



BUILT TO SERVE



FIRE PUMP MOTORS

**VERTICAL
HOLLOW-SHAFT**



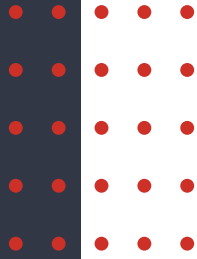
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In line with NAFFCO policy for continuous product development, NAFFCO has the right to change specifications without prior notice.

CAT.NO. NF/NM-VHS-UL/01/22



**VERTICAL
HOLLOW SHAFT**



TECHNICAL DATASHEET

Introduction

National Motors' NVHS Series consists of motors designed for fire pump applications as specified in NFPA 20 (Standard for the Installation of Stationary Pumps for Fire Protection). They are certified by UL as per the requirement of UL 1004-5 'Standard for Fire Pump Motors'. These Vertical Hollow Shaft three-phase asynchronous motors are constructed and manufactured as per the requirements of NEMA MG 1 standard Design B.



**OUTDOOR USE, BETTER
PROTECTION & NEMA
DESIGN STANDARD**

N SERIES VHS MOTOR

2 POLE AVAILABLE RATINGS : 20 HP - 100 HP

Rated Voltage	380 - 415v (50 & 60Hz)
Rated Speed	2929 - 2941 RPM (50Hz) & 3515 - 3529 RPM (60Hz)

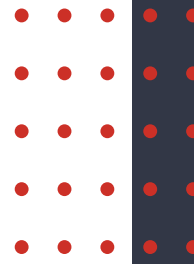
4 POLE AVAILABLE RATINGS : 15 HP - 400 HP

Rated Voltage	380 - 415v (50 & 60Hz), 208 - 230v (60 Hz), 460v (60 Hz)
Rated Speed	1465 - 1488 RPM (50Hz) & 1758 - 1789 RPM (60Hz)

STANDARD PRODUCT LINE FEATURES

Cooling Type	IC 01
Phase	3
Degree of Protection	IP23
Service Factor	1.15
Rated Ambient Temperature	50°C
Insulation Class	F
Altitude	1000 m.a.s.l.
Enclosure	WP1

TECHNICAL DATASHEET



VERTICAL HOLLOW SHAFT

Mounting	F-1
Mounting Type	Foot-mounted
NEMA Design	B
Performance As per	NFPA 20
Approval Standard	UL 1004-5

Note: For further technical support, please contact factory.

TERMINOLOGIES

Frame Size – The system for designating frames of motors and generators shall consist of a series of numbers in combination with letters. In a three-digit or higher frame number, the first two digits of the frame number are equal to four times the distance between the centerline of the motor shaft to the bottom of feet in inches. When this product is not a whole number, the first two digits of the frame number shall be the next higher whole number. The third and, when indicated, the fourth digit of the frame number is the column header number mentioned in the ‘Machine Frame Numbering’ table given in the NEMA MG-1 standard under which the value of the distance (in inches) between centerlines of the corresponding motor feet mounting holes (side view) is mentioned. The ‘T’ at the end of the frame size indicates that the motor is following the established standard dimensions and ‘S’ at the end of the frame size indicates that the motor has a “short shaft” dimension. These are smaller than the shafts associated with the normal frame size and are designed to be directly coupled to a load through a flexible coupling.

Continuous Duty (S1) – This indicates that the motor can be operated continuously at maximum constant load under prescribed conditions of load and within the limitations of established standards without exceeding the established temperature rise limitations.

Degree of Protection – This indicates the degree of protection provided by the motor enclosure against accidental direct contact with live parts and against the ingress of solid foreign objects or water. Degrees of protection provided by the integral design of National Motors are in line with IEC 60034-5 classification developed by the International Electrotechnical Commission (IEC) and subsequently incorporated into NEMA MG-1 standard which is an approved American National Standard and recommended by the National Fire Protection Association standard in their fire pump standard (NFPA 20).

Insulation Class – Insulation class describes motor’s winding insulation ability to withstand the temperature developed under full load. These classes have been established in accordance with General Principles for Temperature Limits in the Rating of Electric Equipment and for the Evaluation of Electrical Insulation (IEEE Std 1) developed by Institute of Electrical and Electronics Engineers (IEEE) which is linked to NFPA 20 through reference in NEMA MG-1 standard. National Motors follows the motor design requirements specified in this standard.

Service Factor (SF) – When A multiplier of an ac motor that, when applied to the rated horsepower, indicates how much above the nameplate rating a motor can be loaded at the rated voltage, frequency, and temperature without causing serious degradation. For example, the multiplier 1.15 indicates that the motor is permitted to be overloaded to 1.15 times the rated horsepower (i.e. a motor with 1.15 SF can produce 15% greater torque than one with 1.0 SF, within temperature constraints).

WP1 - The Weather Protected Type I Enclosure of these motors minimizes the entrance of rain and air-borne particles to the electric parts. Steel mesh screens are added to the enclosure at appropriate locations to further enhance the protection