Brake Systems

Any questions? Please contact us.

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They keep whatever KTR promises: KTR-STOP® and EMB-STOP

Those who have a special problem do not need a general solution. One for all applications: This may sound good, but cannot always be applied. That is why KTR provides its customers solutions in terms of brakes that are tailor-made for individual demands.

KTR-STOP®: variable braking forces, manifold applications

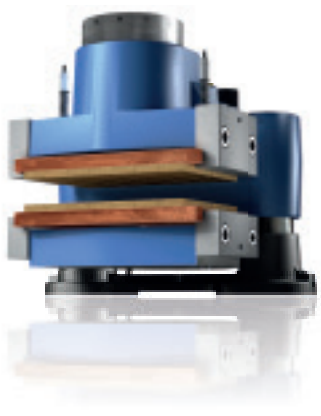
The KTR-STOP® brake system is actually a workaholic. Being a floating caliper brake it is based on the classic disk brake operating reliably, both with storm, iciness and salty sea air. Its resistance to aggressive and rough ambient conditions is not only limited to suitability for offshore applications: Even with the high thermal stress of foundries or the sulphureous air in copper mining KTR-STOP® operates reliably. To make sure it can work very hard under any conditions, it is fully encapsulated, among others, has integrated dirt scrapers and extra wearing rings.
This toughens KTR-STOP®, helps to reduce the operating costs and increase the service life. Thanks to additional guide systems and optimum material utilization - the brake pads can be worn off almost down to the base plate - KTR-STOP® only needs very few and short breaks for maintenance to be ready for operation immediately afterwards. Thus thoroughly a workaholic.

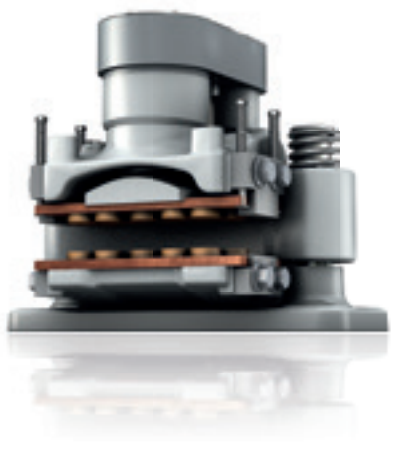
KTR-STOP® NC – definitely a good choice

Playing safe is an obligation in automation technology and in the field of machine tools. New machinery directives meanwhile specify brakes and clamping systems in many applications. KTR reacts promptly to amended demands by developing a plug-in braking and clamping system KTR-STOP® NC which can be retrofitted and which can easily be integrated in existing drives. The additional safety is not only limited to the clamping force and fail-safe operation: As a safety system KTR-STOP® NC compensates for axial load, in this way protecting the drive train from damage. Subject to its multifunctional applicability the passive clamping system is not limited to linear drives, but can be used as a stop system in quite different ranges of machine tools and robotics as well as general engineering. This makes KTR-STOP® NC a good idea for every application.

EMB-STOP: simple, active, unique

EMB-STOP aims high. It feels good at high altitudes and often operates reliably 135 metres above ground - in the huge wind energy plants which it was originally developed for. Different from its hydraulic counterpart EMB-STOP generates its braking force merely electromechanically. By doing without hydraulics maintenance work such as oil change and oil disposal can be done without: This makes EMB-STOP almost maintenance-free.
Meanwhile EMB-STOP has found its way back to earth and water long time ago. EMB-STOP brakes have been used as an efficient and fail-safe system solution in crane construction and mining, materials-handling technology as well as marine and offshore technology. This is not surprising, since they provide for a large contact pressure from 2.5 kN to 1,600 kN. This may increase softly and with control until the maximum braking power has been reached - which is the kind of stop and go treating the material most carefully.





Clamping forces of brake systems

Passive floating caliper brake

Clamping forces [kN]

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900

Hydraulic KTR-STOP®

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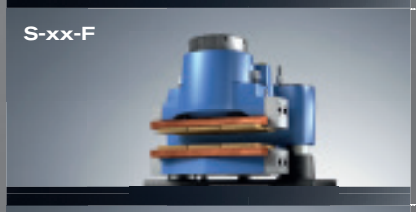

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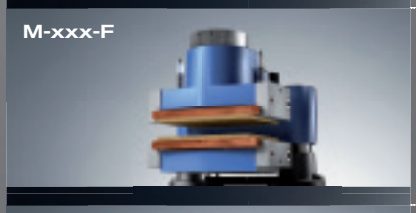

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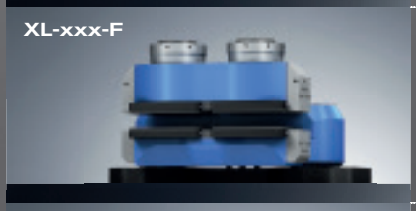

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800 to 1200 [kN]

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Electromechanical EMB-STOP

XS-P-xx-F

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S-P-xx-F

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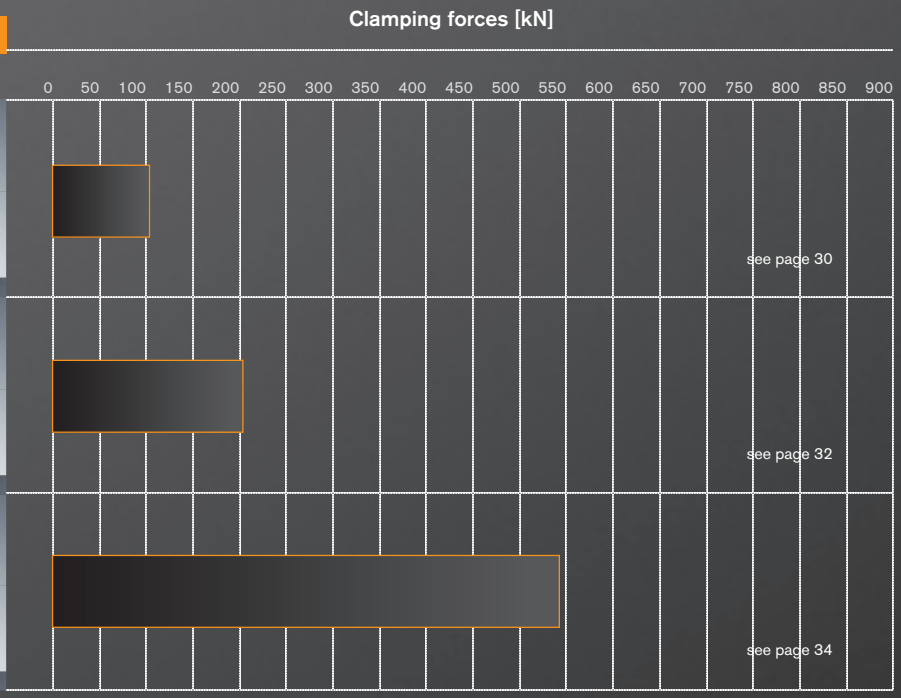
Yaw brakes

Hydraulic KTR-STOP®



Clamping forces of brake systems

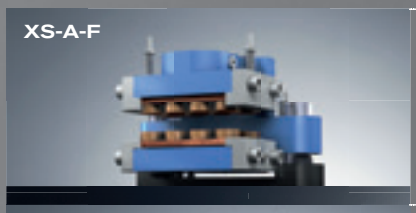
Active floating caliper brake

Clamping forces [kN]

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900

Hydraulic KTR-STOP®

XS-A-F



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S-A-F

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M-A-F

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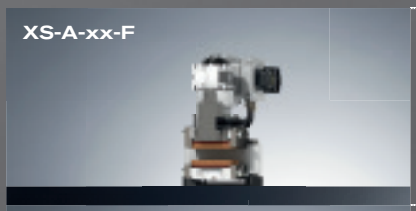
Electromechanical EMB-STOP

XS-A-xx-F



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S-A-xx-F Lever **S-A-xx-F**

S-A-xx-F Lever

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S-A-xx-F

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M-A-xx-F Lever

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L-A-xx-F Lever **L-A-xx-F**

L-A-xx-F Lever

see page 50

L-A-xx-F

see page 56

2L-A-xx-F Lever

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2X L-A-xx-F Lever

800 to 1600 [kN]

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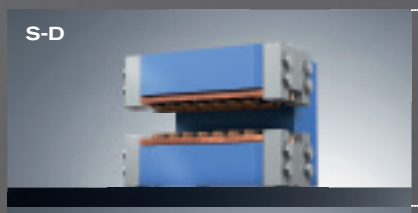
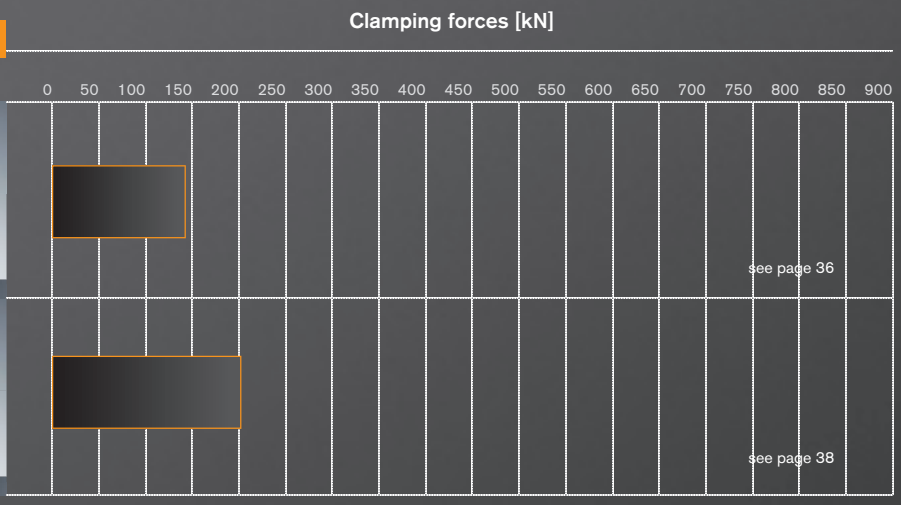
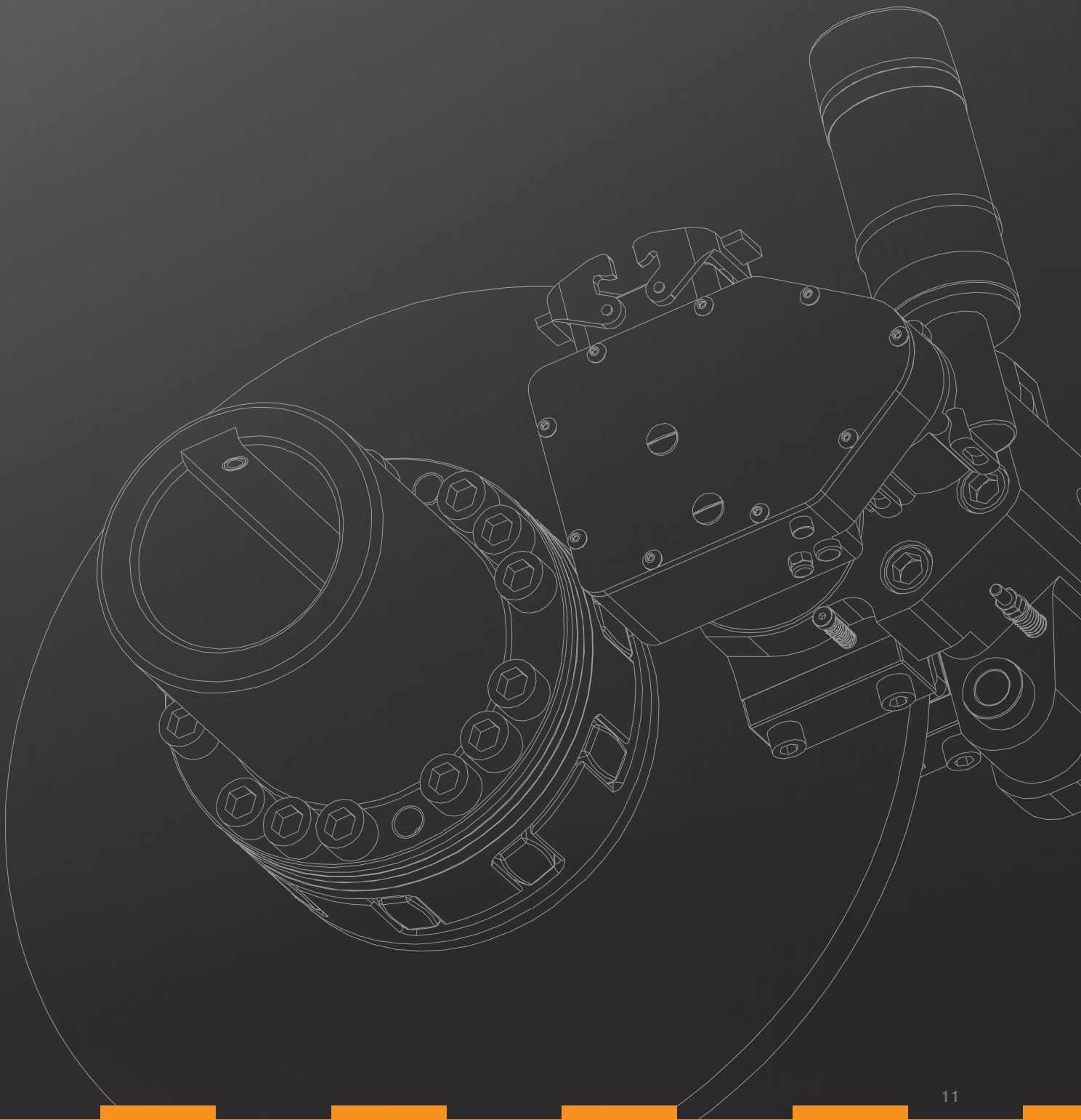
Active fixed caliper brakes

Hydraulic KTR-STOP®







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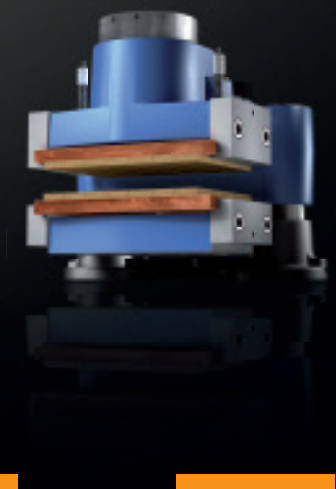
KTR-STOP®



