

## PREFACE

- Thank you very much for purchasing the Mitutoyo dial tension gage. To use this instrument properly, read this User's Manual prior to use. After reading, retain this close at hand for future reference.
- Store this instrument in the following condition. (Temperature: between -10°C and 60°C, No condensation)

## PRECAUTION FOR USE

To obtain the highest performance from this instrument, observe the following operating environments and operating conditions.

### (1) Operating Environment

#### IMPORTANT

- Temperature: 0 to 40°C Relative humidity: 30% to 70% (no condensation)
- Use this instrument at sites where there are little dust, oil, and oil mist.
- Do not apply any shock or vibration to this instrument.

### (2) Operating Condition

#### IMPORTANT

- Applying excessive force from the direction other than measuring direction may cause instrument deterioration or breakage.
- If any shock is exerted on the instrument due to a drop, inspect whether the instrument works normally.
- Take sufficient care so as not to bend the contact point.
- Do not exert load at the measuring hole ( $\phi 1$ ) position more than 4N (Approx. 400gf) for the model DTG-5 to 10 series and 7N (Approx. 700gf) for the model DTG-30 to 500 series. Be sure to use this instrument within the movable range of the indicating hand so as not to bend the contact point.
- Always perform measurement so that the force measurement direction should be perpendicular to the measurement point, that is, at the center of the measuring hole ( $\phi 1$ ) on the contact point. If the measurement position or the force measurement direction has been diverted, the measurement error may result.
- Be sure to read measurements in a direction perpendicular to the graduation plate. Parallax error may result when viewed in an inclined direction.

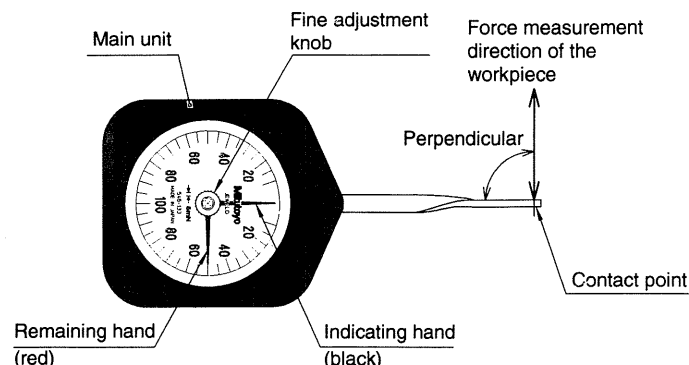
## WARRANTY

The dial tension gage is manufactured under the sufficient quality control system. However, in the event that the instrument should prove defective in workmanship or transportation, within one year from the date of original purchase for use, it will be repaired or replaced, at our option, free of charge upon its prepaid return to us. (For more details, refer to the warranty enclosed.)

## 1. MEASUREMENT METHOD

Use this instrument following the steps shown below.

**Step 1:** Hold the main unit of this tension gage (the black plastic case) by hand, and thrust (or pull) against the workpiece so that the load of the workpiece should be exerted at the center of the measuring hole ( $\phi 1$ ) of the contact point, maintaining the force direction perpendicular to the contact point surface.



**Step 2:** Thrust the workpiece to its measurement position, then read the value pointed by the indicating hand of the tension gage.

**Step 3:** If the peak hold type tension gage is used, rotate the fine adjustment knob to set the remaining hand so that it should move together with the indicating hand before measurement. Then, take measurement by following the step 1 and 2 described above.

## 2. MAINTENANCE, REPAIR

Observe the following precautions when performing maintenance/repair.

#### IMPORTANT

- Wipe off the contamination from the crystal using a soft, dry cloth or a cloth dampened with neutral detergent if the measurements become hard to identify due to the contamination. Do not use organic solvent such as benzene, thinner, and alcohol, etc. for this purpose.
- The performance of this instrument may deteriorate depending on the operating environment and condition. Establish the user's own standard according to the operating frequency, environment, and conditions, then inspect the performance periodically.
- The warranty of performance is void if this instrument is disassembled or repaired by parties not authorized by Mitutoyo.

