AMERICAN-MARSH PUMPS

OPEN LINESHAFT VERTICAL TURBINE FIRE PUMPS

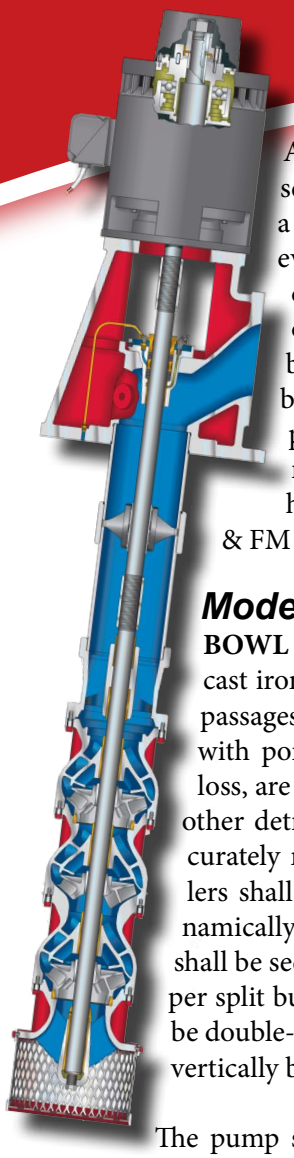
FM APPROVED

NFPA® UL® LISTED

www.american-marsh.com

DURABILITY BY DESIGN SINCE 1873.

Product Overview



American-Marsh Model FP-VT series turbine pumps are used in a variety of fire protection services every day. These rugged and efficient turbine pumps feature francis turbine impellers, modular bowl assemblies, heavy wall bowl bearings and oversized shafts to provide the end user with a superior, reliable product. All pumps have been tested to fully meet UL & FM specifications.

Model FP-VT Specifications

BOWL ASSEMBLY is of close-grained, cast iron ASTM A48 Class 30. The water passages on bowl sizes 10"-14" are lined with porcelain enamel to reduce friction loss, are free of blow holes, sand holes and other detrimental defects, and shall be accurately machined and fitted. The impellers shall be of 304 stainless steel and dynamically balanced. Impellers through 16" shall be securly fastened to the shaft with taper split bushings of steel. Larger sizes shall be double-keyed. Impellers shall be adjusted vertically by an external means.

The pump shaft shall be of A582 grade 416 stainless steel, turned, ground and polished. It shall be supported by bronze bearings above and below each impeller. The suction case bearing shall be grease lubricated and protected by a bronze sand collar. The size of the shaft shall be no less than that determined by ANSI/AWWA Specifications E101, Section A4.3 paragraph 4.3.3.

STRAINER is of stainless steel. A basket or cone type clip-on strainer shall be provided having a net inlet area equal to at least four times the suction pipe area. The maximum opening size shall not be more than 75 percent on the minimum opening of the water passage through the bowl and impeller.

COLUMN ASSEMBLY are made of steel. They shall be furnished in inter-changeable sections not over 10' in length.

The butting faces shall be machined square to the axis of the shaft, with maximum permissable axial misalignment on the thread axis with the shaft axis 0.002" in 6". The size of the shaft shall be no less than that determined by ANSI/AWWA-E101 Specifications Section 5.5 for 416 stainless steel lineshaft and shall be such that elongation due to hydraulic thrust will not exceed the axial clearance of the impellers in the pump bowls. Maximum runout in 10' shall not exceed 0.005".

The lineshaft bearing shall be of 70 minimum shore hardness, neoprene, snap-in type, internally sprial grooved to flush out sand and other abrasives, mounted inside stainless steel bearing retainers held in position in the column pipe. Bearing spacing shall not exceed 10'.

Outer column pipe shall be 5" and larger of ASTM A53 grade B steel pipe of ASTM A120 in interchangable sections not over 10' in length.

THREADED ends of each section faced parallel and machined with 8 straight threads per inch permitting the end to butt and insuring alignment when connected by standard mill steel coupling.

