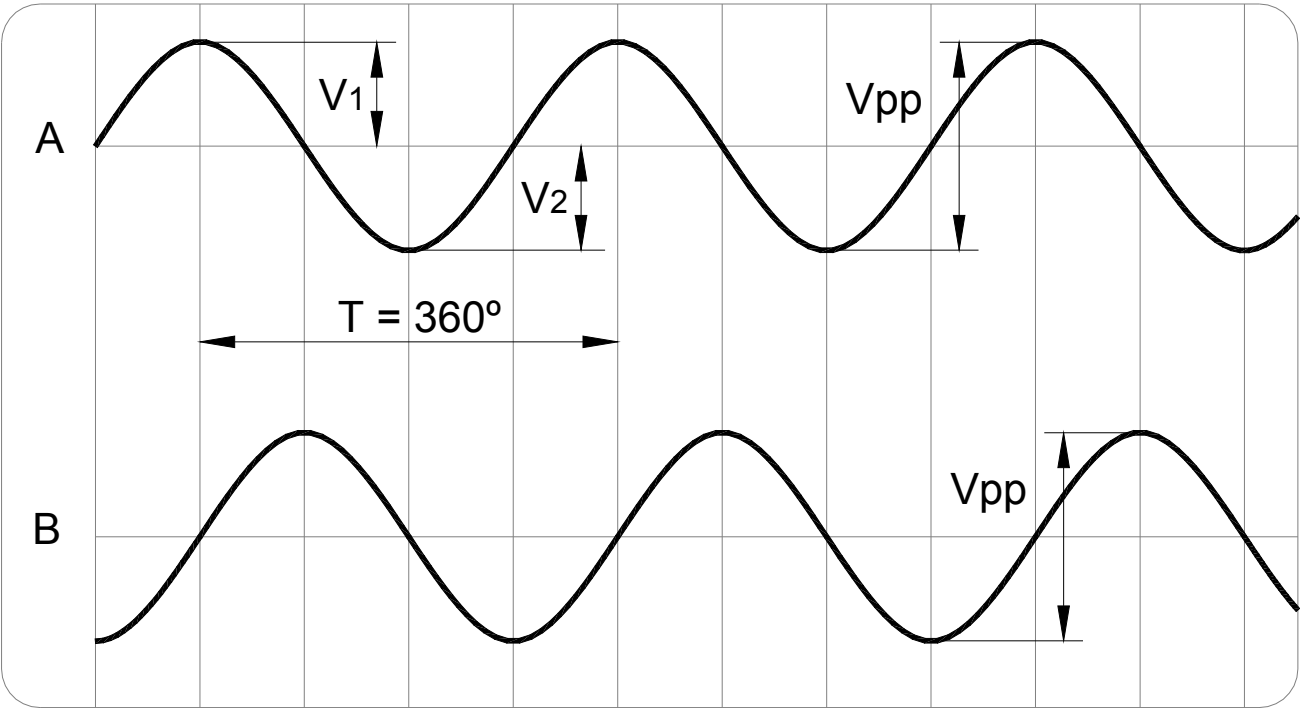
1 Vpp
1 Vpp

SEÑALES DIFERENCIALES
DIFFERENTIAL SIGNALS

SA-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 V Supply V	3.6 - 5.25
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

