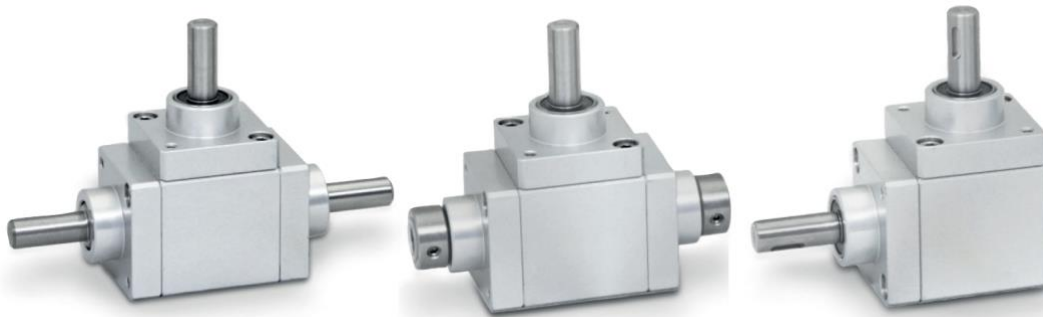


# Datasheet



- 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

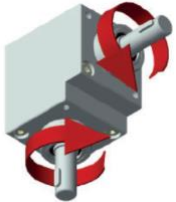




Dimensions	overall, see section: versions and dimensions	
Diameter	Ø 10 mm (standard), 14 mm (optional); on request	
Shaft	Ø 10 mm (Standard), 12 und 14 mm (optional);	
Hollow shaft	on request in version A, B, C	
Length	Hollow shaft	16 mm <u>effective length</u> , 20 mm <u>construction dept</u> (standard)
	Shaft	25 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		
	300 g	with 2 outputs
	400 g	with 3 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 <sup>1)</sup>		
	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	12 Nm	
Axle load	Radial load	25 kg
	Axial load	2,5 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°	





<sup>1)</sup> Gear ratios of 1:2 and 2:1 are only available with spiral bevel gears.



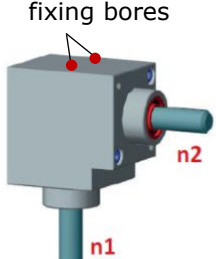
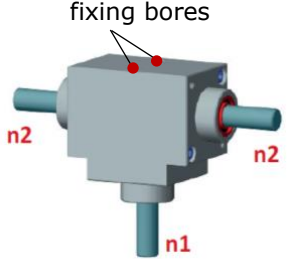


To choose the most suitable gearbox, please refer to the following tables of technical characteristics, efficiency diagrams, as well as the corresponding versions with dimension drawings of the gearboxes.

# 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	Spiral gearboxes	
			
<b>Straight bevel gears</b>	<b>Spiral bevel gears</b>	with 2 shafts	with 3 shafts
Spiral gearboxes (Fig. 2) achieve higher precision, silent operation and enable 30% higher efficiency. Gear ratios of 1:2 and 2:1 are only available with spiral bevel gears.			

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 $n1 = 1.000 \text{ 1/min}$ $n2 = 500 \text{ 1/min}$ $i = 2$	* 2:1 in multiplying $n1 = 1.000 \text{ 1/min}$ $n2 = 2.000 \text{ 1/min}$ $i = 0,5$ * (not available in version D)
The ratio (Fig. 5 and 6) and configuration is determined by the <b>n1</b> shaft (which is always shown on the opposite side of the fixing bores), the others shaft following clockwise (Fig. 3 and 4).			



For use in continuous operation, please see the Model 66/5UC.

