



Model 6700 Family

Point-of-Sale
Interface Scales



Model 6720



Model 6702



Model 6710

User's Manual

UNITED STATES

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emmet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Class A prescrites dans le Reglement sur le brouillage radioelectrique que edicte par le ministere des Communications du Canada.



CAUTION

Risk of electrical shock. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

Avery Berkel reserves the right to change specifications at any time.

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Specifications

Description | The Avery Berkel 6700 models are digital electronic bench scales specifically designed for point-of-sale applications and are "Legal-for-Trade." The scales are easily interfaced with a cash register, computer or other POS terminal.

Capacity/Resolution | Important! Weights and Measures normally requires inspection of scale before scale is placed into operation.

<u>Model</u>	<u>Capacity (lb)</u>	<u>Capacity (kg)</u>
6702-7	15 x .005	7 x .002
6702-15	30 x .01	15 x .005
6710-7	15 x .005	7 x .002
6710-15	30 x .01	15 x .005
6720-7	15 x .005	7 x .002
6720-15	30 x .01	15 x .005
6720-30	60 x .02	30 x .01
6720-60	120 x .05	60 x .02

Agency Certificates of Conformance | **Model 6702/6710/6720**
 US and Canada Approved Legal for Trade
 USA: NTEP COC# 95-070
 Canada: MOI# AM-5076

Dimensions	<p>Model 6702: 10.4 x 6.4 x 2.5</p> <p>Model 6710: 10.4 x 10.4 x 2.5</p> <p>Model 6720: 14.1 x 12.6 x 4.1</p>
Power Supply	<p>UL/CSA approved power supply with 6' line cord</p> <p>6702/6710: Wallmount</p> <p>6720: In-line mounted below scale</p> <p>Input: 120 VAC +10%-15%, Standard 3 wire w/ground</p> <p>Output: 15 VDC @.3 Amps DC</p>
Frequency	50/60 Hz selectable
Power Requirements	0.1 amp maximum
Operating Temperature	<p>42°F – 104°F (5°C – 40°C)</p> <p>10% to 95% RH (non-condensing)</p>
Construction	<p>Models 6702/6710: Aluminum Base and Load Bridge with stainless steel weigh platter. Overload protection: Adjustable center and side stops.</p> <p>Model 6720: Die cast aluminum base with a stainless steel weigh platter. Overload protection: Adjustable center stop, fixed corner stops.</p>
Display	<p>½" high, six-digit LCD.</p> <p>Key panel with ZERO and TEST keys.</p> <p>Remote display with 7 ft. cable. Standard on Models 6702 and 6710, optional on 6720.</p>
Scale Leveling	Using the leveling bubble as a guide, adjust the four adjustable feet to level the scale.
Zero Window	Initial automatic zero setting is ±10% of maximum capacity—active at power up. Manual zero setting range is ±2% of maximum capacity—active using the ZERO key.

Under Capacity Limits	Under capacity indication will be given with dashes appearing on the bottom line of the display whenever the display is below the initial zero value.
Over Capacity Limits	Over capacity indication will be given with dashes appearing in the upper line of the display whenever the weighed item exceeds 9 divisions over the rated capacity of the unit. The scale will use the initial zero value for reference for over capacity determination.
Sealing	Access to the calibration switch can be secured with a lead wire or pressure sensitive security seal. The remote or primary indicators have no metrological features that require the use of a security seal.
Internal Counts	The scale has 100,000 internal counts.
Dynamic Response	<p>The time interval when weight is applied to the scale until a stable weight is displayed:</p> <p style="text-align: center;">0–1000d, 1.5 seconds 1000d+, 2.0 seconds maximum mean average</p>
Communications	<p>Factory default settings: 9600 baud, 7 data bits, even parity, 1 stop bit.</p> <p>Specific cable requirements are determined by particular POS terminal. A standard 9-pin pass through RS-232 interface cable is necessary for most PC interfaces. Not a null modem.</p> <p>RS-232 bidirectional, configurable 1200 to 19.2K baud. Transmits weight and scale status whenever ASCII "W" <CR> is sent by the POS terminal. Standard ECR protocol is OPOS compatible. For Protocol details contact factory.</p>

Initial Setup

Unpacking the Scale

1. Remove contents of the shipping container.
2. Inspect the scale for evidence of shipping damage. Immediately report any damage to the shipper.

