

[®]
OHAUS

E-Series

ELECTRONIC
BALANCES

Directions for Use
and Maintenance

Please read this
manual before you
use your OHAUS
Electronic Balance

MODELS
E 100, E 300 D, E 400
E 3000 D, E 4000



© Ohaus Scale Corporation 1987, all rights reserved.

WARNING: THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS. IT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A COMPUTING DEVICE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE WHEN OPERATED IN A COMMERCIAL ENVIRONMENT. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER AT HIS OWN EXPENSE WILL BE REQUIRED TO TAKE WHATEVER MEASURES MAY BE REQUIRED TO CORRECT THE INTERFERENCE.

TABLE OF CONTENTS

	Page No.
PREFACE	3
SET UP	
• Environment	4
• Assembly Procedure	4
• Power Requirements	5
• Calibration	5
OPERATION	
• Single Range Balances	6
• Auto Range Balances	6
• Weighing	6
• Taring	7
• Batching	7
• Checkweighing	7
CARE AND MAINTENANCE	7
ACCESSORIES AND REPLACEMENT PARTS	8
SERVICE INFORMATION	8
SPECIFICATIONS	9
TROUBLESHOOTING	10
WARRANTY	11

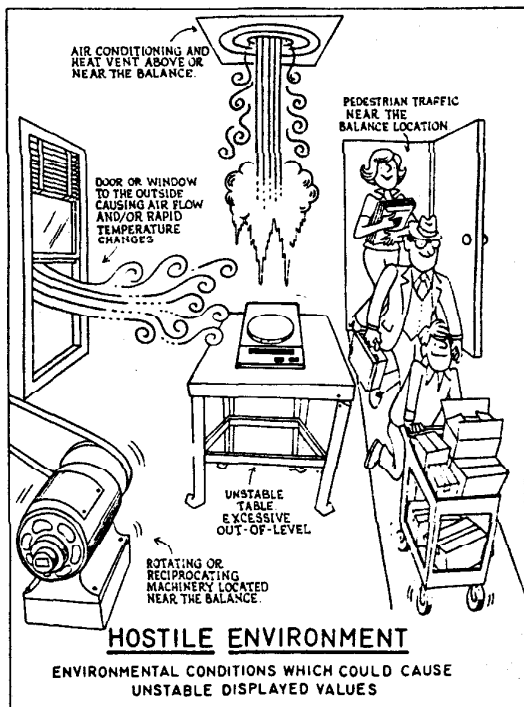
PREFACE

Your OHAUS® Electronic Balance is a precision instrument that is designed to be versatile, accurate and easy to operate. The balance will reward you with many trouble-free weighings if it is handled carefully and maintained properly. This manual specifies the proper procedures for setting up, calibrating and maintaining your balance. Before operating, please read the set up and calibration instructions found on Pages 5 and 6.

SET UP

• ENVIRONMENT

The balance should always be used in an environment which is free from excessive air currents, corrosives, vibration, drafts and/or temperature/humidity extremes. See "HOSTILE ENVIRONMENT" illustration.



• ASSEMBLY PROCEDURE

1. Packed along with your BALANCE were:

A PAN

A PAN SUPPORT

A POWER ADAPTER for power

This INSTRUCTION MANUAL

Your WARRANTY CARD

2. Carefully unpack the balance and other contents.

NOTE: It is recommended that you save the packing material. It will be of value when storing and/or transporting your balance.

3. Place the balance on a reasonably level, stable work surface.
4. Install the pan and pan support.
5. Plug the POWER ADAPTER into the balance and a wall outlet.

• POWER REQUIREMENTS

WARNING:

- To avoid shock hazards, always be certain that the power supply is disconnected **BEFORE** removing the balance cover.
- Even though the balance may have been "switched OFF", voltage is present inside the balance as long as the power supply is connected.
- A power supply has been furnished with the balance. **DO NOT** use any type of power supply other than the one furnished.

• CALIBRATION

The balance has been calibrated before shipment, but the calibration should be checked and, if necessary, reset before the balance is used.

Calibration could have been influenced by such factors as:

- Variations of the earth's gravitational field at different latitudes of the world.
- Handling during shipment.
- Changes in work location.

NOTE: Weights used for Calibration must be adjusted to ANSI/ASTM Class 1 or NBS Class "S" tolerances.

If after placing a calibrated weight on the pan, it becomes evident that the balance needs to be calibrated again, proceed in the following manner:

1. Turn the balance ON and allow it to warm-up, with no weight on the pan, for at least 30 minutes.
2. Press and hold the ON/TARE switch. Release the switch as soon as CAL is displayed. The display will show CO indicating that no weight should be on the platform.
3. Momentarily press the ON/TARE switch.
4. The balance will then display a number which corresponds to the value of the calibration weight, which should be placed in the center of the pan.

NOTE: If no calibration weight is available, press the OFF switch to save the existing calibration.

5. Place the calibration weight on the center of the pan and momentarily press the ON/TARE switch.

6. Wait until the balance displays the indicated calibration weight value. This indicates that the balance is now calibrated.

OPERATION

• SINGLE RANGE BALANCES

After turning the balance on, weighing operations can be performed from zero to maximum capacity, with the specified readability throughout the entire range.

• AUTO RANGE BALANCES

Auto range balances offer both a high readability (fine) range, and also a high capacity (coarse) range. When the balance is first turned on the fine range will be initiated. The balance will remain in this mode until the weight on the pan exceeds capacity of this range. At this time, the balance will automatically change into the high capacity (with reduced readability) range. Once the weight on the pan falls back to within the capacity of the fine range, pressing the ON/TARE will initiate the fine range again.

