

# The solution to your valve and piping problems has a name.



## Overview: Diaphragm Valve



The largest selection in the world  
in thermoplastic valves.

# Diaphragm Valve

## Overview





# Why ASAHI AV ?

Asahi Yukizai was founded in March 1945 as a company that built aircraft parts from wood rather than metal. Since the foundation of the company, Asahi Yukizai has continued to grow with a DNA that finds organic alternatives to metal materials, and is still one of the global leaders in the development and manufacture of thermoplastic valves and pipeline systems, setting new standards year by year.

Today, we offer solutions to customers in a wide range of fields in three core businesses;

## » “ASAHI AV” - Valve & Piping Systems Business

Started the manufacturing of thermoplastic valves first in the world in 1956.

## » Resin Business

Founded in the core technologies of phenol resin polymerization and synthesis technologies which allows Asahi Yukizai to develop unique raw materials and to offer outstanding product performances.

## » Water Treatment & Natural Resources Development Business

Pursues the potential of water and renewable resources and provides solutions for design and realization of enormous projects and infrastructures.

## Made in Japan

We take pride in quality control every step of the way through the raw materials, molding, processing, precision measuring, assembly, testing, evaluation and analysis, and finally, through our “Action Guarantee”, and all these steps are carried out in Nobeoka, Japan. At our raw material factory, we do everything from blending our main raw materials to manufacturing pellets. To ensure durability of our valves and actuators, our pass-fail criteria are based on 100,000 successful open/close cycles. Even after products clear the pass-fail criteria, we check their limit values. We carry out durability testing on valves with our customers’ use cases firmly in mind. In order to eliminate human error, we ensure that all actions through the process are guaranteed - what we call “Action Guarantee”.

Our corporate culture to work closely with our customers and fully solve their problems that they face is the very thing that has supported our growth for more than 70 years. Asahi Yukizai remain dedicated to creating products that please and satisfy customers by solving their problems.

# Approvals and Certificates

## Quality management

For Asahi Yukizai, quality is a decisive criteria for ensuring long-term relationships with our customers and business partners, and it is a value shared by every employee as an ISO 9001 certified company. Besides certifications, we are always working to reach the highest quality level towards one of our most important objectives: the satisfaction of our customers and stakeholders.

## Environmental management

Asahi Yukizai introduced an environmental management system certified to ISO 14001 in order to promote and continually improve our environmental performance. For us, sustainability is a clear goal.

## International Standards

Complying with its own national and international standards is more than just a duty for Asahi Yukizai. ASAHI AV products are produced and tested in accordance with the applicable standards and laws to be delivered globally. For instance, all ASAHI AV diaphragm valves are manufactured in accordance with ISO 16138.



# Applications in Industry

We believe in making a world without corrosion. From heavy industry and chemicals, to water treatment, desalination plants, device manufacturing, and even aquariums, Asahi Yukizai is here to provide safe and reliable solutions that support people all across the world. We offer an extensive range of ASAHI AV thermoplastic valves and associated products to suit many demanding processes and harsh environments. ASAHI AV valves are particularly durable and resistant to aggressive media and it is the right solution for your application.



Chemical  
Industry Plants



Steel  
Manufacturing



Seawater  
Desalination  
Plants



Water  
Treatment  
Services



Food  
Factories



Power  
Plants



Semiconductors  
and  
LCD Factories



Aquaculture



Agricultural  
and Fertilizer



Aquariums



Refineries



Spa and  
Hot Spring  
Facilities



Public  
Facilities



The right product for all your needs

# Diaphragm Valves

Asahi Yukizai's ASAHI AV range of diaphragm valves provides solutions for every application. Even for very demanding and requiring processes, you will find the perfect ASAHI AV diaphragm valve, which is corrosion-free, precise, reliable, and safe. Switching from manual to automatic operation is also available. Our tradition is to never overlook challenges and our priority is to meet your requirements.

Small dimensions (DN15 – 100)

## Diaphragm Valve Type 14

Diaphragm Valve Type 14 made of solid thermoplastic materials for maximum corrosion resistance has a one-piece molded construction body without production joints for spigot or flange, and increases safety and durability to the maximum level. It features excellent body-to-bonnet sealing performance, weir design for excellent throttling capabilities, and built-in travel stop to prevent overtightening and eliminate compressive strain. Bubble-tight sealing can be achieved even in tough applications. True union design for socket, threaded, and spigot connections is available up to DN50.



