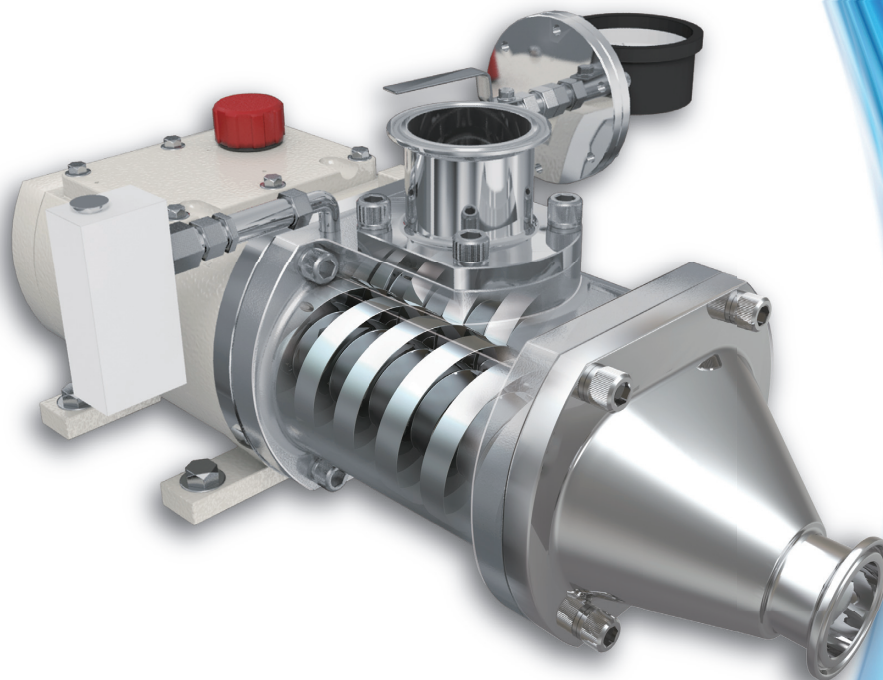


Twin Screw Pump with Defoaming Function (VQ-type)

Defoaming Pump

Defoaming Pump for Ultimate Self-suction



Defoaming Pump

A new twin screw pump with defoaming function [VQ-type] (PAT) !

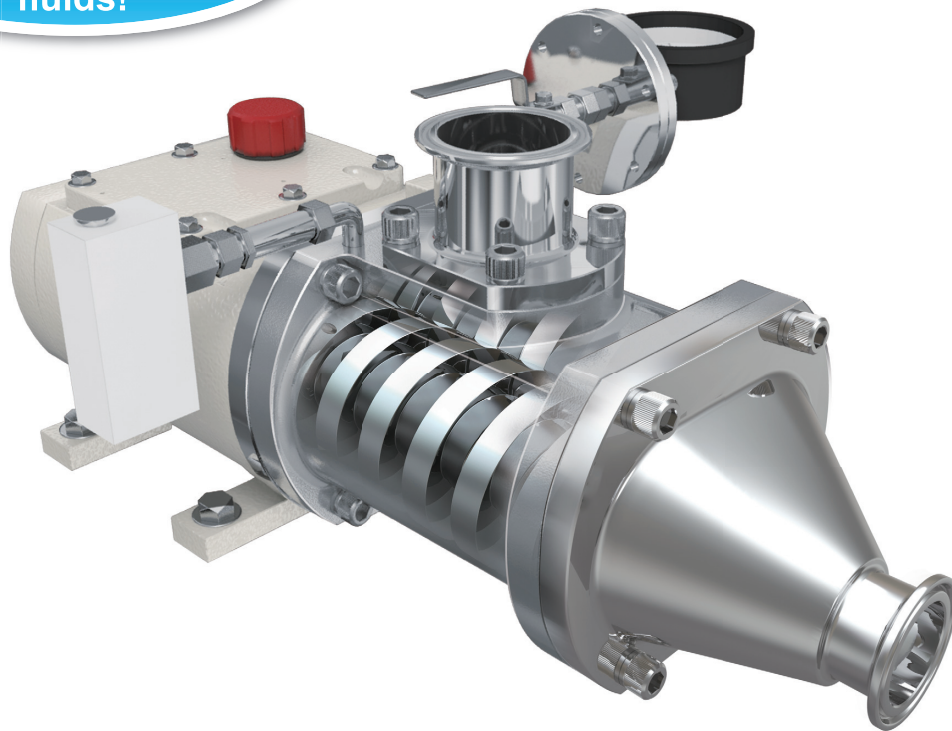
One of the largest challenges in liquid transfer by a pump is air got into the fluid, which harms quality and makes defectives. Focusing on this problem, we posed ourselves a difficult question, "Can't we make a pump that has defoaming function?" and moved forward in our development with focus on "vacuum defoaming." The resulting VQ-type pump has excellent defoaming performance and reliability, and its system enables defoaming transfer with compact size.