• WEIGHING

1. Turn the balance on by pressing the ON/TARE switch. The display will show the following for approximately three seconds:



0.0000000 g

This indicates that all display segments are operating properly.

2. TARE the balance by pressing the ON/TARE switch.
3. Place an unknown mass on the center of the pan. The weight will be displayed. The stability indicator will light when the reading is stable.
4. Press the OFF switch.

NOTE: Overload or underload will be indicated by ERROR being displayed.

• TARING

1. Press the ON/TARE switch to obtain a reading of zero.
2. Place an empty container on the center of the pan. Its weight will be displayed.
3. Press the ON/TARE switch and ZERO will be displayed again. The "container weight" will be automatically subtracted from further weighings. As objects are placed in the container, only the weight of those objects will be displayed.
4. When the container and its contents are removed from the pan, the total "TARED" weight will be displayed as a negative value.

• BATCHING (OR COMPOUNDING)

This procedure is actually repetitive taring. You may repeat the above procedure for each component until the capacity of the balance is reached.

• CHECKWEIGHING

1. Place a known weight on the pan to serve as a reference.
2. Press the ON/TARE switch to obtain a zero reading.
3. Remove the known weight from the pan, and its weight will be displayed as a negative value.
4. Place the other weight to be checked against the known weight on the pan.
5. If it is underweight, the difference will be displayed as a negative value. If it exceeds the known weight, the difference will be displayed as a positive value.

CARE AND MAINTENANCE

To keep your balance operating properly, the cover, housing and removable pan should be kept clean and free from foreign materials.

UNPLUG THE BALANCE before cleaning. DO NOT USE CHEMICALS OF ANY KIND on the cover, because they may damage the display window. If necessary a damp cloth with a mild, non-abrasive detergent may be used. Be careful not to scratch the display window and do not allow any liquid to flow inside the balance. Wipe the balance dry with a soft cloth.

ACCESSORIES AND REPLACEMENT PARTS

ACCESSORY

Ohaus Part Number

Calibration Weights

4 kg	49046-01
2 kg	49026-01
1 kg	49016-01
500 g	49055-01
400 g	49045-01
200 g	49025-01
40 g	49044-01
Service Manual	9755-24
Security Locking Cable	76288-00
Animal Subject Box Kit	76290-01
Animal Subject Box	76431-00
Animal Subject Box Cover	3052-00
Glass Draft Shield for E 100, E 300 D, E 400	76510-01
Below Balance Hook	76790-00
Draft Shield for E 100, E 300 D, E 400	76934-00

Scoops

Aluminum — 1-1/2" x 2" x 7/16"	5076-00
Aluminum — 2-1/4" x 3" x 3/4"	5077-00
Footed Polypropylene	1011-20
Footed Stainless Steel	1078-03
In-Service Cover Kit	76901-00
In-Service Cover Plate	76815-00

REPLACEMENT PARTS

Ohaus Part Number

In-Service Cover	76657-01
Power Adapter	90524-10

SERVICE INFORMATION

If your electronic balance needs maintenance, and/or repair, you can be assured of the best and fastest service available by calling the Ohaus Product Service Department for return information. A Product Service Specialist will be able to provide advice on packing, shipping instruction, local service availability, turnaround time, etc. Failure to call may cause delays.

For Electronic Balance Service assistance, please call Ohaus Scale Corporation toll-free at 1-800-526-0659.

SPECIFICATIONS

	E100	E300D		E400		E3000D		E4000	
		HIGH RANGE	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE	LOW RANGE
Capacity (g)	100	300	30	400	300	3000	300	4000	4000
Readability (g)	0.001	0.01	0.001	0.01	0.01	0.1	0.01	0.1	0.1
Taring Range									
(By Subtraction)									
To Capacity									
Taring Time (Sec)	1	1	1	1	1	1	1	1	1
Precision (Std dev) (g)	0.001	0.007	0.001	0.007	0.01	0.07	0.01	0.07	0.07
Linearity (g)	0.001	0.01	0.001	0.01	0.01	0.1	0.01	0.1	0.1
Stabilization Time (Sec)	≈ 2.5	≈ 2.5	≈ 3.0	≈ 2.5	≈ 2.5	≈ 2.5	≈ 3.0	≈ 3.0	≈ 3.0
Pan Size (inches)	4.9 DIA	4.9 DIA		4.9 DIA	6.5 DIA		6.5 DIA		
Weight - net/gross	10.5/16 lb								
Dimensions WxHxD (Inches)	7.50 x 3.75 x 12.75								
Operating Temp. Range	10 - 30° C								
Power	± 14 VDC MIN @ 230 MA (Using Power Supply)								

TROUBLESHOOTING

Before assuming that your Ohaus E-Series Electronic balance is faulty, check through the following troubleshooting list. These simple, corrective actions may eliminate a call to your Service Representative.

Symptom	Probable Cause(s)	Remedy
DISPLAY WILL NOT LIGHT	1. Power supply not connected.	Connect power supply.
BALANCE DISPLAYS ERROR SIGNAL	1. Pan missing from balance.	Replace pan.
	2. Balance capacity exceeded.	Reduce the amount of weight to less than range capacity.
	3. Balance calibrated incorrectly.	Calibrate balance using correct weights and proper procedure.
UNSTABLE WEIGHT READINGS	1. Hostile environment	Protect balance from environment.
	2. Pan movement obstructed.	Inspect and correct.