# Datasheet

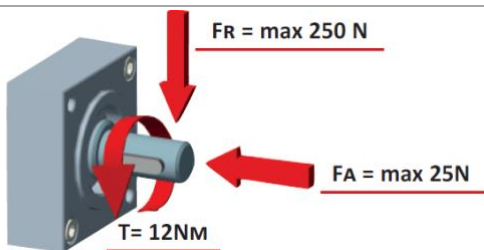
## Loads

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

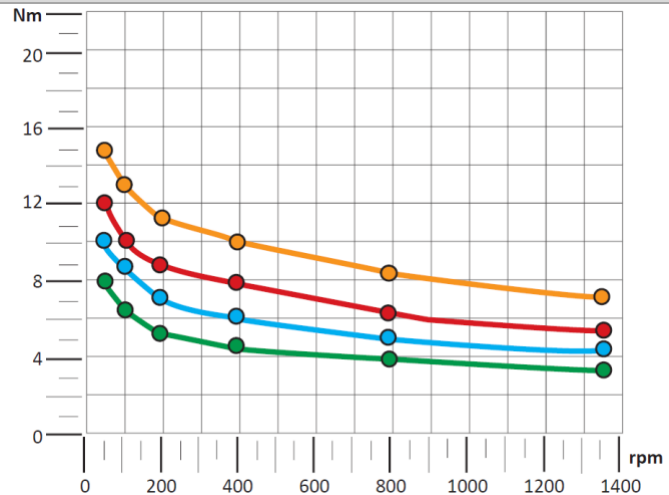
# Datasheet

## 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
12	8	15,6	10,4	50
10,2	6,8	13,2	8,8	100
9	5,8	11,7	7,5	200
8	4,9	10,4	6,3	400
6,8	4,1	8,8	5,3	800
5,5	3,5	7,1	4,5	1400

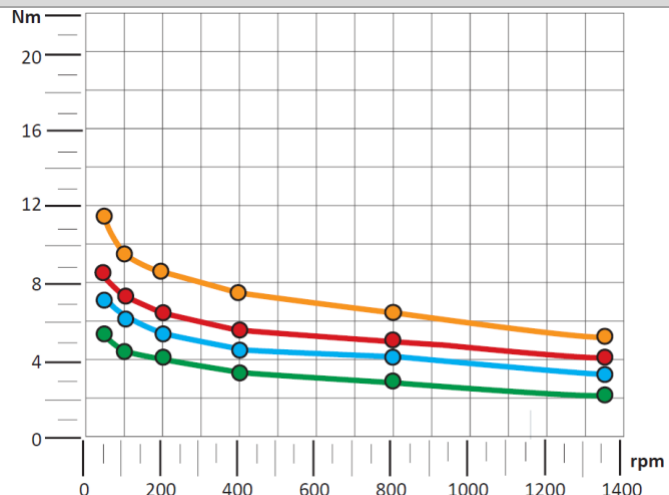
Efficiency - Leistung = 90%



### 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
8,9	5,5	11,6	7,2	50
7,5	4,7	9,7	6,1	100
6,7	4,1	8,7	5,3	200
5,9	3,7	7,7	4,8	400
5	3,1	6,5	4	800
4,1	2,5	5,3	3,2	1400

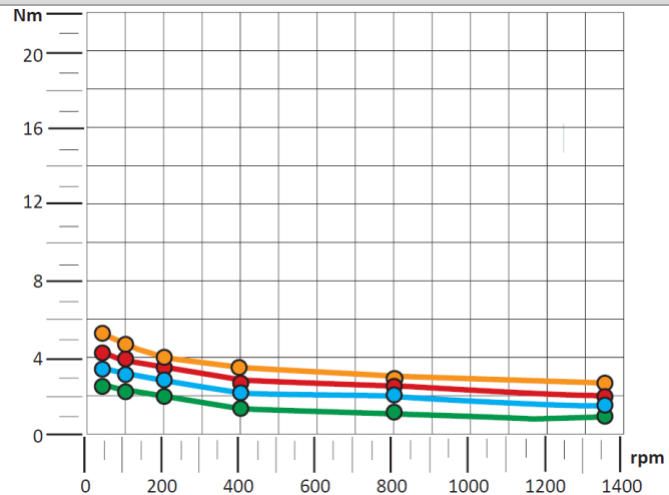
Efficiency - Leistung = 90%



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

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

Efficiency - Leistung = 90%



# Datasheet

## Glossary

F <sub>R</sub>	Radial load
F <sub>A</sub>	Axial load
R	Force
T	Torque
T <sub>M</sub>	Maximum torque
T <sub>R</sub>	Recommended torque
T <sub>A</sub>	Actual torque
T <sub>O</sub>	Output torque
T <sub>I</sub>	Input torque
P <sub>n</sub>	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

