AST Gruppe
Angewandte System Technik

KAF
Force Transducer

Applications

- Material testing
- For testing machines and systems
- For monitoring of forces at hydraulic cylinders

Features

- 1 kN to 500 kN
- High accuracy
- For measuring of tensile and compressive forces
- Made of stainless steel
- Environmental protection IP 67

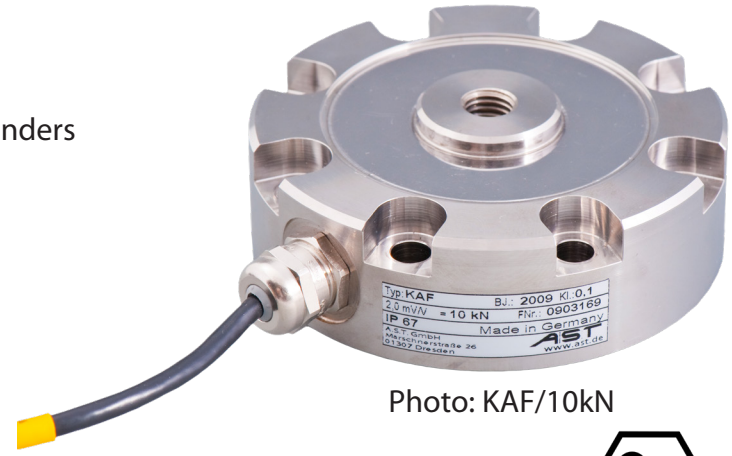
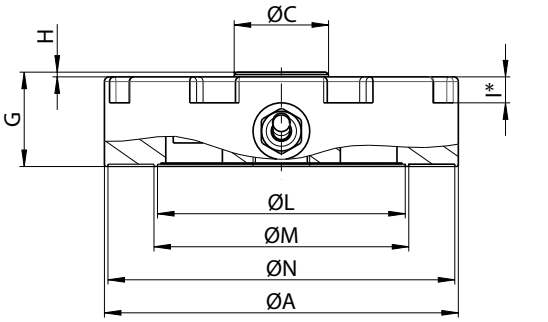


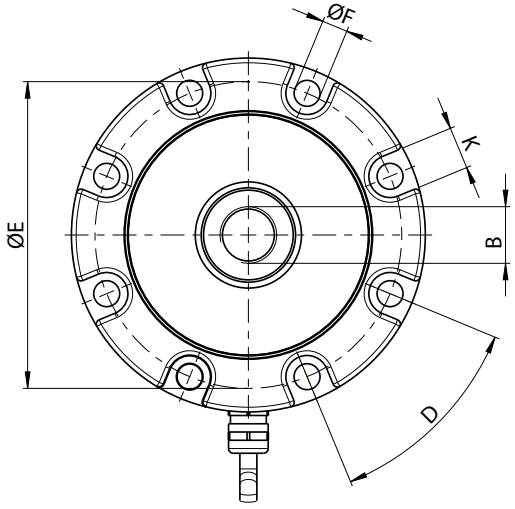
Photo: KAF/10kN

Option

- Integrated amplifier with standard signal for force transducer 20 kN ... 500 kN
- CANopen interface (20 kN ... 500 kN)
- redundant system
- ATEX-Certificate

Dimensions (mm)





Thightening Torque of Fixing Screws

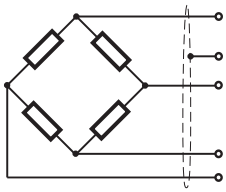
Rated Force (kN)	Size	Thighten-ing Torque
1/ 2/ 5/ 10	8 x M8x35-10.9 (DIN 912)	30 Nm
20/ 50	8 x M10x40-10.9 (DIN 912)	60 Nm
100/ 200	8 x M12x40-10.9 (DIN 912)	100 Nm
250/ 300/ 500	16 x M12x80-10.9(DIN 912)	85 Nm

Rated Force kN)	A	B	C	D	E	F	G	H	I	K	L	M	N	Weight
1/ 2/ 5/ 10	105	M12	31.5	8 x 45°	89	8.4	35	3	9	15	73.5	77.5	101	1.3 kg
20/ 50	150	M24x2	40	8 x 45°	130	11	40	2	11	18	105	108	147	3.7 kg
100	165	M36x3	50	8 x 45°	145	13	42	2	13	20	127	132	161	4.9 kg
200	165	M36x3	50	8 x 45°	145	13	42	2	13	20	111	118	160	6.3 kg
250*/ 300*/ 500*	203	M45X3	94	16 x 22.5°	165	13	64	6.5	-	-	134	145.4	193	11.4 kg

