HEIDENHAIN

Product Information

TS 740

Workpiece Touch Probe
with High Probing Accuracy

September 2007

TS 740

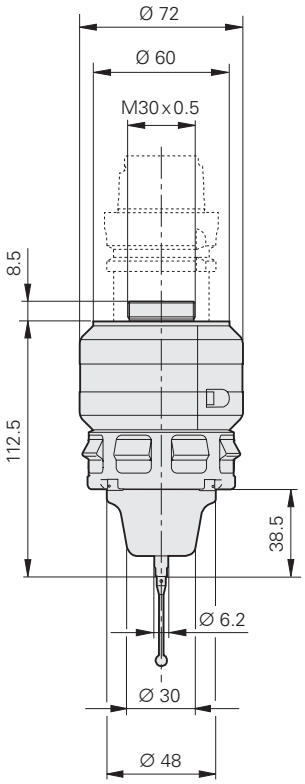
Workpiece Touch Probe with High Probing Accuracy

The TS 740 triggering touch probe is characterized particularly by high probing accuracy and repeatabilty. These features, together with its low probing force, make the TS 740 suitable for very demanding measuring tasks on machine tools or measuring machines. The trigger signal is transmitted over an infrared beam.

The TS 740 uses a high-precision pressure sensor. The trigger pulse is obtained through force analysis. The forces acting during probing are processed electronically. This method provides extremely homogeneous probing accuracy over 360° and precise trigger characteristics in all directions.

Benefits of the TS 740 with high-precision sensor:

- Very high probing accuracy and repeatability
- Suitable for demanding measuring tasks on machine tools or measuring machines
- Homogeneous trigger characteristics



Dimensions in mm

Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ±0.2 mm

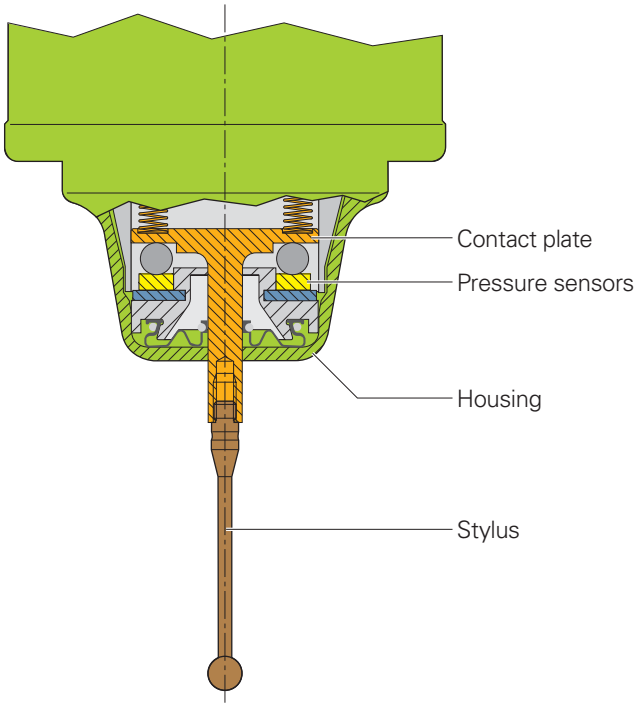
Workpiece touch probe	**TS 740**
Probe accuracy	≤ ± 1 µm when using a standard stylus
Probe repeatability Repeated probing from one direction	2 σ ≤ 0.25 µm at a probing velocity of 0.25 m/min
Deflection of probe contact	≤ 5 mm in all directions (with stylus length L= 40 mm)
Deflection force	Axial: approx. 0.6 N Radial: approx. 0.2 N
Probe velocity	≤ 0.25 m/min
Protection IEC 60529	IP 67
Operating temperature **Storage temperature**	10 °C to 40 °C –20 °C to 70 °C
Weight without taper shank	Approx. 1.1 kg
Taper shank*	• With taper shank***** (see Overview in *Touch Probes* brochure) • Without taper shank (connecting thread M30 x 0.5)
Signal transmission	Infrared transmission with 360° range
Transmission angle of infrared signal*	0° or +30°
Transmitter/receiver unit*	SE 540 or SE 640 (see *Touch Probes* brochure)
TS switch-on/off	Infrared signal from SE
Power supply	2 batteries (rechargeable or nonrechargeable), size C, 1 V to 4 V each
Operating time	Continuous duty typically 100 hours with lithium batteries[1)] 3.6 V/6 000 mAh

***** Please indicate when ordering
[1)] Included in delivery

Functional Principle and Probing Behavior

Mechanical design
The stylus of the TS 740 is rigidly connected to a moving contact plate fitted in the probe housing under preload. The preload is so chosen that even fast movements of the touch probe, such as those occuring during the insertion of the touch probe on machine tools, do not cause accidental deflection of the stylus.

