

## RAYPAK REPLACEMENT KIT INSTRUCTIONS

FLOW SWITCH KIT (#007142F) & FLOW SWITCH PADDLE KIT (#010026F) – ALL RAYPAK APPLIANCES

**IMPORTANT NOTICE**

These instructions are primarily intended for use by qualified personnel specifically trained and experienced in the installation of this type of heating equipment and related system components. Installation and service personnel may be required to be licensed in some states. Persons not qualified shall not attempt to install this equipment nor attempt repairs according to these instructions.

**DANGER - SHOCK HAZARD**

Make sure electrical power to the heater is disconnected to avoid damage to components, potential serious personal injury or death. Make sure the gas to the heater has been shut off.

**WARNING**

Make sure **Water, Gas & Power** have been turned **OFF** before making any repairs or servicing this equipment.

**SCOPE**

This kit provides for a field installation of the Raypak IFS01-BN-S2 Flow Switch kit, which is a direct replacement for the OEM flow switch. This instruction also covers the Flow Switch Paddle kit for all Raypak appliances equipped with a flow switch, except the HPPH.

| KIT 010026F CONTENTS: |                |          |
|-----------------------|----------------|----------|
| (1)                   | "A" Paddle     | 1-13/16" |
| (1)                   | "B" Paddle     | 2-1/8"   |
| (1)                   | "C" Paddle     | 2-3/8"   |
| (1)                   | "D" Paddle     | 3-3/8"   |
| (1)                   | "E" Paddle     | 2-9/16"  |
| (1)                   | "F" Paddle     | 1-7/8"   |
| (1)                   | "G" Paddle     | 2-9/16"  |
| (1)                   | "H" Paddle     | 2-1/64"  |
| (1)                   | "J" Paddle     | 1-53/64" |
| (1)                   | "K" Paddle     | 2-3/4"   |
| (1)                   | "M" Paddle     | 3-1/4"   |
| (1)                   | "N" Paddle     | 3"       |
| (1)                   | "P" Paddle     | 3-3/4"   |
| (1)                   | "Q" Paddle     | 4-1/2"   |
| (1)                   | "R" Paddle     | 6-17/32" |
| (1)                   | Mounting Screw |          |
| (1)                   | Instructions   |          |
| (1)                   | "U" Paddle     | 1.83"    |
| (1)                   | "V" Paddle     | 2.32"    |

**KIT 007142F CONTENTS:**

- (1) Flow Switch (IFS01-BN-S2)
- (1) Outdoor Flow Switch Cover
- (1) **010026F Paddle Kit**



**Figure 1 Kit 007142F**

## LIST OF REQUIRED TOOLS:

1. Phillips screwdriver
2. slotted screwdriver
3. needle nose pliers



**Figure 2 Tools**

**NOTE:** The flow switch may be located on either the water connection side, near the inlet/outlet header, or on the opposite end, on the return header.

## INSTRUCTIONS:

1. Relieve the pressure in the system by opening the PRV (Pressure Relief Valve)
2. Locate flow switch on the heater.
3. Loosen and remove the cover from the flow switch.
4. Remove the wire terminals connected to the flow switch. (See Fig. 3)
5. Loosen and remove the conduit lock-nut. (See Fig. 3.)
6. Remove wires and conduit completely from the flow switch housing.
7. Rotate the complete flow switch assembly counter-clockwise. (See Fig. 3.)
8. Select the correct size paddle. (See pages 13 or 14)
9. Attach the paddle to the existing IFS01-BN-S2 or new flow switch stem by using the stainless steel screw supplied.
10. Attach suitable Teflon tape or pipe sealant to threads of flow switch, leaving the first two threads bare.
11. Install the new flow switch/paddle and reassemble by reversing the above steps.

**NOTE:** Outdoor installations must use the outdoor flow switch cover.

**CAUTION:** The McDonnell & Miller FS4-3-RP paddles and the Raypak IFS01-BN-S2 paddles are not interchangeable.

Table 1

| Paddle Designation | Paddle Size |
|--------------------|-------------|
| A                  | 1-13/16"    |
| B                  | 2-1/8"      |
| C                  | 2-3/8"      |
| D                  | 3-3/8"      |
| E                  | 2-9/16"     |
| F                  | 1-7/8"      |
| G                  | 2-9/16"     |
| H                  | 2-1/64"     |
| J                  | 1-53/64"    |
| K                  | 2-3/4"      |
| M                  | 3-1/4"      |
| N                  | 3"          |
| P                  | 3-3/4"      |
| Q                  | 4-1/2"      |
| R                  | 6-17/32"    |
| U                  | 1.83"       |
| V                  | 2.32"       |