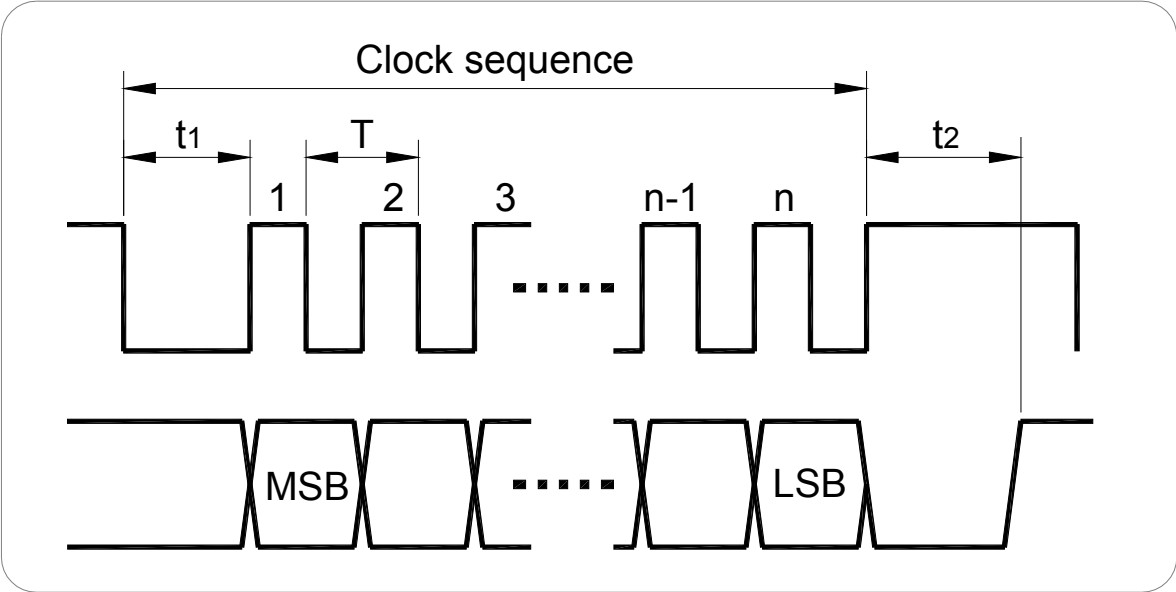
SA-D90

Especificaciones - Specification

Transmisión / <i>Transmission</i>	SSI transferencia serie sin- crons 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	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 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 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 Green	Amarillo Yellow	Azul Blue	Rojo Red	Gris Gray	Rosa Pink	Negro Black	Violeta Purple	Marrón Brown	VerdeClaro LigthGreen	Blanco White	Naranja Orange	Malla Interna Internal Shield	Malla Externa External Shield

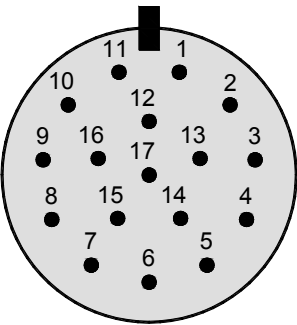
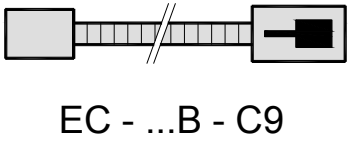
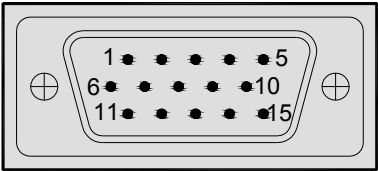
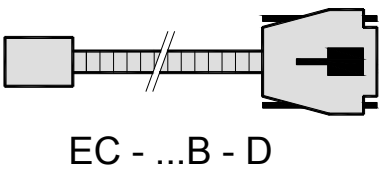
A PARTIR DE 9 METROS - FROM 9 METERS

- * 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 Green	Amarillo Yellow	Azul Blue	Rojo Red	Gris Gray	Rosa Pink	Negro Black	Violeta Purple	Marrón Brown	VerdeClaro LigthGreen	Blanco White	Naranja Orange	Malla Interna Internal Shield	Malla Externa External Shield

