



USER'S OPERATION MANUAL

CUSTOMER: _____

S/O#: _____

SERIAL #: _____

MODEL: **CM-780-GG-2S (SIMPLEX)**

CONTROLLER: **665 LCD CMGG 2_51.TXT w/MULTI-DUMP**

ELECTRICAL (CONTROL): _____

ELECTRICAL (MOTOR): _____

AIR PSI: _____

SPECIAL FEATURES:

JEM International
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Shawnee, Kansas USA 66218-9354
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CONTROL WIRE COLOR CODE

L.....BLACK
N.....WHITE
1.....RED
2.....BLUE
3.....ORANGE
7.....RED/BLACK
GROUND.....GREEN

SUMMING and LOAD CELL COLOR CODE CHART FOR CM-780 and JM scales with 600 SERIES CONTROLLERS

LOAD CELL

+EXC.....	RED
-EXC.....	BLACK
+SIG.....	GREEN
-SIG.....	WHITE
SHLD.....	BARE

SUMMING CABLE

+EXC.....	RED
+SEN.....	BLUE
-EXC.....	BLACK
-SEN.....	YELLOW
+SIG.....	GREEN
-SIG.....	WHITE
SHLD.....	BARE

600 SERIES CONTROLLER

+EXC.....	RED
-EXC.....	BLACK
+SIG.....	GREEN
-SIG.....	WHITE
+SEN.....	BLUE
-SEN.....	YELLOW
SHD.....	BARE

**NOTE: +SEN and –SEN ARE FOR OPTIONAL USE AND SHOULD
ALWAYS BE USED WHEN THE SUMMING CABLE LENGTH IS
GREATER THAN TWENTY-FIVE FEET**

OHMING OF LOAD CELLS

RESISTANCE IN 1K OHMS		LOAD CELL CAPACITY IN POUNDS				
		25#	50#	150#	250#	500#

RED	BLACK	.391	.376	.384	.401	.401
RED	GREEN	.284	.276	.280	.289	.288
RED	WHITE	.284	.276	.280	.289	.288
BLACK	GREEN	.284	.276	.280	.289	.288
BLACK	WHITE	.284	.276	.280	.289	.288
GREEN	WHITE	.351	.351	.351	.351	.351

NOTE: Readings need to be taken with the load cell disconnected from summing box and removed from its working location so that the load cell is free from any stress points.
This must be done to provide proper readings.

1. Turn power off to controller
2. Disconnect load cells from the summing box.
3. Disconnect the weigh hopper from the load cells by removing the 3/8" cap bolt from the rod-heim joint
4. Have an air gap between the load cell and the rod-heim joint
5. Follow the OHM chart for given capacity of load cell you are checking
6. Set meter to read in 1K
7. All readings must be within 10% of chart
8. The .289 readings can be within the 10% but all four should be the same

CM-780 DIGITAL INSTRUCTION MANUAL

The CM-780 is a net weigh bag filling device. The scale preweighs the product prior to discharging it into the bag. The typical model is designed for handling 10-14, 50 lb. (25 kg.) bags per minute at (\pm) 2 oz. to 3 oz accuracy (55 to 85 grams) at 2 Sigma (95%).

The CM-780 scale can be supplied in simplex, duplex or triplex operation.
The scale has 3 sections:

1) The **Feeder Section** is the section most associated with weight accuracy.

The feeder section can be one of the following designs:

- Gravity Gate (2 position)
- Gravity Gate/Vibratory Feeder
- Single Vibratory (2-speed feed rate)
- Belt 2 Position Pneumatic Flow Gate or Variable Speed Controller (2-speed feed rate)
- Twin Auger Variable Speed Controller

The feeder is chosen based on product flow characteristics.

All CM-780 scales are designed with 2-speed feed rates, both fast and slow fill. Typically the slow or dribble fill should be set for no greater than 5 lbs. (2 ½ kg.) per second fill rate.

2) The **Center Section** of the scale is where the actual weighing is accomplished. The weighing is accomplished in a weigh hopper supplied with double door design. The weigh hopper is available in 2 cubic foot, 3 ½ cubic foot and 4 cubic foot as standard. The size of the weigh hopper is determined by the bulk density of your product and the target weight. The center section also includes the complete pneumatic filter regulator assembly and the weighing load cells and valves. This section also includes a transition to connect up to a bag clamp assembly or into other automated equipment.

3) The **spout** is designed for holding the bag in place during the discharge cycle. The spout can be supplied in either air operated dust tight design with a 21", 25", or 31" (52, 62, or 77 cm.) circumference spout as standard. We also have a clam shell design spout which is designed to work on bags with a larger than 28" (70 cm.) circumference. Only one clam shell size spout is available, and is typically used in non-dusty applications.

The scale can be operated with either a pneumatic foot pedal or a hand switch on the spout assembly.

RECEIVING THE SCALE

The scale in most instances is shipped in a wooden crate. If the scale has the following feeders, typically the parts of each shipment are as follows:

Gravity Gate 2-position

- One scale assembly with gravity gate attached
- One spout assembly unattached
- One process controller panel

Single Vibratory (2-speed feed rate)

- One scale assembly
- One vibrator assembly
- One control panel for vibratory feeder
- One spout assembly unattached
- One digital control panel for scale

Gravity Gate/Vibratory Feeder

- One scale assembly with gravity gate attached
- One spout assembly unattached
- One digital control panel unattached
- One vibrating pan feeder and framework unattached
- One pant leg diverter unattached

Belt 2-Position pneumatic flow gate or Variable Speed Controller (2-speed feed rate)

- One scale assembly with feeder attached
- One spout assembly unattached
- One digital control panel unattached
- One drip pan unattached

Twin Auger Variable Speed Controller

- One scale assembly and slide gate attached
- One Auger feeder unattached
- One spout assembly unattached
- One digital control panel unattached

Check the condition of the scale, as it arrives from the shipping company. It is extremely important that if damage is noted, a freight claim is filed by your company at this point. The shipper cannot file a freight claim on your behalf and it is imperative that before the scale system is removed from the crate that it be inspected thoroughly.

PLANNING THE INSTALLATION

The scale should be installed with the bottom of the spout typically 48" (1.2 meters) from floor level. This is typically ideal height for the operator to work at. If the scale is being supplied with an automatic bag placer, check the prints to verify dimensions for installation.

The 48" (1.2 meters) is divided by a maximum bag height of 36" (.9 meters) and 12" (.3 meters) for the conveyor. If the bag is shorter than 36" (.9 meters), the height of the conveyor is typically raised to suit. If, however, the bag is taller than 36" (.9 meters), the height of the scale will have to be adjusted accordingly. The process controller needs to be positioned in an area easily accessible by the operator of the scale. The operator must be able to visually see the digital display and be capable of touching the panel to make adjustments.

The scale is supplied with a filter regulator system for receiving air. A ¼" male quick connect pipe connection is supplied on the scale. The scale will require 100 PSI air pressure at 4 cubic feet per minute on a **simplex** and 7 to 8 cubic feet per minute on a **duplex**.

There are two filter regulators on each scale. The upper unit is designed for handling the pneumatic needs of the feeder section and the weigh hopper. The lower unit is designed for handling the complete pneumatic needs of the bag clamp assembly.

The following charts apply to typical pneumatic needs of the feeder and weigh hopper.

Belt Fed Scale	60 PSI
Single Vibratory (2 Speed)	60 PSI
Gravity/Gravity Scale	80 PSI
Gravity/Vibrator Scale	60 PSI
Auger Fed Scale	60 PSI

The lower regulator to supply the pneumatic needs of the bag clamp assembly has been factory set at 80 PSI. The amount of pressure here is determined by the weight of your bag and the material of your bag. The amount of pressure here should be set only with enough pressure to hold the bag in place during the discharge of the weigh hopper. Typically on 50 lb. (25 kg.) paper bags, the pressure will be set between 60 and 90 PSI.

On bags of 110 lbs. (50 kg.) the setting can be 100 PSI.

After the scale has been installed, it is extremely important that the scale be rigidly attached either to a support system from the floor or a support system from the bins. If the bins have vibrators attached to them, it is generally recommended that the support system be connected to the floor. Vibration to the scale will cause inaccuracies. The scale also needs to have rigid supports as the weight of the scale is as follows:

ELECTRICAL INSTALLATION

The main scale assembly on the CM has a terminal strip with numbers. The remote programmable controller panel has a terminal strip with numbers. The terminal strip at the scale has less numbers than the terminal strip in the programmable controller panel. A complete electrical schematic has been supplied. You need to connect number/letter to number/letter so that all numbers/letters on the terminal strip at the scale have been connected to the terminal strip in the remote programmable controller panel. Some letters and numbers may be duplicated. It is totally irrelevant which number/letter or number duplicated you choose.

The load cells need to be turned 180 degrees. Please note the reinstallation sheet attached of the CM-780 load cells and print #PCM069 for complete instructions on this.

The load cells have cable connecting into a common load cell summing box. This load cell summing box needs to connect to the bottom of the 600 series process controller. Please note complete instructions on this connection on print #ECM032 for simplex or #ECM033 for duplex arrangement.

It is extremely important to remember that load cell cable and wire cannot be run in the same conduit. You must run one conduit for the wire and a separate conduit for the load cell cable or else there is a possibility of line interference to the load cells causing weight inaccuracies.

The programmable controller is designed to work with a clean grounded isolated 110 volt supply, GMA 3 amp fuse is provided. In foreign installations where 220 volt is available, a step down transformer has been supplied in the control panel to transform from 220 volt to 110 voltage. (The CM scale with Gravity/Vibratory feeder will have a GMA 10 amp fuse.)

If the scale is supplied with a belt feeder without variable speed drive, then the 3 phase power is connected to the terminal strip mounted on the scale. This terminal strip is marked L1, L2 and L3 (see attached schematic).

