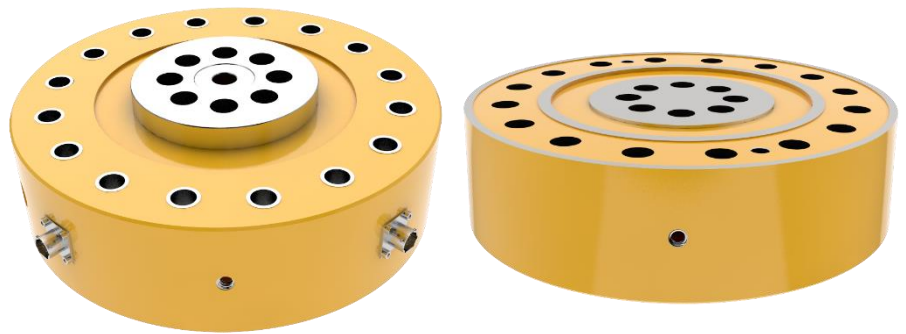


Data sheet

Force Transducer

Series DR-F

(50 kN – 2,5 MN)



Benefits/Application

- ▶ Accuracy class from 0.04
- ▶ Two built-in accelerometers
- ▶ For static and dynamic tensile and compressive forces
- ▶ High resonant frequency
- ▶ 6-wire connection technology
- ▶ Popular connection dimensions

Options/Accessories

- ▶ Second redundant measuring circuit

Technical data

Nominal force/compression/tension		$\pm F_{nom}$	kN	50	125	250	500	1000	1500	2000	2500
Metrological Data	Accuracy class			0.04			0.05	0.06		0.08	
	Linearity error	d_{lin}	%	0.04			0.05	0.06		0.08	
	Hysteresis	h	%	0.04			0.05	0.06		0.08	
	Repeatability (f.s.)		%	0.025							
	Zero error	f_0	%	0.01							
	Creep		%	0.025							
	Temperature effect on characteristic value per 10 K	TK_C	%/10 K	0.015							
	Temperature effect on zero signal per 10 K	TK_0	%/10 K	0.015							
	Eccentricity effect		%/mm	<0.01							
	Bending moment effect		%/N·m	<0.01							
Electrical Data	Rated characteristic value	C_{nom}	mV/V	2							
	Characteristic value tolerance	d_c	%	0.25							
	Zero signal deviation	$d_{s,0}$	%	1							
	Input resistance	R_e	Ω	375							
	Output resistance	R_a	Ω	280 - 360							
	Insulation resistance	R_{is}	Ω	>10 ⁹							
	Operating range of excitation voltage	$B_{U,G}$	V	0.5 - 12							
	Protection (DIN EN 60529)			67							

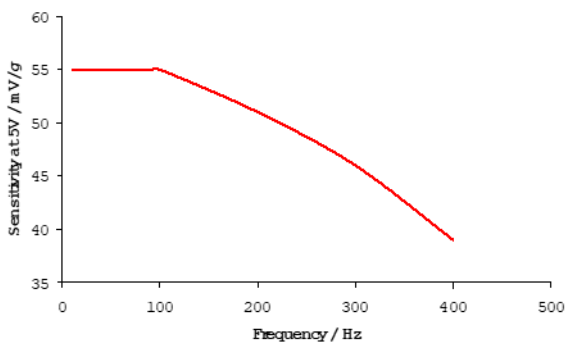
Technical data

Mechanical Data	Nominal force/compression/tension	$\pm F_{nom}$	kN	50	125	250	500	1000	1500	2000	2500	
	Rated Displacement	s_{nom}	mm	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.12	
	Spring rigidity	c_{ax}	kN/mm	1650	3125	4200	7150	12500	16650	18250	21000	
	Mass	m	kg	4.3	4.3	10.3	29.1	44.9	93	155.7	192.9	
	Proportionate moving mass	m_{mess}	kg	1.1	1.1	3	7.9	12.7	40	47.1	64.5	
	Fundamental resonant frequency	f_G	kHz	6.2	8.5	6	4.8	5	3.3	3.2	2.8	
	Permissible oscillation stress for the transducer ¹⁾		%	±100								
Limits	Force limit		%	230								
	Breaking force		%	400				300				
	Lateral force limit		%	100								
	Permissible eccentricity	e_G	mm	25			20					
	Bending moment limit	M_{bzul}	kN·m	1.75	4.5	7.5	15	30	45	60	75	
	Rated temperature range	$B_{T,nom}$	°C	-10 - +45								
	Operating temperature range	$B_{T,G}$	°C	-30 - +85								

