

S O U T H W E S T   R E S E A R C H   I N S T I T U T E

Department of Quality Assurance  
Calibration Laboratory

CERTIFICATE OF CALIBRATION

Issued to: DIV20 B57 JIM PRIKRYL

Device No: 2345

Manufacturer: OHAUS

Model: TS 400D

Nomenclature: ELECTRONIC BALANCE

Serial Number: 2883

SwRI No: NONE

Cal interval 6 Mo.

Remarks

Accuracy: MFGR

Procedure: MFGR

ENVIRONMENT

Temperature: 0

Humidity: 0

Location: SWRI B57

CONCLUSION

Tolerance/Remarks: Received into the system, introduced or reactivated

Calibration was in accord with requirements of MIL-STD-45662A. Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

Signed \_\_\_\_\_  


Calibration Date: 05/11/93

Cal interval: 6 Months

Record Number: 00011249

Next Calibration Due: 11/11/93

S O U T H W E S T   R E S E A R C H   I N S T I T U T E

Department of Quality Assurance  
Calibration Laboratory

Device Serial No: 2883

Calibration Date: 05/11/93

STANDARDS

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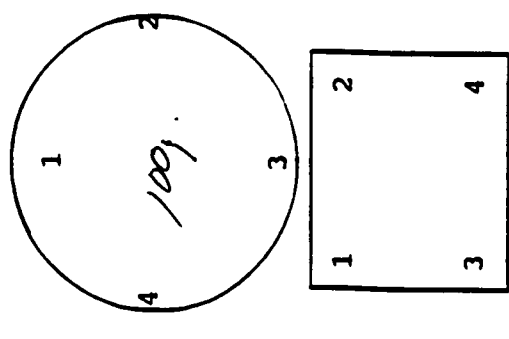
Standard No: 1704	Manufacturer: RICE LAKE	Model: 1 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C859	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1708	Manufacturer: RICE LAKE	Model: 10 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C863	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1709	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C864	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1710	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C865	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1711	Manufacturer: RICE LAKE	Model: 50 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C866	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1713	Manufacturer: RICE LAKE	Model: 200 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C868	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1714	Manufacturer: RICE LAKE	Model: 200 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C869	Cal.Due: 07/08/93	Cal.Rec.No: 00000000

**BALANCE CALIBRATION VERIFICATION FORM**

DATE: 10 May 93 MFR.: OHAUS MODEL: T5400D  
 SER. NO. 2883 RANGE: 400g CALIBRATION DATES  
 TEMPERATURE: \_\_\_\_\_ HUMIDITY: \_\_\_\_\_ LAST: NEW NEXT: 10/06/93  
 CALIBRATED BY: JERRY A. White PRINT NAME  
 BALANCE CAL #: 11249 LIN. TOL.: 0.1/0.001 REP. TOL.: 0.07/0.001  
 BALANCE TOLERANCES

**RANGE VERIFICATION**

	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
DATA PTS.	4005	2007	509	405	105	19			
RUN #1	400.00	200.00	50.00	40.000	10.000	1.000			
RUN #2	400.00	200.00	50.00	40.000	10.000	1.000			
RUN #3	400.00	200.00	50.00	40.000	10.000	1.000			
MEAN	400.00	200.00	50.00	40.000	10.000	1.000			
STD. DEV.									



**SHIFT VERIFICATION**

SELF CALIBRATION Y/N INTERNAL: \_\_\_\_\_ EXTERNAL: 200g

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
100g	100.00	100.00	100.00	100.00

COMMENTS: \_\_\_\_\_

SIGNATURE: Jerry A. White

S O U T H W E S T   R E S E A R C H   I N S T I T U T E

Department of Quality Assurance  
Calibration Laboratory

CERTIFICATE OF CALIBRATION

Issued to: DIV20 B57 JIM PRIKRYL

Device No: 2345

Manufacturer: OHAUS

Model: TS 400D

Nomenclature: ELECTRONIC BALANCE

Serial Number: 2883

SwRI No: NONE

Cal interval 6 Mo.

Remarks

Accuracy: MFGR

Procedure: MFGR

ENVIRONMENT

Temperature:

Humidity:

Location: SWRI DIV20 B57

CONCLUSION

Tolerance/Remarks: Received in tolerance, no adjustments made

Ambient temperature and humidity.

Calibration was in accord with requirements of MIL-STD-45662A. Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

Signed

  
\_\_\_\_\_

Calibration Date: 11/05/93

Cal interval: 6 Months

Record Number: 00012698

Next Calibration Due: 05/05/94

S O U T H W E S T   R E S E A R C H   I N S T I T U T E

Department of Quality Assurance  
Calibration Laboratory

Device Serial No: 2883

Calibration Date: 11/05/93

STANDARDS  
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Standard No: 1704    Manufacturer: RICE LAKE    Model: 1 GRAM  
Nomenclature: WEIGHT STANDARD  
Serial No: C859                      Cal.Due: 06/30/94    Cal.Rec.No: 00011756

Standard No: 1708    Manufacturer: RICE LAKE    Model: 10 GRAM  
Nomenclature: WEIGHT STANDARD  
Serial No: C863                      Cal.Due: 06/30/94    Cal.Rec.No: 00011760

Standard No: 1709    Manufacturer: RICE LAKE    Model: 20 GRAM  
Nomenclature: WEIGHT STANDARD  
Serial No: C864                      Cal.Due: 06/30/94    Cal.Rec.No: 00011761

Standard No: 1710    Manufacturer: RICE LAKE    Model: 20 GRAM  
Nomenclature: WEIGHT STANDARD  
Serial No: C865                      Cal.Due: 06/30/94    Cal.Rec.No: 00011762

Standard No: 1712    Manufacturer: RICE LAKE    Model: 100 GRAM  
Nomenclature: WEIGHT STANDARD  
Serial No: C867                      Cal.Due: 06/30/94    Cal.Rec.No: 00011764

Standard No: 1713    Manufacturer: RICE LAKE    Model: 200 GRAM  
Nomenclature: WEIGHT STANDARD  
Serial No: C868                      Cal.Due: 06/30/94    Cal.Rec.No: 00011765

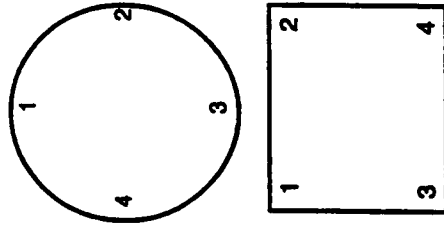
Standard No: 1714    Manufacturer: RICE LAKE    Model: 200 GRAM  
Nomenclature: WEIGHT STANDARD  
Serial No: C869                      Cal.Due: 06/30/94    Cal.Rec.No: 00011766

**BALANCE CALIBRATION VERIFICATION FORM**

DATE: 5 Nov 93 MFGR: OHAUS MODEL: JS 400D  
 SER. NO. 2883 RANGE: 400g CALIBRATION DATES  
 TEMPERATURE: Room HUMIDITY: Room LAST: 11 May 93 NEXT: 5 May 94  
 CALIBRATED BY: Jerry A. White  
 BALANCE CAL #: 12698 LINE. TOL.: \_\_\_\_\_ REP. TOL.: \_\_\_\_\_

BALANCE TOLERANCES

	RANGE VERIFICATION								
	RANGE #1			RANGE #2			RANGE #3		
	CALIBRATION POINTS			CALIBRATION POINTS			CALIBRATION POINTS		
	1	2	3	1	2	3	1	2	3
DATA PTS.	19	105	405	100g	200g	400g	1	2	3
RUN #1	1.000	10.000	40.000	100.00	200.00	400.00			
RUN #2	1.000	10.000	40.000	100.00	200.00	400.00			
RUN #3	1.000	10.000	40.000	100.00	200.00	400.00			
MEAN	1.000	10.000	40.000	100.00	200.00	400.00			
STD. DEV.									



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: \_\_\_\_\_ EXTERNAL: 400g

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
100.9	100.00	100.00	100.00	100.00

COMMENTS: \_\_\_\_\_

SIGNATURE: [Signature]

S O U T H W E S T   R E S E A R C H   I N S T I T U T E

Department of Quality Assurance  
Calibration Laboratory

CERTIFICATE OF CALIBRATION

Issued to: DIV20 B57 JIM PRIKRYL

Device No: 2345

Manufacturer: OHAUS

Model: TS 400D

Nomenclature: ELECTRONIC BALANCE

Serial Number: 2883

SwRI No: NONE

Cal interval 6 Mo.

Remarks

Accuracy: MFGR

Procedure: MFGR

ENVIRONMENT

Temperature:

Humidity:

Location: SWRI DIV20 BLDG. 57

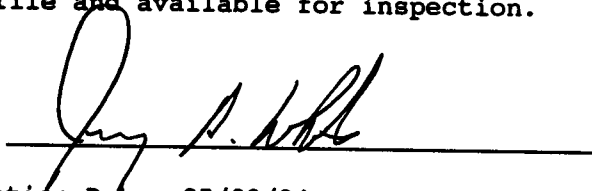
CONCLUSION

Tolerance/Remarks: Received in tolerance, no adjustments made

Room Temperature.

Calibration was in accord with requirements of MIL-STD-45662A. Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

Signed



Calibration Date: 05/02/94

Cal interval: 6 Months

Record Number: 00014022

Next Calibration Due: 11/02/94

S O U T H W E S T   R E S E A R C H   I N S T I T U T E

Department of Quality Assurance  
Calibration Laboratory

Device Serial No: 2883

Calibration Date: 05/02/94

STANDARDS  
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Standard No: 1704	Manufacturer: RICE LAKE	Model: 1 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C859	Cal.Due: 06/30/94	Cal.Rec.No: 00011756
Standard No: 1708	Manufacturer: RICE LAKE	Model: 10 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C863	Cal.Due: 06/30/94	Cal.Rec.No: 00011760
Standard No: 1709	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C864	Cal.Due: 06/30/94	Cal.Rec.No: 00011761
Standard No: 1710	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C865	Cal.Due: 06/30/94	Cal.Rec.No: 00011762
Standard No: 1712	Manufacturer: RICE LAKE	Model: 100 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C867	Cal.Due: 06/30/94	Cal.Rec.No: 00011764
Standard No: 1713	Manufacturer: RICE LAKE	Model: 200 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C868	Cal.Due: 06/30/94	Cal.Rec.No: 00011765
Standard No: 1714	Manufacturer: RICE LAKE	Model: 200 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C869	Cal.Due: 06/30/94	Cal.Rec.No: 00011766



**BALANCE CALIBRATION VERIFICATION FORM**

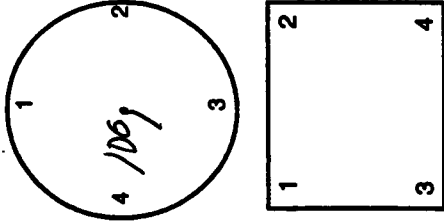
DATE: 3 May 94 MFGR: OHAUS MODEL: 1540a7  
 SER. NO. 2883 RANGE: 400g CALIBRATION DATES  
 TEMPERATURE: Rom HUMIDITY: Rom LAST: 5 Nov 93 NEXT: 3 Nov 94  
 CALIBRATED BY: Terry A. White  
 BALANCE CAL #: 4022 LINE. TOL.: .01/0.01 REP. TOL.: .007/0.01

BALANCE TOLERANCES

**RANGE VERIFICATION**

	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
DATA PTS.	400g	200g	100g	40g	10g	5g			
RUN #1	400.01	200.60	100.00	40.000	10.000	1.000			
RUN #2	400.01	200.60	100.00	40.000	10.000	1.000			
RUN #3	400.01	200.60	100.00	40.000	10.000	1.000			
MEAN									
STD. DEV.									