Furthermore, by mounting a vacuum generation device to the conventional twin screw pump to create high vacuum, the pump allows self-suction of high viscosity liquids, which had not been achievable with conventional screw pumps.

This is a breakthrough pump that enables defoaming while transferring liquids, which had been awaited by many users annoyed by defoaming problems.

Of course, the features of conventional twin screw pumps such as non-contact, no shear, no pulsation and no stirring are succeeded to this new product.

Self-suction of
ultra-high viscosity
fluids!



High self-suction which had not been achievable
with a non-contact pump (-10 m)

4 main functions

Resistance to abrasive fluid

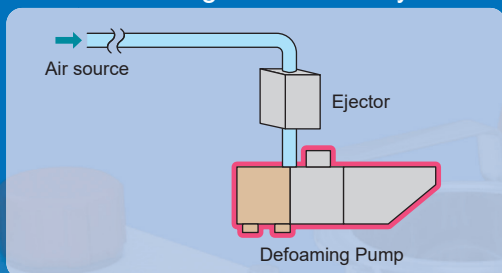
The difference appears in the **running cost!**

Defoaming transfer

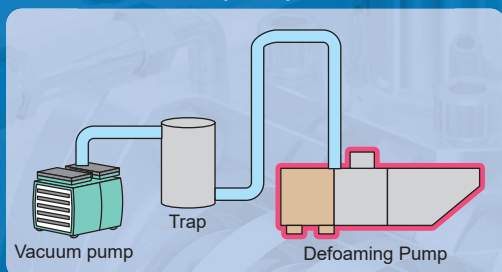
Transfer liquid while **defoaming!**

We suggest two defoaming methods

- With the existing air source at your site...



- With a vacuum pump...



