

ROTARY GEAR LIMIT SWITCHES

For more than 65 years, **Giovenzana International B.V.** has been designing and producing rotary gear limit switches, offering now four different series.

Rotary gear limit switches are used to control the movement of industrial machinery when it's necessary to measure movement based on the rotation angle and/or the number of shaft revolutions, providing upper, lower and/or intermediate limits for moving machinery and mechanisms.

Usually connected to the motor shaft, the rotary gear limit switch uses a series of gears and cams to activate a microswitch when the appropriate number of rotations is reached. This is generally used to stop the motor when a moving load has reached the desired position or final positions.

The device, through a gear transmission, controls a cam system operating on 2, 4 or more microswitches that after a certain number of revolutions predispose the motor or the equipment to the start or stop.

Each cam is equipped with a "micrometric" adjustable register screw that operates in an independent way, so it is possible to calibrate the opening and closing of each microswitch according to the necessary requirements.

The gear transmission system allows to choose different ratios and can be supplied in a bi-protruding shaft version or with linear control (potentiometer or encoder).

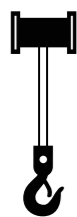
Each series of rotary limit switch has specific features which reduce time and costs for installation and maintenance.

Giovenzana International B.V. offers rotary gear limit switches with standard input ratios from 1:12 to 1:400 (custom input ratios are available on request up to 1:1482). They can be configured with maximum 6 contacts and combined with encoders and potentiometers to reach your own needs. We can offer snap action switches and different cam type to meet customers requirements.

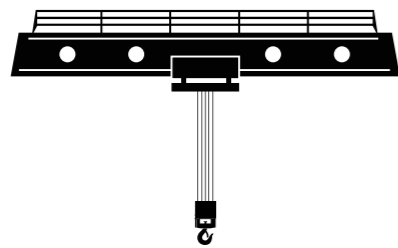
The wide range of the input ratios (standards and customized) available in our series, make every customers and applications needs satisfied.

APPLICATIONS

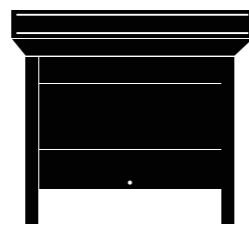
Giovenzana rotary limit switches are suitable for several applications: from lifting machinery to industrial overhead doors and boat lifts, from theatre lighting hoists to renewable energy systems, like wind turbines.



HOIST



CRANE



INDUSTRIAL DOORS



WIND TURBINES

SERIES



FGR0



FGR1



FGR2



FGR3

FEATURES

- The revolutions of the shaft are transmitted to a cam switch mechanism, through which mechanical switching contacts are actuated.
- Different ratios (also direct ratios) are available for the rotary gear limit switches of the FGR series.
- The switch can be equipped with a maximum of 8 switching contacts.
- Positive opening NC contacts for safety functions.
- Each cam can be individually adjusted to the desired position and thus enables flexible definition of end positions and reference points. More accurate adjustment of cams by means of screws.
- To reduce abrasion and rust, the transmission and guide shafts of the gears are made of stainless steel.
- The circumferential rubber gasket provides great protection against dust and water, allowing IP66 protection to be easily achieved for the entire products range.
- The optimised interior allows quick and easy cabling.

BENEFITS

- › High protection class degree
- › Extreme temperature resistance: -30°C to +70°C
- › Easy use, resistance and durability
- › Guaranteed safety



Coding system

The FGR0 coding system is very clear: each block of digits identifies a specific function. The code provides all the informations that can be used to specify each customization.

FGR0	-	0012	M	-	4	A	-	E1	-	01
Series	-	Nr. gear ratio	Shaft type	-	Nr. contacts	Contacts type	-	Options	-	Progressive versions
			M = single shaft B = double overhang shaft			A = MFI.3 (standard) B = MFI.3STP (on request)		E = Encoder P = Potentiometer		Not standard shaft, cams, pinions, colors, logos, extra accessories, etc...
STANDARD ENCODING						OPTIONAL ENCODING				

Available codes

Base fixing
2 microswitches



FGR0-0012M-2A
FGR0-0025M-2A
FGR0-0033M-2A
FGR0-0050M-2A
FGR0-0075M-2A
FGR0-0100M-2A
FGR0-0150M-2A
FGR0-0200M-2A
FGR0-0400M-2A

