

# Vickers<sup>®</sup> by Danfoss

## Vane Pumps

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ENGINEERING  
TOMORROW



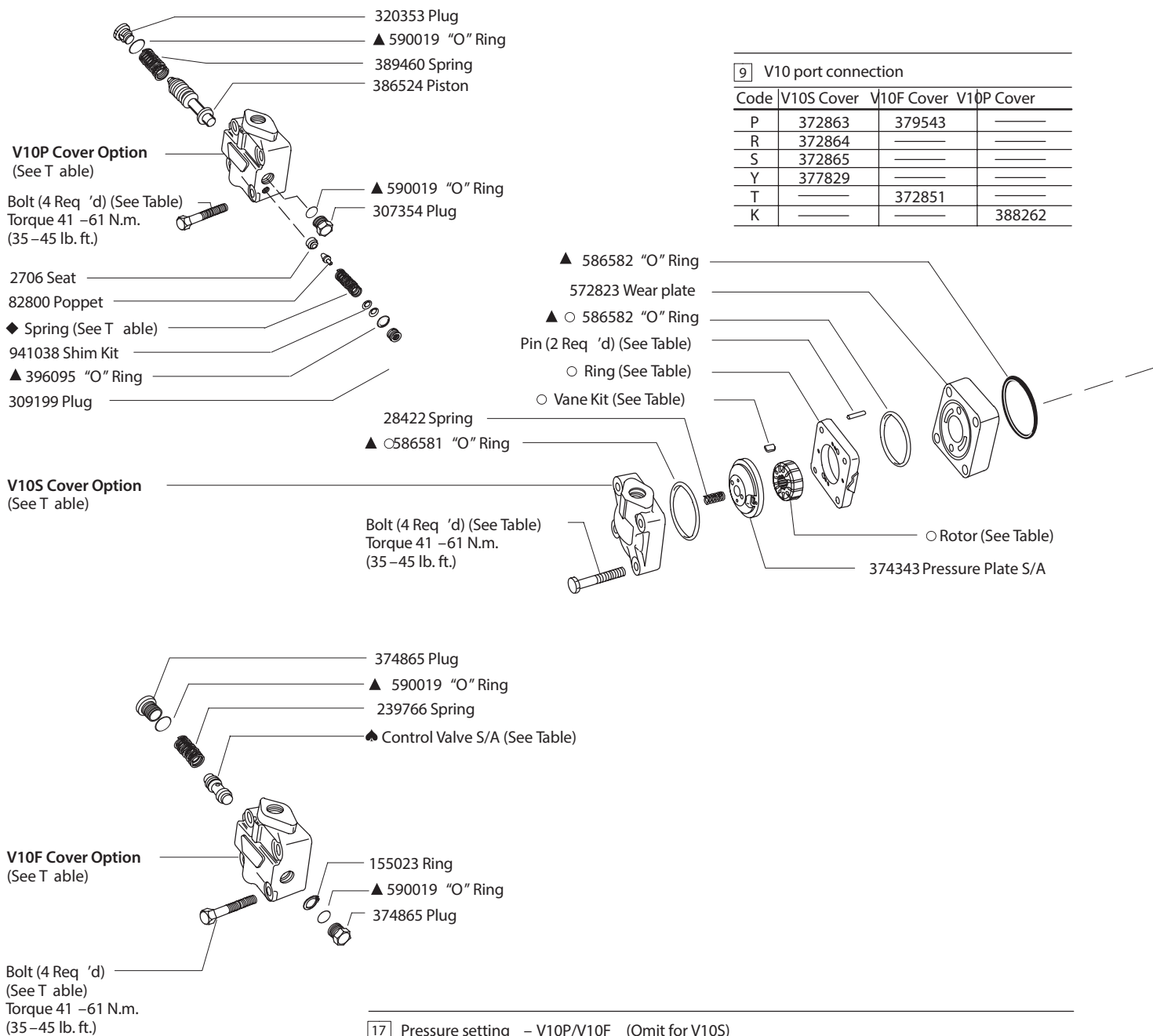
