

SIHI[®] SM-X
Side Channel Pumps



Design

SIHI submersible pump type SM-X is a side channel pump that includes the following features:

- ATEX and IEC-Ex certifications
- Low NPSH required
- Side channel hydraulics with steep performance curves
- Motor cooled by media
- Reduction of maintenance and installation costs
- Easy handling due to small size and low weight
- Increased safety by separation between electrical connection and fluid pipe

The SIHI SM-X submersible side channel pump is the ideal choice for liquefied gas applications like LPG car filling (up to two nozzles).

Application

A liquefied gas application have different configurations, depending on countries and local regulations. The submersible pumps are used all over the world to avoid any installation and piping above the ground, which leads to better safety and clean station design.

The principal disadvantage of the stations installed with submersible pumps is the ownership cost due to the emptying of the tank in case of maintenance of the pump.

Due to its unique design, SIHI pump type SM-X reduces the maintenance operation to its minimum.

Remarks

The SIHI pump type SM-X is an innovative product that can be dropped in place to the other usual submersible pumps used in most of the LPG car filling stations.

Due to its design, this pump can be installed without a bypass valve as an internal bypass to secure the minimum flow of the pump is integrated.

The well-known reliability of the side channel pump is combined with the safe use and the simple design of a submersible pump.

Technical data

| Operating Parameters | Unit | Values |
|--------------------------------------|---------|----------------------------------|
| Maximum flow rate | l/min | To 100 l/min (60 Hz) |
| Maximum differential pressure | bar | To 10 bar (145 psi) |
| Maximum motor speed | 1/min | 3400 rpm |
| Protection class | EX | II 2 G Ex mb IIB T3 Gb |
| Voltage 50 Hz/60 Hz | V | 400V/480V |
| Power consumption | kW | 4 |
| Noise emissions | dB(A) | < 70 |
| Operating temperature | °C (°F) | -20°C to 40°C (-4°F to 104°F) |

