

Calibration Certificate

UNIT DESCRIPTION:

COOLING CENTRIFUGE

MODEL NO.:

C - 24 PLUS

SR. NO.:

ZHKU - 44698

CERTIFICATE NO.:

RITC - 0152/01/2022

NAME OF CUSTOMER:

Institute of Pharmacy, Nirma University

ADDRESS OF CUSTOMER:

Institute of Pharmacy, Nirma University, Ahmednagar

CALIBRATION DATE:

15.01.2022

CAL. VALIDITY:

14.01.2023

DETAILS OF EQUIPMENT USED FOR CALIBRATION

NOTE: Tick mark where as applicable.

Digital Lab Thermometer

Digital Tachometer

Digital Stop Watch

Auto Ranging R.P.M. Meter

Digital Strobe

Weight Set

Digital Temperature Indicator

Sr. No.	Description	Certified By	Instrument Id. No.	Certificate No.	Calibration Date	Validity
01	Digi. Lab. Thermo.	AUTOCAL	2151215	C2181128/T/01	13.08.2021	12.08.2022
02	Digi. Strobe	AUTOCAL	ISR-01	C21101836/P/01	27.10.2021	26.10.2022

OBSERVATIONS:

Sr. No.	Instrument Temp. Displayed (°C)	Indicator Temp (°C)	Temp. Deviation	Remark
01	32	32.1	0.1	OK

Sr. No.	Instrument Speed Displayed (RPM)	Speed Reading on Strobe	Diff. In Actual and Strobe	Remarks
01	20000	20038	038	OK
02	10000	10186	186	OK

NOTE:

1. Calibration done with R - 248 M Rotor head at 20000 rpm.
2. Calibration Traceable to national standards.
3. Overall deviation is within specified accuracy.
4. Result is related only to the item calibrated.
5. Maximum tolerance permissible is $\pm 1^\circ\text{C}$ & $\pm 5^\circ\text{C}$ whichever is applicable and RPM 2% FSD and $\pm 5\text{gm}$ to set weight

REMARKS: ACCEPTED

CALIBRATED BY: SAGAR



APPROVED BY: MANAGER Q. A.

Test Certificate

UNIT DESCRIPTION: COOLING CENTRIFUGE **MODEL NO.:** C - 24 PLUS

SR. NO.: ZHKU - 44698 **O/A. NO:** RI - 01544/22

NAME OF CUSTOMER: Institute of Pharmacy, Nirma University

ADDRESS OF CUSTOMER: Institute of Pharmacy, Nirma University, Ahmedabad

Use of good quality voltage stabilizer of **VS - 03** is a must to protect the unit against fluctuating power.
Guarantee invalid in case of Non-use of voltage stabilizer and inadequate line capacity.

ELECTRICAL SUPPLY:

VOLTAGE	230 V50Hz	SINGLE PHASE A/C LINE CAPACITY	7x20 Amps.
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VISUAL:

HOUSING SURFACE FINISH	OK	PAINT FINISH	OK	LID FITTING	OK
MACHINE STABILITY	OK	LEVELLING ON HEAD	OK	DOOR FINISH	OK
DOOR LEVEL	OK	DOOR LOCK	OK	HANDLE	-
AIR LEAKAGE	NO	FUSE	20A MCB		

CENTRIFUGE MOTOR:

MOTOR MAKE	REMI	MODEL	C-24 PLUS	SR.NO.	LOU-31830
HEAD RUN OUT	NO	TIGHTING NUT FITTING	OK	OVER CURRENT PROTECT	OK
SPEED INDICATION	OK	ZERO STAR SWITCH	OK	IMBALANCED SWITCH	OK

OTHER DETAILS:

BRAKE	OK	TIME-MAKE	REMI	RANGE	99 MIN.
CONTACTS	OK	DOOR LIMIT SWITCH	OK	SOLENOID LOCK	OK
GLOWING OF L.E.D.	OK	RELAY MAKE	-		
INVERTER MAKE	FUJI	MODEL	FRN0004C2S-7A	SR. NO.	T19A021A 0009IJ

LOAD TEST:

ROTOR HEADS			MOTOR			REMARKS
CAPACITY	MODEL	MAX. SPEED	VOLT	AMP	R.P.M.	
24x1.5ml.A.H.	R - 248 M	20000	220 V	1.68 A	20038	OK
12x15ml.A.H.	R - 244 M	18000	220 V	1.77 A	17975	OK
8x50ml.A.H.	R - 247 M	16000	220 V	2.20 A	15922	OK

REFRIGERATION:

COMPRESSOR MAKE	EMBRACO	MODEL	NEU2178GK	SR. NO.	9590A51LJP C1AD159
CONDENSER FAN MOTOR MAKE	REXNORD	SR.NO.	REC832010-A2		
DIGITAL CONTROLLER	REMI	SR. NO.	MICRO PROCESSOR	INDICATION	OK
LOWEST TEMP. WITH HEAD RUNNING ON FULL SPEED FOR 30 MIN.			-8°C	ON / OFF	OK
COMPRESSOR VIBRATION	NO	AIR CIRCULATION	OK	SAFETY THERMOSTAT	OK
REFRIGERATION SYSTEM DONE BY	ANTHONY	CHECKED BY	HEMANT	GAS	R 404a