**POSITION GUIDE**



**SHIFT VERIFICATION**

SELF CALIBRATION Y/N INTERNAL: \_\_\_\_\_ EXTERNAL Y001 COMMENTS: \_\_\_\_\_

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
100g	100.00	100.00	100.00	100.00

SIGNATURE: Terry A. White

**SOUTHWEST RESEARCH INSTITUTE**

**Department of Quality Assurance  
Calibration Laboratory**

**CERTIFICATE OF CALIBRATION  
11/04/94**

Issued to: JIM PRIKRYL DIV20 ,B57  
Manufacturer: OHAUS  
Nomenclature: ELECTRONIC BALANCE  
Serial Number: 2883

Asset Number: 002345  
Model Number: TS 400D  
SwRI Capital Number: NONE

**ENVIRONMENTAL CONDITIONS**

Temperature: 71.0F

Relative Humidity: 68 %

**CALIBRATION INFORMATION**

Location: B57  
Procedure Number: SWRI  
Remarks:

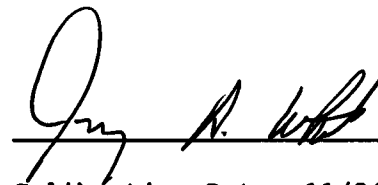
Technician: 7213  
Accuracy: MFRG SPECS  
Received IN Tolerance

Calibration was in accordance with requirements of MIL-STD-45662A.  
Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

**STANDARDS USED FOR CERTIFICATION**

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int.	Cal Due
001714	C869	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001715	C870	RICE	500 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001712	C867	RICE	100 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001710	C865	RICE	20 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001709	C864	RICE	20 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001708	C863	RICE	10 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001704	C859	RICE	1 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95

Certified by :



Calibration Date: 11/04/94  
Interval: 6 months  
Next Calibration Due: 05/04/95

Work Order: 15642

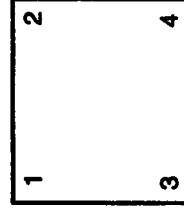
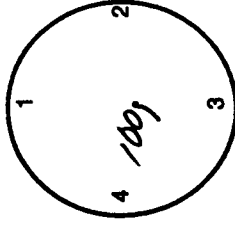
**BALANCE CALIBRATION VERIFICATION FORM**

DATE: 4 Nov 94 MFGR: OHAUS MODEL: TS 400D  
 SER. NO. 2883 RANGE: 400g CALIBRATION DATES  
 TEMPERATURE: 71 HUMIDITY: 68 LAST: 3 MAY 74 NEXT: 4 MAY 95  
 CALIBRATED BY: Jerry A. White  
 BALANCE CAL #: 15642 LINE. TOL.: .01/001 REP. TOL.: .007/.001

BALANCE TOLERANCES

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3		
	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	
400.01	1	2	3	1	2	3	1	2	3
DATA PTS.	400g	200g	100g	40g	10g	1g			
RUN #1	400.00	200.00	100.00	40.001	10.000	1.000	/		
RUN #2	400.00	200.00	100.00	40.001	10.000	1.000			
RUN #3	400.00	200.00	100.00	40.001	10.000	1.000			
MEAN									
STD. DEV.									



POSITION GUIDE

SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: 400g EXTERNAL 400g COMMENTS: Cal in 2457

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
100g	100.00	100.00	100.00	100.00

SIGNATURE: [Signature]

**SOUTHWEST RESEARCH INSTITUTE**  
**Department of Quality Assurance**  
**Calibration Laboratory**

**CERTIFICATE OF CALIBRATION**  
**05/15/95**

Issued to: JIM PRIKRYL DIV20 ,B57  
Manufacturer: OHAUS  
Nomenclature: ELECTRONIC BALANCE  
Serial Number: 2883

Asset Number: 002345  
Model Number: TS 400D  
SwRI/Div. I.D. #: NONE

**ENVIRONMENTAL CONDITIONS**

Temperature: 70.0F

Relative Humidity: 60%

**CALIBRATION INFORMATION**

Procedure Number: SWRI  
Remarks:

Accuracy: MFGR SPECS  
Received IN Tolerance

Calibration was in accordance with requirements of MIL-STD-45662A.  
Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

**STANDARDS USED FOR CERTIFICATION**

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int.	Cal Due
001715	C870	RICE	500 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001714	C869	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001712	C867	RICE	100 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001710	C865	RICE	20 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001709	C864	RICE	20 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001708	C863	RICE	10 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001704	C859	RICE	1 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95

Certified by : 

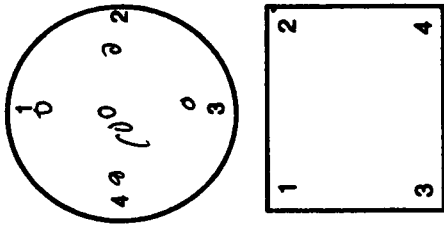
Certificate#: 17327

Calibration Date: 05/08/95  
Interval: 6 months  
Next Calibration Due: 11/08/95

**BALANCE CALIBRATION VERIFICATION FORM**

DATE: May 95 MFGR: Ohaus MODEL: 75 4000  
 SER. NO. 2883 RANGE: 100g CALIBRATION DATES  
 TEMPERATURE: 70 HUMIDITY: 60 LAST: 4 NOV 94 NEXT: 8 NOV 95  
 CALIBRATED BY: Terry A. White  
 BALANCE CAL #: 17327 LINE. TOL.: .01/0.01 REP. TOL.: 0.07/0.01  
BALANCE TOLERANCES

DATA PTS.	RANGE VERIFICATION												POSITION GUIDE				
	RANGE #1			RANGE #2			RANGE #3			CALIBRATION POINTS							
	1	2	3	1	2	3	1	2	3	1	2	3					
RUN #1	400.00	200.00	100.00	40.000	9.999	.997											
RUN #2	400.00	200.00	100.00	40.000	9.999	.997											
RUN #3	400.00	200.00	100.00	40.000	9.999	.997											
MEAN																	
STD. DEV.																	



SHIFT VERIFICATION  
 SELF CALIBRATION Y/N INTERNAL: \_\_\_\_\_ EXTERNAL N  
 COMMENTS: Cal is OK  
 SIGNATURE: [Signature]

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
100.00	100.00	100.00	100.00	100.00

**SOUTHWEST RESEARCH INSTITUTE**

**Department of Quality Assurance  
Calibration Laboratory**

**CERTIFICATE OF CALIBRATION  
11/03/95**

Issued to: JIM PRIKRYL DIV20 ,B57  
Manufacturer/Model: OHAUS/TS 400D  
Nomenclature: ELECTRONIC BALANCE  
Serial Number: 2883  
Asset Number: 002345  
Notes:

**ENVIRONMENTAL CONDITIONS**

Temperature: 66.0F

Relative Humidity: 28%

**CALIBRATION INFORMATION**

Procedure Number: WI-9-30-WT01  
Remarks:

Accuracy: MFGR SPECS  
Received IN Tolerance

Calibration was in accordance with requirements of MIL-STD-45662A.  
Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

**STANDARDS USED FOR CERTIFICATION**

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int.	Cal Due
001714	C869	RICE	200 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001712	C867	RICE	100 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001710	C865	RICE	20 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001709	C864	RICE	20 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001708	C863	RICE	10 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001704	C859	RICE	1 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96

Certified by : 

Calibration Date: 11/03/95  
Interval: 6 months  
Next Calibration Due: 05/03/96

Certificate#: 19170

**BALANCE CALIBRATION VERIFICATION FORM**

DATE: 3 Nov 95 MFGR: OHAUS MODEL: T5400D

SER. NO. 2883 RANGE: 40g CALIBRATION DATES

TEMPERATURE: \_\_\_\_\_ HUMIDITY: \_\_\_\_\_ LAST: 8 MAY 95 NEXT: 3 MAY 91

CALIBRATED BY: Terry A. White

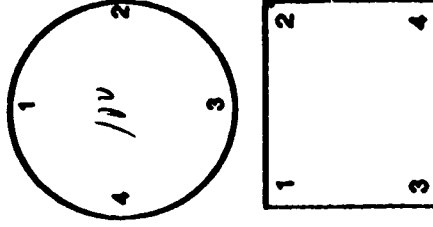
BALANCE CAL #: 19170 LINE. TOL.: .01/0.01 REP. TOL.: 0.07 0.07

BALANCE TOLERANCES

**RANGE VERIFICATION**

	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
DATA PTS.	40g	200g	100g	40g	10g	5			
RUN #1	400.00	200.00	100.00	39.999	10.000	1.000			
RUN #2	400.00	200.00	100.00	35.999	10.000	1.000			
RUN #3	400.00	200.00	100.00	39.997	10.000	1.000			
MEAN									
STD. DEV.									

**POSITION GUIDE**



**SHIFT VERIFICATION**

SELF CALIBRATION Y/N INTERNAL: \_\_\_\_\_ EXTERNAL: \_\_\_\_\_

COMMENTS: \_\_\_\_\_

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
100.00	100.00	100.00	100.00	100.00

SIGNATURE: Terry A. White



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
Department of Quality Assurance  
Calibration Laboratory

# Certificate of Calibration

3 May 1996

**Issued to:** JIM PRIKRYL                                  DIV20                  B57  
**Manufacturer/Model:** OHAUS TS 400D  
**Description:** ELECTRONIC BALANCE  
**Serial Number:** 2883  
**Asset Number:** 002345

## Environmental Conditions

**Temperature:** 76.0    **Humidity:** 58%

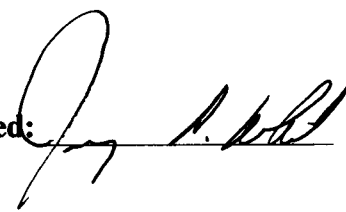
## Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

**Calibration Date:** 2 May 96    **Calibration Procedure:** WI-9-30-WT01  
**Interval:** 6 months    **Accuracy:** MFGR SPECS  
**Next Calibration Due:** 2 Nov 96    **Received:** In Tolerance

**Remarks:**

**Certificate #** 21117

**Signed:** 

LAST PAGE OF REPORT  
Total Pages Printed: 1



**BALANCE CALIBRATION VERIFICATION FORM**

DATE: 2 May 96    MFG: ORHAUS    MODEL: T.S 400D

SER. NO. 2883    RANGE: 500    CALIBRATION DATES

TEMPERATURE: 76    HUMIDITY: 58    LAST: 3 Nov 95    NEXT: 2 Nov 96

CALIBRATED BY: Tracy A White

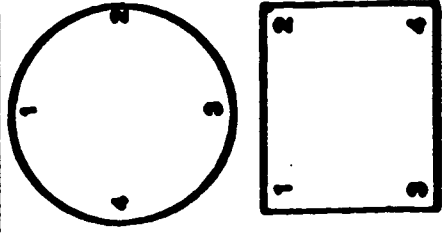
**BALANCE TOLERANCES**

BALANCE CAL #: 21117    LINE. TOL: .01/1.001    REP. TOL: 0.01/1.001

**RANGE VERIFICATION**

	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
DATA PTS	400	200	100	40	10	1			
RUN #1	400.01	200.01	100.00	40.007	10.000	1.000			
RUN #2	400.01	200.01	100.00	40.001	10.000	1.000			
RUN #3	400.01	200.01	100.00	40.001	10.0001	1.000			
MEAN									
STD. DEV.									

