



CATALOGUE HANDBOOK



Test, Measurement & Calibration Instruments

Standards, Systems,
Software & Services

Calibration Solutions for

- TEMPERATURE
- PRESSURE
- ELECTRICAL (SIGNAL)
- PROCESS FLOW (WATER & GAS)
- LEVEL

Why Nagman?

The Unique Advantages & Benefits...

HISTORY

A 45 year old ISO 9001:2008 Certified instrumentation Company, employing over 150 skilled hands.

Dedicated Service to Domestic (Indian) Industries & Exporting products to over 94 Countries.

Among very few companies in the world to offer "Comprehensive Calibration Solutions" in Multiple Parameters - **Temperature, Pressure, Electrical (Signal), Level and Flow** (& work is on to add more...) duly supported by an **Accredited Calibration Lab** (per ISO/IEC 17025:2005 Standards).

PRODUCTS

Calibration Standards & Systems

Portable Temperature, Pressure & Signal Calibrators, Black Body Calibration Sources, Pneumatic & Hydraulic Hand Pumps, Precision Dead Weight & Comparison Testers, Calibration Test Benches/Workstations, Level Calibration System, Flow Meter Calibration System, Water Meter Calibration Test Bench, Gas Meter Calibration System (Bell Prover Type), Automatic Pressure Controller, Speciality Thermocouples & RTDs, Flow Meters, Level Transmitters etc.

Calibration Management Software :

Modular, Interfaces/Integrates Third Party Calibrators to enable perform Automatic & Semi-Automatic Calibration Routines and generates Calibration Reports and Certificates.

Capable of Uplinking to Plant's Centralized (SAP) Systems

Standalone Softwares for Nagman Dead Weight Testers, Temperature & Pressure Calibrators / Level & Flow Systems.

SERVICES

NABL Accredited Calibration Laboratory (per ISO/IEC 17025:2005 Standards) for **Thermal, Mechanical** (Mass & Pressure), **Electro-Technical and Linear Parameters** in Chennai, Mumbai & Delhi Metros (India). **Fluid Flow Calibration Services** are offered at Chennai & Mumbai.

Lab & Field/Site Calibration

Consultancy for Setting up Calibration Lab (from Concept to Completion) including Training, Documentation & obtaining Accreditation.

Structured **Instrumentation / Calibration related Training Courses** conducted inhouse and at Customer sites.

CAPABILITIES

Comprehensive Calibration Lab Packages - Supplies include Third Party Calibrators, Test & Measuring Instruments & Equipments

Innovative Product / Software Development / Improvement & Ultimate Customization

Mid-Sized Company - Highly Flexible & Competitive

MORE ...

Marketing Hub in Singapore to serve Customers in South East Asia Region.

Joint Venture Calibration Lab & Product Sales Office in Johor, Malaysia.

Regional Offices / Representatives spread out thro' India & Distributor Network Worldwide.

Select Products Brand Labeled by reputed Global Distributors.

Circuit Design, Components, Layout as per CE Norms (for select Temperature & Pressure Calibrator Models)

Evaluated & Type Tested per DNV for Marine Applications (select Temperature & Pressure Calibrator Models).

Member of International Marine Purchasing Association (IMPA)

CERTIFICATIONS



BUREAU VERITAS
Certification

NAGMAN INSTRUMENTS & ELECTRONICS (P) LTD.



UKAS
SINCE 1945

27TH KM STONE, CHENNAI – BANGALORE HIGHWAY, NAZARETHPET (POST),
CHENBARAMBAKKAM, CHENNAI – 600 123, TAMIL NADU, INDIA.

Bureau Veritas Certification Holding SAS – UK Branch certifies that the
Management System of the above organization has been audited and found to be in
accordance with the requirements of the Management System
standard detailed below:

Standard
ISO 9001:2008

Scope of certification

DESIGN & DEVELOPMENT, MANUFACTURE, SALES, DESPATCH AND SERVICE OF
CALIBRATION EQUIPMENTS LINE TEMPERATURE CALIBRATORS, PRESSURE
CALIBRATORS, SIGNAL CALIBRATORS, COMPARISON TESTERS, PNEUMATIC &
HYDRAULIC HAND PUMPS, FLOW AND LEVEL CALIBRATION SYSTEMS AND
TEST BENCHES/WORK STATIONS

Certification cycle start date: **16 February 2016**
Subject to the continued satisfactory operation of the organization's Management
System, this certificate expires on: **14 September 2018**
Original certification date: **16 February 2010**
Certificate No. **IND16.6090400** Version: 1 Revision date: **16 February 2016**




Authorized signatory of BVCS SAS – UK Branch
Personnel Accredited
General Manager, CERTIFICATION
South Asia Region

Certification body address: **5th Floor, 68 Piccadilly Street, London, W1P 8PL, United Kingdom**
Local office: **Mylapore Centre 5th Floor, Kilmeash Avenue West,
5th Floor, Anna Salai, Chennai, 600 002, India
Authorised Signatory – 402 072, India**

Further declarations regarding the scope of the certificate and the responsibility of the
management system requirements may be obtained by contacting the organization.
To check the certificate validity please visit: UKAS.6090400

DNV-GL

Certificate No:
A-14134
File No:
800.00
202.10
262.1-01065-2

TYPE APPROVAL CERTIFICATE

This is to certify:
That the Test and Calibration Equipment
with type designation(s)
Temperature Calibrators ETC600, MTC 350/650, 350H/650H Pressure Calibrators MPCE Series,
MPC Series, PPC Series
Issued to
Nagman Instruments & Electronics (P) Ltd
Chennai, Tamil Nadu, India

is found to comply with
Det Norske Veritas' Rules for Classification of Ships and High Speed and Light Craft
Det Norske Veritas' Offshore Standards

Application :
The instruments are only approved as portable test instruments.
Traceable calibration certificates are available from the manufacturer.

This Certificate is valid until **2018-12-31**.
Issued at **Havvik** on **2016-01-22**

DNV GL local station: **Chennai**
Approval Engineer: **Satish Inness**




For **DNV GL**
Digitally Signed by: **Nagman, Gita Mayan**
Location: **2016-01-22, Havvik, Norway**
Signing Date: **2016-01-22**

Old Nagman Havvik
Head of Station

This Certificate is subject to terms and conditions covered. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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NABL

**National Accreditation Board for
Testing and Calibration Laboratories**
(An Autonomous Body under Department of Science & Technology, G)


CERTIFICATE OF ACCREDITATION

CENTRE FOR CALIBRATION, NAGMAN


has been assessed and accredited in accordance with the standard
ISO/IEC 17025:2005
"General Requirements for the Competence of Testing & Calibration Laboratories
for its facilities at
Nagman Instruments & Electronics (P) Ltd., Block 'B', 27th KM Stone, Chennai
Nazarethpet, Chembarambakkam, Chennai, Tamil Nadu
in the discipline of
THERMAL CALIBRATION


This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to
continued satisfactory compliance to the above standard & the additional requirements
Signed for and on behalf of NABL:

Certificate Number: **C-0164**
Issue Date: **03/03/2016**


Anil Datta
Program Manager

Valid Until: **03/03/2018**


Anil Rathi
Director



NABL

**National Accreditation Board for
Testing and Calibration Laboratories**
(An Autonomous Body under Department of Science & Technology, Govt. of India)

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for its facilities at
Nagman Instruments & Electronics (P) Ltd., Block 'B', 27th KM Stone, Chennai-Bangalore NH-4
Nazarethpet, Chembarambakkam, Chennai, Tamil Nadu
in the discipline of
MECHANICAL CALIBRATION


This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to
continued satisfactory compliance to the above standard & the additional requirements of NABL.


Signed for and on behalf of NABL:

Certificate Number: **C-0163**
Issue Date: **03/03/2016**


Anil Datta
Program Manager

Valid Until: **03/03/2018**


Anil Rathi
Director



NABL

**National Accreditation Board for
Testing and Calibration Laboratories**
(An Autonomous Body under Department of Science & Technology, Govt. of India)

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"General Requirements for the Competence of Testing & Calibration Laboratories
for its facilities at
Nagman Instruments & Electronics (P) Ltd., Block 'B', 27th KM Stone, Chennai-Bangalore NH-4
Nazarethpet, Chembarambakkam, Chennai, Tamil Nadu
in the discipline of
ELECTRO-TECHNICAL CALIBRATION


This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to
continued satisfactory compliance to the above standard & the additional requirements of NABL.

Signed for and on behalf of NABL:

Certificate Number: **C-0162**
Issue Date: **03/03/2016**


Anil Datta
Program Manager

Valid Until: **03/03/2018**


Anil Rathi
Director

PROVEN TRACK RECORD - INTERNATIONAL CUSTOMERS

 GASCO شركة الغازات الصناعية المحدودة Abu Dhabi Gas Industries Ltd.	 شركة أبوظبي للعمليات البترولية البرية (ADCO) Abu Dhabi Company for Onshore Oil Operations (ADCO)	 Petrofac U.A.E., Turkmenistan	 EMERSON Process Management U.A.E.
 SWME U.A.E.	 المصهرات للبترولوكيمويات sahara petrochemicals	 المملكة العربية السعودية Saudi Arabia	 سابك عابك Saudi Arabia
 PICSARABIA	 MT ENTERPRISES Saudi Arabia	 مرفاق MARAFIQ Saudi Arabia	 ساتورب SATORP Saudi Arabia
 ابن سينا ibn sina Saudi Arabia	 شركة نفط الكويت Kuwait Oil Company	 شركة الغاز العمانية ش.م.ع. OMAN GAS COMPANY S.A.O.C.	 SOHAR ALUMINIUM Oman
 شركة تنمية نفط عمان Petroleum Development Oman	 OCTAL Oman	 شركة و.أ.ز.ب. للطاقة ش.م.ع. WALJA AZZ POWER COMPANY S.A.O.C. التي هي شركة تابعة لمجموعة و.أ.ز.ب. Member of Wale Group	 PANTHER JINDA SKEELS Jindal Steel Iron & Steel Oman
 قطر للبترول Qatar Petroleum	 الشركة الوطنية للأسمنت NATIONAL CEMENT COMPANY Yemen	 إسرائيل Israel	 PTS POWER TECHNOLOGY SOLUTIONS Kazakhstan
 Oyoy Tolgoi Mongolia	 TITAS GAS TITAS Bangladesh	 HEIDELBERGCEMENT Bangladesh	 INDORAMA Indo-Rama Petrochemical, Thailand
 PILIPARA Malaysia	 Instrumentation System Metering and General Engineering Co., Ltd. Myanmar	 SUCOFINDO Indonesia	 KRAKATAU STEEL Indonesia
 ADITYA BIRLA Indonesia	 Philippines	 YOKOGAWA Singapore	 Colombo Dockyard, Sri Lanka
 Khartoum State Water Corporation, Sudan	 شركة المياه العذبة SUDAN Sudan	 Shell Nigeria	 ARIL TECHNOLOGIES LIMITED Nigeria
 DANGOTE CEMENT Nigeria & Zambia	 Zambia Bureau of Standards	 National Breweries PLC Zambia	 Songas Tanzania
 EXXON Mobil Chad	 Egypt	 GSA Ghana Standards Authority Ghana	 Keppel Shipyard Brazil

PROVEN TRACK RECORD - DOMESTIC CUSTOMERS



TEMPERATURE CALIBRATORS

Ranges (°C)