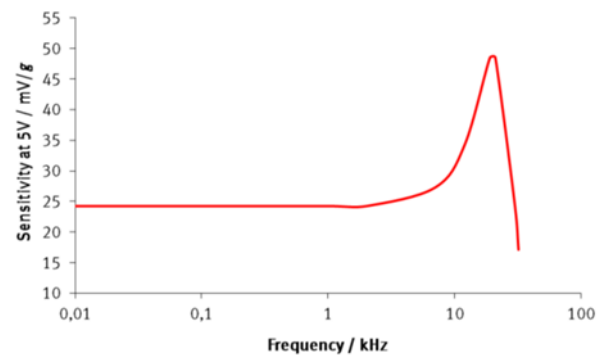
1) Recommendation: Please observe the measures of VDI 2230 Pages 1 and 2 regarding to durability of flange connection.

Acceleration sensors

Typ		I*	II*
Rated acceleration	<i>g</i>	19	50
Rated sensitivity at 5 V	mV/ <i>g</i>	57 ± 10	40 ± 2 (ratiometric)
Static output voltage at 0 <i>g</i>	V _{DC}	1.5 ± 0.25	2.5 ± 0.25
Typical bandwidth	kHz	1.6	11
Excitation voltage	V _{DC}	(5±0.25)	
Linearity error	%	0.3	0.1
Resonant frequency	kHz	5.5	21

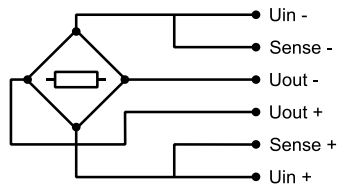


Typ I (19)



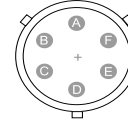
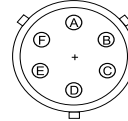
Typ II (50g)

* Acceleration sensors (19g/50g) will be fitted as standard from Q4/2022 onwards



Connection
pluggable¹⁾²⁾

6-pin Amphenol
cable connector: - appliance inlet:



Connection		Wire color	Pin
Supply voltage (+)	U _{in+}	blue	A
Supply voltage (-)	U _{in-}	black	D
Measurement signal (+)	U _{out+}	white	B
Measurement signal (-)	U _{out-}	red	C
Sense (+)	Sense+	green	F
Sense (-)	Sense-	grey	E
Shielding			Housing

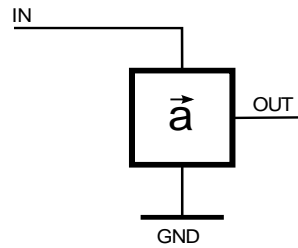
1) View too weldingside

2) Female Amphenol typ: MIL-C-26482 series 1; bayonet catch



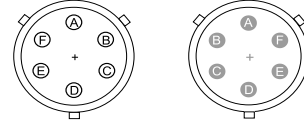
Pluggable connection

- Cable is not standard scope of supply
- Cable length 5 m. Other cable lengths on request



Connection pluggable¹⁾²⁾

6-pin Amphenol cable connector: - appliance inlet:



Connection		wire color	Pin (Type 0)	Pin (Type I)
Supply voltage 5 V	IN	blue	A	
Output voltage	OUT	white	B	
Ground	GND	grey	E	
Supply voltage 5 V	IN	green		F
Output voltage	OUT	red		C
Ground	GND	black		D

