MODEL AFD-280E
Fry Dispenser

EQUIPMENT MANUAL
English (Rev. F)
P/N 290108

AUTOMATED EQUIPMENT LLC

McDonald's

Manufactured by

Automated Equipment, LLC

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http:// **www.autoequipllc.com**

Business Hours: 8:00 AM – 5:00 PM CST
After hours, your call will be handled by a pager service;
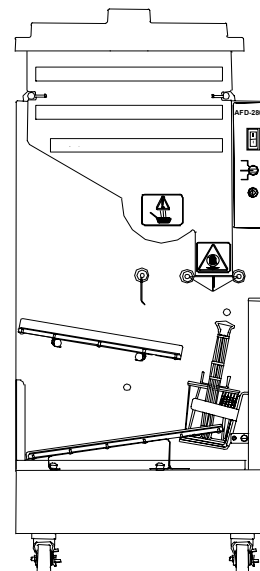a Technical Support Representative will return your call.

TABLE OF CONTENTS

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INTRODUCTION

The Dispenser is a compact automated system that replaces manual basketing of frozen french fries. The Dispenser automatically weighs 12 ounce (350 gm), 16 ounce (450 gm) or 24 ounce (700 gm) loads of frozen fries and dispenses them into custom fry baskets.

The Dispenser's Hopper holds 42 lbs. (19 kg) of frozen french fries prior to basket loading. A rotating Dispenser Drum inside the Hopper transfers the frozen fries onto the Accumulator Doors where a weight sensor accurately weighs the fries.

Empty baskets are manually placed on the Upper Guide. The baskets slide under the Accumulator Doors where fries are dispensed into them. The Basket Lift then lowers the filled baskets onto the Lower Guide where the baskets wait to be picked up by a crew person.

INTENDED USE

The AFD-280E Dispenser is intended to dispense only frozen french fries. All food should be stored and handled according to industry recommendations. The AFD-280E Dispenser is not intended to be used for storage of food and should be cleaned regularly as described in the manual in order to avoid spoilage and contamination.

HAZARD COMMUNICATION STANDARD (HCS)

The procedures in this manual may include the use of chemical products. These chemical products will be highlighted with boldface letters followed by the abbreviation (HCS) in the text portion of the procedure. See the HCS Manual for the appropriate Material Safety Data Sheets (MSDS).

NOTE: This equipment is manufactured in the U.S., therefore all hardware measurements are in English, and the metric conversions stated are approximate.

IMPORTANT!

This manual contains operational and service information for Model AFD-280E Dispenser. All Dispensers post serial #AFER9903B00384 are manufactured with the Non-Contact Weight Sensor (NCWS) which replaces the Load Cell.

Bold face type within brackets [   ] will indicate operational and service procedures for the Non-Contact Weight Sensor (NCWS) models.

SPECIFICATIONS

Features:

Bulk storage of 42 lb. / 19kg frozen product

Manual or automatic Dispense modes

Electrically driven

Holds 7 Custom Fryer Baskets

Disassembles for cleaning

Electrical Requirements:

U.S./Canada (UL Listed):

110 Volts a.c., 60 Hertz, 1Ø, 0.7 A

International (CE Marked):

220-240 Volts a.c., 50 Hertz, 1Ø, 2.0A.

Internal Circuit Breaker: 5 Amps

Additional Equipment Information:

Noise Emissions: < 70 dB(A)

Maximum Altitude: 6000 ft. (1525 meters)

Maximum Humidity: 95% non-condensing

Ambient Temperature: 4° - 25°C (40° - 77°F)

Date of Manufacture:

The manufacturing date is encoded into the serial number identification label on the side panel of the Dispenser.

Example: S/N AFER0403C000000 indicates a manufacturing date of 03/04 or March 2004.

Space Requirements:

Clear floor space near fry vat at least 28 inches (72 cm) wide and 24 inches (60 cm) deep. Basket Handles will extend to 32 inches (81 cm). This equipment must be placed on a horizontal surface with a tilt of less than 2 degrees. This equipment is only to be installed in locations where use and maintenance is restricted to trained personnel.

FCC STATEMENT

WARNING: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications.

WARRANTY

The terms "we", "us", "our" or "factory" hereinafter refer to Automated Equipment LLC. We warrant the purchased product to be free from manufacturing defects in material and workmanship under normal use and conditions for the period and component specified below:

<u>Components covered</u>	<u>Term</u>
Electronic Circuit Board Assemblies	1 year
Electrical and Mechanical Moving Parts	1 year
Structural frame work or enclosures	1 year
Crew removable components:	
Drip Tray	90 days
Hopper, Hopper Lid, and Diverter	90 days
Drum	90 days
Hopper Extension	90 days
Lift Saddle Assembly	90 days
Guide Assemblies & Slides	90 days
Crumb Tray	90 days
Custom Baskets	90 days
Power Cord	90 days

The Warranty period commences on the date of shipment of the Dispenser (hereinafter "Product") from our manufacturing facility.

EXCEPT AS OTHERWISE PROVIDED HEREIN WE MAKE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED AND SPECIFICALLY DISCLAIM ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

We shall not be liable for any direct, indirect, consequential damages (including damages for loss of business profits, business interruption, loss of business information and the like) arising out of the use of or inability to use the Product.

THIS WARRANTY IS VOID IF THE PRODUCT IS NOT FUNCTIONING CORRECTLY DUE TO ABUSE OR NEGLECT BY THE PURCHASER, ITS EMPLOYEES, AGENTS, OR OTHER REPRESENTATIVES EITHER BY BREAKING, BENDING, MISUSE, ABUSE, DROPPING, ALTERATION, IMPROPER MAINTENANCE OR ANY OTHER FORM OF NEGLECT OR IMPROPER USAGE. THIS WARRANTY DOES NOT COVER DAMAGE TO THE PRODUCT BY NATURAL CAUSES SUCH AS LIGHTNING, ELECTRICAL CURRENT FLUCTUATIONS, FLOOD, FIRE, TORNADOES, OR OTHER ACTS OF GOD. WE WILL INVOICE PURCHASER FOR REPAIRS MADE NECESSARY BY THE HEREIN LISTED CAUSES.

This warranty is governed by the substantive laws of Minnesota, U.S.A., without giving effect to the conflict of law provisions.

This warranty is non-transferable and applies only to the original purchaser.

REQUESTING SERVICE, ASSISTANCE, OR PARTS

WARRANTY SERVICE
Warranty service must be initiated by calling our Technical Support Hot Line at 1-800-248-2724 (U.S./Canada) or 651-385-2273 to establish all warranty requests.

Our Technical Support personnel will determine the cause of failure and provide the appropriate resolution. If replacement parts are required, parts will be provided by the factory or by an authorized Service Support Center/Parts Distributor.

We will make all reasonable efforts to perform such repairs during normal business hours, and will not be responsible for any after-hours or holiday charges.

NON-WARRANTY SERVICE
Service is normally conducted by customer appointed personnel, or by contracting a local service agent. Service fees are in accordance with industry standards.

Replacement parts are available through local Service Support Center/Parts Distributors or direct from the factory by calling 1-800-248-2724 (U.S./Canada) or 651-385-2273 in the event a local distributor is not available.

Our Technical Support Hot Line is available for telephone assistance providing factory product technical support, parts and parts information, and service agent referral. Contact our Technical Support Hot Line at 1-800-248-2724 (U.S./Canada) or 651-385-2273.

Record the following information for your records:

_____

Date of Installation

_____

Service Agency Telephone

_____

Serial Number

When repairing this unit, use only replacement parts supplied by the factory, or supplied by a factory Authorized Parts Distributor. Use of replacement parts other than those supplied by the factory or by a factory Authorized Parts Distributor will void the warranty.

All charges for parts and shipping are F.O.B. factory, and are subject to change without notice. Prices will be those in effect at the time of shipment.

We reserve the right to make suitable substitutions in materials, depending upon their availability.

WARNING!

Only trained and/or qualified personnel should perform service to this equipment.

Service functions described in this manual could cause irreversible damage to the equipment and/or injury to personnel if performed improperly.

If the power cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

SAFETY

Here are some guidelines for operating and maintaining the AFD-280E Dispenser:

- Disconnect the Dispenser Power Cord from the wall outlet before inspecting.

- Inspect the Dispenser on a regular basis to identify problems before they occur.

- Keep the Dispenser clean.

- Keep hands away from the Accumulator Doors and Dispenser Drum while the Dispenser is operating:

- Fryer Baskets may be hot. Pick them up by the handles only.

- Do NOT roll the Dispenser to the back sink for cleaning, this will cause unnecessary wear on the Dispenser.

- If the supply cord is damaged it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

- DO NOT SPRAY DOWN THE DISPENSER WITH WATER. It is not sealed against jetting water and contamination may get into sensitive components. This will void the warranty

<div style="border:1px solid black">

WARNING!
Only trained and/or qualified personnel should perform
service to this equipment.
Service functions described in this manual could cause
irreversible damage to the equipment and/or injury to personnel
if performed improperly.

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INTERNATIONAL SAFETY LABELING

International Safety Labeling is represented with the symbols illustrated below. The labels are affixed to the Hopper to clearly indicate areas that could be harmful to the operator of the Dispenser.
These safety issues are:

1. **BASKETS MAY BE HOT:** Baskets should always be picked up by the provided handle.

2. **NO HANDS BELOW:** Hands should not be placed near or below the Accumulator Doors while the Dispenser is energized.

BASKETS MAY BE HOT

NO HANDS BELOW
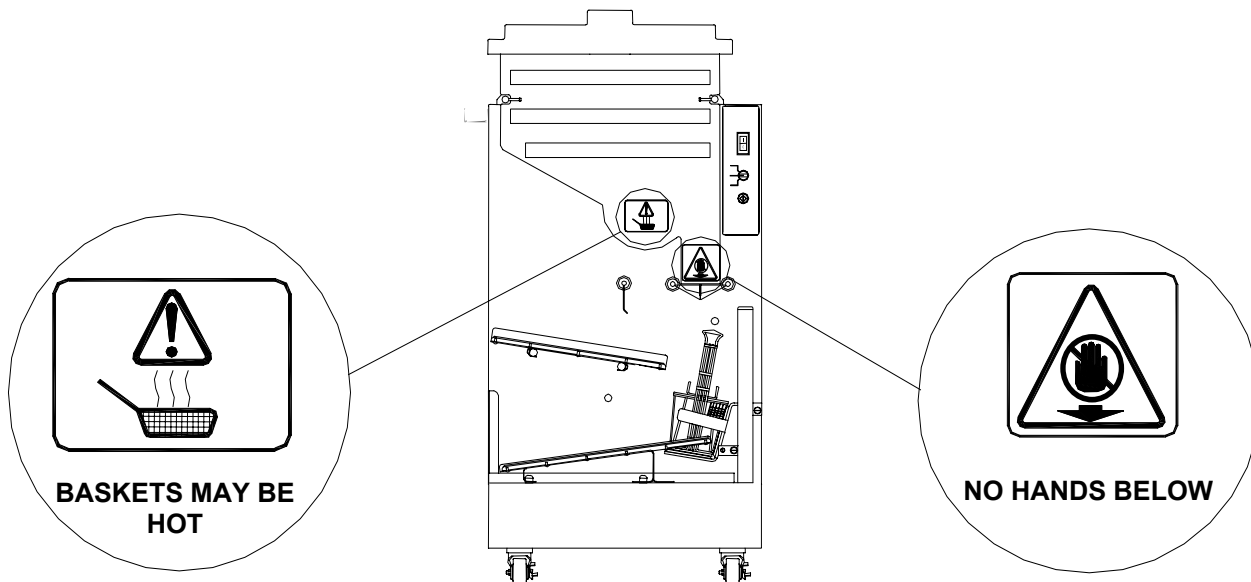
ASSEMBLING THE DISPENSER

INSTALL DRIP TRAY (Fig. 1)

- Position the Drip Tray with the Basket Stop away from the Lift Saddle as shown.
- Slide the end of the Drip Tray under the Lift Saddle.
- Line up the holes in the Drip Tray with the Locator Pins and set the Drip Tray down over the Locator Pins.

INSTALL LOWER GUIDE (Fig. 2)

- Position the Lower Guide with the high end toward the Lift Saddle. The low end should be toward the Basket Stop as shown.
- Line up the holes in the Lower Guide with the Locator Pins and set the Lower Guide down over the Locator Pins.

INSTALL UPPER GUIDE (Fig. 3)

- Locate the Hooked Tab and the Straight Tab on the bottom of the Upper Guide.
- Position the Upper Guide with the Hooked Tab away from the Lift (as shown). Tilt the Upper Guide back so that the end near the Lift is two to three inches (5-10cm) higher than the end with the hooked tab.
- Place the Hooked Tab of the Upper Guide around the LEFT Guide Support . Align the slot in the Hooked Tab with the screw in the middle of the Guide Support, then slide the Upper Guide to the RIGHT, hooking it on the LEFT Guide Support.
- Align the slot in the straight tab of the Upper Guide with the screw on the RIGHT Guide Support. Press the upper guide down, snapping it into place.

INSTALL THE HOPPER AND DRUM (Fig. 4 & 5)

- Find the square opening in one end of the Dispenser Drum.
- Place the Dispenser Drum in the Hopper, aligning the square opening on the Dispenser Drum with the hole in the back of the Hopper.
- Grasp the Hopper so that the hole is toward the Dispenser.
- Align the indentations on the Hopper with the Hopper Support Bars.
- Push the Hopper forward onto the Hopper Support Bars until the Drum Motor shaft touches the Dispenser Drum.

CAUTION: Do NOT force the Hopper back; this could damage the Hopper or Drum.

- Rotate the Dispenser Drum (CLOCKWISE or COUNTER-CLOCKWISE) while applying gentle pressure to the Hopper until you can easily slide the Hopper fully onto the Hopper Support Bars.
- Lock the Hopper onto the Dispenser by pressing the Locking Pins on the ends of the Hopper Support Bars towards each other.

PLACE THE DIVERTER IN THE HOPPER (Fig. 6)
Be sure that it is hooked over the RIGHT edge of the Hopper.

