

wilo®



Wilo-Stratos GIGA2.0-I
Single-Stage, High Efficiency, EC Motor-Driven, Vertical In-line Pumps

Engineering Specification

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Pump shall be series Wilo-Stratos GIGA2.0-I, rigid-coupled, single stage vertical in-line, mechanically sealed, dry rotor, high-efficiency, EC motor-driven, centrifugal pump, as manufactured by WILO SE.
- B. Furnish and install extended life, low maintenance pumps with capacities as shown on plans/submittals.

1.02 RELATED SECTIONS

- A. 23 21 23 – Hydronic Pumps.
- B. 23 09 13.23 – Sensors and Transmitters
- C. 23 09 33 – Electric and Electronic Control System for HVAC

1.03 REFERENCES

- A. HI – Hydraulic Institute.
- B. UL – Underwriters Laboratories.
- C. NEC – National Electrical Code.
- D. ANSI – American National Standards Institute.
- E. IOM – Instruction and Operation Manual
- F. AISI – American Iron and Steel Institute.
- G. ISO – International Standards Organization.
- H. NEMA – National Electrical Manufacturers Association.
- I. VFD – Variable Frequency Drive.
- J. ECM – Electronically Commutated Motor.
- K. TEFC – Totally Enclosed Fan Cooled.

1.04 SUBMITTALS

- A. Submittal data sheet(s).
- B. Dimensional print(s).
- C. Wiring diagram(s).
- D. Installation, operation, and maintenance manual (digital version through QR code).

1.05 QUALITY ASSURANCE

- A. The pump manufacturer shall be fully certified by the International Standards Organization per ISO 9001:2008.
- B. Each pump shall be factory tested per Hydraulic Institute standards prior to shipment and shall conform to ANSI/HI 1.1-1.2, and 1.3 for recommended acceptable unfiltered field vibration limits.
- C. The pump assembly shall comply with NFPA 70, Article 100, and shall be marked for intended use.
- D. The pump and motor-controller assembly shall comply with UL 778 for Motor-Operated Water Pumps.
- E. The motor-controller assembly shall comply with UL 61800-5-1 for Adjustable Speed Electrical Power Drive Systems – Part 5-1: Safety Requirements – Electrical, Thermal and Energy.

- F. Water-glycol mixtures or fluids with a different viscosity than pure water increase the power consumption of the pump. Only use mixtures with corrosion protection and observe the relevant manufacturer's specifications. A glycol mixture of up to 50 % by volume is permitted up to $T \leq +250^{\circ}\text{F}$ (120°C).
- G. Ambient temperature range for the pump shall be rated for $+32^{\circ}\text{F}$ (0°C) to 122°F (50°C).
- H. Maximum operating pressure shall be rated at 232 PSI (16 BAR).
- I. Liquid temperature ranges shall be from 15°F (-10°C) to 284°F (140°C).
- J. All pumps shall meet or exceed the DOE requirements for Pump Efficiency Index (PEI).

1.06 WARRANTY

- A. Provide manufacturer's standard warranty against defects in materials and workmanship.
 - 1. Warranty Period: Wilo-Stratos GIGA2.0-I shall be free of defects in materials and workmanship for a period of two (2) years from date of installation; not to exceed 6 months from date of purchase.
- B. Any use beyond the intended use shall be considered misuse and will void any warranty claims. Intended use shall include compliance with the user manual as well as the specifications and labeling on the pump.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with these specifications, the following manufacturers shall be acceptable:
 - 1. Wilo-Stratos GIGA2.0-I as manufactured by Wilo SE.
 - 2. Pre-approved equal.
- B. The pump shall be a standard product of a single pump and pump logic controller and be designed, built and tested by the same manufacturer.

2.02 COMPONENTS

- A. PUMP CASING/VOLUTE
 - 1. Shall be radially split and constructed with EN-GJL-250 (ASTM A48, class 40B) cast iron cataphoresis-coated, with RP-1/8" threaded gage tappings at the inlet and outlet flanges of the pump, drain plug at bottom and air vent at top of volute.
 - 2. Shall have integrally cast pump feet drilled and tapped with flow direction arrow.
 - 3. Shall be a PN 16 flange drilled in accordance with ANSI Class 125.
- B. LANTERN/MOTOR ADAPTOR
 - 1. Shall be constructed with EN-GJL-250 (ASTM A48, class 40B) cast iron cataphoresis-coated.
 - 2. Shall be equipped with integral condensate/leakage drain, venting plug, pump and motor housing jack-bolt locations. Jack-bolt thread size shall be M12.
- C. IMPELLER
 - 1. Shall be constructed of a corrosion resistant Polyphenylene Sulfide (Ryton[®]) reinforced with 40% glass-fiber (PPS/GF40) with stainless steel inlet engineering composite, single- suction type, statically and dynamically balanced, keyed to shaft.
 - 2. The allowable residual imbalance in the impeller rotating assembly shall conform to ISO Grade G6.3.
 - 3. The impeller shall include bore holes for reduction of axial forces, fluid flushing of mechanical seal and three-dimensional Francis vanes.