1) View too weldingside

2) Female Amphenol typ: MIL-C-26482 series 1 ; bayonet catch



Pluggable connection

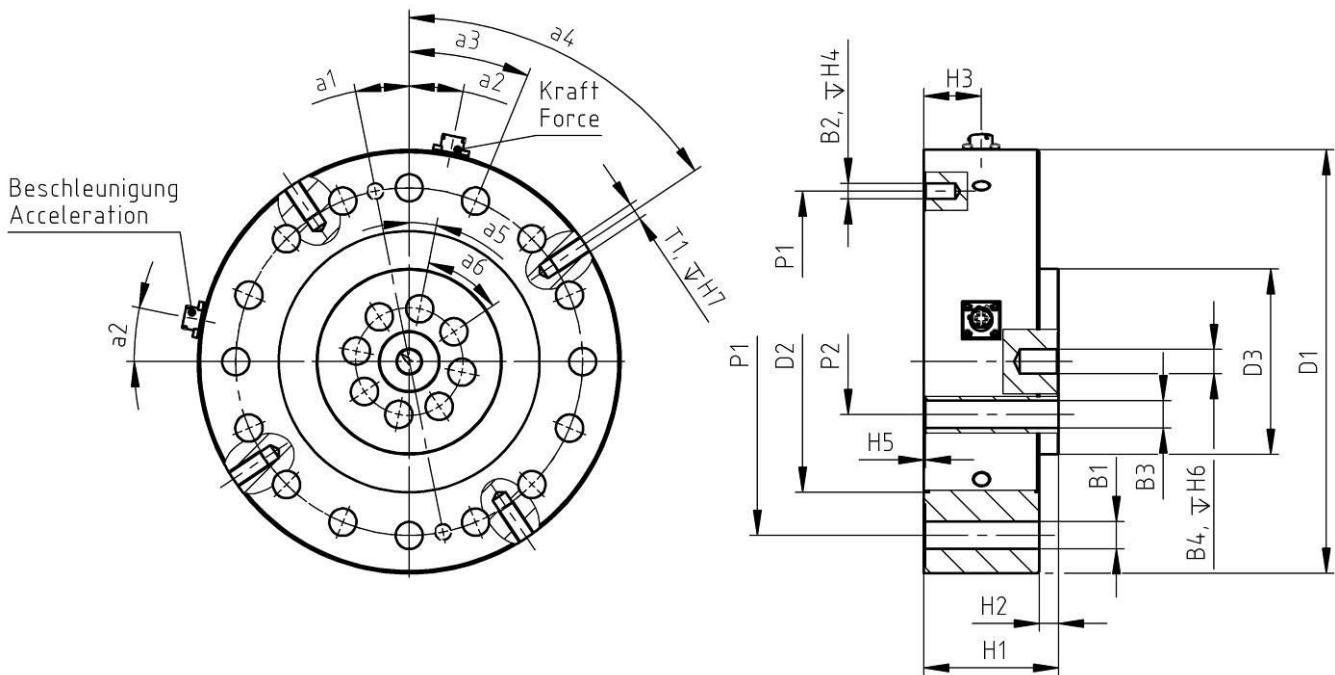
- Cable is not standard scope of supply
- Cable length 5 m. Other cable lengths on request

Option: 2.Measuring circuit

▶ Second redundant measuring circuit

● In case of two circuits the technical data are similarly valid for both circuits

Mating dimensions



Nominal force compression/tension	$\pm F_{norm}$	kN	50	125	250	500	1000	1500	2000	2500
Bore	$\varnothing B_1$	mm	10.5	13	17.5	22	26	33	30	
Bore	$\varnothing B_2$	mm	10H7							
Bore	$\varnothing B_3$	mm	10.5	17	17.5	26	33			
Bore	$\varnothing B_4$	mm	10H7 16H7							
Diameter	$\varnothing D_1$	mm	153.9	203.2	279	304.8	393.7	480	520.7	
Diameter	$\varnothing D_2$	mm	108 _{H8}	138.9 _{H8}	172.1 _{H8}	195 _{H8}	254.4 _{H8}	310 _{H8}	340 _{H8}	
Diameter	$\varnothing D_3$	mm	61.2 _{h9}	95.5 _{h9}	122.2 _{h9}	144.3 _{h9}	196.9 _{h9}	232 _{h9}	267.9 _{h9}	
Pitch circle diameter	$\varnothing P_1$	mm	130.3 \pm 0.1	165.1 \pm 0.1	229 \pm 0.1	241.3 \pm 0.1	322.1 \pm 0.1	385 \pm 0.2	419.1 \pm 0.2	
Pitch circle diameter	$\varnothing P_2$	mm	45 \pm 0.1	71 \pm 0.1		105 \pm 0.1	150 \pm 0.1	180 \pm 0.2	215 \pm 0.2	
Thread	T_1		-			M12				
Height	H_1	mm	44.5-0.1	63.5-0.1	88.9-0.1	114.3-0.1	139.7-0.1	155-0.1	158.8-0.1	
Height	H_2	mm	3.1	6.3	12.7	6.3	12.7	6.3		
Height	H_3	mm	20.5	28.6	37.9	54	63.5	74.5		
Height	H_4	mm	17							
Height	H_5	mm	0.5		1					
Height	H_6	mm	10	20						
Height	H_7	mm	-			24				

Mating dimensions

Nominal force compression/tension	$\pm F_{norm}$	kN	50	125	250	500	1000	1500	2000	2500
Angle	a_1		15°		11.25°		9°	7.5°		6.43°
Angle	a_2		15°		11.25°		9°	7.5°		6.43°
Angle	a_3		12x30°		16x22.5°		20x18°	24x15°		28x12.86°
Angle	a_4		-			56.25°	63°	52.5°		57.8°
Angle	a_5		15°		11.25°		9°	7.5°		6.43°
Angle	a_6		8x45°				12x30°		14x25.71°	