4500C Series Vortex Pumps

Table of Contents

4500C Performance
   2" x 2" - 4523C, Multiple Speed .... 004
   3" x 3" - 4523C, Multiple Speed .... 004
   4" x 4" - 4522C, Multiple Speed .... 005
   4" x 4" - 4523C, Multiple Speed .... 005
   6" x 6" - 4523C, Multiple Speed .... 006
   8" x 8" - 4523C, Multiple Speed .... 006

4500C Construction Features ......... 007

4500C Typical Specifications ............ 008

4500C Basic Pump Technical Data ....... 011

4500C Material Specification
   and Parts List ...................... 012

4500C Assembly ......................... 014

4500C General Arrangement .............. 015

4500C Basic Pump Dimensions .......... 018

4500C Setting Plans ..................... 019
### 4500C Vortex Pumps

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Standard</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Horizontal, single-stage, cup-type vortex impeller, frame mounted</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Rotation</td>
<td>CW or CCW as viewed from driver end, specify on order</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Volute</td>
<td>One-piece, radially split and flanged side tangential discharge, reversible for opposite rotation</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Impeller</td>
<td>Cupped-type, vortex flow</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Suction Flange</td>
<td>Separate one-piece casting</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Wearplate</td>
<td>One-piece</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Shaft</td>
<td>Accurately machined over entire length for tapered bore</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Shaft Sleeve</td>
<td>Straight type, affixed &amp; sealed with O-ring to prevent leakage between sleeve and shaft</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Gland Housing</td>
<td>Separate one-piece casting</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Gland</td>
<td>2-piece, 2-bolt, split type</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Bearing - Radial (Inboard)</td>
<td>2&quot; - 6&quot; Pumps, Two, single row ball-type, oil lubricated</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8&quot; Pumps, Two, spherical roller-type, oil lubricated</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Bearing - Thrust (Outboard)</td>
<td>Three, single row angular contact ball-type, oil lubricated</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Oil</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Auxiliary Connections</td>
<td>Casing Vent</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casing Drain</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gland housing lantern ring or vent</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Baseplate</td>
<td>Bent form or welded structural steel, pedestal mounts, and guard</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>V-Belt Drives</td>
<td>Variable Speed - Stationary Control</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Variable Speed - Motion Control, Spring Loaded</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Coupling</td>
<td>Flexible, pin and buffer or flexible sleeve (mfg. Option)</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Steelflex type</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spacer type</td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>
HEAVY DUTY 4500C RECESSED IMPELLER PUMP SPECIFICATION

PART 1, GENERAL

1.01 The following specification describes the design of ___ horizontal vortex-type slurry pumping unit(s). The design of these units shall be such that they are capable of pumping slurries, which may contain trash, stringy material, organic solids and grit without becoming clogged.

1.02 QUALITY ASSURANCE

A. Pump(s) shall be supplied by the manufacture as specified herein or by an approved equal and shall be designed for use intended in the application described.

B. Pump(s) shall be furnished with correctly sized motor, V-belt drive and drive guards and be mounted on a common base, as well as supply any other accessories as specifically called out in these specifications. All equipment shall carry a manufacturer's warranty.

C. All of the pumps supplied per these specifications shall be the product of a single manufacturer.

1.03 PERFORMANCE

A. The pumps shall be designed for continuous operation and will be operated continuously under normal service.

B. OPERATION CRITERIA

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART 2, PRODUCTS

2.01 A. PUMPS

1. Manufacturers

a. Pump(s) shall be the product of Fairbanks Nijhuis®.