Installing the Scale

1. Mount the scale on a stable, level surface that is free from air currents and vibration. Be sure the scale platter does not touch any adjacent surfaces.
2. To install the scale surface flush with a countertop, use the dimensions on the following page to guide construction.

Model 6702

Scale Dimensions	Min. Cut-Out Dimensions
D 10.4 in. (26.4 cm)	11.1 in. (28.2 cm)
W 6.4 in. (16.3 cm)	7.1 in. (18.0 cm)
H 2.5 in. (6.35 cm)*	
*Adjustable to 3.0 in. (7.6 cm)	

Model 6710

Scale Dimensions	Min. Cut-Out Dimensions
D 10.4 in. (26.4 cm)	11.1 in. (28.2 cm)
W 10.4 in. (26.4 cm)	11.1 in. (28.2 cm)
H 2.5 in. (6.35 cm)*	
*Adjustable to 3.0 in. (7.6 cm)	

Model 6720

Scale Dimensions	Min. Cut-Out Dimensions
D 12.6 in. (32.0 cm)	13.25 in. (33.7 cm)
W 14.1 in. (35.8 cm)	14.75 in. (37.5 cm)
H 4.1 in. (10.4 cm)*	
*Adjustable to 4.6 in. (11.7 cm)	

3. Loosen the collets or jam nuts on the leveling feet. Level the scale by using the level bubble under the scale platter as a guide. Be sure all four feet are in firm contact with the counter, then tighten all collets and jam nuts.
4. Make sure all power cords, remote display cables, etc., are not touching the live weighing surface.
5. Plug the unit into an appropriate voltage outlet that is properly grounded.
6. The 6720 scale can support more than one display; however, only one keypad is operable. Switch 3 selects internal or external display keypad operation.

Switch 3 Settings

Closed= internal display keys operational

Open = external display keys operational

The normal setting for the 6720 with the internal display is Switch 3=Closed. On 6720 w/remote only or 6710 and 6702 scales, Switch 3=Open.

Operation

Power Up Test Sequence

*If RAM or ROM error is reported, you must press the **TEST** key to acknowledge the condition. See "Error Codes" section.*

When the scale is first powered up, it will perform a test sequence. During this sequence, the display will show the following:

- The model number and the software version/revision level.
- A numeric counting test for all segments of the display. During this test, a test of Random Access Memory (RAM) and a test of Read Only Memory (ROM) is performed.

If everything is OK, the display will show zero weight and the scale is ready for use.

Performing a Normal Weighment

If the scale is outside the $\pm 2\%$ zero window, center dashes are displayed “- - -.” If necessary, reapply power to reset the initial zero setting.

1. With the scale powered on, make sure the scale platter is empty and the display is at zero. If it is not, press the **ZERO** key...

0.00 is displayed.

2. Place an item to be weighed on the scale platter...

The scale will display the gross weight.

3. Remove the item from the scale platter.

Operation Controls

ZERO Key – The **ZERO** key will zero the scale if weight is stable, and acts as the NO or SCROLL key in the Menu mode.

TEST Key – The **TEST** key can be used to perform the initial power-up test sequence, recall diagnostic routines, or to view the scale configuration information. This key also acts as YES or ACCEPT in the Menu mode.

Accessing the Menu Mode

The 6700 models power up ready for weighing operations. Access the Menu mode by setting Switch 1 shown in Figure 1 or 2 to the OPEN or Menu mode position.

Top View of 6720 Scale with Platter Removed.