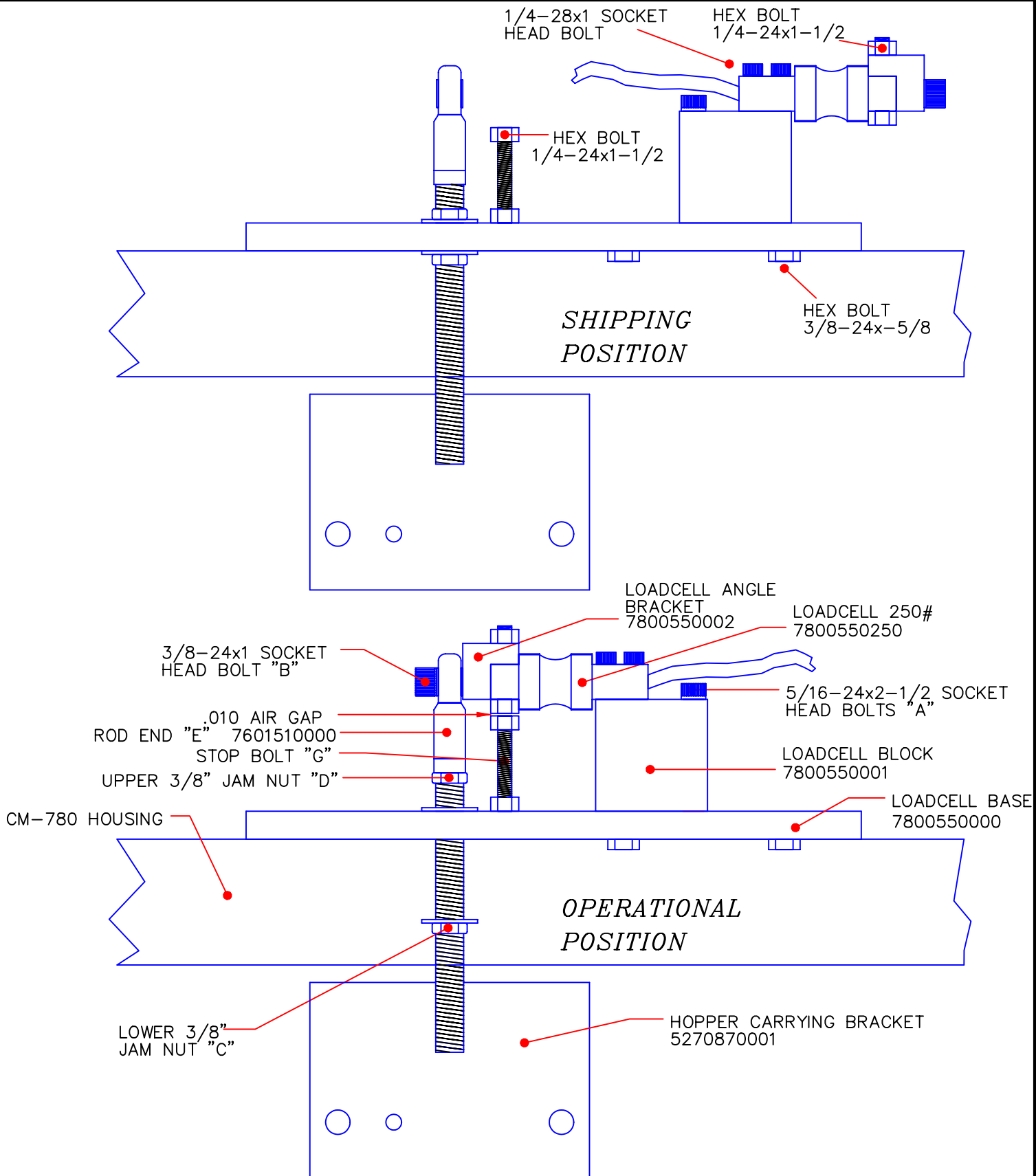
If the scale is supplied with an auger feeder or a belt feeder with a variable speed controller, then the 3 phase power is brought into the digital control panel on this terminal strip marked L1, L2 and L3.

All motors have been clearly marked with their voltage requirements. Verify all this prior to installing 3 phase power. On 110 v connections to control panel it is extremely important that this voltage be verified before being introduced to the scale system. Pull the blade fuse on the left hand side of the terminal strip inside the remote digital control panel. The incoming 110 v power should be connected to L and N on the terminal strip. Verify we have a clean neutral that no voltage is present between ground and neutral. Ground to L should be 110 V (\pm) 15%. If correct, re-terminate the blade fuse on left hand side of terminal strip. At this point we should have power to the scale and power to the digital control panel.

REINSTALLATION OF CM-780 LOAD CELLS

For shipping reasons, we turn the load cells 180 degrees from the normal operating position so that they will not be damaged in shipment. Please follow the directions below and refer to the print PCM069 when installing the load cells. If you have any questions, please feel free to contact us at 913-441-4788.

1. Remove tape from rod end (make sure rod end does not turn when removing tape)
2. Loosen with 1/4" allen wrench the 5/16" socket head bolt "A" on top of load cell block.
3. Remove 3/8" socket head bolt "B" with a 5/16" allen wrench. This bolt is located at the end of the load cell angle bracket.
4. Turn load cell block 180 degrees from original shipping position and finger tighten the 5/16" bolts "A"
5. Loosen lower 3/8" jam nut. "C" Bring down as far as you can. You cannot visually see it from where you are, but you can feel it if you stick your hand up and underneath.
6. Take 3/8" socket head bolt "B" and put through the rod end "E" and into the load cell angle bracket and tighten with a 5/16" allen wrench.
7. Repeat steps 1 through 6 on opposite load cell.
8. Bring upper jam nut "D" up one revolution towards the rod end, same on opposite load cell.
9. Tighten 5/16" load cell block socket head bolts "A" with a 1/4" allen wrench as you tighten socket head bolts, observe slight rise in the load cell away from the stop bolt "G" to ensure you do not stress the load cells.
Make sure socket head bolts are fully tightened.
10. Tighten upper jam nut "D" against base of rod end "E"
11. Make sure ball of rod end is the only part touching load cell angle bracket.
12. Double check that you have a .010 air gap between the stop bolt and load cell angle bracket. The standard distance for this is about a business cards thickness.



REV. 1

REV. 2

NAME

FOR

TOLERANCE
+or-.05
ING NUMBER
PCM069

MATERIAL
DRAWN BY

03-06-95

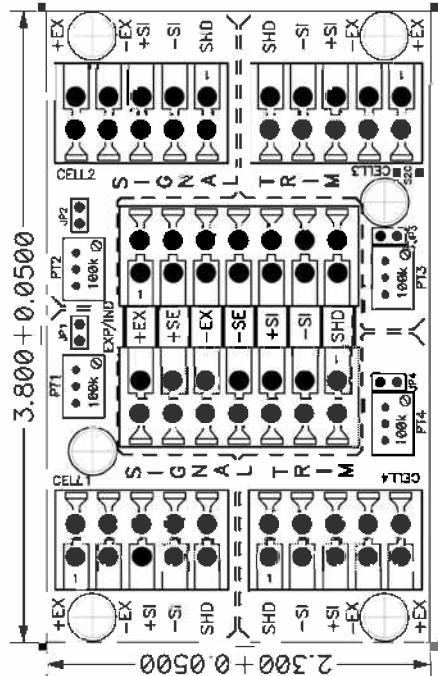
PART NUMBER
PART NUMBER

FABRICATION NOTES:

1. BASE MATERIAL SHALL BE LAMINATED EPOXY TYPE G10 OR FR4 0.062 +/- .005 THICK.
2. CONDUCTOR MATERIAL SHALL MEET UL94V-0 REQUIREMENTS. CONDUCTOR MATERIAL ON BOARD (PLATED THRU) SHALL BE 1 OZ. COPPER MINIMUM.
3. THE TIN LEAD ALLOY PLATING SHALL CONTAIN 40% +/- 5% LEAD AND 60% +/- 5% TIN. ALL SOLDER-PLATED AREAS SHALL BE SUBJECT TO INFRARED OR HOT OIL SOLDER REFLOW PROCESS.
4. MINIMUM PLATING THICKNESS ON TRACE SURFACE AND THROUGH HOLES TO BE .0015 +/- .0005 TIN-LEAD.
5. CONDUCTOR DEFECTS:
 - A. PIN HOLES, NICKS, AND SCRATCHES: CONDUCTOR DEFECTS SUCH AS PIN HOLES AND NICKS WHICH DO NOT REDUCE THE CONDUCTOR WIDTH BY MORE THAN +/- .002.
 - B. PLATING OVERHANG: THE PLATED RESIST MATERIAL OVERHANG REMAINING AFTER THE COPPER FOIL HAS BEEN REMOVED BY ETCHING SHALL NOT EXCEED .005.
 - C. UNDERCUT: THE REDUCTION OF CONDUCTOR CAUSED BY ETCHING UNDER THE EDGE OF PLATING RESIST SHALL NOT EXCEED .001.
 - D. EXCESS CONDUCTOR MATERIAL: ISOLATED SPOTS OF CONDUCTOR MATERIAL NO MORE THAN .010 IN DIAMETER ARE ACCEPTABLE PROVIDING SPACING REQUIREMENTS ARE NOT VIOLATED.
6. WARPAGE: WARPAGE OR TWIST OF PRINTED CIRCUIT BOARD SHALL NOT EXCEED .010 INCH PER INCH.
7. SOLDERABILITY: THE SOLDER COATING SHALL BE ADHERENT AND NON-GRANULAR IN APPEARANCE. THE BASE MATERIAL SHALL NOT SHOW EVIDENCE OF BUSTERING OR DELAMINATION, NOR SHALL CONDUCTORS OR TERMINAL AREAS SHOW EVIDENCE OF SEPARATING FROM THE BASE LAMINATE AFTER DIP SOLDERING.
8. SOLDER MASK SHALL BE GREEN IN COLOR AND APPLIED TO THE BOTTOM SIDE OF THE BOARD ONLY.
9. A WHITE SILKSCREEN SHALL BE APPLIED TO TOP SIDE OF BOARD TO PROVIDE FOR A LEGEND.
10. ARTWORK SUPPLIED BY RLWS ENGINEERING DEPARTMENT.
11. REFER TO PC BOARD ACCEPTABILITY STANDARDS DOCUMENT: ANSI/IPC-A-600D, CLASS 2.
12. WORKMANSHIP PER ANSI/IPC-A-610A CLASS 2
13. LAYER STRUCTURE: BOTTOM SIGNAL LAYER ONLY
14. HOLE SIZES ARE AFTER PLATING WHERE APPLICABLE

ASSEMBLY NOTES:

1. APPLY CONFORMAL COATING PER MANUFACTURER'S INSTRUCTIONS TO BOTTOM SIDE OF BOARD ONLY. MINIMUM ACCEPTABLE THICKNESS IS .0005".
2. PROTECT GROUNDING PAD AROUND MOUNT HOLE FROM COATING.
3. PLACE LABEL IN ASSEMBLY PN Rev FIELD TO INDICATE 88958-B
4. ADD INSTALLATION MANUAL RLWS PN 91909 WHEN PACKAGING FINISHED ASSEMBLY



600 Series
LCD
Programmable Controller
Instruction Manual

VERSION 1-28

CM-780 or 5-GV



EQUIPMENT SALES | PARTS | MANUFACTURING

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Shawnee, Kansas 66218
U.S.A

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Calibration Procedure For Model CM-780

Certified weights are required to perform a calibration. Serious inaccuracies could result from using non-certified standards for calibration. Also before getting started remove any product out of the weigh hopper by performing a manual discharge and clean product build up off of the weigh hopper.

