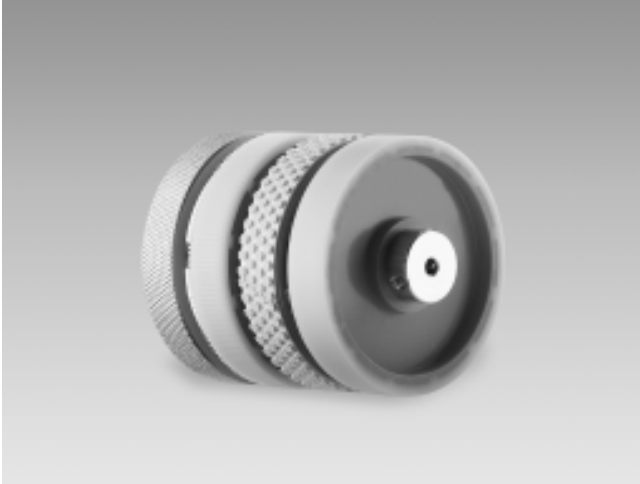
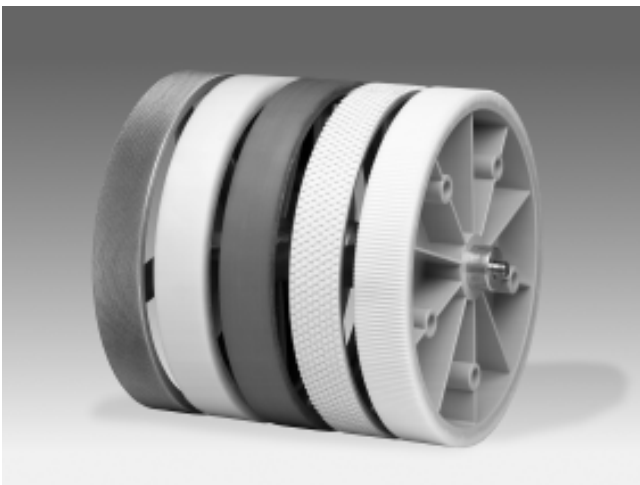


Measuring wheels



Small measuring wheels



Large measuring wheels

Description

When selecting a measuring wheel, consider the type of materials to be measured before you choose the surface properties or the coating of the measuring wheel. The circumference of the measuring wheel is dependent on the available space and the size of the counter. The smaller the measuring wheel, the more force will need to be exerted on its circumference, and the greater the probability of slippage leading to incorrect measuring results. The width of the measuring wheel also affects the measuring result.

Order designations

Measuring wheel with 20 cm circumference (small)

			04	Bore 4 mm (Standard)
			05	Bore 5 mm
			06	Bore 6 mm
			07	Bore 7 mm
			10	Bore 10 mm
Material, Surface				
MR211.	<input type="checkbox"/>	<input type="checkbox"/>	A	Aluminum, cross knurl (4, 7)*
MR241.	<input type="checkbox"/>	<input type="checkbox"/>	D	Plastic, smooth Hytrel (4, 5, 6, 7, 10)*
MR261.	<input type="checkbox"/>	<input type="checkbox"/>	A	Aluminum, knopp. rubber (4, 6, 7, 10)*
MR291.	<input type="checkbox"/>	<input type="checkbox"/>	D	Plastic, grooved Hytrel (4, 5, 6, 7, 10)*

Measuring wheel with 50 cm circumference (large)

			06	Bore
			07	Bore 7 mm (Standard)
			10	Bore 10 mm (Standard)
			12	Bore 12 mm
Material, Surface				
MR512.	<input type="checkbox"/>	<input type="checkbox"/>	A	Aluminum, cross knurl (7, 10)*
MR542.	<input type="checkbox"/>	<input type="checkbox"/>	D	Plastic, smooth Hytrel (6, 7, 10, 12)*
MR552.	<input type="checkbox"/>	<input type="checkbox"/>	A	Aluminum, smooth Vulcolan (7, 10)*
MR562.	<input type="checkbox"/>	<input type="checkbox"/>	A	Aluminum, knopped rubber (7, 10)*
MR592.	<input type="checkbox"/>	<input type="checkbox"/>	D	Plastic, grooved Hytrel (6, 7, 10, 12)*

Measuring wheel with 1 foot circumference

			04	Bore 4 mm
			07	Bore 7 mm
			10	Bore 10 mm
Material, Surface				
MR751.	<input type="checkbox"/>	<input type="checkbox"/>	A	Aluminum, smooth natural rubber

* Available bore diameter

Measuring wheels

Suitable materials to be measured

Recommended liming	Suitable surface
Grooved Hytrel	Plastic, painted surfaces, paper, cardboard, wood metal, textile
Smooth Hytrel	Plastic, painted surfaces, paper, cardboard, wood metal, textile
Cross knurl	Cardboard, wood, (textile)
Knopped rubber	Textile
Smooth Vulcolan	Plastic, painted surfaces, paper, cardboard, wood metal, wire

Measuring Accuracy

The measuring accuracy of a meter counter with a measuring wheel is dependent on the following factors:

- Type of material to be measured
- Angle of contact
- Torque of counter or encoder
- Feeding speed of goods
- Tensile stress of material to be measured
- Surface roughness
- Contact pressure of material to be measured against measuring wheel
- Elasticity of material to be measured
- Diametrical tolerance of measuring wheel