**PORTION GUIDE**



**SHIFT VERIFICATION**

SELF CALIBRATION Y/N INTERNAL: \_\_\_\_\_ EXTERNAL: \_\_\_\_\_

**PAN POSITION**

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
50g	50.00	50.00	50.00	50.00

**COMMENTS:**

\_\_\_\_\_  
 SIGNATURE: [Signature]

SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
Calibration Laboratory • 522-5215

**WORK ORDER**

CERTIFICATE # 23173 ASSET # 2345 DATE 11/01/96

ITEM DATA:

Manufacturer OHAUS Model T3406

Description BALANCE Serial # 2582

Accessories \_\_\_\_\_

ACTION REQUESTED CAL

CUSTODIAN DWZG Jim PLIKRYL

Turned in by: \_\_\_\_\_ Phone \_\_\_\_\_

CHARGE # \_\_\_\_\_ Date Required \_\_\_\_\_

INSTRUMENT USED ON:  NUCLEAR  DOD  NASA  GLP  SPPE  
 OTHER \_\_\_\_\_

COPY OF CALIBRATION CERTIFICATE  Yes  No

CONDITION RECEIVED: \_\_\_\_\_ Out of tolerance, repaired to specifications  
\_\_\_\_\_ In tolerance, minor adjustments/repairs made  
 In tolerance, no adjustments/repairs  
\_\_\_\_\_ Out of tolerance, adjusted to specifications  
\_\_\_\_\_ Received into system, introduced or reactivated  
\_\_\_\_\_ Calibration interval  
\_\_\_\_\_ Reliability code

23173

ACTION TAKEN: (Calibration/Repair/Parts) CAL

CAL ENVIRONMENT:  
Temperature 71 °F Humidity 48 %RH

CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure CLCP-MB-007  
Date 11 NOV 96 Accuracy MB  
Cal Interval \_\_\_\_\_ Time to complete: \_\_\_\_\_  
Next Cal due 1 MAR 97 Cal 1.5 Repair \_\_\_\_\_  
Standards used (Asset#) 201714 13 11 04

DATE COMPLETED \_\_\_\_\_  
DATE PICKED UP CAL PICKED UP BY [Signature]

## WORK ORDER HISTORY

DATE	START STOP	CAL	REP	REMARKS:
TOTAL HOURS			_____	

1.000 | 031 mg  
 2.000 | 0360  
 2.000 | 0172  
 -----  
 .0184

<sup>3</sup>  
 1.000 | 0046  
 1.000 | 0077  
 -----  
 1.004  
 0.995  
 (3)

*amh*

**BALANCE CALIBRATION VERIFICATION FORM**

DATE 1 NOV 96    MFR CHAVIS    MODEL 75400D  
 SER. NO. 2883    RANGE 400    CALIBRATION DATES  
 TEMPERATURE 71    HASTY 48    USER 2 MP496    INSTR 1 MAY 97  
 CALIBRATED BY Jenny A. White  
**BALANCE TOLERANCE**  
 BALANCE O.L.C. 23193    USE TOL. \_\_\_\_\_    REP. TOL. \_\_\_\_\_

**RANGE VERIFICATION**

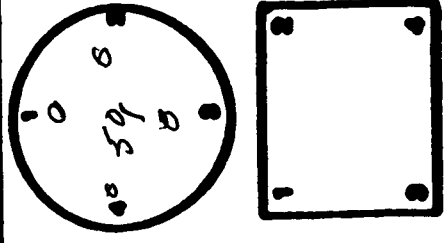
	RANGE 01			RANGE 02			RANGE 03		
	1	2	3	1	2	3	1	2	3
DATA Pts	4005	200	11						
RM 01	400.02	200.01	1.00						
RM 02	400.02	200.01	1.00						
RM 03	400.02	200.01	1.00						
MEAN									
STD. DEV.									

**SOFT VERIFICATION**

SELF CALIBRATION W/ INTERVAL: \_\_\_\_\_    SERIAL: \_\_\_\_\_

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
80	50.00	50.00	50.00	50.00

**POSITION GUIDE**



**COMMENTS**

\_\_\_\_\_

\_\_\_\_\_  
 SIGNATURE



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
Department of Quality Assurance  
Calibration Laboratory

## Certificate of Calibration

11 November 1996

Issued to: JIM PRIKRYL                                  DIV20                  B57  
Manufacturer/Model: OHAUS TS 400D  
Description: ELECTRONIC BALANCE  
Serial Number: 2883  
Asset Number: 002345

### Environmental Conditions

Temperature: 71.0 Deg. F                                  Humidity: 48%

### Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

Calibration Date: 1 Nov 96

Calibration Procedure: CLCP-WB-001

Interval: 6 months

Accuracy: MFGR SPECS

Next Calibration Due: 1 May 97

Received: In Tolerance

Remarks:

Certificate # 23193

Signed: 

LAST PAGE OF REPORT  
Total Pages Printed: 1



**Southwest Research Institute  
Calibration Laboratory**

**Date:** 28 Oct 96

**To:** JIM PRIKRYL

**DIV20**

**Subject:** Items Due for Calibration

Attached is listing of items due for calibration on dates indicated. Please make arrangements for calibration before the current calibration expires. This report is valid for all of your assets scheduled to come due between 1 Jan 90 and 30 Nov 96.

<b>Due Date</b>	<b>Mfg.</b>	<b>Model</b>	<b>Description</b>	<b>Serial No.</b>	<b>Asset No.</b>
2 Nov 96	OHAUS	TS 400D	ELECTRONIC BALANCE	2883	002345

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**WORK ORDER**

CERTIFICATE # 25286 ASSET # 2345 DATE MAY 97

ITEM DATA:  
Manufacturer OHAUS Model 2003  
Description BALANCE Serial # 2553  
Accessories \_\_\_\_\_

ACTION REQUESTED CAL

CUSTODIAN DIVEO Jim PRIKRYL

Turned in by: \_\_\_\_\_ Phone \_\_\_\_\_

CHARGE # \_\_\_\_\_ Date Required \_\_\_\_\_

INSTRUMENT USED ON:  DOD/NASA  NUCLEAR  GLP  SPPE  ISO  
 OTHER \_\_\_\_\_

COPY OF CALIBRATION CERTIFICATE  Yes  No

NEW WORK  Yes  No If yes, an evaluation shall be made to verify capabilities.  
By \_\_\_\_\_ Date \_\_\_\_\_

CONDITION RECEIVED: \_\_\_\_\_ (F) Out of tolerance, repaired to specifications  
\_\_\_\_\_ (G) In tolerance, minor adjustments/repairs made  
 (J) In tolerance, no adjustments/repairs  
\_\_\_\_\_ (K) Out of tolerance, adjusted to specifications  
\_\_\_\_\_ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) cal

CAL ENVIRONMENT:  
Temperature 80 °F Humidity 57 %RH

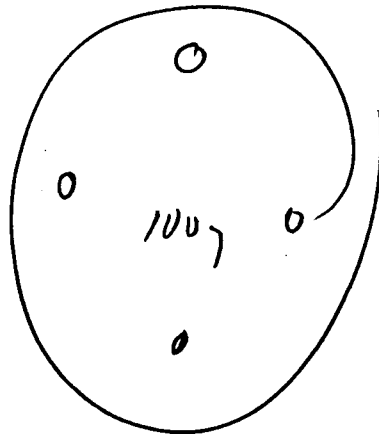
CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure CLP-WP-007  
Date 1 MAY 97 Accuracy mt  
Cal Interval 1 Reliability Code: \_\_\_\_\_  
Next Cal due Nov 97 Cal Time 1.5 Repair Time \_\_\_\_\_  
Standards used (Asset#) \_\_\_\_\_

DATE COMPLETED \_\_\_\_\_  
DATE PICKED UP \_\_\_\_\_ PICKED UP BY [Signature]

25286

400,	200,	50,	30	20	1
400.00	200.00	50.00	30.000	20.000	1.000
/	200.00	1		20.000	
	260.00			20.000	
	200.00			19.999	
	200.00			~0.006	
	260.00			20.001	
	200.00			20.000	
	200.00			26.000	
	260.00			19.775	
	200.00			20.000	

1714  
 1713  
 1712  
 1711  
 1710  
 1709  
 1704







Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
Department of Quality Assurance  
Calibration Laboratory

# Certificate of Calibration

7 May 1997

Issued to: JIM PRIKRYL                      DIV20                      B57  
Manufacturer/Model: OHAUS TS 400D  
Description: ELECTRONIC BALANCE  
Serial Number: 2883  
Asset Number: 002345

## Environmental Conditions

Temperature: 80.0 Deg. F                      Humidity: 57%

## Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

Calibration Date: 1 May 97                      Calibration Procedure: CLCP-WB-001  
Interval: 6 months                      Accuracy: MFGR SPECS  
Next Calibration Due: 1 Nov 97                      Received: In Tolerance

Remarks:

## Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
001704	RICE	1 GRAM	WEIGHT STANDARD	C859	19 Jul 97
001708	RICE	10 GRAM	WEIGHT STANDARD	C863	19 Jul 97
001710	RICE	20 GRAM	WEIGHT STANDARD	C865	19 Jul 97
001711	RICE	50 GRAM	WEIGHT STANDARD	C866	19 Jul 97
001712	RICE	100 GRAM	WEIGHT STANDARD	C867	19 Jul 97
001713	RICE	200 GRAM	WEIGHT STANDARD	C868	19 Jul 97
001714	RICE	200 GRAM	WEIGHT STANDARD	C869	19 Jul 97

Certificate # 25286

Signed: 

LAST PAGE OF REPORT  
Total Pages Printed: 1

**Southwest Research Institute  
Calibration Laboratory**



**Date:** 29 Apr 97

**To:** JIM PRIKRYL

DIV20

**Subject:** Items Due for Calibration

Attached is listing of items due for calibration on dates indicated. Please make arrangements for calibration before the current calibration expires. This report is valid for all of your assets scheduled to come due between 1 May 97 and 31 May 97.

