

**ROUTINE VERTICAL PILE LOAD TEST ON 1200mm DIA PILE FOR THE  
CONSTRUCTION OF CHENNAI METRO RAIL PROJECT EV-03**  
**ROUTINE TEST PILE -P357/2**



Submitted to

**CLIENT:- C.M.R.L**  
**CONSULTANT - NKAB.**  
**CONTRACTOR - L&T CONSTRUCTION**



**ZedGeo Systems Private Limited., Mumbai.**

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**1.0 GENERAL**

1.1 Clients decided to carry out static pile testing work on 1200mm diameter pile to estimate load carrying capacity and settlement in vertical direction. M/s edGeo Systems Private Limited, Mumbai was entrusted with work of Routine vertical pile load test.

1.2 This report covers data for vertical pile load test and calculation of safe load capacity for pile based on data collected during fieldwork.

1.3 The following codes of practices have been adopted.

- IS 2911 (Part 4) 1985 (Reaffirmed 2013) Code of Practice for Design and Construction of Pile Foundations -Concrete Piles -Bored Cast In situ piles - Load Tests on Piles
- IS: 14593 1998 (Reaffirmed 2003). Design and Construction of Bored Cast-in-Situ Piles Founded on Rocks Guidelines.

## **2.0 SCOPE OF WORK**

Pile details are tabulated as below.

### **2.1 Pile details for Routine pile (For Vertical Load Test)**

**Location: - COOVAM.**

The details of the pile are given below:

**Routine Pile No = P357/2.**

**Safe capacity of Pile = 550MT**

**Test Load = 825 MT**

**Diameter of Pile = 1200mm**

**Grade of Concrete = M-35**

**Pile Depth = 36.00 M at Test level.**

**Test Load**

**2.2 Vertical test load for Routine pile.** The design vertical load on the pile was 550T. The pile was tested to a load of 825T.

### **3.0 METHODOLOGY**

3.1 The load testing on piles was conducted as per IS: 2911 (Part 4) 1985 (Reaffirmed 2013).

#### **Vertical Load Test On Piles**

##### **3.2 Test Load**

The Routine load test shall be carried out to a test load of minimum 1.5 times the design load as per IS:2911. The maximum test load was 825T for test pile.

##### **3.3 Routine Vertical Load Test on Piles**

The pile load test was conducted by applying series of vertical load on the test pile. The test pile has been loaded in increment (20% of Design Load ) up to the test loads and then unloaded as given in Table 3-1. The load was applied by hydraulic jack of 1500T capacity reacting against a symmetrically erected reaction system of capacity more than the maximum test load on the pile. The hydraulic jack was of adequate capacity and had a pressure gauge and remote control pump. The pile to be tested was chipped and dressed to a well-levelled surface. A circular steel plate of 20mm thickness was placed over the top of the pile. The jack was connected and operated by one pump. The testing agency submitted the calibration charts showing the correctness of the calibration of the pressure gauges and the dial gauges before use. Another plate of suitable thickness was placed over the ram of the jack, which was later raised by operating the hydraulic pump so that the plate on the top of the ram butts against the bottom plate of the main testing frame. Reading of settlement and rebound was recorded with the help of four dial gauges of 0.01 mm sensitivity and resting on diametrically opposite ends of the pile cap. The dial gauges were fixed to a support at least 3 times the diameter of the pile or a minimum of 1.50 m away clear from the edge of pile. Readings on the dial gauges were observed immediately before and after application of loads, and immediately before and after release of loads. The loading shall be applied in increments of 20% of the Designed load on Pile. Each load will be kept for 1 Hr. The sequence of loading and unloading is described below

**Table 3-1 Loading and Unloading Sequence for the Vertical Load Test Pile**

1 pack of 1500T is used. 2551 cm<sup>2</sup> Ram area is to be used. So effective Ram area is 2551 cm<sup>2</sup>. Pile Capacity = 550 T Routine Load Test was carried out for 825T

**Load Increment shall be 20% of Designed load (550T), so 110T**

**Least Count of Pressure gauge is 10 kg/cm<sup>2</sup>**

**Table 1 Load Sequence**

Sr. no.	Pressure (kg/cm <sup>2</sup> )	Load (MT)	Reading time ( mins)
1.	0	0	0
2.	40	102.04	1,15,30,45,60 Mins
3.	80	204.08	1,15,30,45,60 Mins
4.	120	306.12	1,15,30,45,60 Mins
5.	160	408.16	1,15,30,45,60 Mins
6.	200	510.20	1,15,30,45,60 Mins
7.	240	612.24	1,15,30,45,60 Mins
8.	280	714.28	1,15,30,45,60 Mins
9.	330	841.83	1440 Mins
<b>UNLOADING</b>			
10	280	714.28	1,5,15Mins
11	240	612.24	1,5,15Mins
12	200	510.20	1,5,15 Mins
13	160	408.16	1,5,15 Mins
14	120	306.12	1,5,15 Mins
15	80	204.08	1,5,15 Mins
16	40	102.04	1,5,15 Mins
17	0	0	1,5,15 Mins

The final load was maintained for 24 hrs and the corresponding settlement was observed at every 1hr interval.

During the unloading stages, the load on the pile was maintained for a minimum of 15 minutes

and the subsequent elastic rebound in the pile was measured accurately by dial gauges.

## **ROUTINE VERTICAL PILE LOAD TEST, P357/2, FOR THE CONSTRUCTION OF CHENNAI METRO RAIL PROJECT EV-03**

Rebounding was recorded after the entire load was released. The pile test data was suitably presented by curves drawn between variables namely load and displacement and safe loads shown on the graphs including field observations.

### **3.4 Plant and Equipment**

All temporary work plant, equipment, reaction system, Primary and secondary girders and all necessary instruments for measurements of loads, deflection etc. was provided by the testing agency. The equipment provided was capable to apply slowly and smoothly and to maintain the load at any required value. The load was measured by a single load cell /proving ring or a Pressure Gauge.

## **4.0 RESULTS**

### **4.1 Acceptance Criteria for Vertical Pile Load Test.**

The Safe Capacity of working piles is considered as per IS: 2911, (Part 4):2013:-

- Two thirds of load at which total settlement attains a value of 18mm or maximum of 2 percent of the pile diameter which in this case works out to be 24mm, whichever is less.

The Maximum settlement as per our field record at 841T after 24 hours = 5.79mm.

