



**A New Generation of Advanced  
Metering Pump Technology!**

The Heart of Industry

# A New Generation of Advanced Metering Pump Technology!

## *Hi-Techno Pump*

## IX

Highly precise control offers a solution for every chemical dosing application.

Iwaki's IX Series are digitally controlled direct-drive diaphragm pumps. Years of experience in high-end motor technology result in extremely accurate and energy efficient metering pumps with high resolution. The IX Series meet today's demand for automated chemical delivery in industries from water treatment to chemical process.



High turn down ratio



Viscous liquid transfer



Cavitation prevention



Automatic control



Energy savings  
and Eco-friendly



Constant injection  
with low impact



Degassing



Safety design



Precise chemical  
dosing operation



IP65



Calibration



User friendly design



Efficient pump head design  
is incorporated  
with high compression



Compliant to  
world standards



Operation history

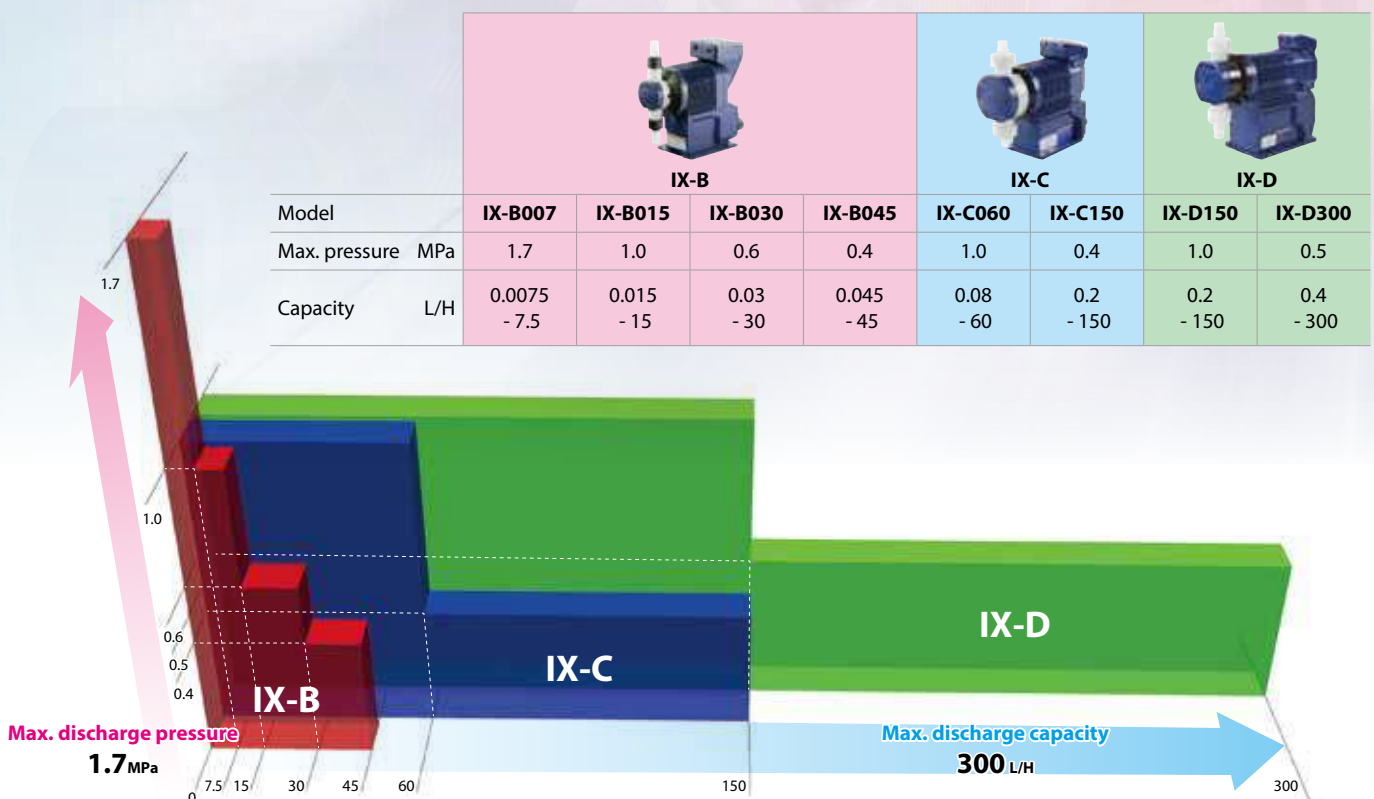


Flexible Installation



## High turn down ratio

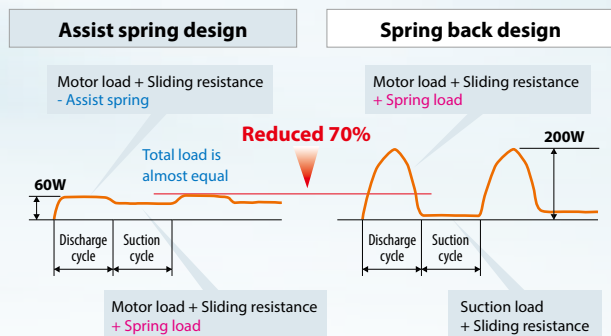
Max. capacity range : 0.0075 - 300L/H, Max. pressure : 1.7MPa covers wide flow range.



## Energy savings and Eco-friendly

With the use of helical gears and spring assistance, power consumption is reduced by 70% compared to the standard spring back design.

\*For IX-C type



## Precise chemical dosing operation

The valve design maintains precise dosing at any flow rate whilst the motor regulates discharge and suction speeds to achieve high accuracy (+/-1%) all with a cost effective design from a mechanically driven diaphragm pump.

\*Some low flow rate areas are excluded.

## Efficient pump head design is incorporated with high compression

Fast priming without air locks is achieved with a high compression ratio due to a fixed (maximum) stroke length.

### Maximum suction lift:

**2m** With an open discharge line and dry valve condition.

### Degassing ability :

|                         |                         |
|-------------------------|-------------------------|
| <b>IX-B007 : 1.0MPa</b> | <b>IX-B015 : 1.0MPa</b> |
| <b>IX-B030 : 0.6MPa</b> | <b>IX-B045 : 0.4MPa</b> |
| <b>IX-C060 : 1.0MPa</b> | <b>IX-C150 : 0.4MPa</b> |
| <b>IX-D150 : 1.0MPa</b> | <b>IX-D300 : 0.5MPa</b> |

With a standard tubing layout.

## Viscous liquid transfer

Standard IX series is capable of pumping liquid viscosities of up to IX-B: 500mPa·s (IX-B045), IX-C: 1000mPa·s, IX-D: 300mPa·s. Contact us for higher viscosity applications.

\*When transferring viscous liquid, the discharge rate may decrease. Custom orders are also available for viscosities of 1000 mPa·s and above. Please contact us for details.

## IP65

Drive and control units are sealed separately to an IP65 enclosure.

## Compliant to world standards

One of the IX features is multi-voltage operation (100-240VAC) compatible worldwide. Compliant to UL, CE standards.

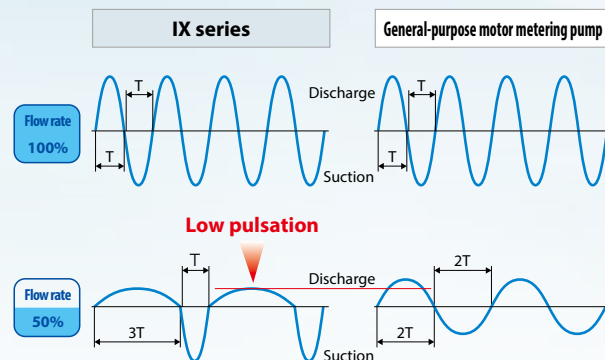
## Constant injection with low impact

Flow control via discharge speed adjustment (with a fixed suction speed) assures constant injection at any flow rate. This system also reduces impact (inertia force) and load to the discharge line.

## Cavitation prevention

When pumping viscous liquids, suction stroke speed can be varied to avoid developing cavitation.

(Programmable suction speed: 75%, 50% or 25% of the normal speed)



## Degassing

Keypad operation or the contact signal (AUX) runs the pump at maximum spm in any mode for degassing.

## Calibration

The pump is calibrated prior to shipment, however we recommend re-calibration when installed in your system due to pipe layout and liquid properties.

## Operation history

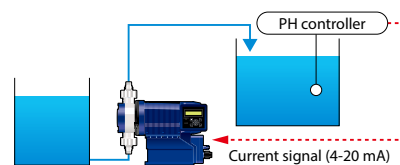
Controller memory logs the total power connection time, operating time, number of strokes and number of power-up events.

## Automatic control

The IX can run in analogue, pulse, batch or interval batch modes.

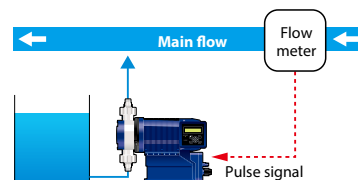
### Analogue operation

The pump operates in response to an input, (4-20mA) from a controller.



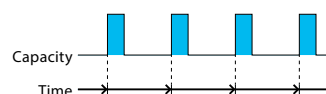
### Pulse operation

When combined with a flow meter or contact head water meter, the IX pump gives a paced dose rate in proportion to the main flow rate.



### Interval batch operation

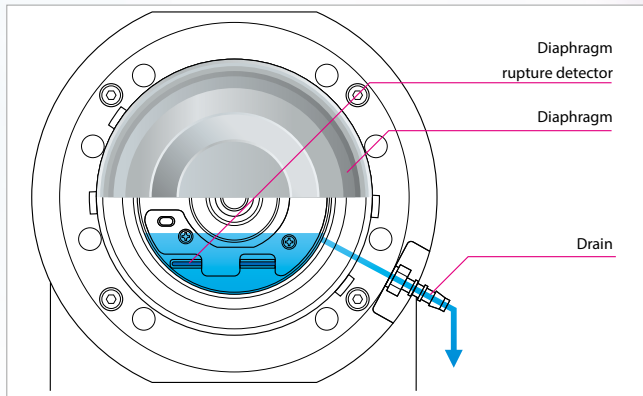
Timed operation is possible with simple pump programming via the keypad and is initiated with a pulse signal.



## Safety design

Standard to all models is a diaphragm rupture detector, protecting users and the environment. Also, a detector for abnormal operation protects the pipework in case of an accidental high discharge pressure caused by clogging or improper operation. A drain hole also ensures safe operation even when the diaphragm is damaged.

\*In some cases it may not be able to detect sudden rises in pressure occurring in shutoff operation. If the piping or machinery in use has low pressure resistance, install a separate safety valve.



## IX-B with excellent utility

### Excellent corrosion resistance

PVDF with excellent corrosion resistance is used as standard for the wet end materials. The 100% fluororesin diaphragm also supports liquid transfer, which is easily permeable to gas.

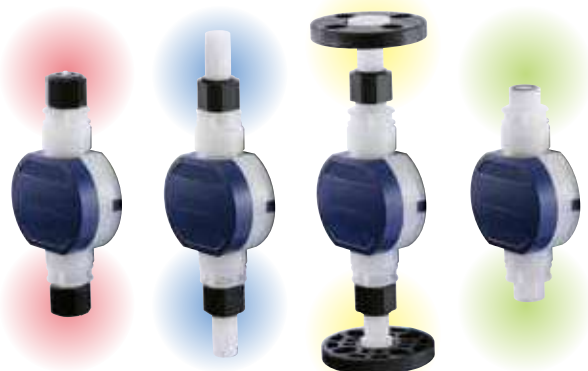
### LED Status Bar

A large LED status bar provides simple visual indication of operating conditions at a glance. It is easily visible to see the pump status at a distance or in dark locations.



