LEADER SMART DRAW-OFF

Leader Evaporator Co., Inc.

49 Jonergin Drive

Swanton, Vermont 05488

(802) 868-5444

www.leaderevaporator.com

Contents

INTRODUCTION

The Leader Smart Draw-off is designed to add efficiency to syrup production through the addition of automation. The Leader Smart Draw-off monitors the temperature of the boiling liquid in the final (draw-off) compartment of the syrup pan. When the liquid reaches the temperature for drawing off as syrup, the valve of the Smart Draw-off starts to open. As the temperature increases the valve opens more allowing more liquid to leave the syrup pan. As the liquid temperature cools the valve will start to close. This opening and closing is termed "modulating". The operation of this valve offers two advantages; less labor is required to monitor and perform draw-off and the syrup pan liquid temperature is held to a tighter temperature control.

EQUIPMENT DESCRIPTION

The Leader Smart Draw-off consists of the following parts;

Control Box

Modulating Valve

Modulating Valve for ¾" and 1" (ball valves)

Modulating Valve for 1-½" and 2" (butterfly valves)

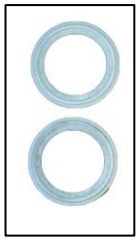
Temperature Probe

Nozzle

Nozzle for; ¾” and 1”

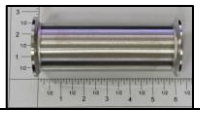
Nozzle for 1 -½” and 2”

Heavy Duty Clamps – 2 supplied with 1-½” and 2” models



Teflon Gaskets – one supplied with each heavy duty clamp

OPTIONAL SETUP AND OPERATING EQUIPMENT

ITEM	LEADER ORDER #	DESCRIPTION/PHOTO		ITEM	LEADER ORDER #	DESCRIPTION/PHOTO
Extension Cables 25’/ Set	610032			Smart Draw Compression Fitting	61140	
Adapter ¾” M to 1½” C	610004			Adapter 1” M to 1½” C	610005	
Extension 2” C to 2” C X 6”	610014			Adapter 1” M to 2” C	610008	
Probe Holder (welded pans)	61108			Probe Holder (soldered pans)	61108S	

Nylon Cable Connector ½" Hub	610034			Expandable Flexible Grommet	610033	
Hydrometer	61040			Test Cup	59007	
Refractometer	61076			¾" Stainless Steel Close Nipple	72106	
1" Stainless Steel Close Nipple	72111			¾" Stainless Steel Ball Valve	60104	
1" Stainless Steel Ball Valve	60106			2" Stainless Steel Butterfly Valve	60116	

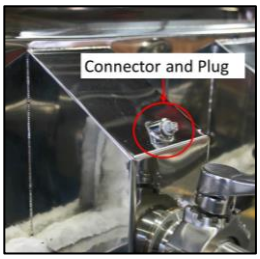
SETUP OF THE LEADER SMART DRAW-OFF

Note: The following steps describe how to setup the Smart Draw-off. For instructions on making the product, refer to the instructions provided with the evaporator or pan set in use.

The Smart Draw-off will be installed to measure the temperature in the draw-off compartment of the syrup pan.

Temperature Probe Installation:

For Syrup Pans with Closed Draw-off boxes Or Syrup Pan Thermometer Ports

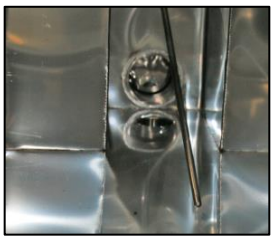


1. Locate the ¼" plug in the connector on the top incline of the draw-off box of the syrup pan which is open to the syrup (draw-off) compartment.
2. Remove the ¼" plug from the connector.

3. Unscrew the parts of the connector on the rod of the temperature probe to separate them.

4. Thread the bottom of the fitting on the thermometer probe into the coupler on the top of the draw-off box. Tighten the fitting. Use caution in tightening to prevent damage to the threads of the fitting.

5. Slide the top of the fitting down on the thermometer probe and loosely tighten onto the bottom part of the fitting. Use caution to prevent damage to the threads as joining the two parts will be difficult due to the rubber bushing.



6. Position the bottom of the probe approximately ¼" from the bottom of the surface pan and tighten the top of the fitting to secure the temperature probe in place.