Total Rebond = 1.92mm

The net settlement = 3.87mm

So, as per the Test data and the graph we can say that the test pile has shown more load carrying capacity than design load of 550T.

So, 550T can be adopted as the safe vertical load for working piles.

**30<sup>th</sup> NOV. 2025**

**For ZedGeo Systems Private Limited.**



**Prasad Zantye  
ME(Geotech)BE(Const)**

## **READINGS AND GRAPH**



**M/s ZEDGE SYSTEMS PRIVATE LIMITED., Mumbai .**

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E-mail:- [zedgeotech yahoo.com](mailto:zedgeotech@yahoo.com)

Website:- [www.zedgeosystems.com](http://www.zedgeosystems.com)



**ZedGeo Systems Pvt Ltd., Mumbai.**

**RECORD OF FOOTING LOAD TEST NO:- P357/2  
PROJECT:- CP10-EV03.**

**LOCATION - COOVAM.  
CONSULTANT :- NKAB.  
CLIENTS:- CMRL.  
CONTRACTOR:- L&T CONSTRUCTION**

Ic of dial gauge:- 0.01mm

**Type of Test:-**

Design Load :- 550 MT

Test Load :- 825 MT

## **Mixed Design :- M35**

**Pile Diameter : - 1200mm**

Page:-1

**Ram Area :-**

**Date of Casting :** 05-09-2025

**Pile Length :- 36.00 mtr**



**ZedGeo Systems Pvt Ltd., Mumbai.**

**RECORD OF FOOTING LOAD TEST NO:- P357/2  
PROJECT:- CP10-EV03.**

**LOCATION - COOVAM.  
CONSULTANT :- NKAB.  
CLIENTS:- CMRL.  
CONTRACTOR:- L&T CONSTRUCTION**

Ic of dial gauge:- 0.01mm

### Type of Test:- RVPI T

Design Load :- 550 MT

Test Load :- 825 MT

## **Mixed Design :- M35**

Pile Diameter : - 1200mm

Page:-2

**Ram Area :-**

**Date of Casting :** 05-09-2025

**Pile Length :- 36.00 mtr**



**ZedGeo Systems Pvt Ltd., Mumbai.**

**RECORD OF FOOTING LOAD TEST NO:- P357/2**

PROJECT:- CP10-EV03.

**LOCATION - COOVAM.**

CONSULTANT :- NKAR

**CLIENTS:** CMRI

**CONTRACTOR:- I & T CONSTRUCTION**

Is of dial gauge: 0.01 mm

**Type of Test:-**

### Type of Test

Design Load :- 550 MT

**Test Load :- 825 MT**

## **Mixed Design :- M35**

**Page:-3**



**ZedGeo Systems Pvt Ltd., Mumbai.**

Page:-4

RECORD OF FOOTING LOAD TEST NO:- P357/2

Ic of dial gauge:- 0.01mm

Ram Area :- 2251cm<sup>2</sup>

PROJECT:- CP10-EV03.

Type of Test:- RVPLT

Date of Casting : 05-09-2025

LOCATION - COOVAM.

Design Load :- 550 MT

Pile Length :- 36.00 mtr

CONSULTANT :- NKAB.

Test Load :- 825 MT

CLIENTS:- CMRL.

Mixed Design :- M35

CONTRACTOR:- L&T CONSTRUCTION.

Pile Diameter :- 1200mm

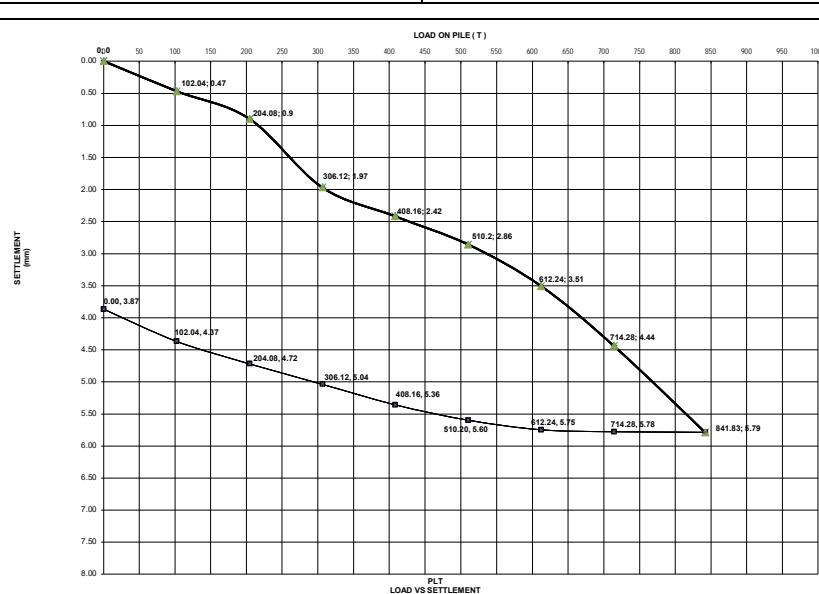
DATE (Hrs)	TIME (Hrs)	PRESSURE GAUGE READING kg/cm <sup>2</sup>	LOAD IN MT	Dial Gauge				AVERAGE SETTLEMENT IN MM	REMARK
				Reading 1	Reading 2	Reading 3	Reading 4		
<b>UNLOADING</b>									
23.11.25	0.21	280.00	714.28	5.34	4.89	7.56	5.32	5.78	
	0.25			5.34	4.89	7.56	5.32	5.78	
	0.35			5.34	4.89	7.56	5.32	5.78	
	0.36	240.00	612.24	5.31	4.89	7.50	5.28	5.75	
	0.40			5.31	4.89	7.50	5.28	5.75	
	0.50			5.31	4.89	7.50	5.28	5.75	
	0.51	200.00	510.20	5.18	4.75	7.39	5.10	5.61	
	0.55			5.18	4.73	7.38	5.10	5.60	
	1.05			5.18	4.73	7.38	5.10	5.60	
	1.06	160.00	408.16	4.91	4.56	7.10	4.87	5.36	
	1.10			4.91	4.56	7.10	4.87	5.36	
	1.20			4.91	4.56	7.09	4.86	5.36	
	1.21	120.00	306.12	4.63	4.14	6.80	4.60	5.04	
	1.25			4.63	4.14	6.80	4.60	5.04	
	1.35			4.63	4.14	6.80	4.60	5.04	
	1.36	80.00	204.08	4.30	3.80	6.50	4.30	4.73	
	1.40			4.30	3.80	6.50	4.30	4.73	
	1.50			4.30	3.79	6.50	4.30	4.72	
	1.51	40.00	102.04	3.95	3.43	6.17	3.98	4.38	
	1.55			3.95	3.43	6.17	3.98	4.38	
	2.05			3.95	3.41	6.15	3.98	4.37	
	2.06	0.00	0.00	3.45	2.95	5.65	3.44	3.87	
	2.10			3.45	2.95	5.65	3.44	3.87	
	2.20			3.45	2.92	5.65	3.44	3.87	

