FEINMETALL
Contact Technologies

PS733

Position Sensor System 157 mil, Airtight

UTILITY MODEL

Centers (mm/mil)	4,00 / 157
Current	5,0 A *
R typ	20 mOhm *
Temperature	-45°C...+100°C

Spring Force Probe+Sensor (cN ±20%)

Version	Preload	Nominal
Sensor	40	60
Standard	50	250

Travel (mm)

Version	Nominal	Maximum
Standard	4,0	5,0
Thread (M)		2,0
Wrench Size		3,0
Pointing Accuracy		±0,10 mm

Materials and Plating

Plunger	see Tip Style
Barrel	Brass, gold plated
Spring	Stainless steel, unplated
Receptacles	Brass, unplated

Accessories

Insertion tool receptacle	FEWZ-774E0
Screw-in tool probe	FWZ733 FWZ733T
Extension cable for Molex-Connector (250 mm)	2112221

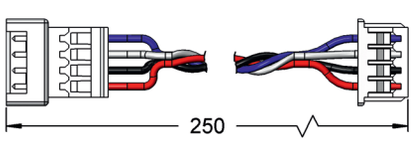
Drill Size (mm)

H733PSRD	3,01 - 3,05

Projection Height (mm)

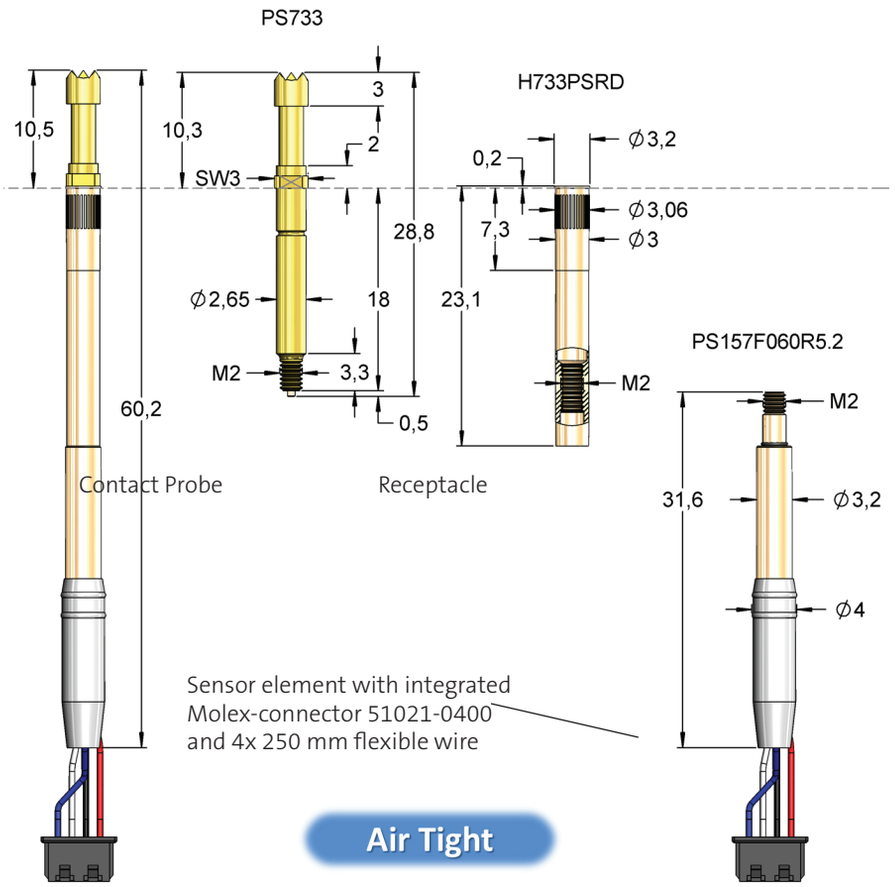
H733PSRD with PS733	10,5

2112221:
Extension cable 250 mm for Molex-connector



Series			Tip-Ø		Spring Force (cN)
PS733	06	B	100	G	250
	Tip Style	Material		Plating	Version

Material: B = BeCu
Tip-Ø: 100 = 1,00 mm (e.g.)
Plating: G = Gold plated
Note: Additional Receptacle and position sensor required, order code according to drawing



The position sensor system PS733 can be used in vacuum fixtures or modules (max. leakage rate <0,5 cm³/min at 0,7bar). It consists of a special spring contact probe PS733..., a receptacle H733PSRD and a sensor element PS157.... These three elements are mounted into a fixture plate. The position sensor is screwed at the receptacle from backwards after the receptacle is mounted.

