Micronano Bubble Generating Unit & Applications

ANZAIKANTETSU CO,LTD

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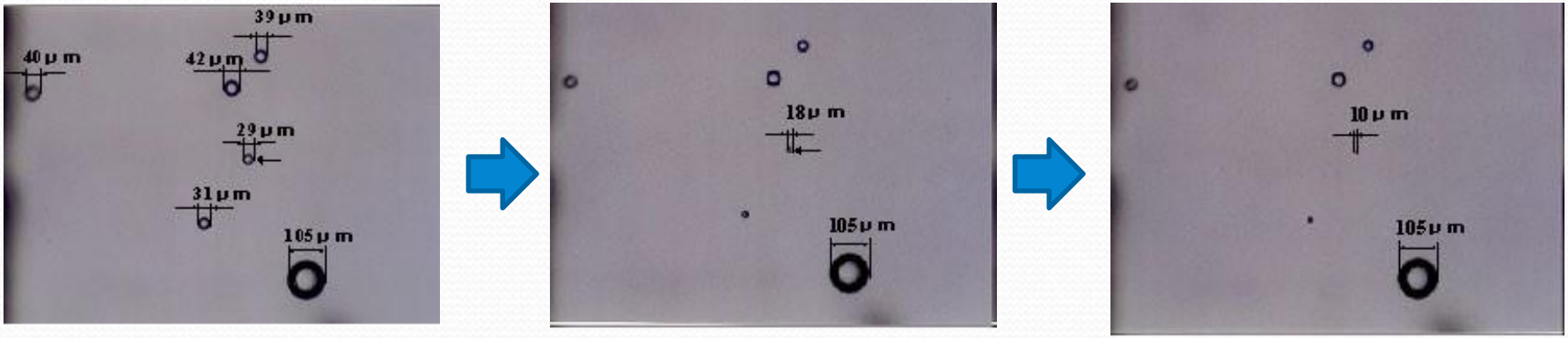
What are Micronano Bubbles?

- As is obvious from their name, “micronano bubbles” are extremely small gas bubbles. But their diameter has not yet commonly been defined even in the Japanese Society for Mutiphase Flow. From the physical point of view, however, it seems appropriate that gas bubbles whose diameter is less than 50 microns are referred to as the micronano bubbles.
- Gas bubbles having such a small diameter shrink in water due to ions existing at the interface between gas and liquid, which in turn increases the ion concentration at the interface and raises the inner pressure and temperature of the bubbles, causing various phenomena to occur.
- We think that taking advantage of these phenomena will provide many different possibilities.



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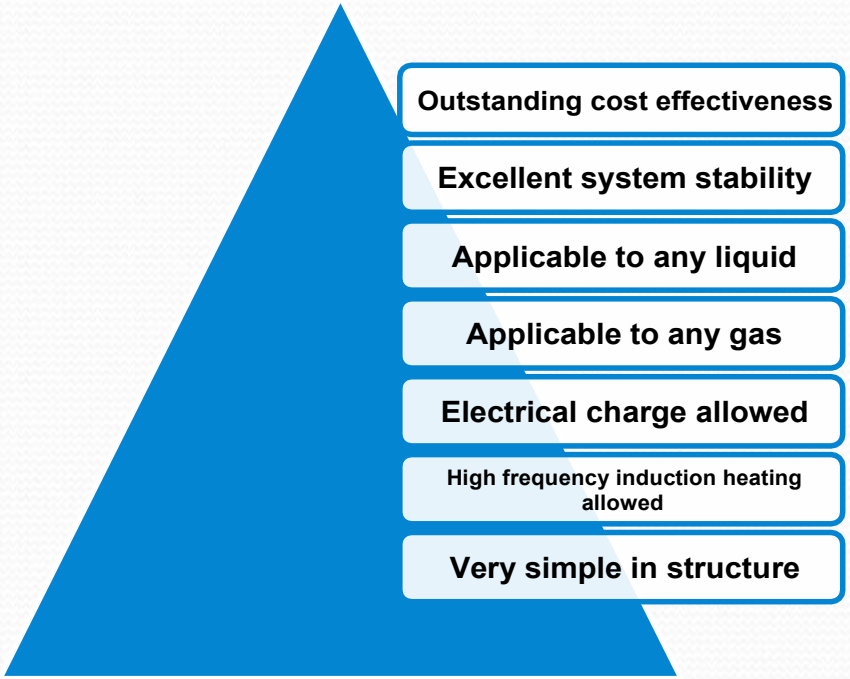
Properties of Micronano Bubbles