**ZedGeo Systems Private Limited., Mumbai.**

**RECORD OF FOOTING LOAD TEST NO:- P357/2  
PROJECT:- CP10-EV03.**



**LOCATION - COOVAM.  
CONSULTANT :- NKAB.  
CLIENTS:- CMRL.  
CONTRACTOR:- L&T CONSTRUCTION.**



Maximum Settlement at 841.83 T: 5.79 mm

Total Rebound : 1.92 mm

Net Settlement : 3.87 mm

ZedGeo Systems Pvt Ltd., Mumbai  
L&T/NKAB/ZED

Ergonomics in Design

# **FIELD READINGS**



**M/s ZedGeo Systems Private Limited. Mumbai .**

**Tel:-** 8097256577 / 8097959295 **Cell :-** 09821065636

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## ZedGeo Systems Private Limited., Mumbai

RECORD OF PILE LOAD TEST NO:- P 357/02

PROJECT:- CMRL, CP10, EV03

LOCATION:- Coovam

CONTRACTOR:- LPT

CLIENTS NAME:- CMRL/NKAB

LC OF DIAL GAUGE:- 10 Kg/cm<sup>2</sup>

Type of Test:- RVPLT

Design load on pile:- 550MT

Test Load:- 825MT

Mixed Design:- M-35

Pile Diameter:- 1200mm

Page:- 1

2551 cm<sup>-2</sup>

Date of Casting:- 20/08/2024

Pile Depth:- 36.00 m

36.00 m depth

DATE	TIME	PRESSURE	LOAD IN MT	INITIAL PILE LOAD TEST								REMARK	
				Reading (mm)				Average settlement	SIGNATURE				
				GAUGE READING (Hrs)	kg/cm <sup>2</sup>	Reading 1	Reading 2	Reading 3	Reading 4	Test Pile	JED	LPT	NKAB
21/08	0	0	0	0	0	0	0	0	0	Test Pile	JED	LPT	NKAB
21/08	5.20	40	102.04	0.00	0.00	0.78	1.04	0.45	1.04	Test Pile	JED	LPT	NKAB
	5.35			0.00	0.00	0.78	1.04	0.45	1.04	Test Pile	JED	LPT	NKAB
	5.50			0.00	0.00	0.79	1.06	0.46	1.06	Test Pile	JED	LPT	NKAB
	6.05			0.00	0.00	0.81	1.08	0.47	1.08	Test Pile	JED	LPT	NKAB
	6.20			0.00	0.00	0.81	1.08	0.47	1.08	Test Pile	JED	LPT	NKAB
	6.21	80	204.08	0.30	0.21	1.44	1.63	0.89	1.63	Test Pile	JED	LPT	NKAB
	6.35			0.30	0.21	1.44	1.63	0.89	1.63	Test Pile	JED	LPT	NKAB
	6.50			0.30	0.21	1.44	1.63	0.89	1.63	Test Pile	JED	LPT	NKAB
	7.05			0.30	0.21	1.44	1.65	0.90	1.65	Test Pile	JED	LPT	NKAB
	7.20			0.30	0.21	1.44	1.65	0.90	1.65	Test Pile	JED	LPT	NKAB
	7.21	120	306.12	1.23	0.43	3.80	2.34	1.95	2.34	Test Pile	JED	LPT	NKAB
	7.35			1.23	0.43	3.80	2.34	1.95	2.34	Test Pile	JED	LPT	NKAB
	7.50			1.25	0.44	3.82	2.36	1.96	2.36	Test Pile	JED	LPT	NKAB
	8.05			1.25	0.44	3.82	2.36	1.96	2.36	Test Pile	JED	LPT	NKAB
	8.20			1.25	0.44	3.82	2.36	1.96	2.36	Test Pile	JED	LPT	NKAB
	8.21	160	408.16	1.55	0.75	4.59	2.77	2.41	2.77	Test Pile	JED	LPT	NKAB
	8.35			1.55	0.75	4.59	2.77	2.41	2.77	Test Pile	JED	LPT	NKAB
	8.50			1.55	0.76	4.60	2.78	2.42	2.78	Test Pile	JED	LPT	NKAB
	9.05			1.55	0.76	4.60	2.78	2.42	2.78	Test Pile	JED	LPT	NKAB
	9.20			1.55	0.76	4.60	2.78	2.42	2.78	Test Pile	JED	LPT	NKAB
				/	/	/	/	/	/	/	/	/	/
				/	/	/	/	/	/	/	/	/	/

