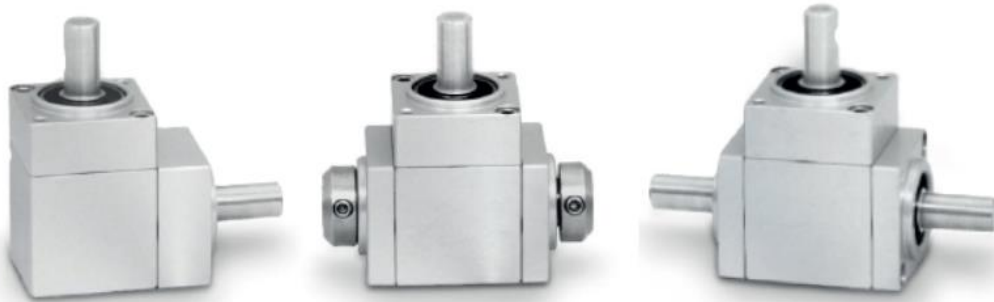


Datasheet



- Angular gearboxes with bevel and spiral bevel gears are suitable for transmitting the rotary motion between two shafts at right angles.
- Models with spiral bevel gears are available in all versions; spiral gearboxes achieve higher precision, silent operation and enable 30% higher efficiency.
- All bevel gears have ball-bearings; minimal angular and axial clearance.

Technical characteristics

Dimensions	overall, see section: versions and dimensions	
Diameter	Hollow shaft, shaft Ø8 mm (standard); Ø10, Ø12 and Ø14 mm (optional)	
Length	Hollow shaft 15 mm <u>effective length</u> , 16 mm <u>construction depth</u> (standard)	
	Shaft 16 mm (standard); at standard with keyways or on request	
Material	Hollow shaft, shaft Stainless steel (AISI 303)	
	Housing Die-cast aluminium housing, anodized natural (standard), black anodized or stainless steel (AISI 303) (optional)	
	Bearing Ball-bearings, hardened bevel gears	
Weight	145 g	with 2 outputs
	150 g	with 3 outputs
	200 g	with 4 outputs
Version	A with 2 outputs	
	B with 3 outputs	
	C with 3 outputs (with opposite rotation)	
	D with 3 outputs, 2 through hollow shafts	
	E with 4 outputs	
Reduction ratios	1:1	1 (standard)
	1:2	2 <i>in reducing</i> (standard)
	2:1	0,5 <i>in multiplying</i> (on request in version A, B, C, not available in version D), see Fig. 5, 6
Torque	4 Nm	
Axle load	Radial load	15 kg
	Axial load	1,5 kg (see Fig. 7)
Gearbox	Straight bevel gears Straight gearing (standard), see Fig. 1	
	Spiral bevel gears Spiral-shaped gearing, see Fig. 2	
Tolerance between gears	0,1° to 0,75°	
Lubrication	Grease fitting for continuous operation (optional)	



To choose the most suitable gearbox, please refer to the following tables of technical characteristics, efficiency diagrams, as well as the corresponding versions with dimension drawings of the gearboxes.

Datasheet



Direction of rotation				
Version A	Version B	Version C	Version D	Version E
The direction of rotation depends on the configuration and the positioning; see section Versions with dimension drawings.				

Bevel gears	
Fig. 1	Fig. 2
Straight bevel gears	Spiral bevel gears
Spiral gearboxes (Fig. 2) achieve higher precision, silent operation and enable 30% higher efficiency.	

Reduction and multiplying ratio			
Fig. 3	Fig. 4	Fig. 5	Fig. 6
Clockwise	Clockwise	Example	
<u>Reduction ratios</u> $i = n1 : n2$ at $i > 1$ in reducing at $i < 1$ in multiplying		1:2 in reducing $n1 = 1.000$ 1/min $n2 = 500$ 1/min $i = 2$	* 2:1 in multiplying $n1 = 1.000$ 1/min $n2 = 2.000$ 1/min $i = 0,5$ * (not available in version D)
The ratio (Fig. 5 and 6) and configuration is determined by the n1 shaft (always shown in the bottom of the drawing), the others shaft following clockwise (Fig. 3 and 4).			

i For use in continuous operation, a grease nipple is provided which must be refilled at different intervals depending on the operating conditions.

