PUMP SUPPLY INCORPORATED

EBARA

# EVMSU Series - Vertical Multistage Pumps

Product Brochure

# Built like a Katana

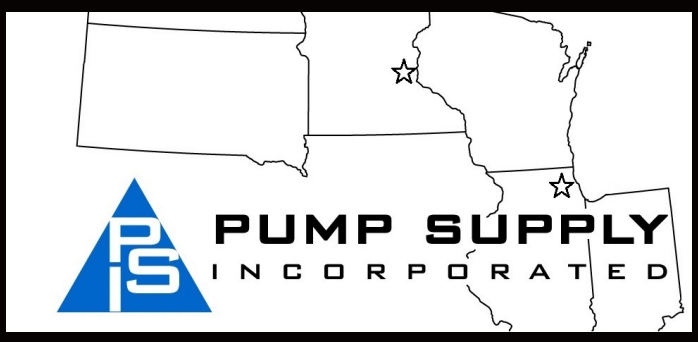
A Katana is a traditional Japanese sword made with distinctive, longstanding expertise started in 300 A.D. Katana are manufactured with care and precise attention to detail. Only years of experience can provide the ability necessary to build a masterpiece.

This is what we do with our pumps. Our 110 years of Japanese expertise in our pump design and manufacturing is the basis for developing pumps with high quality and reliability as well as cutting edge components and performance.

We look forward, not forgetting the past.

EBARA new vertical multistage pumps – model EVMSU – are manufactured with the highest standards of quality to achieve reliable operating performance through strict technical evaluation criteria and control programs that involve the whole manufacturing process.

We listened to the market. Our design is unique. The EVMSU offers exceptional value through cutting-edge solutions to suit your application needs.



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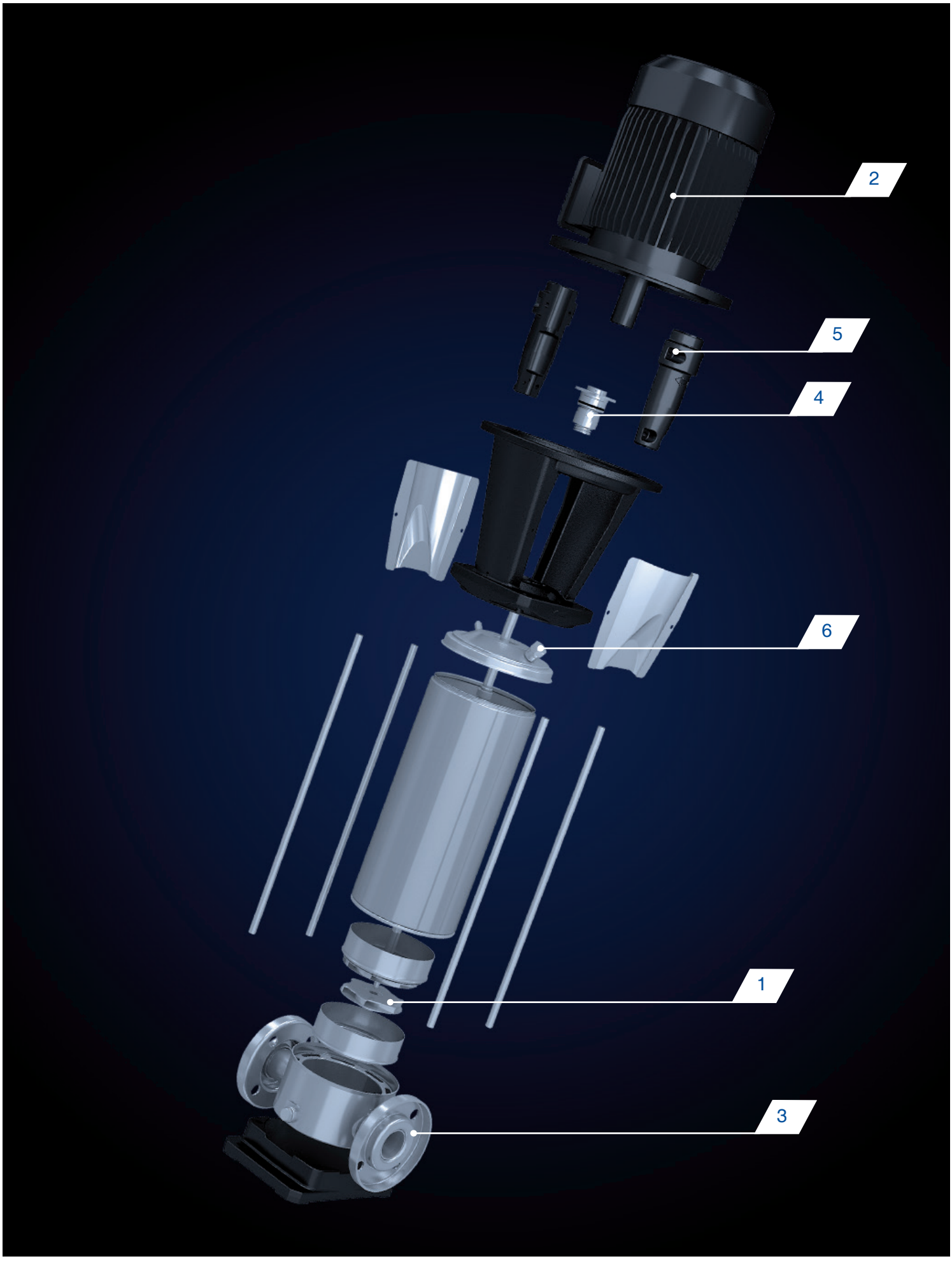
# Precision, Quality, Cutting-Edge