- In recent years, it was revealed that the micronano bubbles have a lot of useful properties. These include the following capabilities:

Sterilization capability	The agglomeration and collapse process of the micronano bubbles converts oxygen in the air into active oxygen, creating bactericidal molecules including OH and O_3.
Cleaning capability	Ions existing at the gas-liquid interface of the micronano bubbles decompose and adsorb oil and fat contamination, which allows removal of the contamination without the need for cleaning agents.
Bio-activation **capability**	It has been proven that the micronano bubbles penetrate deep into biological cells and enhance the immunity of the cells. This has allowed elimination of the need for antibiotics or reduction of the amount of antibiotic usage.
Growth promotion capability	It has been verified that using the micronano bubbles allows fish, crustacea and plants to be grown 20 to 30 percent larger than those grown in an ordinary manner.
Cell protection capability	It has been found that oysters grown with the micronano bubbles remain alive even if they are frozen to minus 20°C. This is likely because the micronano bubbles protect oysters' cells against damage due to freezing.
Heat transfer capability	The micronano bubbles can be used to raise or lower the temperature of a liquid rapidly and effectively.
Vaporization promotion capability	It has been proven that the micronano bubbles contained in a liquid promote vaporization of the liquid. Applications based on this effect include highly efficient water-cooled cooling towers and evaporation based desalination systems.
Environmental purification capability	The micronano bubbles help restore the biological balance in lakes, rivers or seas and remove odors and toxic substances produced by anaerobic bacteria. This effect stays for a long time even in a large water body such as oceans and seas.

Advantages of our Micronano Bubble Generating Unit

- The Micropore-type Microbubble Generating Unit that we have developed, the first in the world, can provide micronano bubbles using very low energy consumption.
- Required pressure difference between gas and liquid: 0.05 MPaRequired liquid flow rate: 1 m/secSpecific energy consumption: 1/50 compared with normal aeration, 1/5 compared with swirl flow



『UFB Generator Pilot』

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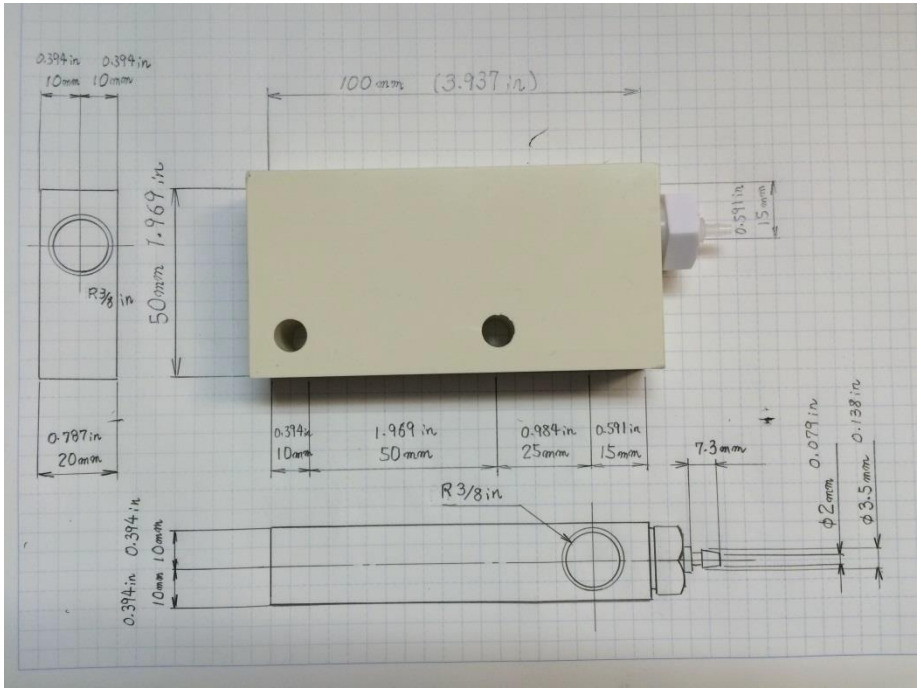