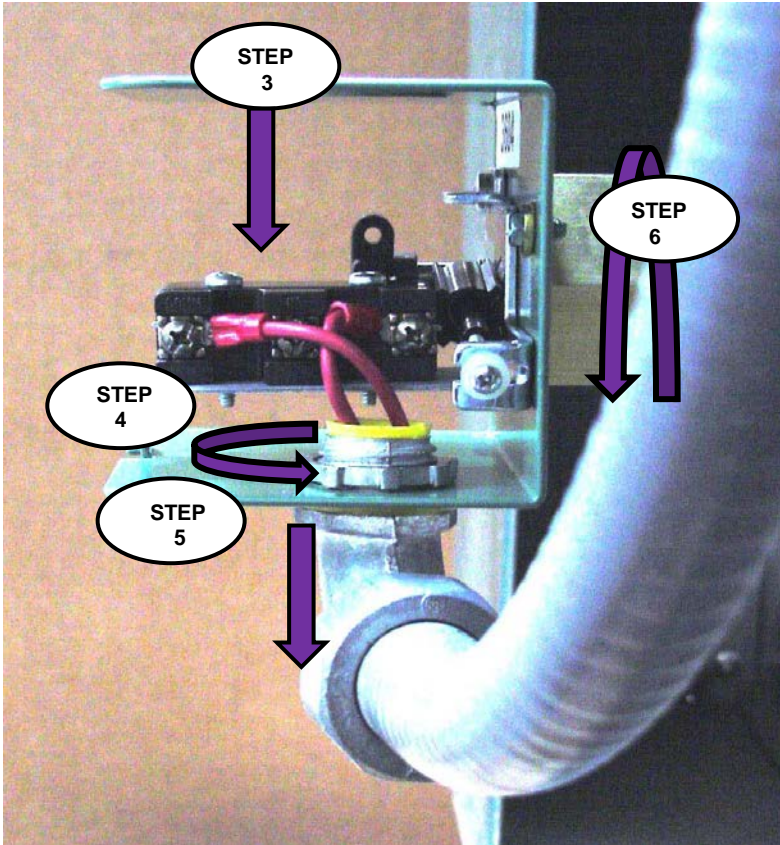
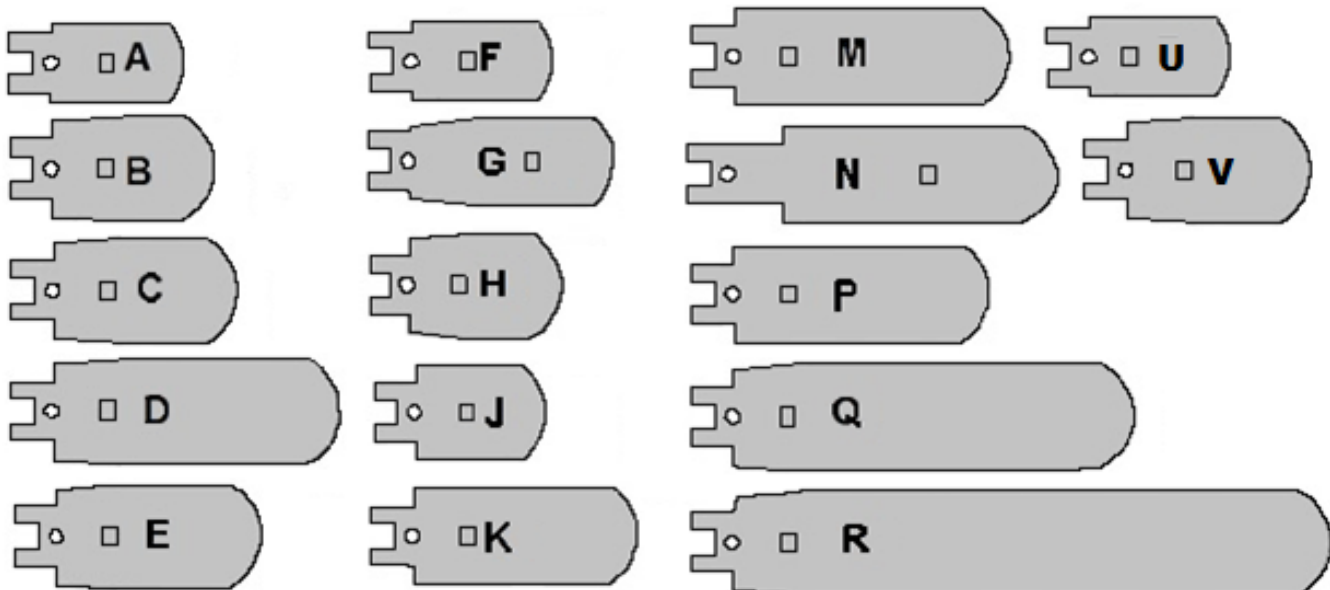