WARRANTY

ELECTRONIC BALANCE LIMITED WARRANTY

This Ohaus® Electronic Balance is warranted against defects in materials and workmanship for two (2) years from date of delivery. During the warranty period Ohaus will repair, or, at its option, replace at no charge components that prove to be defective, provided that the balance is returned to a Service Center authorized by Ohaus.

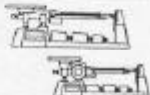
This warranty does not apply if the balance has been damaged by accident or misuse, improper packaging during return shipment, exposed to radioactive or corrosive materials, or as a result of service or modification by other than a Service Center authorized by Ohaus. In lieu of a properly returned warranty registration, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by Ohaus Scale Corporation. Ohaus Scale Corporation shall not be liable for any consequential damages.

OHAUS® Balances

Dial-O-Gram 310/Cent-O-Gram 311 Balance: versatile 10 mg readability with fast, easy dial balancing for economy. The **Cent-O-Gram** Balance uses no dial.



Triple Beam Balance Series 700/ Dial-O-Gram Series 1600 Balance: Top loading convenience in the most popular combination of capacity and sensitivity, plus fast weighing with the dial models.



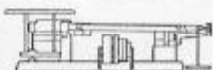
The classic even-arm, two-pan balance: the **Hansen Trip Balance** with sliding poise. The Ohaus **Dial-O-Gram 2000** Balance uses a dial.



For quick moisture determination on most material: the Ohaus **Model MB 301**



For heavy-duty weighing under abusive conditions: the Ohaus **Heavy Duty Solution Balance**.



Manual checkweighing. Specifically designed for rugged performance in harsh environments. Mechanical simplicity and durability. The Ohaus **Check-O-Gram Balance**. USDA approved.



Fast, direct reading digital convenience with high reliability at economical prices. Available in grams only, gram/ounce, gram/carat/pennyweight and parts counting models. Easily interfaced with computers, printers and calculators. Ohaus **Electronic Balances**.



The newest most economical electronic of them all. The Ohaus **Port-O-Gram Electronic Balances**. Battery powered for portability. Available in ounce, gram, pennyweight and parts counting models.



Lowest cost electronic balances, featuring battery operation and ABS plastic construction. Ohaus **Lume-O-Gram Balances**.

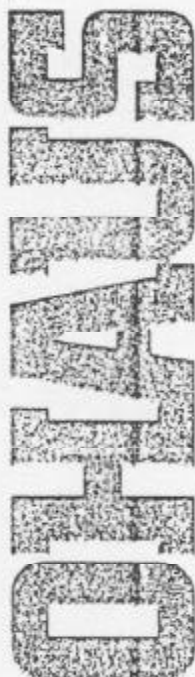


OHAUS® is the registered trademark of Ohaus Scale Corporation as are the following trademarks: **AUTOGRAM®, BRANWEIGH®, CENT-O-GRAM®, CHECK-O-GRAM®, CUBE-O-GRAM®, DEC-O-GRAM®, DIAL-O-GRAM®, DU-O-MEASURE®, GALAXY®, LUME-O-GRAM®, PORT-O-COUNT®, PORT-O-GRAM®, PRACT-O-GRAM®, PRIMER®, STD-A-WEIGH®, TOUCH-N-WEIGH®, 5-0-5®, and 10-10®.**

OHAUS

OHAUS SCALE CORP.
29 Hanover Road
Florham Park, N.J. 07932
Tel: 201-377-9000

Fax: 201-593-0359



E-Series

ELECTRONIC BALANCES

Directions for Use and Maintenance

Please read this
manual before you
use your OHAUS
Electronic Balance

MODELS

E 120, E 300-J, E 400-D, E 400-I
E 1500-D, E 4000-D, E 4000-I



WARNING:

IN COMPLIANCE WITH CLASS A REQUIREMENTS IN BOTH PART 15 OF FCC RULES AND THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DOC, THIS EQUIPMENT DOES NOT EXCEED THE LIMITS FOR RADIO NOISE EMISSIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA MAY CAUSE UNACCEPTABLE INTERFERENCE TO RADIO AND TV RECEPTION REQUIRING THE OPERATOR TO TAKE WHATEVER STEPS ARE NECESSARY TO CORRECT THE INTERFERENCE.

LE PRÉSENT APPAREIL NUMÉRIQUE N'ÉMET PAS DE BRUITS RADIOÉLECTRIQUES DÉPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMÉRIQUES DE CLASSE A PRÉSCRITES DANS LE RÈGLEMENT SUR LE BROUILLAGE RADIOÉLECTRIQUE ÉDICTÉ PAR LE MINISTÈRE DES COMMUNICATIONS DU CANADA.

TABLE OF CONTENTS

	Page No.
PREFACE	3
SET UP	
• Environment	4
• Assembly Procedure	4
• Power Requirements	5
• Calibration	5
OPERATION	
• Single Range Balances	7
• Auto Range Balances	7
• Weighing	8
• Selection of Weighing Units (Model E 300-J only)	8
• Taring	8
• Batching	9
• Checkweighing	9
• RS 232 Interface Option	9
CARE AND MAINTENANCE	9
ACCESSORIES AND REPLACEMENT PARTS	10
SERVICE INFORMATION	10
SPECIFICATIONS	11
TROUBLESHOOTING	12
WARRANTY	12