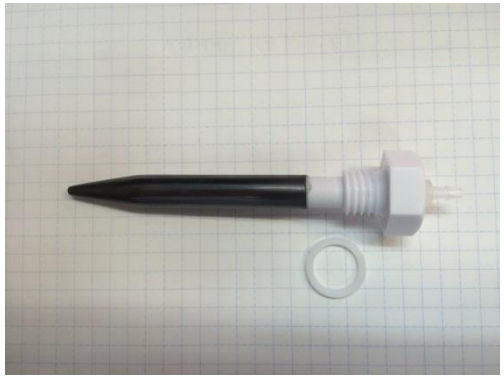

Dimensions：	100×50×20(mm)
Distribution GasVolume：	60cc/min(max)
Water Flow：	5~20L/min
Carbon Ceramic Dimension：	φ9mm×65mm(Pen type)
Treating capacity：	200L
Body Material：	PVCCream/white
Piping Screw：	PT3/8 (R3/8)

『20A/S Specifications』

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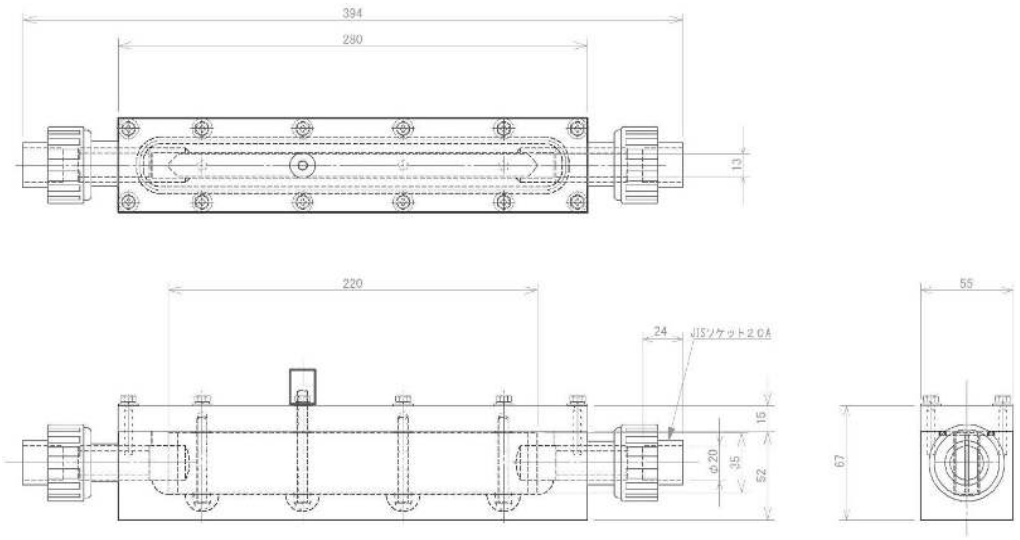

Distribution GasVolume：	1.25L/min(max) 0.2Mpa=29psi g
Recommended Pump：	0.06kw~0.1kw
Water Flow：	0.015m³ ~0.05m³ /min
Carbon Ceramic Dimension：	220mm×35mm×13mm
Treating capacity：	5m³
Material：	Transparent PVC,(union used grey PVC)
O-ring packing：	Viton GS170
Connection method：	Adhesion or R3/4
Piping outer diameter：	φ20mm