Big dimensions (DN125 – 250)

## Diaphragm Valve Type 15 & 72

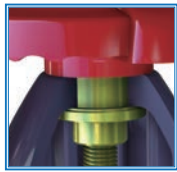
ASAHI AV Type 15 and Type 72 diaphragm valves are a multi-turn valve, good for flow control and use with viscous/slurry lines due to their high resistance to clogging. These valves have a uniquely designed body and bonnet, as well as a diaphragm with new sealing designs. All Type 15 and 72 diaphragm valves shall be of a solid thermoplastic construction for body and bonnet with molded flanged ends.



Small details make big difference

# Diaphragm Valve

- Safe, durable and reliable -



## 2 Built-in travel stop

Built-in adjustable travel stop prevents overtightening on diaphragm, which allows the diaphragm to function long-term.



## 3 Bayonet joint

Bayonet structure to connect compressor and diaphragm enables to replace the diaphragm easily and saves time and costs.



## 4 Bonnet separate from body

Unlike diaphragm body, bonnet does not come in contact with the media, which allows you to select more cost-effective materials.

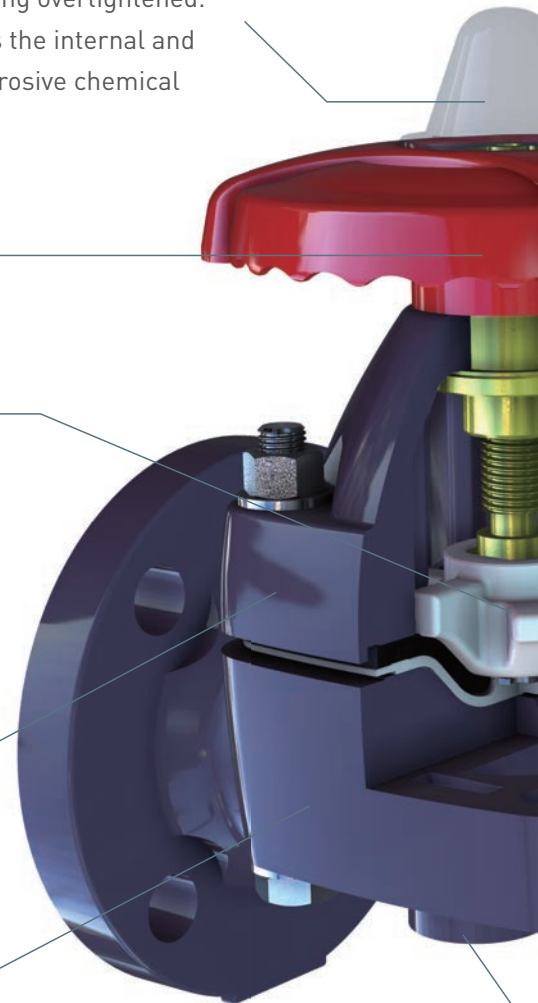


## 5 One-piece molded body

Body of the valve is of one-piece molded structure for maximum durability and corrosion resistance.

## 1 Visual position indicator with cover

Visible valve position indicator to prevent the diaphragm from being overtightened. Indicator cover protects the internal and external parts from corrosive chemical gases.





This industrial ASAHI AV diaphragm valve's optimized design is suitable for abrasive and aggressive media and offers you unconditional safety. The built-in travel stop prevents overtightening and eliminates compressive strain. Diaphragms that Asahi Yukizai developed with the new technology have a low compression set, which results in the longevity. For each and every demand of our customers, we have a solution.



### 6 Lockable handle as option

To avoid unwanted handle valve operation, the lockable device can be supplied as an option.

### 7 Diaphragms of new sealing designs

Asahi Yukizai's diaphragm of new sealing designs lasts longer and seals better because of its low compression set.

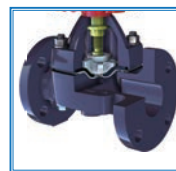


### 8 PVDF gas barrier on request

PVDF gas barrier which protects EPDM backing cushion from gas permeation is available.

### 9 International F-F standard

Face-to-face dimensions are designed according to EN558/DIN and ASME B16/ANSI which are equivalent to most commonly used metal valves, making it ideal for retrofitting.



### 10 Fastening system

The valve can be secured to a stand or panel easily yet firmly thanks to a bottom stand with holes and/or metal threaded inserts.