Base fixing
4 microswitches



FGR0-0012M-4A
FGR0-0025M-4A
FGR0-0033M-4A
FGR0-0050M-4A
FGR0-0075M-4A
FGR0-0100M-4A
FGR0-0150M-4A
FGR0-0200M-4A
FGR0-0400M-4A

Double overhang shaft
2 microswitches



FGR0-0012B-2A
FGR0-0025B-2A
FGR0-0033B-2A
FGR0-0050B-2A
FGR0-0075B-2A
FGR0-0100B-2A
FGR0-0150B-2A
FGR0-0200B-2A
FGR0-0400B-2A

Double overhang shaft
4 microswitches



FGR0-0012B-4A
FGR0-0025B-4A
FGR0-0033B-4A
FGR0-0050B-4A
FGR0-0075B-4A
FGR0-0100B-4A
FGR0-0150B-4A
FGR0-0200B-4A
FGR0-0400B-4A

Front fixing
2 or 4 microswitches



FGR0 Body with long shaft (see technical drawings to page 72)



+

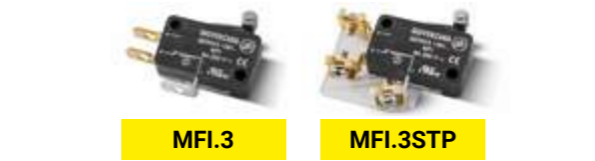


11706002
standard flange

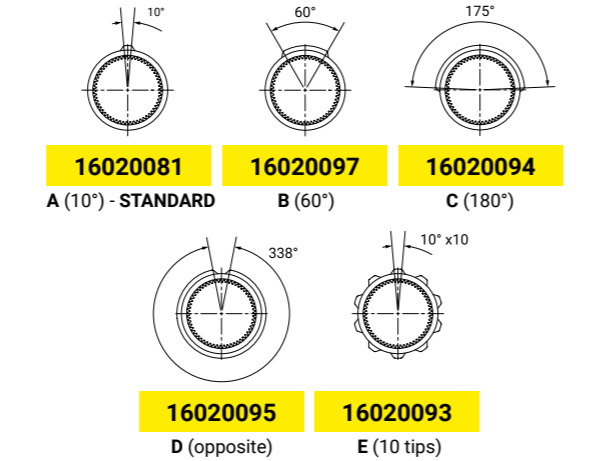


11706019
flange with increased lead

AVAILABLE CONTACT TYPES



AVAILABLE CAM SHAPES



Rotary gear limit switch

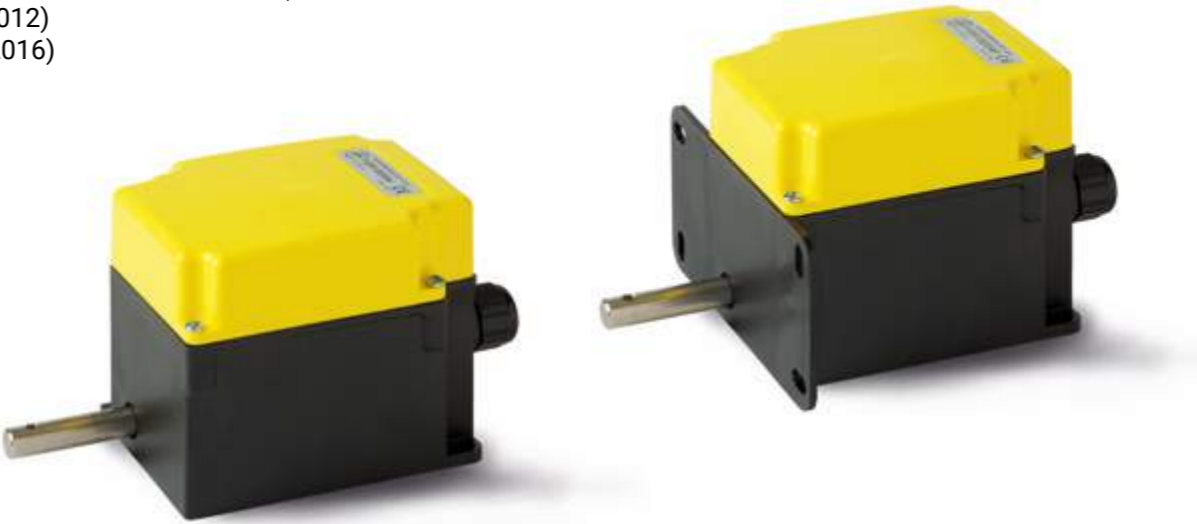
The **FGR1** is a device used to control and measure the movement of industrial machines by measuring the rotation angle and/or counting the number of revolutions of a shaft.

