



Vert-X 26

Applications

- Agricultural machine
- Forklifter
- Platformer

Features

- High range of electronic and mechanic moduls
- Compatible to market standards
- Fully potted electronics with high-end resin (two-chamber-system)
- Custom output characteristics



- Custom version on request
- 5V interface output range within 2% ... 98% Ub possible
- Contactless measuring method
- Full redundancy available

Errors and omissions excepted. Subject to change without notice. / State: 09.07.18

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Sensor principle		MH-C	MH-C2
General electrical data			
Measuring range	°	0 ... 360	0 ... 360
Indep. linearity	% of meas. range ±1		±0.2
Max. hysteresis	°	0.2	0.2
Resolution	bit	12	16
Max. repeatability	°	0.1	0.1
Reverse polarity protection of power supply		yes	yes
Redundancy feasible		yes	yes
Electrical connection		Connector	Connector
5V / 10 ... 90% Ub			
Sample rate fast mode	kHz	(5)	-
Sample rate slow mode	kHz	1.66	-
System propagation delay fast mode	µs	(800)	-
System propagation delay slow mode	µs	4600	-
Max. temperature coefficient of the output signal	ppm/K	50	-
MTTFd / MTBF	years	668 / 668	-
Power supply voltage	VDC	5 (±10%)	-
Current consumption without load (typ.) fast mode	mA	(14)	-
Current consumption without load (typ.) slow mode	mA	9	-
Min. ohmic load at output	kOhm	10	-
Max. capacitive load at output	nF	100	-
24V / 0.5 - 4.5V			
Sample rate fast mode	kHz	(5)	-
Sample rate slow mode	kHz	1.66	-
System propagation delay fast mode	µs	(800)	-
System propagation delay slow mode	µs	4600	-
Max. temperature coefficient of the output signal	ppm/K	100	-
MTTFd / MTBF	years	240 / 240	-
Power supply voltage	VDC	8 ... 35	-
Current consumption without load (typ.) fast mode	mA	(19)	-
Current consumption without load (typ.) slow mode	mA	14	-
Min. ohmic load at output	kOhm	10	-
Max. capacitive load at output	nF	100	-
24V / 4 - 20mA			
Sample rate fast mode	kHz	(5)	-
Sample rate slow mode	kHz	1.66	-
System propagation delay fast mode	µs	(800)	-
System propagation delay slow mode	µs	4600	-
Max. temperature coefficient of the output signal	ppm/K	100	-
MTTFd / MTBF	years	185 / 185	-
Power supply voltage	VDC	16 ... 35	-
Current consumption without load (typ.) fast mode	mA	(19)	-
Current consumption without load (typ.) slow mode	mA	14	-
Ohmic load at output	kOhm	0 ... 0.5	-
Max. capacitive load at output	nF	100	-



