

**FRI**

Prosperity through research

Fire Research Institute

22/44, Ganganagar P. O., ICHALKARANJI - 416 116.
(Dist.Kolhapur) Maharashtra State, INDIA.

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Accreditation No. NABL C0066

CALIBRATION CERTIFICATE OF FORCE MEASURING DEVICE

Date of calibration : 12/01/2014
Next calibration due on : 12/03/2016Certificate No : FRI/01/14/6606
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Calibrated for	Krutam Techno Solutions Pvt. Ltd. 64/B, G.I.D.C. Makarpura Industrial Estate, Behind Fire Brigade Station, Vadodara - 390 010.
Customer Reference No.	D.C. No. 01 dated 10.01.2014
Details of instrument under calibration	Instrument : Dynamometer Id No. : 104 (KTPL/F/003) Capacity : 50 kN Type : Bow Dial Gauge Make : Baker 1 Div : 0.01 mm Dial Gauge No. : VCI 655 Fulcrum Pin No. : 104
Date of receipt	11/01/2014
Mode of calibration	Tension
Machine used for calibration	Dead Weight Force Machine(FIE-DWP-003)
Traceability	NPL,Cert.No.12031657/D.5.05/C-084 valid upto 07/07/14
Dial gauge setting	Large pointer at 12 O' Clock position Small pointer at 8 revolutions
Temperature	24°C
Correction of temperature variation	Apply $\pm 0.027\%$ correction to each reading for each °C rise or fall of temperature.

Note

- 1) Tension test were made out by using tension shackles provided with the force measuring device.
- 2) Prior to each reading, the dial gauge was lightly tapped on the center of the dial cover.
- 3) The reported uncertainty is at coverage factor $k = 2$ which corresponds to a coverage probability of approximately 95% for a normal distribution, considering the relative error of different components such as Zero, Resolution, Repeatability, Interpolation and combining the uncertainty of applied force

Scientific Asst.
(D. D. Magdum)Sr. Engineer
(R.V. Tambad)Director
(Dr. J.C. Padte)

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Details of instrument under calibration Id No. 104 (KTPL/F/003)

Calibration Method

The Dynamometer is calibrated in tension as per FRI
Calibration procedure No. FRICAL/CAL/01 based on
IS: 4169-1988 and results are tabulated below

Results

The Calibration Results are valid for specific force steps/interpolation

Applied Force in kN	Dial Gauge Reading (Divisions)			
	Series1 at 0°	Series2 at 180°	Series3 at 360°	Average
5.000	50.6	50.6	50.6	50.6
10.000	101.6	101.6	101.6	101.6
15.000	153.0	152.8	153.0	152.9
20.000	202.8	203.0	203.0	202.9
25.000	251.2	251.4	251.4	251.3
30.000	299.4	299.6	299.6	299.5
35.000	347.8	348.0	348.0	347.9
40.000	396.4	396.6	396.6	396.5
45.000	444.8	445.0	445.0	444.9
50.000	493.0	493.2	493.2	493.1

Classification : The Classification of force proving instrument is as follows:

Class	Mode	From	To	Uncertainty of measurement
Class 0	Tension	50.000 kN	20.000 kN	± 0.080%
Class 1	Tension	50.000 kN	10.000 kN	± 0.128%
Class 2	Tension	50.000 kN	5.000 kN	± 0.236%

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