## Vane Type Triple Pump

(F3)–4520VQSV10\*–\*\*\*\*\*–\*\*\*\*\*–20\*

AX438766983850en-000101

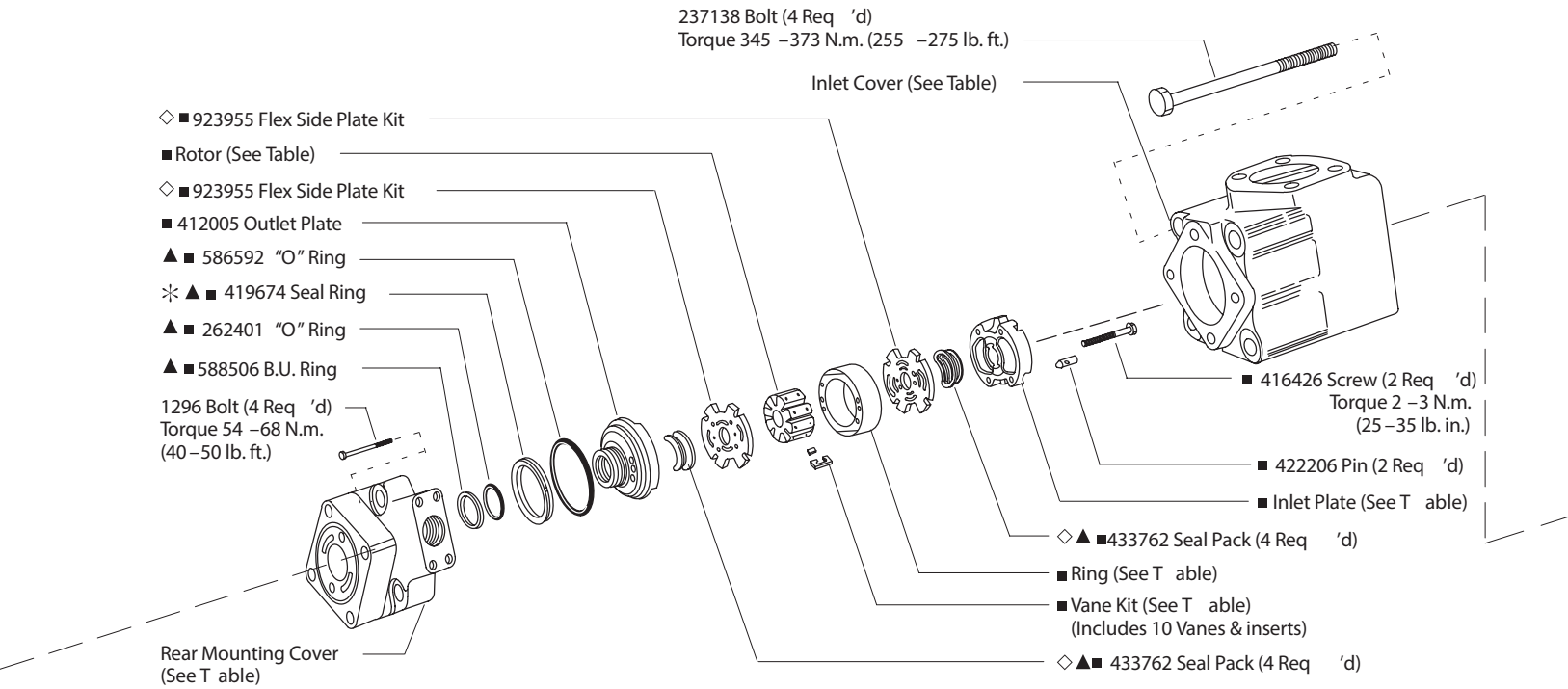
10 SAE rated capacity (V10 cover end cartridge)