『20A/L Specifications』

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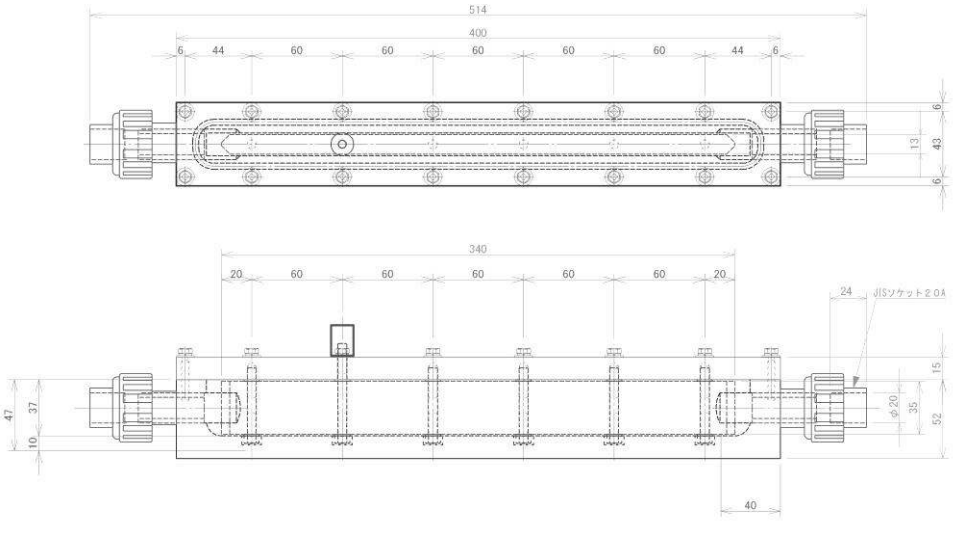

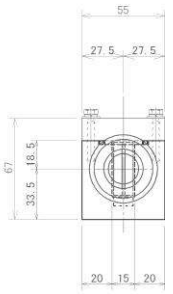

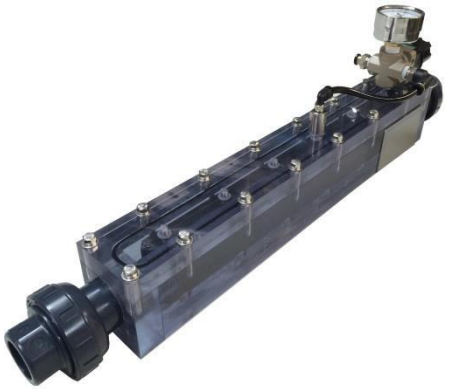

Distribution GasVolume：	1.9L/min(max) 0.2Mpa=29psi g
Recommended Pump：	0.06kw~0.1kw
Water Flow：	0.015m³ ~0.05m³ /min
Carbon Ceramic Dimension：	220mm×35mm×13mm
Treating capacity：	10m³
Material：	Transparent PVC,(union used grey PVC)
O-ring packing：	Viton GS250
Connection method：	Adhesion or R3/4
Piping outer diameter：	φ20mm

『32A/S Specifications』

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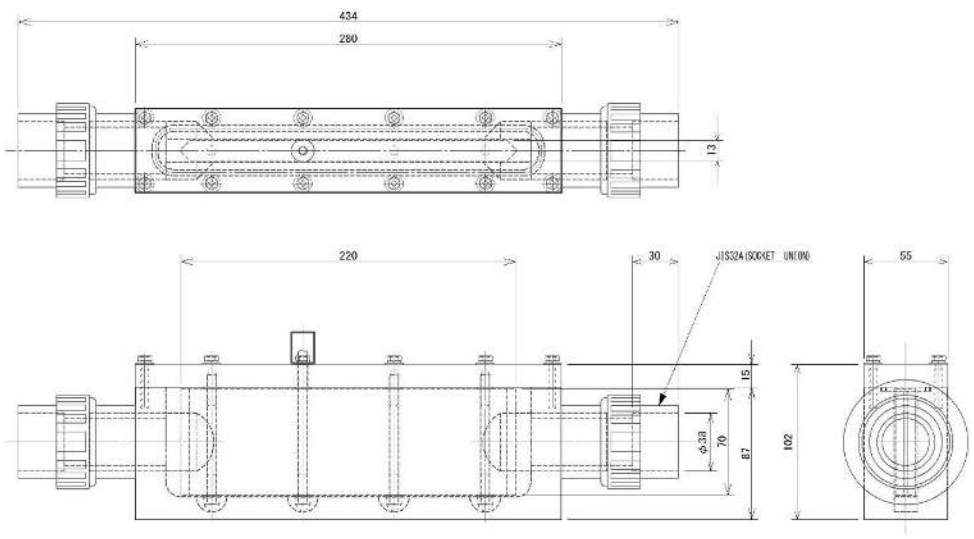