Excellent self-suction

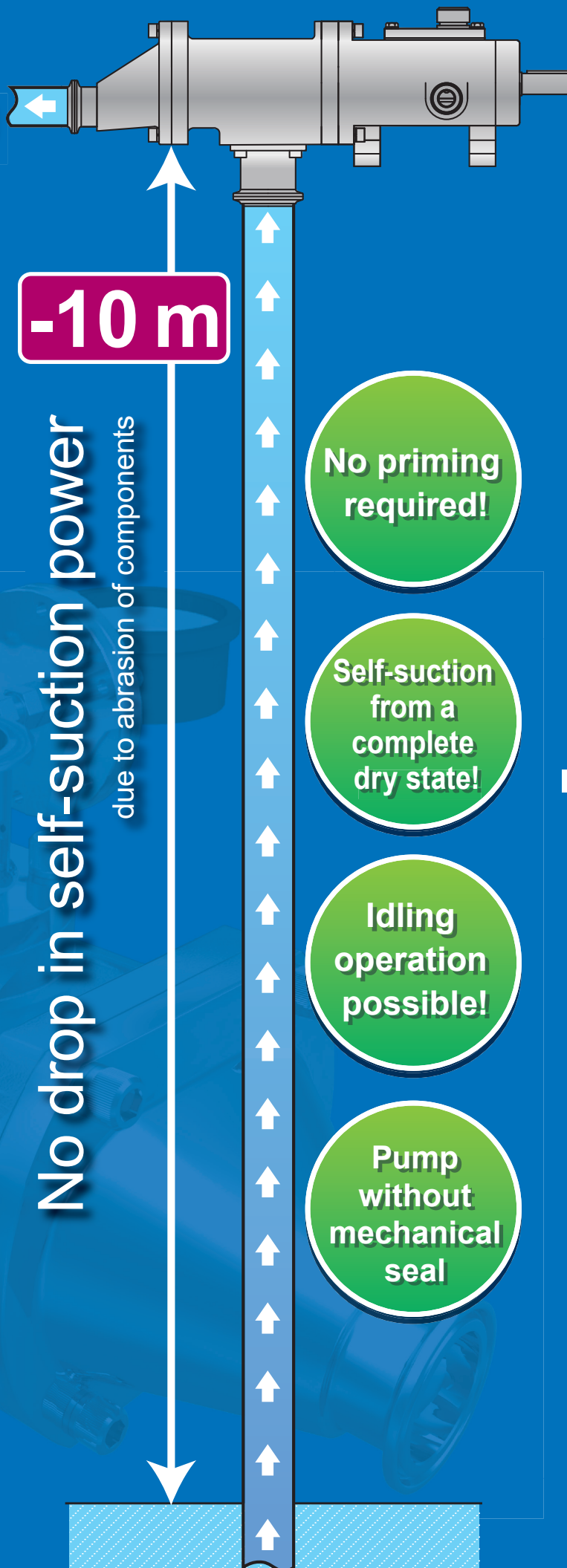
Although it is a non-contact pump, it has a high self-suction power.

Physical limitation **-10 m** is achieved!

No liquid leakage

Because the shaft seal part does not contact liquid,

no mechanical seal is required!



Food

Cosmetics/
Drug
medicines

Chemicals

*Used in various*Application: **Transfer of miso (bean paste)** ■ Viscosity: non-Newtonian fluid**Request**

Mixing of air causes the metal detector to have erroneous sensing and makes it detect acceptable products as defectives, which is being a big trouble.

However, reducing sensitivity of the metal detector may result in failure to detect the metals that should be removed.

Is there any way to overcome erroneous sensing without reducing the sensitivity?

**Result**

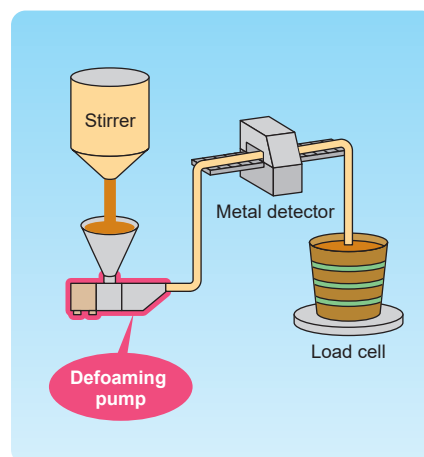
By performing defoaming transfer with the VQ-type pump, erroneous sensing was eliminated; the sensitivity of the metal detector did not drop, but rather, could be doubled.

Also, defoaming was effective in preventing oxidation, which led to quality improvement.

Furthermore, the filling process which used to be done manually could be automated.

Effect

- Sensitivity of a metal detector was doubled.
- Quality improvement achieved by preventing oxidation.
- Labor cost was cut by automation.

System implementation diagram

Reduction in labor cost and improvement in productivity led to...

Saving of **4 million yen a year!**

Application: **Transfer of chocolate** ■ Viscosity: 3,000 mPa·s**Request**

Forming defects due to air bubbles occur at a high rate in the forming process of chocolate.

**Result**

Forming defects could be reduced to 1/20 by defoaming transfer with a VQ-type pump.