<b>Due Date</b>	<b>Mfg.</b>	<b>Model</b>	<b>Description</b>	<b>Serial No.</b>	<b>Asset No.</b>
1 May 97	OHAUS	TS 400D	ELECTRONIC BALANCE	2883	002345

SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
Calibration Laboratory • 522-5215

**WORK ORDER**

CERTIFICATE # 27410 ASSET # 2345 DATE 3 Nov 97

ITEM DATA:

Manufacturer QNAUS Model T5 400D

Description Bal. Scale Serial # 2883

Accessories \_\_\_\_\_

ACTION REQUESTED OKL

CUSTODIAN DIV 20 JIM DUKRYL

Turned in by: \_\_\_\_\_ Phone \_\_\_\_\_

CHARGE # \_\_\_\_\_ Date Required \_\_\_\_\_

INSTRUMENT USED ON:  DOD/NASA  NUCLEAR  GLP  SPPE  ISO  
 OTHER \_\_\_\_\_

COPY OF CALIBRATION CERTIFICATE  Yes  No

NEW WORK  Yes  No If yes, an evaluation shall be made to verify capabilities.

By \_\_\_\_\_ Date \_\_\_\_\_

CONDITION RECEIVED: \_\_\_\_\_ (F) Out of tolerance, repaired to specifications  
\_\_\_\_\_ (G) In tolerance, minor adjustments/repairs made  
\_\_\_\_\_ (J) In tolerance, no adjustments/repairs  
\_\_\_\_\_ (K) Out of tolerance, adjusted to specifications  
\_\_\_\_\_ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) OKL

CAL ENVIRONMENT:  
Temperature 72 °F Humidity 31 %RH

CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure QCRP-WR-001  
Date 3 Nov 97 Accuracy mg  
Cal Interval 2 Reliability Code: \_\_\_\_\_  
Next Cal due 3 MAY 98 Cal Time 1.5 Repair Time \_\_\_\_\_  
Standards used (Asset#) \_\_\_\_\_

DATE COMPLETED \_\_\_\_\_  
DATE PICKED UP OKL PICKED UP BY [Signature]

27410

# BALANCE CALIBRATION VERIFICATION FORM

DATE: 3 Nov 97  
 BALANCE CAL NO.: 27410  
 TEMPERATURE: 22  
 HUMIDITY: 31  
 BARO. PRESSURE: 30.47

CALIBRATION DATES  
 LAST CAL: 11/17/97  
 NEXT CAL: 3/12/98

MFGR: ORNO S  
 MODEL: 734007  
 SERIAL NO.: 2813  
 ASSET NO.: 2345  
 RANGE: 500  
 MASS UNCERTAINTY (U<sub>m</sub>): \_\_\_\_\_

TUR = Comb. MFR Specs (U<sub>mfr</sub>) = 1:1  
 U<sub>m-std</sub>

MFGR BALANCE TOLERANCES  
 LINEARITY: \_\_\_\_\_  
 ECCENTRICITY: \_\_\_\_\_  
 REPRODUCIBILITY: \_\_\_\_\_  
 TEMP. DRIFT/ °C: \_\_\_\_\_  
 COMBINED MFR SPECS (U<sub>mfr</sub>): \_\_\_\_\_

If TUR < 4:1, U<sub>b</sub> = \_\_\_\_\_

	RANGE VERIFICATION				POSITION GUIDE
	RANGE 1	RANGE 2	RANGE 3		
	CALIBRATION POINTS		CALIBRATION POINTS		
DATA POINTS	400	200	40.00	20	
RUN #1	400.00	200.00	40.00	20.000	
RUN #2	/	/	/	/	
RUN #2	/	/	/	/	
MEAN					
STD. DEV.					

SHIFT VERIFICATION				
SELF CALIBRATION Y/N		INTERNAL: _____ EXTERNAL: _____		
	PAN POSITION			
ACTUAL WEIGHT IN CENTER	1	2	3	4
DIFF.				

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 SIGNATURE: [Signature]

**MEASURED UNCERTAINTY:**

Linearity ± \_\_\_\_\_ g  
 Eccentricity ± \_\_\_\_\_ g  
 Comb. Uncertainty ± \_\_\_\_\_ g  
 Rep. (σ) ± \_\_\_\_\_ g  
 Mass tol. (2σ) ± \_\_\_\_\_ g  
 Comb. Uncertainty ± \_\_\_\_\_ g

Std. Uncertainty ± \_\_\_\_\_ g  
 Std. Uncertainty ± \_\_\_\_\_ g  
 (σ) ± \_\_\_\_\_ g  
 (linearity, eccentricity, reproducibility, mass)

Expanded Unc. (k = 2) ± \_\_\_\_\_ g



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
Department of Quality Assurance  
Calibration Laboratory

# Certificate of Calibration

4 November 1997

Issued to: JIM PRIKRYL DIV20 B57  
Manufacturer/Model: OHAUS TS 400D  
Description: ELECTRONIC BALANCE  
Serial Number: 2883  
Asset Number: 002345

## Environmental Conditions

Temperature: 72.00 Deg. F Humidity: 31 % RH

## Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NC SL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Calibration Date: 3 Nov 97 Calibration Procedure: CLCP-WT-001

Interval: 6 months

Next Calibration Due: 3 May 98 Received: In Tolerance

Remarks:

## Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
001704	RICE LAKE	1G	WEIGHT STANDARD	C859	21 Jul 98
001708	RICE LAKE	10G	WEIGHT STANDARD	C863	21 Jul 98
001709	RICE LAKE	20G	WEIGHT STANDARD	C864	21 Jul 98
001710	RICE LAKE	20G	WEIGHT STANDARD	C865	21 Jul 98
001712	RICE LAKE	100G	WEIGHT STANDARD	C867	21 Jul 98
001713	RICE LAKE	200G	WEIGHT STANDARD	C868	21 Jul 98
001714	RICE LAKE	200G	WEIGHT STANDARD	C869	21 Jul 98

Signed:

Title:

LAST PAGE OF REPORT  
Total Pages Printed: 1

Certificate # 27410



**Southwest Research Institute  
Calibration Laboratory  
CALIBRATION DUE NOTICE**

**Date:** 17 Oct 97

**To:** JIM PRIKRYL

DIV20

**Subject:** Items Due for Calibration

Following items are due for calibration on the dates indicated. Please make arrangements for calibration before the current calibration expires. This report is valid for all of your assets scheduled to come due between 1 Nov 97 and 31 Dec 97.

For additional information regarding the items listed, please contact Jim Patterson at (210) 522-2702 or Mark Anthony Romero at 522-5460.

<b>Due Date</b>	<b>Mfg.</b>	<b>Model</b>	<b>Description</b>	<b>Serial No.</b>	<b>Asset No.</b>
1 Nov 97	OHAUS	TS 400D	ELECTRONIC BALANCE	2883	002345

SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
Calibration Laboratory • 522-5215

**WORK ORDER**

CERTIFICATE # 29573 ASSET # 2345 DATE 4 MAY 98

ITEM DATA:

Manufacturer CHAUS Model TS 400D  
Description ELECTRONIC BALANCE Serial # 2893  
Accessories \_\_\_\_\_

ACTION REQUESTED enl

CUSTODIAN DIVCO B57 JIM PRIKRYL

Turned in by: \_\_\_\_\_ Phone \_\_\_\_\_

CHARGE # \_\_\_\_\_ Date Required \_\_\_\_\_

INSTRUMENT USED ON:  (DOD/NASA)  (NUCLEAR)  (GLP)  (SPPE)  (ISO)  
 OTHER \_\_\_\_\_

COPY OF CALIBRATION CERTIFICATE  (Yes)  (No)

NEW WORK  Yes  No If yes, an evaluation shall be made to verify capabilities.

By \_\_\_\_\_ Date \_\_\_\_\_

Work involves proprietary/confidential information or equipment  (Yes)  (No)

CONDITION RECEIVED: \_\_\_\_\_ (F) Out of tolerance, repaired to specifications  
\_\_\_\_\_ (G) In tolerance, minor adjustments/repairs made  
 (J) In tolerance, no adjustments/repairs  
\_\_\_\_\_ (K) Out of tolerance, adjusted to specifications  
\_\_\_\_\_ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) enl

29573

CAL ENVIRONMENT:  
Temperature 71 °F Humidity 57 %RH

CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure QCP-WT-001  
Date 4 MAY 98 Accuracy mls  
Cal Interval L Reliability Code: \_\_\_\_\_  
Next Cal due 4 NOV 98 Cal Time 1.5 Repair Time \_\_\_\_\_  
Standards used (Asset#) 1714 1713 1712 1708 1710 1701

DATE COMPLETED enl  
DATE PICKED UP enl PICKED UP BY [Signature]

# BALANCE CALIBRATION VERIFICATION FORM

DATE: 4 MAY 97  
 BALANCE CAL NO.: 29523  
 TEMPERATURE: 71  
 HUMIDITY: 57  
 BARO. PRESSURE: 12.27

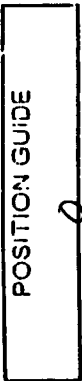
MFGR: OHAUS  
 MODEL: 25400D  
 SERIAL NO.: 2817  
 ASSET NO.: 2345  
 RANGE:  
 MASS UNCERTAINTY (U<sub>m</sub>):

MFGR BALANCE TOLERANCES  
 LINEARITY:  
 ECCENTRICITY:  
 REPRODUCIBILITY:  
 TEMP. DRIFT/°C:  
 COMBINED MFR SPECS (U<sub>mfr</sub>):

CALIBRATION DATES  
 LAST CAL: 3 NOV 97  
 NEXT CAL: 3 MAY 98  
 TUR = Comb. MFR Specs (U<sub>mfr</sub>) = 1  
 U<sub>m-stc</sub>

If TUR < 4:1, U<sub>g</sub> =

	RANGE VERIFICATION			
	RANGE 1	RANGE 2	RANGE 3	
	CALIBRATION POINTS		CALIBRATION POINTS	
DATA POINTS	400	200	100	40
RUN #1	400.00	200.00	100.00	35.999
RUN #2				1.999
RUN #2				
MEAN				
STD. DEV.				



SHIFT VERIFICATION			
	PAN POSITION		
ACTUAL WEIGHT IN CENTER	1	2	3
DIFF.			