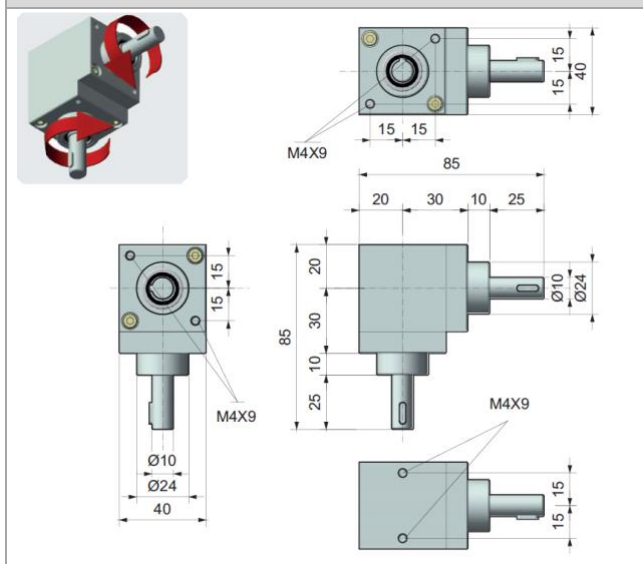
## Versions with dimension drawings

### Available outputs

V = shaft	H = hollow shaft	D = through hollow shaft (only for version D)