~ 10 tonne ~



ZedGeo Systems Private Limited., Mumbai

RECORD OF PILE LOAD TEST NO.- P.357/02

PROJECT:- CMPL. CP 10 . EVO3

LOCATION:- Coavam

CONTRACTOR:- LST

CLIENTS NAME:- CMRLINKAB

LC OF DIAL GAUGE:- 16 Kg/cm<sup>2</sup>

Type of Test:- RVPLT

Design load on pile:- 5500mt

Test Load:-

825 m

Mixed Design:-

m-35

Pile Diameter:-

1200 mm

Page:- 2

Ram Area :- 2551 cm<sup>2</sup>

Date of Casting :- 20/08/2024

Pile Depth :- 36.00 m

## INITIAL PILE LOAD TEST

REMARK

DATE	TIME	PRESSURE	LOAD IN MT	Reading (mm)				Average settlement Test Pile	SIGNATURE			REMARK
				Gauge READING (Hrs)	kg/cm <sup>2</sup>	Reading 1	Reading 2	Reading 3	Reading 4	ZED	LST	NRAB
9.21	200	510.20	1.94	1.30	4.98	3.20	2.85	12	Dhr	8X		
9.35			1.94	1.30	4.98	3.20	2.85	12	Dhr	8X		
9.50			1.94	1.30	4.98	3.20	2.85	12	Dhr	8X		
10.05			1.94	1.30	4.98	3.20	2.85	12	Gurjan	8X		
10.20			1.94	1.30	4.98	3.20	2.85	12	Gurjan	8X		
10.21	240	512.24	2.60	2.10	5.74	3.49	3.48	12	Gurjan	8X		
10.35			2.60	2.10	5.74	3.49	3.48	12	Gurjan	8X		
10.50			2.62	2.13	5.76	3.52	3.50	12	Gurjan	8X		
11.05			2.62	2.13	5.76	3.52	3.50	12	Gurjan	8X		
11.20			2.62	2.13	5.76	3.52	3.50	12	Gurjan	8X		
11.21	280	714.28	3.60	3.12	6.30	4.00	4.25	12	Gurjan	8X		
11.35			3.63	3.15	6.32	4.02	4.28	12	Gurjan	8X		
11.50			3.63	3.15	6.32	4.02	4.28	12	Gurjan	8X		
12/11/23	00:05		3.65	3.17	6.34	4.04	4.30	12	Gurjan	8X		
	00:20		3.67	3.26	6.45	4.17	4.43	12	Gurjan	8X		
	00:21	330	841.83	4.47	4.02	7.00	4.72	5.05	12	Gurjan	8X	(Final load)
	00:35		4.55	4.13	7.05	4.76	5.12	12	Gurjan	8X		
	00:50		4.57	4.17	7.05	4.78	5.14	12	Gurjan	8X		
	01:05		4.57	4.17	7.05	4.78	5.14	12	Gurjan	8X		
	01:20		4.58	4.20	7.06	4.78	5.15	12	Gurjan	8X		
	02:20		4.62	4.25	7.10	4.90	5.21	12	Gurjan	8X		
	03:20		4.64	4.27	7.12	4.92	5.23	12	Gurjan	8X		

24 hours Holding



## ZedGeo Systems Private Limited., Mumbai

RECORD OF PILE LOAD TEST NO:- P.357102

PROJECT:- CMRL - CP.10 EV.03

LOCATION:- Coovem

CONTRACTOR:- LST

CLIENTS NAME:- CMRL/NKAB

L.C OF DIAL GAUGE:- 10 Kg/cm<sup>2</sup>

Type of Test:- RPLT

Design load on pile:- 550 MT

Test Load:- 825 m

Mixed Design:- m<sup>35</sup>

Pile Diameter:- 1200 mm

Page:- ③

Ram Area:- 2551 cm<sup>2</sup>

Date of Casting:- 20/08/2014

Pile Depth:- 36.60 m

## INITIAL PILE LOAD TEST

DATE	TIME	PRESSURE GAUGE READING kg/cm <sup>2</sup>	LOAD IN MT						REMARK	
				Reading				Average settlement		
(Hrs)				1	2	3	4	Test Pile	LST	NKAB
04.20			4.65	4.28	7.13	4.93	5.24	is	Gurav	
05.20			-	-	-	-	-	-	Gurav	
06.20			4.70	4.32	7.17	4.96	5.28	is	Gurav	
07.20			4.75	4.37	7.23	5.01	5.34	is	Gurav	
08.20			4.82	4.45	7.29	5.10	5.41	is	Gurav	
09.20			4.92	4.60	7.40	5.20	5.53	is	Gurav	
10.20			5.35	5.05	7.70	5.50	5.90	is	Gurav	
11.20			5.69	5.35	7.92	5.67	6.16	is	Gurav	
12.20			5.65	5.31	7.89	5.68	6.13	is	Gurav	
01.20			5.59	5.25	7.90	5.68	6.11	is	Gurav	
02.20			5.62	5.31	7.96	5.74	6.16	is	Gurav	
03.20			5.62	5.31	7.93	5.71	6.14	is	Gurav	
			5.93	5.52	7.87	5.65	6.24	is	Gurav	



**ZedGeo Systems Private Limited., Mumbai**

RECORD OF PILE LOAD TEST NO:- P-357102

PROJECT: CMRL-CP-10 EV03

**LOCATION :- Cooyam**

**CONTRACTOR:-** L S T

**CLIENTS NAME:-** CMR INKAB

**LEADER DIAL GAUGE:** 10 kg / cm<sup>2</sup>

Type of Test:- RVPIT

**Design load on pile:-**

**Test Load :-** 825 m

**Mixed Design :-** m 35  
**Pile Diameter :-** 1200 mm

File Diameter :- 1200 mm

#### **AL PILE LOAD TEST**

Ram Area :- 2551/cm<sup>2</sup>  
Date of Casting :- 20/08/2024  
Pile Depth :- 36.00 m

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### INITIAL PILE LOAD TEST



ZedGeo Systems Private Limited., Mumbai

RECORD OF PILE LOAD TEST NO: P-357/02

PROJECT: CMRL-C.P.10 EVO3

LOCATION: COCONUT

CONTRACTOR: L&amp;T

CLIENTS NAME: CMRL/NKAB

LC OF DIAL GAUGE: 10 Kg/cm<sup>2</sup>

Type of Test:

PVP/T

Design load on pile: 550 mt

Test Load: 825 m

Mixed Design: m 35

Pile Diameter: 1200 mm

Page: (5)