SELF CALIBRATION Y/N INTERNAL: \_\_\_\_\_ EXTERNAL: \_\_\_\_\_

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 SIGNATURE: [Signature]

**MEASURED UNCERTAINTY:**

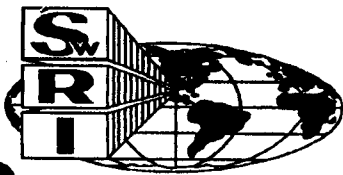
Linearity = \_\_\_\_\_ g  
 Eccentricity = \_\_\_\_\_ g  
 Comb. Uncertainty = \_\_\_\_\_ g  
 Rep (σ) = \_\_\_\_\_ g  
 Mass tol. (2σ) = \_\_\_\_\_ g  
 Comb. Uncertainty = \_\_\_\_\_ g

Std Uncertainty = \_\_\_\_\_ g  
 Std. Uncertainty = \_\_\_\_\_ g  
 (σ) = \_\_\_\_\_ g  
 (linearity, eccentricity, reproducibility, mass)

SWRI CALIBRATION LAB  
 (210) 522-5215  
 CAL 3 MAY 98 BY [Signature]  
 DUE 3 MAY 98 ID 2345  
 SN 2817

Expanded Unc (k = 2) = \_\_\_\_\_ g





Southwest Research Institute  
 6220 Culebra Road  
 San Antonio, TX 78238  
 Department of Quality Assurance  
 Calibration Laboratory



# Certificate of Calibration

4 May 1998

Issued to: JIM PRIKRYL DIV20 B57  
 Manufacturer/Model: OHAUS TS 400D  
 Description: ELECTRONIC BALANCE  
 Serial Number: 2883  
 Asset Number: 002345

## Environmental Conditions

Temperature: 71.00 Deg. F Humidity: 57 % RH

## Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Calibration Date: 4 May 98 Calibration Procedure: CLCP-WT-001

Interval: 6 months

Next Calibration Due: 4 Nov 98 Received: In Tolerance

Remarks:

## Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
001706	RICE LAKE	2G	WEIGHT STANDARD	C861	21 Jul 98
001709	RICE LAKE	20G	WEIGHT STANDARD	C864	21 Jul 98
001710	RICE LAKE	20G	WEIGHT STANDARD	C865	21 Jul 98
001712	RICE LAKE	100G	WEIGHT STANDARD	C867	21 Jul 98
001713	RICE LAKE	200G	WEIGHT STANDARD	C868	21 Jul 98
001714	RICE LAKE	200G	WEIGHT STANDARD	C869	21 Jul 98

Signed: 

Title: 

LAST PAGE OF REPORT  
 Total Pages Printed: 1

Certificate # 29573

SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 31806 ASSET # 2345 DATE 27 Oct 98

ITEM DATA:

Manufacturer OHAUS Model T5400D  
Description Balance Serial # 2183  
Accessories \_\_\_\_\_

ACTION REQUESTED chk

CUSTODIAN DNZO BL57 JIM PRIKRYL

Turned in by: \_\_\_\_\_ Phone \_\_\_\_\_

CHARGE # \_\_\_\_\_ Date Required \_\_\_\_\_

INSTRUMENT USED ON:  (DOD/NASA)  (NUCLEAR)  (GLP)  (SPPE)  (ISO)  
 OTHER \_\_\_\_\_

COPY OF CALIBRATION CERTIFICATE  (Yes)  (No)

NEW WORK  Yes  No If yes, an evaluation shall be made to verify capabilities.

By \_\_\_\_\_ Date \_\_\_\_\_

Work involves proprietary/confidential information or equipment  (Yes)  (No)

- CONDITION RECEIVED: \_\_\_\_\_ (F) Out of tolerance, repaired to specifications  
\_\_\_\_\_ (G) In tolerance, minor adjustments/repairs made  
\_\_\_\_\_  (J) In tolerance, no adjustments/repairs  
\_\_\_\_\_ (K) Out of tolerance, adjusted to specifications  
\_\_\_\_\_ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) chk

CAL ENVIRONMENT:

Temperature 72°F Humidity 71 %RH

CALIBRATED/REPAIRED:

By [Signature] Cal Procedure CRP-WT-001  
Date 27 Oct 98 Accuracy 1.0  
Cal Interval L Reliability Code: 9  
Next Cal due 27 APR 99 Cal Time 1.0 Repair Time \_\_\_\_\_  
Standards used (Asset#) 1714 1713 1710 1708 1706

DATE COMPLETED 27 Oct 98 [Signature]

DATE PICKED UP \_\_\_\_\_ PICKED UP BY \_\_\_\_\_

31806

# BALANCE CALIBRATION VERIFICATION FORM

DATE 27 Oct 98  
 BALANCE CAL NO: \_\_\_\_\_  
 TEMPERATURE 72  
 HUMIDITY 71  
 BARO PRESSURE 28.31

MFR: OHAUS  
 MODEL: 15400D  
 SERIAL NO: 2413  
 ASSET NO: 2345  
 RANGE \_\_\_\_\_  
 MASS UNCERTAINTY (U<sub>m</sub>) \_\_\_\_\_

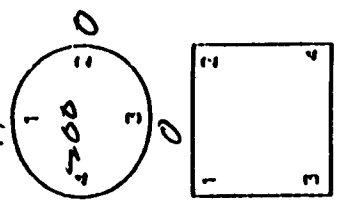
MFR BALANCE TOLERANCES  
 LINEARITY: \_\_\_\_\_  
 ECCENTRICITY: \_\_\_\_\_  
 REPRODUCIBILITY: \_\_\_\_\_  
 TEMP DRIFT °C: \_\_\_\_\_  
 COMBINED MFR SPECS (U<sub>m</sub>) \_\_\_\_\_

CALIBRATION DATES  
 LAST CAL: 7 NOV 98  
 NEXT CAL: \_\_\_\_\_  
 TUR = Comb MFR Specs (U<sub>m</sub>) = 1  
 U<sub>m</sub> = 1

IF TUR < 4:1, U<sub>s</sub> = \_\_\_\_\_

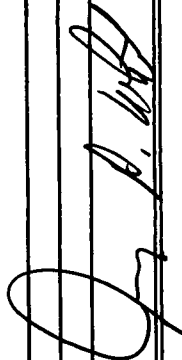
1710  
1709

	RANGE VERIFICATION		
	RANGE 1	RANGE 2	RANGE 3
	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS
DATA POINTS	400	200	80
RUN #1	400.01	200.00	50.00
RUN #2	400.01	200.00	50.00
RUN #3	400.01	200.00	50.00
MEAN			
STD DEV.			

POSITION GUIDE  


SHIFT VERIFICATION			
SELF CALIBRATION Y/N	INTERNAL	EXTERNAL	PAN POSITION
ACTUAL VECT IN CENTER	1	2	3
DIFF			

COMMENTS: \_\_\_\_\_

SIGNATURE: 

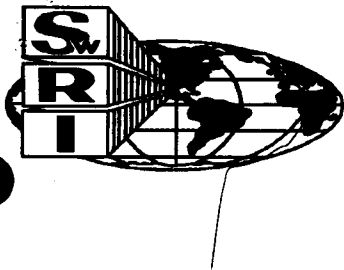
**MEASURED UNCERTAINTY:**

Linearity = \_\_\_\_\_ g  
 Eccentricity = \_\_\_\_\_ g  
 Comb Uncertainty = \_\_\_\_\_ g  
 Rep (c) = \_\_\_\_\_ g  
 Mass tol (Cp) = \_\_\_\_\_ g  
 Comb Uncertainty = \_\_\_\_\_ g

Std Uncertainty = \_\_\_\_\_ g  
 Std Uncertainty = \_\_\_\_\_ g  
 (c) = \_\_\_\_\_ g  
 (Linearity, eccentricity, reproducibility, Mass)

SWRI CALIBRATION LAB  
 (210) 522-5245  
 CAL BY QMP  
 DATE 11/10/98 ID 2345  
 SIN

Excesses U<sub>m</sub> (n=2) = \_\_\_\_\_ g



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
Department of Quality Assurance  
Calibration Laboratory

ACCREDITED



Certificate #  
0972-01

# Certificate of Calibration

27 October 1998

Issued to: JIM PRIKRYL  
Manufacturer/Model: OHAUS TS 400D  
Description: ELECTRONIC BALANCE  
Serial Number: 2883  
Asset Number: 002345

DIV20 B57

## Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this calibration certificate have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report. The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Temperature: 72.0 Deg. F Humidity: 71 % RH  
Calibration Date: 27 Oct 98 Calibration Procedure: CLCP-WT-001  
Interval: 6 months Received: IN TOLERANCE  
Next Calibration Due: 27 Apr 99

Remarks:

## Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
001706	RICE LAKE	2G	WEIGHT STANDARD	C861	25 Jun 99
001708	RICE LAKE	10G	WEIGHT STANDARD	C863	25 Jun 99
001710	RICE LAKE	20G	WEIGHT STANDARD	C865	25 Jun 99
001713	RICE LAKE	200G	WEIGHT STANDARD	C868	25 Jun 99
001714	RICE LAKE	200G	WEIGHT STANDARD	C869	25 Jun 99

Signed:

Title:

LAST PAGE OF REPORT  
Total Pages Printed: 1

Certificate # 31806



**Southwest Research Institute  
Calibration Laboratory  
CALIBRATION DUE NOTICE**

**Date:** 17 Apr 98

**To:** JIM PRIKRYL

DIV20

**Subject:** Items Due for Calibration

Following items are due for calibration on the dates indicated. Please make arrangements for calibration before the current calibration expires. This report is valid for all of your assets scheduled to come due between 1 May 98 and 31 May 98.

For additional information regarding the items listed, please contact Jim Patterson at (210) 522-2702 or Mark Anthony Romero at 522-5460.

<b>Due Date</b>	<b>Mfg.</b>	<b>Model</b>	<b>Description</b>	<b>Serial No.</b>	<b>Asset No.</b>
3 May 98	OHAUS	TS 400D	ELECTRONIC BALANCE	2883	002345

SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
Calibration Laboratory • 522-5215

**WORK ORDER**

CERTIFICATE # 33822 ASSET # 2345 DATE 26 MAR 99

ITEM DATA:

Manufacturer OHAUS Model TS 400D  
Description Balance Serial # 3883  
Accessories \_\_\_\_\_

ACTION REQUESTED enl

CUSTODIAN DWZ Jim Priddy

Turned in by: \_\_\_\_\_ Phone \_\_\_\_\_

CHARGE # \_\_\_\_\_ Date Required \_\_\_\_\_

INSTRUMENT USED ON:  (DOD/NASA)  (NUCLEAR)  (GLP)  (SPPE)  (ISO)  
 OTHER \_\_\_\_\_

COPY OF CALIBRATION CERTIFICATE  (Yes)  (No)

NEW WORK  Yes  No If yes, an evaluation shall be made to verify capabilities.

