

Project: BGJWSC LS 4119 UPGRADE  
Project number: JS0120-13

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## Technical data

with motor

## Submersible sewage pump

FA 10.78Z

FKT 27.1-4/28KEx

| Pump                                            |               |                  |                     |                        |                 |                                              |
|-------------------------------------------------|---------------|------------------|---------------------|------------------------|-----------------|----------------------------------------------|
| Pump type                                       |               | FA 10.78Z        |                     | Installation type      |                 | Suspension device 2                          |
| Impeller Ø                                      | max. possible | 16.1             | inch                |                        |                 | DN150L/2RK                                   |
|                                                 | standard      | 330              | mm                  | Free passage           |                 | 3.1                      inch                |
|                                                 | designed      | 13.2             | inch                | Suction port           | Pressure rating | PN10                                         |
|                                                 | min. possible | 13               | inch                |                        | Rated diameter  | DN100                                        |
| Nominal speed                                   |               | 1740             | 1/min               | Discharge port         | Standard        | EN1092-2-S                                   |
| Frequency                                       |               | 60               | Hz                  |                        | Pressure rating | PN10                                         |
| Impeller type                                   |               | Two-channel      |                     |                        | Rated diameter  | DN100                                        |
| Impeller construction                           |               | Closed           |                     | Standard               | EN1092-2-D      |                                              |
|                                                 |               |                  |                     |                        |                 |                                              |
| Weights                                         |               |                  |                     |                        |                 |                                              |
| Weight of pump end                              |               | max. 377         | lb                  | Weight of unit         |                 | max. 1236.8                      lb          |
| Weight of motor                                 |               | 859.8            | lb                  |                        |                 |                                              |
|                                                 |               |                  |                     |                        |                 |                                              |
| Materials                                       |               |                  |                     |                        |                 |                                              |
| Pump housing                                    |               | EN-GJS-500-7     |                     | Suction ports          |                 | EN-GJL-250                                   |
| Stationary wear ring                            |               | 1.4308           |                     |                        |                 |                                              |
| Impeller                                        |               | EN-GJS-500-7     |                     |                        |                 |                                              |
| Mobile wear ring                                |               | 1.4462/1.4470    |                     |                        |                 |                                              |
|                                                 |               |                  |                     |                        |                 |                                              |
| Motor                                           |               |                  |                     |                        |                 |                                              |
| Motor name                                      |               | FKT 27.1-4/28KEx |                     | Number of poles        |                 | 4                                            |
| Rated power                                     |               | 57               | hp                  | Rated speed            |                 | 1740                      rpm                |
| Power input with rated power                    |               |                  |                     |                        |                 | 65                      hp                   |
| Rated voltage                                   |               |                  |                     |                        |                 | 460 ~3                      V                |
| Current input with rated power                  |               |                  |                     |                        |                 | 74                      A                    |
| Efficiency with rated power                     |               |                  |                     |                        |                 | 88                      %                    |
| cos phi with rated power                        |               | 0.82             |                     | Rated frequency        |                 | 60                      Hz                   |
| cos phi with starting                           |               |                  |                     | Operation type wet     |                 | S1                                           |
| Starting current, direct starting               |               | 380              | A                   | Operation type dry     |                 | S1                                           |
| Starting current, star-delta                    |               | 125              | A                   | Max. fluid temperature |                 | 104                      °F                  |
| Starting torque                                 |               | 354              | lbf ft              | Starts per hour max.   |                 | 15                                           |
| Inertia moment                                  |               | 4.0341           | lb ft²              | Degree of protection   |                 | IP 68                                        |
| Sel. explosion protection                       |               | FM               |                     | Ex-number              |                 | -                                            |
| Ex-designation                                  |               | FM               |                     |                        |                 |                                              |
| Motor connection cable                          |               |                  | 4x16 + 7x1,5 NSSHÖU |                        |                 |                                              |
|                                                 |               |                  |                     |                        |                 |                                              |
| Duty point data                                 |               |                  |                     |                        |                 |                                              |
| Volume flow                                     |               | 800              | US g.p.m.           | Fluid                  |                 | Water, pure                                  |
| Head                                            |               | 158              | ft                  | Required pump NPSH     |                 | 14                      ft                   |
| Shaft power                      P <sub>2</sub> |               | 46.5             | hp                  | Speed                  |                 | 1747                      rpm                |
| Pump efficiency                                 |               | 68.6             | %                   | Total efficiency       |                 | = $\frac{P_2 * \text{Pump efficiency}}{P_1}$ |
| Power input                      P <sub>1</sub> |               | 53               | hp                  |                        |                 |                                              |
|                                                 |               |                  |                     |                        |                 |                                              |
| Item no.                                        |               |                  |                     |                        |                 |                                              |
|                                                 |               |                  |                     |                        |                 |                                              |
|                                                 |               |                  |                     |                        |                 |                                              |