Vert-X 26

Sensor principle		MH-C	MH-C2
General electrical data CAN			
Sample rate	kHz	-	0.5
Max. temperature coefficient of the output signal	ppm/K	-	25
MTTFd / MTBF	years	-	135 / 135
Power supply voltage	VDC	-	8 ... 35
Current consumption without bus load (typ.)	mA	-	30 (per channel)
24V / CANopen			
Bus interface		-	ISO/DIS 11898-2
CANopen communication according to CiA		-	Standard DS-301 V 4.02
Device profile		-	DS-406, V 3.1, Enc. class C2
Default Node-ID (single)		-	16 (program. 1 ... 127)
Default Node-ID's (redundant)		-	16 & 17 (program. 1 ... 127)
Default bitrate	kBit/s	-	125
24V / J1939			
Bus interface		-	ISO/DIS 11898-6
CAN communication according to SAE		-	Standard J1939_201308
		-	Standard J1939_201106
Default preferred address (single)		-	128*
Default preferred address (redundant)		-	128 & 129*
Default bitrate	kBit/s	-	250
* arbitrary address capable			
Mechanical data			
Mechanical range	°	360 (cont.)	360 (cont.)
Protection class		IP68 / IP69K	IP68 / IP69K
Max. starting torque at specified protection class (slide bearing)	Ncm	3	3
Max. starting torque at specified protection class (ball bearing)	Ncm	0.5	0.5
Max. rotating speed (slide bearing)	rpm	120	120
Max. rotating speed (ball bearing)	rpm	6000	6000
Min. life (slide bearing)	movements	50 Mio.	50 Mio.
Min. life (ball bearing)	movements	360 Mio.	360 Mio.
Max. permitted axial shaft load (slide bearing / ball bearing)	N	10 / 30	10 / 30
Max. permitted radial shaft load (slide bearing / ball bearing)	N	10 / 40	10 / 40
Operating & storage temperature (5V supply)	°C	-40 ... +125*	-
Operating & storage temperature (24V supply)	°C	-40 ... +85	-40 ... +85
EN 60068-2-6, Vibration (Amax = 0.75mm, f = 5...2000Hz)	g	20	20
EN 60068-2-27, Shock	g	50	50
* +130°C / 1h			
Standards			
EN 55011, Emission radiated (30...230MHz)	dB(µV/m)	max. 30 (cl. B)	max. 40 (cl. A)
EN 55011, Emission radiated (230...1000MHz)	dB(µV/m)	max. 37 (cl. B)	max. 47 (cl. A)
EN 55011, Emission conducted (0.15...0.5MHz)	dB(µV)	max. 56 ... 46 (cl. B)	max. 66 (cl. A)
EN 55011, Emission conducted (0.5...30MHz)	dB(µV)	max. 50 (cl. B)	max. 60 (cl. A)
EN 61000-4-2, ESD (contact discharge / air discharge)	kV	±4 / ±8	±4 / ±8
EN 61000-4-3, Immision HF rad. (80...1000MHz/1.4...2.7GHz)	V/m	100	100
EN 61000-4-4, Burst (on all lines)	kV	±1	±1
EN 61000-4-5, Surge (lines to ground)	kV	±1	±1
EN 61000-4-6, Immision HF conducted (0.15...80MHz)	Vemk	10	10
EN 61000-4-8, Immision magnetic field (50Hz)	A/m	300	300
EN 60393-1, Insulation resistance (500VDC, 1bar, 2s)	GOhm	20	20
EN 60393-1, Dielectric strength (VAC, 50Hz, 1min, 1bar)	kV	1	1

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Vert-X 26

Ordering code

- 5V / 10 ... 90% Ub
- 24V / 0.5 - 4.5V
- 24V / 4 - 20mA

		Output characteristics	
	Positive gradient CW	Standard	1
	Positive gradient CCW	Optional	2
	Redundant, positive gradient CW	Optional	3
	Redundant, positive gradient CCW	Optional	4
	Redundant, crossed signal curves	Optional	5
		Output signal	
	(24V supply) 0,5VDC ... 4,5VDC	Standard	2
	(5V supply) 10% ... 90% Ub	Standard	2
	(5V supply) x% ... y% Ub (within 2 ... 98%)	Optional	3
	4mA ... 20mA	Standard	5
		Power supply voltage	
	24VDC	Standard	1
	5VDC	Standard	2
		Electrical connection	
	S	Standard	Connector
		Definition of the connector	
	S3	Standard	AMP Superseal 3pole
	D6	Standard	Deutsch DTM04 6pole
	T6	Standard	Deutsch DT04 6pole
	Q6	Standard	AMP MQS 6pole
Vert-X	2	6	3
	1	s	7
	3	6	2
	2	2	1
	S	Q	6
		Electrical angle	
	36	Standard	Electrical angle 360°
	xx	Optional	10 to 35 ; Declaration in 10° steps
	99	Optional	Special angle
		Sensor principle	
	7		MH-C
		Protection	
	r	Optional	Guide ring ø22mm
	s	Optional	Protection cap
		Shaft	
	1	Standard	6mm shaft D-shape
	8	Optional	6mm shaft D-shape ; lever mounted
	9	Optional	Special shaft
		Mechanical version	
	261	Standard	Fastening lug housing ; pilot diameter 50mm ; slide bearing
	262	Standard	Fastening lug housing ; pilot diameter 50mm ; ball bearing
	263	Standard	Fastening lug housing ; pilot diameter 32mm ; slide bearing
	264	Standard	Fastening lug housing ; pilot diameter 32mm ; ball bearing
	269	Optional	Special housing