Overview of materials and tolerances

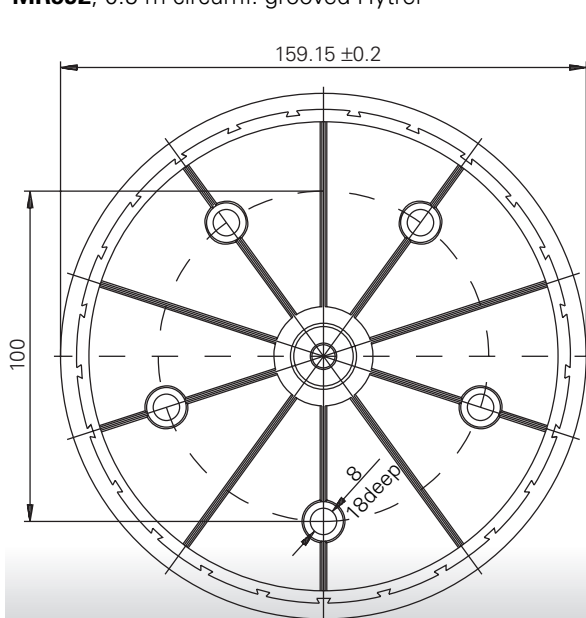
Typ	Circumference	Surface	Surface Hardness	Temperature
MR211	0.2 m	Cross knurl	-	-
MR241	0.2 m	Smooth Hytrel	approx. 90° Shore A	-10...+70 °C
MR261	0.2 m	Knopped rubber NBR	55° ±5° Shore A	-10...+50 °C
MR291	0.2 m	Grooved Hytrel	ca. 90° Shore A	-10...+70 °C
MR512	0.5 m	Cross knurl	-	-
MR542	0.5 m	Smooth Hytrel	approx. 90° Shore A	-10...+70 °C
MR552	0.5 m	Smooth Vulcolan	approx. 94° Shore A	-30...+80 °C
MR562	0.5 m	Knopped rubber NBR	55° ±5° Shore A	-10...+50 °C
MR592	0.5 m	Grooved Hytrel	approx. 90° Shore A	-10...+70 °C
MR751	0.5 m	Smooth natural rubber	approx. 65° Shore A	-30...+80 °C

Dimensions

Large plastic measuring wheels

MR542, 0.5 m circumf., smooth Hytrel

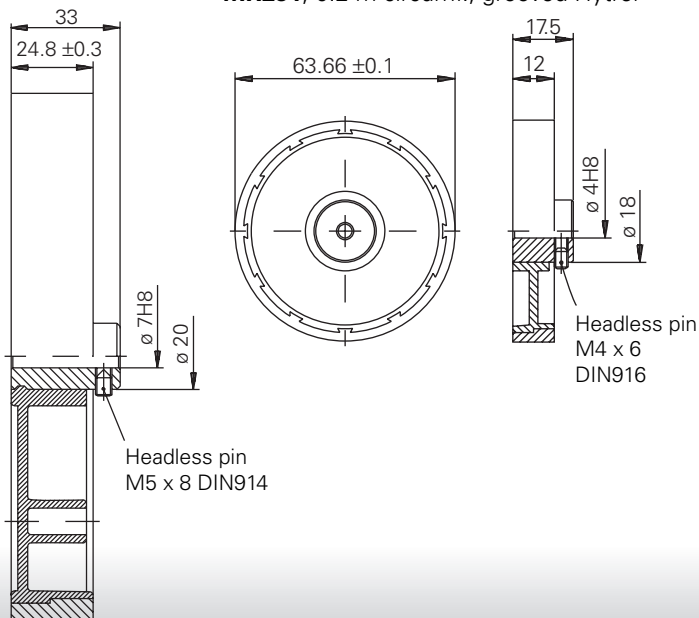
MR592, 0.5 m circumf. grooved Hytrel



Small plastic measuring wheels

MR241, 0.2 m circumf., smooth Hytrel

MR291, 0.2 m circumf., grooved Hytrel



NA214 Position display with SSI interface



Features

Model	Position display
Functions	Two 6-digit preselections P1, P2 Adjustable scaling factor (0.000001...1000) Adjustable setting value, 6-digit SSI absolute encoders (Binary or Gray code) can be connected Resolution programmable up to 36 bit 4 operating modes Optional 4 relay outputs Optional analog outputs (0...+10 V und -10...+10 V)

Order designation

Order No.	Model
A0	Display unit w/o preselection, w/o outputs
01	Position display unit with relay outputs
02	Position display unit with relay and analog outputs
	Voltage
1	24 / 48 VAC
2	115 / 230 VAC
3	24 VDC

