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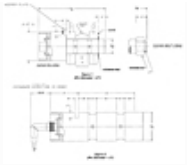
Item # CPA-2, Load Pins

Features | Dimensional Drawing | Performance Specs | Specifications | Electrical Specifications | General Information

FEATURES

Precison Load Sensing
Rugged
Internally Sealed Strain Gages
Easy Installation
Direct Force Measurement
High Strength Stainless Steel

DIMENSIONAL DRAWING

Dimensional Drawing	  Load Pin

PERFORMANCE SPECS

Overload without Zero Shift	150%
Overload without Failure	300% (Minimum)
Bridge	Full bridge 350 Ohm (Nominal)
Excitation	12 V AC (Maximum) 12 V DC (Maximum)
Output Signal[1]	2-mV/V (Nominal) 2-mV/V (Standardized Output)
Non-Repeatability	±0.15% FS (Nominal)
Non-Linearity	±0.50% FS (Nominal)
Hysteresis	±0.50% FS (Nominal)
Service Temp Range	to 150 °F
Temp Effects (on Zero)	0.005% FS / °F (Nominal)
Temp Effects (on Output)	0.008% load / °F (Nominal)
Zero Balance[2]	±2% FS (Nominal)

SPECIFICATIONS

Load Capacity	50,000 lb
Material	Stainless Steel 17-4, H-1025 (Standard)
A - Width of Center Loading Section	1-7/16 in

B - Width of Clevis Support Section	23/32 in
C - Length of Pin/Bolt Reduced Section, Instrumented Zone	9/16 in
Dp - Nominal Pin Diameter	1.999 in
E - Active Length of Pin	4 in
F - Clevis Pin Head Length	2 in
H - Width of Keeper Plate Slot	17/64 in
J - Depth of Keeper Plate Slot	3/8 in
Lp - Overall Length of Pin	6-5/8 in
W - Allowance for Retaining Ring Installation	5/8 in
Keeper Plates	SPA-50-112-1-A
Connector Type	Axial Connector Permanently Attached Axial Cable

ELECTRICAL SPECIFICATIONS

Receptacle	PTIH-10-6P
Mating Plug	PT06A-10-6S (SR)
Function	Pin
(+) Excitation	A
(-) Excitation	D
(+) Signal	B
(-) Signal	C
	#20(26x34) AWG., rubber insulation, shielded, rubber jacket, 4-

Cable	Conductor (Standard Cable)
Function	Wire Code
(+) Excitation	Red
(-) Excitation	Black
(+) Signal	Green
(-) Signal	White

GENERAL INFORMATION

Clevis Load Pins are strain gage transducers developed by Strainsert (U.S. Patent No. 3,695,096). They are manufacured utilizing the internal strain gage process perfected by Strainsert since 1960. We offer precision force measurement by simply replacing existing clevis pins.

The design is a double-shear arrangement. Typically, force P is applied at the center of the pin while 2 equal opposing forces of P/2 are applied at each end. Strain gages are sealed inside a small axial hole and are positioned at the 2 shear locations at the interface between the center eye and clevis ends. The strain gages are positioned and oriented with great precision along the neutral plane relative to the specific direction of force.

An anti-rotation device is necessary for proper reading and alignment. If a force P is applied to the pin at an angle other than the specified direction, the theoretical bridge output will be offset by a component of the force along the sensitive direction, i.e. P cos X.

The four strain gages (two at each shear location) are electrically connected to form a full bridge, the signal from each gage being additive so that the bridge output is proportional to the sum of the forces transmitted by the shear planes of the pin. The circuit typically includes temperature compensation, signal trim (optional), and zero balance resistors terminating in a suitable connector socket or integral cable, and potted with a sealing compound inside the gage hole for enhanced environmental protection.

Standard models include detailed calibration data up to 500,000 lbs. Higher capacity calibration data is

available at an additional charge. Strainsert factory calibrations are intended to simulate installed conditions, however, it is recommended that an in-place calibration be performed to account for any installation, tolerance, and/or alignment influences affecting sensor measurement.

Standard models are typically used in new applications where the designer can develop the specific load pin joint around the standard load pin dimensions, to optimize force measurement performance. In addition, the standard load pin may fit or can be incorporated through the use of bushings or modification of the assembly.

Calibration data up to 500,000 lbs. Higher capacity calibration data is available at an additional charge. Inquire for custom product ranges.

[1] Exact output provided with calibration data. (Standardized outputs are optional). In addition, Strainsert factory calibrations are intended to simulate installed conditions, however, it is recommended that an in-place calibration be performed to account for any installation, tolerance, and/or alignment influences affecting sensor measurement.
[2] Prior to loading, it is necessary to initially/periodically null the zero load output to account for any residual offset.