	MH-C	MH-C2
Options general		
Custom shaft design	X	-
Sample rate in fast mode	X	-
Special electrical angle within 30 to 360° (ex factory)	X	-
Full redundancy available	X	-
Indep. linearity of ± 0.3% measuring range	X	-
Options 5V / 10 ... 90% Ub		
Interface x% ... y% Ub (within 2% ... 98% Ub)	X	-

Options (on request)

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Ordering code
 - 24V / CANopen
 - 24V / J1939

CiA approved **CANopen**
certified

CAN characteristics	
CAN-High-In ; CAN-High-Out ; CAN-Low-In ; CAN-Low-Out	Optional 3
CAN-High ; CAN-Low ; R _{CAN}	Optional 4
CAN-High ; CAN-Low	Standard 5
Redundant 1-Bus / CAN-High-In ; CAN-High-Out ; CAN-Low-In ; CAN-Low-Out	Optional A
Redundant 1-Bus / CAN-High ; CAN-Low ; R _{CAN}	Optional B
Redundant 1-Bus / CAN-High ; CAN-Low	Standard C
Special version	Optional 9

Output signal	
CANopen Encoder Profile 406 (C2)	Standard 3
CAN SAE J1939	Standard B

Power supply voltage	
24VDC	Standard 1

Electrical connection	
S	Standard Connector

Definition of the connector	
D6	Standard Deutsch DTM04 6pole
T6	Standard Deutsch DT04 6pole
Q6	Standard AMP MQS 6pole

Vert-X 2 6 3 1 s 8 3 6 1 3 5 S Q 6

Electrical angle	
36	Standard Electrical angle 360°

Sensor principle	
8	MH-C2

Protection	
r	Optional Guide ring ø22mm
s	Optional Protection cap

Shaft	
1	Standard 6mm shaft D-shape
8	Optional 6mm shaft D-shape ; lever mounted
9	Optional Special shaft

Mechanical version	
261	Standard Fastening lug housing ; pilot diameter 50mm ; slide bearing
262	Standard Fastening lug housing ; pilot diameter 50mm ; ball bearing
263	Standard Fastening lug housing ; pilot diameter 32mm ; slide bearing
264	Standard Fastening lug housing ; pilot diameter 32mm ; ball bearing
269	Optional Special housing

	MH-C	MH-C2
Custom shaft design	-	X
Full redundancy available	-	X
CAN integrated bus termination resistor (120Ω) / R _{CAN}	-	X
Custom bitrate (10 ; 20 ; 50 ; 100 ; 250 ; 500 ; 800 ; 1000 kBit/s)	-	X

Options (on request)