NA214. AX01

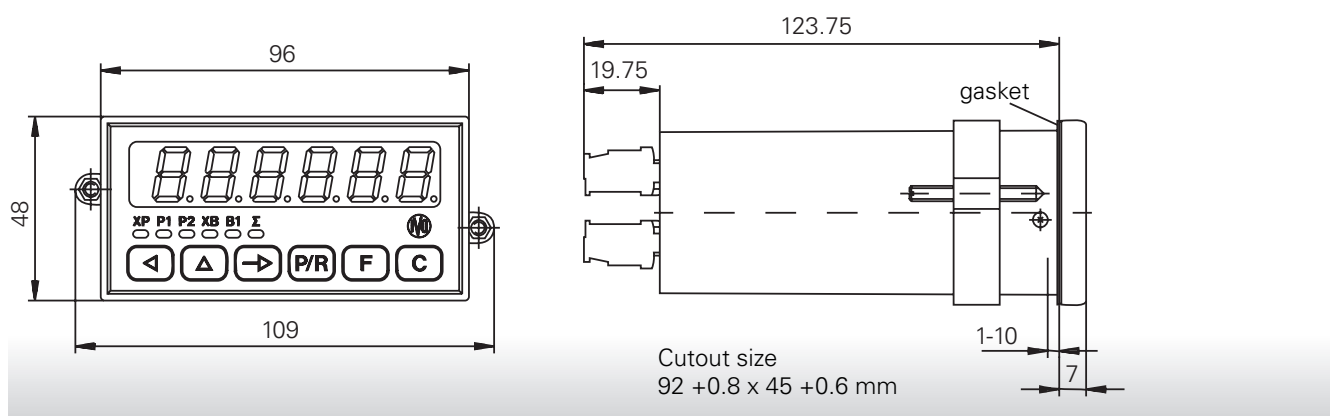
Description

In conjunction with an "SSI" absolute encoder, the NA214 display/positioning unit enables extremely accurate, very reliable positioning of a workpiece, a stop or a movable part.

By connecting an absolute encoder, traversing movements are also registered while the machine is deenergized. This is a safety advantage, as the machine position is properly detected after restarting.

High immunity to interference and a considerable simplification of wiring is achieved with the SSI technology. 6 connections are sufficient to transfer the information from the encoder to the NA214 positioning unit, even over long distances.

Dimensions



NA218 Position display with 24 parallel inputs



Features

Model	Position display
Functions	Setting value programmable Scaling factor programmable 0.00001...1.00000 Resolution programmable 9 bit, 10 bit, 12 bit, 13 bit, 24 bit Gray or binary code

Order designation

NA218. A03AX01 (24 VDC)

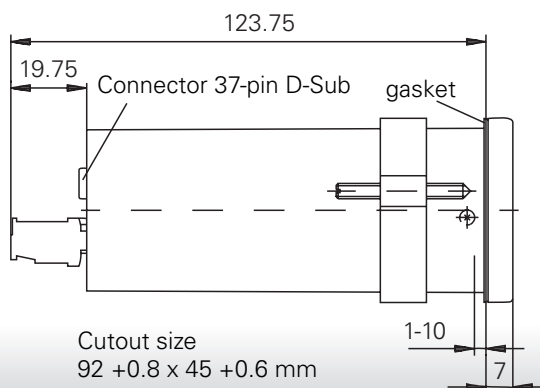
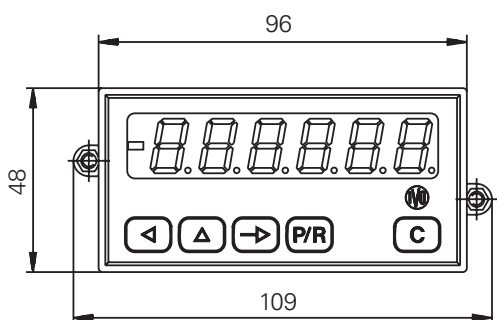
Description

The NA218 position display is used to display the position of a parallel absolute encoder. This is primarily suitable for combination with a PLC or other controller.

The position of the absolute encoder can be evaluated with the pulse evaluation factor.

By connecting an absolute encoder, traversing movements are also registered in the deenergized state. This is a safety advantage, as the machine position is properly detected after restarting.

Dimensions



Z 136 Cable pull



General information

Cable draw drives convert linear movements into rotary movements by pulling a cable out and in. Depending on the requirements, these rotary movements can be used to drive an absolute or incremental encoder. The encoder pulses can be evaluated by a digital display, e.g. IVO N 214, NA214 (see IVO Counters, Controllers and Process Displays Catalog) or a controller.

Features

Measuring range 0...15000 mm
Simple installation
For clamping and servo flange

Technical data

Material	Aluminum	
Cable material	Stainless steel	
Linearity	Up to $\pm 0.05\%$ (optional $\pm 0.01\%$)	
Protection type		
Cable pull	IP 50	
Encoder	IP 54 or IP 65	
Measuring Length	Weight	Distance/Revolution
2000 mm	0.97 kg	163.84 mm
3000 mm	1.08 kg	260.09 mm
5000 mm	2.25 kg	409.60 mm
8000 mm	5.1 kg	667.90 mm
15000 mm	5.4 kg	600.00 mm

Order designation

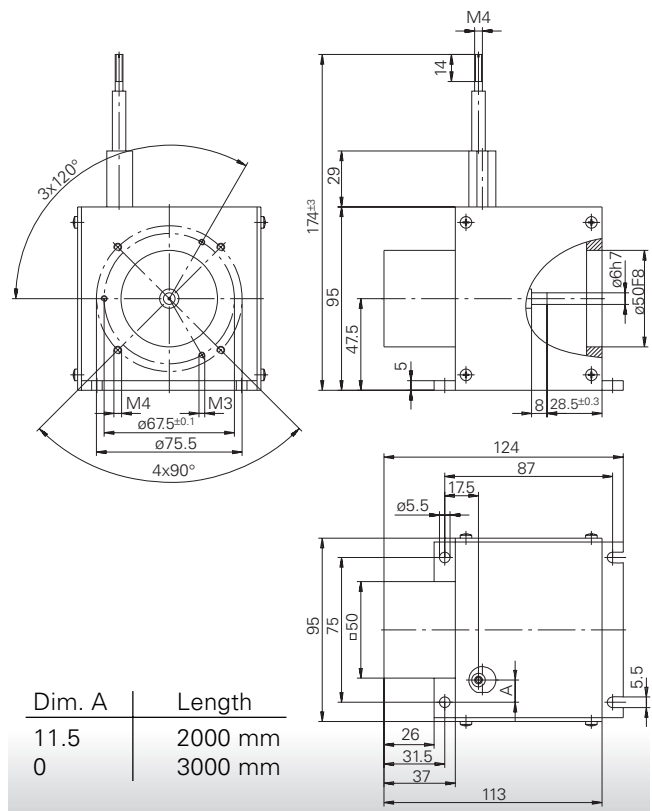
Measuring Length	Encoder with * Clamping Flange	Encoder with ** Servo Flange
2000 mm	Z 136.020	Z 136.120
3000 mm	Z 136.018	Z 136.118
5000 mm	Z 136.019	Z 136.119
8000 mm	Z 136.017	Z 136.117
15000 mm	Z 136.021	Z 136.121