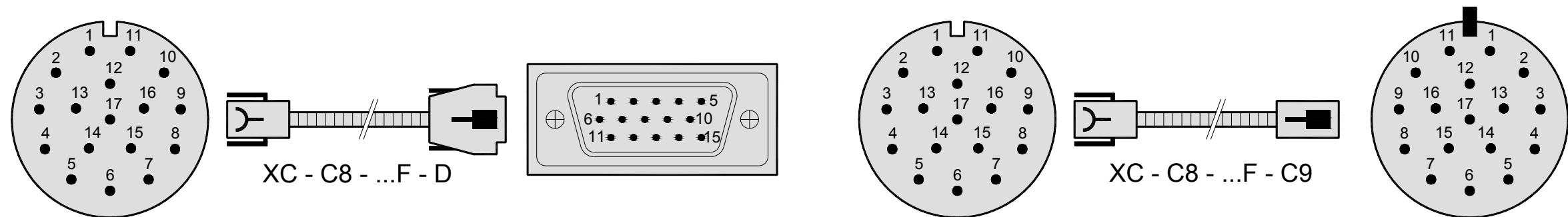


CABLES

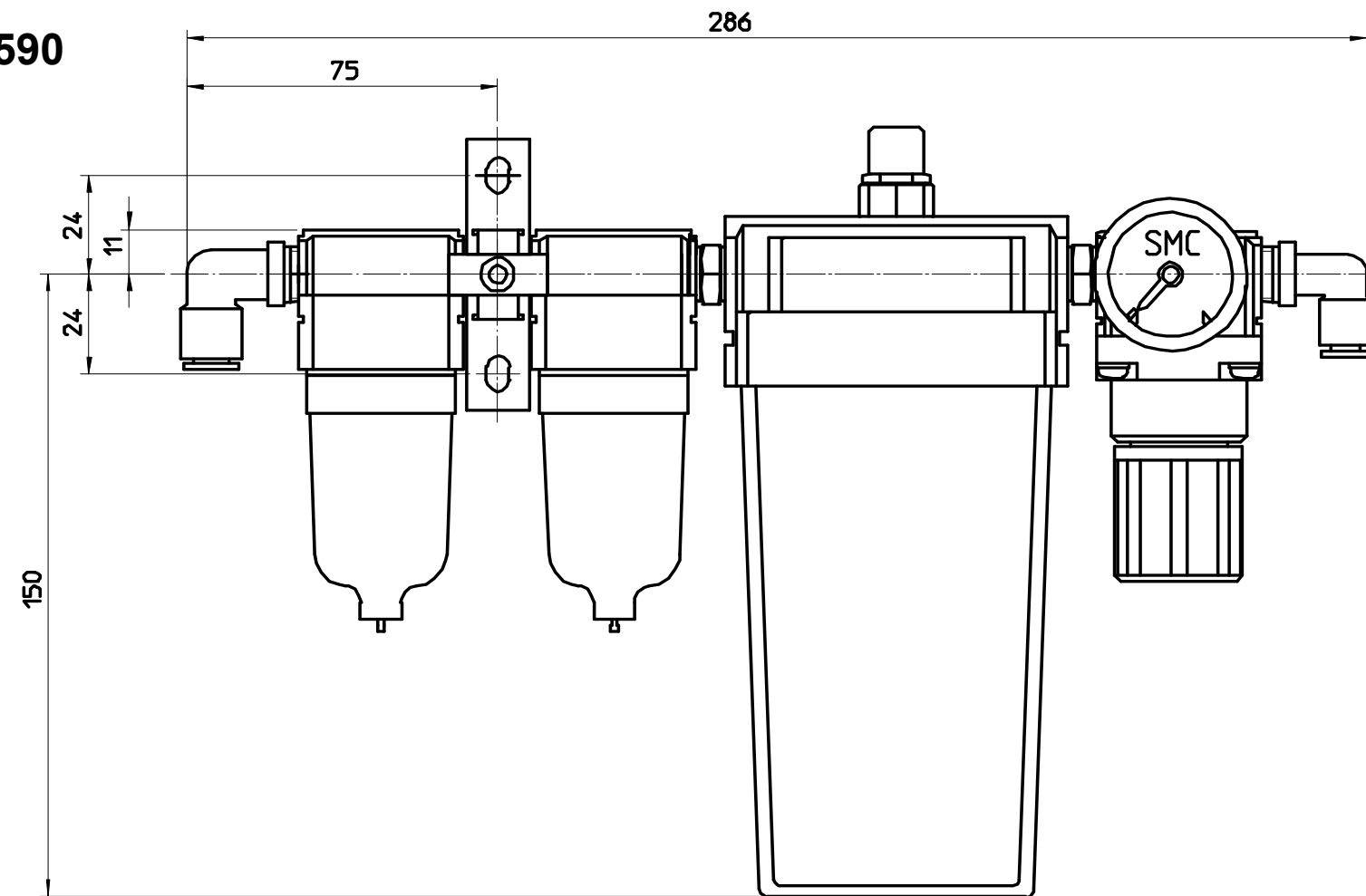
ALARGADERAS PARA CONEXIONES DE LOS ENCODERS ABSOLUTOS FAGOR A SISTEMAS FAGOR
EXTENSION CABLES FOR CONNECTING FAGOR ABSOLUTE ENCODERS TO FAGOR SYSTEMS

