

# Models 3140-P

## Tension/Compression Pancake Load Cell



### DESCRIPTION

Designed for general purpose use in demanding applications in automotive, aerospace, and military applications. Some advantages of these tension/compression load cells include compact size, high accuracy, and cost efficiency. The 3140-P has smaller maximum off-center load and moment error than the standard 3140 Series.

### FEATURES

- Static error band 0.02 % to 0.04 %
- English threads
- Enhanced accuracy version of standard 3140 Series
- Low profile
- Low sensitivity to magnetic fields
- Output to 4 mV/V

# Model 3140-P

## PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Load range <sup>1</sup>	300 lb, 500 lb, 1000 lb, 2000 lb, 5000 lb, 10000 lb, 25000 lb, 50000 lb, 100000 lb
Non-linearity 300 lb to 2K lb	±0.02 % of rated output
Non-linearity 5K lb to 100K lb	±0.04 % of rated output
Hysteresis	±0.02 % of rated output
Non-repeatability	±0.01 % of rated output
Static error band 300 lb to 2K lb	±0.02 % of rated output
Static error band 5K lb to 10K lb	±0.03 % of rated output
Static error band 25K lb to 100K lb	±0.04 % of rated output
Output @ rated capacity	4 mV/V (nominal)
Operation	Tension/compression
Resolution	Infinite
Standard calibration	Tension (+) and compression (-)

## ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	-54 °C to 93 °C [-65 °F to 200 °F]
Temperature, compensated	-9 °C to 46 °C [15 °F to 115 °F]
Temperature effect, zero	±0.008 % of rated output/°F
Temperature effect, output	±0.008 % of reading/°F

## ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Strain gage type	Foil
Excitation (maximum)	10 Vdc or Vac RMS
Insulation resistance	> 5000 mOhm @ 50 Vdc
Input resistance (tolerance)	350 ohm +40/-3.5 ohm
Output resistance (tolerance)	350 ohm ±3.5 ohm
Sensitivity 300 lb to 2K lb	2 mV/V of rated output
Sensitivity 5K lb to 100K lb	4 mV/V of rated output
Zero balance (tolerance)	±1.0 %

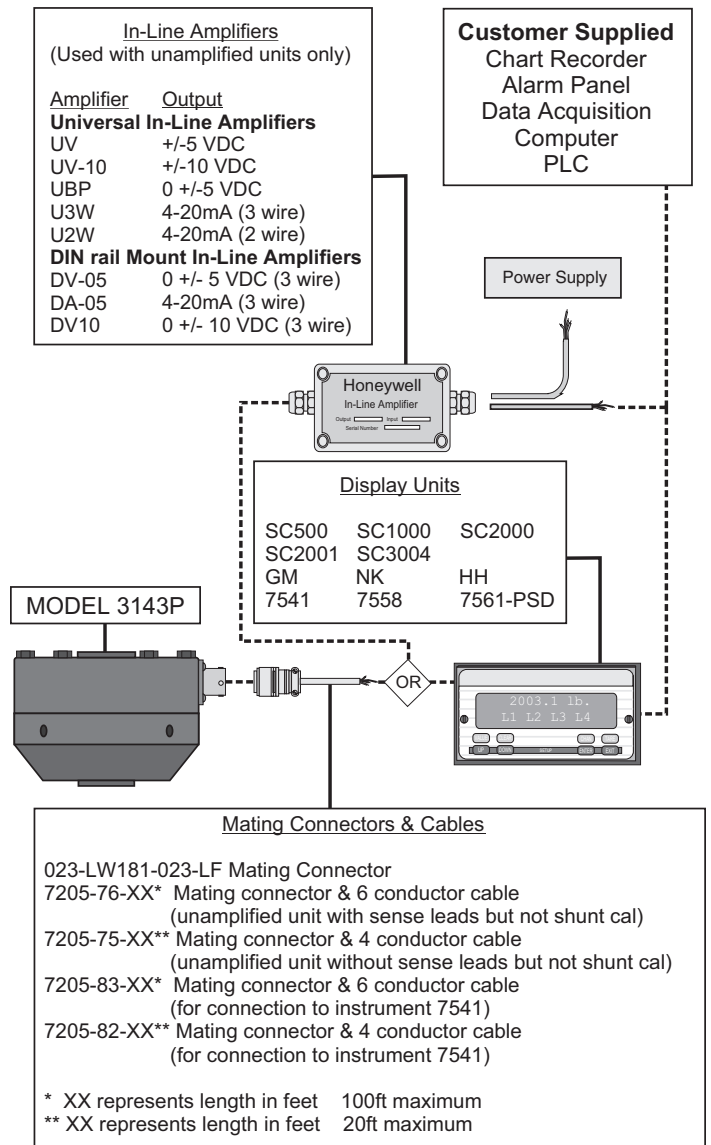
## MECHANICAL SPECIFICATIONS

Characteristic	Measure
Static overload capacity	150 % of nominal capacity
Material	See table on next page
Creep	±0.03 %
Off-centered load sensitivity	±0.10 %
Side load sensitivity	±0.10 %

