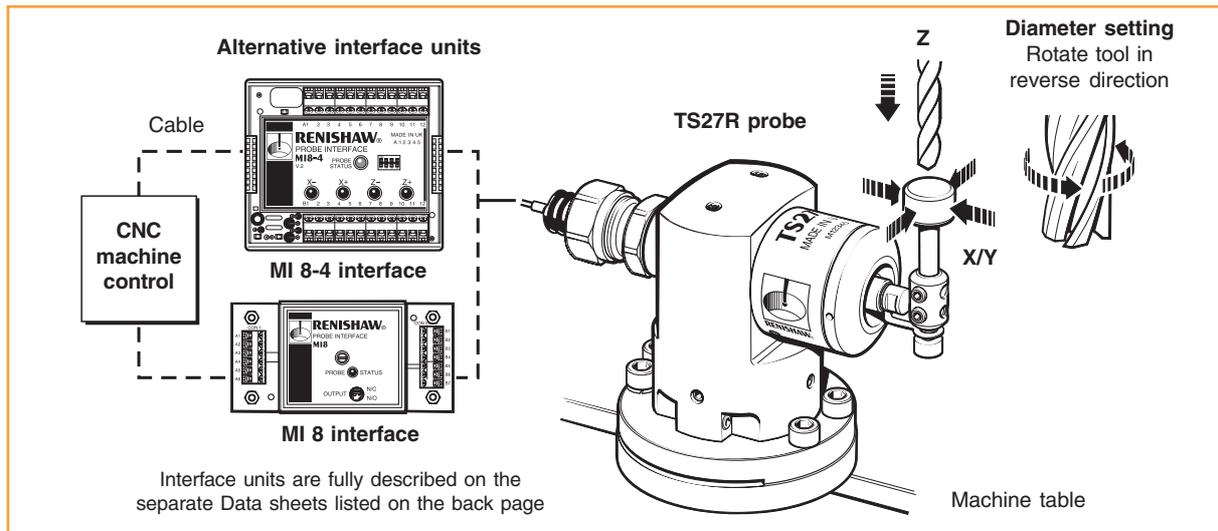


# TS27R tool setting probe



## TS27R PROBE FUNCTIONS

- Setting tool lengths in Z.
- Setting rotating tools in X and Y for radius offsets.
- Tool breakage detection.

The probe body is fully adjustable to enable the stylus tip to be aligned with the machine's axes. The probe mechanism is protected from hot chips and coolant by an outer metal eyelid and inner flexible seal. The base T bolt is clamped in a machine table T slot.

### Styli

Disc styli  $\varnothing 12.7$  mm ( $\varnothing 0.5$  in), or square styli  $19.05$  mm  $\times$   $19.05$  mm ( $0.75$  in  $\times$   $0.75$  in) are available. The stylus mounting allows styli to be changed.

A weak link break stem protection device is incorporated in the stylus mounting to protect the probe mechanism from damage in the event of excessive stylus overtravel or a collision. A captive link secures the stylus to the probe if the break stem is broken in the event of excessive stylus overtravel.

### Achievable set-up tolerances

The achievable tolerance setting of tools depends upon the flatness and parallelism of the stylus tip setting. A value of  $5 \mu\text{m}$  front to back and side to side is easily achievable over the flat portion of the stylus tip ( $5 \mu\text{m}$  parallelism with the axes of square tip styli is sufficient for the majority of tool setting applications).

## INTERFACE

The interface processes signals between the probe and CNC control.

The **MI 8-4 interface** is used with the standard G31 SKIP type control probe input. Probe status and output(s) operate between 4.75 Vdc and 30 Vdc and are fully configurable for ACTIVE HIGH or ACTIVE LOW operation. The interface also includes an 'inhibit' function as well as a facility for simple selection between the tool setting probe and an inspection probe.

The alternative **MI 8 interface** is used with the standard G31 SKIP type control probe input. Probe status output is a voltage free SSR (solid state relay), which is invertable via a switch (SW1).

Maximum current      50 mA peak  
Maximum voltage       $\pm 50$  V peak

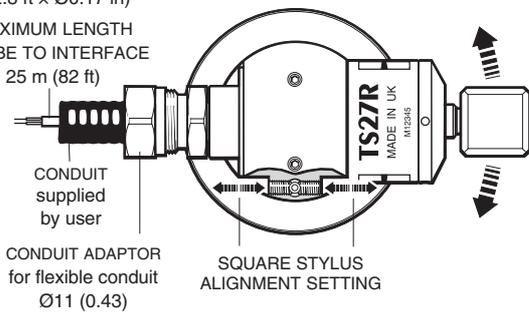
An inhibit function is included, and a facility to drive an external probe status LED.