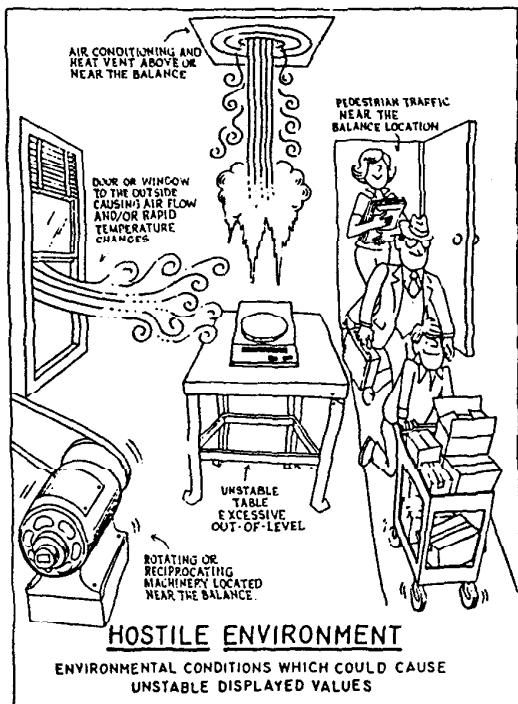
PREFACE

Your OHAUS® Electronic Balance is a precision instrument that is designed to be versatile, accurate and easy to operate. The balance will reward you with many trouble-free weighings if it is handled carefully and maintained properly. This manual specifies the proper procedures for setting up, calibrating and maintaining your balance. Before operating, please read the set up and calibration instructions found on Pages 5, 6 and 7.

SET UP

• ENVIRONMENT

The balance should always be used in an environment which is free from excessive air currents, corrosives, vibration, drafts and/or temperature/humidity extremes. See "HOSTILE ENVIRONMENT" illustration.



• ASSEMBLY PROCEDURE

1. Packed along with your BALANCE were:
A PAN
A PAN SUPPORT
A DRAFT SHIELD (Models E300-J and E120)
A POWER ADAPTER for power
This INSTRUCTION MANUAL
Your WARRANTY CARD

2. Carefully unpack the balance and other contents.

NOTE: It is recommended that you save the packing material. It will be of value when storing and/or transporting your balance.

3. Place the balance on a reasonably level, stable work surface.
4. Install the pan and pan support.

5. INSTALLING THE DRAFT SHIELD (Models E 300-J and E 120)

a. Lift the PLATFORM and the PLATFORM SUPPORT from the balance, exposing the two (2) COVER SCREWS.

b. Remove the COVER SCREWS and set them aside.

c. Model E 300-J

Place the DRAFT SHIELD BASE on the balance with the WINDOW HOUSING open toward the rear, and align the MOUNTING HOLES with those on the balance cover.

Model E 120

Place the ADAPTER PLATE, P/N 76815-01, inside the DRAFT SHIELD. P/N 76433-00 and set them on the balance COVER. Align the CLEARANCE HOLES in the PLATE with those on the balance COVER.

d. Assemble the DRAFT SHIELD, using the SCREWS furnished with the DRAFT SHIELD (The original screws may be discarded if the balance will not be used without the DRAFT SHIELD).

e. Reassemble the PLATFORM SUPPORT and the PLATFORM.

6. Plug the POWER ADAPTER into the balance and a wall outlet.

• POWER REQUIREMENTS

WARNING:

- To avoid shock hazards, always be certain that the power supply is disconnected **BEFORE** removing the balance cover.
- Even though the balance may have been "switched OFF", voltage is present inside the balance as long as the power supply is connected.
- A power supply has been furnished with the balance. **DO NOT** use any type of power supply other than the one furnished.

• CALIBRATION

The balance has been calibrated before shipment, but the calibration should be checked and, if necessary, reset before the balance is used.

Calibration could have been influenced by such factors as:

- Variations of the earth's gravitational field at different latitudes of the world.
- Handling during shipment.
- Changes in work location.

The Calibration Weights required for the E Series models covered by this manual are listed in the following chart.

NOTE:

Weights used for calibration must be adjusted to ANSI/ASTM Class 1 or NBS Class "S" tolerances.

Ohaus Scale Corporation makes approved calibration weights available. The applicable part numbers are noted in parentheses () next to each value.

Model	Linearity Weights	Ohaus Part Number	Span Weight
E 120	50 g	(49054-01)	—
E 120	100 g	(49015-01)	100 g
E 300-J	100 g	(49015-01)	—
E 300-J	200 g	(49025-01)	200 g
E 400-D	40 g	(49044-01)	—
E 400-D	400 g	(49045-01)	400 g
E 400-I	200 g	(49025-01)	—
E 400-I	400 g	(49045-01)	400 g
E 1500-D	200 g	(49025-01)	—
E 1500-D	1 kg	(49016-01)	1 kg
E 4000-D	400 g	(49045-01)	—
E 4000-D	4 kg	(49046-01)	4 kg
E 4000-I	2 kg	(49026-01)	2 kg
E 4000-I	4 kg	(49046-01)	—

SPAN CALIBRATION PROCEDURE

If after placing a calibrated weight on the pan, it becomes evident that the balance needs to be calibrated again, proceed in the following manner:

1. Turn the balance ON and allow it to warm-up, with no weight on the pan, for at least 30 minutes.
2. Press and hold the ON/TARE switch. Release the switch as soon as CAL is displayed. The display will show CO indicating that no weight should be on the platform.
3. Momentarily press ON/TARE switch.
4. The balance will then display a number which corresponds to the value of the calibration weight, which should be placed in the center of the pan.
5. Place the calibration weight on the center of the pan and momentarily press the ON/TARE switch.

6. Wait until the balance displays the indicated calibration weight value. This indicates that the balance is now calibrated.

