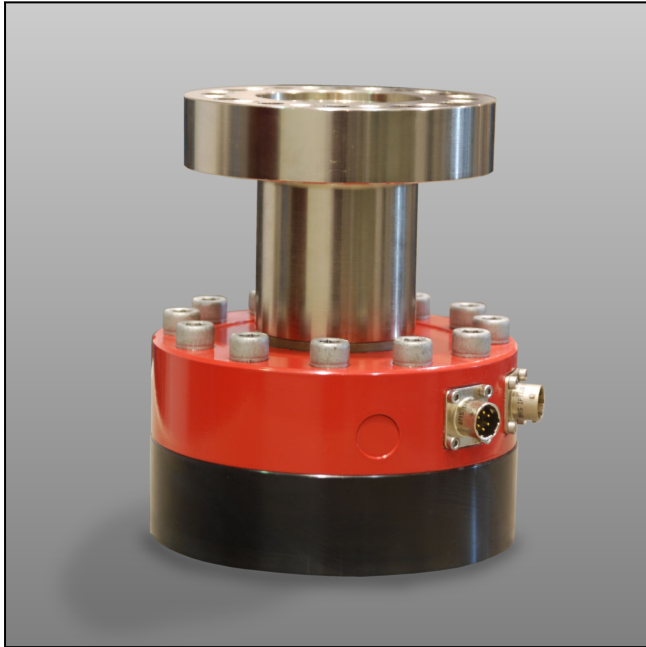


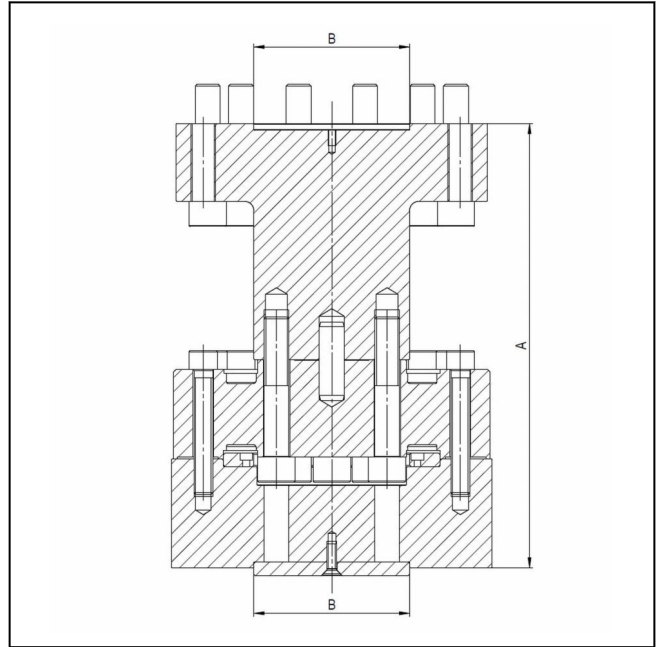
Product Information

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 $\pm 100\%$ 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

Product Information

ZwickRoell Xforce Dynamic load cell for Vibrophores

| Nominal force Item No. | 5 1015190 | 10 1015191 | 25 1015192 | 50 1015193 | kN |
|--|-----------------|---------------|---------------|---------------|-----------------------|
| Electrical / technical measurement data | | | | | |
| 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 | % |
| Temperature influence on the zero-signal TK ₀ , max. | 0.0015 | 0.0015 | 0.0015 | 0.0015 | % F _{nom} /K |
| Temperature influence on characteristic value TK _C , max. | 0.0015 | 0.0015 | 0.0015 | 0.0015 | % F _{1st} /K |
| Nominal characteristic value | 1 | 2 | 2 | 2 | mV/V |
| IP protection class | 67 | | | | |
| Mechanical data / limit values | | | | | |
| Nominal measured displacement | 0.02 | 0.03 | 0.03 | 0.03 | mm |
| Basic resonance ³⁾ | 9.3 | | 9.2 | 6.2 | kHz |
| Fatigue load ⁴⁾ | 100 | 100 | 100 | 100 | % |
| Limit force ⁵⁾ | 230 | 230 | 230 | 230 | % |
| Force at break | 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° ... +45° C | | | | |
| Dimensions / connection size | | | | | |
| Height with adapter (A) | 105 | 119 | 119 | 183 | mm |
| Mounting hole pattern | | | | | |
| Pitch circle Ø | 70 | 70 | 70 | 105 | mm |
| Screws | 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 gauge Ø (B) | 30 H7 | 30 H7 | 30 H7 | 70 H7 | mm |

