

EQUIPMENT SALES | PARTS | MANUFACTURING

USER'S OPERATION MANUAL

CUSTOMER: ------

S/O#: -----

SERIAL #: ------

MODEL: CM-780-BF-14

CONTROLLER: 665 LCD CMBFAVSJH 2_51.TXT

ELECTRICAL (CONTROL): ------

ELECTRICAL (MOTOR): ------

AIR PSI: 80 PSI @ 8 CFM

SPECIAL FEATURES: ------

JEM International	6873 Martindale	Shawnee, Kansas USA 66218-9354
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CONTROL WIRE COLOR CODE

SCALE HOUSING	CONTROL PANEL
L	BLACK
N	WHITE
1	RED
2	BLUE
3	ORANGE
5	RED/BLACK
6	BLUE/BLACK
7	ORANGE/BLACK
GROUND	GREEN

0-IOVDC REFERENCE SIGNAL FOR VARIABLE SPEED DRIVE

CONTROL PANEL	SCALE HOUSING
RED	10
BLACK	9
BARE	GROUND

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

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 form 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 pre-weighs 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 *Yz* 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 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 V4" 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.

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

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 <u>inaccuracies</u>. The scale also needs to have rigid supports as the weight of the scale is as follows:

CM-780 Belt Fed Scale	1,200 Lbs.
CM-780 Gravity/Gravity Scale	950 Lbs.
CM-780 Gravity/Vibrator Scale	1,100Lbs.
CM-780 Auger Fed Scale	1,200 Lbs.

You should also account for the weight of the product in the weigh hopper, plus the weight of the product in a bag held from the spout and head pressure from your surge hopper above when designing the supports for the CM-780 scale. When installing the CM-780 net weigh bagging scale on your bin, head pressure is a concern. The bin must be large enough to ensure that three weighments of product are available at all times above the feeder to ensure accurate weighments. However, too much product and head pressure on the feeder can cause problems. Especially in products where the bin is large and mounted directly over the feeder. This can cause stress on the feeder and can cause inaccuracies.

A baffie or some type of method of suppressing the force of your product on our feeder is recommended in many instances. The installation of such baffie is extremely important. The baffie must not cause bridging of your product in the bin, but it also must be installed in such a way that the pressure from directly above the feeder is limited.

Baffies are most always used in stone, cement and other products with bulk densities of greater than 80 lbs. per cubic foot. Baffies are almost never used in industries such as soil or flour based products where bridging can easily occur.

When installing the spout on the scale, check for the front and rear position. On dust tight spouts, the air cylinder will be on the operator's right side. This spout has a bracket to hold the microswitch. The microswitch has been wired up to the scale and is generally shipped attached to the main scale section. This microswitch and bracket assembly needs to be connected to the spout on initial installation. This bracket is on the back left of the spout. Most air operated dust tight spouts are supplied with a pneumatic foot pedal. The pneumatic foot pedal assembly has been shipped in a box loose from the spout. There are three airlines connecting this spout to the foot pedal. The longest airline connects to the lower part of the CM-780 scale. The next longest airline connects to the air cylinder on the right side of the scale; the port closest to the operator, and the shortest airline connects to the air cylinder on the right side on the right hand side of the scale; the port furthest from the operator.

This arrangement will typically have the bag clamp assembly in the closed position. When the operator steps on the foot pedal, the clamps will open, thus releasing the filled bag, the operator will then insert the next bag, release the foot pedal and the clamps will close. In this arrangement, the operator does not have to stand on the foot pedal when the bag is filling. If your plant desires to have this sequence of operation reversed, reverse the A and B airlines on the foot pedal.

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 inaccuracles.

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 of 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 Land Non 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 (±) 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 <u>finger</u> 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.







ENTERNATIONAL INC.

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CALIBRATION PROCEDURE

FROM THE MAIN MENU PRESS SETUP KEY AND THEN PRESS [F4] KEY ID=CALIBRATION WILL APPEAR ON LOWER DISPLAY

CALIBRATION: Pressing ID on the keypad puts controller in the CALIBRATION mode. (Follow the prompts on the upper display, remembering ENTER=yes / CLR= no)

Scl # : When more than one scale is being used (such as a duplex or triplex scale) the Scl # must be entered.

New Zero? : Tells the controller what will be established as a ZERO point. PRESS ENTER

Units= :Using the UNITS key, toggle through the available units until the correct one is selected.

Key in Calibration Weight: Place calibration mass on or in weigh hopper and key in the exact weight of the mass including any other objects used to support or suspend the mass from the weigh hopper. **PRESS ENTER**

Calibration OK?: If upper display is equal to the amount keyed in PRESS ENTER.