| USgpm | Rotor  | Vane Kit<br>(12 vanes) | O Ring | Pin<br>(V10S) | Pin<br>(V10F/V10P) | Bolt<br>(V10S) | Bolt<br>(V10F) | Bolt<br>(V10P) | Cartridge Kit |
|-------|--------|------------------------|--------|---------------|--------------------|----------------|----------------|----------------|---------------|
| 1     | 317681 | 923499                 | 317674 | 2456          | 2456               | 11156          | 295344         | 295344         | 923471        |
| 2     |        |                        | 317675 |               |                    |                |                |                | 923470        |
| 3     |        |                        | 317676 |               |                    |                |                |                | 923496        |
| 4     | 351247 | 923500                 | 317677 | 16662         | 16662              | 1278           | 432511         | 432511         | 923469        |
| 5     |        |                        | 317678 |               |                    |                |                |                | 923468        |
| 6     |        |                        | 355641 |               |                    |                |                |                | 923497        |
| 7     | 357286 | 923501                 | 331813 | 179341        | 179341             | 432509         | 295346         | 295346         | 923498        |



17 Pressure setting – V10P/V10F (Omit for V10S)

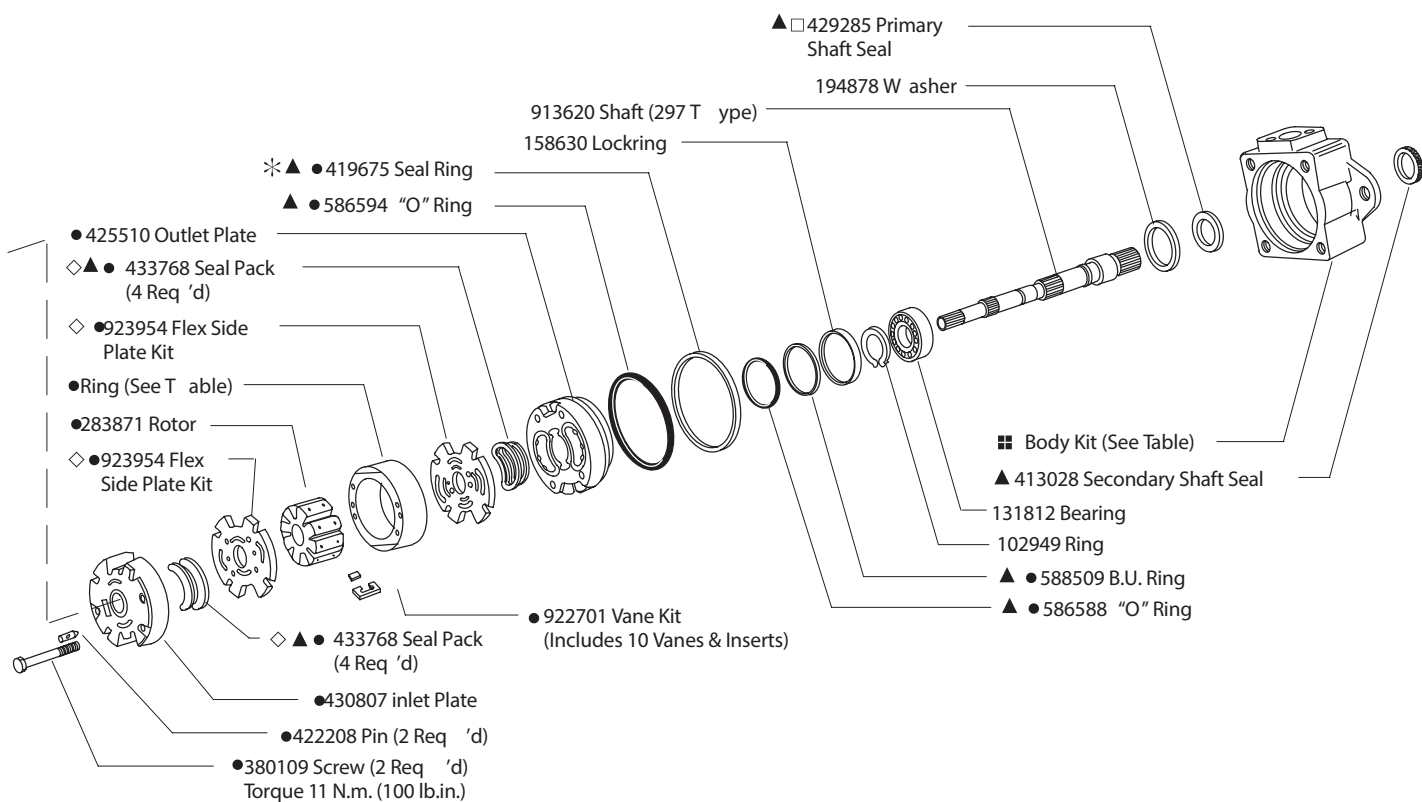
| Code | Pressure setting V10P/V10F | ◆ V10P Spring | ♣ V10F control valve S/A |
|------|----------------------------|---------------|--------------------------|
| A    | 250 psi                    | 252886        | 229613                   |
| B    | 500 psi                    | 2280          | 233018                   |
| C    | 750 psi                    | 2282          | 232794                   |
| D    | 1000 psi                   |               | 232795                   |
| E    | 1250 psi                   |               | 232796                   |
| F    | 1500 psi                   | 2281          | 232797                   |
| G    | 1750 psi                   |               | 232798                   |
| H    | 2000 psi                   |               | 232799                   |
| J    | 2250 psi                   |               | 233019                   |
| K    | 2500 psi                   |               | 233020                   |



