WWS STANDARD LIFT STATION PUMPS

Date Issued: July 1, 2019
Date Last Issued: February 1, 2017
Date First Issued: January 3, 2006

This document approved by the Broward County Water & Wastewater Services Technical Standards Committee.

David J. O’connor, P.E., Chair

Water and Wastewater Services (WWS) uses a suite of standard pumps for its wastewater lift stations. See Product Specifications for detailed requirements for these pumps. This document contains information on the current set of pumps which may change with each new procurement contract.

Electrical service must be three phase for all pumps and also single phase for the 3 and 5 horsepower pumps. 240 volt service is acceptable for pumps 20 horsepower and under, but 480 volt service is strongly preferred. 480 volt service is required above 20 horsepower.

The Acceptable Operating Range is 40% to 120% of the flow at the best operating point.

The impeller shown is the only impeller allowed. For curves 14 through 17 only, the impeller may be trimmed to meet specific design considerations. All other impellers must be supplied untrimmed.
## WWS Current Standard Pumps

<table>
<thead>
<tr>
<th>Curve</th>
<th>Acceptable Operating Range (gpm)</th>
<th>Mfg.</th>
<th>Model</th>
<th>Impeller \ Discharge</th>
<th>HP</th>
<th>Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>120-360</td>
<td>Ebara</td>
<td>100DLBKFMU62.24 (480v)</td>
<td>DLK-C614-9203 \ 4”</td>
<td>3</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100DLBKFMU62.2S (240v)</td>
<td>DLK-C614-9203 \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100DLBKFMU62.22 (240v)</td>
<td>DLK-C614-9203 \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>130-380</td>
<td>Ebara</td>
<td>100DLMBKFMU63.74 (480v)</td>
<td>DLMK-C607-9203 \ 4”</td>
<td>5</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100DLMBKFMU63.7S (240v)</td>
<td>DLMK-C607-9203 \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100DLMBKFMU63.72 (240v)</td>
<td>DLMK-C607-9203 \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>160-500</td>
<td>Grundfos</td>
<td>SL1.30.A40.55.EX.61R.C (480v)</td>
<td>S-TUBE \ 4”</td>
<td>5.5</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SL1.30.A40.55.EX.61R.C (240v)</td>
<td>S-TUBE \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>180-530</td>
<td>HOMA</td>
<td>AMS434-200/7.5T/CFM (480v)</td>
<td>7-7/8” \ 4”</td>
<td>7.5</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AMS434-200/7.5T/CFM (240v)</td>
<td>7-7/8” \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>180-550</td>
<td>HOMA</td>
<td>AMS434-210/7.5T/CFM (480v)</td>
<td>7-15/16” \ 4”</td>
<td>10</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AMS434-210/7.5T/CFM (240v)</td>
<td>7-15/16” \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>210-630</td>
<td>HOMA</td>
<td>AMS434-220/10.4T/CFM (480v)</td>
<td>8-11/16” \ 4”</td>
<td>10</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AMS434-220/10.4T/CFM (240v)</td>
<td>8-11/16” \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>220-660</td>
<td>HOMA</td>
<td>AMS434-230/13P/CFM (480v)</td>
<td>230mm \ 4”</td>
<td>15</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AMS434-230/13P/CFM (240v)</td>
<td>230mm \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>230-700</td>
<td>HOMA</td>
<td>AMS434-248/15P/CFM (480v)</td>
<td>9-3/4” \ 4”</td>
<td>15</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AMS434-248/15P/CFM (240v)</td>
<td>9-3/4” \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>230-700</td>
<td>HOMA</td>
<td>AMS434-255-15P/CFM (480v)</td>
<td>10” \ 4”</td>
<td>15</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AMS434-255-15P/CFM (240v)</td>
<td>10” \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>320-960</td>
<td>HOMA</td>
<td>AMX644-260/20P/CFM (480v)</td>
<td>10-1/8” \ 6”</td>
<td>20</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AMX644-260/20P/CFM (240v)</td>
<td>10-1/8” \ 6”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>260-760</td>
<td>HOMA</td>
<td>AMX644-260/20P/CFM (480v)</td>
<td>10-1/4” \ 4”</td>
<td>20</td>
<td>2”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AMX644-260/20P/CFM (240v)</td>
<td>10-1/4” \ 4”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>260-780</td>
<td>Ebara</td>
<td>100DLMBKFMU61.8 (480v)</td>
<td>DLMK-C612-9203 \ 4”</td>
<td>25</td>
<td>3”</td>
</tr>
<tr>
<td>13</td>
<td>420-1260</td>
<td>HOMA</td>
<td>AMX644-300/30F/CFM (480v)</td>
<td>11-1/2” \ 6”</td>
<td>30</td>
<td>3”</td>
</tr>
<tr>
<td>14</td>
<td>500-1500</td>
<td>HOMA</td>
<td>AMX644-301/39.2F/CFM (480v)</td>
<td>12-5/16” \ 6”</td>
<td>40</td>
<td>3”</td>
</tr>
<tr>
<td>15</td>
<td>480-1450</td>
<td>Ebara</td>
<td>150DLBFMU64.5 (480v)</td>
<td>DLY-C602-9203 \ 6”</td>
<td>60</td>
<td>3”</td>
</tr>
<tr>
<td>16</td>
<td>400-1260</td>
<td>Ebara</td>
<td>150DLFU63.7 (480v)</td>
<td>13.11 in. \ 6”</td>
<td>50</td>
<td>3”</td>
</tr>
<tr>
<td>17</td>
<td>750-2250</td>
<td>Ebara</td>
<td>150DSC4BC (480v)</td>
<td>14.17 in. \ 6”</td>
<td>100</td>
<td>3”</td>
</tr>
</tbody>
</table>
Acceptable Operating Range shown as a solid line.
PUMP MANUFACTURER’S CURVES
(see following pages)
Ebara Submersible Sewage Pump