Figure 1
6720 Switch
Location

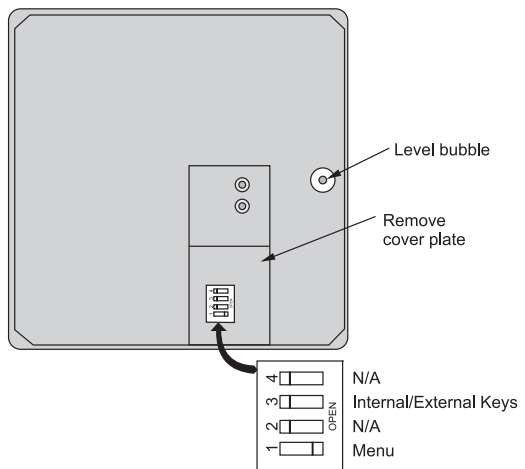
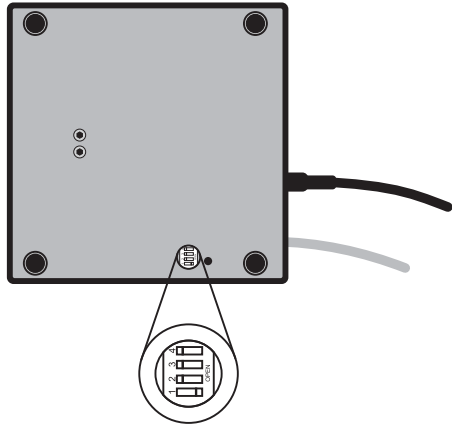


Figure 2
Bottom view

Bottom View of 6702 or 6710 Scale



Menu Mode

There are three modes available to you with Switch 1 in the Menu mode or OPEN position. They are as follows:

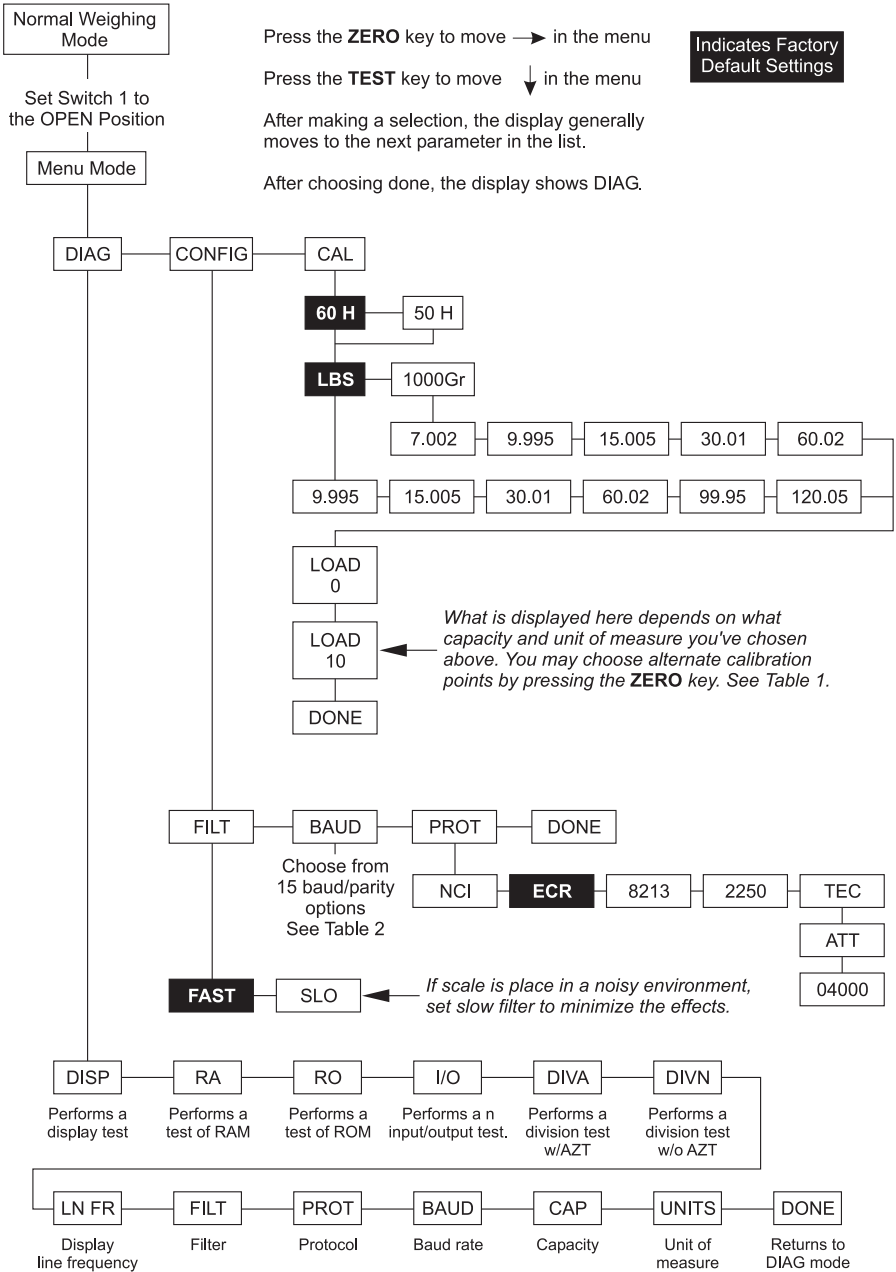
DIAG (Diagnostic Mode) – To test areas of the scale’s function