Ram Area: 2551/cm<sup>2</sup>

Date of Casting: 20/08/2024

Pile Depth: 36.00 m

## INITIAL PILE LOAD TEST

DATE	TIME	PRESSURE	LOAD IN MT	Reading				Average settlement	SIGNATURE	REMARK
				Reading 1	Reading 2	Reading 3	Reading 4	Test Pile	ZED	L&T NKAB
	(Hrs)	GAUGE READING kg/cm <sup>2</sup>								
23/11/23	00.2	280	714.28	5.34	4.89	7.56	5.32	5.77	✓	Guru
	00.25			5.34	4.89	7.56	5.32	5.77	✓	Guru
	00.35			5.34	4.89	7.56	5.32	5.77	✓	Guru
	00.36	240	612.24	5.31	4.89	7.50	5.28	5.74	✓	Guru
	00.40			5.31	4.89	7.50	5.28	5.74	✓	Guru
	00.50			5.31	4.88	7.50	5.28	5.74	✓	Guru
	00.51	200	510.20	5.18	4.75	7.39	5.10	5.66	✓	Guru
	00.55			5.18	4.73	7.38	5.10	5.59	✓	Guru
	01.05			5.18	4.73	7.38	5.10	5.59	✓	Guru
	01.06	160	408.16	4.91	4.56	7.10	4.87	5.36	✓	Guru
	01.10			4.91	4.56	7.10	4.87	5.36	✓	Guru
	01.20			4.91	4.56	7.09	4.86	5.35	✓	Guru
	01.21	120	306.12	4.63	4.14	6.80	4.60	5.04	✓	Guru
	01.25			4.63	4.14	6.80	4.60	5.04	✓	Guru
	01.35			4.63	4.14	6.80	4.60	5.04	✓	Guru
	01.36	80	204.08	4.30	3.80	6.50	4.30	4.72	✓	Guru
	01.40			4.30	3.80	6.50	4.30	4.72	✓	Guru
	01.50			4.30	3.79	6.50	4.30	4.72	✓	Guru
	01.51	40	102.04	3.95	3.43	6.17	3.98	4.38	✓	Guru
	01.55			3.95	3.43	6.17	3.98	4.38	✓	Guru
	02.05			3.95	3.41	6.15	3.98	4.37	✓	Guru
	02.06	0	0.00	3.45	2.95	5.65	3.44	3.87	✓	Guru
	02.10			3.45	2.95	5.65	3.44	3.87	✓	Guru
	02.20			3.45	2.92	5.65	3.44	3.86	✓	Guru

unloading

Total Settlement: 57.8mm

Net Settlement: 38.6mm

Rebound: → 19.2 mm

L&T  
Guyana  
Guru  
23/11/23  
SA/02J. S. Gopal  
Guru

# CALIBRATION CERTIFICATES



**ZedGeo System Pvt. Ltd.**

Tel:- 8097256577 / 8097959295 Cell :- 09821065636  
E-mail:- [zedgeotech yahoo.com](mailto:zedgeotech@yahoo.com)  
Website:- [www.zedgeosystems.com](http://www.zedgeosystems.com)



Office: "Akshar-Dhara", Opp. Kamal Derasar, Nr. Ghar Ho To Aisa Plot, Nr. Railway Over-Bridge, Surendranagar-363001 Gujarat (India)

### CALIBRATION CERTIFICATE

ULR No. - CC260525000003063F

Date of Calibration	Next Due Date of Calibration	Certificate No.	Date of Issue
18-10-2025	17-10-2026	BCS/P/251018/02	19-10-2025

1. Calibrated for :

**ZEDGE SYSTEM PRIVATE LIMITED**

Kamat Industrial Estate, 37 A, Swatantryaveer Savarkar Road,  
Opp. Shree Siddhivinayak Mandir,  
Prabhadevi, Mumbai-400025

2. Description of Item : **PRESSURE GAUGE**

Make/Model No. : Baumer / SS316L

Sl. No. : P223.59-02023

ID No. : ZSPL/PG/01

Range : 0 to 1000 Kg/cm<sup>2</sup>

Least Count : 10 Kg/cm<sup>2</sup>

3. Condition of Item :

Satisfactory

4. Environmental Conditions :

Temp. : (23 ± 1.5) °C, RH: (35-80)%

5. Method of Calibration :

BCS/CP/PRG/01 Based on DKD-R-6-1/2 & NABL-129

6. Standard Used and Traceability :

Nomenclature	ID	Certificate No.	Calibration Due Date	Traceable By
Digital Pressure Gauge	BCS/PG/01	CC389225000000374 F	02/10/2026	NABL Lab CC-3892

7. Results :

Discipline: Pressure/Vacuum (Mechanical)

Indicated Pressure of UUC	Avg. Observed Pressure of Standard	Deviation	Hysteresis	± Expanded Uncertainty
bar	bar	bar	bar	bar
0 (0 Kg/cm <sup>2</sup> )	0.00	0.00	0.00	~
98.07 (100 Kg/cm <sup>2</sup> )	99.78	-1.71	0.23	5.67
196.13 (200 Kg/cm <sup>2</sup> )	195.21	0.92	0.81	5.77
294.2 (300 Kg/cm <sup>2</sup> )	295.91	-1.71	0.82	5.77
392.27 (400 Kg/cm <sup>2</sup> )	395.95	-3.68	0.75	5.75
490.33 (500 Kg/cm <sup>2</sup> )	493.06	-2.73	0.38	5.69
588.4 (600 Kg/cm <sup>2</sup> )	591.34	-2.94	0.35	5.68
686.47 (700 Kg/cm <sup>2</sup> )	689.14	-2.67	0.21	5.67

Note: The Calibration Certificate refers only to the Particular Calibrated Items(s).

- This Certificate shall not be reproduced except in full, without the written approval of BhoomiCAL Calibration Services LLP.
- Calibrated upto NABL scope range as per customer request.
- Due date of calibration is given based on customer requirements.
- Our Masters are calibrated by NABL accredited calibration lab having traceability with national/international standard.
- The reported Uncertainty is at coverage factor k=2 with coverage probability of approximately 95% for a normal distribution.
- UUC Readings are taken in Kg/cm<sup>2</sup> at the time of calibration and then converted to bar. Conversion: 1 Kg/cm<sup>2</sup> = 0.980665 bar
- Calibrated at Lab By JMS



Reviewed & Approved by

(ASHISH MALAVIYA)  
Technical Manager

FIM.CC-10 Rev -01 Dt 25-02-20

Calibration | Testing | Service | Sales | Spares | Modernization





Office: "Akshar-Dhara", Opp. Kamal Derasar, Nr. Ghar Ho To Aisa Plot, Nr. Railway Over-Bridge, Surendranagar-363001 Gujarat (India)

### CALIBRATION CERTIFICATE

ULR No. - CC260525000003064F

Date of Calibration	Next Due Date of Calibration	Certificate No.	Date of Issue
18-10-2025	17-10-2026	BCS/D/251018/03	19-10-2025

1. Calibrated for :

ZEDGE SYSTEM PRIVATE LIMITED

Kamat Industrial Estate, 37 A, Swatantryaveer Savarkar Road,  
Opp. Shree Siddhivinayak Mandir,  
Prabhadevi, Mumbai-400025

