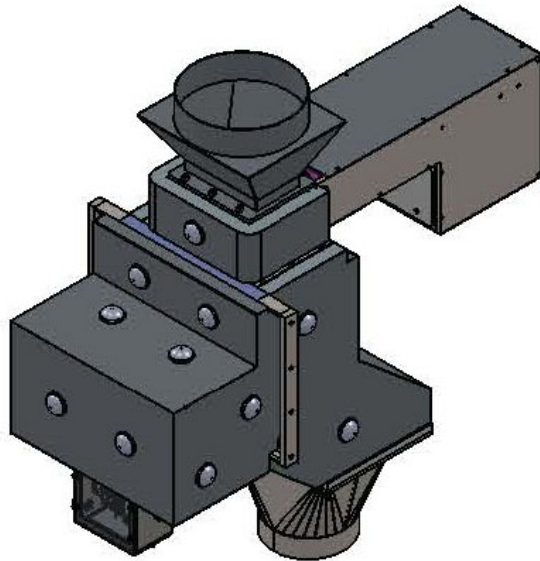




E A S T E R N I N S T R U M E N T S



CentriFeeder

***Integrated Control Valve
For Extreme Heat Environments
INSTALLATION & OPERATION MANUAL***



CentriFeeder®

REV 01/24

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E A S T E R N I N S T R U M E N T S

SAFETY

SAFE OPERATION

PLEASE READ BEFORE OPERATING THE CENTRIFEEDER

- Only authorized personnel should operate Eastern Instruments equipment. Untrained personnel present a hazard to themselves and the equipment and improper operation will void the warranty.
- Check for damaged parts before operating the feeder. Any damaged part should be properly repaired or replaced by trained personnel. Do not operate the feeder if any component does not appear to be functioning correctly. Contact Eastern Instruments for assistance or for repair components.
- Use the appropriate Personal Protection Equipment as required for operating the meter within its installation location.
- The various surfaces of the equipment may have sharp edges and have the potential to cause injury. Use the proper protection for your hands when servicing or maintaining your equipment.
- Because the CFH Feeder is designed specifically for installation in areas where temperatures can reach up to 500 C, proper protection should be worn when operating the meter at all times.
- The electrical panel (digital electronics) should be closed and the safety latch engaged at all times except during installation or service. At those times, only authorized personnel should have access to the electronics panel. When power is activated, AC voltage may be present throughout the panel. Therefore extreme caution is required.
- ♦ **DO NOT modify or alter this equipment in any way. If modifications are necessary, all such requests must be handled by Eastern Instruments. Any modification or alteration of any Eastern Instruments equipment could lead to personal injury and/or mechanical damage and will void the warranty.**

WARNINGS AND CAUTIONS

- Once power has been supplied to the equipment, it is always on and there is a potential that product may run through it at any time.
- Avoid entering or placing body parts within the equipment or its enclosure.
- Do not operate without proper training.
- Always wear proper PPE.
- NEVER service equipment while power is connected.

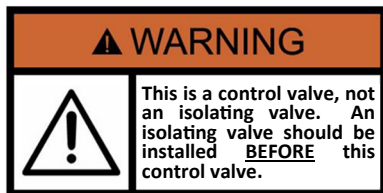
SAFETY PLACARDS

SOME OR ALL OF THESE WARNINGS MAY BE ON YOUR METER. BE AWARE OF THE POSSIBLE DANGERS PRESENT.



ELECTRICAL SERVICE

Electrical shock or electrocution is possible when servicing the electronics of any Eastern Instruments equipment. Be sure to disconnect power before conducting any repairs on the electronics.



PRODUCT FLOW

The Control Valve for the CentriFeeder is used only as a control valve and does not act as an isolation valve. A secondary isolation valve is recommended to be installed before the CentriFeeder's control valve in order to isolate the CentriFeeder from flow during maintenance or repairs.



PINCH POINTS

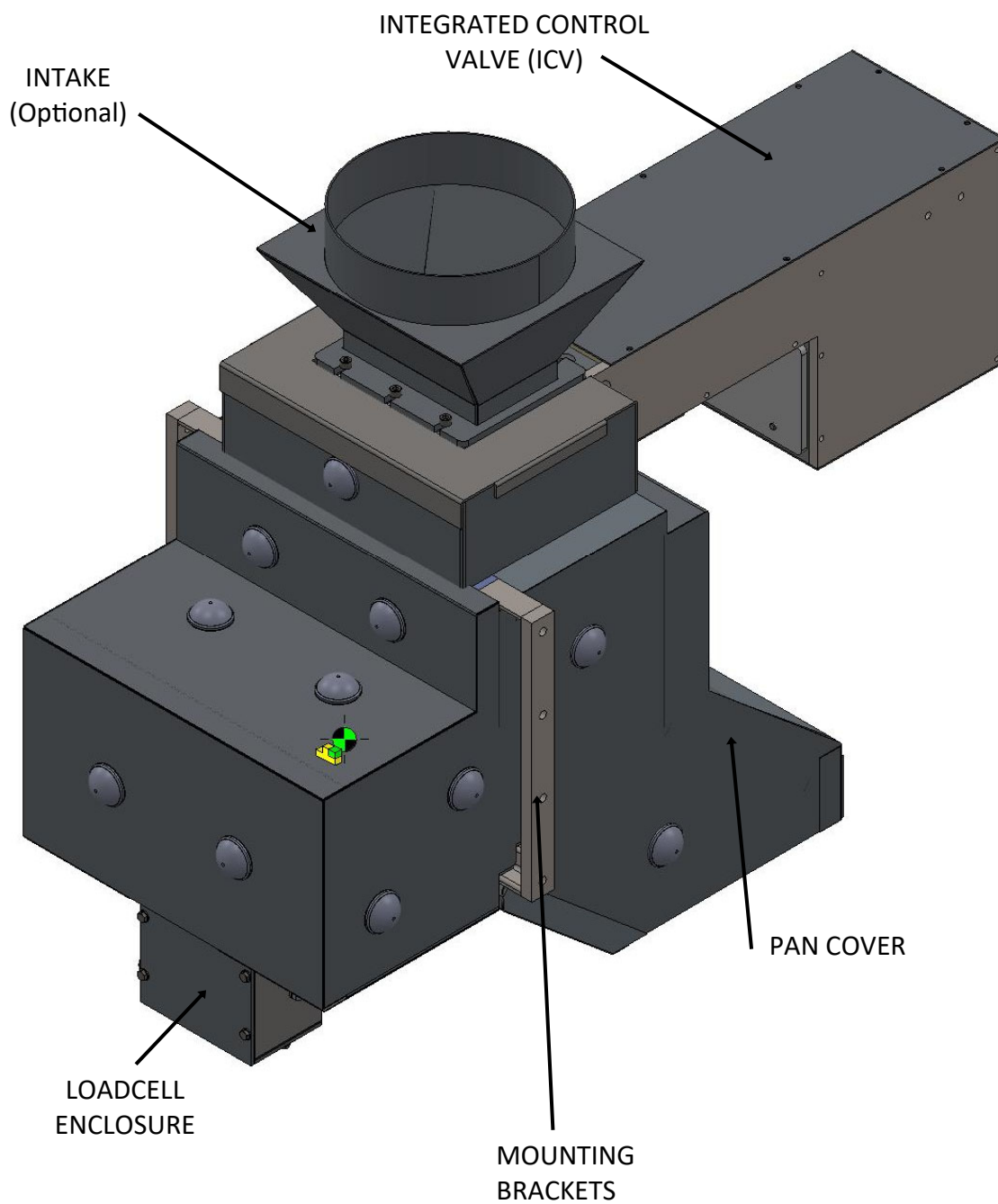
The control valve of the CentriFeeder can cause serious injury or amputation. Keep hands clear of the control valve at all times.