PLACE THE HOPPER LID ON THE HOPPER (Not pictured)
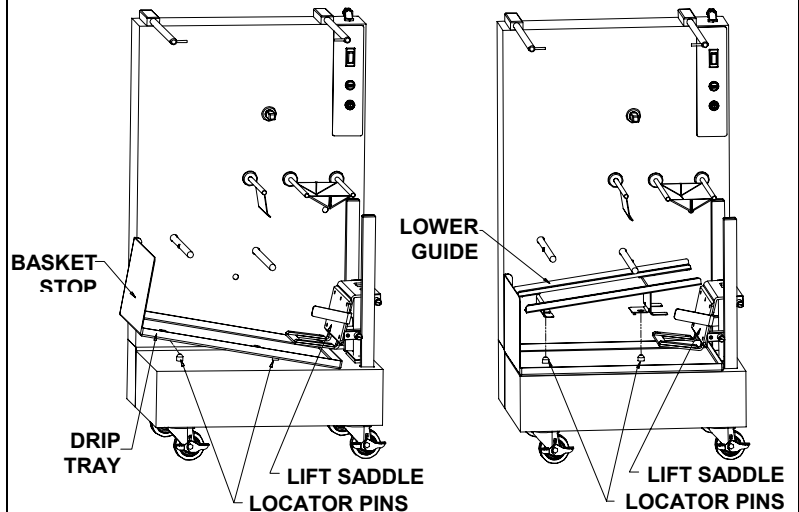Hook the lid's tab over the back rim of the Hopper, then set the Lid down.
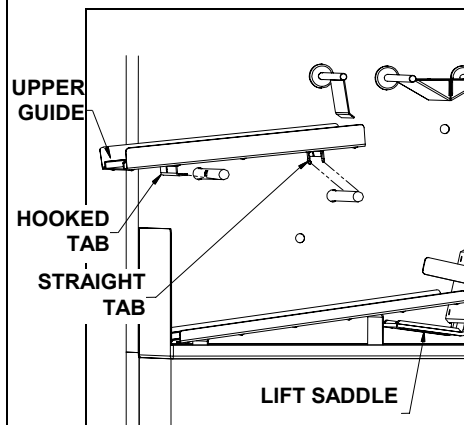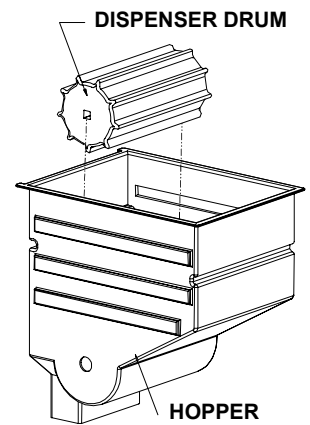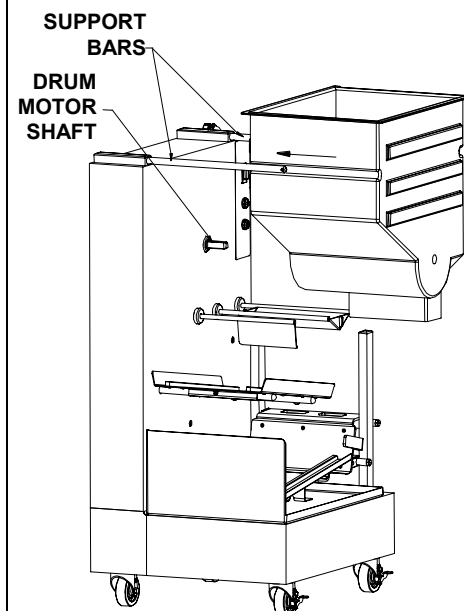

FIGURE 1

FIGURE 2

FIGURE 3

FIGURE 4

FIGURE 5

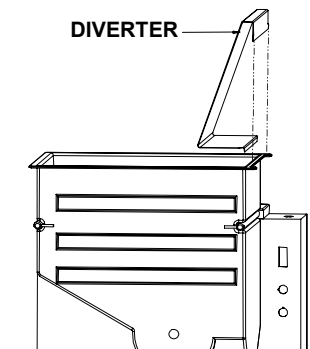FIGURE 6

DAILY SET-UP

1. Verify that the Power Switch is in the OFF position.
2. Plug the Power Cord into a wall outlet.
3. Load the Hopper with frozen french fries. DO NOT SHAKE OR DROP the fries into the Hopper (refer to "LOADING THE HOPPER", page 8).
4. Turn the Load Select Switch to the desired load weight.
5. Fill the Upper Guide with empty Custom Baskets.
6. Turn the Power Switch to the ON position (illuminated). Electric motors will orient themselves to starting positions and the dispenser will initiate the filling process.
7. Use filled Baskets from the Lower Guide for Fry production.
8. Return empty Baskets to the Upper Guide for refilling after the cooking cycle is complete.

LOADING THE HOPPER

To achieve optimum fry yield and the most consistent basket loads, it is important to use the following technique for loading frozen fries into the hopper. Depending on your fry supplier, you will receive your french fries packaged in boxes of six pounds each, or bags of six pounds each. These bags or boxes will be packed six to a case. The hopper will accept one full case plus one bag or box of french fries (42 lbs. or 19 kg).

For each bag or box of french fries:

1. Remove the bag or box of french fries from the case. Be careful not to crush the fries.
2. Open the top of the bag or box completely.
   NOTE: If your supplier uses bags, be careful that the top is fully open. If it is partially open, the bag may retain fries.
3. Hold the opened end of the box or bag closed with your hand and lay it in the hopper with the opening toward the side opposite of the diverter.
4. Release the opened end of the bag or box.
5. Empty the bag or box into the hopper by pulling it evenly toward the Diverter. When adding multiple bags of fries, alternate the placement of the bag or box in the hopper opposite of the previous bag or box. The second bag of fries should be emptied into the Hopper with the opening toward the Diverter, and pulling it evenly toward the Hopper Wall opposite the Diverter.
   NOTE: This criss-cross loading method assures an even distribution of fry lengths in the Hopper and the Baskets.
   NOTE: Do NOT shake or drop fries from the bag or box into the Hopper.
   NOTE: If the loading is done correctly, you should be able to leave a uniform layer of fries in the hopper by simply pulling the bag or box across the hopper and then out of the hopper.
6. Repeat steps 1 through 5 until the hopper is full.
   NOTE: Do NOT fill the hopper past the top.
7. Close the lid on the hopper by engaging the hook at the back of the hopper, and setting the lid down

DAILY CLOSING

1. Turn the Power Switch to the OFF position.
2. Remove all Baskets from the upper and Lower Guides. Discard and record the uncooked fries.
   NOTE: During the last few hours of the day, you may want to keep only two or three bags of french fries in the hopper and run the dispenser in SINGLE mode, to minimize waste.
3. Remove the Hopper Lid by lifting it UP and BACK to unhook the tab.
4. Hang the hopper lid on the front of the hopper, by hooking the tab on the lip of the hopper.
5. Discard and record any fries remaining in the Hopper at closing.
6. Check that the Accumulator Doors are empty of fries.
7. Disconnect the Power Cord from the electrical outlet
8. Remove the Diverter by grasping it and pulling it UP.
9. Slide the Locking Pins outward to release the Hopper.
10. Remove the Hopper (and the Dispenser Drum inside) by pulling the Hopper OUT and AWAY from the Hopper Support Bars.
11. Remove the Upper Guide assembly by lifting the RIGHT end and sliding it to the LEFT.
12. Remove the Lower Guide by lifting it straight UP.
13. Remove the Drip Tray by lifting it from the Basket Stop end and sliding it from under the saddle.
14. Take the hardware removed from the Dispenser to the back sink. Wash it in a hot solution of **McD APSC (HCS)**, rinse with clear water, sanitize and allow to air dry.
15. Roll the dispenser out from the wall, so that you can clean behind it and underneath it.
   NOTE: Do NOT roll the dispenser to the back sink for cleaning, this will cause unnecessary wear on the dispenser and possible premature failure.
16. Wipe down the dispenser with a hot solution of **McD APSC (HCS)** and water. Repeat wipe-down with clear water, sanitize and allow to air dry.
   NOTE: DO NOT SPRAY DOWN THE DISPENSER. It is not sealed against jetting water and contamination may get into sensitive components. SPRAYING MAY VOID THE WARRANTY!
17. Reassemble the dispenser.
18. Roll the dispenser back into place.

<u>WARNING</u>

PINCH HAZARD

Personnel should take care not to place hands or fingers near the Drum inside the Hopper, while this machine is in operation. Hands or fingers could be pinched between the Drum and the Hopper as the Drum turns.

OPERATOR CONTROLS

The following switches and buttons are located on the Operator Panel:
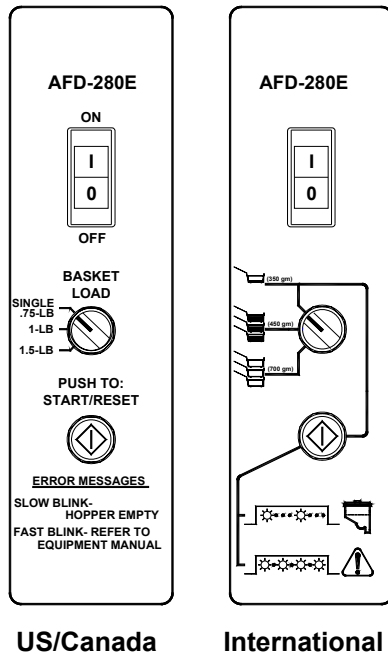
US/Canada   **International**

Power Switch (Orange)

The Power Switch supplies electrical power to the Dispenser. It illuminates when the Dispenser has power. The Power Switch also functions as a circuit breaker for the machine.

Load Select Switch

The Load Select Switch has 3 positions that allow the operator to select Basket Load weights and control operation.
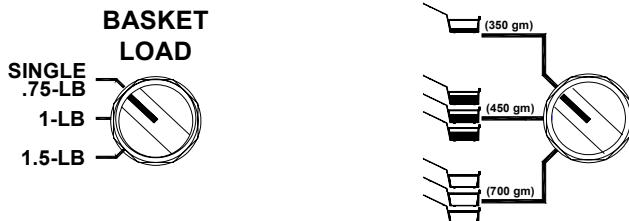
Position #1: Single basket loading. Press the Start/Reset Button to dispense a single basket of Fries. Pre-set to .75 lb./350 gm/Single mode.

NOTE: International units are factory set to automatic mode. US and Canadian units are factory set to single mode. This can be reconfigured by performing a front panel customization (see page 10).
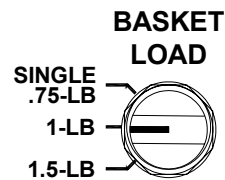
Position #2: For Automatic dispensing of 1.0 lb./450 gm Basket Loads.
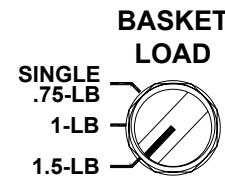
Position #3: For Automatic dispensing of 1.5 lb./700 gm Basket Loads.

Start/Reset Button (Green)

Press to start the loading of a single Basket if the Load Select Switch is set for SINGLE (0.75 lb./350gm). Press to reset a System Error or an empty Hopper warning. The symbols below the button provide an explanation of warning and error conditions.

A **slow blink** (about 1 per second) of the Start/Reset Button indicates either an empty Hopper or bridged fries.

A **fast blink** (about 5 per second) of the Start/Reset Button indicates a system error.

FRONT PANEL OPERATIONS CUSTOMIZATION

Operational characteristics of the AFD-280E Dispenser can be customized using the front panel controls.

MAKE SWITCH POSITION #1 AUTOMATIC DISPENSING

US/Canada   **International**
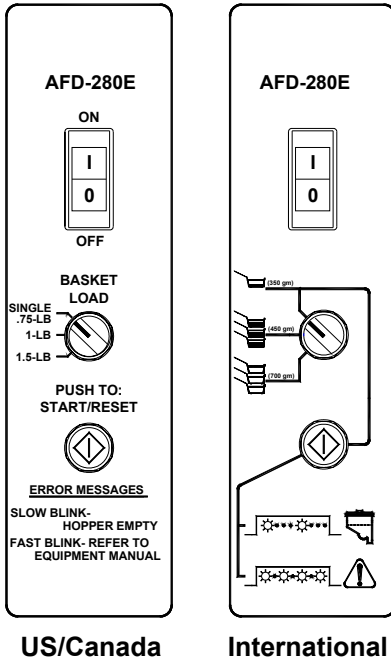
- Turn the dispenser off. **Wait 15 seconds.**
- Select Position #1 (.75 lb.)
- Hold in the Start/Reset Button
- While holding in the Start/Reset Button, turn the Dispenser power ON (**I**). Automatic mode is indicated by the Start/Reset Button remaining on.

This modification to the dispenser operation is permanent: This setting does not change when the dispenser power is turned off. In order to return the dispenser to position #1 being Single mode, the procedure must be performed again.

NOTE: International units are factory set to automatic mode. US and Canadian units are factory set to Single mode.

BYPASS MODE OPERATION

Bypass Mode will allow the dispenser to remain functional in the event the weighing system or the basket sensors fail.

NOTE: The BYPASS mode has two methods of operation and the Dispenser will automatically select the appropriate method.

Method 1:
The Dispenser detects a functioning Weight Sensor.
The Dispenser will appear to operate normally, filling the accumulator with the correct weight of fries. The Start/Reset button must be pushed to dispense the fries into a basket. This method allows the Dispenser to operate with faulty basket sensors.

Method 2:
The Dispenser detects a failed Weight Sensor.
Holding in the Start/Reset Button, the Drum will turn to dispense fries onto the Accumulator Doors.
Releasing the Start/Reset Button stops the Drum motor, opens the Accumulator doors, closes the Stopgate, and then lowers the filled Basket.
After lowering the Basket, the Lift Saddle will come back up and the Stopgate will open to allow the next Basket to move into the Lift Saddle for filling.

US/Canada   **International**
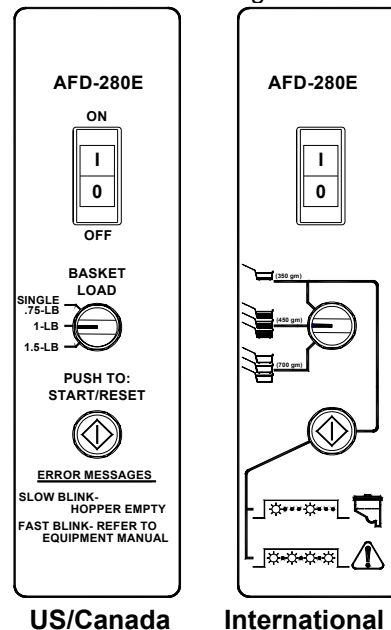
To Engage the BYPASS Mode of operation:

- Turn the Dispenser off. **Wait 15 seconds**.
- Select Position #2.
- Hold in the Start/Reset Button
- While holding in the Start/Reset Button, turn the Dispenser power ON (**I**). Double flashing of the Start/Reset button indicates BYPASS

This modification to the Dispenser operation is temporary. When the Dispenser power is turned OFF (**O**), the Dispenser resets to normal operations when the power is turned ON (**I**) again.

NOTE: Allow 15 seconds before turning the Dispenser Power Switch ON (**I**) after being turned OFF (**O**).

SEQUENCE OF OPERATION

Initial Power Up

The chart below is an example of the Dispenser's sequence of operations under the following conditions:
- The Hopper is fully loaded with french fries and properly installed on the Dispenser.
- There are 2 empty Baskets on the Upper Guide.
- There are no empty Baskets on the Lower Guide.
- The Dispenser Load Switch is in the 1.0 lb./450 gm position.

NOTE: The time for one basketing cycle is approximately 4 - 6 seconds.

Event	Response
Power Switch Turned **ON**	Stopgate moves to the home position. The Lift moves to the home position, pauses, then raises to the up position.
Dispensing Begins.	The Drum turns and fries are dispensed from the Hopper to the Accumulator Doors. The Accumulator Doors weigh the fries and signal to stop the Drum Motor when the 1.0 lb. (450 gm) weight is attained.
Stopgate opens.	When the weight is attained the Stopgate opens to allow a Basket to slide into the Lift Saddle.
Accumulator doors open and empty.	A sensor in the chassis of the Dispenser detects the Basket. If a Basket is not present, the Dispenser will wait until it detects the Basket. When the Basket is present, the Accumulator Doors open to dispense the fries into the Basket.
Stopgate Closes	The Stopgate closes to allow clearance of the filled Basket in the Lift Saddle.
Lift Saddle lowers Basket.	The Lift Saddle lowers the filled Basket to the Lower Guide. As the Basket slides down the Lower Guide, another sensor detects the Basket arriving on the Lower Guide..
Accumulator Doors close. Lift Saddle raises up.	The Accumulator Doors close and the Lift Saddle raises to the up position.
Stopgate opens.	Stopgate opens to allow the next empty Basket to slide into the Lift Saddle.
Restart of Dispensing.	Cycle starts over again. **Dispensing Begins** After filling the second Basket, the Dispenser will stop because there will not be a Basket detected in the Lift Saddle.