## FEATURES

- Standard NEMA motor sizes
- Optionally available Low NPSH 1st stage impeller significantly reduces NPSH requirements.
- Low axial thrust impeller enables long motor bearing life
- Air vent in casing cover allows proper venting preventing air entrapment and dry run
- Fill port in casing cover allows for water fill, as well as installation of sensors, gauges, and other measuring devices
- Liner ring is a self-aligning,floating design constructed to prevent swelling at high temperatures
- Tungsten carbide lower pump bearings and sleeves are standard construction for all services, providing maximum operating life
- Direct drive pump and motor shafts are keyed for positive, reliable power transmission with no adjustments necessary
- “Flexible” floating outer casing allows for thermal expansion in hot water applications, preventing deformation due to pressure fluctuations
- Square-edge four spline shaft provides positive location and drive of impellers, eliminating wear
- Dimensions & flanges – installation is to market accepted dimensions for easy upgrade of existing installations
- Piping connection options include Fixed ANSI compatible flange, Oval flange, Loose ANSI compatible flange, victaulic, and clamp connections
- Mechanical seal – Silicon Carbide/Carbon/Viton mechanical shaft seal. Cartridge mechanical seal design enables plug in replacement without disassembling the motor bracket

NSF Certified to NSF/ANSI/CAN 61 & 372

***Note:** *Model EVMSU with seal code “S” is Certified*
*Low NPSH models and models with optional seal types are not certified.*


2
5
4
6
1
3

# Main product features

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## 1


### Innovative hydraulic solutions

**Any motor, anywhere.**

- **The Shurricane impeller reduces axial thrust load**
- **Long life of standard motor bearing**

Patent application pending

## 2

### Motor flexibility

- Standard NEMA motor sizes can be fitted with no modifications thanks to low axial thrust load.
- Allows a wider range of motors to be used.

## 3

### Piping connection options

- Optional pipe connections are available depending on the application requirements
- Dimensions & flanges - installation is to market accepted dimensions for easy upgrade in existing installations

| Material | Round flange ANSI Compatible | Loose Flange ANSI Compatible | Oval Flange | Plug-In connection (victaulic) |
|---|---|---|---|---|
| **AISI304/ AISI316** |  |  |  |  |

*EVMSUN Low NPSH only available with Round Flange as standard

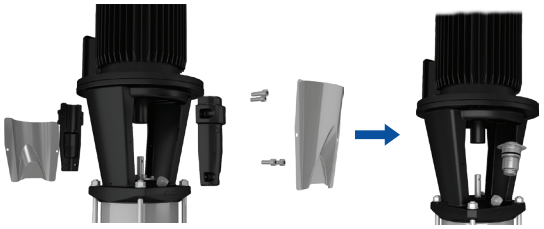
## 4

### Shaft seal solutions

- **Shaft seal material:**
  B: Resin impregnated carbon graphite
  Q: Sintered silicon carbide
  $Q_g$: Silicon carbide with carbon graphite

  Carbon or graphite inclusions with silicon carbide can be used as **reduce friction.**
- Conforms to EN12756 (ex DIN 24960)

## 5



### Easy maintenance

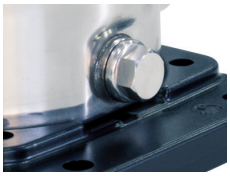
- **The spacer coupling** allows easy maintenance without having to remove heavy motors over 5 HP.
- **The cartridge shaft** seal enables **replacement** of the shaft seal without disassembling the motor bracket

## 6

### Smart plug solutions


Air ventilation plug


Water filling & sensor plug


Drain plug


CARRELLO TES
CARRELLO PORTA STRUMENTI

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# Reliability is made by numbers

**1 Million**

Cycles of the endurance test*

**2 Times**

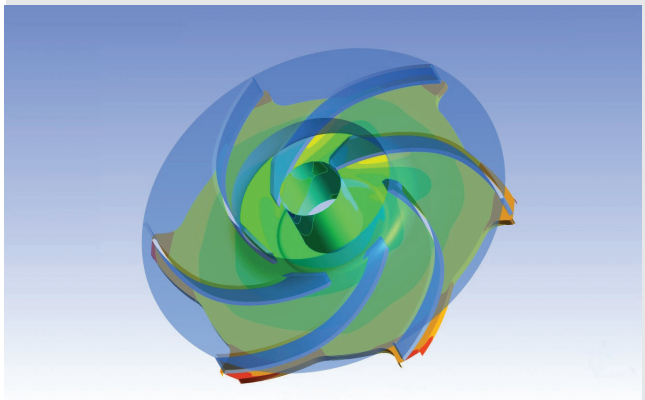
Higher test criteria than nominal operating conditions*

**3 Times**

Lower thrust load than common pumps

* for main components

## Solve axial thrust load



Axial thrust load in a pump is caused by unequal distribution of pressure between the front and back shrouds of an impeller. Axial thrust loading often leads to reduced life of the the motor bearings.