## WIRING CODES

Cable	
Red	(+) excitation
Black	(-) excitation
Green	(+) output
White	(-) output

## TYPICAL SYSTEM DIAGRAM

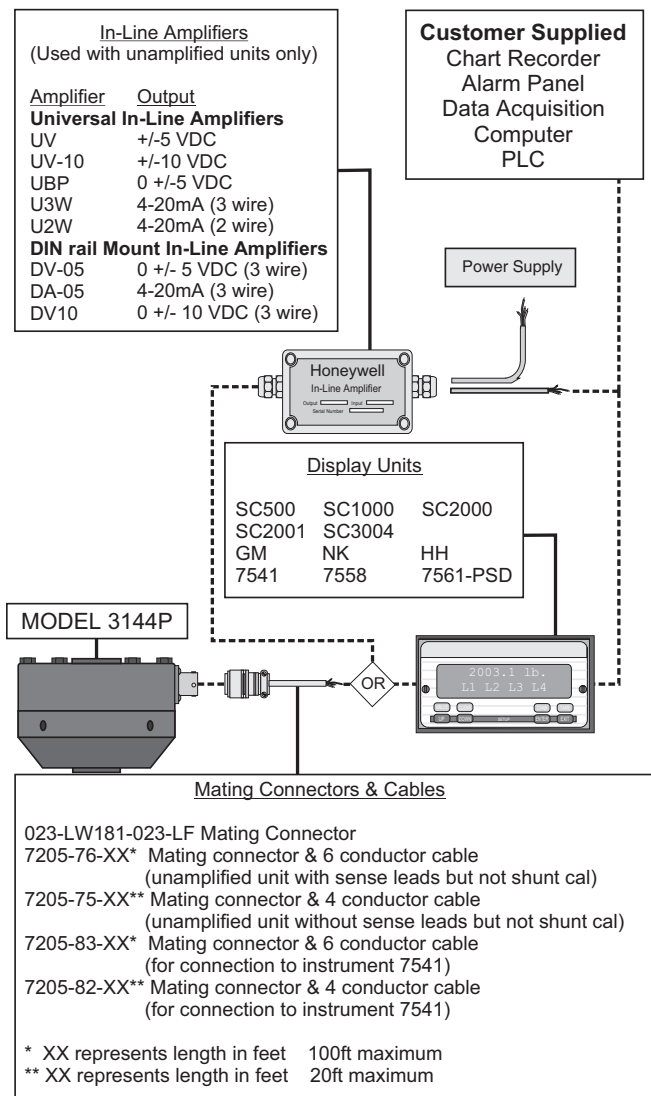


# Tension/Compression Pancake Load Cell

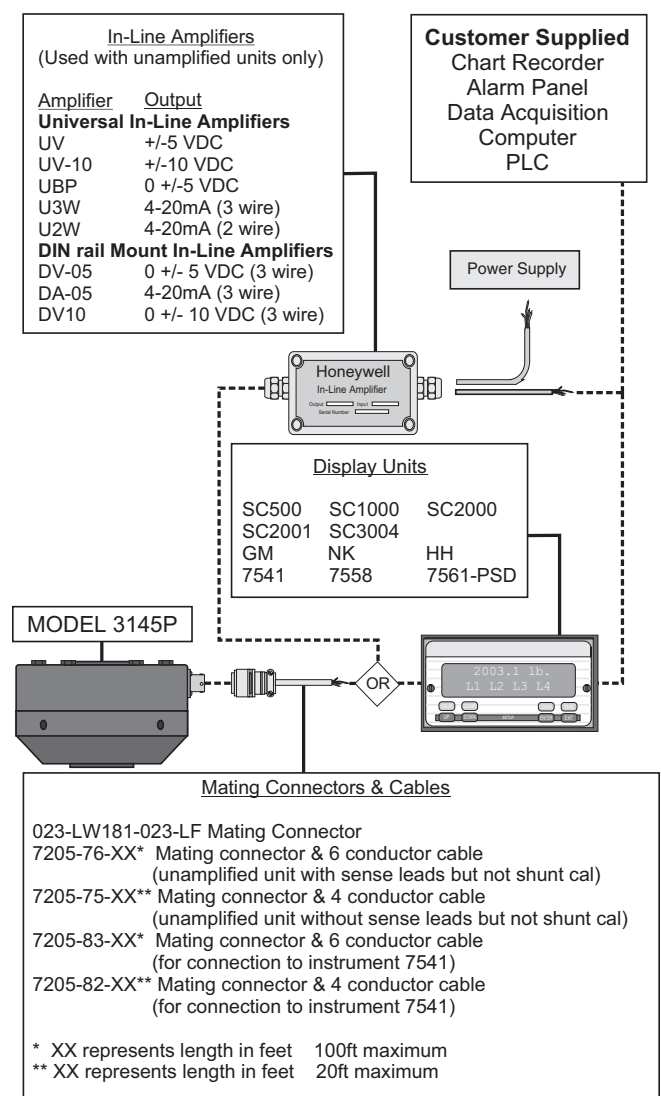
## MECHANICAL CHARACTERISTICS

Model	Nominal load limit capacity $F_z$		Static overload capacity (% of nominal capacity)	Weight (lb)	Weight with base (lb)	Flexure material
	lb	N				
3143-P	300	1K	150	1.0	2.5	Aluminum
3143-P	500	2K	150	1.0	2.5	Aluminum
3143-P	1K	5K	150	1.0	2.5	Aluminum
3143-P	2K	10K	150	1.0	2.5	Aluminum
3144-P	5K	22K	150	2.9	6.5	Steel
3144-P	10K	45K	150	2.9	6.5	Steel
3145-P	25K	110K	150	9.1	21.5	Steel
3145-P	50K	200K	150	9.1	21.5	Steel
3146-P	100K	500K	150	23.5	52.5	Steel