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Loads

The loads on the gearbox must be considered as a whole and in relation to the superstructure, such as structural misalignments, vibrations, acceleration or deceleration, shocks, vibration, etc.
Two types of shaft loads must be considered:
radial FR (radial force) and axial FA (axial force) loads (Fig. 7).

Fig. 7

FR = radial load, FA = axial load

The radial load acts in a perpendicular direction to the shaft/axis.

The axial load acts in the same direction of the shaft/axis; when ordering please take into account, whether it is pull or push type.

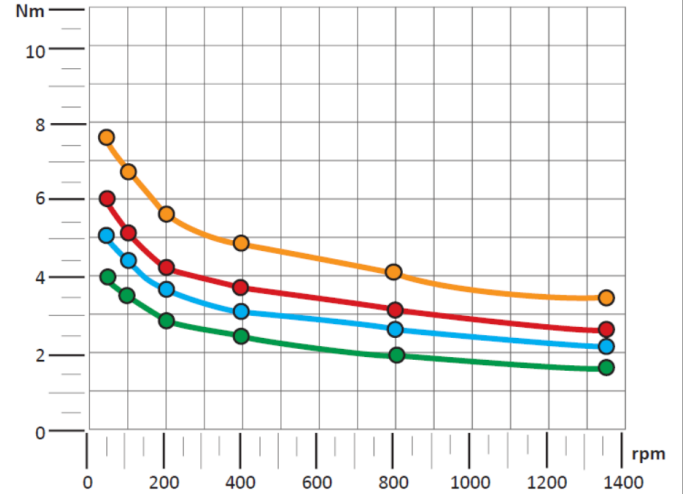
T = torque

Efficiency diagrams and tables

Output torque with ratio 1 (1:1)

OUTPUT TORQUE WITH RATIO 1/1 - DREHMOMENT MIT ÜBERSETZUNG 1/1				
● TM dc	● TR dc	● TM dsp	● TR dsp	rpm
6	4	7,8	5,2	50
5,3	3,5	6,9	4,5	100
4,4	2,9	5,7	3,7	200
3,8	2,5	4,9	3,2	400
3,2	2,1	4,1	2,7	800
2,7	1,8	3,5	2,3	1400

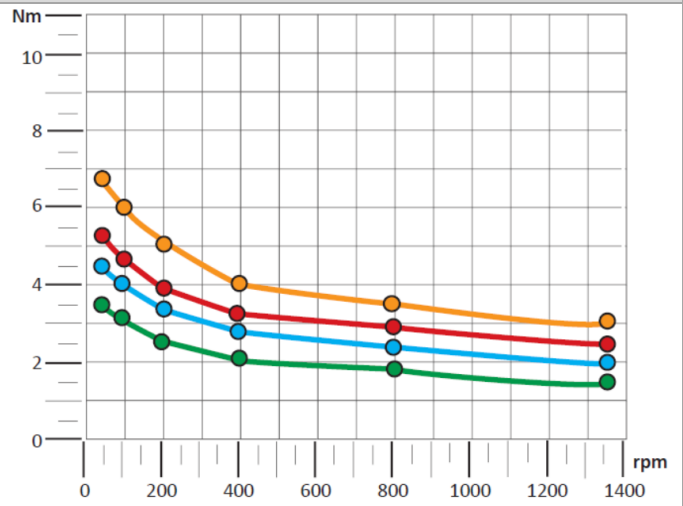
Efficiency - Leistung = 90%



Output torque with ratio 2 (1:2)

OUTPUT TORQUE WITH RATIO 1/2 DREHMOMENT MIT ÜBERSETZUNG 1/2				
● TM dc	● TR dc	● TM dsp	● TR dsp	rpm
5,3	3,5	6,9	4,5	50
4,6	3,1	6	4	100
3,9	2,6	5	3,4	200
3,3	2,2	4,3	2,8	400
2,8	1,9	3,6	2,5	800
2,4	1,6	3,1	2,1	1400

