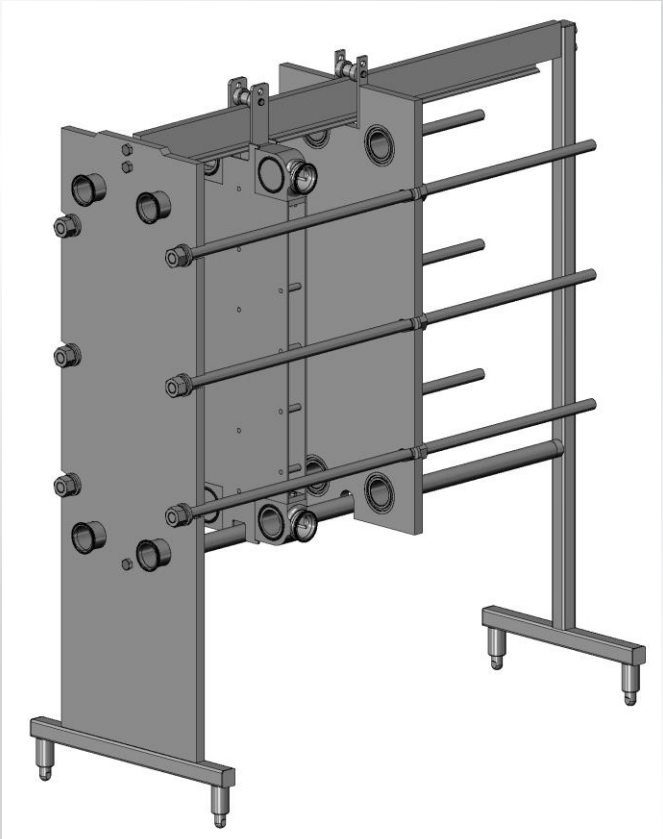
AGC™
HEAT TRANSFER

AGC Model Pro3-XP

Operation and Maintenance Manual



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proflow™ sanitary series

Eastern (Main) +1 703-257-1660 • Western +1 503-774-7342 • Central Sales +1 847-301-6890

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Eastern Factory
10129 Piper Lane
Bristow, Virginia 20136
Phone 703-257-1660
Fax 703-330-7940
800-825-8820

Western Factory
9109 SE 64th Avenue
Portland, Oregon 97206
Phone 503-774-7342
Fax 503-774-2550
800-715-8820

www.AGCHeatTransfer.com

Scope:

This manual is a supplement to the AGC Heat Transfer ProFlow plate heat exchanger manual. We recommend you read the ProFlow manual first because it will provide you with a basic understanding of plate heat exchangers and define the technical terms used in this document. The information provided within this manual describes the installation, operation, and maintenance of the AGC Heat Transfer Pro3-XP heat exchangers.

Please read this manual carefully before installing your heat exchanger. Pay particular attention to the safety instructions and the initial startup procedures. Failure to follow all safety recommendations could result in injury to the operator or cause damage to the heat exchanger.

Receiving and Inspection:

Each AGC heat exchanger is assembled and fully tested at the factory prior to shipping. Once the unit has successfully passed all tests it is prepared for shipping. Every AGC heat exchanger is thoroughly inspected to ensure it is in perfect condition before leaving the factory. Upon arrival, carefully inspect your new heat exchanger for any damage that may have occurred during shipping. If the press was damaged during shipping make sure it is annotated on the shipping documents. Also, report any damage to AGC immediately. To aid you in describing where any damage may have occurred, figure one shows the major components of a typical Pro3 frame with one terminal.

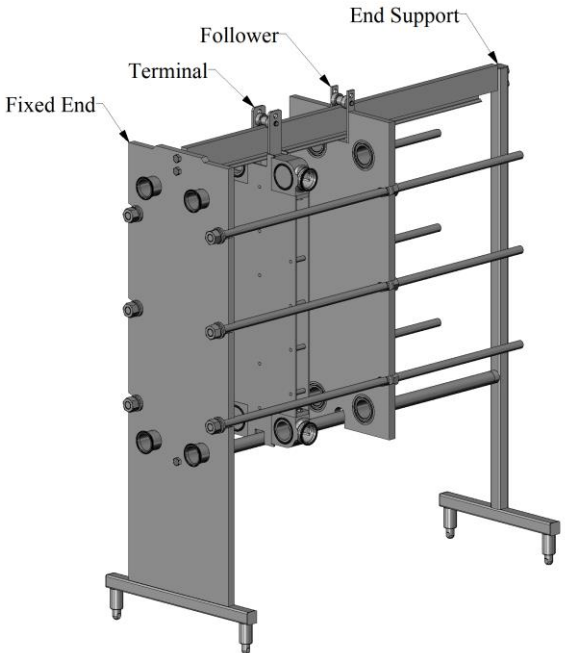

Figure 1

Major Frame Components

Normally, Pro3-XP frames are shipped with the plates installed. As a result the press and plates can weigh several thousand pounds. We recommend only qualified forklift operators should lift and position the unit. It should be noted that the high leg frame, also known as the Pro3-XPH, can be top heavy and could tip if they are not moved properly.