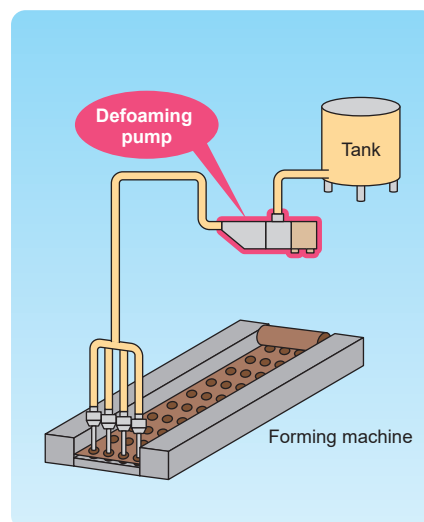
Furthermore, liquid leaking problem could also be solved thanks to not having a mechanical seal in the VQ-type pump.

Effect

- The number of forming defects were reduced to 1/20!
- Leakage problem of the mechanical seal was solved.

Reduction of forming defects led to...

Saving of **5 million yen a year!**

System implementation diagramApplication: **Self-suction of tomato puree** ■ Viscosity: 40,000-80,000 mPa·s**Using a VQ-type pump**

Self-suction from a drum became possible, which free from manual work!

Effect

Reduction in labor cost and improvement in productivity led to... Saving of **3 million yen a year!**

industries for wide applications

Application: Transfer of cleansing cream, toothpaste ■ Viscosity: 100,000-200,000 mPa·s

Request

Due to high viscosity, cleansing cream and toothpaste are difficult to be suctioned by a non-contact pump. However, we would not like to use a contact type pump for fear of contamination problems despite its high self suction power.

Although we currently transfer the fluid manually, is there a pump which generates no contamination and suitable for high viscosity fluid?

↓

Result

Application of the VQ-type pump enabled self-suction from a drum without containing contamination, leading to a great reduction in labor cost.

Effect · **Cut labor cost for almost one employee!**

Reduction in labor cost led to... Saving of **3 million yen a year!**

System implementation diagram

Application: Defoaming transfer of resins ■ Viscosity: 15,000-100,000 mPa·s

Request

Defoaming process of high viscosity resin currently takes 6 hours, impairing productivity.

Is there any way to reduce the defoaming time?

↓

Result

By applying the VQ-type pump for transfer to the vacuum tank, defoaming process which used to take 6 hours could be shortened to 3 hours.

Effect · **Defoaming time could be halved!**

A great improvement in productivity led to... Saving of **20 million yen a year!**

System implementation diagram

Application: Defoaming transfer of ultra-high viscosity adhesive ■ Viscosity: 500,000-1,500,000 mPa·s

Using a VQ-type pump

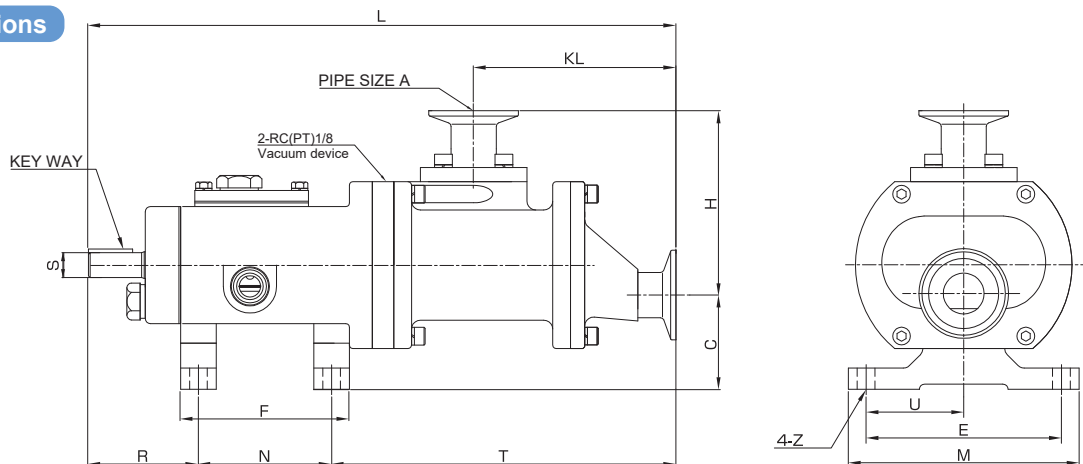
By transferring adhesive of 1,500,000 mPa·s while defoaming, defective products caused by air mixing in filling process could be eliminated.

