Vane Type
Double Pump

(F3)—4520V(M)—**A(M)**(F)—**—22—*
<table>
<thead>
<tr>
<th>MODEL</th>
<th>ROTOR</th>
<th>VANE KIT</th>
<th>RING</th>
<th>INLET PLATE</th>
<th>Cover End</th>
<th>Cover End CART. KIT</th>
<th>F3 CART. KIT</th>
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<tbody>
<tr>
<td>4520V***2</td>
<td>402690</td>
<td>02—136720</td>
<td>388683</td>
<td>584383</td>
<td>02—102506</td>
<td>02—102512</td>
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<td>4520V***5</td>
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<td>02—136721</td>
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<td>584384</td>
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<td>02—102511</td>
<td>02—102517</td>
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</tbody>
</table>

- 580921 Outlet Plate
- Ring (See Table)
- 578903 Inlet Plate
- 220888 Pin (2 Req’d)
- 158465 Pin (2 Req’d)
- Inlet Plate (See Table)
- Ring (See Table)
- Vane Kit See Table
- (Includes 10 Vanes & Inserts)
- Rotor (See Table)

- 02—136718 Vane Kit
  (Includes 12 Vanes & Inserts)
- 289476 Screw (2 Req’d)
- 289473 Screw (2 Req’d)
- 87947 Bolt (4 Req’d)
  Torque 360 - 374 N.m.
  (255 - 275 lb. ft.)
- 584382 Outlet Plate
- 419672 Seal Ring
- 154026 “O”Ring
- 588506 Ring
- 154090 “O”Ring
- Cover (See Table)
- 1296 Bolt (4 Req’d)
  Torque 55.2 - 67.8 N.m.
  (40 - 50 lb. ft.)

- Included in shaft end cartridge kit
- Included in cover end cartridge kit
- Included in seal kit 922863
  F3 equivalent seal kit 919616
- Included in foot bracket kit FB—C—10
- Assemble seal with spring loaded sealing member towards bearing. Seals to be completely wetted with oil prior to assembly.
- Install 419675 sealing ring into body, then install cartridge kit.
<table>
<thead>
<tr>
<th>MODEL</th>
<th>COVER</th>
<th>HOUSING</th>
<th>BODY S/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>4520V**A</td>
<td>250824</td>
<td>252283</td>
<td>942356</td>
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<td>4520V**E</td>
<td>252504</td>
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<td>942356</td>
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<td>4520VM**A</td>
<td>478510</td>
<td>478507</td>
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<tr>
<td>4520VM**AM</td>
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<td>02-136926</td>
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</tbody>
</table>

**NOTE:**
For satisfactory service life of these components in industrial applications, use full flow filtration to provide fluid which meets ISO cleanliness code 16/13 or cleaner. OFP, OFR, and OFRS series filters are recommended.
# Model Code

## (F3) - 4520V (M) - ** A (M)** ** (F) - * * - 22 - *

<table>
<thead>
<tr>
<th>1</th>
<th>Special seals</th>
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<tbody>
<tr>
<td><strong>2</strong></td>
<td>Series designation</td>
</tr>
<tr>
<td>Displacements cm³/r (in³/r)</td>
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<tr>
<td>Model</td>
<td>Shaft end</td>
</tr>
<tr>
<td>4520V</td>
<td>138 – 193</td>
</tr>
<tr>
<td></td>
<td>(8.41 – 11.75)</td>
</tr>
</tbody>
</table>

## 3 Pilot designation

- **M** — Metric per ISO 3019/2 100A2HW
- **Omit** — Standard pilot

## 4 Geometric displacement

- **Shaft end pump**
  - (Rated capacity (USgpm) at 1200 rpm, 6.9 bar (100 psi))

<table>
<thead>
<tr>
<th>Frame size</th>
<th>Code</th>
<th>cm³/r</th>
<th>in³/r</th>
</tr>
</thead>
<tbody>
<tr>
<td>4520V</td>
<td>42</td>
<td>138</td>
<td>8.41</td>
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<td>147</td>
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<td>50</td>
<td>162</td>
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<td>60</td>
<td>193</td>
<td>11.75</td>
</tr>
</tbody>
</table>

## 5 Port connections

- **A** — SAE 4 bolt flange

## 6 Port connection modifier

- **M** — Metric port connection (4 bolt flange)
- **Omit** — Inch thread port connection (4 bolt flange)

## 7 Geometric displacement

- **Cover end pump**
  - (Rated capacity (USgpm) at 1200 rpm, 6.9 bar (100 psi))

<table>
<thead>
<tr>
<th>Frame size</th>
<th>Code</th>
<th>cm³/r</th>
<th>in³/r</th>
</tr>
</thead>
<tbody>
<tr>
<td>4520V</td>
<td>2</td>
<td>6.5</td>
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<td>5</td>
<td>18</td>
<td>1.10</td>
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<tr>
<td></td>
<td>8</td>
<td>27</td>
<td>1.67</td>
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<tr>
<td></td>
<td>11</td>
<td>36</td>
<td>2.22</td>
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<tr>
<td></td>
<td>12</td>
<td>40</td>
<td>2.47</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>45</td>
<td>2.78</td>
</tr>
</tbody>
</table>

## 8 Mounting

- **F** — Foot mounting
- **Omit** — Flange mounting

## 9 Shaft

- **1** — Straight keyed
- **11** — Splined
- **86** — Heavy duty straight keyed
- **192N** — Straight keyed (M pilot only)

## 10 Port orientation

(Viewed from cover end of pump)

- **With no. 1 outlet opposite inlet**
  - **AA** — No. 2 outlet 135° CCW from inlet
  - **AB** — No. 2 outlet 45° CCW from inlet
  - **AC** — No. 2 outlet 45° CW from inlet
  - **AD** — No. 2 outlet 135° CW from inlet

- **With no. 1 outlet 90° CCW from inlet**
  - **BA** — No. 2 outlet 135° CCW from inlet
  - **BB** — No. 2 outlet 45° CCW from inlet
  - **BC** — No. 2 outlet 45° CW from inlet
  - **BD** — No. 2 outlet 135° CW from inlet

- **With no. 1 outlet inline with inlet**
  - **CA** — No. 2 outlet 135° CCW from inlet
  - **CB** — No. 2 outlet 45° CCW from inlet
  - **CC** — No. 2 outlet 45° CW from inlet
  - **CD** — No. 2 outlet 135° CW from inlet

- **With no. 1 outlet 90° CW from inlet**
  - **DA** — No. 2 outlet 135° CCW from inlet
  - **DB** — No. 2 outlet 45° CCW from inlet
  - **DC** — No. 2 outlet 45° CW from inlet
  - **DD** — No. 2 outlet 135° CW from inlet

## 11 Design

(Visited from shaft end of pump)

- **L** — Left hand for counterclockwise
- **R** — Right hand for clockwise

## 12 Rotation

(Visited from shaft end of pump)

- **L** — Left hand for counterclockwise
- **R** — Right hand for clockwise

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### 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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**Sharp Edges of Vane Must Lead in Direction of Rotation**

**Cover End Cartridge**

**R. H. Rotation**

**Shaft End Cartridge**

**R. H. Rotation**

**NOTE**

Standard right hand shaft rotation cartridges shown. Reverse for left hand rotation.