Non-Passcode Protected Calibration Entry

From the MAIN MENU screen press [SETUP] then press [F4]

Passcode Protected Calibration Entry

From the MAIN MENU screen press [F5] and key in the password (4787) then press [F4].

ID = CALIBRATION will appear on the lower part of the display.
Pressing [ID] on the keypad puts controller in the CALIBRATION mode.
(Follow the prompts on the upper display, remembering [ENTER] = YES
and [CLR] = NO)

If multiple scales are enabled, the controller will prompt you with **Keyin Scl #**.
Key in the scale number being calibrated and press [ENTER]. After the scale number is entered the **New Zero?** prompt will be displayed.

If multiple scales are not enabled, the **New Zero?** prompt will be displayed.

New Zero?

New Zero? is the selection for establishing the first or a new calibration.
The controller displays the dead load (which might not be in precise units) that is present on the scale. The controller assumes a “NO LOAD” condition. Place a calibration bracket on each side of weigh hopper (see fig. A) and then press [ENTER]. As soon as [ENTER] is pressed, a new zero is established. This is reflected on the main display with the prompt **Adj’g Zero** followed by the prompt **Keyin CalWt**.

At this point, the controller is waiting for the actual calibration value to be entered. Place the calibration weights on the brackets. (see fig. B)
Key in the weight value, and press [ENTER].

If you key in a cal weight and press [ENTER] without adding any weight since the last calibration weight, the controller will prompt you to add CalWT. Add the weight and press [ENTER].

Entering Numeric Values

Where appropriate, you can use the numeric keypad to enter numeric values. If an error is made while entering data, press **[CLR]** before you press **[ENTER]**. The controller will perform the calibration, display the value of the calibration weight, and prompt **CAL OK?**.

At this point, you can check the accuracy of the calibration by weight without leaving the Calibration Mode.

- If the calibration was accurate, press **[ENTER]**

DUPLEX AND TRIPLEX SYSTEMS ONLY: When finished with the last scale **Scl #** will appear, press **[CLR]** before proceeding.

The controller will prompt you to save the new calibration plus any other changes you have made. Press **[ENTER]** twice to save and exit. Wait for the **MAIN MENU** to be displayed then remove calibration weights and brackets from the weigh hopper. Press **[ZERO]** to clear the negative weight of the calibration brackets used during the procedure.

- If the calibration is not accurate, press **[CLR]**
The controller will return to the **New Zero?** prompt. Repeat the above steps to calibrate.

If the calibration weight was less than 5% of capacity, or if there was a large change in the calibration, the controller prompts **ReCal Req'd**. Press **[ENTER]** and repeat the calibration, or press **[CLR]** to obtain the **CAL OK?** prompt as described above and override the re-calibration requirement.

Cal Reset

Cal Reset may be necessary when an over-load or under-load condition exists, preventing the completion of the calibration process. Calibration Reset adjusts the zero and gain factors of the A/D amplifier to factory default values for maximum sensitivity.

After performing a calibration reset, a complete recalibration is required. The effects of a calibration reset do not take effect until the indicator is recalibrated and calibration information has been saved.

If **Code 02** (under-load) or **Code 03** (over-load) is displayed during calibration, press **[CLR]** to perform a calibration reset.

Figure A



3 ½ cubic foot weigh hopper

2 cubic foot weigh hopper



Figure B

Keypad Operation

F1: Toggles ON/OFF

F2: Toggles HOLD/RUN

(When HOLD is selected, weigh hopper will not discharge)

F3: Manually discharges scale selected.

(Key not functional when in the SETUP mode)

F4: Accepts and discharges an out of tolerance weighment.

(An asterisk will appear to the right of [F4] TOLERANCE ACCEPT when out of tolerance)

SCALE SELECT: Toggles through the available number of scales. See upper right hand of display

(This key only performs the operation while viewing the MAIN MENU)

ZERO: This key will zero off any unwanted weight value displayed.

UNITS: Toggles through the available weighing units.

5-GV: (Pounds/kilograms/ounces/grams)

CM-780: (Pounds/kilograms)

TARE: Performs an auto-tare. (Normally, only used on a GROSS weighing system to tare off

the value of the bag weight)

ENTER/yes: When a change is made in the SETUP mode the new value must be entered.

(Also doubles as a YES command)

CLR/no: When an unwanted value is keyed in, it can be cleared before pressing the ENTER key.

(Also doubles as a NO command)

PRINT: When the PRINT key is pressed two printing options appear on lower display. (OPTIONAL)

[F1] Prints SUBTOTALS of individual Product #'s.

[F2] Prints GRANDTOTALS of all Product #'s.

NOTE: AUTO FREE-FALL MUST BE TURNED ON AND WILL ONLY
CAPTURE WEIGHMENTS ACCORDING TO THE AUTO FREE-FALL START
AND AUTO FREE-FALL FREQUENCY COUNTERS

SETUP: Puts controller in the setup mode where a number of changes can be made to the
Main Menu and determine how the controller will operate. (SCALE SELECT takes the
controller out of the SETUP mode)

F1 will scroll through the Main Menu forwards.

F4 will scroll through the Main Menu backwards.

NOTE: THE FOLLOWING HAVE CHANGEABLE ENTRY CAPABILITIES AND WILL ONLY
MAKE CHANGES TO THE PRODUCT AND SCALE NUMBER SELECTED!!!

PRODUCT NUMBER: There are 100 available product numbers and are set at a range between 00-99.
(These numbers are used to setup different products and/or different FINAL TARGET WEIGHT'S
for the same product)

FINAL TARGET WEIGHT: Displays the final weight.

PRELIM WEIGHT: Displays how much of final weight will be slow fill.

FREE FALL WEIGHT: Determines the slow fill cut-off to allow for product in suspension.

AUTO ZERO: Automatically zeros the weight display after first discharge and is controlled by the
AUTO ZERO START and AUTO ZERO FREQUENCY counters.

AUTO FREE-FALL: Automatically adjusts the free fall after first discharge and is controlled by the
AUTO FREE-FALL START COUNTER and AUTO FREE-FALL FREQUENCY counters.

TOLERANCE: Will only discharge the weighment if it is within the positive and negative settings
for TOLERANCE WEIGHT. (Refer to the F4 key)

+TOLERANCE WEIGHT: Weight that is acceptable above FINAL TARGET WEIGHT.

-TOLERANCE WEIGHT: Weight that is acceptable below FINAL TARGET WEIGHT.

FAST FILL VIBRATOR SPEED: Speed control for vibrator from 1-100%. (OPTIONAL)

SLOW FILL VIBRATOR SPEED: Speed control for vibrator from 1-100%. (OPTIONAL)

FAST FILL BELT SPEED: Speed control for belt feeder from 1-100%. (OPTIONAL)

SLOW FILL BELT SPEED: Speed control for belt feeder from 1-100%. (OPTIONAL)

FAST FILL AUGER SPEED: Speed control for auger feeder from 1-100%. (OPTIONAL)

SLOW FILL AUGER SPEED: Speed control for auger feeder from 1-100%. (OPTIONAL)

FAST FILL GATE POSITION: Sets the gate opening position for fast fill from 1-100%. (OPTIONAL)

SLOW FILL GATE POSITION: Sets the gate opening position for slow fill from 1-100%. (OPTIONAL)

MULTI DUMP: Enables or Disables the MULTI-DUMP CYCLE COUNTER. (OPTIONAL)
(When enabled F4 Key will stop MULTI-DUMP and TOLERANCE should be set to the OFF position)

START FILL DELAY (sec.): The amount of time allowed from when the hopper doors
start to close to the beginning of the fill cycle.

DISCHARGE DURATION (sec.): The amount of time the signal is given to open the weigh hopper doors.

CLAMP RELEASE DELAY (sec.): The amount of time, after discharge, before the bag is released.
(OPTIONAL)

AUTO ZERO START COUNTER: The number of times the controller will ZERO the weight display, after
first discharge, when selected scale is set from the OFF to ON setting.

AUTO ZERO FREQUENCY COUNTER: How often the controller will ZERO the weight display after
AUTO ZERO START COUNTER is completed.

AUTO FREE-FALL START COUNTER: The number of times the controller will adjust the FREE FALL weight, after first discharge, when selected scale is set from the OFF to ON setting.

AUTO FREE-FALL FREQUENCY COUNTER: How often the controller will adjust the FREE FALL weight after the AUTO COMP. START COUNTER is completed.

TOLERANCE CHECK COUNTER: The number of times the controller will check the weighment to determine whether it is within positive and negative TOLERANCE.

MULTI-DUMP CYCLE COUNTER: The number of times the weigh hopper will discharge continuously without having to reset bag switch. (OPTIONAL)

TOTAL BAG COUNT: Total discharges made from selected scale. (Re-settable)

MASTER CYCLE COUNT: Total discharges made from selected product number history. (Non re-settable)

FAULT RESET: Pressing ID on the keypad will reset the fault on the drive for the servo motor. (OPTIONAL)

CALIBRATION: Pressing ID on the keypad puts controller in the CALIBRATION mode.
(See CALIBRATION PROCEDURE)

ACCESS TO THE CONTROLLER: Hold the CLR key for 10 seconds while powering-up the controller.
100 SELECT/23640 ID ENTER

Changing TIME:

502 SELECT (Make sure P502 is set for "Enbld". This can be done using the ENTER key)
500 SELECT The new TIME is entered by keying in "HH.MM.SS" (ENTER) Leading zeros need not be entered.