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**Tender text**

Submersible Sewage Pump as submersible, single-stage block unit in stationary, vertical installation to pump untreated sewage which doesn't attack the pump neither chemically nor mechanically. Pump with radially arranged discharge piece and axial pump intake. Service-friendly design by separated motor and pump casing. Pumping values to be guaranteed as per ISO 9906 Annex A

Submersible motor in pressure-tight design, with internal, sealed active circulation cooling with highly efficient heat exchanger, WILOEMU-double mechanical shaft seal in block design, as well as separate sealing chamber and additional leakage chamber with float control. Motor chamber dry, cooling cycle with water/glycol filling. Motor sealing at the shaft by a double, wear-resistant mechanical shaft seal independent of the direction of rotation entirely made of silicon-carbide as closed unit, in stainless steel sealing cartridge and additional radial seal. Both seals are cooled and lubricated by medical white oil or by water/glycol on customer's request.

The motor chamber is equipped with connecting terminals. Protection of the motor winding by temperature switches installed.

Both ball bearings are maintenance-free, filled with high-quality grease and sealed with additional sealing elements.

All outside casing parts are made of cast iron, shaft and connecting elements are made of stainless steel.

The motor is suitable for continuous operation (S1) under full load in submerged and completely emerged condition.

## Performance curves

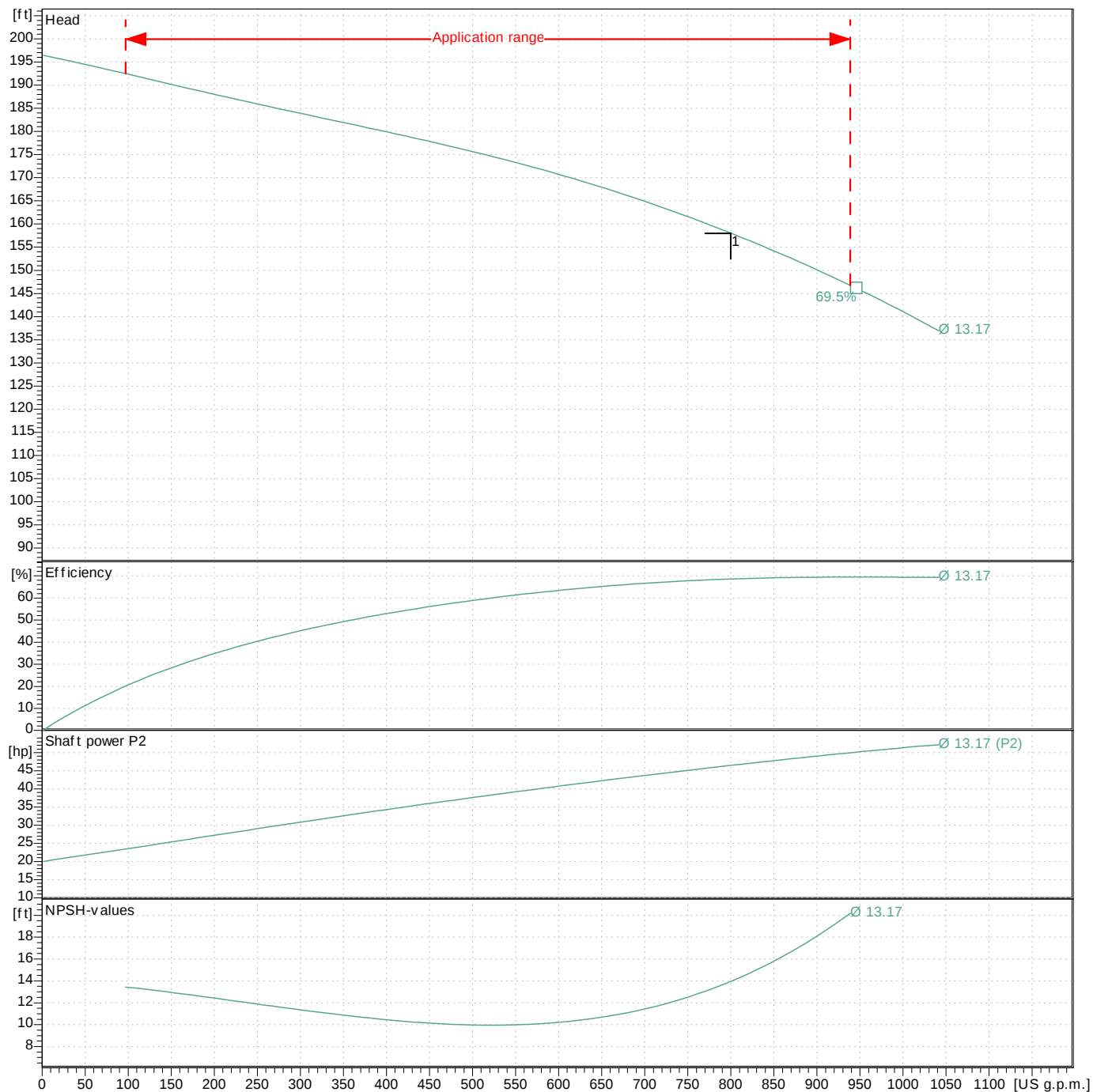
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Power data referred to: Water, pure [100%] ; 68°F; 62.315lb/ft³; 1.0768E-5ft²/s  
Tolerance as per ISO 9906 / Annex A.2