CAL (Calibration Mode) – To calibrate the scale

CONF (Configuration Mode) – To configure the scale for your application

The structure for these menus is shown in Figure 3. Specific information about each mode followed by step-by-step instructions for accessing them are described in the following pages.

Figure 3 Menu Structure



Alternate
Calibration Points

The Avery Berkel 6700 bench scales allow calibration using less than full capacity weights. See Table 1 for alternative weights that can be used to calibrate your scale for its designated capacity.

Table 1
Alternative
Calibration Points

<u>Capacity</u>	<u>Alternative Calibration Weights</u>
9.995 lb	10 lb
15 x .005 lb	10, 15 lb
7 x .002 kg	7 kg
9.995 kg	10 kg
30 x .01 lb	10, 20, 30 lb
15 x .005 kg	10, 15 kg
60 x .02 lb	10, 30, 60 lb
30 x .01 kg	10, 20, 30 kg
99 x .05 lb	10, 50, 100 lb
120 x .05 lb	10, 50, 100 lb
60 x .02 kg	10, 30, 60 kg

Baud Rate and
Parity Options

Table 2
Baud Rate and
Parity Options

<u>Display</u>	<u>Baud</u>	<u>Parity</u>
12 E	1200	Even
24 E	2400	Even
48 E	4800	Even
96 E*	9600	Even
19.2 E	19.2K	Even
12 o	1200	Odd
24 o	2400	Odd
48 o	4800	Odd
96 o	9600	Odd
19.2 o	19.2K	Odd
12 n	1200	None
24 n	2400	None
48 n	4800	None
96 n	9600	None
19.2 n	19.2K	None

*Default Factory Settings

Diagnostics Mode

Diagnostic (DIAG) Mode

Tip: Easy access to the diagnostic mode is available directly from the front panel without opening the scale to access the Menu mode switches. See Setup Review/Test section.

The Diagnostic (**DIAG**) mode menu allows testing of specific areas of the scale's function and viewing current configuration settings. This includes the following:

DISPLAY (DISP) – Shows the version and revision of the software, followed by a display segment test.

RAM (RA) – Performs a nondestructive test of RAM in the processor.

ROM (RO) – Performs a checksum of all locations of ROM in the processor.