General methods to absorb the axial thrust load include:

- Increasing the motor bearing size or using enhanced motor bearings.
- Mounting additional ball bearings on the pump bracket.

**EBARA's newly designed "Shurricane" impeller reduces** the axial thrust load with higher pump efficiency created by the innovative hydraulic design of the impeller shrouds.

**The EVMSU can accept commercial motors without any modifications and improve the maintenance cycles of motor bearings.**

**Any motor, anywhere.**

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# Typical Application

| INDUSTRY | BUILDING SERVICE | WATER SUPPLY |
|---|---|---|
|  |  |  |
| • **Water treatment**<br>reverse osmosis<br>ultra-filtration<br>water purification<br>micro-filtration<br>softening, ionizing and demineralising systems<br>swimming pools<br>separators<br>• **Boiler feed**<br>steam systems<br>condensate systems<br>• **Wash and clean**<br>vehicle washing systems<br>industrial part washing<br>laundry systems<br>supply of liquids with acids and bases<br>supply of chemical liquids<br>• **Chilling**<br>handling of refrigerants for cooling<br>thermal control systems<br>industrial cooling<br>laser cooling<br>• **Machine tool**<br>cooling lubricant supply for machine tools<br>• **Pressure boosting**<br>pressure boosting for industrial use<br>• **Food & beverage**<br>food washing systems<br>bottle wash systems<br>• **Pharmaceutical industries**<br>• **Marine applications**<br>freshwater, deckwash, high fog and fire fighting on ships | • **Pressure boosting**<br>pressure boosting for buildings<br>pressure boosting for high rise buildings/hotels<br>• **Sprinkler systems**<br>• **Fire fighting systems**<br>jockey pump<br>• **District heating**<br>• **Heat exchangers / fan heaters**<br>• **Air conditioning systems**<br>• **Heating systems** | • **Water treatment**<br>water treatment plants filtration<br>water treatment plants transfer<br>• **Pressure boosting**<br>transfer from water treatment plants (mains)<br>• **Irrigation**<br>golf course / sport fields irrigation<br>• **Agriculture**<br>sprinkler irrigation<br>drip irrigation |

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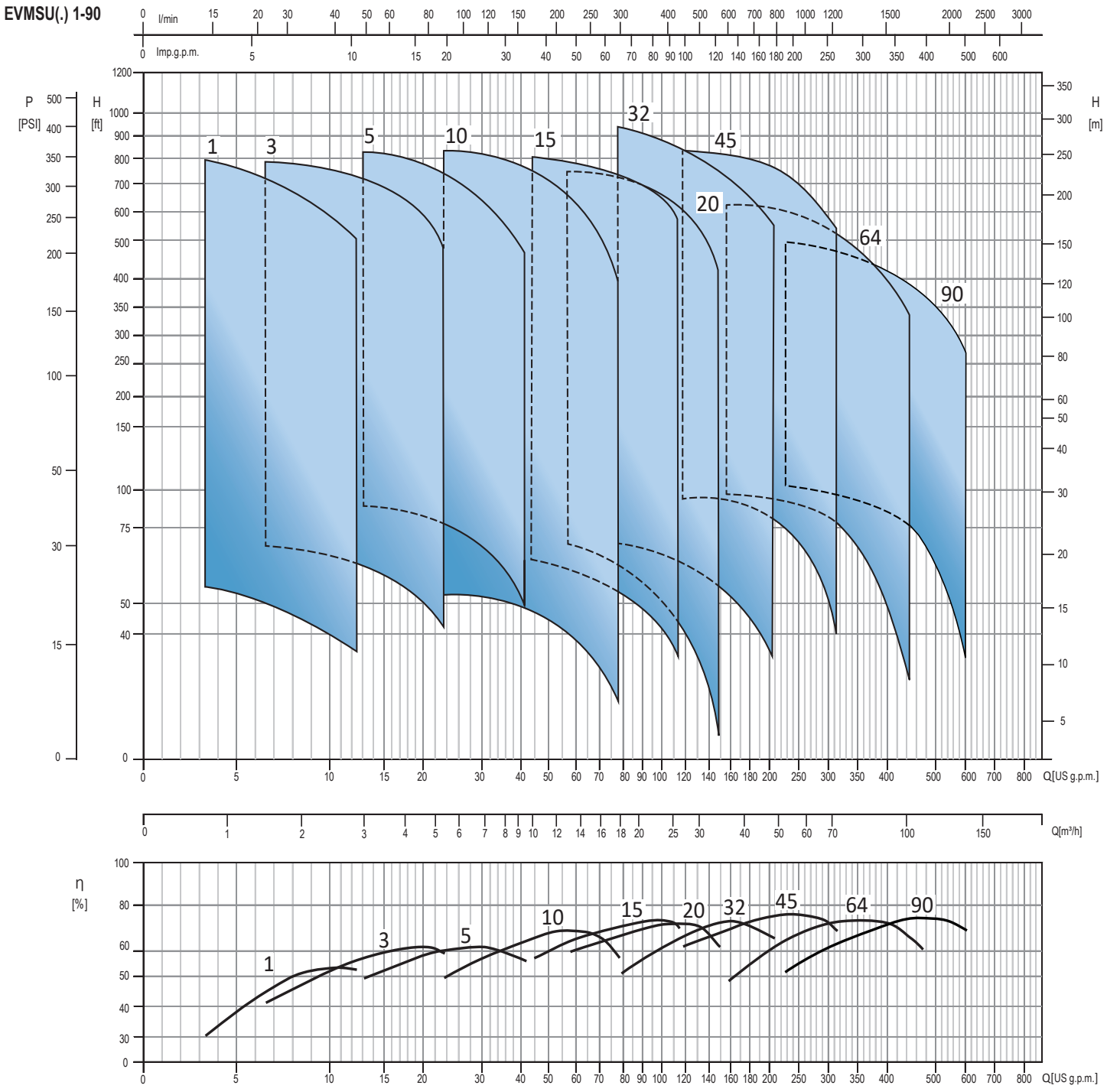
# Performance Range