FUNCTION LIST
The following is a complete list of the available functions. **[ ] refers to NCWS machines only.**

Number	Function Name	Description
1	restart function	Same as Start/Reset Button on front panel.
2	display last error	Displays the last error number recorded.
3	weigh disable	Turns the weighing cycle on and off.
4	tare function	Sets the default zero to the current Empty Scale (load cell or NCWS) value. Be sure doors are empty.
[4]	**[tare function(NCWS)]**	**[Not used.]**
5	calibrate	Accepts 16oz (450gm) reference weight; sets the 12 oz. (350 gm), 16 oz. (450 gm) and 24 oz. (700 gm) targets.
[5]	**[calibrate(NCWS)]**	**[Accepts 16oz (450gm) and 32 oz. (900 gm) reference weights; sets the 12 oz. (350 gm) and, 16 oz. (450 gm), and 24 oz. (700 gm) targets.]**
6	adjust position 2 up	Adjusts selector switch position #2 (16 oz. (450 gm)) target upward in increments of 1 oz. (25 gm).
7	adjust position 2 down	Adjusts selector switch position #2 (16 oz. (450 gm)) target downward in increments of 1 oz. (25 gm)
8	adjust position 3 up	Adjusts selector switch position #3 (24 oz. (700 gm)) target upward in increments of 1 oz. (25 gm)
9	adjust position 3 down	Adjusts selector switch position #3 (24 oz. (700 gm)) target downward in increments of 1 oz. (25 gm)
10	watchdog test	Generates a signal to the program so that the watchdog timer fires. Invokes error #8 (not displayed).
11	weight sensor readout	Displays the current reading from the weight sensor (live display).
12	actuate lift	Moves the lift up and down. Displays the Lift position counts (position of the lift).
13	actuate doors	Opens and closes the accumulator doors.
14	actuate stopgate	Opens and closes the stopgate.
15	actuate drum	Turns the drum motor on and off. Displays speed (16 … 0), varies with each press of the Enter button.
16	actuate light	Turns the restart light on and off.
17	restore defaults	Clears the error log, sets default weighing parameters, defaults lift counts to 102.
18	clear errors	Clears the error log.
19	error counts	Displays the error log.
20	parameters	Displays the current weighing parameters.
[20]	**[parameters (NCWS)]**	**Always displays Default.**
21	adjust position 1 up	Adjusts selector switch position #1 (12 oz. (350 gm) target upward in increments of 1 oz. (25 gm).
22	adjust position 1 down	Adjusts selector switch position #1 (12 oz. (350 gm) target downward in increments of 1 oz. (25 gm)
23	select AU or SL	Selects selector switch position #1 (12 oz. (350 gm) to be "AU" automatic or "SL", single mode.
24	bypass mode	Enables the dispenser to run in "Bypass", single mode. Ignores select system errors.
25	set units	Sets weighing units to ounces "US", or grams "In" International.
26	exercise mode	Enables exercise mode, all motor functions cycle.
27	rev	Displays revision level of installed EPROM
28	segment test	Turns all the display segments on, 888 is displayed.
29	lift up counts	Displays Lift Up position counts. Default range is from 77 (bottom) to 179 (top).
30	adjust lift down	Decreases the Lift Up position, 1 count = 1/12" (2.1 mm). Number of counts is displayed.
31	adjust lift up	Increases the Lift Up position, 1 count = 1/12" (2.1 mm). 105 counts maximum. Number of counts is displayed.

CONTROLLER FUNCTIONS

In the back of the Dispenser, in the upper right corner of the controller circuit board is the service interface. This is used to adjust the basket load sizes and to test and adjust the operation of the Dispenser.

Select Button ⟶ ☐ ☐ ⟵ Enter Button
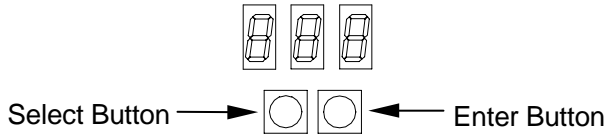
The following sections discuss the modes of this display:

Normal Operation
During Normal Operation, the display will show a series of horizontal bars, as shown below.
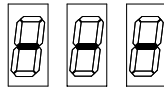
Error Conditions
When an error occurs, the Start/Reset Button will flash rapidly (5 times per second) and the Lift Saddle will go down. Normally, an error condition can be cleared by pressing the Start/Reset Button. If an error persists or occurs too often, you may need to know what error is occurring. For this purpose, when an error occurs, the center line of the display is replaced with an error code. The example below is displaying error code 4.
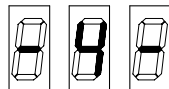
The Error Codes are explained on page 17.

The controller has several functions that may be used to adjust and test the functions of the Dispenser. These are accessed using the following procedure.

1. Press the Select Button the number of times as the function number desired. Each time you press the Select Button the display will show the function code for the function that is ready. The example below shows Function 7: (Adjust Basket Weight, Switch Position #2, DOWN.)
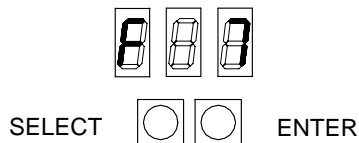
SELECT ☐ ☐ ENTER

NOTE: If you leave the display in this mode, it will return to Normal Operation after a few seconds. This is a safety feature, to prevent functions from being selected by accident.

2. When the display shows the desired function number, press the Enter Button to activate the function.

What happens next depends on the function selected. Pressing the Select Button will close the function; pressing the Enter Button will advance the function to the next step. The following is a detailed account of each function.

Function 1 – Restart
Returns immediately to the normal display. This function serves the same purpose as the Start/Reset button on the front panel.

Function 2 - Display Last Error
Displays the last error number recorded. This allows the Dispenser to be restarted after an error, and then find out what the error was while the Dispenser is in service.

Function 3 - Disable Weighing
Turns the weighing process on and off. This is used for testing of the mechanical systems. It allows you to work on the dispenser without weighing fries. This is a temporary setting and will automatically reset on power up.

Function 4 – Tare
Returns immediately to Normal display. Establishes a new zero point for the load cell. Before selecting this function verify that the accumulator doors are empty.

[Function 4 – Not Used (NCWS)]

Function 5 – Calibrate
Displays "CAL" on the display. Verify the accumulator doors are empty and place a 16 ounce (450 gm.) reference weight (Four 4:1 patties are acceptable) on the doors. Wait 10 seconds, then press the Enter Button and remove the weight. The display will return to normal. This function uses the reference weight to calculate new targets for the 12 ounce (350 gm.) and 24 ounce (700 gm.) loads. When finished, turn machine off, wait 15 seconds, turn machine back on.

[Function 5 – Calibrate (NCWS)]
[Displays the word "CAL" on the display. Verify the doors are empty and press the ENTER button: the display will respond "C1.0." Place 1.0 lb./ 16 ounces / 450 gm. on the door, wait 10 seconds and press the ENTER button: the display will respond "C2.0." Place 2.0 lbs. / 32 ounces / 900 gm. on the door, wait 10 seconds and press the ENTER button: the display will return to the normal "- - -." Remove the weights. The unit is now calibrated. When finished, turn machine off, wait 15 seconds, turn machine back on.]

Function 6 - Adjust Switch Position #2 (1.0 lb. - 450 gm.) UP:
Displays the current target value (in ounces or grams, depending on unit's setting, Function 25) for use when weighing 16oz. / 450 gm loads. The default value for switch position #2 is 16oz. / 450 gm. Pressing the Enter Button causes the value to increase by 1 oz. (25

gm) with each activation. When the desired value is reached, press the Select Button to close the function and set the value. When finished, turn machine off, wait 15 seconds, turn machine back on.

Function 7 -Adjust Switch Position #2 (1.0-lb /450 gm) DOWN:

Displays the current target value (in ounces or grams, depending on unit's setting, Function 25) for use when weighing 16oz. (450 gm) loads. The default value for switch position #2 is 16 / 450. Pressing the Enter Button causes the value to decrease by 1 oz. (25 gm.) with each activation. When the desired value is reached, press the Select Button to close the function and set the value. When finished, turn machine off, wait 15 seconds, turn machine back on.

Function 8 - Adjust Switch Position #3 (1.5 lb./700 gm) UP:

Displays the current target value (in ounces or grams, depending on unit's setting, Function 25) for use when weighing 24oz. (700 gm) loads. The default value for switch position #3 is 24 / 700. Pressing the Enter Button causes the value to increase by 1 oz. (25 gm) with each activation. When the desired value is reached, press the Select Button to close the function and set the value. When finished, turn machine off, wait 15 seconds, turn machine back on.

Function 9 -Adjust Switch Position #3 (1.5 lb./700 gm) DOWN:

Displays the current target value (in ounces or grams, depending on unit's setting, Function 25) for use when weighing 24oz. (700 gm) loads. The default value for switch position #3 is 24 / 700. Pressing the Enter Button causes the value to decrease by 1 oz. (25 gm) with each activation. When the desired value is reached, press the Select Button to close the function and set the value. When finished, turn machine off, wait 15 seconds, turn machine back on.

Function 10 - Watchdog Test

Causes an Error 8.

Function 11 – Load Cell Readout

Displays the current load cell reading, and is used to test the load cell. This is a live display, changing constantly with the load cell input. Use function 11 to check the operation of the Load Cell. Applying one pound of weight to the accumulator doors will cause a deflection of approximately 30 to 50 counts to the readout. Pressing the Select Button closes the function. Load cell Tare should be 75-125 (approx.).

[Function 11 – Weight Sensor Readout(NCWS)] Displays the current weight sensor reading and is **used to test the weight sensor. This is a live display, changing constantly with the weight sensor input. Use function 11 to check the operation of the weight sensor. Applying one pound of weight to the accumulator doors will cause a deflection of approximately 100 counts to the readout. Press the Select button to close the function. NCWS tare should be 30 (+/-9).]**

Function 12 - Actuate Lift Saddle

The display shows the live lift position. Each time the Enter Button is pressed, the controller will change the state and direction of motion for the circuitry that drives the Lift Saddle. If the Lift Saddle is down, it will go up. If it is up, it will go down. Press the Select button to close the function.

Function 13 - Actuate Doors

Display remains "F13". Each time the Enter Button is pressed, the controller will activate the Accumulator Doors for one cycle. They will open or close. Press the Select button to close the function.

Function 14 - Actuate Stopgate

Display remains "F14". Each time the Enter Button is pressed, the controller will change the state and direction of motion for the circuitry that drives the Stopgate. If the Stopgate is open, it will close. If the Stopgate is closed, it will open. Press the Select button to close the function.

Function 15 - Actuate Drum

The display shows the drum speed (16: fastest, 0: slowest). Each time the Enter Button is pressed, the controller will change the speed (16……0 -16) of the Dispenser Drum. This function is used to test the Drum Motor. Press the Select button to close the function.

Function 16 - Actuate Light

Display remains "F16". Each time the Enter button is pressed, the controller will change the state of the output that drives the Start/Reset Light. If it is off it will turn it on. If it is on it will turn it off. This function is used to test the Start/Reset Light. Press the Select button to close the function.

Function 17 - Restore Defaults

This function clears the error log, and restores the weighing parameters and lift height values to factory defaults. Calibration and lift height must be reprogrammed.

NOTE: Function 17 will reset Int'l units to US units. Function 25 can be performed to return to "Int'l" status.

Function 18 - Clear Errors

This function resets the counts in the error log to zero. We recommend that this be done periodically to prevent records of occasional errors from building up (even a perfectly running dispenser will get occasional errors from improper handling) and confusing a service tech at a time when the error log could be useful.

Function 19 - Error Counts

Displays the word "Err". Each time the Enter Button is pressed, it moves to the next error count. When the last count is passed, the display returns to normal mode. The error counts are displayed in numerical order. Error number 9 is not included (error number 9 indicates a memory failure, and therefore renders any history meaningless). For example, if you saw this sequence of displays:

> "Err"
> "1. 0"
> "2. 0"
> "3. 1"
> "4. 3"
> "5. 2"
> "6. 0"
> "7. 21"
> "8. 0"

This would indicate that, since the last time the errors were cleared, there had been one error 3, 3 error 4's, 2 error 5's, and 21 error 7's.

Function 20 - Parameters

Displays the word "Con". Each time the Enter button is pressed, it moves to the next weighing parameter. When all parameters have been displayed, the display returns to the normal mode.

The weighing parameters are (in order of appearance):

1. Switch position #1 target - the number of digitizer steps that represents .75lbs/12 oz./350gm. The default value is 26 US / 26 INTL **[75 US / 70 INTL (NCWS)]**.
2. Switch position #2 target - the number of digitizer steps that represents 1.0lb/16 oz./450gm. The default value is 33 US / 33 INTL **[100 US / 90 INTL(NCWS)]**.
3. Switch position #3 target - the number of digitizer steps that represents 1.5lb/24 oz./700gm.The default value is 49 US / 51 INTL **[150 US / 140 INTL(NCWS)]**.
4. Tare - the value that the dispenser uses for zero reference. (The default value is 105.) Calibrated load cell tare should be 75-125 (approx.)

If the load cell has been calibrated, or the loads adjusted, these may be slightly different. For details see the section on operation/calibration of the load cell.

[If the loads have been adjusted, these may be slightly different. The tare value after calibration should be approximately 30 (+/- 9). For details, see the section on operation/ calibration of the weight sensor. (NCWS)]

Function 21 - Adjust Switch Position #1 UP

Displays the current target value (in ounces or grams, depending on units setting, Function 25) for use when weighing 0.75lb./12 oz.(350 gm) loads. The default value for switch position #1 is 12 / 350. Pressing the Enter button causes the value to increase by 1 oz. (25 gm.) with each activation. When the desired value is

reached, press the Select Button to close the function and set the value. When finished, turn machine off, wait 15 seconds, turn machine back on.

Function 22 – Adjust Switch Position #1 DOWN

Displays the current target value (in ounces or grams, depending on units setting, Function 25) for use when weighing 0.75lb./12 oz.(350 gm) loads. The default value for switch position #1 is 12 / 350. Pressing the Enter Button causes the value to decrease by 1 oz. (25 gm.) with each activation. When the desired value is reached, press the Select Button to close the function and set the value. When finished, turn machine off, wait 15 seconds, turn machine back on.

Function 23 - Position #1 Control Status

Entering this function displays "AU" or "SL". The "AU" display indicates that switch position #1,.75lb.(350gm.) is set to function in the automatic mode. Pressing the Enter Button will now toggle the display between "AU" and "SL". When the display indicates "SL", pressing the Select Button again will set the #1 selector switch position to single mode and close the function.

Function 24 - Bypass Mode Enable (volatile setting)

Entering this function the display will read either "nor," (normal) Bypass mode disabled, or "bYP", Bypass mode enabled. BYPASS mode allows the machine to run in single mode when an optical sensor has failed. The "BYPASS" mode has two methods of operation:

Method 1:
The Dispenser detects a functioning Weight Sensor.
When the Start/Reset Button is pressed, the Dispenser utilizes the Weight Sensor to determine the weight of the frozen french fries. The Dispenser will appear to cycle normally, ignoring other system errors.
NOTE: Bypass Mode is significantly slower than normal operation.

NOTE: All settings function in single basket operation while in Bypass Mode.

Method 2:
The Dispenser detects a failed Weight Sensor.
Holding in the Start/Reset Button, the Drum will turn to dispense frozen french fries onto the Accumulator Doors. Releasing the Start/Reset Button stops the Drum motor, opens the Accumulator Doors closes the Stopgate, and lowers the filled Basket.

After lowering the Basket, the Lift Saddle will come back up and the Stopgate will open to allow the next Basket to move into the Lift Saddle for filling.

The Bypass Mode is further identified by double flashing of the reset button.

NOTE: The Bypass mode will significantly slow down the operations of the Dispenser. The Start/Reset button has to be used in either mode of Bypass operation.

Function 25 - Select Weight Units "US" or "In"

Entering this function permits selection of ounces or grams as the weighing units. Pressing the enter button will toggle the display between ounces "US" and grams "In" (international) for the weight units. Pressing the

Select Button sets the displayed weight units for dispenser operations. The weight sensor should be calibrated after changing this setting.

Function 26 - Exercise Mode (volatile setting).
When the dispenser is in the exercise mode, all systems will continuously cycle. The exercise mode is designed to "break in" a replaced component. The exercise mode is volatile and will reset when the dispenser power is turned off.

Function 27 - Display EPROM Revision Level.
The readout will display the revision level of the installed EPROM.

Function 28 - Segment Test
Verifies that all display segments are functional. The segments will illuminate in a moving display mode.

Function 29 - Lift Position Counts
The readout will display the encoder counts for the lift and will change as the lift travels up or down. Default is 77 at the bottom of travel and 179 at the top of travel.