TEMPRATURE TEST:

ROTOR	4x100ml.A.H.	MODEL	R - 241 M	
AMBIENT TEMP.	32°C			
VOLTS	220 V	TEMP. TEST	TIME	TEMP. °C
AMPS.	2.20 A	FULL LOAD	30 MIN	-8°C
R.P.M.	14500			

OBSERVATION:

CURRENT DRAWN BY COMPRESSOR STARTING	12 A	RUNNING	2.5 A
DISCHARGE PRESSURE	250 PSI	BACK PRESSURE	+14 PSI

REMARKS: ACCEPTED

DATE: 15.01.2022

TESTED BY: SAGAR

APPROVED BY: MANAGER Q. A.



CALIBRATION CERTIFICATE

FF/31-B

THERMAL DISCIPLINE

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ULR No.	CC238221200006684F		
Certificate No	C2181128/T/01	Issue Date	14/08/2021
Date of calibration	13/08/2021	Next Calibration Date	12/08/2022

Service Request Form No.	C2181128		
Calibrated For	Remi Elektrotechnik Ltd Bldg.B, Survey No.65/1, Village Valiv, Vasai (East), Dist. Palghar Maharashtra India 401208		
Date of Receipt of Instrument	06/08/2021		
Condition of Instrument on Receipt	Working	Calibration at	Lab
Environmental Conditions	Temperature	Relative Humidity	50±20 %RH
	25±4 °C		

Details of Unit Under Calibration (UUC)			
Instrument	Temperature indicator with sensor	Equipment	--
Make:	Delta Control	Equipment Id	--
Model No.:	Multi - 49	Department	--
Sr. No:	2151215	Section	--
Tag/Id. No.	2151215	Location:	--
Procedure No	WI/ASPL/CAL/TH/01	Ref. Used:	ITS-90

Range	Resolution	Accuracy/ Acceptance Criteria
(-100) to 400 °C	0.1 °C	Not Specified

Details of Standard(s) used for Calibration (Traceable to National & International Standards)				
Description	Make & Model	Serial No. & Id No	Traceability (Certificate No.)	Valid Upto
PRT Sensor With Indicator	Fluke & I:1524 , S:5616-12	I:2335036 , S: 80089 & STD/P/TH/113	ASPL, Vasai (C20121009/T/03)	04/12/2021

Measurement Result

Group : Temperature

Parameter : Temperature

Range	Test Point	Reading on UUC	Actual Reading on STD	Error	Expanded Uncertainty (±)	Coverage Factor (k)
	°C	°C	°C	°C	°C	
(-100) to 400 °C	-86	-85.3	-86.022	0.722	0.1096	2
	-40	-39.5	-40.016	0.516	0.0607	2
	-20	-19.6	-20.010	0.410	0.0607	2
	25	24.9	24.992	-0.092	0.0622	2
	100	99.8	99.987	-0.187	0.0625	2

Remark

- The reported expanded uncertainty of measurement is stated as a standard uncertainty of measurement multiplied by coverage factor "k=2" such that the coverage probability corresponds to approximately 95% confidence level.
- The measured values mentioned are the average of 5 readings.
- Measured readings have been mentioned.

Notes

- This certificate refers only to the particular item calibrated at site / laboratory.
- The calibration results reported are valid at the time of and under the stated conditions of measurement.
- Any correction in this certificate invalidates this certificate.
- This certificate shall not be reproduced except, in full without the written approval from the Laboratory.
- Calibration of UUC done by any accredited laboratories is meant for scientific and industrial purpose only. However, if used for commercial trading, additional recognition/ approval shall be complied as required by Dept. of Legal metrology, Regulatory bodies, etc.

Authorised Signatory	Prashant Jadhav Lab Incharge
Calibrated By	Prajakta Zagade Calibration Engineer



Prashant Jadhav
Authorised Signatory

---- End of Certificate ----



**CALIBRATION CERTIFICATE
MECHANICAL DISCIPLINE**

FF/31-E-C
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Certificate No.	C21101836/P/01	Issue Date	28/10/2021
Date of Calibration	27/10/2021	Next Calibration Date	26/10/2022

Service Request Form No.	C21101836		
Calibrated for	Remi Elektrotechnik Ltd (Instrumentation division) Bldg. B, Survey No. 65/1, Village Valiv, Vasai (East) Dist. Palghar Maharashtra 401208, India		
Date of Receipt of Instrument	26/10/2021		
Condition of Instrument on Receipt	Working	Calibrated at	Lab
Environmental Conditions	Temperature: 23 ± 1.5°C	Relative Humidity	50 ± 10 % RH

