

SIZE AND FORCE OPTIONS		
HEAD SIZE	5/16	5-12 IN-LBS
	19mm 20mm	8-12 IN-LBS

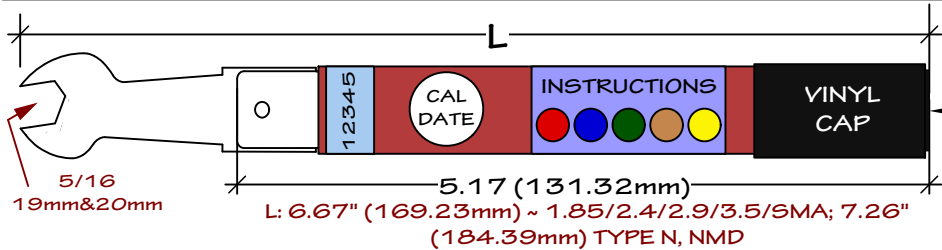
APPLICATION: VM TORQUE WRENCHES ARE DESIGNED AND CALIBRATED TO ENSURE THAT THE MATING OF MICROWAVE CONNECTORS IS ACCOMPLISHED WITHIN AN APPROPRIATE TORQUE RANGE FOR THE CONNECTORS UNDER TORQUE, THEREBY FURTHER ENSURING ACCURATE ELECTRICAL MATING.

ADVANTAGES AND BENEFITS:

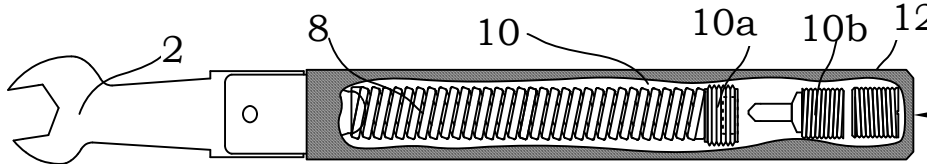
(i) PRESET WITHIN A SHORT ARC OF 10 DEGREES TO REDUCE OPERATOR FATIGUE AND ERROR. THIS SHORT ARC MAKES IT POSSIBLE TO MANIPULATE A FIXED SPANNER WRENCH AND PRESET TORQUE WRENCH WITHOUT THE LATTER PULLING.

(ii) CALIBRATION PER ISO6789 USING A ROBUST TECHNIQUE THAT ENSURES A HIGHER DEGREE OF ACCURACY THAN FORMERLY AVAILABLE WITH MANUAL CALIBRATION TECHNIQUES. CALIBRATION DATA AND UNCERTAINTIES ARE PRESERVED ON A USB THUMB DRIVE.

(iii) INTERNAL AND EXTERNAL PERFORMANCE FEATURES TO SUPPORT LONGER TERM SERVICE AND LIMIT OPERATOR ERROR.



FINAL DRESS FEATURES: (i) INSTRUCTION LABELING, (ii) A STAMPED AND RECORDED SERIAL NUMBER, (iii) AN IEEE COLOR CODE THAT CORRESPONDS TO THE CONNECTOR UNDER TORQUE, (iv) DATED CAL STICKER WITH DATE AND PRESET TORQUE MATCHING INCLUDED CAL WITH DATA AND UNCERTAINTY ON DISC, (v) EXPLICIT HOLD POINT DEFINED BY A VINYL CAP.



MECHANICAL FEATURES: (i) A HARD STOP (10B) TO INHIBIT CAL SLIP DUE TO VIBRATION OR SHOCK; (ii) HIGH QUALITY SPRING STEEL ALLOY (8); POLISHED PLATED STEEL HEAD.