All dimensions in mm

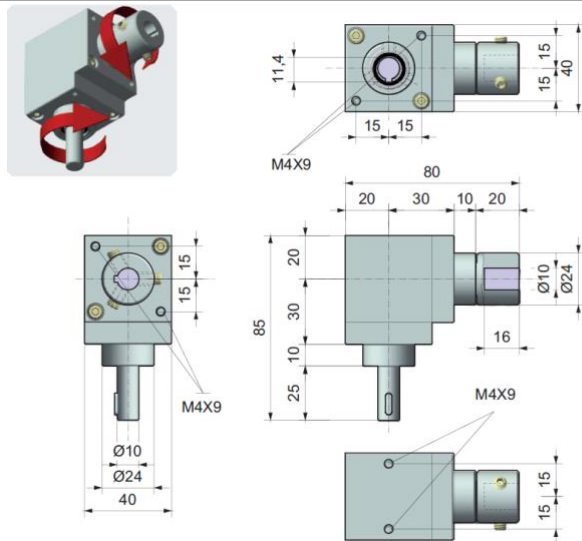
### Version A V-V shaft-shaft



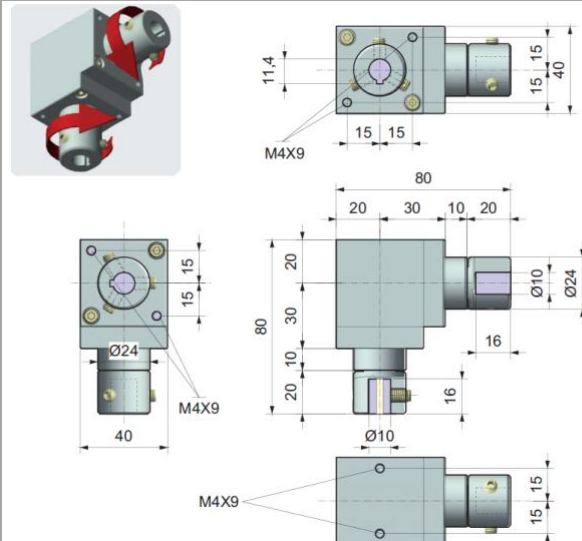




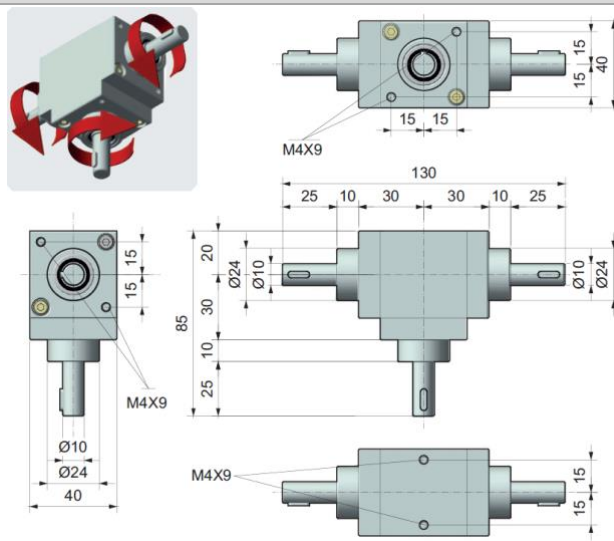
**Version A V-H shaft-hollow shaft**



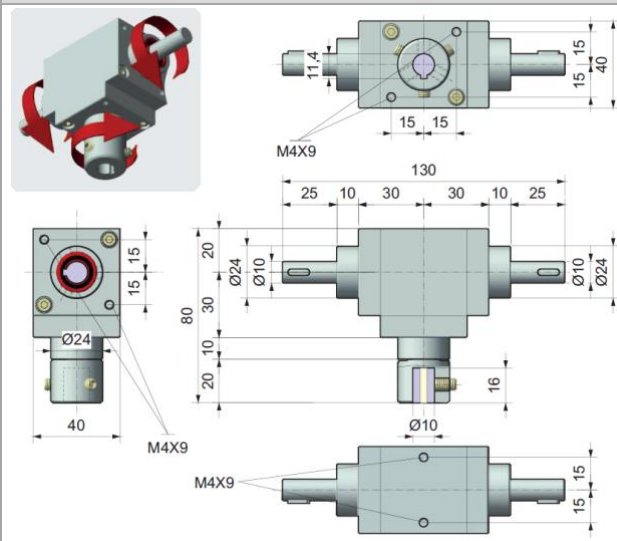
**Version A H-H hollow shaft-hollow shaft**



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



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





<p><b>Version C V-V-V</b> shaft-shaft-shaft (opposite rotation)</p>	<p><b>Version C V-H-H</b> shaft-hollow shaft-hollow shaft (opposite rotation)</p>
<p><b>Version C H-V-V</b> hollow shaft-shaft-shaft (opposite rotation)</p>	<p><b>Version C H-H-H</b> 3 x hollow shaft (opposite rotation)</p>



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# Datasheet

## 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



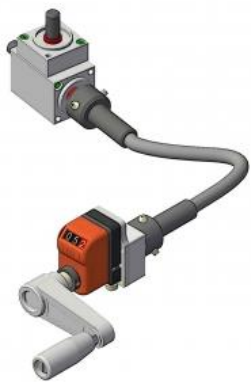

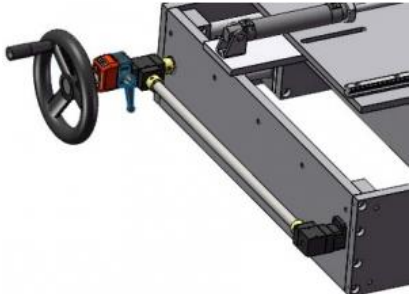
Transmitting the rotary motion, direct connection via rigid shaft.

### 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.

# Datasheet

Further applications		
		
Transmitting the rotary motion, connection via shaft block flange with flexible shaft to the coupling, and position indicator with crank handle.	Transmitting the rotary motion, direct connection via rigid shaft to the coupling and position indicator with handwheel.	



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.

# Datasheet

## Ordering example

**Type** 66/5 - - - A - 1 - V10-H10

### Gearbox <sup>1)</sup>

- = 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 <sup>1)</sup>

- 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 <sup>2)</sup>

- 10 = Ø 10 mm (standard);
- = Ø 12 und 14 mm (optional); on request in version A, B, C

### Length shaft <sup>2)</sup>

- Shaft: 25 mm (standard)
- Hollow shaft: 16 mm effective length, 20 mm construction dept (standard);



- <sup>1)</sup> Gear ratios of 1:2 and 2:1 are only available with spiral bevel gears.
- <sup>2)</sup> Further lengths and diameters are available on request.

Manufacturer:



The manufacturer reserves the right to make changes to the products that it deems necessary for their improvement without prior notice.