* without milled slots for screw heads

Wiring Code

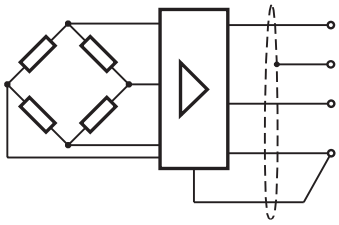
Cable length 3m



excitation voltage +	(+EX)	brown
shield	(SHI)	black
signal +	(+SI)	green
excitation voltage -	(-EX)	yellow
signal -	(-SI)	white

Compressive load is positive change of signal.

with integrated amplifier



supply voltage +	(UB)	brown
shield	(SHI)	black
signal +	(OUT)	green
ground / signal -	(0V)	yellow
programming interface	(PRG)	white

(0V and PRG to be connected by the customer)

Specifications

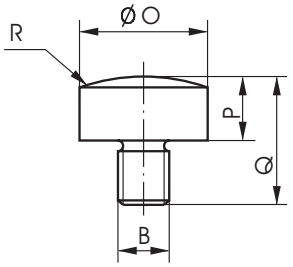
Accuracy Class	**% F_{nom}**	**0.1**	**0.2**	**0.5**	**0.2 with Integrated Amplifier**
Rated force (F_{nom})	kN kN	1/2/5/10/ 20/50/100	200/ 250/ 300	500	20/50/100/200/250/500
Maximum operating force (F_G)	% F_{nom}		150		150
Breaking force (F_B)	% F_{nom}		>300		>300
Lateral force limit (F_Q)	% F_{nom}		10		10
Rated characteristic value (C_{nom})	mV/V		2.000 ± 0.005		
Relative deviation of zero signal	%		≤ 3		
Reference excitation voltage (U_{ref})	VDC		5		
Operating range of excitation voltage ($B_{U,G}$)	VDC		5 .. 20		
Input resistance (R_e)	Ω		770 ± 40		
Output resistance (R_a)	Ω		700 ± 10		
Insulation resistance (R_{is})	Ω		> 5 x 10^9		
Relative linearity error (d_{lin})	%	0.1	0.2	0.5	0.2
Relative reversibility error (v)	%	0.1	0.2	0.5	
Temperature effect on zero signal (TK_0)	%/10K	0.1	0.1	0.1	0.1
Temp. effect on characteristic value (TK_C)	%/10K	0.1	0.1	0.1	
TK of output signal under load	%/10K				0.2
Relative creep over 30 minutes ($d_{cr.\ F+E}$)	%	0.1	0.1	0.1	0.2
Tolerance of output signal	%				0.1
Tolerance of zero signal	%				≤ 3
Reference temperature (T_{ref})	°C		+23		+23
Rated temperature range ($B_{T,nom}$)	°C		-20 ... +50		-20 ... +50
Operating temperature range ($B_{T,G}$)	°C		-30 ... +70		-30 ... +70
Storage temperature range ($B_{T,S}$)	°C		-30 ... +70		-30 ... +70
Environmental protection (EN 60529)			IP 67		IP 67
Supply voltage	VDC				19 ... 28
Input current	mA				35 (at 24V)
Output signal for compression load (0...F_N)					
Alternatively:					
- Voltage output (max. load: 5mA)	V				0 ... 10
- Current output	mA				4 ... 20
- Maximum resistance	Ω				300

All data according to VDI/VDE/DKD 2638

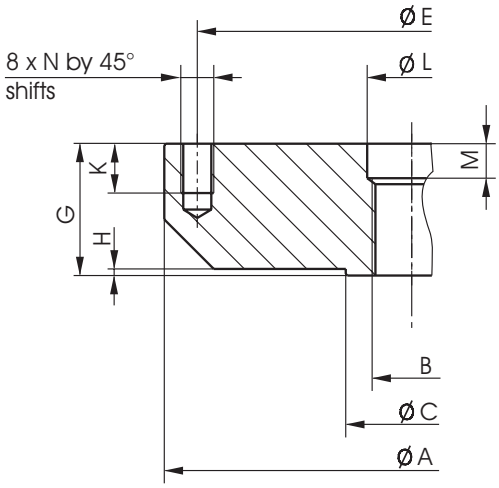
Appliances for Installation and Mounting

Dimensions (mm)