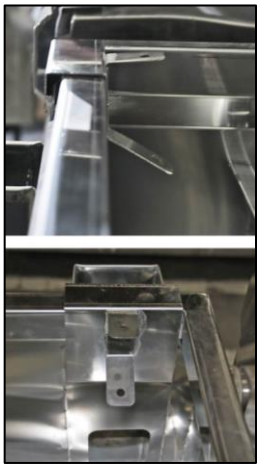
7. Continue to the next step – Installing the draw-off valve.

For Syrup Pans with Open Topped Draw-off Boxes

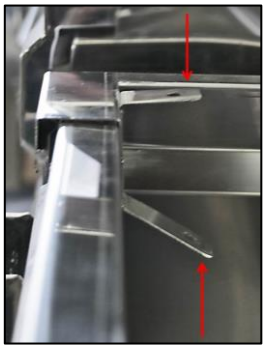
The following represent possible recommended temperature probe mounting with no syrup pan hood or a suspended syrup pan hood and with a syrup pan hood directly on the syrup pan

No Syrup Pan Hood or with Suspended Syrup Pan Hood

1. Obtain a probe holder specific for your pan set (for a welded syrup pan Leader Order #: 61108, for a soldered syrup pan Leader Order #: 61108S).



2. Mount the probe holder onto the top lip of the syrup pan. The holes in the probe holder should line up approximately with the center of the draw-off box.



3. Slide the temperature probe into the probe holder. It will be necessary to squeeze the holder arms toward one another in order to line up the holes.

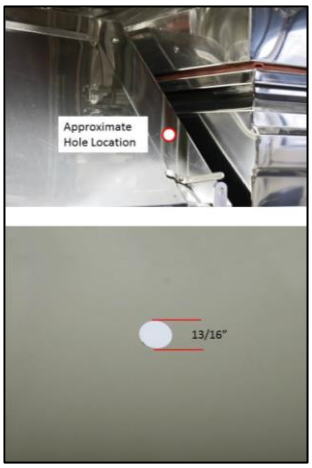
4. Position the probe so the tip is approximately ¼" from the bottom surface of the syrup pan. Squeeze the holder arms to allow movement of the probe.

5. Continue to the next step – Installing the draw-off valve.

With Syrup Pan Hood Directly on the Syrup Pan

In order to maintain control of the steam and condensate it is recommended either a cable connector or an expandable grommet be installed in the hood.

Installation of a Cable Connector



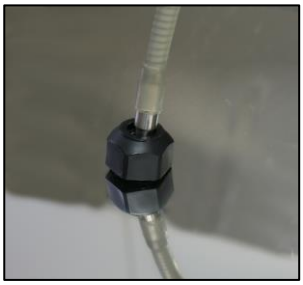
1. It will be necessary to make a 13/16” hole approximately in line with the center of the draw-off box which may be in the front or the rear of the syrup pan. It is not required it be directly in line as it must be positioned so as not to interfere with operation of any installed doors or latches.

2. Separate the cable connector into the two parts by unscrewing and removing the securing nut.

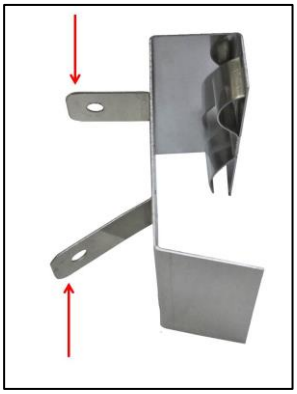
3. From inside the hood, slide the clamping end of the threaded part of the connector into the 13/16” hole.

4. Loosely screw the nut part of the connector onto the exposed end of the connector.

5. Separate the parts of the ¼” connector on the temperature probe and remove them by sliding off the end of the probe.

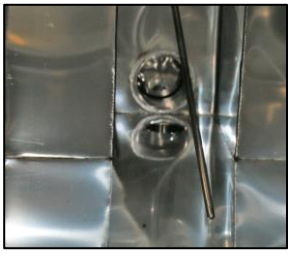


6. From outside of the hood slide the temperature probe through the cable connector.



7. Slide the temperature probe into the probe holder. It will be necessary to squeeze the holder arms toward one another in order to line up the holes.