2. Design

a. Pump(s) shall be specifically designed to pump slurries that may contain solids, rags and grit.

b. This vortex pump design shall be such that trash and solids do not have to pass through the impeller. The impeller shall be recessed from the path of flow from the pump suction to pump discharge. All flow paths shall be equal to or greater than the pump suction size.

c. The hydraulic design of the cupped-type vortex impeller shall be such that performance is not negatively affected with the occurrence of wear. The impeller design shall be such that as wear occurs, the length of the impeller vanes increases. The impeller shall be made from ASTM A532, cast iron with a nominal hardness of 600-650 BHN. Radial design impellers or impellers that include pump-out vanes on the rear shroud are not acceptable.
d. An independently replaceable suction flange made of ASTM A532 shall be provided. The suction flange shall be easily assessable and replaceable, without the need to disassemble any other components of the pump.

e. A removable wear plate shall be provided which directs flow to the center of the volute from behind the impeller. It shall be made of ASTM A532 with a nominal hardness of 600-650 BHN. Bolted directly to the bearing housing shall be a separate stuffing box so that it can be easily removed. The stuffing box shall not be integral with the wear plate.

f. The pump casing shall be ASTM A532 material with a nominal hardness of 600-650 BHN. It shall be of the radially split type design such that the impeller can be removed without disturbing the piping. It shall also be designed so that it can be used for opposite rotation installations.

g. The pump hydraulic curve shall slope continuously upward to shutoff. Pumps with curves that contain a dip or dogleg are not acceptable.

h. Slotted raised-face 125-lb. flanges shall be incorporated into the volute design. These flanges shall be ground smooth to ensure an accurate fit with the piping. The casing shall also include slots in which to house the bolts used to fasten the volute to the bearing housing and suction piece.

3. Materials of Construction

a. Wear parts including the volute, impeller, wear plate and suction flange shall be ASTM A532 material with a nominal hardness of 600-650 BHN.

4. Bearing Housing

a. The bearing housing material shall be ASTM A48CL-30 cast iron.

b. A hardened shaft sleeve shall protect the shaft throughout the sealing area. The shaft material shall be ASTM A108, Grade 4140 heat-treated steel.

c. The three thrust angular contact ball bearings and the two single-row radial ball bearings shall be oil lubricated. Bearings shall carry a minimum B10 life of 100,000 hours at the best efficiency point. A pressure vent plus oil fill and drain taps along with a built-in oil level sight glass shall be included with the bearing frame.

5. Shaft Sealing

a. Packing and HardMetal Sleeve. Synthetic fiber graphite-impregnated packing and a Teflon water seal ring shall be used to seal the shaft. An adjustable split bronze gland shall hold the packing in the gland housing. The bearing housing shall incorporate a tapped ¾" NPT hole to which drain piping can be connected to carry off any leakage through the packing. To prevent leakage between the shaft and sleeve, an O-ring sealed shaft sleeve shall be provided. The sleeve shall be ASTM A532 cast steel with a minimum hardness of 600 Brinell. Stainless steel sleeves will not be acceptable.

- ALTERNATE -

b. Mechanical Seal. The pump shall be furnished with a single cartridge mechanical seal that requires no external water flushing. The seal faces shall be tungsten carbide versus silicon carbide with Viton elastomers and 316 stainless steel parts. The base of the gland housing shall be fitted with a SpiralTrac flow modification device to remove large solids from the gland housing and eject them behind the impeller. Seals that utilize large open areas with the seal faces exposed to the pumpage shall not be acceptable. A sleeve shall be provided to protect the shaft from abrasive wear and be O-ring sealed to prevent leakage between the shaft and the sleeve. The sleeve shall be stainless steel construction of 300-350 BHN. Seals requiring a water or product flush may be furnished in lieu of the non-flushed seal, provided the contractor furnishes all of the external auxiliary equipment necessary for the flushing system. This system shall include, but not be limited to stainless steel tubing, pressure gauge, flowmeter, shutoff and isolation valves, manual throttle valve, strainer, pump, isolated water supply system, solenoid valve in a suitable enclosure,
associated wiring, and modifications to the motor control center to actuate the solenoid valve.