8 SAE rated capacity (\*\*20 VQ center cartridge)

| ■ USgpm | ■ Ring | ■ Inlet Plate | ■ Rotor | ■ Vane Kit | ■ F3 Cart. Kit |
|---------|--------|---------------|---------|------------|----------------|
| 5       | 333624 | 419502        | 402690  | 922741     | 574918         |
| 6       | 431883 |               |         |            | 574919         |
| 8       | 333625 |               |         |            | 574920         |
| 9       | 374799 |               |         |            | 574921         |
| 11      | 333626 | 419501        | 403539  | 922745     | 574922         |
| 12      | 353901 |               |         |            | 574923         |
| 14      | 353902 |               |         |            | 574924         |

- Included in 45\*\* VQ shaft end cartridge kit.
- Included in \*\*20 VQ center cartridge kit.
- Included in V10 cover end cartridge kit.
- ▲ Included in 02 – 315624 seal kit. (Kit contains F3 components & both shaft seals.)
- ◆ Included in flex side plate kit; bronze face of plate must be installed toward the rotor. Kit also contains four seal packs.
- Assemble seal with spring loaded sealing member towards bearing. Seals to be completely wetted with oil prior to assembly.
- \* Install 419675 & 419674 sealing ring into body, then install cartridge kit.



6 SAE rated capacity (45\*\*VQ shaft end cartridge)

| USgpm | Ring   | F3 Cart. Kit |
|-------|--------|--------------|
| 42    | 297510 | 419511       |
| 47    | 297718 | 421954       |
| 50    | 297502 | 419510       |
| 57    | 306772 | 421955       |
| 60    | 297503 | 419509       |

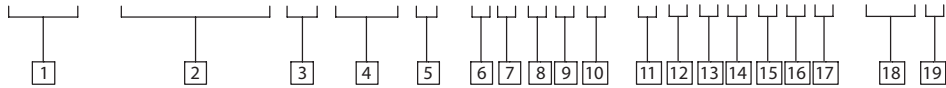
7 Port connections

| Connection Type             | Body Kit  | Inlet Cover | Rear Mounting Cover |
|-----------------------------|-----------|-------------|---------------------|
| A – 4 Bolt Flange (Inch)    | 02-136923 | 252283      | 572822              |
| AM – 4 Bolt Flange (Metric) | 02-136924 | 478507      | 860778              |