| Pump                      |          |                                 | Duty point data            |                            |               |
|---------------------------|----------|---------------------------------|----------------------------|----------------------------|---------------|
| Impeller Ø                | designed | 13 <sup>3</sup> / <sub>16</sub> | inch                       | Volume flow                | 800 US g.p.m. |
| Nominal speed             |          | 1740                            | rpm                        | Head                       | 158 ft        |
| Frequency                 |          | 60                              | Hz                         | Shaft power P <sub>2</sub> | 46.5 hp       |
| Impeller type             |          | Two-channel                     |                            | Pump efficiency            | 68.6 %        |
| <b>Motor</b>              |          |                                 | Power input P <sub>1</sub> | 53                         | hp            |
| Rated power               |          | 57                              | hp                         | Required pump NPSH         | 14 ft         |
| Sel. explosion protection |          | FM                              | Speed                      | 1747                       | rpm           |

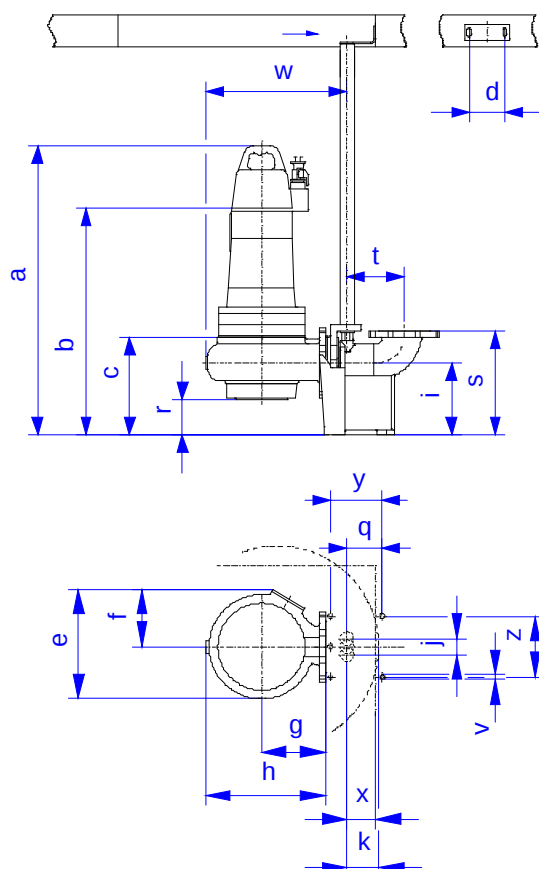
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| Dimensions in inch |                                 |   |                                  | Connections                       |
|--------------------|---------------------------------|---|----------------------------------|-----------------------------------|
| a                  | 64 <sup>1</sup> / <sub>2</sub>  | r | 7 <sup>3</sup> / <sub>16</sub>   | Suction port<br>DN100<br>PN10     |
| b                  | 47 <sup>3</sup> / <sub>4</sub>  | s | 18 <sup>5</sup> / <sub>16</sub>  |                                   |
| c                  | 15 <sup>1</sup> / <sub>2</sub>  | t | 8 <sup>11</sup> / <sub>16</sub>  |                                   |
| d                  | 4 <sup>5</sup> / <sub>16</sub>  | v | 1 <sup>1</sup> / <sub>16</sub>   |                                   |
| e                  | 22 <sup>3</sup> / <sub>16</sub> | w | 29 <sup>11</sup> / <sub>16</sub> | Discharge port<br>DN100<br>PN10   |
| f                  | 11 <sup>5</sup> / <sub>8</sub>  | x | 3 <sup>9</sup> / <sub>16</sub>   |                                   |
| g                  | 13 <sup>3</sup> / <sub>4</sub>  | y | 8 <sup>1</sup> / <sub>4</sub>    |                                   |
| h                  | 25                              | z | 9 <sup>7</sup> / <sub>16</sub>   |                                   |
| i                  | 12 <sup>5</sup> / <sub>8</sub>  |   |                                  | Suspension device 2<br>DN150L/2RK |
| j                  | 1 <sup>15</sup> / <sub>16</sub> |   |                                  |                                   |
| k                  | 3 <sup>3</sup> / <sub>4</sub>   |   |                                  |                                   |
| q                  | 5 <sup>7</sup> / <sub>8</sub>   |   |                                  |                                   |