* On models for clamping flange, coupling Z 121.E02 and adapter plate Z 119.047 with screws are included.

** On models for servo flange, coupling Z 121.E01 and mounting eccentric Z 119.046 with screws are included.

Dimensions

Measuring length 2000/3000 mm
(Dimensional drawings for other series on request)



ProGeber programming software



Description

Absolute encoders primarily offer the advantage that the position is not lost even after a machine standstill, eliminating the need for time-consuming reference traverses. It is available as a Multiturn model for detection ranges of more than one revolution. Integrated electronics also count the revolutions in this case. Such devices can meanwhile be programmed very conveniently under Windows. As the encoders can be adapted to different applications very easily, the required programming effort and stockkeeping. The programmable Multiturn absolute encoders are also equipped with a parallel or SSI interface. If after an encoder change the new devices offer other or additional functions, the software automatically detects the new programming options.

Order designation	Delivery scope	Applications
Z 139.004	Programming cable and CD with Programming software ProGeber and manual	SSI encoder with shaft or hollow shaft: GXP2W, GXP2H, G1P2H
Z 139.005	Programming cable and CD with Programming software ProGeber and manual	Parallel encoder with shaft: GXP1W, GXN1W
Z 139.006	Programming cable and CD with Programming software ProGeber and manual	Parallel encoder with hollow shaft: GXP1H, G1P1H, G2P1H, GXN1H
Z 150.008	CD with programming software ProGeber and manual	SSI and parallel encoder with shaft or hollow shaft: GXP1W, GXP2W, GXN1W GXP1H, G1P1H, G2P1H, GXN1H, GXP2H, G1P2H

Technical data

- For PCs with Windows 95, 98 or NT operating system
- Connected encoder types are automatically detected
- Programmable:
 - + Counting direction
 - + Number of revolutions
 - + Steps per revolution
 - + Total resolution
 - + Preset and offset value
 - + Separate code format (e.g. Gray, Binary, BCD etc.) for steps and revolutions

Explosion protection housing



Features

Housing for all common IVO encoders.
Protection class $\text{Ex II 2G EEx de IIBT6 (PTB 02 ATEX1108)}$

Order designation

G 380.Z □ □

Complete order number will be assigned on ordering.
Additional models on request.

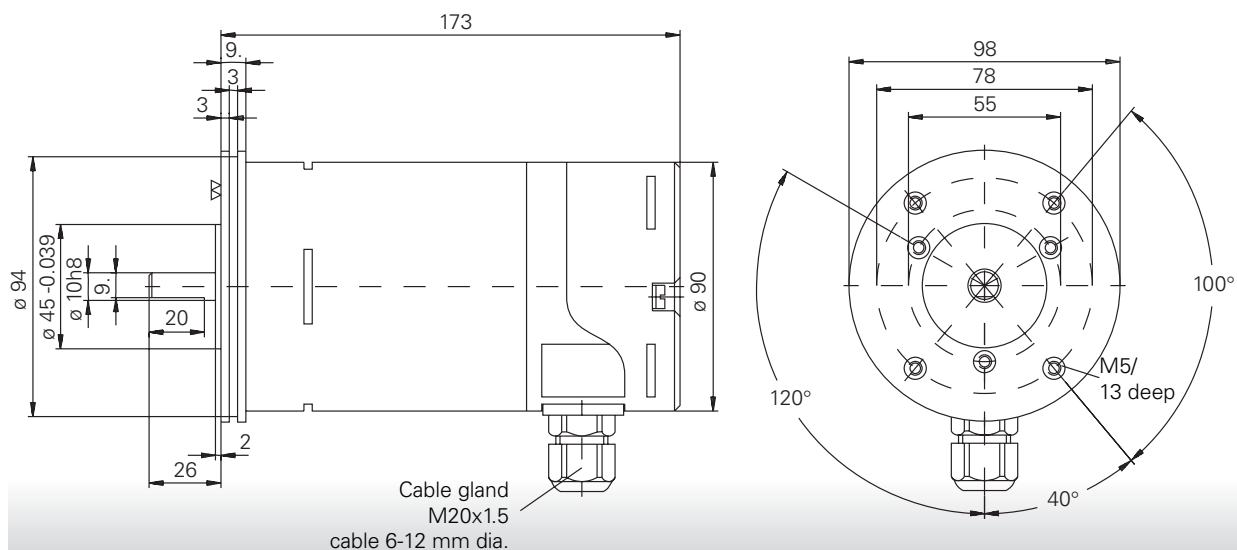
Ambient conditions

Ambient temperature	-20...+70 °C
Protection type	Shaft with sealing IP 65
Humidity	Max. relative humidity 95 %, non-condensing
Interference resistance	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3