### Flexible Connections

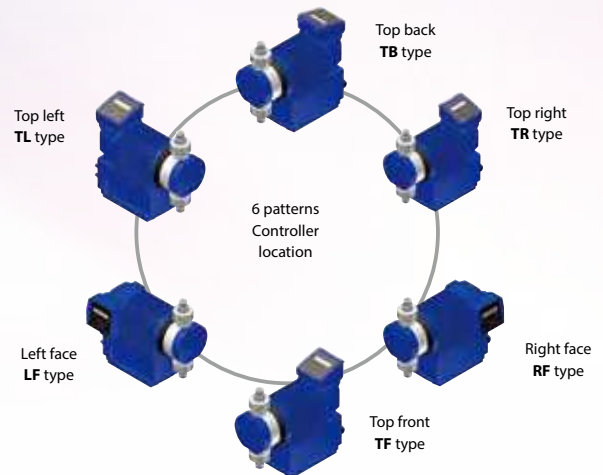
Tubing, Threaded, Flanged or Union (Made by George Fisher) connections are available as standard options providing easy installation for any application.



## User friendly design

### Operator mind design (IX-C/D)

The controller position can be selected from 6 mounting positions for operator convenience. Also, a character LCD with LED backlight and optimized keypad positions assist easy operation.



### Flexible Installation

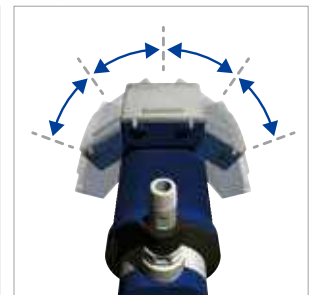
(Patented country : Japan, USA, Germany, France, Denmark, China)

The IX-B Pumps have been designed to be installed into various locations. The control unit can easily be repositioned by customers on-site. The pump can also be relocated from base mounted to wall mounted without any extra parts required.

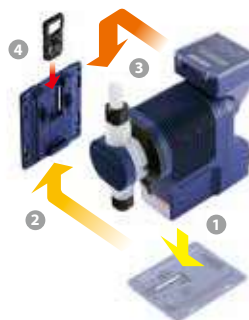
\*IX-B-S6 cannot be wall-mounted.



Upward 4 directions (every 90 degrees)



Two steps on both sides (every 35 degrees)

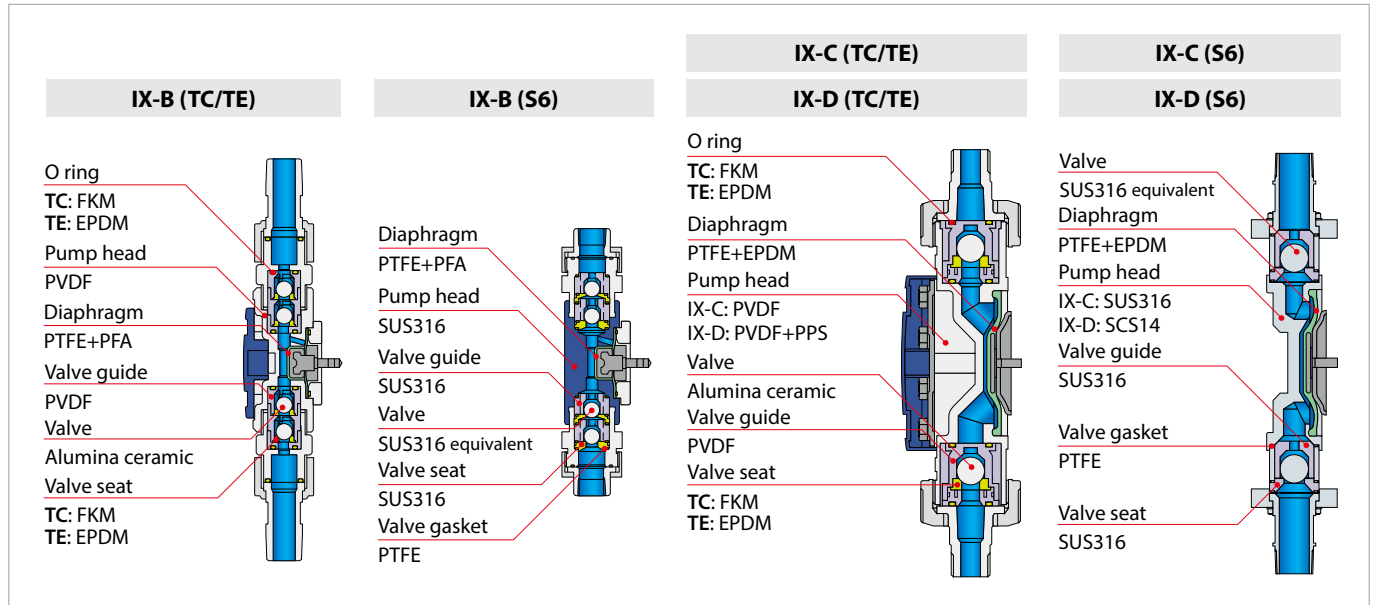


- 1 Remove the pump base.
- 2 Fix the pump base.
- 3 Hook the pump body.
- 4 Fix it with an adapter.



Installation example (with wall)

# Construction and materials



Note : PPS of the pump head and PFA/EPDM of the diaphragm is not wet end materials.

## Identification

**IX-B**

**IX - B 007 TC R - E □□**

① Drive unit **B**

② Pump size  
**007** : 7.5L/H  
**015** : 15L/H  
**030** : 30L/H  
**045** : 45L/H

③ Liquid-end material  
**TC, TE**  
Please refer to above figure.

④ Connection  
**R** : Thread (R)  
**N** : Thread (NPT)  
**G** : Thread (G)  
**F** : Flange  
**T** : Tube

⑤ Type of power code  
**E** : Europe  
**A** : Australia  
**J** : Asia  
**U** : USA (115V)  
**U2** : USA (230V)

⑥ Special arrangement code  
No code : Standard models  
□□ : Customized models

|         | Europe | Australia | Asia           | USA       |
|---------|--------|-----------|----------------|-----------|
| 007/015 | Ø4×Ø6  | Ø6×Ø8     | Ø4×Ø9, Ø4×Ø6   | 1/4"×3/8" |
| 030/045 | Ø9×Ø12 | Ø9×Ø12    | Ø8×Ø13, Ø9×Ø12 | 3/8"×1/2" |

**IX-C**

**IX - C 150 TC R - TB 2 - E □**

① Drive unit **C**

② Pump size  
**060** : 60L/H  
**150** : 150L/H

③ Liquid-end material  
**TC, TE, S6**  
Please refer to above figure.

④ Connection  
**R** : Thread (R)  
**N** : Thread (NPT)  
**FJ** : Flange (JIS)  
**FD** : Flange (DIN)  
**FA** : Flange (ANSI)

⑤ Controller position  
**TB** : Top back  
**TF** : Top front  
**TR** : Top right  
**TL** : Top left  
**RF** : Right face  
**LF** : Left face

⑥ Model code control number  
**1** : C060  
**2** : C150

⑦ Type of power code  
**E** : Europe  
**J** : Japan  
**U** : USA (115V)  
**U2** : USA (230V)

⑧ Special arrangement code  
No code : Standard models  
**S** : Customized models

**IX-D**

**IX - D 150 TC R - TB □ - E □**

① Drive unit **D**

② Pump size  
**150** : 150L/H  
**300** : 300L/H

③ Liquid-end material  
**TC, TE, S6**  
Please refer to above figure.

④ Connection  
**R** : Thread (R)  
**N** : Thread (NPT)  
**FJ** : Flange (JIS)  
**FD** : Flange (DIN)  
**FA** : Flange (ANSI)

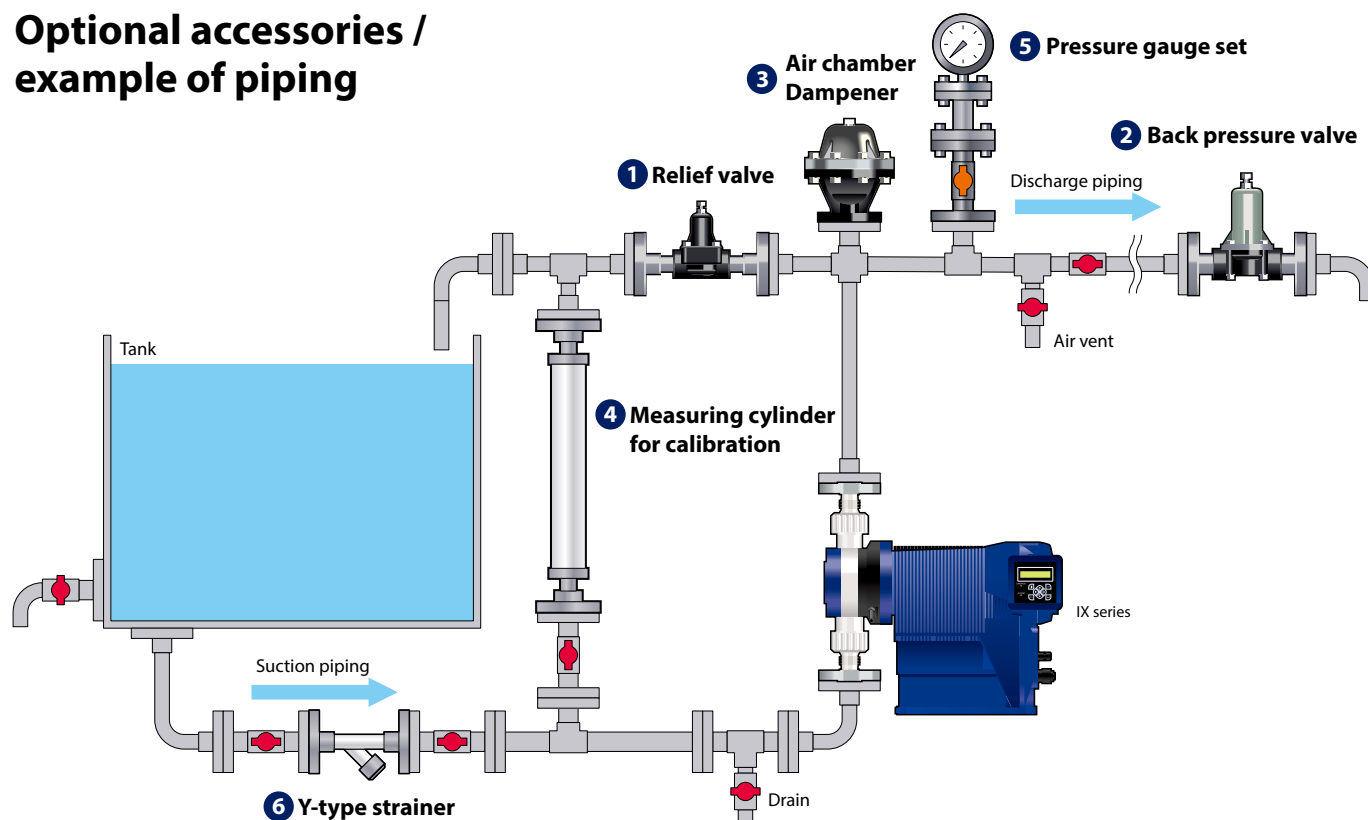
⑤ Controller position  
**TB** : Top back  
**TF** : Top front  
**TR** : Top right  
**TL** : Top left  
**RF** : Right face  
**LF** : Left face

⑥ Model code control number  
No code : D150  
No code : D300

⑦ Type of power code  
**E** : Europe  
**J** : Japan  
**U** : USA (115V)  
**U2** : USA (230V)

⑧ Special arrangement code  
No code : Standard models  
**S** : Customized models

## Optional accessories / example of piping



### Check valve

Attached to the hose on the discharge side. It prevents overfeeding and backflow of the chemical solution and also prevents siphon.