PRODUCT SELECTION CHART

TEMPERATURE CALIBRATORS										Ranges (°C)				Resolution	Accuracy	Stability	Well Dia	Immersion Depth	Page										
Models	-50	-25	0	50	100	150	200	250	300	350	400	450	500							550	600	650	700	750	800	850	900	950	1000
BASIC MODELS	350H 350H2	10°C above Ambient to 350°C										Best Buy										0.1°C	±1°C	±0.3°C ±0.4°C	25 mm	110 mm 190 mm	13		
	650H 650H2	20°C above Ambient to 650°C										Customers' Choice										0.1°C	±1.5°C	±0.5°C ±0.6°C	25 mm	110 mm 190 mm	13		
	ETC 600 ETC 600-2	50 to 600°C										Economy Model										1°C	±0.1% F.S./ ±0.15% F.S. + 1 digit	±0.5°C	25 mm	110 mm 190 mm	13		
HIGH ACCURACY TYPE DRY BLOCKS	MTC 40	-40°C from Ambient to 123°C										Sub-Zero Temperature										WITH MEASUREMENT CAPABILITY	0.1°C	±0.3°C	±0.05°C	19 mm	100 mm	9	
	MTC 350	50°C to 350°C										Low Temperature											0.1°C	±0.4°C	±0.05°C	25 mm	110 mm	9	
	MTC 650	50°C to 650°C										Medium Temperature											0.1°C	±0.6°C	±0.05°C	25 mm	110 mm	9	
	MTC 1200	300°C to 1200°C										High Temperature											1°C	±2°C	±0.5°C	26 mm	105 mm	9	
	Metcal 40	-10°C to 120°C	Axial Uniformity (40 mm): ±0.2°C. Radial Uniformity : ±0.02°C										Sub-Zero Temperature										0.01°C	±0.2°C	±0.02°C	30 mm	150 mm	11	
	Metcal 650	50°C to 650°C										Medium Temperature											0.01°C	±0.4°C	±0.04°C	30 mm	150 mm	11	
	Metcal 1200	150°C to 1200°C										High Temperature											0.1°C	±2°C	±0.3°C	30 mm	105 mm	11	
SPECIALTY PRODUCTS	1200 HN	High Temperature Dry Block Calibrator										300°C to 1200°C										1°C	Better than ±3°C	Better than ±0.5°C	45 mm	150 mm	14		
	1500 HN	Very High Temperature Dry Block Calibrator										500°C to 1500°C										1°C	±0.5% of Span	±2°C	55 mm	250 mm	14		
	MOB 250	Micro Oil Bath - Stirred Type - Medium : Oil										20°C above Ambient to 250°C										0.1°C	±0.6°C	±0.2°C	95 mm	170 mm	15		
	FB-06S/L	Fluidized Bath - Stirred Type - Medium : Powder										20°C above Ambient to 600°C										1°C	±1.5°C	±0.5°C	155 mm 225 mm	250 mm 400mm	15		
BLACK BODY CALIBRATION SOURCE	BBSL	10°C above Ambient to 350°C										Low Temperature										INFRA RED PYROMETER CALIBRATION	±0.1°C	Within 0.5% of F.S. (Min. 1°C)	±0.5°C	0.98	25 mm	17	
	BBSM	20°C above Ambient to 600°C										Medium Temperature											1°C	Within 0.5% of F.S. (Min. 2°C)	±0.5°C	0.98	25 mm	17	
	BBSH	500°C to 1200°C										High Temperature											1°C	Within 0.5% of F.S. (Min. 3°C)	±1.5°C	0.98	25 mm	17	
	BBSD	50°C to 300°C & 250°C to 600°C										Dual Chamber Type											0.1°C 1°C	Within 0.5% of F.S. (Min. 1°C / 2°C)	±0.5°C	0.98	25 mm	17	
	BBS-VH	500°C to 1300°C										Very High Temperature											1°C	Minimum 3°C	±0.5°C	0.99	25 mm	17	

Also see : Test Benches (34 & 35), Mobile Systems (36), Signal Calibrators (37), Software (38 & 39), Level Calibration System (40), Flow Meter Calibration System (41), Water Meter Calibration System (42), Gas Meter Calibration System (43), Calibration Services (44 - 46), Flow Lab (47)

PRESSURE CALIBRATORS

Series / Models

Ranges (bar) ■ Pneumatic ■ Hydraulic

PUMPS	Series / Models	Ranges (bar)	Operation
PUMP	PHP	-0.90 to 2 & upto 60 bar	Air Operated
	HHP	Upto 1000 bar	Oil / Water Operated
TABLE TOP	PPC-P / PPC-P+	-0.85 to 2 & upto 20 bar	Built-in Pump
	PPC-H / PPC-H+	0 to 200 / 400 bar	Built-in Pump
	PPC-D / PPC-D+	-0.85 to 20 bar	Built-in Pump
		0 to 200 / 400 bar	
HANDHELD MODELS	MPCE-P	-0.85 to 2 & upto 60 bar	Economy
	MPCE-H	0 to 700 bar	Economy
	MPC-P / MPC-P+	-0.85 to 2 & upto 60 bar	Advanced / Hi-Precision
	MPC-H / MPC-H+	0 to 700 bar	Advanced / Hi-Precision
	MPC-B / MPC-B+	-0.85 to 20 bar	Bench-top / Bench Mounted
		0 to 700 bar	
DEAD WEIGHT TESTERS	P8000-SP	-0.85 to 1 bar	Compound Dead Weight Tester
	P8000 / P8600	0.5 to 35 bar	Pressure Standard
	H3000 / H6000	Upto 700 bar	Economy
	H6600 / H6900	Upto 700 bar	High Accuracy
	H6600N / H6900N	Upto 1200 bar	High Precision
	Portable	Upto 700 bar	Portable
	Motorized	Upto 700 bar	Motorized
COMPARATORS	PCP	-0.95 to 4 bar	Very Low Pressure - Screw Pump
	GCL-SP	Upto 350 bar	Low Pressure - Screw Pump
	GCH-SP	High Pressure - Screw Pump	Upto 1400 bar

PRODUCT SELECTION CHART

Type	Operation	Pr. Increment	Ranges	Page
Pneumatic	Scissor Action	Fine Adjustment Vernier	Very Low, Low & Medium	18
Hydraulic	Scissor action	Fine Adjustment Vernier	Medium & High Pressure	19
Type	Accuracy	Resolution	Switch Test	Page
Pneumatic	±0.05% F.S. / ±0.025% F.S.	Min. 5 digits	Max. 9V DC	25
Hydraulic	±0.05% F.S. / ±0.025% F.S.	Min. 5 digits	Max. 9V DC	25
Dual (Pneumatic & Hydraulic)	±0.05% F.S. / ±0.025% F.S.	Min. 5 digits	Max. 9V DC	25
Pneumatic	±0.1% F.S.	Min. 4½ digits	Max. 9V DC	21
Hydraulic	±0.1% F.S.	Min. 4½ digits	Max. 5V DC	21
Pneumatic	±0.05% F.S. / ±0.025% F.S.	Min. 5 digits	Max. 5V DC	21
Hydraulic	±0.05% F.S. / ±0.025% F.S.	Min. 5 digits	Max. 5V DC	21
Pneumatic / Hydraulic	±0.05% F.S. / ±0.025% F.S.	Min. 5 digits	Max. 5V DC	23
Type	Accuracy	Piston	Software	Page
Pneumatic	±0.05% of Reading	Single	—	31
Pneumatic	±0.05% / ±0.025% of Rdg.	Single	Optional	31
Hydraulic	±0.1% / ±0.05% of Rdg.	Single / Dual	Optional	29
Hydraulic	±0.025% / ±0.015% of Rdg.	Single / Dual	For H6900 only	29
Hydraulic	±0.025% / ±0.015% of Rdg.	Single / Dual	For H6900N only	27
Hydraulic	±0.1% / ±0.05% / ±0.025% of Rdg.	Single / Dual	Optional	29
Hydraulic	±0.1% / ±0.05% / ±0.025% of Rdg.	Single / Dual	Optional	29
Type	Pressure Generation	Medium	Test Port	Page
Pneumatic	Thro' Screw RAM Pump	Air	¼" BSP (M) & 3/8" BSP (M)	33
Hydraulic	Thro' Priming Pump	Oil / Water	½" BSP (F) Swivel	33
Hydraulic	Thro' Screw Pump	Oil / Water	½" BSP (F) Swivel	33

Also see: Test Benches (34 & 35), Mobile Systems (36), Signal Calibrators (37), Software (38 & 39), Level Calibration System (40), Flow Meter Calibration System (41), Water Meter Calibration System (42), Gas Meter Calibration System (43), Calibration Services (44 - 46), Flow Lab (47)

UNIVERSAL DRY BLOCK TEMPERATURE CALIBRATORS



Salient Features

Precise, High Accuracy, Resolution & Stability with **Measurement Capability** for mV / V / mA, Resistance, Tc (ISA Types : J, K, R, S, N), RTD (Pt100 : IEC Standard) Signals

Ideal for Steel, Glass, Metallurgical Industries, Cement Plants, Refineries, Fertilizer Plants, Thermal Power Stations etc.

Conforms to "EL" Standards - Horizontal / Vertical Uniformity

High Temperature Model (1200°C) is available as a Unique Portable Type

- Advanced Micro-controller based Technology
- Heavy Duty Portable / Bench-top Model
- High Accuracy, Resolution & Stability
- 128 x 64 Graphic Display
- Touch Membrane Keypad
- Switch Test Contact Measurement
- Interchangeable Thermowell Inserts
- RS-232 Interface & Calibration Software

Specifications

Models	MTC 40	MTC 350
Range	-40°C from Ambient to 123°C	50°C to 350°C
Resolution	0.1°C	0.1°C
Accuracy	±0.3°C	±0.4°C
Stability	±0.05°C	±0.05°C
Well Dia	19 mm	25 mm
Immersion Depth	100 mm	110 mm
Thermowell (Interchangeable)	Single hole to suit 1/4" Probe	Single hole to suit 1/4" & 1/2" Probes
RS-232 Computer Interface	Built-in	Built-in
Calibration Management Software	MTCCal Software	MTCCal Software

Models	MTC 650	MTC 1200
Range	50°C to 650°C	300°C to 1200°C
Resolution	0.1°C	1°C
Accuracy	±0.6°C	±2°C
Stability	±0.05°C	±0.5°C
Well Dia	25 mm	26 mm
Immersion Depth	110 mm	105 mm
Thermowell	Single hole to suit 1/4" & 1/2" Probes	8 mm (Single hole)
RS-232 Computer Interface	Built-in	Built-in
Calibration Management Software	MTCCal Software	MTCCal Software

METROLOGICAL LAB STANDARD

Salient Features

High Accuracy, Resolution & Stability with **Measurement Capability** for mV / V / mA, Resistance, Tc (ISA Types : J, K, R, S, N), RTD (Pt100, Pt200, Pt500, Pt1000 : IEC Standard) Signals

Ideal for use as High Accuracy Metrological Lab Standards & quick / fast Site Calibration of RTDs / TCs / Bi-Metal Thermometers, Temperature Switches / Indicators etc. in Industrial & Marine Applications

Conforms to "EL" Standards - Horizontal / Vertical Uniformity



METCAL Series

- Advanced Micro-controller based Technology
- Heavy Duty Portable / Bench-top Model
- High Accuracy, Resolution & Stability
- 128 x 64 Graphic Display
- Touch Membrane Keypad
- Switch Test Contact Measurement
- Multihole Thermowell Inserts
- RS-232 Interface & Calibration Software
- Count down timer (Shows when unit is stable)
- Stability Indicator