Effect Manufacturing with a pump, which we gave up in the past, became possible!

Outer dimensions/main specifications/performance curves

► VQ-type

Outer dimensions



(単位 : mm)

| MODEL | A | C | R | KEY | S | F | N | L | U | E | M | H | KL | T | Z |
|-------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-----|
| VQ-15 | 1S | 54 | 62 | 5 | φ14 | 95 | 75 | 331 | 55 | 110 | 130 | 103 | 114 | 194 | φ10 |
| VQ-25 | 2S | 57 | 82.5 | 6 | φ20 | 132 | 107 | 472 | 70 | 140 | 170 | 132 | 179 | 282.5 | φ10 |
| VQ-50 | 2.5S | 77.5 | 98.5 | 8 | φ27 | 139 | 114 | 579 | 80 | 160 | 190 | 144.5 | 234.5 | 366.5 | φ10 |
| VQ-65 | 3S | 82.5 | 124 | 10 | φ34 | 165 | 135 | 759 | 110 | 220 | 250 | 180.5 | 339.5 | 500 | φ12 |

Main specifications

| Type | VQ-15 | VQ-25 | VQ-50 | VQ-65 |
|-----------------------|--|-------|-------|-------|
| Connection method | Ferrule, IDF screw, and JIS10K | | | |
| Discharge pressure | 0.8MPa *1 | | | |
| Rotation speed | Max. 3,600rpm | | | |
| Viscosity | 1,500,000mPa·s (measured value) | | | |
| Flow direction | Above to front, below to front (irreversible) | | | |
| Operating temperature | 100°C (Standard specification) *2 | | | |
| Bore | 1.5S to 3.5S | | | |
| Drive system | Direct coupling and V belt drive | | | |

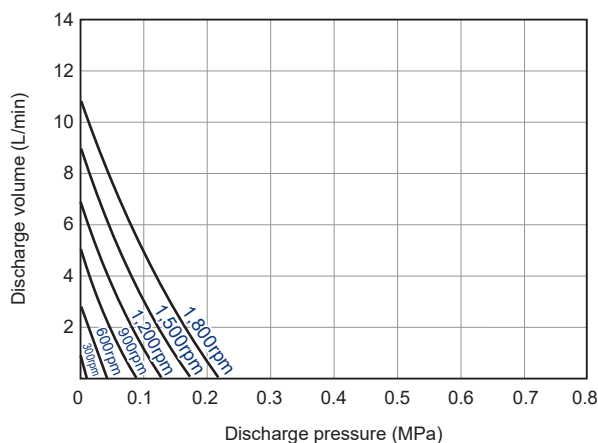
*1: Max. 2.0MPa (Special specification) *2: 200°C (Special specification)

Performance curves

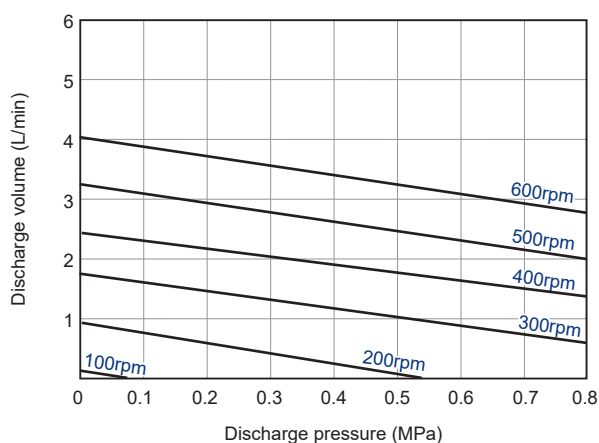
* Max. 2.0MPa (Special specification)