SPECIFICATIONS

WRENCH TYPE	PRESET CRESCENT GEOMETRY
WRENCH FUNCTION	BREAK WITHIN A SPECIFIED ARC
CONNECTOR COMPATIBILITIES	1.85/2.4/2.92/3.5mm/SMA/N/NMD
HEAD SIZE OPTIONS	5/16 IN, 19mm, 20mm
TEMPERATURE RANGE	17 DEG C TO 25 DEG C

PERFORMANCE

TORQUE RANGE CAPABILITY	5 IN-LBS TO 20 IN-LBS
CAL STANDARD	ISO-6789-2003
CALIBRATION TYPE	CERT WITH CALIBRATION DATA AND UNCERTAINTIES AT K=2 CONFIDENCE
CALIBRATION ARC	10 DEGREES (OR CUSTOM)
ACCURACY AS CALIBRATED	5 IN-LBS: 3% (MAX 6%)
ACCURACY AS CALIBRATED	8 IN-LBS & 12 IN-LBS: 3% (MAX 6%)
CALIBRATION METHOD	ARC ITERATE TO CONVERGENT PRESET

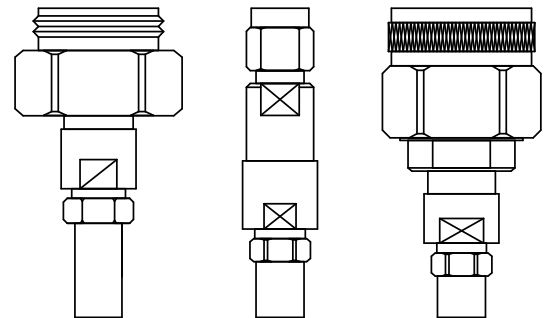
MECHANICAL

HANDLE GRIP DIAMETER	0.70 (17.78mm)
HANDLE DIAMETER	0.565 (14.35mm)
HANDLE FINISH	NICKLE PLATE BRIGHT STEEL ALLOY
HEAD FINISH	COLOR ANODIZE PER MIL-A-8625
19mm, 20mm CLASS LENGTH	7.26 INCHES (184.4mm)
5/6 CLASS LENGTH	6.67 INCHES (169.4mm)
WEIGHT 5/16 WRENCH CLASS	3.1 OZ. (88 GRAMS)
WEIGHT 19, 20mm WRENCH	3.5 OZ. (104 GRAMS)

ANCILLARY

PACKAGING	PETG TUBE WITH VINYL END CAPS
ACCESSORIES SUPPLIED	USB THUMB DRIVE W/ DATA & CAL TWO PAGE INSTRUCTION SHEET

FOR THE GAGING OF 1.85mm (V), 2.4mm (Q), 2.93mm (K), 3.5mm, SMA, TYPE N & NMD MICROWAVE CONNECTORS FOR ACCURATE AND SAFE ENGAGEMENT



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NOTES: THE FORTIS SERIES TORQUE WRENCHES WERE DESIGNED FOR LONG TERM SERVICE IN A LAB OR PRODUCTION ENVIRONMENT; THEY USE HIGH QUALITY SPRING STEEL, A TORQUE LOCKING MEANS, AND RIGOROUS CALIBRATION WITH DATA AND UNCERTAINTIES ON DISK PER ISO6789.

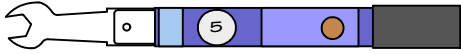
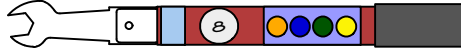
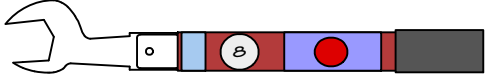
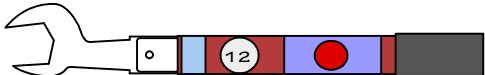
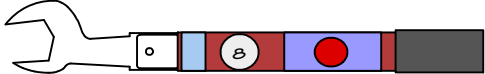
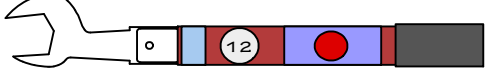
FORTIS TORQUE WRENCHES

[5, 8 & 12 IN-LBS.]