FLANGED column assembly is machined to accept bearing retainer in such a way as not to allow any movement of retainer after flanges are bolted securely together and to implement proper sealing of the column. The weight of the column pipe shall be no less than that stated in ANSI/AWWA Specification E101, Section 5.1 "Standard Specifications for Discharge Column Pipe." The column size shall be such that friction loss will not exceed 5' or 100', based on the rated capacity of the pump. If possible, the column size shall be such also be such as to provide a velocity of not less than 5 feet per second at the rated capacity.

Top and bottom sections of column pipe on product lubricated pumps shall not exceed 5' in length.

Performance Specifications

SIZE: 10" to 19" (350-483 mm)

FLOWS: Up to 5,000 gpm (1,817 m^3/hr)

HEADS: Up to 800 feet (244 meters)

PRESSURE: Up to 370 psi

- UL Listed Certified & Approved Pumps
- Compliance to NFPA 20 Design Regulations
- Matches FM Approval requirements
- Multiple Range of Flow and Pressures

DISCHARGE HEAD shall be of close grain, cast iron, ASTM A48 class 30, free of sand holes and other defects, accurately machined and with a surface discharge. Discharge flange shall be machined and drilled to ANSI standards for 125 lb. rating and shall be ___ nominal inside diameter. The top of the discharge head has a rabbet fit to accurately locate the vertical hollow shaft driver, and have a diameter equal to the drive base diameter (BD) and less than ___.

The standard cast iron stuffing box shall be rated for 125 PSI discharge pressure and shall be fitted with graphite acrylic packing. It shall have a lantern ring or grease chamber placed as required below the top packing ring. Throttle bearing shall be bronze with stainless steel bolting and with brass or stainless steel adjusting nuts. Sealing between the stuffing box and the discharge head shall be accomplished by means of an o-ring.

If the discharge pressure exceeds 125 PSI, a high pressure bypass style packing box shall be supplied with a minimum of six rings of packing and two lantern rings and a bypass to sump.

The shaft supplied shall be one-piece bowl, line and headshaft where practical of 416 stainless steel material.

The top lineshaft can be of 416 stainless steel and shall not exceed 10' in length. Impeller adjustment shall be provided at the top of the headshaft by means of adjusting nut which shall be positively locked in position. The headshaft shall also be 416 stainless steel and shall be connected to the top lineshaft beneath the motor to facilitate ease of assembly and maintenance.

MOTOR is electric and shall be vertical hollow shaft 4-pole, three-phase (50 or 60 Hz) various voltage with a non-reverse ratchet, P-base, squirrel cage induction design. Enclosure shall meet NEMA weather protected type 1 or TEFC design with stainless steel screens to prevent entrance of rodents. Motor shall have Class B or Class F insulation with temperature rise as specified by NEMA standards for class insulation used and shall have a 1.15 service factor.

Thrust bearing shall be chosen to handle the continuous down thrust as specified by the pump manufacturer with an AFBMA B-10 one-year minimum or five year average life under design conditions. Provisions shall be made for momentary upthrust equal to 30 percent of rated down thrust. The motor rating shall be such that at design it will not be loaded beyond nameplate rating and at no place on the pump curve shall the loading exceed the service factor.

Product Features

1 MOTOR

- Optional right angle gear drives
- Vertical hollowshaft of solid shaft
- Can be supplied with a non-reverse ratchet
- Top adjusting nut allows user to adjust lateral setting
- Bearing designed to carry thrust loads and is oil lubricated
- Available in WP-I, WP-II, TEFC & Explosion-Proof enclosures

2 STUFFING BOX

- Packed with lantern ring standard
- High-pressure stuffing boxes and shaft sleeves are optional
- Grease port for throat bushing lubrication