1) Related to the end value

2) Maximum deviation of displayed value from reference line

3) Frequency at which the unloaded load cell without any mounting parts vibrates after a pulse-like force

4) Permissible load range of a sinusoidal pulsating or alternating load which the load cell tolerates for more than 10⁷ cycles without any significant changes in its measurement properties

5) Limit force refers to the greatest force with which the load cell can be loaded without resulting in significant mechanical deformation or change in the zero signal

6) Largest permissible static transverse force, perpendicular to the measurement axis without resulting in a significant change in properties

7) Static bending moment, e.g. as a result of eccentric force application that does not lead to a significant change in properties

| Nominal force Item No. | 100 1011630 | 250 1011631 | 500 3005209 | 600 1065577 | 1000 3001507 | kN |
|--|----------------|----------------|----------------|----------------|-----------------|----|
| Electrical / technical measurement data | | | | | | |
| Linearity deviation ¹⁾²⁾ | 0.04 | 0.04 | 0.06 | 0.06 | 0.06 | % |
| Hysteresis ¹⁾ | 0.05 | 0.05 | 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.

Product Information

ZwickRoell Xforce Dynamic load cell for Vibrophores

| Nominal force Item No. | 100 1011630 | 250 1011631 | 500 3005209 | 600 1065577 | 1000 3001507 | kN |
|---|-----------------|----------------|----------------|----------------|-----------------|--------------------------------|
| Reproducibility ¹⁾ | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | % |
| Temperature influence on the zero signal TK ₀ , max. | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | % F _{nom} / K |
| Temperature influence on the characteris- tic value TK _C , max. | 0.0015 | 0.0015 | 0.0015 | 0.0015 | 0.0015 | % F _{actual} /K |
| Nominal characteristic value | 2 | 2 | 2 | 2 | 2 | mV/V |
| IP protection class | 67 | | | | | |
| Mechanical data / limit values | | | | | | |
| Nominal measured displacement | 0.04 | 0.06 | 0.07 | 0.07 | 0.08 | mm |
| Basic resonance ³⁾ | 8.5 | 6.0 | 4.8 | 4.8 | 5.0 | kHz |
| Fatigue load ⁴⁾ | 100 | 100 | 100 | 100 | 100 | % |
| Limit force ⁵⁾ | 230 | 230 | 230 | 230 | 230 | % |
| Force at break | 400 | 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° ... +45° C | | | | | |
| Dimensions / connection size | | | | | | |
| Height with adapter (A) | 183 | 275 | 333 | 333 | 428 | mm |
| Mounting hole pattern | | | | | | |
| Pitch circle Ø | 105 | 165 | 240 | 240 | 280 | mm |
| Screws | 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 gauge Ø (B) | 70 H7 | 100 H7 | 100 H7 | 100 H7 | 100 H7 | mm |

1) Related to the end value

2) Maximum deviation of display value from the reference line

3) Frequency at which the unloaded load cell without any mounting parts vibrates after a pulse-like force

4) Permissible load range of a sinusoidal pulsating or alternating load which the load cell tolerates for more than 10⁷ cycles without any significant changes in its measurement properties

5) Limit force refers to the greatest force with which the load cell can be loaded without resulting in significant mechanical deformation or change in the zero signal

6) Largest permissible static transverse force, perpendicular to the measurement axis without resulting in a significant change in properties

7) Static bending moment, e.g. as a result of eccentric force application that does not lead to a significant change in properties