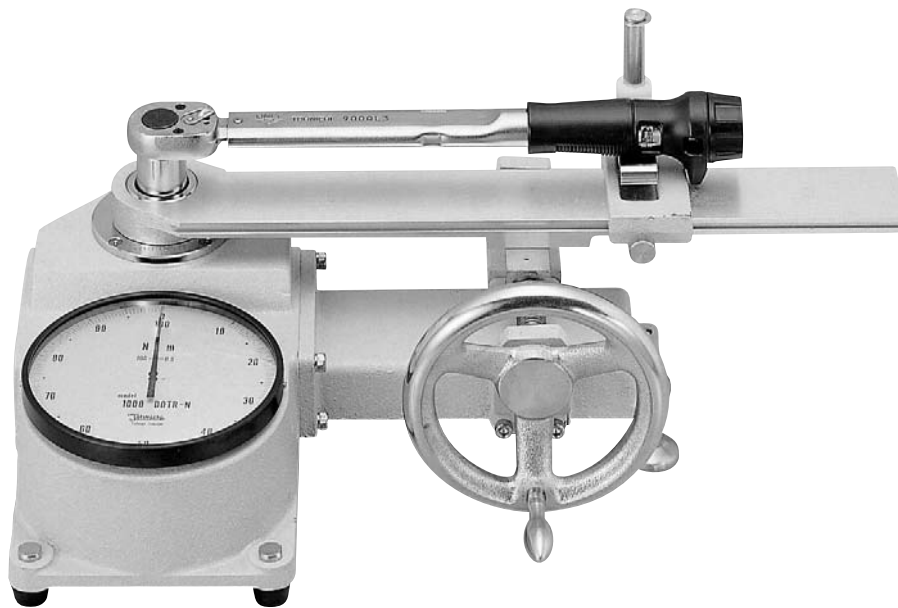


# TORQUE WRENCH CHECKER MODEL DOT

## OPERATING INSTRUCTION

DOT **DOT Model**



To use this product properly and safely, please read this manual carefully before use. If you have any question about the product and its operations, please contact your nearest distributor or TOHNICHI MFG. CO., LTD.

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DOT Torque Wrench Checker measure torque values accurately by the use of the amplified twisting of the torsion bar set on the dial gauge. DOT Torque Wrench Checker consists of a torque meter and a loading device (to apply force to the torque wrench), which contribute to high accuracy and user-friendly operations. Since DOT Torque Wrench Checker is low weight and small in size compared with conventional testers, operators can check torque wrenches easily.