3 DISCHARGE HEAD

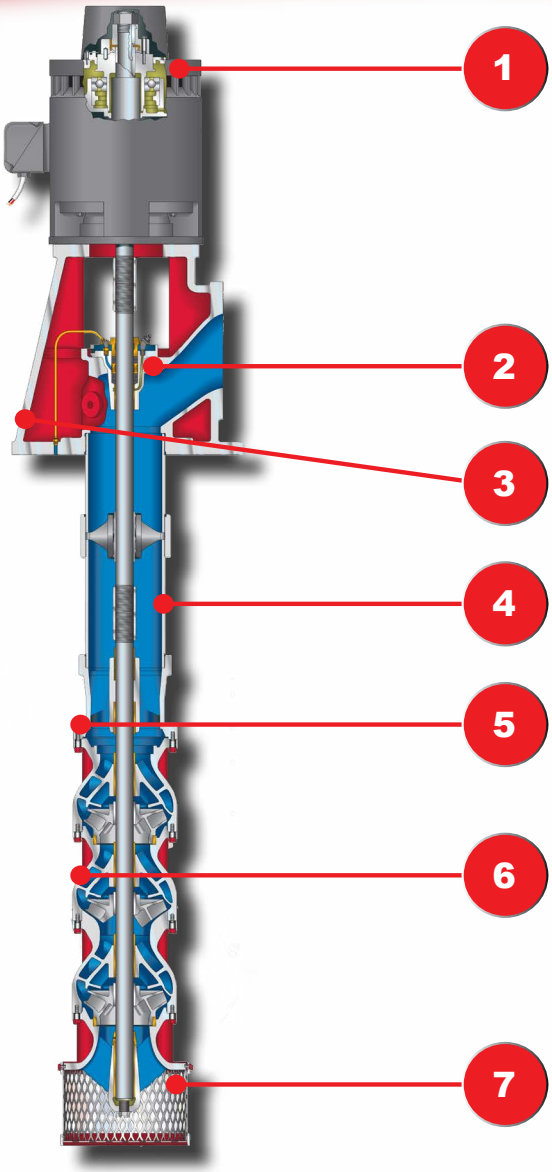
- Stainless steel top shaft
- Optional fabricated steel heads available
- Headshaft coupling connects top shaft to headshaft
- High profile head allows for ease in servicing packing
- Integral drip basin collects leakage from stuffing box
- Spacer couplings are available for use with VSS motors
- Heavy duty ASTM A48 class 30 cast iron construction standard

4 COLUMN ASSEMBLY

- Larger diameter, steel shaft material
- Heat straightened shafting standard
- Heavy wall carbon steel construction
- Product lubricated lineshaft bearings
- Overall length is engineered to customer specifications
- Cast 304 stainless steel bearing retainer with cutlass rubber insert
- Threaded column is standard through 12" and flanged for larger sizes

5 DISCHARGE CASE

- Two discharge bearings for additional support
- Heavy duty ductile iron construction standard
- Additional vanes for minimizing turbulence, thus improving efficiency



6 BOWL ASSEMBLY

- Bronze bowl bearings standard
- 416 stainless steel bowlshaft is standard
- Impellers are expertly machined to customer specifications
- Heavy duty ASTM A48 class 30 cast iron construction standard
- Heavy duty grease-packed suction case bearing with sand collar
- Diffuser bowls through 16" have standard vitreous enamel lining
- Heavy wall ASTM A48 class 30 cast iron construction with 304 stainless steel impellers
- Tapered impeller collets are used on bowls through 16" with keyed impellers used on larger sizes

7 STRAINER

- Basket or cone strainers are available upon request
- Stainless steel materials are available
- Vortex suppressors can be supplied to minimize inlet stress