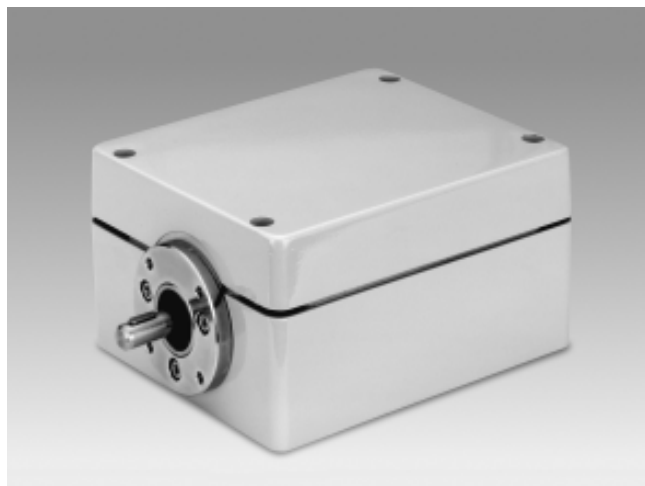
Technical data

Speed (dependent on encoder)	
mechanical	Max. 6000 rpm
electrical	Max. 6000 rpm
Start-up torque	With sealing (IP65) < 0.015 Nm
Shaft loading	
axial	< 20 N
radial	< 20 N
Moment of inertia	$2 \times 10^{-6} \text{ kgm}^2$
Material	
Housing	Polyester resin
Flange	Aluminum
Connection	10 or 16-pin connection terminal max. 1.5 mm ² flexible/single-wire

Dimensions



GK401 robust housing



Features

The GK401 is a sturdy aluminum housing with an integrated encoder and a separate mounting. Absolute, incremental or bus encoders can be integrated.

The encoder is driven by the shaft of the protective housing via a coupling, protecting it from mechanical overloading and impacts on the encoder shaft.

Special models, e.g. with an integrated heating element, available on request.

Technical data of housing

Operating temperature	-20...+70 °C
Storage temperature	-20...+85 °C
Protection class	IP65, IEC 529 DIN40050
Shaft load	Max. Fa = 0.8 kN, Fr = 1.0 kN (at 100 rpm)

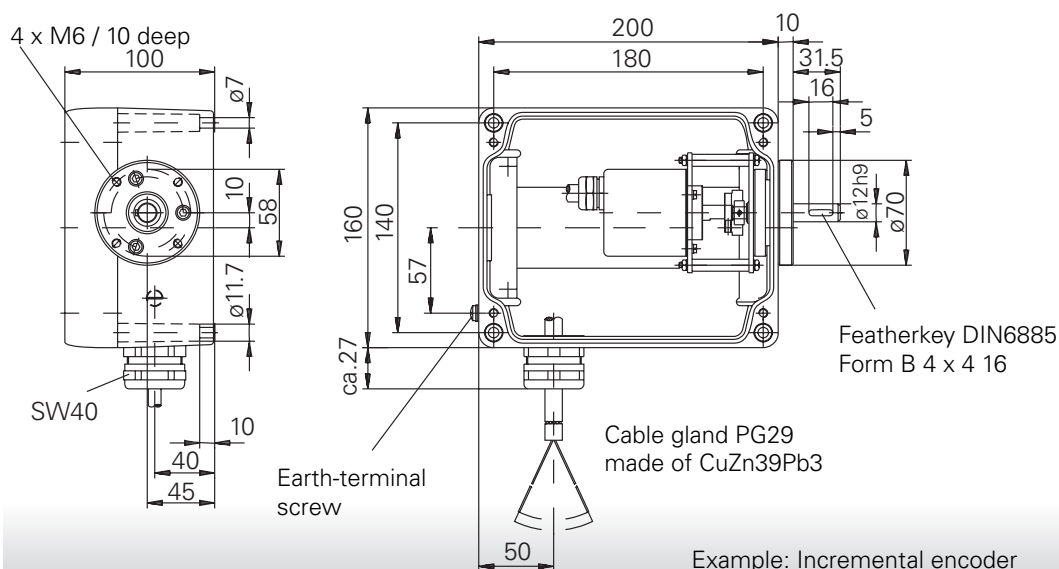
Only applies to housing. Specific values apply for the individual encoder types.

Order designation

- GK401.I** □ □ Incremental encoder
- GK401.A** □ □ Absolute encoder, singleturn
- GK401.M** □ □ Absolute encoder, multiturn
- GK401.P** □ □ Programmable absolute encoder, multiturn and bus encoder

Complete order number will be assigned on ordering.

Dimensions



Bearing flange



Description

The bearing flange can be mounted on any encoder with a servo flange and a 6 mm shaft. It considerably increases the shaft load for encoders. A spring washer coupling and the mounting screws are included.