Figure 3 Flow Switch Installation



## RAYTHERM MODELS



**Figure 4**  
**Raytherm Boiler Without Pump**  
Outdoor model with cover



**Figure 5 Raytherm Econopak**



**Raytherm Boiler**  
Front-Mounted  
Flow Switch

**Raytherm Models Without Pump**  
Flow switch must be horizontal as shown.

**Figure 6**

## RAYTHERM MODELS



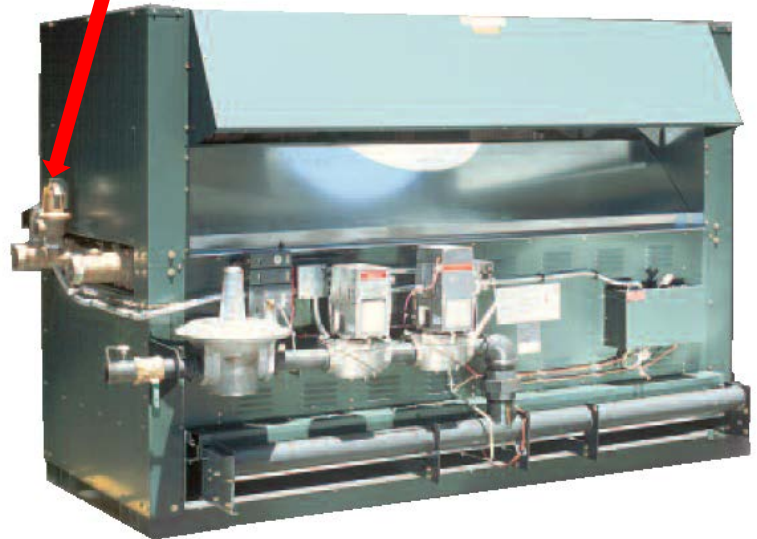
**RAYTHERM Models 514-1826 with Integral Pump**  
Flow switch must be tilted  $25^{\circ} \pm 5^{\circ}$   
From Horizontal  
**Figure 7**



**Figure 8**



**RAYPAK Professional Pool Heater**  
**Models 268 & 408**  
Front-Mounted Flow Switch  
**Figure 9**



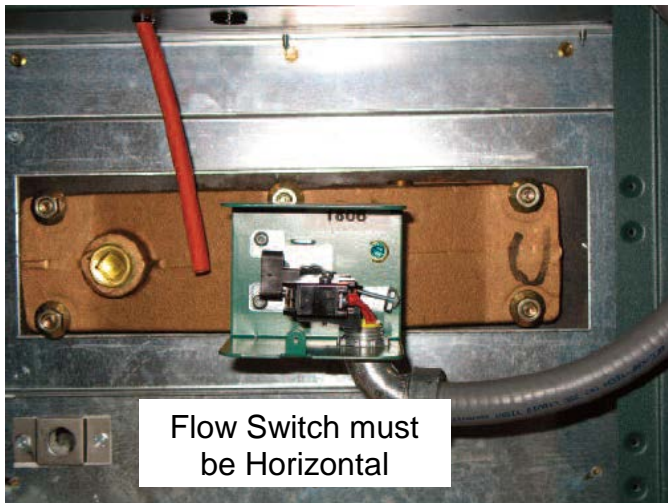
**RAYTHERM Models 2100-4001**  
Flow switch must be mounted Perpendicular to Flow  
**Figure 10**