► VQ-15

1mPa·s



100,000mPa·s

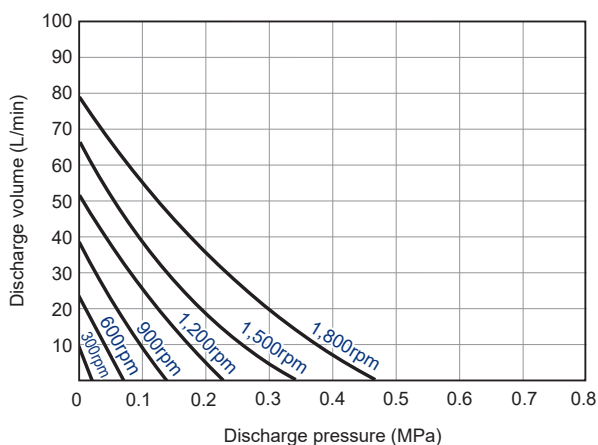


Performance curves

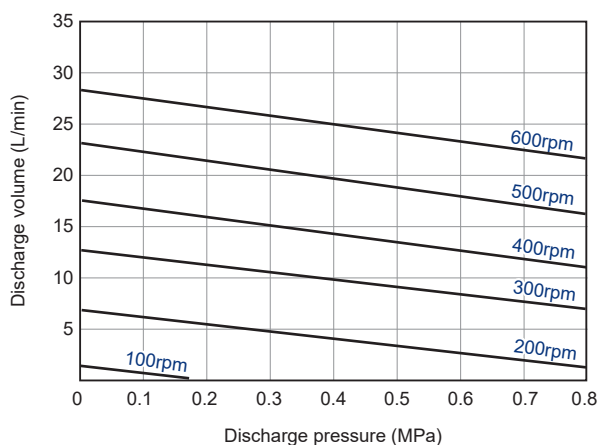
* Max. 2.0MPa (Special specification)