## 60Hz

## EVMSU(G)(L) 1-90




| | | |
|---|---|---|
| Model EVMSU5 | $PEI_{CL}$ 0.89 | Imp. Dia. 3.58 (in.) |
| Model EVMSU10 | $PEI_{CL}$ 0.92 | Imp. Dia. 3.78 (in.) |
| Model EVMSU15 | $PEI_{CL}$ 0.97 | Imp. Dia. 4.21 (in.) |
| Model EVMSU20 | $PEI_{CL}$ 0.99 | Imp. Dia. 4.45 (in.) |
| Model EVMSU32 | $PEI_{CL}$ 0.96 | Imp. Dia. 4.56 (in.) |
| Model EVMSU45 | $PEI_{CL}$ 0.93 | Imp. Dia. 5.52 (in.) |
| Model EVMSU64 | $PEI_{CL}$ 1.00 | Imp. Dia. 5.61 (in.) |
| Model EVMSU90 | $PEI_{CL}$ 1.00 | Imp. Dia. 5.76 (in.) |

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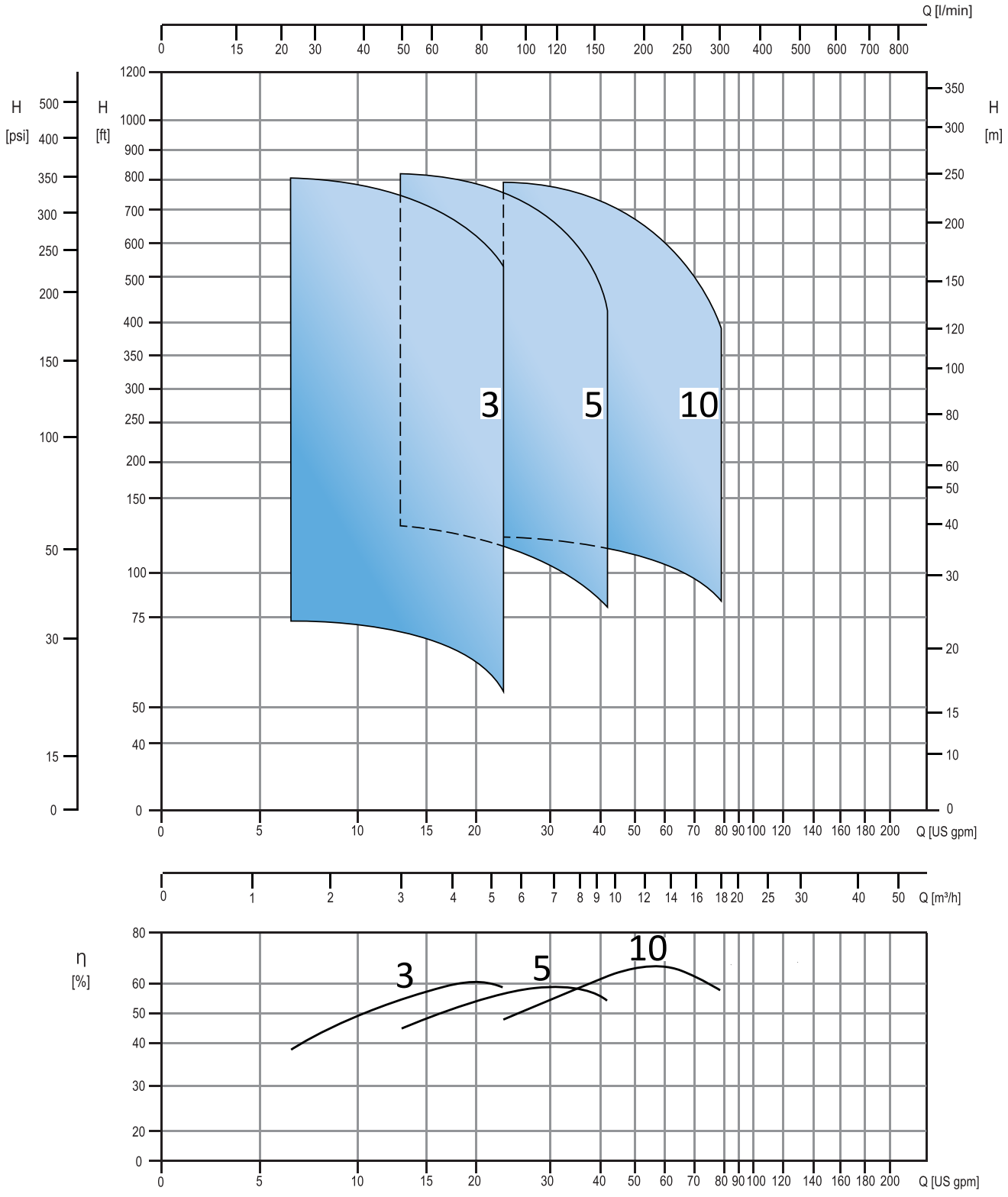
# Performance Range