LIVE ELECTRICITY

Live electrical wires may be present. Please note that coming into contact with the live wires (AC Power) could cause electrical shock or electrocution.

Identifying Your Components: Feeder





E A S T E R N I N S T R U M E N T S

Identifying Your Components: Electronics

TEMPERATURE CONTROLLERS (OPTIONAL)



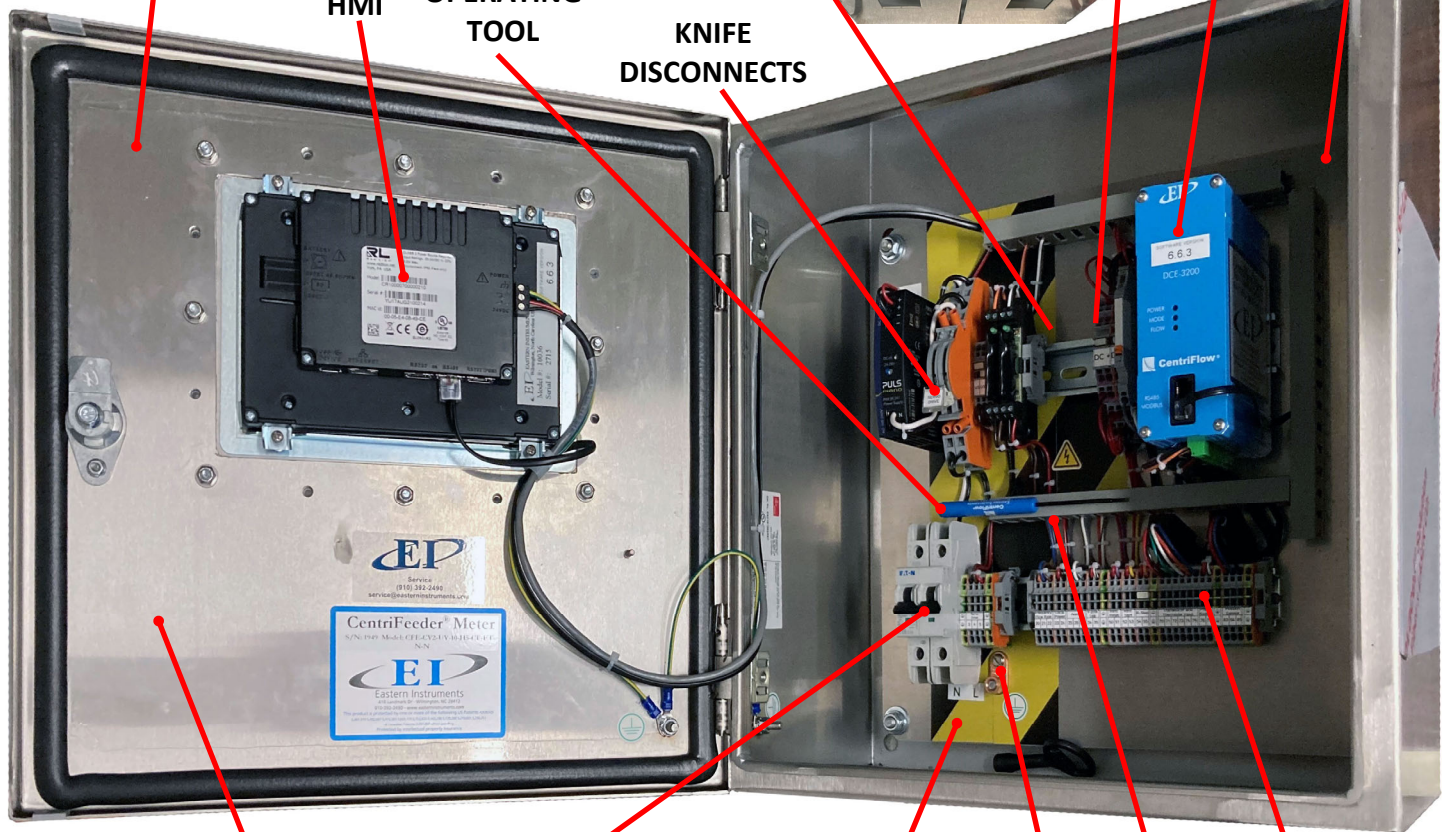
NEMA 4X SS ENCLOSURE
(OPTIONAL CS)

BACK PLANE

DCE

HMI
OPERATING
TOOL

KNIFE
DISCONNECTS



ENCLOSURE
DOOR

POWER CONNECTIONS
WITH CIRCUIT BREAKERS

AC ONLY
AREA

WIRE WAYS

GROUND
CONNECTION

CUSTOMER
CONNECTIONS

The Digital Electronics Enclosure contains the HMI, the Digital CentriFlow® Electronics (DCE), Power Supply, Alarm Relay, Power Connections with Knife Disconnects, and the Customer Connections.

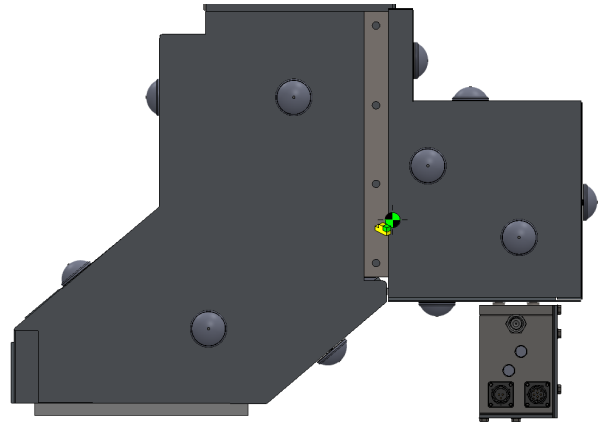
Configuration Drawing

The CentriFeeder CFH is a specially designed feeder that is built to operate in extreme conditions. The feeder will measure/control the flow of product that can reach temperatures of up to 500 C (932 F). The feeder is mainly composed of two components, a flow measurement portion and an Integrated Control Valve portion.

CentriFlow Meter

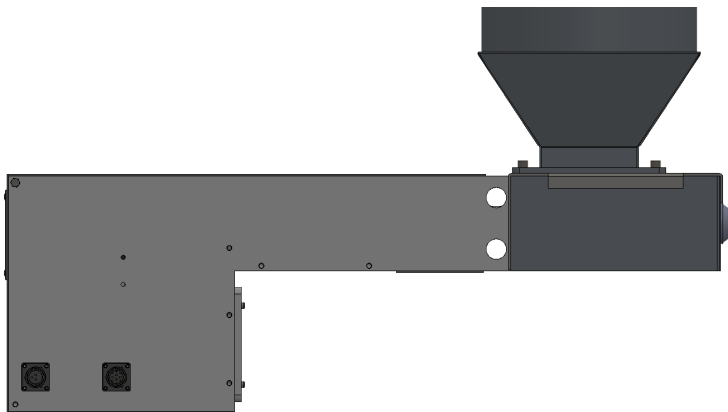
Measurement portion that contains the loadcell and the measurement pan.

Input Voltage 115 VAC
Input Current 5A
Input Frequency 60 Hz



Integrated Control Valve (ICV)

Input Voltage 115 VAC
Input Current 5A
Input Frequency 60 Hz



Wiring the CentriFeeder: Meter Portion With Amphenol Connectors

Integrated Control Valve - Meter Portion

If your meter was shipped with Amphenol connectors on the meter's Power and Electronics Cable, then continue with this section. These cables were shipped with the CentriFeeder and should be labeled accordingly. Please note that mis-wiring can lead to serious damage of the equipment.