If upper display is not equal to the amount keyed in press CLR and start at (New Zero?)

WHEN FINISHED WITH LAST SCALE ScI # WILL APPEAR PRESS CLR KEY TO EXIT. DUPLEX AND TRIPLEX ONLY !

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 SERIAL NUMBER



3¹/₂ 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)Fl 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 oftime, 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- ACTUAL WEIGHT OF BAG DESIRED (EXAMPLE 50.00)

PRELIM- SLOW FILL WEIGHT (EXAMPLE 12.00)

FREE FALL- WEIGHT OF PRODUCT IN SUSPENSION (EXAMPLE .90)

SETUP

- 1. SELECT PRODUCT#: CODE WHERE VALUES WILL BE STORED.
- 2. SET FINAL TO DESIRED BAG WEIGHT (EXAMPLE 50.00).
- 3. FREE FALL .00, AND PRELIM SAME AS FINAL (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 .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 ADruSTING FREE FALL, WE CAN NOW START INCREASING THE SPEED OF FILLING.
- 7. THE SPEED IS SET USING THE CYCLE LIGHT AND PRELIM WEIGHT. THE CYCLE LIGHT IS USED TO ASSIST THE OPERATOR IN ADruSTING THE PRELIM WEIGHT AS FOLLOWS. LONG CYCLE LIGHT PRELIM TOO HIGH-VERY SHORT OR NO CYCLE LIGHT PRELIM TOO LOW. DEPENDING ON PRODUCT AND SPEED OF CYLINDERS PRELIM CAN VARY GREATLY FROM PRODUCT TO PRODUCT. NORMALLY PRODUCTS DO NOT CHANGE WITH SIZE (EXAMPLE CODE 00 (50# PELLETS) FINAL 50.00- FREE FALL .70- PRELIM 5.00 CODE 01 (25# PELLETS) FINAL 25.00- FREE FALL .70- PRELIM 5.00)

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

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.

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.

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						
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						
7 OLERANCE 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 an 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. <u>DO NOT ATTEMPT EVER TO</u> <u>ADJUST FOR SPEED AND ACCURACY AT THE SAME TIME.</u>

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.

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 Belt Feeder	Quantity 5 bumpers	Areas to be checked (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.

RESISTANCE	50 Lb.	150 Lb.	250 Lb.	500 Lb.
INK OHMS				
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

LOAD CELL CAPACITY

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.

BELT FEEDER (PNEUMATICALLY OPERATED STREAM DEPTH REGULATOR)

The belt feeder is used for semi free flowing products and is motor driven. The belt has a catch gate at the discharge end to prevent product from falling off the belt and causing weight inconsistencies. The feeder also comes complete with a stream depth regulator pneumatically operated. When the belt is in fast feed operation, the catch gate at the discharge is open, the belt is running, and the stream depth regulator is in the up position. When the belt is in dribble mode or slow feed, the catch gate is open, the belt feeder is running, and the stream depth regulator. For setting the scale, normally the slow feed should be set to allow no more than 5 lbs. per second of material flow. This can be easily adjusted by manually setting the stream depth regulator on top of the belt feeder. In the event some product cannot be slowed to this level, then contact the factory. It may be necessary to change the sprocket and slow down the belt feeder in very unusual circumstances. When the final weight is reached, the catch will close and flow gate will return to up position.

The catch gate at the discharge of the belt feeder should be set to close fairly rapidly and open at a slower rate. The speed of the closing will affect the accuracy of the scale system; however, the speed of the opening has no effect on the scale accuracy. The speed settings can be adjusted on the valve controlling the pneumatic cylinder.

*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 affect filling rates. Using the handle attached to the flow gate, screw in to increase and out to decrease. After several bags have been run all slow fill and weights are correct, and then the fast filling adjustment can be made. The fast fill adjustment is adjustable using the all thread that runs parallel with the flow gate cylinder. Screw the nut 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-I value or time.

<u>Note</u>: For best accuracy, set dribble feed at no more than 5 lbs. of material per second. <u>Before operating scale, recheck belt tracking.</u>

BELT FEEDER (SINGLE MOTOR VARIABLE SPEED CONTROLLER)

The belt feeder is used for semi free flowing products and is motor driven. The belt has a cutoff gate, "catch gate", at the discharge end to prevent product from falling off the belt and causing weight inconsistencies. The feeder also comes complete with a stream depth regulator pneumatically operated. When the belt is in fast feed operation, the catch gate at the discharge is open, the belt is running, and the stream depth regulator is in the up position. When the belt is in slow feed, the catch gate is open, the belt feeder is running slow.