## 60Hz

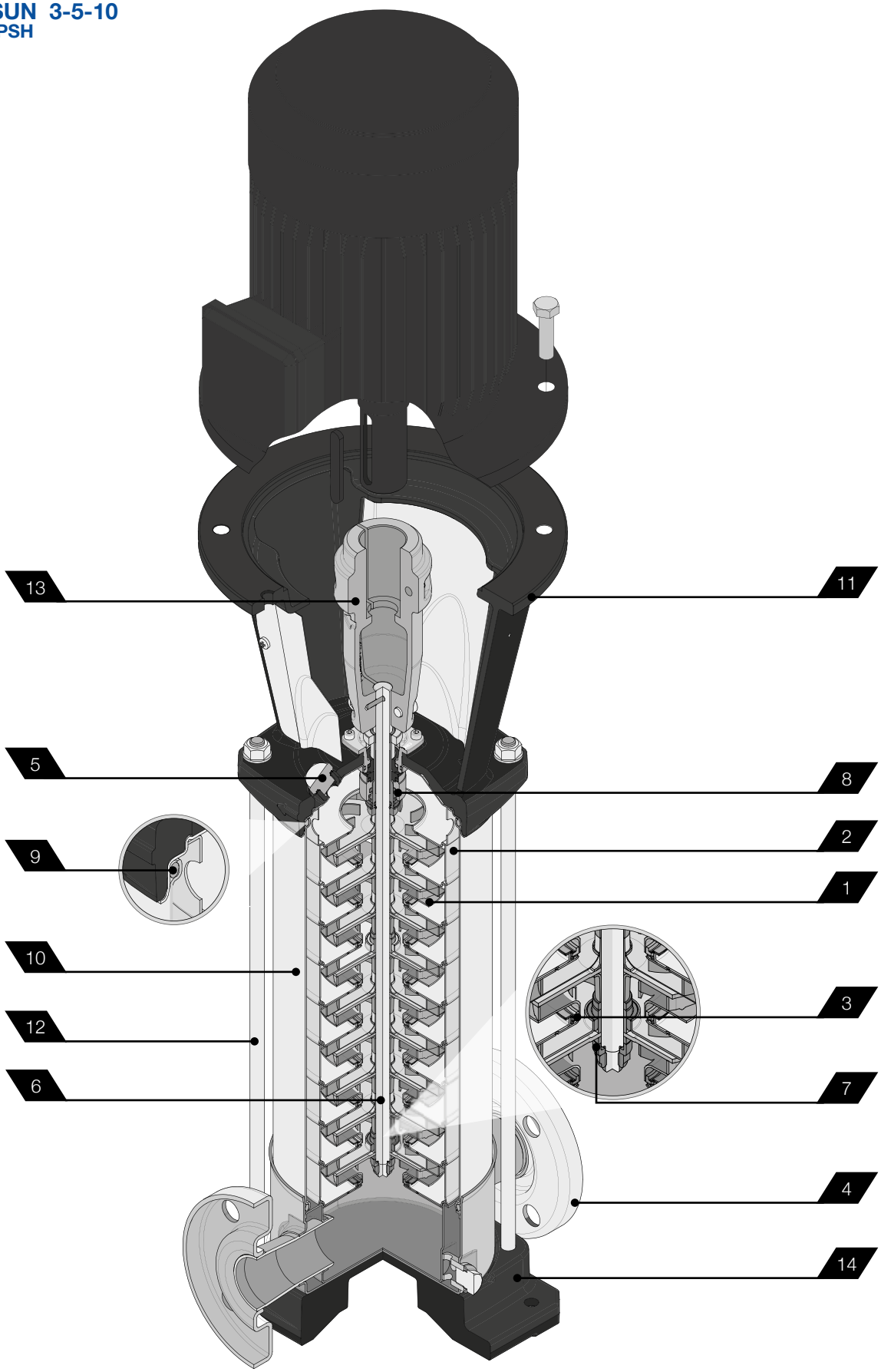
## EVMSU(L)N 3-5-10
## Low NPSH




| | | | |
|---|---|---|---|
| Model EVMSUN5 | $PEI_{CL}$ 0.97 | Imp. Dia. 3.58 (in.) |
| Model EVMSUN10 | $PEI_{CL}$ 0.98 | Imp. Dia. 3.78 (in.) |

