

## Technical Pages

A common question asked when working with pumps is the difference between Input Power (P1) and Output Power (P2). Both of these values are in units of Power, however they represent two very different things.

**Input Power – P1:** Input power is the total electrical power supplied to the pump system.

**Output Power – P2:** Output power is the mechanical power at the shaft of the pump. This is the power that is given as the “Rated Power” of the pump.

The difference between P1 and P2 comes from the efficiency of the motor. The more efficient the motor is, the less power is lost converting from electrical power to mechanical.

In a Hopsel Data Pack, you can find P2 listed on Page 1 and 4, and P1 listed on Page 4 in the “Motor” section (shown in red). If a duty point is entered, the required horsepower at the operating point will be shown in the “Operating Data” sections on Pages 1 and 4 (shown in blue). The maximum required power draw of the selected impeller is shown on Page 4 (shown in orange).

**Technical Information**  
AMS434-230/13,0ETFM

**Operating data**

Flow 500 US g.p.m.  
Head 55 ft  
Shaft power P2 9.9 hp  
Pump efficiency 80.1 %  
Required pump NPSH  
Pump type Single pump  
No. of pumps 1  
Fluid Water, clean

**Pump**

Pump Code AMS434-230/13,0ETFM  
Impeller Single channel impeller  
Impeller size 9 1/2" x 3"  
Solid size 3 inch  
Discharge port 4" ANSI  
Suction port DN100

**Motor**

Rated voltage 230 / 460 V  
Frequency 60 Hz  
Rated power P2 13.0 hp

Number of poles 4  
Efficiency 88.8 %  
Rated current 31.6 / 15.8 A  
Degree of protection IP 68

**Materials**

Motor housing Cast Iron ASTM A48, Cl.40B  
Impeller Cast Iron ASTM A48, Cl.40B  
Pump housing Cast Iron ASTM A48, Cl.40B  
Wear ring Bronze ASTM B505, C93200  
Motor shaft AISI 430 F Stainless Steel  
Bolts AISI 304 Stainless Steel  
Motor jacket Stainless steel  
Elastomers Nitrile Rubber

Mechanical seal on motor side SIC / SIC  
Mechanical seal on medium side SIC / SIC  
Lower Bearing Double row angular ball bearing  
Upper Bearing Deep Groove Ball Bearing

Tostroom: HI Standard Sect. 11.6.5.4

Wet well installation with coupling kit (ET, 200...230)  
Dimensions in mm (inch), letters see table

Table Dimensions (inch)

A 34 1/4"

Project

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**Technical Data**  
AMS434-230/13,0ETFM

**Operating data**

|                 |   |                    |                             |
|-----------------|---|--------------------|-----------------------------|
| Flow            | 500 US g.p.m. / 18.75 m <sup>3</sup> /h | Head               | 55 ft                       |
| Shaft power P2  | 9.9 hp                                  | Static head        | 0 ft                        |
| Pump efficiency | 80.1 %                                  | Required pump NPSH | ft                          |
| Pump type       | Single pump                             | No. of pumps       | 1                           |
| Fluid           | Water, clean                            | Temperature        | 88 °F                       |
| Density         | 62.32 lb/ft <sup>3</sup>                | Kin. viscosity     | 1.062E-5 ft <sup>2</sup> /s |

**Pump**

|                |                         |                              |                      |
|----------------|-------------------------|------------------------------|----------------------|
| Pump Code      | AMS434-230/13,0ETFM     | Speed                        | 1750 rpm             |
| Suction port   | DN100                   | Head                         | Max. 79.0 ft         |
| Discharge port | 4" ANSI                 | Min.                         | 19.9 ft              |
| Impeller type  | Single channel impeller | Flow                         | Max. 924.6 US g.p.m. |
| Solid size     | 3 inch                  | Pump efficiency max.         | 80.2 %               |
| Impeller Ø     | 9.06 inch               | Required rated power max. P2 | 11.9 hp              |

**Motor**

|                                   |   |                                 |                           |
|-----------------------------------|---|---------------------------------|---------------------------|
| Motor design                      | Submersible motor   | Insulation class                | H                         |
| Motor name                        | AM210.14.6ET/4/3  | Degree of protection            | IP 68                     |
| Frequency                         | 60 Hz   | Temperature class               | T3C                       |
| Rated power P1                    | 14.6 hp   | NEMA code                       | C                         |
| Rated power P2                    | 13.0 hp   | Explosion protection            | Class I, Div. 1, Grp. C&D |
| Rated speed                       | 1750 rpm  | Efficiency                      | 100% 88.8 %               |
| Rated voltage                     | 230 / 460 V 3~  | at % rated power                | 75% 90.0 %                |
| Rated current                     | 31.6 / 15.8 A   | 50%                             | 89.9 %                    |
| Starting current, direct starting | 117.9 / 59.0 A  | cos phi                         | 100% 0.87                 |
| Starting current, star-delta      | A   | at % rated power                | 75% 0.83                  |
| Starting mode                     | Directly  | Efficiency                      | 50% 0.75                  |
| Power cable                       | 404   | Control cable                   | SG1.5                     |
| Type of power cable               | H07RN8-F-PLUS   | Type of control cable           | H07RN8-F-PLUS             |
| Cable length                      | 32.8 ft   | Service factor                  | 1.15                      |
| Shaft seal                        | Mechanical seal on motor side<br>Mechanical seal on medium side | SIC / SIC                       | SIC / SIC                 |
| Bearing                           | Lower Bearing<br>Upper Bearing                                  | Double row angular ball bearing | Deep Groove Ball Bearing  |

Remarks

**Materials / Weight**

|                  |                            |              |                          |
|------------------|----------------------------|--------------|--------------------------|
| Motor housing    | Cast Iron ASTM A48, Cl.40B | Bolts        | AISI 304 Stainless Steel |
| Pump housing     | Cast Iron ASTM A48, Cl.40B | Elastomers   | Nitrile Rubber           |
| Impeller         | Cast Iron ASTM A48, Cl.40B | Motor jacket | Stainless steel          |
| Wear ring        | Bronze ASTM B505, C93200   |              |                          |
| Motor shaft      | AISI 430 F Stainless Steel |              |                          |
| Weight aggregate | On demand lb               |              |                          |

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