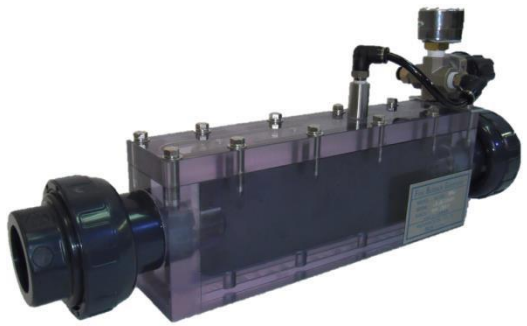

Distribution GasVolume：	2.5L/min(max) 0.2Mpa=29psi g
Recommended Pump：	0.1kw~0.4kw
Water Flow：	0.03m³ ~0.15m³ /min
Carbon Ceramic Dimension：	220mm×70mm×13mm
Treating capacity：	15m³
Material：	Transparent PVC,(union used grey PVC)
O-ring packing：	Viton GS170
Connection method：	Adhesion or R1_1/4
Piping outer diameter：	φ38mm

『32A/L Specifications』

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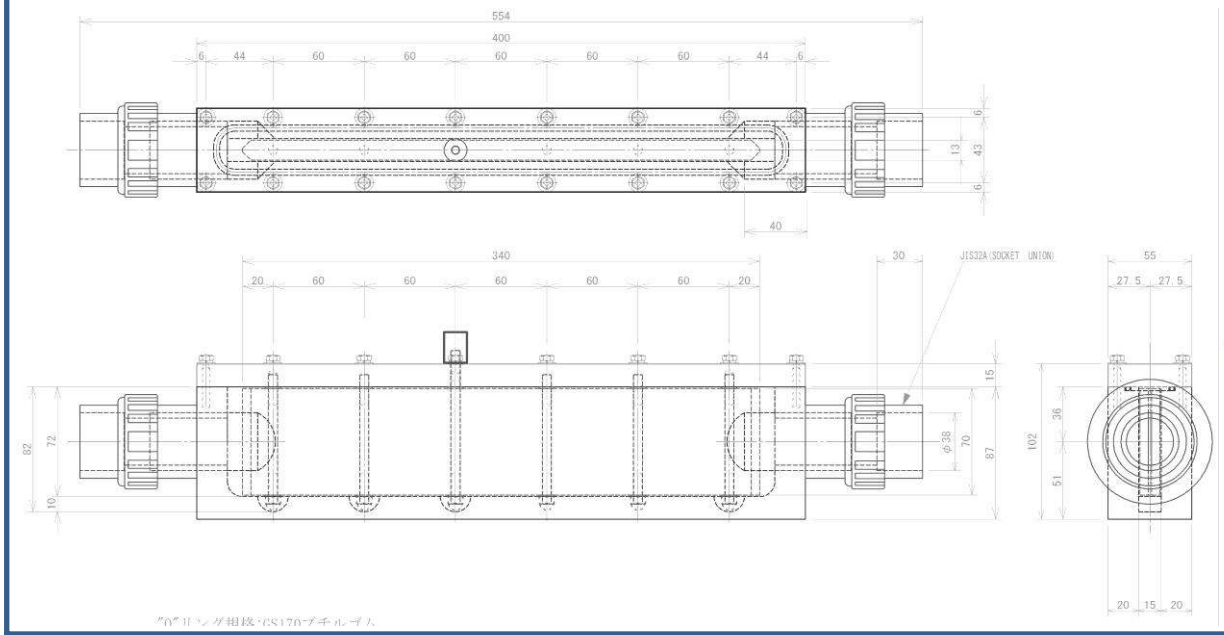

