

CERTIFICATE OF CALIBRATION

Certificate No: RVTM/2024-01/0003/001-03	Page No: 1 of 2
Date of Calibration: 01.01.2024	Calibration Certificate issue date: 04.01.2024
Recommended Due date for next calibration: 31.12.2024	ULR No.: CC285824000000003F

Customer's Name	M/s MRF Limited, Post Box 2, PO Vadavathoor, Kottayam, 686010 Kerala.		
Calibration site Name & Address	-- As above --		
CRF No & Order No	2400291542	Condition of UUC	: Satisfactory

Equipment details			
Name of the Equipment	: Universal Testing Machine		
Calibration parameters	: Displacement measuring systems		
Displacement Range	: 0-550 mm	Equipment ID	: --
Make	: Hegewald & Peschke	Type of the machine	: Ball Screw driven
Sr No	: 10061903	Model No	: --
Location of the Machine	: Tube plant-Technical Lab	Year of manufacturing	: 2019
Room Temperature	: 26.2°C	Relative Humidity	: 51 %
Displacement Resolution	: 0.001mm	Measurement through	: PC
Method of verification – Displacement	Set-the-displacement method as per ASTM E 2309 -20		

Master Equipments used for calibration:				
Sr.No	Equipment used for calibration	Certificate No	Valid up to	UOM
1.	Linear Probe – length measuring instruments	TI/F/GMC/001/002	03/06/2024	$\pm 2+\sqrt{(L+1000)} \mu\text{m}$
Used equipments are Traceable to National /International standard through ISO/IEC 17025 Accredited lab and NPL , New Delhi				

Calibrated By
K.Ravichandran
(CEO)

Verified by
M.Kannathal
(Sales Co-Ordinator & Service Dept.)

Authorised signatory
K. Ravichandran
(Quality Manager)

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Verification of displacement measuring systems / Crosshead travel

Verification of Results: (Results as found / ~~Error Correction Applied~~)

Results	The above machine is calibrated as per ASTM E 2309-20 and results are tabulated below
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Set Displacement (mm)		Observed Displacement (mm)		Error (mm)		Error (%)	
Run I	Run II	Run I	Run II	Run I	Run II	Run I	Run II
2.000	2.000	2.0008	2.0009	-0.0008	-0.0009	-0.040	-0.045
5.000	5.000	5.0064	5.0078	-0.0064	-0.0078	-0.128	-0.156
10.000	10.000	10.0243	10.0261	-0.0243	-0.0261	-0.243	-0.261
50.000	50.000	50.0868	50.0879	-0.0868	-0.0879	-0.174	-0.176
100.000	100.000	100.0974	100.0986	-0.0974	-0.0986	-0.097	-0.099
200.000	200.000	200.1082	200.1098	-0.1082	-0.1098	-0.054	-0.055
300.000	300.000	300.1940	300.1196	-0.1940	-0.1196	-0.065	-0.040
400.000	400.000	400.144	400.1474	-0.1436	-0.1474	-0.036	-0.037
500.000	500.000	500.179	500.1806	-0.1789	-0.1806	-0.036	-0.036

Uncertainty of measurement at 95% confidence level & Coverage factor $k = 2$	$\pm 0.71 \%$
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Acceptance Criteria for force verification			
Classification of Displacement Measuring Systems as per ASTM E 2309-20	Resolution not to Exceed the Greater of	Error not to Exceed the Greater of:	Class
	% of Reading	Relative Error (% of Displacement)	
	0.25	± 0.5	
Observed on the machine	0.05	-0.26	Class A

*****End of the Calibration Certificate*****

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(CEO)

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