## 1 Specifications

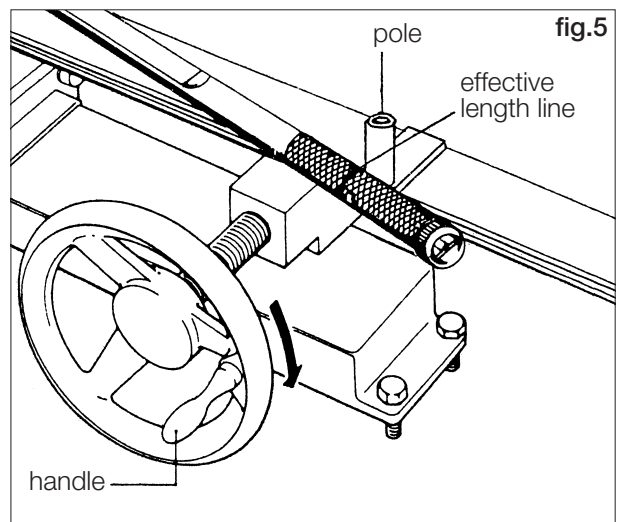
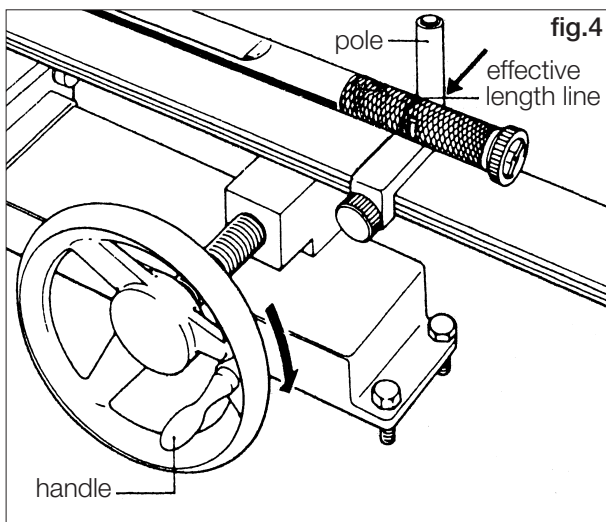
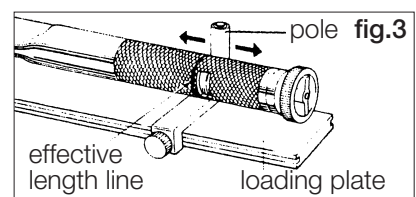
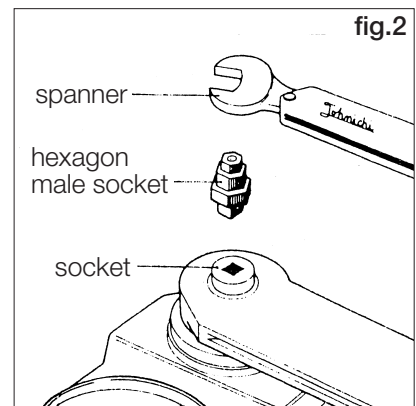
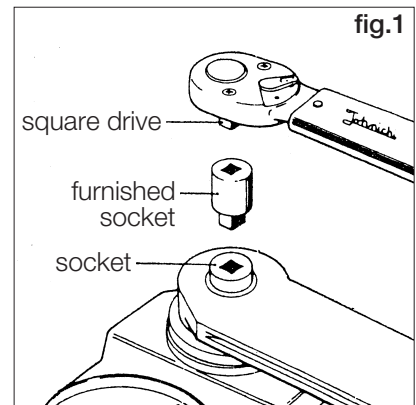
MODEL	S.I.		IMPERIAL		METRIC		Furnished Sq. Drive (Female)	Furnished Hex. Drive (Male)	Weight
	Capacity	Grad.	Capacity	Grad.	Capacity	Grad.	(in)	(mm)	(lbs.) (kg)
	(N.m)		(lbf.in)		(kgf.cm)				
350DOT	5-35	0.1	50-350	1	50-350	1	1/4, 3/8	10, 12, 13, 14, 17, 19	27-19/23 12.5
500DOT	5-50	0.2	50-500	2	50-500	2	1/4, 3/8	10, 12, 13, 14, 17, 19	27-19/23 12.5
			(lbf.ft)						
1000DOT	10-100	0.5	7-70	0.5	100-1000	5	3/8, 1/2	10, 12, 13, 14, 17, 19	27-19/32 12.5
3000DOT	30-300	1	22-220	1	300-3000	10	1/2, 3/4	17, 19, 22, 24, 27, 30	46-9/15 21.1
7000DOT	70-700	2	50-500	2	700-7000	20	3/4	22, 27, 29, 30, 32, 36	55-3/16 25.0

## 2 Features

- a) There is no need to fix the checker on top of a table. Force is applied to the torque wrench by turning the handle, so that the checker is not moved by hand, accidentally.
- b) There will be no error in the way of force application.
- c) Since force can be increased gradually using the handle, measurement can be performed easily.
- d) The weight error of the torque wrench can be neglected since the torque wrench is measured horizontally.

### 3 Handling Instructions Torque Wrench Checking

- a) There is no need to fix the checker onto the table. Place the checker horizontally on the table.
- b) In case of the square drive head: Insert the square drive of the torque wrench into the socket. If the square drive is small, use the furnished socket between the square drive and the socket. In case of the spanner head: Choose the hexagon male socket that matches the size of the spanner from the furnished sockets. Insert the square drive of the hexagon male socket into the socket, and fit the spanner to the width across the hexagon. (Fig.1) (Fig.2)
- c) Slide the pole on the loading plate so that it is aligned to the effective length line of the torque wrench, and lock the pole. (Fig.3)
- d) Turn the handle clockwise, so that the pole presses on the effective length line of the torque wrench. With the turning of the handle, the pointer on the dial indicates the applied torque. (Fig.4)
- e) In case of the preset torque wrench with scale or without scale, the pointer will suddenly lower after continuous increase when the preset torque is reached. Read the value on the dial just before the pointer lowers. In case of beam and dial type torque wrenches, read the value on the dial as it is. Depending on the shape of torque wrench, there may be too much space between the pole and the handle of the torque wrench. In such case, remove the pole once and put it on the opposite sides to make up for the space (Fig.5)