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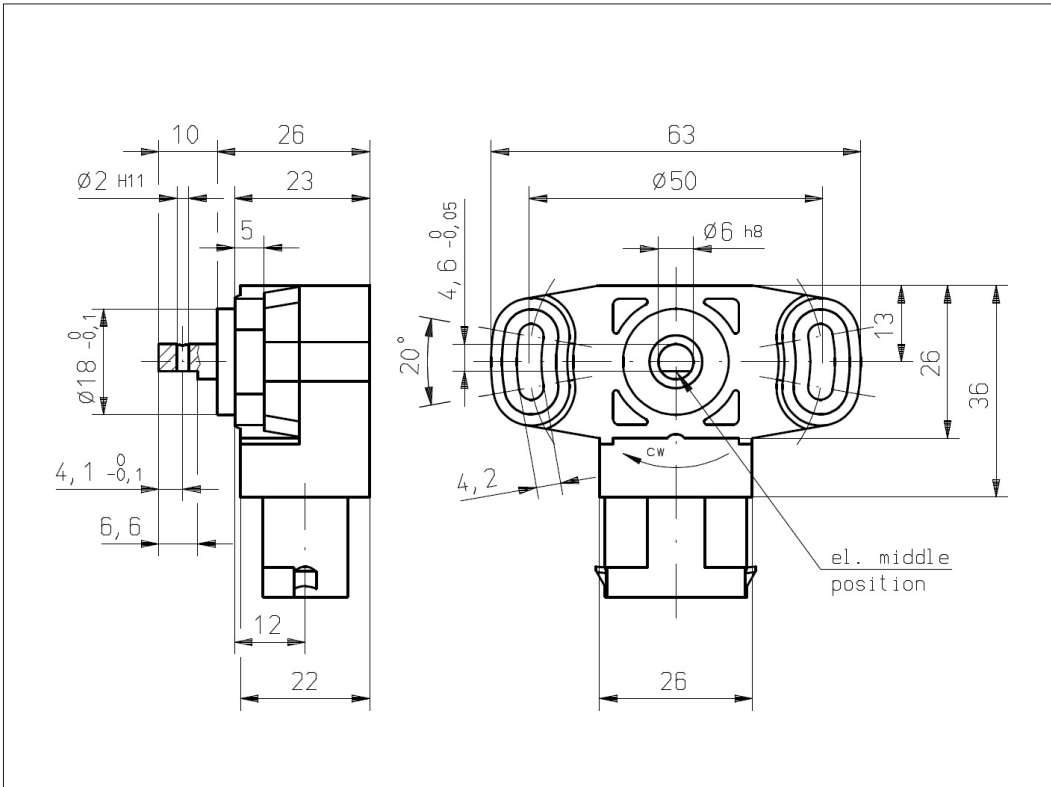
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Vert-X 2611
Vert-X 2621

Accessories (incl.)

- None



Vert-X 2611
Vert-X 2621

Connector

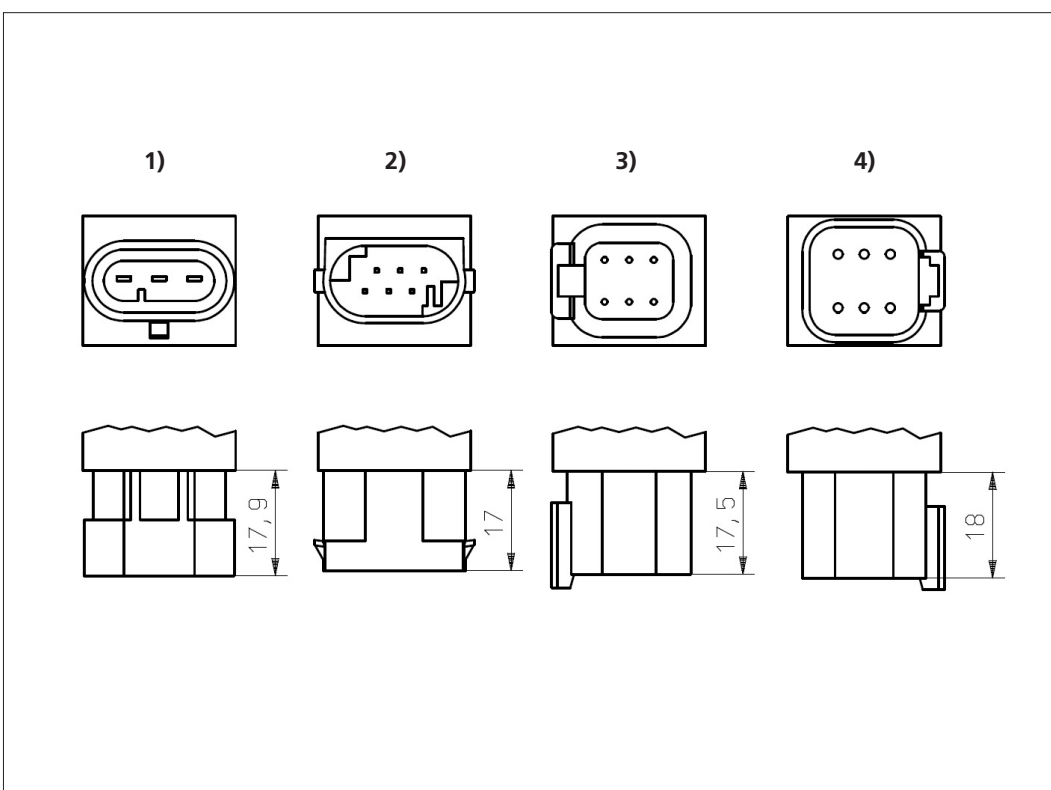
- AMP superseal 3pole ¹⁾
- AMP MQS 6pole ²⁾
- Deutsch DTM04-6P ³⁾
- Deutsch DT04-6P ⁴⁾

