

SATAKE MULTI S MIXERS

D Series (Commercial Reducer Mount Type)

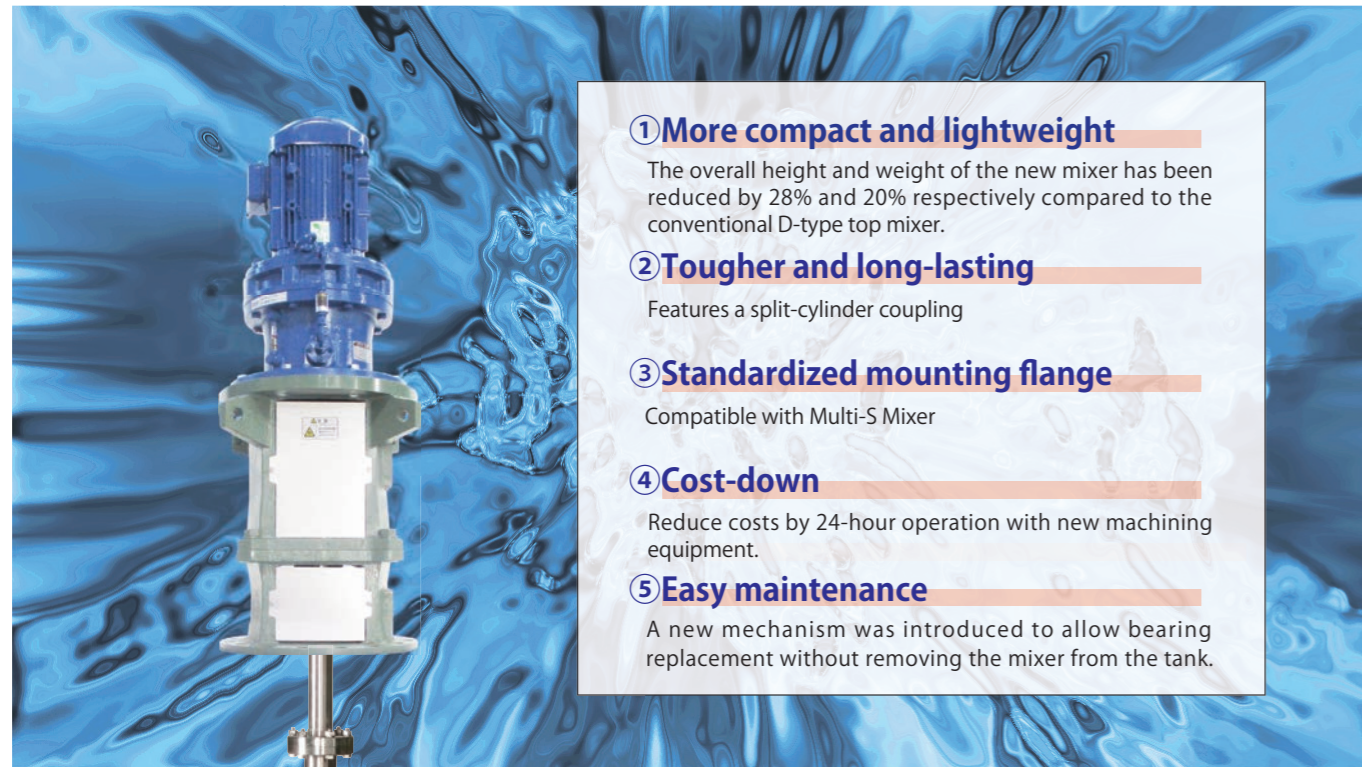
Compatible with a variety of commercial speed reducers, variable speed reducers and motors.



Model selection is now broader with the addition of **commercially available reducers** to the Multi-S mixer.

Low Cost, Downsize and Easy Maintenance as well

Features



- ① More compact and lightweight**
The overall height and weight of the new mixer has been reduced by 28% and 20% respectively compared to the conventional D-type top mixer.
- ② Tougher and long-lasting**
Features a split-cylinder coupling
- ③ Standardized mounting flange**
Compatible with Multi-S Mixer
- ④ Cost-down**
Reduce costs by 24-hour operation with new machining equipment.
- ⑤ Easy maintenance**
A new mechanism was introduced to allow bearing replacement without removing the mixer from the tank.