## TYPICAL SYSTEM DIAGRAM



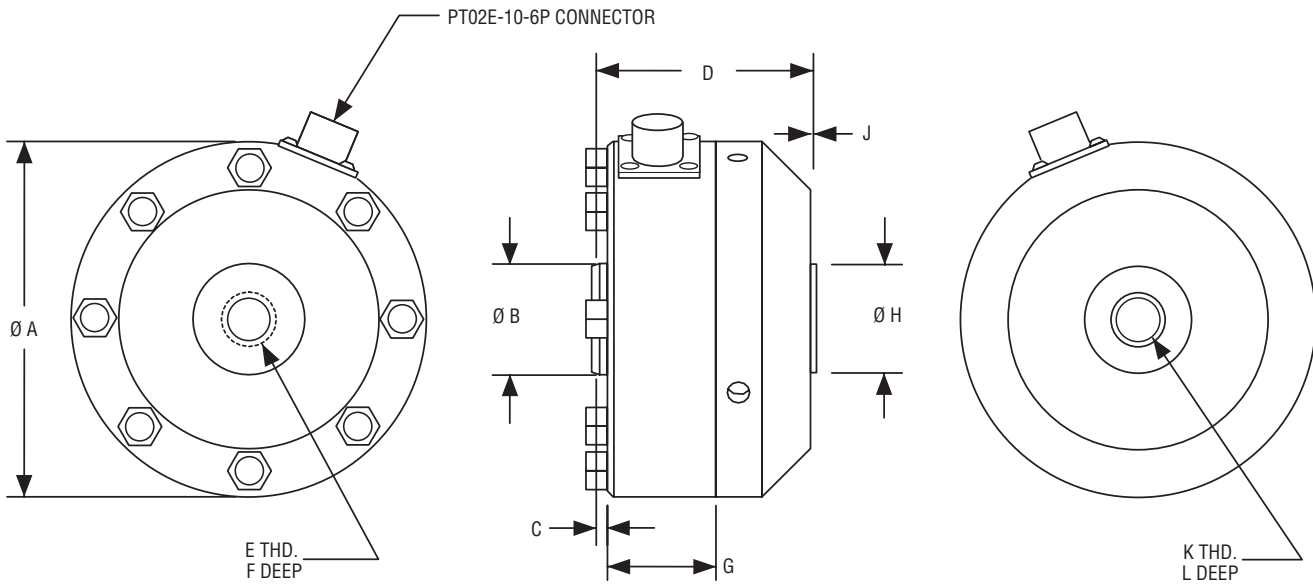
## TYPICAL SYSTEM DIAGRAM



# Model 3140-P

## MOUNTING DIMENSIONS

Model	Capacity (lb)	Ø A in	Ø B in	C in	D in	E Thread	F in	G in	Ø H in	J in	K Thread	L in
3143-P-300	300	4.12	1.29	0.13	2.50	1/2-20 UNF 3B	1.12	1.25	1.25	0.03	1/2-20 UNF 3B	0.88
3143-P-500	500	4.12	1.29	0.13	2.50	1/2-20 UNF 3B	1.12	1.25	1.25	0.03	1/2-20 UNF 3B	0.88
3143-P-1K	1000	4.12	1.29	0.13	2.50	1/2-20 UNF 3B	1.12	1.25	1.25	0.03	1/2-20 UNF 3B	0.88
3143-P-2K	2000	4.12	1.29	0.13	2.50	1/2-20 UNF 3B	1.12	1.25	1.25	0.03	1/2-20 UNF 3B	0.88
3144-P-5K	5000	4.12	1.29	0.13	2.50	5/8-18 UNF 3B	1.12	1.25	1.25	0.03	5/8-18 UNF 3B	0.88
3144-P-10K	10000	4.12	1.29	0.13	2.50	5/8-18 UNF 3B	1.12	1.25	1.25	0.03	5/8-18 UNF 3B	0.88
