



**Wilo COR MVI
Pressure Boosting Systems**

Engineering Specification

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Furnish and install Multi-Stage packaged booster system c/w:
- Vertical multi-stage booster pumps & motors
 - Control panel c/w VFD
 - Related interconnecting piping, valves, sensors, etc..

1.2 REGULATORY

- A. The packaged booster system shall be rated for maximum 230 PSI and where applicable, bear the approval symbol of the required regulatory body.
- B. Electrical assemblies (circuitry, wiring terminals and internal connections) of all electronic components (motors, panels etc.) shall be certified and registered to bear the emblem of UL, ULC or CSA as required. Electrical assembly shall meet codes and standards established by national bodies.

1.3 REFERENCES

- A. Local electrical and plumbing specifications shall apply.

1.4 SUBMITTALS

- A. Provide submittals, warranty information and shop drawings in accordance with the General Requirements and as specified herein. Submit detailed product drawings including wiring schematics. Indicate critical dimensions of the packaged booster system.
- B. Submit manufacturer's technical data in the form of published Installation and Operation and Maintenance Manuals to be supplied for the system and multi-stage booster pumps at time of installation.
- C. The packaged booster system shall be tested and verified for performance. Copies of "Certification of Performance" shall be made available to the specifying engineer if requested.
- D. Submit catalogue data on all equipment, pipe, fittings, fasteners and associated items supplied by others to complete the installation of the packaged booster system in the system installation.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. The packaged booster system is to remain in factory shipping condition until immediately prior to installation.
- B. The packaged booster system shall be stored indoors in a conditioned space, protected from exposure to the elements, and from exposure to other potential contaminants.
- C. Factory applied labels are to remain in place and un-obscured. These identification tags are to display model numbers, serial numbers, and evidence of certifications/listings.

1.6 WARRANTY

- A. The Manufacturer shall warrant the packaged booster system for a period of 1 year from date of purchase, subject to the Terms and Conditions of said Warranty. A copy of the Manufacturer's Warranty shall be provided as part of the Submittals as outlined in Section 1.04 of this specification.

PART 2 - PRODUCTS

2.1 GENERAL

A. PUMPS AND MOTORS:

Vertical multi-stage booster pumps shall be constructed with 304 stainless steel bodies and supplied with built in thrust bearings. Motors will be NEMA frame, TEFC design, inverter duty type.

B. CONTROL PANEL

C. OVERLOAD ACCESSORIES

D. Adjustable low suction pressure switch

- Automatic transfer on lag pumps in the event of a failure

E. SYSTEM ACCESSORIES

- Stainless steel suction and discharge headers (4")
- Check valves (one per pump)
- Isolation valves
- Baseplate

2.2 ELECTRICAL CONNECTIONS

- A. All wiring between pumps and control panel and all related pressure sensors/switches shall be completed by the system manufacturer. Site wiring shall consist of main power supply to the control panel.

2.3 ELECTRICAL

- A. All 24 volt wiring shall be of 18 gauge or larger, UL/CSA approved, 300 volts, 220 deg F maximum temperature.
- B. All 110 volt wiring shall be of 14 gauge or larger, UL/CSA approved, 300 volts, 220 deg F maximum temperature.
- C. Higher voltage wiring shall be compliant with all applicable electrical codes.
- D. Voltage variances shall be less than +/- 10% from rated voltage with pump under load conditions. Amperage variance between phases on three phase systems shall be less than +/- 5%. Correct pump rotation must be confirmed during start-up.
- E. Thermal overloads shall be integral for each motor.

2.4 CONTROL, OPERATION AND DIAGNOSTICS

- A. The system will provide a constant discharge pressure over the entire flow range of the system. P1 (lead pump) will operate as a VFD type. When run up to speed at higher flow demands, P1 runs to full speed and P2 becomes the VFD pump. P4 is a back up pump in the event of a failure of P1, 2 or 3.

2.5 MATERIALS OF CONSTRUCTION

- A. Vertical multi-stage booster pumps shall be constructed with 304 stainless steel bodies and supplied with built in thrust bearings. Motors will be NEMA frame, TEFC design, inverter duty type.
- B. The control panel will be NEMA 1 enclosure
- C. The system piping shall be Stainless Steel

PART 3 – EXECUTION

3.1 PREPARATION

- A. Prior to commencing work the contractor will have read and understood both the Installation/Operation and Maintenance Manuals (IOM) supplied and enclosed with the attendant, for the system and vertical multi-stage booster pumps.
- B. The effectiveness of the system is dependant on the system being designed and installed correctly. Proper consideration of factors such as minimum inlet pressure, boost pressure and flow rate is critical.
- C. Prior to final connection of the booster system as part of the system, the system piping shall be flushed of all contaminants and foreign objects.

3.2 INSTALLATION

- A. The packaged booster system must be installed by a qualified installer/service technician.
- B. The packaged booster system shall be installed in accordance with the relevant requirements of the local authority having jurisdiction, as required to meet the performance requirements and function specified for the system.
- C. The packaged booster system must be installed and operated strictly in accordance with the terms set out in both the Installation and Operation and Maintenance Manuals supplied.
- D. The system must be installed in a way that it is not stressed by the pipe work.
- E. Fluid temperature limitations are 122 deg F (50 deg C) to 14 deg F (-10 deg C). Maximum ambient temperature surrounding the pump shall be between 32 deg F (0 deg C) to 104 deg F (40 deg C).
- F. Inlet pressure shall not exceed 145 psi (10 Bar). Minimum inlet pressure shall be 3 feet static water column height above the inlet of the pump.

3.3 FIELD QUALITY CONTROL

- A. Upon receipt and prior to commissioning the packaged booster system should be inspected for any sign of visible damage.
- B. Prior to commissioning the packaged booster system, the system connections should be complete and leak free. The system should be filled and purged as per instructions in the IOM manuals.
- C. Following fill and purge, the system should undergo a pressure test, followed by a run-through of the sequence of operations listed in the IOM manuals.

System Schedule:

Mark	Qty.	Duty	Design flow rate	Boost press	Mfg	Model	Electrical	System function	Remarks
BP-1	1	Pressure Boosting System	350 USGPM	55 PSI	WILO	COR 4 – MVI 8005	575/3/60	Maintaining constant domestic water pressure	Packaged VFD booster system c/w controls, piping and pumps (4 only WILO MVI 80-05, 7 ½ Hp)

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