Function 30 - Adjust Lift Down
The readout will display the current or default value for the Lift height (102). Each time the Enter button is pressed, this value will decrease by 1, or approximately 1/12" (2.1 mm). The Select button must be pushed after lowering the lift height to complete the change. The new height setting will take effect on the next lift cycle.

Function 31 - Adjust Lift Up
The readout will display the current or default value for the Lift height (102). Each time the Enter button is pressed, this value will increase by 1, or approximately 1/12" (2.1 mm). The Select button must be pushed after raising the lift height to complete the change. The lift will raise slightly each time the count is incremented.

NOTE: Do not adjust the lift height to compensate for bent saddle/shoulder screws. Maximum recommended lift height is 105. An adjustment of 106 and higher may result in damage to the controller PCB.

ERROR CODES

The status of the Dispenser is displayed on the Start/Reset Button light. When the Hopper is filled and operating automatically, the Start/Reset Button remains steadily illuminated. When a System Error occurs, the Start/Reset button flashes rapidly (about 5 per second). System Errors are a result of incorrectly assembling the Dispenser, or an interruption in the normal operation. System Errors are also displayed inside the Dispenser on the controller PCB. Each error has its own error code; these are summarized below.

Number	Error Name	Definition
Error #1	ACCUMULATOR TIME-OUT	Accumulator Home Switch fails to turn off within 0.6 seconds of the motor being turned on, or it fails to turn on within 5.0 seconds of the motor output starting. Error will occur if the motor or home switch is disconnected, obstructed, broken, or the associated input or output on the controller PCB has failed.
Error #2	LIFT MOTION	Error will occur if the motor or encoder inputs are disconnected, or the associated input or output on the controller PCB has failed. Error will occur if there is a physical obstruction of Lift Saddle or damage to Lift Saddle components. Error will occur if there is a Failure of lift drive motor w/ gear box, lift tube, encoder, or encoder disk.
Error #3	STOPGATE MOTION	The stop gate allows 1.0 second to home itself. Error will occur if the motor or home switch is disconnected, obstructed, broken, or the associated input or output on the controller PCB has failed, or if the Hardstop screw is broken off.
Error #4	LIFT SENSOR	The controller PCB has sent the Lift Saddle down and the controller PCB is still receiving the Lift sensor input. Sensor is operating out of sequence.
Error #5	GUIDE SENSOR	The controller PCB has not received a signal from the guide sensor after the Lift is down. The Guide Sensor has failed to detect a Basket leaving the Lift Saddle.
Error #6	Not Used	
Error #7	ENCODER SEQUENCE	This is caused by both of the encoder sensors changing at the same time. If the count rate of the encoder exceeds 100 counts per second (normal speed is 51 counts) or something electrically interferes with the encoder sensors, the error would occur. This error could also be caused by contamination.
Error #8	ABNORMAL RESET (WATCHDOG)	An event other than a normal power up has caused the processor to restart. This could be a watchdog reset, (indicating that the processor has hung or Function 10 was entered), a processor reset (an EMI/RFI problem), or the processor has detected corrupted memory. **NOTE: Error code #8 is not displayed.**
Error #9	NVRAM CHECKSUM	The processor writes the permanent data (error logs, configuration, and operating parameters) along with extra data that it uses to verify the data is valid. Data may be invalid for several reasons: a) The first time the controller PCB has been used. b) Software upgrade. (When new software has a different memory configuration). c) Power down interrupted a Non Volatile RAM write cycle. The write cycle usually happens when the reset button is pressed to reset an error. d) The NVRAM has failed

AFD-280E Dispenser

ERROR 1

Do Accumulator doors open?

NO

Does L11 come on?

NO

Go to F13 and see if L11 will come on when enter is toggled. If not, replace controller and correct version of eprom.

YES

YES

Does L7 come on when the doors open?

NO

Does the motor make noise?

NO

Check wires to accumulator motor (M2) and to control board.

YES

YES

Make sure the cam follower H-block screw is tight on the left door shaft (left from the front)

Check the accumulator home switch wiring and operation, L7 should blink on when switch is acitvated.

Check the white cam on the motor shaft, not loose or broken. Check home switch.

AFD-280E Dispenser

ERROR 2

Does the lift move at power up? Should go down first, unless already there.

NO → Check wiring connections at motor and at output #1, terminals 5 and 6 on controller board. Also check board for corrosion.

Remove lift tube and press reset, does motor run? — **YES** → Check lift tube, should move smoothly. If not, replace or clean/relube it.

NO → Remove lift motor wires 5,6 on input one, and hot-wire to the 24v input plug by touching the wires on the screws.

Does the motor spin both directions? (Reverse wiring) — **YES** → Replace the controller board, 290626. Verify proper software.

NO → Replace the lift drive motor 290147

YES → Does the lift move both directions, or just one way?

ONE → Check for water damage to controller board and plugs. Replace controller 290626, and appropriate version of software.

BOTH → Check the saddle for binding. Check lift height setting (F30), not to exceed 106. Remove lift tube, check for binding. Check lift motor for water damage.

With lift tube out, and while still in a system error, manually verify encoder operation. Using a flat blade screwdriver, place blade inside center of motor next to the center pin. Be careful not to damage encoder disk/vane. Turn the handle either direction. L4/5 should go on/off completely, but never change at the same time. Also check encoder disk/vane for damage. Replace both encoders or disk/vane as needed.

AFD-280E Dispenser

ERROR 3

Does the stop gate move at all?

YES → Does it move BOTH directions?

NO → Does L22/23 come on?

(From "Does it move BOTH directions?")

YES → L6 should be ON when stop gate is fully open or closed, OFF when gate is anywhere in between.

NO → Verify that L22 comes on as gate closes, L23 as gate opens. If not, replace control board 290626 and appropriate software.

(From "Does L22/23 come on?")

YES → Verify wiring to motor and control board.

Replace the stop-gate motor.

NO → Go to F14, L22/23 should toggle on/off as the enter button is pressed, if not, replace control board 290626 and appropriate software.

(From L6 box)

Does L6 operate properly?

NO → Check encoder and termination to control board. Replace encoder 290690.

YES → Assure hard-stop screw is present. Rotate stop gate manually clockwise, should not be able to rotate past the 7 o-clock position.

AFD-280E Dispenser

Error 4

Verify that the L2 light on the circuit board is not damaged.

Is the lift down?

NO → Press the left button on the controll board until the display reads F12, then immediately press the right button. Press the right button again to make the lift go down.

Yes

Is the LED L2 lit on the control board?

Yes → Clean the sensor window using a warm moist towel. → Is L2 still on?

Yes → Turn sensor adjustment counter clock wise until L2 goes off.

NO

NO

Place your hand on the front of the machine so your palm covers the upper sensor.

Did L2 go off?

Yes

NO → Remove the bottom right connector from the control board. If L2 does not go out, replace the circuit board 290626. If L2 does go off, replace the sensor 290038.

Is L2 lit up?

NO → Check wiring for optical sensor. Black and blue wire on bottom right connector, and brown wire on top right connector.

Yes

Now will L2 come on when sensor blocked?

Yes

NO → Replace Sensor 290038.

Slowly pull hand away from machine until light goes off. Should be about 5-6 inches from the machine. Adjust sensor as needed.

DONE

AFD-280E Dispenser

Error 5

Verify that the L3 light on the circuit board is not damaged.

Before doing this procedure, assure the lower guide was installed correctly, and the lower guide slides are not damaged. Baskets should slide down without sticking or tipping.
Replace lower guide slides as needed.

Remove all baskets from the lower guide

Is the LED L3 lit on the control board?

Yes → Clean the sensor window using a warm moist towel.

Is L3 still on?

Yes → Turn sensor adjusment screw ccw until light goes off.

NO

NO → Place your hand on the front of the machine so your palm covers the lower sensor.

Yes

Did L3 go off?

Yes

NO → Remove the bottom right connector from the control board. If L3 does not go out, replace the circuit board 290626. If L3 does go off, replace the sensor 290038.

Is L3 lit up?

NO → Check wiring for optical sensor. Black and blue wire on bottom right connector, and brown wire on top right connector.

Yes

Now will L3 come on when sensor blocked?

Yes → Slowly pull hand away from machine until light goes off. Should be about 5-6 inches from the machine. Adjust sensor as needed.

NO → Replace Sensor 290038. Adjust to 5-6 inch range.

DONE

ERROR 6

Error 6 is not used on this model of machine.

AFD-280E Dispenser

ERROR 7

Press reset while watching the lights on the circuit board in the back of the machine.

When the lift is moving, do L4 and L5 flash? — **No** → Remove the lift saddle. Remove lift tube by removing the socket head cap screw and bracket on the lift motor, then twist and pull on the tube. Remove the nut on the bottom of the machine that holds the motor in, and remove the motor. Remove the encoders and encoder disk/vane assembly. Inspect the encoder disk/vane and encoders for any damage. Check for debris, etc inside encoder block.

Yes

Do all the lights dim at the same time? — **No**

Yes

Press reset again, and observe at what point In the cycle the board dims. Remove the associated motor from the circuit. Press reset.

Is there any damage to the disk or encoders? — **No** → Clean and dry the disk/vane and encoders. Check encoders for damage and proper operation. Replace if damaged. Reassemble and retest.

Yes

Still get error 7? — **No** → Troubleshoot or replace the motor that was removed from the circuit.

Yes

Replace controller board 290626 and appropriate EPROM.

Replace encoder disk/vane or encoder. Reassemble and retest.

ERROR 8

Check power cord, on/off switch, and power supply connections. Replace/repair as needed.

This error means the program is being reset by means other than the reset button.
Error 8 automatically resets by itself, so it will not show up on the display. The only way to check for error 8 is to access the error log by going to function 19, and pressing the Enter button 9 times. Some error 8's are to be expected, as it can be caused by turning the machine on/off too quickly. If problem persists, call Automated Equipment LLC for technical support.

ERROR 9

Turn the machine off for 15 seconds and turn it back on.

Error 9 is normal for the first time a machine is turned on after replacing an EPROM.

Still get error 9?

Yes → Turn the machine off. Remove the EPROM M1 from the board. Check for bent or broken legs. If all looks well, reinstall the EPROM. Power up

No

Still get error 9?

No →

Yes

Replace the board 290626 and EPROM

Done

DRUM MOTOR WON'T TURN

Is the green start/reset button flashing?

— YES → Is the green button flashing fast or slow?

— Fast → Check the error code and proceed to the appropriate error resolution page.

— Slow → Press the reset button → Is the drum turning?

— YES → Check for low fries. Check for bridging of fries in the hopper.

— NO →

Is the green start/reset button flashing? — NO →

Is the machine cycling empty baskets?

— YES → Calibrate weighing system as per instructions in manual.

— NO →

Are there fries on the accumulator doors?

— YES → Check L2, L3 lights. L2 should be on if basket is present on the lift, L3 should be off unless there are three baskets on the lower guide. Clean and check sensors.

— NO →

On the circuit board, press the select button until F15 is displayed, then press the enter button twice. Display should say 16.

Is L10 on the circuit board lit up?

— YES → Is the drum motor turning?

— YES → Calibrate weighing system as per instructions in manual.

— NO → Verify drum motor wiring at motor and at circuit board, if wiring is ok, replace drum motor 290692.

Is L10 on the circuit board lit up? — NO → Replace the control board 290626 and appropriate software

AFD-280E Dispenser

TROUBLESHOOTING

In the following charts, the PROBLEM columns contain a list of problems that may occur, the PROBABLE CAUSE column describes why the problem may have appeared; and the CORRECTIVE ACTION column describes the action that must be taken to eliminate the problem. If, after performing the procedure listed under CORRECTIVE ACTION, you have not corrected the problem, call our Service Department for assistance (see page 5).

NOTE: Press the Start/Reset Button after correcting the problem.

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Start/Reset Button is flashing slowly (about once per second) and Lift remains up.	Hopper is empty	Fill the Hopper with french fries.
	Frozen fries in the hopper have formed a "bridge" over the Drum.	Remove the Hopper Lid and re-distribute the fries inside. Press the Start/Reset button. The Drum will begin rotating in a few seconds.
	Hopper Drum is not locked onto the shaft.	Install the Hopper Assembly correctly.
	Drum is damaged.	Replace Drum.
Basket Loads are consistently light or heavy.	Diverter not installed.	Verify diverter is installed correctly.
	The Hopper is touching the Accumulator Doors.	Re-assemble the Hopper. No objects, other than french fries, may touch the Accumulator Doors.
	Basket Load targets were not set properly.	Verify proper target values. Adjust if necessary (refer to Functions 6-9, 21 & 22, beginning on on page 13).
	The Weight Sensor has malfunctioned.	Verify Weight Sensor tare and calibration. (See page 28 for calibration procedures.)
Dispenser Drum is not rotating.	The Hopper Accumulator is full.	The Dispenser Drum will rotate only when the Hopper Accumulator requires more fries.
	Hopper is empty (Start/Reset Button is flashing slowly).	Fill the Hopper with fries and press the Start/Reset button. The Drum will begin rotating in a few seconds.
	Fries have formed a "bridge" over the Drum (Start/Reset Button is flashing slowly).	Remove the Hopper Lid and re-distribute the fries inside. Press the Start/Reset button. The Drum will begin rotating in a few seconds.
	The Dispenser has detected a SYSTEM FAULT (Start/Reset Button is flashing rapidly).	Continue troubleshooting. If the Accumulator needs more fries, the Dispenser Drum will continue rotating when the Start/Reset Button is pressed.
	Hopper Drum is not locked onto the shaft.	Install the Hopper Assembly correctly.
	The Hopper is touching the Accumulator Doors.	Re-assemble the Hopper. No objects, other than fries, may touch the Accumulator Doors.
	The Diverter fell inside the Hopper preventing the Dispenser Drum from turning.	Remove the Diverter from inside the Hopper and install correctly.
	Basket Load targets were not set properly.	Verify proper target values. Adjust if necessary (refer to Functions 6-9, 21 & 22, beginning on on page 13).
	The Weight Sensor has malfunctioned.	Perform a Weight Sensor calibration procedure. (See page 28.)
	Drum is damaged.	Replace Drum.
Baskets are sticking or tipping on Upper or Lower Guide	Fries, crumbs, or shortening have accumulated on the Guide or Lift Saddle.	Turn the Power Switch off, and clean the Guide and Lift Saddle with a hot towel.
	A Basket is bent or damaged.	Replace the damaged Basket.
	The Lift Saddle is assembled incorrectly or damaged.	Re-assemble, repair or replace the Lift Saddle. Check that shoulder screws are not loose, bent, or missing (See page 29).
	The guide is not assembled correctly.	Re-assemble the guide
	Incorrect Basket.	Use the Custom Fry Baskets supplied with the Dispenser.
	Lift height improperly adjusted.	Adjust the Lift height (Functions 30 and 31, see page 16).
	The Guide is bent or the Basket Slides are damaged.	Repair or replace the components.

AFD-280E Dispenser

NOTE: Press the Start/Reset Button after correcting the fault condition.

