

# MOTOR SPEED PRODUCT LINE: CAST IRON PUMPS

456 Series™

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## RELATED PRODUCTS

Cast Iron, 32 & 432 Series: Catalog Section 310

## SERIES DESCRIPTION

The 456 Motor Mounted units answer the need for more compact, lighter weight equipment. They use the Series 456 hub type pumps with valves in casings and are mounted to modified NEMA “C” flange motors. Units are available with ¼, ⅓, ½ or ¾ HP, 1 ph, 1200 RPM or 1800 RPM, special shaft, TEFC or explosion proof motors. All sizes use the mounting flange bracket with pump connected to motor through a coupling. The pump can be turned on the bracket to any position desired.



## OPERATING RANGE

| SERIES             | NOMINAL FLOW |           | MAXIMUM PRESSURE* |     | TEMPERATURE RANGE |             | VISCOSITY RANGE* |            |
|--------------------|--------------|-----------|-------------------|-----|-------------------|-------------|------------------|------------|
|                    | GPM          | m³h       | PSI               | Bar | °F                | °C          | SSU              | cSt        |
| <b>456 Series™</b> | 0.5 - 3      | 0.1 - 0.7 | 250               | 17  | -60 to +350       | -50 to +175 | 28 to 7,500      | 1 to 1,650 |

- 250 PSI for 100 SSU & above, 100 PSI for less than 100 SSU

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### FEATURES & BENEFITS

- Relief Valve Standard
  - » Permits bypassing of liquid from discharge back to suction side of pump. Prevents building up excessive pressure in discharge line. If reversing pump at any time, valve parts must be inserted in opposite port. Pumps with relief valve are built with right hand suction as standard.
- Mechanical Seal
  - » All models are furnished with mechanical seal. The seal is a rotary type packaged unit that is simple and self-adjusting.

### STANDARD MATERIALS OF CONSTRUCTION

| Component       | Standard Material   |
|-----------------|---|
| Casing          | Cast Iron, ASTM A48, Class 35B                            |
| Head            | Cast Iron, ASTM A48, Class 35B                            |
| Rotor & Shaft   | Steel (C Size) ASTM A311, Grade 1144, Class B (F-FH Size) |
| Idler           | Powdered metal, MPIF 35, FLC-4608-75HT                    |
| Idler Pin       | Nitralloy, MIL-S-6709                                     |
| Casing Bushing  | Carbon Graphite   |
| Mechanical Seal | Buna-N, FKM, Carbon vs. Ni-Resist                         |

### SPECIFICATIONS

| Model Number | Port Size | Nominal Pump Rating (100 SSU & below) |                   |      | Maximum Recommended Discharge Pressure (PSIG) |                            |                | ① Maximum Recommended Temperature |     | Maximum Hydrostatic Pressure |     | ② Approximate Pump Shipping Weight with Valve and With Motor |      |
|--------------|-----------|---------------------------------------|-------------------|------|---|----------------------------|----------------|-----------------------------------|-----|------------------------------|-----|--|------|
|              |           | GPM                                   | m <sup>3</sup> /h | RPM  | Less Than 100 SSU                             | Fuel Oil Less Than 100 SSU | 100 SSU and Up | °F                                | °C  | PSIG                         | BAR | Lbs.   | Kg.  |
| C456         | ¼         | 0.5                                   | 0.1               | 1750 | 100   | 150                        | 250            | 225                               | 107 | 750                          | 51  | 42   | 19   |
| F456         | ½         | 1.5                                   | 0.3               | 1750 | 100   | 150                        | 250            | 225                               | 107 | 750                          | 51  | 43   | 19.5 |
| FH456        | ½         | 3                                     | 0.7               | 1750 | 100   | 150                        | 250            | 225                               | 107 | 750                          | 51  | 44   | 20   |

① Temperatures to 350°F (180°C) can be handled with special construction.

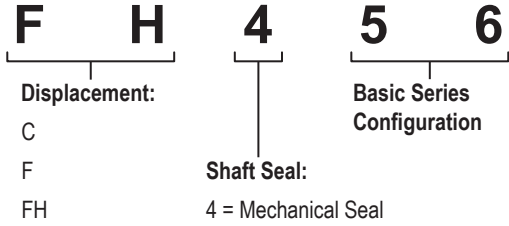
② Includes ½ HP, 1 PH. TEFC motor.