INPUT/OUTPUT (I/O) – Data is output by the scale and through the use of a loopback connector. The data is immediately read back into the receive channel and verified against what was sent. Requires a jumper (short) between transmit and receive data lines.

DIVISION TEST, w/AZT (DIV-A) – Weight data is normalized to 100,000 counts of displayed resolution. AZT (Auto Zero Tracking) is enabled.

DIVISION TEST, w/o AZT (DIV-N) – Weight data is normalized to 100,000 counts of displayed resolution. AZT is disabled.

Viewable configuration settings include:

LN FR	Line frequency
FILT	Filter setting
PROT	Serial protocol
BAUD	Baud rate
CAP	Scale capacity
UNITS	Unit of measure

If you encounter any failure in these tests, contact your local Avery Berkel dealer.

*Press the **ZERO** key to scroll through lists of selections.*

*Press the **TEST** key to make a selection.*

*To skip a test, press the **ZERO** key to scroll to the next test.*

Follow these steps to access the tests in the **DIAG** menu.

1. From normal weighing mode, move Switch 1 to the Menu mode or OPEN position. (See Figure 1 or 2).

DIAG is displayed.

2. Press the **TEST** key. . .

DISP is displayed. This stands for display.

3. Press the **TEST** key to perform the display test described earlier...

Display test is performed and the display shows *DISP* after the test is completed.

4. Press the **ZERO** key...

RA is displayed. This stands for the RAM test.

5. Press the **TEST** key to perform the RAM test...

PASS or *FAIL* is displayed briefly; then *RA*.

6. Press the **ZERO** key...

RO is displayed. This stands for the ROM test.

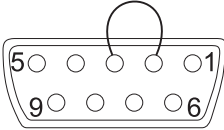
7. Press the **TEST** key to perform the ROM test . . .

PASS or *FAIL* is displayed briefly; then *RO*.

8. Press the **ZERO** key...

I/O is displayed. This stands for the INPUT/OUTPUT test.

9-Pin RS-232 models:



On 15-Pin "RS" units,
jumper from Pin 1 to 2.

DIAG will flash every 15 seconds during the high resolution test as a reminder that you are doing a test and not seeing normal weight readings.

The remaining selections are for viewing current settings only. You can scroll through the menu to verify the settings, but to make changes, you must enter configuration or calibration.

9. With a loopback connector in place, press the **TEST** key to perform the I/O test...
PASS or FAIL is displayed briefly, then I/O. This test is only valid on 9-pin or 15-pin models configured as "RS" units.
10. Press the **ZERO** key . . .
DIV-A is displayed. This stands for the high resolution DIVISION TEST W/AZT enabled. See note at left.
11. Press the **TEST** key to perform this test...
The display shows the weight on the scale at a resolution of 100,000 counts.
12. Press the **TEST** key to stop the test...
DIV-A is displayed.
13. Press the **ZERO** key...
DIV-N is displayed. This stands for the high resolution DIVISION TEST w/o AZT enabled.
14. Press the **TEST** key to perform this test...
The display shows the weight on the scale at a resolution of 100,000 counts.
15. Press the **TEST** key to stop the test...
DIV-N is displayed.
16. Press the **ZERO** key...
LN FR is displayed. This stands for line frequency.
17. Press the **TEST** key...
The current line frequency (50 or 60) is displayed.

18. Press the **ZERO** key...

FILT is displayed. This stands for filtering.

19. Press the **TEST** key...

The current filter setting, *FAST* or *SLO*, is displayed.

18. Press the **ZERO** key...

PROT is displayed. This stands for protocol.

19. Press the **TEST** key...

The current serial protocol selection is displayed.

20. Press the **ZERO** key...

BAUD is displayed. This stands for baud rate.

21. Press the **TEST** key...

The current baud rate and parity selection is displayed.

22. Press the **ZERO** key...

CAP is displayed. This stands for capacity.

23. Press the **TEST** key...

The current capacity/resolution selection is displayed.