Specifications

Models	Metcal 40 NEW	Metcal 650
Range	-10°C to 120°C	50°C to 650°C
Resolution	0.01°C	0.01°C
Accuracy	±0.2°C	±0.4°C
Stability	±0.02°C	±0.04°C
Axial Uniformity (40 mm)	±0.2°C	±0.4°C
Radial Uniformity	±0.02°C	±0.04°C
Well Dia	30 mm	30 mm
Immersion Depth	150 mm	150 mm
Thermowell (Interchangeable)	Multihole to suit 2 x 1/4" & 1 x 1/2" Probes. Other Sizes available as optional	Multihole to suit 2 x 1/4" & 1 x 1/2" Probes. Other Sizes available as optional
RS-232 Computer Interface	Built-in	Built-in
Calibration Management Software	METCAL Software	METCAL Software

Model	Metcal 1200 NEW
Range	150°C to 1200°C
Resolution	0.1°C
Accuracy	±2°C
Stability	±0.3°C
Well Dia	30 mm
Immersion Depth	105 mm
Thermowell (Interchangeable)	Multihole to suit 2 x 8.5 mm & 1 x 6.5 mm Probes. Other Sizes available as optional
RS-232 Computer Interface	Built-in
Calibration Management Software	METCAL Software

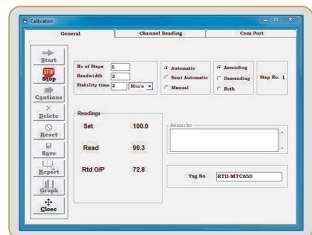
METCAL Software

The Nagman's **METCAL** Software is a powerful tool for calibration of devices in the process industries under the present day quality guidelines such as ISO 9001. The **METCAL** automates the process of calibration making them quicker & easier.

This Software has been developed with our vast experience & knowledge to perform Automatic, Semi-Automatic & Manual Calibration & Certificate Generation. This is a user friendly, simpler & easier software.

In addition, the customer can include their company logo while generating the calibration certificates.

The data storage format of **METCAL** helps the User to ascertain the performance of the instrument over a period of time and enables him/her to fix-up optimum recalibration intervals for instruments.



LOW & MEDIUM TEMPERATURE DRY BLOCK CALIBRATORS

HEAVY DUTY



350H & 650H



SUITABLE FOR
MARINE
APPLICATIONS

Meets
SOLAS IX Maintenance Regulations
&
ISM (International Safety Management)
requirements

BUDGET
SOLUTION



ETC 600

Salient Features

Ideal for quick / fast Site Calibration of RTDs / TCs / Bi-Metal Thermometers, Temperature Switches / Indicators etc. in Industrial & Marine Applications

Meets the requirements of "Safety of Life at Sea" (SOLAS IX Maintenance Regulations) & "International Safety Management" (ISM)

- Heavy Duty Portable / Bench-top Model
- Improved Accuracy, Resolution & Stability
- Rugged Field use - for Calibration at Site
- Interchangeable Thermowell Inserts - Single / Multihole
- Auto-tune PID Control
- Meets "CE" Norms
- Switch Test capability
- RS-232 Interface & Calibration Software (Optional)
- Fast and Reliable

Specifications

Models	350H *	650H *
Range	10°C above Ambient to 350°C	20°C above Ambient to 650°C
Resolution	0.1°C	0.1°C
Accuracy	±1°C	±1.5°C
Stability	±0.3°C	±0.5°C
Well Dia	25 mm	25 mm
Immersion Depth	110 mm	110 mm
Thermowell (Interchangeable)	Single hole to suit ¼" & ½" Probes	Single hole to suit ¼" & ½" Probes
RS-232 Computer Interface	Optional	Optional
Calibration Management Software	'Caltemp' Software as Optional	'Caltemp' Software as Optional

* Consult us for Models 350-H2 & 650-H2 with 190 mm Immersion Depth.

Models	ETC 600	ETC 600-2
Range	50°C to 600°C	50°C to 600°C
Resolution	1°C	1°C
Accuracy	±0.1% F.S. + 1 digit	±0.15% F.S. + 1 digit
Stability	±0.5°C	±0.5°C
Well Dia	25 mm	25 mm
Immersion Depth	110 mm	190 mm
Thermowell (Interchangeable)	Single hole to suit ¼" & ½" Probes	Single hole to suit ¼" & ½" Probes

SEMI
PORTABLE

High Temperature Dry Block Calibrator

1200 HN

Ideal for Steel, Glass, Metallurgical Industries, Cement Plants, Refineries, Fertilizer Plants, Thermal Power Stations etc.

Stable High Temperature Source (1200°C) for Calibration of Multiple (upto 6) Sensors at High Temperature

Range	300°C to 1200°C
Resolution	1°C
Accuracy	Better than $\pm 3^\circ\text{C}$
Stability	Better than $\pm 0.5^\circ\text{C}$
Well Dia	45 mm
Immersion Depth	150 mm
Multihole Thermowell	4 x 7 mm + 3 x 9 mm or to suit
RS-232 Computer Interface	Optional
Calibration Management Software	'Caltemp' Software as Optional

Very High Temperature Dry Block Calibrator

1500 HN

Ideal for Steel, Glass, Ceramic, Semi-Conductor Industries etc. for Calibration of noble Metal Thermocouples Type R / S / B etc. Fast, Stable & Accurate.

Semi-Portable with Castor Wheels

Range	500°C to 1500°C
Resolution	1°C
Accuracy	$\pm 0.5\%$ of Span *
Stability	$\pm 2^\circ\text{C}$
Ceramic Dry Block Dia	55 mm
Probe Immersion Depth	250 mm
Interchangeable Thermowells	7 mm, 11 mm, 15 mm
RS-232 Computer Interface	Provided
Calibration Management Software	'Caltemp' Software as Optional

*In Comparison Mode, much higher Accuracies can be achieved.

HEAVY
DUTY

SPECIALITY PRODUCTS

Micro Oil Bath

MOB 250

Ideal for Liquid-in-Glass Thermometers & Bi-Metal Thermometers / RTD Calibration

Site Calibration of Multiple / Multi-type / ODD Shaped Sensors (Lid / Probe holder can be designed to suit)

Range	20°C above Ambient to 250°C
Resolution	0.1°C
Accuracy	±0.6°C
Stability	±0.2°C
Working Chamber Dia	95 mm
Working Chamber Depth	170 mm
Chamber Capacity	1500 mm
Medium	Special Silicon Oil
Housing / Mounting	Bench-top



STIRRED
BATH (OIL)

STIRRED
BATH
(POWDER)

Fluidized Bath

FB-06S / L

Ideal for Steel, Glass, Ceramic Semi-Conductor Industries etc. for Calibration of noble Metal Thermocouples Type R / S/ B etc.

Suitable for Multiple / Multi-type odd shaped Sensors (Large Chamber Dia)

Fast, Stable & Accurate.

Semi-Portable with Castor Wheels



Range	20°C above Ambient to 600°C
Resolution	1°C
Accuracy	±1.5°C
Stability	±0.5°C
Working Chamber Dia	155 mm / 225 mm
Immersion Depth	250 mm / 400 mm
Medium	Aluminium Oxide Powder
Air Pressure*	1 to 1.5 Kg/cm2
Air Flow	25 LPM / 45 LPM

* Dry Compressed Air required (@ 7 Bar

BLACK BODY CALIBRATION SOURCE

BBLM/MH
SERIES



Ideal for
**INFRARED PYROMETER
CALIBRATION**

BBSD
SERIES



Salient Features

Circuit Design, Layout & Components as per "CE" Norms

Ideal for Non-Contact Pyrometer Calibration

- Portable, Table-top / Bench-top Models
- Low, Medium, High, Very High & Dual Chamber Models
- High Emissivity, Wide Aperture
- Excellent Accuracy & Stability
- Auto-tune PID Controller
- Low Power Consumption
- Optional RS-232 Interface & Calibration Management Software

Specifications

Models	BBSL LOW TEMPERATURE	BBSM MEDIUM TEMPERATURE
Range	10°C above Ambient to 350°C	20°C above Ambient to 600°C
Emissivity	0.98	0.98
Accuracy	Within 0.5% F.S. (Min. 1°C)	Within 0.5% F.S. (Min. 2°C)
Resolution	0.1°C	1°C
Stability	±0.5°C	±0.5°C
Aperture Size (Dia)	25 mm	25 mm

Model	BBSH HIGH TEMPERATURE	BBSD DUAL CHAMBER MODEL
Ranges	500°C to 1200°C	50°C to 300°C (Chamber 1); 250°C to 600°C (Chamber 2)
Emissivity	0.98	0.98
Accuracy	Within 0.5% F.S. (Min. 3°C)	Within 0.5% F.S. (Min. 1°C) (Chamber 1); Within 0.5% F.S. (Min. 2°C) (Chamber 2),
Resolution	1°C	0.1°C; 1°C
Stability	±1.5°C	±0.5°C
Aperture Size (Dia)	25 mm	25 mm

HAND PUMPS - PNEUMATIC

- Compact, Light Weight, Hand Operated
- Combined Vacuum & Pressure Pump with Pressure / Vacuum Changeover option
- Generation (Range) of Pressure upto 2 / 10 / 25 / 35 / 40 / 60 bar & Vacuum upto 0.9 bar
- Fine Adjustment Vernier to realize upto 0.05 / 1 mbar Resolution / Sensitivity
- Very Low Leakage rate
- Flexible Nylon Hose (1 Meter) with Swivel Adaptor to connect devices under test
- Test Connection Port : 1/4" (F) BSP
- Gauge / Indicator Connection Port : 3/8" (F) BSP



PHP 2



PHP 10
PHP 25
PHP 35
PHP 40



PHP 60

Salient Features

Models	PHP 2	PHP 10 / 25 / 35 / 40 / 60
Type	Very Low Pressure	Low & Medium Pressure
Ranges	-0.90 Bar Vacuum to 2 bar	-0.90 Bar Vacuum to 10 upto 60 bar
Sensitivity / resolution	0.05 mBar / 0.5 mmWC	1 mBar
Leakage Rate	Very low	Very low
Operation	Scissor action	Scissor action
Adjustment	Fine Adjustment Vernier	Fine Adjustment Vernier
Advantage	Suitable for Very Fine Increments (better than 0.5 mmWC) of Pressure with inbuilt Volume Chamber & Precise Fine Adjustment	—

HAND PUMPS - HYDRAULIC

- Compact, Light Weight, Hand Operated
- Ranges : Upto 200 / 350 / 700 / 1000 bar
- Fine Adjustment Vernier with Open / Close Release Valve for small incremental Pressure readings
- Test Connection Port : 1/4" (F) BSP
- Gauge / Indicator Connection Port : 1/4" (F) BSP (for HHP 200/350)
3/8" (F) BSP (for HHP 700/1000)
- Medium : Oil. (Water Model available as optional).
- Oil Reservoir Material : Transparent Acrylic
- Reservoir Capacity : 100 cc

**OEM
PRODUCT**



Salient Features

Models	HHP 200 / 350	HHP 700 / 1000
Type	Medium Pressure	High Pressure
Ranges	0 to 200 / 350 bar	0 to 700 / 1000 bar
Medium	Oil (Water - optional)	Oil (Water - optional)
Cubic Capacity	100 cc	100 cc
Operation	Scissor action	Scissor action
Adjustment	Fine Adjustment Vernier	Fine Adjustment Vernier

PRESSURE CALIBRATORS - HANDHELD

Accuracy $\pm 0.1\%$ F.S.