Efficiency - Leistung = 90%



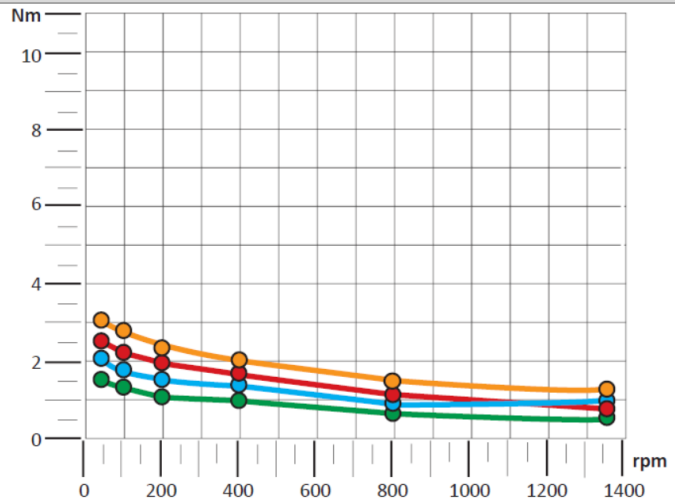
Datasheet



Output torque with ratio 0,5 (2:1)

OUTPUT TORQUE WITH RATIO 2/1 DREHMOMENT MIT ÜBERSETZUNG 2/1				
● T_M dc	● T_R dc	● T_M dsp	● T_R dsp	rpm
2,4	1,6	3,1	2,1	50
2,1	1,4	2,7	1,8	100
1,8	1,2	2,3	1,5	200
1,5	1	2	1,3	400
1	0,8	1,3	1	800
0,8	0,7	1	0,9	1400

Efficiency - Leistung = 90%

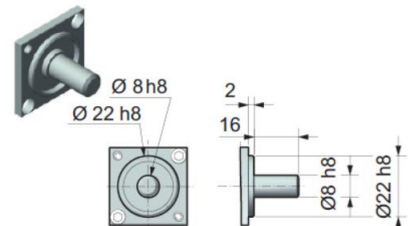
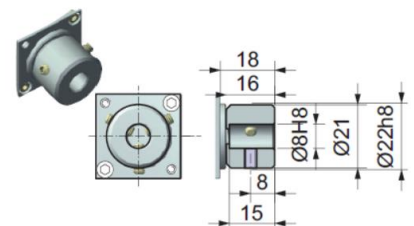
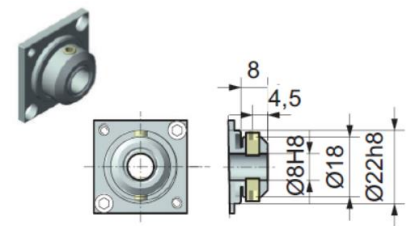