Meter Power Cable:

The Meter Power Cable supplies power to the heater in the rear portion of the feeder where the loadcell is located (Loadcell Enclosure) and is landed in the Customer Connections section of the Digital Electronics provided with the feeder.

Meter Electronics Cable:

The Meter Electronics Cable transmits the loadcell signal from the loadcell to the electronics and is landed in the Customer Connections section of the Digital Electronics provided with the feeder.



**METER
POWER
CABLE**

**METER
ELECTRONICS
CABLE**

METER ELECTRONICS CABLE

Red Wire	-	#70 CUSTOMER CONNECTIONS
Black Wire	-	#71 CUSTOMER CONNECTIONS
Green/Black Wire	-	#72 CUSTOMER CONNECTIONS
White Wire	-	#73 CUSTOMER CONNECTIONS
Orange Wire	-	#74 CUSTOMER CONNECTIONS
Blue Wire	-	#75 CUSTOMER CONNECTIONS
Red/Black Wire	-	#90 CUSTOMER CONNECTIONS
White/Black Wire	-	#91 CUSTOMER CONNECTIONS
Green Wire	-	GROUND CONNECTION

METER POWER CABLE

White Wire	-	#8 CUSTOMER CONNECTIONS
Black Wire	-	#9 CUSTOMER CONNECTIONS
Green Wire	-	GROUND CONNECTION

Wiring the CentriFeeder: Valve Portion With Amphenol Connectors

Integrated Control Valve - Valve Portion

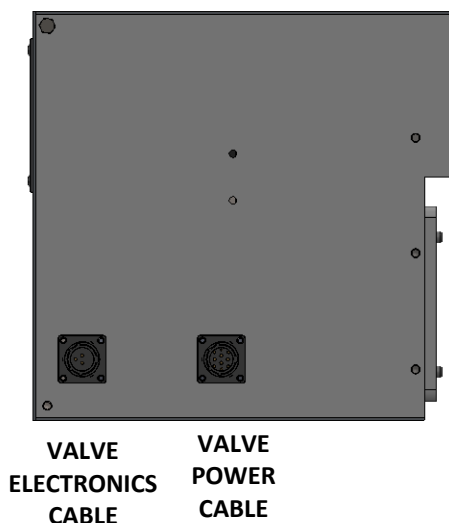
If your meter was shipped with Amphenol connectors on the valve's Power and Electronics Cable, then continue with this section. These cables were shipped with the CentriFeeder and should be labeled accordingly. Please note that mis-wiring can lead to serious damage of the equipment.

Valve Power Cable:

The Valve Power Cable supplies power to the valve's motor and cooling fans and is landed in the Customer Connections section of the Digital Electronics provided with the feeder.

Valve Electronics Cable:

The Valve Electronics Cable transmits the control signal from the electronics to the valve and is landed in the Customer Connections section of the Digital Electronics provided with the feeder.



VALVE ELECTRONICS CABLE

Red Wire	-	#83 CUSTOMER CONNECTIONS
Black Wire	-	#84 CUSTOMER CONNECTIONS
Green/Black Wire	-	#85 CUSTOMER CONNECTIONS
White Wire	-	#40 CUSTOMER CONNECTIONS
Orange Wire	-	#41 CUSTOMER CONNECTIONS
Blue Wire	-	#42 CUSTOMER CONNECTIONS
Red/Black Wire	-	#94 CUSTOMER CONNECTIONS
White/Black Wire	-	#95 CUSTOMER CONNECTIONS
Green Wire	-	GROUND CONNECTION

VALVE POWER CABLE

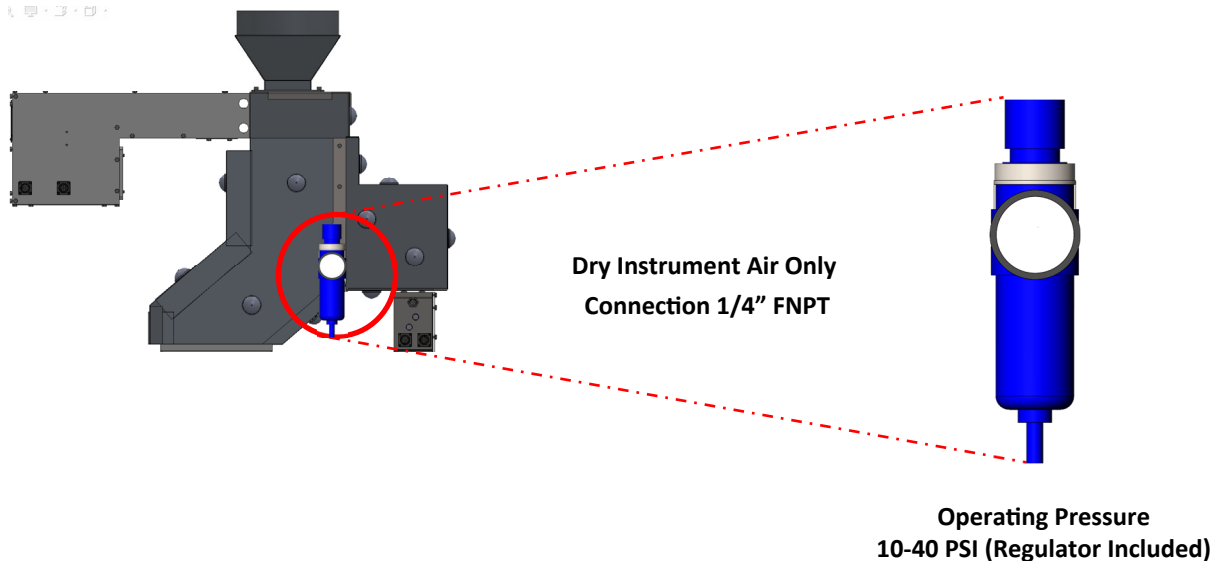
White Wire	-	#10 CUSTOMER CONNECTIONS
Black Wire	-	#11 CUSTOMER CONNECTIONS
Green Wire	-	GROUND CONNECTION



E A S T E R N I N S T R U M E N T S

Cooling Purge Air

Because your feeder is designed for use in extreme temperatures, it comes equipped with a purge system that ensures that the excessive temperatures do not reach the loadcell of the device. The cooling purge air needs to be dry instrument air only.



Please Note that the warranty will be void if operation over the temperature alarm set for more than 5 minutes is detected.

The Loadcell/enclosure Temperature Allowed (before alarm is triggered) is 75 deg C. The loadcell is controlled to 60 deg C (+/-5 deg C) by an integral cartridge heater. Additionally, compressed instrument air - introduced via the regulator above - is introduced in the space above the loadcell with a temperature limit of 50 deg C.

Note: If the loadcell does not control to 60 deg C (+/-5 deg C), the accuracy of the loadcell is reduced. The power needs to stay on the loadcell even when not in use. Low temperatures will affect the accuracy the most whereas high temperatures will damage loadcell measurement system. To lower the temperature, increase the amount of compressed air, via the regulator.