2. Description of Item : PLUNGER DIAL GAUGE

Make/Model No. : Baker/--

SI. No. : GIC693

ID No. : ZSPL/PDG/01

Range : 0-50 mm

Least Count : 0.01 mm

3. Condition of Item : OK

4. Environmental Conditions : Temp. : (20 ± 2) °C, RH: (30-80) %

5. Method of Calibration : BCS/CP/DG-CMS/01

6. Standard Used and Traceability :

Nomenclature	ID	Certificate No.	Calibration Due Date	Traceable By
Slip Gauge Set	BCS/SG/01	CCS/25/S290/001	08-10-2027	NABL Lab CC-3585
Comparator Stand	BCS/CMS/01	MCS/23000002053	23-11-2025	NABL Lab CC-3133

7. Results :

Discipline : Mechanical Calibration (Dimension)

Nominal Value (mm)	Avg. Observed Reading of UUC* (mm)	Error (mm)
0	0.00	0.00
1	1.00	0.00
2	2.00	0.00
5	5.01	0.01
10	10.01	0.01
15	15.01	0.01
20	20.01	0.01
25	25.02	0.02
30	30.02	0.02
40	40.02	0.02
50	50.03	0.03

Note: The Calibration Certificate refers only to the Particular Items(s) Submitted for Calibration.

- Expanded Uncertainty of Measurement : ± 13.1 µm
- The reported Uncertainty is at coverage factor k=2 with coverage prob. of approx. 95% for a normal distribution.
- This Certificate shall not be reproduced except in full, without the written approval of BhoomiCal Calibration Services LLP.
- UUC = Unit Under Calibration
- Due date of calibration & calibration points are given based on customer requirements.
- Calibrated at Dimension Lab By : DAM

Reviewed & Approved By

(ASHISH MALAVIYA)

Technical Manager

Format No. FM.CC-04



Calibration | Testing | Service | Sales | Spares | Modernization





### CALIBRATION CERTIFICATE

ULR No. - CC260525000003065F

Date of Calibration	Next Due Date of Calibration	Certificate No.	Date of Issue
18-10-2025	17-10-2026	BCS/D/251018/04	19-10-2025

1. Calibrated for :

ZEDGE SYSTEM PRIVATE LIMITED  
Kamat Industrial Estate, 37 A, Swatantryaveer Savarkar Road,  
Opp. Shree Siddhivinayak Mandir,  
Prabhadevi, Mumbai-400025

2. Description of Item : PLUNGER DIAL GAUGE

Make/Model No. : Baker--  
SI. No. : GFF277  
ID No. : ZSPL/PDG/02  
Range : 0-50 mm  
Least Count : 0.01 mm

3. Condition of Item : OK

4. Environmental Conditions : Temp. :  $(20 \pm 2)^\circ\text{C}$ , RH: (30-80) %

5. Method of Calibration : BCS/CP/DG-CMS/01

6. Standard Used and Traceability :

Nomenclature	ID	Certificate No.	Calibration Due Date	Traceable By
Slip Gauge Set	BCS/SG/01	CCS/25/S290/001	08-10-2027	NABL Lab CC-3585
Comparator Stand	BCS/CMS/01	MCS/23000002053	23-11-2025	NABL Lab CC-3133

7. Results :

Discipline : Mechanical Calibration (Dimension)

Nominal Value (mm)	Avg. Observed Reading of UUC* (mm)	Error (mm)
0	0.00	0.00
1	1.00	0.00
2	2.00	0.00
5	5.01	0.01
10	10.01	0.01
15	15.01	0.01
20	20.01	0.01
25	25.02	0.02
30	30.02	0.02
40	40.01	0.01
50	50.01	0.01

Note: The Calibration Certificate refers only to the Particular Items(s) Submitted for Calibration.

- Expanded Uncertainty of Measurement :  $\pm 13.1 \mu\text{m}$
- The reported Uncertainty is at coverage factor k=2 with coverage prob. of approx. 95% for a normal distribution.
- This Certificate shall not be reproduced except in full, without the written approval of BhoomiCal Calibration Services LLP.
- UUC = Unit Under Calibration
- Due date of calibration & calibration points are given based on customer requirements.
- Calibrated at Dimension Lab By : DAM

Format No. FM.CC-04



Reviewed & Approved By

(ASHISH MALAVIYA)  
Technical Manager



Calibration | Testing | Service | Sales | Spares | Modernization

R.S.No. 981 (Plot No.17-18), Nr. Dudhrej Bus Stop, Dudhrej-Vana Road, Dudhrej, Surendranagar-363040  
Email: BhoomiCalibration@gmail.com | Website: BhoomiCalibration.com



Office: "Akshar-Dhara", Opp. Kamal Derasar, Nr. Ghar Ho To Aisa Plot, Nr. Railway Over-Bridge, Surendranagar-363001 Gujarat (India)

### CALIBRATION CERTIFICATE

ULR No. - CC260525000003066F

Date of Calibration	Next Due Date of Calibration	Certificate No.	Date of Issue
18-10-2025	17-10-2026	BCS/D/251018/05	19-10-2025

1. Calibrated for :

ZEDGE SYSTEM PRIVATE LIMITED

Kamat Industrial Estate, 37 A, Swatantryaveer Savarkar Road,  
Opp. Shree Siddhivinayak Mandir,  
Prabhadevi, Mumbai-400025

2. Description of Item : PLUNGER DIAL GAUGE

Make/Model No. : Baker/-

SI. No. : GIC685

ID No. : ZSPL/PDG/03

Range : 0-50 mm

Least Count : 0.01 mm

3. Condition of Item : OK

4. Environmental Conditions : Temp. : (20 ± 2) °C, RH: (30-80) %

5. Method of Calibration : BCS/CP/DG-CMS/01

6. Standard Used and Traceability :

Nomenclature	ID	Certificate No.	Calibration Due Date	Traceable By
Slip Gauge Set	BCS/SG/01	CCS/25/S290/001	08-10-2027	NABL Lab CC-3585
Comparator Stand	BCS/CMS/01	MCS/23000002053	23-11-2025	NABL Lab CC-3133

7. Results :

Discipline : Mechanical Calibration (Dimension)

Nominal Value (mm)	Avg. Observed Reading of UUC* (mm)	Error (mm)
0	0.00	0.00
1	1.00	0.00
2	2.00	0.00
5	4.99	-0.01
10	10.00	0.00
15	15.00	0.00
20	19.99	-0.01
25	25.00	0.00
30	29.98	-0.02
40	39.98	-0.02
50	49.98	-0.02

Note: The Calibration Certificate refers only to the Particular Items(s) Submitted for Calibration.