# Diaphragm Valve Type 14

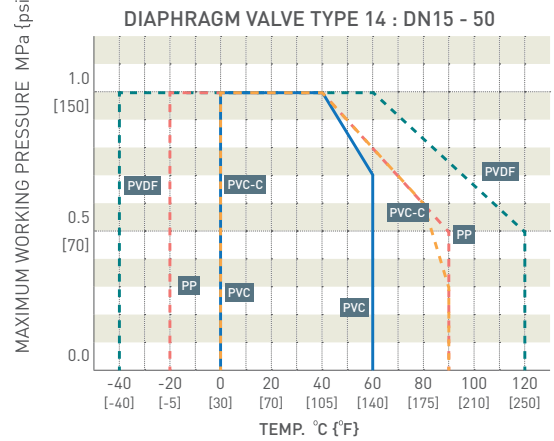
The current version of ASAHI AV's thermoplastic diaphragm valve is the result of over 70 years' product development and experience in multiple industrial fields and applications. This valve has a flow characteristic of nearly linear and its low-torque operation enables more precise control and adjustment of the media flow.

Type 14  
(DN15-100)

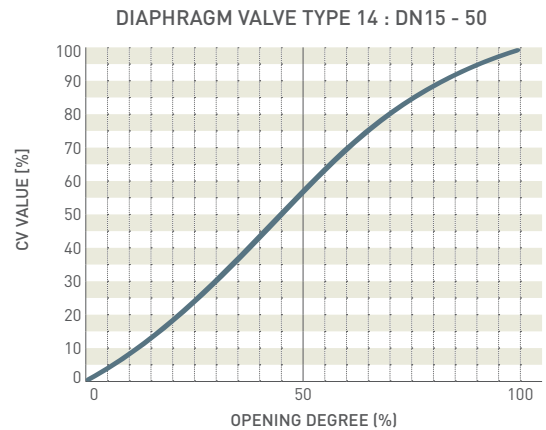


True Union Type 14  
(DN15-50)

## Working pressure vs. Temperature



## CV Value



## Long valve life in chlorine service

When a diaphragm valve is used in chlorine applications, PTFE is typically the diaphragm material of choice. The ASAHI AV PTFE diaphragm consists of three un-bonded layers: The primary layer is PTFE, the middle layer is a PVDF gas barrier, and the top cushion is EPDM. The PVDF gas barrier prevents the migration of gas, which permeates the PTFE layer, from attacking the EPDM backing cushion and metallic stem parts in bonnet. This added protection provides for longer valve life.



# For chlorine electrolysis application

## EL-PVDF Diaphragm Valve

PVDF is often used in chlorine electrolysis applications in combination with high pH values. This often results in blistering on the surfaces of PVDF valves. To avoid this, Asahi Yukizai has developed the special material, EL-PVDF and the special diaphragm, EL-PTFE. Various tests and decades of experience in real applications have shown that valves in the EL version increase the service life considerably, compared to PVDF.



Images below show PVDF and EL-PVDF bodies after 5 years of use under the conditions of 88°C, 3 bars (0.3MPa) in return brine line at a soda electrolysis plant. Blisters can be observed on the PVDF body surface whereas EL-PVDF body is still smooth and in perfect condition.

PVDF



EL-PVDF



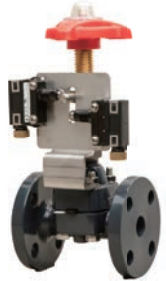
Diaphragm valves

Standard specification		EL specification
DN15 - 250	Dimensions	DN15 - 150
Flange	Connections	Flange
PVC-U, PVC-C, PP, PVDF	Body	EL-PVDF
PVC-U, PP, PPG, PVDF	Bonnet	PPG, PVDF
EPDM, FKM, FKM-F, FKM-C, PTFE, NBR	Diaphragm	EL-PTFE with PVDF gas barrier
SUS 304	Inserts	Palladium-titanium
	Others	Metal liners & conical spring washers



## Options and Accessories

From handle lock to switching manual/automatic operations, ASAHI AV diaphragm valve accessories are always there to offer you customized solutions for your special needs.



Limit Switch



Locking Device



Metal Liners &  
Conical Spring Washers

## Automations

ASAHI AV valves can be easily converted from manual to actuated.