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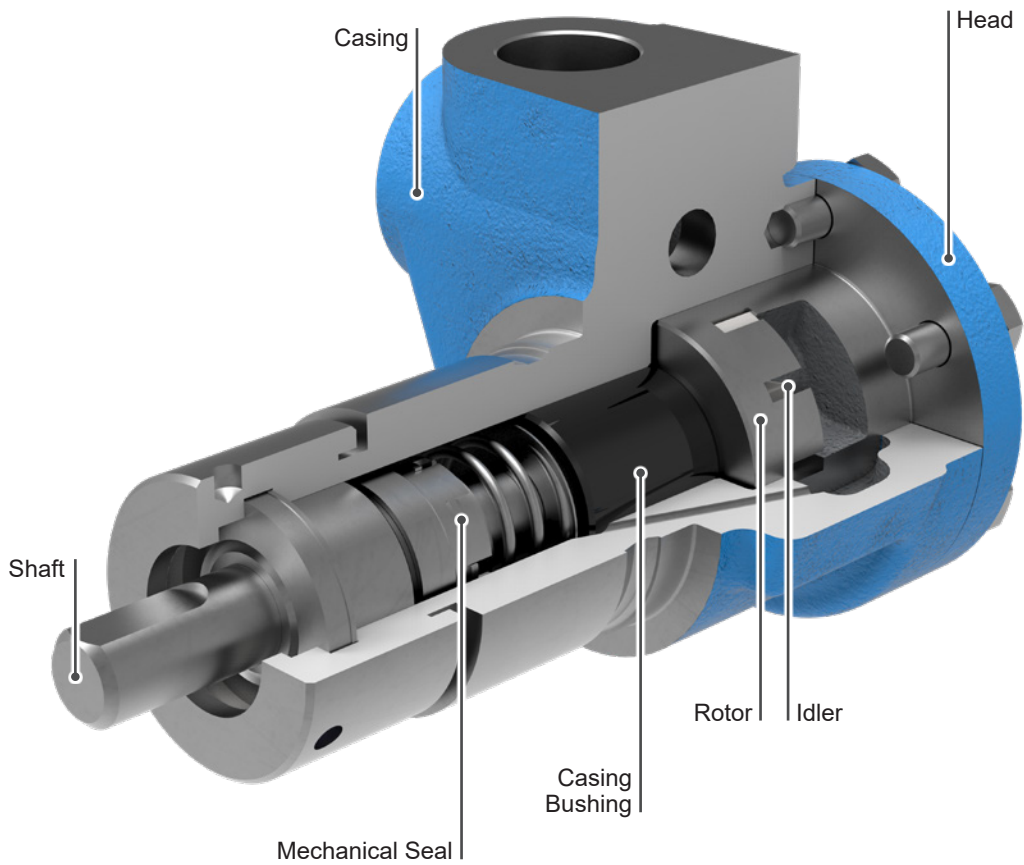
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## MODEL NUMBER KEY



## CUTAWAY VIEW & PUMP FEATURES

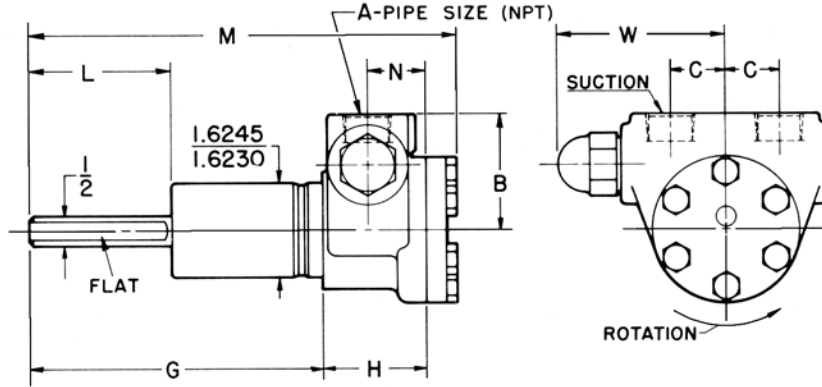


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## DIMENSIONS – C, F, FH SIZES