Lightweight and Compact!

Comparison between D-Type Top Mixer and Conventional Mixer

Height	Reduced 28%
Weight	Reduced 21%
Number of parts	Reduced 12%
Number of bolt types	Reduced 30%

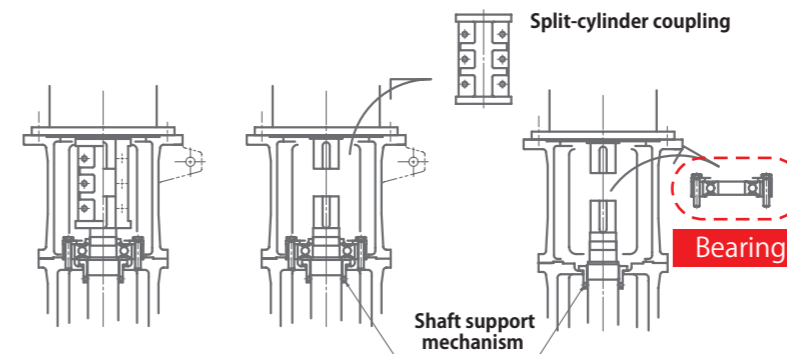


To deliver even lighter and more compact mixers to our valued customers.

Introducing SATAKE New D Series Mixer, as we are constantly committed to improve the quality and efficiency of our mixers. Be sure to check out our new mixer!

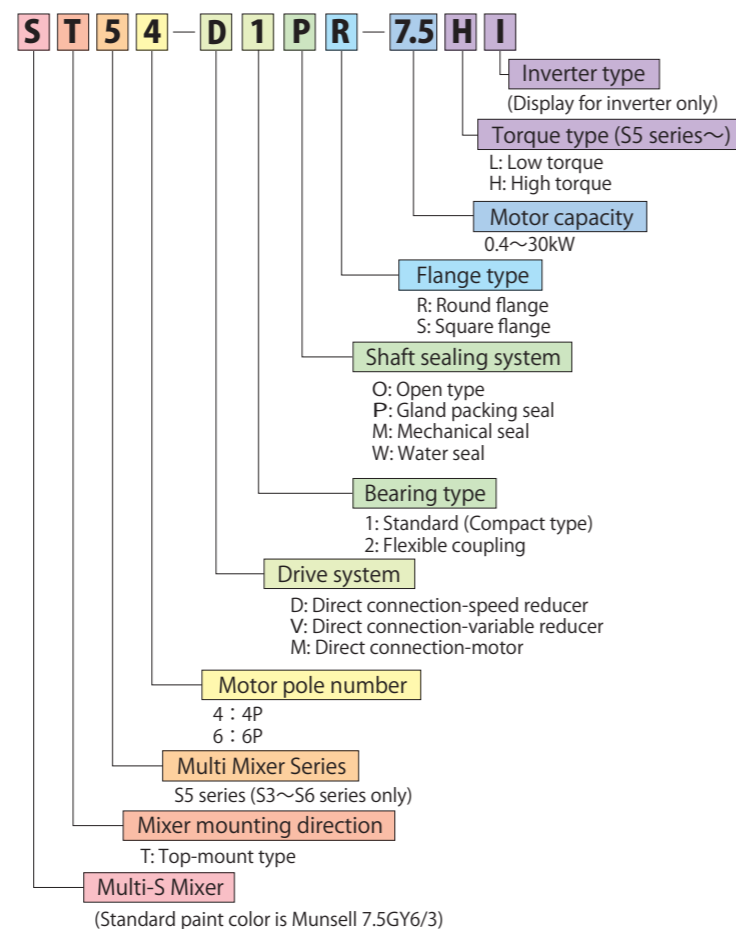
Easy Maintenance!

Methods of Replacing Bearing



Mixers require periodic maintenance, repair, and parts replacement. However, the risk of accidents will increase if disassembly and assembly are complicated. For this mixer, we have made innovations in the replacement method for the wearable bearing to improve efficiency during operation.