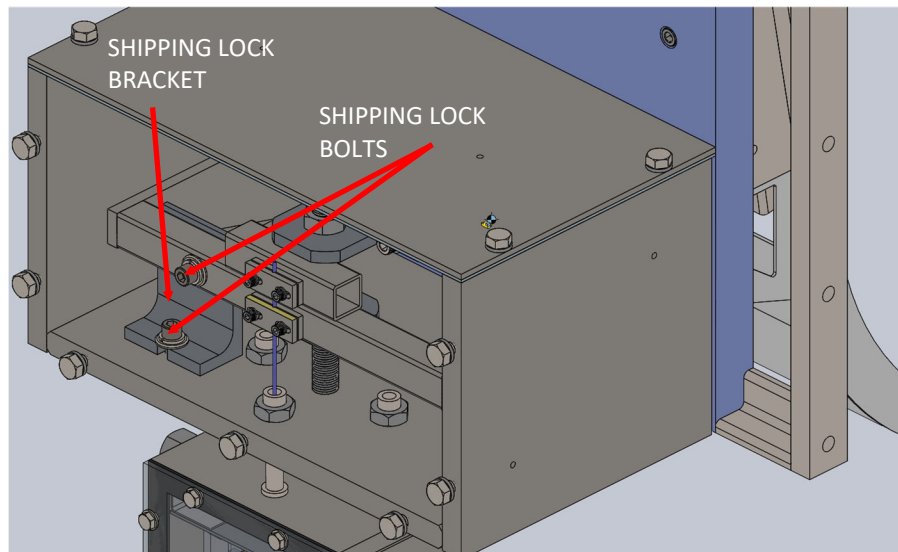
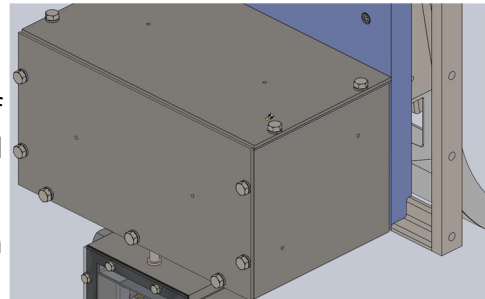
PROCEDURES

Shipping Locks

THE SHIPPING LOCKS ARE DESIGNED TO BE USED WHEN MOVING, TRANSPORTING OR WORKING ON THE ICV FEEDER. WHEN SHIPPED FROM THE FACTORY, THE FEEDER WILL BE EQUIPPED WITH SHIPPING LOCKS THAT NEED TO BE REMOVED PRIOR TO USE. IF WORKING ON THE FEEDER, THESE SHIPPING LOCKS WILL NEED TO BE REINSTALLED.

REMOVING THE SHIPPING LOCKS

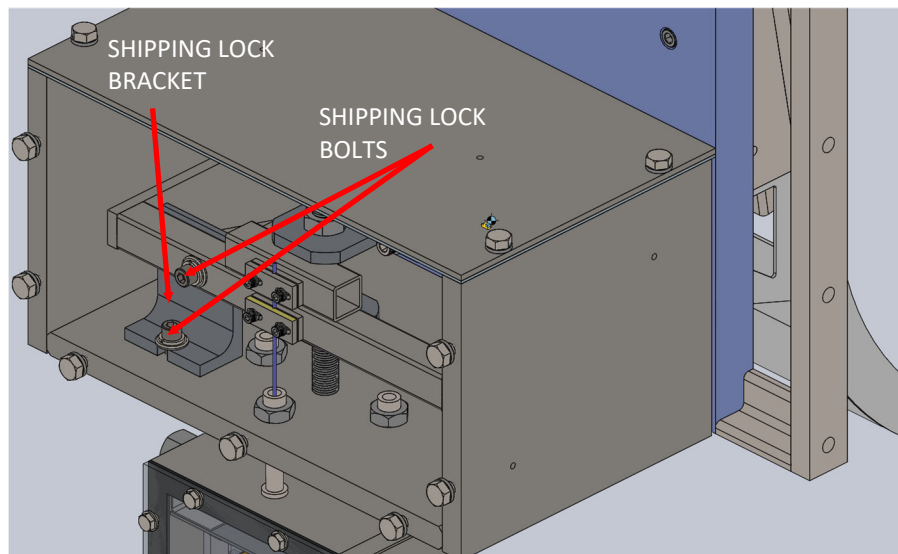
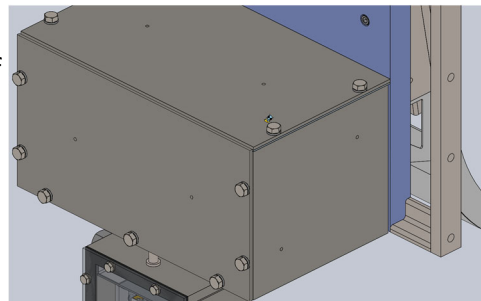
1. Remove the insulation from the Back Panel of the meter module, thus exposing the Back Panel (See Picture—right).
2. Remove the 7 bolts holding the Back Panel in place and remove the Back Panel.
3. Removing the Back Panel (picture below) will reveal the Shipping Lock.
4. Remove the two Shipping Lock Bolts using the appropriate Allen key.
5. Remove the Shipping Lock Bracket and place it somewhere safe so that it can be retrieved when needed.
6. Replace the Back Panel and Insulation accordingly.



THE SHIPPING LOCKS ARE DESIGNED TO BE USED WHEN MOVING, TRANSPORTING OR WORKING ON THE ICV FEEDER. WHEN SHIPPED FROM THE FACTORY, THE FEEDER WILL BE EQUIPPED WITH SHIPPING LOCKS THAT NEED TO BE REMOVED PRIOR TO USE. IF WORKING ON THE FEEDER, THESE SHIPPING LOCKS WILL NEED TO BE REINSTALLED.

REINSTALLING THE SHIPPING LOCKS

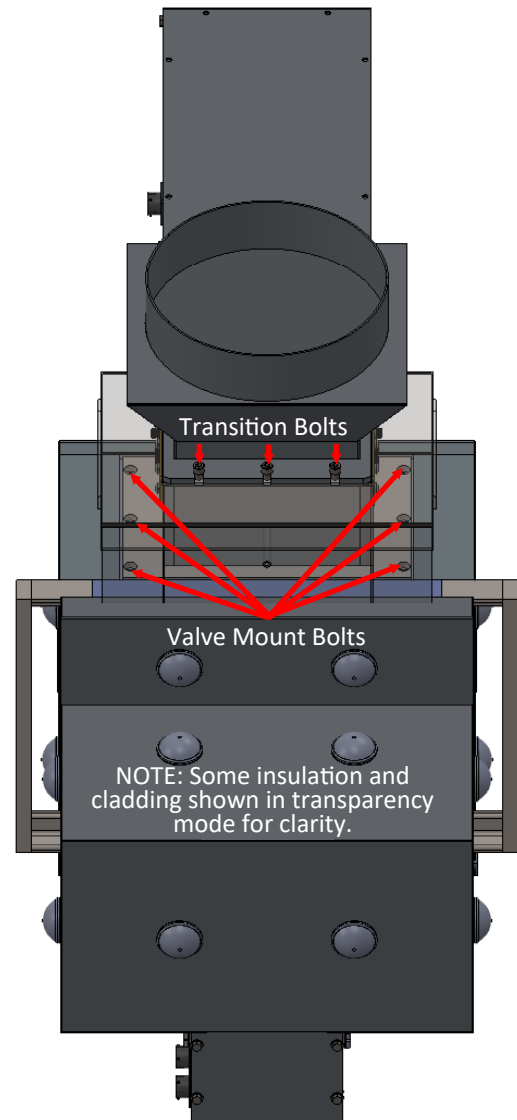
1. Remove the insulation from the Back Panel of the meter module, thus exposing the Back Panel (See Picture—right).
2. Remove the 7 bolts holding the Back Panel in place and remove the Back Panel.
3. Removing the Back Panel (picture below) will reveal the location for the Shipping Lock.
4. Place the Shipping Lock Bracket in its location as shown in the image below.
5. Reinstall the two Shipping Lock Bolts using the appropriate Allen key.
6. Replace the Back Panel and Insulation accordingly.