CAN type



CS type

| Model     | Material |                |                       | Set pressure |       | Connection                                        |                                 | Applicable pump |
|-----------|----------|----------------|-----------------------|--------------|-------|---------------------------------------------------|---------------------------------|-----------------|
|           | Body     | Spring         | O-ring                | MPa          |       | IN                                                | OUT                             |                 |
| CAN-1VC-M | PVC      | Hastelloy C276 | FKM                   | 0.17         | ±0.04 | Hose connection<br>Ø4×Ø9 <sup>Note1</sup> , Ø4×Ø6 | Thread connection<br>R3/8, R1/2 | IX-B007/015     |
| CAN-1VE-M |          |                | EPDM                  |              |       |                                                   |                                 |                 |
| CAN-2VC-M |          |                | FKM                   |              |       |                                                   |                                 |                 |
| CAN-2VE-M |          |                | EPDM                  |              |       |                                                   |                                 |                 |
| CS-1S     | SUS316   |                | PTFE <sup>Note2</sup> | 0.2          | ±0.04 | Thread connection<br>Rc1/4                        | Thread connection<br>Rc1/4      | IX-B007/015     |
| CS-2S     |          |                |                       |              | ±0.03 | Thread connection<br>Rc3/8                        | Thread connection<br>Rc3/8      | IX-B030/045     |

Note1 : Applicable hose diameter can be changed. Refer to "Connection Diameter of the Multi-connection" on page 12 for details.

Note2 : The sealing of CS type is a gasket.

### Relief valve Model RV

Positive displacement pumps keep operating even in a closed-discharge condition, resulting in piping breakage or pump failure from overpressurization without a relief valve. Always install a relief valve to prevent overpressure in the discharge line.

1



| Model      | Body            | Material<br>Diaphragm | O-ring      | Max. capacity<br>L/min (L/H) | Set pressure<br>MPa        | Connection<br>JIS10K Flange                               | Applicable<br>pump | Mass<br>kg |
|------------|-----------------|-----------------------|-------------|------------------------------|----------------------------|-----------------------------------------------------------|--------------------|------------|
| RV-3T□-15  | PVDF            | PTFE                  | FKM<br>EPDM | 3.0 (180)                    | 0.3 - 1.0                  | 15A<br>DIN PN10 DN15<br>ANSI 150LB 1/2 <sup>m</sup> Note2 | IX-B, C060         | 0.7        |
| RV-3T□-20  |                 |                       |             |                              |                            | 20A                                                       | IX-C150<br>IX-D150 | 0.8        |
| RV-3T□-MS  |                 |                       |             |                              | 0.3 - 1.0 <sup>Note1</sup> | Hose connection Ø4×6, Ø4×9                                | IX-B007/015        | 0.5        |
| RV-3T□-ML  |                 |                       |             |                              |                            | Hose connection Ø8×13, Ø9×12                              | IX-B030/045        |            |
| RV-3T□-R   |                 |                       |             |                              |                            | Thread connection R1/2                                    | IX-B               |            |
| RV-3T□-N   |                 |                       |             |                              |                            | Thread connection 1/2NPT                                  |                    |            |
| RV-3T□-G   |                 |                       |             |                              | Thread connection G3/4     |                                                           |                    |            |
| RV-3P-15   | PVC             | PTFE                  | 3.0 (180)   | 0.3 - 1.0                    | 15A                        | IX-B, C060                                                | 0.6                |            |
| RV-3P-20   |                 |                       |             |                              | 20A                        | IX-C150<br>IX-D150                                        |                    |            |
| RV-3P-25   |                 |                       |             |                              | 25A                        | IX-D300                                                   | 0.9                |            |
| RV-7TV-15  | PVDF            | PTFE                  | FKM         | 7.5 (450)                    | 0.3 - 0.8                  | 15A                                                       | IX-B, C060         | 5          |
| RV-7TE-15  |                 |                       | EPDM        |                              |                            |                                                           |                    |            |
| RV-7TV-25  |                 |                       | FKM         |                              |                            |                                                           |                    |            |
| RV-7TE-25  |                 |                       | EPDM        |                              |                            |                                                           |                    |            |
| RV-2S6-15  | SUS316<br>SCS14 | PTFE                  | PTFE        | 2.0 (120)                    | 0.3 - 0.8                  | 15A (JIS16K)                                              | IX-B, C060         | 3.5        |
| RV-2S6B-15 |                 |                       |             |                              | 0.8 - 1.5                  |                                                           |                    |            |
| RV-7S6-20  |                 |                       |             | 7.5 (450)                    | 0.3 - 0.8                  | 20A (JIS16K)                                              | IX-C150<br>IX-D150 | 6          |
| RV-7S6B-20 |                 |                       |             |                              | 0.8 - 1.5                  |                                                           |                    |            |
| RV-7S6-25  |                 |                       |             | 7.5 (450)                    | 0.3 - 0.8                  | 25A (JIS16K)                                              | IX-D300            | 6          |
| RV-7S6B-25 |                 |                       |             |                              | 0.8 - 1.5                  |                                                           |                    |            |

Note1 : When connecting a hose, use it at a hose normal pressure or less. When used with the IX-B007T (C/E) type pump, it can be installed in a pressure range of 0.3 to 1.7 MPa. However, the maximum flow rate is 0.125L/min (7.52L/H).

Note2 : The flange is a shared product that complies with the standards listed in the table.

# Optional accessories

## Back pressure valve

### Model BV

Install a back pressure valve when discharge-line pressure is less than 0.03 MPa or less than suction-line pressure. Pump check valves may otherwise not operate correctly and overfeeding may result. Differential pressure between discharge and suction lines must be 0.03 MPa or more and also greater than the inertia resistance (Pid or Pis, whichever greater). Differential pressure (0.03 MPa or more) > Inertia resistance (Pid or Pis, whichever is greater)



PVDF type

2



PVC type

| Model      | Material        |           |                            | Max. capacity<br>L/min (L/H)              | Set pressure<br>MPa        | Connection<br>JIS10K Flange                                                                                                                | Applicable<br>pump | Mass<br>kg         |   |
|------------|-----------------|-----------|----------------------------|-------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|---|
|            | Body            | Diaphragm | O-ring                     |                                           |                            |                                                                                                                                            |                    |                    |   |
| BV-3T□-15  | PVDF            |           | FKM<br>EPDM                | 0.000125<br>(0.0075)<br>-<br>3.0<br>(180) | 0.1 - 0.8 <sup>Note1</sup> | 15A<br>DIN PN10 DN15<br>ANSI 150LB 1/2" <sup>Note2</sup>                                                                                   | IX-B, C060         | 0.7                |   |
| BV-3T□-20  |                 |           |                            |                                           |                            | 20A                                                                                                                                        | IX-C150<br>IX-D150 | 0.8                |   |
| BV-3T□-MS  |                 |           |                            |                                           |                            | Hose connection Ø4×6, Ø4×9<br>Hose connection Ø8×13, Ø9×12<br>Thread connection R1/2<br>Thread connection 1/2NPT<br>Thread connection G3/4 | IX-B007/015        | 0.5                |   |
| BV-3T□-ML  |                 |           |                            |                                           |                            |                                                                                                                                            | IX-B030/045        |                    |   |
| BV-3T□-R   |                 |           |                            |                                           |                            |                                                                                                                                            | IX-B               |                    |   |
| BV-3T□-N   |                 |           |                            |                                           |                            |                                                                                                                                            |                    |                    |   |
| BV-3T□-G   |                 |           |                            |                                           |                            |                                                                                                                                            |                    |                    |   |
| BV-3P-15   | PVC             | PTFE      | 0.03 - 3.0<br>(1.8 - 180)  |                                           | 15A                        | IX-C060                                                                                                                                    | 0.6                |                    |   |
| BV-3P-20   |                 |           |                            |                                           | 20A                        | IX-C150<br>IX-D150                                                                                                                         |                    |                    |   |
| BV-3NV-15  | PVC             | FKM       | 0.005 - 3.0<br>(0.3 - 180) | 0.1 - 0.3                                 | 15A                        | IX-B, C060                                                                                                                                 | 0.6                |                    |   |
| BV-3NV-20  |                 |           |                            |                                           | 20A                        | IX-C150<br>IX-D150                                                                                                                         |                    |                    |   |
| BV-3NE-15  |                 | EPDM      |                            |                                           | 15A                        | IX-B, C060                                                                                                                                 | 0.6                |                    |   |
| BV-3NE-20  |                 |           |                            |                                           | 20A                        | IX-C150<br>IX-D150                                                                                                                         |                    |                    |   |
| BV-7TV-15  | PVDF            | PTFE      | FKM                        | 0.05 - 0.8                                | 15A                        | IX-B, C060                                                                                                                                 | 5                  |                    |   |
| BV-7TE-15  |                 |           | EPDM                       |                                           |                            |                                                                                                                                            |                    |                    |   |
| BV-7V-20   | PVC             | PTFE      | 0.2 - 7.5<br>(12 - 450)    | 0.05 - 0.8                                | 20A                        | IX-C150<br>IX-D150                                                                                                                         | 3.5                |                    |   |
| BV-7F-C17  | PVDF            |           |                            |                                           | Thread connection Rc1/2    | IX-B                                                                                                                                       |                    |                    |   |
| BV-7F-C18  |                 |           |                            |                                           | Thread connection Rc3/4    |                                                                                                                                            |                    |                    |   |
| BV-7TV-25  | PVDF            | PTFE      | FKM                        | 0.05 - 0.8                                | 25A                        | IX-D300                                                                                                                                    | 5                  |                    |   |
| BV-7TE-25  |                 |           | EPDM                       |                                           |                            |                                                                                                                                            |                    |                    |   |
| BV-2S6-15  | SUS316<br>SCS14 | PTFE      | 0.02 - 2.0<br>(1.2 - 120)  | 0.05 - 0.8                                | 15A (JIS16K)               | IX-B, C060                                                                                                                                 | 3.5                |                    |   |
| BV-2S6-C17 |                 |           |                            |                                           | Thread connection Rc1/2    | IX-B                                                                                                                                       |                    |                    |   |
| BV-2S6-C18 |                 |           |                            |                                           | Thread connection Rc3/4    |                                                                                                                                            |                    |                    |   |
| BV-7S6-20  |                 |           |                            |                                           | 2.0 - 7.5<br>(12 - 450)    | 0.1 - 0.8                                                                                                                                  | 20A (JIS16K)       | IX-C150<br>IX-D150 | 6 |
| BV-7S6-25  |                 |           |                            | 25A (JIS16K)                              | IX-D300                    |                                                                                                                                            |                    |                    |   |

Contact us for use at smaller flow rates than the above.

Note1: When connecting a hose, use it at a hose normal pressure or less.

Note2: The flange is a shared product that complies with the standards listed in the table.

## Air chamber Model A

The air chamber reduces flow pulsation to prevent piping vibration and overfeeding. An air chamber designed for slurry transfer is also available. Contact us for detail.