LINEARITY AND SPAN CALIBRATION PROCEDURE

1. Turn the balance ON and allow it to warm-up, with no weight on the pan, for at least 30 minutes.
2. Turn the balance OFF.
3. Press and hold the ON/TARE switch. Release the switch as soon as -C- is displayed. The display will show CO indicating that no weight should be on the platform.
4. Momentarily press the ON/TARE switch.
5. The balance will display a number which corresponds to the value of the calibration weight, which should be placed in the center of the pan.
6. Place the calibration weight on the center of the pan and momentarily press the ON/TARE switch.
7. The balance will display a number which corresponds to the value of the second calibration weight, which should be placed in the center of the pan.
8. Momentarily press the ON/TARE switch again.
9. Wait until the balance displays the indicated calibration weight value. This indicates that the balance is now calibrated.

NOTE:

If no calibration weight is available, press the OFF switch to save the existing calibration.

OPERATION

• SINGLE RANGE BALANCES

After turning the balance on, weighing operations can be performed from zero to maximum capacity, with the specified readability throughout the entire range.

• AUTO RANGE BALANCES

Auto range balances offer both a high readability (fine) range, and also a high capacity (coarse) range. When the balance is first turned on the fine range will be initiated. The balance will remain in this mode until the weight on the pan exceeds capacity of this range. At this time, the balance will

automatically change into the high capacity (with reduced readability) range. Once the weight on the pan falls back to within the capacity of the fine range, pressing the ON/TARE will initiate the fine range again.

• WEIGHING

1. Turn the balance on by pressing the ON/TARE switch. The display will show the following for approximately three seconds:
 - a. All models except E 300-J

0.00000 g

- b. For model E 300-J only

0.00000 g ^c dwt

This indicates that all display segments are operating properly.

2. TARE the balance by pressing the ON/TARE switch.
3. Place an unknown mass on the center of the pan. The weight will be displayed. The stability indicator will light when the reading is stable.
4. Press the OFF switch.

NOTE: Overload or underload will be indicated by ERROR being displayed.

• SELECTION OF WEIGHING UNITS

Select the desired weighing unit by pressing and holding the ON/TARE SWITCH until

SEL ^c g dwt is displayed.

When the ON/TARE SWITCH is released, the display will cycle between grams (g), carats (c) and pennyweight (dwt). Pressing the ON/TARE SWITCH again will select the desired WEIGHING UNIT. The balance will then be in the weighing mode for the selected WEIGHING UNIT.

• TARING

1. Press the ON/TARE switch to obtain a reading of zero.
2. Place an empty container on the center of the pan. Its weight will be displayed.

3. Press the ON/TARE switch and ZERO will be displayed again. The "container weight" will be automatically subtracted from further weighings. As objects are placed in the container, *only the weight of those objects will be displayed.*
4. When the container and its contents are removed from the pan, the total "TARED" weight will be displayed as a negative value.

• BATCHING (OR COMPOUNDING)

This procedure is actually repetitive taring. You may repeat the above procedure for each component until the capacity of the balance is reached.

• CHECKWEIGHING

1. Place a known weight on the pan to serve as a reference.
2. Press the ON/TARE switch to obtain a zero reading.
3. Remove the known weight from the pan, and its weight will be displayed as a negative value.
4. *Place the other weight to be checked against the known weight on the pan.*
5. If it is underweight, the difference will be displayed as a negative value. If it exceeds the known weight, *the difference will be displayed as a positive value.*

• RS 232 INTERFACE OPTION

Your balance may be expanded to be compatible with calculators, printers or computers by obtaining the optional RS 232 Interface Kit. See the ACCESSORIES section, page 9 for the part number of the kit.

CARE AND MAINTENANCE

To keep your balance operating properly, the cover, housing and removable pan should be kept clean and free from foreign materials.

UNPLUG THE BALANCE before cleaning. DO NOT USE CHEMICALS OF ANY KIND on the cover, because they may damage the display window. If necessary a damp cloth with a mild, non-abrasive detergent may be used. Be careful not to scratch the display window and do not allow any liquid to flow inside the balance. Wipe the balance dry with a soft cloth.

ACCESSORIES AND REPLACEMENT PARTS

ACCESSORY	Ohaus Part Number
Calibration Weights	
4 kg	49046-01
2 kg	49026-01
1 kg	49016-01
400 g	49045-01
200 g	49025-01
100 g	49015-01
50 g	49054-01
Service Manual	9755-27
Security Locking Cable	76288-00
Animal Subject Box Kit	76290-01
E 4000 & E 4000 D	
Subject Box	76431-00
Subject Box Cover	3052-00
Glass Draft Shield (analytical type)	76510-20
E 120, E 400 & E 400 D	
Metal Draft Shield	76934-00
E 400 & E 400 D	

SCOOPS

Aluminum 1-1/2" x 2" x 7/16"	5076-00
Aluminum 2-1/4" x 3" x 3/4"	5077-00
Footed Polypropylene	1011-20
Footed Stainless Steel	1078-03
In-Service Cover Kit	76901-10
Below Balance Hook	76790-00
Interface Kit (RS 232)	77018-00

REPLACEMENT PARTS	Ohaus Part Number
In-Service Cover	76901-20
Power Adapter 100V	90524-11
120V	90524-10
220V	90524-13
240V	90524-14

SERVICE INFORMATION

If your electronic balance needs maintenance, and/or repair, you can be assured of the best and fastest service available by calling the Ohaus Product Service Department for return information. A Product Service Specialist will be able to provide advice on packing, shipping instruction, local service availability, turnaround time, etc. Failure to call may cause delays.