24. Press the **ZERO** key...

UNITS is displayed. This stands for unit-of-measure.

25. Press the **TEST** key.

The current unit-of-measure *LBS* (for pounds) or *1000G* (for kilograms), is displayed.

26. When you are finished, press the **ZERO** key, until *DONE* is displayed, then press the **TEST** key to return to the top menu level...

DIAG is displayed. Or close Switch 1 to return to normal weighing mode.

Configuration Mode

The Configuration (**CONF**) Mode menu allows scale configuration for your specific application needs. The items you can configure are as follows:

FILTERING (FILT) – Choose between *FAST* and *SLO* filtering. *SLO* should be chosen in areas susceptible to vibration. Choose *FAST* filtering for more stable conditions.

Baud (BAUD) – Choose a baud and parity from Table 2.

Protocol (PROT) – Select the RS-232 communication protocol.

NCI – NCI standard

ECR – Cash register compatible

8213 – 8213 compatible (Sharp)

2250 – 2250 compatible (Swintec)

TEC – MA-1535/1595 compatible (TEC)*

ATT – AT&T compatible

o4000 – Olympia Cash Register compatible

* *Approved for use with 30 and 60 lb or 7, 15, 30 and 60 kg capacities only*

Access the Menu mode as shown in Figure 3.

1. From the *DIAG* display, press the **ZERO** key until *CONF* is displayed, or from the normal weighing mode, move Switch 1 to the Menu mode or the *OPEN* position; then press the **ZERO** key until *CONF* is displayed.

2. Press the **TEST** key...
FILT is displayed.
3. Press the **TEST** key...
The current setting, *FAST* or *SLO*, is displayed.
4. Use the **ZERO** key to toggle between the two choices. Press the **TEST** key when the choice you want is displayed. The choice is accepted and the display shows the *FILT* item.
5. Press the **ZERO** key...
BAUD is displayed.
6. Press the **TEST** key...
The current baud and parity choice is displayed.
7. Use the **ZERO** key to scroll the choices found in Table 2. When the choice you want is displayed, press the **TEST** key. The choice is accepted, and the display shows the *BAUD* item.
8. Press the **ZERO** key until...
PROT is displayed.
9. Press the **TEST** key...
The current RS-232 communication protocol is displayed.
10. Press the **ZERO** key to scroll through the choices. When the choice you want is displayed, press the **TEST** key. The choice is accepted and the display shows the *PROT* item.

Calibration Mode

Step-by-Step Instructions for CAL Mode

The Calibration (CAL) Mode menu lets you calibrate your scale. The items in the calibration menu are as follows:

POUNDS/KILOGRAMS (LBS or 1000 Gr) – Selects the unit of measure of your calibration test weights (lb or kg).

CAPACITY (9.995, 15.005, 30.01, 60.02 etc.) – Select the capacity of the scale.

Follow these steps to calibrate the scale. Refer to Figure 3.

1. From the DIAG display, press the **ZERO** key until *CAL* is displayed, or from the normal weighing mode, move Switch 1 to the Menu mode or OPEN position. Press the **ZERO** key until *CAL* is displayed.

2. Press the **TEST** key...

50 H or *60 H* is displayed. This is the AC line frequency.

3. Press the **ZERO** key to toggle between the choices. When the choice you want is displayed, press the **TEST** key...

That choice is accepted and *LBS* or *1000Gr* is displayed.

4. Press the **ZERO** key to toggle between the choices. When the choice you want is displayed, press the **TEST** key...

The scale capacity is displayed.

(Example: 9.995)

If a different capacity selection is desired, press the **ZERO** key to scroll through the choices.

The capacity selected must correlate with the rated capacity of the scale noted on the serial tag.

If this procedure is attempted without any calibration weights applied, the scale will abort the process and retain the original calibration data.

5. When the desired capacity is displayed, press the **TEST** key. . .

That choice is accepted and *LOAD 0* is displayed.

