Leaflet
H-1000-4054-02-B

RENISHAW
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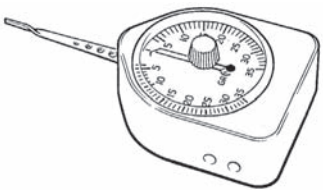
Trigger force gauge guide

Specification



Overall length	95 mm
Needle length	41 mm
Depth	27 mm
Width	43 mm
Range	4 g to 35 g range with 1 g graduations

Renishaw part no. P-GA01-0001

All Renishaw's touch-trigger probes have an optimum trigger force setting for general purpose applications as detailed in table below:

Trigger force			
CMM probes	**Stylus length (typical)**	**Optimum trigger force (preset by Renishaw)**	**Trigger force range**
TP1 (S)	31 mm (PS1-1R)	0.15 N (15 gf)	0.1 N to 0.5 N (10 gf to 50 gf)
TP2-5 way	10 mm (PS1-2R)	0.07 N to 0.08 N (7 gf to 8 gf)	0.07 N to 0.15 N (7 gf to 15 gf)
TP6 / TP6A	21 mm (PS1-12R)	0.11 N to 0.13 N (11 gf to 13 gf)	0.11 N to 0.3 N (11 gf to 30 gf)

Trigger force

Trigger force is the amount of pressure applied by the helical compression spring onto the pivotal plate and bearing points to hold the stylus mount in place.

The trigger force is preset by Renishaw but can be altered for any of the following reasons:

- To permit the use of a longer styli on the probe.
- To permit the use of heavier styli on the probe.
- If the preset trigger force has decreased due to probe use.
- If the acceleration of the CMM is causing illegal triggers.

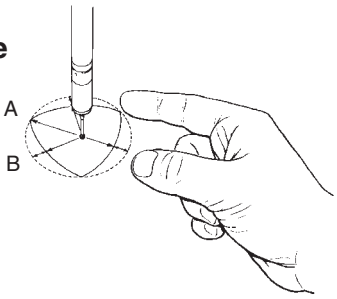
NOTE:

Changing the probe's trigger force will affect it's measurement performance. It is important to requalify the probe configuration and check the measurement performance of the probe system after any adjustment has been made to the trigger force.

Checking trigger force with a Renishaw gram gauge

1. Ensure that the probe is held firmly in position (preferably on a CMM) and connected to an interface to detect a probe trigger.
2. Establish the direction of trigger which gives the maximum resistance. The most practical way of doing this is to gently deflect the stylus with a finger, trying different directions (see sketch below). There are three lobes which produce three maximum and three minimum force directions. These can be easily found with a minimum of practice.

Establishing direction of minimum resistance

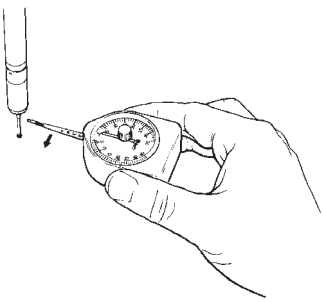


A = High trigger force direction

B = Low trigger force direction

3. Set the gram gauge maximum force indicator to the zero point and place flat on the CMM table. Move the stylus tip to the same height above the surface as the gram gauge lever.
4. Slide the gram gauge slowly sideways so that the flat point on the end of the lever touches the probe stylus ball (ensuring that the probe is deflected in the low trigger force direction). Very slowly continue to move the gram gauge until the probe triggers, at which point stop immediately, back off the gram gauge and read the maximum force indicator.
5. Repeat this procedure three or four times to ensure consistent results.

Measuring trigger force



NOTE:

Use the following formula to convert gf to Newtons:

Newtons = gf / 100

Trigger force adjustment

The trigger force of a TP1 (S) / TP2-5W / TP6 / TP6A probe is preset by Renishaw at an optimal performance setting, but can be altered if necessary as follows:

1. Remove the probe from the quill of your CMM.
2. Insert the correct size hexagonal key (supplied with every probe) into the centre of the shank until you locate a grub screw.
3. Adjust this grub screw to alter the trigger force of the probe:
   - Clockwise increases the trigger force.
   - Anticlockwise decreases the trigger force.

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