

# Precision Miniature Load Cells

## Model 31 and 34

WELDED STAINLESS

RUGGED, SMALL SIZE

TENSION/COMPRESSION



**Model 31**  
(Tension/Compression)



**Model 34**  
(Tension/Compression)

Models 31 and 34, Precision Miniature load cells measure both tension and compression load forces of 50 grams to 10,000 lbs. These models are our highest accuracy, rugged miniature load cells. Model 31's welded, stainless steel construction is designed to eliminate or reduce to a minimum, the effects of off-axis loads. (The internal construction assures excellent long term stability for ranges 1000 grams and above.) A modification permits this model to be completely welded for underwater applications. The Model 31 tension/compression load cell has male threads while the Model 34 tension/compression load cell has female threaded load attachments. High accuracies of 0.15-0.25% full scale are achieved. Each bonded strain gage unit is built of welded 17-4 PH stainless steel for additional ruggedness. All load cells that have ranges  $\leq 10$  lbs. have a small electrical zero balance circuit board which is in the lead wire (approximately 1"x .087" thick). This balance board does not have to be the same temperature as the transducer. Applications include cable tension and electromechanical parts testing.

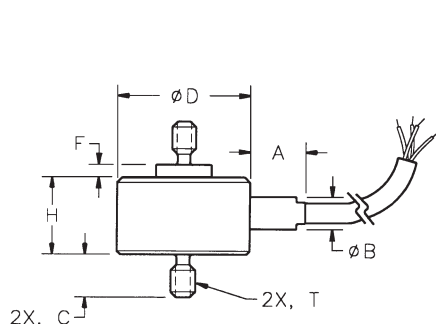
## Dimensions

### Model 31 (Order Code AL311)

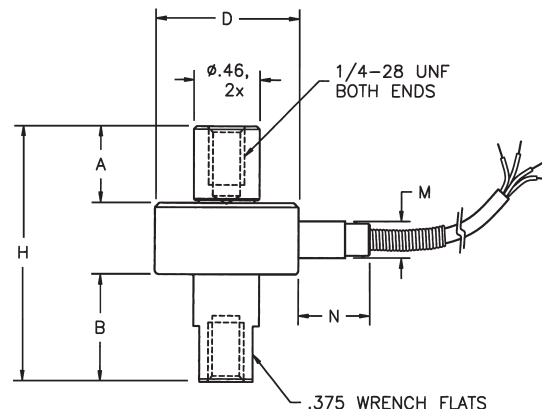
Available Ranges*	T Thread	D"	H"	C"	F"	A"	B"
50; 150; <b>250</b> 500; gm.	#6-32 UNC	1.00	.75	.25	.11	.50	.38
<b>1000</b> gm.; 5; 10 lbs.	#6-32 UNC	.75	.45	.25	.05	.31	.19
<b>25; 50; 100</b> lbs.	#10-32 UNF	1.00	.52	.25	.03	.50	.25
<b>250; 500; 1000</b> lbs.	1/4-28 UNF	1.00	.52	.38	.03	.50	.25
2000; 3000 lbs.	3/8-24 UNF	1.00	.72	.50	.03	.50	.38
4000; 5000 lbs.	1/2-20 UNF	1.25	.94	.63	.03	.50	.38
7500; 10,000 lbs.	3/4-16 UNF	1.38	1.10	.88	.03	.50	.38

\* Stocked ranges are in bold face print.

**Notes:** Model 31 load cells  $\leq 250$  grams have overload stops. For custom cells without overload stops consult SENSOTEC.