**HI-DELTA MODELS**  
302-902A, B & C  
992A, B & C – 2342A, B & C

**HI-DELTA Models without pump**  
Flow Switch must be Horizontal  
**Figure 11**



**HI-DELTA MODELS**  
302A,B & C - 2342A,B & C



Flow Switch must be Horizontal

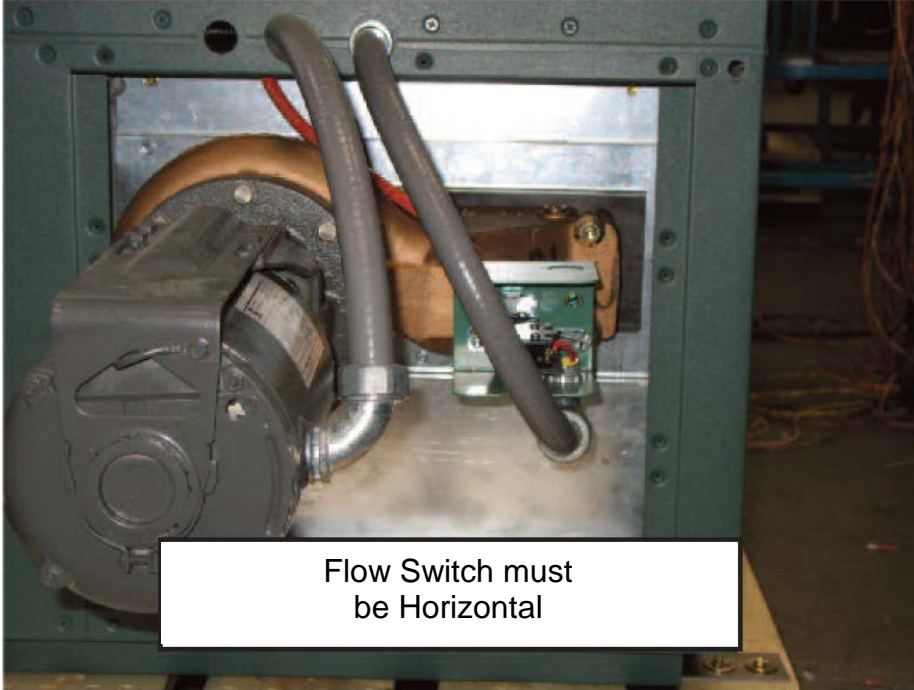
**HI-DELTA Models without pump**  
Flow Switch must be Horizontal

Flow Switch is Mounted Perpendicular to Flow  
**Figure 12**



**HI-DELTA Models HD101- 401**  
**Figure 13**

**HI-DELTA MODELS  
302-902A,B & C  
992A,B & C -2342A,B & C**



**HI-DELTA Models  
302A,B & C – 902A,B&C With Pump**  
Flow Switch Must be Horizontal

**Figure 14**

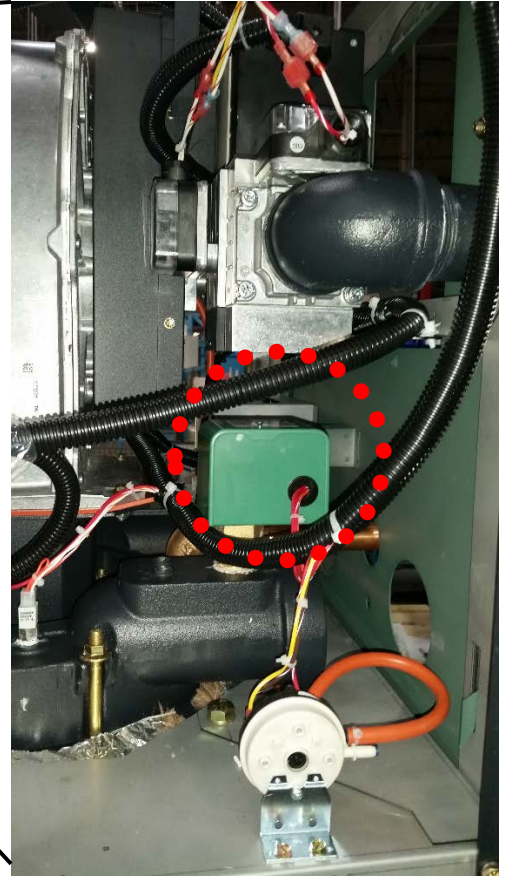


**HI-DELTA Models  
992A,B & C – 2342A,B & C  
with Integral Pump**  
Flow switch must be tilted  $25^{\circ} \pm 5^{\circ}$   
From Horizontal