CentriFeeder ICV Replacement Procedure

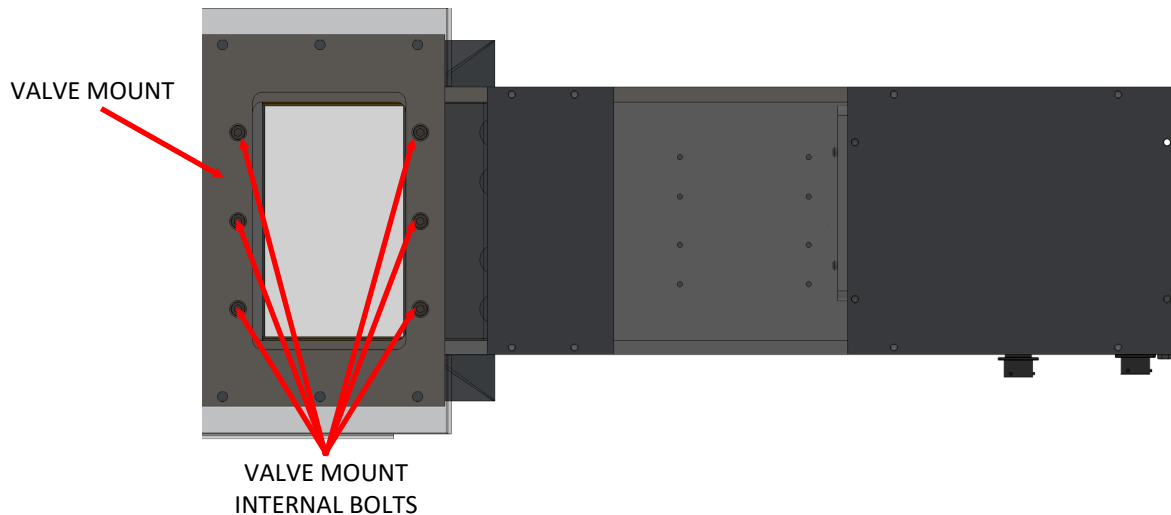
REMOVING THE ICV

1. Because the ICV is specifically designed for extreme heat, please be sure that the unit is given adequate time to cool down prior to initiating this procedure.
2. Ensure that power is disengaged from the valve by flipping the circuit breakers to the off position inside the electronics enclosure.
3. Ensure that the proper lock out tags are in place.
4. Disconnect all wiring leading from the feeder's electronics to the ICV including the Valve Power Cable and the Valve Electronics Cable.
5. Ensure that product flow is stopped using a device other than the integrated control valve.
6. Remove the CentriFeeder ICV from the process.
7. Remove the Transition. Loosen by removing the Transition Bolts.
8. Please note, before beginning step 9 that the valve is very heavy and should be supported prior to loosening the valve mount bolts.
9. Gently remove the old valve from the rest of the feeder by removing the 6 Valve Mount Bolts and pulling upward until it is free of the rest of the feeder.



Continued on next page...

8. The valve should now be removed completely from the rest of the CentriFeeder Assembly. The valve will have the Valve Mount (plate) still attached to it and this plate must be removed and connected to the new valve before installing it.
9. Looking at the bottom of the ICV Valve, remove the valve mount (plate) by removing the 6 valve mount internal bolts.



10. Now you can install the Valve Mount (plate) to the new valve and install it onto your CentriFeeder ICV by following the steps below.

** Please note the existing valve mount will be mounted to the new valve.*

REPLACING THE ICV

1. Using the new valve, install the Valve Mount (plate) using the Valve Mount Internal Bolts from the old valve.
2. With the valve mount secure on the new valve, place the new valve onto the CentriFeeder (meter portion) and line up the Valve Mount holes on the valve, with the holes on the meter portion of the CentriFeeder.
3. Re-install the Meter Mount Bolts to attach the new valve to the rest of the CentriFeeder.
4. Re-install the Transition using the Transition Bolts that were taken out in Step 6.
5. Re-install the feeder into your process.
6. Reconnect both the Valve Power Cable (black) and the Valve Electronics Cable (red).
7. Restore power to the CentriFeeder ICV by reengaging the breakers within the digital electronics enclosure.
8. Stroke the new valve using the "Stroking the Valve" section of this manual.



Static Cal. (Cal S) Procedure

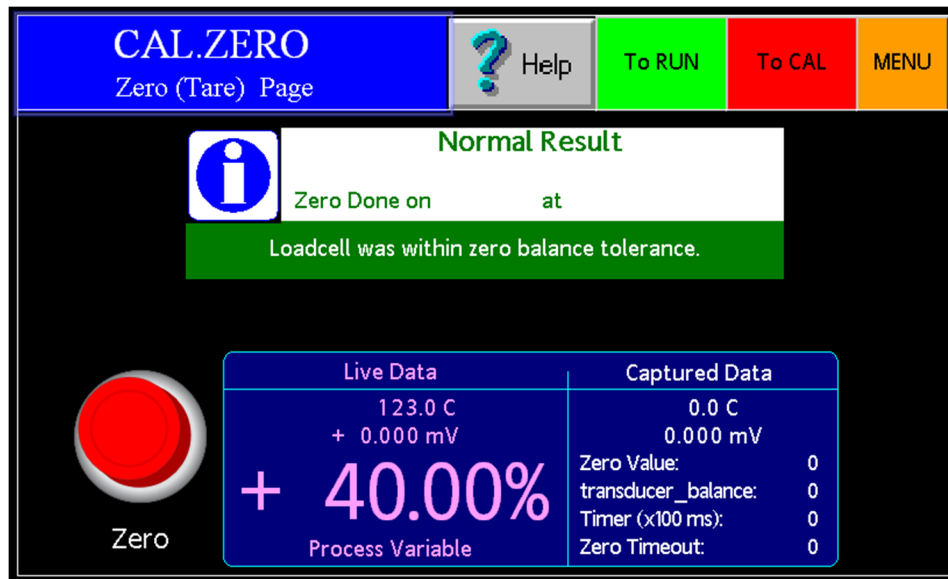
Static Calibration sets the Range of the Transducer in the CentriFeeder™ Meter. This allows the meter to be versatile in a way such that it can be ranged up, known as Extended Static Calibration, or it can be ranged down, known as Reduced Static Calibration. The Static Calibration is a Factory Setting and should not need to be changed while the meter is in service, unless the Transducer has been replaced. Setting or checking the Static Calibration consists of two steps – Zero and Static Calibration. Note that readings are measured using two different units - %PV and % Volts. The difference between the two scales is the Dynamic CAL multiplier. The nominal value is five (5), this value equates to multiplying by one.

Before beginning the calibrations, make sure that there is no product on the Pan or around the Pan Arms.

The procedure for setting or checking the Static Calibration is as follows:

Step 1: Click the CAL Button on the TOP Menu, then click the ZERO Button.

Step 2: You should now be on the CAL.ZERO page as seen below.

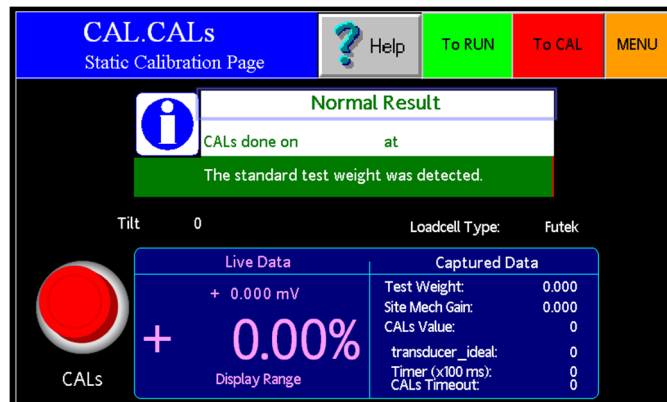


Step 3: Press the Zero Button. Verify that the number displayed in the Diagnostic Window is 0.0 % Process Variable.