Performance Curve 1

Model: 100DLBKFMU62.22/4  HP: 3  FLA: 9.2/4.6  Date: 3/11/11

Curve No: DLK-C614-9203
Solid Dia 3"
LM80
Ebara Submersible Sewage Pump

Performance Curve 2

Model: 100DLMBKFMU63.72/4  HP: 5  FLA: 14.2/7.1  Date: 7/21/10

曲线No:DLMK-C607-9203
Solid Dia 3”
LL100
99030144 SL1.30.A40.55.EX.4.61R.C 60 Hz

Performance Curve 3

SL1.30.A40.55.EX.4.61R.C, 60Hz

Q = 406 US gpm
H = 31 ft

Eff pump = 64 %
Eff pump+mtr = 56.2 %

P1 = 4.225 kW
P2 = 4.975 HP
NPSH = 7.64 ft
Performance Curve 4
AMS434-200/7.5T/C FM

Impeller

<table>
<thead>
<tr>
<th>Solid size</th>
<th>Ø:</th>
<th>Max. Ø:</th>
<th>Min. Ø:</th>
<th>Sel. Ø:</th>
</tr>
</thead>
</table>
| 3 inch     | ø"| 8\(^{1/2}\)" | 7\(^{1/2}\)" | 7\(^{1/2}\)"

Operating data

<table>
<thead>
<tr>
<th>Speed:</th>
<th>Frequency:</th>
<th>Duty point:</th>
<th>Shaft power P2:</th>
<th>Discharge port:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750 rpm</td>
<td>60 Hz</td>
<td>Q =360 US g.p.m. H = 40 ft</td>
<td>5.39 hp</td>
<td>4&quot; ANSI</td>
</tr>
</tbody>
</table>

Power data referred to:
Water, clean [100%] ; 68°F; 62.322lb/ft³; 1.0818E-5ft²/s

Testnorm: HI Standard Sect. 14.6.3.4.1
### Impeller

<table>
<thead>
<tr>
<th>Impeller type:</th>
<th>Solid size</th>
<th>Max. Ø:</th>
<th>Min. Ø:</th>
<th>Sel. Ø:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single channel impeller</td>
<td>3 inch</td>
<td>Ø</td>
<td>Ø</td>
<td>7 3/4&quot;</td>
</tr>
</tbody>
</table>

### Operating data

<table>
<thead>
<tr>
<th>Speed:</th>
<th>Frequency:</th>
<th>Duty point:</th>
<th>Shaft power P2:</th>
<th>Discharge port:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750 rpm</td>
<td>60 Hz</td>
<td>Q =387 US g.p.m. H = 41 ft</td>
<td>5.7 hp</td>
<td>4&quot; ANSI</td>
</tr>
</tbody>
</table>

Power data referred to:
Water, clean [100%] ; 68°F; 62.322lb/ft³; 1.0818E-5ft²/s

Testnorm: Hi Standard Sect. 14.6.3.4.1
### Performance Curve 6
AMS434-220/10,4T/C FM

#### Impeller

<table>
<thead>
<tr>
<th>Impeller type:</th>
<th>Solid size</th>
<th>Ø:</th>
<th>Max. Ø:</th>
<th>Min. Ø:</th>
<th>Sel. Ø:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single channel impeller</td>
<td>3 inch</td>
<td>9 1/2&quot;</td>
<td>7 1/2&quot;</td>
<td>8 1/2&quot;</td>
<td></td>
</tr>
</tbody>
</table>

#### Operating data

- **Speed:** 1750 rpm
- **Frequency:** 60 Hz
- **Duty point:** Q = 371 US g.p.m. H = 55 ft
- **Shaft power P2:** 7.48 hp
- **Discharge port:** 4" ANSI