SUS type



PVC type

3

| Model     | Material |        | Capacity<br>L | Max. pressure<br>MPa | Connection<br>JIS10K Flange | Applicable<br>pump     | Mass<br>kg |
|-----------|----------|--------|---------------|----------------------|-----------------------------|------------------------|------------|
|           | Body     | O-ring |               |                      |                             |                        |            |
| A-1VV     | PVC      | FKM    | 1.0           | 0.5                  | 15 - 25A (common)           | IX-B, C060             | 2          |
| A-1VE     |          | EPDM   |               |                      |                             |                        |            |
| A-2VV     |          | FKM    | 2.0           |                      |                             | IX-C150<br>IX-D150     | 2.5        |
| A-2VE     |          | EPDM   |               |                      |                             |                        |            |
| A-5VV     |          | FKM    | 5.0           |                      |                             | IX-D300                | 4.5        |
| A-5VE     |          | EPDM   |               |                      |                             |                        |            |
| A-05S6-10 | SUS316   |        | 0.5           | 0.9                  | 10A                         | IX-B                   | 3          |
| A-05S6-15 |          |        |               |                      | 15A                         |                        |            |
| A-05S6-20 |          |        |               |                      | 20A                         |                        |            |
| A-1S6-15  |          |        | 1.5           |                      | 15A                         | IX-C060/150<br>IX-D150 | 5          |
| A-1S6-20  |          |        |               |                      | 20A                         |                        |            |
| A-1S6-25  |          |        |               |                      | 25A                         |                        |            |
| A-5S6-25  |          |        | 5.0           |                      | 25A                         | IX-D300                | 12         |
| A-5S6-40  |          |        |               |                      | 40A                         |                        |            |

Contact us for other materials.

## Dampener

Installed on the discharge side. Reduces pulsation and prevents piping vibration.

3



AQ-10



AQ-85

| Model       | Material |        | Capacity<br>mL | Max. pressure<br>MPa | Connection<br>JIS10K Flange     | Applicable<br>pump |
|-------------|----------|--------|----------------|----------------------|---------------------------------|--------------------|
|             | Body     | O-ring |                |                      |                                 |                    |
| AQ-10TV     | PVDF+PVC | FKM    | 164            | 0.05 - 0.5           | Hose connection<br>Ø4×Ø9, Ø4×Ø6 | IX-B007/015        |
| AQ-10TE     |          | EPDM   |                |                      |                                 |                    |
| AQ-10TV-4   |          | FKM    |                |                      | Hose connection<br>Ø8×Ø13       | IX-B030/045        |
| AQ-10TE-4   |          | EPDM   |                |                      |                                 |                    |
| AQ-85TV-15F | PVDF     | FKM    | 1400           |                      | 15A                             | IX-C060            |
| AQ-85TE-15F |          | EPDM   |                |                      | 20A                             | IX-C150<br>IX-D150 |
| AQ-85TV-20F |          | FKM    |                |                      |                                 |                    |
| AQ-85TE-20F |          | EPDM   |                |                      |                                 |                    |

The AQ-85 series is not in standard stock, so please contact us for the delivery date.

### Strainer with a foot valve

Attached at the end of the suction hose. Prevents foreign matter from entering the pump chamber and water level fall in the suction hose when the pump is stopped.



| Model   | Material |                     |                 |        | Hose Connection | Applicable pump |
|---------|----------|---------------------|-----------------|--------|-----------------|-----------------|
|         | Body     | Strainer            | Valve           | O-ring |                 |                 |
| FSVN-1  | PVC      | Fluoro resin (ETFE) | Alumina ceramic | FKM    | Ø4×Ø9           | IX-B007/015     |
| FSVN-2  |          |                     |                 |        | Ø4×Ø6           |                 |
| FSVN-4  |          |                     |                 |        | Ø8×Ø13          | IX-B030/045     |
| FSVN-5  |          |                     |                 |        | Ø9×Ø12          |                 |
| FSEN-1  | PVC      | Fluoro resin (ETFE) | Hastelloy C276  | EPDM   | Ø4×Ø9           | IX-B030/045     |
| FSEN-2  |          |                     |                 |        | Ø4×Ø6           |                 |
| FSEN-4  |          |                     |                 |        | Ø8×Ø13          |                 |
| FSEN-5  |          |                     |                 |        | Ø9×Ø12          |                 |
| FSTCN-2 | PVDF     | Fluoro resin (ETFE) | Alumina ceramic | FKM    | Ø4×Ø6           | IX-B007/015     |
| FSTCN-6 |          |                     |                 |        | Ø10×Ø12         | IX-B030/045     |

Mesh size : #20

### Measuring cylinder for calibration

Used to calibrate the discharge rate of the pump. Installed on the suction side to measure the suction amount.



4

| Model          | Material | Capacity mL | Connection <sup>Note</sup>                    | Applicable pump |
|----------------|----------|-------------|-----------------------------------------------|-----------------|
| CC-PVC-500-FD  | PVC      | 500         | JIS10K15A<br>ANSI 150LB 1/2"<br>DIN PN10 DN15 | IX-B            |
| CC-PVC-1000-FD |          | 1000        |                                               | IX-C060         |
| CC-PVC-2000-FD |          | 2000        | JIS10K25A<br>ANSI 150LB 1"<br>DIN PN10 DN25   | IX-C/D150       |
| CC-PVC-4000-FD |          | 4000        |                                               | IX-D300         |

Note : The flange is a common item that complies with the standards listed in the table.

### Pressure gauge set

A convenient unit that combines a pressure gauge and a stop valve. Necessary to check the discharge pressure and control air supply to the air chamber. PVC type and SUS type are available.



5

| Type        | Line up         | Valve  | Diaphragm | Material                                                                                | Connection diameter   | Max. pressure MPa |
|-------------|-----------------|--------|-----------|-----------------------------------------------------------------------------------------|-----------------------|-------------------|
|             |                 |        |           | Sealing material                                                                        |                       |                   |
| PVC type    | 0.3MPa×Ø100×15A | PVC    | PTFE      | FKM (Ball valve FKM type)<br>EPDM (Ball valve EPDM type)<br>PTFE (Diaphragm valve type) | Flange connection 15A | 0.3               |
|             | 0.5MPa×Ø100×15A |        |           |                                                                                         |                       | 0.5               |
|             | 0.6MPa×Ø100×15A |        |           |                                                                                         |                       | 0.6               |
|             | 1.0MPa×Ø100×15A |        |           |                                                                                         |                       | 1.0               |
| SUS316 type | 0.3MPa×Ø100×15A | SUS316 | PTFE      | PTFE                                                                                    | Flange connection 15A | 0.3               |
|             | 0.5MPa×Ø100×15A |        |           |                                                                                         |                       | 0.5               |
|             | 0.6MPa×Ø100×15A |        |           |                                                                                         |                       | 0.6               |
|             | 1.0MPa×Ø100×15A |        |           |                                                                                         |                       | 1.0               |

### Y-type strainer

Installed in the suction piping to prevent dirt and foreign matter from entering the pump chamber. PVC type and SUS type are available.



6

| Type          | Line up   | Material |                  | Connection diameter |
|---------------|-----------|----------|------------------|---------------------|
|               |           | Body     | Sealing material |                     |
| PVC type FKM  | 15A, FKM  | PVC      | FKM              | 15A                 |
|               | 25A, FKM  |          |                  | 25A                 |
| PVC type EPDM | 15A, EPDM |          | EPDM             | 15A                 |
|               | 25A, EPDM |          |                  | 25A                 |
| SUS type      | 15A       | SUS      | PTFE             | 15A                 |
|               | 20A       |          |                  | 20A                 |
|               | 25A       |          |                  | 25A                 |

Mesh size : #40

### DIN 5-pin connector cable

External control signal cable (5m)  
(External control signal input)  
Selection No. IX0018



### DIN 5-pin connector cable

STOP signal and AUX signal cable (5m)  
(STOP signal input)  
Selection No. IX0019