Model Coding (Example)



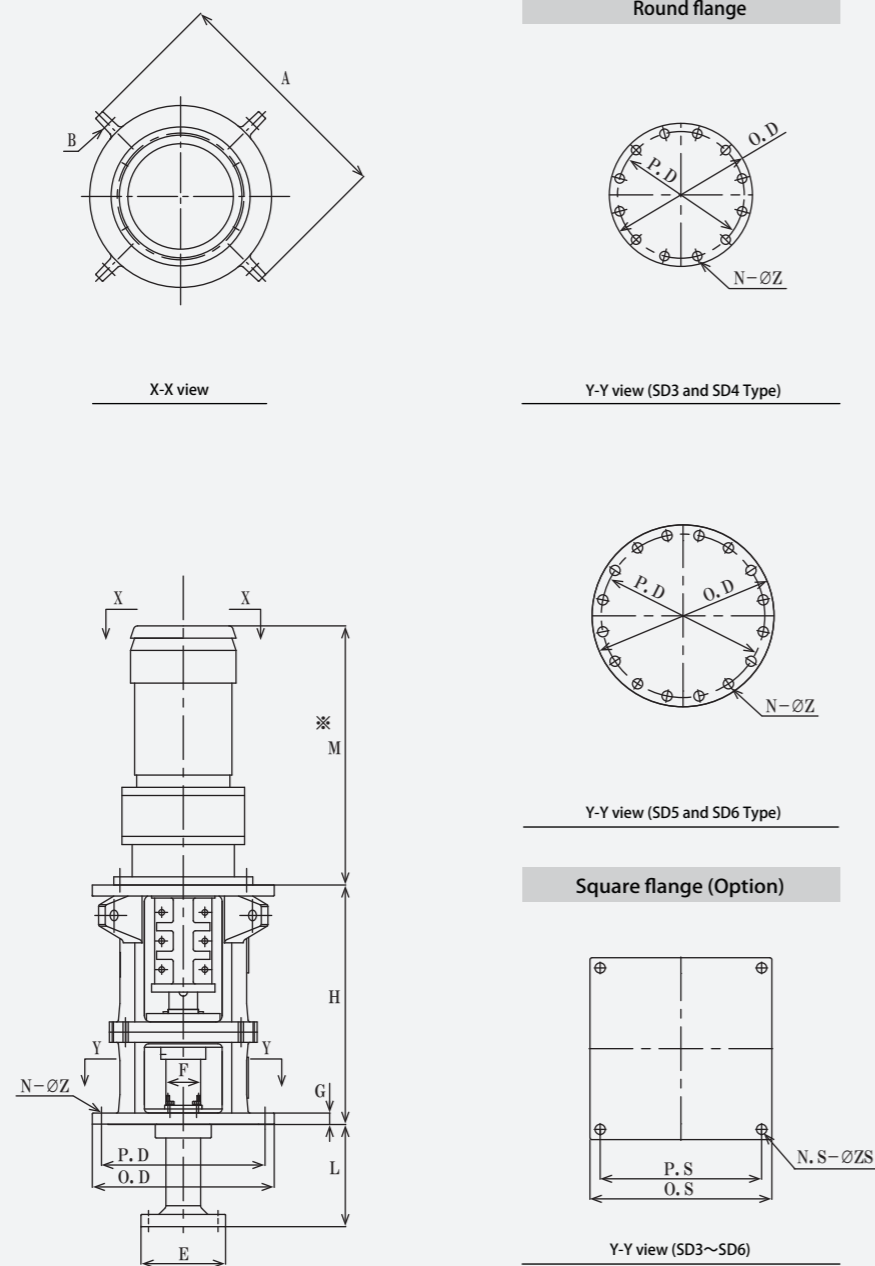
Multi-S Mixer
D Series
Standard

MULTI S MIXERS D SERIES Model Variations

Impeller speed (min ⁻¹)	50 Hz (Cyclo® Speed Reducer and SEW Type Speed Reducer)										60 Hz (Cyclo® Speed Reducer and SEW Type Speed Reducer)											
	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30
181					SD3	SD3	SD4	SD4	SD5L							SD3	SD3	SD4	SD4	SD5L		
132					SD3	SD4	SD4	SD5L	SD5H	SD5H	SD6L					SD3	SD3	SD4	SD5L	SD5L	SD5H	SD6L
112					SD3	SD4	SD5L	SD5L	SD5H	SD5H	SD6L					SD3	SD4	SD4	SD5L	SD5L	SD5H	SD6L
96.7				SD3	SD4	SD4	SD5L	SD5H	SD5H	SD6L	SD6H					SD3	SD4	SD4	SD5L	SD5H	SD5H	SD6L
85.3				SD3	SD4	SD4	SD5L	SD5H	SD6L	SD6L	SD6H					SD4	SD4	SD5L	SD5H	SD5H	SD6L	SD6L
69				SD4	SD4	SD5L	SD5H	SD6L	SD6L	SD6H					SD3	SD4	SD4	SD5L	SD5H	SD6L	SD6L	SD6H
58		SD3	SD4	SD5L	SD5L	SD5H	SD6L	SD6H							SD4	SD4	SD5L	SD5H	SD6L	SD6L	SD6H	
50		SD3	SD4	SD5L	SD5H	SD6L	SD6H	SD6H							SD4	SD4	SD5L	SD5H	SD6L	SD6H	SD6H	
41.4			SD4	SD4	SD5L	SD5H	SD6L	SD6H							SD3	SD4	SD5L	SD5H	SD6L	SD6H		
33.7		SD3	SD4	SD5L	SD5H	SD6L	SD6H								SD4	SD4	SD5L	SD5H	SD6L	SD6H		
28.4		SD4	SD4	SD5L	SD5H	SD6L	SD6H								SD3	SD4	SD5L	SD5H	SD6L	SD6H		
24.6		SD4	SD4	SD5H	SD6L	SD6H									SD3	SD4	SD5L	SD5H	SD6L	SD6H		
20.4		SD4	SD5L	SD5H	SD6L	SD6H									SD4	SD4	SD5H	SD6L	SD6H			
16.7	SD3	SD4	SD5L	SD6L	SD6H							SD3	SD4	SD5L	SD5H	SD6L	SD6H					

※Other types of commercial reducer are also available. Please consult us.
※Cyclo® is a registered trademark of Sumitomo Heavy Industries, Ltd.

Dimensional drawings (Standard: Compact Type)