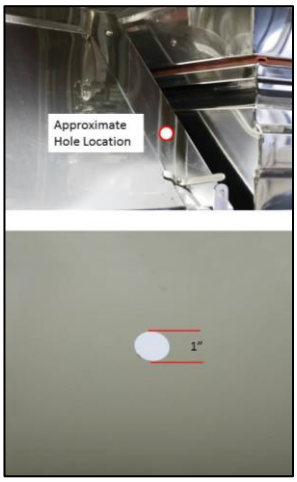
8. The assembly of the temperature probe and probe holder can be hooked over the interior lip of the hood so the temperature probe will be lined up approximately with the center of the draw-off box.



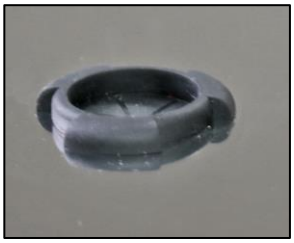
9. Position the probe so the tip is approximately ¼" from the bottom surface of the syrup pan. Squeeze the holder arms to allow movement of the probe.

10. Slide the temperature probe wire through the connector until the temperature probe and holder is properly seated in the syrup hood channel and there is no slack wire inside the hood. Tighten the nut of the cable connector to secure the temperature probe wire.
11. Continue to the next step – Installing the draw-off valve.

Installation of an Expandable Grommet

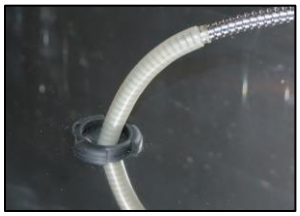


1. It will be necessary to make a 1” hole approximately in line with the center of the draw-off box which may be in the front or the rear of the syrup pan. It is not required it be directly in line as it must be positioned so as not to interfere with operation of any installed doors or latches.

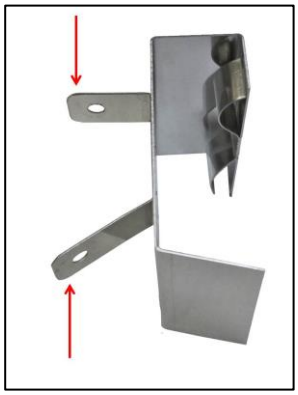


2. Insert the expandable grommet into the 1” hole.

3. Separate the parts of the ¼” connector on the temperature probe and remove them by sliding off the end of the probe.

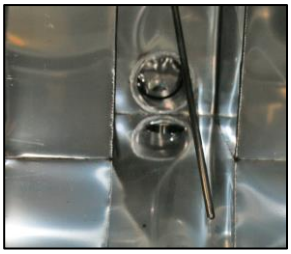


4. Slide the temperature probe through the expandable grommet.



5. Slide the temperature probe into the probe holder. It will be necessary to squeeze the holder arms toward one another in order to line up the holes.

6. The assembly of the temperature probe and probe holder can be hooked over the interior lip of the hood so the temperature probe will be lined up approximately with the center of the draw-off box.



7. Position the probe so the tip is approximately ¼" from the bottom surface of the syrup pan. Squeeze the holder arms to allow movement of the probe.

8. Slide the temperature probe wire through the grommet until the temperature probe and holder is properly seated in the syrup hood channel and there is no slack wire inside the hood.
9. Continue to the next step – Installing the draw-off valve.

Installing the Draw-Off Valve

Installing the draw-off valve – Installation of the draw-off valve will be dependent on the syrup pan connections and the smart draw-off to be used. Connections are as follows:

- A ¾" or 1" Smart Draw-Off with ball valve being connected to a threaded syrup pan connection
- An 1-½" Smart Draw-Off with butterfly valve being connected to a ¾", 1" 1-¼" or 1-½ threaded syrup pan connection
- A 1-½" or 2" Smart Draw-Off connected to a syrup pan with clampable fittings.
- A 2" Smart Draw-Off connected to a reversible cross flow syrup pan

Connecting a ¾" or 1" Smart Draw-off with Ball Valve to a Threaded Syrup Pan Connection

NOTE: In order to allow for easy movement of the Smart Draw-off to either draw-off box on the syrup pan, it is recommended each draw-off connection be set up as follows.