Suitable for
MARINE
APPLICATIONS

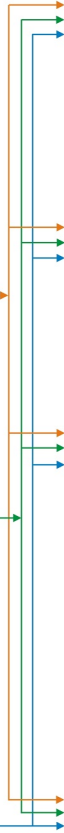


APPROVED

Accuracy $\pm 0.05\%$ F.S.



Accuracy $\pm 0.025\%$ F.S.



PNEUMATIC

Range : 2 bar



Ranges upto 60 bar



HYDRAULIC

Ranges upto 350 bar



Ranges upto 1000 bar

Salient Features

Ideal Lab / Site Tool for checking & Calibration of Pressure / Differential Pressure Gauges / Switches / Transmitters / Receiver Gauges / Loops etc.

- Several Models / Variants
 - Portable / Compact / Handheld
 - Low, Medium & High Accuracy Models
 - Lab, Field & Site Calibration Standards
- Pneumatic / Hydraulic Versions
- Touch Membrane Keypad
- Selectable Multiple Engineering Pressure Units
- Switch Test Capability & Zero Offset facility
- Audio & Visual Alarms for Over Pressure
- Pressure Transducer - all Media compatible with SS116
- Matching External Pneumatic / Hydraulic Hand Pump & Accessories
- Automatic Temperature Compensation (0 to 50°C) (Higher Accuracy Models)
- With / Without RS-232 Computer Interface & 'Calpress' Calibration Software

Specifications

Models	MPCE-P	PNEUMATIC	MPC-P / MPC-P+	PNEUMATIC
Ranges	-0.85 to 2 & upto 60 bar		-0.85 to 2 & upto 60 bar	
Accuracy *	±0.1% F.S.		±0.05% F.S. / ±0.025% F.S.	
Resolution	Minimum 4½ digits		Minimum 5 digits	
Display	2 Line 16 Characters LCD		2 Line 16 Characters LCD	
Engineering Units	MPa, atm, bar, kg/cm ² , mH ₂ O, psi, inHg, ftH ₂ O, kPa, inH ₂ O, mmHg, cmH ₂ O		bar, psi, kg/cm ² , kPa, MPa, mmHg, atm, mH ₂ O, inHg, ftH ₂ O, cmH ₂ O, Pa, mbar	
mA Input	0 to 25 mA DC		50 mA (Active Loop); Load Resistance : 800 Ω 25 mA (Passive Loop) (MPC-P+)	
Volt Input			0 to 30V DC	
Switch Test	Provided		Provided	
Over Pressure Alarm	105% FS (Audio / Visual)		120% FS (Audio / Visual)	
Pressure Generation	Thro' Matching Pneumatic Hand Pump with Fine Adjustment Vernier & Release Valve		Thro' Matching Pneumatic Hand Pump with Fine Adjustment Vernier & Release Valve	

Models	MPCE-H	HYDRAULIC	MPC-H / MPC-H+	HYDRAULIC
Ranges	0 to 70 upto 700 bar		0 to 70 upto 700 bar	
Accuracy *	±0.1% F.S.		±0.05% F.S. / ±0.025% F.S.	
Resolution	Minimum 4½ digits		Minimum 5 digits	
Display	2 Line 16 Characters LCD		2 Line 16 Characters LCD	
Engineering Units	MPa, atm, bar, kg/cm ² , mH ₂ O, psi, inHg, ftH ₂ O, kPa		bar, psi, kg/cm ² , kPa, MPa, atm, mH ₂ O, inHg, ftH ₂ O	
mA Input	0 to 25 mA DC		50 mA (Active Loop); Load Resistance : 800 Ω 25 mA (Passive Loop) (MPC-H+)	
Volt Input			0 to 30V DC	
Switch Test	Provided		Provided	
Over Pressure Alarm	105% FS (Audio / Visual)		120% FS (Audio / Visual)	
Pressure Generation	Thro' matching Hydraulic Hand Pump with Fine Adjustment Vernier & Release Valve		Thro' matching Hydraulic Hand Pump with Fine Adjustment Vernier & Release Valve	

PRESSURE CALIBRATORS - HANDHELD TYPE

TYPICAL MODELS

MPCE-P / MPCE-H SERIES (Accuracy : $\pm 0.1\%$ F.S.)

PNEUMATIC



Range 2 bar

PNEUMATIC



Ranges upto 60 bar

HYDRAULIC



Ranges 200/350 bar

HYDRAULIC



Ranges 700/1000 bar

MPC-P/MPC-H SERIES (Accuracy : $\pm 0.05\%$ F.S.)

PNEUMATIC



Range 2 bar

PNEUMATIC



Ranges upto 60 bar

HYDRAULIC



Ranges 200/350 bar

HYDRAULIC



Ranges 700/1000 bar

MPC-P+ / MPC-H+ SERIES (Accuracy : $\pm 0.025\%$ F.S.)

PNEUMATIC



Range 2 bar

PNEUMATIC



Ranges upto 60 bar

HYDRAULIC



Ranges 200/350 bar

HYDRAULIC



Ranges 700/1000 bar

PRESSURE CALIBRATORS - BENCH-TOP / BENCH MOUNTED

Salient Features

- Several Variants
 - Bench-top / Panel Mounted Models
 - Medium & Higher Accuracy Models
 - Lab, Field & Site Calibration Standards
- Pneumatic / Hydraulic Versions
- Large Graphic Display
- Touch Membrane Keypad
- 15 Selectable Multiple Engineering Pressure Units
- Switch Test Capability & Zero Offset facility
- Audio & Visual Alarms for Over Pressure
- Pressure Transducer - all Media compatible with SS116
- Matching External Pneumatic / Hydraulic Hand Pump & Accessories
- Automatic Temperature Compensation (0 to 50°C) (Higher Accuracy Models)
- With / Without RS-232 Computer Interface & 'Calpress' Calibration Software



Specifications

Models	MPC-B/MPC-B+	BENCH-TOP
Ranges	Pneumatic : -0.85 to 2 upto 40 bar (or) Hydraulic : 0 to 70 upto 700 bar	
Accuracy	$\pm 0.05\%$ F.S. / $\pm 0.025\%$ F.S.	
Resolution	Minimum 5 digits	
Display	Large Graphic Display	
Switch Test & Loop Supply	Provided	
	DC Current Measurement (upto 50 mA), DC Voltage Measurement (Max. 30V)	
	Matching Hand Pumps with Vernier	
	15 selectable Engineering Pressure Units	

Models	MPC-B/MPC-B+	PANEL MOUNTED
Ranges	Pneumatic : -0.85 to 2 upto 40 bar (or) Hydraulic : 0 to 70 upto 700 bar	
Accuracy	$\pm 0.05\%$ F.S. / $\pm 0.025\%$ F.S.	
Resolution	Minimum 5 digits	
Display	Large Graphic Display	
Switch Test & Loop Supply	Provided	
	DC Current Measurement (upto 50 mA), DC Voltage Measurement (Max. 30V)	
	Matching Hand Pumps with Vernier	
	15 selectable Engineering Pressure Units	

PRESSURE CALIBRATORS - PORTABLE

PPC-P
SERIES



Suitable for
MARINE
APPLICATIONS



DNV
APPROVED

Ideal for
FIELD / SITE
CALIBRATION

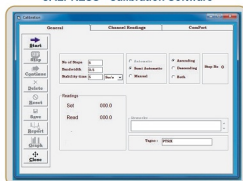
PPC-D
SERIES



PPC-H
SERIES



CALPRESS - Calibration Software



Calpress is a dedicated & cost effective Calibration Software which enables & supports Automatic / Semi-Automatic Calibration thro' our Pressure Calibrators - Handheld / Portable / Bench-top / Bench Mounted Models.

Salient Features

Ideal Lab / Site Tool for checking & Calibration of Low Ranges of Pressure / Differential Pressure Gauges / Transmitters / Indicators, Receiver Gauges, Control Valves, Pressure Transducers / Loops etc. - in Industrial & Marine Applications

- Several Models/Variants
 - Portable/Compact
 - Basic/Advanced Models with High/Very High Accuracies
 - Lab, Field & Site Calibration Standards
- Sturdy Trendy Casing
- Pneumatic / Hydraulic / Dual Types
- Large Graphic Display
- Touch Membrane Keypad
- 15 Selectable Multiple Engineering Pressure Units
- Switch Test Capability & Zero Offset facility
- Audio & Visual Alarms for Over Pressure
- Pressure Transducer - all Media compatible with SS116
- Built-in - Pneumatic / Hydraulic Hand Pump & Accessories
- Automatic Temperature Compensation (0 to 50°C) (in High Accuracy Models)
- With / Without RS-232 Computer Interface & 'Calpress' Calibration Software

Specifications

Models	PPC-P / PPC-P+	PNEUMATIC
Range	-0.85 to 2 / 7 / 10 / 20 bar	
Accuracy *	±0.05% F.S. / ±0.025% F.S.	
Resolution	Minimum 5 digits	
Engineering Units	MPa, atm, bar, kg/cm ² , mH ₂ O, psi, inHg, ftH ₂ O, kPa, inH ₂ O, mmHg, mbar, cmH ₂ O, mmH ₂ O, Pa	
Switch Test & Loop Supply	Provided	
	DC Current Measurement (upto 50 mA), DC Voltage Measurement (Max. 30V), Pressure generation thro' Priming Pump & Fine Adjustment Vernier, Inbuilt Battery & Charger	

Models	PPC-H / PPC-H+	HYDRAULIC
Range	0 to 200 / 400 bar	
Accuracy *	±0.05% F.S. / ±0.025% F.S.	
Resolution	Minimum 5 digits	
Engineering Units	MPa, atm, bar, kg/cm ² , mH ₂ O, psi, inHg, ftH ₂ O, kPa, inH ₂ O, mmHg, mbar, cmH ₂ O, mmH ₂ O, Pa	
Switch Test & Loop Supply	Provided	
	DC Current Measurement (upto 50 mA), DC Voltage Measurement (Max. 30V), Pressure generation thro' Priming Pump & Fine Adjustment Vernier, Inbuilt Battery & Charger	

Models	PPC-D / PPC-D+	DUAL
Ranges	Pneumatic : -0.85 bar Vacuum to 20 bar & Hydraulic : 0 to 400 bar	
Accuracy *	±0.05% F.S. / ±0.025% F.S.	
Resolution	Provided	
Engineering Units	MPa, atm, bar, kg/cm ² , mH ₂ O, psi, inHg, ftH ₂ O, kPa, inH ₂ O, mmHg, mbar, cmH ₂ O, mmH ₂ O, Pa	
Switch Test & Loop Supply	Provided	
	DC Current Measurement (upto 50 mA), DC Voltage Measurement (Max. 30V), Pressure generation thro' Priming Pump & Fine Adjustment Vernier, Inbuilt Battery & Charger	

Also available Model : **PPC-PL** with Ranges : ±2000 / ±5000 / ±8000 / 10000 mmWC; Accuracy : ±0.075% F.S.