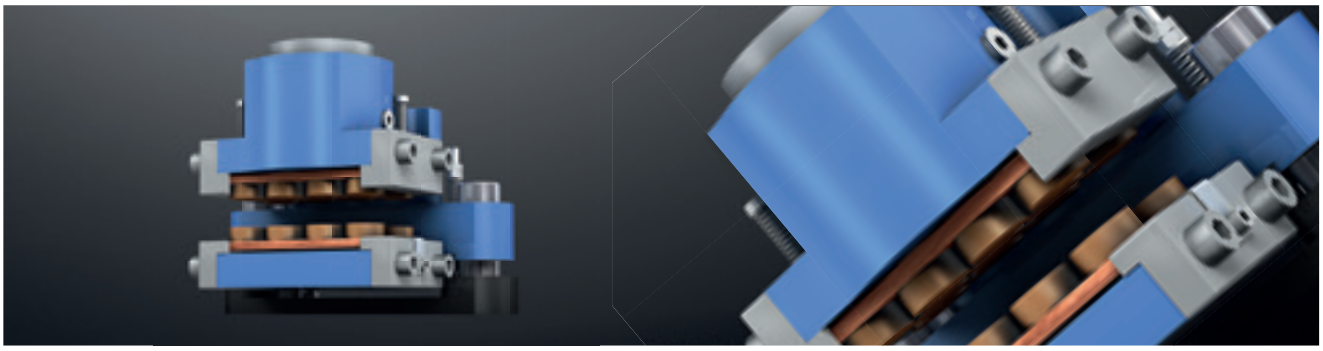
EMB-STOP

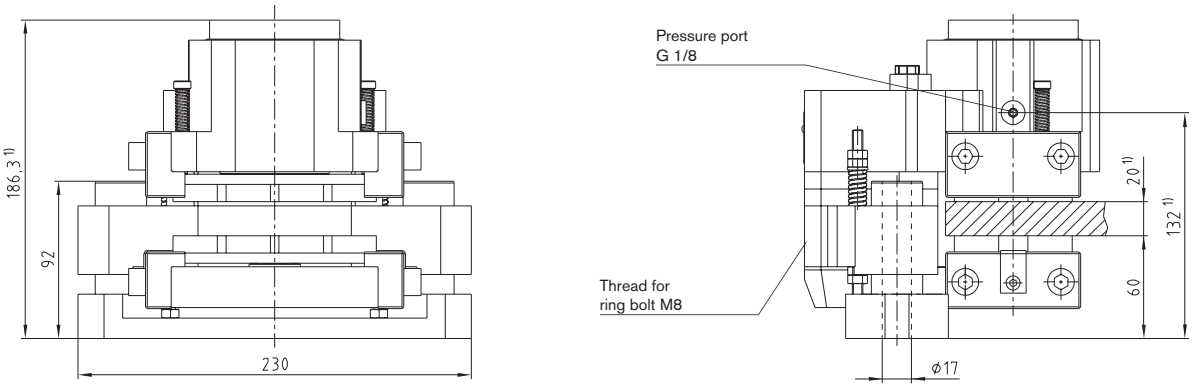
IntelliRamp®

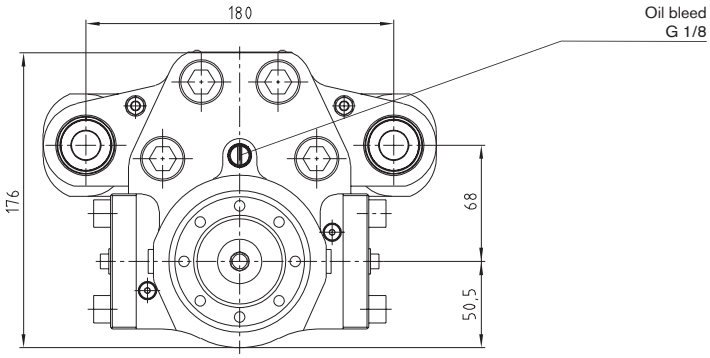
KTR-STOP® NC

KTR-STOP® XS-xx-F
Passive floating caliper brakes

Hydraulic brake system







1) Dimensions and weight depend on thickness of brake disk.

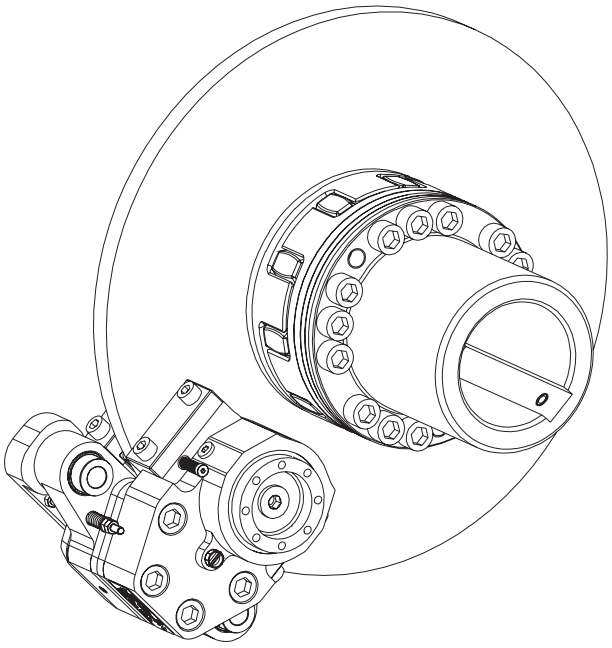
KTR-STOP® XS-xx-F			
Total weight	approx. 20,5 kg	Max. operating pressure	200 bar
Width of brake pad	70 mm	Thickness of brake disk	10 mm - 30 mm
Surface of each brake pad organic	8.000 mm²	Pressure port	G 1/8
powder metal	5.800 mm²	Oil bleed	G 1/8
Max. wear of each brake pad	5 mm	Backlash on axles - towards mounting surface	5 mm
Nominal coefficient of friction 2)	μ = 0,4	Backlash on axles - away from mounting surface	5 mm
Total brake piston surface - complete brake	11 cm²	Min. diameter of brake disk ØD$_A$	300 mm
Volume with 1 mm stroke - complete brake	1,1 cm³	Operating temperature	-20 °C to +50 °C

Types of brakes							
Type of brake 3)	Clamping force F_C [kN]	Power loss 4) [%]	Opening pressure [bar]	Weight 1) [kg]	Braking torque [Nm] with brake disk Ø [mm]		
					315	560	800
KTR-STOP XS-3-F	3	5,5	40	20,5	270	560	850
KTR-STOP XS-6-F	6	6,5	80	20,5	540	1130	1710
KTR-STOP XS-9-F	9	12	130	20,5	820	1700	2570
KTR-STOP XS-12-F	12	11	160	20,5	1090	2270	3420
KTR-STOP XS-15-F	15	8	190	20,5	1370	2840	4280

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.
3) Other types of brakes on request
4) With 1 mm stroke (0.5 mm wear of pad on each side)

Ordering example:

KTR-STOP®	XS	-	6	-	F	A	-	20
KTR brake	Size of brake		Clamping force		Floater	Option		Thickness of brake disk

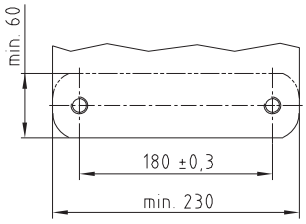


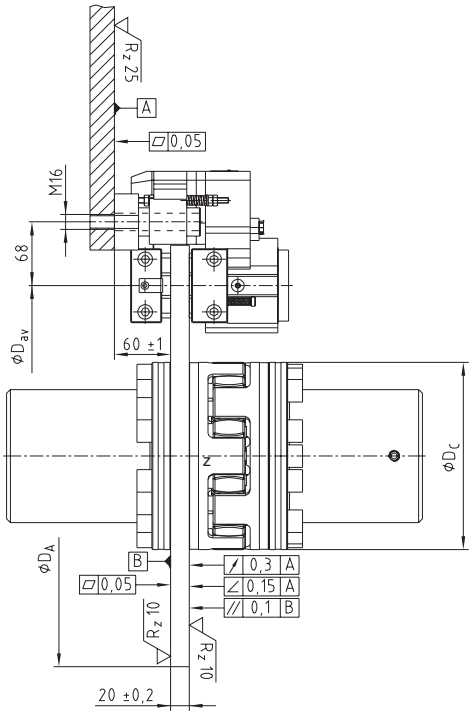
Calculation of brake disk

$$D_{Cmax} = D_A - 195$$

$$D_{av} = D_A - 86$$

Connection dimensions of brake





$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

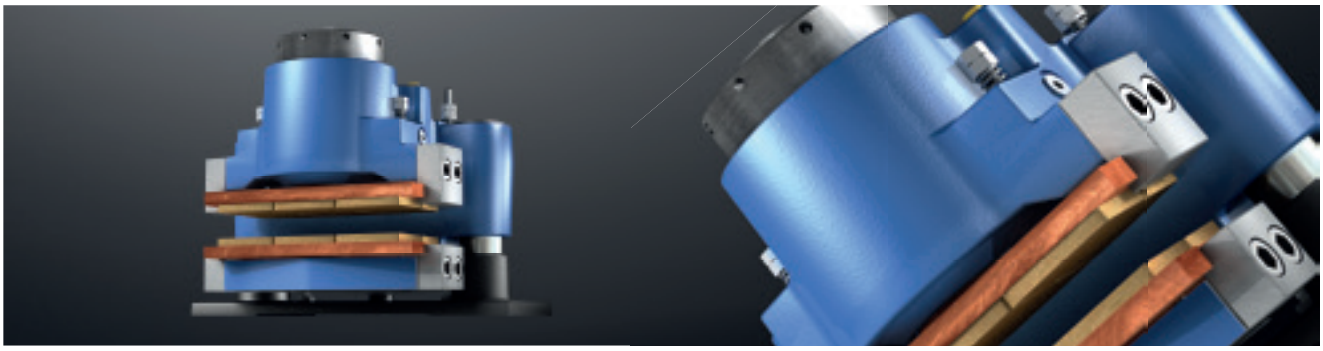
F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

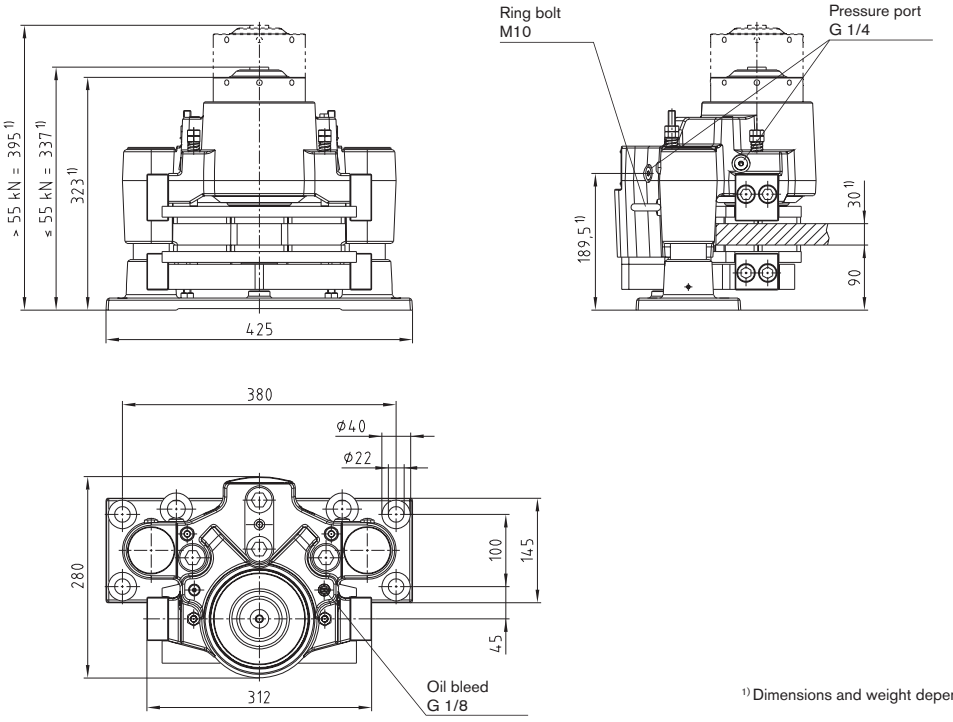
Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® S-xx-F
Passive floating caliper brakes

Hydraulic brake system





1) Dimensions and weight depend on thickness of brake disk.

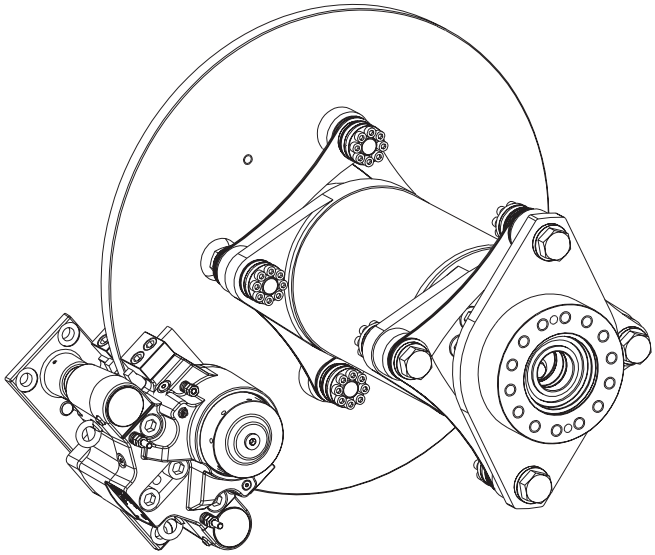
KTR-STOP® S-xx-F			
Total weight	approx. 90 kg - 100 kg 1)	Max. operating pressure	200 bar
Width of brake pad	125 mm	Thickness of brake disk	20 mm - 40 mm
Surface of each brake pad organic	28.700 mm²	Pressure port	G 1/4
powder metal	26.800 mm²	Oil bleed	G 1/8
Max. wear of each brake pad	6 mm	Backlash on axles - towards mounting surface	5 mm
Nominal coefficient of friction 2)	μ = 0,4	Backlash on axles - away from mounting surface	10 mm
Total brake piston surface - complete brake	69 cm²	Min. diameter of brake disk ØD$_A$	500 mm
Volume with 1 mm stroke - complete brake	6,9 cm³	Operation temperature	-20 °C to +50 °C

Bremsentypen							
Type of brake 3)	Clamping force F_C [kN]	Power loss 4) [%]	Opening pressure [bar]	Weight 1) [kg]	Braking torque [Nm] with brake disk Ø [mm]		
					500	710	1000
KTR-STOP® S-20-F	20	4,5	40	90	2900	4600	6900
KTR-STOP® S-40-F	40	6,5	90	90	5900	9200	13900
KTR-STOP® S-60-F	60	7,0	130	100	8800	13900	20800
KTR-STOP® S-80-F	80	5,0	170	100	11800	18500	27800

2) The coefficient of friction each depends on the application or material of the brake, respectively. Please consult with KTR.
3) Other types of brakes on request
4) With 1 mm stroke (0.5 mm wear of pad on each side)

Ordering example:

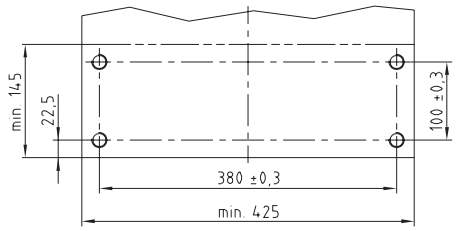
KTR-STOP®	S	-	40	-	F	A	-	30
KTR brake	Size of brake		Clamping force		Floater	Option		Thickness of brake disk

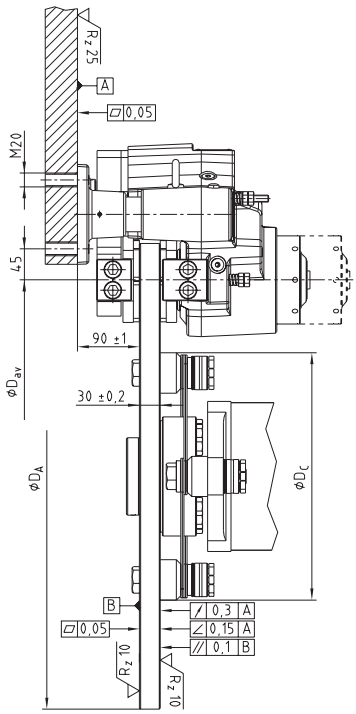


Calculation of brake disk

up to $ØD_A$ = 1000 mm	from $ØD_A$ = 1000 mm to $ØD_A$ = 1800 mm	from $ØD_A$ = 1800 mm
$D_{C\ max.} = D_A - 305$	$D_{C\ max.} = D_A - 295$	$D_{C\ max.} = D_A - 285$
$D_{av} = D_A - 130$	$D_{av} = D_A - 120$	$D_{av} = D_A - 110$