Step 4: The Zero portion of Static Calibration is complete. Press the Red TO CAL Button on the upper right of the screen in order to return to the TOP.CAL page.

Step 5: Press the CALs Button. You should now be on the CAL.CALs page as seen on the next page.

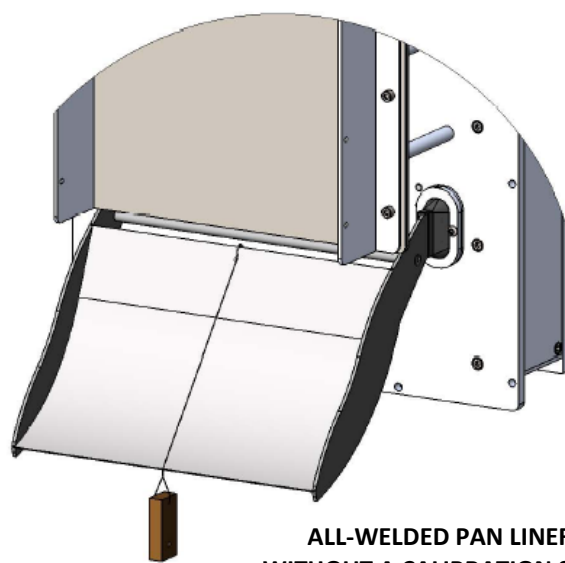
Step 6: Hang the Test Weight provided with the Electronics Enclosure from the Calibration Stud located under the bottom edge of the Pan as seen below. For Pans that have more than one Calibration Stud, there should be a Test Weight for each. Some optional pans may not have a Stud. In these cases the wire will be long enough to hook onto the top edge of the pan and be draped over the front end of the pan as shown below. Be sure that the Test Weight hangs freely from the Calibration Stud. It is also good practice to allow the Test Weight to become stable and movement free before proceeding.



Step 7: Press the CALs Button located on the lower left side of the screen. Note the % Volts reading displayed in the Diagnostic Window. Verify the reading is correct for the selected range. For example, 25% is the correct value for the Standard Range setting. Please see the table below for the correct % Volts reading for each range.

Range	Extended	Standard	Reduced	Minimum
% Volts	12.5%	25.0%	50.0%	100.0%

Step 8: Remove the Test Weight from the Calibration Stud. The voltage should return to 0.00% Volts.



**ALL-WELDED PAN LINER
WITHOUT A CALIBRATION STUD**

Site Calibration

When the CentriFeeder is sent from the Factory it is set with Default values for the Static Calibration and the Calibration Voltage, which were chosen for the particular material being measured with the meter. As described in the previous Section, the Static Calibration is an adjustment that ranges the Transducer, the Measurement Element of the feeder. This Setting will not change unless the Electronic Full Scale is changed.

The Calibration Voltage, however, is the adjustment that is made to Calibrate or Site Calibrate the Electronics to a particular application. Although the Factory setting may be quite accurate, it is likely due to differences in installation, feed systems, and material being measured that an adjustment will be made after the CentriFeeder is installed. This procedure is very simple and will require a means of capturing material that is run through the meter and weighing that material. Depending on the installation, the method of capturing the material to be weighed will be different. The most accurate method, however, is to capture product after it leaves the Pan Section of the feeder, or as close as your installation allows. The closer the capture point is to the end of the Pan Section of the meter, the less likely it is that there will be loss in the measurement sample and therefore an error in the Calibration of the Electronics. It is important not to come in contact with the Pan Section when capturing the measurement sample so that the Electronics does not give incorrect results from measuring the contact. Always remember to fully secure the door back to the enclosure before resuming normal flow through the feeder.

When performing the Site Calibration, it is recommended that a minimum of five samples be taken before making any Adjustments to the Electronics. Also, it is recommended that the sample run be a minimum of 10 seconds long. This will allow a reasonable amount of material to be run through the CentriFeeder, ensuring an accurate adjustment to the Calibration. The procedure is explained as follows:

- Step 1:** Make sure that the TOP.RUN page is accessed to begin the procedure. Press the Reset Button on the Lower Left to reset your count to zero before running product through the meter.
- Step 2:** Run product through the meter for a designated period of time, collecting the material in some manner after it has passed through the meter.



Step 3: After product has stopped flowing through the meter, go to the SET.FIELD page located under the SET option on the MAIN MENU. **HINT: Press the MENU soft key, then press SET, and finally FIELD DATA.**

SET.FIELD		Total	?		Help	To RUN	To SET
Field Data		0.000					
Run		CF Meter	Actual	A/M Ratio	% Error		
1	●	0.000	0.000	0.0000	+ 0.000		
2	●	0.000	0.000	0.0000	+ 0.000		
3	●	0.000	0.000	0.0000	+ 0.000		
4	●	0.000	0.000	0.0000	+ 0.000		
5	●	0.000	0.000	0.0000	+ 0.000		
Next Run		Enter Run	Clear Run	Previous Run	0.0000	Average	
					0.00000	Standard Deviation	
					NAN	% Standard Deviation	

- Step 4:** Click on the “ENTER RUN” Button and you should see the GREEN value (CF Meter) change from “0.000” to a number signifying the weight that the electronics calculates passed through the meter.
- Step 5:** Weigh the collected material on a static scale and record the weight in the YELLOW block (Actual) next to the value automatically entered in Step 4. Press the YELLOW box to bring up a numeric keypad. After entering the value, press the NEXT RUN Button to prepare for the next run. It is important that the container holding the material not be included in the weight. The only weight that is important is the material that actually went through the meter.
- Step 6:** Return to the TOP.RUN page and press the RED RESET Button on the bottom left.
- Step 7:** Repeat Steps 2-6 four more times to complete the five Field Data runs.
- Step 8:** Once all five runs are completed click on the RUN Number next to each set of data to select each data RUN. When selected, the circles next to the numbers will become green as seen in the picture above.

Step 9: Now return to the TOP.SET page by clicking on the TO SET shortcut key in the top right corner. Now press the FIELD CALd Button.

Step 10: You should now be on the SET.CALd page. The newly calculated Dynamic Calibration can be seen on the left side of the page, while the current Dynamic calibration can be seen on the right side of the screen. If you would like to change your current settings with the settings that you calculated, please move on to Step 11. If you would like to keep your current settings, please press the CANCEL Button.

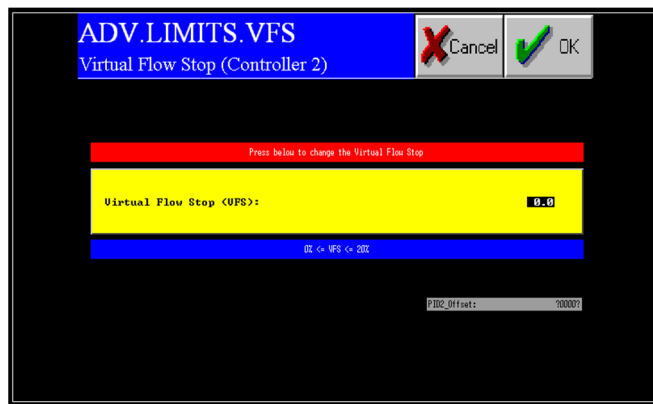
The screenshot shows the SET.CALd screen with the title 'SET.CALd' and subtitle 'Adjust CALd using field data'. At the top right are three buttons: a question mark icon for 'Help', a red 'X' icon for 'Cancel', and a green checkmark icon for 'OK'. Below these are two columns: 'Calculated Settings' and 'Current Settings'. The 'Calculated Settings' column shows 'Dynamic CAL = 0.0000' and a red warning message: 'Dynamic CAL must be: >= 4 and <= 10 Check Field Data!'. The 'Current Settings' column shows 'Dynamic CAL = 10.0000' and 'Adjusted 0 time(s)'. A red bar across the bottom of the columns says 'Press below to change current settings'. Below this is a large yellow button labeled 'Calculated ---> Current'.