DEAD WEIGHT TESTERS - HYDRAULIC

Bellows / Hanging Type

HIGH
PRECISION



NEW

H6600N /
H6900N Series

DWTCal Software

DWTCal

Temperature & Gravity Corrections
Master Inst Details

Tag: Model No:

SI No: Range: To

Description: Accuracy: % of FS

Manufacturer: Ser No:

Ref Tag: Cal date:

Since 1972

SINo	Applied Pressure bar	Equivalent Pressure psi	Indicating Pressure psi	Deviation psi	Remarks
1	0	0.0000	0.0000	0.0000	PASS
2	1	14.5018	14.5000	-0.0018	PASS
3	2	29.0035	29.0000	-0.0035	PASS
4	3	43.5053	43.5051	-0.0002	PASS
5	4	58.0070	55.8000	26.9530	FAIL
6	5	72.5087	72.5000	-0.0087	PASS
7	6	87.0104	87.2572	0.2868	PASS
8	7	101.5122	101.0424	-0.4698	PASS
9	8	116.0139	116.0120	-0.0019	PASS

New Edit Save Cancel

Del Find Close

(Gauge shown above is not part of the standard equipment)

Salient Features

- Single / Dual Piston Models
- Hydraulic Models (Medium : Oil)
Available in various Accuracy levels ($\pm 0.025\%$ / $\pm 0.015\%$ / $\pm 0.01\%$ Reading)
- Traceable to International Standards
- $\pm 0.01\%$ Reading Accuracy also available - Consult us
- Pressure generation direct via Ram Screw & Priming Pump
- Adjustable Foot Knob & Spirit Level
- Calibrated to Standard Gravity (Customer specific Gravity adjustment can also be done optionally)
- Piston Calibrated thro' "Cross Floating Techniques"
- Weight Sets available in Bar, Kg/Cm³, PSI Engineering Units (Other Units can be supplied on request)

Specifications

Series	H6900N
Ranges	1000 / 1100 / 1200 bar (Also available in psi or Kg/Cm ²)
Piston	Single / Dual
Accuracy	$\pm 0.015\%$ / $\pm 0.01\%$ of Reading (upto 1000 bar)
PCU	Tungsten Carbide Piston & Matching Hardened Cylinder
Weight Set	Stainless Steel (Non-Magnetic)
Test Port Connection	½" BSP (F) Swivel
Certification	Calibration Certificate from NABL Accredited Laboratory (as per ISO/IEC 17025:2005)
Traceability	International Standards
Software	DWTCal Software

Series	H6600N
Ranges	1000 / 1200 bar (Also available in psi or Kg/Cm ²)
Piston	Single / Dual
Accuracy	$\pm 0.025\%$ of Reading
PCU	Tungsten Carbide Piston & Matching Hardened Cylinder
Weight Set	Stainless Steel (Non-Magnetic)
Test Port Connection	½" BSP (F) Swivel
Certification	Calibration Certificate from NABL Accredited Laboratory (as per ISO/IEC 17025:2005)
Traceability	International Standards
Software	DWTCal Software (as Optional)

DEAD WEIGHT TESTERS - HYDRAULIC

H6900, H6600, H6000, H3000 Series

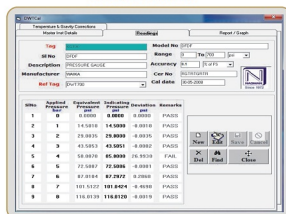
H6900
H6600



H6000
H3000



DWTCal Software



MOTORIZED



PORTABLE



(Gauges shown above are not part of the standard equipment)

Salient Features

- Single / Dual Piston
- Hydraulic - Oil operated
- Available in various Accuracy levels ($\pm 0.1\%$ / $\pm 0.05\%$ / $\pm 0.025\%$ / $\pm 0.015\%$ Reading) - Traceable to International Standards
- $\pm 0.01\%$ Reading Accuracy also available - Consult us
- Pressure generation direct via Ram Screw & Priming Pump
- Adjustable Foot Knob & Spirit Level
- Calibrated to Standard Gravity (Customer specific Gravity adjustment can also be done optionally)
- Piston Calibrated thro' "Cross Floating Techniques"
- Weight Sets available in bar, Kg/Cm³, psi Engineering Units (Other Units can be supplied on request)
- Portable & Motorized Models

Specifications

Series	H6900	H6600
Ranges	Upto 700 bar	Upto 700 bar
Piston	Single / Dual	Single / Dual
Accuracy	$\pm 0.015\%$ of Reading	$\pm 0.025\%$ of Reading
PCU	Tungsten Carbide Piston & Matching Hardened Cylinder	Tungsten Carbide Piston & Matching Hardened Cylinder
Weight Set	Stainless Steel (Non-Magnetic)	Stainless Steel (Non-Magnetic)
Test Port Connection	½" BSP (F) Swivel	½" BSP (F) Swivel
Certification	Calibration Certificate from NABL Accredited Laboratory (as per ISO/IEC 17025:2005)	Calibration Certificate from NABL Accredited Laboratory (as per ISO/IEC 17025:2005)
Traceability	International Standards	International Standards
Software	DWTCaI Software (standard)	DWTCaI Software (optional)

Series	H6000 / H3000	PORTABLE / MOTORIZED
Ranges	Upto 700 bar	Upto 700 bar
Piston	Single / Dual	Single / Dual
Accuracy	$\pm 0.05\%$ / $\pm 0.1\%$ of Reading	$\pm 0.1\%$ / $\pm 0.05\%$ / $\pm 0.025\%$ / $\pm 0.015\%$ of Reading
PCU	Hardened Special Steel Piston & Matching Cylinder	Hardened Special Steel Piston & Matching Cylinder
Weight Set	Phosphated Mild Steel / Stainless Steel	Stainless Steel (Non-Magnetic)
Test Port Connection	½" BSP (F) Swivel	½" BSP (F) Swivel
Certification	Traceable Calibration Certificate	Traceable Calibration Certificate
Traceability	International Standards	International Standards
Remarks		Inbuilt Hand Pump & Fine Adjustment Ram Screw

DEAD WEIGHT TESTERS - PNEUMATIC

P8000
P8600



COMPOUND DEAD WEIGHT TESTERS (VACUUM & PRESSURE)

P8000-SP-1/2

VACUUM



PRESSURE



(Gauges shown above are not part of the standard equipment)

Salient Features

- Single Piston
- Pneumatic - Air operated
- Available in various Accuracy levels ($\pm 0.05\%$ / $\pm 0.025\%$ Reading)
 - Traceable to International Standards
- Pressure generation direct via Ram Screw & Priming Pump
- Adjustable Foot Knob & Spirit Level
- Calibrated to Standard Gravity (Customer specific "Gravity Adjustment" can also be done optionally)
- Weight Sets available in Bar, Kg/Cm³, PSI Engineering Units.
 - (Other Units can be supplied on request)
- Portable & Motorized Models

Specifications

Series	P8000	P8600
Ranges	0.5 to 35 bar *	0.5 to 35 bar *
Piston	Single	Single
Accuracy	$\pm 0.05\%$ of Reading	$\pm 0.025\%$ of Reading
PCU	Hardened Special Steel Piston & Matching Cylinder	Hardened Special Steel Piston & Matching Cylinder
Weight Set	Stainless Steel (Non-Magnetic)	Stainless Steel (Non-Magnetic)
Test Port Connection	½" BSP (F) Swivel	½" BSP (F) Swivel
Certification	Traceable Calibration Certificate	Calibration Certificate from NABL Accredited as per ISO/IEC 17025:2005 Laboratory
Traceability	International Standards	International Standards
Remarks	Inbuilt Hand Pump & Fine Adjustment Ram Screw. Air / Gas operated.	Inbuilt Hand Pump & Fine Adjustment Ram Screw. Air / Gas operated.

* External Pressure Source (for Ranges above 5 bar) to be provided by customer.

Compound Dead Weight Testers

Salient Features

- Single Piston
- Media : Air/Gas operated
- Fine Adjustment - Ram Screw Design
- Adjustable Foot Knob & Spirit Level

Specifications

Series	P8000-SP-1/2	VACUUM & PRESSURE
Ranges	-0.85 to 1 bar	
Accuracy	0.05% of reading (indicated pressure)	
PCU	Hardened Special Steel Piston & Matching Cylinder	
Weight Set	Stainless Steel (Non-Magnetic) & Aluminium Weights for Low/Initial Ranges	
Test Port Connection	½" BSP (F) Swivel	
Certification	Traceable Calibration Certificate	
Traceability	International Standards	

COMPARISON TESTERS

GLIGCH
SERIES

HYDRAULIC



PORTABLE

HYDRAULIC



PCP
SERIES

PNEUMATIC



(Gauge / Indicator shown above are not part of the standard equipment)

Salient Features

- Compact & Easy to carry for Lab & Field use
- Budget Solutions
- Hydraulic & Pneumatic Types
- Hydraulic Ranges : 0 to 250 bar upto 1400 bar - Medium : Oil
- Pneumatic Range : -0.95 to 4 bar - Medium : Air
- Very Low Maintenance Cost
- Priming Pump with Fine Adjustment Vernier for Incremental Pressure generation
- Adjustable Foot

Specifications

Series	GCL 250 SP	GCH 700 SP	HYDRAULIC
Ranges	250 bar	700 bar	
Type	Screw Pump	Screw Pump	
Pressure generation	Priming Pump for initial pressures & Screw RAM Pump for high pressures	Priming Pump for initial pressures & Screw RAM Pump for high pressures	
Test Port Connection	1/2" BSP (F) Swivel	1/2" BSP (F) Swivel	
Medium	Oil / Water *	Oil / Water *	

Series	GCH 1000 SP	GCH 1400 SP	HYDRAULIC
Ranges	1000 bar	1400 bar	
Type	Screw Pump	Screw Pump	
Pressure generation	Priming Pump for initial pressures & Screw RAM Pump for high pressures	Priming Pump for initial pressures & Screw RAM Pump for high pressures	
Test Port Connection	1/2" BSP (F) Swivel	1/2" BSP (F) Swivel	
Medium	Oil / Water *	Oil	

* Water Operated Models are available as optional.

Series	PCP Series	NEW	PNEUMATIC
Ranges	-0.95 to 4 bar		
Type	Screw Pump		
Pressure generation	Screw RAM Pump		
Test Port Connection	1/4" BSP(M) Adaptor & 3/8" BSP (M) Adaptors – 1 No. each.		
Medium	Air		

CALIBRATION TEST BENCHES / WORKSTATIONS



CORNER TYPE TEST BENCH SYSTEM

Nagman Calibration Test Benches are the ultimate **"Calibration Solutions"** for a variety of Industrial Applications. Each Test Bench is **"custom-made"** to meet specific user requirements.

Offering versatility and precision these Test Benches – complementing scores of **Field/Site Calibrators / Test & Measuring Instruments** – are ideal for **Centralized / Site Laboratories and Workshops** in need of **"Multi-Product / Multi Parameter"** Testing / Calibration that meets the highest industry standards, both during periodic / routine maintenance & (or) annual shutdown periods.

A wide range / variety of Calibration / Test modules – which generally are higher in Accuracy/Stability than the Field/Site Calibrators, Test & Measuring Instruments – can be fitted in these Test Benches creating a **highly flexible system** that is both functional and easy to use. Further expansion can be achieved by adding more modules in **"Blank" Spaces** provided!

Designed Ergonomically, these Test Benches **can be used by one or more operators** & are amenable/adaptable for **"Multi-tasking"**.

In the "Climate Controlled" Central Laboratories, the variety of Modules fitted in the Test Benches perform optimally, offering Reliable Calibration/Test Results – **accepted per ISO Standards**.