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Accumulator Doors do not close	Accumulator Motor failure	Observe L11 on the Controller Board, when it is ON the motor should turn. Check for broken or loose wiring to the motor.
	Accumulator Home Switch failure	When the Accumulator cycles, L7 on the Controller Board should blink. If not, check for loose or broken wires for the Accumulator. Verify that the switch functions by manually activating it.
	The Accumulator Door linkage is loose or binding, or the linkage spring is disconnected or broken.	Examine the linkages for loose or broken components. Lubricate Accumulator Door pivot points.
Basket Stop-gate does not hold Baskets in place	Stopgate Motor failure	Observe L22 and L23 on the Controller Board (L13 on Controller 290322). When either is ON the motor should turn. Check for broken or loose wiring to the motor.
	Encoder failure	When the Stopgate cycles, L6 on the Controller Board should blink. If not, check for loose or broken wires for the Stopgate.
	Hard Stop broken	If Stopgate can be rotated all the way around, the Hard Stop needs to be replaced.
Does not dispense fries into a waiting Basket.	The Lift Saddle is assembled incorrectly or damaged.	Re-assemble, repair or replace the Lift Saddle.
	A Basket is positioned incorrectly on the Lift Saddle.	Reposition the Basket in the Lift Saddle.
	Lift height improperly adjusted.	Adjust the Lift height (Functions 30 and 31, see page 16).
	Lift Sensor is not working.	Verify by observing L2 on Controller Board. (See pages 30 & 31.)
SYSTEM ERROR: (Start/Reset Button flashes rapidly as Lift reaches top or bottom)	Lift Motion fault.	An Error #2 may have occurred. Pressing the Start/Reset Button will clear this error. If problem persists, there may be a problem with the Lift mechanism or electronics.
	A tipped Basket stopped the Basket Lift.	Remove the Basket. Check it to be sure that it is not bent or damaged. Clear the Lift Saddle of any fries or shortening. Press the Start/Reset button. If problem re-occurs, remove and re-assemble the guides.
	Lift Sensor or Guide Sensor is not functioning properly.	Clean the sensors with a HOT wet towel. Press the Start/Reset button. Verify proper sensor operation.
	Lift Mechanism Failure	Verify by manually cycling the Lift with Function #12. (Refer to Function 12, page 14.)
	A system Error has occurred.	Check the controller board service interface for an error code. (See page 17 for a description of all the error codes.)
	Lift Position Encoder Error	Verify encoder operations, (*on the controller board, observe L4 and L5 pulsing as the Lift moves*) repair or replace the encoder that does not function.
Dispenses fries with no basket present	Shortening on Sensor	Power off, clean sensor with hot wet towel.
	Sensor too sensitive	Adjust sensor. (See page 29.)

ADJUSTMENTS AND DIAGNOSTICS

For optimum performance, the weighing system should be calibrated twice per year. To do this, follow these steps:

NON-CONTACT WEIGHING SYSTEM (NCWS) CALIBRATION

1. **Remove the BACK PANEL of the Dispenser.**

2. **Turn the Power Switch to the ON position.**

3. **Select Function 30. Record the lift height setting.**

4. **Select Function 17. Press the ENTER button.**

5. **Select Function 3 on the controller and press the ENTER button to disable the weighing.**

6. **Run a Basket through the Dispenser to empty the Accumulator Doors.**

7. **Remove the Hopper from the Dispenser.**

8. **Verify that the Accumulator Doors are empty.**

9. **For International units, select Function 25 and press the ENTER button. Press ENTER again to change from "US" to "In". Press Select to exit the function.**

10. **Select Function 5 (Calibrate) on the controller and press the ENTER button. The word "CAL" will appear on the display.**

11. **Wait 10 seconds, and press the ENTER button: the display will respond "C1.0".**

12. **Place 1.0 lb. (450 gm) on the Accumulator Doors (use a 1 lb. reference weight), wait 10 seconds, and press the ENTER button: the display will respond "C2.0".**

13. **Place 2.0 lbs. (900 gm) (an additional 1.0 lb. (450 gm)) on the Accumulator Doors. Wait 10 seconds and press the ENTER button: the display will respond "---".**

14. **Select Function 11 and press the ENTER button. With 2 lb. (900 gm) on the Accumulator Doors the readout should be approximately 230 (+/-9). Remove 1 lb. (450 gm) from the Accumulator doors. The readout should be approximately 130 (+/-9). Remove all weight from the Accumulator doors. The readout should be 30 (+/-9).**

15. **Turn the Dispenser off, wait 15 seconds, turn the Dispenser on. The new calibration will now be active.**

16. **Reinstall the Hopper on the Dispenser.**

17. **Reset the Lift height using either Function 30 (lower lift) or 31 (raise lift) to input the setting recorded in step 3. The default is 102.**

18. **Cycle baskets through the Dispenser. Check basket loads and adjust if necessary.**

19. **Replace the Back Panel.**

LOAD CELL CALIBRATION

1. Remove the BACK PANEL of the Dispenser.

2. Turn the Power Switch to the ON position.

3. Select Function 11 and press Enter Button. Tare should read 25-125 (approx.). Place slight downward pressure on Accumulator doors. Value should change with pressure.

4. Select Function 30 and press the ENTER button. Record the lift height setting.

5. Select Function 17 and press the ENTER button.

6. Select Function 3 on the controller and press the ENTER button to disable the weighing.

7. Run a basket through the dispenser to empty the Accumulator Doors.

8. Remove the Hopper from the Dispenser.

9. Verify that the Accumulator doors are empty.

10. For International units, select Function 25 and press the ENTER button. Press ENTER again to change from "US" to "In". Press Select to exit the function.

11. Select Function 4 (Tare Function) on the controller and press the ENTER button.

12. Select Function 5 (Calibrate) on the controller and press the ENTER button. The word "CAL" will appear on the display.

13. Place a 1.0 lb. (450 gm) weight on the Accumulator Doors (use a 1 lb. reference weight). Wait 10 seconds and press the ENTER button on the controller.

14. Select Function 20 and press Enter. (See page 15.)

15. Remove the calibration weight and turn power off.

16. Reinstall the Hopper on the Dispenser and turn back on.

17. Reset the Lift height using either Function 30 (lower lift) or 31 (raise lift) to input the setting recorded in step 3. The default is 102.

18. Cycle baskets through the Dispenser. Check basket loads and adjust if necessary.

19. Replace the Back Panel.

SERVICE NOTE:
**Calibration must be performed any time a controller pcb, e-prom, load cell or NCWS component is replaced.**

LIFT DRIVE ASSEMBLY INFORMATION

The bottom of the Lift Cylinder stroke is home by definition. This is found at power up and set to 77. This is an arbitrary number, mathematically chosen for maximum flexibility in the Lift control. The default stroke is 102 counts, and is adjustable. There are 12 counts per inch and full stroke is 8.5 inches (12 * 8.5 = 102, 102 + 77 = 179). There is approximately 1/4 inch between top of stroke and hard stop. The dispenser logic controls the Lift to the specified location. If adjusted to the hard stop (approximately 105), it will still function. Adjusting it past the hard stop will result in an endless chain of Error #2's, and may result in permanent damage to controllers and lift drive motor.

CHECK/ADJUST SENSOR RANGES

1. Remove all baskets on the dispenser.

2. Select Function 12 on the controller board (see pages 12 & 14) and press ENTER to lower the Lift Saddle. This will prevent the Accumulator Doors from accidentally opening.

3. Verify that the indicator lights for the Basket Sensors are OFF (Lights L2 and L3). See the CONTROLLER BOARD illustrations on pages 30 and 31.

4. Place your hand directly in front of the Basket Sensor Verify that indicator light L2 turns ON. Move your hand away from the sensor until the light turns OFF.

5. Place the palm of your hand in front of the sensor. The indicator light should stay on until your hand is 4-6 inches (10-15 cm) away from the sensor. If this range is incorrect, adjust the GAIN control on the rear of the sensor.

6. Repeat steps 3 through 6 for the Guide Sensor. The guide sensor lights indicator light L3.

7. Select Function 18 and press ENTER to clear the error log.

8. Turn the power switch OFF.

9. Replace the BACK PANEL.

10. Finish reassembling the dispenser.
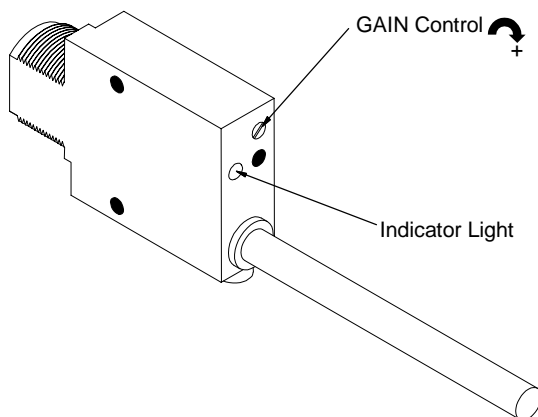
CHECK SADDLE FOR DAMAGE

Inspect the four Shoulder Screws for being bent or loose. Measure the Saddle at each Skid Plate position to determine if the Saddle frame is damaged. Measure as shown by the dashed line in the illustration below. Saddle frame should measure 11 5/8" +/-1/16" (295.3mm +/- 2mm).

TO HERE

SKID PLATE

MEASURE FROM HERE

SHOULDER SCREWS

GAIN Control

Indicator Light
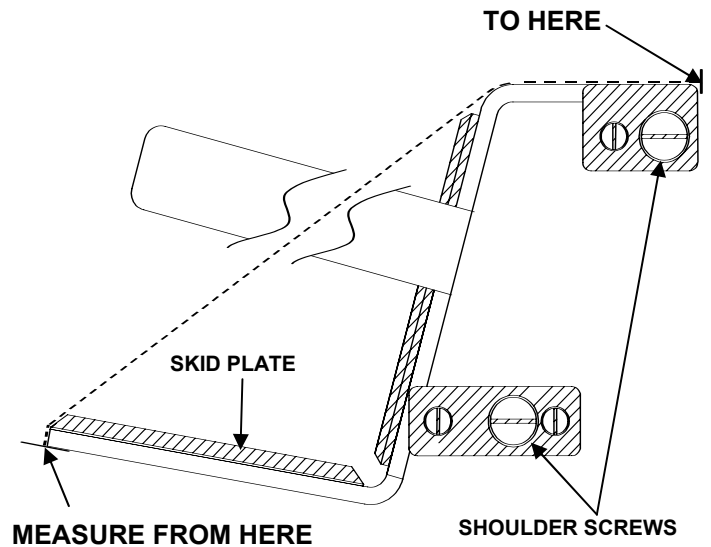
AFD-280E Dispenser

CONTROLLER BOARD LAYOUT

Plus Controller PCB (P/N 290626)
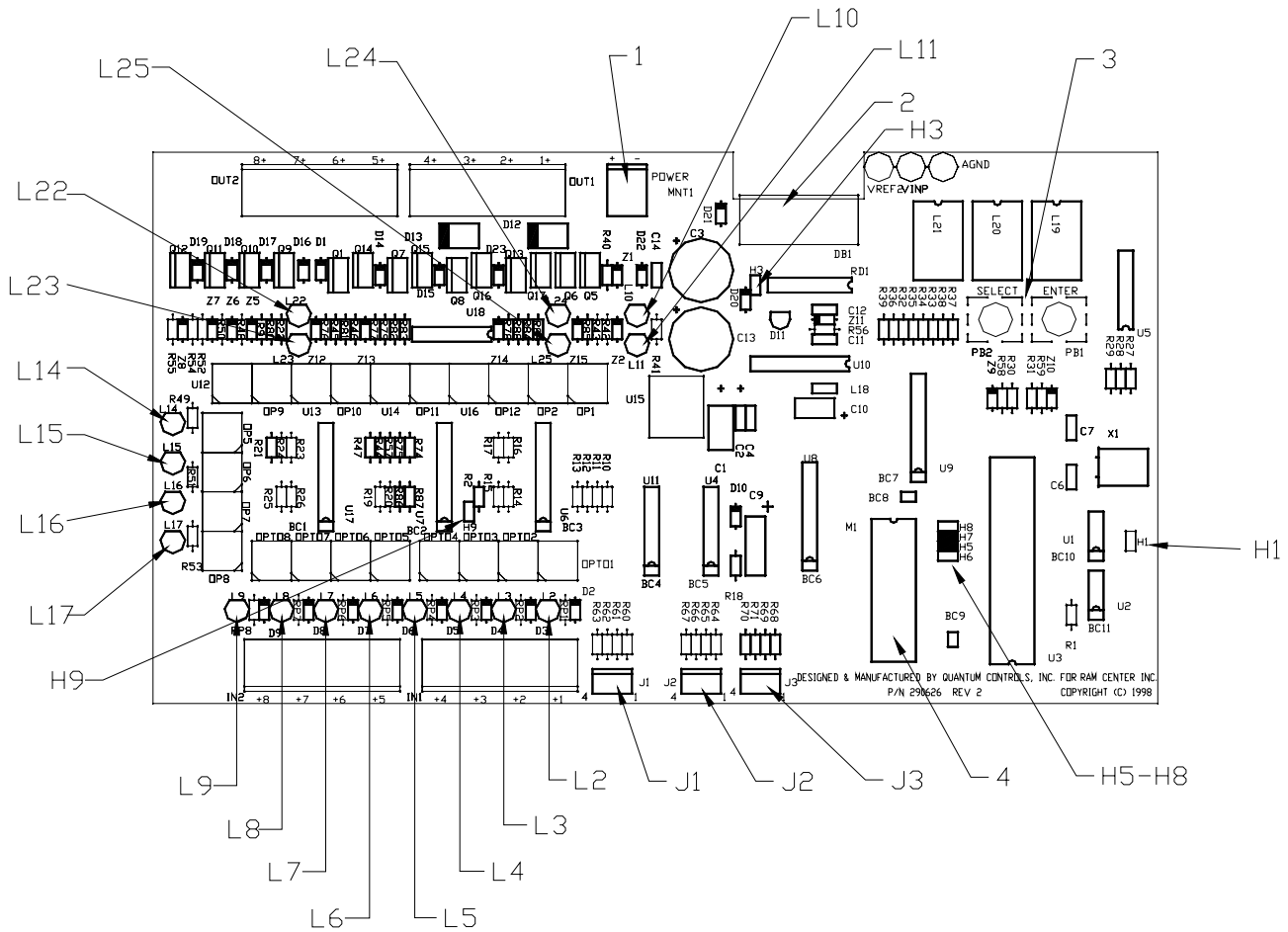
ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Power Input 24 VDC	L2	Lift optical sensor	L11	Accumulator Door Drive
2	Weight Sensor Connection	L3	Guide optical sensor	L14	Reverse
3	Function Buttons	L4	Lift encoder 2 (J3)	L15	Start light
H5-H8	EPROM Configuration	L5	Lift encoder 1 (J1)	L16	Load switch multiplexer
4	Software EPROM Load Cell 290790 **[NCWS 290778]**	L6	Stopgate home switch (J2)	L17	Start/Reset switch multiplexer
J3	Lift encoder phase 2 connection (L4) Green	L7	Accumulator home switch	L22	Close stopgate
J2	Stopgate sensor connection (L6) Yellow	L8	Selector switch position 3	L23	Open stopgate
J1	Lift encoder phase 1 connection (L5) Blue	L9	Selector switch position 2 Start/Reset Input	L24	Lift down
H9	Electric mode jumper	L10	Rotate Drum	L25	Lift up

