MSI5200

BANTAM
PORTABLE VEHICLE
WEIGHING SYSTEM
WITH 4 CHANNEL
SELECTOR BOX

User Guide

Quality Industrial Weighing and Force Measurement Equipment

Measurement Systems International

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Important Information

Please read the following instructions completely before using the Magnum.

THE BANTUM WHEEL WEIGHER SYSTEM

Carrying Case:
Used to transport and store the entire system when not in use.

Weigh Pad Cable:
Used to interconnect weigh pads.

Note: Each end of the cable is color coded. Connect to matching-colored connector on weigh pad.

Meter Cable:
Used to connect weigh pad(s) to meter connector marked PAD.

A.C. Cable:
Used for A.C. system operation and for battery charging.

D.C. Cable:
Used for D.C. system operation.

WARNING: Do not connect the Bantam to 28 Volt D.C. external power sources.

Weigh Pad:
Used in any order and in any number (maximum of six) for weighing operations.

METER

Used for weight indication. Contains an internal battery and battery charger. Operates from external 117 Volts +/- 10% A.C., external 12 Volts D.C. @1 Amp, or internal battery power sources.

On/Off Switch:
Turns the meter display on or off. The battery charger circuit, however, charges the internal battery whether the switch is on or off. A fully discharged internal battery will be recharged overnight (16 hours) if the switch is off. It will take approximately twice as long to recharge if the switch is on.

Span Control Screw and Cap:
Used only during system calibration (see Calibration Procedure). Cap should be left in place during normal operation.

L.E.D. Display:
Indicates weight on connected pad(s) in pounds or kilograms.

Charging Light:
The charging light is illuminated when A.C. line power is connected and internal battery has recharged to at least 80% of its capacity.

Low Battery Indicator:
This lamp will flash when internal battery needs recharging. When the lamp begins to flash 1/2 hour of battery life remains (considerably less if optional printer is in use).

Automatic Shutoff:
When the internal battery is fully discharged and the external power is not connected, the internal battery will be automatically disconnected to protect the battery.

Zero Switch:
Push to zero meter prior to loading weigh pads or checking calibration.

CAL Switch:
With no load on the weigh pads and with the display zeroed, pushing the Cal Switch will display the Cal number for checking meter calibration.

Meter Input Connectors:
Used for weigh pad and external power connections.

Power Connector:
Used for A.C. and D.C. external power connections.

WARNING: Do not connect the Bantam to 28 Volt D.C., external power sources.

Pad Connector:
Used to connect weigh pad(s) to meter.

Pad Switch and Zero Adjust (labeled 1 to 4):
When switched on, pads connected to the same numbered connector input to the electronic display. The zero pot is used to zero pad or pads connected to that input connector.

HOW TO SET UP AND OPERATE THE SYSTEM

Note: Typical six pad arrangement (Figure 2) allows for easy weighing of both two and three axle vehicles. Plan to weigh groups of the same type vehicles for most efficient operations.

BATTERY OPERATION

Note: Turn the ON/OFF Switch to OFF when weighing is not taking place to extend operation time before battery recharge is required.

1) Set the weigh pads on a firm level surface to achieve the best accuracy. Weigh pads are completely interchangeable and may be connected in any order with the same system. Do not interchange between systems.
2) Connect the cables as shown in figures 2, 3, or 4, with color of cable connector matching color of pad connector at each connection.

CAUTION: Snap cable strain reliefs to eyelets in weigh pad handles.

3) Turn the meter ON/OFF Switch to ON. Verify that all display segments and lamps light during the segment check (88888). Wait until the program nunber has been displayed and a stable reading appears on the display.
4) With all weigh pad switches off, push the zero button to zero the display.
   a) Switch on weigh pad switch 1 and zero the display using the associated zero pot. Repeat for switches 2, 3 and 4. Do not push the zero button between these four steps.
   b) Switch on the weigh pad switches for which weigh pads are connected. Push the zero button to electronically zero out small errors for each pad.
5) To check calibration push the Cal Switch and compare the number on the display with the Cal number stamped on the serial number tag under the meter lid. If the numbers are different, remove the SPAN adjust cap and adjust the span screw until the numbers agree. Release the Cal Switch and verify that the display returns to zero. Replace the Span cap.
6) Close the meter lid to prevent moisture and/or dirt from entering the meter.