Changing DATE:

502 SELECT (Make sure P502 is set for "Enbld". This can be done using the ENTER key)
501 SELECT The new DATE is entered by keying in "MO.DA.YR" (ENTER) Leading zeros need not be entered.

Viewing mv/V output of load cells:

61099 SELECT Specifies the scale number from which to view the information.
61100 SELECT Displays an approximation of the current mv/V output of the connected load cell.

Viewing the voltage of the battery on the database memory board:

60018 SELECT Displays the condition of the database battery.

EXITING THE ACCESS MODE: PRESS THE **ZERO** KEY

If the display reads Code 39 check *AID* Cal press CLR key
If the display reads Setup ENTER = CAL press CLR key
If the display reads Setup ENTER = SAVE press the ENTER key
If the display reads Setup ENTER = EXIT press the ENTER key

When the following appears on the lower display you are finished:

MODEL OF SCALE
PROGRAM and SERIAL NUMBER

PASSCODE PROTECTION FORMAT
FOR 663 AND 665 PROCESS CONTROLLERS

THE FOLLOWING PARAMETERS WILL NOT BE PROTECTED AND WILL BE AVAILABLE TO THE OPERATOR:

- PRODUCT NUMBER
- FINAL TARGET WEIGHT
- SLOW FILL WEIGHT
- FREE FALL WEIGHT

THE FOLLOWING PARAMETERS WILL BE PROTECTED AND WILL NOT BE AVAILABLE TO THE OPERATOR:

- START FILL DELAY
- AUTO FREE-FALL ON/OFF
- AUTO FREE-FALL START COUNTER
- AUTO FREE-FALL FREQUENCY COUNTER
- AUTO ZERO ON/OFF
- AUTO ZERO START COUNTER
- AUTO ZERO FREQUENCY COUNTER
- TOLERANCE ON/OFF
- + TOLERANCE
- - TOLERANCE
- TOLERANCE CHECK COUNTER
- MASTER CYCLE COUNT

THE FOLLOWING PARAMETERS WILL BE PROTECTED AND WILL NOT BE AVAILABLE TO THE OPERATOR. PARAMETERS THAT WILL BE DISPLAYED, DEPENDS ON THE MODEL OF SCALE PURCHASED:

- FAST FILL BELT SPEED
- SLOW FILL BELT SPEED
- FAST FILL AUGER SPEED
- SLOW FILL AUGER SPEED
- FAST FILL GATE POSITION
- SLOW FILL GATE POSITION
- DISCHARGE DURATION
- CLAMP RELEASE DELAY
- MULTI-DUMP ON/OFF
- MULTI-DUMP CYCLE COUNTER

To access the protected parameters from the MAIN MENU screen, press F5 and key in 4787. The MASTER PASSWORD is 4787 and will always allow access to the PARAMETERS. You can create a four digit user password by typing in “9999” at the password prompt and following the on screen instructions. Use “4787” as the OLD PASSWORD.

600 Series Process Controller Set-Up Procedure (net weigh)

PRODUCT #: - 100 DIFFERENT PRODUCT NUMBERS MAY BE STORED USING CODES 00 - 99. CODES CAN BE SELECTED BY PRESSING THE **SETUP** KEY, TYPE IN THE DESIRED PRODUCT NUMBER, THEN PRESS ENTER.

NOTE: SCALES MUST BE IN THE OFF POSITION TO CHANGE PRODUCT #:

FINAL TARGET - ACTUAL WEIGHT OF BAG DESIRED (EXAMPLE 50.00)

SLOW FILL - SLOW FILL WEIGHT (EXAMPLE 12.00)

FREE FALL - WEIGHT OF PRODUCT IN SUSPENSION (EXAMPLE 0.90)

SETUP

1. SELECT PRODUCT #: CODE WHERE VALUES WILL BE STORED.
2. SET FINAL TARGET TO DESIRED BAG WEIGHT (EXAMPLE 50.00).
3. SET FREE FALL 0.00 AND SLOW FILL THE SAME AS FINAL TARGET (EXAMPLE 50.00).
4. RUN ONE BAG WITH SCALE IN THE HOLD POSITION TO PREVENT THE HOPPER FROM DISCHARGING. NOTE WEIGHT (EXAMPLE 50.70)
5. ENTER EXCESS INTO FREE FALL (EXAMPLE 0.70). THE EXCESS WEIGHT IS PRODUCT THAT IS IN THE AIR WHEN THE WEIGHT IS REACHED AND MUST BE COMPENSATED FOR.
6. RUN A SECOND OR THIRD BAG TO BE SURE THAT WEIGHT IS CORRECT. AT THIS POINT WE HAVE RUN ENTIRE BAG IN SLOW FILL TO ACHIEVE THE CORRECT WEIGHT. ONCE THE CORRECT WEIGHT HAS BEEN SET BY ADJUSTING FREE FALL, WE CAN NOW START INCREASING THE SPEED OF FILLING.
7. THE SPEED IS SET USING THE CYCLE LIGHT AND SLOW FILL. THE CYCLE LIGHT IS USED TO ASSIST THE OPERATOR IN ADJUSTING THE SLOW FILL AS FOLLOWS. LONG CYCLE LIGHT SLOW FILL TOO HIGH - VERY SHORT OR NO CYCLE LIGHT SLOW FILL TOO LOW. DEPENDING ON PRODUCT AND SPEED OF CYLINDERS SLOW FILL CAN VARY GREATLY FROM PRODUCT TO PRODUCT. NORMALLY PRODUCTS DO NOT CHANGE WITH SIZE. (EXAMPLE)
FINAL 50.00 - FREE FALL .70 – SLOW FILL 10.00 CODE 00 (50# PELLETS)
FINAL 25.00 - FREE FALL .70 – SLOW FILL 10.00) CODE 01 (25# PELLETS)

GSE Regenerate Program for C Base

Shut the power off to the controller, and then power-up the controller while holding the CLR key until Macro Disbl appears. When Disbl Comm1 appears press ENTER. Then key in 100 SELECT 23640 ID ENTER. This puts the controller in the access mode. The upper display should read P108.01 Scale 1 and the lower display should be blank. At anytime you feel that a mistake has been made, power down the controller and start over from the beginning of this process.

Key in 65002 SELECT and the upper display should read P65002. Deflt -Cal

Press the TARE key two times and the upper display should read P65002. UserC Gen

Press the ENTER key three times and the controller will start loading the program.

When the display shows the Main Menu screen the controller is done loading the program.

***This will set the controllers set-up parameters back to factory defaults, so it is advisable to write down all of the controllers set-up parameter values before performing this procedure.

LCD CONTRAST ADJUSTMENT FOR THE DISPLAY

The contrast of the LCD changes with temperature. A contrast setting that allows good viewing at a high temperature might make the display impossible to read at a low temperature.

If the display is not visible or hard to read, at power-up you can adjust the contrast as follows:

1. Power down.
2. Hold down the left, down and right arrow keys.
3. Power up.
4. Continue to hold the left, down and right arrow keys until you can see the contrast adjustment menu on the display, then release.
5. Make fine adjustments to the contrast by pressing the up and down arrow keys.
6. Press **[ENTER]** to exit the menu and permanently store the new contrast setting.

ERROR CODES and MESSAGES

- CODE 02 Bad Load Cell
Load Cell installed upside down
Green and White Load Cell wires connections reversed
- CODE 03 Bad Load Cell
Load Cell installed upside down
Green and White Load Cell wires connections reversed
- CODE 04 The number to be displayed is greater than 125.00 lb or kg
More than 125 lb or kg of product in the bag on gross weigh
scales or more than 125 lb or kg of product in the weigh
hopper on net weigh scales.
Re-Calibrate scale
- CODE 08 Check all Load Cell and Summing Cable wire connections
and Re-Calibrate
- CODE 26 When the controller is powered-up the main board checks the
data in the database and vise versa, if the information does
not check with each of the components a checksum error
will occur. Try powering down the controller then power-up
again, if this does not work the program will need to be re-
loaded.

FACTORY SET PARAMETERS

WEIGHT SPIKE DELAY	1.1 Second for JM and CM 0.5 Second for 5GV
FAST FILTER	2
SLOW FILTER	3
IDLE FILTER	5

DRY TESTING

It is extremely important that after you have the scale connected up pneumatically and electrically that you test the scale before introducing your products to the feeder section.

When utilizing variable speed drives to control twin auger or belt feeders, it is possible that the feeders could be running backwards, which could cause severe damage to occur to the equipment. If the feeder is running in reverse, then reverse any 2 of the 3 phase wires. Visually check to see that the feeders are delivering product from the inlet of your surge hopper to the discharge end of feeder.

On belt feeders, the belt has been tracked at the factory prior to shipment. It could have become loose or untracked in shipment. We therefore suggest that the belt be tracked at least 30 minutes prior to introduction of any product. Because the belt can expand, it is also imperative that the belt be watched continuously for the first 24 hours of actual operation as it may track from one side to another.

Turn scale on and put the hold/run button to run position. At this point, the feeder should be in full feed position and running. The weigh hopper doors should be closed. The bag clamp assembly should be closed. Depress the foot pedal to open the bag clamps and release. This will not effect the weigh hopper or the feeder, but you should have a smooth motion on the bag clamp assembly as the speed has been set at the factory.

Pull down on the weigh hopper until you have reached the first cutoff point. The first point is the final weight less prelim. At this point the feeder should go to slow or dribble feed. Continue pulling down on the weigh hopper until you reach the final weight value. At this point the feeder should stop. The weigh hopper will not discharge until the bag clamp has provided the ok to discharge signal.

Once you have verified that the operation of this scale is correct, then introduce your product to the scale.

Check calibration of scale against a known weight or a platform scale known to be correct. The unit has been calibrated at factory prior to shipment; however, calibration can be lost in shipment. It is up to the user of this equipment to verify calibration prior to use.

A good practice is to verify scale calibration once every morning and once every afternoon.