**Model 31 Male Threads**  
(Tension/Compression)



**Model 34 Female Threads**  
(Tension/Compression)

### Model 34 (Order Code AL312)

Available Ranges	D"	H"	A"	B"	M"	N"
50; 150; 250; 500 gm.	1.00	1.75	.52	.52	.38	.50
1000 gm.; 5; 10 lbs.	.75	1.75	.60	.72	.19	.31
25; 50; 100 lbs.	1.00	1.75	.52	.72	.25	.50
250; 500; 1000 lbs.	1.00	2.00	.75	.75	.25	.50

## Options (See Appendix)

Temperature compensated 1b, 1c, 1f; Special calibration 30a, 30b

**Premium Options:** 1d, 1e, 1g, 1h ( $\geq 25$  lb), 1i; 6d; 9a ( $\geq 5$  lb.)

**Accessories:** Rod end attachments for Model 31

	<b>Model 31</b> (Male Threads) (Tension/Compression) Order Code AL311	<b>Model 34</b> (Female Threads) (Tension/Compression) Order Code AL312
<b>PERFORMANCE</b>		
Load Ranges .....	50 gms to 10,000 lbs.	50 gms to 1,000 lbs.
Non-Linearity/Hysteresis (max)		
50 gms to 1000 gms .....	$\pm 0.15\%$ F.S.	$\pm 0.15\%$ F.S.
5 to 250 lbs. ....	$\pm 0.15\%$ F.S.	$\pm 0.15\%$ F.S.
500 to 10,000 lbs. ....	$\pm 0.2\%$ F.S.	$\pm 0.2\%$ F.S.
Non-Repeatability (max)		
50 gms to 1000 gms .....	$\pm 0.1\%$ F.S.	$\pm 0.1\%$ F.S.
5 to 10,000 lbs. ....	$\pm 0.05\%$ F.S.	$\pm 0.05\%$ F.S.
Output (standard)		
50 to 150 gms (semi) .....	.1mV/V/gm max	.1mV/V/gm
250 to 500 gms (semi) .....	20mV/V	20mV/V
1000 gms. ....	1.5mV/V (nominal)	1.5mV/V (nom)
5 lbs. to 10,000 lbs. (foil) .....	2mV/V	2mV/V
Resolution .....	Infinite	Infinite
<b>ENVIRONMENTAL</b>		
Temperature, Operating .....	-65° F to 250° F	-65° F to 250° F
Temperature, Compensated .....	60° F to 160° F	60° F to 160° F
Temperature Effect		
– Zero/Span (max)		
50 gms to 500 gms .....	.015% F.S./° F	.015% F.S./° F
1000 gms. ....	.005% F.S./° F	.005% F.S./° F
5 to 10,000 lbs. ....	.005% F.S./° F	.005% F.S./° F
<b>ELECTRICAL</b>		
Strain Gage Type .....	Foil or Semiconductor	Foil or Semiconductor
Excitation (Calibration)		
50 gms to 10 lbs. ....	5.00VDC	5.00VDC
20 lbs. to 10,000 lbs. ....	10.0VDC	10.0VDC
Insulation Resistance .....	5000 megohm @ 50VDC	5000 megohm @ 50VDC
Bridge Resistance		
50 gms to 500 gms .....	500 ohm (semi)	500 ohm (semi)
1000 gms. ....	350 ohm (foil)	350 ohm (foil)
5 to 10,000 lbs. ....	350 ohm (foil)	350 ohm (foil)
Shunt Calibration Data .....	Included	Included
Wiring Code (std) .....	#1 (See Pg. AP-8)	#1 (See Pg. AP-8)
Electrical Termination (std) .....	Teflon cable (5 ft.)	Teflon cable (5 ft.)
<b>MECHANICAL</b>		
Overload, Safe .....	50% over capacity	50% over capacity
Thread Size .....	See table	See table
Deflection – Full Scale .....	.0005"-.0020"	.0005"-.0020"
Casing material .....	17-4 PH Stainless	17-4 PH Stainless
Weight (nom) .....	1.6 oz.	2.5 oz.
<b>IN-LINE AMPLIFIERS</b> (Optional)		
Outputs Available .....	$\pm 5$ VDC, 4-20mA	$\pm 5$ VDC, 4-20mA

**NOTES** \*Standard calibration for tension/compression load cells is in tension only.

## General Information

How to order (See Pg. AP-19)

Load cell selection flow chart (See Pg. LO-1)

Installation Note: Maximum torque for installation of Model 31 in ranges less than 25 lbs. is 12 inch lbs.