# Sectional Drawing

**EVMSU(L) 1-3-5-10-15-20**
**EVMSUN 3-5-10**
**Low NPSH**



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# Product Specifications

**EVMSU(L) 1-3-5-10-15-20**

| PUMP | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Version** | | | **EVMSU** | | | | | | **EVMSUL** | | | | | |
| **Performance range** | Nominal size | | 1 | 3 | 5 | 10 | 15 | 20 | 1 | 3 | 5 | 10 | 15 | 20 |
| | Motor Power | | 1/2 to 25 HP | | | | | | | | | | | |
| | Capacity | | 2.9 to 132.1 gpm | | | | | | | | | | | |
| | Total Head | | 24.3 to 860 ft | | | | | | | | | | | |
| **Liquid Handling** | Type of liquid | | Clean water *(for other clean liquids, consult factory)* | | | | | | | | | | | |
| | Maximum working pressure | | 230 / 375 PSI (depending on model) | | | | | | | | | | | |
| | Liquid temperature range | | -22°F to 248°F (-30°C to 120°C) | | | | | | | | | | | |
| **Size** | Suction | | 1 1/4" | | | 2" | | | 1 1/4" | | | 2" | | |
| | Discharge | | 1 1/4" | | | 2" | | | 1 1/4" | | | 2" | | |
| **Key Component Materials** | Impeller | | AISI 304 (EN 1.4301) | | | | | | AISI 316 (EN 1.4401) | | | | | |
| | Intermediate casing | | AISI 304 (EN 1.4301) | | | | | | AISI 316 (EN 1.4401) | | | | | |
| | Liner ring | | AISI 304 (EN 1.4301) + PPS | | | | | | AISI 316 (EN 1.4401) + PPS | | | | | |
| | Bottom casing | | AISI 304 (EN 1.4301) | | | | | | AISI 316 (EN 1.4401) | | | | | |
| | Casing cover | | AISI 304 (EN 1.4301) | | | | | | AISI 316 (EN 1.4401) | | | | | |
| | Shaft | AISI 304 (EN 1.4301) | EVMSU 1-3-5, EVMSU 10-15-20 (depending on model) | | | | | | | | | | | |
| | | AISI 316L (EN 1.4404) | EVMSUL 1-3-5, EVMSUL 10-15-20 (depending on model) | | | | | | | | | | | |
| | | AISI 329A (EN 1.4462) | EVMSU / EVMSUL 5-15-20 (depending on model) | | | | | | | | | | | |
| | Shaft sleeve bearing | | Tungsten carbide | | | | | | | | | | | |
| | Shaft Seal | SiC/Carbon/FPM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | SiC+Graphite/SiC/FPM | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | SiC/Carbon/EPDM | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | SiC+Graphite/SiC/EPDM | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | O-ring | FPM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | EPDM | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Outer casing | | AISI 304 (EN 1.4301) | | | | | | AISI 316L (EN 1.4404) | | | | | |
| | Motor bracket | | Cast Iron | | | | | | | | | | | |
| | Tie rod | | AISI 431 (EN 1.4057) | | | | | | | | | | | |
| | Coupling | up to 5 HP | Die cast aluminium | | | | | | | | | | | |
| | | from 7 1/2 HP | Cast Iron | | | | | | | | | | | |
| | Base | | Die cast aluminium | | | | | | | | | | | |
| **Pipe connection** | Oval flange | up to 230 PSI | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Round flange (ANSI compatible raised face) | up to 230 PSI | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | from 230 PSI to 375 PSI | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | Loose round flange (ANSI compatible raised face) | up to 230 PSI | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | | from 230 PSI to 375 PSI | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | Victaulic | up to 230/375 PSI | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| **Motor** | Type | | NEMA C/TC/TSC frame, TEFC or ODP enclosure | | | | | | | | | | | |
| | Speed | | 2-or 4-pole, 60 Hz, 3500 or 1750 rpm nominal speed | | | | | | | | | | | |
| | Power Requirements | | 3 Phase, 230/460V or 208-230/460V - Single Phase, 115/230V | | | | | | | | | | | |
| | Direction of Rotation | | Clockwise when viewed from motor end | | | | | | | | | | | |
| | Motor Options | | *Consult factory for optional motor types* | | | | | | | | | | | |