Drawing Package:

Every frame is shipped with a drawing package. This drawing package contains important information that is specific to your heat exchanger. If you cannot find the drawing package, contact AGC Heat Transfer or your local AGC distributor to obtain a replacement prior to installing the heat exchanger.

The drawing package is a collection of several important documents related explicitly to your heat exchanger. The first of these is the streaming diagram. Two copies of the streaming diagram are included. One copy has been laminated to protect it. This copy is intended to be used by production and maintenance personnel when installing and/or servicing the heat exchanger. The remaining copy should be kept on file in a safe place in the event the production copy is lost or damaged. The streaming diagram (also referred to as the drawing) describes all the characteristics of the heat exchanger. Figure 2 shows a typical two page streaming diagram**.**

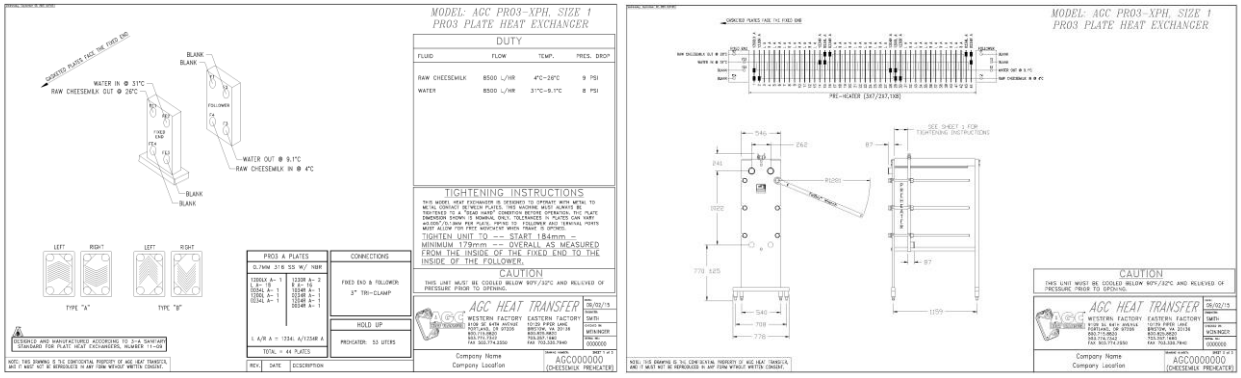

Figure 2

Typical Streaming Diagram

Page one shows the unit serial number, the duty, plate type, plate count, gasket type, connection type, connection size, and the tightening dimension. Revisions are also listed on page one. Page two of the drawing shows how the fluids pass through the heat exchanger. (The ProFlow manual describes how to read this flow diagram). If the unit is small, such as the unit in figure two, a front and side view of the heat exchanger will be shown as well. For larger units the front and side views are shown on page three or page four.

The second document in the drawing package is a plate punching diagram. This diagram will show you how to identify each Pro3 plate either by its configuration number (stamped at the top of each plate) or by looking at the plate noting which ports have been opened. Since the Pro3 plate is a vertical flow plate, each plate can be used for either a right or left hand plate. The ProFlow manual explains how these plates are used in greater detail.

The final document in the drawing package is the ProFlow manual. The ProFlow manual has information about the AGC Heat Transfer product line and a more in-depth discussion about plate heat exchangers in general.

Frame Placement:

Locate the Pro3-XP frame on a firm flat surface capable of supporting the press and all of its contents when full. If possible, the frame should remain strapped to the shipping skid until it is near its final location. Once the press is positioned cut the metal bands holding it to the shipping skid and, using an appropriately sized lifting strap, carefully lift the press off the skid. The top rail can be used as a lifting point. Never lift the press by the tiebolts. These bolts are in slots and are not designed to support the weight of the frame for lifting. When locating the heat exchanger, ensure that adequate space is left around the frame for maintenance and for plate installation/removal. Also include enough space to allow the AGC Fat Boy™ wrench to fully swing. See figure 3.