6. **Horizontal Mounting with V-Belt Drives between Motor and Pump.**
   a. A fabricated steel base with a minimum thickness of 3/8” shall be provided that is suitable to adequately support the weight of the pump, motor, drive and drive guard.
   b. An adjustable motor base shall be furnished whose design is such that the motor can easily be moved to accommodate appropriate tensioning of the V-belt drive.
   c. A "stationary control" variable speed drive complete with belts and sheaves shall be installed on the base with the pump and motor. This type of drive is to provide a means to adjust speeds while the drive is not operating.
   d. An enclosed and approved metal belt guard shall be provided.

7. **Motor.** The motor provided shall meet NEMA standards and shall be ____________ type, _____ HP, _____ Phase, _____ Hertz, _____ Volt, _____ RPM.

---

7. **Tests**
   a. **Performance Testing**
      (Performance Test Option #1)
      1. Each pump shall be factory certified tested in accordance with the latest edition of Hydraulic Institute codes. At least six test points shall be taken including the design condition and shutoff. Test results shall include capacity, head, efficiency and horsepower from shutoff to 150% of rated capacity. (Performance Test Option #2)
      2. A registered Professional Engineer shall review and certify the test results prior to shipment. (Performance Test Option #3)
      3. The owner or his representative shall witness the certified performance test.
   b. **Hardness Testing**
      (Hardness Test Option #1)
      1. Individual hard metal castings shall be Brinell tested prior to shipment. A minimum of two places shall be checked on each casting to verify the material conforms to ASTM A532. These tests shall be by the ASTM Method E-10 and shall be conducted at the manufacturer's plant. (Hardness Test Option #2)
      2. A Registered Professional Engineer shall review and certify the test results prior to shipment. (Hardness Test Option #3)
      3. The owner or his representative shall witness the hardness testing.

9. Pumps shall be manufactured by companies whose management system is registered to ISO-9001:2000.
## 4500C

<table>
<thead>
<tr>
<th>4522C</th>
<th>4523C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pump Size (Discharge Size)</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Suction Size (Standard)</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Suction Size (Optional)</strong></td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Shaft Diameter:
- at Impeller (taper) 2 to 1-1/8 1-1/4 to 5/8 2 to 1-1/8 2 to 1-1/8 2-1/4 to 1-3/8 3 to 1-7/8
- at Sleeve 2 1-1/4 2 2 2-1/4 3
- at Coupling 2 1-3/8 2 2 2-5/16 3-3/16

### Thrust Bearing No.
- MRC 7311PJDU
- RTF
- MRC 7311PJDU
- MRC 7311PJDU
- MRC 7312PJDU
- FAFNIR 7317WN SU

### Radial Bearing No.
- MRC 211M
- RTF
- MRC 211M
- MRC 211M
- MRC 212M
- 22217CJW33C3

### Gland Housing

#### Packing:
- **Size**
  - 1/2: 3/8
  - 1/2: 1/2
  - 1/2: 1/2
  - 1/2: 1/2
  - 1/2: 1/2

- **No. Rings per Box**
  - 4
  - 4
  - 4
  - 4
  - 4

- **Lantern Ring Width**
  - 1/2: 9/16
  - 1/2: 1/2
  - 1/2: 1/2
  - 1/2: 1/2

### Mechanical Seal: (2)
- **Type (Standard)**
  - (3)
  - (3)
  - (3)
  - (3)
  - (3)

- **Recommended flush water:**
  - **Pressure**
    - (4)
    - (4)
    - (4)
    - (4)
    - (4)
  - **Flow (GPM)**
    - 1/2 - 1
    - 1/2 - 1
    - 1/2 - 1
    - 1/2 - 1
    - 1/2 - 1

- **Sleeve OD**
  - 2-1/2
  - 1-3/4
  - 2-1/2
  - 2-1/2
  - 2-3/4

- **Box ID**
  - 3-1/2
  - 2-1/2
  - 3-1/2
  - 3-1/2
  - 3-1/2

- **Box Depth**
  - 2.6
  - 2.6
  - 2.6
  - 2.6
  - 3.1

- **Distance to nearest obstruction (5)**
  - 2.15
  - 2.00
  - 2.15
  - 2.15
  - 3.35