## 3. SPECIFICATION

### (1) General Specification

#### (a) gf-indication type

Type	Order No.	Model	Graduation(gf)	Measuring range(gf)	Dial reading	Mass(g)
Standard type	546 - 102	DTG - 5	0.2gf	0.6gf to 5gf	0.6 - 5 - 0.6	54g
	546 - 103	DTG - 10	0.5gf	1gf to 10gf	1 - 10 - 1	
	546 - 104	DTG - 30	1gf	3gf to 30gf	3 - 30 - 3	
	546 - 105	DTG - 50	2gf	6gf to 50gf	6 - 50 - 6	
	546 - 106	DTG - 100	5gf	10gf to 100gf	10 - 100 - 10	
	546 - 107	DTG - 150	5gf	15gf to 150gf	15 - 150 - 15	
	546 - 108	DTG - 300	10gf	30gf to 300gf	30 - 300 - 30	
Peak hold type	546 - 109	DTG - 500	20gf	60gf to 500gf	60 - 500 - 60	56g
	546 - 123	DTG - 10P	0.5gf	1gf to 10gf	1 - 10 - 1	
	546 - 124	DTG - 30P	1gf	3gf to 30gf	3 - 30 - 3	
	546 - 125	DTG - 50P	2gf	6gf to 50gf	6 - 50 - 6	
	546 - 126	DTG - 100P	5gf	10gf to 100gf	10 - 100 - 10	
	546 - 127	DTG - 150P	5gf	15gf to 150gf	15 - 150 - 15	
	546 - 128	DTG - 300P	10gf	30gf to 300gf	30 - 300 - 30	
546 - 129	DTG - 500P	20gf	60gf to 500gf	60 - 500 - 60		

#### (b) N-indication type

Type	Order No.	Model	Graduation(N)	Measuring range(N)	Dial reading	Mass(g)
Standard type	546 - 112	DTG - 5N	2mN	6mN to 50mN	6 - 50 - 6	54g
	546 - 113	DTG - 10N	5mN	10mN to 100mN	10 - 100 - 10	
	546 - 114	DTG - 30N	10mN	30mN to 300mN	30 - 300 - 30	
	546 - 115	DTG - 50N	0.02N	0.06N to 0.5N	0.06 - 0.5 - 0.06	
	546 - 116	DTG - 100N	0.05N	0.1N to 1N	0.1 - 1 - 0.1	
	546 - 117	DTG - 150N	0.05N	0.15N to 1.5N	0.15 - 1.5 - 0.15	
	546 - 118	DTG - 300N	0.1N	0.3N to 3N	0.3 - 3 - 0.3	
Peak hold type	546 - 119	DTG - 500N	0.2N	0.6N to 5N	0.6 - 5 - 0.6	56g
	546 - 133	DTG - 10NP	5mN	10mN to 100mN	10 - 100 - 10	
	546 - 134	DTG - 30NP	10mN	30mN to 300mN	30 - 300 - 30	
	546 - 135	DTG - 50NP	0.02N	0.06N to 0.5N	0.06 - 0.5 - 0.06	
	546 - 136	DTG - 100NP	0.05N	0.1N to 1N	0.1 - 1 - 0.1	
	546 - 137	DTG - 150NP	0.05N	0.15N to 1.5N	0.15 - 1.5 - 0.15	
	546 - 138	DTG - 300NP	0.1N	0.3N to 3N	0.3 - 3 - 0.3	
546 - 139	DTG - 500NP	0.2N	0.6N to 5N	0.6 - 5 - 0.6		

### (2) Accuracy (at 20°C)

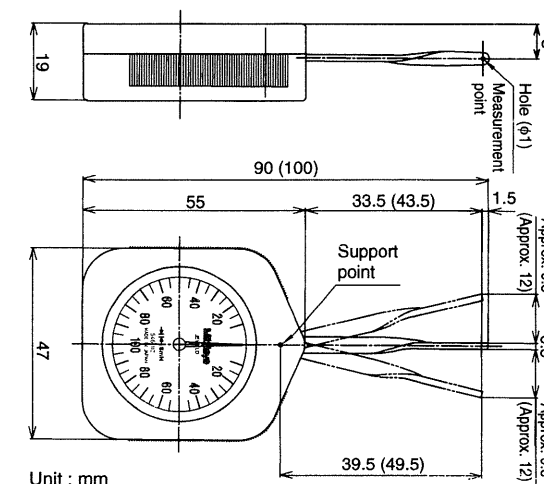
±0.5 graduation

### (3) Dimensions

#### TIP

The dimensions shown in the parentheses are for DTG-5N, 10N, and 10NP.

The dimensions for models other than DTG-5N, 10N, and 10NP are in common.



Unit : mm