### DIN 4-pin connector cable

Output signal cable (5m)  
(Signal output)  
Selection No. IX0020



### Profibus converter

Profibus communication



# Specifications

## Pumps

| Model           |    | Capacity<br>L/hr              | Max. pressure<br>MPa | Max. viscosity<br>mPa·s | Liquid temperature range<br>°C | Connection                                                  | Power consumption<br>W | Current<br>A | Mass<br>kg |
|-----------------|----|-------------------------------|----------------------|-------------------------|--------------------------------|-------------------------------------------------------------|------------------------|--------------|------------|
| IX-B007 (TC/TE) | R  | 0.0075 - 7.5                  | 1.7                  | — <sup>Note2, 3</sup>   | 0 - 50                         | R1/2                                                        | 17                     | 0.4          | 3.5        |
|                 | N  |                               |                      |                         |                                | 1/2 NPT                                                     |                        |              |            |
|                 | G  |                               |                      |                         |                                | G3/4                                                        |                        |              |            |
|                 | T  |                               |                      |                         |                                | Please refer to Pump identification.                        |                        |              |            |
|                 | F  |                               |                      |                         |                                | JIS10K 15A, DIN PN10 DN15, ANSI 150LB 1/2" <sup>Note5</sup> |                        |              | 3.7        |
| IX-B007 S6      | R  | 0.0075 - 7.5 <sup>Note4</sup> | 1.7                  | 1000 <sup>Note2</sup>   | 0 - 80                         | Rc3/8                                                       | 17                     | 0.4          | 4.5        |
|                 | N  |                               | 1.0                  |                         |                                | 3/8 NPT                                                     |                        |              | 6.0        |
|                 | F□ |                               | 1.0                  |                         |                                | FJ: JIS 10K 15A, FD: DIN PN10 DN15, FA: ANSI 150LB 1/2"     |                        |              |            |
| IX-B015 (TC/TE) | R  | 0.015 - 15                    | 1.0                  | 100 <sup>Note2, 3</sup> | 0 - 50                         | R1/2                                                        | 17                     | 0.4          | 3.5        |
|                 | N  |                               |                      |                         |                                | 1/2 NPT                                                     |                        |              |            |
|                 | G  |                               |                      |                         |                                | G3/4                                                        |                        |              |            |
|                 | T  |                               |                      |                         |                                | Please refer to Pump identification.                        |                        |              |            |
|                 | F  |                               |                      |                         |                                | JIS10K 15A, DIN PN10 DN15, ANSI 150LB 1/2" <sup>Note5</sup> |                        |              | 3.7        |
| IX-B015 S6      | R  | 0.015 - 15                    | 1.0                  | 1000 <sup>Note2</sup>   | 0 - 80                         | Rc3/8                                                       | 17                     | 0.4          | 4.5        |
|                 | N  |                               |                      |                         |                                | 3/8 NPT                                                     |                        |              | 6.0        |
|                 | F□ |                               |                      |                         |                                | FJ: JIS 10K 15A, FD: DIN PN10 DN15, FA: ANSI 150LB 1/2"     |                        |              |            |
| IX-B030 (TC/TE) | R  | 0.030 - 30                    | 0.6                  | 100 <sup>Note2, 3</sup> | 0 - 50                         | R1/2                                                        | 19                     | 0.5          | 3.7        |
|                 | N  |                               |                      |                         |                                | 1/2 NPT                                                     |                        |              |            |
|                 | G  |                               |                      |                         |                                | G3/4                                                        |                        |              |            |
|                 | T  |                               |                      |                         |                                | Please refer to Pump identification.                        |                        |              |            |
|                 | F  |                               |                      |                         |                                | JIS10K 15A, DIN PN10 DN15, ANSI 150LB 1/2" <sup>Note5</sup> |                        |              | 3.9        |
| IX-B030 S6      | R  | 0.030 - 30                    | 0.6                  | 1000 <sup>Note2</sup>   | 0 - 80                         | Rc3/8                                                       | 19                     | 0.5          | 5.0        |
|                 | N  |                               |                      |                         |                                | 3/8 NPT                                                     |                        |              | 6.5        |
|                 | F□ |                               |                      |                         |                                | FJ: JIS 10K 15A, FD: DIN PN10 DN15, FA: ANSI 150LB 1/2"     |                        |              |            |
| IX-B045 (TC/TE) | R  | 0.045 - 45                    | 0.4                  | 500 <sup>Note2, 3</sup> | 0 - 50                         | R1/2                                                        | 19                     | 0.5          | 3.7        |
|                 | N  |                               |                      |                         |                                | 1/2 NPT                                                     |                        |              |            |
|                 | G  |                               |                      |                         |                                | G3/4                                                        |                        |              |            |
|                 | T  |                               |                      |                         |                                | Please refer to Pump identification.                        |                        |              |            |
|                 | F  |                               |                      |                         |                                | JIS10K 15A, DIN PN10 DN15, ANSI 150LB 1/2" <sup>Note5</sup> |                        |              | 3.9        |
| IX-B045 S6      | R  | 0.045 - 45                    | 0.4                  | 1000 <sup>Note2</sup>   | 0 - 80                         | Rc3/8                                                       | 19                     | 0.5          | 5.0        |
|                 | N  |                               |                      |                         |                                | 3/8 NPT                                                     |                        |              | 6.5        |
|                 | F□ |                               |                      |                         |                                | FJ: JIS 10K 15A, FD: DIN PN10 DN15, FA: ANSI 150LB 1/2"     |                        |              |            |
| IX-C060 (TC/TE) | R  | 0.08 - 60 <sup>Note4</sup>    | 1.0                  | 1000 <sup>Note2</sup>   | 0 - 50                         | R1/2                                                        | 62                     | 0.8          | 8          |
|                 | N  |                               |                      |                         |                                | 1/2 NPT                                                     |                        |              | 9          |
|                 | F□ |                               |                      |                         |                                | FJ: JIS 10K 15A, FD: DIN PN10 DN15, FA: ANSI 150LB 1/2"     |                        |              |            |
| IX-C060 S6      | R  | 0.08 - 60 <sup>Note4</sup>    | 1.0                  | 1000 <sup>Note2</sup>   | 0 - 80                         | R1/2                                                        | 62                     | 0.8          | 10.5       |
|                 | N  |                               |                      |                         |                                | 1/2 NPT                                                     |                        |              | 12         |
|                 | F□ |                               |                      |                         |                                | FJ: JIS 10K 15A, FD: DIN PN10 DN15, FA: ANSI 150LB 1/2"     |                        |              |            |
| IX-C150 (TC/TE) | R  | 0.2 - 150 <sup>Note4</sup>    | 0.4                  | 1000 <sup>Note2</sup>   | 0 - 50                         | R3/4                                                        | 62                     | 0.8          | 9          |
|                 | N  |                               |                      |                         |                                | NPT 3/4                                                     |                        |              | 11         |
|                 | F□ |                               |                      |                         |                                | FJ: JIS10K20A, FD: DIN PN16 DN20, FA: ANSI 150LB 3/4"       |                        |              |            |
| IX-C150 S6      | R  | 0.2 - 150 <sup>Note4</sup>    | 0.4                  | 1000 <sup>Note2</sup>   | 0 - 80                         | R3/4                                                        | 62                     | 0.8          | 13         |
|                 | N  |                               |                      |                         |                                | NPT 3/4                                                     |                        |              | 13         |
|                 | F□ |                               |                      |                         |                                | FJ: JIS10K20A, FD: DIN PN10 DN20, FA: ANSI 150LB 3/4"       |                        |              |            |
| IX-D150 (TC/TE) | R  | 0.2 - 150                     | 1.0                  | 300 <sup>Note2, 3</sup> | 0 - 50                         | R3/4                                                        | 110                    | 1.3          | 14.5       |
|                 | N  |                               |                      |                         |                                | 3/4 NPT                                                     |                        |              | 15         |
|                 | F□ |                               |                      |                         |                                | FJ: JIS10K20A, FD: DIN PN16 DN20, FA: ANSI 150LB 3/4"       |                        |              |            |
| IX-D150 S6      | R  | 0.2 - 150 <sup>Note4</sup>    | 1.0                  | 300 <sup>Note2, 3</sup> | 0 - 80                         | R3/4                                                        | 110                    | 1.3          | 17         |
|                 | N  |                               |                      |                         |                                | 3/4 NPT                                                     |                        |              | 17         |
|                 | F□ |                               |                      |                         |                                | FJ: JIS10K20A, FD: DIN PN10 DN20, FA: ANSI 150LB 3/4"       |                        |              |            |
| IX-D300 (TC/TE) | R  | 0.4 - 300                     | 0.5                  | 300 <sup>Note2, 3</sup> | 0 - 50                         | R1                                                          | 110                    | 1.3          | 15.5       |
|                 | N  |                               |                      |                         |                                | 1 NPT                                                       |                        |              | 15.5       |
|                 | F□ |                               |                      |                         |                                | FJ: JIS10K 25A, FD: DIN PN16 DN25, FA: ANSI 150LB 1"        |                        |              |            |
| IX-D300 S6      | R  | 0.4 - 300 <sup>Note4</sup>    | 0.5                  | 300 <sup>Note2, 3</sup> | 0 - 80                         | R1                                                          | 110                    | 1.3          | 17         |
|                 | N  |                               |                      |                         |                                | 1 NPT                                                       |                        |              | 19.5       |
|                 | F□ |                               |                      |                         |                                | FJ: JIS10K 25A, FD: DIN PN10 DN25, FA: ANSI 150LB 1"        |                        |              |            |

Note1 : Use below the maximum allowable pressure of a connected tube.

Note3 : A dedicated valve is required when using with high-viscosity liquid.

Note2 : When transferring viscous liquid, the discharge rate may decrease. When selecting a pump, allow a margin for the discharge amount.

Note4 : For the IX-B, accuracy is not guaranteed at flows below 30 mL/h. For the IX-C060, accuracy is not guaranteed at flows below 0.4 L/h. For the IX-C150, accuracy is not guaranteed at flows below 1.0 L/h.

For the IX-D150, accuracy is not guaranteed at flows below 1.5 L/h. For the IX-D300, accuracy is not guaranteed at flows below 3.0 L/h.

Note5 : Flanges will be shared with the standards listed in the table.

• The above is the value at rated voltage, ambient temperature and clear water. • The pressure at which the abnormal pressure detection function operates is 1.3 to 2 times the maximum discharge pressure.  
• No viscosity change, Non freezing, No slurry. • The max. discharge capacity is obtained in operation with clear water at ambient temperature and the max. discharge pressure. It gets higher as the pressure gets lower.  
• Operating humidity range: 30-90%RH (Non condensing in the controller) • Operating temperature range: 0-50 °C (Indoor use only) • Contact us for other plumbing connections.

## Controllers

|                                |                                         |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                |                                                                                          |
|--------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Operation mode                 | MAN (Manual)                            |                                                                                                                                                                                                                                                                   | Use the UP and DOWN keys to set a flow rate.                                                                                                                                                                                                                   |                                                                                          |
|                                | Analog fixed operation                  |                                                                                                                                                                                                                                                                   | 4–20, 0–20, 20–4, 20–0 mA (Proportional to the discharge rate)                                                                                                                                                                                                 |                                                                                          |
|                                | Analog variable operation               |                                                                                                                                                                                                                                                                   | Programmable 2-point setting (Input signal DC 0–20 mA, proportional to the discharge rate)                                                                                                                                                                     |                                                                                          |
|                                | Pulse control-<br><small>Note1</small>  | IX-B                                                                                                                                                                                                                                                              | 0.000625mL/PLS - 15.000000mL/PLS (IX-B007)<br>0.002500mL/PLS - 60.000000mL/PLS (IX-B030)                                                                                                                                                                       | 0.001250mL/PLS - 30.000000mL/PLS (IX-B015)<br>0.003750mL/PLS - 90.000000mL/PLS (IX-B045) |
|                                |                                         | IX-C                                                                                                                                                                                                                                                              | 0.00625mL/PLS - 120mL/PLS (IX-C060) 0.01560mL/PLS - 300mL/PLS (IX-C150)                                                                                                                                                                                        |                                                                                          |
|                                |                                         | IX-D                                                                                                                                                                                                                                                              | 0.01560mL/PLS - 300mL/PLS (IX-D150) 0.03120mL/PLS - 600mL/PLS (IX-D300)                                                                                                                                                                                        |                                                                                          |
|                                | Batch control-<br><small>Note1</small>  | IX-B                                                                                                                                                                                                                                                              | 0.625mL/PLS - 15.000L/PLS (IX-B007)<br>2.500mL/PLS - 60.000L/PLS (IX-B030)                                                                                                                                                                                     | 1.250mL/PLS - 30.000L/PLS (IX-B015)<br>3.750mL/PLS - 90.000L/PLS (IX-B045)               |
|                                |                                         | IX-C                                                                                                                                                                                                                                                              | 6.25mL/PLS - 120L/PLS (IX-C060) 15.6mL/PLS - 300L/PLS (IX-C150)                                                                                                                                                                                                |                                                                                          |
|                                |                                         | IX-D                                                                                                                                                                                                                                                              | 15.6mL/PLS - 300L/PLS (IX-D150) 31.2mL/PLS - 600L/PLS (IX-D300)                                                                                                                                                                                                |                                                                                          |
|                                |                                         |                                                                                                                                                                                                                                                                   | Day: 0 - 9, Hour: 0 - 23, Minute: 1 - 59                                                                                                                                                                                                                       |                                                                                          |
|                                | Interval batch control <sup>Note1</sup> | IX-B                                                                                                                                                                                                                                                              | 0.625mL - 15.000L (IX-B007)<br>2.500mL - 60.000L (IX-B030)                                                                                                                                                                                                     | 1.250mL - 30.000L (IX-B015)<br>3.750mL - 90.000L (IX-B045)                               |
|                                |                                         | IX-C                                                                                                                                                                                                                                                              | 6.25mL - 120L (IX-C060), 15.6mL - 300L (IX-C150)                                                                                                                                                                                                               |                                                                                          |
|                                |                                         | IX-D                                                                                                                                                                                                                                                              | 15.6mL - 300L (IX-D150), 31.2mL - 600L (IX-D300)                                                                                                                                                                                                               |                                                                                          |
|                                | Profibus control <sup>Note2</sup>       |                                                                                                                                                                                                                                                                   | Communication protocol: Profibus-DP-compliant international standard: EN50170 (IEC61158)                                                                                                                                                                       |                                                                                          |
| Monitors                       | LCD                                     | 16 digits × 2 lines, backlight character LCD                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | LED                                     | IX-B                                                                                                                                                                                                                                                              | White: When the pump is stopped etc., Green: During pump operation etc., Orange: When entering Pre-Stop etc., Red: When alarm such as abnormal pressure detection etc.                                                                                         |                                                                                          |
|                                |                                         | IX-C<br>IX-D                                                                                                                                                                                                                                                      | OPERATE<br>Lights in green color during pump operation. Lights in orange color when a Pre-Stop signal is input. Lights in red color when the pump has stopped or flashes when overload is detected.<br>ALARM<br>Red: Lights up when Alarm1 or Alarm2 is output |                                                                                          |
| Operation                      | Keypads                                 | (Ⓢ)Start/Stop, MENU, ESC, (↵)Enter, (↑)Up, (↓)Down, (←)Left and (→)Right keys                                                                                                                                                                                     |                                                                                                                                                                                                                                                                |                                                                                          |
| Control function               | STOP                                    | Operation stops with input contact <sup>Note3</sup>                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | PRIME                                   | Max spm operation by pressing the (↑)UP and (↓)DOWN keys                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Keylock                                 | Password setting to lock and release operation keys                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Interlock                               | Operation stops with input contact <sup>Note3</sup>                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | AUX                                     | Pump operates at the set discharge rate with input contact.                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Maximum discharge rate                  | Arbitrarily set the upper discharge limit in each operation mode.                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Buffer memory function                  | Store the number of pulses entered in batch operation.                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                |                                                                                          |
| Input                          | Analog input value display              | Display the analog input value.                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | STOP/Pre-Stop                           | No-voltage contact or open collector <sup>Note4</sup>                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | AUX                                     | No-voltage contact or open collector <sup>Note4</sup>                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Interlock                               | No-voltage contact or open collector <sup>Note4</sup>                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Analogue                                | 0 - 20mADC (Internal resistance is 200ohm.)                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                |                                                                                          |
| Output                         | Pulse                                   | Non-voltage contact or open collector Max pulse frequency is 100Hz. (Pulse ON: 5 msec or more)                                                                                                                                                                    |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Alarm1 (OUT1)                           | Non-voltage contact (mechanical relay): AC 250 V, 3 A (resistive load)<br>Each output item is selected by Enable/Disable.<br>Batch complete <sup>Note4</sup> /STOP/Pre-Stop/Interlock/Leak Detection/Motor Overload/Drive Error                                   |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Alarm2 (OUT2)                           | Non-voltage contact (photo relay): AC/DC 24 V, 0.1 A (resistive load)<br>Each output item is selected by Enable/Disable.<br>Volume Prop. PLS <sup>Note4</sup> /Batch complete <sup>Note5</sup> /STOP/Pre-Stop/Interlock/Leak Detection/Motor Overload/Drive Error |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | External power supply                   | DC 12 V, 30 m A or less                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                |                                                                                          |
|                                | Current                                 | DC 0–20 mA, Two-point setting (allowable load resistance: 300 Ω)                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                |                                                                                          |
| Power voltage <sup>Note7</sup> |                                         | 100-240VAC 50/60Hz                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                |                                                                                          |