General features

- Different versions available:
 - base fixing;
 - front fixing;
 - with double overhang shaft.
- IP65 Protection class.
- Available in different ratios: 1:12, 1:33, 1:50, 1:75, 1:100, 1:150, 1:200, 1:400 (optional on request).
- Available in direct ratio: 1:50, 1:75, 1:100 (others direct ratio on request).
- Micro switches:
 - device available with 4 microswitches;
 - the working point is adjustable with a calibration screw;
 - each switch has 1NO + 1NC inside;
 - positive opening for NC contacts.

Compliance and certifications

- 2014/35/UE - 2014/33/UE - 2011/65/UE - 2015/863/UE
- EN 60947-1 (2007/A1 : 2011/A2 : 2014)
- EN 60947-5-1 (2004/A1 : 2009/AC : 2004/AC : 2005)
- EN 60204-1 (2006/A1 : 2009)
- EN 60529 (1991/A1 : 2000/A2 : 2013)
- EN 50581 (2012)
- IEC 63000 (2016)



Base Fixing versions

X-ray view

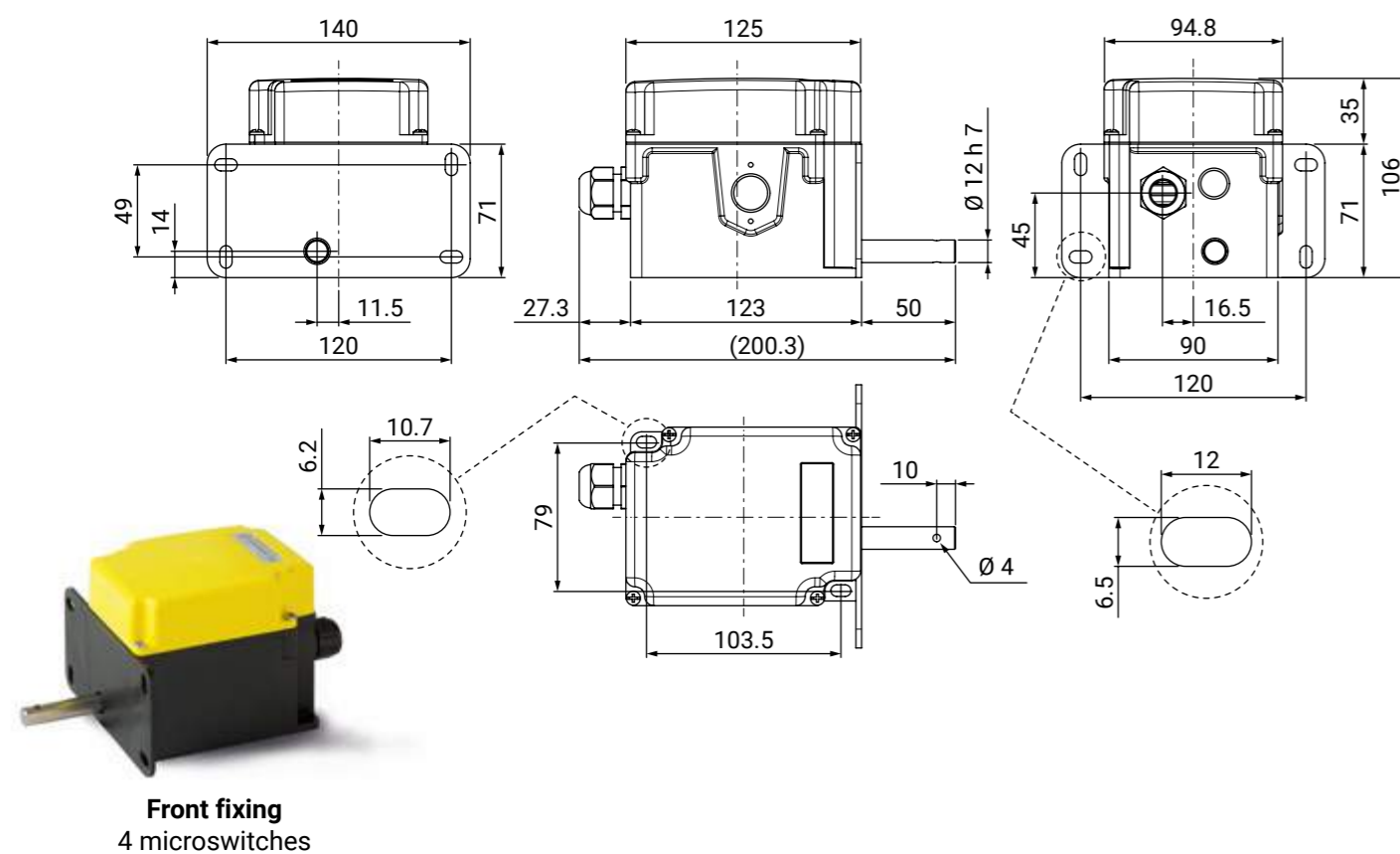
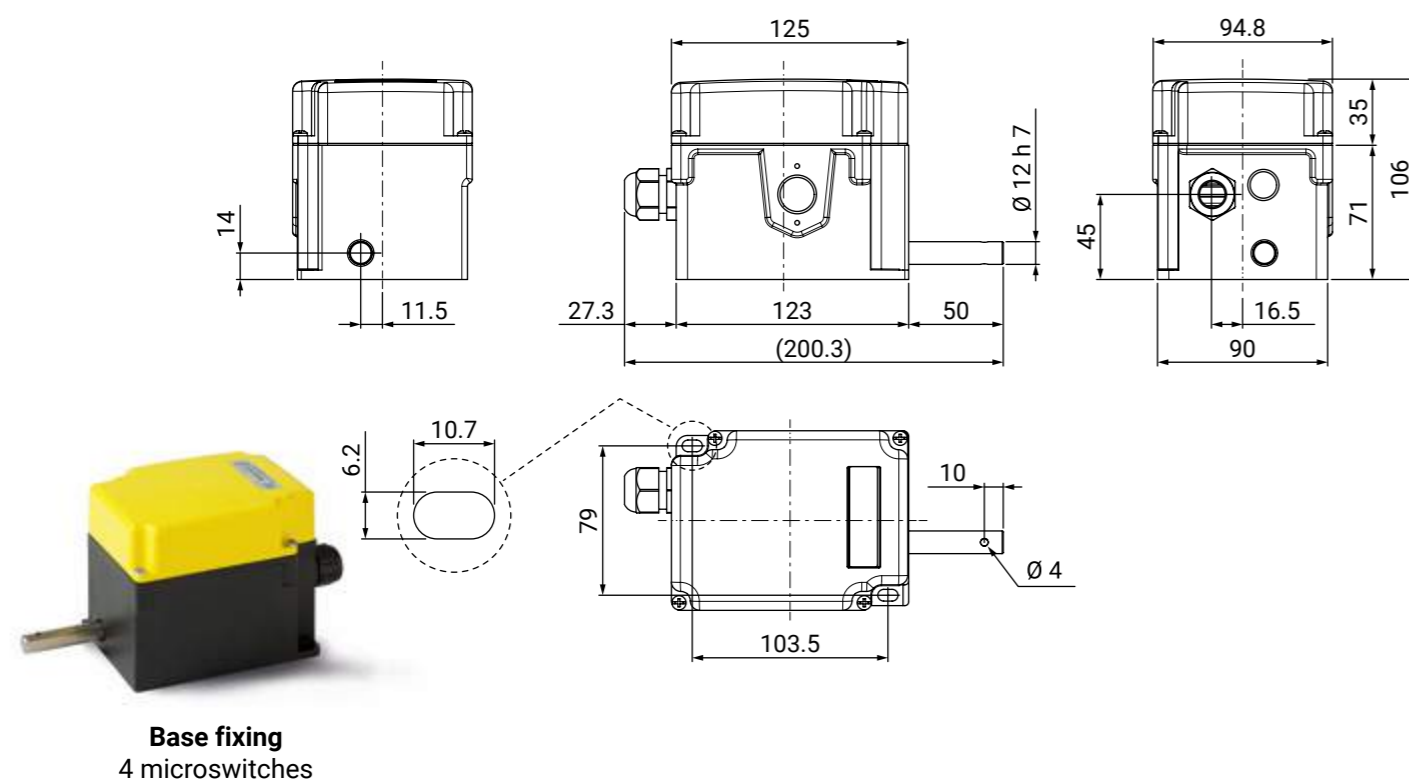
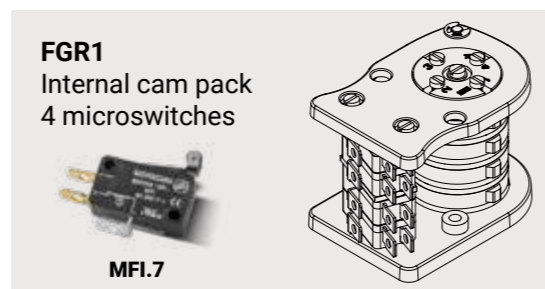