3145-P-25K	25000	6.06	2.34	0.13	3.50	1¼-12 UNF 3B	1.50	1.63	1.25	0.03	1¼-12 UNF 3B	1.50
3145-P-50K	50000	6.06	2.58	0.13	3.50	1¼-12 UNF 3B	1.50	1.63	2.25	0.03	1¼-12 UNF 3B	1.50
3146-P-100K	100000	8.00	3.76	0.25	4.50	1¼-12 UNF 3B	2.25	2.25	3.00	0.03	1¼-12 UNF 3B	1.75



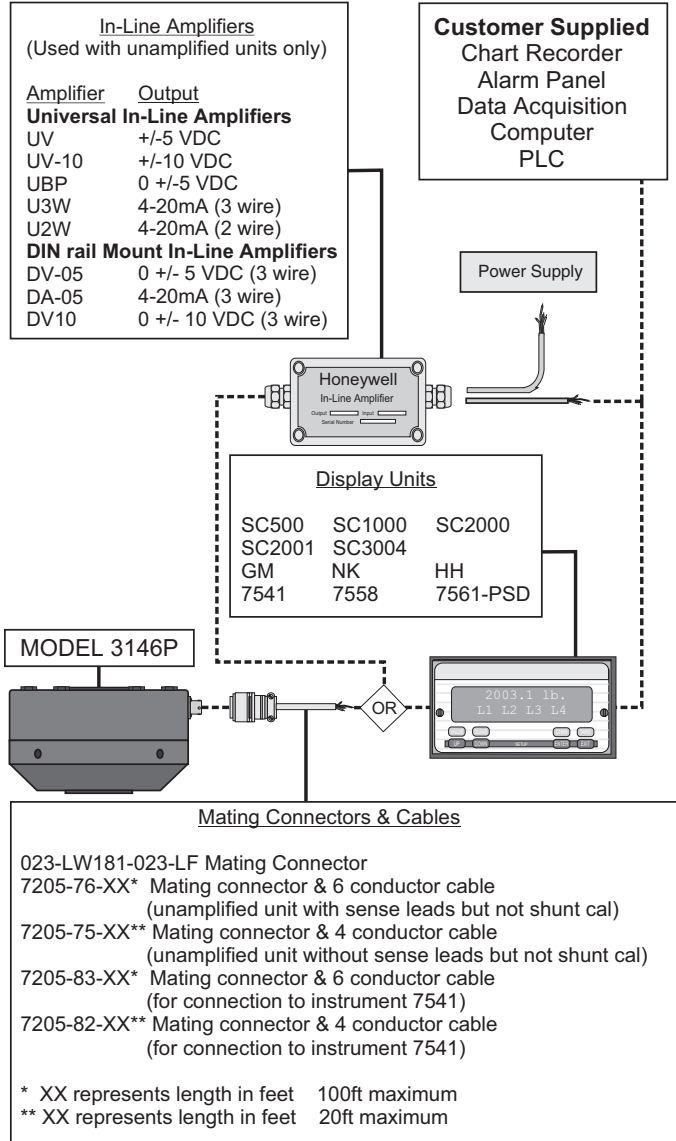
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# Tension/Compression Pancake Load Cell

## NOTES

1. This unit calibrated to Imperial (non-Metric) units.

## TYPICAL SYSTEM DIAGRAM



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- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### **WARNING** **MISUSE OF DOCUMENTATION**

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

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008625-1-EN IL50 GLO  
May 2008

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