1. Wrap Teflon tape around the threaded connection on the syrup pan.

2. Obtain the correct size stainless steel ball valve to match the syrup pan threaded connection.

3. Obtain the correct adapter to match the size of the stainless steel ball valve ex. if using a 1” ball valve use a 1” to 1-½” adapter. Teflon tape the threads of the adapter.

4. Thread the adapter onto the stainless steel ball valve and tighten.

5. Thread the open end of the stainless steel ball valve onto the threaded connection on the syrup pan. Tighten to a position where the ball valve can work freely.

6. Teflon tape the threads of a second adapter. The thread size of the adapter should match the smart draw-off valve. Thread the adapter into the smart draw-off valve and tighten.

7. Connect the clampable end of the adapter on the ball valve to the clampable end of the adapter on the smart draw-off valve assembly. The motor box should be located on top.

8. Teflon tape the thread of the supplied nozzle and thread the nozzle into the open side of the smart draw-off valve.

Connecting a Smart Draw-off with Butterfly Valve to a Threaded Syrup Pan Connection

Adapters are required to connect the valves. Adapters are available to connect 1 – ½" smart draw-offs to ¾", 1", 1 – ¼" and 1 – ½" threaded fittings. Adapters are available to connect 2" smart draw-offs to 1", 1 – ¼", 1 – ½" and 2" fittings. The procedure below is applicable to all of this type connection if the appropriate adapters are used.

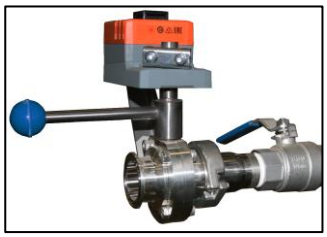
1. Teflon tape the threads of the draw-off fitting of the syrup pan.

2. Obtain a ball valve the same size as the draw-off fitting on the syrup pan.

3. Obtain the adapter required to go from the inside thread of the ball valve to the smart draw-off butterfly flange ex. if the ball valve is 1" and the smart draw-off is 1 – ½" then an adapter from 1" to 1 – ½" would be required (Leader Order Number 610005).

4. Tape the threads of the adapter and screw and tighten the adapter into the outlet end of the ball valve.

5. Thread the ball valve onto the syrup pan draw-off fitting and tighten to a position where the ball valve can work freely.



6. Using heavy duty clamp and Teflon gasket (supplied), connect the flange on the incoming side of the smart draw-off to the flange on the ball valve. Ensure the motor for the valve is on the top.

7. Using a heavy duty clamp and Teflon gasket (supplied), connect the nozzle to the outgoing side of the smart draw-off valve.

Connecting a Smart Draw-off with Butterfly Valve to a Flanged Syrup Pan Connection (Pans Under 5' Wide)

1. Obtain the adapter required to go from the inside thread of the ball valve to the flange on the draw-off box of the syrup pan..

2. Tape the threads of the adapter and screw and tighten the adapter into the outlet end of the ball valve. Note the orientation of the ball valve for mounting.

3. Obtain the correct sized adapter to go from the open end of the ball valve to flange of the auto draw-off gate valve.

4. Tape the threads of the adapter and tighten the adapter into the ball valve.

5. Using a heavy duty clamp and Teflon gasket, mount the ball valve assembly to the syrup pan draw-off box. Ensure the valve is mounted to allow freedom of movement of the handle.

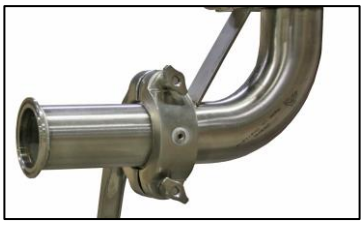
6. Using a heavy duty clamp and Teflon gasket (both supplied), connect the flange of the incoming side of the auto draw-off control to the flange of the ball valve assembly. The motor assembly should be vertically upright.

7. Using a heavy duty clamp and Teflon gasket (both supplied), connect the flange on the outgoing side of the motor control assembly.