# 4 Maintenance and Handling Notes

## Maintenance

- a) Avoid placing the checker in dusty places.
- b) Inspect the checker approximately every two months, although the period may depend on the frequency of use. Inspection guarantees the accuracy and the life of the checker.  
It is not necessary to apply lubricant on the checker.

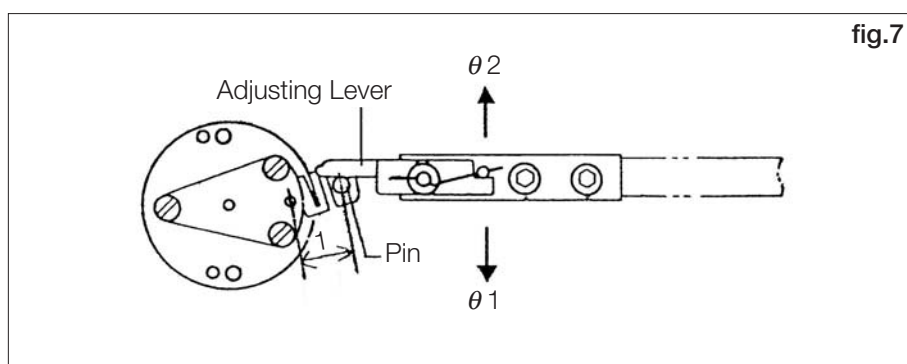
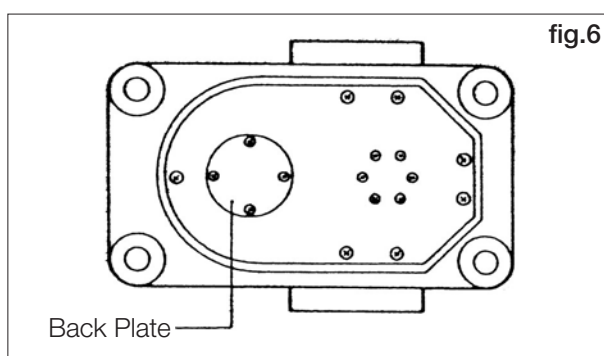
## Handling Notes

- a) Place the checker horizontally whenever used.
- b) Handle with care, since the checker is an elaborate product. If the checker has been subjected to violent vibration or dropped on the ground, check the accuracy in any case.
- c) Avoid using the checker in places subject to extreme vibration. Accurate checking can not be obtained.

# 5 Accuracy Adjustment

- a) Turn the checker over and take off the back plate. (Fig. 6)
- b) In case the reading torque on the dial is lower than the actual value, shorten the measurement of "1" by reducing the width of both grooves of the adjusting lever.  
In case it is higher, lengthen the "1" by increasing the width of the grooves of the adjusting lever. (Fig. 7)

- c) In case the accuracy cannot be obtained by the above-mentioned adjustment method, change the position of the Pin in degrees clockwise and/or counterclockwise ( $\theta_1$ ,  $\theta_2$ ) by changing the width of the grooves of the adjusting lever.