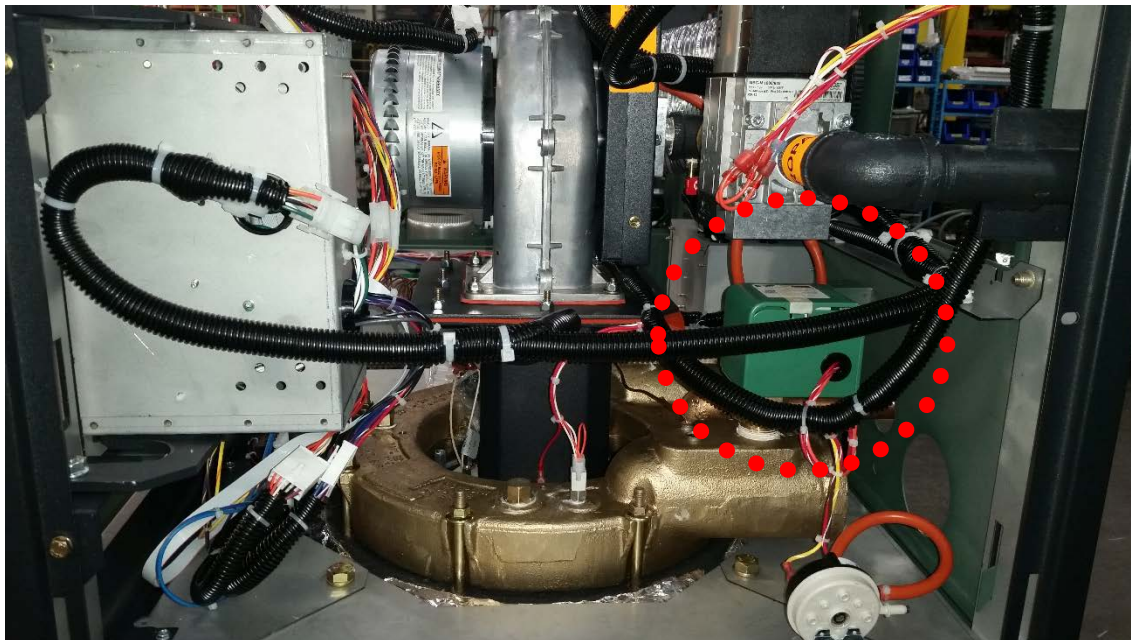
**Figure 15**



**MVB MODELS  
503-2004, 503A-2004A  
2503-4003  
Figure 16**



**Figure 17**





**XVERS MODELS  
856-3006  
XVERS L MODELS 406L-856L**



**FRONT VIEW XVERS**

**Figure 18**



**XVERS L**

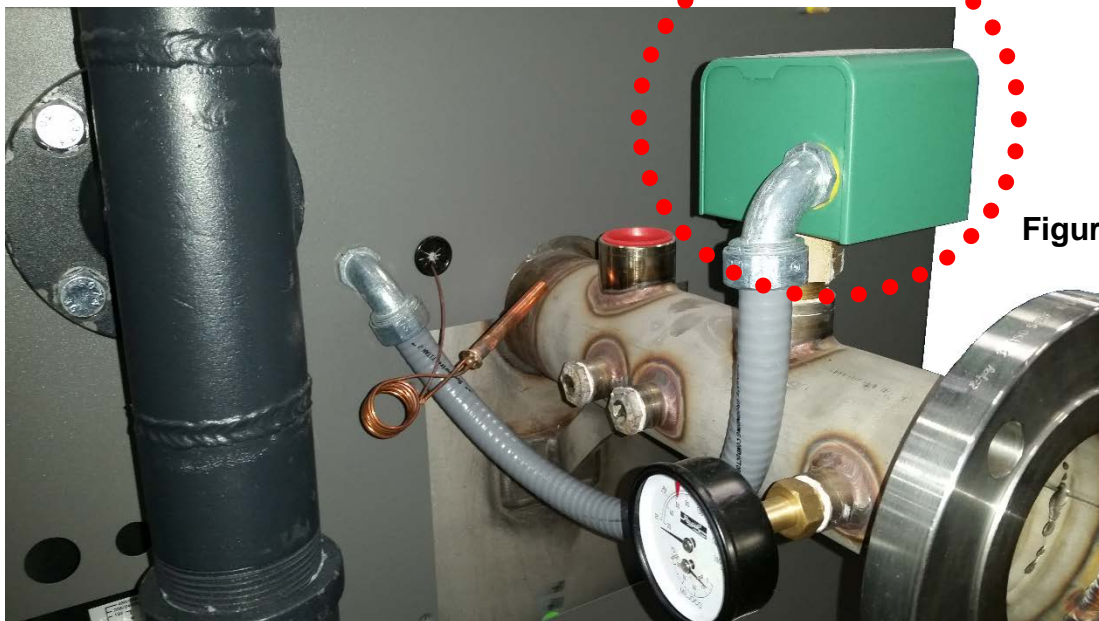
**Figure 19**



**Figure 20**

**REAR VIEW**

**CLOSE UP**



**Figure 21**

## XTHERM MODELS 1005, 1005A, 1505, 1505A, 2005, 2005A, 2505, 3005, 3505 & 4005 AND INDIRECT XTHERM MODELS



Figure 22



Figure 23

**NOTE:**

There are two separate Flow Switches provided on XTherm Indirect Pool Heaters.

The Flow Switch mounted to the Inlet/Outlet Header uses "A" and "B" paddles. Check the Paddle size chart for the correct Model.

The Flow Switch mounted to the piping uses paddle size "K".