Power data referred to:
Water, clean [100%]; 68°F; 62.322 lb/ft³; 1.0818E-5 ft²/s

Testnorm: HI Standard Sect. 14.6.3.4.1

![Performance Curve Graph](image_url)
Impeller

Impeller type: Single channel impeller
Solid size: 3 inch
Ø: 8.92 hp
Min. Ø: 9/16”
Sel. Ø: 9/16”
Max. Ø: 7/8”

Operating data

Speed: 1750 rpm
Frequency: 60 Hz
Duty point: Q = 401 US g.p.m., H = 64 ft
Shaft power P2: 8.92 hp
Discharge port: 4” ANSI

Power data referred to:
Water, clean [100%], 68°F, 62.322 lb/ft³, 1.0818E-5 ft²/s

Testnorm: HI Standard Sect. 14.6.3.4.1

Performance Curve 7
AMS434-230/13P/C FM

Shaft power P2:

Head

Application range

Efficiency

60.2%

Shaft power P2

US g.p.m.
**Impeller**

- Impeller type: Single channel impeller
- Solid size: 3 inch
- Ø: 11.5 hp
- Head
- Efficiency
- Shaft power P2
- Discharge port: 4” ANSI

**Operating data**

- Speed: 1750 rpm
- Frequency: 60 Hz
- Duty point: Q = 382 US g.p.m. H = 73 ft
- Shaft power P2: 11.5 hp
- Discharge port: 4” ANSI

Power data referred to: Water, clean [100%]; 68°F; 62.322 lb/ft³; 1.0818E-5 ft²/s

**Test norm:** HI Standard Sect. 14.6.3.4.1

---

Performance Curve 8
AMS434-248/15P/C FM
### Impeller

<table>
<thead>
<tr>
<th>Impeller type</th>
<th>Solid size</th>
<th>Ø:</th>
<th>Max. Ø:</th>
<th>Min. Ø:</th>
<th>Sel. Ø:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single channel impeller</td>
<td>3 inch</td>
<td>11.9 hp</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Operating data

- **Speed:** 1750 rpm
- **Frequency:** 60 Hz
- **Duty point:** Q = 324 US g.p.m. H = 89 ft
- **Shaft power P2:** 11.9 hp
- **Discharge port:** 4" ANSI

Power data referred to:
Water, clean [100%]; 68°F; 62.322 lb/ft³; 1.0818E-5 ft²/s

Testnorm: HI Standard Sect. 14.6.3.4.1

---

**Performance Curve**

![Performance Curve](image-url)

**Diagram Details:**
- **Head:** Application range
- **Efficiency:** %
- **Shaft power P2:** [hp]

---

Project:
Project no.: 
Created by: nyackerman 
Page: 2 
Date: 2018-01-22
**Performance Curve 10**

**AMX644-260/20P/C FM**

### Impeller

<table>
<thead>
<tr>
<th>Impeller type:</th>
<th>Solid size</th>
<th>Ø:</th>
<th>Max. Ø:</th>
<th>Min. Ø:</th>
<th>Sel. Ø:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single channel impeller</td>
<td>4 inch</td>
<td></td>
<td>12 1/8&quot;</td>
<td>10 3/8&quot;</td>
<td>10 3/8&quot;</td>
</tr>
</tbody>
</table>

### Operating data

<table>
<thead>
<tr>
<th>Speed:</th>
<th>Frequency:</th>
<th>Duty point:</th>
<th>Shaft power P2:</th>
<th>Discharge port:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750 rpm</td>
<td>60 Hz</td>
<td>Q = 805 US g.p.m. H = 54 ft</td>
<td>18.3 hp</td>
<td>6&quot; ANSI</td>
</tr>
</tbody>
</table>

**Power data referred to:**
Water [100%]; 68°F; 62.322 lb/ft³; 1.0818E-5 ft²/s

**Testnorm:**
P2>10kW, HI Standard Grade 2B
P2<10kW, HI Standard Sect. 14.6.3.4.1
### Performance Curve 11
AMS434-260/20P/C FM

#### Impeller

<table>
<thead>
<tr>
<th>Impeller type:</th>
<th>Solid size</th>
<th>Ø:</th>
<th>Max. Ø:</th>
<th>Min. Ø:</th>
<th>Sel. Ø:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single channel impeller</td>
<td>3 inch</td>
<td>10½&quot;</td>
<td>10½&quot;</td>
<td>9½&quot;</td>
<td>10½&quot;</td>
</tr>
</tbody>
</table>