By \_\_\_\_\_ Date \_\_\_\_\_

Work involves proprietary/confidential information or equipment  (Yes)  (No)

CONDITION RECEIVED: \_\_\_\_\_ (F) Out of tolerance, repaired to specifications  
\_\_\_\_\_ (G) In tolerance, minor adjustments/repairs made  
\_\_\_\_\_ (J) In tolerance, no adjustments/repairs  
\_\_\_\_\_ (K) Out of tolerance, adjusted to specifications  
\_\_\_\_\_ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) \_\_\_\_\_

CAL ENVIRONMENT:  
Temperature \_\_\_\_\_ °F Humidity 33 %RH

CALIBRATED/REPAIRED:  
By J. H. Holt Cal Procedure QACP-105-001  
Date 26 MAR 99 Accuracy \_\_\_\_\_  
Cal Interval 6 Reliability Code: \_\_\_\_\_  
Next Cal due 26 Sep 99 Cal Time 1.8 Repair Time \_\_\_\_\_  
Standards used (Asset#) 1714 B 12 11 10 05 07

DATE COMPLETED enl on site Jim  
DATE PICKED UP \_\_\_\_\_ PICKED UP BY \_\_\_\_\_

**33822**

# BALANCE CALIBRATION VERIFICATION FORM

DATE: 26 MAR 89  
 BALANCE CAL NO.: 33827  
 TEMPERATURE: 21  
 HUMIDITY: 43  
 BARO. PRESSURE: 1440  
 CALIBRATION DATES  
 LAST CAL: 27 Feb 89  
 NEXT CAL: 26 Sep 89

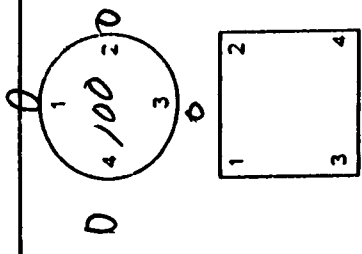
MFGR: Ohaus  
 MODEL: 75400D  
 SERIAL NO: 3883  
 ASSET NO: 2345  
 RANGE:  
 MASS UNCERTAINTY ( $U_m$ ):  
 TUR = Comb. MFR Specs ( $U_{mfr}$ ) = 1  
 $U_{m-stg}$

MFGR BALANCE TOLERANCES  
 LINEARITY:  
 ECCENTRICITY:  
 REPRODUCIBILITY:  
 TEMP. DRIFT/°C:  
 COMBINED MFR SPECS ( $U_{mfr}$ ):  
 If TUR < 4:1,  $U_0 =$

17 14 13 12 11 10 9 7

	RANGE VERIFICATION			
	RANGE 1	RANGE 2	RANGE 3	
	CALIBRATION POINTS		CALIBRATION POINTS	
DATA POINTS	400	200	30	40
RUN #1	400.01	200.00	30.001	20.000
RUN #2				5.000
RUN #2				
MEAN				
STD. DEV.				

POSITION GUIDE



SHIFT VERIFICATION			
SELF CALIBRATION Y/N		EXTERNAL	
PAN POSITION			
ACTUAL WEIGHT IN CENTER	1	2	3
DIFF.			

COMMENTS:  
 SIGNATURE: [Signature]

**MEASURED UNCERTAINTY:**  
 Linearity =      g  
 Eccentricity =      g  
 Comb. Uncertainty =      g  
 Rep ( $\sigma$ ) =      g  
 Mass tol. ( $2\sigma$ ) =      g  
 Comb Uncertainty =      g

Std Uncertainty =      g  
 Std Uncertainty =      g  
 ( $\sigma$ ) =      g  
 (linearity, eccentricity, reproducibility, mass)

*Jim Prisk RYL*

Expanded Unc ( $k=2$ ) =      g



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
(210) 522-5215  
Department of Quality Assurance  
Calibration Laboratory



Certificate #  
0972-01

## Certificate of Calibration

7 April 1999

**Issued to:** JIM PRIKRYL DIV20 B57  
**Manufacturer/Model:** OHAUS TS 400D  
**Description:** ELECTRONIC BALANCE  
**Serial Number:** 2883  
**Asset Number:** 002345

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

**Ambient Conditions:** Temperature: 71.0 Degrees Fahrenheit Humidity: 43 % RH

**Calibration Date:** 26 Mar 99

**Calibration Procedure:** CLCP-WT-001 AUG 97

**Condition as Received:** IN TOLERANCE

**Condition as Released:** IN TOLERANCE

**Remarks:** MEASURING UNCERTAINTY IS +/-0.003 G(0 TO 50G) AND +/-0.02 G  
(50 TO 400G)

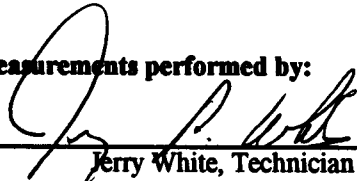
**Approved by:**

  
\_\_\_\_\_  
Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 33822

m:\a2la.rpt Rev date 10 Mar 99

**Measurements performed by:**

  
\_\_\_\_\_  
Jerry White, Technician

Page 1 of 1



SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
Calibration Laboratory • 522-5215

B57  
26 Sept 99

WORK ORDER

WORK ORDER # 36119 ASSET # 2345 DATE 23 Sept 99

ITEM DATA:

Manufacturer OHAUS Model TS 400D  
Description BALANCE Serial # 2023  
Accessories \_\_\_\_\_

ACTION REQUESTED \_\_\_\_\_

CUSTODIAN Jim Priskryl

Turned in by: \_\_\_\_\_ Phone \_\_\_\_\_

CHARGE # 20-0751-006 Date Required \_\_\_\_\_

INSTRUMENT USED ON:  (DOD/NASA)  (NUCLEAR)  (GLP)  (SPPE)  (ISO)  
 OTHER \_\_\_\_\_

COPY OF CALIBRATION CERTIFICATE  (Yes)  (No)

NEW WORK  Yes  No If yes, an evaluation shall be made to verify capabilities.

By \_\_\_\_\_ Date \_\_\_\_\_

Work involves proprietary/confidential information or equipment  (Yes)  (No)

CONDITION RECEIVED: \_\_\_\_\_ Out of tolerance  
\_\_\_\_\_ In tolerance  
\_\_\_\_\_ Damaged (Contact customer)  
\_\_\_\_\_ Contact \_\_\_\_\_ Date \_\_\_\_\_  
\_\_\_\_\_ Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) \_\_\_\_\_

SWRI CALIBRATION LAB  
(210) 522-5215  
CAL 26 Sept 99 BY QAW  
DUE 23 Sept 99 ID 2575  
SN 2023

CAL ENVIRONMENT:

Temperature 73 °F Humidity 37 %RH

CALIBRATED/REPAIRED:

By [Signature] Cal Procedure QCP-105-001 Nov 97

Date 23 Sept 99 Accuracy \_\_\_\_\_

Cal Interval 6 Reliability Code \_\_\_\_\_

Next Cal Due 23 March 00 Cal Time 1.8 Repair Time \_\_\_\_\_

Standards used (Asset #) 1214 13 12 11 10 04

DATE COMPLETED out of set

DATE PICKED UP \_\_\_\_\_ PICKED UP BY \_\_\_\_\_

36119

# BALANCE CALIBRATION VERIFICATION FORM

DATE: 23 Sep/98  
 BALANCE CAL NO.: 36117  
 TEMPERATURE: 73  
 HUMIDITY: 33  
 BARO. PRESSURE: 24.85

MFGR: OMNUS  
 MODEL: 253207  
 SERIAL NO.: 2003  
 ASSET NO.: 2347  
 RANGE:  
 MASS UNCERTAINTY (U<sub>m</sub>):

MFGR BALANCE TOLERANCES  
 LINEARITY:  
 ECCENTRICITY:  
 REPRODUCIBILITY:  
 TEMP. DRIFT/°C:  
 COMBINED MFR SPECS (U<sub>mf</sub>):

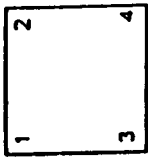
CALIBRATION DATES  
 LAST CAL: 26 MAR 98  
 NEXT CAL: 25 MAR 00

TUR = Comb. MFR Specs (U<sub>mf</sub>) = 1  
 U<sub>m</sub> = 1

IF TUR < 4:1, U<sub>o</sub> = \_\_\_\_\_

1714

		RANGE VERIFICATION			POSITION GUIDE
		RANGE 1	RANGE 2	RANGE 3	
		CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	
DATA POINTS	400	200	50	20	1
RUN #1	400.00	200.00	50.00	20.00	1.00
RUN #2	/	/	/	/	/
RUN #2	/	/	/	/	/
MEAN					
STD. DEV.					



SHIFT VERIFICATION			
SELF CALIBRATION Y/N		PAN POSITION	
INTERNAL	EXTERNAL	1	2
		3	4
ACTUAL WEIGHT IN CENTER			
DIFF			

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 SIGNATURE: [Signature]

MEASURED UNCERTAINTY:  
 Linearity = \_\_\_\_\_ g  
 Eccentricity = \_\_\_\_\_ g  
 Comb. Uncertainty = \_\_\_\_\_ g  
 Rep (σ) = \_\_\_\_\_ g  
 Mass tol. (2σ) = \_\_\_\_\_ g  
 Comb. Uncertainty = \_\_\_\_\_ g

Std Uncertainty = \_\_\_\_\_ g  
 Std Uncertainty = \_\_\_\_\_ g  
 (σ) = \_\_\_\_\_ g  
 (linearity, eccentricity, reproducibility, mass)

Expanded Unc (k=2) = \_\_\_\_\_ g



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
(210) 522-5215  
Department of Quality Assurance  
Calibration Laboratory



Certificate #  
0972-01

## Certificate of Calibration

23 September 1999

**Issued to:** JIM PRIKRYL DIV20 B57  
**Manufacturer/Model:** OHAUS TS 400D  
**Description:** ELECTRONIC BALANCE  
**Serial Number:** 2883  
**Asset Number:** 002345

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

**Ambient Conditions:** Temperature: 73.0 Degrees Fahrenheit Humidity: 33 % RH

**Calibration Date:** 23 Sep 99 **Calibration Procedure** CLCP-WT-001 AUG 97

**Condition as Received:** IN TOLERANCE

**Condition as Released:** IN TOLERANCE

**Remarks:**

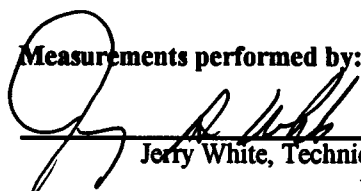
**Approved by:**

  
\_\_\_\_\_  
Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 36119

m:\a2la.rpt Rev date 10 Mar 99

**Measurements performed by:**

  
\_\_\_\_\_  
Jerry White, Technician

Page 1 of 1

# WORK ORDER 38375

Date Received 3/23/00

Asset No. 002345 Manufacturer OHAUS Model TS 400D  
Description ELECTRONIC BALANCE Serial Number 2883  
Accessory Received/Required NONE  
Div/CC ID NONE Accessory to Asset No. N/A Accuracy MFG SPECS  
Div/CC DIV20 Location B57 Custodian JIM PRIKRYL Tel. 5667  
Charge/Project No. 20.00751.006 Proprietary/Confidential N Date Required ROUTINE  
Work Requested CALIBRATION ONSITE