The slow feed should be set to allow no more than 2.0 lbs. of product per second of material flow. This can be easily adjusted by lowering the speed on the variable speed controller, speed #2. When the final weight is reached, the catch will close and the variable speed controller will return to fast feed setting, speed # 1.

The catch gate at the discharge of the belt feeder should be set to close fairly rapidly and open at a slower rate. The speed of the closing will affect the accuracy of the scale system; however, the speed of the opening has no effect on the scale accuracy. The speed settings can be adjusted on the valve controlling the pneumatic cylinder.

*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 5 lbs. per second (this is a guide and not a set value), size and density will affect filling rates, changing the setting on the variable speed controller for slow fill, speed #1, to increase or decrease the speed of the belt. After several bags have been run all slow fill and weights are consistent, and then the fast filling adjustment can be made. The fast fill, speed #1, adjustment is adjustable by changing speed #2 on variable speed controller. Lower speed #1 to decrease and raise value to increase. The flow should be set at a slow rate and slowly increased until there is a uniform filling.

Note: For best accuracy, set slow feed, "speed #2" at no more than 5 lbs. of material per second.

Before operating scale, recheck belt tracking.

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 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 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 V4" 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 r and then make sure that the ring is showing about V4 when the doors are in the closed position. If V4" is not present, you must remove the female rod-end from the cylinder and cut V4" from the rod end then re-install on cylinder shaft and pin.

DUPLEX/TRIPLEX

INSTALLATION

A duplex or triplex scale is nothing more than multiple simplex scales tied together in a common framework with typically a single discharge point either a manual bag clamp or a connection to an automatic device. The scales are designed totally separate from one another, therefore, the standard manual of a simplex scale will apply to all component parts of a duplex or triplex scale. This feature of scales being totally separate from one another allows you to turn off a scale in the event it is not calibrated correctly or is having any other mechanical problems. The duplex scale can run on one scale and a triplex scale can run on any combination of scale A, B or C.

The sequence of operation is somewhat different in that the units are not designed to go A B, A B or A B C, A B C. The program searches for scale A first. If scale A is at weigh complete, it will seek scale A If scale A is not at weigh complete, it will then search scale B. If both scales are capable of 10 weighments per minute, therefore a duplex scale is capable of 20 weighments per minute and a triplex scale is capable of 30 weighments per minute. If the feed to the hopper above the scale is uniform and either a duplex or triplex scale is operated at 10 bags per minute, theoretically only scale A will operate on the duplex and scale B and Con the triplex will not have a need to operate and will not do so.

When initial testing is performed, if product is not available for higher speed operation, scale A will need to be turned off and then the system will automatically search scale B on a duplex and on a triplex. On a triplex scale, if product is still not available, then scale A and B will need to be in the off position in order to test scale C.

THEORY

Many times the output of a system does not meet expectations. In order to determine where the problem lies; simply watch the scale digital readout. If scale A discharges, then scale B discharges, then A B, etc., etc. Then the scale is generally operating at optimum conditions. If when watching the scale, scale A discharges 5 times more often than scale B, then generally the operator is not hanging bags as fast as the scale will accept them.

On a duplex or triplex scale, all feeders are identical; therefore, the amount of time it takes scale A to reach weigh complete and the amount of time it takes scale B and scale C to reach weigh complete should be fairly uniform. There are adjustments in the feeders and if all are adjusted uniformly, this will hold true.

If scale A reaches weigh complete in substantially less time than scale B and the feeders have been adjusted identically, then the flow to the surge hopper above the scale needs to be addressed. Many times the flow will go into side A and only go into side B when A is in an overflow condition or visa/versa.

It is extremely important when utilizing duplex or triplex scales that the feed to the overhead surge hopper feeds all scales uniformly.







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

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

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-IA5S 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.

BELT FEEDER





Chute gate 5444840001 MS 5444840002 SS 5444840003 BFW



Seal front 0024257904 BF18 0024257906

Bracket Rear Bearing 3600180000 Housing

3600000000 MS 3600010000 SS 3600020005 BFW

Rail 5444780001 Cover front 5444820002 MS 5444820003 SS 7800650001 Handle adjust 3600500000