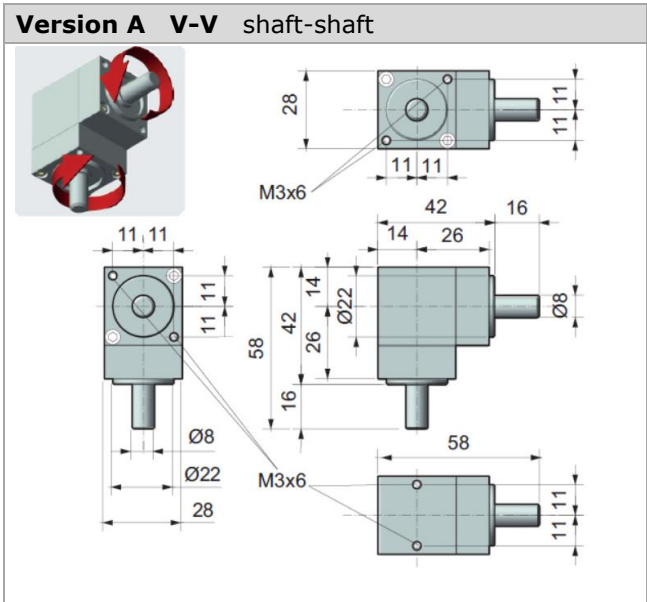
Glossary

F_R	Radial load
F_A	Axial load
R	Force
T	Torque
T_M	Maximum torque
T_R	Recommended torque
T_A	Actual torque
T_O	Output torque
T_I	Input torque
Pn	Power
N	Newton
Nm	Newton meter
fu	Factor of use
i	Gear ratio
rpm	Revolutions per minute (rpm)
n1	Entry shaft
n2	Outlet shaft
dc	Straight bevel gears
dsp	Spiral bevel gears
M	Solid shaft
F	Hollow shaft
D	Through hollow shaft

Datasheet

Versions with dimension drawings

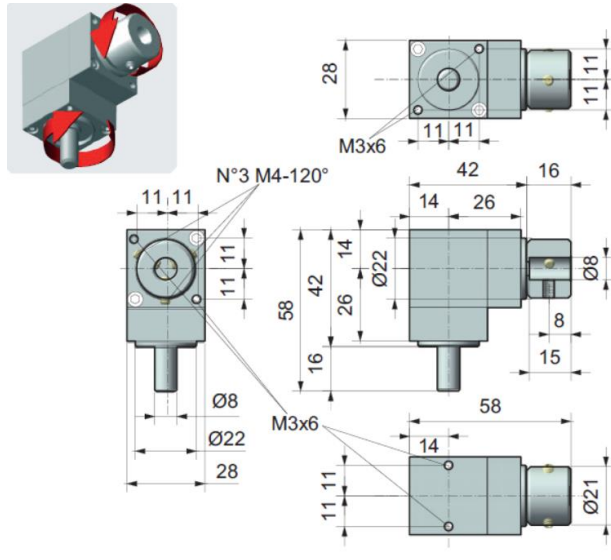
Available outputs		
V = shaft	H = hollow shaft	D = through hollow shaft (only for version D)
 <p>Ø 8 h8 Ø 22 h8 2 16 Ø 8 h8 Ø 22 h8</p>	 <p>18 16 Ø 8 H8 Ø 21 Ø 22 h8 8 15</p>	 <p>8 4,5 Ø 8 H8 Ø 18 Ø 22 h8</p>