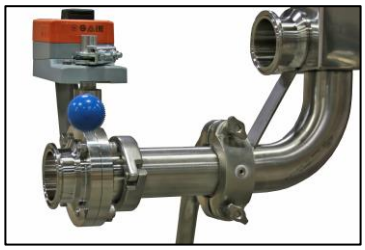
Connecting a Smart Draw-off with Butterfly Valve to a Flanged Syrup Pan Connection (Reversible Cross Flow Pans Over 5' Wide)

Note: Please reference Attachment #1 on the Installation of Butterfly Valves.

1. In order to connect the Smart Draw-off to a reversible cross flow syrup pan five wide or wider it will be necessary to obtain a 2" clampable X 2" clampable X 6" long extension (Leader order #: 610014) and a 2" stainless steel butterfly valve (Leader order #: 60116).



2. Attach the clampable extension to the flange fitting of the draw-off box using the 2" stainless steel butterfly valve. The butterfly valve handle should be positioned on the side which will be the accessible for operation.



3. Using a supplied 2" stainless steel heavy duty clamp, connect the Smart Draw Off motor assembly to the flange of the extension. The motor assembly should be mounted vertically with the motor on the top.

4. Using a supplied 2" stainless steel heavy duty clamp, connect the nozzle to the end of the Smart Draw Off motor assembly.

Mounting the Control Box

There are two options for mounting the control box; on the syrup pan or locate remotely.

Mounting the Control Box on the Syrup Pan

The bracket installed on the control box is designed to mount directly to the Leader syrup pan (excluding the ½ pint, supreme and WSE pans).

1. Select a location of the side of the syrup pan accessible from the draw-off box of the syrup pan. Ensure the location will allow easy access to the control panel on the face of the control box. There must also be clearance for the base of the bracket mounted on the control box.

2. Insert the top of the mounting bracket under the lip of the syrup pan.

3. Holding the mounting bracket under the lip of the syrup pan, slowly lower the control box and bracket until the bottom of the bracket rests on the syrup pan. The top of the mounting bracket should slide and secure under the syrup pan lip.

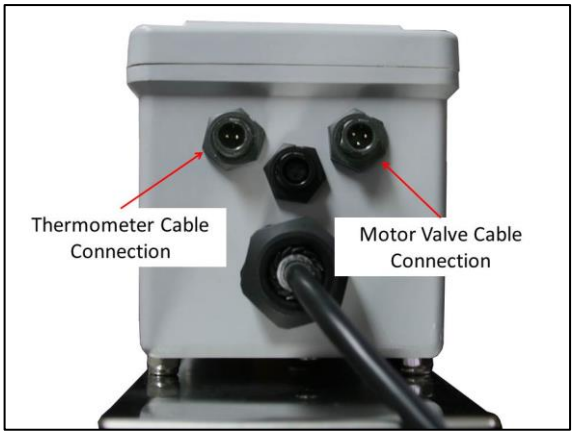
Mounting the Control Box Remotely

The control box can be mounted away from the evaporator. It is suggested a location be selected to allow easy access for adjustment of the control box. A 25' extension cable set is available to allow remote mounting of the control box.

The control box assembly can be mounted using the attached bracket (some modification may be required) or by removing the nuts securing the mounting bracket to the control box then mounting to your own mounting.

Connecting the Cables to the Control Box

There are two connection ports on the bottom of the control box. One is to connect the thermometer cable and the other for the valve motor assembly.



Connecting the Thermometer Cable

1. The thermometer cable control box connection is a male two pin connector located on the left bottom of the control box. The left side is as you face the control box.

2. The plug of the thermometer cable to be inserted into the control box is keyed with a slot. The slot will be facing forward (toward the front of the control box) when inserting. Insert the cable plug into the thermometer cable connection until it stops then secure it by raising the lock ring on the plug to the control box connector and turn approximately ¼ turn.

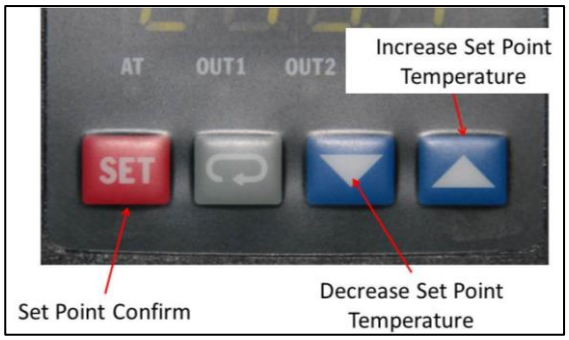
Connecting the Valve Motor Assembly Cable

1. The Valve Motor Assembly cable control box connection is a male three pin connector located on the right bottom of the control box. The right side is as you face the control box.