Values are calculated for LPG with specific gravity of 0.56 kg/dm³

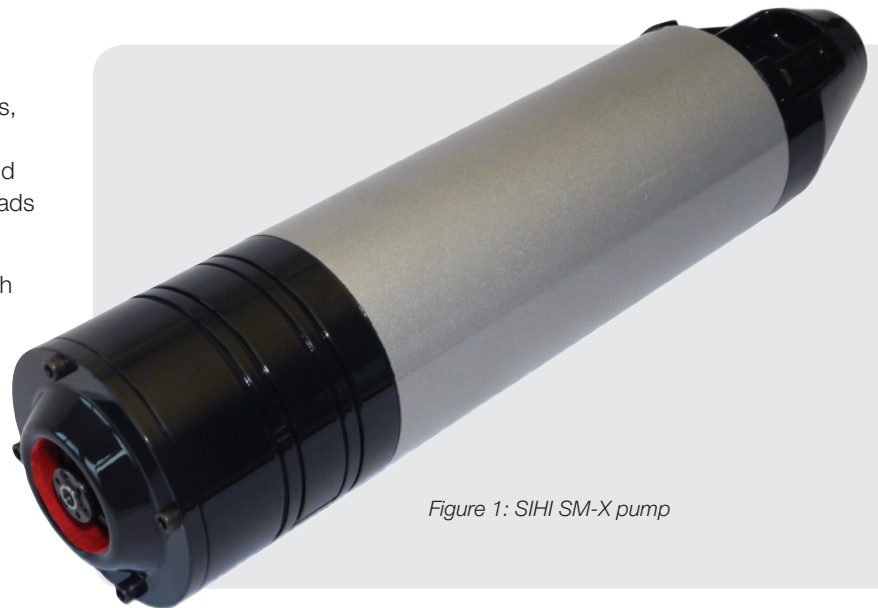


Figure 1: SIHI SM-X pump

Advantages of the SM-X

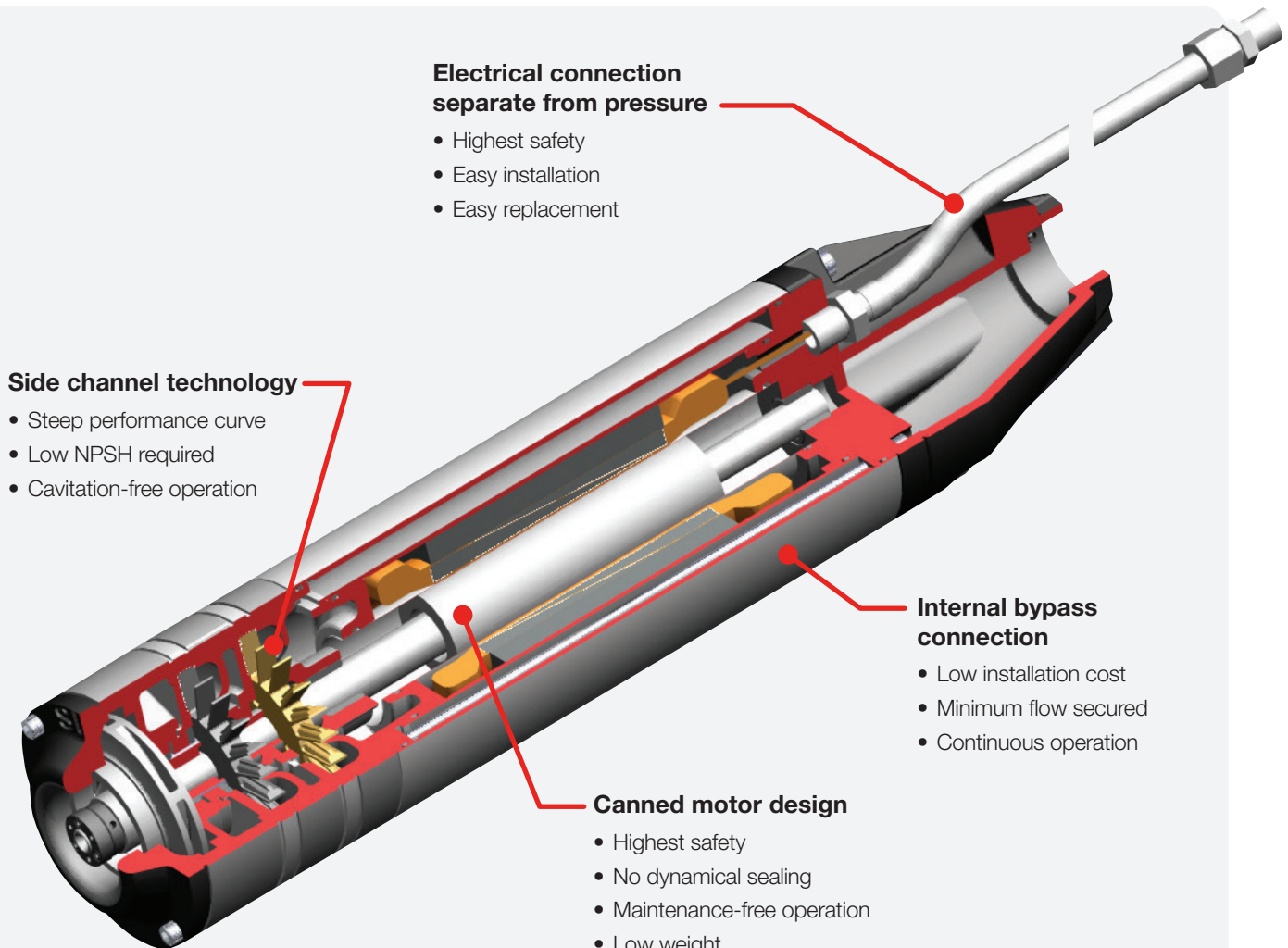


Figure 2: SIHI SM-X pump cutaway

Variants of SM-X

The SIHI pump type SM-X is available in one unique variant which provides to the owner the advantages of a standardized product.

Explosive area

The SIHI SM-X pump is designed and certified to be used in explosive areas. The ATEX protection class is II 2G Ex m IIB T3 Gb for use between -20°C to 40°C (-4°F to 104°F). It is also certified IEC-EX for usage outside European countries with IECEx Ex m IIB T3 Gb.