Step 11: To accept the new Dynamic Calibration press the YELLOW CALCULATED to CURRENT Button and press the OK Button. A pop-up screen will appear, asking if you are sure you would like to accept this value. Press YES.

Setting the Virtual Flow Stop™

Virtual Flow Stop™ is a function of the CentriFeeder™ that allows you to manipulate the position of the blade of the Integrated Control Valve so that flow can be stopped without closing the Integrated Control Valve completely, thus not damaging the product and minimizing damage to the leading edge of the valve and the Tangential Back Plate as well.

To Set the Virtual Flow Stop™ press the ADV Button from the TOP (Main Menu) page. Press the Feeder Limits Button, and from this page press the Set VFS Button. You should now be on the ADV.PID2.OFFSET page as shown below. Press on the Virtual Flow Stop Button to open a numeric keypad and enter the percentage value you wish to set for your Virtual Flow Stop™.



The Virtual Flow Stop™ is typically set by increasing the Manual Valve until flow just begins to trickle from the valve, then set the Virtual Flow Stop™ to 66% of that value. This value is, of course, dependent on the particle size and characteristics of your product.

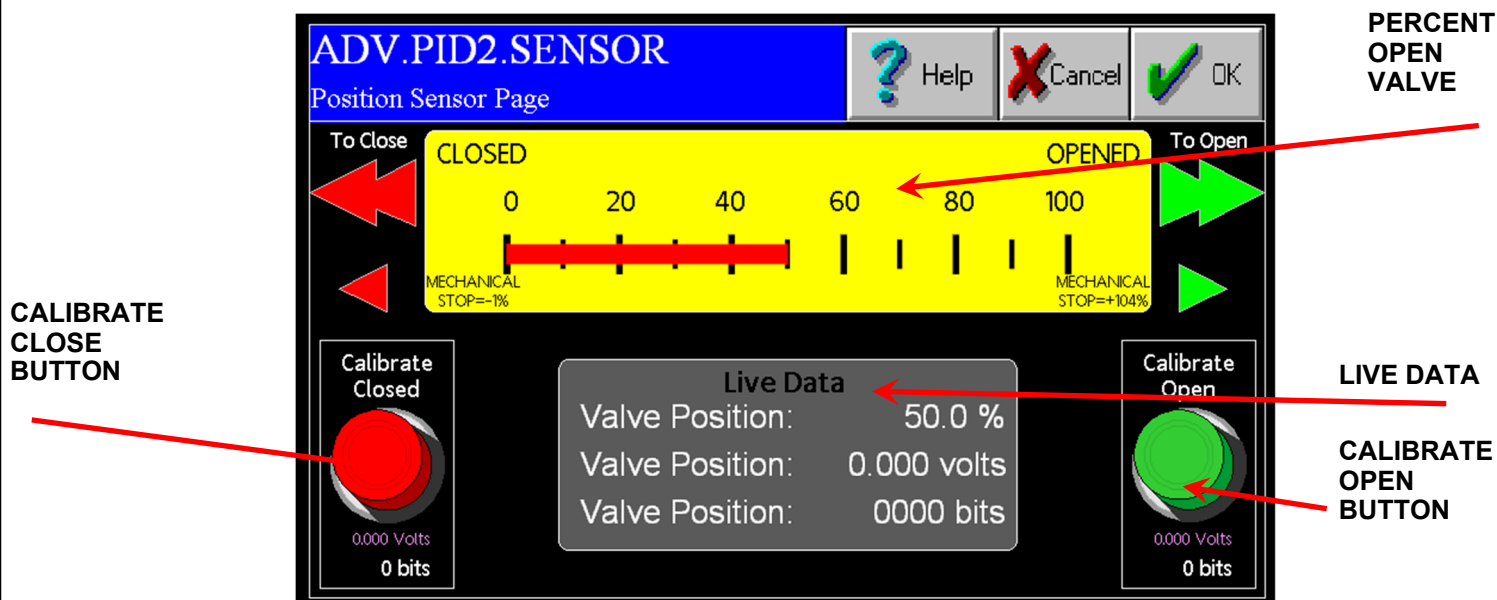
Please note that it is very important that the valve not stick or “crunch” upon closure. If this happens, increase the Virtual Flow Stop value to 85% of the “flow just starts value”. It is normal for the valve to “trickle” for a short period after a stop command as it establishes the Virtual Flow Stop condition.

Stroking the Valve

Stroking the Integrated Control Valve is a way of setting the position sensor output to correspond to the actual stroke or range of travel of the valve's blade. Stroking the valve may be required if the electronics package is replaced or the HMI is reprogrammed; however, new installations will typically include a properly stroked valve that will not need to be adjusted.

Please note that the operating stroke of the valve is 3.5". Mechanical Stops are the actual, mechanical endpoints (fully open and fully closed) of the valve's stroke. In order to properly stroke the valve, the electronic endpoints should be moved from these actual stops to 1% under the defined closed position and to 4% over the defined open position. This will prevent damage to the valve.

To stroke the valve, you must access the Position Sensor page. To access this page, press the ADV Button from the TOP (Main Menu) page. Then, press the PID #2 Tuning Button, and finally press the Position Sensor Button. You should now be on the ADV.PID2.SENSOR page seen below.



- Step 1:** Move the valve to the mechanical stops by depressing the Open or Close arrows. **DO NOT PRESS THE RED CALIBRATE CLOSE or GREEN CALIBRATE OPEN BUTTONS.** The large arrow makes a hard movement command and the small arrow produces a softer movement command. Use the small arrow for all movements towards the stops. Do not use the large arrow against the stops. It should only be used to bring the valve off the stops, if needed. The speed of travel is about the same for both arrows and takes less than a minute for a full stroke. The valve is at the end of its stroke when it quits moving as indicated in the Potentiometer value in the Diagnostic Window. Confirm the end of the stroke by moving off and then back on to the mechanical stop.

- Step 2:** Check your Percent Open values in the Diagnostic Window. The Percent Open values should read **+104% ($\pm 0.4\%$)** against the open stops and **-1% ($\pm 0.2\%$)** against the closed stops. The Maximum Live Value should be 2.0V, ± 0.25 V. The Minimum Live value should be 0.5V, ± 0.25 V.
- Step 3:** If the conditions described in Step 2 are met, then the valve is properly stroked and the valve position is correctly read into the system. If the conditions described are not met, continue to Step 4.
- Step 4:** Move the valve to the fully open position against the mechanical stops as described in Step 1 and press the Open Push Button. ***Please note that the Open Push Button and Open Arrows are not the same button!*** This will set the Percent Open Value to 100% in the Diagnostic Window.
- Step 5:** Close the valve to the fully close position against the mechanical stops as described in Step 1 and press the Closed Push Button. ***Please note that the Close Push Button and Close Arrows are not the same button!*** You have set your 0% and 100% values to the mechanical stops, so now you must set the Operating Stroke of the Valve.
- Step 6:** Since you are on the Close mechanical stop, move the valve off the mechanical stop by 1%. You are now at the defined Close Valve position. Again, press the Close Push Button. The Percent Open value should now be 0%. If you move the valve back to the mechanical closed stop, the value should read -1.0%.
- Step 7:** Now move the valve to the fully open position as described in Step 1. Ease it against the fully open mechanical stop. The Percent Open value should be 100%. Back the valve off the mechanical stop until the Percent Open value is 96%. You are now at the defined Full Open position. Press the Open Push Button. The Percent Open value should now be 100%. You may check by easing the valve back to the mechanical stop and confirming a reading of 104%. To verify that the stroking of the valve was successful, check your values against those specified in Step 2.