- Expanded Uncertainty of Measurement : ± 13.1 µm
- The reported Uncertainty is at coverage factor k=2 with coverage prob. of approx. 95% for a normal distribution.
- This Certificate shall not be reproduced except in full, without the written approval of BhoomiCal Calibration Services LLP.
- UUC = Unit Under Calibration
- Due date of calibration & calibration points are given based on customer requirements.
- Calibrated at Dimension Lab By : DAM

Reviewed & Approved By

(ASHISH MALAVIYA)  
Technical Manager

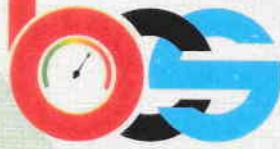
Format No. FM CG-04



Calibration | Testing | Service | Sales | Spares | Modernization

R.S.No. 981 (Plot No.17-18), Nr. Dudhrej Bus Stop, Dudhrej-Vana Road, Dudhrej, Surendranagar-363040  
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Office: "Akshar-Dhara", Opp. Kamal Derasar, Nr. Ghar Ho To Aisa Plot, Nr. Railway Over-Bridge, Surendranagar-363001 Gujarat (India)

### CALIBRATION CERTIFICATE

ULR No. - CC260525000003067F

Date of Calibration	Next Due Date of Calibration	Certificate No.	Date of Issue
18-10-2025	17-10-2026	BCS/D/251018/06	19-10-2025

1. Calibrated for :

ZEDGE SYSTEM PRIVATE LIMITED

Kamat Industrial Estate, 37 A, Swatantryaveer Savarkar Road,  
Opp. Shree Siddhivinayak Mandir,  
Prabhadevi, Mumbai-400025

2. Description of Item : PLUNGER DIAL GAUGE

Make/Model No. : Baker/--

SI. No. : GIC704

ID No. : ZSPL/PDG/04

Range : 0-50 mm

Least Count : 0.01 mm

3. Condition of Item : OK

4. Environmental Conditions : Temp. : (20 ± 2) °C, RH: (30-80) %

5. Method of Calibration : BCS/CP/DG-CMS/01

6. Standard Used and Traceability :

Nomenclature	ID	Certificate No.	Calibration Due Date	Traceable By
Slip Gauge Set	BCS/SG/01	CCS/25/S290/001	08-10-2027	NABL Lab CC-3585
Comparator Stand	BCS/CMS/01	MCS/23000002053	23-11-2025	NABL Lab CC-3133

7. Results :

Discipline : Mechanical Calibration (Dimension)

Nominal Value (mm)	Avg. Observed Reading of UUC* (mm)	Error (mm)
0	0.00	0.00
1	1.01	0.01
2	2.00	0.00
5	5.00	0.00
10	10.00	0.00
15	15.02	0.02
20	20.00	0.00
25	25.02	0.02
30	30.01	0.01
40	40.02	0.02
50	50.03	0.03

Note: The Calibration Certificate refers only to the Particular Items(s) Submitted for Calibration.

- Expanded Uncertainty of Measurement : ± 13.1 µm
- The reported Uncertainty is at coverage factor k=2 with coverage prob. of approx. 95% for a normal distribution.
- This Certificate shall not be reproduced except in full, without the written approval of BhoomiCal Calibration Services LLP.
- UUC = Unit Under Calibration
- Due date of calibration & calibration points are given based on customer requirements.
- Calibrated at Dimension Lab By : DAM

Reviewed & Approved By

(ASHISH MALAVIYA)  
Technical Manager

Format No. FM.CC-04



Calibration | Testing | Service | Sales | Spares | Modernization

R.S.No. 981 (Plot No.17-18), Nr. Dudhrej Bus Stop, Dudhrej-Vana Road, Dudhrej, Surendranagar-363040  
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Format No: PLTJ/01

Rev. No.- 00

### CALIBRATION CERTIFICATE

CALIBRATION CERTIFICATE NO	: QCC-158-CR-02
CALIBRATION TEST REPORT DATE	: 28/05/2025
NAME OF CUSTOMER	: M/s. ZEDZEO SYSTEMS PRIVET LIMITED
PROJECT SITE ADDRESS	: NAVI MUMBAI
DATE OF CALIBRATION	: 28/05/2025
SUGGESTED NEXT CALIBRATION DUE DATE ( As customer Requested)	: 27/05/2026

#### Details of Device Under Calibration (DUC)

Instrument Description : Hydraulic Pile Test Jack	Jack Model No. : 1500/350
Make : DYNAMIC	Range of Jack (Ton) : 1500
Tag / ID No : ZCB/HPTJ/02	Make pf pressure Gauge : Baumer
Power Pack Sr. No. : 21907664	Range of Pressure Gauge (Kg/cm <sup>2</sup> ) : 700
Pushing Jack Sr. No. : 21908720	Sr. No of Pressure Gauge:- P223.59.02023
Ram Area of Jack (cm <sup>2</sup> ): 2551.17	Resolution of Pressure Gauge (Kg/cm <sup>2</sup> ) : 10

#### Technical Details of Hydraulic Jack

Outer Dia, mm	Close Length of Jack , mm	Dia of Piston , mm	Max Stroke , mm
600	650	425	350

#### DETAIL OF MASTER EQUIPMENT USED FOR CALIBRATION

Id of Instrument	Range of Master	Calibrated By	Calibration Certificate No.	Calibration Date	Calibration Due Date
QCC/PGC/01	0- 700 bar	IDEMI , Mumabi	CC/PRL/ 0305 /24-25	19/06/2024	18/06/2025

#### CALIBRATION RESULTS

Calibration Method : DKD R-6 : 2016, SOP-CAL-10      Calibration done at Room Temp(° C) : 25±5

Calibration Done at Location : At Lab

Calibration done at Humidity(% RH) : 50±10

Pressure Transmitting Medium : Hydraulic

Certified Range of Hydraulic Jack (Ton) : 1483.79

Reading on DUC (kg/cm <sup>2</sup> )	Reading on Standard (kg/cm <sup>2</sup> )				Average Reading (Mean) (kg/cm <sup>2</sup> )	Error (kg/cm <sup>2</sup> )	Repeatability (kg/cm <sup>2</sup> )	Hysteresis (kg/cm <sup>2</sup> )	Solid Ram Area, cm <sup>2</sup>	Pressure in Tons	Expanded Uncertainty kg/cm <sup>2</sup> (±)
	P ( ACT )	M1	M2	M3	M4	[M1+M2+M3+M4]/4	Mean-P(Act)	Max Value ((M3-M1), (M4-M2))			
0	0.00	0.00	0.00	0.00	0.000	0.0000	0.000	0.000	2551.17	0.00	0.63
60	60.12	60.08	60.15	60.15	60.125	0.1250	0.070	0.000	2551.17	153.39	0.63
120	120.09	120.03	120.08	120.12	120.080	0.0800	0.090	0.040	2551.17	306.34	0.63
180	180.16	180.16	180.17	180.09	180.145	0.1450	0.010	0.000	2551.17	459.58	0.63