Sectional drawing

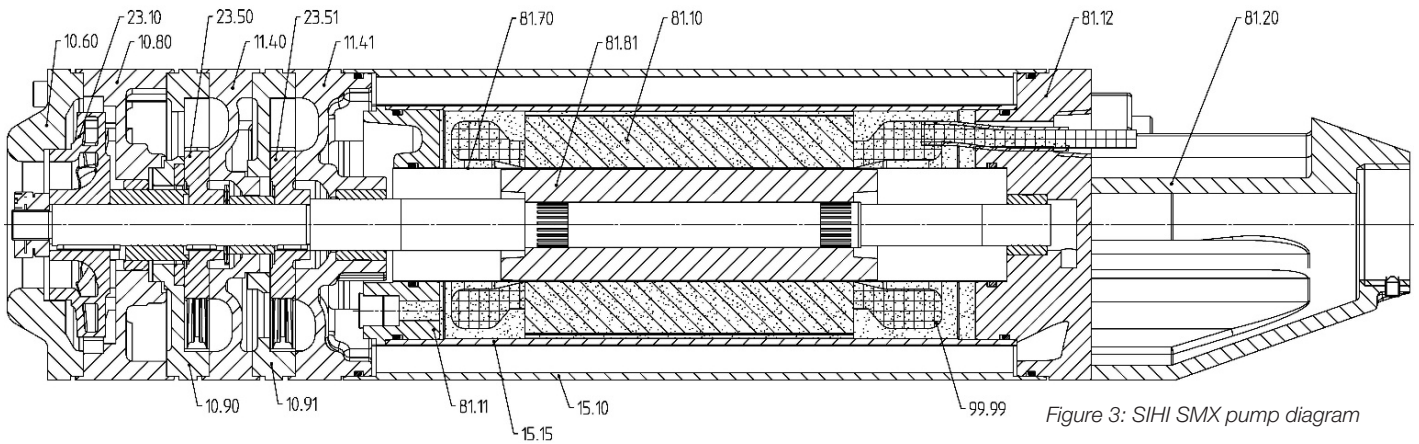


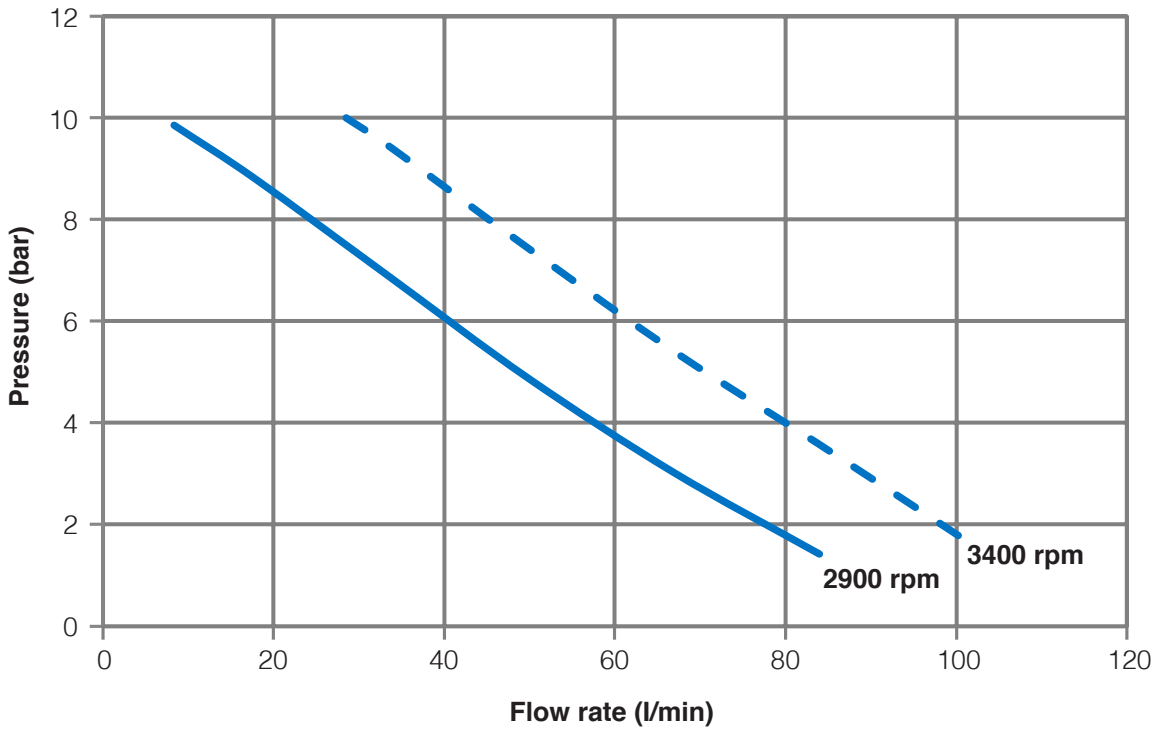
Figure 3: SIHI SMX pump diagram

Parts list

| Pos. | Designation | Material |
|-------|-------------------------------|----------|
| 10.60 | Suction casing | 0.7040 |
| 10.80 | Low NPSH stage | 0.7043 |
| 10.90 | Suction intermediate (1) | 0.7040 |
| 10.91 | Suction intermediate (2) | 0.7040 |
| 11.40 | Side channel intermediate (1) | 0.7040 |
| 11.41 | Side channel intermediate (2) | 0.7040 |
| 15.10 | Shell casing | AW 6060 |
| 15.15 | Outer can | AW 6060 |
| 23.10 | Low NPSH impeller | 0.6025 |
| 23.50 | Vane wheel impeller (1) | 1.4517 |
| 23.51 | Vane wheel impeller (2) | 2.0561 |
| 81.10 | Stator | N/A |
| 81.11 | Motor casing (1) | 0.7040 |
| 81.12 | Motor casing (2) | 0.7040 |
| 81.20 | Pump head | 0.7040 |
| 81.70 | Inner can | 1.4301 |
| 81.81 | Rotor | N/A |
| 99.99 | Resin | N/A |

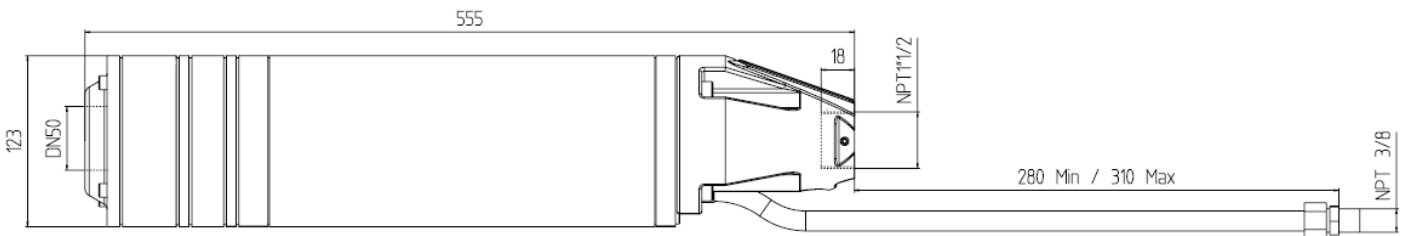
Curves

For LPG with specific gravity of 0.56 kg/dm³



Dimensional drawing

Dimensions [mm]



Net weight: 25 kg

Pump codification

| Pump type | Size | Number of impellers | Hydraulic | Bearing set-up | Shaft seal | Material combination | Gasket | Additional option | Motor size |
|-------------|--|------------------------------|---|------------------------------|---------------------|--|--------------|-------------------|---------------------------|
| | 20 = Side channel hydraulics size 2000 | 02 = Two side channel stages | A = Standard SC hydraulics left-hand driven | F = 2 carbon sleeve bearings | D = Can motor (new) | 1A = GGG casing/stages and brass impellers | P = Perbunan | A = Standard | 61 = Size similar to 132M |
| SMXA | 20 | 02 | A | F | D | 1A | P | A | 61 |

Codification example: SMXA 2002 AF D 1A PA 61

Pump options and accessories

| Designation | Use | Remark |
|--|---|---|
| ELFI power monitor | Secure pump from dry running Secure pump from over power | Needed if no continuous level controller is installed on the tank and/or not link to motor stop Not needed if SIHI intelligent drive is used |
| Adaptor kit for red jacket V17/21 | Drop in place of existing pumps | Plug and play on the usual RJ pump head Recover existing pump length |



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PSS-120-2.2 (A4) June 2019

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