

WINDOW PINCH FORCE SYSTEMS: HANDS-FREE PINCH FORCE

Window Pinch Force Systems: Hands-Free Pinch Force (10293) is used to measure the pinch force of automatically closing windows, doors and sunroof systems under defined spring rates and displacements.

The sensor features five interchangeable spring packs, adjustable measurement height, and a hand held peak force display.

The user will configure the sensor spring rate by screwing in the spring packs and adjusting the window bracket to the desired window opening. In operation, the sensor is clipped onto the window and the closer actuated. The companion instrument records the peak force developed to verify compliance to the specifications.

The sensor can also be mated to more sophisticated instrumentation for development applications. The sensor was designed to help automakers and OEM's comply with FMVSS 118 (Federal Motor Vehicle Safety Standard section 571, title 49) and European standards.



INCLUDED

Sensor Kits

- 5 spring packs (2, 5, 10, 20, 65 N/mm)
- 200mm extension bracket
- Sensor attachment assembly
- Signal cable

Optional Display Units

- PMAC 3000 [Model 90424]
- Peak Track Instrument (PTI) [Model 90323]

OPTIONS

- 300N and 500N full-scale capacity
- Custom spring rates
- 100mm and 150mm Extension brackets

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HDS_10293_112420/01

 **HITECSENSORS**
A HUMANETICS COMPANY

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DIAGRAMS

VIEW FOR OPTIONAL BRACKET & THUMB SCREW
MODEL: 10293-XXX-XB0C0
9.3mm MIN (.37), 45mm (1.77), #12mm (.47), 25mm

VIEW FOR OPTIONAL BEARING & PIN
MODEL: 10293-XXX-XB0CC
3 FT, 50 FT, 4 COND. SHIELDED CABLE, FGG-1B-304-CLAD42 CONNECTOR, MODEL 90376-000-0000X SIGNAL CONDITIONER

VIEW 'A' - OPTIONAL CABLE ASSY
MODELS: 10293-XXX-EHXX0 & 10293-XXX-EJXX0
COMPRESSION UPSCALE, 86mm (3.37), 76mm (3.00), 67mm (2.63), 6mm, 25mm, 50mm, 30mm (1.17), 5mm (.188) MAX GLASS THICKNESS, M3 X 0.5 X 6mm F.H.C.S. 2 PLACES FOR BRACKET ADJUSTMENT, 133mm (5.23), 125mm (4.86), 109mm (4.30), 3mm (.12), 97mm (3.82), 39mm (1.55), #5mm (.188)

VIEW FOR 100mm, 150mm & 200mm
ADAPTER REF (100mm, 150mm & 200mm ONLY), 57mm (2.24), 38mm (1.50), 50mm, 273mm (10.8)

MODEL: 10293-XXX-XB0C0
M3 X 0.5 X 6mm S.H.C.S. (FOR LATERAL PIN ADJUSTMENT)

MODEL: 10293-XXX-EHXX0
OPTIONAL COILED CABLE REF. C FT EXTENDED LENGTH - SEE VIEW 'A'
OPTIONAL 15 PIN AUTO ID CONNECTOR - SEE VIEW 'A'

MODEL: 10293-XXX-EJXX0

MODEL: 10293-XXX-XXXX0

| MODEL NO. | OUTPUT |
|-----------------|----------|
| 10293-XXX-EJXX0 | 2.0 mV/V |
| 10293-XXX-EHXX0 | 4.5V NOM |
| 10293-XXX-EJXX0 | 10V NOM |

TABLE 1: CABLE LENGTH OPTION

| MODEL NO. | OUTPUT |
|-----------------|--------------|
| 10293-XXX-ABXX0 | 30 FT (9M) |
| 10293-XXX-ACXX0 | NO CABLE |
| 10293-XXX-ABXX0 | 12 FT (3.5M) |

TABLE 2: ADAPTER LENGTH OPTION

| MODEL NO. | OUTPUT |
|----------------|---------------|
| 10293-XXX-XXH0 | 150 mm |
| 10293-XXX-XXG0 | 100 mm |
| 10293-XXX-XXF0 | 100mm & 150mm |
| 10293-XXX-XXC0 | 200 mm |

TABLE 3: SPECIFICATIONS

| CAPACITY (NEWTONS) F.S. | SEE CHART |
|-----------------------------|---------------|
| OUTPUT NOM. F.S. | CHARTED |
| NON-LINEARITY (% F.S.) | .1 |
| HYSTERESIS (% F.S.) | .1 |
| OVERLOAD CAPACITY (% F.S.) | 1,000% |
| USEABLE TEMP RANGE (°C) | -55° TO +120° |
| COMPENSATED TEMP RANGE (°C) | 20° TO 75° |
| SPRING RATE (N/mm) | CHARTED |
| EXCITATION VOLTAGE | 20V MAX |

TABLE 4: SPRING RATES

| MODEL NO. | SPRING RATE | MAX LOAD |
|-----------|-------------|----------|
| 10293-670 | 65 N/mm | 300N |
| | 20 N/mm | 300N |
| | 10 N/mm | 275N |
| 10293-450 | 65 N/mm | 200N |
| | 20 N/mm | 200N |
| | 10 N/mm | 200N |
| | 5 N/mm | 150N |
| | 2 N/mm | 75N |

TABLE 5: SPRING RATES

| PART NO. | SPRING RATE | MAX LOAD |
|----------|-------------|----------|
| 18143C8 | 13.5 N/mm | 200N |
| 18143E9 | 7.5 N/mm | 200N |
| 18143E14 | 4 N/mm | 135N |
| 18143E13 | 3 N/mm | 100N |
| 18143E7 | 1.5 N/mm | 55N |
| 18143E6 | 1 N/mm | 40N |

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SPECIFICATION

| PARAMETER | RANGE | |
|------------------------------------|--------------------|-----------------|
| Output (at 200N Max Load) | 2mV/V nominal | |
| Non-Linearity (% FS) | 0.1 | |
| Hysteresis (% FS) | 0.1 | |
| Overload Capacity | 1,000 | |
| Compensated Temperature Range (°F) | 70 to +170 | |
| Useable Temperature Range (°F) | -65 to +250 | |
| Spring Rates and Maximum Load | Spring Rate | Max Load |
| | 2 N/mm | 40 N |
| | 5 N/mm | 85 N |
| | 10 N/mm | 125 N |
| | 20 N/mm | 200 N |
| | 65 N/mm | 200 N |

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