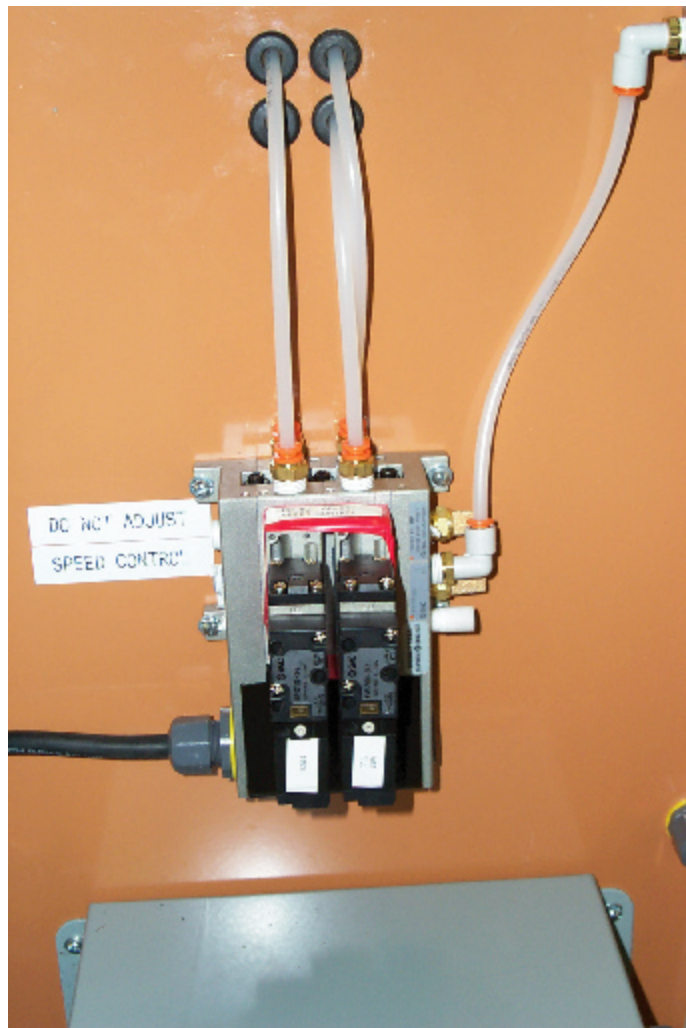
	Product #		Product #		Product #	
	Scale 1	Scale 2	Scale 1	Scale 2	Scale 1	Scale 2
FINAL TARGET WEIGHT						
PRELIM WEIGHT						
FREE FALL WEIGHT						
FAST FILL BELT/AUGER SPEED						
SLOW FILL BELT/AUGER SPEED						
FAST FILL VIBRATOR SPEED						
SLOW FILL VIBRATOR SPEED						
START FILL DELAY						
DISCHARGE DURATION						
CLAMP RELEASE DELAY						
AUTO FREE-FALL ON/OFF						
AUTO FREE-FALL START COUNTER						
AUTO FREE-FALL FREQUENCY COUNTER						
AUTO ZERO ON/OFF						
AUTO ZERO START COUNTER						
AUTO ZERO FREQUENCY COUNTER						
TOLERANCE ON/OFF						
+TOLERANCE WEIGHT						
-TOLERANCE WEIGHT						
TOLERANCE CHECK COUNTER						
MULTI-DUMP ON/OFF						
MULTI-DUMP CYCLE COUNTER						
TOTAL BAG COUNTER						
MASTER CYCLE COUNTER						
WEIGHT SPIKE DELAY						
FAST FILTER						
SLOW FILTER						
IDLE FILTER						

FLOW CONTROLS

Flow controls are factory set.

DO NOT ADJUST

Faster speeds will cause damage to the equipment and will not increase bagging speeds. Do not remove factory tape.



SEQUENCE OF OPERATION

The following is a simple sequence of operation and will be more detailed for different types of units provided.

1. Set programmable controller using final weight, free fall, and preliminary. Final weight is your target weight, Free fall is the amount of product in suspension, and Preliminary is the amount of slow fill weight. The fast feed cutoff is final weight less preliminary and slow feed cutoff is final weight less free fall.

Example: Settings 50 lb. final weight, .6 lb. free fall, and 20 lb. preliminary. The feeder will run fast for 30 lb., then slow until 49.4 lb., then off. The product in suspension would fall and the weight will be 50 lb.

2. Turn scale to on. Scale will now run through fast feed, slow feed, and weigh complete.
3. Place bag on spout. When spout closes, o.k. to discharge signal will be provided.
4. Weigh hopper will be discharged. Weigh hopper doors will close and feeding cycle will repeat.

OPERATIONAL TIPS

The scale is designed for fast feed, slow feed, weigh complete and discharge operations. Lights on the inside of the programmable controller display each of these functions. Lights on the valve also display when the valve has been energized.

It is extremely important to remember that problems can be mechanical, electrical or pneumatic. The light sequencing features allow your operators to determine if the problems are pneumatic or electrical.

The valves that we supply have push button overrides on each valve and each valve has speed controls mounted directly underneath the valve between the valve and the baseplate. If the valve receives an electrical signal from the control panel, it lights. If the valve does not operate, then it probably is a pneumatic problem. If the light does not come on and you manually override the valve by pushing in on the override push button, then you have an electrical problem.

Before operating your scale, pull down on the weigh hopper 5 or 10 times fairly hard. The weight on the indicator should return to 0 or the starting point each and every time. If it fails to do so, a mechanical problem could be present. Mechanical problems are described in the troubleshooting portion of this manual.

The CM-780 scale is designed to provide you with optimum speed and accuracy on each and every product that you run through the scale. When setting your scale, you must set the controller for excessive slow fill. Typically setting a target weight of 50 lbs. and prelim of 30 lbs. would create a fast fill of 20 lbs. and a slow fill of 30 lbs. Remember that in slow fill, a maximum rate is 5 lbs. per second.

Once you have run several bags, the weight over 50 lbs. needs to be entered into the free fall value on the 600 series programmable controller. For example, if 51.00 lbs. is obtained, 1.0 lb. is entered into free fall. This will stop the feeder at 49.00 lbs. and allow for 1.0 lb. of free fall to accomplish a 50.00 lb. weighment.

First and foremost, you must make the scale accurate. **DO NOT ATTEMPT EVER TO ADJUST FOR SPEED AND ACCURACY AT THE SAME TIME.**

By lowering the value of the prelim, will subsequently increase the fast fill and reduce the slow fill. Continue to decrease the prelim value until the accuracy is lost.

Once you have obtained ideal speed and accuracy for this product, these values can be retained in the product “#” feature. Please note this in the 600 series Programmable Controller Instruction Manual. Basically, there are 100 product #s which are settings for values that have been pre-entered into the system for different products and different weights. It is very similar to speed dialing on a telephone.

BAG CLAMP SAFETY

Bag clamps (spouts)

The most ergonomically correct height for the spout is 48 inches (1.2 meters) to the floor. Exception to this rule is that the bag closing conveyor should not be lower than 12 inches (305 mm) to the floor. If the bag is taller than 36 to 37 inches (914 to 940 mm) then height will have to be adjusted upward to ensure a gap to allow the bag to fall and clear the spout.

Bags are placed on the spouts manually by operators. The clamps are operated by a foot pedal, hand wand switch or special order push buttons. Normally in plants where fertilizer, salt or other corrosive products are handled, foot pedals are not recommended. But foot pedals seem to be the most operator friendly device.

Hanging the bags safely is critical to a successful operation.

Bags manufactured of paper or laminated poly propylene have excellent rigidity and are the easiest to work with. Poly woven, cloth and low density poly ethylene bags have the least rigidity and are more difficult for the operator to hang.

Bags with rigidity are generally placed by the operator in the following manner.

1. Grab the bag with right hand approximately 12" (304 mm) from the top.
2. Slide the bag over the right end of the spout, allowing the shape of the spout to open the bag.
3. When bag is approximately 4" (101 mm) on the spout, activate the clamping assembly.
4. Operator's right hand will now be approximately 8" (203 mm) below the clamps.

On bags with less rigidity the operator's hand or hands will need to be closer to the top of bag. Subsequently, closer to the bag clamps and more care needs to be taken by the operator.

On cloth and low density poly propylene bags two hands may be required to hang the bag. The operator needs to make sure his/her hands are clear of the spout assembly before activating the clamp switch/foot pedal.

The bag clamps not only support bags during the filling but also some models (GBAO, JMDT and CMDT) are designed to control dust. To control dust the spout assembly and brackets that hold the bag must be of very close tolerance.

Close tolerance also means pinch point. All dust tight spouts are designed with spring loaded brackets that hold the belting material. This minimizes the risk to the operator's hand but the dust tight design is more cumbersome to most operators than the center grip or clam shell spout.

Clam shell spouts (JM600 or JMCS) are designed for bags with a minimum 28" (711 mm) circumference. This fits the industry standard rule that spout circumferences need to be at

least 5" (127 mm) smaller than the circumference of the smallest bag being used. If the circumference of the spout and the circumference of the bag are 5" (127 mm) or less it is cumbersome for the operator to place the bag on the spout assembly.

The dust tight spouts (DT) and center grip spouts (CG) are available in a variety of sizes so these are basically customized to the bags being used in normal operations. The normal shape is pecan or US football shaped. This helps in opening the bag during placement and does not misshape the bag during the filling operation. It is important that the bag not be misshaped to ensure an easier motion of the operator to close the bag after it has been filled and discharged.

Not all spouts are identical in size or shape. Some products pass through round spouts more easily. Round spouts, however are generally harder for operators to use than pecan shaped spouts.

A separate air regulator is provided for all bag clamps. Each pneumatic system valve cylinder includes speed control. The amount of air pressure required is trial and error. The amount of air used should only be enough to firmly hold the heaviest bag without any slippage. The speed controls are factory set and clearly marked "do not adjust" in three languages; English, Spanish and French. Do not adjust the speed controls.

On GB model scales (GBAO) operators can operate the bag clamp without the possibility of the product passing through. On JM gross weigh scales, CM-780 net weigh scales and 5GV net weigh scales a "hold/run" switch is provided. In run mode the operation of the clamp will activate the product flow. In hold the clamps can be operated without activating product flow. Operators who want to test their skill on spouts using the JM, CM-780 or GV models must put the scale in "hold" first or risk discharging product unwanted. By placing the scales in "hold" will eliminate the possibility of spillage.

If a finger would get caught in the spout assembly, don't panic. We are not aware of any broken bones in 30+ years of manufacturing these products.