► VQ-25

1mPa·s

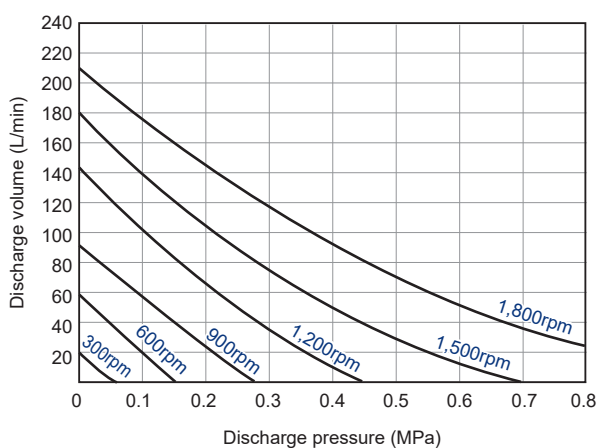


100,000mPa·s

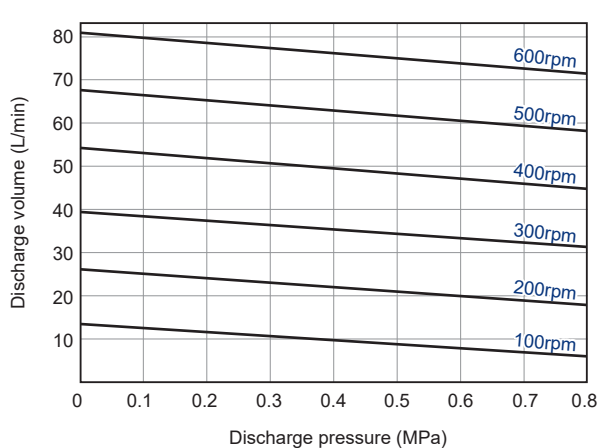


► VQ-50

1mPa·s

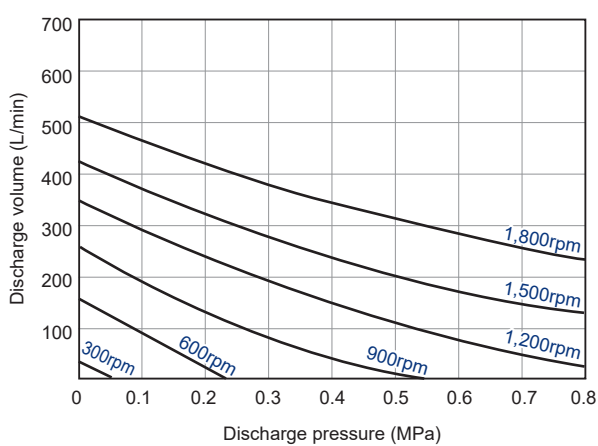


100,000mPa·s

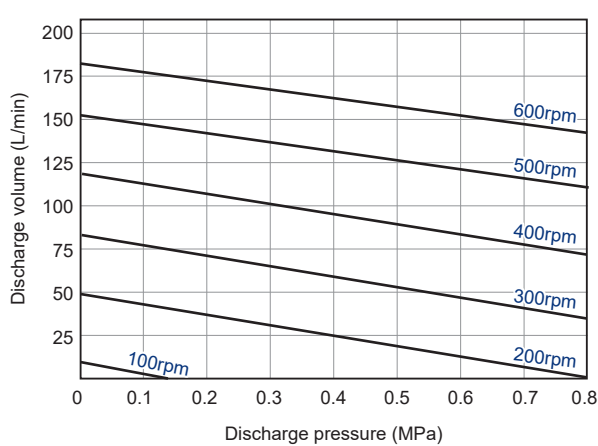


► VQ-65

1mPa·s



100,000mPa·s



If you have any inquiries: We would appreciate your help if you fill in the following information sheet before you make an inquiry, for example when looking for an estimate. (Please fill in the data to the extent of your knowledge.)

| | | | | |
|-------------------------|----------------------------------|---|----|--|
| Transferred substances | Material | | | |
| | State of the material | <input type="checkbox"/> Liquid <input type="checkbox"/> Cake-like materials <input type="checkbox"/> Solid with some fluidity | | |
| | Temperature | Common use : °C / Maximum : °C | | |
| | Cleaning | <input type="checkbox"/> None <input type="checkbox"/> Clean (°C) (<input type="checkbox"/> Hot water <input type="checkbox"/> CIP <input type="checkbox"/> SIP <input type="checkbox"/> Vapor) | | |
| | Relative density | (at °C) | | |
| | Viscosity | mPa·s (at °C) | | |
| | Solid mixture | <input type="checkbox"/> None <input type="checkbox"/> Mixed (Properties : Granularity : Rate of mixture : %) | | |
| | Corrosive | <input type="checkbox"/> No <input type="checkbox"/> Yes | | |
| Pump specification | Discharge volume | L / min | | m ³ / Hr |
| | Discharge pressure | m | | MPa |
| | Intake pressure | Push (+) : | m | Suction (-) : m |
| Motor specification | Power supply | V | Hz | <input type="checkbox"/> Indoors <input type="checkbox"/> Outdoors |
| | Type | <input type="checkbox"/> TEFC <input type="checkbox"/> Explosion proof safety increased <input type="checkbox"/> Explosion proof | | |
| | Drive system | <input type="checkbox"/> V belt <input type="checkbox"/> Reduction gears <input type="checkbox"/> Continuously variable transmission <input type="checkbox"/> Inverter motor | | |
| Connection duct | Intake duct aperture | | | |
| | Discharge duct aperture | | | |
| Defoaming specification | Defoaming | <input type="checkbox"/> Not required <input type="checkbox"/> Required | | |
| | Foam diameter | Maximum : / Minimum : | | |
| | Change amount of specific weight | Before defoaming : / After defoaming : | | |
| | Device | <input type="checkbox"/> Ejector (Required air pressure: 0.5MPa Flow rate: 83L/min) / <input type="checkbox"/> Vacuum pump | | |

Piping drawing



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Safety notice

To use the product properly and safely, thoroughly read the instructions before using it.