Receiving Inspection

Delivered By N/A

Tel. 5667

## WORK HISTORY

Date	Start Time	Stop Time	Notes

## PARTS

Part Name	Part Number	Cost	Failure Description

## WORK SUMMARY

Failure Description \_\_\_\_\_

Repair Action \_\_\_\_\_

Cal Procedure REC-WT-001 DCL 99 Temp 72 F Hum 51 %

Tech JW Cal Hrs. 1.8 Repair Hrs. \_\_\_\_\_ Part Cost \_\_\_\_\_

Action Taken cnl

Standards Used 1714 1713 1711

Date Cal 23 MAR 2000 Int. 6 Mo. Date Due 23 Apr 2000 Reliability Code 11

Date Picked Up   Picked Up By  

38375

# ELECTRONIC BALANCE CALIBRATION DATA SHEET

WORK ORDER 38378 DATE 23 Mar 2000 TECHNICIAN JNW

MODEL JS 400D SERIAL NO. 2883 ASSET NO. 2845

LOCATION B57

AMBIENT: TEMP 73 HUMIDITY 51 BARO PRESS 14.28

### 1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 400.00

POST-CALIBRATION INDICATION 400.00 TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

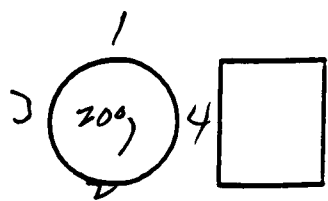
### 2) REPEATABILITY

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

SWRI CALIBRATION LAB  
(210) 522-5219  
CAL 2350795 BY JNW  
DUE 27 Mar 00 ID 2845  
S/N 2883

1714  
1713  
1711

S.D. \_\_\_\_\_ TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_



### 3) OFF-CENTER ERROR

1	200.00	3	200.00
2	200.00	4	200.00

TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

### 4) NON-LINEARITY

TEST POINT	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
0	0.00	—	—
25%	50.00		
50%	50.00		
75%	50.00		
100%	50.00		

TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

40.000  
20.000  
10.000  
1708  
1710  
1709

### 5) COMMENTS:



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
(210) 522-5215  
Department of Quality Assurance  
Calibration Laboratory

## Certificate of Calibration

24 March 2000

**Issued to:** JIM PRIKRYL DIV20 B57  
**Manufacturer/Model:** OHAUS TS 400D  
**Description:** ELECTRONIC BALANCE  
**Serial Number:** 2883  
**Asset Number:** 002345

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

**Ambient Conditions:** Temperature: 73.0 Degrees Fahrenheit Humidity: 51 % RH

**Calibration Date:** 23 Mar 00 **Calibration Procedure:** CLCP-WT001 DEC 99

**Condition as Received:** IN TOLERANCE

**Condition as Released:** IN TOLERANCE

**Remarks:**

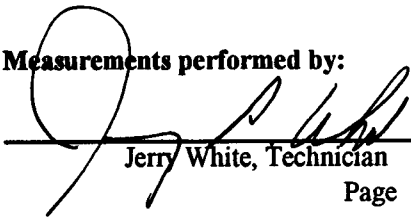
**Approved by:**

  
\_\_\_\_\_  
Jim Patterson, Supervisor or Walt Hill, Metrologist

**Certificate #** 38375

m:\nona21a.rpt Rev date 13 Apr 99

**Measurements performed by:**

  
\_\_\_\_\_  
Jerry White, Technician

Page 1 of 1

# WORK ORDER 40563

Date Received 9/14/00

Asset No. 002345 Manufacturer OHAUS Model TS 400D  
 Description ELECTRONIC BALANCE Serial Number 2883  
 Accessory Received/Required NONE  
 Div/CC ID NONE Accessory to Asset No. N/A  
 Div/CC DIV20 Location B57 Custodian JIM PRIKRYL Tel. 5667  
 Charge/Project No. 20.00751.006 Proprietary/Confidential N Date Required ROUTINE  
 Work Requested CALIBRATION ONSITE  
 Receiving Inspection  
 Delivered By N/A Tel. 5667

### WORK HISTORY

Date	Start Time	Stop Time	Notes

### PARTS

Part Name	Part Number	Cost	Failure Description

### WORK SUMMARY

Failure Description \_\_\_\_\_

Repair Action \_\_\_\_\_

Cal Procedure CLCP-WT-001 DEC 99 Temp 44 F Hum 75 %

Tech JD Cal Hrs. 1.8 Repair Hrs. \_\_\_\_\_ Part Cost \_\_\_\_\_

Action Taken OK

Standards Used 1714 13 12 05 08

Date Cal 14 Sep 2000 Int. 6 Mo. Date Due 14 Mar 2001 Reliability Code \_\_\_\_\_

Date Picked Up \_\_\_\_\_ Picked Up By \_\_\_\_\_

40563

# ELECTRONIC BALANCE CALIBRATION DATA SHEET

WORK ORDER 40563 DATE 14 Sept 2000 TECHNICIAN QW

MODEL T5400D SERIAL NO. 2883 ASSET NO. 2345 2345

LOCATION B57

AMBIENT: TEMP 66 HUMIDITY 75 BARO PRESS 14.26

### 1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 400.00

POST-CALIBRATION INDICATION 400.00 TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

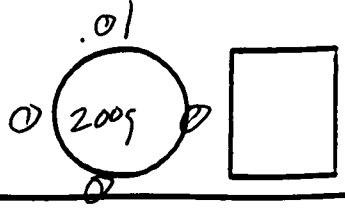
### 2) REPEATABILITY

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

1714  
1713  
1712  
1708  
1709

SWRI CALIBRATION LAB  
(210) 522-5215  
CAR 3 BAL 2000 BY QW  
DUB-TS-2000 ID 2345  
SN 2883

S.D. \_\_\_\_\_ TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_



### 3) OFF-CENTER ERROR

1		3	
2		4	

TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

### 4) NON-LINEARITY

TEST POINT	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
0	0.00	—	—
25%	100.00		
50%	100.00		
75%	100.00		
100%	100.00		

TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

### 5) COMMENTS:

10 10.000  
20 20.000  
30 30.000





Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
(210) 522-5215  
Department of Quality Assurance  
Calibration Laboratory



Certificate #  
0972-01

# Certificate of Calibration

15 September 2000

**Issued to:** JIM PRIKRYL DIV20 B57  
**Manufacturer/Model:** OHAUS TS 400D  
**Description:** ELECTRONIC BALANCE  
**Serial Number:** 2883  
**Asset Number:** 002345

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NC SL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

**Ambient Conditions:** Temperature: 66.0 Degrees Fahrenheit Humidity: 75 % RH


**Calibration Date:** 15 Sep 00 **Calibration Procedure:** CLCP-WT-001 DEC 99

**Condition as Received:** IN TOLERANCE

**Condition as Released:** IN TOLERANCE

**Remarks:**

**Approved by:**

  
\_\_\_\_\_  
Jim Patterson, Supervisor, or Walt Hill, Metrologist

**Measurements performed by:**

  
\_\_\_\_\_  
Jerry White, Technician

Certificate # 40563

m:\a2la.rpt Rev date 22 May 00

# SOUTHWEST RESEARCH INSTITUTE

## Calibration Laboratory

### WORK ORDER

Processed by WHILL at 11:11:05AM on 3/1/01

\*\*\*\*\*

Work Order **444042613**

Arrived 3/1/01

Asset No. 002345 Manufacturer OHAUS

Model TS 400D

Instrument Type/Class BALANCE

Serial No. 2883

Accessory No. Calibration Procedure CLCP-WT-001 DEC 99

Location B57

Div/Client DIV20

Custodian JIM PRIKRYL

Mail Stop B57

Tel. 5667

Charge/Project No. 20.00751.006

Delivered By / Telephone

**IN4CAL**

Special Instructions \_\_\_\_\_

### WORK NOTES

Date	Hours	Remarks/Notes
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

### REPAIR PARTS

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

### WORK SUMMARY

Failure Description \_\_\_\_\_

Repair Action \_\_\_\_\_

Calibration Procedure CLCP - WT - 001, 12/99 Temp 6 F Hum. 54 %

Tech U. Morel Totals Cal Hours 1 Repair Hours \_\_\_\_\_ Parts Cost \_\_\_\_\_

Standards Used 1714, 1713, 1712

Date Picked Up \_\_\_\_\_ Picked Up By \_\_\_\_\_

42613



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
(210) 522-5215  
Department of Quality Assurance  
Calibration Laboratory



Certificate #  
0972-01

## Certificate of Calibration

5 March 2001

**Issued to:** JIM PRIKRYL DIV20 B57  
**Manufacturer/Model:** OHAUS TS 400D  
**Description:** BALANCE  
**Serial Number:** 2883  
**Asset Number:** 002345  
**Work Order Number:** 444042613

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCCL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

**Ambient Conditions:** Temperature: 67.0 Degrees Fahrenheit Humidity: 54 % RH

**Calibration Date:** 2 Mar 01 **Calibration Procedure:** CLCP-WT-001 DEC 99

**Condition as Received:** IN TOLERANCE

**Condition as Released:** IN TOLERANCE

**Remarks:**

**Approved by:**

  
\_\_\_\_\_

Walt Hill, Supervisor  
Institute Calibration Laboratory

**Measurements performed by:**

  
\_\_\_\_\_

Vince Morales, Technician

# ELECTRONIC BALANCE CALIBRATION DATA SHEET

WORK ORDER 44404263 DATE 2 MAR 01 TECHNICIAN Ullman

MODEL TS 4000 SERIAL NO. 2883 ASSET NO. 2345

LOCATION DW 20 B57

AMBIENT: TEMP 67 HUMIDITY 54 BARO PRESS 14.19

### 1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 399.99g

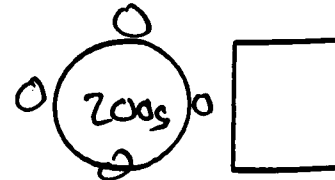
POST-CALIBRATION INDICATION 400.00g TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

### 2) REPEATABILITY

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

1714, 1713  
1712

S.D. \_\_\_\_\_ TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_



### 3) OFF-CENTER ERROR

1		3	
2		4	

TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

SWRI CALIBRATION LAB  
(210) 522-5215  
CAL BY Ullman 2001  
DUE 2/28/01 ID 2345  
S/N 2183

### 4) NON-LINEARITY

TEST POINT	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
0	0	—	—
25%	100.00g		
50%	100.00g		
75%	100.00g		
100%	100.00g		

TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

### 5) COMMENTS:

# SOUTHWEST RESEARCH INSTITUTE

## Calibration Laboratory

### WORK ORDER

Received by MROMERO, 8/17/01 8:54:10AM

Arrived 8/17/01

Work Order **444044842**

Asset No. 002345 Manufacturer OHAUS

Model TS 400D

Instrument Type/Class BALANCE

Serial No. 2883

Accessory No. \_\_\_\_\_

Calibration Procedure CLCP-WT-001 DEC 99

Location B57

Div/Client DIV20

Custodian JIM PRIKRYL

Mail Stop B57

Tel. 5667

**IN4CAL**

Special Instructions \_\_\_\_\_

Notify before making adjustments or repairs. (  Provide measurement readings (  )

Charge/Project No. 00751.006 1.20

Requested By / Telephone \_\_\_\_\_

The above is correct for the work requested.