6. Clear all weight from the scale platter and press the **TEST** key...

After a brief wait *LOAD xx* is displayed. Alternate calibration points can be chosen using the **ZERO** key to scroll between choices (see Table 1).

7. Place the appropriate calibration weights on the scale and press the **TEST** key. After a brief wait...

DONE is displayed.

8. Remove all calibration weights from scale.

9. Press the **TEST** key...

DIAG is displayed, or return Switch 1 to the closed position. The scale returns to normal weighing mode.

The scale is now tested, configured, and calibrated. It is ready for use in your application.

Review/Test Scale Settings

IMPORTANT: If you press and release the **TEST** key, the display will show the scales model number, version-revision, and performs a display test.

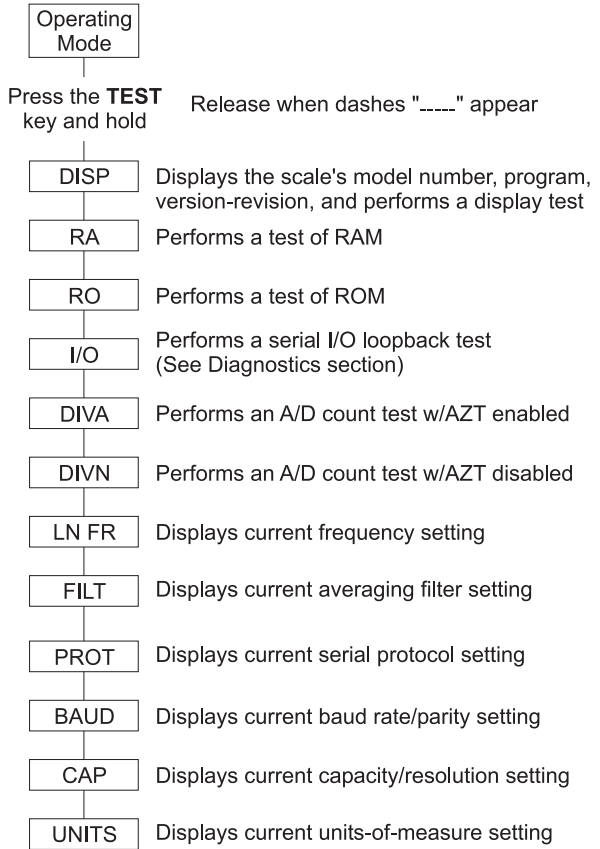
To review the current system settings, press and hold the **TEST** until the display shows dashes "_____" Release the **TEST** key and the display will prompt **DISP** and the scale is now in the Review/Test Mode.

Press the **ZERO** key to move to the next item in the menu

Press the **TEST** key to select the displayed item to run or view.

IMPORTANT: Internal rocker switches will be ignored until you exit this special mode or power reset the scale.

The **TEST** key located on the front panel lets you perform some basic system diagnostics, as well as review the current system settings without having to access switches inside the scale.



When finished running tests or viewing the settings, press the **ZERO** key until **DONE** is displayed. Then press the **TEST** key to return to normal (i.e., weighing) mode of operation.

Communication

Communications
Enabled

The 6700 is capable of interfacing with an EIA Standard RS-232, full duplex, asynchronous, or smart device for output of weight data to an ECR device. The 6700 9-pin style is capable of RS-232 communication only.

Serial commands will be responded to only when the scale is in the 'normal' operating mode and Switch 1 on the main board is in the CLOSED position.