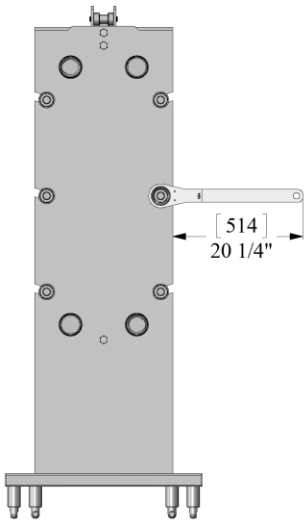

Figure 3

Wrench Space Requirement

The Pro3-XP and Pro3-XPH frames are equipped with adjustable ball feet. These feet are adjusted by turning the base clockwise to lower and counterclockwise to raise the press. The ball feet should be adjusted so the ports are level from side to side. Figure 4 shows a spirit level placed across the ports to establish level.

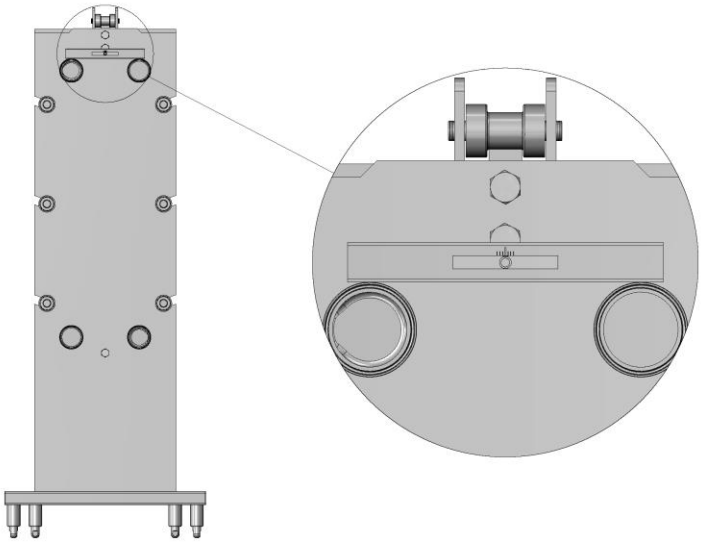

Figure 4

Port Leveling

Once the ports are level, the heat exchanger should be adjusted so it will drain properly. This is done by adjusting the ball feet to establish a slope from end to end. Figure 5 shows a press adjusted to drain forward to the fixed end.

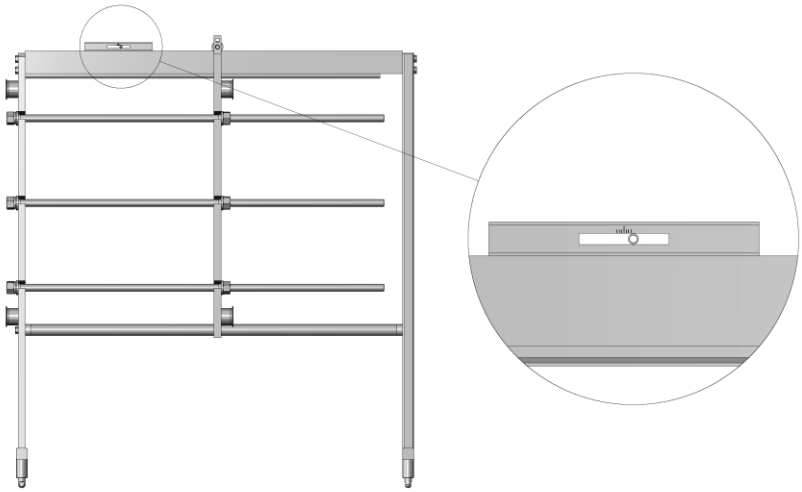

Figure 5

Frame Adjusted to Drain to Fixed End

Consult your onsite Plant Engineer or Project Manager to determine how much slope and which direction (toward the fixed end or follower) is appropriate for your installation.

Frame Connections:

Careful planning during the installation of your new heat exchanger will help ensure years of trouble free operation. All piping connections should be well supported and carefully aligned with the ports on the heat exchanger. Misaligned pipes or pipes that are not properly supported can lead to connection failures or cracks in the welded joints. When laying out a new installation, include enough breaks in the piping so service and maintenance can be completed easily. The piping connected to the follower should be configured with joints that are easy to remove so the follower can be fully retracted. This will provide enough space for clear inspection of the heat exchanger plates. The streaming diagram will show where all external connections should be made. Figure 6 shows page one of a typical streaming diagram for a multi section heat exchanger.

