

# ANA Tips : No 2

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## Tips on using coaxial connector torque spanners

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While recently calibrating some of the torque spanners used in our laboratory, we noticed that each individual spanner was capable of producing a range of torque values depending on how the spanner was operated. (These are the torque spanners usually found in ANA calibration kits.) This note presents some of our observations and gives recommendations on using torque spanners to achieve a reliable torque value.

### The test set-up

We used a calibrated, traceable, torque meter fitted with an appropriate 'dummy connector' to allow torque measurements to be made on spanners (having a nominal torque setting of 8 lb.in) used for connecting GPC-3.5 devices.

Initially, we noticed that it was very important to apply pressure to the torque spanner handle at right angles (i.e. normal) to the direction of the handle's movement. This is because any longitudinal pressure applied to the handle can cause a very large torque (>20 lb.in) to be applied to the connector.

We next concentrated on applying the pressure at various different positions along the spanner's handle. The table below gives the results obtained as we moved successively away from the spanner's pivot, or break-point. The distance values are only approximate but give a flavour of the effect on achieved torque at the connector.

Point of applied pressure - distance from pivot (mm)	Measured torque (lb.in)
20 mm from the break-point	20
40 mm from the break-point	13
60 mm from the break-point	11
80 mm from the break-point	9
12 mm from the free end	8

Finally, we measured the torque produced by a spanner when operated in each of its two possible orientations, i.e. causing it to 'break' in both directions. In general, this caused only a small variation in the torque produced (less than 0.5 lb.in).

### Recommendations

- 1) Always apply the pressure to the torque handle in a direction normal to the direction of the handle's movement.
- 2) From our brief investigations, we recommend that the spanner's handle is gripped near the free end and well away from the torque breaking mechanism.
- 3) Differences between the two possible user orientations of the spanner are usually small but we expect they become more significant for spanners where the break mechanism has become worn.