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 Green- Black	Amarillo- Negro Yellow- Black	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

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 Green- Black	Amarillo- Negro Yellow- Black	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



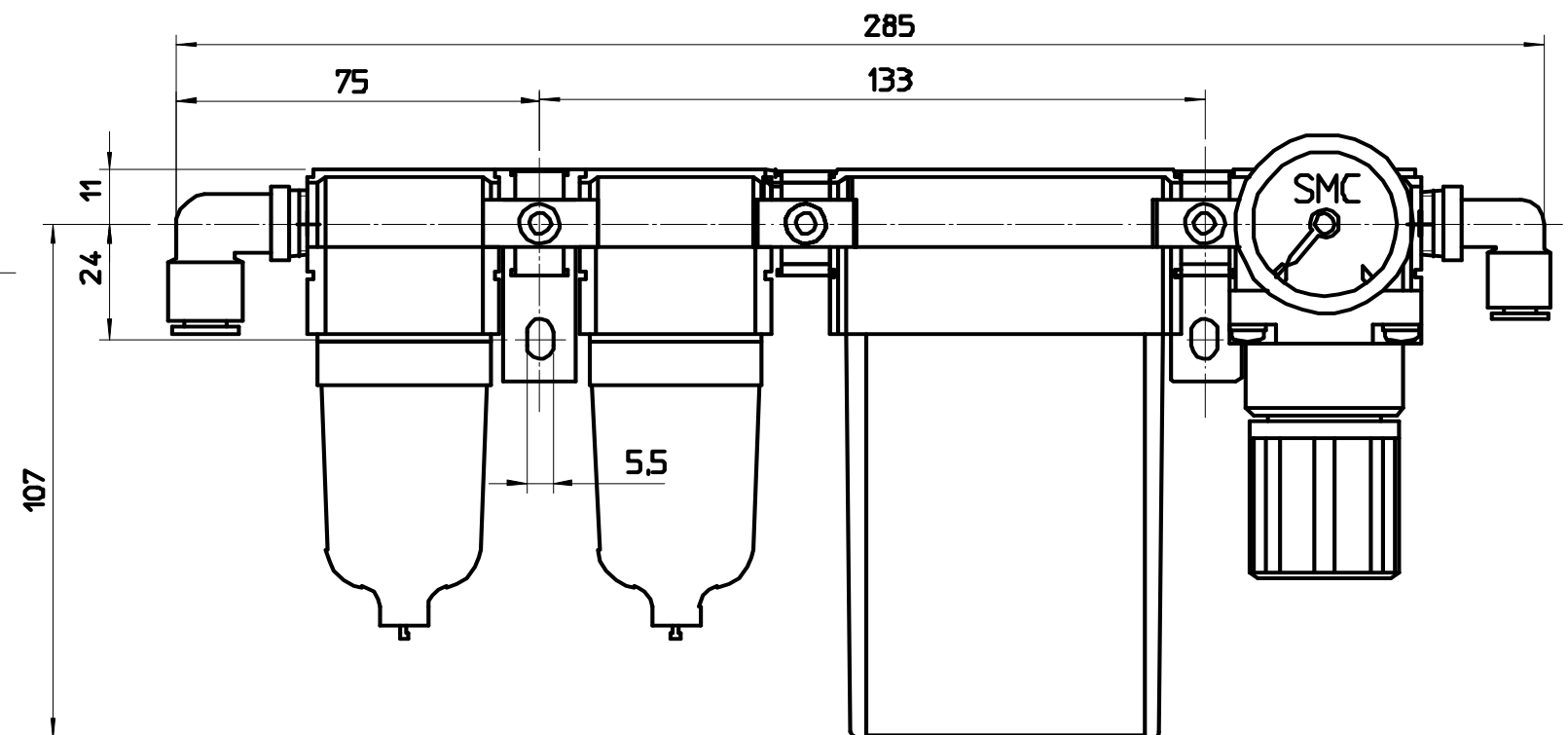
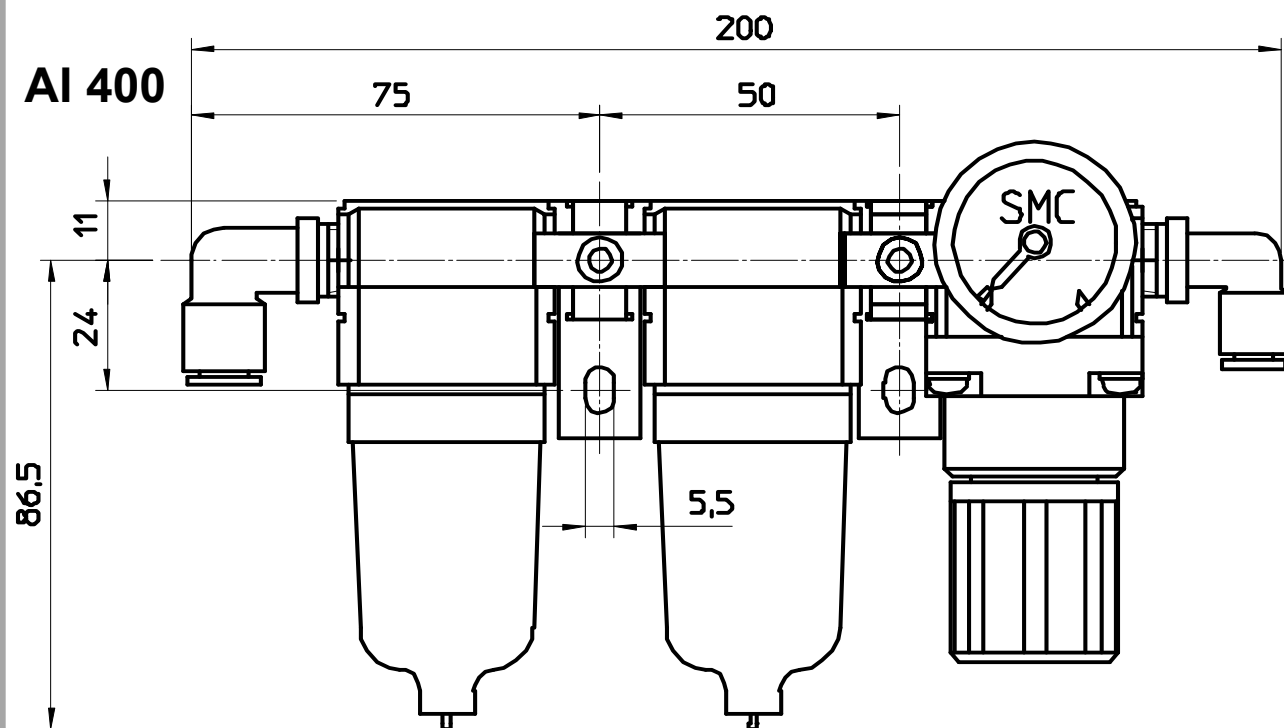
AI 590



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



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 Mayo 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, May 1st 2011

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