4 microswitches

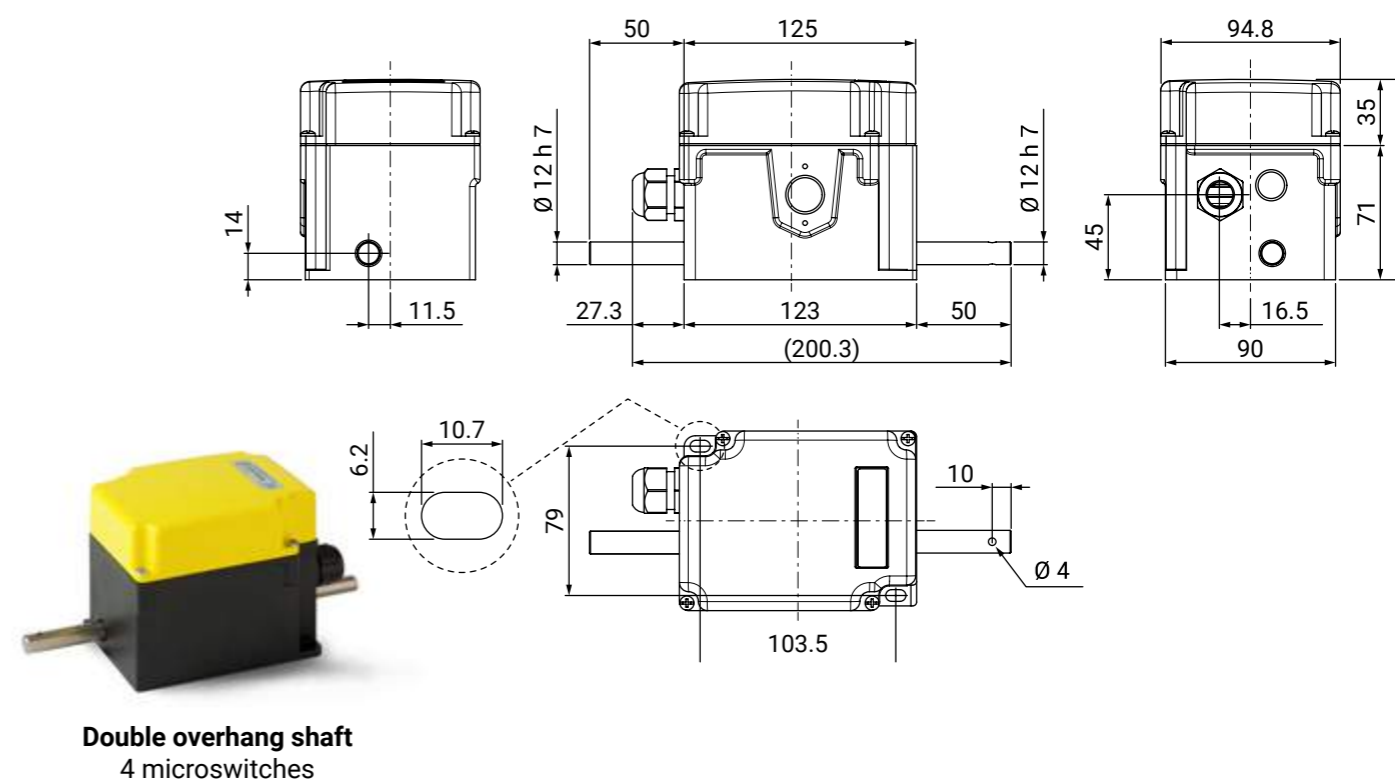


4 microswitches
Direct Ratio

Available codes



Available codes

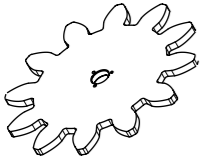
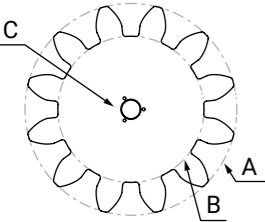
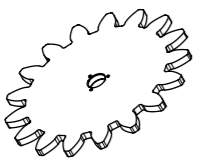
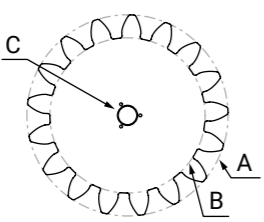
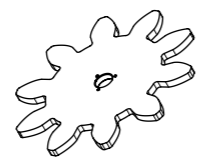
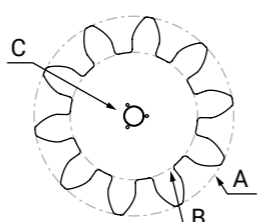
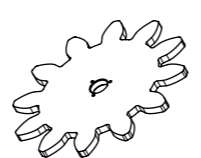
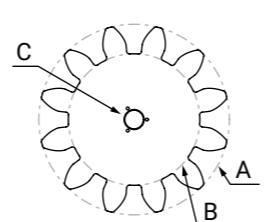
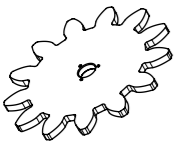