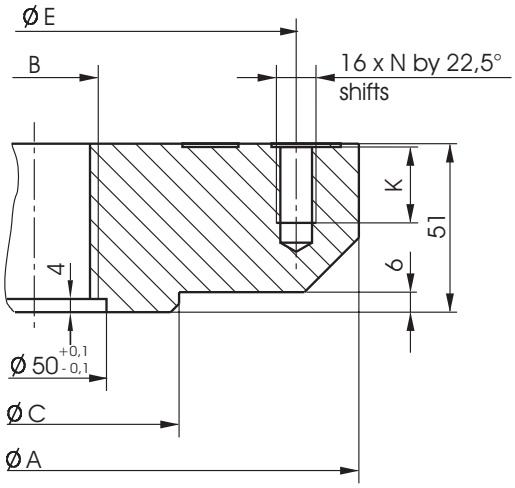
load button



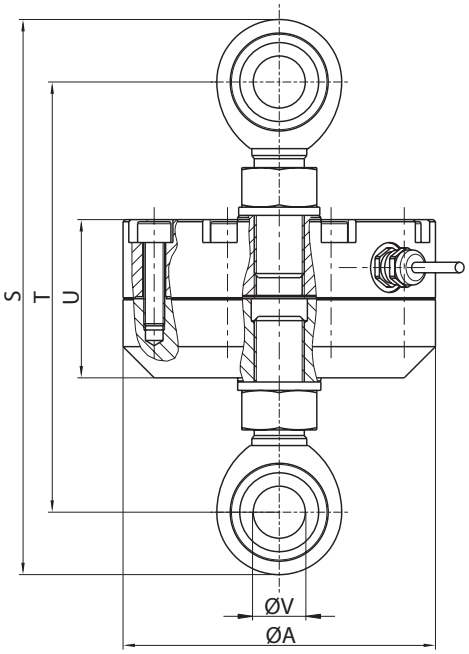
base plate



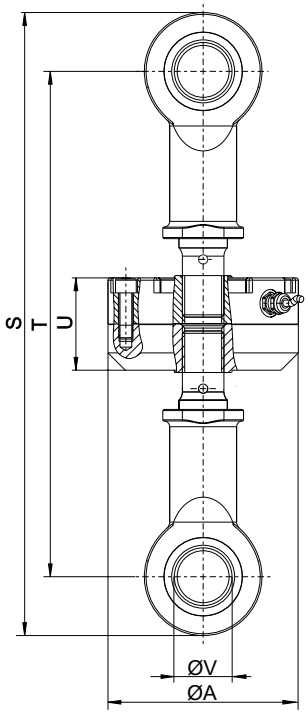
KAF 1 kN to KAF 200 kN



KAF 250 kN to KAF 500 kN



KAF 1 kN ... KAF 100 kN and KAF 250 kN/ 300 kN
with base plate and rod end bearings



KAF 200 kN and KAF 500 kN
with base plate and rod end bearings

Rated Force	K	L	M	N	O	P	Q	R	S	T	U	V
1/ 2/ 5/ 10 kN	14	14	10,5	M8	30	15	29	R50	approx. 175	approx. 143	64	12 +0,018
20/ 50 kN	15	27	10,5	M10	30	22	42	R50	approx. 266	approx. 206	76	25 +0,021
100 kN	15	-	-	M12	50	21	58	R120	approx. 380	approx. 298	80	35 -0,012
200 kN	15	-	-	M12	50	21	58	R120	approx. 532	approx. 430	80	45 -0,012
250 kN/ 300 kN	24	-	-	M12	70	40	70	R120	approx. 513	approx. 401	102,5	50 -0,012
500 kN	24	-	-	M12	70	40	70	R120	approx. 671	approx. 536	102,5	60 -0,015

Order Example

Type Code	Description
KAF/10kN/0.1	Force transducer 10kN with 0.1% accuracy Accuracy class Rated force Model
KAF-E/100kN/0,2/24V/±10V	Force transducer 100kN with 0.2% accuracy and integrated amplifier Output signal Supply voltage Accuracy class Rated load E = Integrated amplifier Model

Accessoires/ Options

	Type Code	Description
Load button	XKM 019 XKM 044 XKM 045 XKM 046	K12-50 for KAF 1 kN to 10 kN K24-50 for KAF 20 kN and 50 kN K36-120 for KAF 100 kN and 200 kN K45-120 for KAF 250 kN to 500 kN
Base plate	XKM 037 XKM 038 XKM 035 XKM 031	For KAF 1 kN to 10 kN For KAF 20 kN and 50 kN For KAF 100 kN and 200 kN For KAF 250 kN to 500 kN
Rod end bearing	GKA 12 GKA 25 GKA 35 GKA 45 GKA 50 GKA 60	With locknut for KAF 1 kN to 10 kN With locknut for KAF 20 kN and 50 kN With locknut for KAF 100 kN With adapter for KAF 200 kN With locknut for KAF 250 kN and 300 kN With adapter for KAF 500 kN
Connector male and cable	XKC 041 XKC 044.01 XKC 046.03 XKC 046.04 XKC 071	Connector male instead of open cable ends, 6-pin Connector male, mounted to sensor body, 5-pin Connecting cable 5 m for XKC 044.01, 5-pin Connecting cable 10 m for XKC 044.01, 5-pin Plug connected to force transducer (TEDS), 6-pin
ATEX-Certificate	KAF-EX	For 1 kN ... 500 kN. Please note ATEX data sheet!
CANopen interface	KAF-DI	For 20 kN to 500 kN Please note data sheet „Force Transducer with CANopen Interface“!