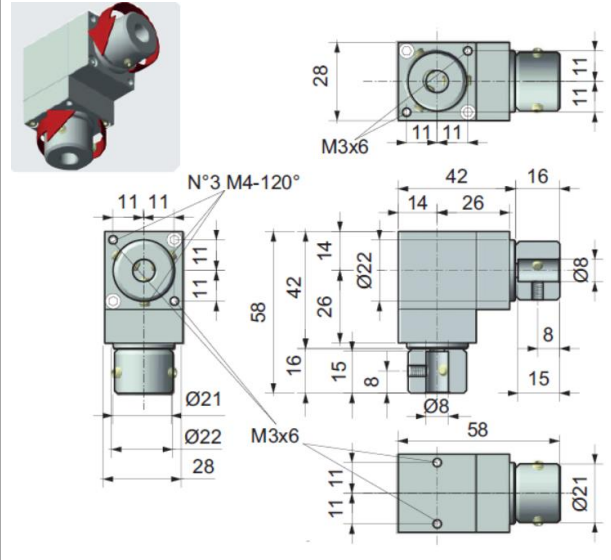


Datasheet

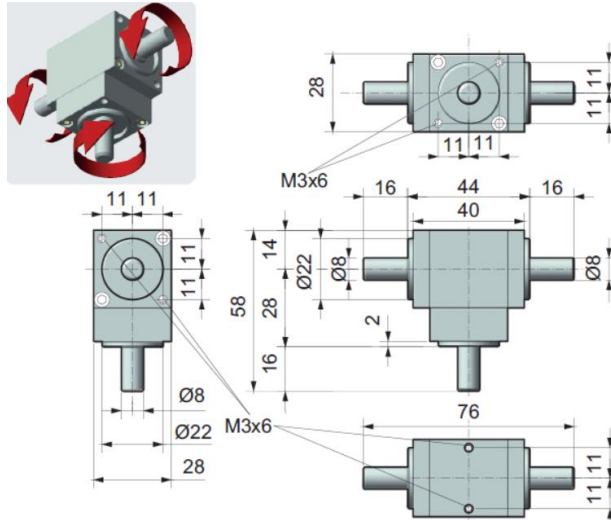
Version A V-H shaft-hollow shaft



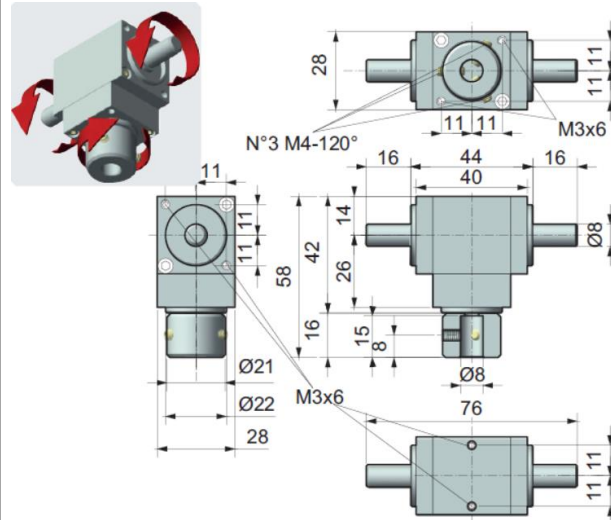