Legend: ● Standard ○ Options

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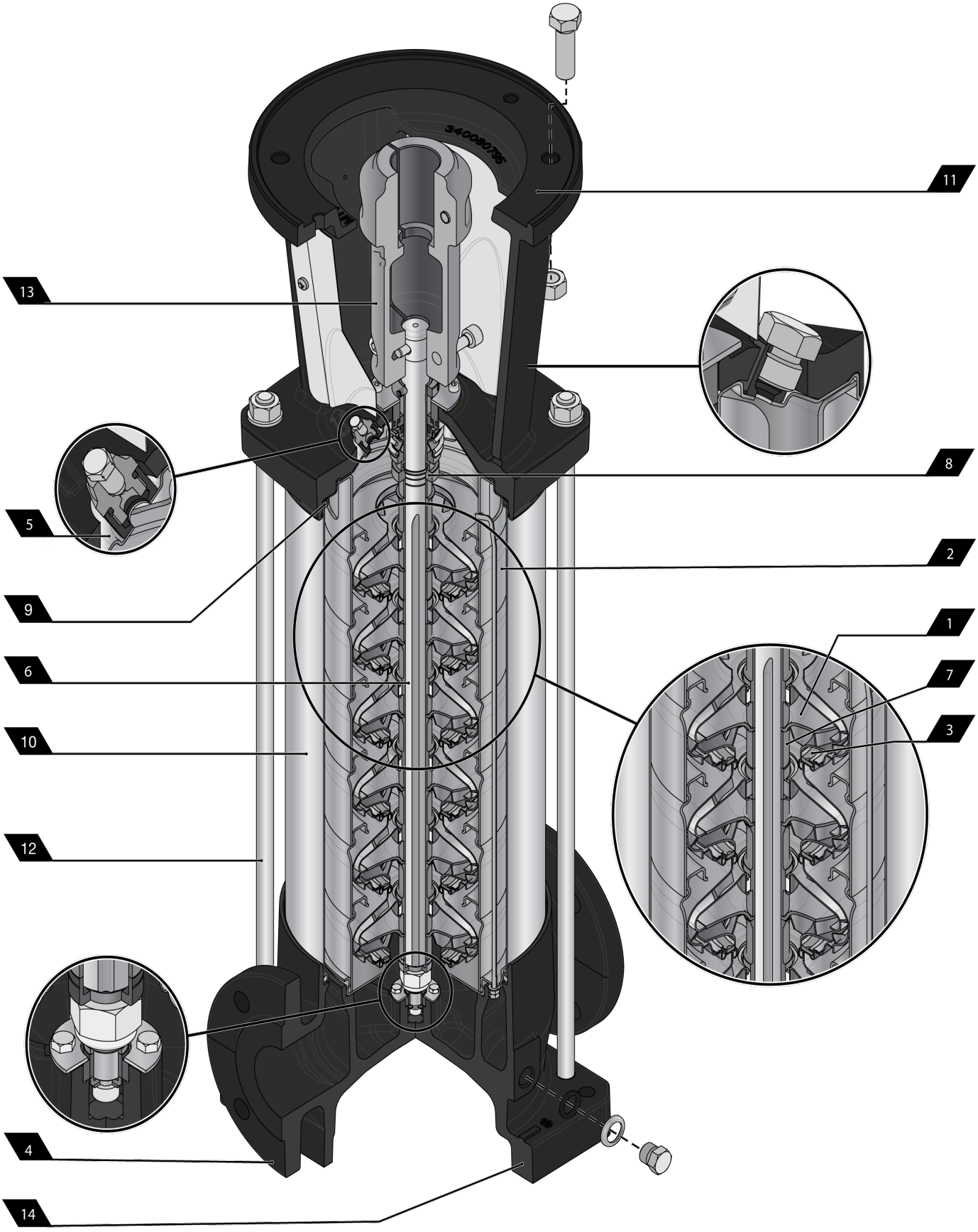
# Product Specifications

**EVMSU(L)N 3-5-10**
**Low NPSH**

| PUMP | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Version** | | | **EVMSUN** | | | **EVMSULN** | | | |
| **Performance range** | Nominal size | | 3 | 5 | 10 | 3 | 5 | 10 | |
| | Motor Power | | 3/4 to 15 HP | | | | | | |
| | Capacity | | 6.6 to 79.26 US gpm | | | | | | |
| | Total Head | | 54 to 815 ft | | | | | | |
| **Liquid Handling** | Type of liquid | | Clean water *(for other clean liquids, consult factory)* | | | | | | |
| | Maximum working pressure | | 360 psi | | | | | | |
| | Liquid temperature range | | -22°F to 284°F (-30°C to 140°C) | | | | | | |
| **Pipe Connection** | Suction size | | 1 1/4" | | 2" | 1 1/4" | | 2" | |
| | Discharge size | | 1 1/4" | | 2" | 1 1/4" | | 2" | |
| | Flange type | | Round flange (ANSI compatible raised face) | | | | | | |
| **Key Component Materials** | Impeller | | AISI 304 (EN 1.4301) | | | AISI 316 (EN 1.4401) | | | |
| | Intermediate casing | | AISI 304 (EN 1.4301) | | | AISI 316 (EN 1.4401) | | | |
| | Liner ring | | AISI 304 (EN 1.4301) + PPS | | | AISI 316 (EN 1.4401) + PPS | | | |
| | Bottom casing | | AISI 304 (EN 1.4301) | | | AISI 316 (EN 1.4401) | | | |
| | Casing cover | | AISI 304 (EN 1.4301) | | | AISI 316 (EN 1.4401) | | | |
| | Shaft | AISI 304 (EN 1.4301) | EVMSUN 3-5-10 (depending on model) | | | | | | |
| | | AISI 316L (EN 1.4404) | EVMSULN 3-5-10 (depending on model) | | | | | | |
| | | AISI 329A (EN 1.4462) | EVMSUN / EVMSULN 5 (depending on model) | | | | | | |
| | Shaft sleeve bearing | | Tungsten carbide | | | | | | |
| | Shaft Seal | | SiC+Graphite/SiC/EPDM | | | | | | |
| | O-ring | | EPDM | | | | | | |
| | Outer casing | | AISI 304 (EN 1.4301) | | | AISI 316L (EN 1.4404) | | | |
| | Motor bracket | | Cast Iron | | | | | | |
| | Tie rod | | AISI 431 (EN 1.4057) | | | | | | |
| | Coupling | up to 3 HP | Die cast aluminium | | | | | | |
| | | from 5 HP | Cast Iron | | | | | | |
| | Base | | Die cast aluminium | | | | | | |
| **Motor** | Type | | NEMA C/TC/TSC frame, TEFC or ODP enclosure | | | | | | |
| | Speed | | 2-pole, 60 Hz, 3500 rpm nominal speed | | | | | | |
| | Power Requirements | | 3 Phase, 230/460V or 208-230/460V - Single Phase, 115/230V | | | | | | |
| | Direction of Rotation | | Clockwise when viewed from motor end | | | | | | |
| | Motor Options | | *Consult factory for optional motor types* | | | | | | |