For Electronic Balance Service assistance, please call Ohaus Corporation toll-free at 1-800-526-0659.

Service hours are 8:00 a.m. to 4:00 p.m. EST.

In New Jersey call 201-377-9000.

SPECIFICATIONS

		E 120	E 300-J		E 400-D		E 400-I	E 1500-D		E 4000-D		E 4000-I
			HIGH RANGE	LOW RANGE	HIGH RANGE	LOW RANGE		HIGH RANGE	LOW RANGE	HIGH RANGE	LOW RANGE	
Capacity	(g)	0-120	0-300	0-30	0-400	0-40	0-400	0-1500	0-250	0-4000	0-400	0-4000
E 300-J	{(c)		0-1500	0-150								
only	{(dwt)}		0-192	0-19								
Readability	(g)	0.001	0.01	0.001	0.01	0.001	0.01	0.1	0.01	0.1	0.01	0.1
E 300-J	{(c)		0.05	0.005								
only	{(dwt)}		0.01	0.001								
Taring Range (By Subtraction)		To Capacity										
Taring Time (Sec)		1	1	1	1	1	1	1	1	1	1	1
Precision (Std dev) (g)		0.001	0.007	0.001	0.007	0.001	0.007	0.07	0.01	0.07	0.01	0.07
Linearity (g)		0.001	0.01	0.001	0.01	0.001	0.01	0.1	0.01	0.1	0.01	0.1
Stabilization Time (Sec)		2.5	2.5	3.0	2.5	3.0	2.5	2.5	3.0	2.5	3.0	2.5
Pan Size (inches)		4.9 DIA	4.9 DIA	4.9 DIA	4.9 DIA	4.9 DIA	4.9 DIA	6.5 DIA	6.5 DIA	6.5 DIA	6.5 DIA	6.5 DIA
Weight - net/gross		8/14										
Dimensions WxHxD (inches)		7.50 x 6.00 x 12.75										
Operating Temp. Range		10° - 30° C										
Power		± 14 V DC 230 MA Power Pack (External)										

TROUBLESHOOTING

Before assuming that your Ohaus E-Series Electronic balance is faulty, check through the following troubleshooting list. These simple, corrective actions may eliminate a call to your Service Representative.

Symptom	Probable Cause(s)	Remedy
DISPLAY WILL NOT LIGHT	1. Power supply not connected.	Connect power supply.
BALANCE DISPLAYS ERROR SIGNAL	1. Pan missing from balance. 2. Balance capacity exceeded. 3. Balance calibrated incorrectly.	Replace pan. Reduce the amount of weight to less than range capacity. Calibrate balance using correct weights and proper procedure.
UNSTABLE WEIGHT READINGS	1. Hostile environment 2. Pan movement obstructed.	Protect balance from environment. Inspect and correct.

LIMITED WARRANTY

Ohaus products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period Ohaus will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to Ohaus.

This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than Ohaus. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by Ohaus Corporation. Ohaus Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact Ohaus or your local Ohaus dealer for further details.

OHAUS[®]

E-Series INTERFACE KIT

NOTE: The accessory described in this document is no longer supported by Ohaus. This information is distributed for the information only.

For use on MODELS

E 120, E 300-J, E 400-D,

E 400-I, E 1500-D,

E 4000-D & E 4000-I

**Directions for Installation and
Operational Information**

Part Number 77018-00

PREFACE

This Ohaus Interface Kit provides the capability for communicating weighing information from certain "E" Series balances to Data Processing equipment.

PARTS LIST

Part Number	Description	Quantity
76996-01	Back Plate	1
90640-00	Integrated Circuit, RS - 232 Hybrid	1
90511-08	Interconnecting Cable Assembly	1

INSTALLATION

In order to modify one of the "E" Series models specified, proceed in the following manner:

WARNING

- To prevent damage to the balance, always be certain that the power supply is disconnected BEFORE removing the cover.
- Even though the balance may have been "Switched OFF", voltage is present inside the balance as long as the power supply is connected.

1. Remove the PLATFORM and the PLATFORM SUPPORT from the balance, exposing the cover mounting screws.
2. Remove the two (2) SCREWS and WASHERS and set them aside to use again.
3. Raise the right hand side (when viewed from the front of the balance) of the COVER sufficiently to grasp the PLUG near the right hand side.
4. Disengage the PLUG and then lay the cover over on its side, as shown in Figure 1.