## SPECIFICATION

<b>Sense directions</b>	Normally mounted in the machine's $\pm X$ , $\pm Y$ and $-Z$ axes
<b>Uni-directional repeatability</b>	$1 \mu\text{m}$ (0.00004 in) Maximum mean 2 sigma ( $2\sigma$ ) value *
<b>Stylus trigger force</b>	1.3 N to 2.4 N / 130 gf to 240 gf (4.6 ozf to 8.5 ozf) depending on sense direction
<b>Temperature limits</b>	Operating $5^\circ\text{C}$ to $60^\circ\text{C}$ ( $41^\circ\text{F}$ to $140^\circ\text{F}$ ) Storage $-10^\circ\text{C}$ to $70^\circ\text{C}$ ( $14^\circ\text{F}$ to $158^\circ\text{F}$ )
* Valid as tested with a 35 mm straight stylus and a velocity of 480 mm/min at the stylus tip	

**SCREENED CABLE**  
10 m x Ø4.4 mm SUPPLIED  
(32.8 ft x Ø0.17 in)

MAXIMUM LENGTH  
PROBE TO INTERFACE  
25 m (82 ft)



CONDUIT supplied by user  
CONDUIT ADAPTOR for flexible conduit Ø11 (0.43)

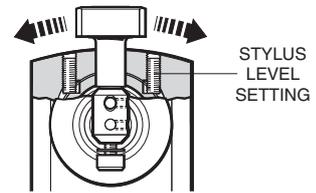
SQUARE STYLUS ALIGNMENT SETTING

RENISHAW RECOMMENDS THAT THOMAS & BETTS TYPE EF CONDUIT, OR A SUITABLE ALTERNATIVE, IS FITTED TO ALL INSTALLATIONS

## Installation

dimensions mm (in)

**SQUARE STYLUS**  
19.05 x 19.05  
(0.75 x 0.75)

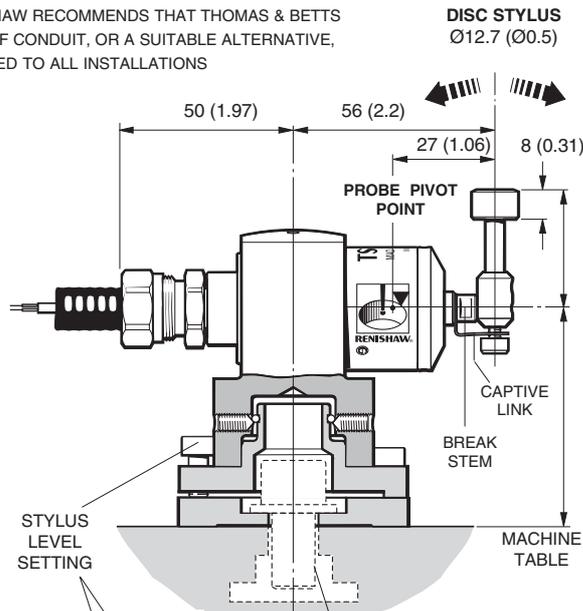


STYLUS LEVEL SETTING



Z  
OVERTRAVEL at stylus centre  
5.5 (0.21)

X and Y  
OVERTRAVEL  
±10° minimum  
in all axes



PROBE PIVOT POINT

**DISC STYLUS**  
Ø12.7 (Ø0.5)

CAPTIVE LINK

BREAK STEM

STYLUS LEVEL SETTING

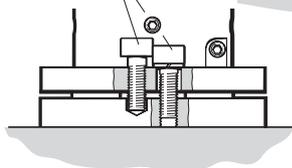
MACHINE TABLE

STYLUS HOLDER

81.75 (3.22)

Ø54 (Ø2.125) PCD  
Ø63.5 (2.5)

Two holes for Spirol® pins  
Ø6.13 (0.24)  
Ø5.95 (0.23)  
x  
13 (0.51) deep  
MINIMUM



T BOLT ASSEMBLY supplied by user

45°

Four holes for Spirol® pins (two are used)  
equi-spaced on Ø54 (Ø2.125) PCD

The T bolt provides adequate clamping in all normal circumstances. Two Spirol® pins (supplied by Renishaw) may be fitted on installations where there is requirement to remove and remount the TS27R. To fit the Spirol® pins, drill two holes in the machine table to correspond with two of the probe base holes.

## Parts List - Please quote the Part No. when ordering equipment

Type	Part No.	Description
TS27R full kit	A-2008-0397	TS27R with stylus break stem protection (x 2), disc stylus Ø12.7 mm (Ø0.5 in) and MI 8-4.
TS27R full kit	A-2008-0396	TS27R with stylus break stem protection (x 2), square stylus 19.05 mm x 19.05 mm (0.75 in x 0.75 in) and MI 8-4.
TS27R full kit	A-2008-0367	TS27R with stylus break stem protection (x 2), disc stylus Ø12.7 mm (Ø0.5 in) and MI 8.
TS27R full kit	A-2008-0366	TS27R with stylus break stem protection (x 2), square stylus 19.05 mm x 19.05 mm (0.75 in x 0.75 in) and MI 8.
TS27R	A-2008-0368	TS27R with stylus break stem protection (x 2) and disc stylus Ø12.7 mm (Ø0.5 in).
Probe + holder	A-2008-0388	TS27R with stylus break stem protection (x 2) and stylus holder (without stylus).
Disc stylus	A-2008-0382	Disc stylus (tungsten carbide, 75 Rockwell C) - Ø12.7 mm (Ø0.5 in).
Square stylus	A-2008-0384	Square tip stylus (ceramic tip, 75 Rockwell C) - 19.05 mm x 19.05 mm (0.75 in x 0.75 in).
Break stem kit	A-5003-5171	Stylus protection kit comprising : break stem, captive link, grub screw flat ended (x 3), cap head screw (x 2) and tools (hexagon wrenches, spanner 5 mm AF, and support bar).
MI 8-4	—	See Data Sheet <b>H-2000-2185</b> MI 8-4 interface unit.
MI 8	—	See Data Sheet <b>H-2000-2191</b> MI 8 interface unit.

For worldwide contact details, please visit our main website at [www.renishaw.com/contact](http://www.renishaw.com/contact)