



## N ALF 319

### Description

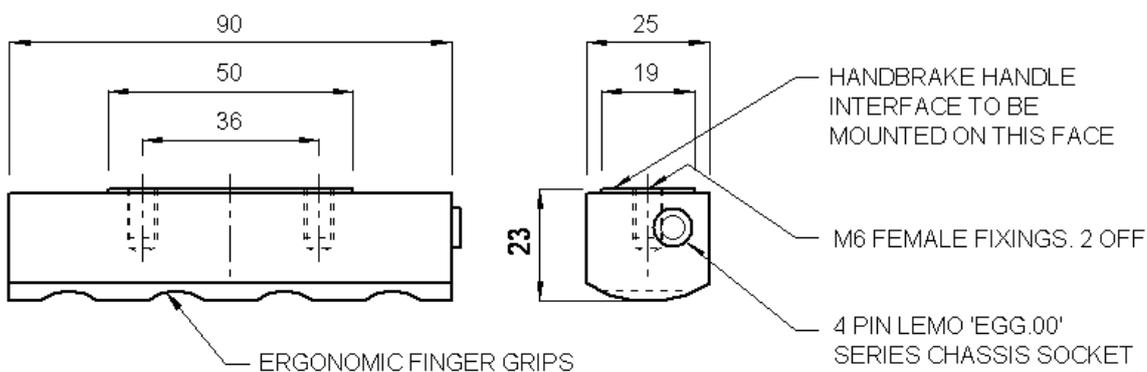
- Measurement range 0 ... 1 kN
- Compression
- Non-linearity 0.05 % RL
- Output signal rationalised 1.0 mV/V  $\pm$ 0.2 %
- Supply voltage 10 VDC



The ALF319 handbrake load cell offers an excellent technical solution to measurement of an ergonomic force. The double shear web design and rigid low profile finger grip combine to maintain the same precision of measurement along the entire finger grip length. The typical unevenly distributed force applied by the human hand is measured with good repeatability and minimum error in a sense normal to the lever axis.

The ALF319 has been fitted directly to a handbrake lever and also adapted for production tests by using an easy fit socket moulding, as care must be taken to ensure that the hand clamping forces are not measured in addition to the handbrake pull force the moulding used a 'dorsal fin' to ensure hand clamping was avoided.

### Dimensions



Dimensions in „mm“, approx. values  
These drawings are for information only and not intended for construction purpose.  
Please contact us for detailed drawings.

## Specifications

Rated load:	1 kN
Non-linearity, terminal:	±0.05 % RL
Hysteresis:	±0.05 % RL
Creep, 20 min:	±0.1 % AL
Repeatability:	±0.02 % RL
Rated output, rationalised:	1.0 mV/V ±0.2 % RL
Zero load output:	±4 % RL
Temperature effect on rated output:	±0.005 % AL/K
Temperature effect on zero load output:	±0.01 % RL/K
Compensated temperature range:	-10 ... +50 °C
Operating temperature range:	-10 ... +80 °C
Supply voltage, recommended:	10 V
Supply voltage, max.:	10 V
Bridge resistance:	350 Ω
Insulation resistance, minimum at 50 VDC:	500 MΩ
Structural stiffness, nominal:	1.4 x 10 <sup>7</sup> N/m
Overload, safe:	150 % RL
Overload, ultimate:	200 % RL
Dynamic load capacity:	70 % RL
Environmental sealing:	IP65
Weight (excl. cable):	approx. 100 g
Material:	Aluminium

### Notes:

1. RL = rated load
2. AL = applied load
3. Temperature coefficients apply over the compensated range.

## Application Tests

### Uneven Hand Loading Errors

The uneven load distribution of a human hand has been replicated by applying point loads over the length of the load cell. In the worst case, the extreme ends, the error is limited to <1 % of the applied force.

### Handbrake Angle Vector Errors

The ALF319 handbrake load cell measures force perpendicular or normal to the handbrake lever. Variations of lever inclination angle can produce angular deviations between the applied force and the load cell's normal measurement axis. For angular deviations up to 33° to the load cell's normal axis the load errors are limited to <1 % of the applied force.

## Electrical Connections

The F319 load cell is fitted with 2 metres of PVC insulated 4 core screened cable type 7-1-4C. The cable is connected to the load cell with a miniature 4 pin connector so that cable can be easily replaced if it is damaged.

The screen is not connected to the load cell body.

### Wiring:

red	+ supply voltage
blue	- supply voltage
yellow	+ output signal
green	- output signal
orange	screen

## Ordering Codes

ALF319CFR0HN	Compression, IP65, rationalised
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Due to continuous product development, ALTHEN and partners reserve the right to vary the foregoing details without prior notice.