Counter Connector

- TE-Nr.: 282087-1 ¹⁾
- AMP-Nr.: 1-967616-1 ²⁾
- Deutsch DTM06-6S ³⁾
- Deutsch DT06-6S ⁴⁾

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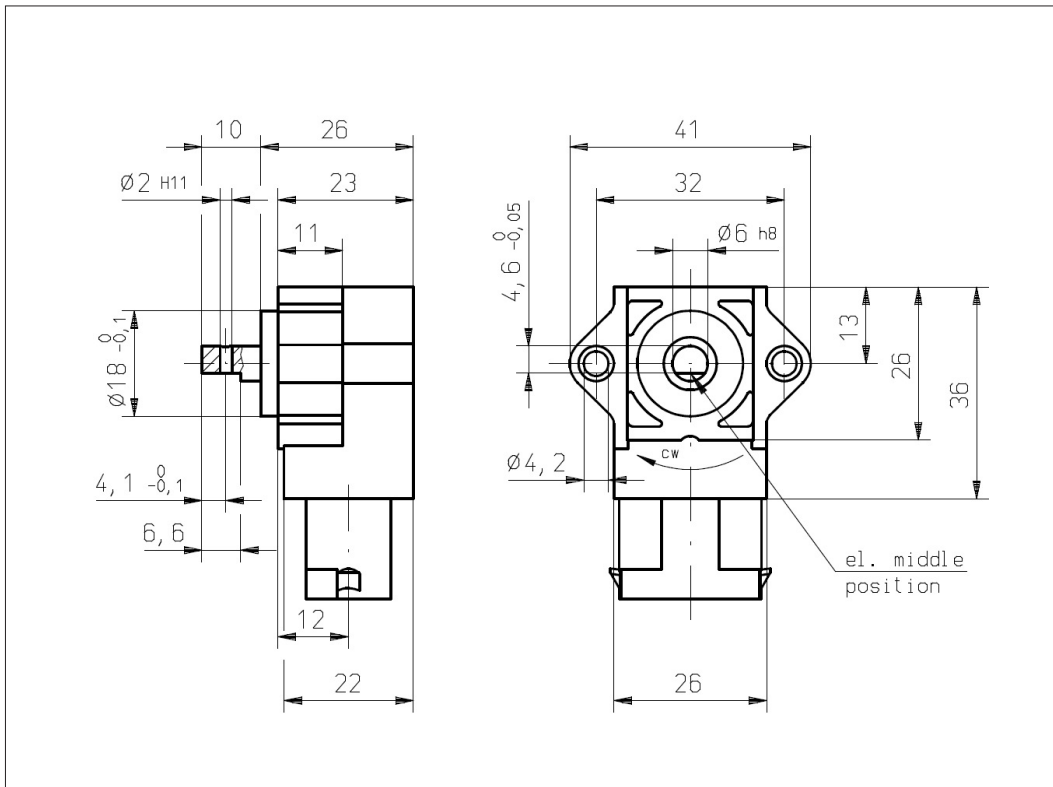




Vert-X 2631
Vert-X 2641

Accessories (incl.)

