

# FN3042 Load Cell for Fatigue Testing



- Heavy duty cylindrical load cell
- Ranges from 5 to 500 kN [1 to 100 klpf]
- Tension and Compression
- Suited for fatigue and crash testing
- High Level Output with Integrated Amplifier

## DESCRIPTION

The FN3042 is highly suited for use in test benches and fatigue tests. Due to the mechanical design, the FN3042 is especially durable. It measures tension and compression in standard ranges from 5 kN to 500 kN and is able to undergo more than 1 000 000 cycles of full scale with very little change in zero offset stability.

The sensor housing can be supplied fully stainless steel with high IP protection level for fatigue test benches or regulation in high temperature or corrosive fluids environments.

With many years of experience as a designer and manufacturer of sensors, Measurement Specialties, Inc. often works with customers to design or customize sensors for specific uses and testing environments. To meet your needs we also offer complete turnkey systems. The matched components (sensor, power, amplifier and digital display) are formatted, calibrated and ready for immediate use.

## FEATURES

- High stiffness
- Tension and Compression
- Accuracy: 0.25% F.S.
- Skydrol compatible on request
- Integrated amplifier optional

## APPLICATIONS

- Crash test walls and plates
- Hydraulic cylinder regulation
- Dynamic lifetime component tests
- Aerospace structure test beds
- Laboratory and Research

## STANDARD RANGES

Ranges in N	5k	10k	25k	50k	100k	200k	500k
Ranges in lbf	1k	2k	5k	10k	20k	40k	100k
Stiffness in N/m	$1.7 \times 10^8$	$3 \times 10^8$	$6 \times 10^8$	$1.5 \times 10^9$	$2 \times 10^9$	$3.5 \times 10^9$	$6.5 \times 10^9$
Stiffness in lbf/ft	$1.2 \times 10^7$	$2.1 \times 10^7$	$4.1 \times 10^7$	$1.0 \times 10^8$	$1.4 \times 10^8$	$2.4 \times 10^8$	$4.5 \times 10^8$
Material	Aluminum	Stainless steel					

# FN3042 Load Cell for Fatigue Testing

## PERFORMANCE SPECIFICATIONS

All values are typical at temperature 20±1° C

PARAMETERS	
Operating Temperature Range (OTR)	-20 to 80° C [-4 to 176° F]
Compensated Temperature Range (CTR)	0 to 60° C [32 to 140° F]
Zero Shift in CTR	<0.5% F.S. / 50° C [100° F]
Sensitivity Shift in CTR	<1 % of reading / 50° C [100° F]
Range (F.S.)	0-5 to 0-500 kN [0-1 to 0-100 klf]
Over-Range	
Without Damage	2 x F.S.
Without Destruction	3 x F.S.
Accuracy	
Combined non-linearity and hysteresis	±0.25%F.S.

## Electrical Characteristics

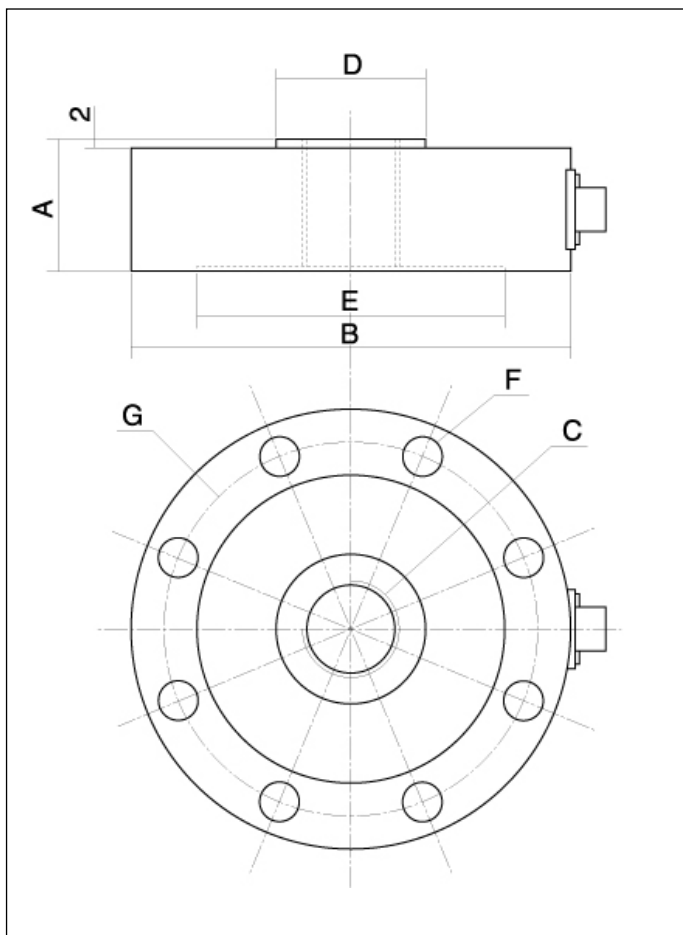
Model	FN3042	FN3042-A1	FN3042-A2
Supply Outage	10Vdc	10 – 30Vdc	±15Vdc (±12 to ±18Vdc)
F.S. Output	±1.5mV/V typical	±2V ±5% F.S.	±5V ±5% F.S.
Zero Offset	±5% F.S.	2.5V ±5% F.S.	0V ±5% F.S.
Input Impedance/Consumption	350 to 700Ω	<50mA	50mA
Output Impedance	350 to 700Ω	<10Ω	<10Ω
Insulation under 50Vdc	≥100MΩ	≥100MΩ	≥100MΩ