Details of Unit Under Calibration (UUC)			
Instrument	Stroboscope	Equipment:	NA
Make	TTPL	Equipment ID.	NA
Model	TT-5100	Department	NA
Sr. No.	1364	Section	NA
Tag/ID No.	ISR-01	Location	NA
Procedure No.	WI/ASPL/CAL/PR/07		

Range/Size	Resolution/Least Count	Accuracy/Acceptance Criteria
150 to 20000 RPM	1 RPM	Not Specified

Details of Standard(s) Used for Calibration (Traceable to National / International Standards)

Description	Make / Model	Serial No./ ID No.	Traceability (Certificate No.)	Valid upto
Digital Tachometer	Monarch / PLT200	1856742 STD/P/PR/07	Hi Tech, Chennai (HT/CC/210623-20/003)	25/06/2022

Measurement Result

Group : Acceleration, Speed & Acoustics

No.	Calibration Point	Reading On UUC	Reading On Standard	Error	(±) Expanded Uncertainty
1	150	150	149.69	0.310	1.50
2	1000	1000	1000.1	-0.10	1.50
3	5000	5000	5000.3	-0.3	1.50
4	10000	10000	10002	-2.0	5.60
5	20000	20000	20003	-3	4.00

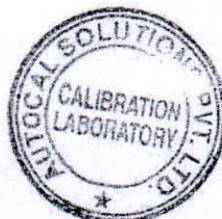
Remarks

- The reported expanded uncertainty of measurement is stated as a standard uncertainty of measurement multiplied by coverage factor "k=2" such that the coverage probability corresponds to approximately 95% confidence level.
- The Measured Values Mentioned are the average of 5 readings

Notes

- This certificate refers only to the particular item calibrated at site / laboratory.
- The calibration results reported are valid at the time of and under the stated conditions of measurement.
- Any correction in this certificate invalidates this certificate.
- This certificate shall not be reproduced except, in full without the written approval from the Laboratory.
- Calibration of UUC done by any accredited laboratory is meant for scientific and industrial purpose only however if used for commercial trading additional recognition /approval shall be compiled as a required by department of legal metrology, regulatory bodies, etc.

Authorised Signatory	Jyotindra Mehta Sr. Manager
Calibrated By	Vijay Katkade Calibration Engineer



Authorised Signatory

***** End of Certificate *****



HI TECH CALIBRATION SERVICES



CALIBRATION CERTIFICATE

Certificate No.	HT/CC/210623-20/003	ULR No.	ULR - CC215121000017633F
CUSTOMER DETAILS		DEVICE UNDER CALIBRATION DETAILS	
Name	M/s. Autocal Solutions Pvt. Ltd,	Description	Digital Tachometer
Address	Unit No. : 04, Ruby Industrial Estate PCS Ltd., Navghar, Vasai (E), Dist. Palghar 401 210.	Make	Monarch
		Model	PLT200 Mode Non - Contact
		Range	As Per Manual
		Least Count	0.001/0.01/0.1/1 RPM
Job No.	210623-20	Accuracy	± 0.01% Rdg or Least count (Whichever is Greater)
Job Receipt Date	23-Jun-2021	Identification	STD/P/PR/07
Issue Date	26-Jun-2021	Serial No.	1856742
Received Condition of DUC	Satisfactory	Location	--
ENVIRONMENTAL CONDITION		Calibration On	26-Jun-2021
Temperature	25 °C ± 2 °C	Due On	25-Jun-2022
Humidity	30 % RH to 75 % RH	Calibrated By	P. Sheeba Saraswathi
Discipline & Group	Mechanical Calibration & Acceleration, Speed and Acoustics		
Calibration Procedure	HT/WI/M/AS (Section 01) & SANAS TR 45-02 by Comparison Method		
STANDARD DETAILS			
Description	Digital Tachometer		
Identification No.	M/AS/TACHO/08 & M/AS/TACHO/04		
Certificate No.	SALPR/0653/1/20-A1 & FCRI/EQL/20-21/315		
Valid Till	08-Sept-2021 & 23-Sept-2021		

CALIBRATION RESULT

DUC Reading in RPM	Standard Reading in RPM	Error in RPM	Expanded Uncertainty in ± RPM
6.007	6.006	0.001	0.16
59.993	59.995	-0.002	0.16
100.01	100.02	-0.01	0.20
1000.2	1000.2	0.0	0.31
10002	10001.7	0.3	1.42
30002	30001.4	0.6	1.88
50001	50002.2	-1.2	2.57
99948	99950.5	-2.5	3.31

Remarks:

- The Calibration is performed at Permanent Facility.
- The calibration certificate is valid for scientific & industrial purpose only.
- The Expanded uncertainty is expressed at 95.45 % confidence level with coverage factor k=2.

Checked By
D. JAYAKUMAR - CALIBRATION ENGINEER
HT / FT / 7.8 / 01

CERTIFIED TRUE COPY
AUTOCAL SOLUTIONS PVT. LTD.

End of Certificate

Authorized Signatory

Approved By
R.R. HARI (AIRAM) - TECHNICAL MANAGER

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