Connection dimensions of brake





$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

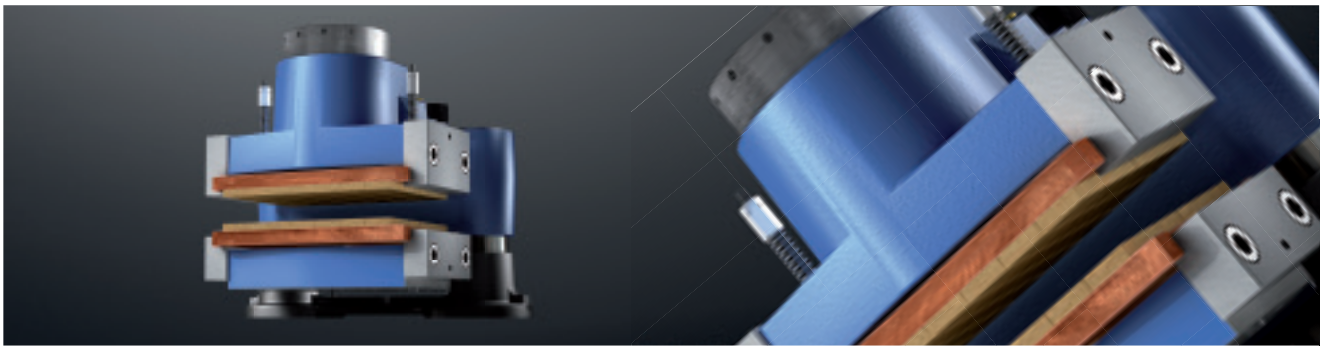
F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

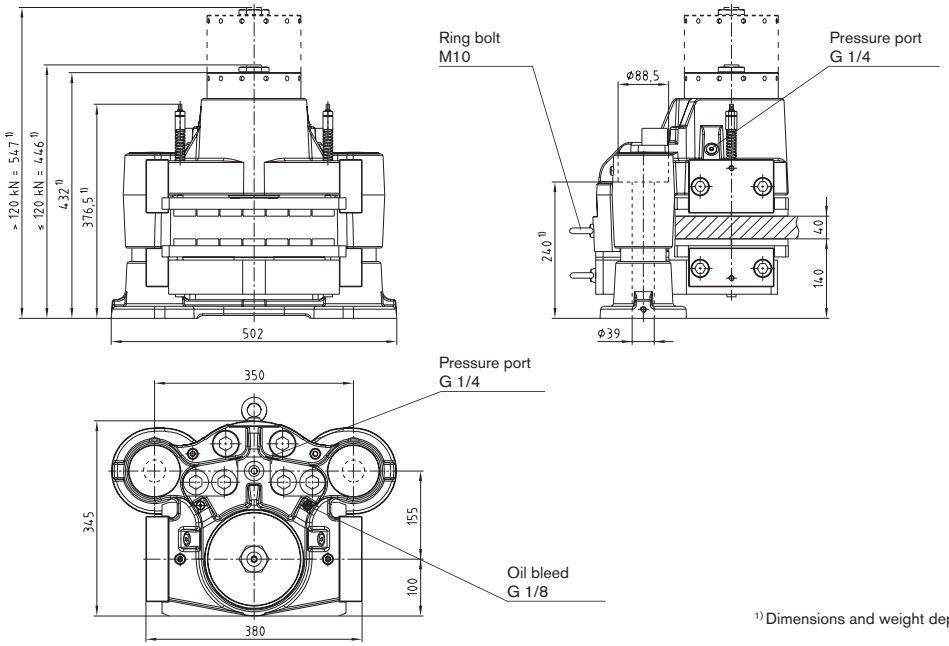
Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® M-xxx-F
Passive floating caliper brakes

Hydraulic brake system





1) Dimensions and weight depend on thickness of brake disk.

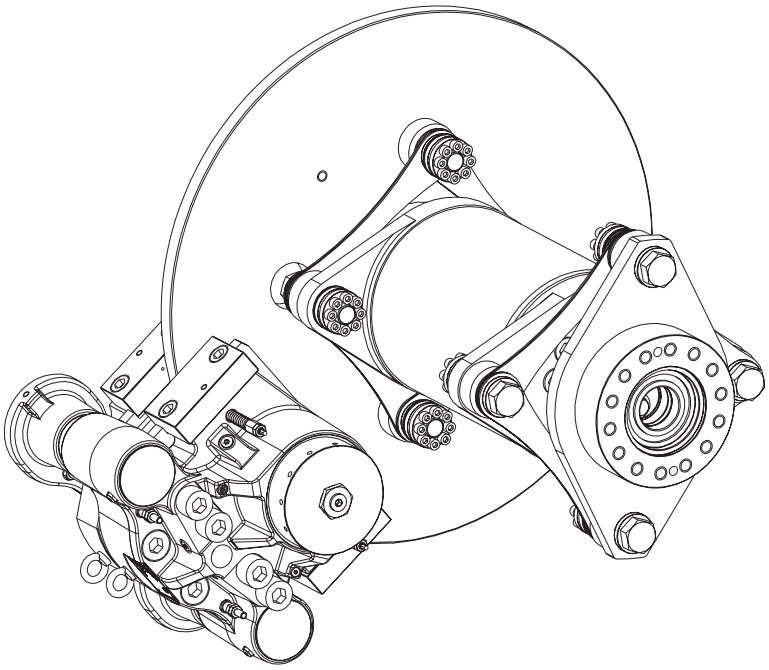
KTR-STOP® M-xxx-F				
Total weight		approx. 200 kg - 212 kg 1)	Max. operating pressure	200 bar
Width of brake pad		200 mm	Thickness of brake disk	25 mm - 50 mm
Surface of each brake pad	organic	57.900 mm²	Pressure port	G 1/4
	Sinter	53.500 mm²	Oil bleed	G 1/8
Max. wear of each brake pad		8 mm	Backlash on axles - towards mounting surface	5 mm
Nominal coefficient of friction 2)		μ = 0,4	Backlash on axles - away from mounting surface	below 120 kN = 10 mm
Total brake piston surface - complete brake		137,4 cm²		above 120 kN = 5 mm
Volume with 1 mm stroke - complete brake		13,74 cm³	Min. diameter of brake disk $ØD_A$	800 mm
			Operation temperature	-20 °C to +50 °C

Bremsentypen							
Type of brake 3)	Clamping force F_C [kN]	Power loss 4) [%]	Opening pressure [bar]	Weight 1) [kg]	Braking torque [Nm] with brake disk Ø [mm]		
					800	1500	2000
KTR-STOP® M-100-F	100	7,0	110	200	24000	52000	72000
KTR-STOP® M-120-F	120	8,5	130	200	28800	62400	86400
KTR-STOP® M-140-F	140	4,5	150	212	33600	72800	100800
KTR-STOP® M-160-F	160	7,0	180	212	38400	83200	115200
KTR-STOP® M-180-F	180	6,0	190	212	43200	93600	129600

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.
3) Other types of brakes on request
4) With 1 mm stroke (0.5 mm wear of pad on each side)

Ordering example:

KTR-STOP®	M	-	100	-	F	A	-	40
KTR brake	Size of brake		Clamping force		Floater	Option		Thickness of brake disk

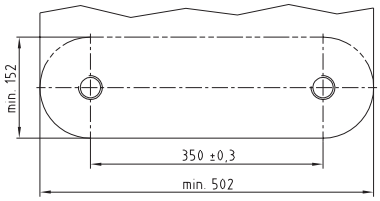


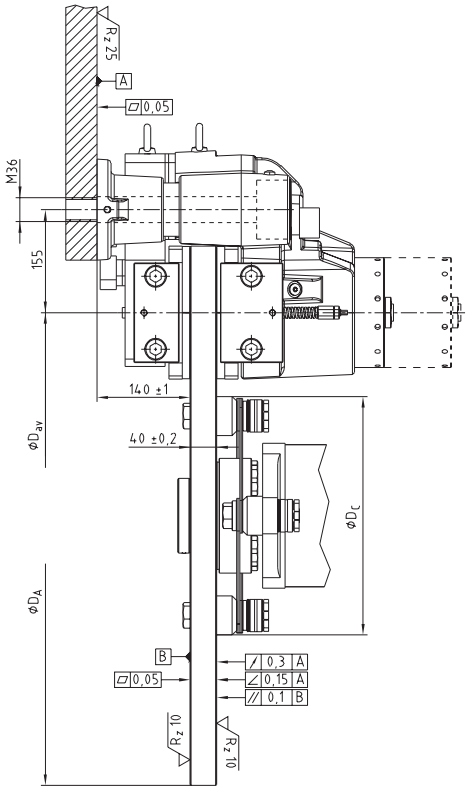
Calculation of brake disk

$$D_{C\ max.} = D_A - 410$$

$$D_{av} = D_A - 200$$

Connection dimensions of brake





$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

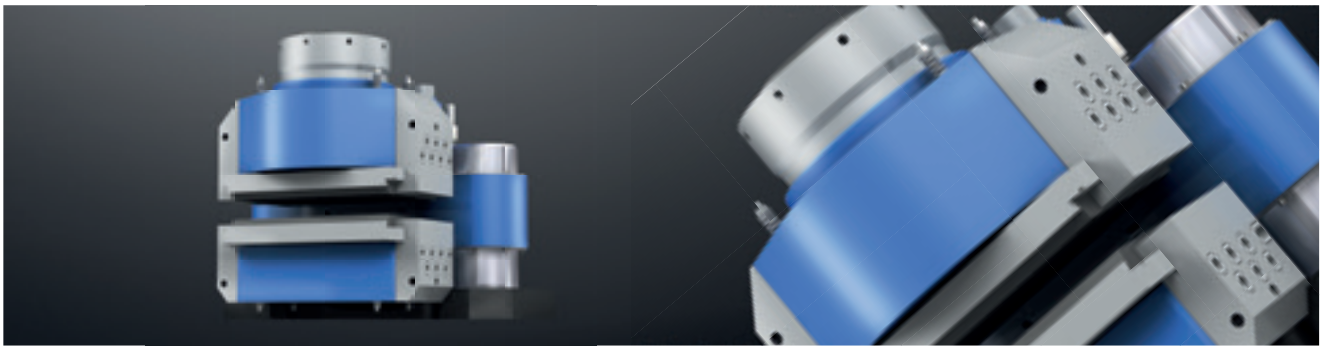
F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

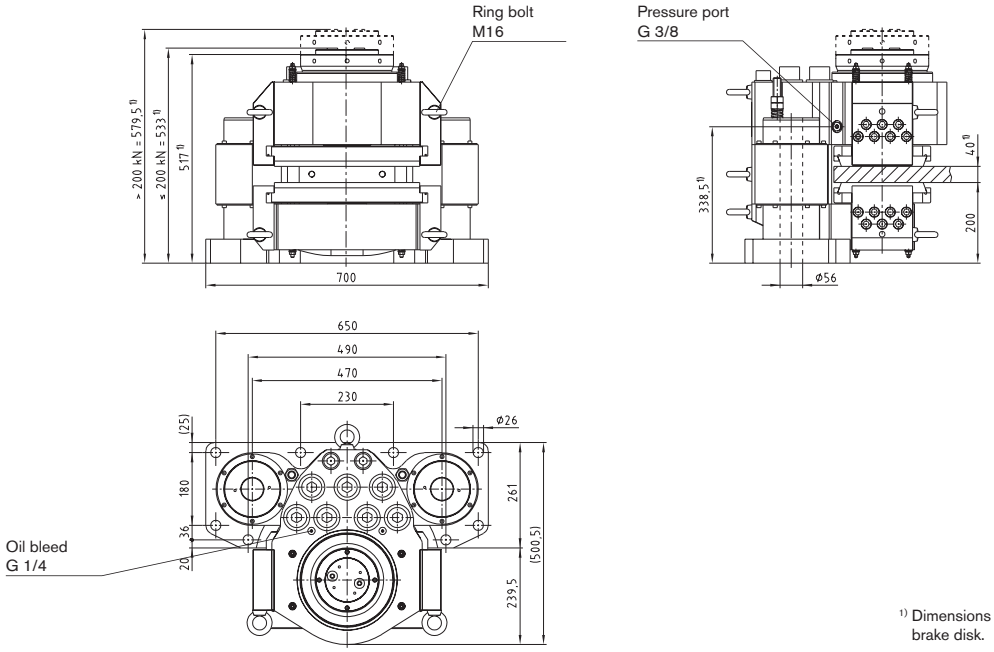
Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® L-xxx-F
Passive floating caliper brakes

Hydraulic brake system





1) Dimensions and weight depend on the thickness of brake disk.

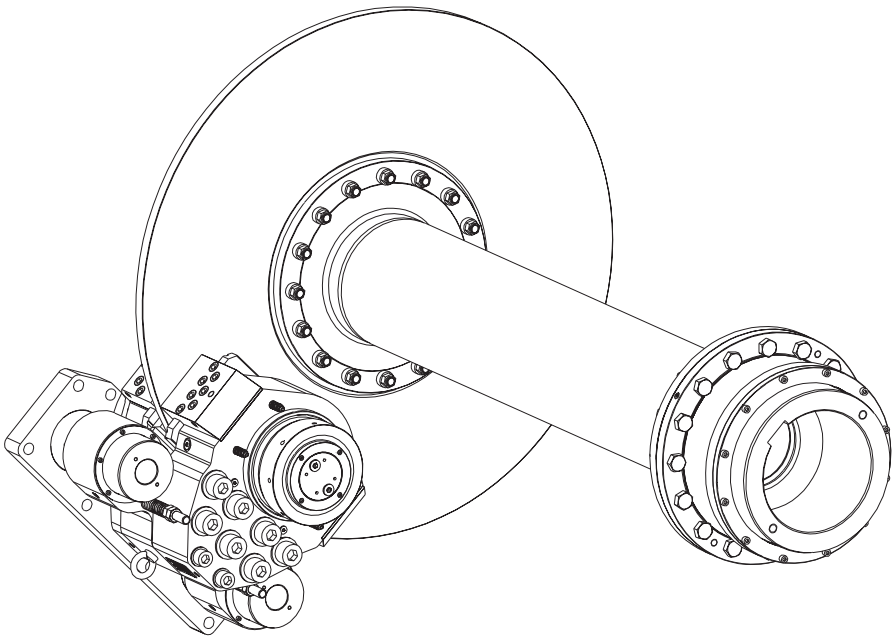
KTR-STOP® L-xxx-F			
Total weight	approx. 585 - 600 kg 1)	Max. operating pressure	200 bar
Width of brake pad	240 mm	Thickness of brake disk	30 mm - 60 mm
Surface of each brake pad (organic/powder metal)	72.900 mm²	Pressure port	G 3/8
Max. wear of each brake pad	6 mm	Oil bleed	G 1/4
Nominal coefficient of friction 2)	μ = 0,4	Backlash on axles - towards mounting surface	5 mm
Total brake piston surface - complete brake	267 cm²	Backlash on axles - away from mounting surface	10 mm
Volume with 1 mm stroke - complete brake	26,7 cm³	Min. diameter of brake disk ØD$_A$	1000 mm
		Operation temperature	-20 °C to +50 °C