NOTE: Body kit includes body, ball, and plug. (Ball and plug not shown)

# Model Code

## (F3) - 4520VQ S V10 \* - \* \* \* \* - \* \* \* \* \* - 20 \*



### 1 Special seals

F3 – Vition “O”Rings and shaft seals

### 2 Pump series designation

45\*\*VQ – Shaft end pump  
\*\*20VQ – Center pump

### 3 Body mounting flange

S – SAE mounting per J –744 101 –2

### 4 Pump series designation

V10 cover end pump

### 5 V10 pump cover options

S – Standard cover  
F – Flow control and relief cover  
P – Priority valve and relief cover

### 6 SAE rated capacity (VQ shaft – end cartridge)

| Code          | Code          |
|---------------|---------------|
| 42 – 42 USgpm | 57 – 57 USgpm |
| 47 – 47 USgpm | 60 – 60 USgpm |
| 50 – 50 USgpm |               |

### 7 VQ port connections (inlet & outlet #1 & #2)

A – 4 bolt flange (Inch threads)  
AM – 4 bolt flange ( Metric threads)

### 8 SAE rated capacity (VQ center cartridge)

| Code        | Code          |
|-------------|---------------|
| 5 – 5 USgpm | 11 – 11 USgpm |
| 6 – 6 USgpm | 12 – 12 USgpm |
| 8 – 8 USgpm | 14 – 14 USgpm |
| 9 – 9 USgpm |               |

### 9 V10 port connections

V10S standard covers and outlet # 3

#### Code

S – .750 –16 Str. thd.  
P – 1/2" – NPT thd.  
Y – .875 –14 Str. thd.  
R – 1.062 –12 Str. thd.

### V10F flow/relief control cover

| Code                   | Outlet # 3 | Tank port          |
|------------------------|------------|--------------------|
| T – .750 –16 Str. thd  |            | .750 –16 Str. thd. |
| P – .750 –16 Str. thd. |            | 1/2" – NPT thd.    |

### V10P priority control covers

| Code          | Primary<br>port<br>Str. thd | Secondary<br>port<br>Str. thd. | Tank port<br>Str. thd |
|---------------|-----------------------------|--------------------------------|-----------------------|
| K – .5625 –18 |                             | .750 –16                       | .5625 –18             |

### 10 SAE rated capacity (V10 cover end cartridge)

| Code        | Code        |
|-------------|-------------|
| 1 – 1 USgpm | 5 – 5 USgpm |
| 2 – 2 USgpm | 6 – 6 USgpm |
| 3 – 3 USgpm | 7 – 7 USgpm |
| 4 – 4 USgpm |             |

### 11 Shaft seal

Blank – Single seal  
S – Double seal

### 12 Shaft type

297 – All series

### 13 Port orientation (Outlet #1)

(Viewed from cover end of pump;  
refer to table on next page)

### 14 Port orientation (Outlet #2)

(Viewed from cover end of pump;  
refer to table on next page)

### 15 Port orientation (Outlet #3 or primary outlet)

(Viewed from cover end of pump;  
refer to table on next page)

### 16 Controlled flow rate, V10F & V10P (Omit for standard cover)

| Code        | Code        |
|-------------|-------------|
| 3 – 3 USgpm | 6 – 6 USgpm |
| 4 – 4 USgpm | 7 – 7 USgpm |
| 5 – 5 USgpm | 8 – 8 USgpm |