Fitted Calibration modules cover **"Electrical / Electronic Signal, Temperature & Pressure"** (Measurement & Generation) Applications. General Utilities like **AC/DC Power Supplies, & Test / Measuring Calibration Instruments** like Multifunction Calibrators, DMMs, Oscilloscopes, Function / Frequency Generators, Decade Resistance Box modules – can also be fitted into the Bench. Functions are clearly defined on each module and a competent Technician will quickly master the operation of the system without Training or constant reference to Manuals.

A Complete Calibration Laboratory in **"One Integrated"** Test Bench or in **"Multiple Dedicated"** Test Benches.

Each Test Bench is **built for the end user's designated applications**, with Standard Modules capable of **Calibrating Multiple Instruments and Devices**, and add-ons or modifications to cover user-specific requirements.

Nagman Test Bench Modules – optionally – can be integrated by a common **Calibration Software** which enables perform **Manual / Semi-Automatic & Automatic Calibration Routines & Store data** for future reference.

Nagman is offering Test Benches / Calibration Work Stations (dedicated) to suit **Temperature or Pressure or Electrical / Electronic (Signal) Parameters** and/or a **"Multi-function / Multi-parameter"** Test Bench to cover all these parameters.

These Test Benches enable Test & Calibrate :

- **Pressure** : Gauges, Calibrators, Transducers, Transmitters, Indicators, Switches, Valves I/P, P/I Converters, etc. -- Both Hydraulic & Pneumatic.
- **Temperature** : Sensors, Indicators, Thermocouple and RTDs – Probes / Assemblies / Transmitters, Calibrators, Thermistors, Recorders, Switches etc.
- **Electrical/Electronic** : V/A Meters, Multimeters, AC/DC Signal Sources, Clamp Meters, Tachometers, Ohmmeters, Decade Boxes, Power Supplies, Multifunction Calibrators, Frequency / Signal Generators, Oscilloscopes, Frequency Meters, Timer Counters etc.

About **1500+ Nagman Calibration Test Benches** are being used in **Centralized Test Facilities / Laboratories (including ISO/IEC 17025 Accredited Calibration Labs)** across a Wide Spectrum of Industries around the world, providing these customers with high performance systems for the necessary applications.

Popular Industries which use our Test Bench Systems include Chemical, Petrochemical, Refineries, Power Generation (Thermal, Gas, Nuclear & Hydro), Oil & Gas, Manufacturing, Automation, Automotive, Aeronautics, Cement, Steel, Glass & other Process Industries.

**Primary Standard
Pressure Calibration Test Bench**

SYSTEM 1100



- for Primary Level / Precision Calibration & Testing of Pneumatic, Electro-Pneumatic & Hydraulic Pressure Instruments.

**Secondary Standard
Pressure Calibration Test Bench**

SYSTEM 3600



- for Calibration & Testing of Pneumatic, Hydraulic & Electronic Process Instruments

Electrical & Electronics Calibration Test Bench

SYSTEM 5000



- for Calibration & Testing of Electrical & Electronic Instruments and equipments including Power & Energy Meters, mV, mA, Ohm & Frequency Meters / Devices, Thermocouple & RTD Indicators / Devices and Electronic Circuits Testing

Temperature Calibration Test Bench

SYSTEM 7000



for bulk / simultaneous checking & calibration of Temperature Devices including Thermocouples, RTDs, Temperature Switches, Temperature Transmitters / Controllers / Recorders etc.

**Multifunction / Multiparameter Calibration
Test Bench Workstation**

SYSTEM 9000



Combination of Temperature, Pressure & Electrical/Electronic parameters in a single Test Bench System. Automatic Testing & Calibration of above mentioned Measuring Instruments can be performed by integrating our powerful "Calman+" Software

Student / Teacher Trainer Systems

E3000 / E6000 / E9000 SERIES



New Generation Engineering & Industrial / Vocational Training Systems

MOBILE CALIBRATION SYSTEM / MARINE TRAINER KIT

MOBICAL SERIES

Temperature, Pressure and/or Electrical & Electronics Modules mounted in rack, placed inside Mobile (sturdy) Trolley case, ready for use as Table-top Unit. (Entire Rack can also be removed & placed on top of Laboratory Table)

TYPICAL CONFIGURATION OF MODULES

Electrical & Electronics

Mobical EE

- Function Generator
- 5½ digit Digital Multimeter
- Multifunction Calibrator
- Decade Resistance Box
- Variable AC & DC (Programmable) Power Supplies
- Power Supply for Unit Under Test

Pressure & Temperature

Mobical PT

- Pressure Indicator (*Various Ranges offered*)
Pneumatic : -0.85 to 2 upto 60 Bar & Hydraulic 0 to 70 upto 700 bar
- Built-in / External Hand Pumps
- Dual Dry Block Temperature Calibrators
- Range : -35 from Ambient to 123°C & 50 to 350°C
- Multifunction Calibration & Power Supply for Unit Under Test



Multi-parameter Trainer

(Electrical, Electronics, Pressure & Temperature)

Mobical PTES

- Dry Block Temperature Calibrators (2 Nos.)
Range : -35 from Ambient to 123°C & 50 to 350°C
- Function Generator
- 5½ digit Digital Multimeter
- Process (Multifunction) Calibrator
- Decade Resistance Box
- Variable AC & DC Power Supply for Units Under Test
- Integrated / Interfaced with a Personal Computer & foldable Touch Screen Monitor
Calibration Management Software (Calman Plus) for Automatic / Semi-Automatic Test / Calibration routines; Data Collection / Storage etc.



Note : For detailed specifications of fitted Modules, refer previous pages

SIGNAL (LOOP) CALIBRATORS

Ideal for quick Loop Checking & Calibration of Transmitters, Simulation/Measurement of mV & mA.

Compact Models • Light Weight Unit with Holster • Basic Accuracy $\pm 0.02\%$ / $\pm 0.05\%$ F.S.

Thermocouple Calibrator

Nagman 02



Measurement & Simulation
of
Thermocouple & Voltage

RTD Calibrator

Nagman 03



Measurement & Simulation
of
RTD & Resistance

Process Meter

Nagman 05+



Measurement & Simulation
of mA

Temperature Calibrator

Nagman 14+



Capability to Measure & Simulate
DC Voltage, Resistance,
Thermocouple & RTD

Voltage/Milliamp Calibrator

Nagman 15+



Capability to Measure & Simulate
DC Voltage, DC Current & Frequency

Dual LCD with white LED for backlight

Capability to perform Continuity Test &
provide Loop Supply (24 V) for Transmitter

Multifunction Calibrator

Nagman 25



Capability to Measure & Simulate
DC Voltage, DC Current, Frequency,
Resistance, Thermocouple & RTD

Dual LCD with white LED for backlight

Capability to perform Continuity Test &
provide Loop Supply (24 V) for Transmitter

Multifunction Process Calibrator

MFC 40

A 'Power Packed' Portable High Accuracy (Basic Accuracy : $\pm 0.025\%$ F.S) Instrument in a sleek & sturdy carry case, capable of Simulation & Measurement of various Process Signals including DC Voltages, DC Current, Resistance, Thermocouples & RTDs, with the capacity of In / Out Data Memory storage of 20 Values. It has 128x64 backlight Graphic Display for easy & comfortable reading.

This Process Calibrator is designed to cover maximum range in each process parameters, with highest Resolution & Accuracy.



5 digits display of Measurement & 6 digits display for Simulation

For Bulk Orders / OEM requirements write to us at support@nagman.com

CALIBRATION MANAGEMENT SOFTWARE

CALMAN *Plus*

The Nagman's **Calman Plus** (Calibration Management) Software is a powerful tool for calibration of devices in the process industries under the present day quality guidelines such as ISO 9000. The **Calman Plus** automates the process of calibration making them quicker & easier.

This Software has been developed with our experience / knowledge of the Calibration Softwares of the various reputed International Manufacturers & in the current stage of development, **Calman Plus** Software supports, in addition to Nagman's own range of Temperature, Pressure & Signal Calibrators, several world brand Calibrators, Test & Measuring Instruments & enables perform Semi-Automatic / Automatic Calibration & Certificate Generation. Our motto was "to develop a single Software which could communicate with diverse instruments" making Automatic Calibration user friendly, simpler & easier.

In addition to these listed Instruments, Nagman has the capability to develop Drivers for other Make / Model Calibrators / Instruments.

The **Calman Plus** Software Package built on Modular concept offers utmost flexibility enabling the user to choose any combination from world's leading brand Calibrators with possibility of future Add-ons (per user requirement) on Modular basis!

The unique feature of **Calman Plus** with ability to communicate with diverse instruments helps to save considerable cost on investment and being a single dedicated programme reduces chances for confusion / mistakes during calibration.

The historical data storage format of **Calman Plus** helps the User to ascertain the performance of the instrument over a period of time and enables him/her to fix-up optimum recalibration intervals for instruments.

Calman Plus has the capability to integrate the entire Calibration System in a Plant & uplink to the Centralized ERP System.

Features

- Capable of storing all information of Field Instruments in a single Database
- Stores individual calibration information of instruments
- Communicates with many instruments using RS-232 Serial Bus, also option available to calibration instruments without Serial Interface - Manually
- Maintains history of Calibration Records
- Calibration Reports in compliance with ISO 9000
- Printing of User Definable Calibration Reports
- Compatible with Microsoft Windows Platform
- Powerful Graphical Presentation
- All Screens in full colour / Help Screens
- Modular & Expandable
- Simultaneous Calibration of Temperature, Pressure or Electrical / Signal Calibrators

Calibration Report

Instrument Details

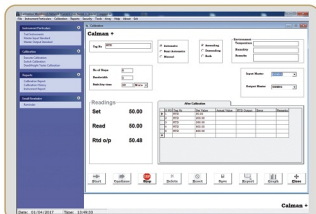
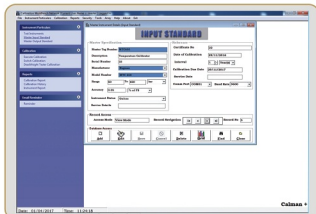
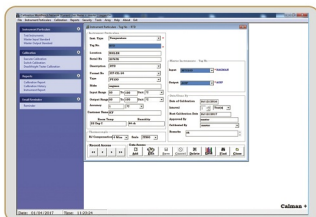
Tag No : RTD	Input Range : 50 TO 650 °C
Make : Nagman	Output Range : 50 TO 650 °C
SI No : 237879	Location : BOILER
Description : RTD	Cal Date : 01/04/17
Accuracy : ± 1 °C	Due Date : 01/04/17

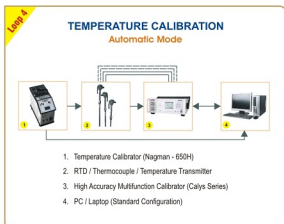
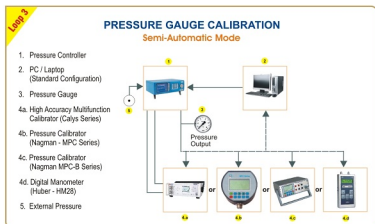
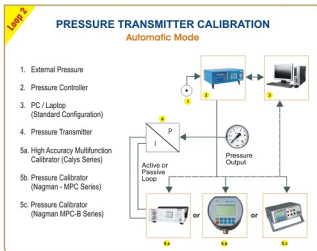
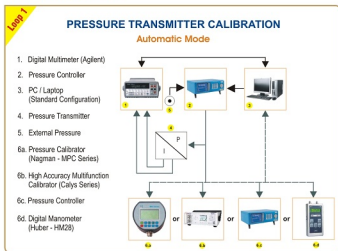
Master Details

Description	Make	SI No	Model No	Range	Accuracy	Due Date
Temperature Calibrator	Nagman	NEIGALCA02 014-2015P159	MTC 650	50 TO 650 °C	± 0.05 % of FS	29/11/17
TEMPERATURE CALIBRATOR	Nagman	NEIGALCA02 014-2015P159	MTC 650	0 TO 650 °C	± 0.05 % of FS	29/11/17

Readings

SLNo	Set Value °C	Actual Value °C	Actual Output °C	Error	Remarks
1	50.00	50.00	50.10	0.10	PASS
2	200.00	200.00	200.15	0.15	PASS
3	350.00	350.00	349.95	-0.05	PASS
4	500.00	500.00	500.02	0.02	PASS
5	650.00	650.00	650.00	0.00	PASS





CALTEMP



Caltemp is a dedicated simple & cost effective Temperature Calibration Software which enables & supports automatic / semi-automatic calibration thro' Nagman Dry Block Calibrators, Micro Oil Bath & Fluidized / Hot Cold Baths.

