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Renishaw CMM Products Division

PRODUCT BULLETIN – PBC1338

Product:	SM25-5	Status:	Open
Title:	SM25-5 Product Availability	Date:	14 May 2009

Originator: L Quick		Distribution:	
		Internal	✓
		Subsidiaries	✓
Reviewer: B Gow		**OEM's**	✓
		Distributors	✓
		Retrofitters	✓

Summary:

Renishaw is pleased to announce the release of the SM25-5 to further enhance the SP25M probe range by enabling the use of larger star/non-linear stylus arrangements. The SM25-5 also has its own dedicated stylus holder SH25-5 that must be used with this module.

The recommended stylus reach is a conical shape (see fig 1). 105mm cranks are permitted "straight out" at 15mm down and this reduces to 55mm cranks at 55mm down. It should be noted that exceeding these limits will reduce metrology performance. The maximum straight down length is 100mm. To ensure that the stylus holder fits into the rack port when a star/non-linear stylus is fitted a minimum down length of 15mm must be used.

SM25-5 has a higher gain (approx 20%) in XY than the other SM25 modules and as a result has less XY range than the other modules. To enable a wide range of styli to be carried the working range has been restricted to 0.3mm. In addition the spring rates have been increased from 0.6N/mm with SM25-1 / 2 / 3 / 4 to 1N/mm with SM25-5 (measured with a standard stylus holder and a 21mm stylus). The lower working range and higher spring rate of SM25-5 result in probing forces very similar to SM25-1 / 2 / 3 / 4.

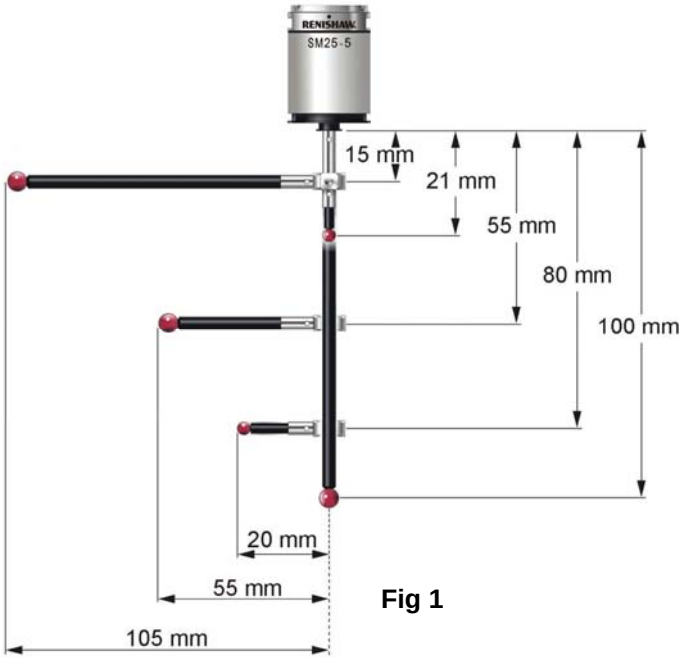


Fig 1

The SM25-5 can be calibrated using the Renishaw non-linear calibration for module type 2 with both straight and cranked styli.

Typically Renishaw recommends 0.2 and 0.5mm calibration deflections for SM25-1/2/3/4 but for SM25-5 this needs to be reduced to **0.1 and 0.3mm**.

SM25-5 and SH25-5 work in the FCR25 rack ports providing that the stylus carrying guidelines in fig 1 are followed.

Metrology summary

The diagrams below show the metrology performance that can typically be expected when using the SM25-5 with the stylus configurations as described.

ISO10360-4 filtered Tij (60 UPR µm)