# Sectional Drawing

## EVMSU(G)(L) 32-90



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# Product Specifications

## EVMSU(G)(L) 32-90

| PUMP | | | | EVMSUG | | | | EVMSU | | | | EVMSUL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Performance Range | | Nominal size | | 32 | 45 | 64 | 90 | 32 | 45 | 64 | 90 | 32 | 45 | 64 | 90 |
| | | Motor Power | | 5 to 60 HP | | | | | | | | | | | |
| | | Capacity | | 79.3 to 607 US gpm | | | | | | | | | | | |
| | | Total Head | | 20.7 to 918.7 ft | | | | | | | | | | | |
| Liquid Handling | | Type of liquid | | Clean water (for other clean liquids, consult factory) | | | | | | | | | | | |
| | | Maximum working pressure | | 230 / 360 / 435 psi (depending on model) | | | | | | | | | | | |
| | | Liquid temperature range | | -22ºF to 248ºF (-30ºC to 120ºC) | | | | | | | | | | | |
| Size | | Suction | | 2 1/2" | 3" | 4" | 4" | 2 1/2" | 3" | 4" | 4" | 2 1/2" | 3" | 4" | 4" |
| | | Discharge | | 2 1/2" | 3" | 4" | 4" | 2 1/2" | 3" | 4" | 4" | 2 1/2" | 3" | 4" | 4" |
| Key Component Materials | 1 | Impeller | | EN 1.4301 (AISI 304) | | | | | | | | EN 1.4404 (AISI 316L) | | | |
| | 2 | Intermediate casing | | EN 1.4301 (AISI 304) | | | | | | | | EN 1.4404 (AISI 316L) | | | |
| | 3 | Liner ring | | EN 1.4301 (AISI 304) + PPS | | | | | | | | EN 1.4404 (AISI 316L) + PPS | | | |
| | 4 | Bottom casing | EVMSU(G)32 | Cast Iron EN GJL-250 EN 1561 | | | | EN 1.4308 (ASTM CF8) | | | | EN 1.4408 (ASTM CF8M) | | | |
| | | | EVMSU(G)45-64-90 230 psi | | | | | | | | | | | | |
| | | | EVMSU(G)45-64-90 230+ psi | Cast Iron EN GJS 400-15 EN 1563 | | | | | | | | | | | |
| | 5 | Casing cover | | EN 1.4301 (AISI 304) | | | | | | | | EN 1.4404 (AISI 316L) | | | |
| | 6 | Shaft | | AISI 304 (EN 1.4301) | | | | | | | | AISI 316L (EN 1.4404) (Depending on model) | | | |
| | | | | | | | | | | | | AISI 329A (EN 1.4462) (Depending on model) | | | |
| | 7 | Shaft sleeve bearing | | Tungsten carbide | | | | | | | | | | | |
| | 8 | Shaft Seal | SiC/Carbon/FPM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | | SiC+Graphite/SiC/FPM | O | O | O | O | O | O | O | O | O | O | O | O |
| | | | SiC+Graphite/SiC/EPDM | O | O | O | O | O | O | O | O | O | O | O | O |
| | 9 | O-ring | FPM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | | EPDM | O | O | O | O | O | O | O | O | O | O | O | O |
| | 10 | Outer casing | | EN 1.4301 (AISI 304) | | | | | | | | EN 1.4404 (AISI 316L) | | | |
| | 11 | Motor Bracket | | Cast Iron EN GJS 400-15 EN 1563 | | | | | | | | | | | |
| | 12 | Tie rod | | EN 1.4057 (AISI 431) | | | | | | | | | | | |
| | 13 | Coupling | up to 5 HP | Die cast Aluminium EN AB-AISI11 Cu2 (Fe) | | | | | | | | | | | |
| | | | from 7 1/2 to 40 HP | Cast Iron EN GJL250 EN 1561 | | | | | | | | | | | |
| | | | 50 HP and larger | Carbon Steel | | | | | | | | | | | |
| | 14 | Base | | | | | | Cast Iron EN GJL200 EN 1561 | | | | | | | |
| Pipe connection | | Round flange (ANSI compatible raised face) | | ● | ● | ● | ● | | | | | | | | |
| | | Loose round flange (ANSI compatible raised face) | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| Motor | | Type | | NEMA C/TC/TSC frame, TEFC or ODP enclosure | | | | | | | | | | | |
| | | Speed | | 2-pole, 60 Hz, 3500/3550 rpm nominal speed | | | | | | | | | | | |
| | | Power Requirements | | 3 Phase, 230/460V or 208-230/460V - Single Phase, 115/230V | | | | | | | | | | | |
| | | Direction of Rotation | | Clockwise when viewed from motor end | | | | | | | | | | | |
| | | Motor Options | | *Consult factory for optional motor types* | | | | | | | | | | | |

● Standard O Optional

**Illinois Location:**
(847) 841-7867
860 Church Rd Elgin, IL 60123

**Minnesota Location:**
(651) 758-7867
330 Mill Bay South Suite 1511
Afton, MN 55001

PumpSupplyInc.com

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