

## F313 Low Profile Donut Loadcell

**Standard Ranges 10, 20, 40, 80, 100, 120, 160 and 200kN (1 to 20tonnef)**

- ✓ Low profile with centre hole
- ✓ Ranges to suit bolt sizes from M6 to M36
- ✓ Stainless steel construction
- ✓ Tensile applications are "fail-safe"
- ✓ Traceable calibration with certificate included in the standard price
- ✓ Standard 1 year warranty



### Specification

| Parameter                                     | Value  | Unit |
|---|--|------|
| Non-linearity - Terminal                      | ±0.5 (10kN) / ±0.5 (20 to 200kN)             | % RL |
| Hysteresis                                    | ±0.5 (10kN) / ±0.5 (20 to 200kN)             | % RL |
| Creep - 20 minutes                            | ±0.1 (10kN) / ±0.1 (20 to 200kN)             | % AL |
| Repeatability (excluding rotational effects)  | ±0.1 (10kN) / ±0.1 (20 to 200kN)             | % RL |
| Rated output - Nominal                        | 1.3 (10kN) / 1.3 (20 to 200kN)               | mV/V |
| Rated output - Rationalised                   | 1.0 (10kN) / 1.0 (20 to 200kN)               | mV/V |
| Rationalisation tolerance                     | ±0.5 (10kN) / ±0.5 (20 to 200kN)             | % RL |
| Zero load output                              | ±4 (10kN) / ±4 (20 to 200kN)                 | % RL |
| Temperature effect on rated output per °C     | ±0.005 (10kN) / ±0.005 (20 to 200kN)         | % AL |
| Temperature effect on zero load output per °C | ±0.03 (10kN) / ±0.03 (20 to 200kN)           | % RL |
| Temperature range - Compensated               | -10 to +50 (10kN) / -10 to +50 (20 to 200kN) | °C   |
| Temperature range - Safe                      | -10 to +80 (10kN) / -10 to +80 (20 to 200kN) | °C   |
| Excitation voltage - Recommended              | 10 (10kN) / 10 (20 to 200kN)                 | V    |

|  |                                  |      |
|--|----------------------------------|------|
| Excitation voltage - Maximum                             | 10 (10kN) / 20 (20 to 200kN)     | V    |
| Bridge resistance  | 350 (10kN) / 700 (20 to 200kN)   | Ω    |
| Insulation resistance - Minimum at 50Vdc                 | 500 (10kN) / 500 (20 to 200kN)   | MΩ   |
| Overload - Safe  | 50 (10kN) / 50 (20 to 200kN)     | % RL |
| Overload - Ultimate                                      | 400 (10kN) / 400 (20 to 200kN)   | % RL |
| Sealing  | IP65                             |      |
| Weight - Nominal (excluding cable)                       | 15 (10kN) / 20-260 (20 to 200kN) | g    |
| All standard ranges are manufactured in stainless steel. |                                  |      |

**Geometry: Axial strain cylinder in weather sealed case, with raised end load bearing faces and hole right through. For use in compression or in fail-safe tensile applications on a wide range of OEM or end-user applications.**

The F313 is ideally suited to engineering force measurements. It is designed for easy installation, usually between two flat faces bearing on its loading rings, either unattached or with retaining spigots positioned in the centre hole. Alternatively tensile load transfer can be achieved via a tie rod assembly through the centre hole. In this way the loadcell can indirectly measure tensile loads in a "fail-safe" mode. We are happy to design variants of this loadcell to meet your specific requirements. Versions can be manufactured for fully compensated operation up to +250°C. Please consult our engineering department.

### Order Codes

| Code  | Description                       |
|---|-----------------------------------|
| F313CFR0K0                                  | Compression, IP65, unrationalised |
| F313CFR0KN                                  | Compression, IP65, rationalised   |
| Change the K to an H for the 1 tonne range. |                                   |

## Structural Stiffness - Nominal

| Range (kN) | Stiffness (N/m)        |
|------------|------------------------|
| 10         | 1.1 x 10 <sup>9</sup>  |
| 20         | 2.2 x 10 <sup>9</sup>  |
| 40         | 4.4 x 10 <sup>9</sup>  |
| 80         | 8.8 x 10 <sup>9</sup>  |
| 100        | 7.7 x 10 <sup>9</sup>  |
| 120        | 7.1 x 10 <sup>9</sup>  |
| 160        | 8.0 x 10 <sup>9</sup>  |
| 200        | 1.0 x 10 <sup>10</sup> |

## Notes

- AL = Applied load.
- RL = Rated load.
- Temperature coefficients apply over the compensated range.
- The load must be applied directly through the central loading axis.