Note1 : The minimum settings for pulse operation, batch operation, and interval batch operation are the flow rates per stroke corrected by calibration.

Also, the change rate of the setting value per pulse is the flow rates per stroke corrected by calibration.

Note2 : A separate Profibus conversion BOX (option) is required to operate Profibus on IX.

Note3 : Switches to pump operation with input contact if default state is changed in the controller settings.

Note4 : The maximum voltage and current applied to the contact are 12 V and 5 mA. If you use a contact such as a relay, the minimum applicable load must be 5 mA or less.

Note5 : When Batch Complete (batch operation complete output) is set to Enable, the other functions will be set to Disable.

Note6 : When Volume Prop. PLS output is set to Enable, the other functions will be set to Disable.

Note7 : Do not apply voltage out of the specified range. Doing so may cause malfunction or failure. The allowable voltage supply range is 90-264VAC only.

# Performance

| Model                                | Discharge line inertia<br>resistance Pid |                      | Suction line inertia<br>resistance Pis |                      | NPSHr     | Viscosity      |               | Priming lift | Applicable chamber<br>Materials |       |
|--------------------------------------|------------------------------------------|----------------------|----------------------------------------|----------------------|-----------|----------------|---------------|--------------|---------------------------------|-------|
|                                      | L/hr                                     | MPa/1m               | (%)                                    | MPa/1m               |           | Standard valve | Viscous valve |              | SUS                             | PVC   |
| IX-B007                              | ~7.50                                    | 8.3×10 <sup>-4</sup> | 100                                    | 8.3×10 <sup>-4</sup> | 0.07 MPaA | —              | 1000 mPa·s    | 1 m          | 0.5 L                           | 1.0 L |
|                                      | ~5.60                                    | 2.9×10 <sup>-4</sup> | 75                                     | 4.6×10 <sup>-4</sup> |           |                |               |              |                                 |       |
|                                      | ~3.74                                    | 9.1×10 <sup>-5</sup> | 50                                     | 2.1×10 <sup>-4</sup> |           |                |               |              |                                 |       |
|                                      | ~1.87                                    | 1.7×10 <sup>-5</sup> | 25                                     | 5.2×10 <sup>-5</sup> |           |                |               |              |                                 |       |
| IX-B015                              | ~15.0                                    | 1.6×10 <sup>-3</sup> | 100                                    | 1.6×10 <sup>-3</sup> | 0.07 MPaA | 100 mPa·s      | 1000 mPa·s    | 2 m          | 0.5 L                           | 1.0 L |
|                                      | ~11.2                                    | 5.8×10 <sup>-4</sup> | 75                                     | 9.2×10 <sup>-4</sup> |           |                |               |              |                                 |       |
|                                      | ~7.50                                    | 1.8×10 <sup>-4</sup> | 50                                     | 4.1×10 <sup>-4</sup> |           |                |               |              |                                 |       |
|                                      | ~3.74                                    | 3.3×10 <sup>-5</sup> | 25                                     | 1.0×10 <sup>-4</sup> |           |                |               |              |                                 |       |
| IX-B030                              | ~30.0                                    | 2.7×10 <sup>-3</sup> | 100                                    | 2.7×10 <sup>-3</sup> | 0.06 MPaA | 100 mPa·s      | 1000 mPa·s    | 2 m          | 0.5 L                           | 1.0 L |
|                                      | ~22.4                                    | 9.7×10 <sup>-4</sup> | 75                                     | 1.5×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~15.0                                    | 3.0×10 <sup>-4</sup> | 50                                     | 6.8×10 <sup>-4</sup> |           |                |               |              |                                 |       |
|                                      | ~7.50                                    | 5.5×10 <sup>-5</sup> | 25                                     | 1.7×10 <sup>-4</sup> |           |                |               |              |                                 |       |
| IX-B045                              | ~45.0                                    | 4.1×10 <sup>-3</sup> | 100                                    | 4.1×10 <sup>-3</sup> | 0.06 MPaA | 500 mPa·s      | 1000 mPa·s    | 2 m          | 0.5 L                           | 1.0 L |
|                                      | ~33.6                                    | 1.5×10 <sup>-3</sup> | 75                                     | 2.3×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~22.4                                    | 4.6×10 <sup>-4</sup> | 50                                     | 1.0×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~11.2                                    | 8.2×10 <sup>-5</sup> | 25                                     | 2.6×10 <sup>-4</sup> |           |                |               |              |                                 |       |
| IX-B007T<br>(Inner diame-<br>ter Ø4) | ~7.50                                    | 1.3×10 <sup>-2</sup> | 100                                    | 1.3×10 <sup>-2</sup> | 0.07 MPaA | —              | 1000 mPa·s    | 1 m          | 0.5 L                           | 1.0 L |
|                                      | ~5.60                                    | 4.7×10 <sup>-3</sup> | 75                                     | 7.5×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~3.74                                    | 1.5×10 <sup>-3</sup> | 50                                     | 3.3×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~1.87                                    | 2.7×10 <sup>-4</sup> | 25                                     | 8.4×10 <sup>-4</sup> |           |                |               |              |                                 |       |
| IX-B015T<br>(Inner diame-<br>ter Ø4) | ~15.0                                    | 2.6×10 <sup>-2</sup> | 100                                    | 2.6×10 <sup>-2</sup> | 0.07 MPaA | 100 mPa·s      | 1000 mPa·s    | 2 m          | 0.5 L                           | 1.0 L |
|                                      | ~11.2                                    | 9.4×10 <sup>-3</sup> | 75                                     | 1.5×10 <sup>-2</sup> |           |                |               |              |                                 |       |
|                                      | ~7.50                                    | 2.9×10 <sup>-3</sup> | 50                                     | 6.6×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~3.74                                    | 5.3×10 <sup>-4</sup> | 25                                     | 1.7×10 <sup>-3</sup> |           |                |               |              |                                 |       |
| IX-B030T<br>(Inner diame-<br>ter Ø8) | ~30.0                                    | 1.1×10 <sup>-2</sup> | 100                                    | 1.1×10 <sup>-2</sup> | 0.06 MPaA | 100 mPa·s      | 1000 mPa·s    | 2 m          | 0.5 L                           | 1.0 L |
|                                      | ~22.4                                    | 3.9×10 <sup>-3</sup> | 75                                     | 6.2×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~15.0                                    | 1.2×10 <sup>-3</sup> | 50                                     | 2.8×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~7.50                                    | 2.2×10 <sup>-4</sup> | 25                                     | 6.9×10 <sup>-4</sup> |           |                |               |              |                                 |       |
| IX-B045T<br>(Inner diame-<br>ter Ø8) | ~45.0                                    | 1.6×10 <sup>-2</sup> | 100                                    | 1.6×10 <sup>-2</sup> | 0.06 MPaA | 500 mPa·s      | 1000 mPa·s    | 2 m          | 0.5 L                           | 1.0 L |
|                                      | ~33.6                                    | 5.9×10 <sup>-3</sup> | 75                                     | 9.4×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~22.4                                    | 1.9×10 <sup>-3</sup> | 50                                     | 4.2×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~11.2                                    | 3.3×10 <sup>-4</sup> | 25                                     | 1.0×10 <sup>-3</sup> |           |                |               |              |                                 |       |
| IX-C060                              | ~60                                      | 4.4×10 <sup>-3</sup> | 100                                    | 4.4×10 <sup>-3</sup> | 0.08 MPaA | 1000 mPa·s     |               | 2 m          | 1.5 L                           | 1.0 L |
|                                      | ~45                                      | 1.6×10 <sup>-3</sup> | 75                                     | 2.5×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~30                                      | 4.9×10 <sup>-4</sup> | 50                                     | 1.1×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~6                                       | 1.2×10 <sup>-5</sup> | 25                                     | 2.8×10 <sup>-4</sup> |           |                |               |              |                                 |       |
| IX-C150                              | ~150                                     | 6.3×10 <sup>-3</sup> | 100                                    | 6.3×10 <sup>-3</sup> | 0.08 MPaA | 1000 mPa·s     |               | 2 m          | 1.5 L                           | 2.0 L |
|                                      | ~113                                     | 2.3×10 <sup>-3</sup> | 75                                     | 3.6×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~75                                      | 7.0×10 <sup>-4</sup> | 50                                     | 1.6×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~15                                      | 1.8×10 <sup>-5</sup> | 25                                     | 4.0×10 <sup>-4</sup> |           |                |               |              |                                 |       |
| IX-D150                              | ~150                                     | 6.3×10 <sup>-3</sup> | 100                                    | 6.3×10 <sup>-3</sup> | 0.08 MPaA | 300 mPa·s      |               | 2 m          | 1.5 L                           | 2.0 L |
|                                      | ~113                                     | 2.3×10 <sup>-3</sup> | 75                                     | 3.6×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~75                                      | 7.0×10 <sup>-4</sup> | 50                                     | 1.6×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~15                                      | 1.8×10 <sup>-5</sup> | 25                                     | 4.0×10 <sup>-4</sup> |           |                |               |              |                                 |       |
| IX-D300                              | ~300                                     | 7.2×10 <sup>-3</sup> | 100                                    | 7.2×10 <sup>-3</sup> | 0.08 MPaA | 300 mPa·s      |               | 2 m          | 5.0 L                           | 5.0 L |
|                                      | ~225                                     | 4.1×10 <sup>-3</sup> | 75                                     | 4.1×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~150                                     | 8.0×10 <sup>-4</sup> | 50                                     | 1.8×10 <sup>-3</sup> |           |                |               |              |                                 |       |
|                                      | ~30                                      | 2.0×10 <sup>-5</sup> | 25                                     | 4.5×10 <sup>-4</sup> |           |                |               |              |                                 |       |

• Pi : Inertia resistance per meter (based on clean water, suction line I.D. should be equal to the pump suction connection as a minimum.)

Calculate inertia resistance per meter using the following formula.

