

## TQ-300/TQ-300M Instructions

The TQ-300 series has been designed to be utilized directly with the specifications provided in the VCR manufacturers service manuals. This gauge can be successfully used to replace the "dummy reel" - spring scale measurement shown in most factory service manuals. The TQ-300M provides a motor drive for smooth, easy rotation of the dial torque gauge for more consistent, accurate measurements.

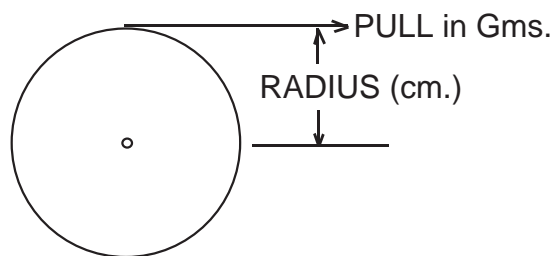
There are some of these factory specified measurements that are still best done with a Tentelometer® tape tension gauge; namely the holdback tension and any other tension where it is necessary (per the factory manual) to thread the tape through and around the various heads and guides to perform the "torque" measurement. The factory measurements are easily distinguished since the cumbersome threading procedures are an attempt to simulate the normal operating tape path in the VCR. Tentel believes, along with tens of thousands of current Tentelometer® users, that it's best and easiest to allow the VCR itself to pull the tape during normal operations whenever possible. The TQ-300M is recommended for the other various clutch and brake torques.

### OPERATION:

The TQ-300 eliminates the need to remove the side panels from the VCR since the integral adapter on the dial torque gauge fits directly down onto the splines of the spindles. The gauge can then be rotated in the desired direction by hand or with the "M" motor drive while noting the torque reading on the calibrated torque gauge scale. The torque is thus read directly in gram-centimeters (gm-cm).

Factory service manuals will usually show both the torque (gm-cm) and the tension that is desired when pulling on the dummy reel. Please consult the particular service manual for the exact torque specification for your model VCR.

The torque is merely the product of the tension (gm) multiplied by the tape pack radius in centimeters (cm). The resultant torque is shown in gm-cm units. (Pronounced gram centimeters)



$$\text{TORQUE (gm-cm)} = \text{PULL (gm)} \times \text{Radius (cm)}$$

When using both the Tentelometer® and the TQ-300 torque gauge systems, readings can usually be performed within just a few minutes once the top cover of the VCR has been removed.

### CALIBRATION:

The calibration of the TQ-300 Torque Gauge is based on a torsion bar. Tentel has tightly controlled the length and diameter of the torsion bar. As long as the scale disc rotates freely and returns to zero, when holding the gauge vertically by the handle (as in normal operation), the accuracy can be assured.

### LIMITED WARRANTY

TQ-300/TQ300M Torque Gauges are guaranteed to be free of defects in materials and workmanship for a period of one year after delivery to the initial purchaser. This warranty does not cover damage caused by normal wear, accident, abuse, alteration, disassembly or failure to follow operating instructions. Tentel assumes no responsibility or liability beyond the purchase price of the unit. The TQ-300 instruction manual is intended as a helpful guide only and Tentel assumes no liability from its misuse or misapplication.

Should your TQ-300 require factory service, include your return address and telephone information along with the gauge and a description of the problem to:

TENTEL  
Attn: Repair Department  
333 Industrial Drive #4  
Placerville, CA 95667  
(530) 344-0183

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