Bremsentypen							
Type of brake 3)	Clamping force F_C [kN]	Power loss 4) [%]	Opening pressure [bar]	Weight 1) [kg]	Braking torque [Nm] with brake disk Ø [mm]		
					1000	2000	3000
KTR-STOP® L-150	150	6,0	80	585	46000	106000	166000
KTR-STOP® L-200	200	5,0	110	585	61000	141000	221000
KTR-STOP® L-250	250	6,0	140	600	77000	177000	277000
KTR-STOP® L-300	300	5,0	170	600	92000	212000	332000
KTR-STOP® L-350	350	7,0	190	600	107000	247000	387000

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.
3) Other types of brakes on request
4) With 1 mm stroke (1 mm wear of pad on each side)

Ordering example:

KTR-STOP®	L	-	200	-	F	A	-	50
KTR brake	Size of brake		Clamping force		Floater	Option		Thickness of brake disk

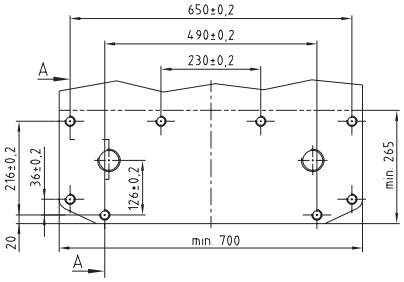


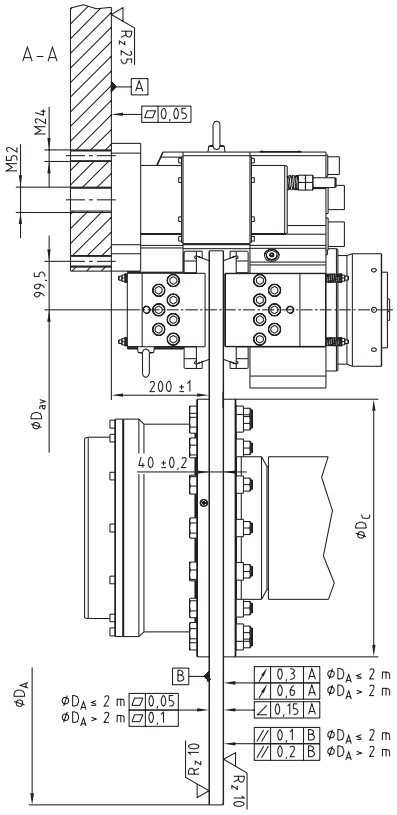
Calculation of brake disk

$$D_{C\ max.} = D_A - 570$$

$$D_{av} = D_A - 230$$

Connection dimensions of brake





$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

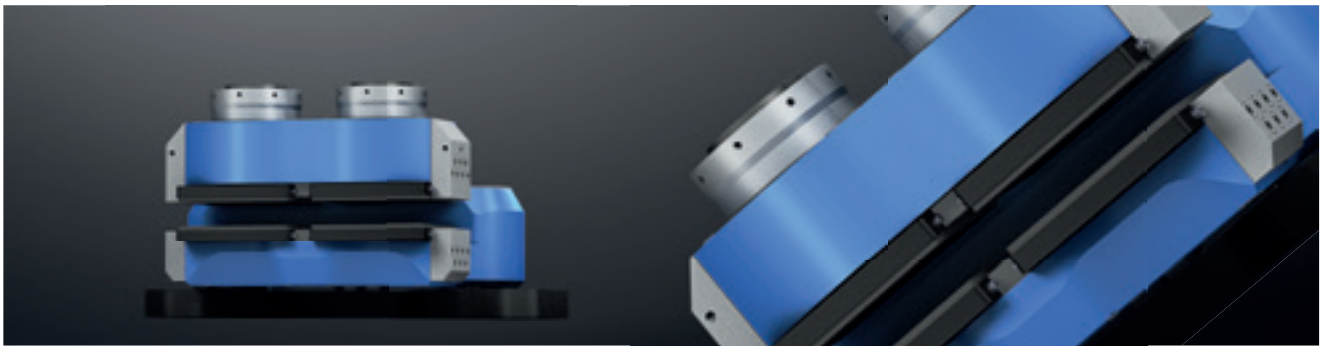
F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

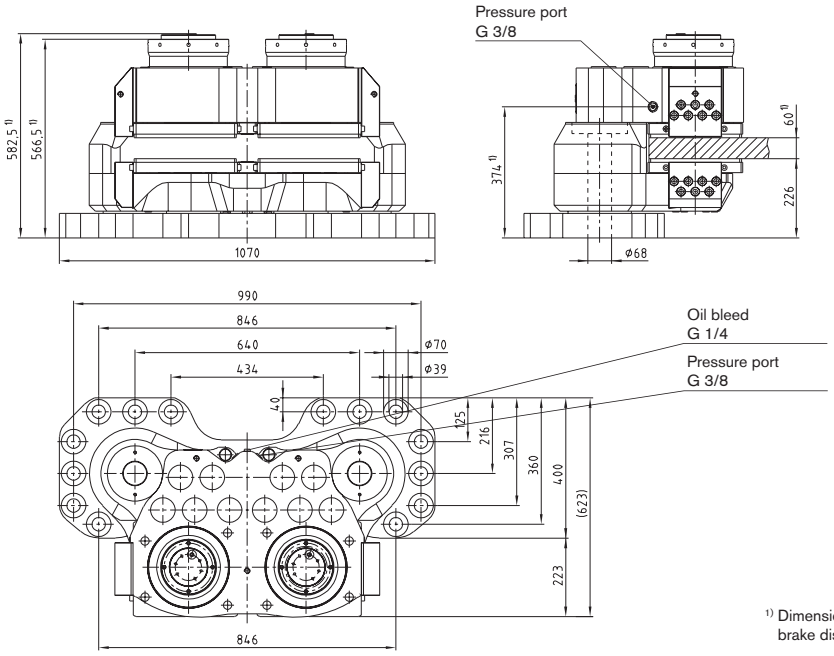
Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® XL-xxx-F
Passive floating caliper brakes

Hydraulic brake system





1) Dimensions and weight depend on the thickness of brake disk.

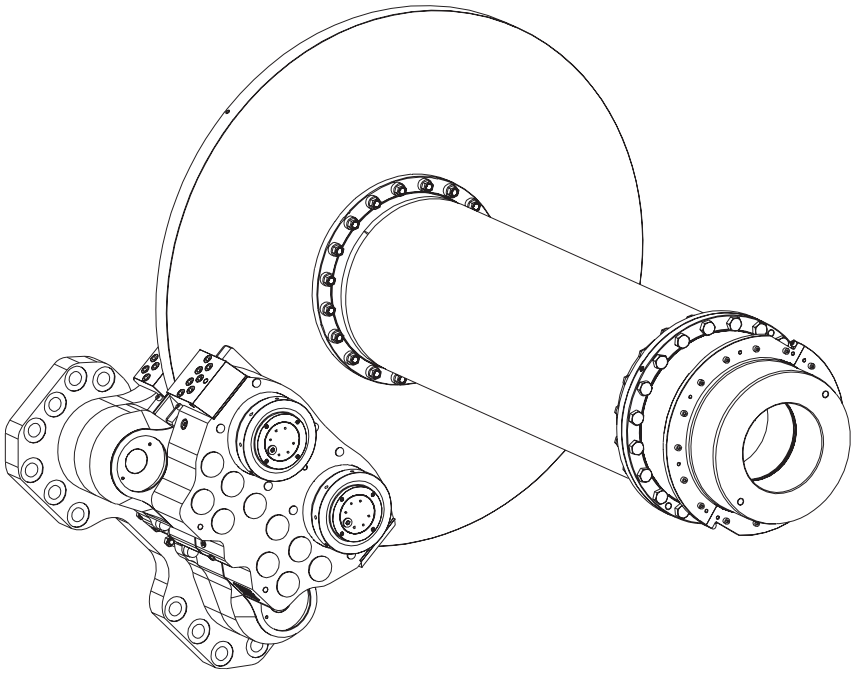
KTR-STOP® XL-xxx-F			
Total weight	approx. 1080 kg 1)	Max. operating pressure	200 bar
Width of brake pad	270 mm	Thickness of brake disk	40 mm - 80 mm
Surface of each brake pad (organic/powder metal)	76.800 mm²	Pressure port	G 3/8
Max. wear of each brake pad	6 mm	Oil bleed	G 1/4
Nominal coefficient of friction 2)	μ = 0,4	Backlash on axles - towards mounting surface	5 mm
Total brake piston surface - complete brake	452 cm²	Backlash on axles - away from mounting surface	10 mm
Volume with 1 mm stroke - complete brake	45,2 cm³	Min. diameter of brake disk ØD$_A$	1.500 mm
		Operation temperature	-20 °C to +50 °C

Bremsentypen							
Type of brake 3)	Clamping force F_C [kN]	Power loss 4) [%]	Opening pressure [bar]	Weight 1) [kg]	Braking torque [Nm] with brake disk Ø [mm]		
					1500	3000	4000
KTR-STOP® XL-400-F	400	4,5	130	1080	198000	438000	598000
KTR-STOP® XL-500-F	500	7,5	160	1080	247000	547000	747000
KTR-STOP® XL-600-F	600	6	190	1080	296000	656000	896000

1) Weight depends on thickness of brake disk
2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.
3) Other types of brakes on request
4) With 1 mm stroke (0.5 mm wear of pad on each side)

Ordering example:

KTR-STOP®	XL - 600 - F	A - 60	
KTR brake	Size of brake	Clamping force	Floater	Option	Thickness of brake disk

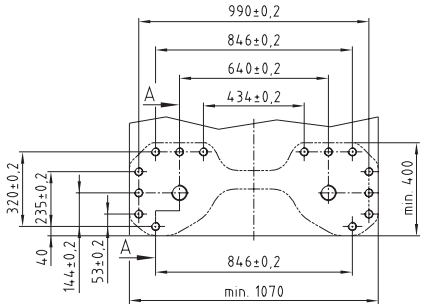


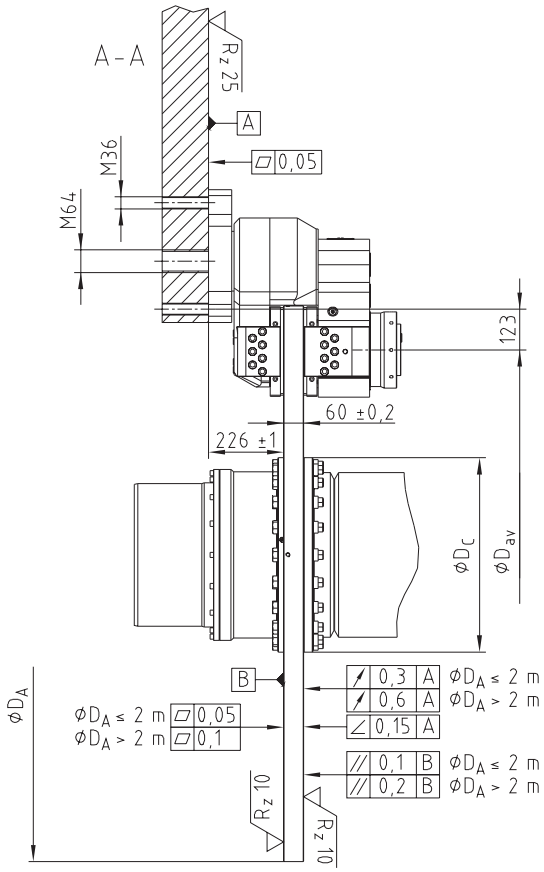
Calculation of brake disk

$$D_{C\ max.} = D_A - 570$$

$$D_{av} = D_A - 230$$

Connection dimensions of brake





$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

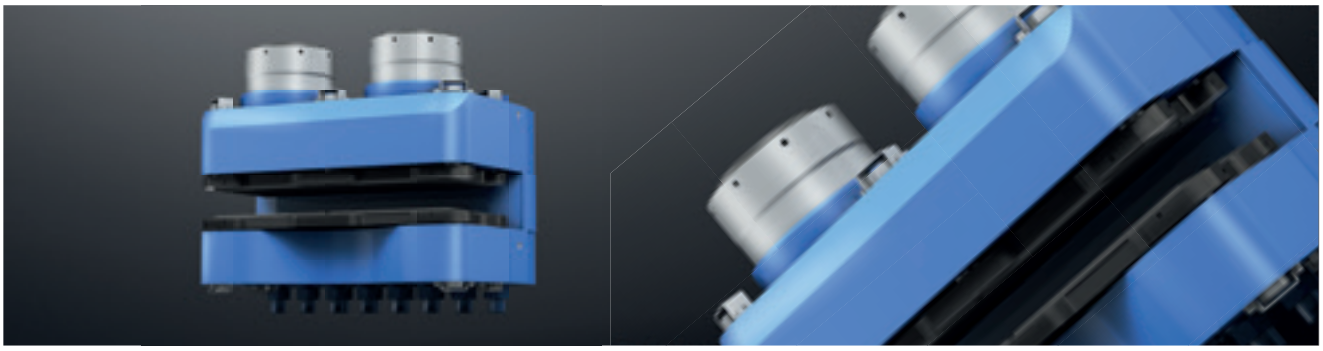
F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

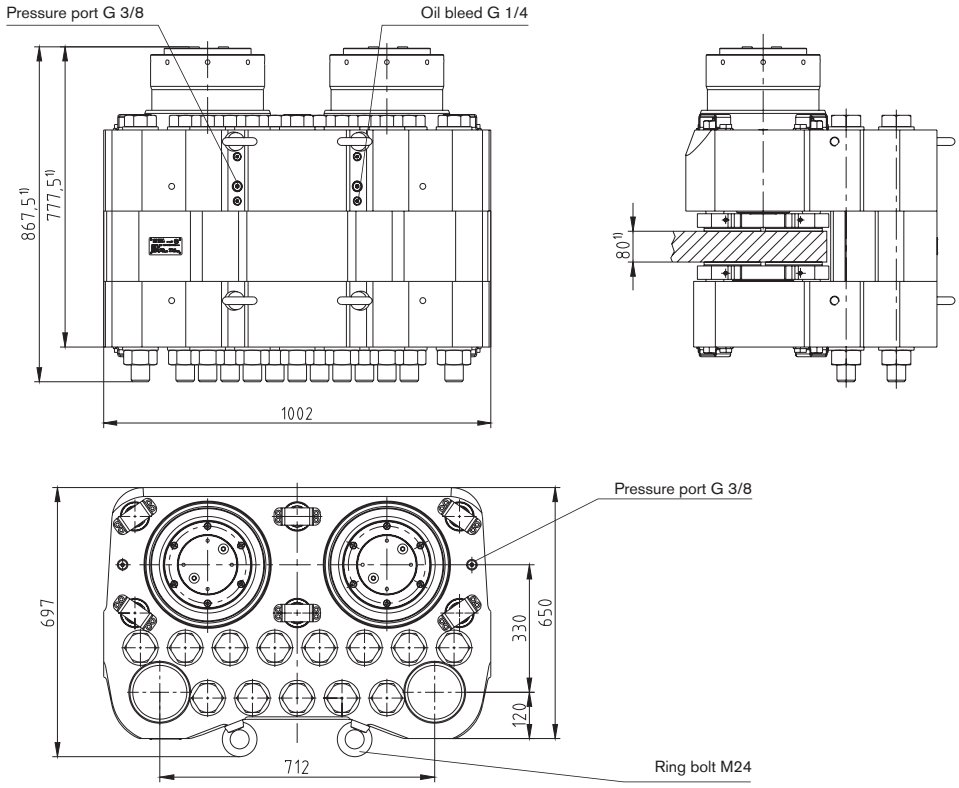
Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® XXL-xxxx-F
Passive floating caliper brakes

Hydraulic brake system





1) Dimensions and weight depending on thickness of brake disk.

