SOUTHWEST RESEARCH INSTITUTE™

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Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

Certificate of Calibration

Submitted By:	DIV20	**Work Order:**	444052193
Address:	B57	**Date Issued:**	Jan 30, 2003
Contact:	JIM PRIKRYL	**Calibration Date:**	Jan 29, 2003
Manufacturer Model:	OHAUS TS 400D	****Calibration Due:**	Jul 29, 2003
Description:	BALANCE	**Calibration Location:**	B57 LAB 111
Serial No:	2883	**Environment:**	Temp. 72.0°F Hum. 47 %RH
Asset No:	002345	***As Found:**	IN TOLERANCE
Procedure:	CLCP-WT-001, 12/99	***As Left:**	IN TOLERANCE

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999 and ANSI/NCSL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government.

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of k=2 to approximate a 95% confidence level. The calibration process provides a Test Uncertainty Ratio (TUR) of less than or equal to 25% (4:1) of the test limit unless otherwise stated in remarks or an attachment.

*The client has sole responsibility for determination of in/out of tolerance or compliance/noncompliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

**Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

Remarks: None

Standards Used

Asset	Manufacturer	Model	Description	Cal Due
001712	RICE LAKE	100G	WEIGHT, CLASS S	Jun 14, 03
001713	RICE LAKE	200G	WEIGHT, CLASS S	Jun 14, 03
001714	RICE LAKE	200G	WEIGHT, CLASS S	Jun 14, 03

Approved by: Walt Hill
Metrology Group Leader

Measurements by: Vince Morales
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Calibration Data Sheet

Work Order	444052193	**Mfr.** Ohaus		**Technician**	Vincent Morales
Asset No.	002345	**Model** TS400D		**Procedure**	CLCP-WT-001, 12/99
Serial No.	2883	**Type** Balance		**Cal Date**	29-Jan-03

Location: Bldg. 57/ Lab 111 Corrosion Lab

Ambient Conditions: 72 **F** 47 **%RH** 14.35 **PSIA**

Operational Check: **Limits +/- :** 0.05 g **Uncertainty:** 0.01 g

STD Mass Load	As Found Indication	Instrument Error
400.00 g	400.00 g	**0.00** g

Post Calibration Check:

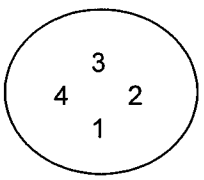
STD Mass Load	Post calibration Indication	Instrument Error	Results
400.00 g	400.00 g	**0.00** g	**Pass**

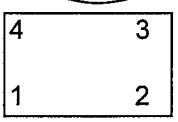
Repeatability Check: **Mass Load:** 200.00 g

1	200.00 g	**6**	200.00 g
2	200.00 g	**7**	200.00 g
3	200.00 g	**8**	200.00 g
4	200.00 g	**9**	200.00 g
5	200.00 g	**10**	200.00 g

Std Deviation	Tolerance
0.00 g	**0.02** g

Off-Centerline Check: **Mass Load:** 200.00 g **Uncertainty:** 0.01 g





	Indication	Instrument Error	+/- Limits	Results
1	0.00 g	**0.00** g	**0.02**	**Pass**
2	0.00 g	**0.00** g	**0.02**	**Pass**
3	0.00 g	**0.00** g	**0.02**	**Pass**
4	0.00 g	**0.00** g	**0.02**	**Pass**

Non-Linearity Check: **Range:** 400.00 g **Uncertainty:** 0.01 g

STD Mass Load	Indication	Instrument Error	+/- Limits	Results
0.00 g	0.00 g	**0.00** g	**0.02**	**Pass**
100.00 g	100.00 g	**0.00** g	**0.02**	**Pass**
200.00 g	100.00 g	**0.00** g	**0.02**	**Pass**
300.00 g	100.00 g	**0.00** g	**0.02**	**Pass**
400.00 g	100.00 g	**0.00** g	**0.02**	**Pass**

Remarks: *Readability is 0.001g (80g) and 0.01g (410g). Standards used 1712, 1713, and 1714.*