SMA, 1.85mm, 2/4mm, 2.92mm, 3.5mm
TYPE N & NMD

Velocity Microwave ~ div. ATX Labs
www.velocitymicrowave.com

ORDERING OPTIONS

ORDER NUMBER	DESCRIPTION	APPEARANCE
S-5	5/16 CRESCENT CALIBRATED TO 5 IN-LBS FOR TORQUING SMA BRASS CONNECTORS	COLOR CODE BROWN 
S-8	5/16 CRESCENT CALIBRATED TO 8 IN-LBS FOR TORQUING STAINLESS 1.85/2.4/2.92/3.5mm & SMA CONNECTORS	COLOR CODE BROWN OR, BL, GRN, YL 
N19-8	19mm CRESCENT WRENCH CALIBRATED TO 8 IN-LBS FOR TORQUING STAINLESS TYPE N AND NMD PANEL MOUNT CONNECTORS	COLOR CODE RED 
N19-12	19mm CRESCENT WRENCH CALIBRATED TO 12 IN-LBS FOR TORQUING STAINLESS TYPE N AND NMD PANEL MOUNT CONNECTORS	COLOR CODE RED 
N20-8	20mm CRESCENT WRENCH CALIBRATED TO 8 IN-LBS FOR TORQUING STAINLESS TYPE N AND NMD PANEL MOUNT CONNECTORS	COLOR CODE RED 
N20-12	20mm CRESCENT WRENCH CALIBRATED TO 12 IN-LBS FOR TORQUING STAINLESS TYPE N AND NMD PANEL MOUNT CONNECTORS	COLOR CODE RED 

SPECIFICATIONS

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HEAD SIZE OPTIONS	5/16 IN, 19mm, 20mm
TEMPERATURE RANGE	17 DEG C TO 25 DEG C

PERFORMANCE

TORQUE RANGE CAPABILITY	5 IN-LBS TO 20 IN-LBS
CAL STANDARD	ISO-6789-2003
CALIBRATION TYPE	CERT WITH CALIBRATION DATA AND UNCERTAINTIES AT K=2 CONFIDENCE
CALIBRATION ARC	10 DEGREES (OR CUSTOM)
ACCURACY AS CALIBRATED	5 IN-LBS: 3%(MAX 6%)
ACCURACY AS CALIBRATED	8 IN-LBS & 12 IN-LBS: 4%(MAX 6%)
CALIBRATION METHOD	ARC ITERATE TO CONVERGENT PRESET

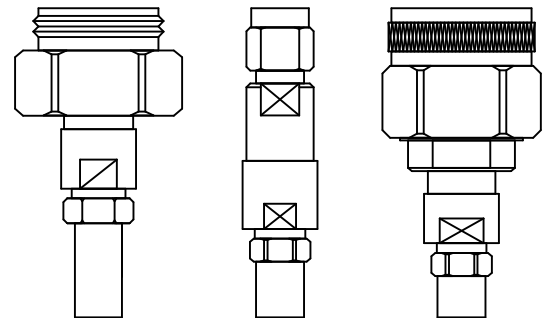
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ANCILLARY

PACKAGING	PETG TUBE WITH VINYL END CAPS
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FOR THE GAGING OF 1.85mm (V), 2.4mm (Q), 2.93mm (K), 3.5mm, SMA, TYPE N & NMD MICROWAVE CONNECTORS FOR ACCURATE AND SAFE ENGAGEMENT



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FORTIS TORQUE WRENCHES

[5, 8 & 12 IN-LBS.]

SMA, 1.85mm, 2/4mm, 2.92mm, 3.5mm
TYPE N & NMD

Velocity Microwave ~ div. ATX Labs
www.velocitymicrowave.com

CALIBRATION METHOD

VELOCITY MICROWAVE [VM] TORQUE WRENCHES USE A PATENT PENDING SETTING AND CALIBRATION MEANS THAT CONVERGES TO A DEFINABLE TORQUE VALUE AUTOMATICALLY. THIS TECHNIQUE HAS SEVERAL BENEFITS:

- (i) PER ISO6789 SEC. 6.3.1E THE FORCE IS APPLIED AT A POINT CENTRAL TO THE END USER'S APPLICATION OF FORCE, AND IN A MANNER THAT IS REPEATABLE AND WELL DEFINED;
- (ii) PER ISO6789, SEC. 6.3.2, A FORCE STRICTLY NORMAL TO THE WRENCH AXIS IS APPLIED IN A MANNER THAT IS REPEATABLE AND WELL DEFINED;
- (iii) PER ISO6789, SEC. 6.3.2, THE AXIS OF THE WRENCH RELATIVE TO THE AXIS OF THE TORQUE MEASURING DEVICE IS PERPENDICULAR, AND THIS CONDITION IS REPEATABLE AND WELL DEFINED;
- (iv) SPRING TENSION AND WRENCH ARC ARE ALTERNATELY CHANGED UNDER COMPUTER CONTROL WHILE FEEDBACK DATA DETERMINES THE DELTA BETWEEN MEASURED TORQUE AND PRESET TORQUE ENSURING A TIGHT CONTROL OF FINAL TOLERANCE (UNCERTAINTY);
- (v) CALIBRATION UNCERTAINTY IS GENERATED PER GUM* GUIDELINES BY ASSIGNING TYPE B COMPONENTS TO MEASURED DATA TO ARRIVE AT A FINAL CONFIDENCE LEVEL OF K=2 FOR STANDARD DEVIATION. DATA AND CALIBRATIONS ARE SAVED TO DISK.

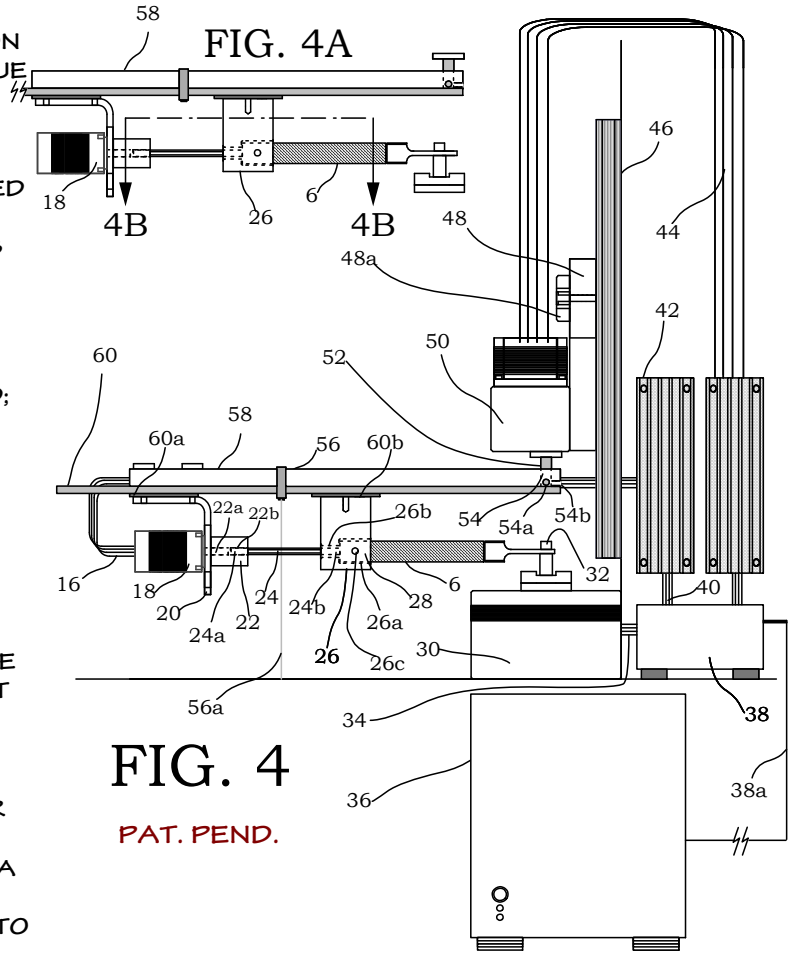


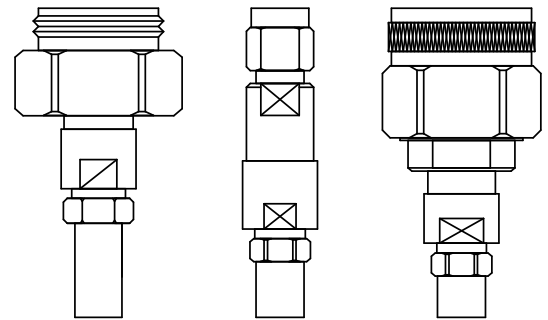
FIG. 4

PAT. PEND.

*Evaluation of measurement data Guide to the expression of uncertainty in measurement, JCGM 100:2008

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