7) The system is now ready for weighing operation. Use two weigh pads per axle.

Note: Ensure that only one wheel on each side of duals is centered on the pads.

8) To read individual axle weight simply turn off weigh pad switches for all weigh pads not under the desired axle.

EXTERNAL A.C. OPERATION

The Bantam may be operated directly from 117 Volt +/- 10% 6OHz A.C. external power sources.

1) Turn the ON/OFF Switch to OFF.
2) Connect cable 40035-6 to the connector on the side of the meter labeled POWER.

CAUTION: Ensure proper pin alignment. Do not attempt to force connector into place.

3) Plug Cable 40035-6 into external A.C. power source.
4) Operate system as in Battery Operation steps 1-8.

EXTERNAL D.C. OPERATION

The Bantam may be operated directly from 12 Volt D.C. external power sources.

WARNING: Do not connect the Bantam to 28 Volt D.C. power sources.

1) Turn the meter selector knob to OFF.
2) Connect the battery clip ends of cable DS015 directly to a 12 Volt battery in the following manner:
   a) Red clip to POSITIVE (+) terminal.
   b) Black Clip to NEGATIVE (-) terminal.
3) Connect cable 40043-240 to the connector on the side of the meter labeled POWER.

CAUTION: Ensure proper pin alignment. Do not attempt to force connector into place.

4) Operate the system as in Battery Operation steps 1-8.

Note: The engine of the vehicle to which the system is connected should be running to ensure constant 12 Volt power availability.

CALIBRATION PROCEDURE

The Bantam has been calibrated at the factory and is ready for use.

Recalibration of the system may be accomplished should the Bantam weight readings differ significantly from those obtained at a certified scale.

Note: The Battery should be fully charged for this operation.

1) Turn the ON/OFF switch to on, verify that all display segments and lamps are on during the segment check, then off again before the program number is displayed (P-XX).
2) With no load on the weigh pads wait for a stable display reading and push the zero switch to zero the display.
   a) Switch on weigh pad switch 1 and zero the display using the associated zero pot. Repeat for switches 2, 3 and 4. Do not push the zero button between these four steps.
   b) Switch on the weigh pad switches for which weigh pads are connected. Push the zero button to electronically zero out small errors for each pad.
3) Push the Cal Switch. The Cal number (found on the serial number tag under the meter lid) should appear on the display. If the displayed Cal number agrees with the Cal number on the serial number tag, skip to step 5.
4) Adjust the SPAN screw with the Cal switch pushed until the proper calibration number appears.
5) Release the Cal Switch and verify that the display returns to zero. If not, repeat steps 2-4.

Note: Perform the following steps for each weigh pad.

6) With all four weigh pad switches off, push the zero button to zero the meter.
7) Connect an unloaded weigh pad to connector 1. Switch on SW1, ensuring that SW2 through SW4 are off. Zero the pad using the zero pot next to SW1. Push the ZERO switch to zero the display.

8) Apply a calibrated load to the center of each weigh pad. This may be accomplished by loading the weigh pad with a truck wheel previously weighed at a certified scale. Best results will be obtained by loading the pad as near to the rated pad capacity as possible.

Note: An unconnected weigh pad should be placed under the opposite wheel on the axle for the most accurate results.

9) Remove the cap screw located on one side of the weigh pad under the handle (see Figure 1).
10) Turn the adjustment screw until the meter displays the correct weight.
11) Remove weight from the pad and check for return to 0, Repeat steps 2 through 10 if the meter does not return to 0.
12) Replace the cap screw.
13) Repeat steps 2 through 12 for each pad.

Note: Measurement Systems International, Inc., will calibrate, for a fixed charge, systems that are returned to the factory. Systems must be returned freight prepaid.

BATTERY CHARGING

Battery life is a function of several variables, including battery age, battery charge, temperature and the number of pads connected. Battery life will be reduced if the meter is left on when actual weighing is not taking place.

Note: Turn the ON/OFF switch to OFF when weighing is not taking place.