Gear Box 15:1 3700581151

Chute gate extension 5444880001 MS 5444880002 SS 5444880004 BFW

Seal bar front 0445803601 MS 0445803603 BFW Chain guard common 5444790000

Bracket Front Bearing 3600190000 Pulley bearing 7623180000



Toggle Clamp 6032252100



CM-780 BELT FEEDER PARTS LIST			
PART #	DESCRIPTION	CODE	QTY.
0012003542	Motor 3/4 HP		
0012003546	I HP inverter duty motor 56C (for variable	e speed)	
002000001	Sprocket on Pulley		
002000003	Sprocket on Gear Box		
0020402414	Sprocket for motor for variable speed		
0020500000	#40 Chain		
0024247936	Seal Head Pulley	R	2
0024257904	Seal Front	R	1
0024257906	Seal Front BF-18	*	
0024257918	Seal Back	R	1
0024257920	Seal Back BF-18	*	
0444893801	Bar Seal Retainer Rear		
0444893802	Bar Seal Rear BF-18	*	
0445045501	Plate Head Pulley Seal Retainer		
0445803601	Seal Bar Front		
0445803603	Seal Bar Front B-18		
0445813601	Side Seal Retainer Bar		
0447223601	Bracket Gate Stop		
0498437805	Seal Teflon side	R	3
0498437810	Seal Teflon back		
0498447801	Side Seal BF-18	*	
0498457801	Rear Seal BF-18	*	
0498457803	Rear Seal Bar BF-18	*	
360000000	Housing		
3600020005	Housing BFW	*	
3600050000	Access Plate		
3600050003	Access Plate BFW	*	
3600180000	Bracket Rear Bearing		
3600190000	Bracket Front Bearing		
3600310000	Plate belt support		
3600310003	Plate Belt support BFW	*	
3600500000	Handle Adjust		
3600510000	Bracket Flow Adjust		

R=RECOMMENDED SPART PARTS

Continued	CM-780 BELT FEEDER PARTS LIST		
0023487924	Belt BF-14 endless white		
3600510002	Bracket FF Gate Stop		
3600530000	Bracket Flow Adjust BF-18	*	
3600540000	Adjustment link rod BF-18	*	
3700581151	Gear Box		
3700581152	Right hand duplex Gear Box		
5000210000	Rod Fast Flow Adjust		
5022640000	Belt BF-14 standard	R	1
5022640018	Belt BF-18 Standard		
5022720000	Belt BF-14 white, laced		
5022740000	Belt BF-14 Rock & gravel, endless		
5022740001	Belt BF-18 Rock, endless		
5022750004	Belt Lacing 36" SS		
5023330000	Belt BF-14 AG no vanner		
5422120000	Access Door		
5422120003	Access Door BFW	*	
5422150001	Flow Gate		
5422150007	Flow Gate BFW	*	
5422200001	Head Pulley		
5422200004	Head Pulley BFW	*	
5422210001	Tail Pulley		
5422210004	Tail Pulley BFW	*	
5444770001	Drip Pan		
5444770003	Drip Spout BFW	*	
5444780001	Rail		
5444780004	Rail BFW	*	
5444790000	Chain Guard Common		
5444800001	Spindle Gate		
5444800003	Spindle Gate BFW	*	
5444810001	Bracket Spindle Stop		
5444820001	Spindle Housing		
5444820002	Cover Front		

R=RECOMMENDED SPART PARTS

Continued	CM-780 BELT FEEDER PARTS LIST		
5444820006	Spindle Housing BFW	*	
5444820007	Cover Front BFW	*	
5444833501	Cover Spindle Housing End		
5444840001	Chute Gate		
5444840003	Chute Gate BFW	*	
5444880001	Chute Gate Extension		
5444880004	Chute Extension BFW	*	
6034500000	Toggle Clamp		
78PBF068	Bearing Flow Gate		
7144010000	Rubber Bumper	R	6
7623160000	Bearing Chute Gate		
7623180000	Pulley Bearing		
78PCM033A	Plate Motor Mount		
7800620000	Rod End Gate Cylinder		
7800650001	Knob Aluminum 5/8"		
8332820002	Clevis Front Hopper		
8332830003	Clevis Rear Hopper		
8332850000	Cylinder Flow Gate single speed	R	1
8332870000	Cylinder Flow Gate BF-18	*	
8333260002	Clevis AO Spout		
8333260004	Clevis Rear AO		
83NCA1B200-0600	Cylinder Catch Gate	R	1
8334900002	Bracket Catch Gate Cylinder		
8334900003	Bracket Gate Cylinder End		
8334900007	Pin 7/8"		
9500150070F	Contact Block (Variable speed)		
9500150100F	Selector switch 2 position		
9500150140F	Legend and holder		
140M-C2E-B25	Starter, MTR protect amp 1.6-2.5		
100-C09UKD10	Contactor 110 volt coil		
	Airline		
	Motor Starter (Specify coil voltage)		
	Overload (Specify Amp Range)		

R=RECOMMENDED SPART PARTS

*= option for wider belt feeder

When ordering parts, be sure to mention if your scale is mild steel or, stainless steel. Also have the serial # off of the name plate or from the cover of the manual.