2. The plug of the valve motor assembly cable to be inserted is keyed with a slot. The slot will be facing forward (towards the front of the control box) when inserting. Insert the cable plug into the valve motor connection until it stops then secure it by raising the lock ring on the plug to the connector on the control box and turn approximately ¼ turn.

OPERATION OF THE SMART DRAW-OFF

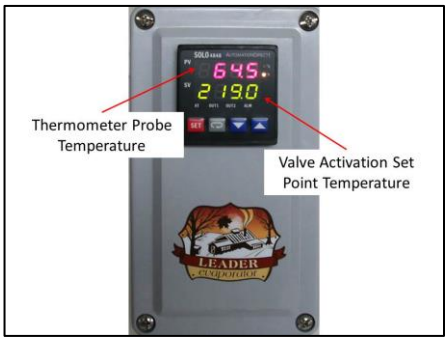
Control Box Set Point Adjustment



1. The set point temperature is changed by using the up or down arrows on the control box.
    a. The set point will change one tenth of a degree for each press.
    b. The set point will change rapidly if either key is pressed and held.
    c. The up arrow will increase the set point temperature.
    d. The down arrow will decrease the set point temperature.
2. When the new set point temperature is displayed, press the “SET” button.

Standard Operation

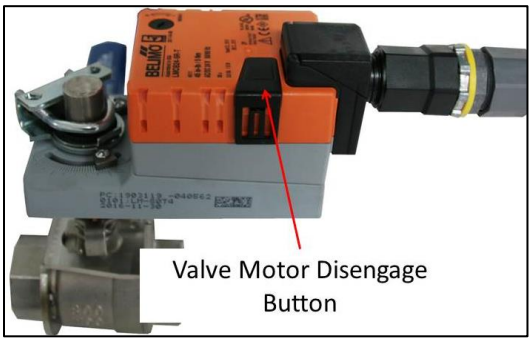
1. Connect the power cord of the Smart Draw-off to a 110V power source.



2. The control panel will display the current temperature being sensed by the temperature probe and the temperature the activation temperature for the valve (the set point).
3. Bring the evaporator up to boiling. The valve will open when the temperature reaches the set point.
4. Using a test cup and hydrometer, determine if the density of the syrup flowing through the valve is correct.
    a. If the density is too high (red line of the hydrometer will float above the liquid level in the test cup), lower the set point temperature. The amount the set point needs adjusting will depend on how dense the syrup was measured. For example if the variance is small then adjust the set point down by two tenths.
    b. If the density is too low (redline of the hydrometer is below the liquid level line in the test cup), then raise the set point temperature. The amount the set point needs adjusting will depend on how mush density needs to be added to the syrup. For example if the line on the hydrometer was only slightly below the liquid line when measured, adjust the set point up two tenths.
5. Sample each successive draw from the valve and perform set point adjustments until at least 5 successive draws are at the correct density.
6. Continue sampling draws every 15 to 20 minutes while boiling. Adjust the set point as necessary.

Manual Operation of the Valve

There may be times when it is necessary to open the valve manually. An example of when this may occur is where there is a rapid change in the density / temperature of the boiling syrup.



1. Locate the valve motor disengage button on the top of the motor.

2. Press the button down and hold.

3. On the side of the button there is a small plastic catch. Depress this to catch the side of the motor box which in turn will hold the button down.

4. While the button is down the motor drive is disengaged and the valve can be turned manually.

5. To re-engage the motor drive press down on the top of the button and the catch will release.

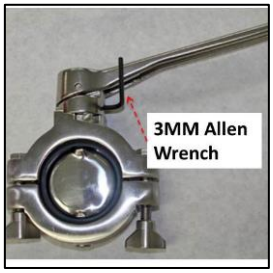
FEEDBACK

Please use the following e-mail address (feedback@leaderevaporator.com) to suggest improvements or enter comments on this document. Reference the document title in your note. You may also contact LEADER Customer Service.

NOTES

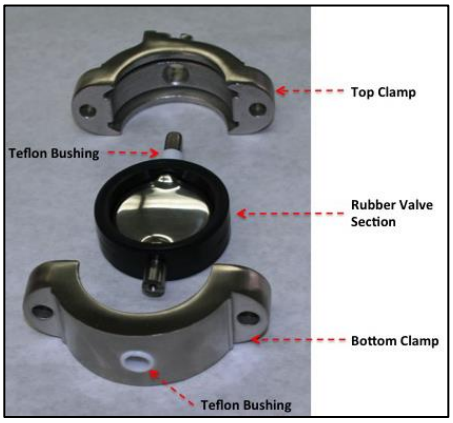
ATTACHMENT #1: Installation of Butterfly Valves

NOTE: Do NOT install this valve without first disassembling. If not fully disassembled, the rubber section cannot be aligned properly and will be damaged.

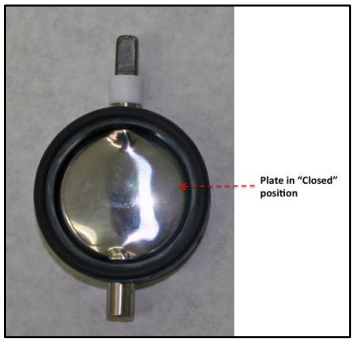


1. Disassemble the butterfly valve as follows:
   a. Using the supplied 3MM Allen wrench, loosen and remove the handle.

b. Loosen and remove the wing nuts and bolts.

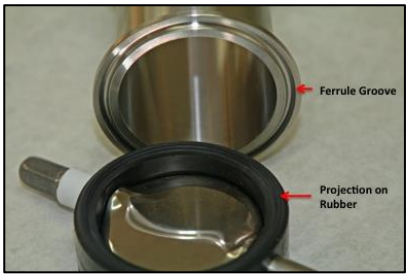


c. Remove the top and bottom sections of the valve clamp. Note the locations of the Teflon bushings. Do not lose or damage these bushings.

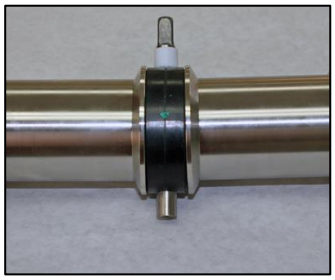


2. Assemble the butterfly valve as follows:

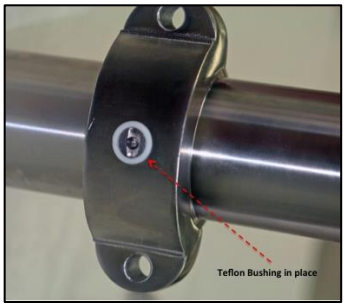
NOTE: To ease the step of aligning the handle to the valve it is recommended during the installation steps, the valve remain in the "closed position. The flat spot on the shaft will is parallel to the valve plate.



a. Align the projections of the rubber valve section with the grooves in the ferrules. Ensure the Teflon bushing is on the "top" of the valve shaft.



b. Place the rubber section between the ferrules being connected such that the handle end of the valve shaft will be in its operating position.

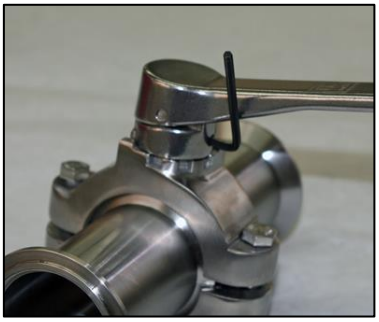


c. Ensure the Teflon bushing is properly positioned in the bottom part of the valve clamp. Fit the clamp over the "bottom" shaft of the valve and confirm the Teflon bushing remains in place.

d. Place the top part of the valve clamp over the "top" of the valve shaft, ensuring it is over the Teflon bushing.

e. Insert the bolts with the bolt head on the same side as the top (handle side) of the valve and thread on the wing nuts and tighten.

f. Position the handle so it will be parallel to the valve plate (parallel to the valve body if it was installed in the closed position). Make sure the handle will be able to move to both the closed and open positions.



g. Tighten the handle with the included 3MM Allen wrench.