Order designation

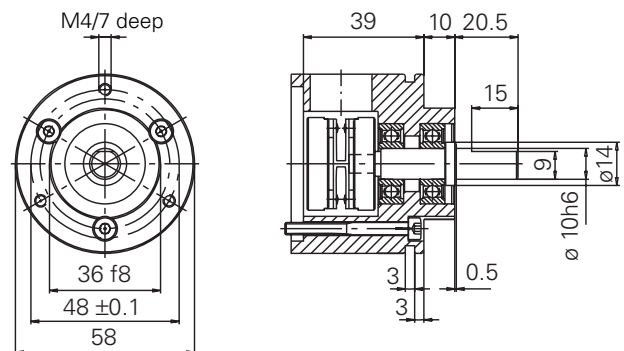
Z 119.035 Bearing flange

Technical data

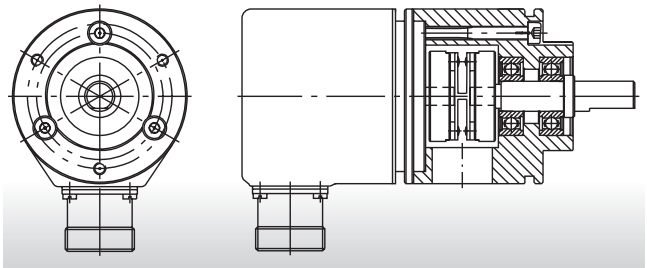
Speed	Up to 10000 rpm
Shaft loading	
axial	200 Nm
radial	250 Nm
Spring washer coupling	
Radial offset	± 0.3 mm
Angular error	$\pm 2.5^\circ$
Axial offset	± 0.4 mm
Weight	Approx. 380 g
Material	Aluminum

Dimensions

Bearing flange



With integrated servo flange encoder



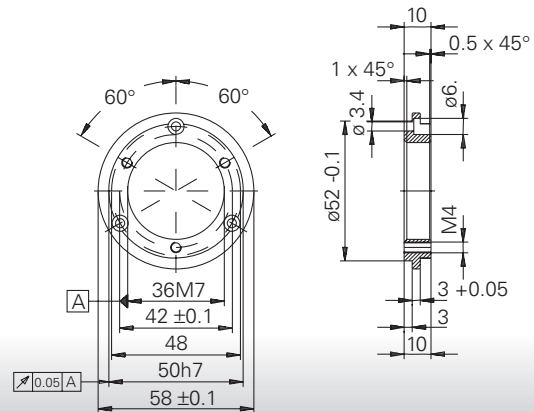
Adapter plate



Order designation

Z 119.013
Adapter plate for converting clamping flange to servo flange.

Dimensions



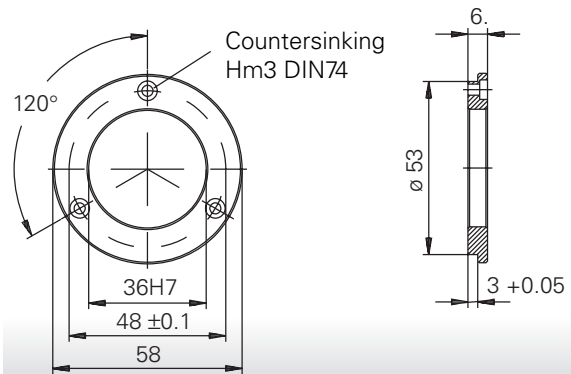
Adapter plate



Order designation

Z 119.025
Adapter plate for clamping flange for installation with eccentric mounting

Dimensions



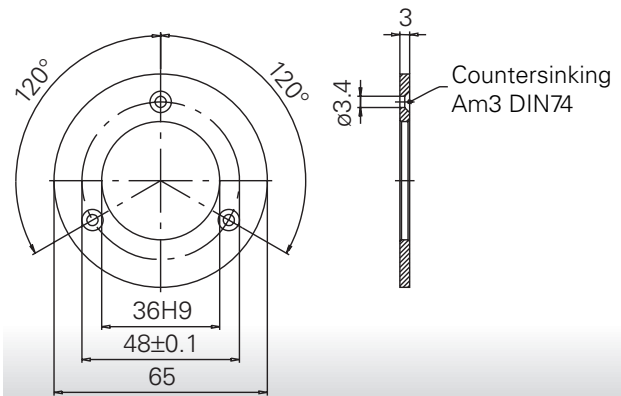
Adapter plate with 65 mm dia.



Order designation

Z 119.033
Adapter plate for clamping flange for conversion to 65 mm dia. flange

Dimensions



Mounting bell for servo flange encoders



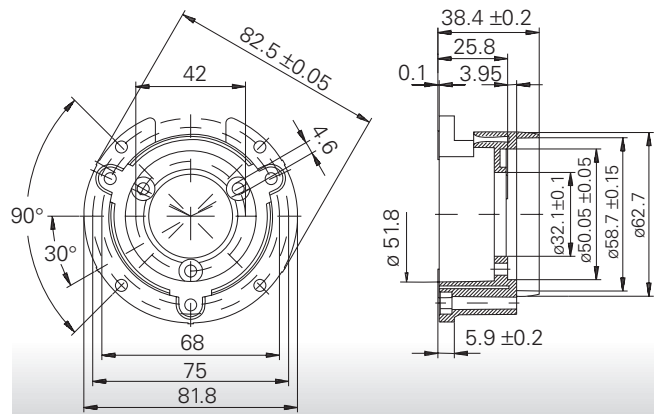
Order designation

Z 119.015

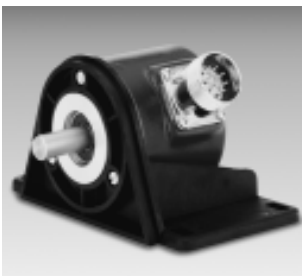
Mounting bell of PPS for servo flange encoders

(Please order mounting with eccentric mounting Z 119.018 separately)