### Pneumatic Actuator / Type AN

- » Dimensions: DN15 - 50
- » Lightweight plastic actuator
- » PN10
- » Double Acting, Air to Open or Air to Close
- » Position indicator
- » Stopper for fully closed position
- » NAMUR air connection



### Compact Pneumatic Actuator Type AI with Dedicated Valve Design

- » Dimensions: DN15 - 50
- » Compact design – ideal for limited piping space
- » Long lasting (more than 500.000 open/close cycles)
- » PN10 or PN7 bars
- » Double Acting, Air to Open or Air to Close
- » Position indicator
- » Stopper for fully closed position
- » NAMUR air connection



## Pneumatic Actuator / Type AP

- » Dimensions: DN65 - 100
- » Lightweight plastic actuator
- » PN10 or PN6
- » Double Acting, Air to Open or Air to Close
- » Position indicator
- » Stopper for fully closed position
- » NAMUR air connection



## Pneumatic Actuator / Type AV

- » Dimensions: DN65 - 250
- » Lightweight aluminum actuator
- » PN10
- » Double Acting, Air to Open or Air to Close
- » Position indicator
- » Stopper for fully closed position
- » NAMUR air connection



## Pneumatic Actuator / Type AD

- » Dimensions: DN15 - 50
- » Lightweight plastic actuator
- » Long lasting (more than one million open/close cycles)
- » Ideal for semiconductor application
- » Delivered in cleaned bag
- » PN5 or PN4
- » Double Acting or Air to Open
- » Position indicator
- » Stopper for fully closed position
- » NAMUR air connection



## Electric Actuators

- » Dimensions: DN15 - 250
- » Wide range with various models
- » Type H for on/off service
- » Type M for fluid control
- » Type S for large dimensions

Perfect solution for the extreme

# Pneumatic Actuators for Diaphragm Valves

- Long-lasting, compact and flexible -



Type AN  
(DN15 - 50)



Type AP (DN65 - 100)

## Long-lasting

- » Full plastic body
- » No exposed metal parts
- » Corrosion-free
- » Rust-free

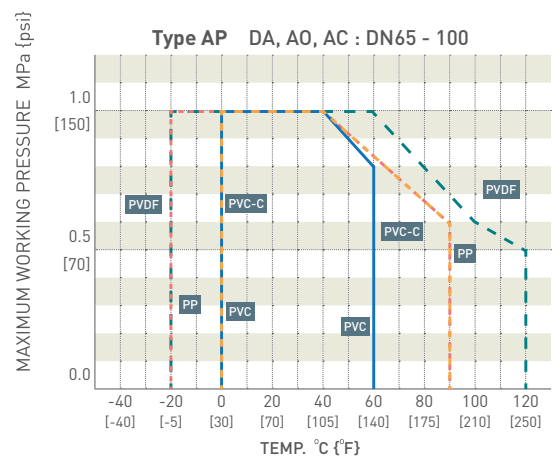
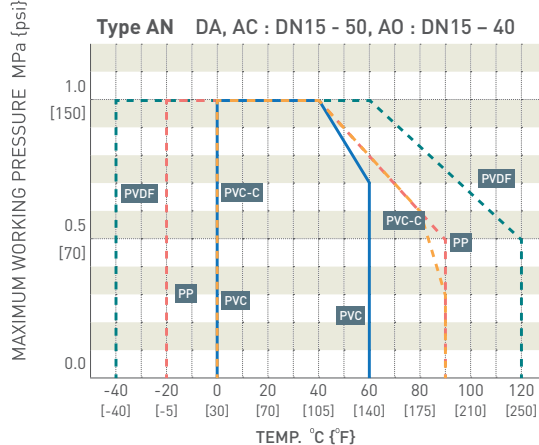
## Compact

- » Roughly half the weight of a metal actuator
- » Reduced costs thanks to scale down pipe layout
- » Reduced maintenance costs and downtime
- » Reduced installation space

## Flexible

- » Choice between working pressure PN10 (1.0MPa) and PN6 (0.6MPa)
- » Multifarious accessories available
- » NAMUR air connection
- » Valve body available in various materials including EL-PVDF

### Working pressure vs. Temperature

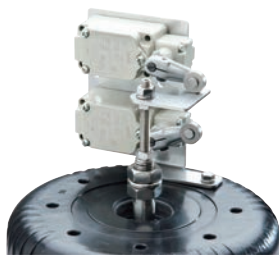




# Accessories and Options for Pneumatic Actuators

There is a broad range of accessories available for the pneumatic actuators, which include solenoid valves for on/off applications, positioning devices for modulating applications, and auxiliary limit switches for position indication. This allows remote operation for a variety of reasons: piping status assurance, automatic sequencing, savings in labour, and plant safety, to name a few.