Most damage is done by pulling out. The clamps require 50 to 80 lbs of air pressure normally to hold a standard 50 lb bag. Operators normally cannot pull out of this clamp assembly with said pressure. By pulling out the skin can be torn or a fingernail can be lost, depending on the position of the hand when clamped. Generally it is far better for the operator not to panic and wait for the release of air pressure.

If the scale has an automatic release, bag clamps will automatically open in a few seconds, releasing the operator. For quicker release please refer to the following.

GB scales: depress foot pedal and hold foot pedal. The clamps will automatically open.

JM and CM digital scales: F1 key turns the bag clamps off. The clamps will automatically open.

JM non digital models: turn on/off push button to "off" position.

On any model scale, "quick disconnect" air has been supplied. Disconnect air and all pressure will be released.

MAINTENANCE

All bearings on the scale are lubricated type bearings. These must be lubricated not less than once every 6 months. This will, however, be determined by the product and the scale usage.

Gearboxes if supplied on your CM-780 scale should have oil changed annually. Check gearbox oil level before starting system to ensure that oil has not leaked out in shipment.

Check rubber bumpers on scale weekly.

Model	Quantity	Areas to be checked
Belt Feeder	5 bumpers	(2 on stream depth regulator on top of belt feeder, 2 on catch gate in closed position, and 1 on catch gate in open position.
Auger Fed	0 bumpers	
Gravity/Gravity	3 bumpers	(2 on catch gate closed position, 1 on catch gate open position)
Gravity/Vibrator	3 bumpers	(2 on gravity gate closed position, 1 on gravity gate opened position)
Single Vibratory	0 bumpers	

If a bumper is found to be excessively worn, replace immediately. If a scale is allowed to operate with a bumper omitted, structural damage will occur.

TROUBLESHOOTING

Fuse light on terminal strip in programmable control panel is on. This signifies that the fuse is blown or missing. Replacement parts are available from JEM at 913-441-4788. This is a GMA 3 amp fuse.

Digital display screen does not return to "0". This is typically a mechanical problem with the scale. The steady rods stabilizing the weigh hopper from side movement may be in a bind position. The rods should be straight and level. Check to see if any have been broken or bowed.

Check all bolts pertaining to the load cell weigh hopper connection. Put a wrench on these and re-tighten to verify. Check the top of the weigh hopper to verify no product has become trapped between this and the top of the scale housing.

Check the airline connections to the air cylinder opening and closing the weigh hopper doors to verify that it is not in a tight or pulling position. If weigh hopper is supplied with a hopper limit switch, check the electrical connection to the weigh hopper limit switch to verify that it is not pulling.

Digital display screen does not reach weight. Check load cell stop bolt bracket air gap according to re-installation of CM-780 load cell print #PCM069. Check stop bolt G jam nut D to verify that this nut has not worked its way down and is resting on washer setting on top load cell base.

Scale weight drifts with no weight added or subtracted from weigh hopper. Typically one or both load cells are faulty. Refer to Ohms chart in manual.

LOAD CELL CAPACITY

RESISTANCE INK OHMS	50 Lb.	150 Lb.	250 Lb.	500 Lb.
Red Black	.376	.384	.401	.401
Red Green	.276	.280	.289	.288
Red White	.276	.280	.289	.288
Black Green	.276	.280	.289	.288
Black White	.276	.280	.289	.288
Green White	.351	.351	.351	.351

Do not attempt to remove the e-prom chip from the processor while power is on unit. If this chip is removed with power on the unit, the entire program will be lost.

If the belt feeder does not stop, check motor starter; it may be faulty or motor starter coil stuck in engaged position. Scale will not discharge. Be sure scale is in run position.

Check bag clamp limit switch mounted on left rear of spout.

The feeder section will not start; check air is present to close weigh hopper doors. The second solution would be limit switch on weigh hopper doors is activated.

Double dumping, re-adjust bag clamp limit switch for a more positive close connection.

The digital readout does not match check weigh scale indicator. Follow instructions in 600 series programmable controller instruction manual as to re-calibrating scale.

GRAVITY GATE 2 POSITION

The gravity gate feeder is used for free flowing products and is air operated. The gravity system works on a single radial gate controlled by two air cylinders mounted back to back. With the unit in fast feed or full open position, both cylinders are retracted. The opening of fast feed can be reduced with a mechanical stop located on the top backside of the gate housing. When the scale changes to slow feed, one cylinder will extend and the gate will become partially closed. The slow feed rate can be changed with a mechanical linkage on the air cylinders. When weigh complete is achieved, the second cylinder will extend and the gate will close completely.

Note: Normal setting for slow or dribble feed is 2.0 lbs. of material per second

Adjustment for slow fill should be made first. The unit should be set to run the entire cycle in slow fill. The unit should fill at approximately 2.0 lbs. per second (this is a guide and not a set value), size and density will effect filling rates. Using the handle attached to the back of the dual cylinders, screw in to decrease and out to increase the filling rate. After several bags have been run all slow fill and weights are correct, then the fast filling adjustment can be made. The fast fill adjustment is adjusted with the handle on top of the gate. Screw the handle in to decrease and out to increase. The flow should be set at a slow rate and slowly increased until there is a uniform filling. Each time the fill rate is increased, an adjustment may need to be made to the PS-1 value or time.

Maintenance

1. Lube 4 bearings, 2 external and 2 internal periodically.
2. Mechanical limiting adjustments - grease lightly to prevent rusting in place.
3. Periodically check rubber gate stop bumpers. Adjust as needed and replace when rubber feels brittle.
4. Periodically check rubber gate seals both front and back.

HOPPER SECTION

The weigh hopper is a double door air operated hopper. This unit normally has a limit switch to give a signal that the doors are closed and the weighing can start. Also included in this section are steady rods to prevent the hopper from swinging side to side but will allow it to move up and down freely. The discharge time duration is controlled by an internal timer (refer to programmable controller instruction manual) and should be set to allow the product to clear the hopper. Any excess time is wasted and reduces the cycle rate of the scale.

Maintenance

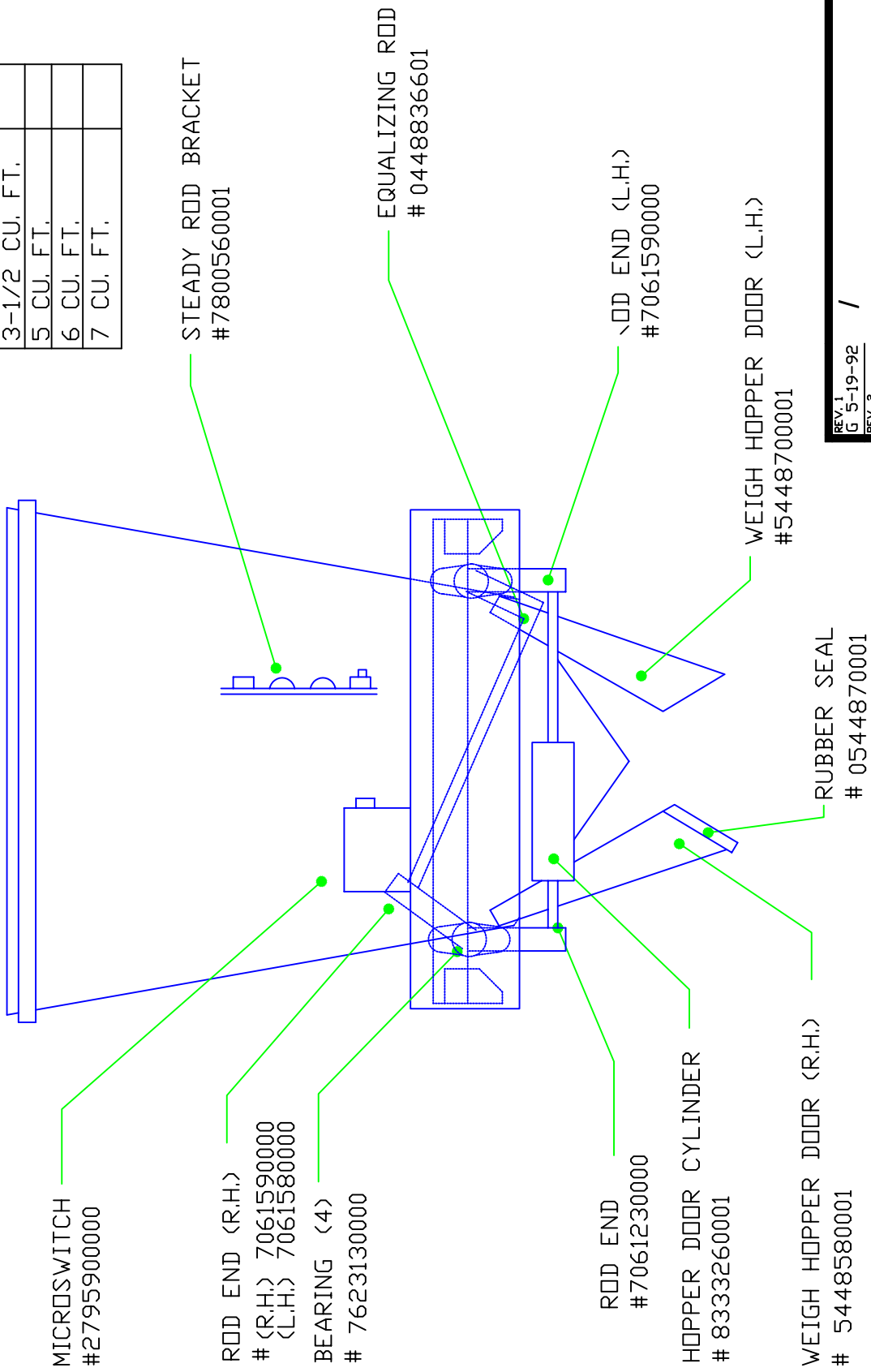
1. Lubricate 4 bearings periodically.
2. Check steady rod for tightness periodically.

REPLACEMENT OF AIR CYLINDER ON WEIGH HOPPER (W.H.) DOORS

1. Remove air supply
2. Remove scale transition and bagging spout.
3. Disconnect the hopper air cylinder by first removing the cotter pins located in the mounting bolts $\frac{1}{2}$ " nuts. Take note of the amount of spacer washers between the air cylinder and door actuator brackets.
4. Remove the airlines from the air fittings by holding in the expansion ring while pulling on the airline.
5. Remove the male rod end and base bracket and female rod end from the old air cylinder.
6. Swap out air fittings and rod ends from old air cylinder to the new replacement weigh hopper air cylinder.
7. Drill a $\frac{1}{8}$ " hole through the female rod end and install cotter pin.
8. (Note) that both the male and female rod ends are on as tight as possible before drilling hole.
9. Re-install air cylinder facing in same direction utilizing the hardware removed earlier.