Distribution GasVolume：	3.75L/min(max) 0.2Mpa=29psi g
Recommended Pump：	0.1kw~0.4kw
Water Flow：	0.03m³ ~0.15m³ /min
Carbon Ceramic Dimension：	340mm×70mm×13mm
Treating capacity：	25m³
Material：	Transparent PVC,(union used grey PVC)
O-ring packing：	Viton GS250
Connection method：	Adhesion or R1_1/4
Piping outer diameter：	φ38mm

『50A/S Specifications』

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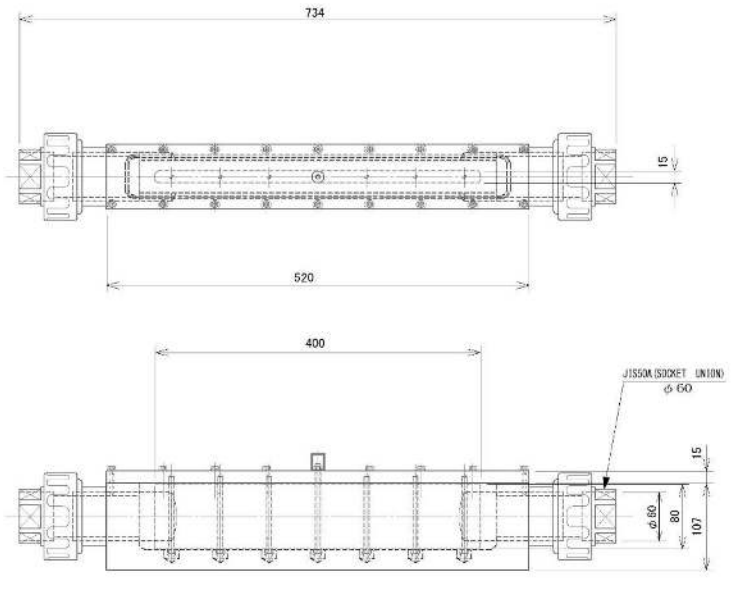

Distribution GasVolume：	5L/min(max) 0.2Mpa=29psi g
Recommended Pump：	0.4kw~1.5kw
Water Flow：	0.1m³~0.5m³/min
Carbon Ceramic Dimension：	400mm×80mm×15mm
Treating capacity：	50m³
Material：	Transparent PVC,(union used grey PVC)
O-ring packing：	Viton GS325
Connection method：	Adhesion or R2
Piping outer diameter：	φ60mm

『50A/L Specifications』

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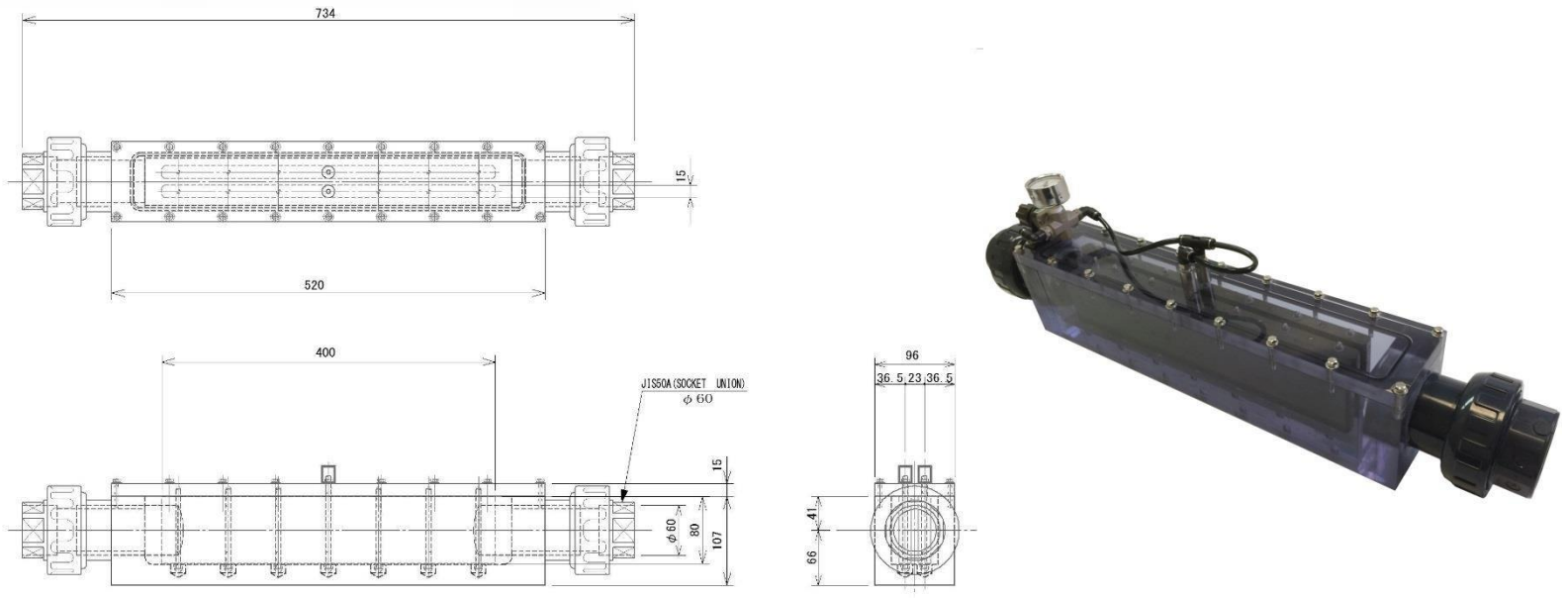