Limit Switch



Limit Switch Box



Speed Controller



Solenoid Valve



Positioner



Bypass Valve







Full Opening Adjustment



# System Overview at a Glance

## >> General Info.

				
Product	Diaphragm Valve	Diaphragm Valve	Diaphragm Valve	Pneumatic Diaphragm Valve
Type	Type 14	Type 15	Type 72	Type AN
Dimension: DN (inch)	15 - 100 (1/2" - 4")	125 - 150 (5" - 6")	200 - 250 (8" - 10")	15 - 50 (1/2" - 2")
Nominal Pressure: PN (MPa)	PN10 (1.0 MPa)	PN1.5 - 2.5 (0.15 - 0.25 MPa)	PN0.75 - 2 (0.075 - 0.2 MPa)	PN7.5 (0.75 MPa)
Top Flange Interface				

## >> Connections

Socket	•			•
Flange	•	•	•	•
Threaded	•			•
Spigot	•			•

## >> Body Materials

PVC-U	•	•	•	•
PVC-C	•			•
PP	•	•	•	•
PVDF	•	•	•	•
EL-PVDF	•	•		•

## >> Bonnet Materials

PVC-U	•	•	•	
PP	•	•	•	
PPG	•	•	•	
PVDF	•	•	•	

## >> Seal Materials

EPDM	•	•	•	•
PTFE	•	•	•	•
EL-PTFE	•	•		•
FKM	•	•	•	•
FKM-F	•	•	•	•
FKM-C	•	•	•	•
NBR	•	•	•	•
Others / Special Materials	•	•	•	•

## >> Options & Accessories

Locking Device	•			
Label / Chain Tag	•	•	•	
Bottom Stand Ensaf	•	•	•	•
Lubricant Free	•	•	•	•
Speed Controller				•
Filter Regulator				•
Solenoid Valve				•
Limit Switch Box				
Limit Switch				•
Output Contact Limit Switch				
E/P Positioner				•
P/P Positioner				•
E/E Positioner				
Full Opening Adjustment				•
Open-Close Counter				•
Manual Override				•
Actuator Coating				
Special Fitting (Stainless Steel)				
Space Heater				
Potentiometer				



Pneumatic Diaphragm Valve  
Type AI  
15 - 50 (1/2" - 2")  
PN7.5 (0.75 MPa)

Pneumatic Diaphragm Valve  
Type AP  
65 - 100 (2 1/2" - 4")  
PN10 (1.0 MPa) or  
PN6 (0.6 MPa)

Pneumatic Diaphragm Valve  
Type AV  
65 - 250 (2 1/2" - 10")  
PN7.5 (0.75 MPa)

Pneumatic Diaphragm Valve  
Type AD  
15 - 50 (1/2" - 2")  
PN3 - 3.5  
(0.3 - 0.35 MPa)

Electric Diaphragm Valve  
Type H  
15 - 150 (1/2" - 6")  
PN2 - 10  
(0.2 - 1.0 MPa)

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For more detail, please contact us or refer to our technical datasheets and catalogue.



## System Overview

Asahi Yukizai's comprehensive product range up to DN1200 offers high product reliability. We are able to provide you complete system solutions for your applications. Customized solutions are also available on request.



### PVDF System

Excellent chemical resistance and thermal stability. Connections choices of socket, spigot, flange and threaded.

Diameters: DN10 – DN700 (3/4" – 28")

Temperature: -40 – 120 °C (-40 – 250 °F)



### PP System

High chemical resistance. Connections choices of socket, spigot, flange and threaded.

Diameters: DN10 – DN700 (3/8" – 28")

Temperature: -20 – 80 °C (-5 – 175 °F)



### PVC-U System

Solvent cementable plastic, universal use, very good chemical resistance, easy to join with adhesives. Connections choices of socket, spigot, flange and threaded.

Diameters: DN10 – DN350 (3/8" – 14")

Temperature: 0 – 60 °C (30 – 140 °F)



### PVC-C System

Solvent cementable plastic, universal use, very good chemical resistance, easy to join with adhesives. In grey or brown colours. Connections choices of socket, spigot, flange and threaded.