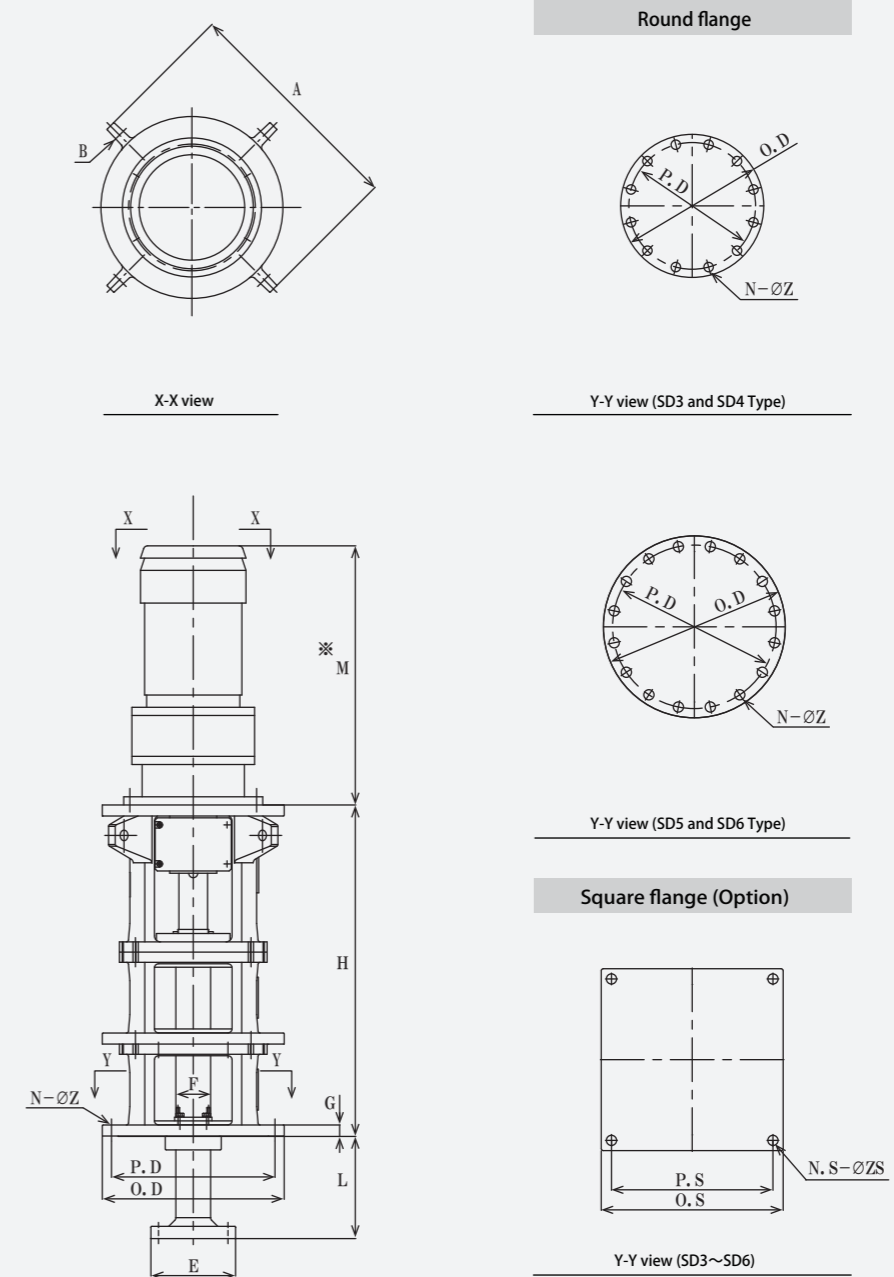


Standard dimensions (mm)

Frame	Flange specification	O.D	P.D	O.S	P.S	G	N	φZ	N.S	φZS	F	E	L	H	A	B	Body weight (kgf)
SD3	Approx.JIS 10K 225A	350	310	350	305	24	12	23	4	24	55	137	200	446	450	4-φ 20	100
SD4	Approx.JIS 10K 250A	400	355	400	350	26	12	25	4	24	65	157	200	505	510	4-φ 23	140
SD5L	Approx.JIS 10K 300A	445	400	445	395	28	16	25	4	26	75	207	250	586	565	4-φ 26	195
SD5H	Approx.JIS 10K 300A	445	400	445	395	28	16	25	4	26	85	207	250	586	565	4-φ 26	220