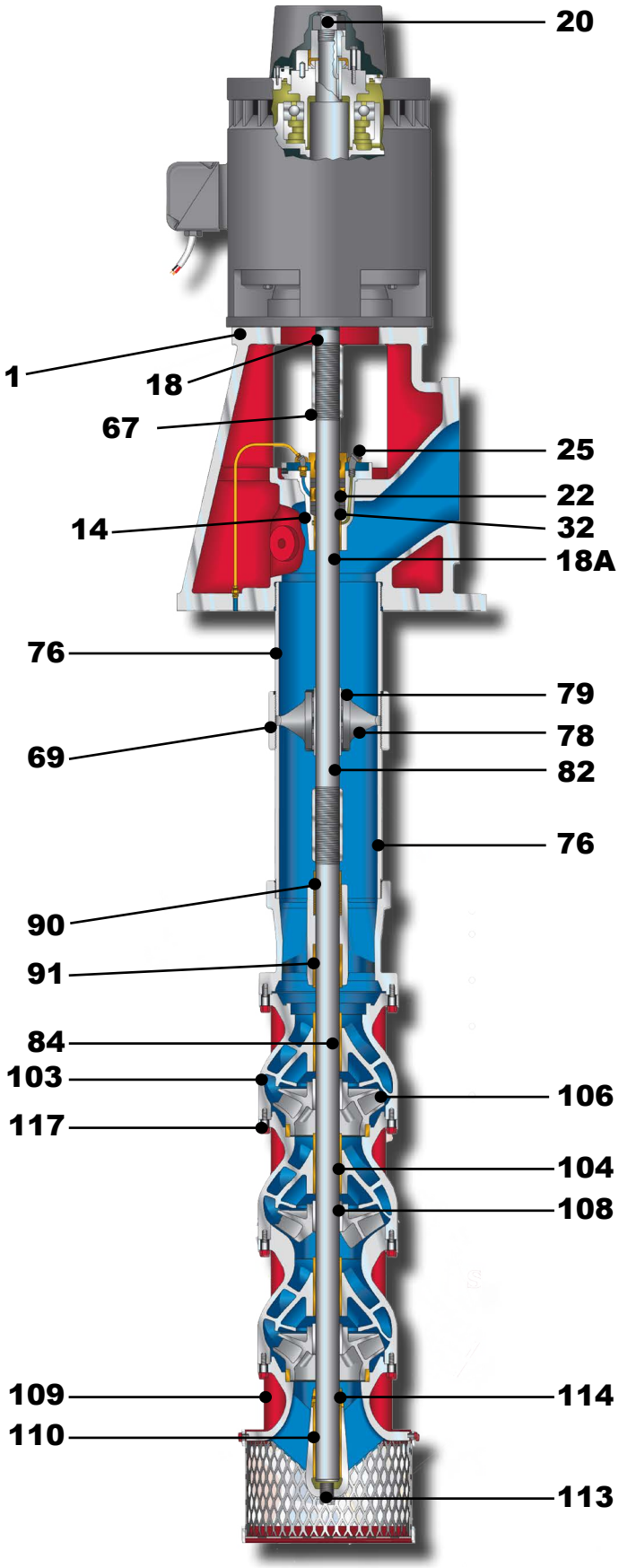
UL Listed/FM Approved Range of Pumps

Model	Flow (GPM)	Speed (RPM)	Stage(s)	Pressure Range (PSI)	UL Listing	FM Approval	Max Working Pressure (PSI)
10MC	200	1450	3-15	40-254		•	370
10MC	200	1450	4-15	50-254	•		370
10MC	200	1760	3-15	56-376	•	•	370
10MC	250	1450	3-15	40-241		•	370
10MC	250	1450	4-15	48-241	•		370
10MC	250	1760	3-15	55-375	•	•	370
12MC	250	1450	3-10	54-251	•	•	370
12MC	250	1760	3-10	73-355	•	•	370
10MC	300	1450	3-15	40-237		•	370
10MC	300	1450	4-15	45-237	•		370
10MC	300	1760	3-15	52-362	•	•	370
12MC	300	1450	3-10	52-245	•	•	370
12MC	300	1760	3-10	72-355	•	•	370
10MC	400	1450	15	222	•	•	370
10MC	400	1760	3-15	47-337	•	•	370
12MC	400	1450	3-10	50-238	•	•	370
12MC	400	1760	3-10	72-355	•	•	370
10MC	500	1760	15	319	•		370
12MC	500	1450	3-10	49-238	•	•	370
12MC	500	1760	3-10	69-349	•	•	370
12MC	750	1760	3-10	63-334	•	•	370
14HCR	750	1450	3-5	82-174	•	•	370
14HCR	750	1760	3-5	125-266	•	•	370
14MCR	750	1450	3-6	79-226	•	•	370
14MCR	750	1760	3-6	119-343	•	•	370
14HCR	1000	1450	3-5	77-166	•	•	370
14HCR	1000	1760	3-5	114-258	•	•	370
14MCR	1000	1450	3-6	72-209	•	•	370
14MCR	1000	1760	3-6	112-323	•	•	370
14HCR	1250	1450	3-5	73-165	•	•	370
14HCR	1250	1760	3-5	108-148	•	•	370
14MCR	1250	1450	6	192	•	•	370
14MCR	1250	1760	6	298	•	•	370
14HCR	1500	1450	3-5	71-165	•	•	370
14HCR	1500	1760	3-5	103-249	•	•	370
16LC	1500	1450	2	51-63	•	•	370
16LC	1500	1450	3	77-95	•	•	370
16LC	1500	1450	4	102-112	•	•	370
16LC	1500	1450	5	128-140	•	•	370
16LC	1500	1760	2	79-95	•	•	370
16LC	1500	1760	3	118-143	•	•	370
16LC	1500	1760	4	158-191	•	•	370
16LC	1500	1760	5	197-213	•	•	370