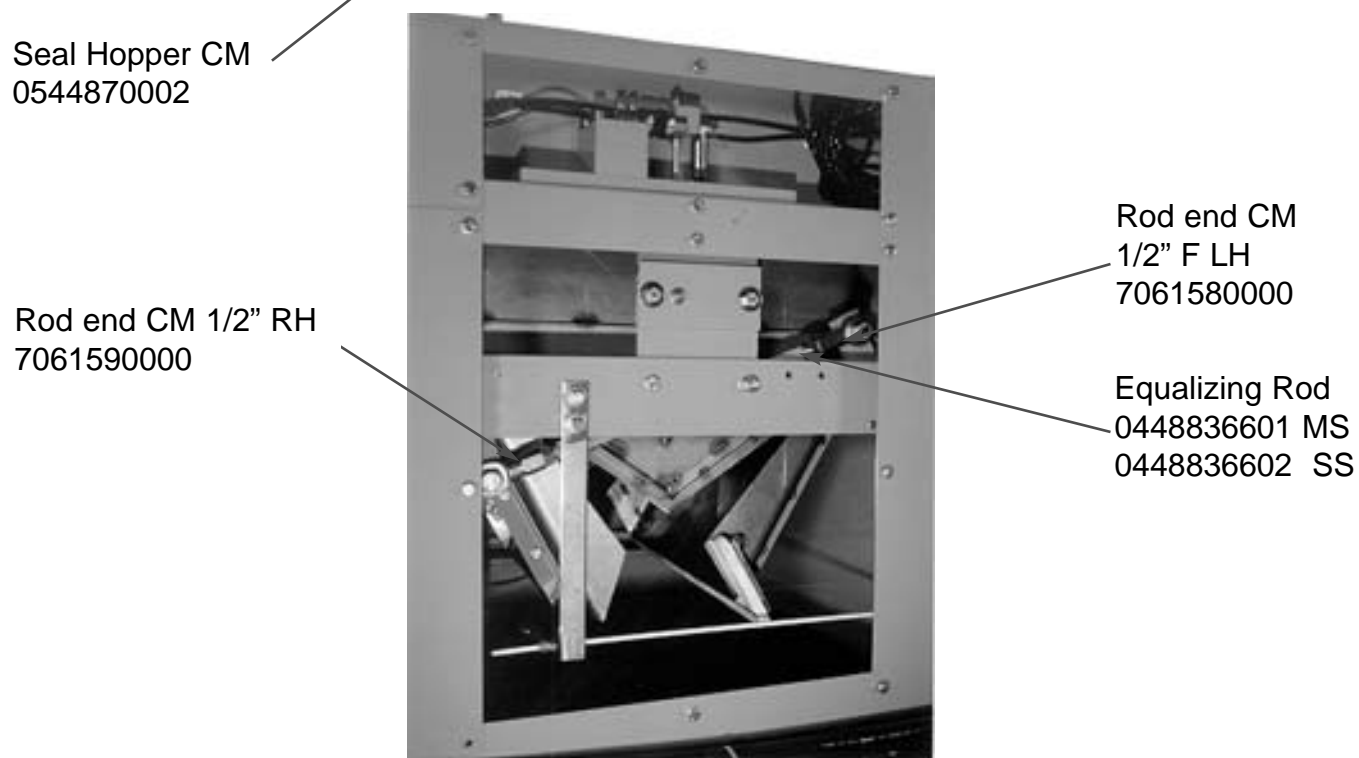
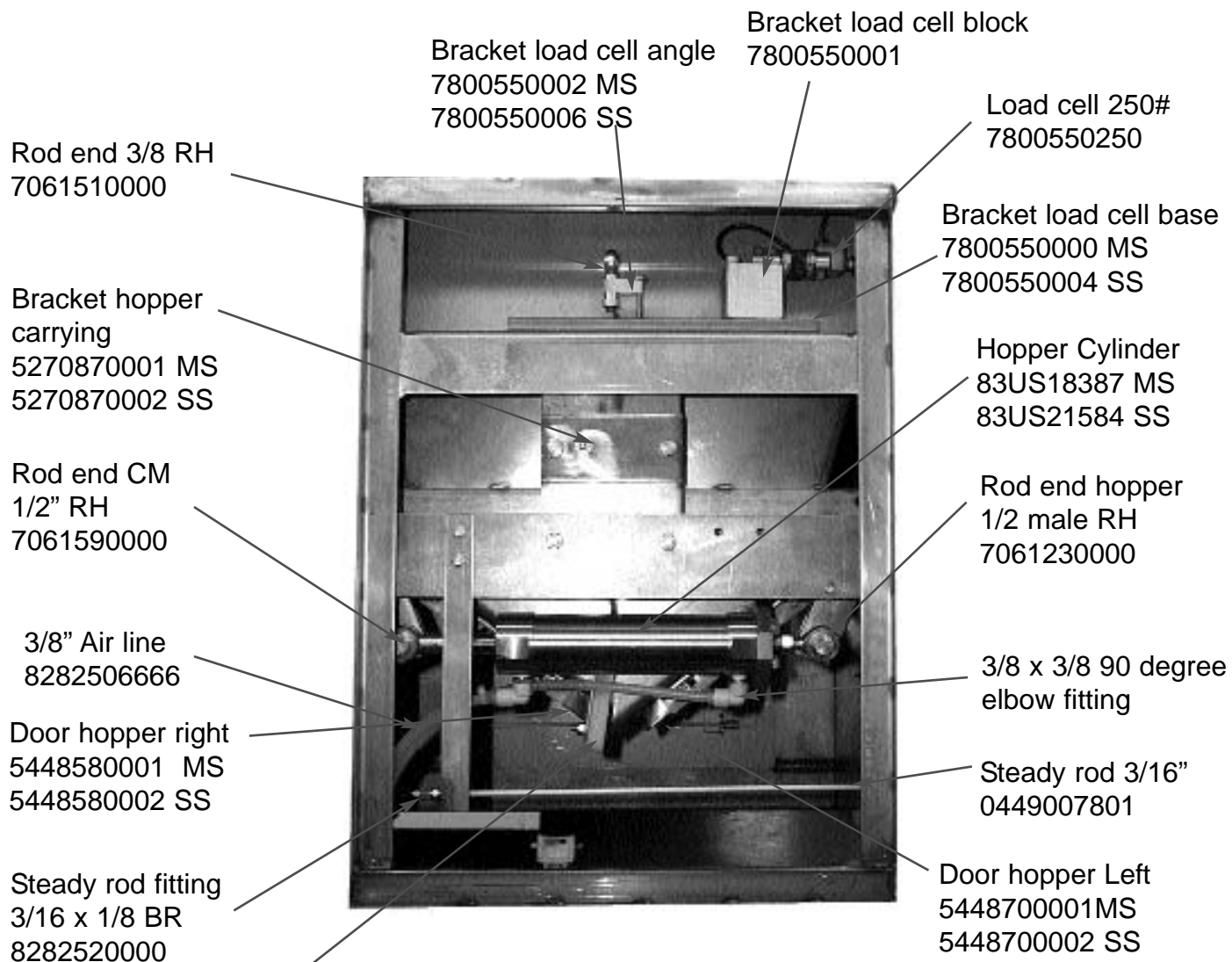
When weigh hopper doors are in the closed position, the hopper door cylinder should not bottom out. There should be around $\frac{1}{4}$ " clearance before the actual cylinder can bottom out. A way to check this is to manually operate the air cylinder numerous times until a small dirt ring forms on the shaft of the air cylinder and then make sure that the ring is showing about $\frac{1}{4}$ " when the doors are in the closed position. If $\frac{1}{4}$ " is not present, you must remove the female rod-end from the cylinder and cut $\frac{1}{4}$ " from the rod end then re-install on cylinder shaft and pin.

WEIGH HOPPER	
CAPACITY	✓
2 CU. FT.	
3-1/2 CU. FT.	
5 CU. FT.	
6 CU. FT.	
7 CU. FT.	



REV. 1	G 5-19-92	/
REV. 2	12-05-94	NAME
REV. 3	03-22-96	
REV. 4		FOR
REV. 5		
REV. 6		TOLERANCE
REV. 7		DRAWING NUMBER
		PCM025