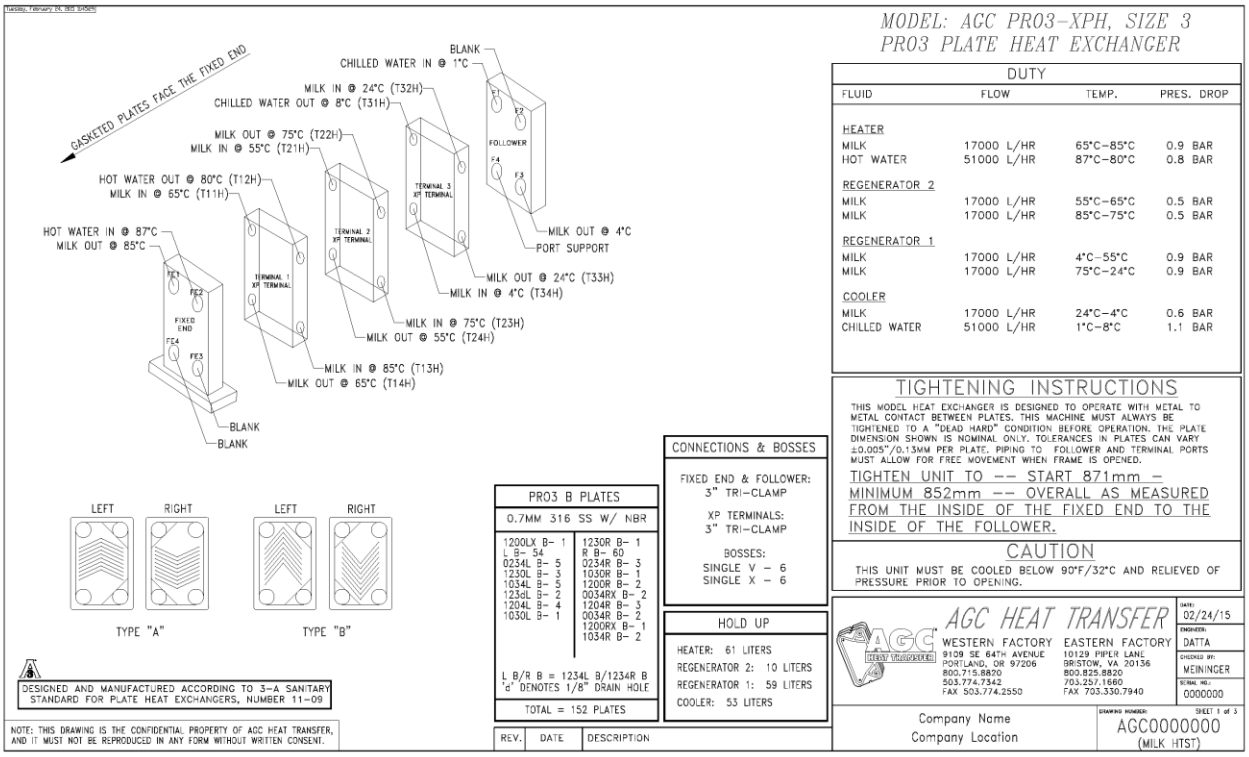

Figure 6

Typical Streaming Diagram

Notice that all ports have labels that clearly state what is to be connected to each one.

Normal Operation:

The Pro3-XP series heat exchangers are tiebolt style frames. This means the press is closed by using 6 tiebolts to compress the plates. For this type of frame it is important for each tiebolt to take an equal share of the load. After your heat exchanger is in place you should check the compressed dimension if the plates were shipped installed. The dimension for your heat exchanger is listed on the first page of your streaming diagram. Figure 7 shows where the tightening dimension is located on the drawing. If the plates were shipped in a separate crate refer to the ProFlow manual for instructions on installing them.