Distribution GasVolume：	10L/min(max) 0.2Mpa=29psi g
Recommended Pump：	0.4kw~1.5kw
Water Flow：	0.1m³~0.5m³/min
CarbonCeramicDimension：	400mm×80mm×15mm×2pcs
Treating capacity：	100m³
Material：	Transparent PVC,(union used grey PVC)
O-ring packing：	Viton GS330
Connection method：	Adhesion or R2
Pipingouter diameter：	φ60mm

『100A/S Specifications』

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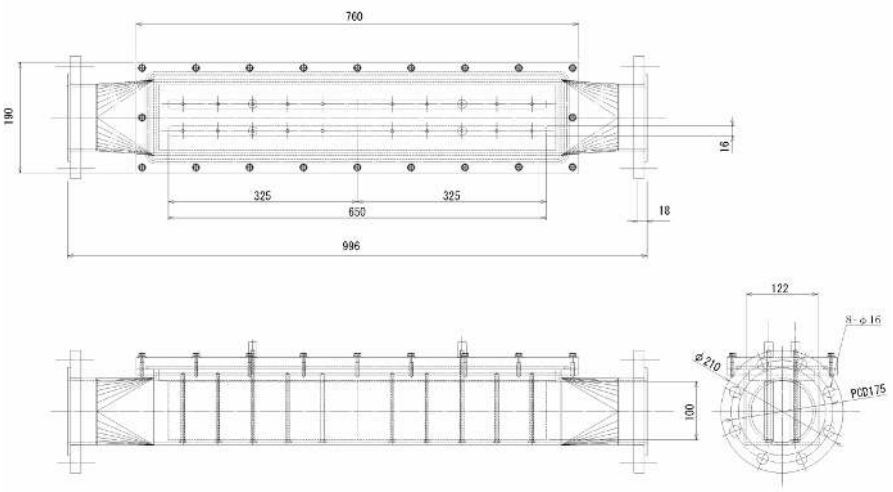

Distribution GasVolume：	20L/min(max) 0.2Mpa=29psi g
Recommended Pump：	2.2kw~4kw
Water Flow：	0.5m³~1.5m³/min
CarbonCeramicDimension：	325mm×100mm×16mm×4pcs
Treating capacity：	400m³
Material：	SUS316L/ Cover：transparent PVC
O-ring packing：	Viton G545
Connection method：	JIC100A/10K Flange(Loose Flange)
Pipingouter diameter：	100A(4inch)

