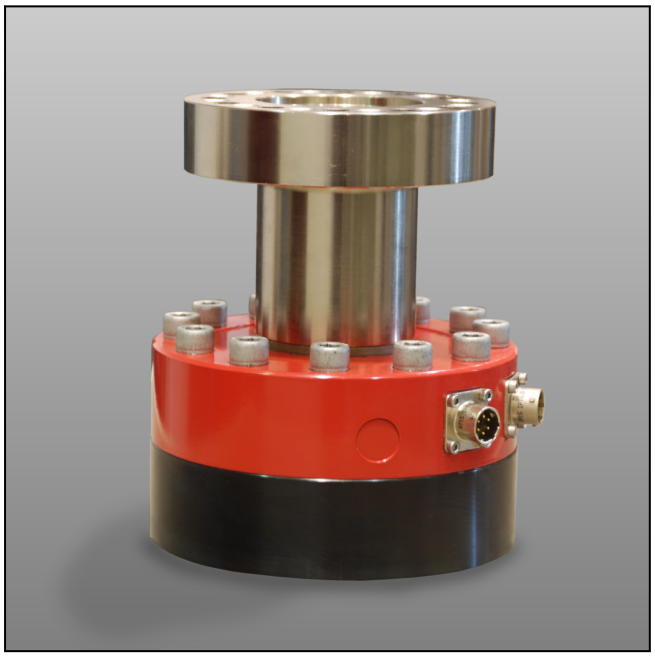
Zwick / Roell

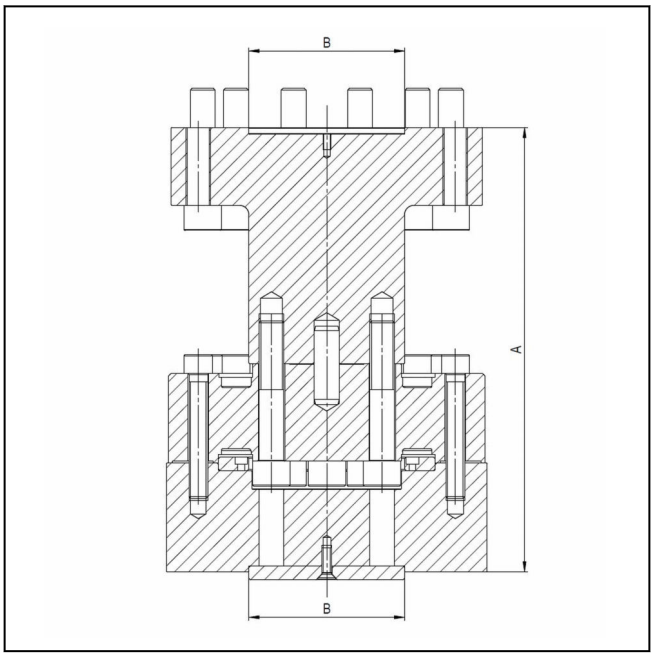
Product Information

ZwickRoell Xforce Dynamic load cell for Vibrophores

CTA: 90612 90666



Xforce Dynamic with mounting flange



Xforce Dynamic: general layout drawing

Range of application

Load cells in the Xforce Dynamic range have been specially developed for use in dynamic testing machines and enable highly accurate measurement of tensile and compression forces under both static and oscillating/ fatigue loading. They are fatigue-resistant and suitable for alternating-load tests.

Description of operation

Xforce Dynamic load cells have strain gages attached to the measuring body in accordance with the shear-web measurement principle. Their high stiffness and natural frequency make them the natural choice for dynamic applications.

The accelerations occurring on load cells during dynamic tests, in combination with the connected masses, lead to distortion of the actual specimen force being measured. Xforce Dynamic load cells are therefore additionally equipped with two accelerometers to compensate for the inertial forces which arise. As the two accelerometers have different measurement ranges, optimum matching of the acceleration measurement to the design/layout of the machine or to the test is possible. To avoid parasitic oscillations influencing the measurement signal the sensors are arranged exactly in the force measurement plane.

Xforce Dynamic load cells possess an intelligent EEPROM plug for connection to the ZwickRoell electronics. All relevant load cell data, including calibration data, are stored on the plug, enabling the ZwickRoell testing software to identify the sensor automatically and among other things set the force limits accordingly.

All mounting surfaces are in the form of a flange with centering spigot, ensuring alignment of the load string.