SD6L	Approx.JIS 10K 350A	490	445	490	435	28	16	25	4	28	95	237	300	800	630	4-φ 28	370
SD6H	Approx.JIS 10K 350A	490	445	490	435	28	16	25	4	28	105	237	300	800	630	4-φ 28	380

The M dimension shown in the above figure varies depending on the speed reducer, variable speed reducer or motor's brand.

Dimensional drawings (Flexible coupling type)



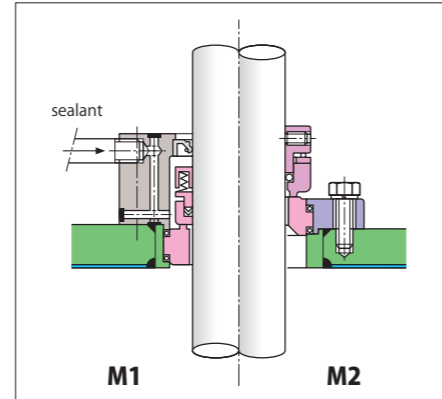
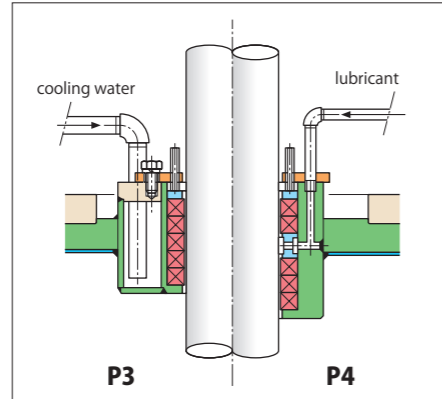
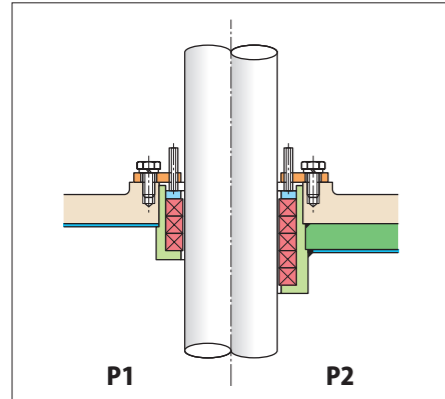
Standard dimensions (mm)