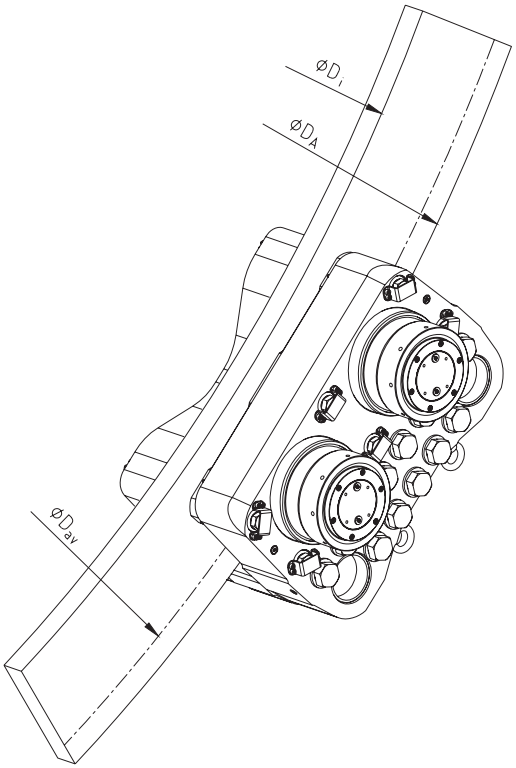
KTR-STOP® XXL-xxxx-F				
Total weight		approx. 2200 kg	Volume with 1 mm stroke - complete brake	92,4 cm³
Width of brake pad		340 mm	Max. operating pressure	220 bar
Surface of each brake pad	organic	238.700 mm²	Thickness of brake disk	60 mm - 120 mm
	powder metal	-	Pressure port	G 3/8
Max. wear of each brake pad		8 mm	Oil bleed	G 1/4
Nominal coefficient of friction 2)		μ = 0,4	Min. diameter of brake disk ØD$_A$	6.000 mm
Total brake piston surface - complete brake		924 cm²	Operation temperature	-20 °C to +50 °C

Bremsentypen				
Type of brake 3)	Clamping force F_C [kN]	Power loss 4) [%]	Opening pressure [bar]	Weight 1) [kg]
KTR-STOP® XXL-800-F	800	6	125	2200
KTR-STOP® XXL-1000-F	1000	4,5	150	2200
KTR-STOP® XXL-1200-F	1200	4	175	2200

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.
3) Other types of brakes on request
4) With 1 mm stroke (0.5 mm wear of pad on each side)

Ordering example:

KTR-STOP®	XXL	-	1000	-	F	A	-	80
KTR brake	Size of brake		Clamping force		Floater	Option		Thickness of brake disk

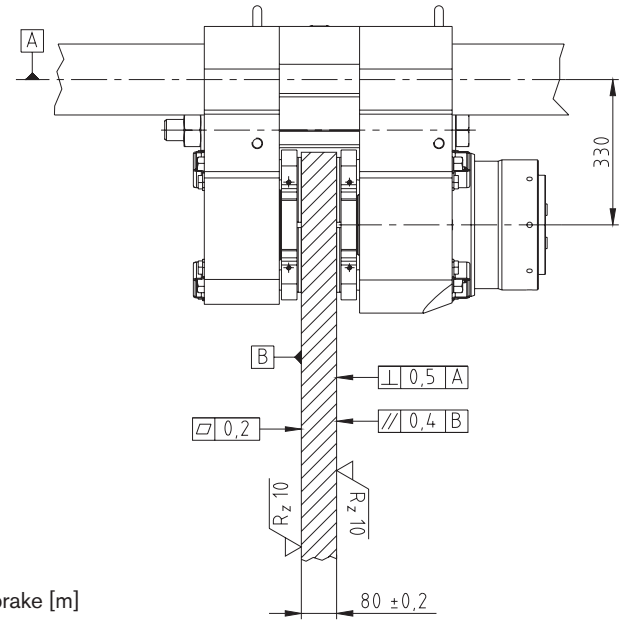


Calculation of brake disk

$D_{Cmax} = D_A - 780$

$D_{av} = D_A - 330$

Connection dimensions of brake



$F_b = F_c \cdot 2 \cdot \mu$

$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$

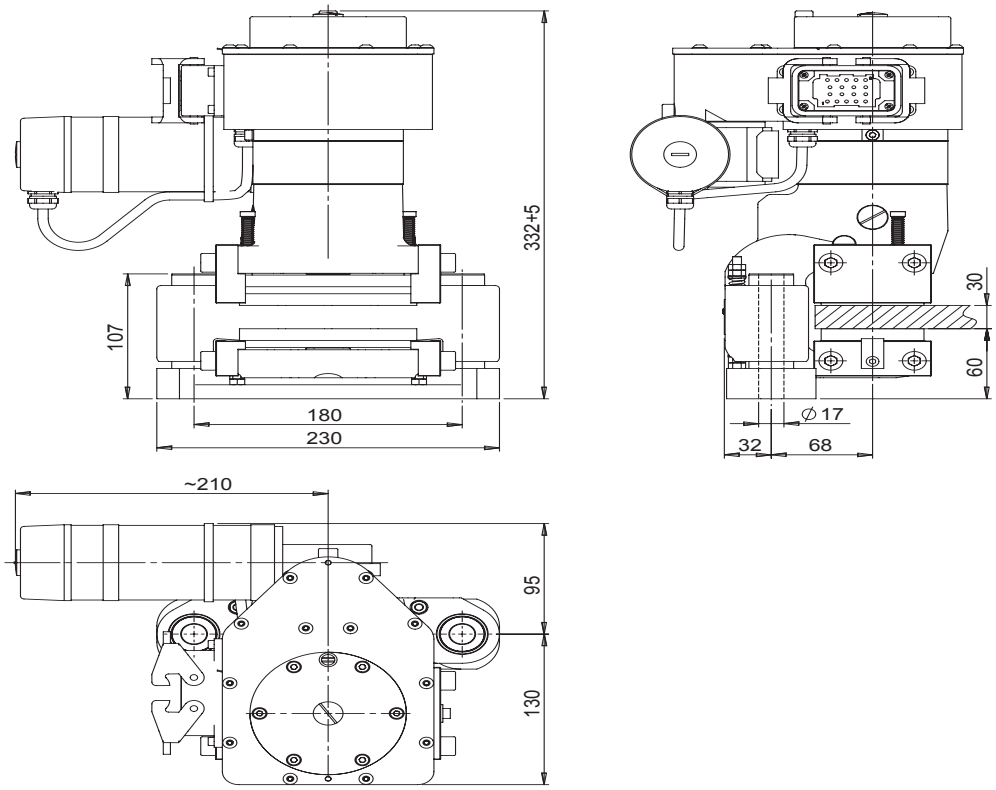
F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

EMB-STOP XS-P-xx-F
Passive floating caliper brakes

Electromechanical brake system



EMB-STOP XS-P-xx-F				
Total weight		approx. 28 kg	Thickness of brake disk	20 mm - 30 mm
Width of brake pad		70 mm	Operating voltage	400 VAC, 50 Hz
Surface of each brake pad	organic	8.000 mm²	Size of industrial connector	Han10B / HAN18EE (male)
	powder metal	5.800 mm²	Backlash on axles - towards mounting surface	5 mm
Wear of pad on each side (max.)		5 mm	Backlash on axles - away from mounting surface	5 mm
Coefficient of friction of pad, nominal value[2)]		μ = 0,4	Min. diameter of brake disk ØDA	300 mm
Max. clamping force		12 kN	Operation temperature	-20 °C ... +50 °C
Power loss with 1mm stroke (0.5 on each side)		10%		

[1)] Tolerances depending on air gap.
[2)] The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.

Calculation of braking force/braking torque

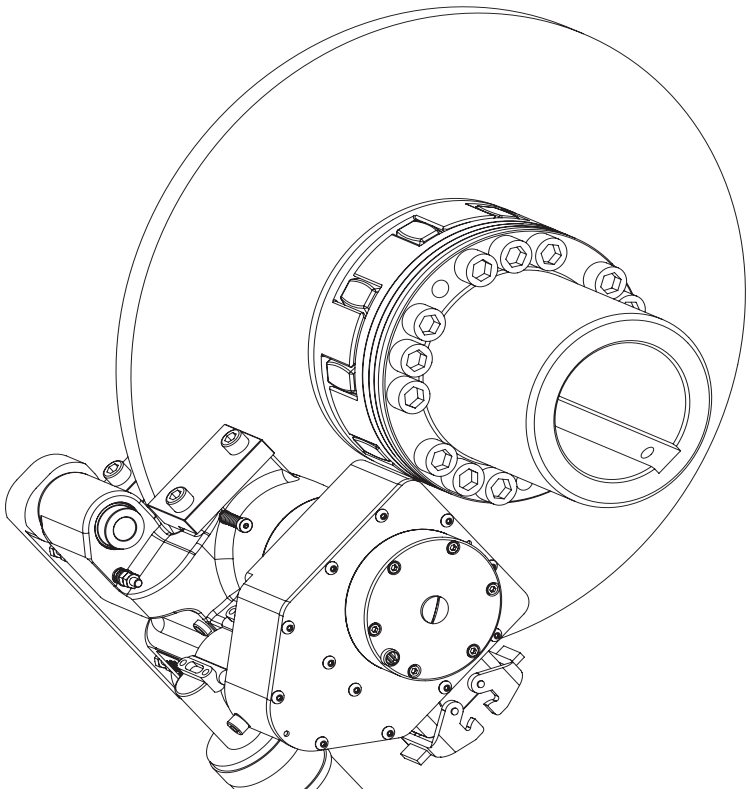
$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Ordering example:

EMB-STOP	XS	-	P	-	12	-	F	A	-	30
EMB brake	Size of brake		Passive		Clamping force		Floating caliper („Floater“)	Option		Thickness of brake disk

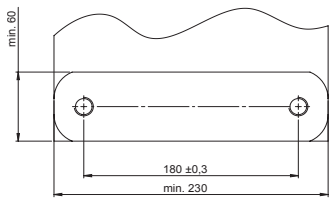


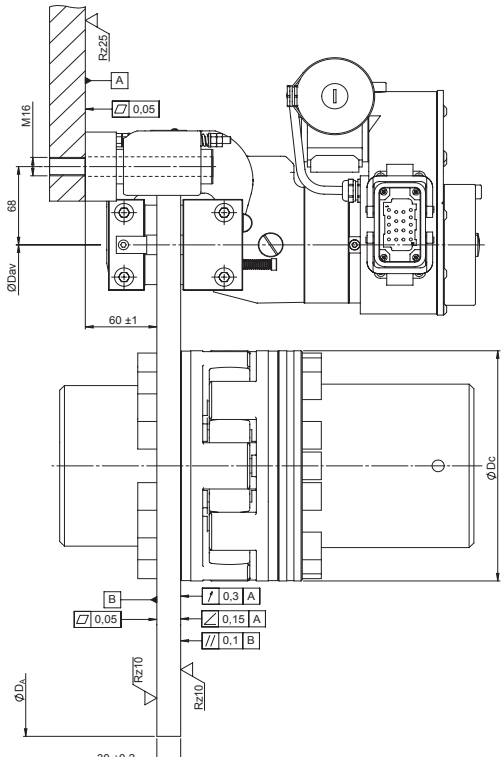
Calculation of brake disk

$D_{Cmax} = D_A - 195$

$D_{av} = D_A - 86$

Connection dimensions of brake



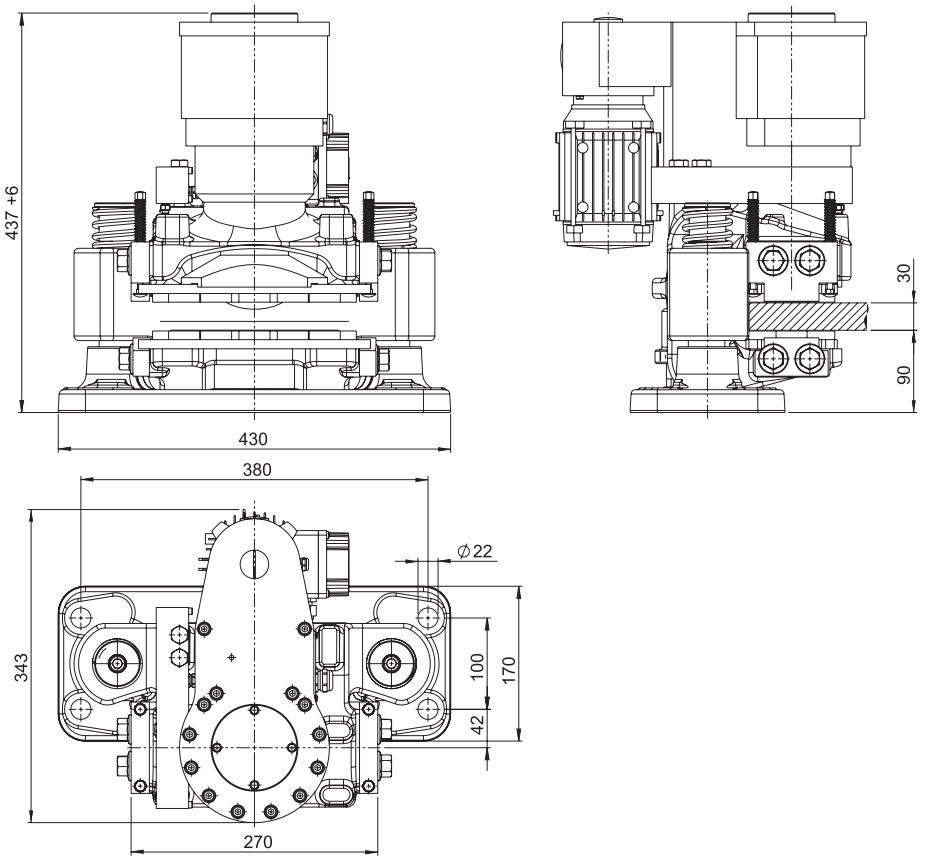


Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

EMB-STOP S-P-xx-F
Passive floating caliper brakes

Electromechanical brake system



EMB-STOP S-P-xx-F	
Total weight	93 kg
Thickness of brake disk	25 - 35 mm
Wear of pad on each side (max.)	4 mm
Coefficient of friction of pad, nominal value [2]	μ = 0,4
Clamping force, min.	30 kN
Clamping force, max.	50 kN
Operating temperature range	-30 to +50 °C
Motor output	250 W
Motor voltage	400 VAC
Voltage of electric signals	230 VAC / 24 VDC

[1] Tolerances depending on air gap.
[2] The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.