Serial Data
Transmission

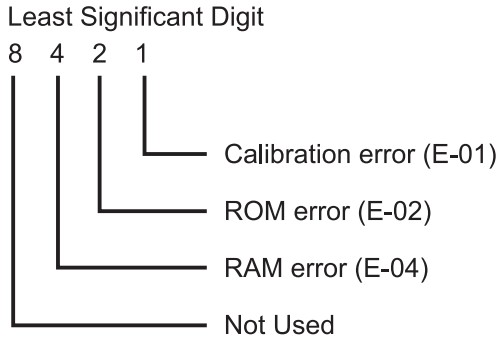
Baud Rates:
1200, 2400, 4800, 9600, or 19.2K

*Modem control lines
will not be supported
for RS-232*

Word Length: 10 Bits
1 Start, 7 Data, 1 Parity, 1 Stop
Parity: Even, Odd, or None

The scale is DTE.

If an E-02 ROM error or E-04 RAM error occurs, power the scale off and then back on. If it occurs again contact your Avery Berkel scale service provider.



Troubleshooting

Perform the following steps in the order presented until the described problem is corrected.

No Power (Display is Blank)

1. Check that the primary side of the cord is plugged into the AC outlet, and the secondary side is properly connected to the power jack on the back of the scale.
2. Replace the power supply.
3. Replace the display board.
4. Replace the main board.

Missing or extra segments on display

1. Replace the display board.
2. Replace the main board.

Scale will not return to zero, or incorrect weight is displayed

1. Press the **ZERO** key.
2. Check for interference of weighing platform.
3. Power down, remove all items from the platter, and then power up the scale.
4. Recalibrate the scale.
5. Replace the load cell.
6. Replace the main board.

Display shows unrecognized characters

1. Check software PROM for proper insertion.
2. Check display cables for the proper connection.
3. Replace PROM.
4. Replace the display board.
5. Replace the main board.

Display shows under “ _ _ _ _ ” dashes

(Indicates that the scale is below zero or under capacity.)

1. Verify that weigh platter is on the scale.
2. Press the **ZERO** key.
3. Power down, remove any items from the platter, and then power up the scale.
4. Recalibrate the scale.
5. Replace the load cell.
6. Replace the main board.

Display shows center “ _ _ _ _ ” dashes

(Indicates that the scale is outside zero capacity of $\pm 2\%$.)

1. Verify that weigh platter is on the scale.
2. Press the **ZERO** key.
3. Power down, remove any items from the platter, and then power up the scale.
4. Recalibrate the scale.
5. Replace the load cell.
6. Replace the main board.

Display shows upper “ _ _ _ _ ” dashes

(Indicates the scale is over capacity.)

1. Remove all items from the scale.
2. Press the **ZERO** key.
3. Power down, and then power up the scale.
4. Recalibrate the scale.
5. Replace the load cell.
6. Replace the main board.

Scale is not transmitting data to the host device

1. Check cable connection at both the rear of the scale and the host device.
2. Check communication setting and baud rate on both scale and software.
3. Perform I/O loopback test.
4. Replace the cable.
5. Replace the main board.

The ZERO key and the TEST key do not function

1. Open display enclosure and verify that the keypad cable is still installed correctly.
2. Replace the display panel.
3. Replace the display PCB.
4. Replace the display cable.
5. Replace the main PCB.

Spare Parts Listing

<u>DESCRIPTION</u>	<u>PART NUMBER</u>
Keyboard Panel	56143-0018
Display PCB	7405-15465
RS-232 PCB	7405-14704-2
Power Supply - 6702/6710	1148-15535
Power Supply - 6720	1148-15536
RS-232 Cable - PC	1140-13842
6700-7 Kg (15 lb) Loadcell	7154-16323-07
6700-15 Kg (30 lb) Loadcell	7154-16323-15
6700-30 Kg (60 lb) Loadcell	7154-16323-30
6700-60 Kg (120 lb) Loadcell	7154-16323-50
Remote Display Kit	7300-16577-04
Remote Pole Kit	7200-14837
Remote Pole/Displ Kit 7'	7300-16864-03
Remote Pole/Displ Kit 14'	7300-16864-04
6702/6710 Fr/Rear Mt. Bkt.	7200-14829
6700 Foot	7075-10256
6702/6710 Frt Mt. Bkt.	1067-17061

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