- **Gland Bolt Size**
  - 0.50 - 13
  - 0.375 - 16
  - 0.50 - 13
  - 0.50 - 13
  - 0.50 - 13

- **No. of Gland Bolts**
  - 4
  - 4
  - 4
  - 4
  - 4

- **Casing Working, PSI (6)**
  - 75
  - 75
  - 75
  - 75
  - 75

### Nominal Casting Thickness:
- **Casing**
  - 3/4
  - 1/2
  - 9/16
  - 3/4
  - 3/4
  - 7/8

- **Suction Flange**
  - 1-1/4
  - 7/8
  - 1
  - 1-1/4
  - 1-1/4
  - 1-1/2

### Shipping Wt. (Basic Pump) (lbs.)
- 820
- 370
- 710
- 960
- 1260
- 2025

---

1. All Dimensions are in inches.
2. Different seal housing required.
3. Standard mechanical seal is a John Crane Type 1 or equal double seal (flushed - NOT deadheaded) with Viton O-ring, stainless steel wetted parts, and carbon on ceramic upper faces and carbon on ceramic lower faces. Contact the factory for other types of mechanical seals availability.
4. Shutoff pressure or 10 PSI above operating pressure whichever is greater. (Not required with a slurry seal.)
5. Distance from top of stuffing box to face of bearing cap.
6. These are maximum values based on standard construction. If higher values are required, contact the factory.
<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>Material</th>
<th>Specifications (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Case</td>
<td>Ni-Hard (650 BHN)</td>
<td>ASTM A-532</td>
</tr>
<tr>
<td>2</td>
<td>Impeller</td>
<td>Ni-Hard (650 BHN)</td>
<td>ASTM A-532</td>
</tr>
<tr>
<td>3</td>
<td>Flange, Suction</td>
<td>Ni-Hard (650 BHN)</td>
<td>ASTM A-532</td>
</tr>
<tr>
<td>4</td>
<td>Housing, Bearing</td>
<td>Cast Iron</td>
<td>ASTM A48 CL30</td>
</tr>
<tr>
<td>5</td>
<td>Wearplate</td>
<td>Ni-Hard (650 BHN)</td>
<td>ASTM A-532</td>
</tr>
<tr>
<td>6</td>
<td>Housing, Gland</td>
<td>Cast Iron</td>
<td>ASTM A48 CL30</td>
</tr>
<tr>
<td>7</td>
<td>Cap, Bearing</td>
<td>Cast Iron</td>
<td>ASTM A48 CL30</td>
</tr>
<tr>
<td>9</td>
<td>Shaft</td>
<td>Steel</td>
<td>AISI 4140</td>
</tr>
<tr>
<td>10</td>
<td>Bolt, Hex Head</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>11</td>
<td>Sleeve, Shaft</td>
<td>Stainless Steel</td>
<td>ASTM A276 (Heat treated to 450 BHN)</td>
</tr>
<tr>
<td>12</td>
<td>Gland, Split</td>
<td>Bronze</td>
<td>ASTM B584 AL836</td>
</tr>
<tr>
<td>13</td>
<td>Ring, Lantern *</td>
<td>Teflon</td>
<td>Commercial</td>
</tr>
<tr>
<td>15</td>
<td>Bearing, Inboard</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>16</td>
<td>Bearing, Outboard</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>17</td>
<td>Seal, Oil</td>
<td>Viton</td>
<td>Commercial</td>
</tr>
<tr>
<td>20</td>
<td>Ring, Retaining *</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>21</td>
<td>Slinger</td>
<td>Rubber</td>
<td>Neoprene</td>
</tr>
<tr>
<td>22</td>
<td>O-Ring, Shaft Sleeve</td>
<td>Viton</td>
<td>Commercial</td>
</tr>
<tr>
<td>24</td>
<td>Gasket, Case</td>
<td>Rubber</td>
<td>Neoprene</td>
</tr>
<tr>
<td>25</td>
<td>Shim, Bearing Cap</td>
<td>Nylon</td>
<td>Commercial</td>
</tr>
<tr>
<td>26</td>
<td>Shim, Bearing Cap</td>
<td>Nylon</td>
<td>Commercial</td>
</tr>
<tr>
<td>27</td>
<td>Gasket, Gland Housing *</td>
<td>Vegetable Fiber</td>
<td>Commercial</td>
</tr>
<tr>
<td>28</td>
<td>Ring, Packing *</td>
<td>Synthetic, Graphite Impregnated</td>
<td>Commercial</td>
</tr>
<tr>
<td>29</td>
<td>Plate, Serial *</td>
<td>Stainless Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>30</td>
<td>Drive Screw *</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>31</td>
<td>Key, Square Shaft</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>33</td>
<td>Set Screw, Shaft Sleeve</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>34</td>
<td>Set Screw, Shaft Sleeve</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>36</td>
<td>Washer, Rubber</td>
<td>Rubber</td>
<td>Neoprene</td>
</tr>
<tr>
<td>37</td>
<td>Washer, Cupped</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>40</td>
<td>Bolt, Hex Head</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>41</td>
<td>Washer, Flat</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>42</td>
<td>Nut, Square Head</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>45</td>
<td>Stud, Tap End</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>46</td>
<td>Nut, Hex Head</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>47</td>
<td>Washer, Flat</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>48</td>
<td>Bolt, Hex Head</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>50</td>
<td>Bolt, Hex Head</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>51</td>
<td>Washer, Lock</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>54</td>
<td>Pipe Plug, NPTM</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>55</td>
<td>Pipe Plug, NPTM *</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>56</td>
<td>Capplug Plug, NPTM *</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>57</td>
<td>Bushing, NPTM *</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>58</td>
<td>Vent, Air *</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>59</td>
<td>Stud, Tap End</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>60</td>
<td>Nut, Hex Head</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>61</td>
<td>Street Elbow, 90 deg, NPT</td>
<td>Cast Iron</td>
<td>Commercial</td>
</tr>
<tr>
<td>63</td>
<td>Washer, Cupped</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>64</td>
<td>Washer, Rubber</td>
<td>Rubber</td>
<td>Neoprene</td>
</tr>
<tr>
<td>83</td>
<td>Street Elbow, NPT F x M *</td>
<td>Cast Iron</td>
<td>Commercial</td>
</tr>
<tr>
<td>84</td>
<td>Sight Window, NPT *</td>
<td>Glass</td>
<td>Commercial</td>
</tr>
<tr>
<td>87</td>
<td>Washer, Thrust</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>98</td>
<td>Collar, Locking</td>
<td>Cast Steel</td>
<td>Commercial</td>
</tr>
<tr>
<td>99</td>
<td>Cap Screw, Socket Head</td>
<td>Steel</td>
<td>Commercial</td>
</tr>
</tbody>
</table>