Calculation of braking force/braking torque

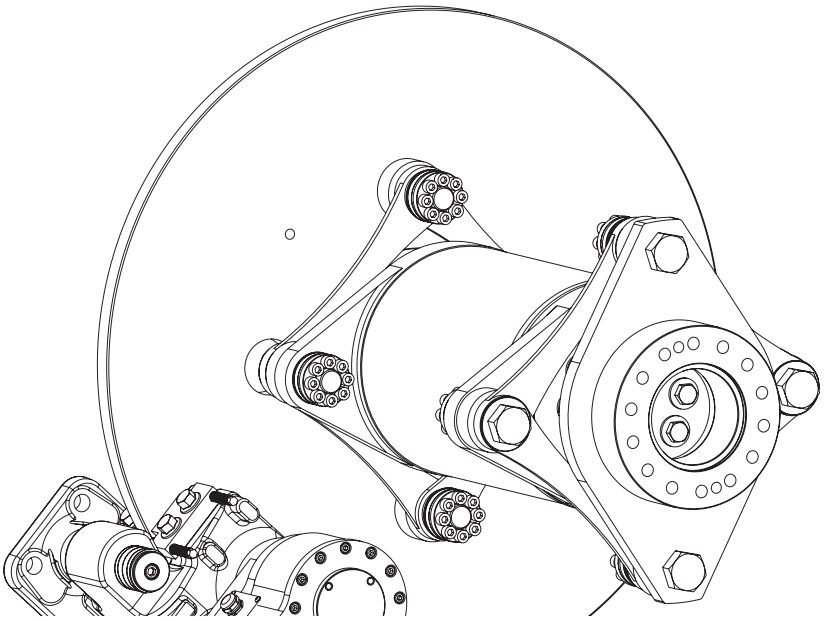
$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Ordering example:

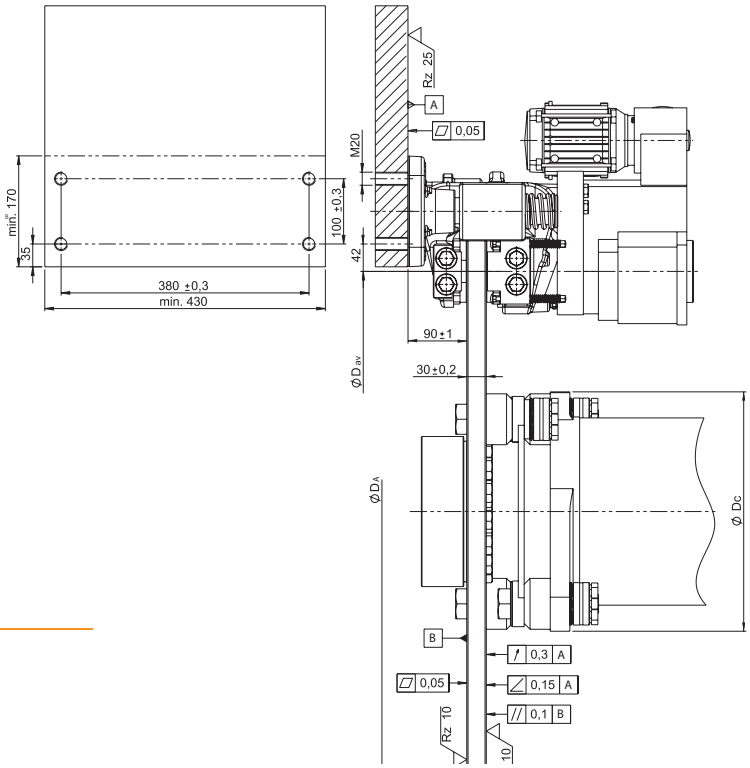
EMB-STOP	S	-	P	-	50	-	F	A	-	30
EMB brake	Size of brake		Passive		Clamping force		Floating caliper („Floater“)	Option		Thickness of brake disk



Calculation of brake disk

$ØD_A$ = 1800 ... 3000 mm	$ØD_A$ = 1000 ... 1800 mm	$ØD_A$ = 500 ... 1000 mm
$D_{av} = D_A - 130$	$D_{av} = D_A - 110$	$D_{av} = D_A - 105$

Connection dimensions of brake

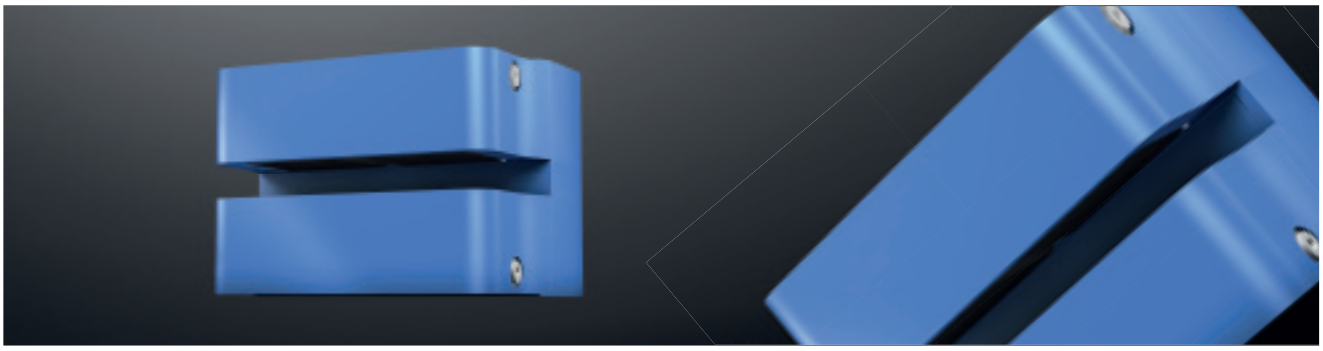


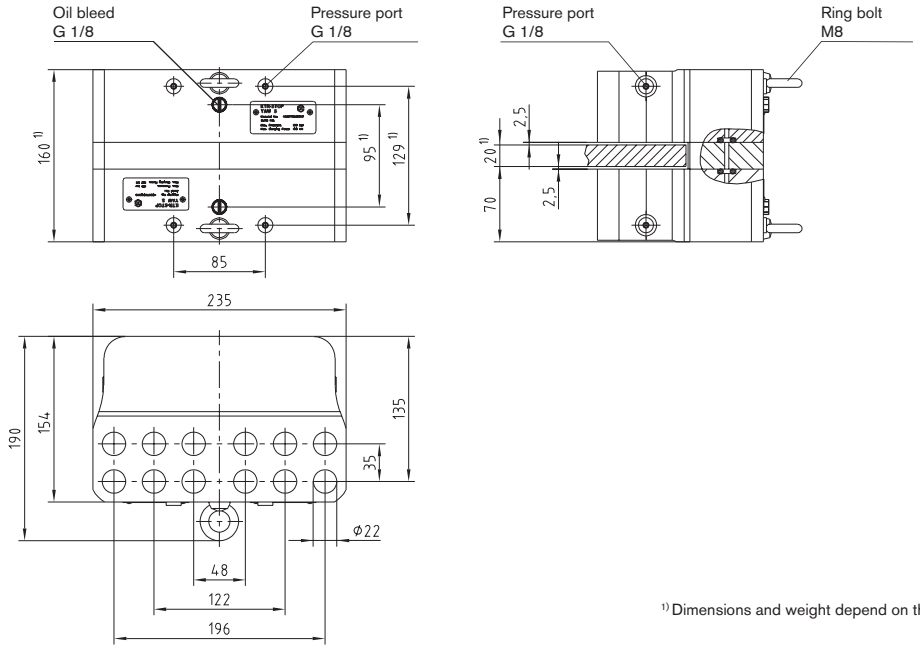
Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® YAW S
Yaw brakes

Hydraulic brake system





1) Dimensions and weight depend on the thickness of brake disk.

KTR-STOP® YAW S			
Total weight	approx. 31,5 kg 1)	Max. clamping force	106 kN
Width of brake pad	70 mm	Max. operating pressure (up to μ = 0.4)	160 bar
Surface of each brake pad	10.400 mm²	Thickness of brake disk3)	10 mm - 30 mm
Max. wear of each brake pad	6 mm (Material: organic)	Assembly of brake externally	400 mm
Nominal coefficient of friction 2)	μ = 0,4	Min. diameter of brake disk ØD$_A$	
Total brake piston surface - complete brake	133 cm²	Assembly of brake internally	700 mm
Volume with 1 mm stroke - complete brake	13,3 cm³	Min. diameter of brake disk ØD$_i$	
Pressure port	G 1/8	Operation temperature	-20 °C to +50 °C
Oil bleed	G 1/8		

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.
3) Other thickness of disk on request.

Calculation of braking force/braking torque

$$F_b = F_c \cdot 2 \cdot \mu$$

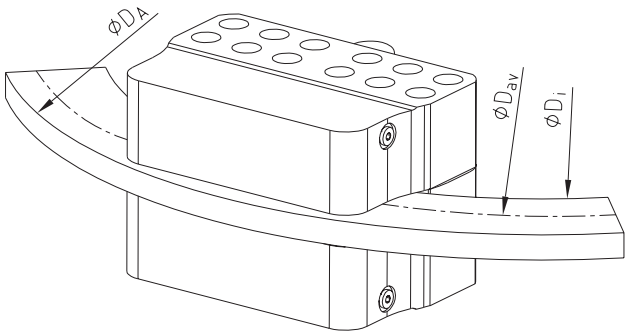
$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Ordering example:

KTR-STOP®	YAW S	A	- 20
KTR brake	Size of brake	Option	Thickness of brake disk

Assembly of brake internally



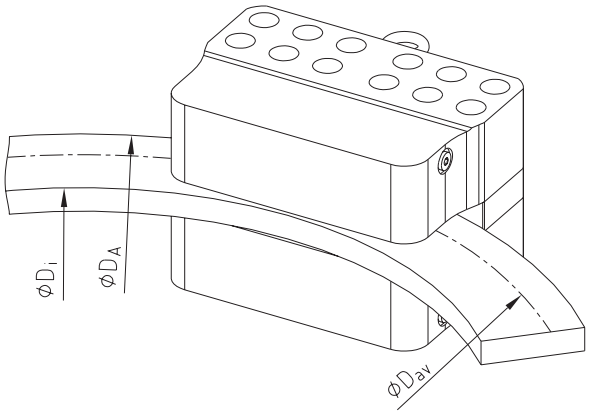
Calculation of brake disk

$$D_{i\ min.} = \sqrt{D_{av}^2 - 140 \cdot D_{av} + 44900}$$

$$D_{av} = \sqrt{D_i^2 - 40000} + 70$$

$$D_{A\ min.} = D_i + 170$$

Assembly of brake externally

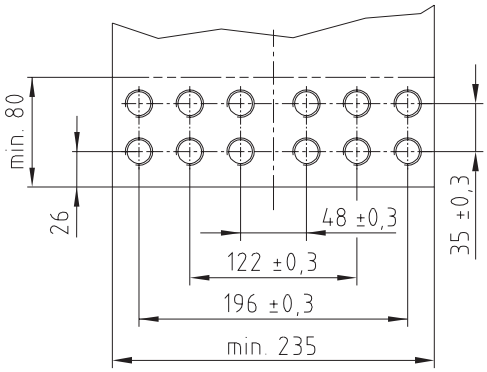


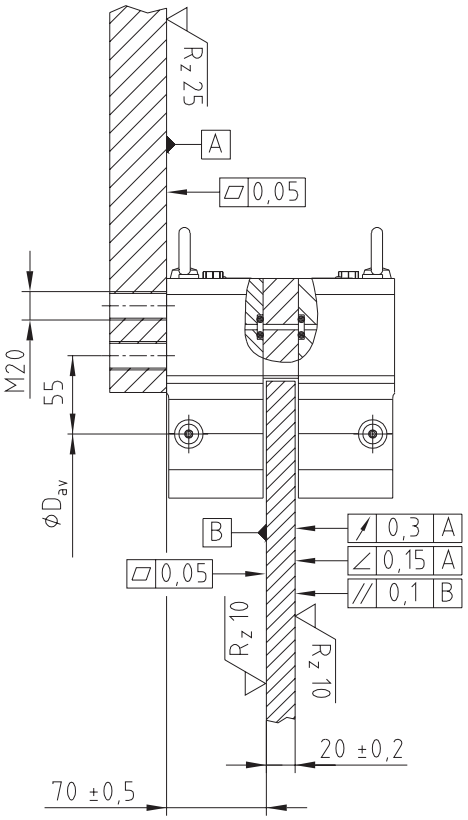
Calculation of brake disk

$$D_{av} = D_A - 70$$

$$D_{i\ max.} = D_A - 175$$

Connection dimensions of brake



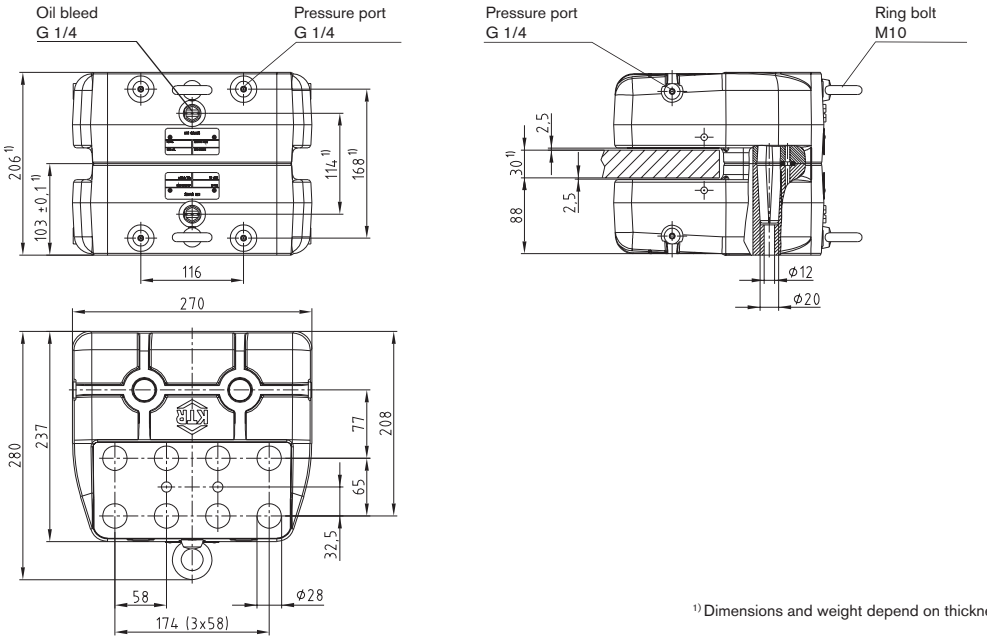


Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® YAW M
Yaw brakes

Hydraulic brake system



1) Dimensions and weight depend on thickness of brake disk.

KTR-STOP® YAW M			
Total weight	approx. 63 kg 1)	Max. clamping force	203 kN
Width of brake pad	108 mm	Max. operating pressure (up to μ = 0.4)	160 bar
Surface of each brake pad	20.300 mm²	Thickness of brake disk3)	30 mm - 50 mm
Max. wear of each brake pad	7 mm (Material: organic)	Assembly of brake externally	500 mm
Nominal coefficient of friction 2)	μ = 0,4	Min. diameter of brake disk $ØD_A$	
Total brake piston surface - complete brake	254 cm²	Assembly of brake internally	900 mm
Volume with 1 mm stroke - complete brake	25,4 cm³	Min. diameter of brake disk $ØD_i$	
Pressure port	G 1/4	Operation temperature	-20 °C to +50 °C
Oil bleed	G 1/4		

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.
3) Other thickness of disk on request.