UL Listed/FM Approved Range of Pumps

Model	Flow (GPM)	Speed (RPM)	Stage(s)	Pressure Range (PSI)	UL Listing	FM Approval	Max Working Pressure (PSI)
14HCR	2000	1760	5	234	•	•	370
16LC	2000	1450	2	47-58	•	•	370
16LC	2000	1450	3	70-88	•	•	370
16LC	2000	1450	4	94-103	•	•	370
16LC	2000	1450	5	117-129	•	•	370
16LC	2000	1760	2	75-90	•	•	370
16LC	2000	1760	3	112-135	•	•	370
16LC	2000	1760	4	150-180	•	•	370
16LC	2000	1760	5	187-202	•	•	370
19MC	2000	1450	1	43-49	•	•	370
19MC	2000	1450	2	86-92	•	•	370
19MC	2000	1760	1	67-74	•	•	370
19MC	2000	1760	2	133-141	•	•	370
16LC	2500	1760	2	70-84	•	•	370
16LC	2500	1760	3	106-126	•	•	370
16LC	2500	1760	4	141-168	•	•	370
16LC	2500	1760	5	176-190	•	•	370
19MC	2500	1450	1	41-48	•	•	370
19MC	2500	1450	2	81-89	•	•	370
19MC	2500	1760	1	62-72	•	•	370
19MC	2500	1760	2	125-134	•	•	370
19HC	3000	1450	2	69-77	•	•	370
19HC	3000	1760	1	53-62	•	•	370
19HC	3000	1760	2	107-115	•	•	370
19MC	3000	1450	2	84	•	•	370
19MC	3000	1760	1	59-70	•	•	370
19MC	3000	1760	2	119-129	•	•	370
19HC	3500	1450	2	72	•	•	370
19HC	3500	1760	1	51-61	•	•	370
19HC	3500	1760	2	101-112	•	•	370
19MC	3500	1760	2	123	•	•	370
19HC	4000	1450	2	68	•	•	370
19HC	4000	1760	2	106	•	•	370
19MC	4000	1760	2	116	•	•	370
19HC	4500	1760	2	101	•	•	370

Sectional Drawing



PARTS LIST

NO.	PART
1	Discharge Head
18	Water Lubricated Headshaft
18A	Top Shaft
20	Headshaft Adjusting Nut
22	Packing (Set)
25	Head Packing Housing Grease Fittings
67	Shaft Coupling
69	O/C Coupling
76	Water Lubricated O/C Section
78	Water Lubricated L/S Bearing Spider
79	Water Lubricated L/S Bearing
84	Water Lubricated Bowl Shaft
90	Water Lubricated Case Bearing
91	Water Lubricated Case Bearing
103	Bowl Assembly (Enclosed Type)
104	Bowl Bearing
106	Impeller (Enclosed Type)
108	Taper Lock
109	Suction Case Assembly (Enclosed Type)
110	Suction Case Bearing
113	Suction Case End Plug
114	Suction Case Sand Cap
117	Bowl Assembly Cap Screw

AMERICAN-MARSH PUMPS