$Pi = Pid \text{ (or } Pis) \times \text{Specific gravity} \times \text{Pipe length (m)} \times (Pump \text{ I.D.} \div \text{Pipe I.D.})^2 (MPa)$

• Suction speed is set to 100% as the default setting. Reduce speed when handling viscous or gaseous liquids to prevent the possibility of cavitation.

Note the suction speed is used to control maximum discharge capacity.

e.g.) If suction speed is set to 75%, maximum discharge capacity is correspondingly reduced to 75% (45L/h for IX-C060, 113 L/h for IX-C150).

• Discharge capacity may be reduced from rated performance when pumping highly viscous liquids. Select a suitable pump size according to liquid viscosity.

Contact us if handling liquid viscosities of over 1000 mPa·s.(IX-C) Contact us if handling liquid viscosities of over 300 mPa·s.(IX-D)

• Applicable chamber: Capacities are based on Iwaki standard chamber sizes. Contact us for chamber materials.

• High accuracy: ±1% (This accuracy may not be met at flows below 1.0 L/h for the IX-C150S6. For model IX-C060S6, accuracy may not be met at flows below 0.4 L/h)

• Liquid temperature range: 0-50 °C(TC/TE type), 0-80 °C(S6 type) No viscosity change, Non freezing, No slurry

Accurate calibration may not be possible with liquid temperatures over 60°C and discharge pressures over 0.8MPa. For optimum accuracy, calibration must be performed below these parameters.

## Points to be observed in pump installation and piping

IX Series Hi-Techno pumps are positive-displacement, reciprocating pumps.

Reciprocating pumps generate pulsation in the suction and discharge piping. Special consideration, (different from the ordinary centrifugal pumps), should be given to this point when planning the pump installation and piping.

### • Prevention of pipe vibration

**Discharge side inertial resistance  $P_{id} < 0.1$  MPa**  
 •  $P_{id}$  : Inertial resistance on discharge side

Inertial resistance means the pulsated impact force generated by the flow just upon entering discharge stroke. It is a phenomenon particular to a reciprocating pump which is generated as a result of the sudden application of acceleration to the liquid in the discharge piping. The condition " $P_{id} < 0.1$  MPa is given above as an approximate standard. If  $P_{id}$  becomes 0.1MPa or higher, vibration on the pipe is generated. So measures should be taken to cope with the influence of vibration on the pump, too.

#### Measures

1. Install pulsation prevention device (air chamber).
2. Enlarge the diameter and shorten the length of the discharge piping.

### • Prevention of overfeeding

**Pump differential pressure > Inertial resistance  $P_i$**   
 • The larger one of the suction side or the discharge side

Overfeeding means excessive flow of the liquid due to abnormal functioning of the check valve caused by pulsation of the liquid in the piping. Check carefully in case the differential pressure is low and in case the piping is too long even with the differential pressure value at 0.03 MPa.

#### Measures

1. Install air chamber.
2. Install back pressure valve

### • Prevention of suction failure

**$NPSH_a > NPSH_r$**   
 **$NPSH_a = P_a - P_v \pm P_{hs} - P_{is} * MPa$**   
 \*Or  $P_{fs}$  : whichever is the larger. (NPSH : Net positive suction head)

If  $NPSH_a$  is not sufficient, the pump may be damaged by the flow-break or cavitation generated under such conditions.

- **NPSH<sub>a</sub>**: Absolute NPSH (MPa)
- **NPSH<sub>r</sub>**: Required NPSH (value particular to the pump) (MPa)
- **P<sub>a</sub>**: Absolute pressure onto the tank liquid surface (MPa)
- **P<sub>v</sub>**: Liquid vapour pressure (MPa)
- **P<sub>hs</sub>**: Pressure caused by the height of the suction side (MPa) (Flooded suction : +, Negative suction : -)
- **P<sub>is</sub>**: Inertial resistance on the suction side (MPa)
- **P<sub>fs</sub>**: Piping resistance on the suction side (MPa)

See the table below for NPSH<sub>r</sub>, inertia resistance( $P_i$ ) and applicable chambers.

 Compressed air dissolves in solutions in a chamber. Supply air into the chamber periodically, or its performance may reduce.  
 It takes longer time for air to be compressed enough to deliver liquid as a flow rate gets lower.

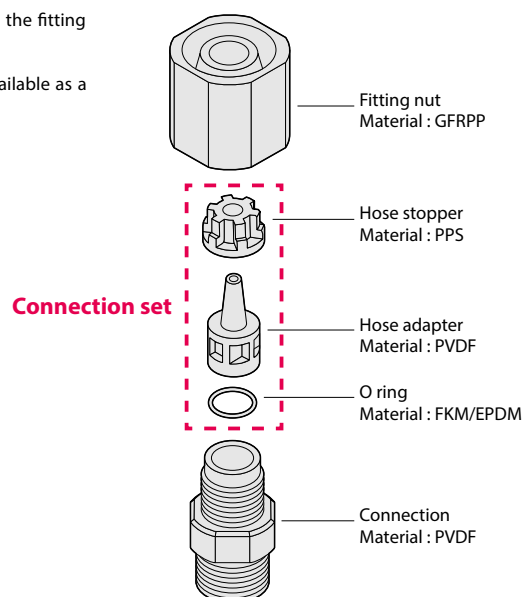
### • Pump/Piping protection

Install a relief valve to protect the pump and piping from overpressure.

## Connection diameter of multi-joint

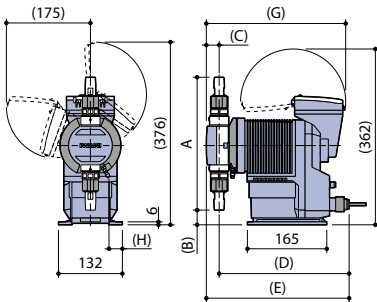
The applicable hose diameter can be switched by removing the fitting nut and recombining the hose stopper and hose adapter.

In addition, a hose stopper, hose adapter, and O-ring are available as a connection set. Please see the chart on the right for details.

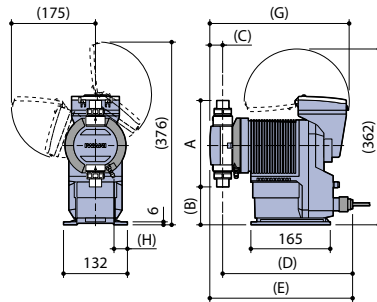


# Dimension in mm

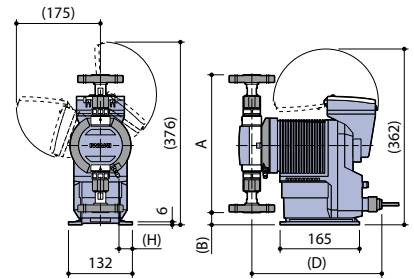
**IX-B (TC/TE) Connection : R (Thread R)**



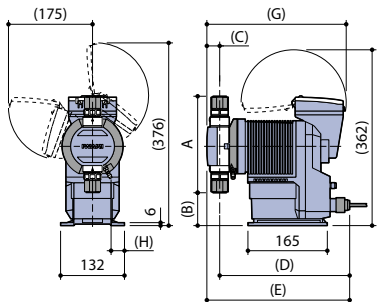
**IX-B (TC/TE) Connection : G (Thread G)**



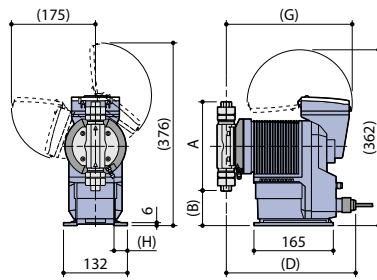
**IX-B (TC/TE) Connection : F (Flange)**



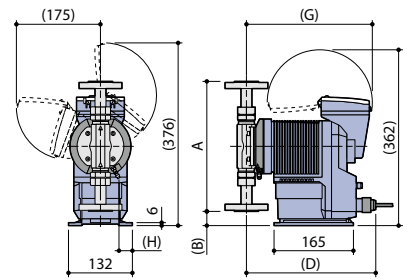
**IX-B (TC/TE) Connection : T (Tube)**



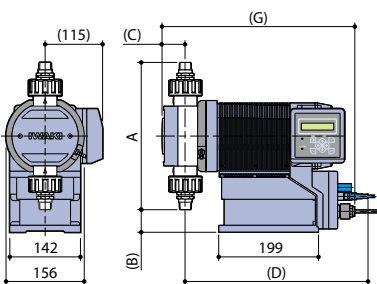
**IX-B (S6) Connection : R (Thread R)**



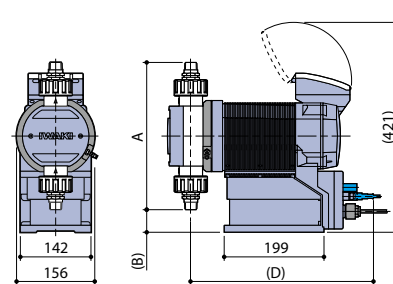
**IX-B (S6) Connection : F □ (Flange)**



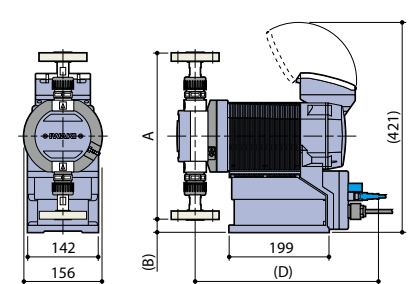
**IX-C Connection : Common to all types,  
Controller position : RF (Right face)**



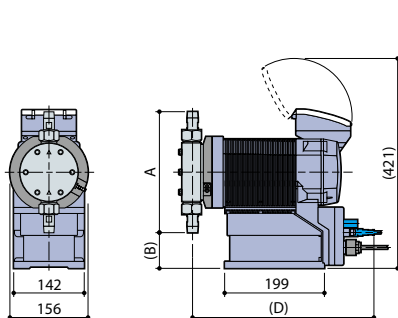
**IX-C (TC/TE) Connection : R (Thread R)  
Controller position : TB (Top back)**



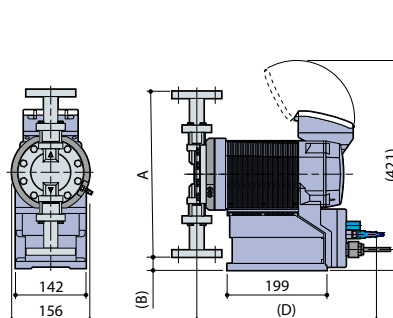
**IX-C (TC/TE) Connection : F □ (Flange)  
Controller position : TB (Top back)**



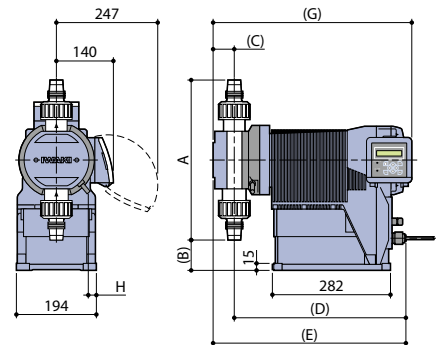
**IX-C (S6) Connection : R (Thread R)  
Controller position : TB (Top back)**



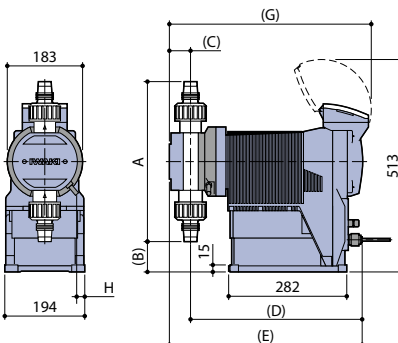
**IX-C (S6) Connection : F □ (Flange)  
Controller position : TB (Top back)**