Low battery voltage is indicated by a flashing Low Battery lamp below the display. The battery is charged by connecting the meter to an A.C. power source with cable 40035-8 indicated by the illumination of the CHARGING light. When the charge lamp is illuminated (and the A.C. power connected) the battery has recharged to at least 80% of full capacity.

Note: The ON/OFF Switch should be in the OFF position for fastest charging.

The internal battery may be allowed to charge continuously. A fully discharged battery will reach 80-90% of full capacity within 16 hours if the ON/OFF switch is in the OFF position. Frequent recharging will give the longest battery service life. Poorest service life is obtained when the battery is allowed to fully discharge before each recharge.

A fully charged internal battery will typically power the system for about 20 hours. With the printer option the discharge time is reduced to 6-8 hours with the printer on, or 12 hours with the printer off.

BATTERY REPLACEMENT

The battery is located in the meter. The following procedure should be followed if a defective battery needs to be replaced.

1) Order a replacement battery from your dealer or from Measurement Systems International, Inc.
2) Turn the meter off. Carefully remove the panel to access battery. Remove the four screws securing the front panel.
3) Remove the screw securing the battery hold-down plate and remove the plate. Unplug the battery connector and remove the battery.

Note: If the printer option is installed further disassembly is required since the plate cannot be removed. Unplug all wires going to the power, pad and printer connectors on the right side of the meter case. The four nuts inside the feet on the bottom of the meter case. The entire internal chassis assembly may now be removed from the case. Unplug the battery and slide out sideways without removing the battery hold down plate.

4) Install the new battery and reassemble the meter.
5) Charge the battery for 16 hours.

TROUBLESHOOTING GUIDE

SYMPTOM:	POSSIBLE CAUSE:	ACTION:
Meter display is blank without external power connected, but OK with external power.	Discharged Battery.	Recharge
Battery fails to recharge (charge status lamp does not illuminate after 16 hours of charging with ON/Off switch in OFF position).	Defective battery.	Remove front panel and disconnect internal battery. If charge lamp comes on (with A,C, power connected) Battery is probably defective.
	Defective power supply board.	Check Fuse(s) on Power supply Board. If OK replace the Chassis Assembly.
Meter display is blank even with external AC or DC power connected.	Defective power cable test. Defective power supply board. Defective computer board.	Test and repair or replace. (See above). Replace.
Meter display is blank only when external DC power is used.	DC power cable connections are reversed. DC power fuse blown.	Check for correct polarity. Check miniature 3A fuse in upper right hand corner of power supply board with ohmmeter (with DC power connected). Replace if open.
Meter display is unintelligible.	Defective computer board.	Replace.
Meter display flashes EEEE.	Scale capacity is exceeded. Loose or disconnected weigh pad cable. Internal zero adjust control on computer board needs adjustment. Defective computer board. Defective weigh pad. Damaged or broken weigh pad or meter cable.	Reduce load. Check cables. Adjust per calibration procedure. Replace. Connect to one pad at a time to isolate faulty pad. Isolate faulty weigh pad cable by eliminating all pads except two and swapping cables until the defective one is found. Find open or short with ohmmeter and repair. If weigh pad cables are OK, check meter cable with ohmmeter.

SYMPTOM:	POSSIBLE CAUSE:	ACTION:
Meter reading is erratic or drifting or does not respond to weight changes.	Loose or disconnected weigh pad cable. Damaged or broken weigh pad or meter cable. Defective computer board. Defective weigh pad.	Check cables. (Same as above). Replace. Connect to one pad at a time to isolate faulty pad.
Meter display will not zero or there is a large reading to be zeroed out (with pads unloaded) when meter is turned on.	Check items above. Internal zero adjust control on Computer Board needs adjustment.	(Same as above). Adjust per calibration procedure.
Meter Cal Number is correct but weight reading is in error.	Defective weigh pad. Damaged or broken weigh pad or meter cable.	Connect each weigh pad individually to meter and check. Compare weight readings with the same test load to isolate the faulty pad. Recalibrate or replace pad. (Same as above).
Low battery lamp flashes when external DC power is connected.	External DC power source voltage too low.	Start vehicle if vehicular Power.