Calculation of braking force/braking torque

$$F_b = F_c \cdot 2 \cdot \mu$$

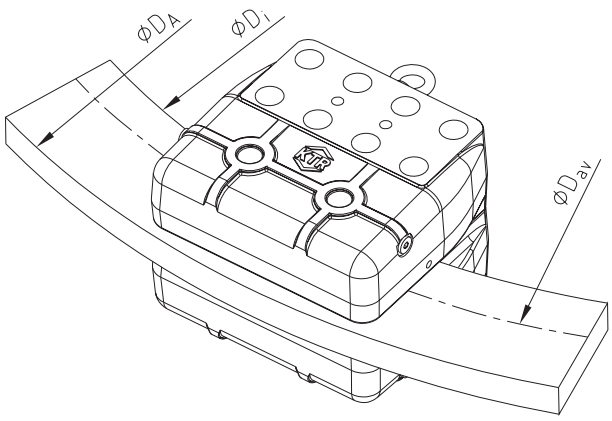
$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Ordering example:

KTR-STOP®	YAW M	A	- 30
KTR brake	Size of brake	Option	Thickness of brake disk

Assembly of brake internally



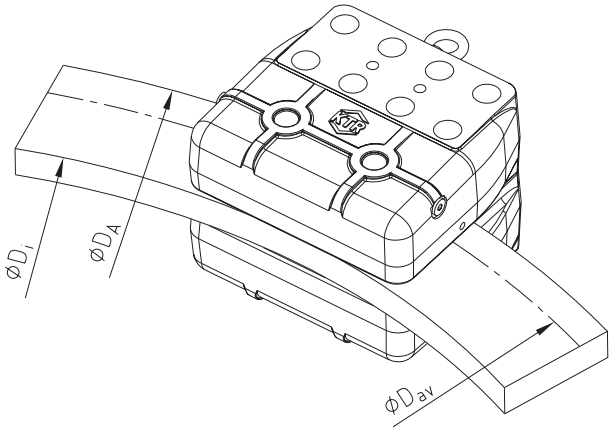
Calculation of brake disk

$$D_{i\ min.} = \sqrt{D_{av}^2 - 200 \cdot D_{av} + 46000}$$

$$D_{av} = \sqrt{D_i^2 - 36000} + 100$$

$$D_{A\ min.} = D_i + 250$$

Assembly of brake externally

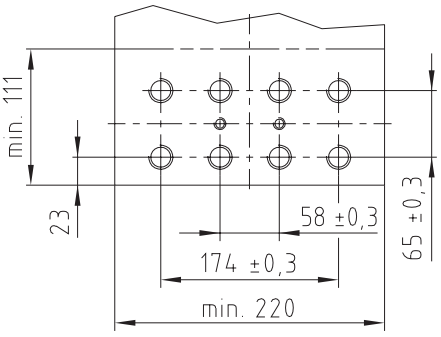


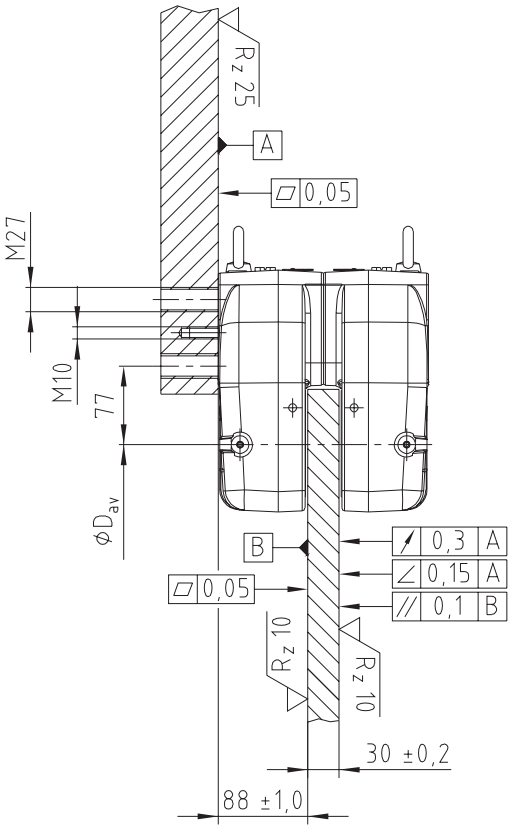
Calculation of brake disk

$$D_{av} = D_A - 102$$

$$D_{i\ max.} = D_A - 240$$

Connection dimensions of brake



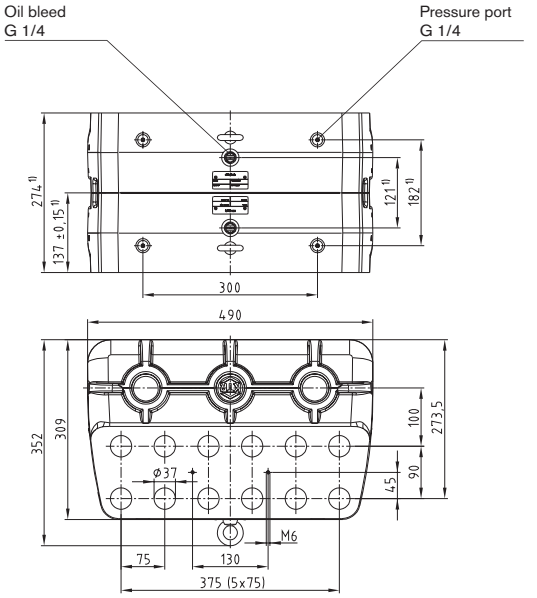


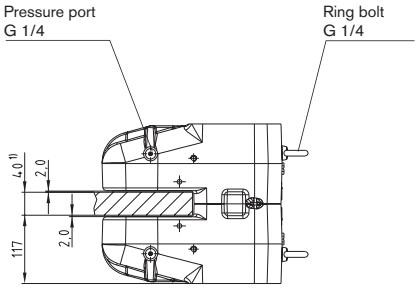
Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® YAW L
Yaw brakes

Hydraulic brake system





1) Dimensions and weight depend on thickness of brake disk.

KTR-STOP® YAW L			
Total weight	approx. 176 kg 1)	Max. clamping force	542 kN
Width of brake pad	138 mm	Max. operating pressure (up to μ = 0.4)	160 bar
Surface of each brake pad	58.000 mm²	Thickness of brake disk3)	40 mm - 60 mm
Max. wear of each brake pad	7 mm (Material: organic)	Assembly of brake externally	2000 mm
Nominal coefficient of friction 2)	μ = 0,4	Min. diameter of brake disk $ØD_A$	
Total brake piston surface - complete brake	678 cm²	Assembly of brake internally	2500 mm
Volume with 1 mm stroke - complete brake	67,8 cm³	Min. diameter of brake disk $ØD_i$	
Pressure port	G 1/4	Operation temperature	-20 °C to +50 °C
Oil bleed	G 1/4		

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.
3) Other thickness of disk on request.

Calculation of braking force/braking torque

$$F_b = F_c \cdot 2 \cdot \mu$$

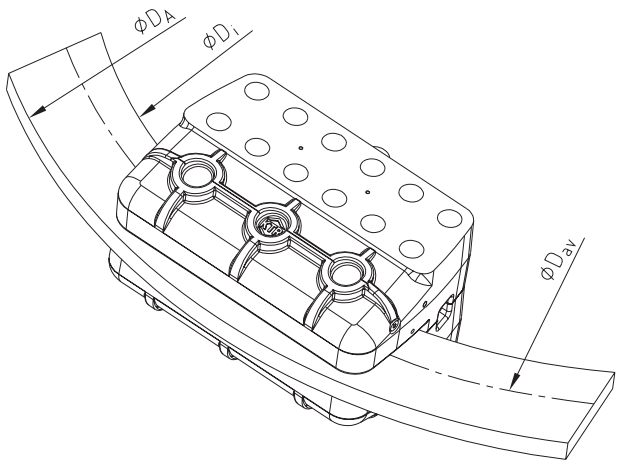
$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Ordering example:

KTR-STOP®	YAW L	A	-	40
KTR brake	Size of brake	Option		Thickness of brake disk

Assembly of brake internally



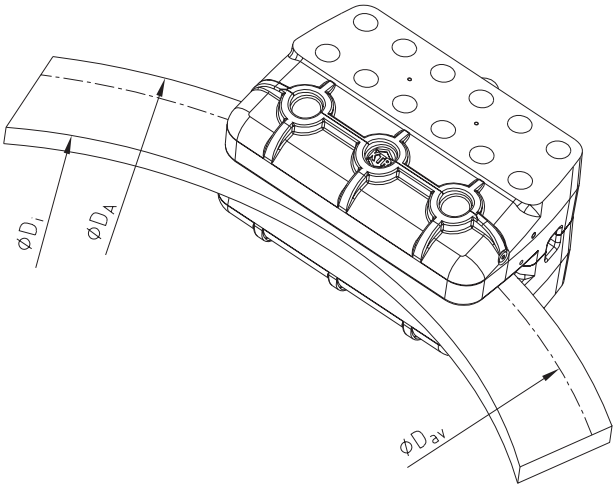
Calculation of brake disk

$D_{i\ min.} = \sqrt{D_{av}^2 - 270 \cdot D_{av} + 200000}$

$D_{av} = \sqrt{D_i^2 - 180000} + 135$

$D_{A\ min.} = D_i + 320$

Assembly of brake externally

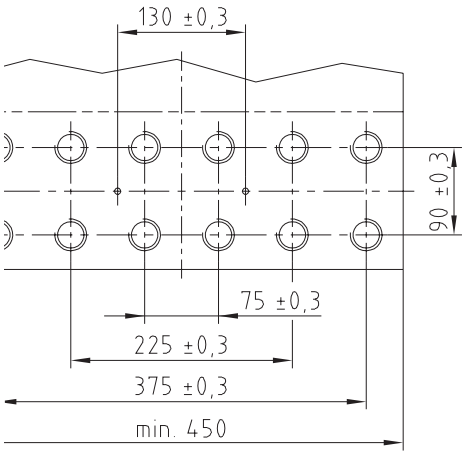


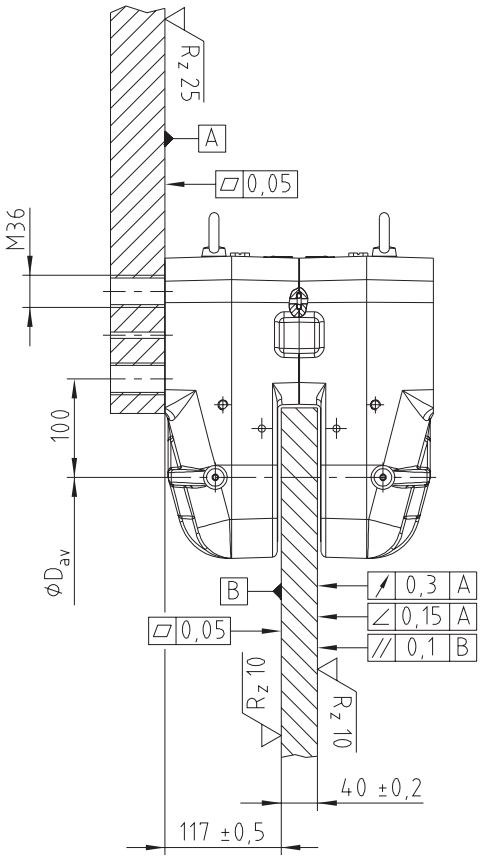
Calculation of brake disk

$D_{av} = D_A - 136$

$D_{i\ max.} = D_A - 320$

Connection dimensions of brake



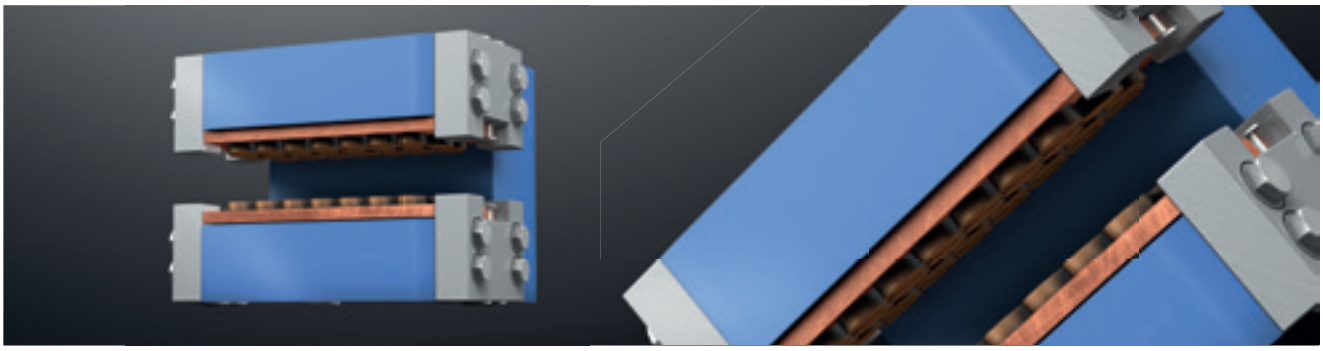


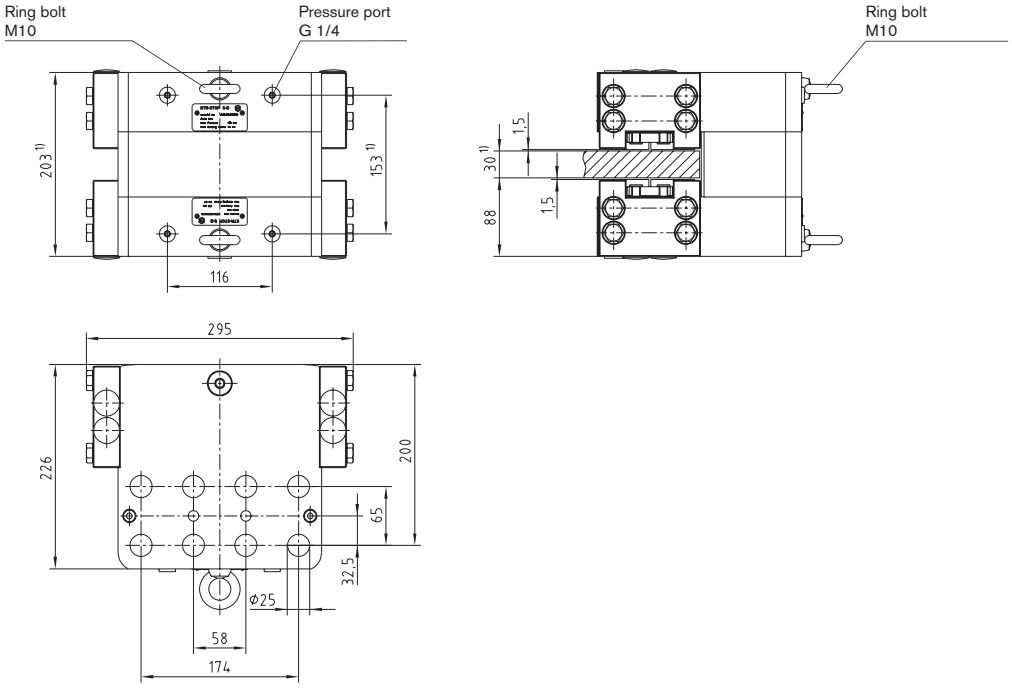
Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® S-D
Active fixed caliper brakes

Hydraulic brake system





KTR-STOP® S-D				
Total weight		approx. 67,5 kg 1)	Max. clamping force	141 kN
Width of brake pad		110 mm	Max. operating pressure	160 bar
Surface of each brake pad	organic	21.000 mm²	Thickness of brake disk	20 mm - 40 mm
	powder metal	14.000 mm²	Pressure port	G 1/4
Max. wear of each brake pad		6 mm	Min. diameter of brake disk ØD$_A$	400 mm
Nominal coefficient of friction 2)		μ = 0,4	Operation temperature	-20 °C to +50 °C
Total brake piston surface - complete brake		177 cm²		
Volume with 1 mm stroke - complete brake		17,7 cm³		

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.