Frame	Flange specification	O.D	P.D	O.S	P.S	G	N	φZ	N.S	φZS	F	E	L	H	A	B	Body weight (kgf)
SD3	Approx.JIS 10K 225A	350	310	350	305	24	12	23	4	24	55	137	200	631	450	4-φ 20	140
SD4	Approx.JIS 10K 250A	400	355	400	350	26	12	25	4	24	65	157	200	715	510	4-φ 23	200
SD5L	Approx.JIS 10K 300A	445	400	445	395	28	16	25	4	26	75	207	250	811	565	4-φ 26	280
SD5H	Approx.JIS 10K 300A	445	400	445	395	28	16	25	4	26	85	207	250	811	565	4-φ 26	300
SD6L	Approx.JIS 10K 350A	490	445	490	435	28	16	25	4	28	95	237	300	1094	630	4-φ 28	490
SD6H	Approx.JIS 10K 350A	490	445	490	435	28	16	25	4	28	105	237	300	1094	630	4-φ 28	500

The M dimension shown in the above figure varies depending on the speed reducer, variable speed reducer or motor's brand.

Various variations of shaft sealing systems.

Shaft Sealing Systems



Gland packing seal

P1 type

- Inside tank temperature: 120°C or less
- Inside tank pressure: Atmosphere
- It is not designed for a pressure-tight seal, but it is ideal as a simple seal

Gland packing seal

P2 type

- Inside tank temperature: 120°C or less
- Inside tank pressure: 3×10^{-2} MPaG (0.3 kgf/cm²G) or less
- It is used for low pressure condition in the tank.

Gland packing seal

P3 type

- Inside tank temperature: Between 121°C and 170°C
- Inside tank pressure: 3×10^{-2} MPaG (0.3 kgf/cm²G) or less
- It is ideal for inside tank temperature above 121°C.

Gland packing seal

P4 type

- Inside tank temperature: 120°C or less
- Inside tank pressure: 0.1 MPaG (1.0 kgf/cm²G) or less
- Inject lubricant periodically in the midsection of the gland packing. Seal the leaking fluid with the packing at the back of the lantern ring and the lubricant with the packing at the front.

Single mechanical seal

(For vacuum type mixing tank)

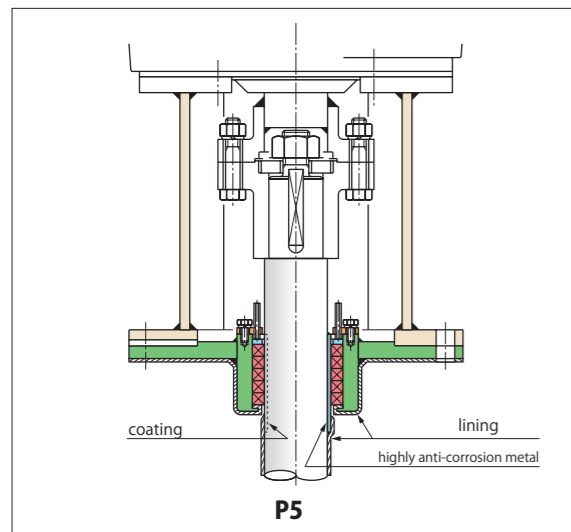
M1 type

- Inside tank temperature: 100°C or less
- Inside tank pressure: F.V. $\sim 3 \times 10^{-2}$ MPaG (0.3 kgf/cm²G) or less
- It is generally used for vacuum type mixing tanks that are not tolerant of leaks and demonstrate excellent sealing performance.