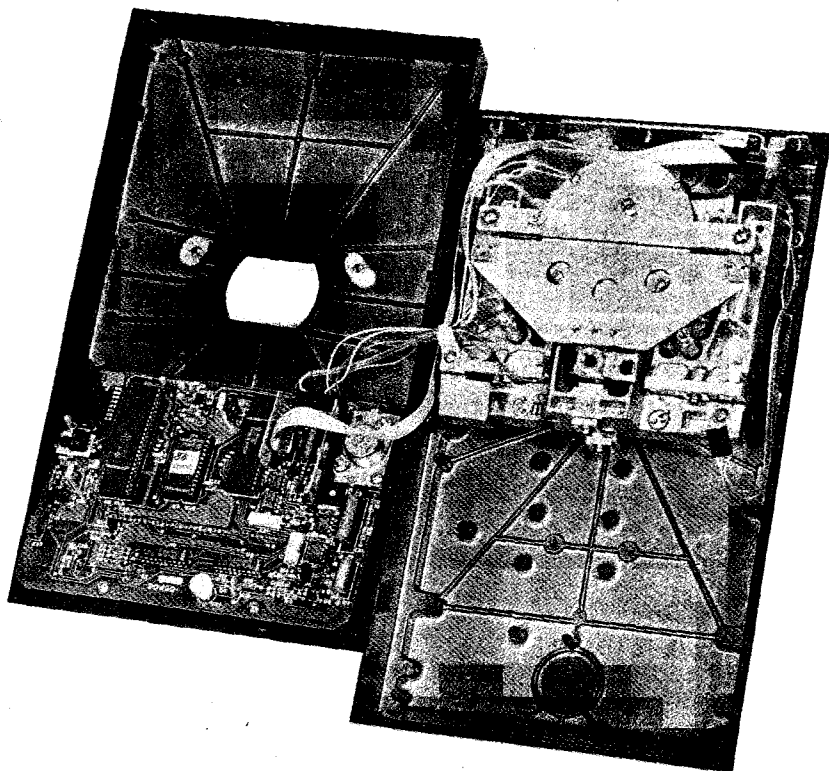


FIGURE 1

5. Disengage the BRACKET located inside the BACK WALL by removing the three (3) SCREWS and the plastic HOLE PLUG from the BACK PANEL. Set the screws and hole plug aside to use again. The back panel will be replaced and may be discarded.
6. Lift the BRACKET out of the balance. The white plastic RECEPTACLE located in the rear right hand corner may be disassembled from the bracket by pressing the locking tabs together.
7. Install the 9 PIN RECEPTACLE end of the INTERCONNECTING CABLE (Part Number 90511-08) in the BRACKET, as shown in Figure 2, using the SCREWS and HEX NUTS furnished.

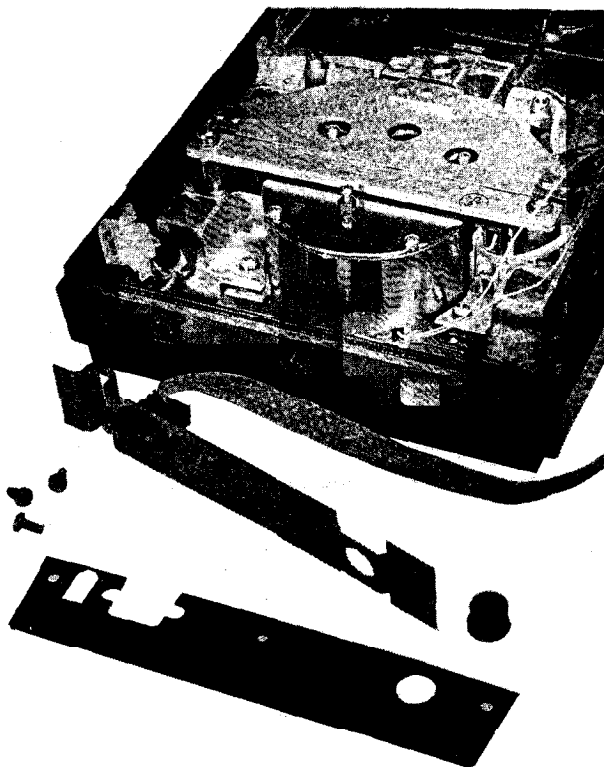


FIGURE 2

Note that the FLATS of the HEX NUTS must be in the HORIZONTAL position after the SCREWS are tightened.

8. Route the INTERCONNECTING CABLE along the REAR and LEFT SIDE WALLS, as shown in Figure 1.
9. Note the polarity of the RECEPTACLE on the other end of the cable. Connect it to the plug (J2) on the P.C. BOARD. See Figure 3.

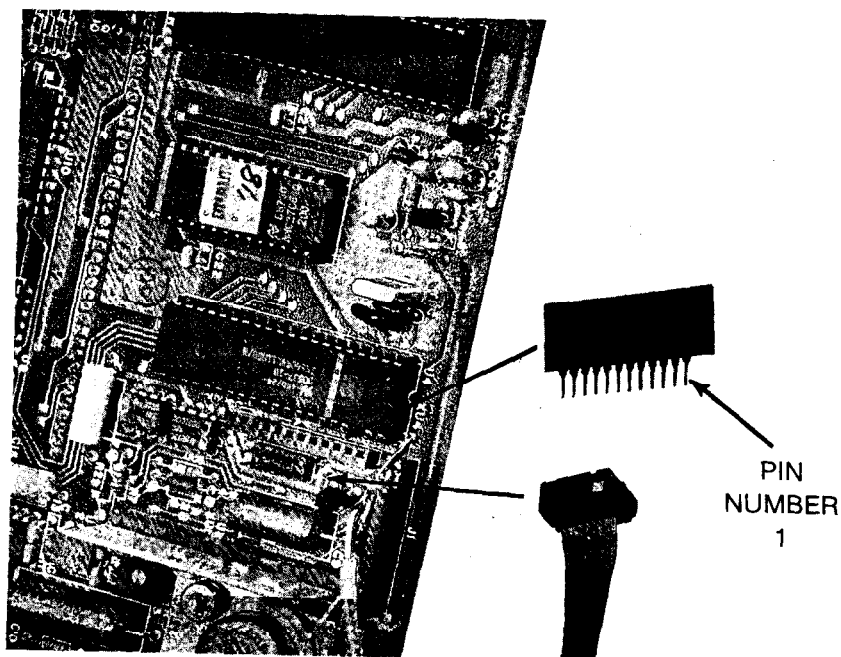


FIGURE 3

10. Note the marking that indicates PIN NUMBER 1 on the INTEGRATED CIRCUIT (Part number 90640-00). Install the INTEGRATED CIRCUIT in the RECEPTACLE (U-11) on the P.C. BOARD, making certain that PIN NUMBER 1 is toward J1 and the rear of the balance. See Figure 3.