The Windows Platform based Software offers an easy method for calibrating, datalogging and managing your calibration data.

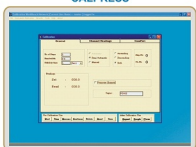
Multipoint : Upto 6 calibrations at a time are possible using the "Scanner Module" (optional). This Advance Multi-point Scanner offers a unique time saving and Automatic Solution to calibrate Multiple Temperature Sensors upto 6/8 RTD / T/C Probes etc. Simultaneously.

MTCCal



MTCCal is a dedicated & cost effective Calibration Software which enables & supports Automatic / Semi-Automatic & Manual Calibration thro' Nagman's Metcal 650 Calibrator. In Report Format, Customer Logo is user defined.

CALPRESS



The Windows Platform based Software offers an easy method for calibrating, datalogging and managing your calibration data.

Calpress is a dedicated & cost effective Calibration Software which enables & supports Automatic / Semi-Automatic Calibration thro' Nagman's Pressure Calibrators - MPC & MPC-E Series.

LEVEL TEST & CALIBRATION RIG/SYSTEM

For Primary, Interface & Total Liquid Testing & Calibration of
various Types / Models of

Level Measurement (& Control) Devices

including

Float / Displacer / Radar / Capacitance / Ultrasonic / Magnetic
- both Inbuilt & External Chamber types.



Ranges / Spans : 1000 / 2000 / 3000 / 4000 mm

Zero Offset facility for Short Span UUTs

Calibration Accuracy : $\pm 0.05\%$ F.S. or better (Min. 1 mm)

Media : Water

Single Chamber (approx. 400 mm Dia) accommodates
Reference Standard (Probe) (Precise Magnetostrictive
Probe) & upto 2 UUTs (Units Under Test)

Laser Zero Datum Setter (Transmitter & Receiver) (LTR
Series)

Simple PID Control : Console, Integral with Chamber
Assembly

4 Channel Alphanumeric Display - for UUTs with Analog (4-
20 mA) output.

Feed Pump, Control Valves - Integral with Chamber
Assembly.

Chamber Material : "Stainless Steel"/Transparent Perspex
can also be offered.

Chamber top provides "Universal" Slotted Flanges (2) to
accept/mount 2 UUTs.

Reservoir provided separately, to be connected to Feed
Pump/Drain Line thro' Flexible Hose.

Chamber Assembly, Mounted on "Wheels", enhancing
"Mobility", enabling moving to "Site" locations & locking (LTR
Series).

Manual Hydraulic / Electrically Actuated lifting arrangement
(for holding Test Chamber & height adjustment) (LTR
Series)

Stand-alone Hydrostatic Pressure Test equipment (LTR
Series)

Software enabled Data Acquisition & Printing of customized
Calibration Reports

Tests possible to be conducted : Linearity, Hysteresis, Dead
Band, Repeatability, Sensitivity & Functional Tests.

Customized Designs for OEMs.

Level Test & Calibration Rig LTR Series



Typical Models Supplied to

1. Kuwait Oil Company (KOC) Kuwait.
2. H.M.E.L., Punjab, India
Bhatinda Refinery
3. Power Technology Solutions,
Kazakhstan

Level Calibration System - Single / Dual Chamber Types



LCS
Series



LCS-D Series

Dual Chamber Model

PROCESS FLOW METER CALIBRATION SYSTEM

FLOCAL Series

Basic Calibration, using 0.2% Traceable Calibration Accuracy Master Flow Meter in 'Comparison' (Master/Slave) Mode (One or more Masters, based on the Flow Ranges/Sizes of UUT).

Calibration Accuracy Enhancement (Uncertainties upto 0.05%) thro' Gravimetric (Collection Chamber Mounted on Precision Weigh Scale) & or Pre-Calibrated Volume Chambers (for Low Volumes).



Typical Flow Meter Calibration System
supplied to
PICS Arabia, Kingdom of Saudi Arabia

Features

- Calibrates most types of Process Flow Meters (Turbine, Vortex, Coriolis Mass, Electro-Magnetic, Ultrasonic etc.) from 2% to 0.1% Accuracy Levels
- Water Media Calibration with **"Correction Factors" for other Liquids**
- Calibration of Multiple UUT's simultaneously
- Effortless / Ergonomic Clamping / Mounting System
 - Manual / Pneumatic / Hydraulic / Electrical Actuators
- Adjustable Flow Rate over the Span
- Masters : Electro-magnetic Flow Meters** - Calibration Accuracy 0.2% and/or Pre-Calibrated **Volume Chambers** - 5 Litres to 500 Litres
 - Calibration Accuracy 0.1% (or)
- Weighing Scales** (Load Cells) : 300 to 10000 Kg, High Resolution
- 1 or more Open Type **Diversers** to suit - in case Gravimetric / Pre-calibrated Volumetric Chambers are employed.
- Best Uncertainties (CMC) - upto 0.05%
- Storage Reservoirs to suit
- Pumps : One or more - to suit - Single/Multi-stage (with **VFD** for Flow Control) / Flow Control Valves
- Inline Temperature / Pressure Measurement

Specifications

- Sizes**
 - DN 6 upto DN 300
- Flow Rates**
 - From 1 LPM upto 25000 LPM
- No. of Lines**
 - 1, 2 or 3 to suit
- Calibration Campaign Time**
 - To suit, from 30 Seconds
- Display/Control Console**
 - Flow Rate, Total Flow, Start/Stop Timer etc.

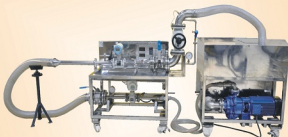
- Test Bed - Dimensions to suit - Tubular Steel, Epoxy Coated (SS Optional)
- Wetted Parts : Non-Rusting Materials to suit (SS optional)
- Collection / Volume Chambers - Stainless Steel
- Reservoir : Preferably Underground - Capacities to suit

- Spacers / Blanks - to suit
- Flow Conditioners / Straighteners - to suit
- Control Console (with 'Flocal' Software (Optional))
- Height Adjustable (Mobile) Tripod Stand to support UUTs

MOBILE FLOW METER CALIBRATION SYSTEM



SKID MOUNTED



TROLLEY MOUNTED

Compact Mobile Flow Meter Calibration Solution - for those who are limited for space & who need to 'move' the System from Site to Site for Spot Calibration - thro' 'Comparison Method' with a Pre-Calibrated Master Flow Meter

DN 6 upto DN 50/80 (Maximum Flow 1500 LPM) - System comes in 2 Types - Skid Mounted / Trolley Mounted

DN 6 upto DN 100 (Maximum Flow 2500 LPM) - System is housed in a Mobile Skid on Wheels - which can be Lifted & Placed in a Truck Chassis for Mobility & or Stationed at a chosen Site Location

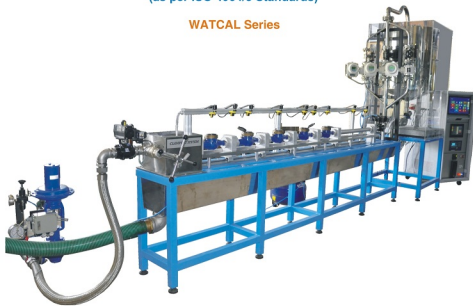
Reference Masters : Electro-Magnetic Flow Meter with Calibrated Accuracy $\pm 0.2\%$

For Enhanced Accuracy : Coriolis Mass Flow Meters with $\pm 0.1\%$ Accuracy can be used as Masters

WATER METER CALIBRATION TEST BENCH

(as per ISO 4064/3 Standards)

WATCAL Series



- Different systems to suit Domestic / Industrial / Bulk Water Meters - (Mechanical, Electrical, Ultrasonic etc.).
- Calibration of Multiple Meters/Sizes : DN 10 to DN 40 to DN 300 in 1 or more lines
- Test/Calibration Methods per ISO 4064/3 Standards:
 - **Gravimetric** : Collection Chamber(s) mounted on Weighing Scale(s) &
 - **Volumetric** : thro' pre-calibrated Volume Chambers
- Precise flow adjustment using Rotameters / Electro-Magnetic Flow Meters
- One or more pumps to suit (with VFD / Manual Throttle for Flow Control)
- Clamping : Manual / Pneumatic / Hydraulic etc.
- Flow Rates :
 - 1 LPM to 335 LPM (for Domestic Water Meter)
 - 10 LPM to 1500 M³/Hr (for Industrial Meter)

DOMESTIC GAS METER CALIBRATION TEST BENCH

(BELL PROVER TYPE)



Suitable for Testing
4 / 6 / 8 Meters
(Single Bell Prover)

GASCAL Series

Suitable for Testing
4 / 6 / 8 Meters
(Double Bell Prover)



GASCAL-Mini

Suitable for Testing 2 Meters



- A Boon for Calibration of Domestic Gas Meters - OEMs, Hotels, Hospitals & R&D Institutions.
- Flow Rates : 0.018 to 6 M³/Hr
- Suitable for Gas Meter Sizes : G1.6, G2.5, G4, G6
- Bell Prover : Capacity 20/100/200 Litres
- Accuracy : $\pm 0.2\%$ & $\pm 0.5\%$ (Traceable to ISO/IEC 17025:2005 Accredited Lab).
- Upstream/Downstream Pressure & Temperature Measurement
- D.P. Gauges (for measurement of pressure loss) : 0 to 1.0 inH₂O (0 to 250 Pa)
- Meter Clamping : Pneumatic
- Simultaneous Calibration of multiple Meters (Provision to mount 2/4/6/8 Meters)

Consult us for higher capacity Bell Provers for Calibration of Industrial / Bulk Meters.

CENTRE FOR CALIBRATION



The **Centre for Calibration (CFC) at Chennai** is an 'Independent Profit Centre', - Unit of Nagman Instruments & Electronics (P) Ltd., a pioneer and leader in the Calibration field in India.

Having manufactured and sold over **50,000 Calibrators**, **2,000 Dead Weight Tester & 1500+ Calibration Test Benches**, Nagman understands Calibration at its best and have designed the Centre to serve the diverse Calibration requirements of Large, Medium, Small Scale Industries-Effectively and Comprehensively. Our Products are **exported to 94 Countries** Worldwide.