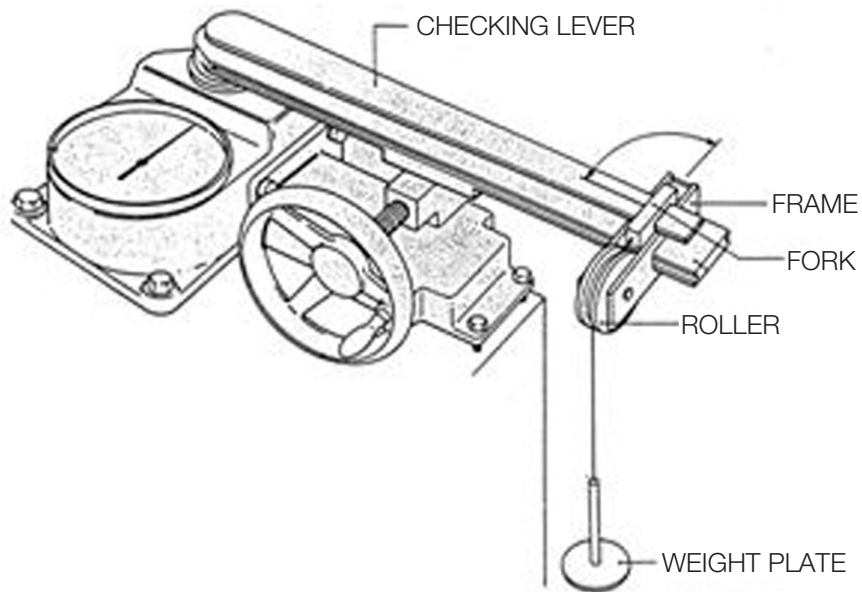
## 6 Measurement Method

For calibration of DOT models, use the DOTCL Calibration Kit.

The DOTCL calibration kit is designed exclusively for Tohnichi DOT Torque Wrench Testers. It is not recommended for use on other equipment. There is no need to fix the kit to a workbench, since the unique design stabilizes the unit itself. The DOTCL kit tests in both the clockwise and counterclockwise directions.

- 1) Set the DOT tester on a sturdy workbench in a vibration-free environment.
- 2) Assemble the calibration stand and set.
- 3) When hanging the wire, carry out a zero adjustment according to the following:  
Turn the scale plate so the needle is pointing toward zero.
- 4) Hang the scale holder from the top of the wire.
- 5) According to the measured value, add additional weights to the scale holder for calibration.

Note : Start the calibration from the minimum value.



The above illustration shows DOT torque wrench tester with DOTCL calibration set.

**The following table shows the calibration values for DOT (S.I. models)**

MODEL	CALIBRATION KIT	EFFECTIVE LENGTH	SCALE HOLDER	NECESSARY WEIGHTS
DOT35N	DOTCL360	400mm	0.5kg	5kg, 2kg, Combination Weight 2kg
DOT50N				5kg x 2, 2kg x 2, Combination Weight 2kg
DOT100N	DOTCL1000		1kg	5kg x 4, 2kg x 2, Combination Weight 2kg
DOT300N	DOTCL3600	600mm	5kg	5kg x 9, Combination Weight 2kg
DOT700N	DOTCL7000	1000mm		5kg x 13, 2kg, Combination Weight 2kg

MODEL						
DOT35N	MEASURING POINT	5 N.m	10 N.m	15 N.m	25 N.m	35 N.m
	LOADING WEIGHT	1.275kg	2.549kg	3.824kg	6.373kg	8.923kg
DOT50N	MEASURING POINT	5 N.m	20 N.m	30 N.m	40 N.m	50 N.m
	LOADING WEIGHT	1.275kg	5.099kg	7.648kg	10.2kg	12.75kg
DOT100N	MEASURING POINT	10 N.m	20 N.m	50 N.m	80 N.m	100 N.m
	LOADING WEIGHT	2.549kg	5.099kg	12.75kg	20.39kg	25.49kg
DOT300N	MEASURING POINT	30 N.m	50 N.m	100 N.m	200 N.m	300 N.m
	LOADING WEIGHT	5.010kg	8.498kg	17.00kg	33.99kg	50.99kg
DOT700N	MEASURING POINT	70 N.m	200 N.m	400 N.m	600 N.m	700 N.m
	LOADING WEIGHT	7.138kg	20.39kg	40.79kg	61.18kg	71.38kg

**The following table shows the calibration value for DOT (Metric models)**

MODEL	CALIBRATION KIT	EFFECTIVE LENGTH	SCALE HOLDER	NECESSARY WEIGHTS
350DOT	DOTCL360	400mm	0.5kg	5kg, 2kg, Combination Weight 2kg
500DOT				5kg x 2, 2kg x 2, Combination Weight 2kg
1000DOT	DOTCL1000		1kg	5kg x 4, 2kg x 2, Combination Weight 2kg
3000DOT	DOTCL3600	600mm	5kg	5kg x 9
7000DOT	DOTCL7000	1000mm		5kg x 13, 2kg