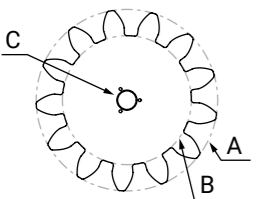
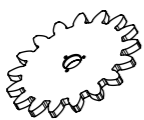
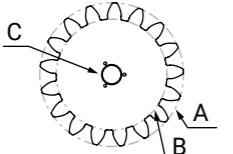

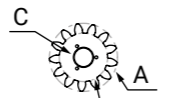
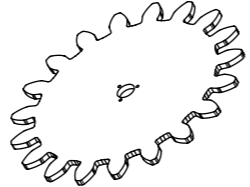
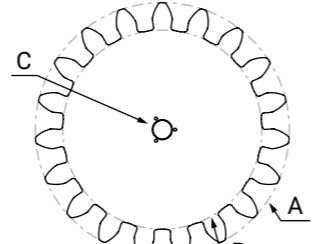


ROTARY LIMIT SWITCHES



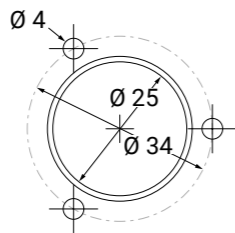
Water jet cut pinions

Our measuring pinions are specially manufactured for use with encoders and geared limit switches.
Pinions thickness = 10 mm.