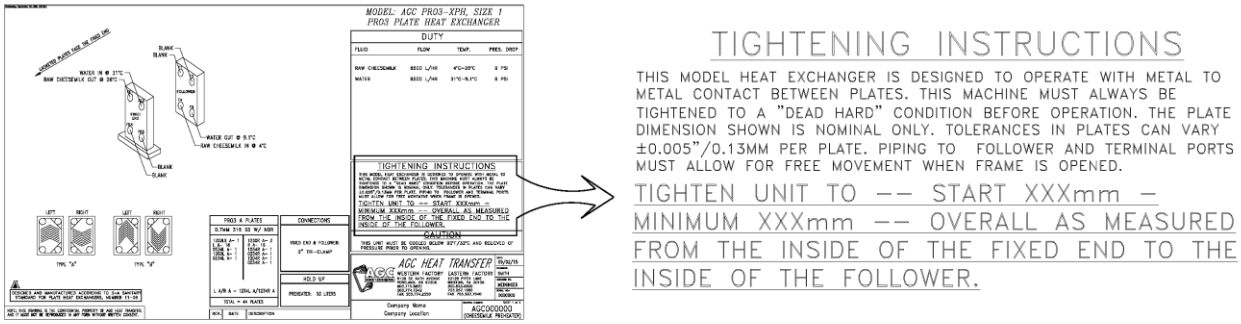

Figure 7

Tightening Instructions

Most new plate packs will seal at the start dimension. As the plates and gaskets wear it may be necessary to compress or close the press further. You should never exceed the minimum dimension shown on the streaming diagram. If your press is closed to the minimum dimension and leaks are noticed contact AGC Heat Transfer for technical assistance. Closing the press beyond the minimum dimension could cause permanent damage to the plates, frame, or both. When measuring the compressed dimension it is a good practice to take the measurement in several locations on the inside of the fixed end and follower as shown in figure 8.

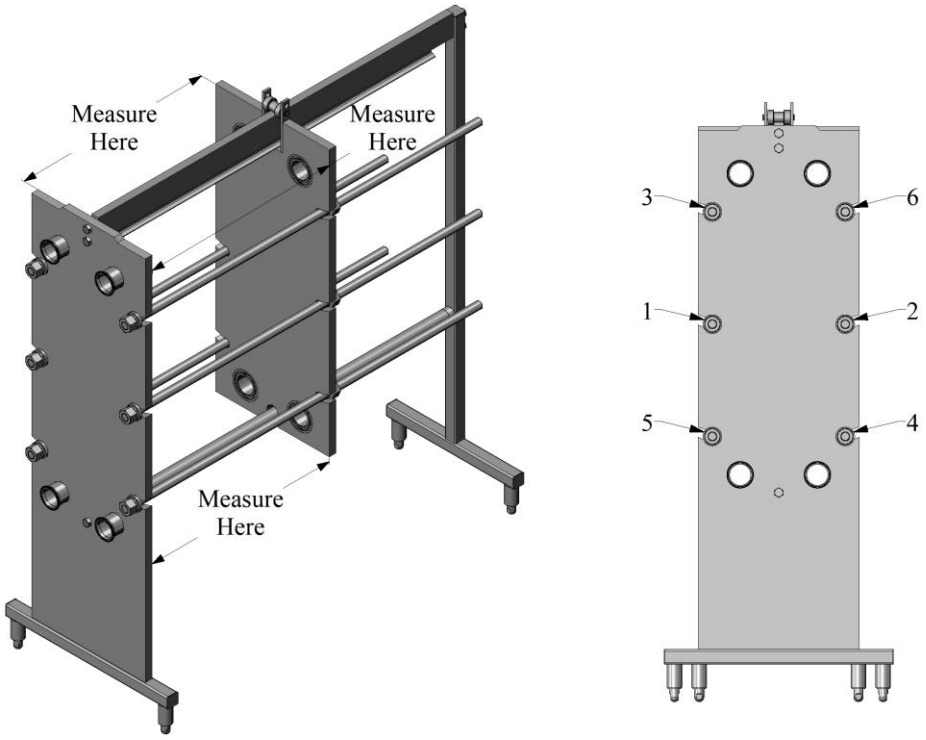

Figure 8

Tightening Location and Sequence

Measure top and bottom as well as front and back. The heat exchanger is designed operate at its top efficiency when it is closed to a metal to metal condition. This means the rubber plate gaskets are fully compressed and the plates contact points are fully engaged with each adjacent plate. In this condition, the plate gap is uniform and the plate is fully supported. To maintain this condition all tiebolts should be tightened equally and in sequence. Following the sequence shown in figure 8, tighten each tiebolt in small increments so the follower remains parallel to the fixed end. As the press approaches the start dimension smaller increments at each bolt will make for easier closing.

After the press is closed and all connections are made to the heat exchanger the unit is ready to be pressure checked. Consult the onsite plant engineer or project manager for the correct procedure on pressure testing the press.

Opening the Heat Exchanger:

Before opening this or any other heat exchanger you must verify the temperature in the unit is below 90° F and that the unit has been relieved of all internal pressure. Failure to follow this safety warning could result in serious injury to the operator or damage to the plates and gaskets. All pipes/connections should be disconnected from the heat exchanger before the tiebolts are loosened.

Prior to opening the press, inspect the tiebolts to ensure they are free from dirt or excessive dust and that lubrication is present on each. Opening or closing the tiebolts without lubrication may cause permanent damage to the tiebolt. Small increments on each bolt will make the process easier and prevent

damage to the press or any of its parts. The tiebolts should be loosened using the same sequence as for tightening. See figure 8 for the bolt sequence. As with tightening, the closer the unit is to the minimum dimension the more torque will be required on the Fat Boy™ wrench. Once the plates are completely uncompressed, the tiebolts can be lifted from their slot. Handle the tiebolts with care so the threads are not damaged. The follower can now be moved back toward the end support and the plates can be inspected or removed.