Version A H-H hollow shaft-hollow shaft



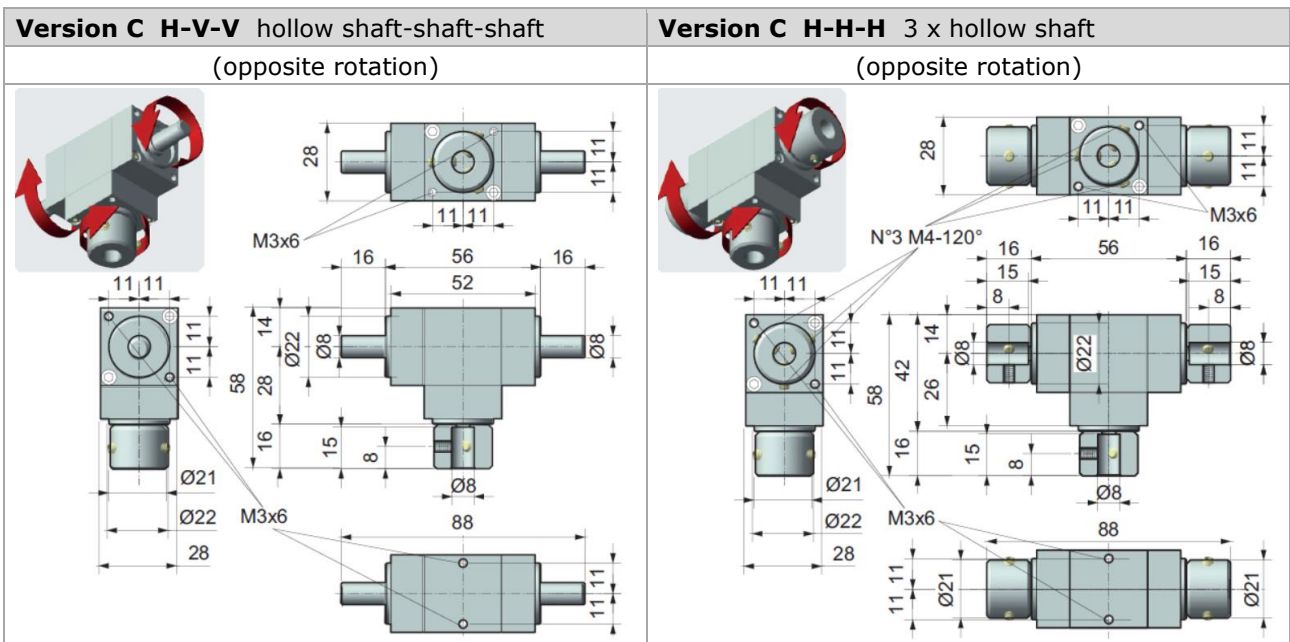
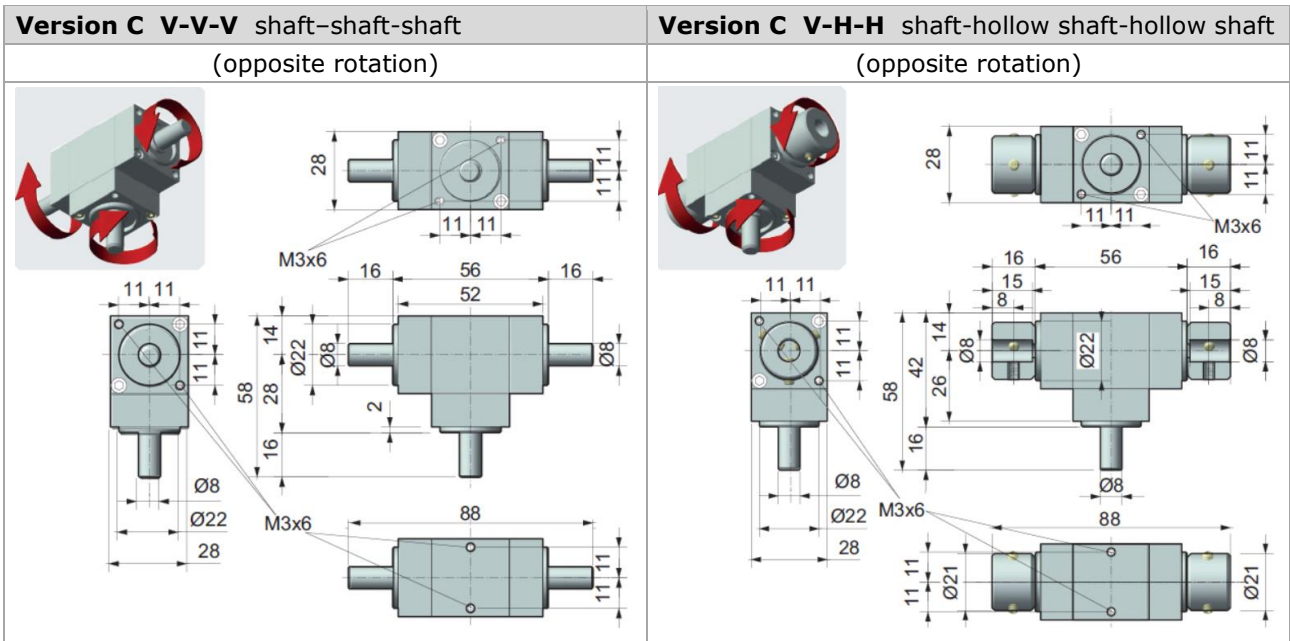
Version B V-V-V shaft-shaft-shaft