Jumper Settings for Plus Controller Board						
H1	H3	H5	H6	H7	H8	H9
		X		X		X

AFD-280E Dispenser

Controller Board (P/N 290322)
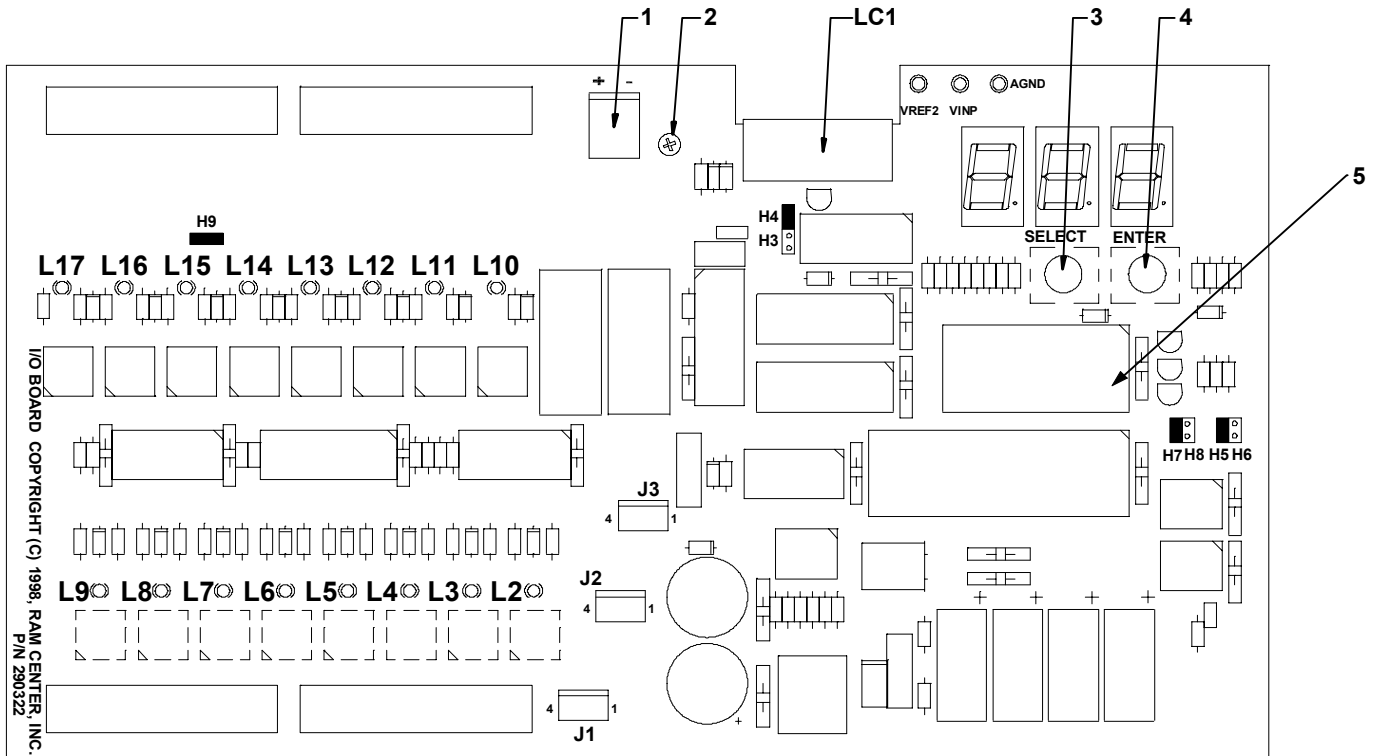
INPUT CONNECTORS AND LED FUNCTIONS

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Power Input 24 VDC	**L2**	Lift Optical Sensor	**L10**	Rotate Drum
2	Grounding Screw	**L3**	Guide Optical Sensor	**L11**	Accumulator Drive
3	Select Button	**L4**	Lift Encoder – 2 (J3)	**L12**	Lift Drive
4	Enter Button	**L5**	Lift Encoder – 1 (J1)	**L13**	Stopgate Drive
5	E-PROM Load Cell 290122 **[NCWS 290717]**	**L6**	Stopgate Home Switch	**L14**	Reverse
LC1	Weight Sensor Connector	**L7**	Accumulator Home Switch	**L15**	Start Light
J1	Lift Connector – 1 (L5) Blue	**L8**	Select Sw. Pos. 3	**L16**	Load Sw. Mpx.
J2	Stopgate Connector (L6) Yellow	**L9**	Select Sw. Pos. 2 Start/Reset Input	**L17**	Start/Reset Sw. Mpx.
J3	Lift Connector – 2 (L4) Green	**L8&L9**	Both OFF = Sw. Pos. 1		

Jumper Settings for Plus Controller Board						
H1	H4	H5	H6	H7	H8	H9
	X	X		X		X

AFD-280E SCHEMATIC
Inductive Encoders

PU1
24 VDC POWER SUPPLY
CLASS 2
P/N 202793

2 BLK
1 RED
3 GRN/YEL
4 BRN (YEL)
5 BLU (YEL)

18 ga
18 ga
16 ga

H3

T1   GRN/YEL

M1   (+)   24VDC DRUM MOTOR   WHITE (YEL/RED)   18 ga
BLK (YEL/RED)   18 ga

M2   24VDC ACCUM. MOTOR   WHITE (RED/BLU)   18 ga
BLK (RED/BLU)   18 ga
(+)

M3   (+)   24VDC LIFT MOTOR   WHITE (RED/YEL)   18 ga
BLK (RED/YEL)   18 ga

M4   (+)   24VDC GATE MOTOR   WHITE (RED/GRN)   18 ga
BLK (RED/GRN)   18 ga

H2

H1

PIN #11   PIN #12
BLU   BLU (YEL)
A
PIN #21   PIN #22
BRN   BRN (YEL)

SW1
POWER ON/OFF
5 AMP

LINE   BLU   16 ga
NEUTRAL   BRN   16 ga
GROUND   GRN/YEL   16 ga

PE   GRN/YEL

WEIGHT SENSOR   LC1

X2   RESTART LIGHT   U1
X1

STOP/GATE ACTIVATE
LIFT ACTIVATE
ACCUM. ACTIVATE
DRUM ROTATE

YEL (GRN)
BRN (RED/GRN)
BLK (BLU/RED)
BRN (RED/YEL)
BLU (GRN/YEL)
RED (GRN/YEL)
BLK (RED/GRN)
WHT (RED/GRN)
WHT (RED/YEL)
BLK (RED/YEL)
BLK (RED/BLU)
WHT (RED/BLU)
BLK (YEL/RED)
WHT (YEL/RED)
RED
BLK

8 + 7 + 6 + 5 +   4 +   3 +   2 +   1 +   +24 VDC   0 VDC
Out 2   Out 1

PCB1
AFD-280 CONTROLLER (REV.D)

J3   1

In 2   In 1
8 + 7 + 6 + 5 +   4 +   3 +   2 +   1 +

J1   1   J2   1

BLU (RED/YEL)
ORN
YEL
PUR
BLK (GRN/RED)
BLK (YEL/RED)
BLU (YEL/GRN)

BLK
BRN
BLU
MARKING-BLUE

ORN
RED
BLK
BRN
MARKING - YELLOW

BLK
BRN
BLU
MARKING-GREEN

SW2
CYCLE START
SW3

ACCUM HOME
SW4

1 LB. LOAD
1.5 LB. LOAD

LIFT STEP-1
SW6

STOP/GATE
SW5

LIFT STEP-2
SW7

BLU
BLK
BRN
LIFT SENSOR
PS1

BLU
BLK
BRN
GUIDE SENSOR
PS2

AFD-280E SCHEMATIC
Optical Encoders

PU1
24 VDC POWER SUPPLY
CLASS 2
P/N 202793

2 BLK
1 RED
3 GRN/YEL
4 BRN (YEL)
5 BLU (YEL)

18 ga
18 ga
16 ga

H3

H2

H1

NEUTRAL — WHITE 16 ga
LINE — BLACK 16 ga
GROUND — GRN/YEL 16 ga

PE
GRN/YEL

PIN #11
WHITE
PIN #21
BLACK

PIN #12 BLU (YEL)
PIN #22 BRN (YEL)

SW1
POWER ON/OFF
5 AMP

T1 GRN/YEL

M1 24VDC DRUM MOTOR (+)
WHITE (YEL/RED) 18 ga
BLK (YEL/RED) 18 ga

M2 24VDC ACCUM. MOTOR (+)
WHITE (RED/BLU) 18 ga
BLK (RED/BLU) 18 ga

M3 24VDC LIFT MOTOR (+)
WHITE (RED/YEL) 18 ga
BLK (RED/YEL) 18 ga

M4 24VDC GATE MOTOR (+)
WHITE (RED/GRN) 18 ga
BLK (RED/GRN) 18 ga

WEIGHT SENSOR LC1

PCB1
CONTROLLER

Out 2: 8 7 6 5 4 3 2 1
Out 1
+24 VDC 0 VDC

RESTART LIGHT LI1
X1 X2
STOPGATE ACTIVATE
LIFT ACTIVATE
ACCUM. ACTIVATE
DRUM ROTATE

YEL (GRN)
BRN (RED/GRN)
BLK (BLU/RED)
BRN (RED/YEL)
BRN (GRN/YEL)
RED (GRN/YEL)
BLK (RED/GRN)
WHT (RED/GRN)
BLK (RED/YEL)
BLK (RED/BLU)
WHT (RED/BLU)
BLK (YEL/RED)
WHT (YEL/RED)
RED
BLK

In 2: 8 7 6 5 4 3 2 1
In 1

BLU (RED/YEL)
GRN
YEL
PUR
BLK (GRN/RED)
BLU (YEL/RED)
BLK (BLU/GRN)
BLU (YEL/GRN)

SW2
CYCLE START
SW3
ACCUM HOME SW4

1 LB. LOAD
1.5 LB. LOAD

J3 1

J1 1
J2 1

MARKING–BLUE ORN RED BLK BRN
MARKING – YELLOW ORN RED BLK BRN
MARKING – GREEN ORN RED BLK BRN

LIFT STEP–1 SW6
STOPGATE SW5
LIFT STEP–2 SW7

BLU
BLK
BRN
LIFT SENSOR PS1

BLU
BLK
BRN
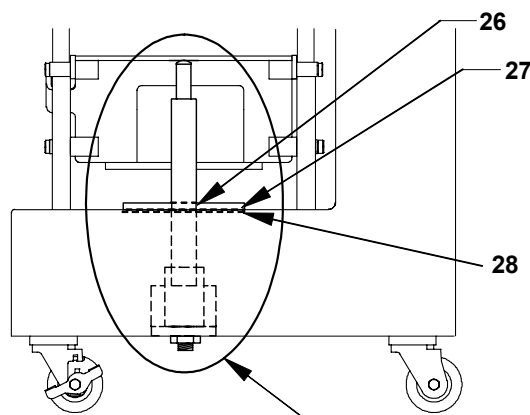GUIDE SENSOR PS2

33

AFD-280E Dispenser

PARTS IDENTIFICATION
FRONT VIEW

LOWER SIDE VIEW

BASKET LIFT ASSEMBLY
See pages 37 & 38

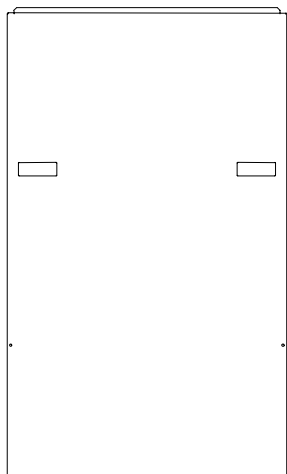| Item	Description	Part No.	Qty
1	Hopper Lid	202364	1
2	Diverter	219129	1
3	Hopper Support Bar, Left	202884	1
4	Hopper Support Bar, Right	202885	1
5	Hopper	202368	1
6	Dispenser Drum	202366	1
	Shaft Collar	203240	1
7	Shaft Collars	203256	3
8	Stopgate Shaft	290384	1
9	Upper Guide (complete)	202219	1
	Guide Slides	202359	2
	Guide Slide Screws	290000	10
10	Support Bars (Upper Guide)	202218	2
	Fillister Screw	202044	2
11	Basket Sensor (Lower Guide)	202038	1
	Sensor Window Kit (Includes two windows)	202619	1
12	Lower Guide (complete)	202779	1
	Guide Slides	220494	2
	Guide Slide Screws	290000	12
13	Power Switch	202381	1
14	Selector Switch	215607	1
15	Start/Reset Switch	215606	1
	Start/Reset Lamp	216489	1
	Lens only	290771	1
16	Accumulator Doors Left	203254	1
	Right	203253	1
17	Basket Sensor (Basket Lift)	202038	1
	Sensor Window Kit (Includes two windows)	202619	1
18	Basket	216258	10
19	Lift Guide Post	220456	2
20	Lift Saddle Assembly	202782	1
	Roller	217810	1
	Shoulder Screw	202064	4
	Saddle Skid	202762	2
	Splash Shield	220473	4
21	Drip Pan	202780	1
22	Locator Pins (Lower Guide and Drip Pan)	290687	2
	Nut only	290394	
23	Front Caster with Brake	216596	2
24	Safety Label Set (side of cabinet)	202986	1
25	Caster Mounting Screw (quantity is per caster)	202530	4
26*	O-Ring	290152	1
27	Lift Cover	290432	1
28*	Lift Cover Gasket	292166	1

*Items 26 & 28 are available as a kit: Part number 292463 (See page 38)

AFD-280E Dispenser

REAR VIEW
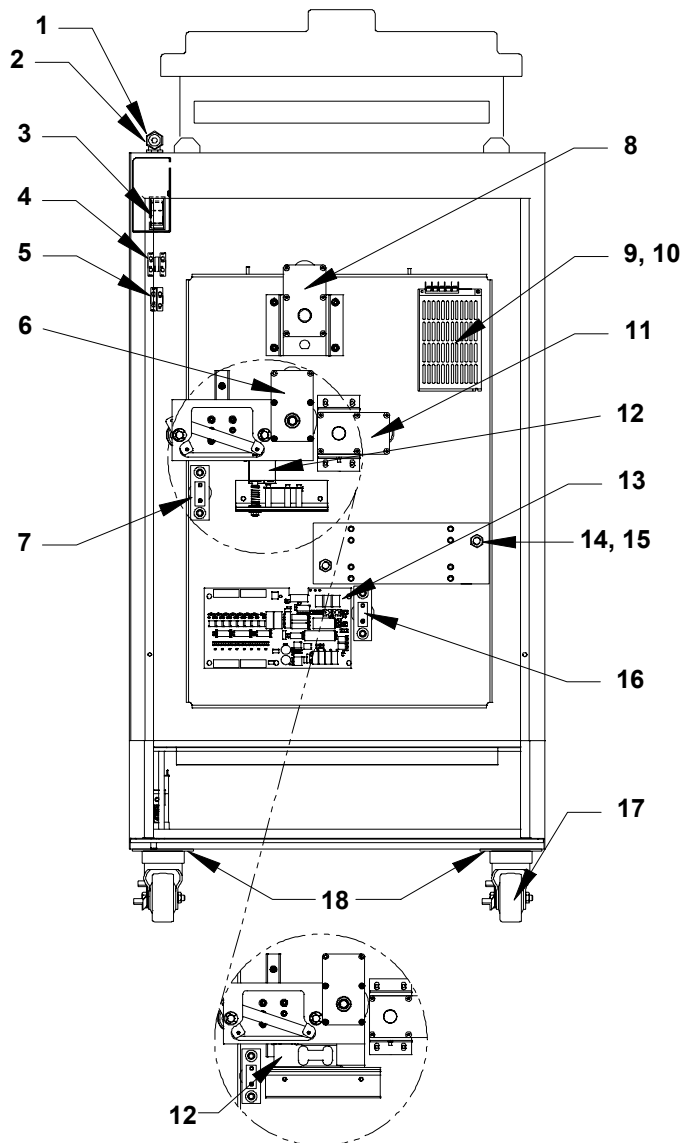
Item	Description	Part Number	Qty
1	Power Cord Inlet		1
	Domestic Power Cord	202172	
	European Power Cord	202790	
	Australian Power Cord	202354	
2	Cord Relief		
	Elbow	216692	1
	Washer	202586	1
	Nut	213942	1
3	On/Off Switch	202381	1
4	Selector Switch	215607	1
5	Start/Reset Switch	215606	1
	Start/Reset Lamp	216489	1
	Button assembly, including lens	290771	1
6	Accumulator Motor	290641	1
7	Basket Sensor (Basket Lift)	202038	1
	Sensor Window Kit (Includes two windows)	202619	1
8	Drum Motor	292546	1
9	Power Supply Fuse	291294	1
10	Power Supply	202793	1
11	Stopgate Motor	290691	1
12	Load Cell	290685	1
	[Weight Sensor Assembly (NCWS)] Refer to page 43 for details	**[290724]**	1
13	Controller Board	290322	1
	Software E-PROM	290122	1
	[Software E-PROM(NCWS)]	**[290717]**	
	Plus Controller Board	290626	1
	Software E-PROM	290790	1
	[Software E-PROM(NCWS)]	**[290778]**	
14	Bolt	202174	
15	Washer	213264	
16	Basket Sensor (Lower Guide)	202038	1
	Sensor Window Kit (Includes two windows)	202619	1
17	Rear Caster	216595	1
18	Caster Mounting Screw (quantity is per caster)	202530	4