Operator Maintenance:

All AGC Heat Transfer heat exchangers are designed to require minimal operator maintenance. As long as the unit is operated within the pressure and temperature limits the only maintenance required is routine cleaning, lubrication and inspection. We recommend the unit be leak checked annually using the PlateCheck™ field service provided by AGC Heat Transfer. This service is performed onsite by factory trained service engineers. The PlateCheck™ service provides a thorough inspection of all parts of the heat exchanger. After the service is complete, a detailed written report is provided on the condition of the heat exchanger. This preventative maintenance service greatly reduces unscheduled down time by keeping the heat exchanger in peak operating condition.

Parts List:

Replacement parts for any AGC Pro3-XP frame can be ordered from AGC Heat Transfer or from your local AGC Distributor. Most parts are in stock and can be shipped within 24 hours from the time we receive your order. Some parts have been revised so it is important to have your unit model and serial number available when placing an order for spare or replacement parts. Most of the field replaceable parts are listed in this manual. If the part you need is not listed on the following pages contact your local AGC distributor or the AGC Heat Transfer Factory.

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

Eastern Factory
10129 Piper Lane
Bristow, Virginia 20136
Phone 703-257-1660
Fax 703-330-7940
800-825-8820

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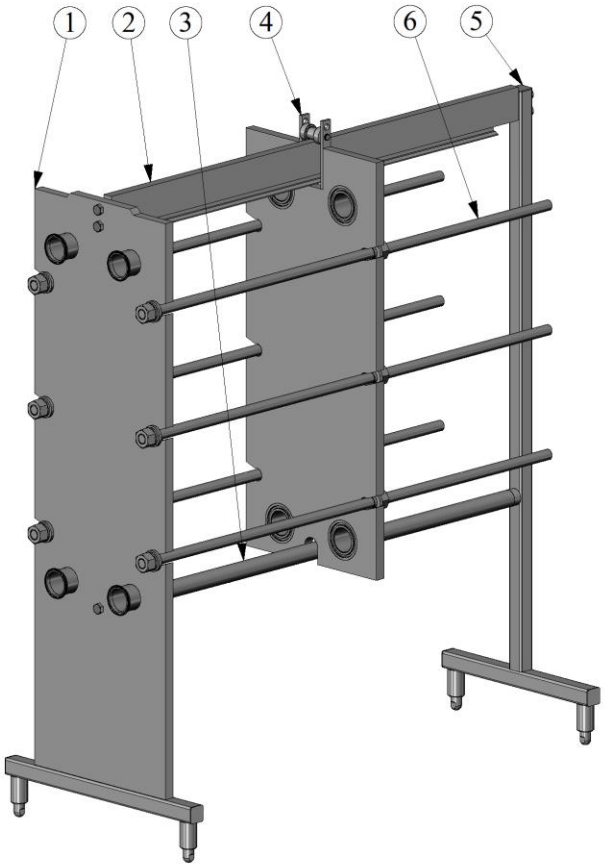
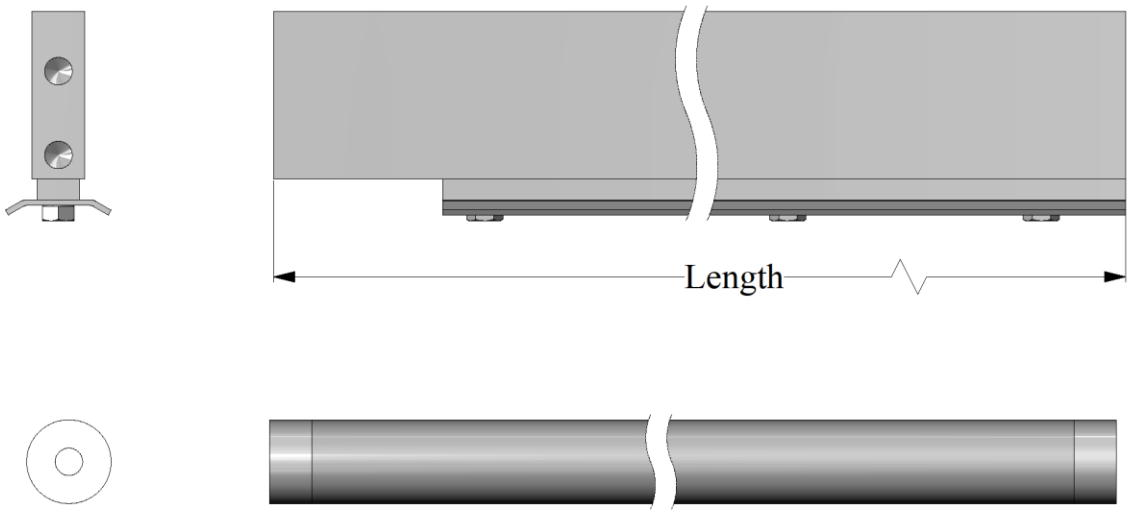