* The values for current and resistance are only valid for a soldered connection at the receptacle. The blue wire of the Molex connector only allows a maximum current of 1,0 A and R_{typ} 500 mOhm.

Tip Style	Number	Material	Plating	Ø in mm	Version
	06	B	G	1,00	-
	06	B	G	2,00	-
	06	B	G	3,00	-
	17	B	G	2,30	-

Position Sensor System

Contact Probe with Integrated Potentiometer

The position sensor system has been developed to enable an exact measurement of the travel of the plunger additionally to contacting the test item.

The system has a modular design and consists of a contact probe, a receptacle and a sensor element with integrated potentiometer. The potentiometer is galvanically isolated from the probe.

After applying an operating voltage, the sensor supplies a measurement voltage that is linear to the travel of the plunger (potentiometric operation). Alternatively, with restrictions regarding accuracy and life cycle, also the resulting resistance can be used as measurement value (resistive operation). FEINMETALL recommends the potentiometric operation for all position sensor systems. The measurement results can be analyzed by the available tester environment, commonly.

Variants

The position sensor system is available for different centers of 75 mil, 100 mil and 157 mil. For 100 mil centers a twist proof version is available (PS756).
The system for 157 mil is suitable for airtight modules or fixtures (i.e. leakage rate < 0,5 cm³ / min at 0,7 bar).

Measuring ranges

PS175: 0...6,4 mm (75 mil)
PS756: 0...4,4 mm (100 mil)
PS732: 0...5,0 mm (100 mil)
PS733: 0...5,0 mm (157 mil)

Modular Design of the Position Sensor System

Contact probe - Receptacle - Sensor element

Specification sensor element
Measuring principle: potentiometric
Accuracy: ≤ 2%
Reproducibility: typ. ≤ ±0,05 mm
Therm. resist. coeff. 5x10-5/K
Nominal spring force: 60 cN
Preload: 40 cN
Nominal: 4,0 mm

Connections
Red: Operating voltage U_0
Black: Measuring signal U_m or R_m
White: Mass
Blue: Test point of contact probe tip (maximum current 1 A)

Calibration

Due to test principle with a certain initial and final resistance and due to electrical and mechanical tolerances the exact plunger position in millimeter requires a calibration of the position sensor system after assembly.

Measurement of relative values

By calculating the difference between two measurement values of one probe deviations related to a required position can be determined in positive or negative travel direction.

Reference measurement

By calculating the difference between two measurement values of different probes deviations related to a reference position can be determined.

The reference can either be a certain reference point of the test item or a special “golden device”.

Zero balance

Depending on the hard- and software of the test system the measurement signal can be zeroed at user-defined positions. This method allows positive or negative deviations without calculating any differences.

FEINMETALL recommends periodic calibration and zeroing of the system.

U_0	Operating voltage (maximum 10 VDC)
U_m	Measuring voltage (potentiometric op.) ($U_1 < U_m < U_P - U_3$)
R_m	Measuring resistance (resistive op.) ($R_1 < R_m < R_P - R_3$)
R_1	Initial resistance
U_1	Initial voltage ($U_1 = I * R_1$)
R_3	Final resistance
U_3	Final voltage ($U_3 = I * R_3$)
R_P	Potentiometric resistance (4,5 kOhm ± 20%) ($R_P = R_1 + R + R_3$)
R_S	Slider resistance
R_L	Load resistor (optional to protect against over-current at the slider)