Version B H-V-V hollow shaft-shaft-shaft

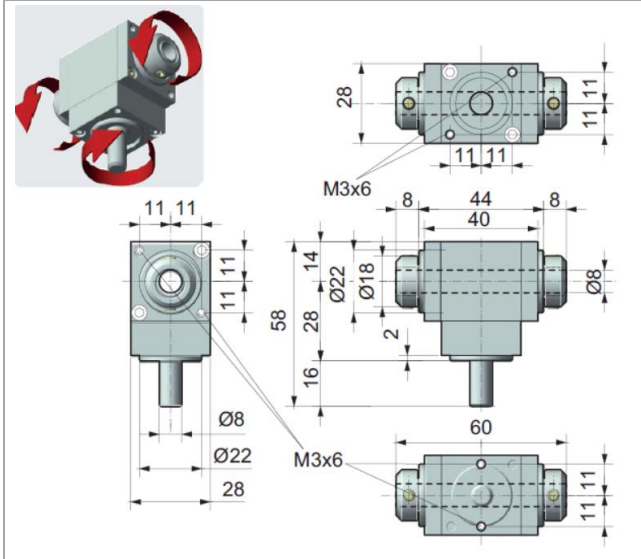


Datasheet

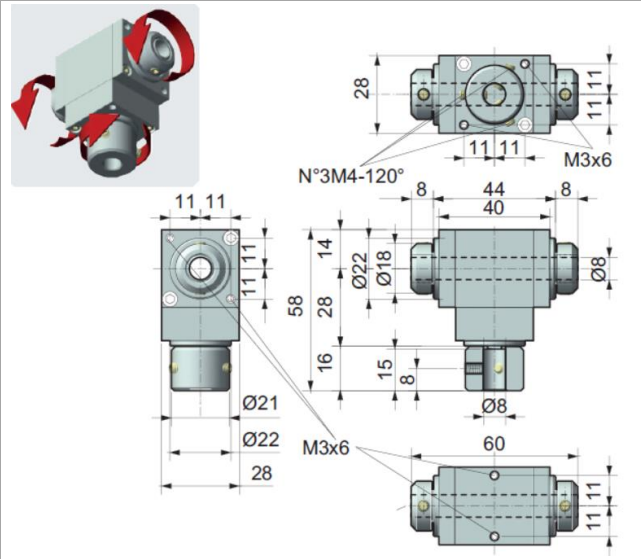


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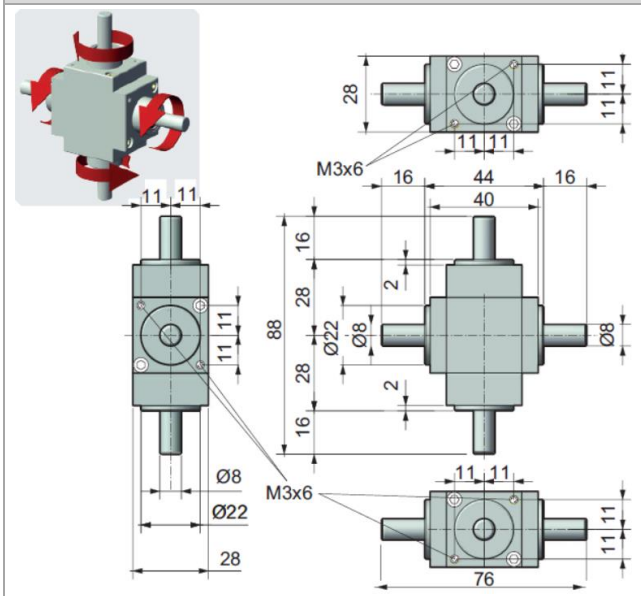
Version D V-H-H hollow shaft-shaft-shaft
(with through hollow shaft)



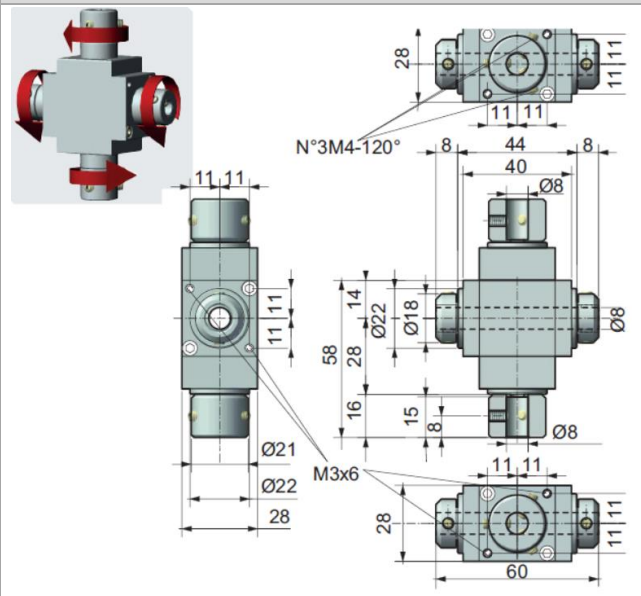
Version D H-H-H 3 x hollow shaft
(with through hollow shaft)



Version E V-V-V-V 4 x shaft



Version E H-H-H-H 4 x hollow shaft



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Applications

The angular gearboxes are suited for industrial use and can be universally used for spindle drives in any mounting position.