## Connections

For ranges up to 4 tonnef the loadcell is fitted with 2 metres of PVC insulated 4 core screened cable type 7-1-4C. Ranges above 4 tonnef are fitted with 7-2-4C cable.

Excitation + = Red, Excitation - = Blue, Signal + = Yellow, Signal - = Green, Screen = Orange.

The screen is not connected to the loadcell body.

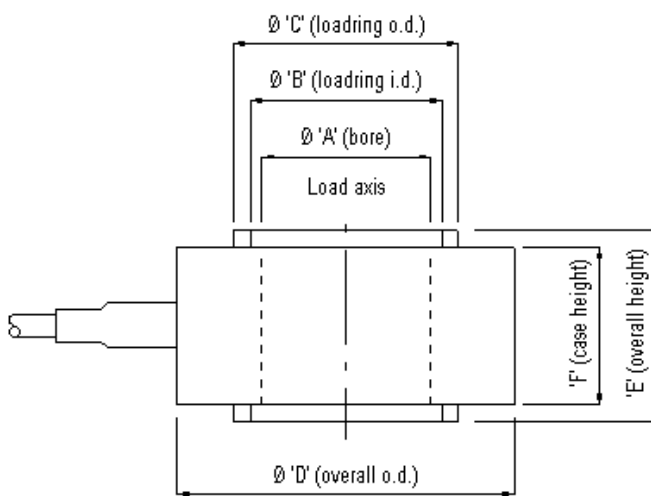
When this loadcell is rationalised the resistors are housed in a capsule located in the loadcell cable 100mm from the free end. Capsule dimensions are Ø10mm by 57mm.

## Files

| Type      | Title                     | Download                 |
|-----------|---------------------------|--------------------------|
| STEP File | F313CFR0K0 10kN (1tonnef) | <a href="#">Download</a> |
| STEP File | F313CFR0K0 20kN (2tonnef) | <a href="#">Download</a> |

|           |                             |                          |
|-----------|-----------------------------|--------------------------|
| STEP File | F313CFR0K0 40kN (4tonnef)   | <a href="#">Download</a> |
| STEP File | F313CFR0K0 80kN (8tonnef)   | <a href="#">Download</a> |
| STEP File | F313CFR0K0 100kN (10tonnef) | <a href="#">Download</a> |
| STEP File | F313CFR0K0 120kN (12tonnef) | <a href="#">Download</a> |
| STEP File | F313CFR0K0 160kN (16tonnef) | <a href="#">Download</a> |
| STEP File | F313CFR0K0 200kN (20tonnef) | <a href="#">Download</a> |

## Outline



| Range  | Bolt Size | A    | B    | C    | D  | E  | F  |
|--------|-----------|------|------|------|----|----|----|
| 10 kN  | M6        | 6.1  | 7.1  | 8.9  | 18 | 15 | 11 |
| 20 kN  | M8        | 8.1  | 9.5  | 12.3 | 22 | 15 | 11 |
| 40 kN  | M10       | 10.2 | 12.3 | 16.5 | 28 | 16 | 11 |
| 80 kN  | M12       | 12.2 | 15.4 | 21.9 | 38 | 20 | 14 |
| 100 kN | M16       | 16.3 | 19.6 | 26.2 | 42 | 24 | 18 |
| 120 kN | M24       | 24.3 | 27.3 | 33.3 | 50 | 29 | 23 |
| 160 kN | M30       | 30.5 | 33.8 | 40.3 | 60 | 35 | 28 |
| 200 kN | M36       | 36.5 | 40   | 46.9 | 75 | 36 | 28 |

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