Item	Quantity	Part Number	Description
1	1	11012310	Pro3-XP Fixed End
2	1	See Chart	Pro3-XP Upper Rail
3	1	See Chart	Pro3-XP Bottom Rail
4	1	11012330	Pro3-XP Follower
5	1	11012340	Pro3-XPH End Support
6	6	See Chart	Pro3-XP Tie Bolt Assembly

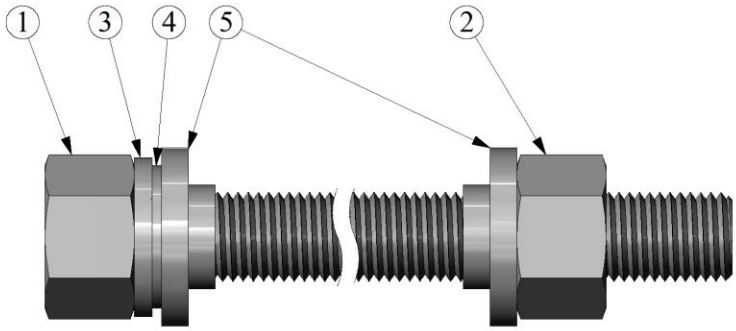
Pro3-XP Frame Components

*Note: All rails shipped without bolts and washers unless specifically ordered.



Rail Size	Rail Length	Upper Rail Part Number	Lower Rail Part Number
1	1118 [44”]	11012365	11014700
2	1701 [67”]	11012366	11014703
3	2311 [92”]	11012367	11014704
4	2921 [115”]	11012368	11014705

Pro3-XP Rail Size Chart

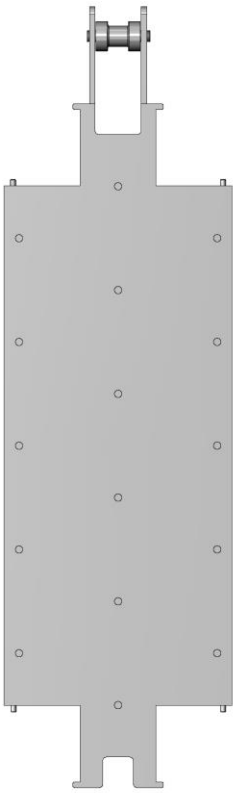


Item	Quantity	Part Number	Description
1	1	See Chart	Tie Bolt Base
2	1	SG114C	Bronze Nut
3	1	11013002	Thrust Washer
4	1	EW203202	Thrust Bearing
5	2	11012377	Pro3-XP Tie Bolt Bushing

Pro3-XP Tie Bolt Size Chart			
Tie Bolt Size	**Overall Length**	**Tie Bolt Base Part Number**	**Complete Assembly Number**
1	1118 [44”]	11012374	11012370
2	1701 [67”]	11012375	11012371
3	2311 [91”]	11012376	11012372
4	2921 [115”]	11012377	11012373

Note: To order a complete tiebolt assembly use assembly number for desired size.