- None



Vert-X 2631
Vert-X 2641

Connector

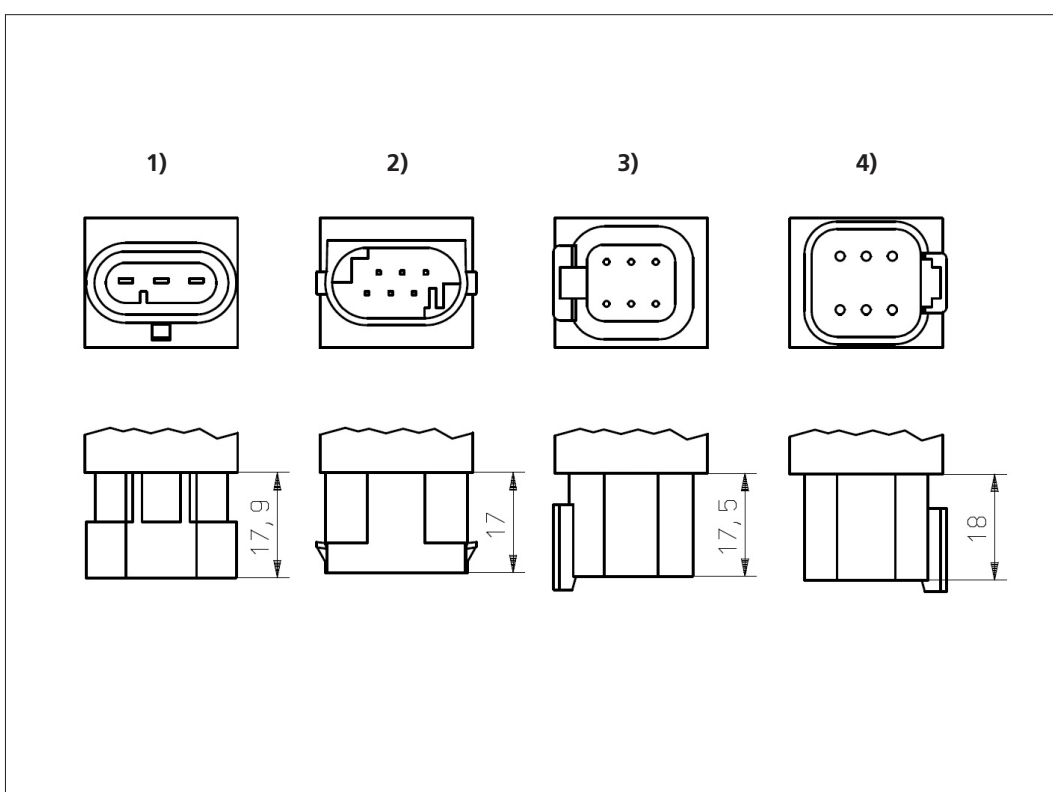
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- AMP MQS 6pole ²⁾
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Counter Connector