 	 	 	 
16020051 M20 - Z12 A = Ø 280 / B = Ø 193.2	16020052 M14 - Z17 A = Ø 266 / B = Ø 205.24	16020053 M22 - Z10 A = Ø 264 / B = Ø 168.52	16020054 M18 - Z12 A = Ø 252 / B = Ø 173.88
 	 	 	 
16020055 M16 - Z13 A = Ø 240 / B = Ø 170.56	16020056 M10 - Z17 A = Ø 190 / B = Ø 146.6	16020057 M6 - Z13 A = Ø 90 / B = Ø 63.96	16020070 M16 - Z19 A = Ø 336 / B = Ø 263,2

Detail C


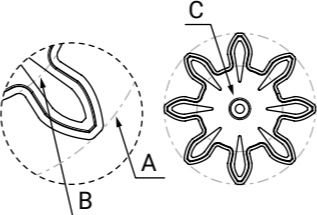

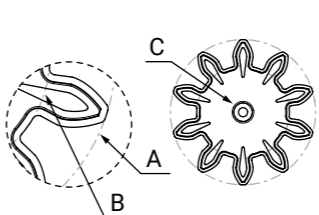

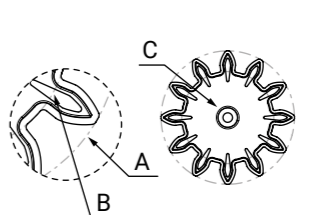
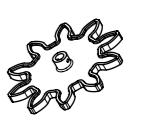
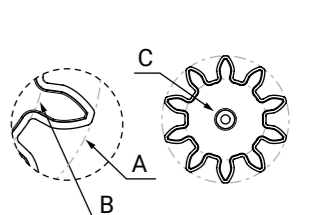

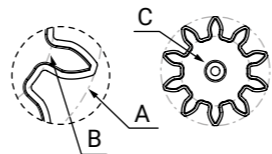

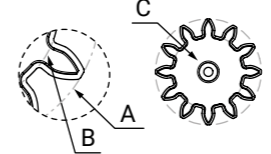

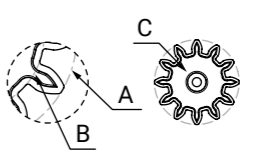

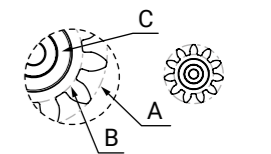

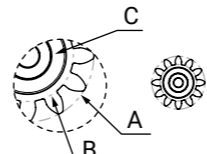

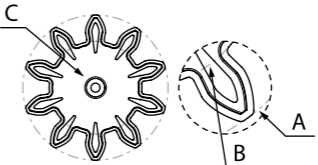

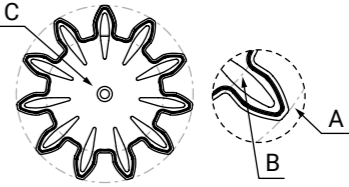

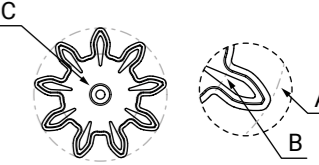
For all previous pinions.
Finished product measurements.



SPARE PARTS & ACCESSORIES

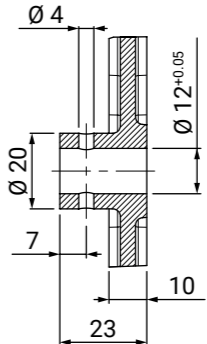
Rotary gear limit switch

Injection moulded pinions

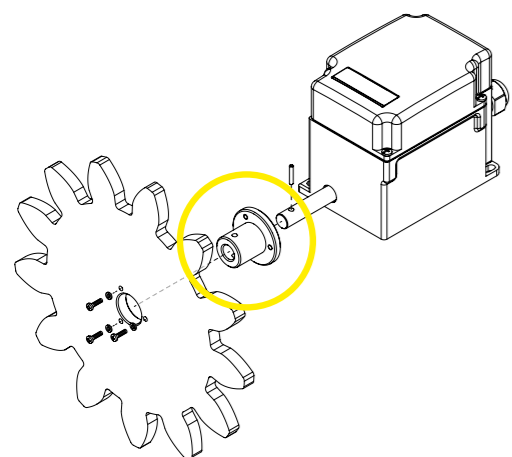
 	 	 	 
16020058 M20 - Z8 A = Ø 200 / B = Ø 113.2	16020059 M13 - Z10 A = Ø 192 / B = Ø 122.56	16020060 M12 - Z12 A = Ø 176.4 / B = Ø 121.716	16020061 M14 - Z10 A = Ø 168 / B = Ø 107.24
 	 	 	 