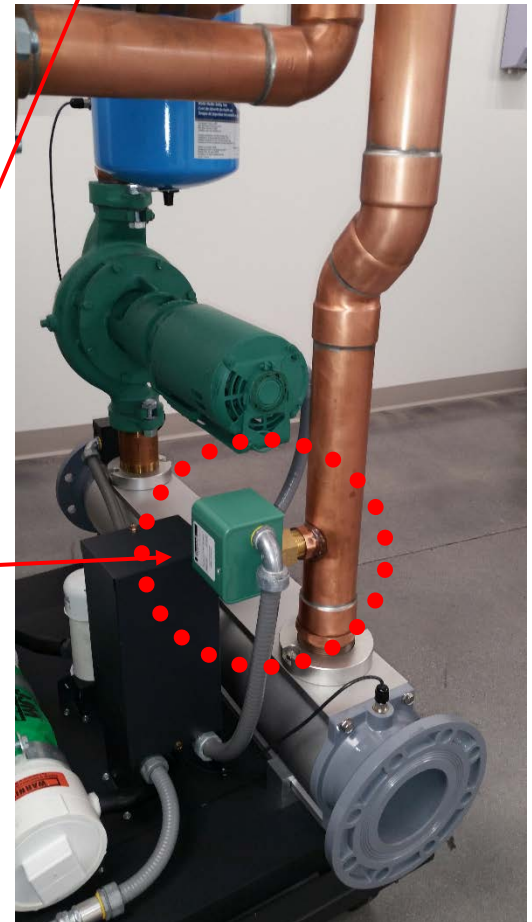


Figure 24

## XFYRE MODELS 300A – 850A & XFIIRE MODELS 300B-1000B

### XFYRE



Figure 23

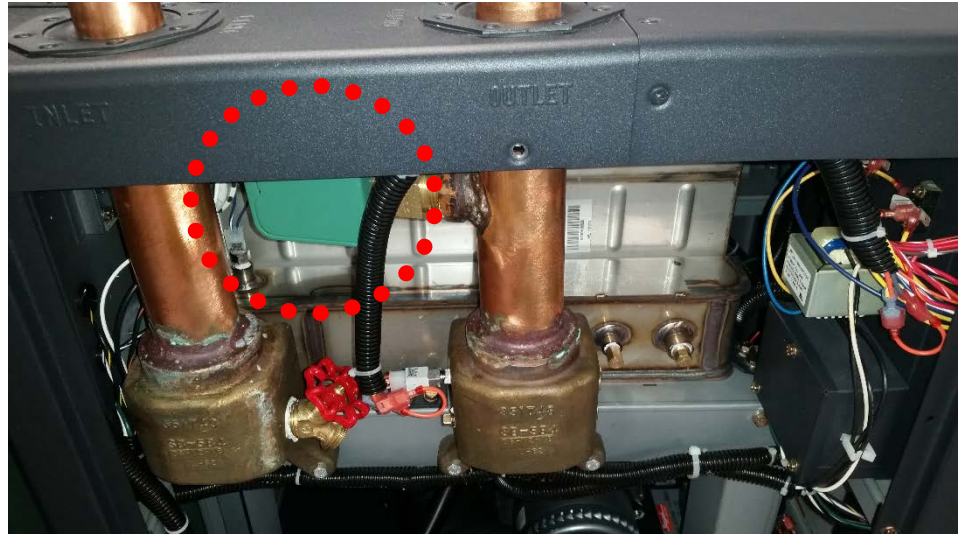


Figure 25

### XFIIRE



Figure 24



Figure 26

## XPAK FT MODELS 088A -398A



Figure 27

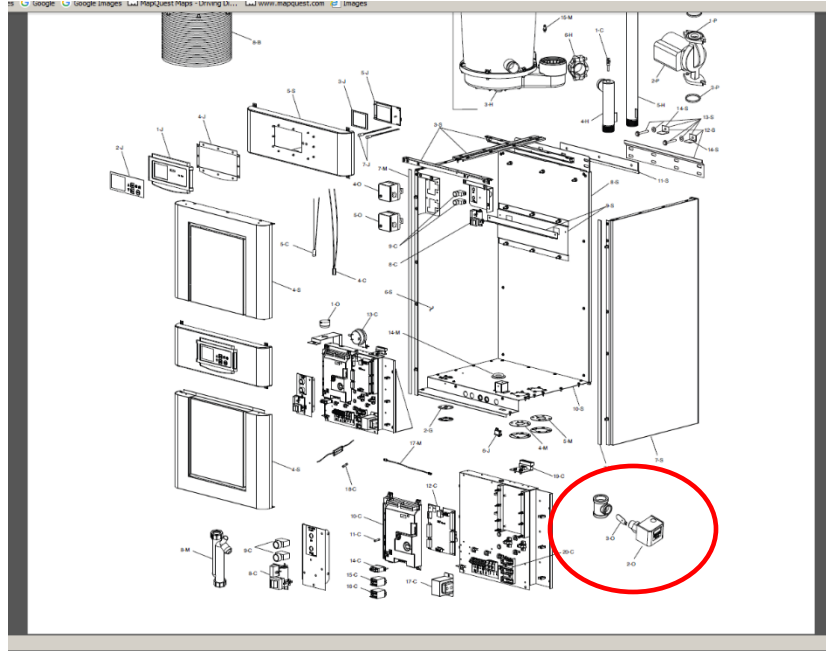


Figure 28

**NOTE:**

The Flow Switches provided on XPAK FT boilers are shipped loose and must be installed in the system piping.