* Not Shown
### Options to Basic Pumps

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>Material</th>
<th>Specifications (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Sleeve, Shaft</td>
<td>Hard Metal</td>
<td>620 Brinell</td>
</tr>
<tr>
<td>11</td>
<td>Sleeve, Shaft</td>
<td>Ceramic</td>
<td>Vickers Hardness 3.3 - 4.1 MPa m(1/2)</td>
</tr>
<tr>
<td>28</td>
<td>Mechanical Seal</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>*</td>
<td>Nose Cone*</td>
<td>Ni-Hard (650 BHN)</td>
<td>ASTM A532</td>
</tr>
</tbody>
</table>

* Not Shown
**WARNING**

Do not operate this machine without protective guard in place. Any operation of this machine without protective guard can result in severe bodily injury.

- A- supplied by FMPC  
- B- supplied by others

---

**NOTES:**

1. All flanges are 125# ANSI drilling unless noted.
2. All dimensions are in inches unless noted otherwise.
3. Suction and discharge gauge connections are not available and should be located on adjacent piping.
4. Casing and suction flanges are provided as cast. Piping should be fitted to pump with heavy neoprene gaskets after pump is set and leveled.
5. Not for construction, installation, or application purposes unless certified. Dimensions shown may vary due to normal manufacturing tolerances.