If you are unable to locate the problem or have located the problem and cannot make the necessary repairs, call your dealer or Measurement Systems International, Inc. Telephone: (206) 433-0199

FIGURES

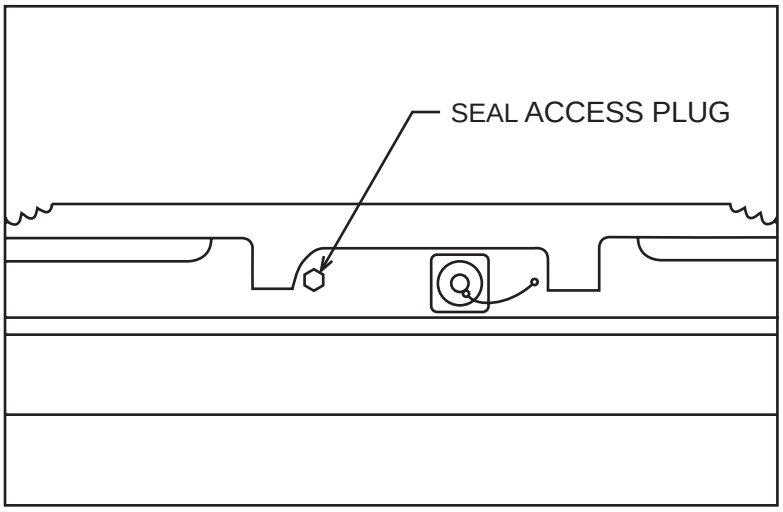

Figure 1: Access to calibration port.

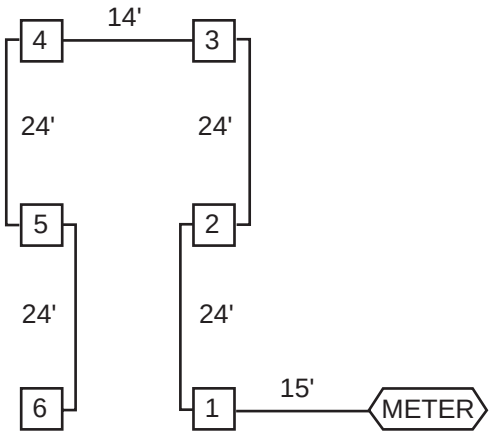

Figure 2: Six-pad system configuration.

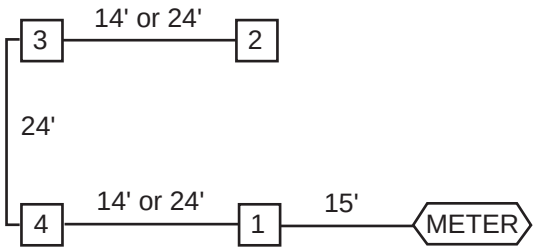

Figure 3: Four-pad system configuration.

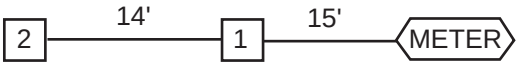

Figure 4: Two-pad system configuration.

THE MSI LIMITED WARRANTY

MEASUREMENT SYSTEMS INTERNATIONAL, INC., WARRANTS load sensing elements and meters against defects in workmanship and materials for a period of one year from date of purchase and warrants electrical cables and batteries against the same defects for a period of ninety (90) days from date of purchase.

Any device which proves defective during the warranty period will be replaced or repaired at no charge; provided that the defective device is returned to the Company freight pre-paid.

In no event shall the Company be liable for the cost of any repairs or alterations made by others except those repairs or alterations made with its specific written consent, nor shall the Company be liable for any damages or delays whether caused by defective workmanship, materials or otherwise.

The Company shall not be liable for any personal injury or property damage resulting from the handling, possession or use of the equipment by the customer.

The warranty set forth herein is exclusive and is expressly in lieu of all other warranties, express or implied, including without limitation any implied warranties of merchantability or fitness or of any other obligations or liability on the part of the Company.

The liability of the Company under this warranty is limited solely to repairing or replacing its products during the warranty periods; and the final judgement and disposition of all claims will be made by MEASUREMENT SYSTEMS INTERNATIONAL, INC.

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