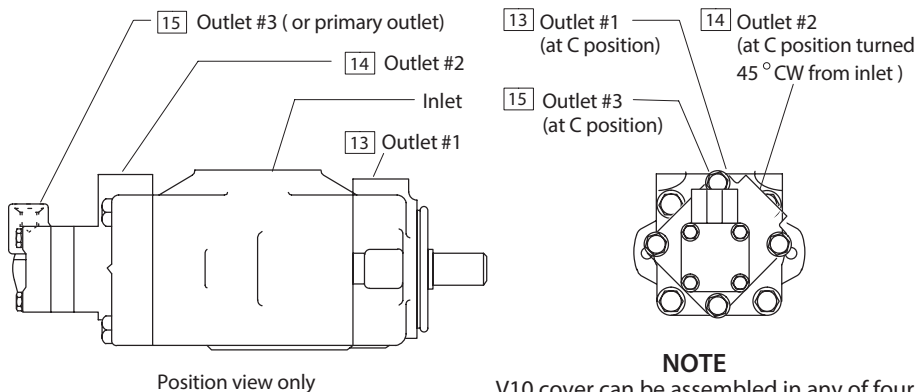
### 17 Relief valve pressure setting, V10F & V10P (Omit for standard cover)

| Code         | Code         |
|--------------|--------------|
| A – 250 psi  | F – 1500 psi |
| B – 500 psi  | G – 1750 psi |
| C – 750 psi  | H – 2000 psi |
| D – 1000 psi | J – 2250 psi |
| E – 1250 psi | K – 2500 psi |

### 18 Design

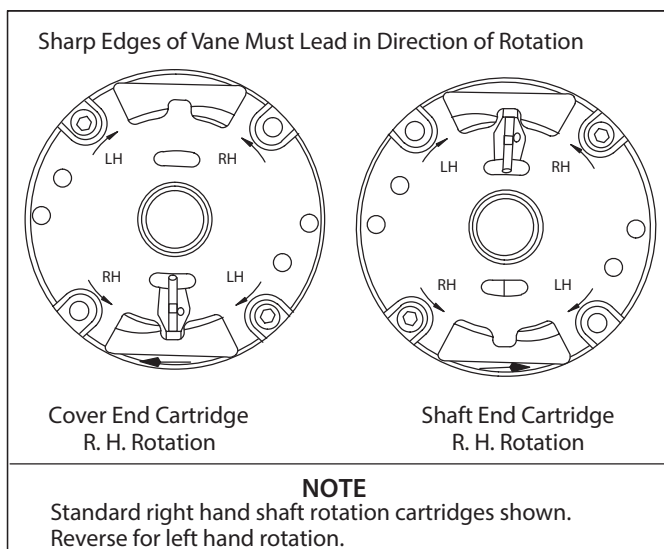
### 19 Rotation (Viewed from shaft end of pump)

L – Left hand for counterclockwise  
R – Right hand for clockwise



**NOTE**  
V10 cover can be assembled in any of four positions refer to drawing M -2005 -S.

| 13 14 15 Port orientation code<br>(Viewed from cover end of pump) |       |       |       |
|-------------------------------------------------------------------|-------|-------|-------|
| Outlet                                                            | 13 #1 | 14 #2 | 15 #3 |
| Opposite inlet                                                    | A     |       | A     |
| 135° CCW from inlet                                               |       | A     |       |
| 90° CCW from inlet                                                | B     |       | B     |
| 45° CCW from inlet                                                |       | B     |       |
| Inline with inlet                                                 | C     |       | C     |
| 45° CW from inlet                                                 |       | C     |       |
| 90° CW from inlet                                                 | D     |       | D     |
| 135° CW from inlet                                                |       | D     |       |



#### NOTE

To reverse cartridge kit rotation, remove the two screws and reverse the location of the inlet support plate and the outlet support plate. Reinstall the two screws hand tight. Use pump cover to align all sections of the cartridge. Carefully remove the cover and tighten the screws.

When ordering spare cartridge parts, it is recommended they be obtained in cartridge kits. Kits are assembled and tested for either right or left hand rotation. If left hand rotation is required, it should be specified on parts order by adding suffix "L" to cartridge kit number.

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