#### Operating data

<table>
<thead>
<tr>
<th>Speed:</th>
<th>Frequency:</th>
<th>Duty point:</th>
<th>Shaft power P2:</th>
<th>Discharge port:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750 rpm</td>
<td>60 Hz</td>
<td>Q =478 US g.p.m. H = 85 ft</td>
<td>14.4 hp</td>
<td>4&quot; ANSI</td>
</tr>
</tbody>
</table>

Power data referred to:
Water, clean [100%] ; 68°F; 62.322lb/ft³; 1.0818E-5ft²/s

Testnorm: HI Standard Sect. 14.6.3.4.1
Ebara Submersible Sewage Pump

Performance Curve 12

Model: 100DLMBKFMU6182/4  HP: 25  FLA: 66.6/33.3  Date: 7/1/10

Flow (gpm)

TDH (ft)

Efficiency (%)

Power (hp)

Flow (gpm)

Curve No: DLMK-C612-9203
Solid Dia 3”
LL100
Impeller

<table>
<thead>
<tr>
<th>Impeller type:</th>
<th>Solid size</th>
<th>Ø:</th>
<th>Max. Ø:</th>
<th>Min. Ø:</th>
<th>Sel. Ø:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single channel impeller</td>
<td>4 inch</td>
<td></td>
<td></td>
<td></td>
<td>11½&quot;</td>
</tr>
</tbody>
</table>

Operating data

<table>
<thead>
<tr>
<th>Speed:</th>
<th>Frequency:</th>
<th>Duty point:</th>
<th>Shaft power P2:</th>
<th>Discharge port:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750 rpm</td>
<td>60 Hz</td>
<td>Q =864 US g.p.m. H = 76 ft</td>
<td>26.7 hp</td>
<td>6&quot; ANSI</td>
</tr>
</tbody>
</table>

Power data referred to:
Water [100%]; 68°F; 62.322lb/ft³; 1.0818E-5ft²/s

Testnorm: P2>10kW, HI Standard Grade 2B
P2<10kW, HI Standard Sect. 14.6.3.4.1
### Impeller

<table>
<thead>
<tr>
<th>Impeller type:</th>
<th>Solid size</th>
<th>Ø:</th>
<th>Max. Ø:</th>
<th>Min. Ø:</th>
<th>Sel. Ø:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single channel impeller</td>
<td>4 inch</td>
<td>12½&quot;</td>
<td>12½&quot;</td>
<td>12½&quot;</td>
<td></td>
</tr>
</tbody>
</table>

### Operating data

<table>
<thead>
<tr>
<th>Speed:</th>
<th>Frequency:</th>
<th>Duty point:</th>
<th>Shaft power P2:</th>
<th>Discharge port:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750 rpm</td>
<td>60 Hz</td>
<td>Q = 819 US g.p.m. H = 100 ft</td>
<td>34.4 hp</td>
<td>6&quot; ANSI</td>
</tr>
</tbody>
</table>

Power data referred to: Water [100%]; 68°F; 62.322 lb/ft³; 1.0818E-5 ft²/s

Testnorm: P2>10kW, HI Standard Grade 2B
P2<10kW, HI Standard Sect. 14.6.3.4.1

---

**Performance Curve 14**

**AMX644-310/39,2F/C FM**

![Performance Curve Graph](attachment:image.png)

---

Project: Project no.: Created by: nyackerman Page: 2 Date: 2018-01-17
Pump Performance Curve

Item number: Default
Service: 
Quantity: 1
Quote number: 
Date last saved: 11 Jul 2017 11:19 AM
Flow, rated: 1,049.3 USgpm
Differential head / pressure, rated: 106.9 ft
Fluid density, rated / max: 1.000 / 1.000 SG

Product Description: 150DLFU637
Stages: 1
Speed, rated: 1770 rpm
Based on curve number: DLY-C602-9203
Efficiency: 64.29%
Power, rated: 44.05 hp
NPSH required: -
Viscosity: 1.00 cP
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]: 1.00 / 1.00 / 1.00 / 1.00
Item number : Default
Service : Stages : 1
Quantity : 1 Speed, rated : 1780 rpm
Quote number : Based on curve number : BC
Date last saved : 11 Jul 2017 11:16 AM Efficiency : 76.17 %
Flow, rated : 1,873.3 USgpm Power, rated : 99.07 hp
Differential head / Pressure, rated : 159.5 ft NPSH required : 10.96 ft
Fluid density, rated / max : 1.000 / 1.000 SG Viscosity : 1.00 cP
Fluid density, rated / max : 1.000 / 1.000 SG Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010] : 1.00 / 1.00 / 1.00 / 1.00

Customer : BROWARD COUNTY
Reference : 100 HP PUMP CURVE

Ebara International Corporation - Fluid Handling Division
1651 Cedar Line Dr. Rock Hill, South Carolina 29730 USA
Tel: (803) 327-5005 Fax: (803) 327-5097 www.pumpsebara.com