Dimensions



Angular fixing for clamping flange encoders

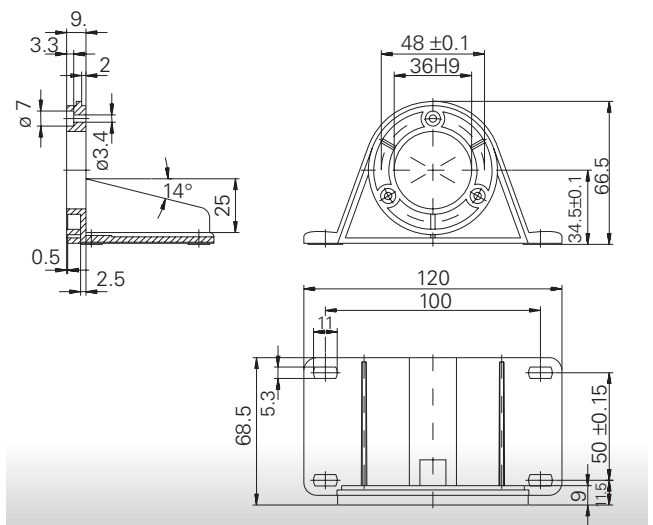


Order designation

Z 119.017

Angled mounting bracket of PPS for clamping flange encoders

Dimensions



Eccentric mounting



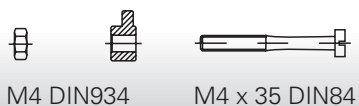
Order designation

Z 119.018

3 eccentric mountings with
M4 bolts + nuts.

Especially for mounting bell
Z 119.015

Dimensions

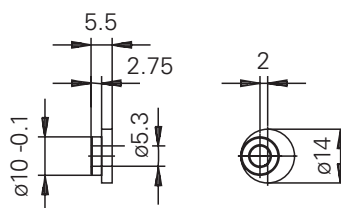


Order designation

Z 119.006

Eccentric mounting
(1 each) for M5 bolts

Dimensions



For M5 bolts.
Additional bore diameters on request.

Spring washer couplings

Order designation

Z 121.C01 D1=6, D2=10

Z 121.C02 D1=6, D2=6

Z 121.C03 D1=10, D2=10

Z 121.C04 D1=10, D2=16

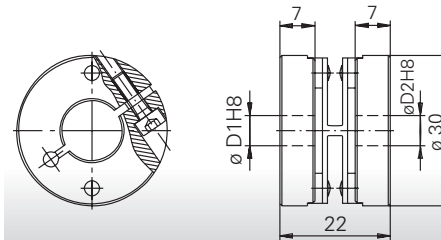
Features

- Plug-in assembly
- Electrically isolating

Technical data

Speed	Max. 12000 rpm
Torque	Max. 60 Ncm
Moment of inertia	29.5 gcm ²
Torsion spring stiffness	50 Nm/rad
Radial offset	±0.3 mm
Angular error	±2.5 °
Axial offset	±0.4 mm
Ambient temperature	-10...+100 °C
Material	
clamping ring	Aluminum
spring washer	Plastic
Weight	Approx. 26 g

Dimensions



Insert couplings

Order designation

Z 121.D01 D1=6, D2=6

Z 121.D02 D1=5, D2=6

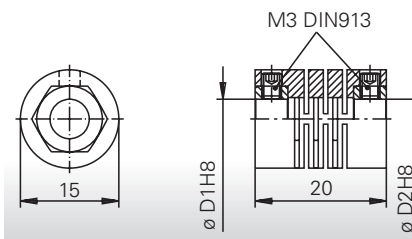
Features

- Electrically isolating
- Metal insert for setscrew

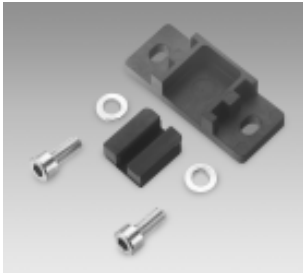
Technical Data

Speed	Max. 12000 rpm
Torque	Max. 20 Ncm
Moment of inertia	4.2 gcm ²
Torsion spring stiffness	14 Nm/rad
Radial offset	±0.3 mm
Angular error	±2.5 °
Axial offset	±0.2 mm
Ambient temperature	-10...+80 °C
Material	
Body	Plastic
Hexagon sockets	Copper alloy
Weight	Approx. 7 g

Dimensions



Hollow shaft set for absolute encoders GX/G1/G2 (included)

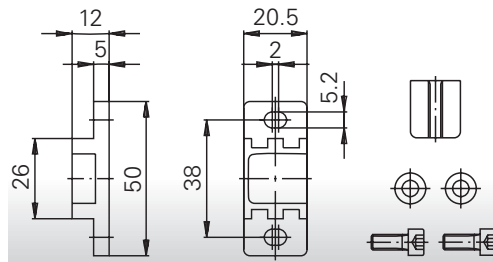


Order designation

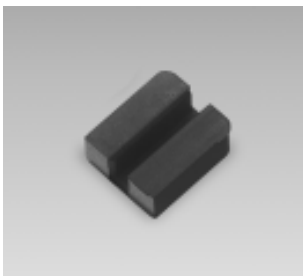
Z 119.041

Rubber spring element,
Adjustment piece with 2
washers and 2 cap screws
M5 x 122 DIN912

Dimensions



Rubber spring element



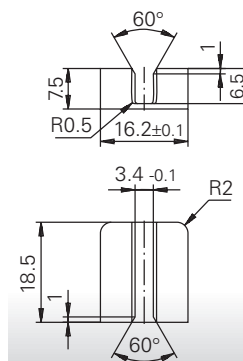
Order designation

Z 119.037

Description

The rubber spring element
of NBR is used as a torque
bracket for hollow shaft
encoders.