Diameters: DN10 – DN100 (3/8" – 4")

Temperature: 0 – 90 °C (30 – 195 °F)



### EL-PVDF System

Unique material for higher chemical resistance and thermal stability. Suitable for electrolysis processes. Flange connection.

Diameters: DN15 – DN150 (3/4" – 6")

Temperature: -40 – 120 °C (-40 – 250 °F)

#### And much more...

##### >> Large diameters

Products are available up to DN1200.

##### >> Raw materials

Variety of materials for valves and seals available.

##### >> Automation

Extensive range of pneumatic and electric actuators.

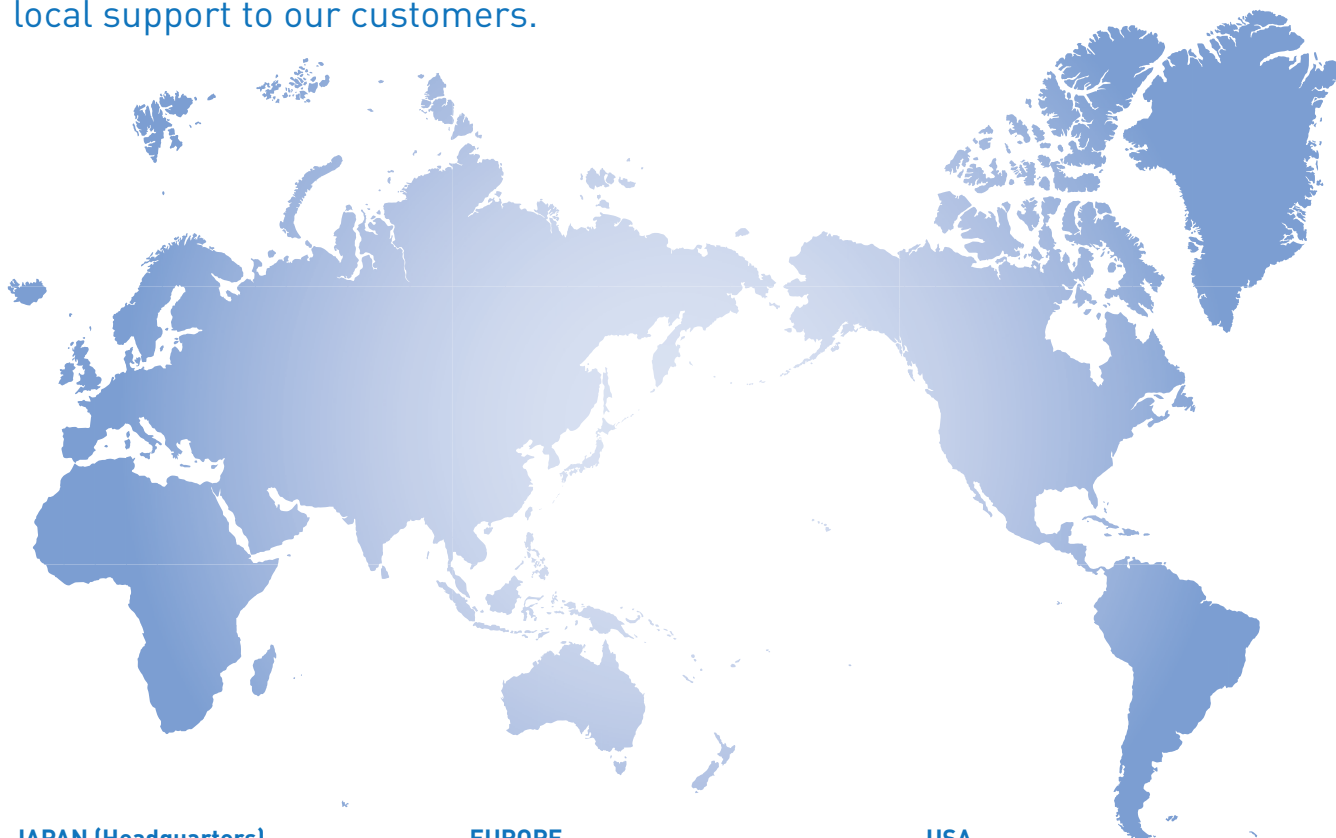
For more details, please contact us.





## We are close to you

Our branch offices and global sales network guarantee local support to our customers.



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