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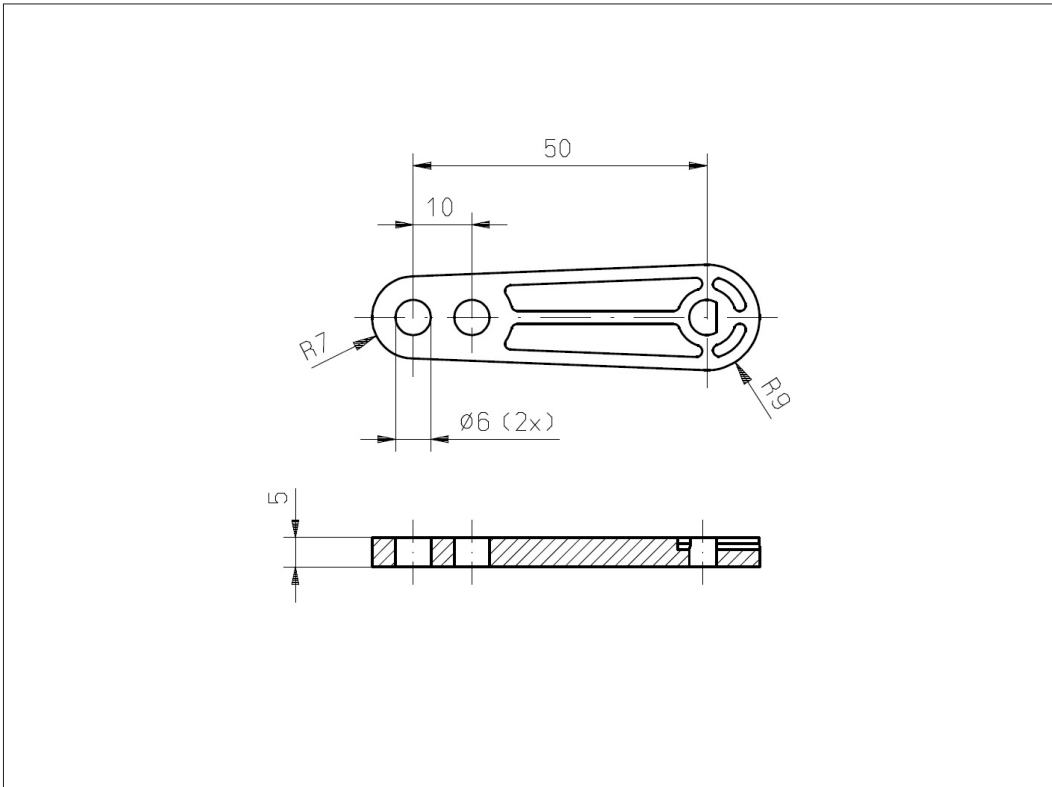




