

# ENGINEERED PRODUCTS

## VR SERIES VERTICAL MULTI-STAGE PUMPS



### ENGINEERING SPECIFICATIONS

**1.01 SCOPE:** The contractor shall furnish (quantity) model VR Vertical Multi-Stage centrifugal pumps as manufactured by Franklin Electric. All pump units shall be from one pump manufacturer and provided complete including electric motor drive.

**2.01 OPERATING CONDITIONS:**

EQUIPMENT ITEM NUMBER:

FLANGE INSIDE DIAMETER:

NOTE: SUCTION AND DISCHARGE MUST BE SAME SIZE

PRIMARY SERVICE CONDITION:

GALLONS PER MINUTE (capacity):

TOTAL DYNAMIC HEAD (feet):

EFFICIENCY (%):

MINIMUM SHUT-OFF HEAD:

MINIMUM FLOW ALLOWED:

OPERATING SPEED:

MAXIMUM MOTOR (hp):

PUMP END COMPONENTS:

**3.01 CONSTRUCTION:**

**CASING:** Models VR3-VR20 shall be of deep drawn, laser welded, 316L stainless steel and shall be capable of withstanding maximum working pressures of 360 psi. Models VR30-VR95 shall be of A48 Class 35 cast iron (standard) or AISI 316 (optional) with an equal maximum working pressure. Piping connections shall be in-line and compatible with ANSI raised-face flanges (with optional NPT or Victaulic® connections).

**FLOATING NECK RING:** Floating neck rings composed of PTFE/PPS shall be provided within each stage. They shall be self-centering and easily replaceable.

**IMPELLER:** Impellers shall be of enclosed design and constructed of AISI 316 stainless steel.

**DIFFUSER BOWL:** Each stage shall have a bowl with attached diffuser and be constructed of AISI 316 SS.

**MECHANICAL SHAFT SEAL:** The mechanical shaft seal assembly shall be composed of a Silicon Carbide SiC rotating face, Carbon graphite stationary, EPDM elastomers and AISI 316 stainless steel hardware as standard. Silicon carbide SiC stationary and FKM elastomers are optional.

**INTEGRAL OVERSIZED THRUST BEARING AND COUPLING:** Shall be one piece capable of handling pump thrust and include coupling to attach pump to motor requiring no field adjustment to the impeller stack.

**PUMP SHELL:** Shell will be manufactured from AISI 316 SS or AISI 304 SS coils TIG welded, calibrated, and cut at precise height.

**BEARING SYSTEM:** Oversized thrust bearing capable to handle pump thrust, integrated into the pump end. It allows the use of standard motors instead of special models.

**4.01 ELECTRIC MOTOR:** The pump drive motor shall be NEMA standard design TC frame suitable for vertical mounting and close coupled to the pump unit. Motors shall be of standard manufacturers catalog design and must not use special bearings as a thrust handling device. The motor rating shall be:

hp	rpm	Phase	Hz	Volts	Enclosure (ODP/TEFC) High Efficiency, 1.15 Service Factor
----	-----	-------	----	-------	---

**5.01 TESTING SPECIFICATIONS (IF REQUIRED):** Each pump shall be hydrostatically tested by the manufacturer in accordance with Hydraulic Institute Standards at a minimum of 350 psi. Production performance testing will be conducted by the manufacturer on each pump unit. Head at three operating points (70% of BEP, BEP and 120% of BEP) will be measured to verify performance.