Principle of function
With the TS 740, the deflection of the stylus is measured by several pressure sensors that are arranged between the contact plate and the probe housing. When probing a workpiece, the stylus is deflected so that a force acts on the sensors. The generated signals are processed and the trigger signal is produced. The relatively low probing forces provide high probing accuracy and repeatability, while offering precise trigger characteristics in all directions.



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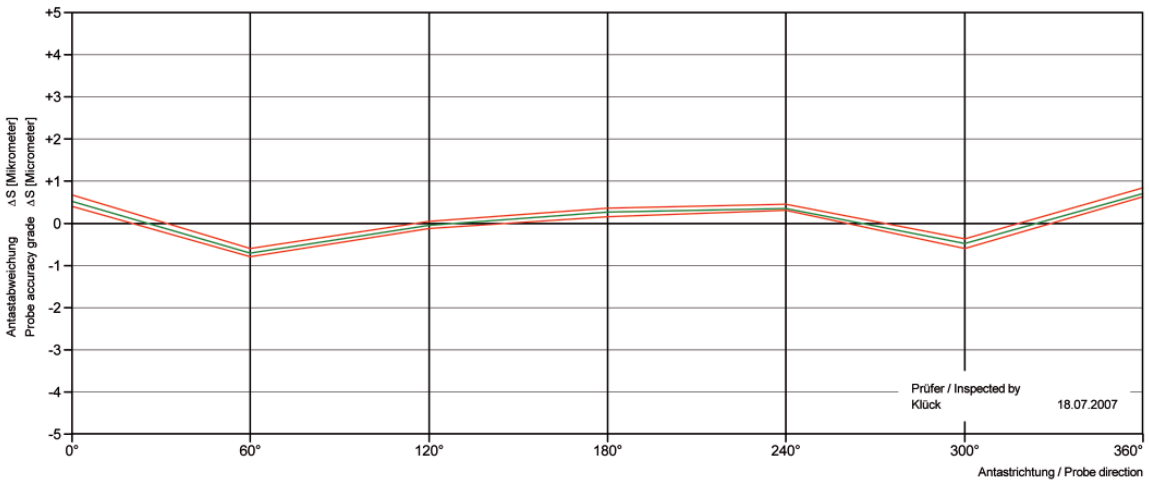
Messprotokoll
Calibration Chart

TS 740
Id.Nr.: 573757-01
S.Nr.: 20492261G4

Antastabweichung / Probe accuracy grade	X; Y-Achse/Axis: ± 0,71 µm	Antastgeschwindigkeit / Probe velocity:	1 mm/s
Antast-Reproduzierbarkeit / Probe repeatability	X; Y-Achse/Axis: 2 σ 0,15 µm	Bezugstemperatur / Reference temperature:	22°C ± 1°C



Die Messkurve zeigt die Mittelwerte aus 10 Antastungen pro Antastrichtung.
Antastabweichung $\Delta S = S_S - S_M$
(S_S = ($S_{M\,max}$ + $S_{M\,min}$)/2, S_M = Schaltposition des Prüflings)
Anzahl der Antastrichtungen: **6**

The error curve shows the mean values from ten measurements per probe direction.
Probe accuracy grade $\Delta S = S_S - S_M$
(S_S = ($S_{M\,max}$ + $S_{M\,min}$)/2, S_M = Trigger point of the test component)
Number of probe directions: **6**

Hersteller-Prüfzertifikat (DIN 55 350-18-4.2.2)
Dieses Gerät wurde unter strengen HEIDENHAIN-Qualitätsnormen hergestellt und geprüft.

Genauigkeitsklasse	± 1,0 µm	Kalibriernormal	Laser-Interferometer
Antast-Reproduzierbarkeit	2 σ 0,25 µm	Kalibrierzeichen	4120 PTB 02
		Kalibrierdatum	Juli 2002

Manufacturer´s Inspection Certificate (DIN 55 350-18-4.2.2)
This unit has been manufactured and inspected in accordance with the stringent quality standards of HEIDENHAIN.

Accuracy grade	± 1,0 µm	Calibration standard	Laser interferometer
Probe repeatability	2 σ 0,25 µm	Calibration mark	4120 PTB 02
		Date of calibration	July 2002

For more information
- Brochure: *Touch Probes*
- CD: *Touch Probes*

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