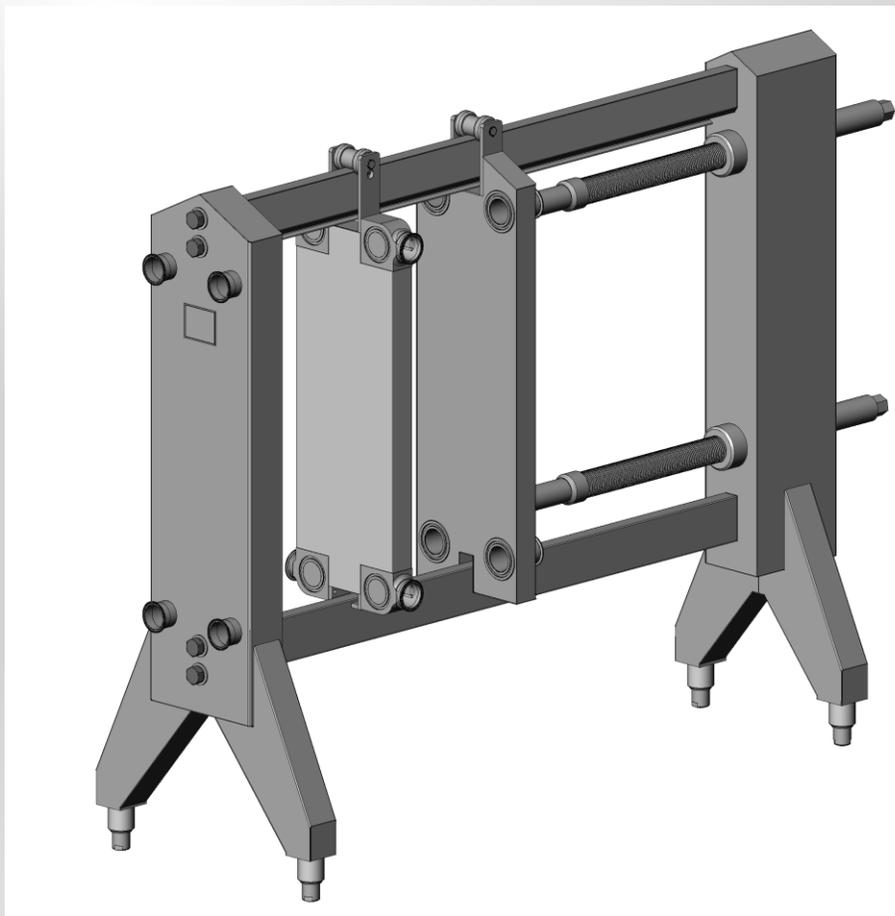




AGC Model Pro31-M

Operation and Maintenance Manual



proflow^{sanitary}
SERIES

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www.agcheattransfer.com

Revised 07/01/20

Scope:

This manual is intended to be a supplement to the **AGC Heat Transfer** Proflow Operation Manual. The information provided here is for the normal operation and installation of the AGC Model Pro31-M Plate Heat Exchanger. Please read and follow all safety instructions contained in this manual. Failure to follow all safety recommendations could result in serious injury to the operator or cause damage to the press. If you need additional information or spare parts for this or any other equipment built by AGC please contact your local AGC distributor.

Receiving and Inspection:

Each AGC frame is assembled and fully tested at the factory prior to shipping. After testing, the unit is prepared for shipping. When the press leaves the factory it is in perfect condition. Upon arrival, carefully inspect the frame for any damage that may have occurred during shipping. If you notice any damage from shipping or otherwise note it on the shipping paperwork and report it to AGC immediately. In most cases the frame is shipped assembled with the plates in a separate crate. Because each frame can weigh over 4,000 pounds, only qualified and licensed forklift truck drivers should lift and position the frame. Figure 1 shows the major frame components. Depending on the application, your frame may or may not be equipped with one or more terminals.

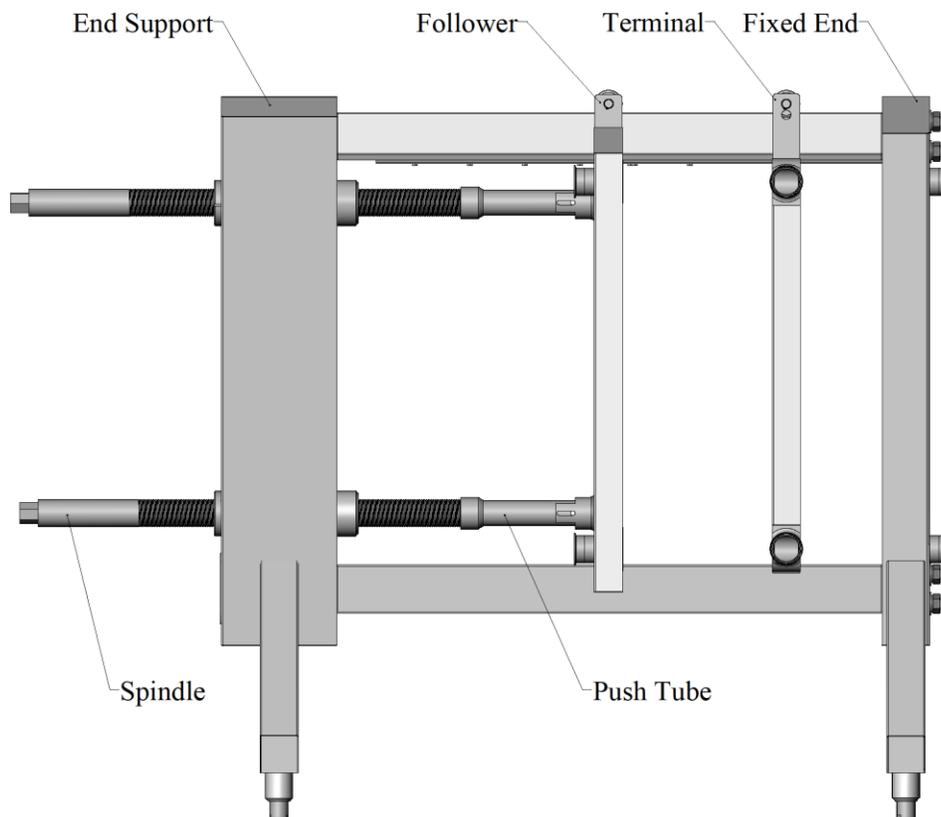


Figure 1
Major Frame Components

Locate the drawing package that was shipped with your frame. This drawing package contains important information specific to your frame. If your frame was delivered without a drawing package, contact AGC or your local AGC distributor for a replacement package prior to installing the frame.

Frame Placement:

The Pro31-M frame should be located on a firm flat surface capable of supporting the press and all of its contents when full. Ensure that adequate space is left around the frame for maintenance and plate installation/removal. The drawing package will show the clearance required for the spindle shafts to be fully retracted. This is the space required to fully open the press.

Each frame is equipped with adjustable ball feet to compensate for minor floor variations. To adjust the ball foot height, turn the base of the foot clockwise to raise and counter clockwise to lower. **CAUTION:** Never exceed the maximum port height dimension shown on the streaming diagram. If this dimension is exceeded, the leg could disengage from the socket and the frame could tip.

When moving the frame, the top rail can provide a good lifting point. However, when using the top rail as a lifting point, exercise caution to prevent damaging the plate hanger. Do not attempt to lift a frame using the port nozzles as a lifting point. Lifting a frame by the port nozzles could crack the nozzles causing leaks. Moving a frame that is fully populated with plates is not recommended.

Normal Operation:

The Model Pro31-M Plate Heat Exchanger is a twin spindle manual closure press. The closing force is developed by turning the two spindle screws on the end support (see figure 2). The spindle screws have a hex machined on the end to accommodate the AGC Fatboy™ wrench. This wrench is sized specifically to provide an efficient means for opening and closing of the Pro31-M press. As with all plate heat exchangers, the unit must be cooled below 90° F and relieved of all internal pressure before opening. **Failure to follow this safety warning could result in serious injury to the operator or damage to the heat exchanger.**

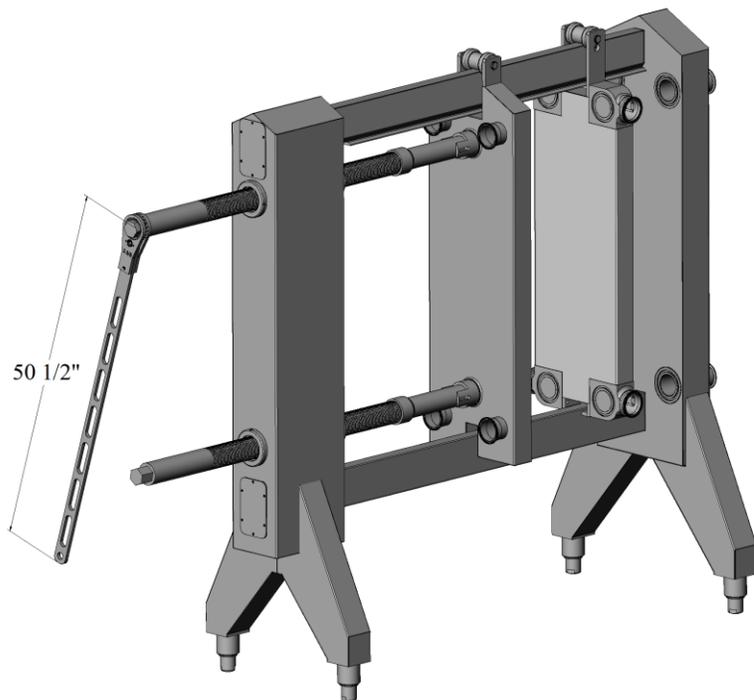


Figure 2
Open/Close with Fatboy Wrench

Closing the Frame:

After all the plates and any terminals are installed into the frame it can be closed. Refer to the streaming diagram that was provided with the heat exchanger to determine the proper plate configuration and piping requirements. Figure 3 shows where this information is listed on the drawing. Note: The dimensions for each frame will be listed on the streaming diagram shipped with that frame.

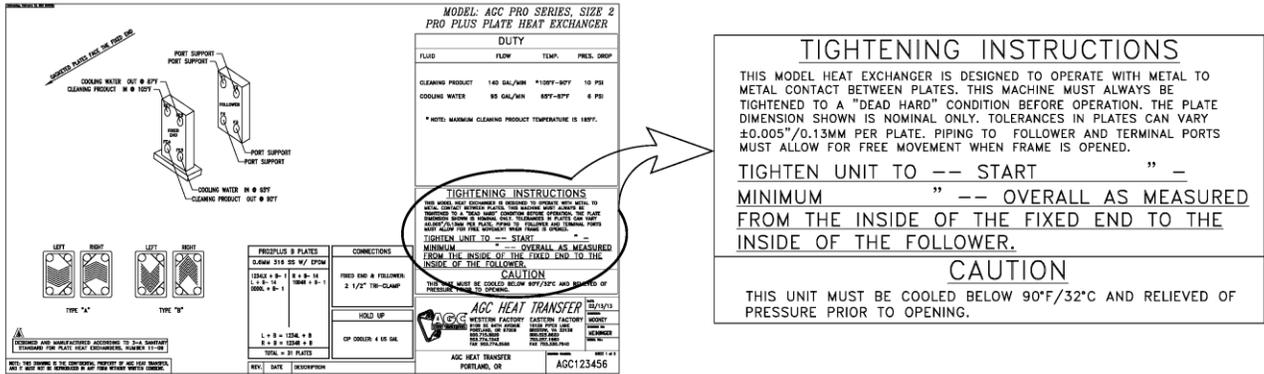


Figure 3
Streaming Diagram Sample

To close the frame, turn the spindle screws clockwise. It is important when closing the press that each screw shares the load equally. At no time should the screws be engaged at drastically different lengths. This could cause damage to the plates or to the spindle screws. When checking the heat exchanger closed dimension, it is important to check in two locations as shown in figure 4.

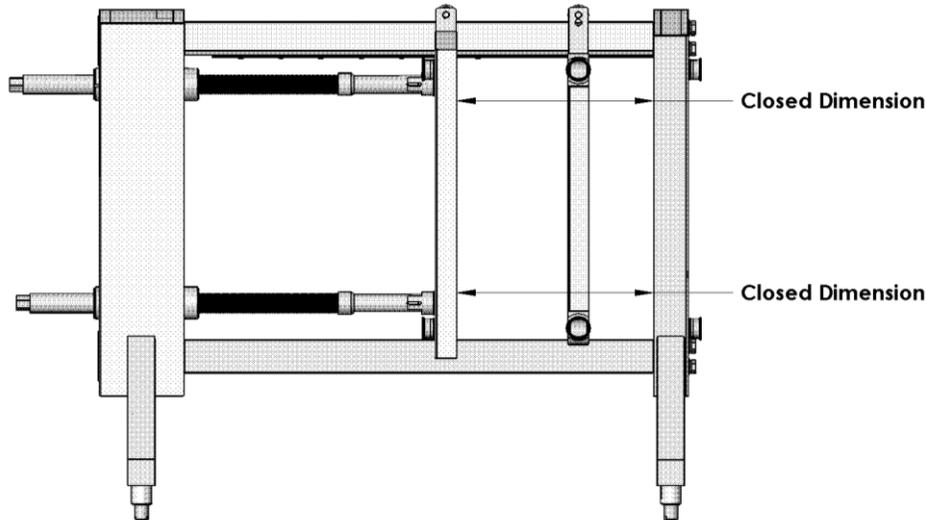


Figure 4
Tightening Dimension

The heat exchanger should be pressure tested to check for leaks. If the pressure check passes, the frame is ready to be put into service.

Opening the Frame:

To open the frame, rotate the spindle screws counter-clockwise. As with closing, alternate between each spindle to ensure even opening. The follower will move back as the plate pack expands to its uncompressed state. As the spindles retract the pushtubes may disengage from the spindles. This could allow the pushtube to rotate about the supporting pin causing the push-tube to swing down (see figure 5). Caution should be exercised when opening the frame to prevent injury by the pushtube.

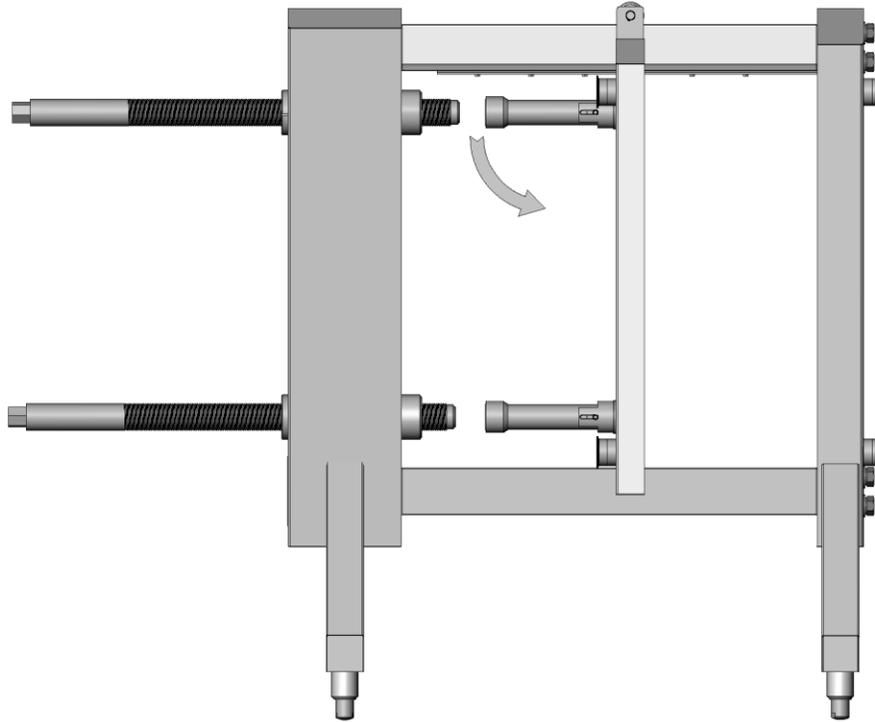


Figure 5
Pushtube Swing

When retracting the spindles, it is recommended to back the spindles out only to the point that the plates can be removed. Once the spindles have been adequately retracted the handle should be moved to the center (neutral) position.

Frame Assembly Instructions:

Assembling a Pro31 frame requires careful attention to detail and should only be attempted by qualified equipment installers or maintenance technicians. The components are large and could cause serious injury or death if mishandled. The procedure described here is the method used at the factory to assemble the press. Your particular site requirements and limitations may require deviation from this description. It is assumed that the persons installing this heat exchanger are familiar with processing equipment and sanitary installation methods. If you have questions about erecting a Pro31 frame or any procedure described in this section, please contact AGC or your local AGC distributor.

Upon delivery, uncrate all components and inspect for damage. Check the drawing package and packing slip to ensure all components are present. To complete this assembly you will need two sets of jack stands (2 stands 19" tall and 2 stands 25³/₄" tall), a forklift truck, a socket wrench with an 8 (eight) inch extension, a 1⁷/₈" socket, a lifting sling rated for 4000 lbs cinch, and a spirit level (or other level measuring device).

To assemble the press:

1. Place the fixed end assembly on the two 19" jack stands (see figure 6-1). The jack stands should be located near the ends of assembly as shown. Position the two 25³/₄" tall jack stands as shown. Depending on the size frame you are assembling the actual distance from the fixed end will vary. These stands will support the rails and should be located so they are opposite from the rail holes in the fixed end.
2. The Pro31 uses two different length bolts to secure the rails. Each press requires 8 (eight) rail bolts. Four each 1¹/₄-12 x 8" long and four 1¹/₄-12 x 7" long.
3. To attach the rails to the fixed end use the four 8" long bolts, 4 each 1¹/₄" flat washers, and 4 each 1¹/₄" lock washers. Prior to installation, apply a liberal amount of food grade anti-seize to the threads of each bolt.
4. Position the bottom rail as shown in figure 6-2. Loosely bolt the bottom rail in place. It may be necessary to adjust the rail to install the end support.
5. Position the upper rail as shown in figure 6-3 (hanger side toward the bottom rail) and loosely bolt the rail in place. Note: The bolts will be fully tightened after the end support is installed.
6. Using a forklift truck, carefully position the end support assembly at the end of the rails as shown in figure 6-5. It will be necessary to remove the upper and lower covers on the end support to gain access to the rail bolts. Install the rail bolts and washers to attach the end support to the rails.

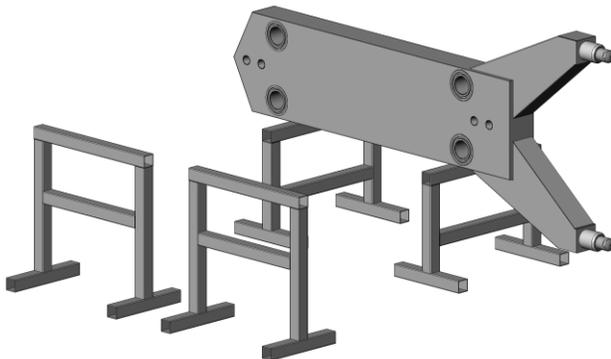


Figure 6-1
Fixed End on 19" Tall Stands

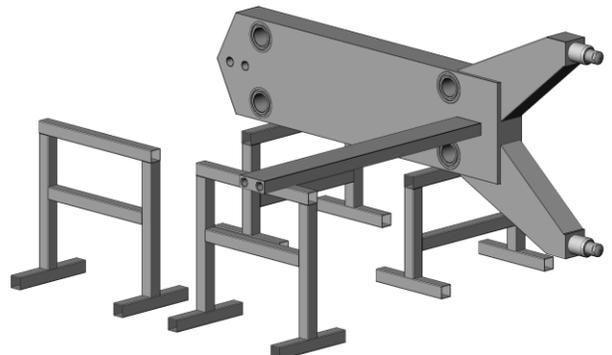


Figure 6-2
Fixed End with Bottom Rail

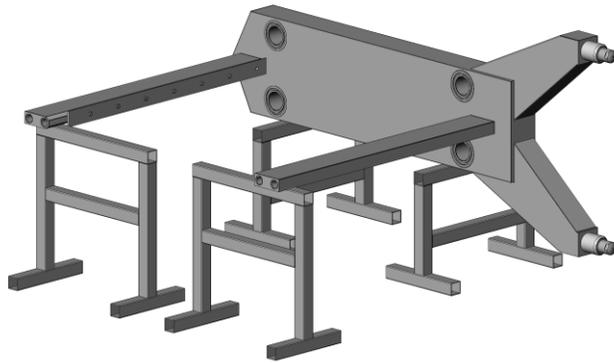


Figure 6-3
Press with Both Rails

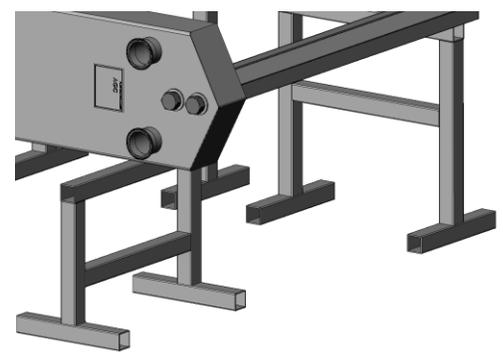


Figure 6-4
Fixed End with Rail Bolts

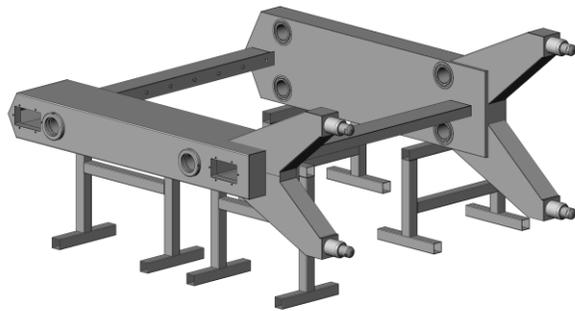


Figure 6-5
Positioning the End Support

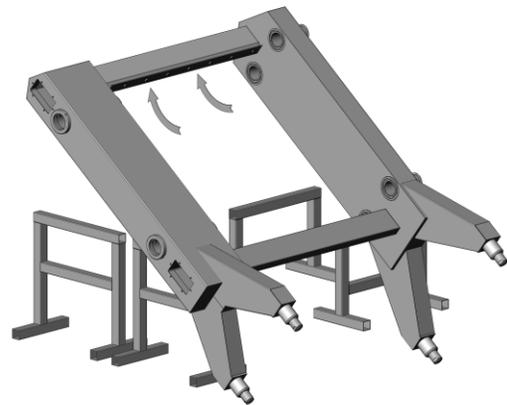


Figure 6-6
Raising Frame

7. After the end support rails are securely tightened, tighten the rail bolts on the fixed end (these bolts were left loose in step 4 above).
8. Using a forklift truck carefully stand the frame assembly upright, lifting it by the upper rail as shown in figure 6-6.
9. After the press is upright (see figure 6-7) and in the desired location it must be leveled so the plates and terminals will hang correctly. Make sure the fixed end is plumb. This can be accomplished by putting a spirit level across the ports (see figure 6-8). Adjust the ball feet as necessary. Caution: Do not exceed maximum port center height as shown in the drawing package.

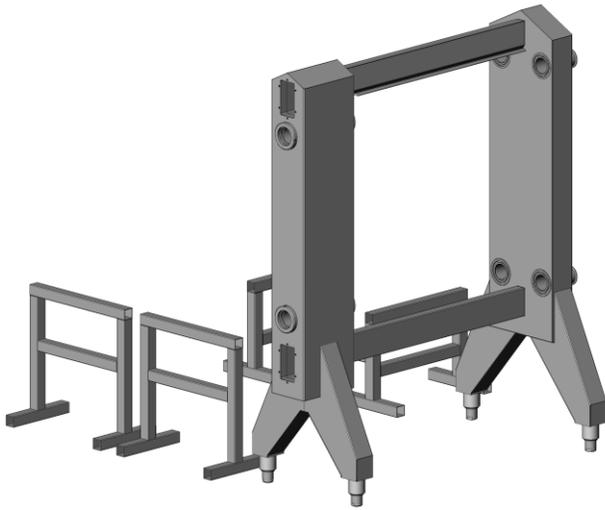


Figure 6-7
Frame Standing

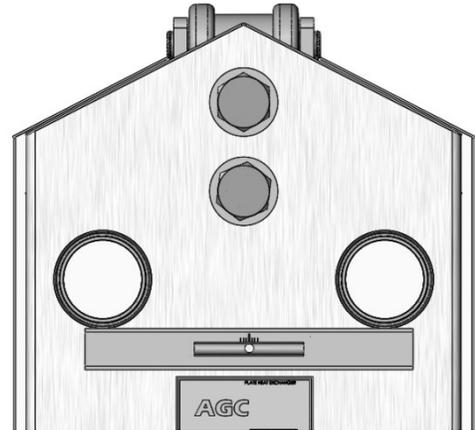


Figure 6-8
Leveling the Ports

10. After leveling the fixed end, check the upper rail to ensure it is level. The plate hanger on the upper rail must also be level in order for the plates to hang correctly.
11. Once the upper rail is level, the rail bolts should be checked to ensure they are fully tightened.
12. To install the follower it is necessary to remove the roller. To remove the follower roller, remove one of the snap rings on the roller pin, then slide the pin out and remove the roller.
13. The follower is installed using a lifting sling. The follower is wrapped with the sling in a cinch configuration and tilted into position using a forklift truck (figure 6-9). After the follower is over the bottom rail, stand the follower upright and re-install the roller and pin. Secure the pin with a snap ring.

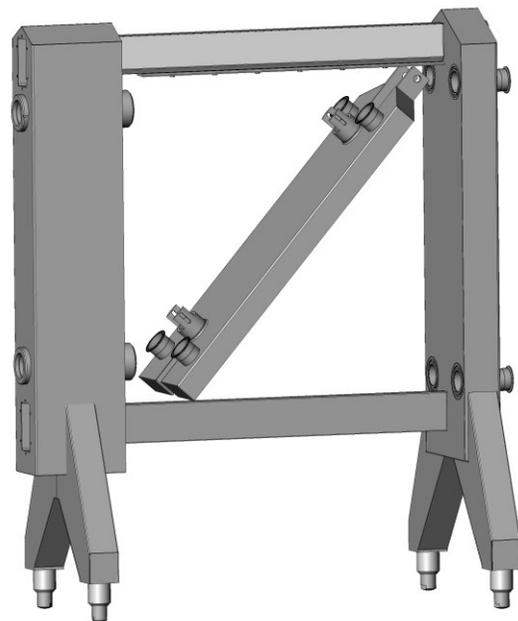
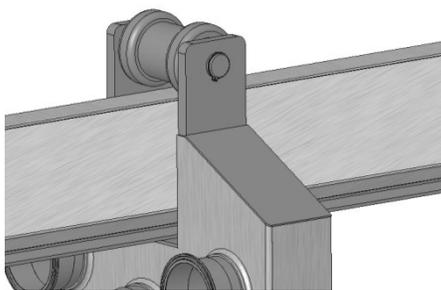


Figure 6-9
Follower Installation

14. Install any terminals using the same procedure as described for the follower.

Operator Maintenance:

The unit is designed to operate reliably with little operator maintenance. However, when servicing the frame observe all lockout/tagout regulations prescribed by your company. In addition, you should **NEVER OPEN THE PRESS WHEN IT IS PRESSURIZED OR WHEN HOT**. The press must be cooled below 90° F prior to opening.

Press Monthly Lube/Inspection:

1. Lockout/Tagout the voltage supply to the press.
2. Inspect the spindle shafts for signs of wear.
3. Apply food grade grease to the exposed threads of the spindle shaft.
4. Remove lockout/tagout device and return press to service.

Parts List:

Replacement parts for the Model Pro31-M can be ordered from AGC or your local AGC distributor. Most parts are in stock and can be shipped within 24 hours from time of order. Some components have had engineering revisions, so when ordering spare parts be sure to have your unit specific information available.

Contact information is provided below or visit our website for more information:

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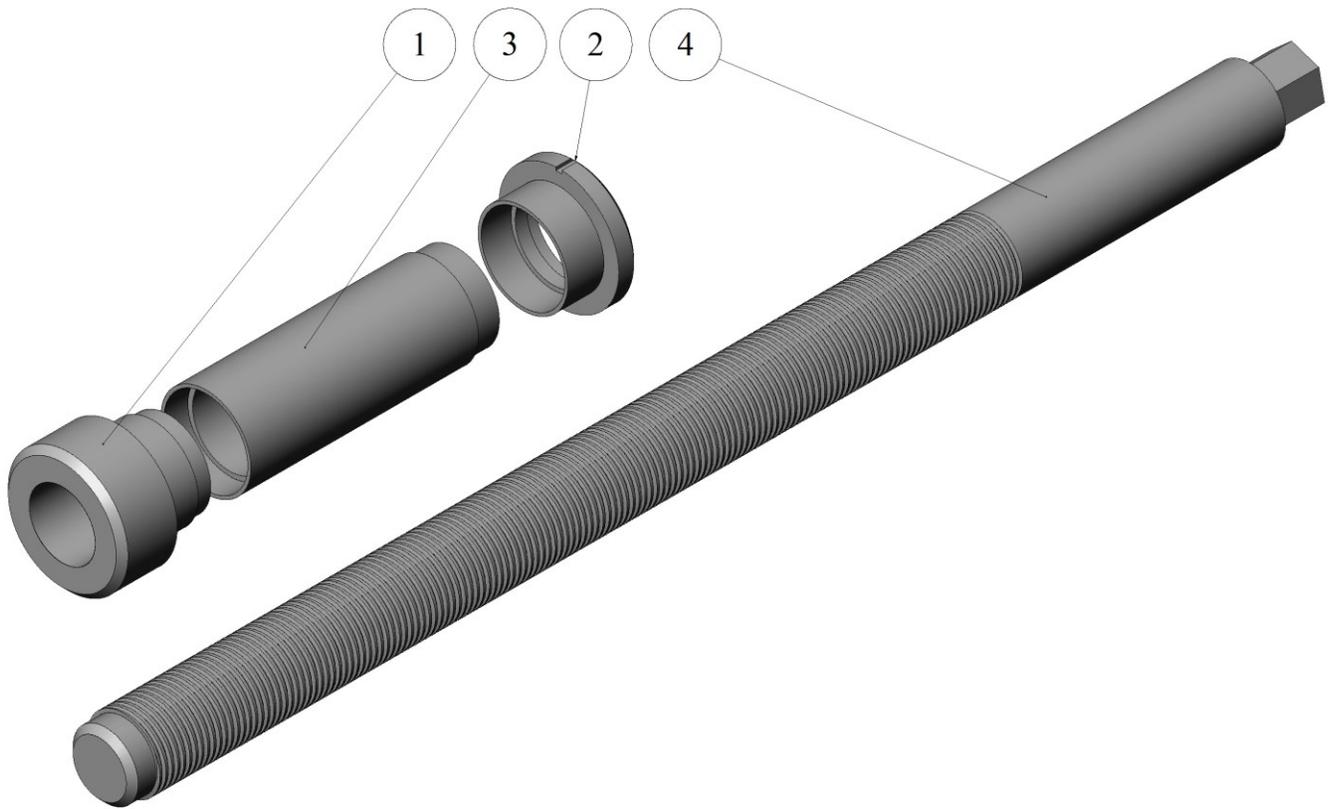
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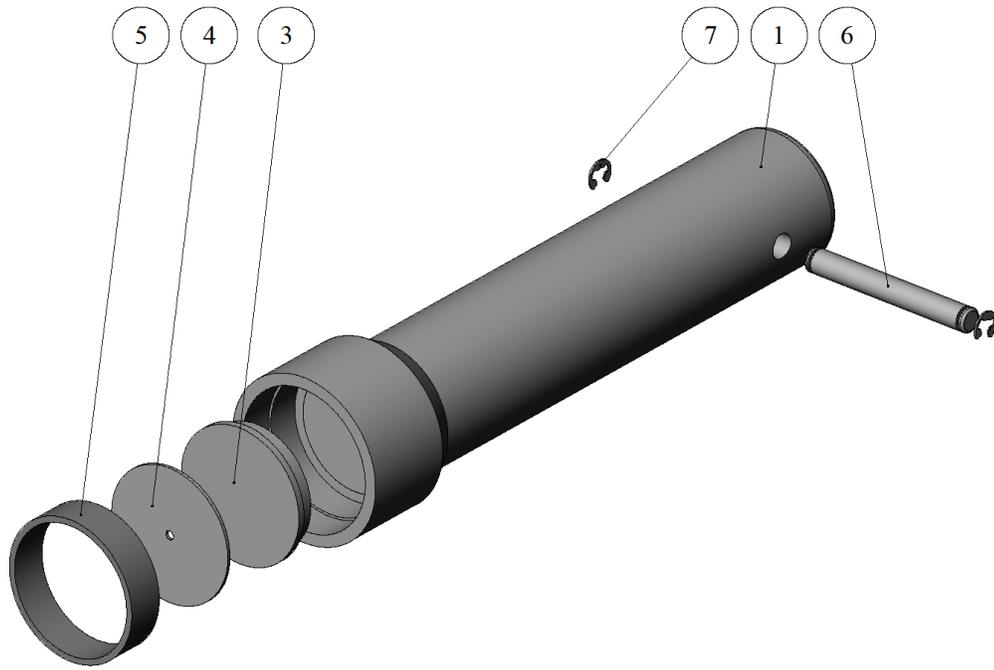
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Item	Part Number	Description
1	11010903	Spindle Thrust Nut
2	11010901	Spindle Retaining Nut
3	11010902	Spindle Nut Tube
4A	11011000	Spindle Shaft 50"
4B	11101001	Spindle Shaft 62"

AGC recommends that spindle and nut be ordered as a matched set. For a 50" spindle order assembly number 11010911. For a 62" spindle, order assembly number 11010910.

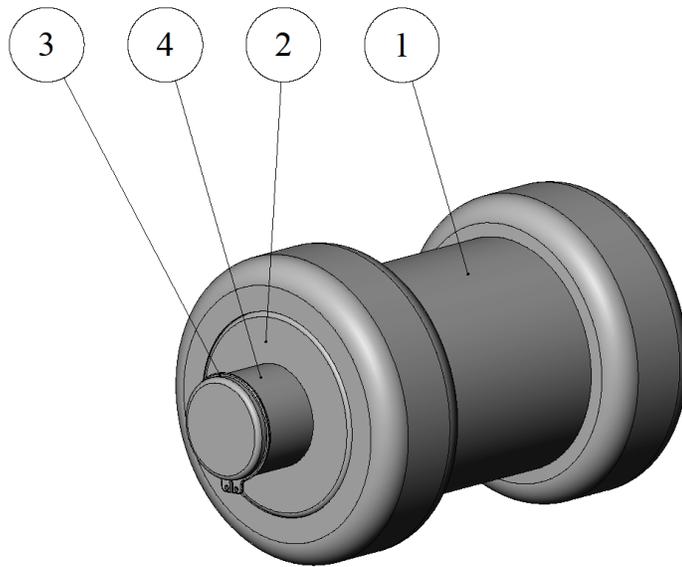
Spindle Nut Assembly



Item	Quantity	Part Number	Description
1	1	See Chart	Push Tube Base
3	1	11011103	Slip Disk
4	1	11011104	Thrust Washer
5	1	11011105	Lock Insert
6	1	11011106	Pushtube Pin
7	2	39 5133-50H	E-Clip Retainer

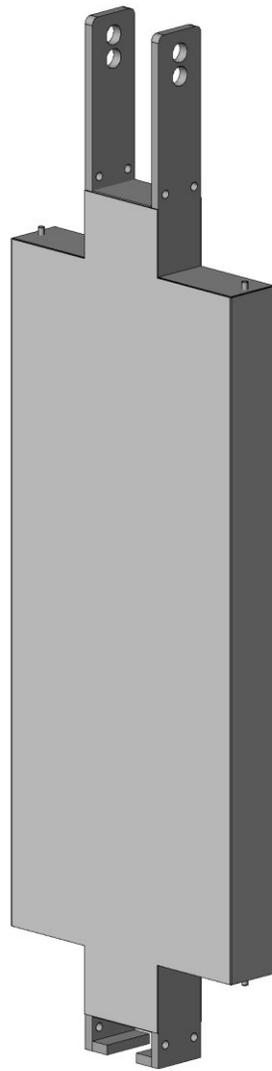
Push Tube Length	Part Number
10 Inch	11011111
14 Inch	11011110
18 Inch	11011112
24 Inch	11011115
28 Inch	11011117
32 inch	11011113
36 Inch	11011116

Pushtube Assembly



Item	Quantity	Part Number	Description
1	1	11016210	Follower Roller Pro31
2	2	SSR16-2RS	Stainless Steel Ball Bearing
3	2	5100-100H	Stainless Steel Snap Ring
4	1	11016212	Pro31 Follower Roller Pin

Follower Roller Assembly
(AGC P/N 11016213)



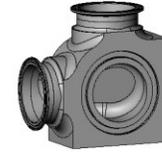
Pro3 'V' Boss



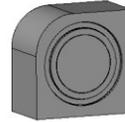
Pro3 'X' Boss



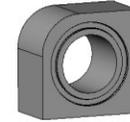
Pro3 Thru with
2" Connection



Pro3 Double



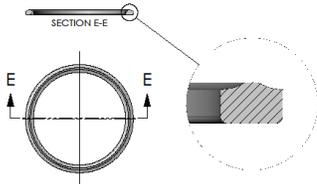
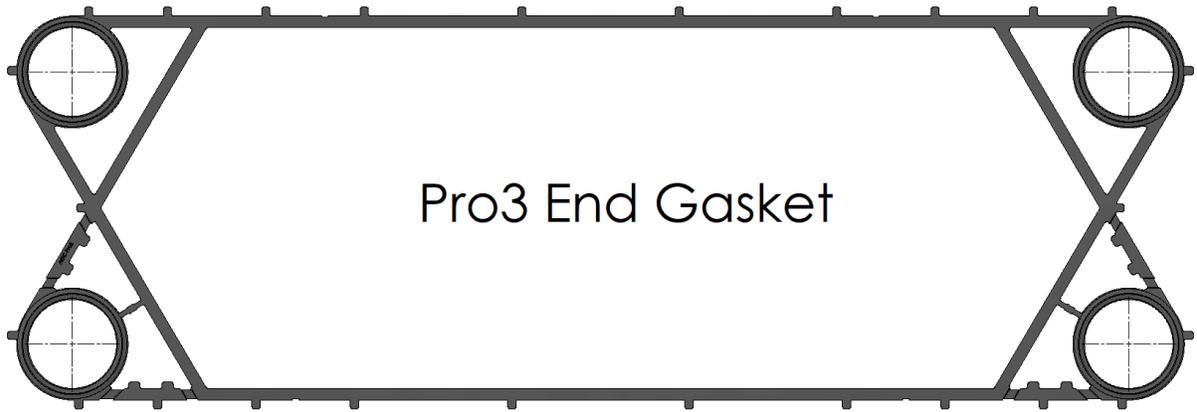
Pro3 Blank



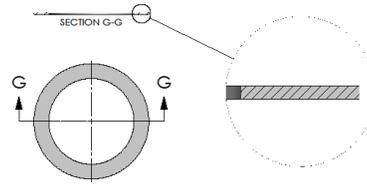
Pro3 Thru

Pro3 Terminal Parts	
Description	Part Number
Pro3 Terminal Body with Roller	11018500
Pro3 Terminal Roller with Pin	11015007
Pro3 Port Boss V Configuration with 3" connection	11018516
Pro3 Port Boss X Configuration with 3" connection	11018515
Pro3 Port Boss Thru with 2" connection	11018520
Pro3 Blank Port Boss	11018520
Pro3 Thru Boss	11018513

Pro3 Terminal Components



Pro3 Port Gasket



Pro3 FDA Port Gasket

Pro3 Gasket	NBR	EPDM	VITON
Flow Gasket	AGPRO301N	AGPRO301E	AGPRO301V
End Gasket	AGPRO302N	AGPRO302E	AGPRO302V
Port Gasket	AGPRO303N	AGPRO303E	AGPRO303V
FDA Port Gasket	11018572	11018578	11018583

Pro3 Plate and Frame Gaskets

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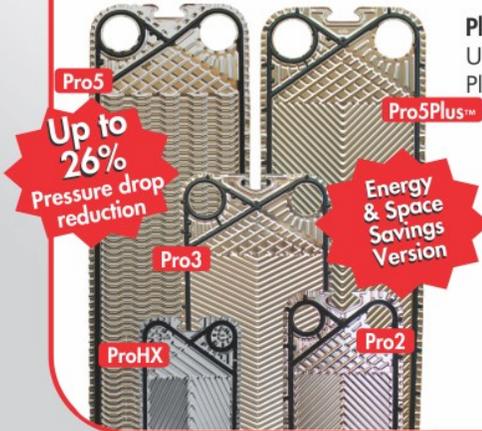
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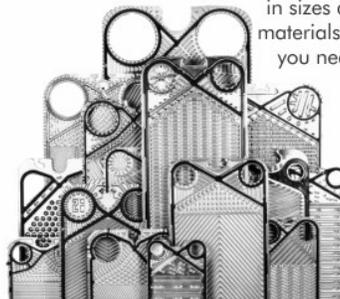
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