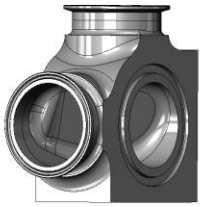
Pro3-XP Tiebolt Assembly



Pro3 "V" Boss

Pro3 "X" Boss

Pro3 Thru with
2" Pressure Switch



Pro3 Double

Pro3 Blank

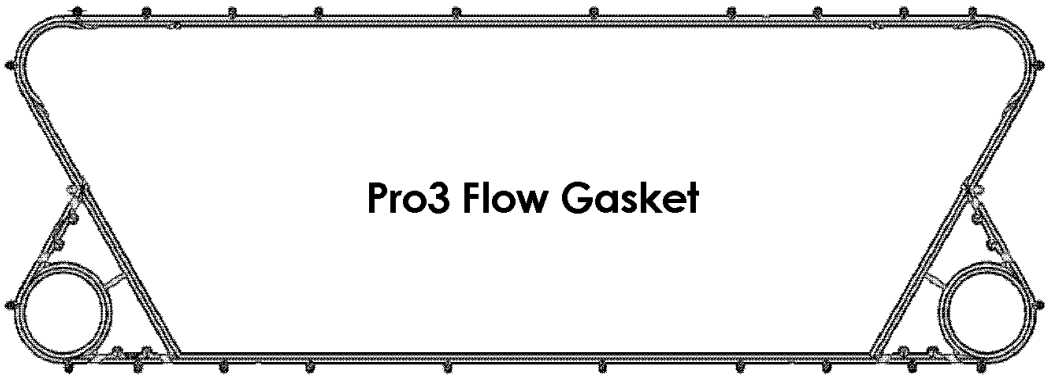
Pro3 Thru

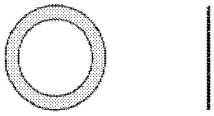
Pro3-XP Terminal Parts	
Description	**Part Number**
Pro3-XP Terminal without Roller	11012350
Pro3-XP Terminal Roller with Pin	11012335
Pro3 Port Boss V Configuration	11018516
Pro3 Port Boss X Configuration	11018515
Pro3 Port Boss with 2” Pressure Switch	11018518
Pro3 Port Boss Blank	11018520
Pro3 Port Boss Thru	11018513

*Note: Port Bosses shown with tri-clamp ferrules. Other connections are available on request.

Pro3-XP Terminal Assembly

(All Pro3 Tiebolt Frames)





Die Cut Pro3
Port Gasket

Molded Pro3
Port Gasket

Description	Part Number	Frame Application
Pro3 Flow EPDM	AGPRO301E	All Pro 3 Models
Pro3 Flow NBR	AGPRO301N	All Pro 3 Models
Pro3 End EPDM	AGPRO302E	All Pro3 Models
Pro3 End NBR	AGPRO302N	All Pro3 Models
Pro3 Die Cut Port EPDM	11018578	Pro3-I
Pro3 Die Cut Port NBR	11018572	Pro3-I
Pro3 Molded Port EPDM	AGPRO303E	Pro3-S/SH/F/DF/DFH and Pro3 Terminal
Pro3 Molded Port NBR	AGPRO303N	Pro3-S/SH/F/DF/DFH and Pro3 Terminal

Pro3 Plate and Frame Gaskets

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PRO31
Hydraulic Frame

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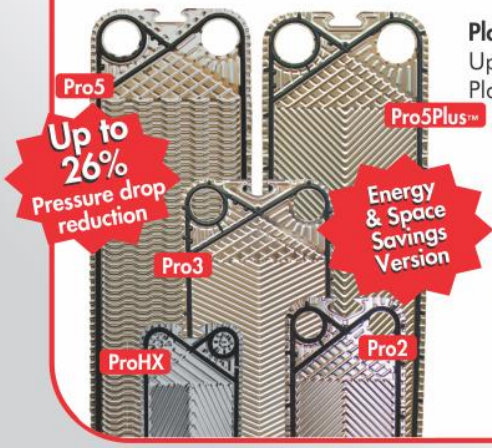

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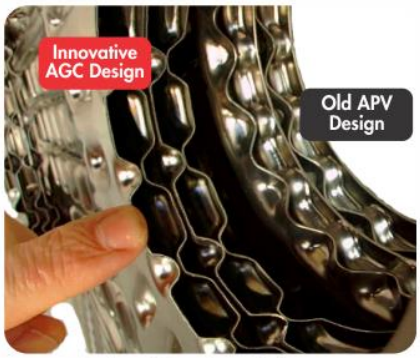
AGC Snap-in Gasket



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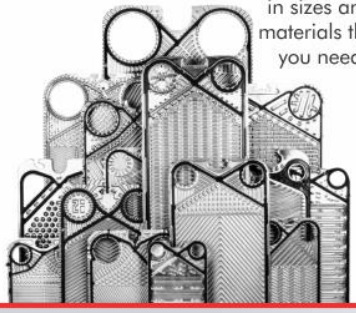

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AGC Heat Transfer, Inc. is the leading supplier of sanitary plate heat exchangers in North America, manufacturing plate heat exchangers specifically designed for sanitary applications. AGC offers complete heat exchangers services including new frames as well as upgrade plate packs, gaskets and spares that fit other brands. Frames available are tie-bolt, twin spindle and hydraulic (automatic) closure. AGC offers Platecheck™ Field Leak Testing of plate heat exchangers that meets the 3-A sanitary standard.

Eastern Factory (Main)
10129 Piper Lane
Bristow, VA 20136
+1 703-257-1660
FAX +1 703-330-7940

Western Factory
9109 SE 64th Avenue
Portland, OR 97206
+1 503-774-7342
FAX +1 503-774-2550

Central (Sales)
1325 Remington Rd.
Suite T
Schaumburg, IL 60173
+1 804-301-6890
FAX +1 503-774-2550

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