Dimensions



Shoulder screw

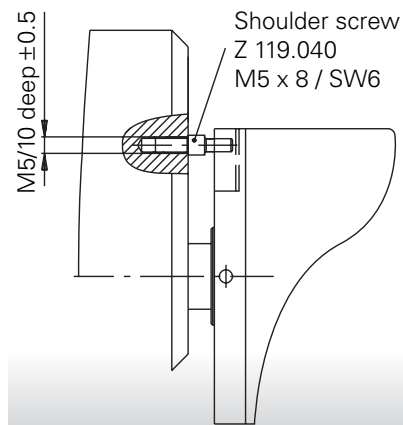


Order designation

Z 119.040

Shoulder screw for
mounting hollow shafts

Dimensions



Angled adjustment piece

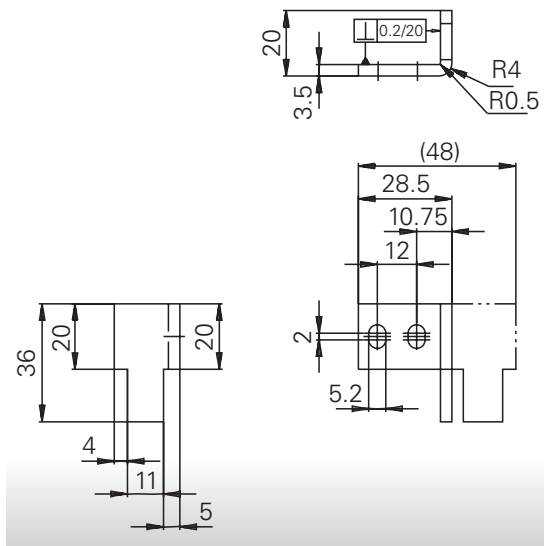


Order designation

Z 119.039

Angled adjustment piece
with 2 washers and 2
screws

Dimensions



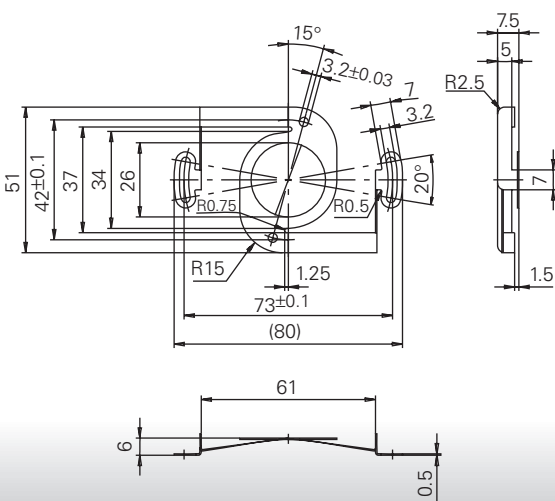
Coupling springs

Coupling spring Z 119.023

Order designation

Z 119.023 Coupling spring
For incremental encoders GI330/GI331

Dimensions

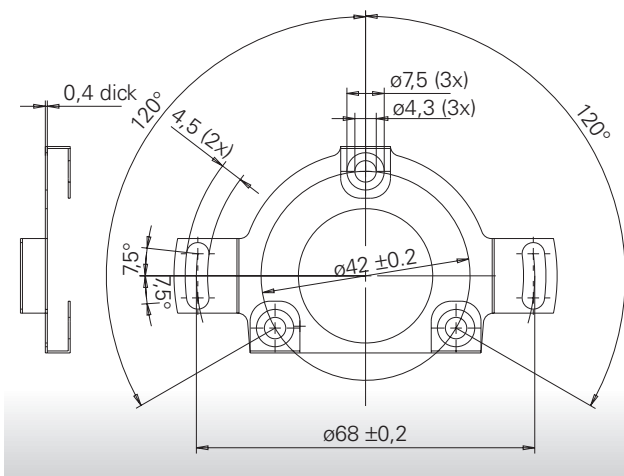


Coupling spring Z 119.042

Order designation

Z 119.042 Coupling spring
For **a**ctivo® encoders

Dimensions

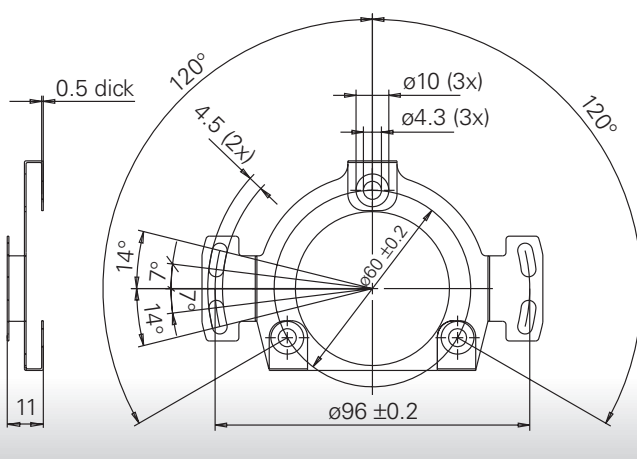


Coupling spring Z 119.043

Order designation

Z 119.043 Coupling spring
For hollow shaft encoders G1 and G2

Dimensions



Coupling spring Z 119.050

Order designation

Z 119.050 Coupling spring
For hollow shaft encoders G1 and G2

Dimensions