Features

- fatigue-resistant up to ±100% of nominal force
- high natural resonance for use at high test-frequencies
- inertial force compensation via two integrated accelerometers
- high safety margin against overload
- intelligent EEPROM plug with sensor data for simple connection to ZwickRoell electronics
- 6-conductor technology for maximum measurement accuracy
- flange adapter with centering spigot for easy installation

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Nominal force	**5**	**10**	**25**	**50**	**kN**
Item No.	**1015190**	**1015191**	**1015192**	**1015193**	
Electrical / metrological specifications					
Linearity deviation[1)2)]	0.03	0.04	0.04	0.04	%
Hysteresis[1)]	0.03	0.04	0.04	0.05	%
Reproducibility[1)]	0.025	0.025	0.025	0.025	%
Zero-point deviation[1)]	0.01	0.01	0.01	0.01	%
Effect of temperature on characteristic value	0.015	0.015	0.015	0.015	%/10K
Temperature effect on zero signal	0.015	0.015	0.015	0.015	%/10K
Nominal characteristic value	1	2	2	2	mV/V
IP rating			67		
Mechanical data / limit values					
Nominal measurement travel	0.02	0.03	0.03	0.03	mm
Fundamental resonant frequency[3)]	9.3	6.6	9.2	6.2	kHz
Fatigue load[4)]	100	100	100	100	%
Limit force[5)]	230	230	230	230	%
Breaking load	400	400	400	400	%
Limit transverse force[6)]	100	100	100	100	%
Limit bending moment[7)]	0.140	0.330	0.635	1.750	kNm
Nominal temperature range			-10° to +45° C		
Dimensions / connection size					
Height with adapter (A)	105	119	119	183	mm
Mounting hole pattern					
Bolt circle Ø	70	70	70	105	mm
Bolts	6 x M8	6 x M8	6 x M8	12 x M10	
Hole	6 x 9	6 x 9	6 x 9	12 x 11	
Centering spigot Ø (B)	30 H7	30 H7	30 H7	70 H7	mm

1) Related to final value
2) Maximum deviation of displayed value from reference line
3) Frequency at which the unloaded load cell with no attachments vibrates following pulse-type excitation
4) Permissible load range of a sinusoidal pulsating or alternating load which the load cell tolerates for more than 10^7 cycles with no significant changes in its measuring characteristics
5) Limit force refers to the greatest force with which the load cell can be loaded without this resulting in significant mechanical deformation or change in the zero signal.
6) Highest permissible static transverse force perpendicular to the measurement axis which does not result in a significant change to the load cell characteristics
7) Static bending moment, e.g. resulting from off-center force application, which does not result in a significant change in characteristics

Nominal force	**100**	**250**	**500**	**600**	**1000**	**kN**
Item No.	**1011630**	**1011631**	**3005209**	**1065577**	**3001507**	
Electrical / metrological specifications						
Linearity deviation[1)2)]	0.04	0.04	0.06	0.06	0.06	%

All data at ambient temperature.

We reserve the right to make technical changes in the course of ongoing development.

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ZwickRoell Xforce Dynamic load cell for Vibrophores

Nominal force	**100**	**250**	**500**	**600**	**1000**	**kN**
Item No.	**1011630**	**1011631**	**3005209**	**1065577**	**3001507**	
Hysteresis[1)]	0.05	0.05	0.06	0.06	0.06	%
Reproducibility[1)]	0.025	0.025	0.025	0.025	0.025	%
Zero-point deviation[1)]	0.01	0.01	0.01	0.01	0.01	%
Effect of temperature on characteristic value	0.015	0.015	0.015	0.015	0.015	%/10 K
Temperature effect on zero signal	0.015	0.015	0.015	0.015	0.015	%/10 K
Nominal characteristic value	2	2	2	2	2	mV/V
IP rating			67			
Mechanical data / limit values						
Nominal measurement travel	0.04	0.06	0.07	0.07	0.08	mm
Fundamental resonant frequency[3)]	8.5	6.0	4.8	4.8	5.0	kHz
Fatigue load[4)]	100	100	100		100	%
Limit force[5)]	230	230	230	230	230	%
Breaking load	400	400	400		400	%
Limit transverse force[6)]	100	100	100	100	100	%
Limit bending moment[7)]	4.5	7.5	15.0	15.0	30.0	kNm
Nominal temperature range			-10° to +45° C			
Dimensions / connection size						
Height with adapter (A)	183	275	333	333	428	mm
Mounting hole pattern						
Bolt circle Ø	105	165	240	240	280	mm
Bolts	12 x M10	12 x M16	12 x M20	12 x M20	12 x M24	
Hole	12 x 11	12 x 17.5	12 x 22	12 x 22	12 x 26	
Centering spigot Ø (B)	70 H7	100 H7	100 H7	100 H7	100 H7	mm

1) Related to final value
2) Maximum deviation of displayed value from reference line
3) Frequency at which the unloaded load cell with no attachments vibrates following pulse-type excitation
4) Permissible load range of a sinusoidal pulsating or alternating load which the load cell tolerates for more than 10^7 cycles with no significant changes in its measuring characteristics
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All data at ambient temperature.