Page 1 of 2



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abhinav@qcclabsolutions.com

CALIBRATION: RATNESH GOEL

MOB: 9452200078

ratnesh@qcclabsolutions.com



240	240.19	240.17	240.16	240.16	240.170	0.1700	-0.010	0.000	2551.17	612.71	0.63
300	300.56	300.52	300.56	300.54	300.545	0.5450	0.020	-0.020	2551.17	766.74	0.63
360	360.64	360.66	360.68	360.69	360.668	0.6675	0.040	0.020	2551.17	920.12	0.63
420	420.86	420.81	420.82	420.88	420.843	0.8425	0.070	0.060	2551.17	1073.64	0.63
480	480.90	481.05	481.02	481.07	481.010	1.0100	0.120	0.150	2551.17	1227.14	0.63
540	541.12	541.19	541.23	541.28	541.205	1.2050	0.110	0.070	2551.17	1380.71	0.63
580	581.65	581.66	581.57	581.56	581.610	1.6100	-0.080	0.010	2551.17	1483.79	0.63

**Remarks:**

1. The Reported Expended uncertainty is stated as a standard uncertainty multiplied by a coverage confidance level factor k=2 at  $\pm 95\%$

**Note:**

2. DUC stands for device under calibration.

3. The certificate shall refers only to the perticuler item submitted for calibration .

4. The certificate shall not be reproduced except in full unless written permission for the publication of an approved abstract has been obtained from the the technical manager of QCC lab solution Pvt. Ltd. Navi Mumbai.

5. As found ;As left

6. The calibration results reported in the certificate are valid at the time of and under the stated conditions of measurement.

7. Calibration point don as per customer request

(Authorised Signatory)




**QCC LAB**  
SOLUTIONS PVT. LTD.  
Equipment Sales & Calibration Services

Format No:- QCC-PG-01

**CALIBRATION CERTIFICATE**

Rev. No.: 00

<b>1. General Details</b>									
Date of Receipt	:- 22/11/2024				Certificate Issue date	:- 22/11/2024			
Service Request No.	:- QCC-97				Certificate No.	:- QCC-97-CR-01			
Condition of Instruments	:- Satisfactory				Calibration to be done at	:- AT LAB			
Date of Calibration	:- 22/11/2024				Environmental Condition °C &	:- 27.5 °C & 53% rh			
Due date of calibration (As per customer requirement)	:- 21/11/2025				Reference Standard	:- DKD R-6 : 2016, QCC-SOP-4			
<b>2. Customer Details</b>									
Name of Customer	:- M/s. ZedGeo System Pvt. Ltd.								
Site Address	:- 4/8, Kamma CHS KG Marg, Prabhadevi, Mumbai-400025								
<b>3. Details of Equipment</b>									
Instrument Description	:- Pressure Gauge				Tag / ID No	:- SE/3942/01			
Scale Range(kg/cm2)	:- 1000				Type of Pressure Gauge	:- Analog			
Resolution (kg/cm2)	:- 10				MU Requirement(%)	:- NA			
Make	:- Baumer				Certified Range(kg/cm2)	:- 700			
Model/ Sr. No.:	:- SS316L/ P494.59-13985				Pressure Transmitting Medium	:- Hydraulic			
<b>4. Detail of Master Equipment</b>									
Master Equipment Description	ID Mark	Calibration Certificate No.			Range of Master	Calibration Date	Calibration Due Date		
Pressure Gauge	QCC/PG/01	CC/PRL/ 0305 /21-22			700 bar	19/10/2024	18/10/2025		
<b>5. Result</b>									
Reading on DUC (kg/cm2)	Reading on Standard (kg/cm2)			Average Reading (Mean) (kg/cm2)	Error (kg/cm2)	Repeatability (kg/cm2)	Hysteresis (kg/cm2)		
P ( ACT )	M1	M2	M3	M4	[M1+M2+M3+M4]/4	Mean-P(Act)	Max Value ((M3-M1), (M4-M2))	Max Value ((M2-M1), (M4-M3))	
0	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
70	70.02	70.03	70.04	70.02	70.03	0.03	0.020	0.01	
140	140.01	140.12	140.08	140.09	140.08	0.08	0.069	0.11	
210	210.15	210.19	210.14	210.16	210.16	0.16	-0.010	0.04	
280	280.22	280.19	280.16	280.19	280.19	0.19	0.000	0.03	
350	350.26	350.29	350.24	350.26	350.26	0.26	-0.020	0.03	
420	420.35	420.49	420.40	420.41	420.41	0.41	0.050	0.14	
490	490.48	490.41	490.46	490.47	490.46	0.46	0.060	0.01	
560	560.51	560.55	560.53	560.55	560.54	0.53	0.020	0.04	
630	630.61	630.63	630.58	630.58	630.60	0.60	-0.030	0.02	
700	700.76	700.78	700.79	700.70	700.76	0.76	0.030	0.02	

(Calibration by)



(Authorized by)

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**QCC LAB**  
SOLUTIONS PVT. LTD.  
Equipment Sales & Calibration Services

Sr. No	Determination	Value (Kgcm <sup>2</sup> )	% FSD
1	Maximum Error	1.12	0.16
2	Maximum Hysteresis	0.14	0.02

**Remarks:**

1. The Reported expanded uncertainty is evaluated at approximately 95% confidence level having Coverage factor k=2.

**Note:**

1. DUC stands for device under calibration.
2. The certificate shall refers only to the perticular item submitted for calibration .
3. The certificate shall not be reproduced except in full unless written permission for the publication of an approved abstract has been obtained from the technical manager of QCC lab solution Pvt. Ltd. Navi Mumbai.
4. As found ;As left
5. The calibration results reported in the certificate are valid at the time of and under the stated conditions of measurement.



(Calibration by)



(Authorized by)