---

**CUSTOMER**

**P.O. NO.**

**JOB NAME**

**TAG NAME**

**PUMP SIZE AND MODEL**

**GPM**

**THM**

**RPM**

**ROTATION**

**MOTOR**

**HP**

**FRAME**

**PHASE**

**HERTZ**

**VOLTS**

**ENCLOSURE**

**CERTIFIED FOR**

**CERTIFIED BY**

**DATE**

**4520S010**

**REV 1**

---

Fairbanks Nijhuis®

© 2015 Pentair Ltd. 02/15
WARNING

DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.

- A- SUPPLIED BY FMPC
- B- SUPPLIED BY OTHERS

---

### 4500C Series Vortex Pumps

#### Section 009 Page 019

---

<table>
<thead>
<tr>
<th>PUMP SIZE</th>
<th>SERIES</th>
<th>Q SUCTION</th>
<th>L</th>
<th>Q DISCHARGE</th>
<th>N</th>
<th>W</th>
<th>FG</th>
<th>SHAFT CENTERS</th>
<th>MOTOR FRAMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot; 4523C</td>
<td>2</td>
<td>7</td>
<td>11½</td>
<td>6¾</td>
<td>28</td>
<td>5½</td>
<td>21</td>
<td>18½-23¼ 182T-284T</td>
<td>6½ 17½ 20 10¼ 47 45 15</td>
</tr>
<tr>
<td>2&quot; 4523C</td>
<td>3</td>
<td>7</td>
<td>11½</td>
<td>6¾</td>
<td>28</td>
<td>5½</td>
<td>21</td>
<td>18½-23¼ 182T-284T</td>
<td>6½ 17½ 20 10¼ 47 45 15</td>
</tr>
<tr>
<td>3&quot; 4523C</td>
<td>3</td>
<td>8¼</td>
<td>11</td>
<td>14</td>
<td>7½</td>
<td>36½</td>
<td>4½</td>
<td>18-22 182T-284T</td>
<td>3½ 5½ 17½ 20 10¼ 47 45 15</td>
</tr>
<tr>
<td>3&quot; 4523C</td>
<td>4</td>
<td>8¼</td>
<td>11</td>
<td>14</td>
<td>7½</td>
<td>36½</td>
<td>4½</td>
<td>18-22 182T-284T</td>
<td>3½ 5½ 17½ 20 10¼ 47 45 15</td>
</tr>
<tr>
<td>4&quot; 4522C</td>
<td>4</td>
<td>8¼</td>
<td>13</td>
<td>14</td>
<td>8</td>
<td>37½</td>
<td>4½</td>
<td>18-27 182T-284T</td>
<td>3½ 5½ 17½ 20 10¼ 47 45 15</td>
</tr>
<tr>
<td>4&quot; 4523C</td>
<td>4</td>
<td>9¼</td>
<td>13</td>
<td>15</td>
<td>9</td>
<td>38¼</td>
<td>4½</td>
<td>18-27 182T-284T</td>
<td>4 5¾ 17¼ 20 10¼ 47 45 15</td>
</tr>
<tr>
<td>4&quot; 4523C</td>
<td>5</td>
<td>9¼</td>
<td>13</td>
<td>15</td>
<td>9</td>
<td>38¼</td>
<td>4½</td>
<td>18-27 182T-284T</td>
<td>4 5¾ 17¼ 20 10¼ 47 45 15</td>
</tr>
<tr>
<td>4&quot; 4523C</td>
<td>6</td>
<td>9¼</td>
<td>13</td>
<td>15</td>
<td>12</td>
<td>41¼</td>
<td>4½</td>
<td>18-27 182T-284T</td>
<td>4 5¾ 17¼ 20 10¼ 47 45 15</td>
</tr>
</tbody>
</table>