Check the Paddle size chart for the correct Model.



APPROVED

241225 Rev 11  
Effective 02-22-21  
Replaces 7-1-19

## PADDLE SIZES

NOTE: All volute/pump headers should use the "A" paddle.  
\* Flow Switch is installed into pipe Tee, factory mounted.

Table 2

| Model No. | Product Line                         | Paddle |
|-----------|--------------------------------------|--------|
| 088A      | XPak FT                              | J      |
| 101       | Hi Delta SS                          | B      |
| 108A      | XPak FT                              | J      |
| 122*      | Hi Delta                             | B      |
| 133*      | Atmospheric                          | B      |
| 136*      | Atmospheric                          | B      |
| 151       | Hi Delta SS                          | B      |
| 162*      | Hi Delta                             | B      |
| 181*      | Atmospheric                          | C      |
| 182*      | Atmospheric                          | C      |
| 183*      | Atmospheric                          | C      |
| 198A      | XPak FT                              | H      |
| 201       | Hi Delta SS                          | B      |
| 202*      | Hi Delta                             | B      |
| 203*      | Atmospheric                          | C      |
| 242       | Hi Delta                             | B      |
| 251       | Hi Delta SS                          | B      |
| 259       | 84 Professional                      | G      |
| 260*      | Atmospheric                          | C      |
| 261*      | Atmospheric                          | C      |
| 263*      | Atmospheric                          | C      |
| 268       | Professional ASME (Prior to 12/2019) | F      |
| 278A      | XPak FT                              | H      |
| 300B      | XFIIRE                               | G      |
| 300       | XFyre                                | C      |
| 301       | Hi Delta SS                          | B      |
| 302*      | Hi Delta                             | D      |
| 322*      | Hi Delta                             | B      |
| 330*      | Atmospheric                          | C      |
| 331*      | Atmospheric                          | C      |
| 333*      | Atmospheric                          | C      |
| 334       | Atmospheric                          | D      |
| 398A      | XPak FT                              | G      |
| 399       | Delta LTD                            | D      |
| 400       | Atmospheric                          | D      |
| 400*      | Atmospheric                          | C      |
| 400       | XFyre                                | E      |
| 401       | Hi Delta SS                          | A      |
| 401*      | Atmospheric                          | C      |
| 268       | Professional ASME (12/19 onwards)    | V      |
| 408       | Professional ASME (12/19 onwards)    | U      |

| Model No. | Product Line                         | Paddle |
|-----------|--------------------------------------|--------|
| 400B      | XFIIRE                               | G      |
| 402       | Hi Delta                             | D      |
| 403*      | Atmospheric                          | C      |
| 404       | Atmospheric                          | D      |
| 406L      | XVers L                              | G      |
| 408       | Professional ASME (prior to 12/2019) | A      |
| 409       | 84 Professional                      | F      |
| 410       | X94 Professional                     | A      |
| 499       | Delta LTD                            | D      |
| 500       | ADB                                  | C      |
| 500       | XFyre                                | C      |
| 500B      | XFIIRE                               | G      |
| 502       | Hi Delta                             | D      |
| 503       | MVB                                  | C      |
| 504       | MVB                                  | C      |
| 506L      | XVers L                              | G      |
| 510       | Atmospheric                          | D      |
| 514       | Atmospheric                          | D      |
| 606L      | XVers L                              | G      |
| 624       | Atmospheric                          | D      |
| 649       | Delta LTD                            | D      |
| 650B      | XFIIRE                               | G      |
| 652       | Hi Delta                             | D      |
| 700       | XFyre                                | B      |
| 724       | Atmospheric                          | D      |
| 726L      | XVers L                              | G      |
| 749       | Delta LTD                            | D      |
| 750       | ADB                                  | C      |
| 751       | ADB                                  | C      |
| 752       | Hi Delta                             | D      |
| 753       | MVB                                  | C      |
| 754       | MVB                                  | C      |
| 800B      | XFIIRE                               | G      |
| 824       | Atmospheric                          | D      |
| 825       | Atmospheric                          | D      |
| 850       | XFyre                                | B      |
| 856       | XVers                                | P      |
| 856L      | Xvers L                              | G      |
| 899       | Delta LTD                            | D      |
| 902       | Hi Delta                             | D      |
| 1000B     | XFIIRE                               | G      |

**NOTE:** Atmospheric units are either Raytherm or Hurricane models.

- 1) Units manufactured up to 1990.
- 2) Units manufactured in 1991 or later.