Braking torque [Nm] with brake disk Ø [mm]			
Brake disk Ø [mm]	400	710	1000
Braking torque [Nm]	16900	34400	50700

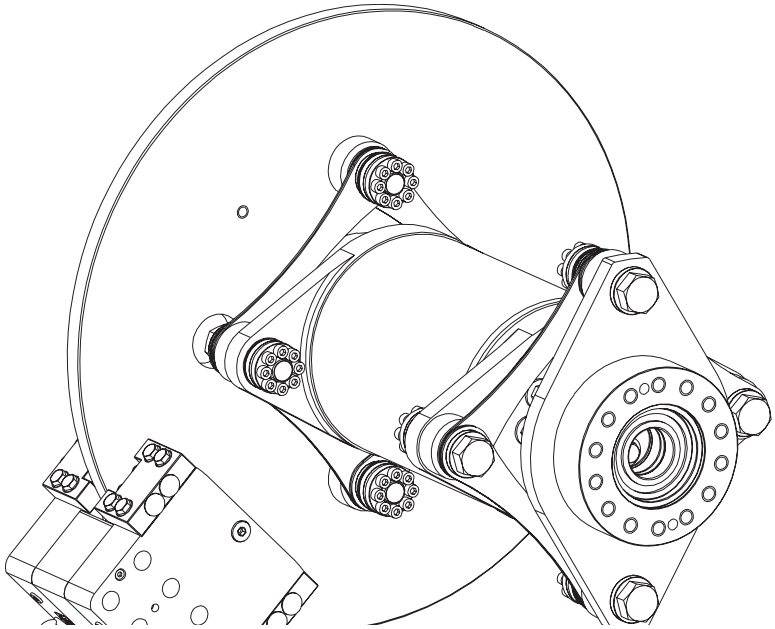
Calculation of braking force/braking torque

$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Ordering example:	KTR-STOP®	S-D	A	-	30
	KTR brake	Size of brake	Option		Thickness of brake disk

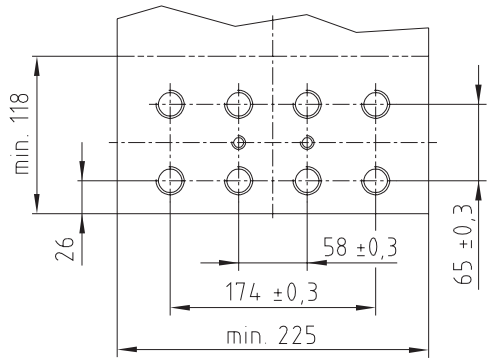


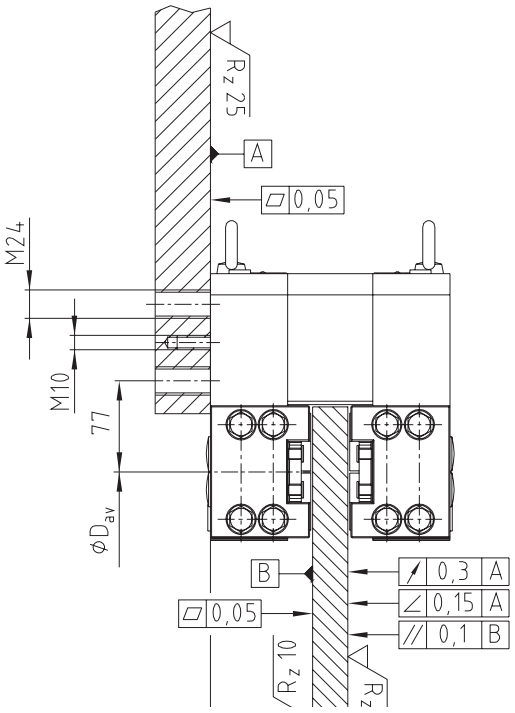
Calculation of brake disk

$D_{C\ max.} = D_A - 230$

$D_{av} = D_A - 100$

Connection dimensions of brake



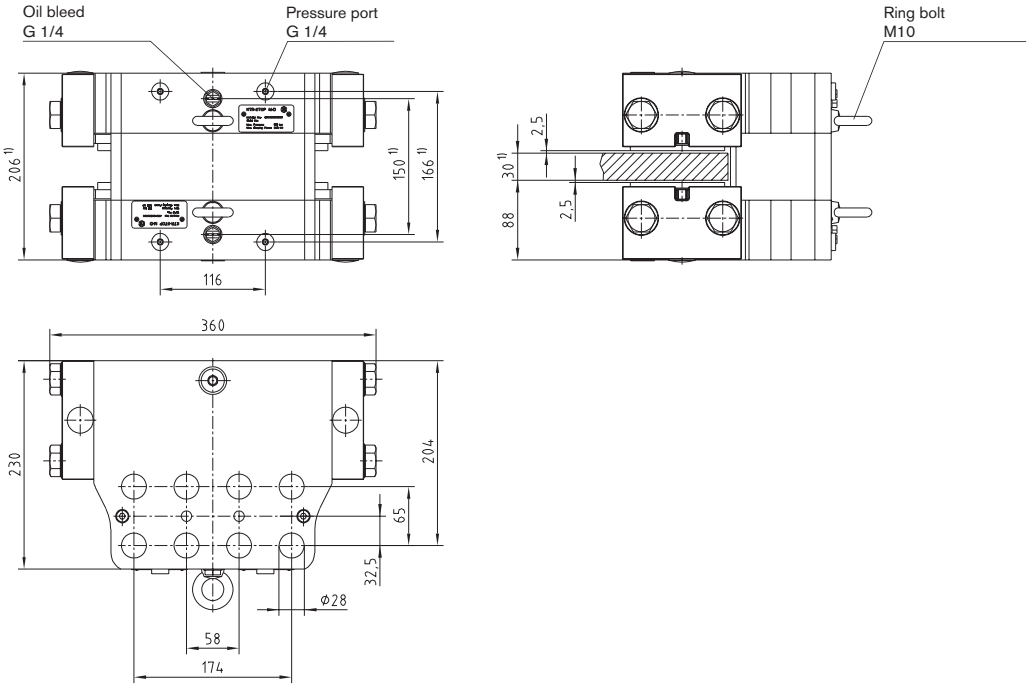


Optional

- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® M-D
Active fixed caliper brakes

Hydraulic brake system



KTR-STOP® M-D				
Total weight		approx. 76 kg [1]	Max. clamping force	203 kN
Width of brake pad		110 mm	Max. operating pressure	160 bar
Surface of each brake pad	organic	26.000 mm²	Thickness of brake disk	20 mm - 40 mm
	powder metal	–	Pressure port	G 1/4
Max. wear of each brake pad		6 mm	Oil bleed	G 1/4
Nominal coefficient of friction [2]		μ = 0,4	Min. diameter of brake disk ØD$_A$	800 mm
Total brake piston surface - complete brake		254 cm²	Operation temperature	-20 °C to +50 °C
Volume with 1 mm stroke - complete brake		25,4 cm³		

[2] The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.

Braking torque [Nm] with brake disk Ø [mm]			
Brake disk Ø [mm]	800	1500	2000
Braking torque [Nm]	56500	113300	153900

Calculation of braking force/braking torque

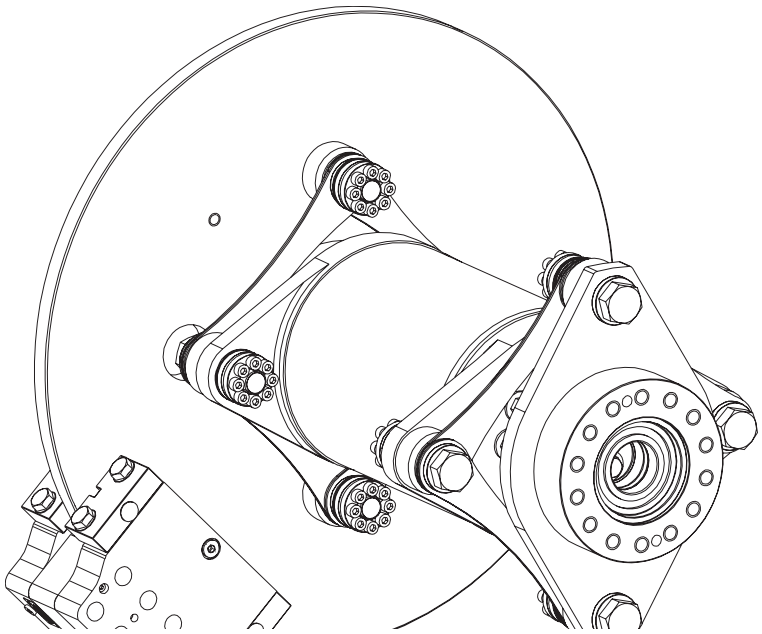
$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Ordering example:

KTR-STOP®	M-D	A	-	30
KTR brake	Size of brake	Option		Thickness of brake disk

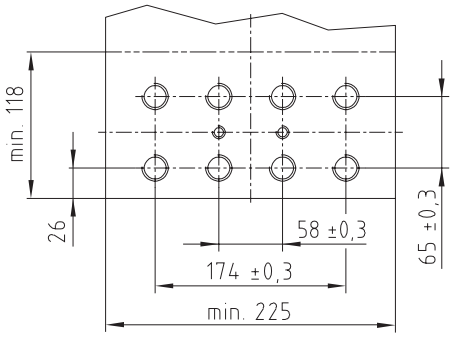


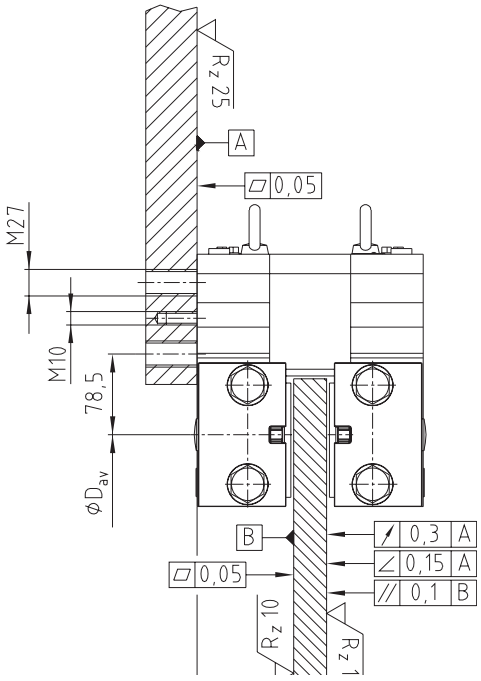
Calculation of brake disk

$D_{C\ max.} = D_A - 245$

$D_{av} = D_A - 104$

Connection dimensions of brake



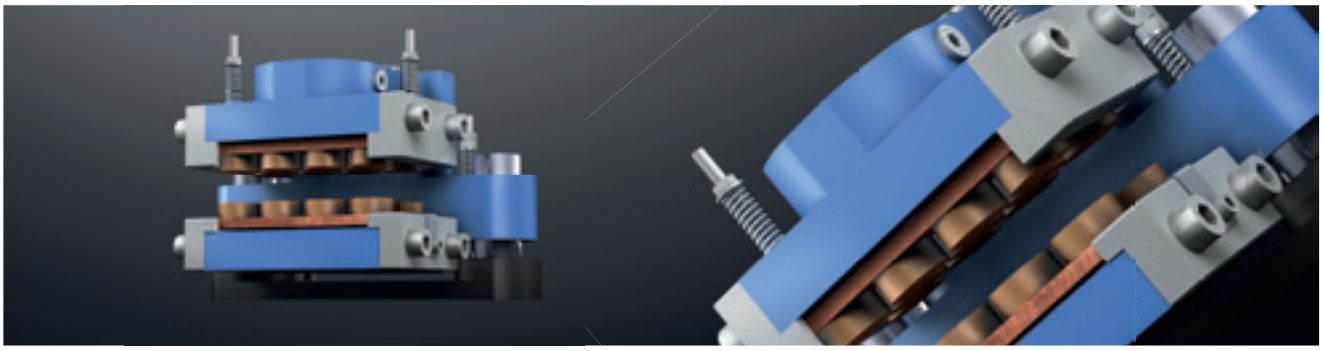


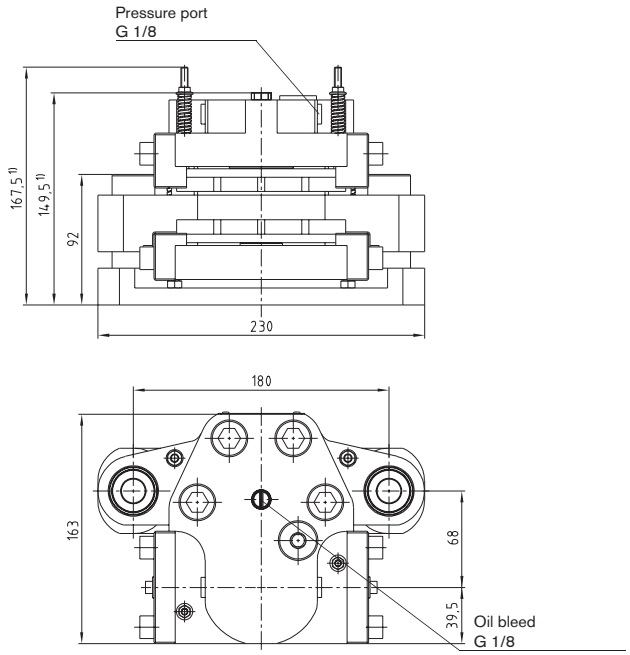
Optional

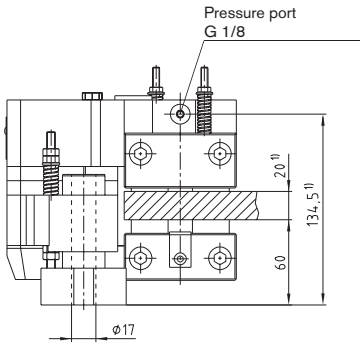
- Various colours available
- Sensor indicating wear of pad and condition
- Temperature sensor
- Alternative materials of brake pad

KTR-STOP® XS-A-F
Active floating caliper brakes

Hydraulic brake system







1) Dimensions and weight depend on thickness of brake disk.

KTR-STOP® XS-A-F				
Total weight		approx. 18 kg 1)	Max. clamping force	16,5 kN
Width of brake pad		70 mm	Max. operating pressure	105 bar
Surface of each brake pad	organic	8.000 mm²	Thickness of brake disk	10 mm - 30 mm
	powder metal	5.800 mm²	Pressure port	G 1/8
Max. wear of each brake pad		5 mm	Oil bleed	G 1/8
Nominal coefficient of friction 2)		μ = 0,4	Backlash on axles - towards mounting surface	5 mm
Total brake piston surface - complete brake		15,9 cm²	Backlash on axles - away from mounting surface	5 mm
Volume with 1 mm stroke - complete brake		1,59 cm³	Min. diameter of brake disk ØD$_A$	300 mm
			Operation temperature	-20 °C to +50 °C

2) The coefficient of friction each depends on the application or material of the brake pad, respectively. Please consult with KTR.

Braking torque [Nm] with brake disk Ø [mm]			
Brake disk Ø [mm]	315	560	800
Braking torque [Nm]	1510	3120	4710

Calculation of braking force/braking torque

$$F_b = F_c \cdot 2 \cdot \mu$$

$$M_b = z \cdot F_b \cdot \frac{D_{av}}{2}$$

F_b = Braking force [kN]
F_c = Clamping force [kN]
M_b = Braking torque [kNm]
z = Number of brakes
D_{av} = Effective diameter of brake [m]

Ordering example:

KTR-STOP®	XS	-	A	-	F	A	-	30
KTR brake	Size of brake		Active		Floater	Option		Thickness of brake disk