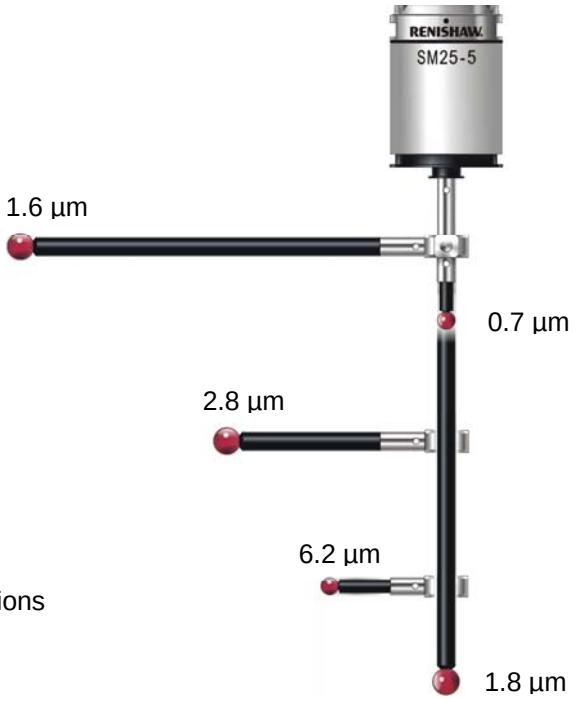


Fig 2

Note: Refer to fig 1 for dimensions

Bi-directional ring gauge filtered span (60 UPR µm)

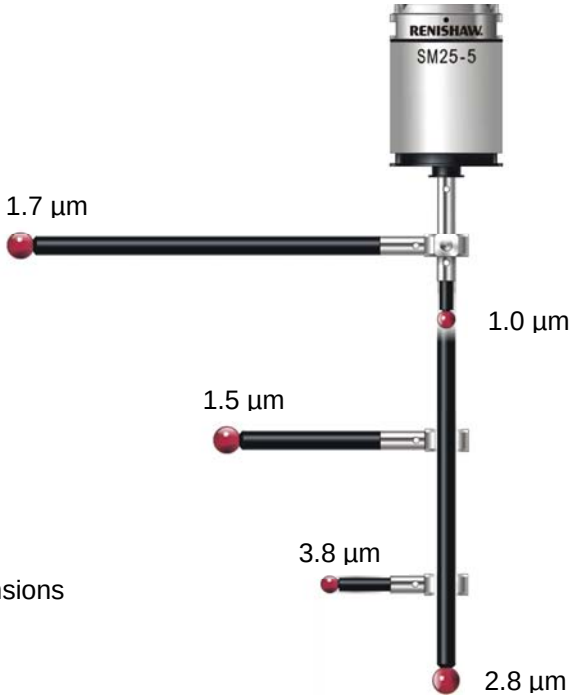


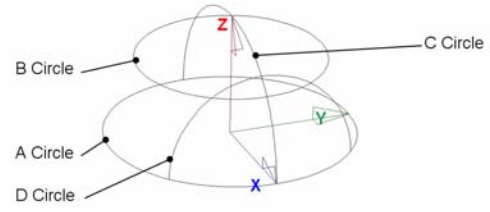
Fig 3

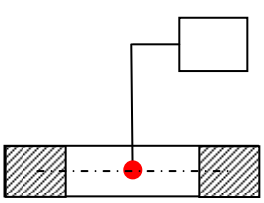
Note: Refer to fig 1 for dimensions

When to use SM25-5

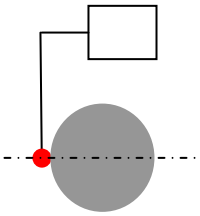
For 3D scanning with a star/non-straight stylus configuration Renishaw recommend that you use SM25-5.

For example, with SM25-1 it is possible to scan 2D features with a 25 down by 58mm out cranked stylus, but 3D features may be an issue. When performing an ISO 10360-4 for example (see below) the B circle and C and D half circles may not be feasible with SM25-1 with a 25 down by 58mm out cranked stylus. These circles would be feasible (with this cranked stylus arrangement) with SM25-5.

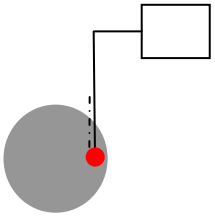




Ring Gauge	
SM25-1	Yes
SM25-5	Yes



Sphere Equator	
SM25-1	Yes
SM25-5	Yes



ISO-4 “D”	
SM25-1	No
SM25-5	Yes

If you are using straight styli and speed and throughput are a concern then you should use the standard range of modules (SM25-1/2/3/4).

SM25-5 metrology performance is reduced at higher scanning speeds compared to the other scanning modules. For example in a back-to-back ISO 10360-4 tests with a SM25-2 at 45mm/s the raw span with SM25-2 was less than 5µm compared to 39µm with SM25-5.