APPR





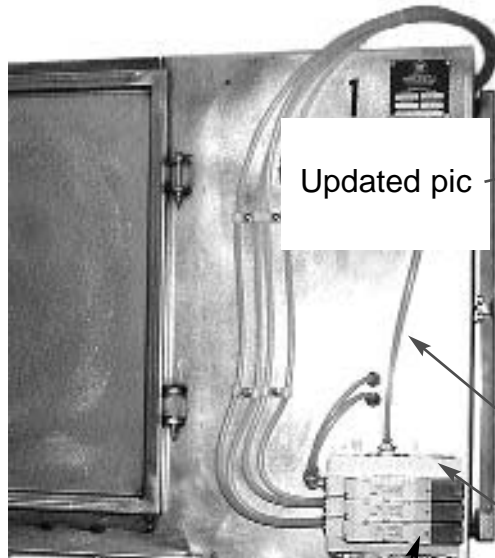
Summing box
7800550604

Terminals
9500380000

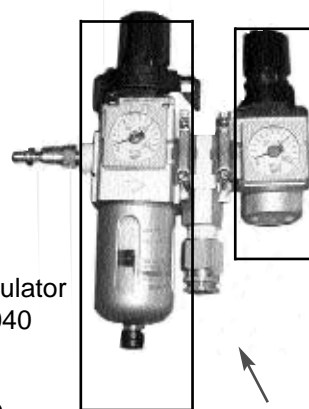
Terminal ground
9500410000

Terminal fuse holder
9500440000

Filter Regulator Ass'y
3770330046



Updated pic



Regulator
3770330041

Filter Regulator
3770330040

3/8 x 1/4 elbow
fitting

3/8 x 1/4
straight fitting

3/8 Air line
8282506666

Complete Valve
8953100000 for 110V
8953120220 for 220V

Muffler
8953100002

Solenoid Only
8953100001 for 110 V
8953110222 for 220 V

CM CENTER GRIP SPOUT MS and SS

BEARINGS
7623140002 MS
7623140004 SS
Recommended 2

Fitting for MS Cylinder
17KQ2L1136S
Fitting for SS Cylinder
17KQ2L1135S



CYLINDER SPOUT AO
8333260000 MS
OR 8333260003 SS
Recommended 1

MICRO SWITCH
2795900000 MS
2795900005 SS
Recommended 1

HAND SWITCH
3770320000 MS
2795900010 SS
Recommended 1

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PART#	DESCRIPTION	CODE	Simplex
0423955501	Sway Bracket AO		
0436255501	Latch		
0438243601	Bracket Micro Switch Spout		
0448836601	Equalizing Rod		
0448993601	Bracket Steady Rod End		
0449007801	Steady rod 3/16"	R	4
0544870002	Seal Hopper	R	1
2795900000	Switch Opar	R	1
3770330040	Filter Regulator		
3770330041	Regulator	R	1
3770330046	Filter Regulator Assembly		
5270870001	Bracket Hopper Carrying		
5448530000	Hopper 3.5 Ft		
5448550000	Hopper 4 Cubic Ft		
5448570000	Frame Hopper		
5448580001	Door Hopper Right		
5448580003	Bracket Hopper door RT		
5448580004	Bracket LH W/SW Bracket Hopper		
5448700001	Door Hopper Left		
5448910001	Plate Rear Extension		
5448910003	Plate Extension Front & Rear 4 CB FT		
5448910015	Plate Extension Rear 2 CU FT		
7061230000	Rod End Hopper 1/2 male RH		
7061510000	Rod End 3/8 RH		
7061580000	Rod End CM 1/2" F LH		
7061590000	Rod End CM 1/2" RH		
7144010000	CM Rubber Bumper Black*	R	4

R=RECOMMENDED SPART PARTS

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7144050000	CM Rubber Bumper White*	R	4
7623130000	Bearing 5/8" 2 Bit Hopper		
7800230001	Housing CMD Left		
7800230004	Housing CMD Right		
7800230020	Channel Mounting 4 x 36 20"		
7800250000	Cover Small		
7800270000	Panel Large		
7800350000	Bracket Duplex MSGG Angle		
7800350005	Bracket Duplex Connector GG/BF		
7800390000	Transition x 14 CM Center		
7800390007	Transition Extension 4 CU FT		
7800390010	Transition FR Dis Duplex		
7800390012	Transition Extension CM Duplex 6"		
7800550000	Bracket Load Cell Base		
7800550001	Bracket Load Cell Block		
7800550002	Bracket Load Cell Angle		
7800550250	Load Cell 250#	R	1
7800550604	Summing Box EL604		
7800550605	Summing Board		
7800560001	Bracket Steady Rod Rear		
7800560002	Bracket Steady Rod Front		
7808080000	Knob		
7809000000	Top Plate		
8282500000	Fittings for Airline	R	30
8282506666	3/8" Airline	R	100
8282520000	Steady rod fitting 3/16 x 1/8 BR	R	8
8282530000	Steady rod fitting 1/8 x 1/8 BR	R	2
8333260000	Cylinder Spout AO		
83US18387	Cylinder Hopper	R	1

R=RECOMMENDED SPART PARTS

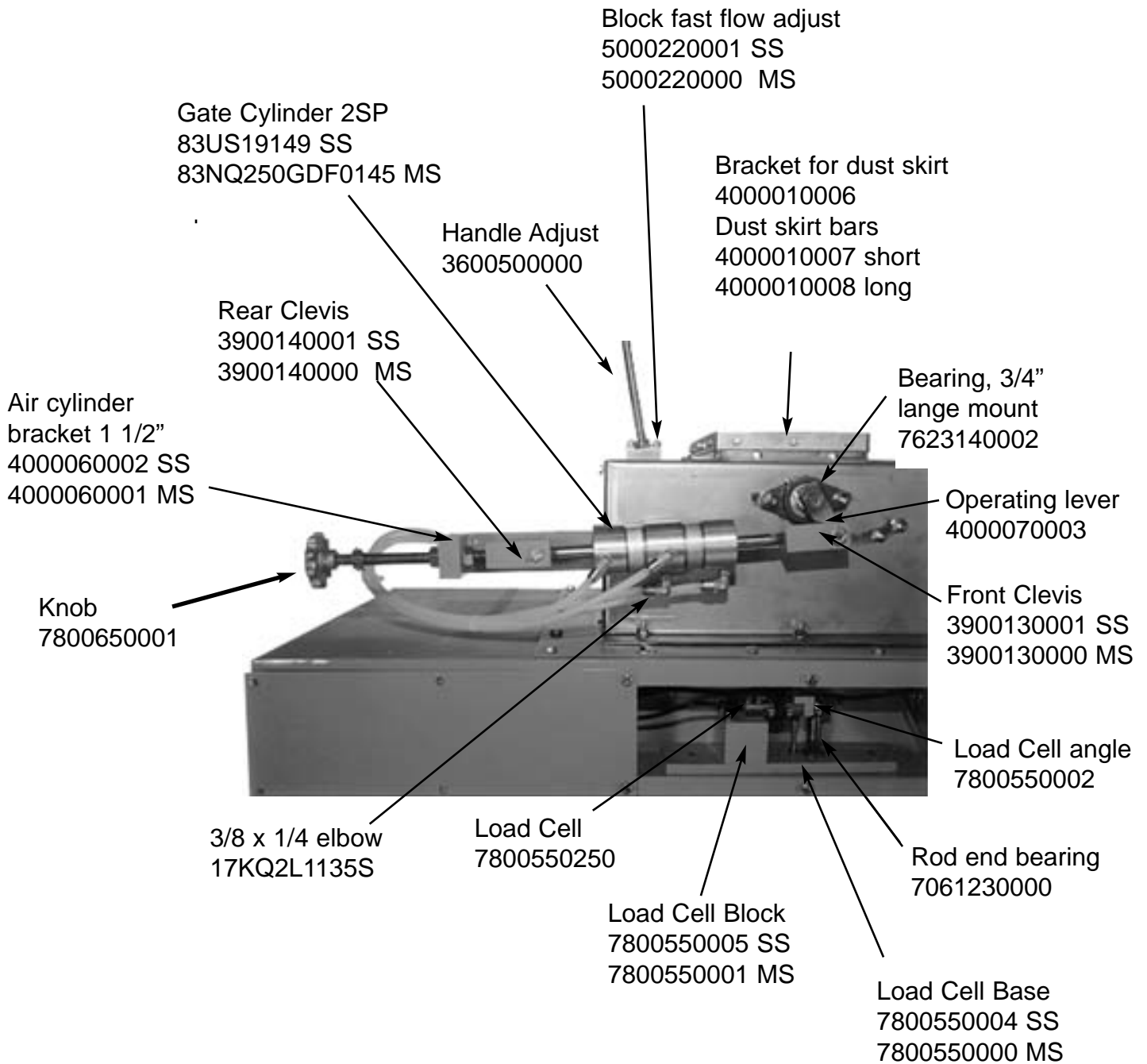
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83US21584	Cylinder Hopper SS		
8953100000	Valve 3 Stat 110 Volt		
8953120220	Valve 3 Stat 220 Volt		
8953100001	Solenoid for CM Valve SMC 110 Volt	R	1
8953110222	Solenoid for CM Valve SMC 220 Volt	R	1
9500380000	Terminals		
9500410000	Terminal Ground		
9500440000	Terminal Fuse Holder		
200665-00020	Controller Model 665		
	Simplex Scale		
13-10-7050	Fuse 600 series main PCB	R	5
24660B-122AO	1/0 Module 2 input/2 output R (Simplex)	R	1
24660B-130AO	1/0 Module 4 position SBM. AC (Simplex)	R	1
	Duplex Scale		
13-10-4500	Fuse for relay board 600 series	R	
13-10-7050	Fuse 600 series main PCB	R	
19-30-0310	Relay 1781-0A5S Output 12-1	R	
19-30-1910	Relay 1781-1A5S Input 90-140	R	

R=RECOMMENDED SPARE PARTS

When ordering parts, be sure to advise your scale construction material; mild steel or stainless steel, and the serial # on the name plate or, on the cover of the manual.

GRAVITY GATE



JEM INTERNATIONAL, INC.

PHONE: 913-441-4788 FAX: 913-441-1711

CM-780 GRAVITY GATE PARTS LIST					
PART #	D E S C R I P T I O N	CODE	Simplex	Duplex	
0024257912	Seal GG Neoprene for seal plat	R	2	4	
0447223601	Bracket gate stop				
0447223602	Bracket gate stop SS				
3600500000	Handle adjust				
3600500001	Handle adjust SS				
3900130000	Front Clevis				
3900130001	Front Clevis SS				
3900140000	Rear Clevis				
3900140001	Rear Clevis SS				
4000010000	Housing				
4000010006	Bracket top dust skirt				
4000010007	Dust skirt bar short SS				
4000010008	Dust skirt bar long SS				
4000020001	Chute SS				
4000030001	Gate SS				
4000040001	Deflector GG SS				
4000060001	Air cylinder bracket 1 1/2"				
4000070003	Operating lever				
4000080000	Seal Plate GG SS				
4000090000	Bar Front Seal GG SS				
4000110000	Cover End GG SS				
5000220000	Block fast flow adjust				
5000220001	Block fast flow adjust SS				
7061150000	Rod End bearing 2 speed				
7061510000	Rod End bearing				
7144050000	Bumper CM White				
7623120000	Gate bearing GG	R	3	6	
7623140002	Bearing, 3/4" flange mount	R	1	2	
7623140004	Bearing, 3/4"SS	R	1	2	
7791760000	Dust skirt GG cotton duct	R	1	2	
7800650001	Knob				
8282506666	3/8 Airline				
83NQ250GDF0145	Cylinder Gate 2 sp MS	R	1	2	
83US19149	Cylinder Gate 2 sp SS	R	1	2	
8953100000	Complete Valve				
8953100001	Solenoid only				
17KQ2L1135S	3/8 x 1/4 elbow				

R=RECOMMENDED SPART PARTS

**When ordering parts be sure to advise scale
construction material, mild steel or stainless**