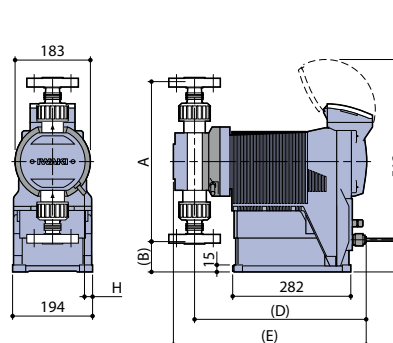
**IX-D Connection : Common to all types,  
Controller position : RF (Right face)**



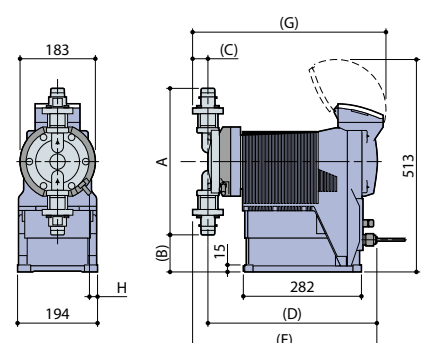
**IX-D (TC/TE) Connection : R (Thread R)  
Controller position : TB (Top back)**



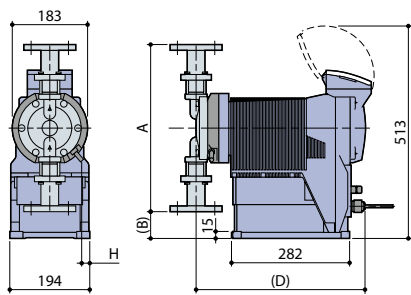
**IX-D (TC/TE) Connection : F □ (Flange)  
Controller position : TB (Top back)**



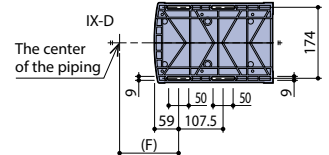
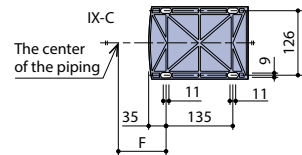
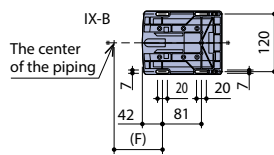
**IX-D (S6) Connection : R (Thread R)  
Controller position : TB (Top back)**



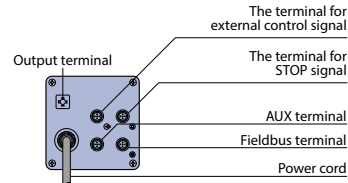
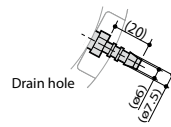
**IX-D (S6) Connection : F□ (Flange)**  
**Controller position : TB (Top back)**



**Common to IX series / Pump base**



**Common to all IX series / others**



|      | Model              | Liq-uid-end material | Connection     | A   | B  | C    | D   | E   | F    | G   | H  |
|------|--------------------|----------------------|----------------|-----|----|------|-----|-----|------|-----|----|
| IX-B | IX-B007            | TC/TE                | R : Thread (R) | 240 | 45 | 24.3 | 267 | 291 | 94.5 | 284 | 29 |
|      |                    |                      | G : Thread (G) | 146 | 92 |      |     |     |      |     |    |
|      |                    |                      | F : Flange     | 250 | 40 |      |     |     |      |     |    |
|      |                    |                      | T : Tube       | 168 | 81 |      |     |     |      |     |    |
|      | IX-B015            | TC/TE                | R : Thread (R) | 161 | 82 | 24.3 | 267 | 291 | 94.5 | 284 | 29 |
|      |                    |                      | F□ : Flange    | 247 | 39 |      |     |     |      |     |    |
|      |                    |                      | R : Thread (R) | 240 | 41 |      |     |     |      |     |    |
|      |                    |                      | G : Thread (G) | 155 | 88 |      |     |     |      |     |    |
|      | IX-B030<br>IX-B045 | TC/TE                | F : Flange     | 259 | 36 | 24.3 | 270 | 296 | 97.5 | 289 | 28 |
|      |                    |                      | T : Tube       | 177 | 77 |      |     |     |      |     |    |
|      |                    |                      | R : Thread (R) | 161 | 82 |      |     |     |      |     |    |
|      |                    |                      | F□ : Flange    | 247 | 39 |      |     |     |      |     |    |
|      | IX-B030<br>IX-B045 | S6                   | R : Thread (R) | 273 | 30 | 26.4 | 278 | 296 | 97   | 289 | 28 |
|      |                    |                      | G : Thread (G) | 179 | 77 |      |     |     |      |     |    |
|      |                    |                      | F : Flange     | 283 | 25 |      |     |     |      |     |    |
|      |                    |                      | T : Tube       | 201 | 66 |      |     |     |      |     |    |

|      | Model   | Liq-uid-end material | Connection     | A   | B  | C  | D   | E | F | G   | H |
|------|---------|----------------------|----------------|-----|----|----|-----|---|---|-----|---|
| IX-C | IX-C060 | TC/TE                | R : Thread (R) | 325 | 30 | 35 | 365 | — | — | 375 | — |
|      |         |                      | F□ : Flange    | 335 | 25 | —  |     |   |   |     |   |
|      |         | S6                   | R : Thread (R) | 240 | 72 | 25 |     |   |   |     |   |
|      |         |                      | F□ : Flange    | 270 | 57 | —  |     |   |   |     |   |
|      | IX-C150 | TC/TE                | R : Thread (R) | 294 | 45 | 47 | 365 | — | — | 386 | — |
|      |         |                      | F□ : Flange    | 317 | 34 | —  |     |   |   |     |   |
|      |         | S6                   | R : Thread (R) | 287 | 48 | 30 |     |   |   |     |   |
|      |         |                      | F□ : Flange    | 335 | 24 | —  |     |   |   |     |   |

|      | Model   | Liq-uid-end material | Connection / Controller position | A   | B   | C  | D   | E   | F   | G   | H |
|------|---------|----------------------|----------------------------------|-----|-----|----|-----|-----|-----|-----|---|
| IX-D | IX-D150 | TC/TE                | R : Thread (R) / RF : Right face | 317 | 108 | 42 | 409 | 450 | 144 | 465 | — |
|      |         |                      | R : Thread (R) / TB : Top back   |     |     |    |     |     |     |     |   |
|      |         |                      | F□ : Flange / RF : Right face    |     |     |    |     |     |     |     |   |
|      |         |                      | F□ : Flange / TB : Top back      |     |     |    |     |     |     |     |   |
|      |         | S6                   | R : Thread (R) / RF : Right face | 315 | 108 | 30 | 401 | 431 | 136 | 453 | — |
|      |         |                      | R : Thread (R) / TB : Top back   |     |     |    |     |     |     |     |   |
|      |         |                      | F□ : Flange / RF : Right face    |     |     |    |     |     |     |     |   |
|      |         |                      | F□ : Flange / TB : Top back      |     |     |    |     |     |     |     |   |
|      | IX-D300 | TC/TE                | R : Thread (R) / RF : Right face | 384 | 74  | 52 | 415 | 467 | 151 | 482 | — |
|      |         |                      | R : Thread (R) / TB : Top back   |     |     |    |     |     |     |     |   |
|      |         |                      | F□ : Flange / RF : Right face    |     |     |    |     |     |     |     |   |
|      |         |                      | F□ : Flange / TB : Top back      |     |     |    |     |     |     |     |   |
|      |         | S6                   | R : Thread (R) / RF : Right face | 355 | 88  | 37 | 408 | 445 | 143 | 460 | — |
|      |         |                      | R : Thread (R) / TB : Top back   |     |     |    |     |     |     |     |   |
|      |         |                      | F□ : Flange / RF : Right face    |     |     |    |     |     |     |     |   |
|      |         |                      | F□ : Flange / TB : Top back      |     |     |    |     |     |     |     |   |

**IWAKI CO., LTD.** 6-6 Kanda-Sudacho 2-chome Chiyoda-ku Tokyo 101-8558 Japan TEL : (81)3 3254 2935 FAX : 3 3252 8892

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|--------------------------------------|---------------------------|------------------------|------------------------|------------------------------|-------------------------------------------------------------|-------------------------|-----------------------|
| European Headquarter                 | <b>IWAKI Europe GmbH</b>  | TEL: (49)2154 9254 0   | FAX: (49)2154 9254 48  | U.S.A.                       | <b>IWAKI America Inc.</b>                                   | TEL: (1)508 429 1440    | FAX: (1)508 429 1386  |
| Germany                              | <b>IWAKI Europe GmbH</b>  | TEL: (49)2154 9254 50  | FAX: (49)2154 9254 55  | Brazil                       | <b>IWAKI Do Brasil Comercio De Bombas Hidraulicas LTDA.</b> | TEL: (55)19 3244 5900   | FAX: (55)19 3244 5900 |
| The Netherlands (Netherlands Branch) | <b>IWAKI Europe GmbH</b>  | TEL: (31)74 2420011    | FAX: (49)2154 9254 48  | China (Shanghai)             | <b>IWAKI Pumps (Shanghai) Co., Ltd.</b>                     | TEL: (86)21 6272 7502   | FAX: (86)21 6272 6929 |
| Italy (Italy Branch)                 | <b>IWAKI Europe GmbH</b>  | TEL: (39)0445 561219   | FAX: (39)0445 569088   | China (Hong Kong)            | <b>IWAKI Pumps Co., Ltd.</b>                                | TEL: (852)2607 1168     | FAX: (852)2607 1000   |
| Spain (Spain Branch)                 | <b>IWAKI Europe GmbH</b>  | TEL: (34)934 741 638   | FAX: (34)934 741 638   | China (Guangzhou)            | <b>GFTZ IWAKI Engineering &amp; Trading Co., Ltd.</b>       | TEL: (86)20 84350603    | FAX: (86)20 84359181  |
| Poland (East Europe Branch)          | <b>IWAKI Europe GmbH</b>  | TEL: (48)12 347 0755   | FAX: (48)12 347 0900   | China (Shenzhen)             | <b>IWAKI Pumps (Shenzhen) Co., Ltd.</b>                     | TEL: (86)0755 8656 3696 |                       |
| Denmark                              | <b>IWAKI Nordic A/S</b>   | TEL: (45)48 242345     |                        | Singapore                    | <b>IWAKI Singapore Pte Ltd.</b>                             | TEL: (65)6316 2028      | FAX: (65)6316 3221    |
| Finland                              | <b>IWAKI Suomi Oy</b>     | TEL: (358)10 201 0490  |                        | Indonesia (Indonesia Office) | <b>IWAKI Singapore Pte Ltd.</b>                             | TEL: (62)21 6906606     | FAX: (62) 21 6906612  |
| Norway                               | <b>IWAKI Norge AS</b>     | TEL: (47)23 38 49 00   |                        | Malaysia                     | <b>IWAKI SDN. BHD.</b>                                      | TEL: (60)3 7803 8807    | FAX: (60)3 7803 4800  |
| Sweden                               | <b>IWAKI Sverige AB</b>   | TEL: (46)8 511 72900   |                        | Korea                        | <b>IWAKI Korea Co.,Ltd.</b>                                 | TEL: (82)2 6238 4800    | FAX: (82)2 6238 4801  |
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|                                      |                           |                        |                        | Australia                    | <b>IWAKI Pumps Australia Pty Ltd.</b>                       | TEL: (61)2 9899 2411    | FAX: (61)2 9899 2421  |

( ) Country codes

 **Caution for safety use:**  
Before use of pump, read instruction manual carefully to use the product correctly. Actual pumps may differ from the photos. Specifications and dimensions are subject to change without prior notice. For further details please contact us.

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