**NOTE :** XTherm Indirect Pool Heaters uses paddle "K" for sensing flow in bypass assembly.

### POOL HEATERS OR UNITS INSTALLED WITH CHX (CONDENSING HEAT EXCHANGER)

1. When installing a flow switch on models 514 to 824 pool heaters, utilize a 2 x 2 x 1 Tee and a "B" paddle.
2. When installing a flow switch on models 926 to 1223 pool heaters, utilize a 2-1/2 x 2-1/2 x 1 Tee and a "C" paddle.
3. For CHX's installed with parallel and separate pumping, utilize either a 2 x 2 x 1 Tee or a 2-1/2 x 2-1/2 x 1 Tee and a "C" paddle. Keep the selected Tee size the same as the CHX inlet and outlet water connections.

## PADDLE SIZES

NOTE: All volute/pump headers should use the "A" paddle.  
\* Flow Switch is installed into pipe Tee, factory mounted.

**Table 3**

| Model No. | Product Line | Paddle | Model No. | Product Line | Paddle |
|-----------|--------------|--------|-----------|--------------|--------|
| 856       | XVers        | P      | 1756      | XVers        | P      |
| 962       | Atmospheric  | C      | 1758      | Atmospheric  | C      |
| 989       | Delta LTD    | C      | 1799      | Delta LTD    | C      |
| 992       | Hi Delta     | C      | 1802      | Hi Delta     | C      |
| 1000      | ADB          | B      | 1826      | Atmospheric  | C      |
| 1001      | ADB          | B      | 1999      | Delta LTD    | C      |
| 1003      | MVB          | B      | 2001      | Atmospheric  | A      |
| 1004      | MVB          | B      | 2002      | Hi Delta     | C      |
| 1005      | XTherm       | B      | 2003      | MVB          | A      |
| 1006      | XVers        | P      | 2004      | MVB          | A      |
| 1083      | Atmospheric  | C      | 2005      | XTherm       | A      |
| 1104      | MVB          | B      | 2006      | XVers        | P      |
| 1125      | Atmospheric  | C      | 2069      | Delta LTD    | C      |
| 1178      | Atmospheric  | C      | 2072      | Hi Delta     | C      |
| 1223      | Atmospheric  | C      | 2100*     | Atmospheric  | A      |
| 1253      | MVB          | A      | 2339      | Delta LTD    | C      |
| 1256      | XVers        | P      | 2342      | Hi Delta     | C      |
| 1259      | Delta LTD    | C      | 2500*     | Atmospheric  | A      |
| 1262      | Hi Delta     | C      | 2503      | MVB          | A      |
| 1287      | Atmospheric  | C      | 2505      | XTherm       | A      |
| 1336      | Atmospheric  | C      | 2506      | XVers        | P      |
| 1414      | Atmospheric  | C      | 3000      | Atmospheric  | A      |
| 1468      | Atmospheric  | C      | 3001*     | Atmospheric  | A      |
| 1500      | ADB          | A      | 3003      | MVB          | A      |
| 1501      | ADB          | A      | 3005      | XTherm       | A      |
| 1503      | MVB          | A      | 3006      | XVers        | P      |
| 1504      | MVB          | A      | 3291      | Atmospheric  | A      |
| 1505      | XTherm       | A      | 3500*     | Atmospheric  | A      |
| 1506      | XVers        | P      | 3503      | MVB          | A      |
| 1529      | Delta LTD    | C      | 3505      | XTherm       | A      |
| 1532      | Hi Delta     | C      | 4000      | Atmospheric  | A      |
| 1571      | Atmospheric  | C      | 4001*     | Atmospheric  | A      |
| 1631      | Atmospheric  | C      | 4003      | MVB          | A      |
| 1753      | MVB          | A      | 4005      | XTherm       | A      |

**NOTE:** Atmospheric units are either Raytherm or Hurricane models.

3) Units manufactured up to 1990.

4) Units manufactured in 1991 or later.

**NOTE :** XTherm Indirect Pool Heaters may use paddles "Q" & "R" optionally for sensing flow in pool water system main pipe that is 4" or 6" respectively.

### POOL HEATERS OR UNITS INSTALLED WITH CHX (CONDENSING HEAT EXCHANGER)

- When installing a flow switch on models 514 to 824 pool heaters, utilize a 2 x 2 x 1 Tee and a "B" paddle.
- When installing a flow switch on models 926 to 1223 pool heaters, utilize a 2-1/2 x 2-1/2 x 1 Tee and a "C" paddle.
- For CHX's installed with parallel and separate pumping, utilize either a 2 x 2 x 1 Tee or a 2-1/2 x 2-1/2 x 1 Tee and a "C" paddle. Keep the selected Tee size the same as the CHX inlet and outlet water connections.