### WORK NOTES

Date	Hours	Remarks/Notes
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

### WORK SUMMARY

Failure Description \_\_\_\_\_

Repair Action \_\_\_\_\_

Calibration Procedure \_\_\_\_\_

Temp 77 F

Hum. 53 %

Tech Mr. Anthony Roman

Totals Cal Hours 15

Repair Hours \_\_\_\_\_

Parts Cost \_\_\_\_\_

Standards Used 1712, 1713, 1714

Date Picked Up \_\_\_\_\_

Picked Up By \_\_\_\_\_

**44842**



Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
(210) 522-5215  
Department of Quality Assurance  
Calibration Laboratory



Certificate #  
0972-01

## Certificate of Calibration

17 August 2001

**Issued to:** JIM PRIKRYL DIV20 B57  
**Manufacturer/Model:** OHAUS TS 400D  
**Description:** BALANCE  
**Serial Number:** 2883  
**Asset Number:** 002345  
**Work Order Number:** 444044842

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. The results of this calibration relate only to the individual item as described above. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

**Ambient Conditions:** Temperature: 71.0 Degrees Fahrenheit Humidity: 53 % RH

**Calibration Date:** 17 Aug 01 **Calibration Procedure:** CLCP-WT-001 DEC 99

**Condition as Received:** IN TOLERANCE

**Condition as Released:** IN TOLERANCE

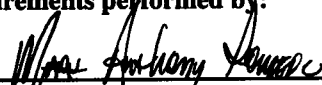
**Remarks:**

**Approved by:**

  
\_\_\_\_\_

Walt Hill, Supervisor  
Institute Calibration Laboratory

**Measurements performed by:**

  
\_\_\_\_\_

Mark Romero, Technician

WORK ORDER 444044842 DATE 17 Aug 2001 TECHNICIAN Anthony Jones  
 MODEL TS4000 SERIAL NO. 2883 ASSET NO. 002345  
 LOCATION 657  
 AMBIENT: TEMP 71 HUMIDITY 53 BARO PRESS 14.31

1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 400.01 g  
 POST-CALIBRATION INDICATION 400.00g TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

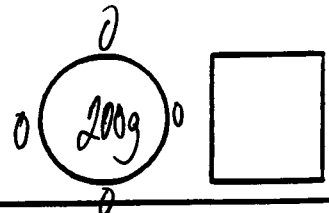
2) REPEATABILITY

1	<u>200.00 g</u>	6	
2		7	
3		8	
4		9	
5		10	

1712  
1713  
1714

SwRI CALIBRATION LAB  
 (210) 522-5215  
 CAL ZMAROI BY VW  
 DUE 2 Sep 01 ID 2345  
 S/N 2883

S.D. \_\_\_\_\_ TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_



3) OFF-CENTER ERROR

1		3	
2		4	

TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

4) NON-LINEARITY

TEST POINT %FS or value	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
	<u>0</u>	<u>-</u>	<u>-</u>
	<u>100.00 g</u>		
	<u>100.00 g</u>		
	<u>100.00 g</u>		
	<u>100.00 g</u>		

TOLERANCE \_\_\_\_\_ P/F \_\_\_\_\_

5) COMMENTS:

# SOUTHWEST RESEARCH INSTITUTE

## Calibration Laboratory

### WORK ORDER

Received by MROMERO, 2/15/02 11:17:56AM

Arrived 2/15/02

Work Order **444047259**

Asset No. 002345 Manufacturer OHAUS

Model TS 400D

Equipment Type BALANCE

Serial No. 2883

Accessory No.

Interval 6 M

Calibration Procedure CLCP-WT-001 DEC 99

Location B57

Div/Client DIV20

Custodian JIM PRIKRYL

Mail Stop B57

Tel 5667

### QUEUE

Special Instructions \_\_\_\_\_

Notify before adjustments or repairs. ( ) Provide data with certificate ( ) Certificate Typ\_\_\_\_\_

Charge/Project No. 00751.006 1.20

Requester / Telephone \_\_\_\_\_

SWRI CALIBRATION LAB  
(210) 522-5215  
CAL BY MARCO  
DUE 17 FEB 02 ID 002345  
SN 2883

This information is correct for the work requested. \_\_\_\_\_

### WORK NOTES

Date	Hours	Remarks/Notes
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

### WORK SUMMARY

Failure Description \_\_\_\_\_

Repair Action \_\_\_\_\_

Tech MARCO Cal Hrs. 1.0 Repair Hrs \_\_\_\_\_ Parts Cost \_\_\_\_\_ Temp 72 F Hum. 48 %

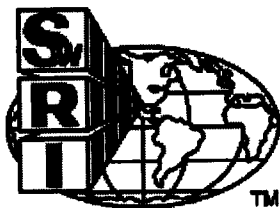
Standards Used 1712, 1713, 1714

Date Picked Up 15 FEB 2002

Picked Up By MARCO

**444047259**





Southwest Research Institute  
6220 Culebra Road  
San Antonio, TX 78238  
(210) 522-5215  
Department of Quality Assurance  
Calibration Laboratory

## Certificate of Calibration

18 February 2002

**Issued to:** JIM PRIKRYL DIV20 B57  
**Manufacturer/Model:** OHAUS TS 400D  
**Description:** BALANCE  
**Serial Number:** 2883  
**Asset Number:** 002345  
**Work Order Number:** 444047259

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

**Ambient Conditions:** Temperature: 72.0 Degrees Fahrenheit Humidity: 48 % RH


**Calibration Date:** 15 Feb 02 **Calibration Procedure:** CLCP-WT-001, 12/99

**Condition as Received:** IN TOLERANCE

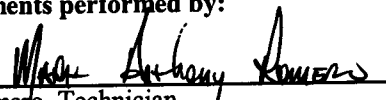
**Condition as Returned:** IN TOLERANCE

**Remarks:**

**Approved by:**

  
\_\_\_\_\_  
Walt Hill, Supervisor  
Institute Calibration Laboratory

**Measurements performed by:**

  
\_\_\_\_\_  
Mark Romero, Technician

Southwest Research Institute  
Calibration Laboratory  
Calibration Data Sheet

Work Order 444047259	Mfr. Ohaus	Technician Mark A. Romero
Asset No. 2345	Model TS400D	Procedure CLCP-WT-001, 12/99
Serial No. 2883	Type Balance	Cal Date 15-Feb-02

Location: Bldg. 57/ Lab L111 Corrosion Lab

Ambient Conditions: 72 F      48 %RH      14.39 PSIA

Operational Check: Limits +/- : 0.01 g

STD Mass Load	As Found Indication	Instrument Error
400.00 g	399.99 g	-0.01 g

Post Calibration Check:

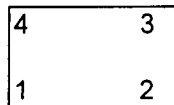
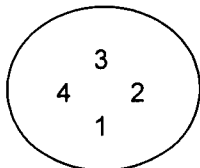
STD Mass Load	Post calibration Indication	Instrument Error	Results
400.00 g	399.99 g	-0.01 g	Pass

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	0.01 g

Off-Centerline Check: Mass Load: 200.00 g



	Indication	Instrument Error	+/- Limits	Results
1	0.00 g	0.00 g	0.01	Pass
2	0.00 g	0.00 g	0.01	Pass
3	0.00 g	0.00 g	0.01	Pass
4	0.00 g	0.00 g	0.01	Pass

Non-Linearity Check: Range: 400.00 g

STD Mass Load	Indication	Instrument Error	+/- Limits	Results
0.00 g	0.00 g	0.00 g	0.01	Pass
100.00 g	100.00 g	0.00 g	0.01	Pass
200.00 g	99.99 g	-0.01 g	0.01	Pass
300.00 g	100.00 g	0.00 g	0.01	Pass
400.00 g	100.00 g	0.00 g	0.01	Pass

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

Southwest Research Institute  
Calibration Laboratory  
Uncertainty Budget

Ohaus TS400D (TI)	Units	Range	Acc. +/- (1)	Resolution
	g	400	0.03	0.01
Source of Uncertainty	Value	Distribution	Divisor	Std. Uncertainty
Standard weight (2)	0.00075	Rectangular	Sqrt 3	0.000433
Resolution	0.01	Rectangular	Sqrt 3	0.00577
Air buoyancy (3)	0.0004	Rectangular	Sqrt 3	0.000231
Combined Uncertainty	RSS			0.00579
Expanded Uncertainty	k=2			0.01
Test Accuracy Ratio (TAR)	TI Acc./STD Acc.			
	40	to 1		
Test Uncertainty Ratio (TUR)	TI Acc./Muk=2			
	2.6	to 1		

(1) Combined Uncertainty (2 sigma) of mfg std dev. (0.01mg), linearity (0.01g), corner load (0.01g), & Class S1 400g (1g) internal check weight tolerance.  
(2) RSS of combined tolerances for standard wgts [(2) Class S1 200g (0.5mg) and S1 100g (0.25mg)].  
(3) No correction is made for air buoyancy. As the span of the weighing machine was adjusted before calibration, the uncertainty limits were estimated to be 1 ppm of the nominal value ie= 0.4 mg.

Ohaus TS400D (TI)	Units	Range	Acc. +/- (1)	Resolution
	mg	80 000	3	1
Source of Uncertainty	Value	Distribution	Divisor	Std. Uncertainty
Standard weight (2)	0.150	Rectangular	Sqrt 3	0.0864
Resolution	1	Rectangular	Sqrt 3	0.577
Air buoyancy (3)	0.08	Rectangular	Sqrt 3	0.0462
Combined Uncertainty	RSS			0.586
Expanded Uncertainty	k=2			1.17
Test Accuracy Ratio (TAR)	TI Acc./STD Acc.			
	20.1	to 1		
Test Uncertainty Ratio (TUR)	TI Acc./Muk=2			
	2.6	to 1		

(1) Combined Uncertainty (2 sigma) of mfg std dev. (1mg), linearity (2mg), corner load (3mg), & Class S1 100g (0.25mg) internal check weight tolerance.  
(2) RSS of combined tolerances for standard wgts [Class S1 50g (0.12mg), 20g (0.074mg), and 10g (0.05mg)].  
(3) No correction is made for air buoyancy. As the span of the weighing machine was adjusted before calibration, the uncertainty limits were estimated to be 1 ppm of the nominal value ie= 0.08 mg.