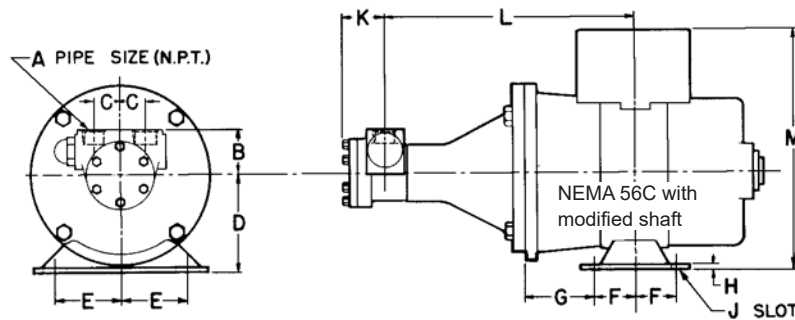


| Model Number | A (in) |    | B    | C    | G <sub>1</sub> ① | G <sub>2</sub> ② | H    | L    | M <sub>1</sub> ① | M <sub>2</sub> ② | N    | W    |
|--------------|--------|----|------|------|------------------|------------------|------|------|------------------|------------------|------|------|
| C456         | ¼      | in | 1.69 | 0.75 | 3.38             | 4.66             | 1.47 | 2.25 | 5.38             | 6.69             | 0.88 | 2.56 |
|              |        | mm | 43   | 19   | 86               | 118              | 37   | 57   | 137              | 170              | 22   | 65   |
| F456         | ½      | in | 2.00 | 0.94 | 3.38             | 4.59             | 1.84 | 2.00 | 5.75             | 7.00             | 1.00 | 2.88 |
|              |        | mm | 51   | 24   | 86               | 117              | 47   | 51   | 146              | 178              | 25   | 73   |
| FH456        | ½      | in | 2.00 | 0.94 | 3.38             | 4.97             | 1.84 | 2.38 | 5.75             | 7.38             | 1.00 | 2.88 |
|              |        | mm | 51   | 24   | 86               | 126              | 47   | 60   | 146              | 187              | 25   | 73   |

① G<sub>1</sub> & M<sub>1</sub> for 456 models for M mount. These pumps have a 37/8" shaft.

② G<sub>2</sub> & M<sub>2</sub> for 456 models with 57/8" shaft. These pumps cannot be M mounted.

## DIMENSIONS – C, F, FH SIZES – M DRIVE



| Model Number | A (in) |    | B    | C    | D    | E    | F    | G    | H    | J    | K    | L    | M    |
|--------------|--------|----|------|------|------|------|------|------|------|------|------|------|------|
| C456         | ¼      | in | 1.69 | 0.75 | 3.50 | 2.44 | 1.50 | 2.56 | 0.13 | 0.34 | 1.44 | 8.97 | 9.00 |
|              |        | mm | 43   | 19   | 89   | 62   | 38   | 65   | 3    | 9    | 37   | 228  | 229  |
| F456         | ½      | in | 2.00 | 0.94 | 3.50 | 2.44 | 1.50 | 2.56 | 0.13 | 0.34 | 1.56 | 9.22 | 9.00 |
|              |        | mm | 51   | 24   | 89   | 62   | 38   | 65   | 3    | 9    | 40   | 234  | 229  |
| FH456        | ½      | in | 2.00 | 0.94 | 3.50 | 2.44 | 1.50 | 2.56 | 0.13 | 0.34 | 1.56 | 9.22 | 9.00 |
|              |        | mm | 51   | 24   | 89   | 62   | 38   | 65   | 3    | 9    | 40   | 234  | 229  |

These dimensions are average and not for construction purposes. Certified prints on request.

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## NPSH REQUIRED

Printed performance curves are not available.

Performance curves can be electronically generated with the Viking Pump Curve Generator on [vikingpump.com](http://vikingpump.com).

NPSH<sub>R</sub> data is not available on the curve generator.

**NPSH (Net Positive Suction Head):** The NPSH<sub>R</sub> (Net Positive Suction Head Required by the pump) is given in the table below and applies for viscosities through 750 SSU. NPSH<sub>A</sub> (Net Positive Suction Head – Available in the system) must be greater than the NPSH<sub>R</sub>. For a complete explanation of NPSH, see Application Data Sheet AD-19.

**FOR VISCOSITIES UP TO 750 SSU** – See NPSH<sub>R</sub> table below.

**NPSH<sub>R</sub> for high viscosities can be estimated using the following method:**

1. Calculate line loss for a 1 foot long pipe of a diameter matching the pump inlet port size. Use your flow rate and max viscosity.
2. Convert this value into Feet of Liquid (S.G. 1.0)
3. Add this value to the NPSH<sub>R</sub> value in the chart below.

NPSH<sub>R</sub> – FEET OF LIQUID (Specific Gravity 1.0), Viscosities up to 750 SSU

| PUMP<br>SIZE | PUMPS SPEED, RPM |     |     |      |      |      |
|--------------|------------------|-----|-----|------|------|------|
|              | 640              | 780 | 950 | 1150 | 1450 | 1750 |
| C            | —                | —   | 1.7 | 1.9  | 2.2  | 2.4  |
| F, FH        | 1.8              | 1.9 | 2.1 | 2.3  | 2.8  | 3.4  |