The Centre is equipped with sophisticated Calibration Equipments both Primary & Working / Transfer Standards which are Traceable to National & International Standards. We have the **Unique Cross Float Calibration System** and **Precision Mass Balance** duly accredited by **Accreditation Body**. With our Dead Weight Tester Manufacturing capability, **total replacement of PCU & Trimming of Masses** also possible. We give your age old Dead Weight Tester a new lease of life. Facility includes **Computerized Automatic Calibration & Report generation conforming to ISO Standards**.

Our Unique Capabilities include **Calibration of Dead Weight Tester Upto 1600 bar**, **Temperature Calibration upto 1500°C**, **Black Body Calibration upto 1300°C**.

Nagman Centre for Calibration offers a wide range of **Calibration Services** covering most process parameters & serves almost every type of **Industry / Institution / Establishment**.

Nagman "Centre for Calibration" enjoys the unique distinction of obtaining **NABL Accreditation** (as per ISO/IEC 17025:2005) in Chennai & Mumbai and also offer **Traceable Calibration Services** in Chennai, Mumbai, New Delhi, Vadodara and Visakhapatnam.

Parameters Covered :

Thermal, Mechanical (Pressure, Mass, Volume, Torque, Density & Dimension), Electro-Technical and Fluid Flow.

Calibration Services offered

- NABL Accredited Calibration
- Lab / Site Calibration
- Annual Maintenance Contract
- Consultancy Services for Calibration Lab Setup
- Training Workshops on Calibration Management
- Calibrator Rental

Nagman "Centre for Calibration" is **staffed with qualified & well trained Team Leaders & Engineers** in **Laboratory Management, Internal Audit and Proficiency Testing**.

Nagman "Centre for Calibration" offers **Structured Training Workshops on "Calibration Management Techniques"** for Engineers & Technicians. This program is conducted periodically at our Chennai Lab & at customer places (for group Trainings) upon request. More than **500 Foreign Engineers** in addition to bunches of Industry personnel from India were trained at our Chennai Lab.

Adding feather to their crown, Nagman presently offers **Consultancy Services for Setting up Calibration Labs** (from concept to completion) & to avail Accreditation as per ISO/IEC 17025:2005 Standards. Nagman had completed a Project in India for NSIC, Chennai (Government Organization) and on overseas part, a **'Complete Project Package'** was done for MT Enterprises, Kingdom of Saudi Arabia, and few more Projects in India & abroad are in pipeline.



C-162, C-163, C-164 & C-1212

ACCREDITED BY NABL, INDIA
(AS PER ISO/IEC 17025:2005 STANDARDS)

List of Industries We Serve...

MAJOR

- Power - Thermal / Combined Cycle / Nuclear / Gas based / Co-generation
- Petrochemicals, Refineries, Oil & Gas
- Pulp & Paper, Cement & Sugar
- Metallurgical, Steel, Glass & Ceramic
- Fertilizer, Synthetics & Chemicals
- Picture Tube Manufactures
- Iron Ore Industries
- Air Craft Manufacturers
- Heavy Vessels Manufacturers

SMALL & MEDIUM

- Hospital & Clinical / Diagnostic Laboratories
- Analytical Laboratories
- Calibration Centres
- Battery Manufacturers
- Confectionaries
- Lighting / Switch Gear Industries
- Leather, Pen Manufactures
- Cold Storage Units / Bottling Plants Institutions
- Engineering Colleges / Technical
- Home Appliances
- Hotels / Sea Food Industries
- Building Promoters
- Computer / Cosmetics Manufacturers

HEAVY & MISCELLANEOUS

- Heavy Engineering / Automobile (& Ancillaries)
- Pharmaceutical / Cosmetic
- Textiles, Paint, Rubber & Cable Manufacturers
- Food Processing & Distilleries / Breweries
- Defence Establishments
- Boiler, Pressure Vessel Manufacturers
- Mobile Phone Manufacturers
- Oven & Furnace Manufacturers
- Plastic Industries
- Watch Manufacturers
- Contractors, Project Sites (Erection, Installation & Commissioning)

NOW AT
**CHENNAI, MUMBAI, DELHI,
VADODRA & VISAKAPATNAM**

Our Wide Range of Services...

Lab Calibration

Including "Express" (same day) Calibration

Mobile Calibration Lab

Calibration Service at your door steps

Annual Maintenance Contracts

Periodic visits on preplanned dates

Comprehensive Calibration Job Packages

Including Mobilization of Master Standards, Manpower etc.

Consultancy Services

For setting up Calibration Lab (as per ISO/IEC 17025 Standards) & obtaining of Accreditation

Calibration Training

Structured Training on Calibration Management Techniques for Technicians, Engineers & Managers - at our Calibration Centre (Lab) or at Customer's facility

Calibrator Rentals / Lease

For the first time in India, we offer Rental Services / Lease of our Portable Calibrators, Transfer Standards, Simulators, Dead Weight Testers etc. which is a boon to Project Consultants, Executants, Erection & Commissioning Contractors



What & Where We Calibrate

Parameters	List of Instruments			Calibration Facilities at			
				Chennai	Mumbai	Delhi	Vadodara & Vizag
PRESSURE							
Pressure Transmitters	Pneumatic Smart (Digital)	Electronic Differential Pressure	Electro-Pneumatic	✓	✓	✓	✓
Industrial Pressure Gauges	Calibrators Transducers	Transfer Standards Indicators	I/P, P/I Converters Recorders	✓	✓	✓	✓
Precision Pressure Gauges	Test, Standard & Master			✓	✓	✓	✓
	Switches, Regulators & Safety Valves			✓	✓	✓	✓
Manometers & Micromanometers	Single Limb Digital	U-Tube BP Apparatus	Inclined	✓	✓	✓	✓
Dead Weight Testers	Hydraulic & Pneumatic - any Make / Accuracy (upto 0.015%).			✓	✗	✗	✗
Masses & Weighing Balance	Weights, Balance (Electronic Weighing Scale)			✓	✓	✗	✗
SOUND	Sound Level Meter			✓	✓	✗	✗
LINEAR	Plug Gauges External Micrometer Measuring Pins Flush Pin Gauge	Cylindrical Setting Standards Height Gauge, Snap Gauges Vernier Caliper Micro Meter, Dial / Bore / Lever Gauge		✓	✗	✗	✗
TEMPERATURE							
RTDs	Pt / Ni / Cu			✓	✓	✓	✓
Temperature Calibrators	Dry Blocks / Stirred Liquid / Powder Baths Relative Humidity - Chambers / Labs			✓	✓	✓	✓
Temperature Transmitters	Electronic / SMART (Digital)			✓	✓	✓	✓
Temperature Gauges / Thermocouples/Appliances	Rigid Stem/Capillary (Mercury in Steel/Vapour Pressure/ Gas Filled)	Thermocouples : J, K, T, B, R, S, E, B etc.					
	Furnaces : Autoclaves, Ovens & Incubators	Temperature Indicators (Analog & Digital)					
	Precision Glass Thermometers (Liquid-in-glass)	Wet & Dry Thermometers		✓	✓	✓	✓
	Controllers / Recorders / Switches Bi-Metal / Electronic Digital etc.	Sling Psychrometers Waters Baths, Hot Plate					
HUMIDITY	Humidity Chambers & Meters			✓	✓	✗	✗
OPTICAL	IR Thermometers, Black Body Calibration			✓	✓	✗	✗
THERMAL MAPPING & VALIDATION	Autoclaves, Ovens & Incubators, Waters Baths, Furnaces			✓	✓	✗	✗
ELECTRICAL	Ammeters / Voltmeters T/C, RTD (Signal) Calibrators Frequency Indicators / Meters mV / mA Meters / Calibrators Resistance Bridges / Decade Boxes Temperature Indicators / Controllers Data Loggers / Oscilloscopes / Recorders Timers / Power Meters / High Voltage Testers / Probes	Digital Multimeters upto 6½ Digit Multifunction Calibrators Digital Panel Meters, LCR Meters DC & AC Voltage Current Sources		✓	✓	✱	✗
VOLUME	Burette, Pipette, Cylindrical Flask, Beaker, Measuring Jar, Glassware			✓	✓	✗	✗
FLOW	Viscometer, Water Meters, Flow Meters, Rotameters, Flow Cups.			✱	✱	✗	✗
OTHERS	Rotary Shakers / Tachometers (Contact Type) Counters / Stop Watches pH Indicators / Transmitters Hydrometers, Anemometer	Centrifuge, Laminar Flow Gauges Medical & Clinical Equipment Conductivity Transmitters / Meters Vibration Meter & many more		✓	✱	✱	✱

✳ Please consult us

FLUID FLOW CALIBRATION LABORATORY

Nagman's Centre for Calibration is the first Calibration Laboratory in India to be Accredited as per ISO/IEC 17025:2005 being managed by dedicated, highly qualified, trained & Competent Experts in the field of Calibration to take care of all types of Customer's specific requirements & provide solution.

Centre for Calibration is a unit of Nagman Instruments & Electronics Private Ltd., Chennai. This Calibration Lab is Accredited by NABL India to provide Calibration Services as per ISO/IEC 17025:2005 Standards. The Team consists of Qualified & NABL Empaneled Assessor, CETE Trained Auditor & Qualified Lead Assessor of ISO 9001/ISO 14001 Systems to provide Total Solutions to Calibration.



C-1212

ACCREDITED BY
NABL INDIA
as per
ISO/IEC 17025:2005
Standards

We offer a wide range of Calibration Services in Chennai & Mumbai covering Parameters viz. Thermal, Electro-Technical, Mechanical (Pressure & Vacuum, Mass, Dimension & Volume) etc. The Centre is equipped with sophisticated Calibration Equipments both Primary & Working / Transfer Standards which are Traceable to National & International Standards. Facility includes Computerized Automation Calibration & Report Generation conforming to ISO Standards. This Centre Serves covering most Process Parameters & serves almost every type of Industry / Institution / Establishment.



Our New Flow Meter Calibration Lab at Chennai - Covers Meters Sizes upto DN 400

FLOW METER CALIBRATION LAB

Nagman, in its constant endeavor to enhance its Calibration Capabilities had ventured into offering Fluid Flow (Process Flow Meter & Water Meter Calibration) for Process Industries in India.

Nagman's **Fluid Flow Calibration Laboratory** is Accredited by NABL India for performing Calibration Services (as per ISO/IEC 17025:2005 Standards).

Flow Meter Calibration Methods : Comparison / Gravimetric

Types of Process Flow Meters that can be Calibrated : Turbine, Vortex, Coriolis Mass, Electro-magnetic, Ultrasonic etc.

Accuracy : $\pm 0.1\%$ Reading.

Flow Lab (Accredited)

Liquid Mass Flow Rate	Upto 720 TPH	CMC 0.11%
Liquid Volume Flow Rate	Upto 720 M ³ /hr	CMC 0.15%
Quantity of Mass	Upto 11500 Kg.	CMC 0.04%
Quantity of Volume	Upto 11.5 M ³	CMC 0.12%
High Volume Flow Rate	Upto 1500 M ³ /hr	CMC 0.5%
Gas Volume Flow Rate	Upto 6 M ³ /hr	CMC 1.1%

Site Calibration

High Volume Flow Rate	Upto 360 M ³ /hr	CMC 1%
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Control Console

Our Mumbai Fluid Flow Calibration Lab
Accredited by NABL, New Delhi - Covers Meter Sizes upto DN 150

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