### NOTES:

1. ALL FLANGES ARE 125# ANSI DRILLING UNLESS NOTED.
2. ALL DIMENSIONS ARE IN INCHES UNLESS NOTED OTHERWISE.
3. SUCTION AND DISCHARGE GAUGE CONNECTIONS ARE NOT AVAILABLE AND SHOULD BE LOCATED ON ADJACENT PIPING.
4. BASES ARE DESIGNED TO BE COMPLETELY FILLED WITH GROUT.
5. CASING AND SUCTION FLANGES ARE PROVIDED AS CAST.
   PIPING SHOULD BE FITTED TO PUMP WITH HEAVY NEOPRENE GASKETS AFTER PUMP IS SET AND LEVELED.
6. NOT FOR CONSTRUCTION, INSTALLATION, OR APPLICATION PURPOSES UNLESS CERTIFIED. DIMENSIONS SHOWN MAY VERY DUE TO NORMAL MANUFACTURING TOLERANCES.

---

**Customer**

**P.O. NO.**

**Job Name**

**Tag Name**

**Pump Size and Model**

**GPM**

**TDH**

**RPM**

**Rotation**

**Dish Pos**

**Motor**

**HP**

**Frame**

**Phase**

**Hertz**

**Volts**

**Enclosure**

**Certified For**

**Certified By**

**Date**

---

© 2015 Pentair Ltd. 02/15

Fairbanks Nijhuis®
**WARNING**

DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.

A- SUPPLIED BY FMPC  B- SUPPLIED BY OTHERS

---

### 4500C Series Vortex Pumps

#### Section 009 Page 020

---

**NOTES:**

1. ALL FLANGES ARE 125# ANSI DRILLING UNLESS NOTED.
2. ALL DIMENSIONS ARE IN INCHES UNLESS NOTED OTHERWISE.
3. SUCTION AND DISCHARGE GAUGE CONNECTIONS ARE NOT AVAILABLE AND SHOULD BE LOCATED ON ADJACENT PIPING.
4. BASES ARE DESIGNED TO BE COMPLETELY FILLED WITH GROUT.
5. CASING AND SUCTION FLANGES ARE PROVIDED AS CAST. PIPING SHOULD BE FITTED TO PUMP WITH HEAVY NEOPRENE GASKETS AFTER PUMP IS SET AND LEVELED.
6. NOT FOR CONSTRUCTION, INSTALLATION, OR APPLICATION PURPOSES UNLESS CERTIFIED. DIMENSIONS SHOWN MAY VERY DUE TO NORMAL MANUFACTURING TOLERANCES.

---

**Fairbanks Morse**

**PENTAIR PUMP GROUP**

**SETTING PLAN**

4520C

R.H. ARRANGEMENT

---

**Customer**

**P.O. No.**

---

**Job Name**

**Tag Name**

---

**Pump Size and Model**

**GPM**

**TDH**

**RPM**

**Rotation**

**Disch Pos**

---

**Motor**

**HP**

**Frame**

**Phase**

**Hertz**

**Volts**

**Enclosure**

---

**Certified For**

**Certified By**

**Date**

**Doc No**

**Rev No**

---

© 2015 Pentair Ltd. 02/15
WARNING
DO NOT OPERATE THIS MACHINE WITHOUT PROTECTIVE GUARD IN PLACE. ANY OPERATION OF THIS MACHINE WITHOUT PROTECTIVE GUARD CAN RESULT IN SEVERE BODILY INJURY.

Section 009 Page 021

Notes:
(1) All flanges are 125# ANSI flanges unless noted.
(2) All dimensions are in inches unless noted otherwise.
(3) Suction and discharge gauge connections are not available and should be located on adjacent piping.
(4) Bases are designed to be completely filled with grout.
(5) Casing and suction flanges are provided as cast. Piping should be fitted to pump with heavy neoprene gaskets after pump is set and leveled.
(6) Not for construction, installation, or application purposes unless certified. Dimensions shown may vary due to normal manufacturing tolerances.