Rear Access Door

Rear Access Door hardware

Item	Description	Part No.	Qty
	U-Clip (mounts on dispenser)	202892	2
	Retaining Washer (holds 202585 in place)	202539	2
	Machine screw 10-32 x 1"	202585	2
	Pocket Pull door handle	202523	2
Pictured at left	Door, stainless steel panel	202890	1

AFD-280E Dispenser

NEW BACKPANEL CONFIGURATION
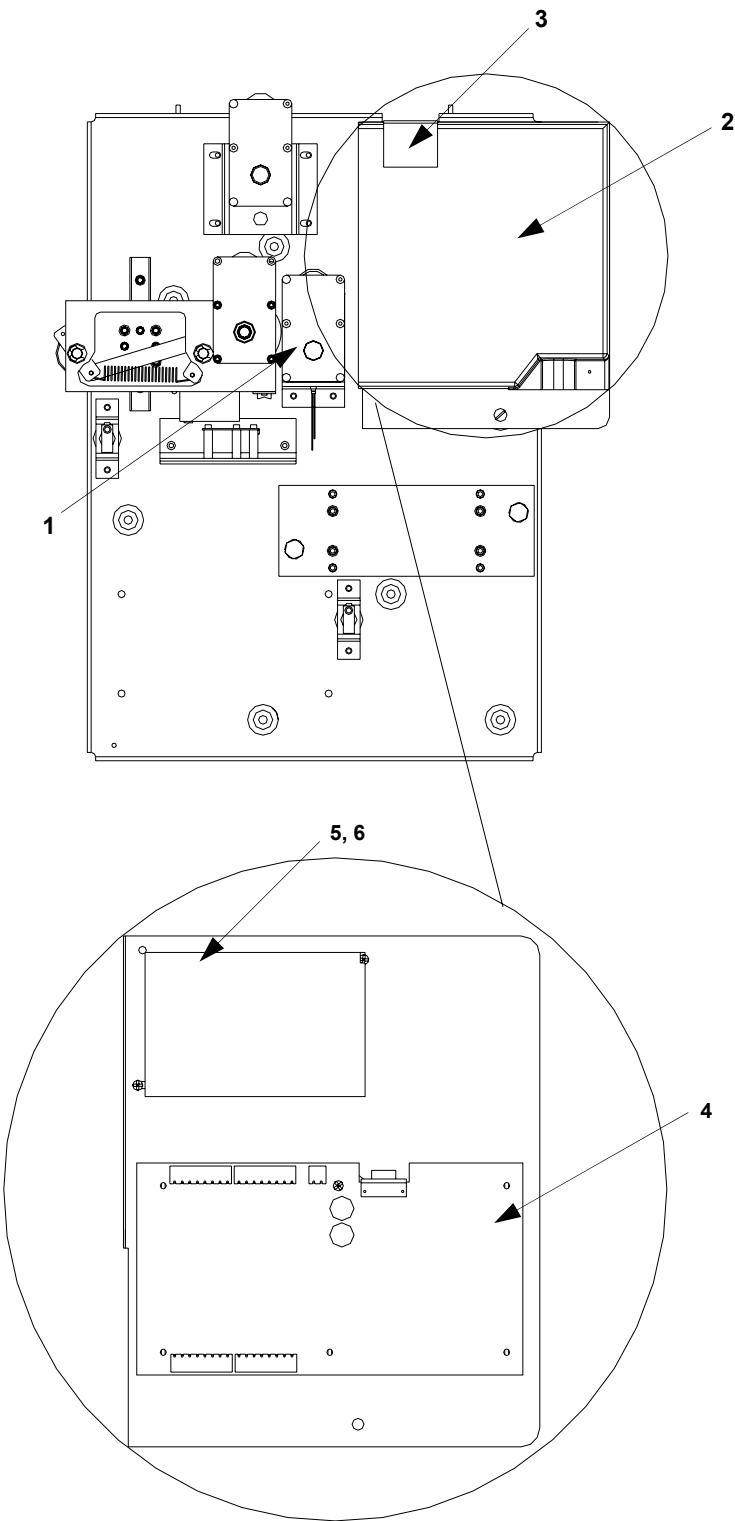
Item	Description	Part Number	Qty
1	Stopgate Motor (rotated 90°)	290691	1
2	Controls Cover	291507	1
3	Retainer Clip, Controls Cover	292559	1
4	Plus Controller Board **[Software E-PROM(NCWS)]**	290626 **[290778]**	1
5	Power Supply Fuse	291294	1
6	Power Supply	202793	1

BASKET LIFT ASSEMBLY

Item	Description	Part No.	Qty
1	Lift Motor	290147	1
2	Mounting Plate	290141	1
3	Encoder Block	290140	1
4	Screw, #6-32 UNC	213507	5
5	Lock Washer, #6	213528	1
6	Ground Stud (Green Wire)	290423	1
7	Nut, #6	202874	1
8	Rubber Washer	290171	1
9	Rubber Bushing	292197	1
10	Drive Coupler with Encoder Disk	290292	1
	Encoder Disk Only	290145	
11	Lift Motor Wiring Harness		
	White wire on **+** terminal	290175	1
	Surge suppressor filter, Mov	290428	1
12	Encoder Phase 1	290690	1
	J1 Blue		
13	Encoder Phase 2	290690	1
	J3 Green		
14	Screw, #4-40UNC	290372	4
15	Lift Lock Bracket	290146	1
16	Screw, ¼-20UNC	213143	1
17	Lock Washer, ¼"	213142	1
18	Flange Nut, 3/8-16 UNC	290394	1
19	Flat Washer, 3/8"	202992	1
20	Lift Tube	290115	1
21	Finishing Plug (White)	290160	1
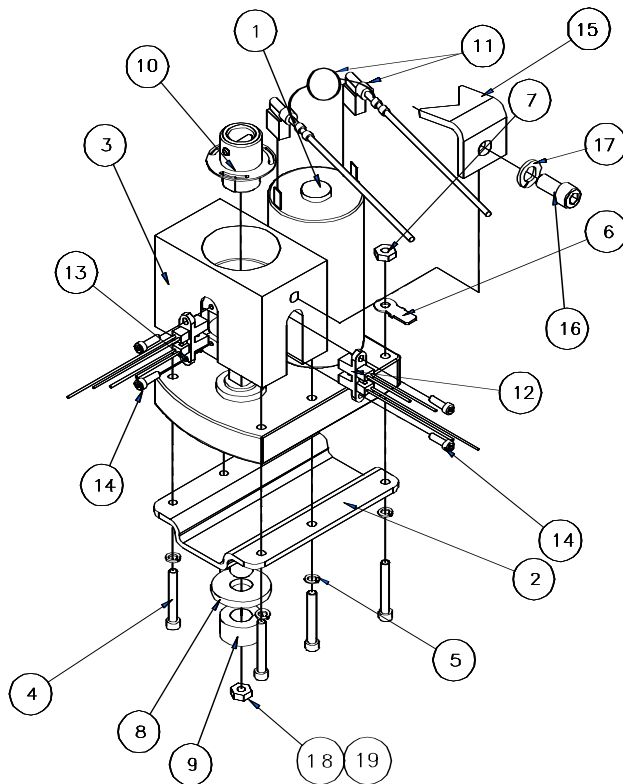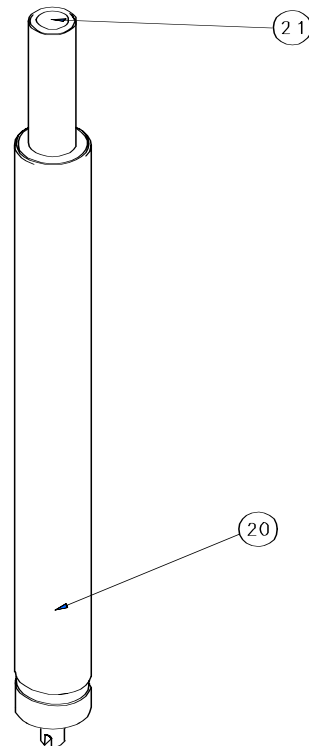
NEW BASKET LIFT ASSEMBLY

Item	Description	Part Number	Qty
1	Lift Motor	290147	1
2	Mounting Plate	290141	1
3	Encoder Block (Black)	292155	1
4	Screw #6-32UNC	290612	5
5	Lock Washer #6	213528	5
6	Ground Stud (Green Wire)	290423	1
7	Nut #6-32UNC	202874	1
8	Rubber Washer	290171	1
9	Rubber Bushing	292197	1
10	Encoder Vane	292157	1
11	4-40 X ½ Screw	292165	2
12	Lift Lock Bracket	290146	1
13	Screw ¼-20UNC	213143	1
14	Lock Washer ¼"	213142	1
15	.38 ID X .063 THK Nylon Washer	292158	1
16	Drive Coupler	292156	1
17	Inductive Encoders (J1 Blue) (J3 Green)	292560	2
18	Flange Nut 3/8-16UNC	290394	1
19	Lift Tube (upgrade version)	292349	1
20	Finishing Plug (upgrade version)	292159	1
21	Lift Cover Gasket Kit (includes o-ring)	292463	1
22	Lift Cover (includes o-ring)	290432	1
23	O-Ring	290152	1
24	Washer ¼-20UNC	213141	2
25	Nut ¼-20UNC	213260	2
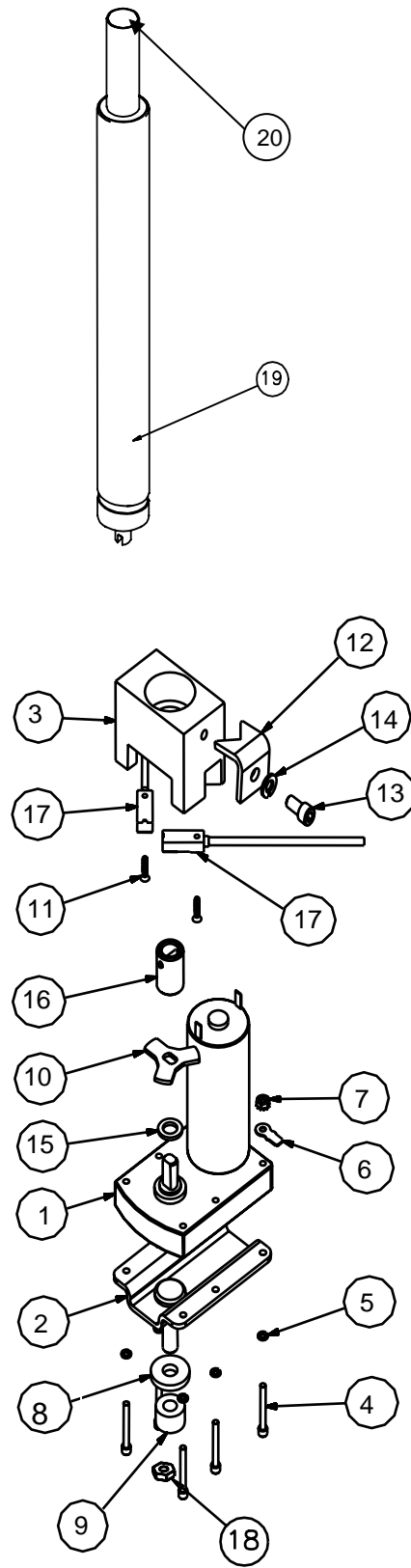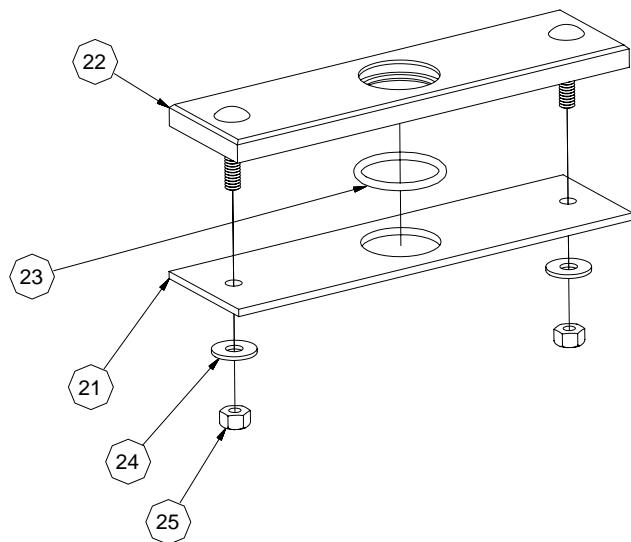
AFD-280E Dispenser

STOPGATE DRIVE ASSEMBLY
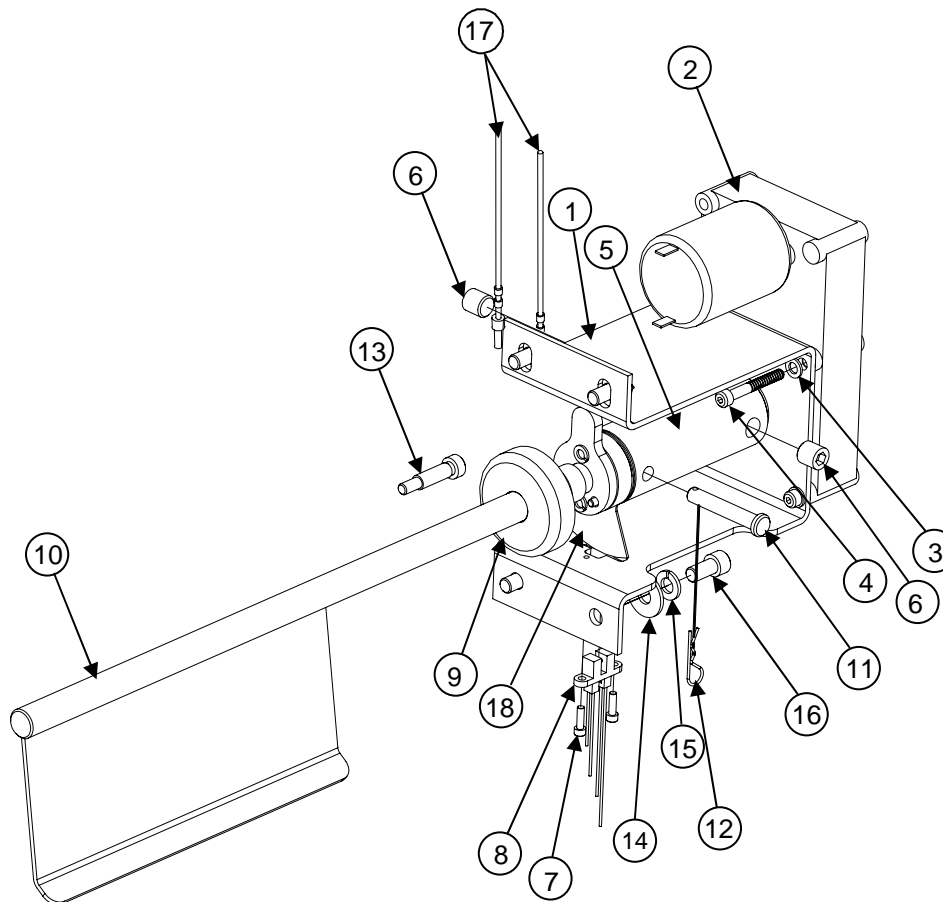
ITEM	QTY	PART NO.	DESCRIPTION
1	1	290126	Housing, Stopgate
2	1	290691	24VDC Gearmotor, Stopgate
3	4	213140	Washer, Lock #10
4	4	213136	Screw, Socket head, #10-32 X 1-1/4"
5	1	290379	Stopgate Tube Assembly
	1	290137	Encoder Vane only
6	2	290653	Set Screw, 3/8"-24 UNC
7	2	290372	Nylon Socket Head Cap Screw, #4-40 UNC X 1/4"
8	1	290690	Encoder (includes item #7)
9	1	203256	Stopgate Shaft Collar
10	1	290384	Stopgate Shaft
11	1	290127	Clevis Pin
12	1	202081	Hairpin Clip
13	1	203258	Hardstop, for units prior to serial #AFER0012C 01768, 1/4" Dia X 3/4" (attaches to backplane)
		291276	Hardstop, for units after and including serial #AFER0012C 01768,5/16" Dia X 3/4" (attaches to backplane)
14	4	213141	Washer, Flat, ¼"
15	4	213142	Washer, Lock, ¼"
16	4	213143	Screw, Socket head, ¼-20 x ½
17	1	290124	Harness, Distribution, 24VDC, 30"
18	1	290137	Vane, Stopgate