『100A/L Specifications』

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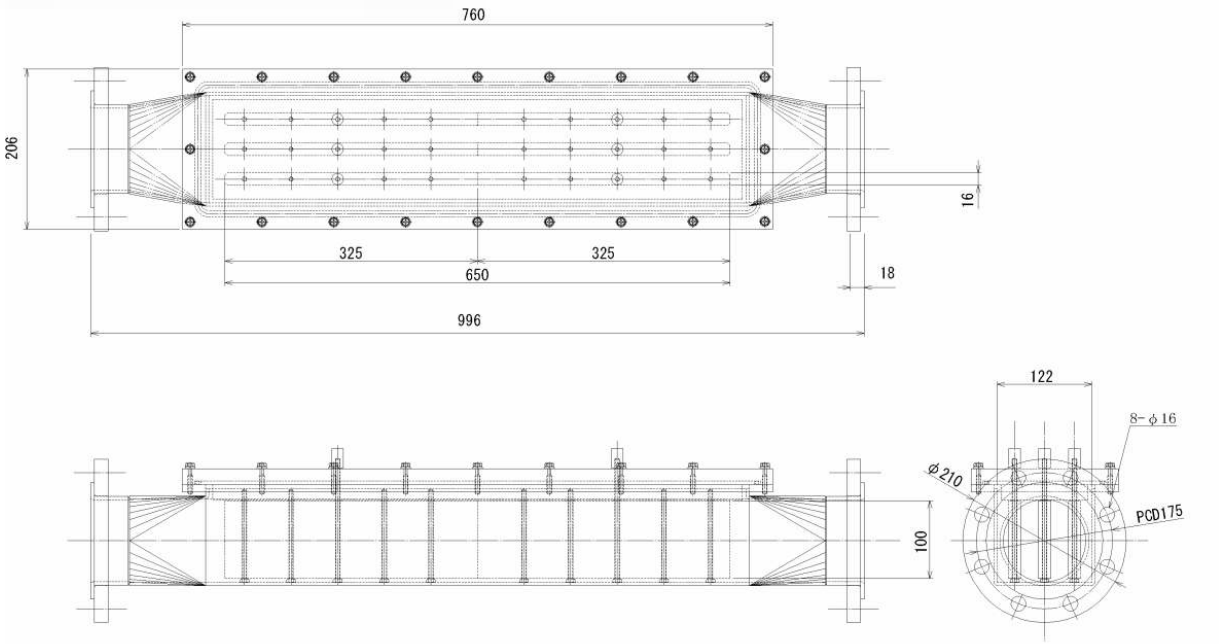

Distribution GasVolume：	30L/min(max) 0.2Mpa=29psi g
Recommended Pump：	2.2kw~4kw
Water Flow：	0.5m³~1.5m³/min
CarbonCeramicDimension：	325mm×100mm×16mm×6pcs
Treating capacity：	600m³
Material：	SUS316L/ Cover：transparent PVC
O-ring packing：	Viton G555
Connection method：	JIC100A/10K Flange(Loose Flange)
Pipingouter diameter：	100A(4inch)

『150A Specifications』

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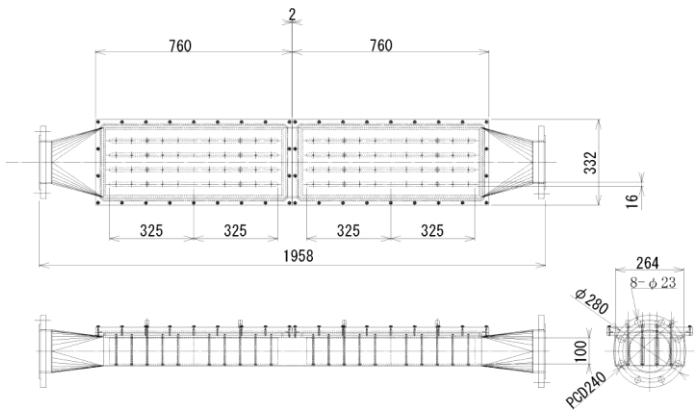

Distribution GasVolume：	75L/min(max) 0.2Mpa=29psi g
Recommended Pump：	11kw~30kw
Water Flow：	4㎥~6㎥/min
CarbonCeramicDimension：	325mm×100mm×16mm×16pcs
Treating capacity：	1,500㎥
Material：	SUS316L/ Cover： transparent PVC
O-ring packing：	Viton G630×2
Connection method：	JIC150A/10K Flange(Loose Flange)
Pipingouter diameter：	150A(6inch)

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