16020062 M12 - Z10 A = Ø 144 / B = Ø 91.92	16020063 M10 - Z12 A = Ø 140 / B = Ø 96.6	16020064 M8 - Z12 A = Ø 112 / B = Ø 77.28	16020065 M6 - Z11 A = Ø 78 / B = Ø 51.96
 	 	 	 
16020066 M5 - Z12 A = Ø 70 / B = Ø 48.3	16020068 M16 - Z20 A = Ø 192 / B = Ø 122.56	16020069 M18 - Z11 A = Ø 234 / B = Ø 155.81	16020071 M16 - Z19 A = Ø 176 / B = Ø 107.285

Detail C

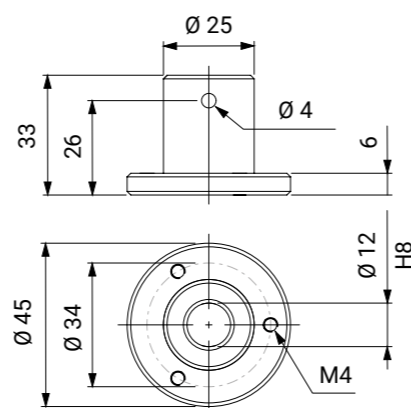
For all previous pinions.



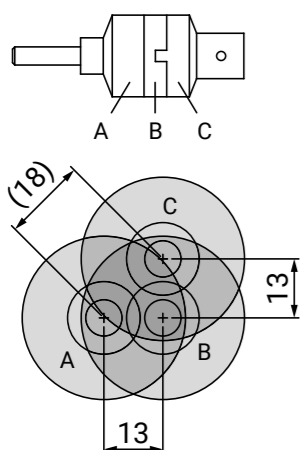
Metal sleeve for water jet cut pinions



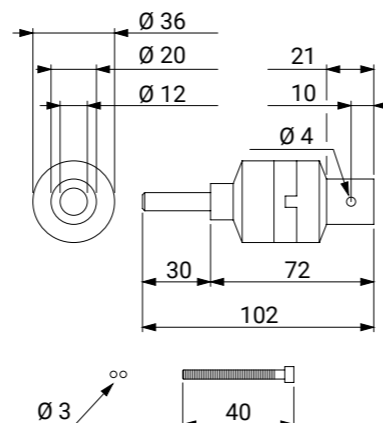
16020050



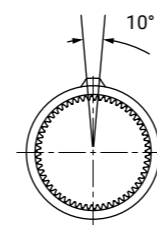
Oldham coupling



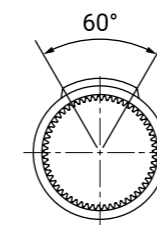
FGH



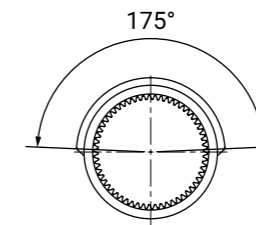
Cam shapes for FGR0, FGR1, FGR3



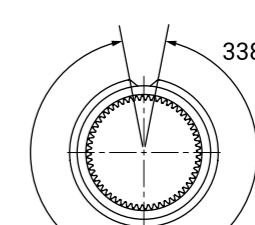
16020081
A (10°) - STANDARD



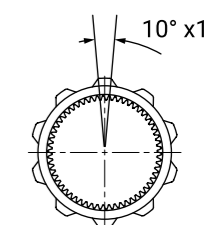
16020097
B (60°)



16020094
C (180°)

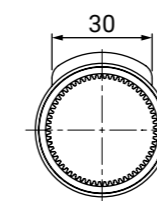


16020095
D (opposite)

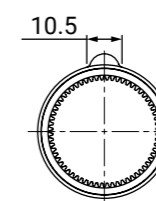


16020093
E (10 tips)

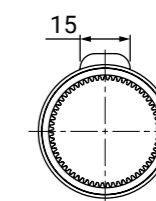
Cam shapes for FGR2



11703015
A (30°) - STANDARD



11703019
B (15°)



11703013
C (90°)

Available customised versions on request.