MODEL						
350DOT	MEASURING POINT	50kgf.cm	100kgf.cm	150kgf.cm	250kgf.cm	350kgf.cm
	LOADING WEIGHT	1.25kg	2.5kg	3.75kg	6.25kg	8.75kg
500DOT	MEASURING POINT	50kgf.cm	100kgf.cm	200kgf.cm	400kgf.cm	500kgf.cm
	LOADING WEIGHT	1.25kg	2.5kg	5kg	10kg	12.5kg
1000DOT	MEASURING POINT	100kgf.cm	200kgf.cm	500kgf.cm	800kgf.cm	1000kgf.cm
	LOADING WEIGHT	2.5kg	5kg	12.5kg	20kg	25kg
3000DOT	MEASURING POINT	300kgf.cm	600kgf.cm	1500kgf.cm	2400kgf.cm	3000kgf.cm
	LOADING WEIGHT	5kg	10kg	25kg	40kg	50kg
7000DOT	MEASURING POINT	700kgf.cm	2000kgf.cm	4000kgf.cm	6000kgf.cm	7000kgf.cm
	LOADING WEIGHT	7kg	20kg	40kg	60kg	70kg

Example) When measuring 500kgf.cm for 1000DOT, the 1kg scale, 5kg weight 2pcs. and 500g weight 1 pc. are necessary.

Note 1) The measuring torques and weights in the above table are recommended values.

Note 2) The scale weight is included in the above table.

The following table shows the samples applicable torque wrenches for each DOT.

(Equivalent torque range models to metric and newton models are applicable. For example, 1300F (metric) is equivalent to F130N (Newton)).

NEWTON MODEL	METRIC MODEL	EXAMPLES OF APPLICABLE TORQUE WRENCH
DOT35N	350DOT	230F, QSP12N4, QSP25N3, 1200QL, 225QL3, 225CL3, CSP25N3x10D, 250CF, 120DB4-S, 230DB3-S, SP8N, SP19N, *200LTD, *160FTD, *230T-S
DOT50N	500DOT	460F, QSP50N3, 450QL3, 450DB3-S, SP38N, 450CL3, 500CF, *450T-S
DOT100N	1000DOT	920F, 600QF, QSP100N4, 900QL4, 900DB3-S, SP67N, 1000CF, 900CL3, CSP100N3x15D, *900T-S
DOT300N	3000DOT	1300F, 1900F, 2800F, 1200QF, 1500CF, 2300CF, QSP200N4, QSP280N3, 1800QL4, 2800QL3, 1800DB3-S, 2800DB3-S, SP120N, SP160N, SP220N, SP310N, *180T-S
DOT700N	7000DOT	4200F, 5600F, 7000F, 4200QF, 5600QF, 7000QF, SP420N, SP560N, 4200DB2-S, 5600DBE2-S, 7000DBE2-S, 4200QL, 5500QLE, 7500QLE, *700T-S

## 7 Applied Torque Products and Other Notes

- For the torque wrenches and the torque drivers marked with an \*, fix the torque meter with bolts and check them by hand without the loading device. (Table above)
- If the loading device is taken off, the checker can be used as a torque meter to perform various measurements.
- English units (in. lbs) are available.

Designs and specifications are subject to change without notice



■ **TOHNICHI MFG. CO., LTD.**

TEL: 81 3 3762 2455 FAX: 81 3 3761 3852  
 2-12, Omori-kita, 2-Chome Ota-ku, Tokyo 143-0016, JAPAN  
 E-mail: [overseas@tohnichi.co.jp](mailto:overseas@tohnichi.co.jp)  
 Website: <http://tohnichi.jp>

■ **N. V. TOHNICHI EUROPE S. A.**

TEL: 32 16 60 66 61 FAX: 32 16 60 66 75  
 Industrieweg 27 Boortmeerbeek, B-3190 Belgium  
 E-mail: [tohnichi-europe@online.be](mailto:tohnichi-europe@online.be)  
 Website: <http://www.tohnichi.be>

■ **TOHNICHI AMERICA CORP.**

TEL: 1 847 272 8480 FAX: 1 847 272 8714  
 677 Academy Drive, Northbrook, Illinois 60062, U. S. A.  
 E-mail: [inquiry@tohnichi.com](mailto:inquiry@tohnichi.com)  
 Website: <http://www.tohnichi.com>