D. SHAFT

1. Shall be constructed of a Nickel-containing, martensitic stainless steel (1.4057 x X17CrNi16-2).

E. SEAL

1. Shall be a mechanical seal Q1Q1X4GG consisting of silicon carbide rotating ring against a silicon carbide seat held by CrNiMo steel spring and HNBR bellows and Gasket.

F. SHAFT GUARDS

1. Shall be a dual rated ANSI B15.1, Section 8 & OSHA 1910.219 compliant coupling guard constructed of stamped stainless steel and shall have viewing windows for inspection of the coupling mounted to the pump end.

G. MOTOR

1. Shall be an electronically commutated motor of energy efficiency rated at class IE5 in accordance with IEC 60034-30-2.
2. Motor shall be totally enclosed fan cooled with user interface and graphical output and have a rated power range of 0.75 to 10 horsepower.
3. Electrical components, devices and accessories shall be UL listed 508, labeled and defined in NFPA 70 marked for intended location, IP54 protection.
4. Mains connection shall be available in the following voltages and phases:
 - a. 3~480 V ± 10 % 50/60 Hz.
 - b. 3~400 V ± 10 % 50/60 Hz.
 - c. 3~380 V -5 % ± 10 % 50/60 Hz
5. Shall be compliant with electromagnetic compatibility without interference emissions of residential environments in accordance with EN 61800-3:2018.

H. VARIABLE FREQUENCY DRIVE

1. Shall be capable of modulating from 500–5500 RPM without internal recirculation, built in ΔP-V, ΔP-C, PID control, constant speed control, or control using either 0–10V or 4–20mA signals.
2. Shall have the following inputs and outputs:
 - a. Two digital inputs
 - b. Two digital outputs
 - c. Four Analog inputs
 - i. 0(2)-10V
 - ii. 0(4)-20Ma
 - iii. Pt1000 (only 2)

I. DATA EXCHANGE

1. Shall be a Wilo-Smart Connect module for Bluetooth, wireless data exchange using a smartphone or tablet to control the pump.
2. Data exchange shall be possible with accessories of the corresponding Wilo-CIF modules:
 - a. Serial/digital Modbus RTU interface for connection to building automation BA via RS485 bus system.
 - b. Serial/digital BACnet MS/TP interface for connection to building automation BA via RS485 bus system.
 - c. Digital interface for Ethernet Multiprotocol Modbus TCP, BACnet/IP for connection to building automation BA via RJ45 bus system.
 - d. Serial/digital LON interface for connection to building automation BA via LONWorks bus system.
 - e. Serial/digital PLR interface for connection to building automation BA via company-specific coupling modules.
 - f. Serial/digital CANopen interface for connection to building automation BA via company-specific coupling modules.

J. CONTROL MODES

1. The following control modes shall be available with the motor/drive combination:
 - a. Permanent, automatic power adjustment to system requirements without setpoint specification Wilo Dynamic Adapt plus (factory setting).
 - b. Constant temperature (T -const.).
 - c. Constant differential temperature (ΔT -const.).
 - d. Needs-based volume flow optimization of the feeder pump through connectivity and communication between multiple secondary pumps (Multi-Flow Adaptation).
 - e. Constant volume flow (Q-const.).
 - f. Variable differential pressure ($\Delta p-v$) with the option to set the nominal duty point Q and H.
 - g. Constant differential pressure ($\Delta p-c$).
 - h. Differential pressure control $\Delta p-c$ to a remote point in the pipe network (index circuit evaluator).
 - i. Constant speed (n-const.).
 - j. User-defined PID control.
 - k. Parametrizable functions:
 - i. External OFF
 - ii. External MIN
 - iii. External MAX
 - iv. MANUAL (Building automation BA OFF)

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install equipment in accordance with the manufacturer's instructions.
- B. Power wiring, as required, shall be the responsibility of the electrical contractor. All wiring shall be performed according to the manufacturer's instructions and applicable state, federal and local codes.
- C. All factory wiring shall be numbered for easy identification and the numbers shall coincide with those shown on the wiring diagram.
- D. Unit shall be a Wilo-Stratos GIGA2.0-I as manufactured by Wilo SE.

END OF SECTION

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