NOTE: Prior to serial # AAFER0002C00295,
Item 14 is inserted from opposite side of Link.
See page 3 for serial number explanation.
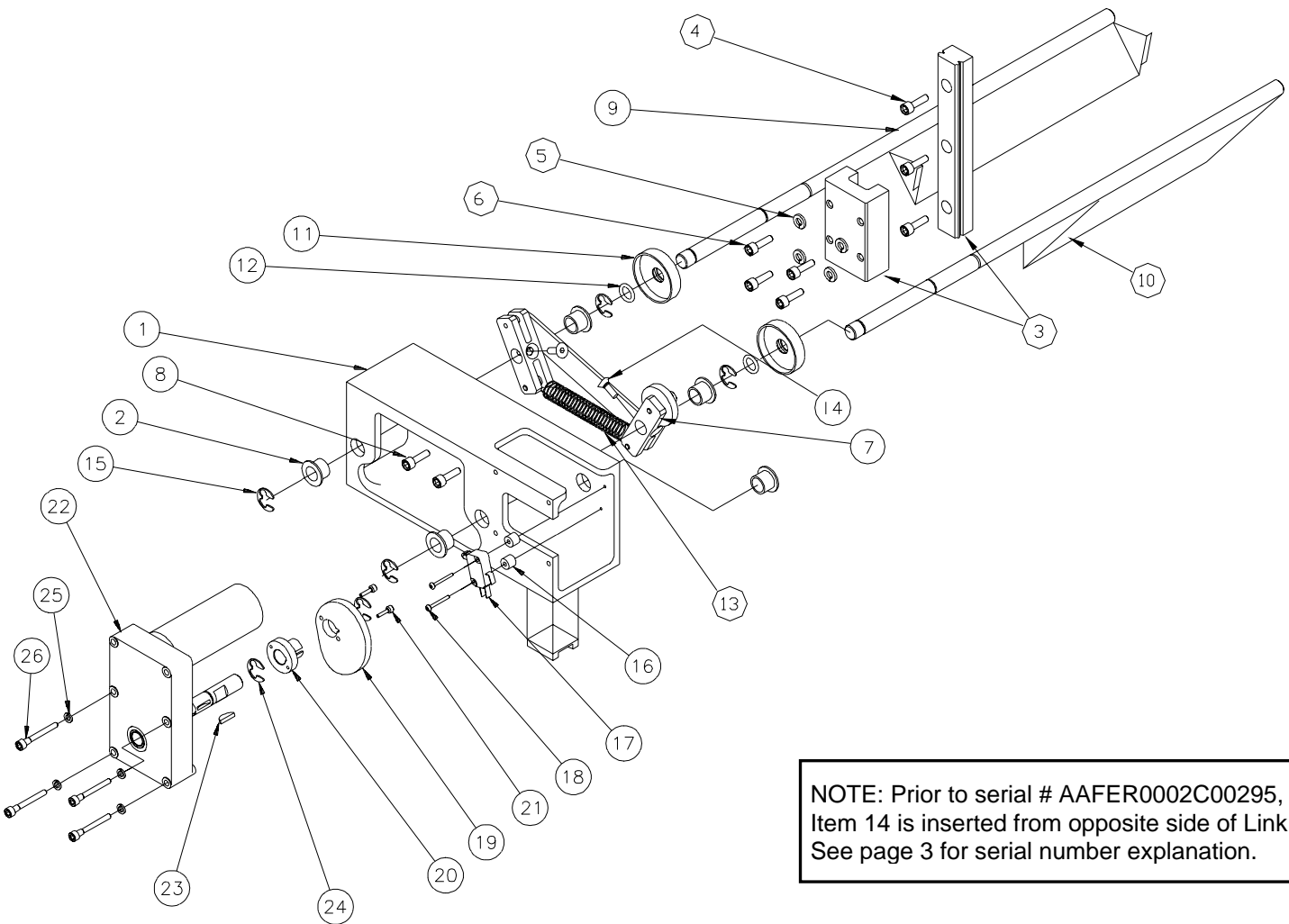
AFD-280E Dispenser

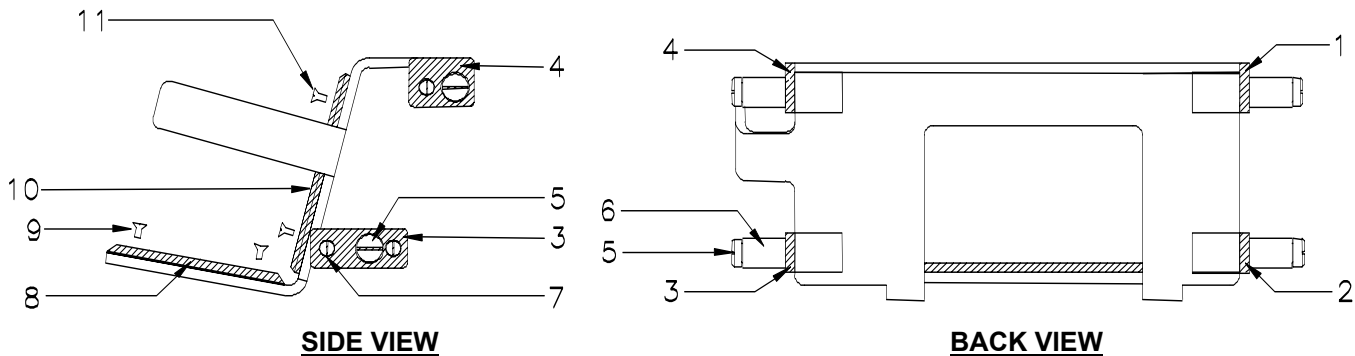| ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	203245	Extrusion, Accumulator Housing
2	5	202974	Bearing, Flange, 1/2 In. I.D. x 5/8 In. O.D.
3	1	202068	Assembly, Linear Bearing
4	3	202073	Screw, Socket Head Cap, 1/4-20 x 3/4:
5	4	213142	Washer, Lock,1/4"
6	4	203097	Screw, Socket Head Cap, M6 x 16mm
7	1	203374	Assembly, Linkage, Accumulator
	2	203219	Link, Accumulator Doors
	1	203220	Rod, Connecting
	1	203221	Wheel, Cam Follower
	4	203258	Screw, Shoulder, Socket Head Cap 1/4"x3/4"
	4	203259	Bearing, Plastic, 1/4"I.D. x 5/16" O.D. x 1/4"
	1	203260	Spring, Ext., .650" x 3.271
8	1	202073	Screw, Socket Head Cap, 1/4-20 UNC x 3/4 In., Zinc Plated
9	1	203253	Accumulator Door, Right
10	1	203254	Accumulator Door, Left
11	2	203256	Shaft Collar, 1/2 In. I.D.
12	2	203257	Gasket, O-Ring, 11/16 In. O.D. x 1/2 In. I.D. x 3/32 In. Thick
13	1	203260	Spring
14	2	213549	Screw, Flat head Cap, 1/4-20 UNC x 5/8 In., Zinc Plated
15	4	213356	Retaining Ring, E-Clip, 1/2 In.
16	2	203250	Stand-off, 3/8 O.D. x 0.140 I.D.x 5/16 long, Nylon
17	1	203249	Switch, Microswitch with roller
18	2	213500	Screw, Pan Head Machine, 4-40 UNC x 7/8 In., Phillips, Zinc Plated
19	1	203222	Cam, Accumulator
20	1	203248	Hub, Cam, Accumulator
21	2	213144	Screw, Socket Head Cap, 6-32 UNC x 1/2 In., Zinc Plated
22	1	290641	Motor, DC Drive, Accumulator Doors
23	1	203251	Key, Woodruff, #405
24	2	213356	Retaining Ring, E-Clip, 1/2 In.
25	4	213140	Washer, Lock, #10
26	4	213518	Screw, Socket Head Cap, 10-32 UNF x 1 1/2 In., Zinc Plated
Not Shown	1	290354	Wiring Harness, Accumulator Motor

DRUM MOTOR ASSEMBLY
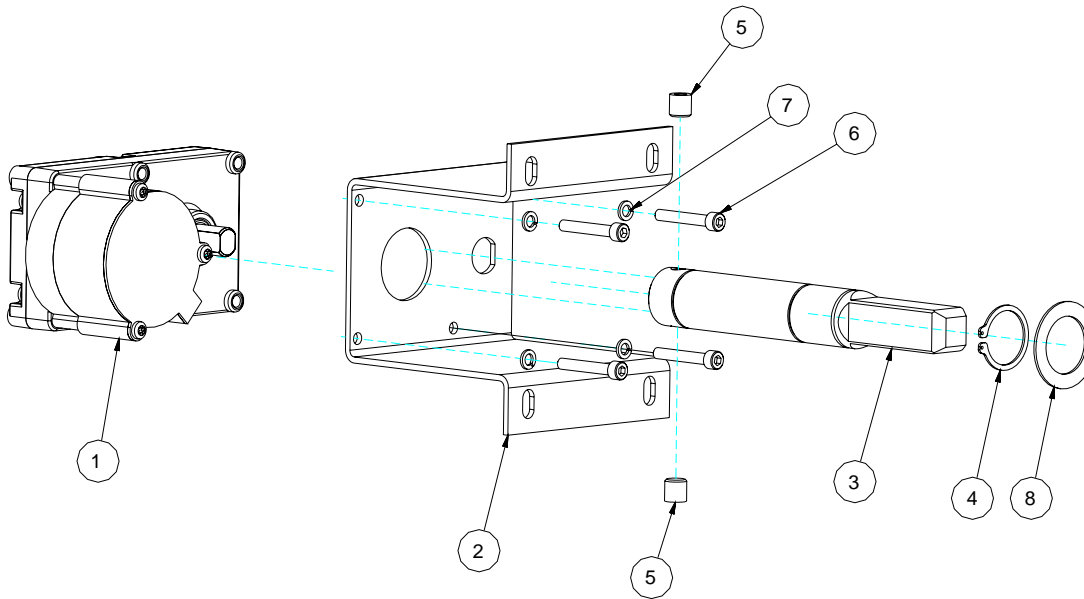
Not Shown, Item 9- Wiring Harness

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	292546	Kit, Gear Motor, 24VDC, Drum
2	1	202797	Mounting Bracket, Motor
3	1	203380	Drum Shaft
4	1	213911	Retaining Ring, External, Zinc Plated, 1"
5	2	290653	Set Screw, Socket Head, Cup Point, 3/8-24x3/8"
6	4	213136	Cap Screw, Socket Head, Zinc Plated, 10-32 x 1 ¼"
7	4	213140	Lock Washer, Zinc Plated, #10
8	1	202896	Flat Washer, Zinc Plated 1"x1½" x .047"
9	1	290124	Harness, Distribution, 24VDC, 30"

LIFT SADDLE ASSEMBLY

SIDE VIEW   **BACK VIEW**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	220468	Wear Strip, Upper Right
2	1	220469	Wear Strip, Lower Right
3	1	220469	Wear Strip, Lower Left
4	1	220467	Wear Strip, Upper Left
5	4	202064	Shoulder Screw
6	4	217810	Guide Roller
7	6	202046	Wear Strip Screws
8	2	202762	Saddle Skid
9	4	202047	Saddle Skid Screw
10	1	220473	Splash Shield
11	5	202047	Splash Shield Screw

AFD-280E Dispenser

NON-CONTACT WEIGHING SYSTEM ASSEMBLY (NCWS)
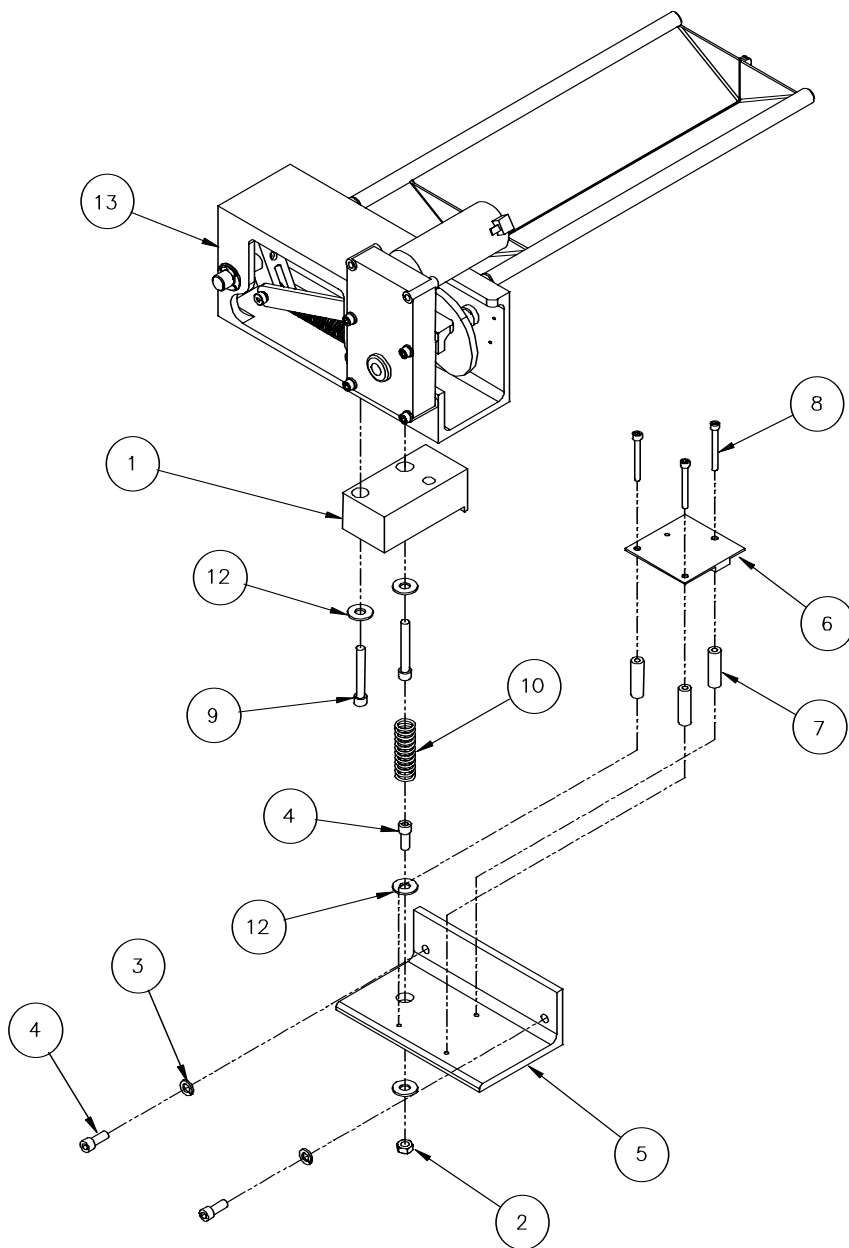
Not Shown, Item 11- NCWS Wiring Harness

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	290725	Magnet Mount Assembly
2	1	290086	Hex Nut, Nylon Insert, ¼-20
3	2	213142	Lock Washer, Zinc Plated, ¼"
4	3	213145	Cap Screw, Socket Head, Zinc Plated, ¼-20 x 5/8
5	1	290650	Bracket, NCWS, Board Mount
6	1	290519	Circuit Board, NCWS
7	3	290657	Spacer, Round, Unthreaded, Nylon, 3/8 x #8 x 1.25"
8	3	290658	Cap Screw, Socket Head, Zinc Plated, 8-32 x 1 ½
9	2	290659	Cap Screw, Socket Head, Zinc Plated, ¼-20 x 1 ¾
10	1	290656	Spring, NCWS
11	1	290655	Harness, NCWS
12	4	213141	Flat Washer, Zinc Plated, ¼"
13		Accumulator Assembly, see page 40 for details	