## Notes

1. Electrical Termination: Connector output including mate
2. Materials: Body in stainless steel or aluminium alloy depending on F.S.; aluminum cover
3. Protection Index: IP50 (other protection levels on request)

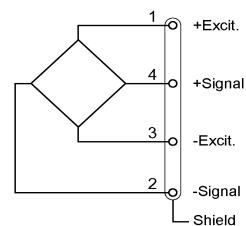
# FN3042 Load Cell for Fatigue Testing

## DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)

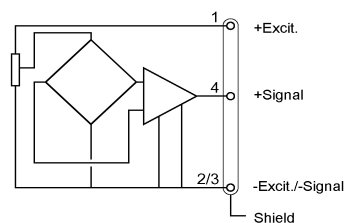


### Wiring Schematic

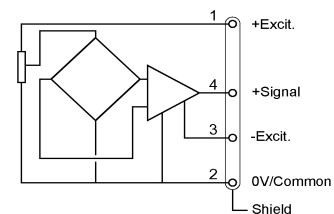
#### FN3042



#### FN3042-A1



#### FN3042-A2



### Dimensions in mm [inch]

Ranges in N [in lbf]	5k [1k]	10k [2k]	25k [5k]	50k [10k]	100k [20k]	200k [40k]	500k [100k]
A	30 [1.18]	30 [1.18]		40 [1.57]	50 [1.97]	50 [1.97]	70 [2.76]
B	101 [3.98]	101 [3.98]		119 [4.69]	144 [5.67]	168 [6.61]	228 [8.98]
C (Thread)	M16 x 2	M20 x 1.5		M24 x 2	M36 x 3	M45 x 4	M64 x 4
D	34 [1.34]	34 [1.34]		49 [1.93]	66 [2.60]	72 [2.83]	102 [4.02]
E	70 [2.76]	70 [2.76]		83 [3.27]	104 [4.09]	118 [4.65]	152 [5.98]
F	8x 8.2 [0.32]	8x 8.2 [0.32]		8x 10.2 [0.40]	8x 12.2 [0.48]	8x 16.2 [0.64]	16x 20.2 [0.8]
G	85 [3.35]	85 [3.35]		101 [3.98]	124 [4.88]	143 [5.63]	190 [7.48]
Material	Aluminum	Stainless steel					

# FN3042 Load Cell for Fatigue Testing

## OPTIONS

<b>A1</b> : Amplified Tension output with unipolar power supply
<b>A2</b> : Amplified Tension output with bipolar power supply
<b>ET1</b> : CTR -20 to 100°C [-4 to 212°F] OTR = CTR
<b>ET2</b> : CTR -40 to 120° C [-40 to 248°F] OTR = CTR
<b>ET3</b> : CTR -40 to 150° C [-40 to 302°F] OTR = CTR (Not e : ET3 not available with A1 and A2 options)
<b>PE</b> : Cable Gland Termination with 2 m [6.5 ft] cable
<b>PE/L00M</b> : Additional cable length with PE option, replace "00" with total length in meters

## ORDERING INFO

FN3042 - A1 - 500KN -/ET1/PE



### NORTH AMERICA

Measurement Specialties, Inc.  
Vibration Design Center  
32 Journey - Suite 150  
Aliso Viejo, CA 92656  
United States USA  
Tel: 1-949-716-0877  
Fax: 1-949-916-5677  
[t&m@meas-spec.com](mailto:t&m@meas-spec.com)

### EUROPE

Measurement Specialties  
(Europe), Ltd.  
26 Rue des Dames  
78340 Les Clayes-Sous-Bois,  
France  
Tel: +33 (0) 130 79 33 00  
Fax: +33 (0) 134 81 03 59  
[pfg.cs.emea@meas-spec.com](mailto:pfg.cs.emea@meas-spec.com)

### ASIA

Measurement Specialties  
(China), Ltd.  
No. 26 Langshan Road  
Shenzhen High-Tech Park (North)  
Nanshan District, Shenzhen  
518057  
China  
Tel: +86 755 3330 5088  
Fax: +86 755 3330 5099  
[pfg.cs.asia@meas-spec.com](mailto:pfg.cs.asia@meas-spec.com)

The information in this sheet has been carefully reviewed and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Furthermore, this information does not convey to the purchaser of such devices any license under the patent rights to the manufacturer. Measurement Specialties, Inc. reserves the right to make changes without further notice to any product herein. Measurement Specialties, Inc. makes no warranty, representation or guarantee regarding the suitability of its product for any particular purpose, nor does Measurement Specialties, Inc. assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Typical parameters can and do vary in different applications. All operating parameters must be validated for each customer application by customer's technical experts. Measurement Specialties, Inc. does not convey any license under its patent rights nor the rights of others.