- Compact and modular designs, adaptable, easy assembly. The favourable price-performance ratio and small installation space enable a cost-effective system solution.
- Manual or motorised adjustments with matching flange, adapter, flexible shafts and couplings or motor, optionally with position indicators and clamping elements, complete a sensible assembly group in machine and plant construction.

Angular gear with rigid shaft



Transmitting the rotary motion, direct connection via rigid shaft.

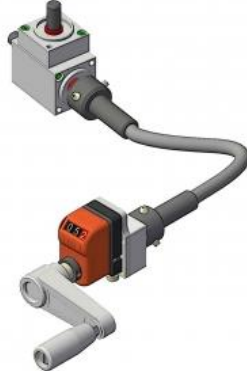
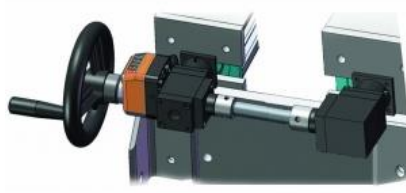
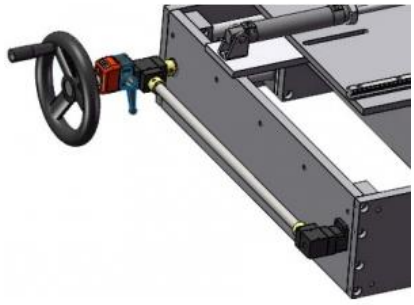
Angular gear with flexible shaft



Transmitting rotary motion via one or more flexible shafts where a direct connection is not possible in any other case; for example, to connect two axes or shafts which are not perfectly aligned.

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Further applications

		
<p>Transmitting the rotary motion, connection via shaft block flange with flexible shaft to the coupling, and position indicator with crank handle.</p>	<p>Transmitting the rotary motion, direct connection via rigid shaft to the coupling and position indicator with handwheel.</p>	



Figures show angular gear with flexible or rigid shaft, shaft block flange, clamping elements and position indicator.

Areas of application

Packaging, food, pharmaceutical, plastic, wood, sheet metal, glass, winding, construction road machines, also on traditional machines and special applications in metal construction, lifting technology, conveyor technology, linear technology, special plant engineering, etc.

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Ordering example

Type 66/4 - - - A - 1 - V08-H08 - UC

Gearbox

- = bevel gears (standard)
- SP = spiral bevel gears (optional)

Housing material

- = anodized transparent (standard)
- ES = anodized black (optional)
- VA = stainless steel (AISI 303) (optional)

Version

- A = with 2 outputs
- B = with 3 outputs
- C = with 3 outputs (with opposite rotation)
- D = with 3 outputs, 2 through hollow shafts
- E = with 4 outputs

Reduction ratio

- 1 = 1:1 (standard)
- 2 = 1:2 *in reducing* (standard)
- 0,5 = 2:1 *in multiplying* (on request in version A, B, C, not available in version D)

Version shaft

- V = Shaft; with keyway (at standard)
- H = Hollow shaft with blind hole; through hollow shaft only with version D

Diameter shaft *

- 08 = Ø8 mm (standard); Ø10, Ø12 und Ø14 mm (optional)

Length shaft *

- Shaft: 16 mm (standard)
- Hollow shaft: 15 mm effective length, 16 mm construction depth (standard);

Continuous use

- UC = Grease fitting for continuous operation (optional); available on request



* Further lengths and diameters are available on request.

Manufacturer:

