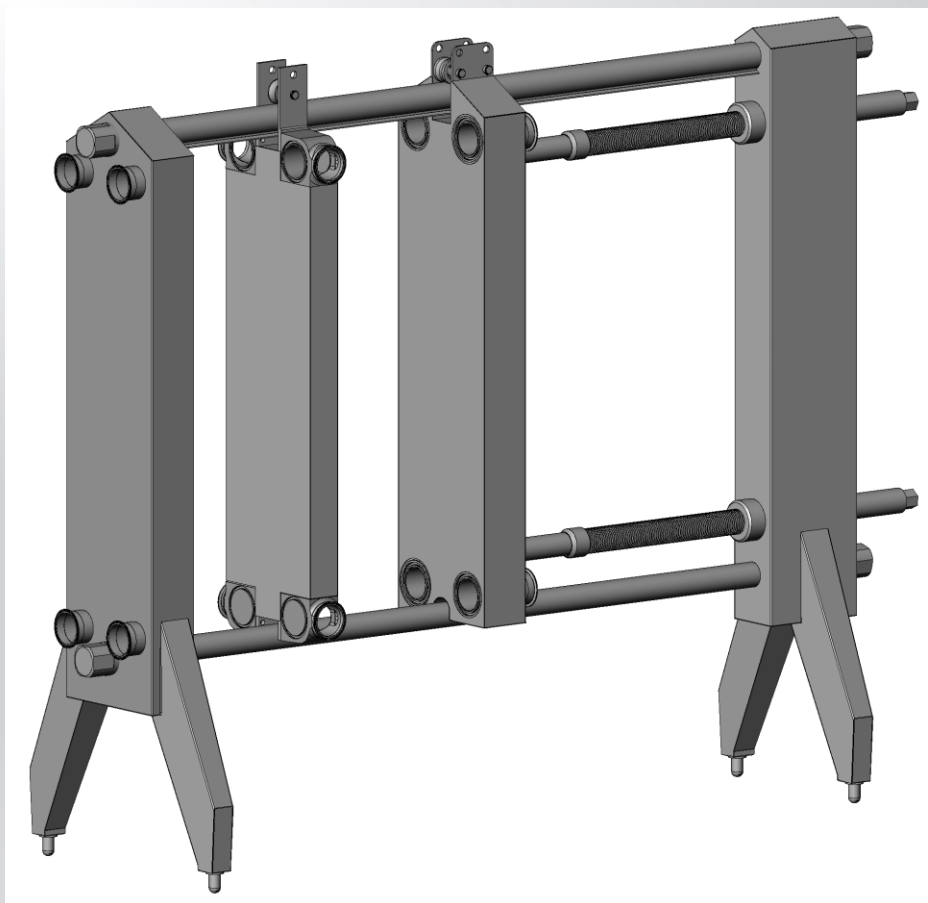




AGC Model AR51-M

Operation and Maintenance Manual



proflow^{sanitary}
S E R I E S

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Western

3109 NE 230th Avenue
Fairview, OR 97024
+1.503.774.7342
+1.800.715.8820
FAX +1.503.774.2550

Central

8400 Lakeview Parkway
Suite 700
Pleasant Prairie, WI 53158
+1.847.301.6890
+1.888.489.8820

Eastern

10129 Piper Lane
Bristow, VA 20136
+1.703.257.1660
+1.800.825.8820
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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 AR51-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 the frame was damaged during shipping report this to AGC immediately. In most cases the frame is shipped assembled with the plates in a separate crate. Because each frame can weigh over 7,000 pounds, only qualified and licensed forklift truck drivers should lift and position the frame. If your frame was shipped disassembled refer to the assembly instructions section of this manual for assembly procedures. Figure 1 shows the major frame components. Depending on the application, your frame may or may not be equipped with one or more terminals.

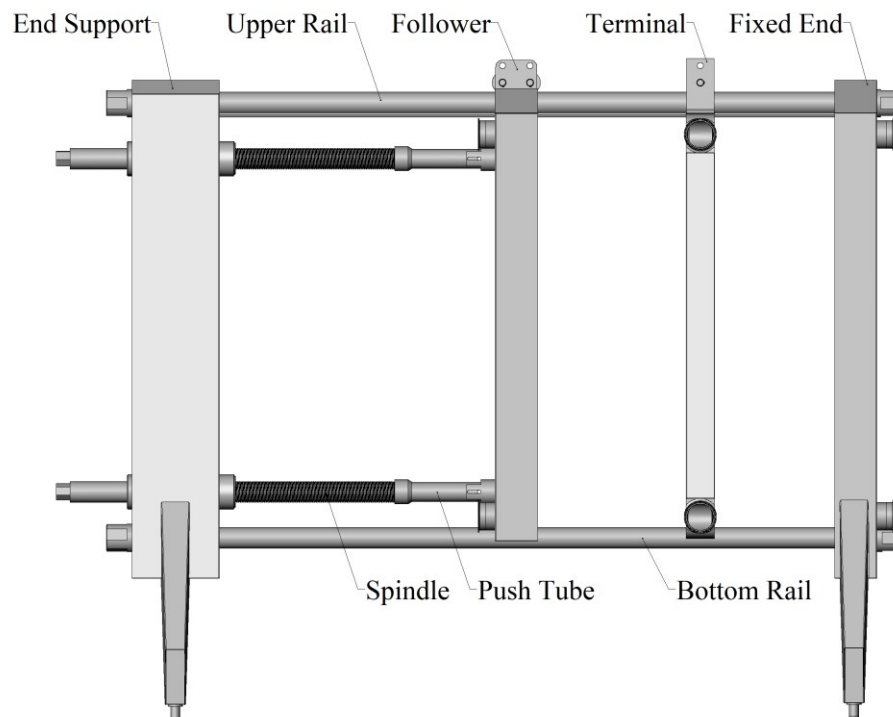


Figure 1
Major Frame Components

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 AR51-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 minimum required dimension for the end support.

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 AGC Model AR51-M Plate Heat Exchanger is a twin spindle manual closure press. The closing power is developed by turning the two spindle screws on the end support (see figure 2). To make this process easier AGC Heat Transfer has designed the Fatboy™ wrench. This wrench when used properly will provide an efficient means for opening and closing of the Model AR51-M Plate Heat Exchanger. 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 plates and/or plate gaskets.**

Closing the Frame:

The following procedure describes how to close the AR51-M Plate Heat Exchanger. Before closing the press the operator should verify all pipes and lines are clear and the plates are in the correct arrangement. Plate arrangement information can be found on the streaming diagram that was provided with the heat exchanger. Piping requirements can also be determined by referring to the streaming diagram.

The AR51-M spindle screws will provide enough closing power to compress the plate pack to the factory recommended minimum or “dead-hard” dimension. To determine the correct closed dimension for your press refer to the streaming diagram. Figure 3 shows where this information can be found on the drawing. Note: The dimensions for each frame will be listed on the streaming diagram shipped with that frame.



When measuring the closed dimension it is recommended to measure near the top and bottom of the plates as seen in figure 4. This will ensure the plates are compressing evenly.

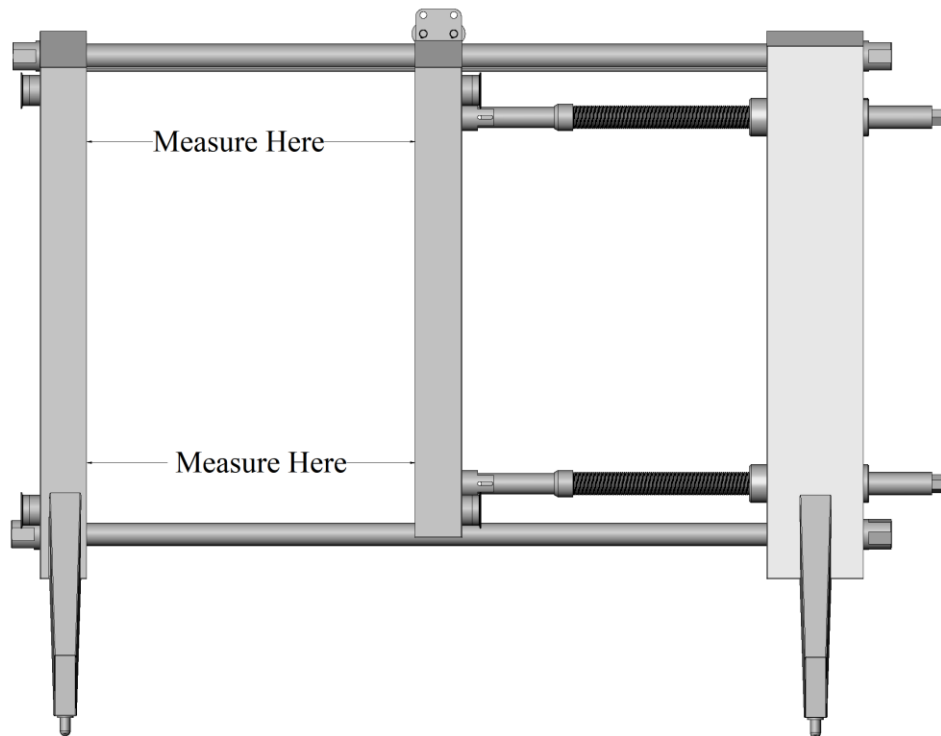


Figure 4
Tightening Dimension

After the top and bottom measurements are to the desired dimension a final check should be made on both sides of the heat exchanger. Once the press is closed and all dimensions are equal 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. If external leakage is observed, installation of new gaskets and/or plates may be recommended. For assistance with trouble shooting leaks contact AGC or your local AGC distributor.

Opening the Frame:

Prior to opening the heat exchanger, ensure that all internal pressure has been removed and that the temperature of the plates is below 90° F. To open the frame, turn the spindle screws counter-clockwise. As with closing the press, the spindles should be retracted evenly when opening the press. As the plate pack expands to its uncompressed state the follower will move back. Once the plates are fully uncompressed the spindles may disengage from the pushtubes. This could allow the pushtube to rotate about the supporting pin causing the pushtube to swing down (see figure 5). Caution should be exercised when opening the frame to prevent injury by the pushtube.

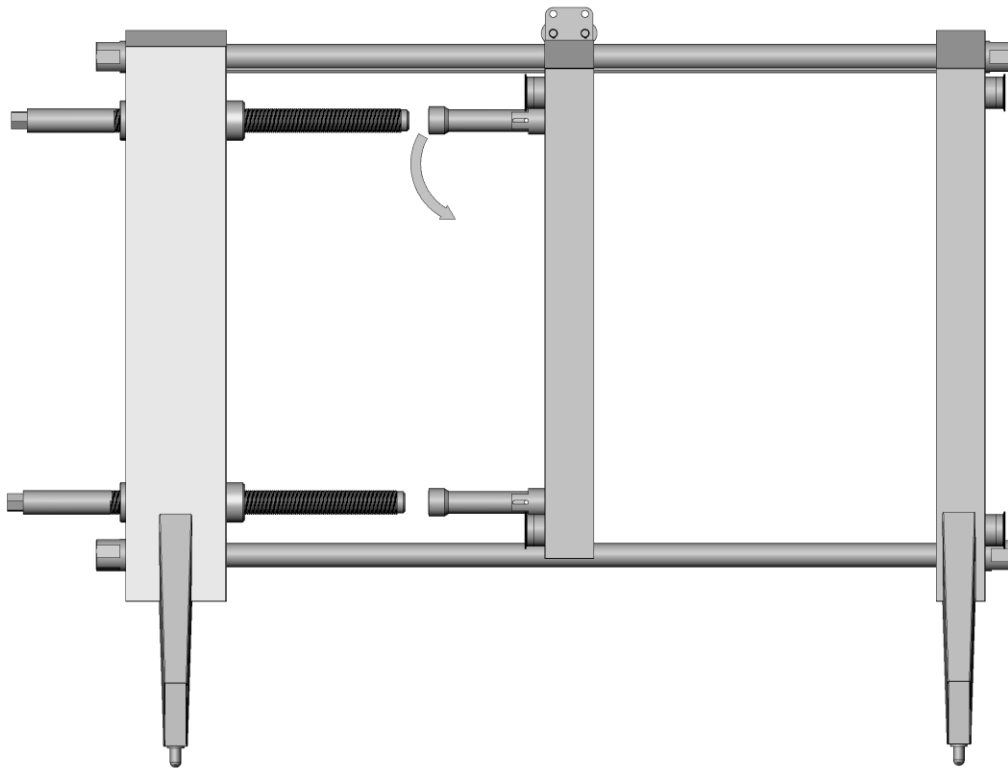


Figure 5
Pushtube Swing

When retracting the spindles, it is recommended to back the spindles out only to the point that the plates can be removed and/or inspected.

Frame Assembly Instructions:

Assembling an AR51 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. If you have questions about erecting an AR51 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 wrench with a 3" capacity, 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.
2. Position the two 25 $\frac{3}{4}$ " jack stands (see figure 6-2). Depending on the size frame you are installing 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.
3. Slide the top and bottom rails into the fixed end (see figure 6-3). Note: The top rail has a long and a short end. The short end will go through the fixed end while the long end is intended to go through the end support.
4. Slide the end support onto the rails (see figure 6-4). Note: The bronze bushing should be on the plate or inside of the frame as shown in figure 4 and figure 5.
5. Apply a liberal coat of food grade anti-seize to the threads on the rails, and then install the 3" acorn nuts on each rail end. Tighten only hand tight at this point.
6. Using a forklift truck carefully stand the frame assembly upright, lifting it by the upper rail.

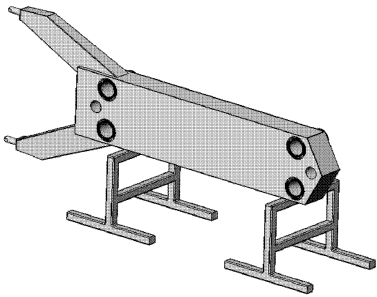


Figure 6-1
Fixed End on 19" Tall Stands

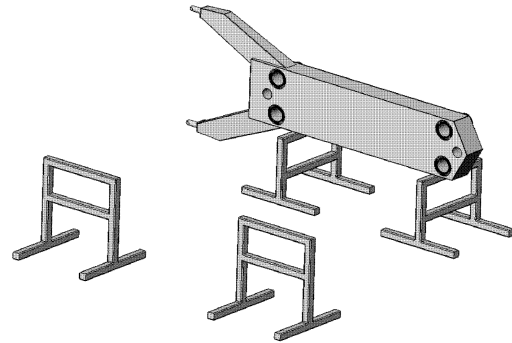


Figure 6-2
25 $\frac{3}{4}$ " Tall Stand Location

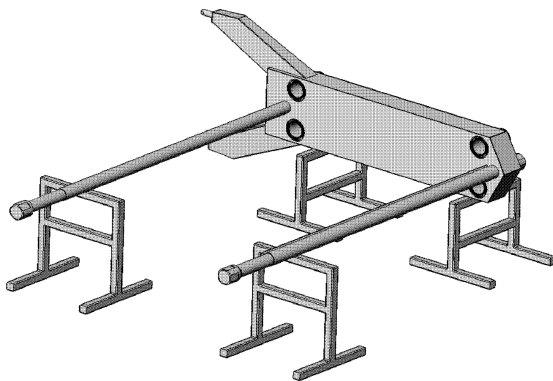


Figure 6-3
Press with Rails

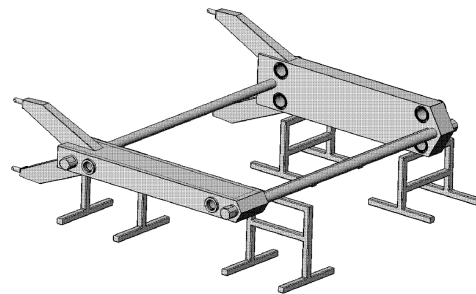


Figure 6-4
Press with End Support

7. After the press is upright 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 6-5). Adjust the ball feet as necessary. Caution: Do not exceed maximum port center height as shown in the drawing package.

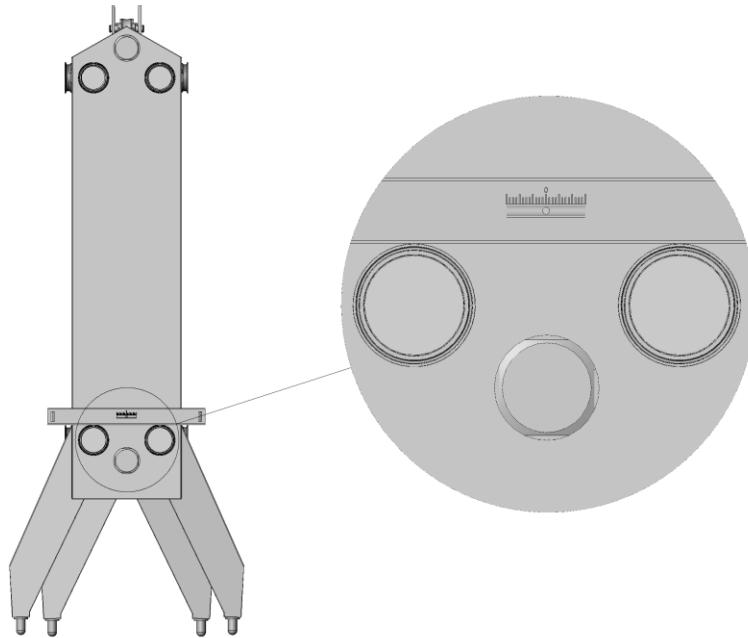


Figure 6-5
Leveling the Fixed End

8. After leveling the fixed end, adjust the upper rail. The plate hanger on the upper rail must also be level in order for the plates to hang correctly. Check the hanger using the spirit level (see figure 6-6).

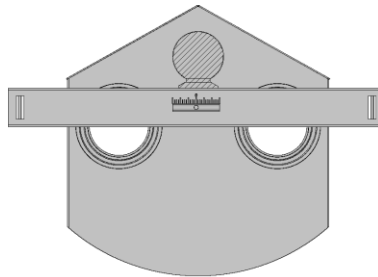


Figure 6-6
Leveling the Upper Rail

9. Once the upper rail is level, the acorn nuts on the upper rail can be tightened. After the nuts are tight, re-check the rail for level.
10. Tighten the bottom rail acorn nuts just until the fixed end and the end support are parallel. Over-tightening the bottom rail will damage the rail cladding and possibly the frame.
11. To install the follower it is necessary to remove the rollers. These are removed by removing the one circlip from each pin, and then the set collars (see figure 6-7).
12. The follower is installed using a lifting sling. The follower is wrapped with the strap in a cinch configuration and tilted into position using a forklift truck. After the follower is over the bottom rail, replace the rollers. Center the roller on the follower and lock in place with the set collars.
13. Install any terminals using the same procedure as described for the follower.

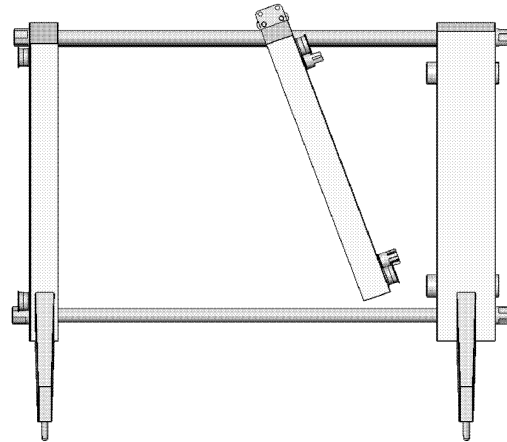
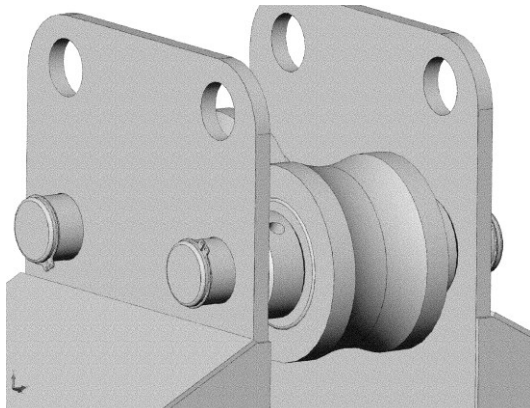


Figure 6-7
Follower Installation

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 IT IS HOT**. The press must be cooled below 90° F prior to opening.

A good preventative maintenance schedule will minimize or eliminate major mechanical problems. The press should be inspected regularly and moving parts should be lubed with high quality food grade grease.

Parts List:

Replacement parts for the Model AR51-M Plate Heat Exchanger 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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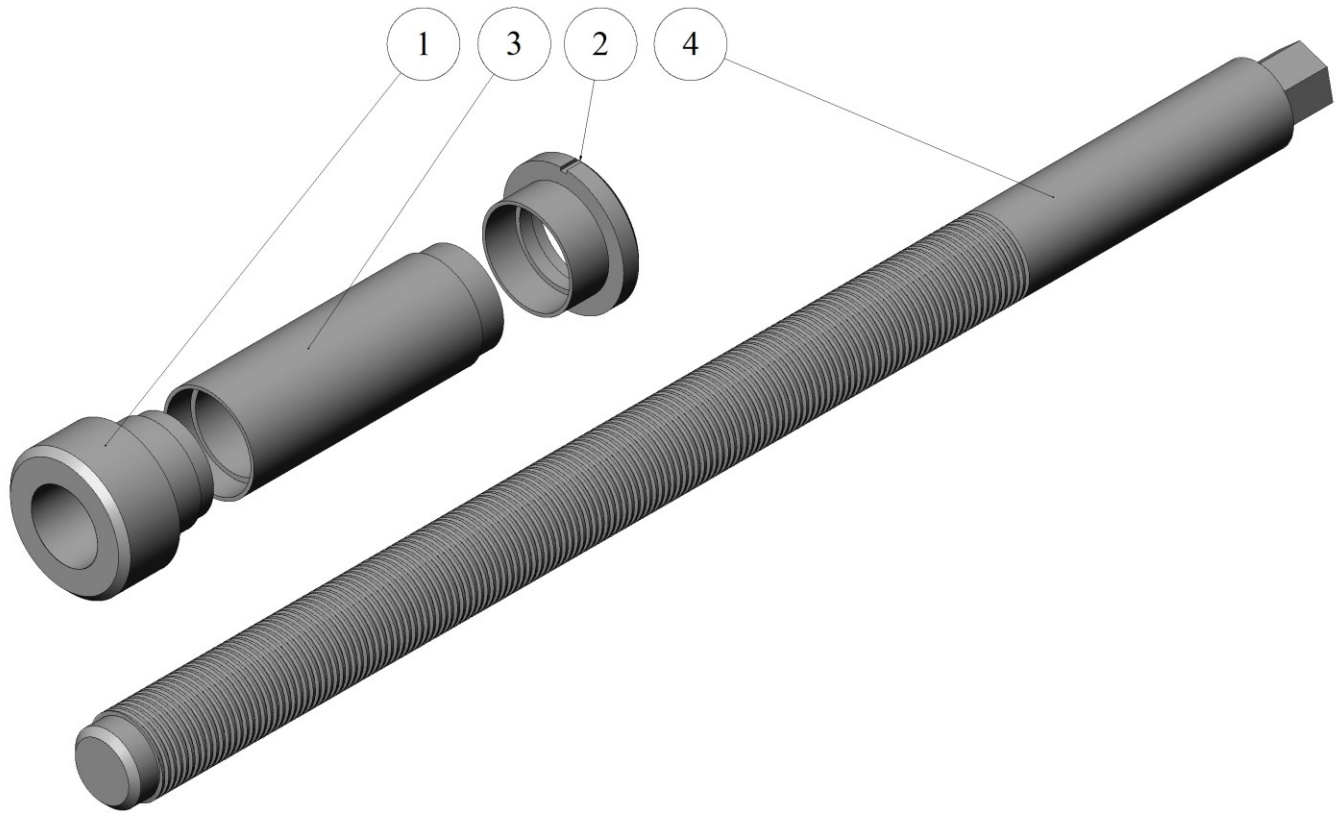
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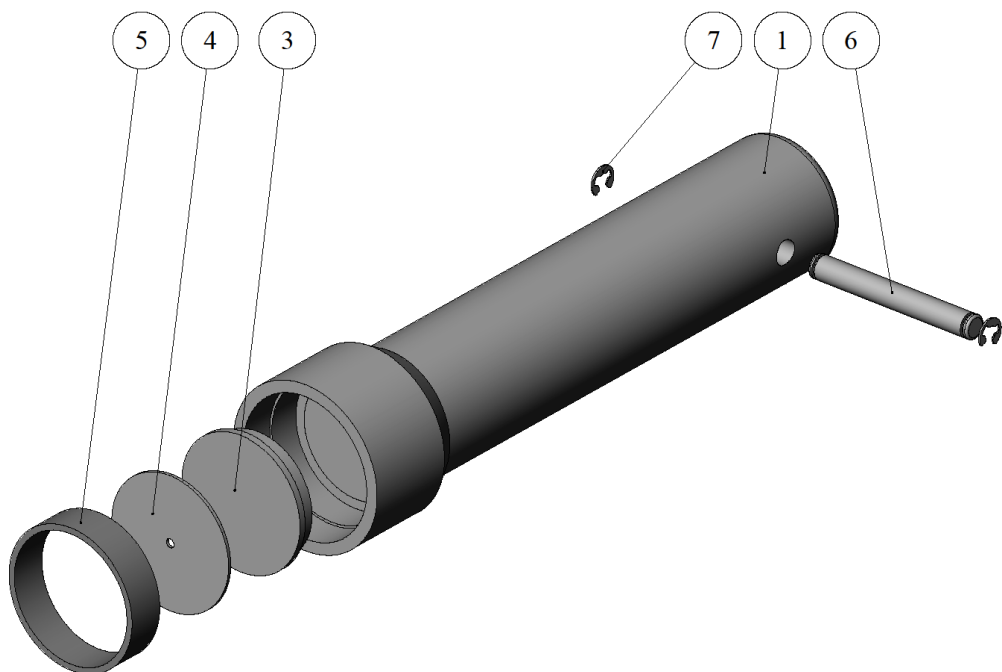
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Item	Part Number	Description
1	11010903	Spindle Thrust Nut
2	11010901	Spindle Retaining Nut
3	11010902	Spindle Nut Tube
4A	11011000	Spindle Shaft 50"
4B	11101001	Spindle Shaft 62"

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.

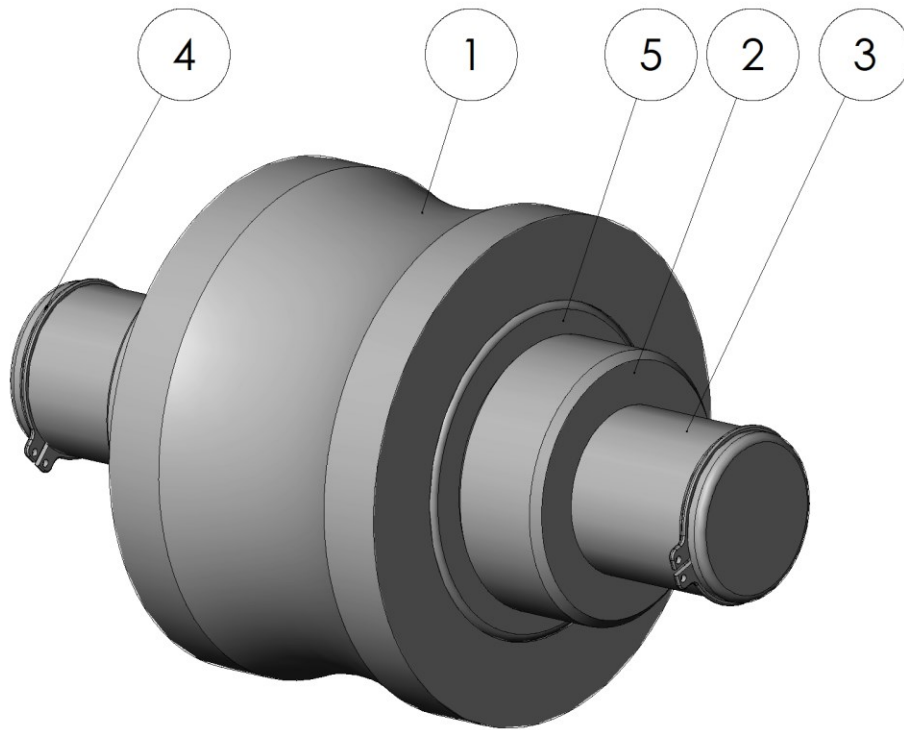
Spindle Nut Assembly



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

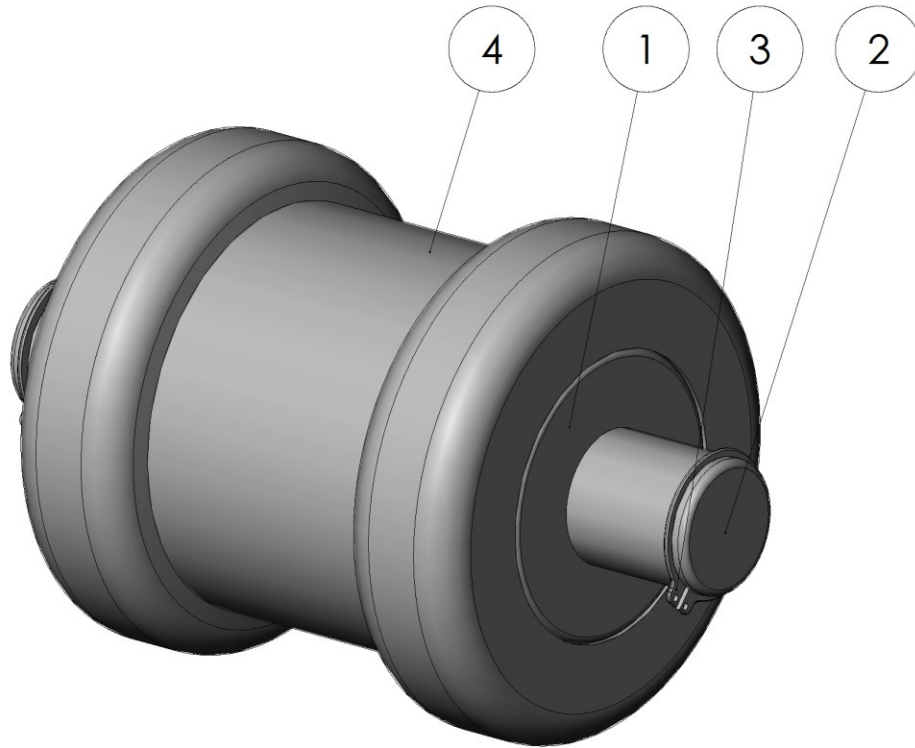
Push Tube Length	Part Number
10 Inch	11011111
14 Inch	11011110
18 Inch	11011112
24 Inch	11011115
28 Inch	11011117
32 inch	11011113
36 Inch	11011116

Pushtube Assembly



Item	Quantity	Part Number	Description
1	1	11010309	AR51 Follower Roller
2	2	SSC100	Stainless Steel Set Collar
3	1	11010310	AR51 Standard Rail Follower Pin
4	2	5100-100H	Snap Ring
5	2	SSR16-2RS	SS Ball Bearing

Follower Roller Assembly (Frame Sizes 1-9)
(AGC P/N 11010330)



Item	Quantity	Part Number	Description
1	2	SSR14-2RS	SS Ball Bearing
2	1	11010470	AR51 High Capacity Rail Follower Pin
3	2	5100-87H	Snap Ring
4	1	11008540	AR51 High Capacity Follower Roller

Follower Roller Assembly (Frame Sizes 10-15)
(AGC P/N 11008010)

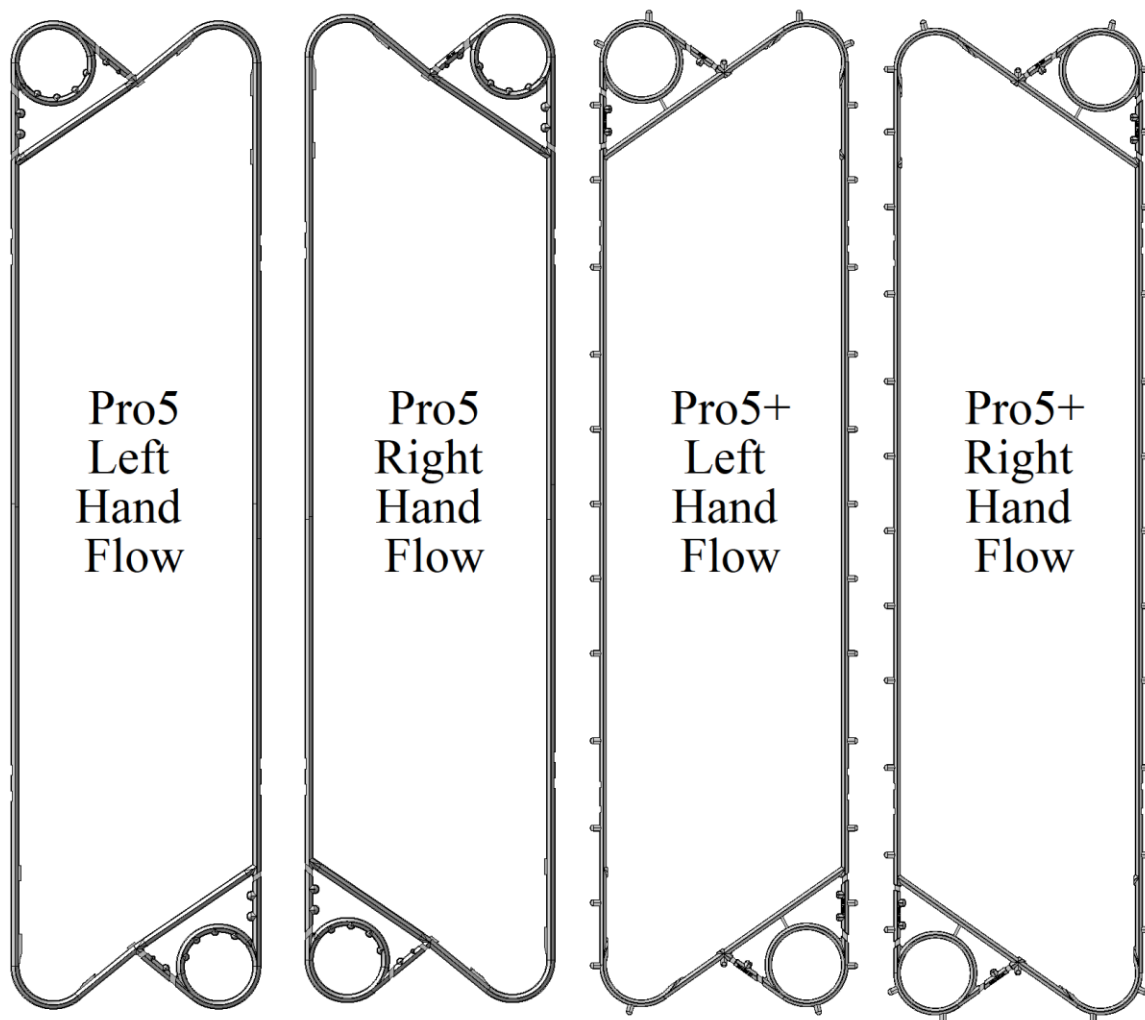


Plate Type	Part Number for NBR Gasket	Part Number for EPDM Gasket
Pro5 Right Hand	AGPRO501N	AGPRO501E
Pro5 Left Hand	AGPRO502N	AGPRO502E
Pro5+ Right Hand	AGPRO5P01N	AGPRO5P01E
Pro5+ Left Hand	AGPRO5P02N	AGPRO5P02E
Pro5 Port Gasket	AGPRO504N	AGPRO504E

Pro5 Flow Gaskets

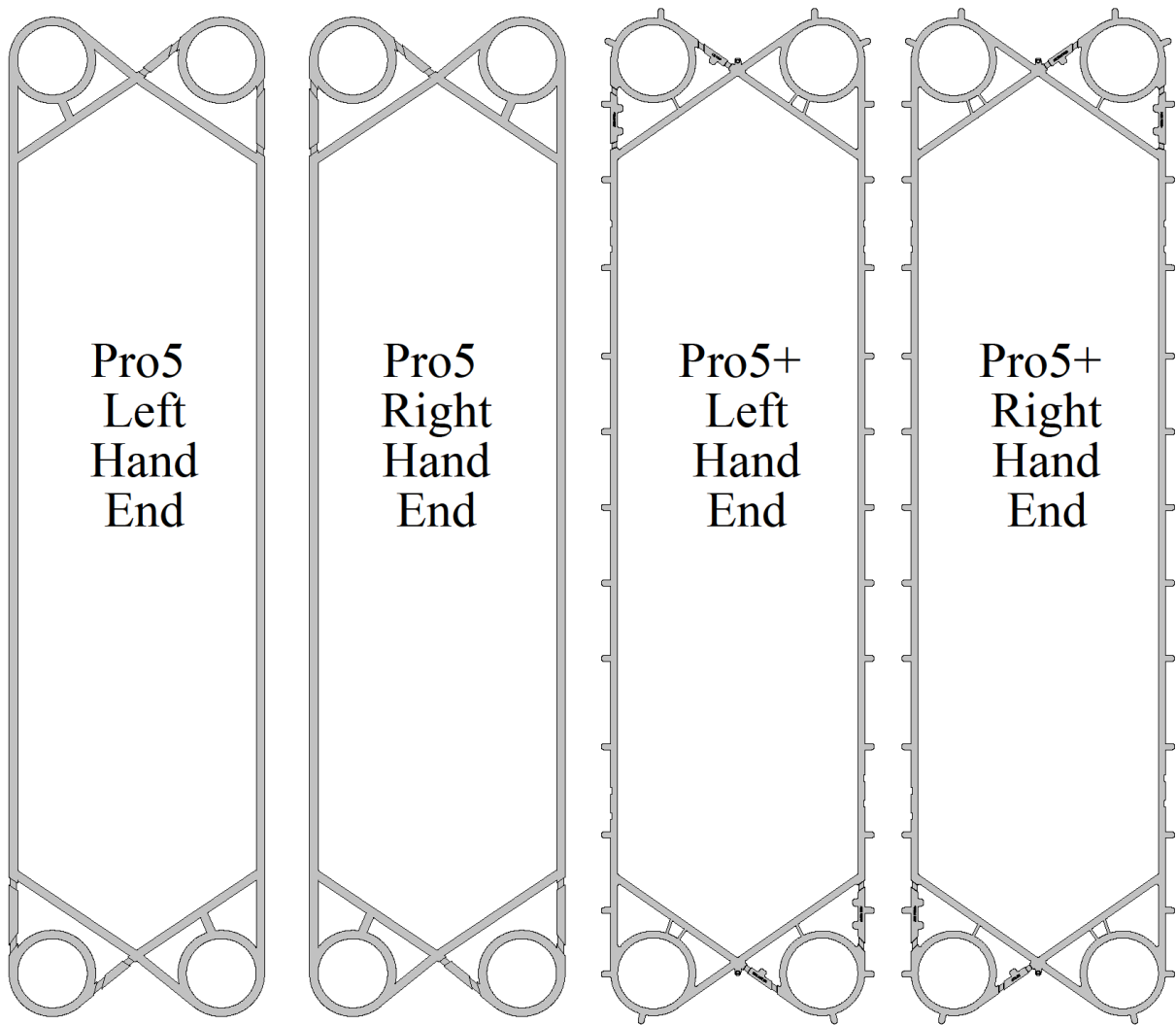
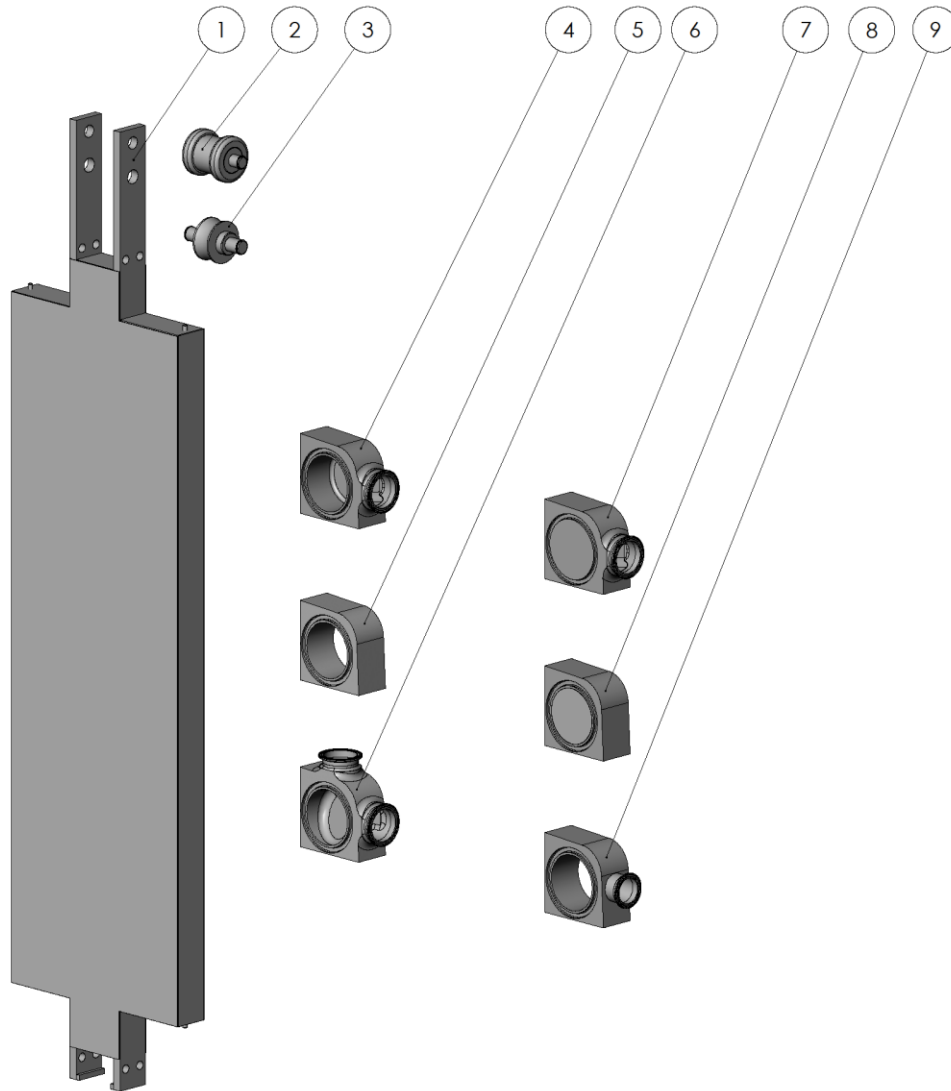


Plate Type	Part Number for NBR Gasket	Part Number for EPDM Gasket
Pro5 Right Hand End	AGPRO505N	AGPRO505E
Pro5 Left Hand End	AGPRO503N	AGPRO503E
Pro5+ Right Hand End	AGPRO5P04N	AGPRO5P04E
Pro5+ Left Hand End	AGPRO5P03N	AGPRO5P03E
Pro5 Port Gasket	AGPRO504N	AGPRO504E