Helpful Hint:

If the valve becomes inadvertently stuck against the mechanical stops, it can be freed by removing the access cover and, with a large screwdriver, moving the large timing belt pulley in the direction required to free the valve. There is a direction arrow on the pulley indicating which direction causes the valve to open. If the valve is stuck in the open position, then the pulley should be turned in the closed direction. Do the opposite if stuck in the closed position. If you are unsure of the position, it may be determined by the Mechanical Position Indicator on the side of the valve.

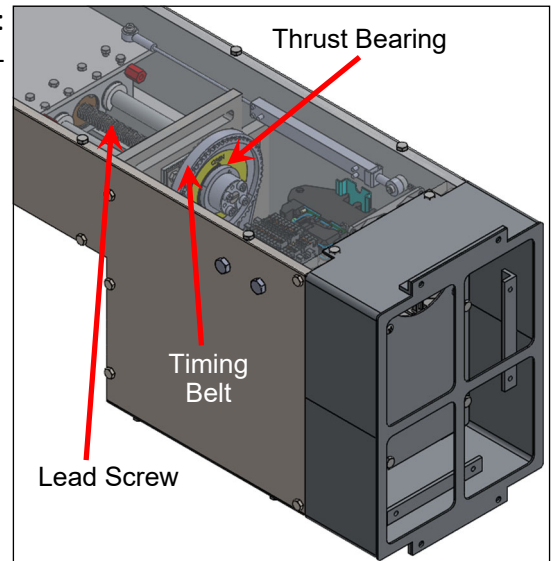
ICV Valve Inspection

The ICV Valve Inspection consists of three separate items: greasing the Lead Screw, changing the Timing Belt, and inspecting the Thrust Bearing.

Lead Screw: To ensure that the valve is able to quickly and accurately move from position to position in order to maintain an accurate and consistent flow as well as to prolong the life of the valve itself, the Lead Screw must be inspected to ensure that enough grease is present. Follow the below procedure in order to grease the Lead Screw.

Ensuring that the Valve is completely closed, remove the Valve Cover by first removing the screws on the front of the valve and on top of the

1. valve, then gently removing the two-piece Valve Cover.
2. Place a liberal amount of grease on the Lead Screw as indicated.



With the Valve Cover removed, you can also inspect the Thrust Bearing and the Timing Belt.

Timing Belt: The Timing Belt is the belt that runs between the Timing Pulleys on the front of the valve.

1. Inspect the Timing Belt to ensure that it has not become loose over time. If it has become loose, replace immediately.
2. Replace the Timing Belt by first placing the belt over the top Timing Pulley, then pulling the belt downward over the bottom Timing Pulley.

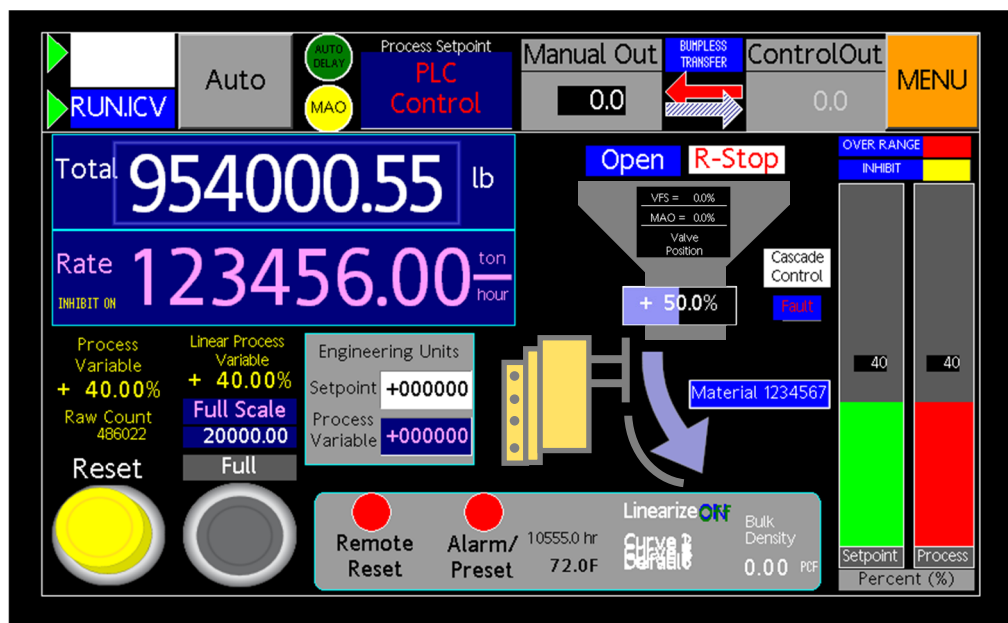
Thrust Bearing: The Thrust Bearings ensure the proper movement of the Lead Screw as the valve opens and closes.

1. Inspect the Thrust Bearings and ensure that there is no increase in the internal clearance or degradation of the tolerances. If any degradation is present, the valve must be sent back to Eastern Instruments for repair or an Eastern Instruments technician can visit to make the proper repairs/replacement. Please contact your EI representative immediately.

Start Up

Upon initial startup of the CentriFeeder, several procedures need to be performed in order to ensure proper functioning of the device. Once installation of the CentriFeeder is complete, please follow the below list of procedures to properly commission your CentriFeeder. Please note that the location of those procedures not specifically called out below can be found in the "Procedures" section of this manual.

1. Perform a Zero along with a Static Calibration (see CentriFeeder Manual). Static Calibration properly sets the Range of the Transducer within the CentriFeeder.
2. Perform a Dynamic Calibration or Site Calibration. The Site Calibration procedure ensures that the electronics is calibrated to the particular product that you are running.
3. Set the Virtual Flow Stop for your particular product. Setting the Virtual Flow Stop will allow product to stop flowing without closing the valve all the way, thus protecting the valve's blade as well as your product from damage.



Maintenance Schedule

The CentriFeeder is a rugged piece of equipment that is built to withstand a great deal of wear; however, some care should be taken to ensure that the CentriFeeder is always working at its optimal level of performance. Below are some recommended evaluations and Inspections that can be undertaken to ensure that the meter functions, and continues to function, with optimal performance well into the future.

Wear Surface Inspection: It is recommended that your wear surfaces be checked periodically to ensure that any coating or liner is functioning and does not show signs of wear. Of course the frequency of the wear surface inspection will vary due to product and environmental conditions; however, **we recommend an inspection every 4-5 years or 5000 hours of operation**, whichever comes first. Please note that action should be taken during the initial signs of wear as the Pan can be recoated. If wear continues unchecked, the Pan itself may wear and would thus need replacement.

Purge Air Inspection: Proper functioning of the purge air for the feeder is required for proper operation of the device. **The Purge Air should be Inspected prior to each use of the device.** Inspect the Regulator for leaks or damage. If pressure is not holding, replace the Regulator immediately.

ICV Air Filter Replacement: Inspect the Air Filter regularly and replace every three months or as needed. To access the filter, remove the four screws securing the filter housing in place. Once the filter has been replaced, replace the four screws.