NOTE:

Before proceeding to Step 11, be sure to return the white plastic receptacle (beveled sides up).

11. Install the BRACKET and NEW BACK PANEL (Part Number 76966-01), using the same three (3) SCREWS. Note that the flats of the hex nut are in the panel slots.
12. Reinstall the HOLE PLUG.

NOTE:

DO NOT REINSTALL THE COVER BEFORE STEP 13!

13. Reconnect the PLUG (disengaged in Step 4) to its RECEPTACLE (J3) on the P.C. BOARD. Removing the 3 wire cable from the clamp on the right side wall will simplify this step. Be sure to insert the wires in the clamp again after the connection is made.
14. Reinstall the COVER, using the same two (2) SCREWS and WASHERS.
15. Return the PLATFORM and PLATFORM SUPPORT. The completed assembly is shown in Figure 4.

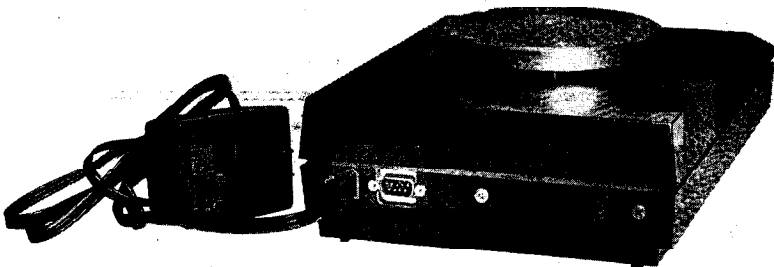


FIGURE 4

HARDWARE

Your balance is now equipped with a bi-directional RS - 232 compatible interface. You can interface the balance to other equipment by means of the 9 PIN CONNECTOR just installed on the rear of the balance. The pin out and pin description is shown in Figure 5.

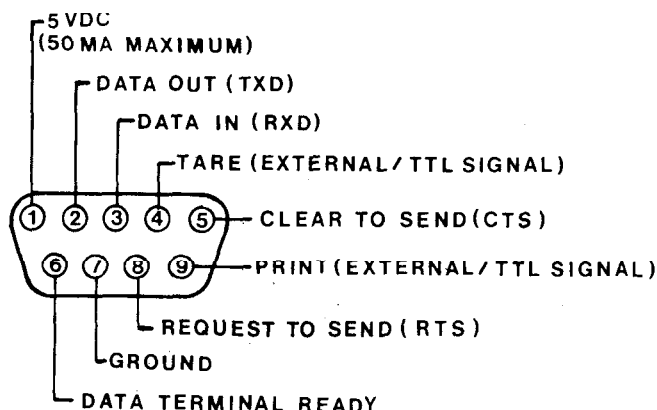


FIGURE 5
REAR OF BALANCE

The balance will not output any information under any circumstances unless pin 5 (CTS) is held in an ON state (+3 to +15 VDC). Interfaces not utilizing the CTS handshake may tie pin 5 to pin 6 to defeat it.

NOTE:

This interface does not strictly adhere to the official RS 232 standard (particularly in the connector used). However, it is compatible with what has become commonplace in the microcomputer industry.

Specifications for the output data are:

Stop Bits	2
Baud Rate	300
Parity	None
Data Bits	7

If desired, connect external TARE Switch between pin 4 and pin 7. Connect external PRINT Switch between pins 7 and 9. TARE and PRINT Switches should be "Normally Open."

SOFTWARE

All command inputs must be terminated by a carriage return. All other control characters and spaces are ignored by the balance. Invalid commands are ignored.

COMMAND DESCRIPTION

1. "?" PRINT MODE

The balance responds by sending back the current MODE and stability:

Field	/ mode /	stability /	Cr /	Lf /
Length	5	1	1	1

Total # of characters transmitted 8

The 5 character mode field is comprised of the current units abbreviation left justified with appended blanks where appropriate.

2. "T" TARE

This command has the same effect as pressing the ON/TARE switch on the front panel. No data is output.

3. "P" PRINT DISPLAY DATA

The balance responds by sending the weight information followed by the mode and stability data.

Field	/ pol	/ weight	/	/ mode	/ stability	/ Cr	/ Lf
Length	1	7	1	5	1	1	1

Total # of characters transmitted 17

The single character polarity field contains a blank or a minus sign. The seven character weight field contains the current display weight right justified with lead zero blanking and a decimal point. The mode and stability fields are described under the PRINT MODE command.

RS-232 SPECIAL OUTPUT FIELD

If the balance is in an error condition, any request for output will yield the error field described below.

Field	/ "ERROR"	/ Cr	/ Lf
Length	5	1	1

Total # of characters transmitted 7

OHAUS® is the registered trademark of Ohaus Corporation as are the following trademarks: AUTOGRAM®, BRAINWEIGH®, CENT-O-GRAM®, CHECK-O-GRAM®, CUBE-O-GRAM®, DEC-O-GRAM®, DIAL-O-GRAIN®, DIAL-O-GRAM®, DU-O-MEASURE®, GALAXY®, LUME-O-GRAM®, PORT-O-COUNT®, PORT-O-GRAM®, PRACT-O-GRAM®, PRIMER®, STO-A-WEIGH®, TOUCH-N-WEIGH®, 5-0-5®, and 10-10®.

OHAUS

OHAUS CORPORATION