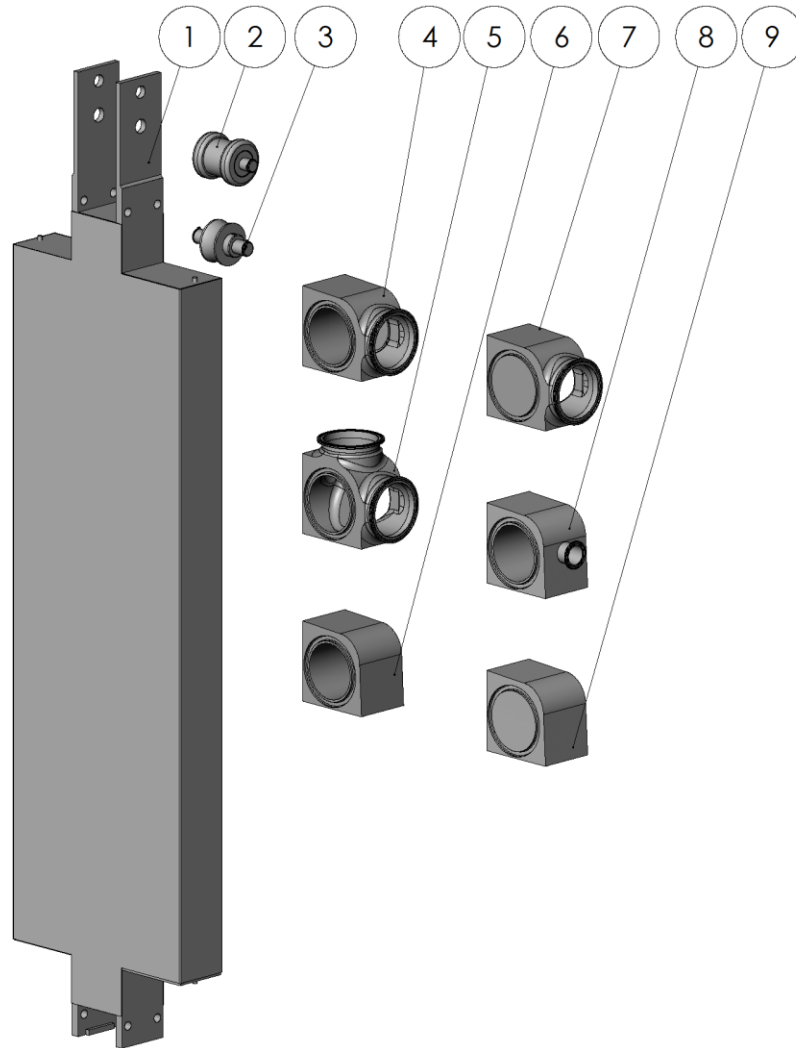
Pro5 End Gaskets



Item	Part Number	Description
1	11008450	Pro5 Standard Terminal Assembly without Bosses
2	11008553	Pro5 High Capacity Roller
3	11008551	AR51 Terminal Roller
4	11018561	Standard Pro5 Single Port Boss 'X' configuration
5	5997	Standard Pro5 Thru Port Boss
6	11008515	Standard Pro5 Double Port Boss
7	11008562	Standard Pro5 Single Port Boss 'V' configuration
8	11008563	Standard Pro5 Blank Port Boss
9	11008520	Standard Pro5 Thru Port Boss with 2" connection

Terminal measures 2-5/8" thick.

Pro5 Standard Terminal Components



Item	Part Number	Description
1	11008460	Pro5 Wide Terminal Assembly without Bosses
2	11008013	Pro5 High Capacity Roller Assembly
3	11008551	AR51 Terminal Roller
4	11008565	Wide Pro5 Single Port Boss 'X' configuration
5	11008522	Wide Pro5 Double Port Boss
6	11008513	Wide Pro5 Thru Port Boss
7	11008566	Wide Pro5 Single Port Boss 'V' configuration
8	11008556	Wide Pro5 Thru Port Boss with 2" connection
9	11008498	Wide Pro5 Blank Port Boss

Terminal measures 4-1/16" thick.

Pro5 Wide Terminal Components

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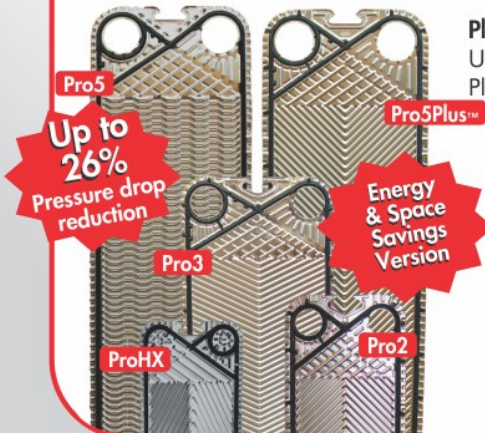
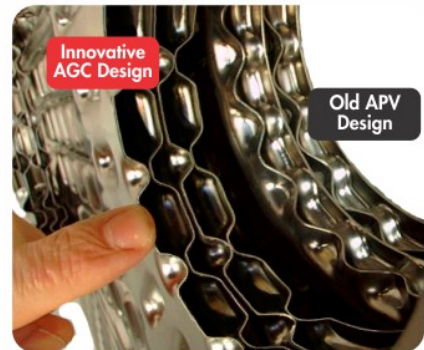


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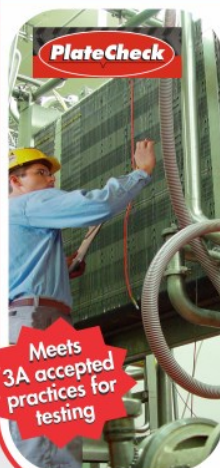
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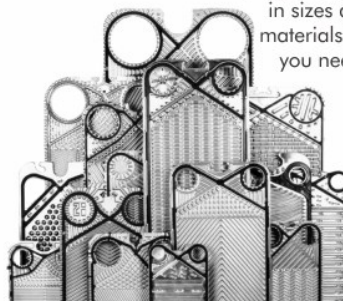


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+1.503.774.7342
+1.800.715.8820
FAX +1.503.774.2550

Central

8400 Lakeview Parkway
Suite 700
Pleasant Prairie, WI 53158
+1.847.301.6890
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Eastern

10129 Piper Lane
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