Vert-X 26

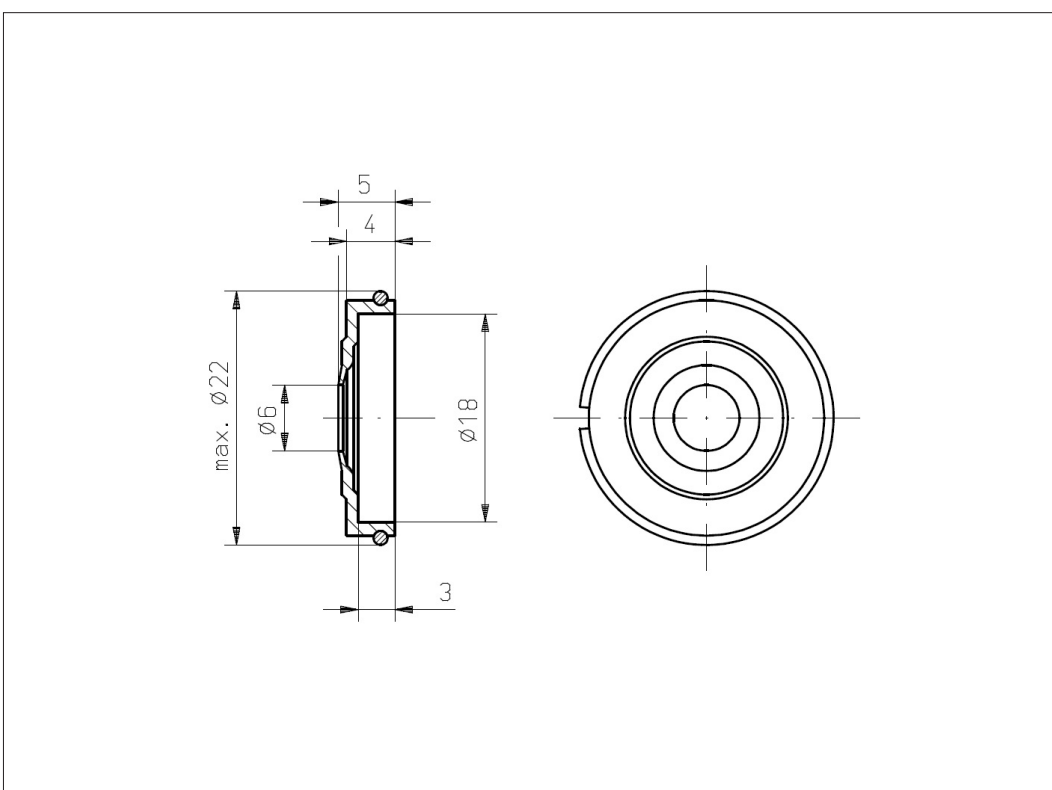
Accessories

- Lever (mounted)



Accessories

- Protection cap (mounted)



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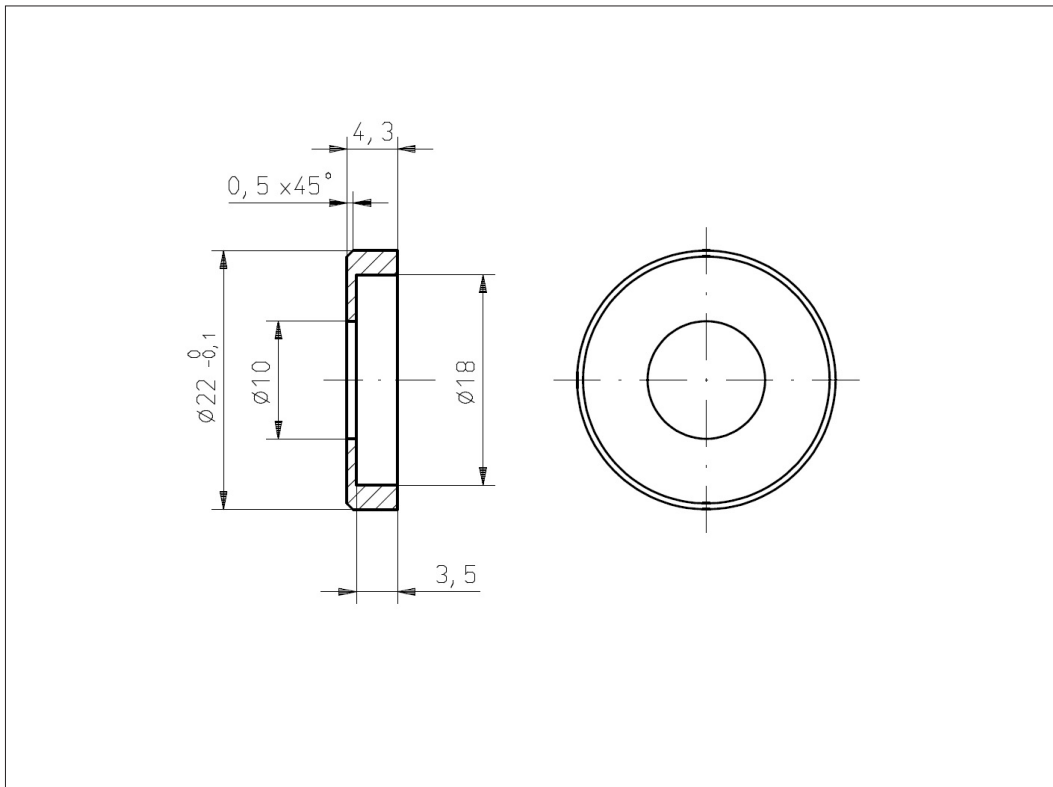
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Accessories

- Guide ring (mounted)



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