Dry mechanical seal

M2 type

- Inside tank temperature: 150°C or less
- Inside tank pressure: F.V. ~ 0.19 MPaG (1.9 kgf/cm²G) or less
- used to prevent sealant from entering the tank, thereby prevent sealant from reacting with the gas or liquid in the tank.

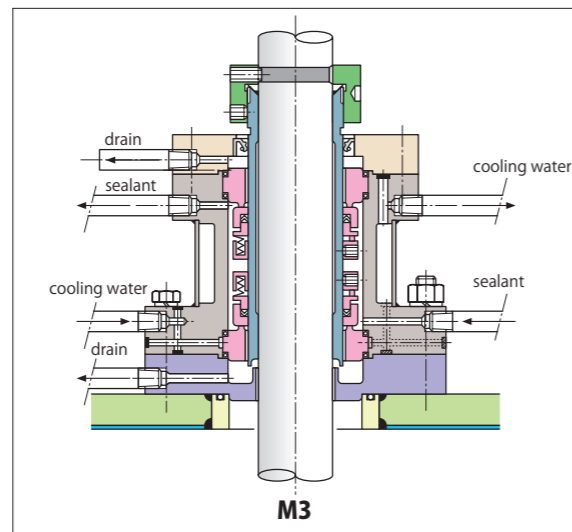


Gland packing seal

(Lining and coating of various parts in contact with liquid and gas)

P5 type

- Inside tank temperature: 120°C or less
- Inside tank pressure: 3×10^{-2} MPaG (0.3 kgf/cm²G) or less
- Various types of metal lining and coatings (hastelloy, stellite, colmony, hard chrome plating, ceramic) are used on the sliding parts of the gland packing.



Double mechanical seal

M3 type

- Inside tank temperature: 300°C or less
- Inside tank pressure: F.V. ~ 0.99 MPaG (9.9 kgf/cm²G) or less (Please consult us if the inside tank pressure exceeds 0.99MPaG)
- It is generally used in applications where leakage is not tolerated, and provides excellent sealing performance even under high temperature, low temperature, high pressure, and vacuum conditions.

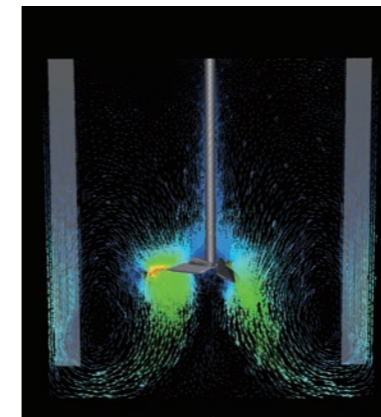
SATAKE SUPERMIX® SERIES

High Performance and High Efficiency Impeller

Impeller is the most important element of a mixer. In general, 3-bladed propeller (3P), 4-bladed pitched paddle (4PP), 6-bladed flat turbine (6FT), etc. are the impellers which commonly used in the High Re (mixing Reynolds number) range. Meanwhile, anchor blades and helical ribbon blades are used in the Low Re (mixing Reynolds number) range. However, these impellers are not completely sufficient to meet the wide variety and complexity of mixing purposes in recent years.

Therefore, we continued our research and development on high-performance impeller based on the theory of impeller blades to satisfy the different mixing purposes of each customer. Moreover, we also have been making efforts to meet the needs of our customers as much as possible by further considering the precise operating conditions. The impeller blades developed through these efforts are called the 「Supermix」 series. Below are introduced some examples.

HR320 impeller <<Medium and High Re (Mixing Reynolds Number) range>>



Flow pattern for HR320 impeller (CFD simulation result)



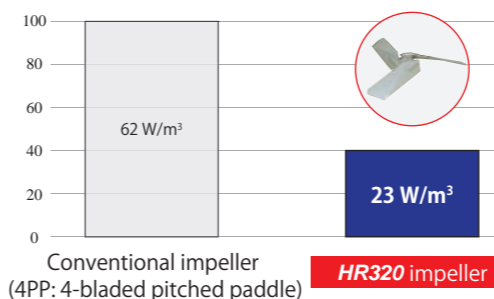
[Main applications]

- General uniform mixing of liquid-liquid
- To prevent solids suspension
- Uniform distribution of solids, etc.

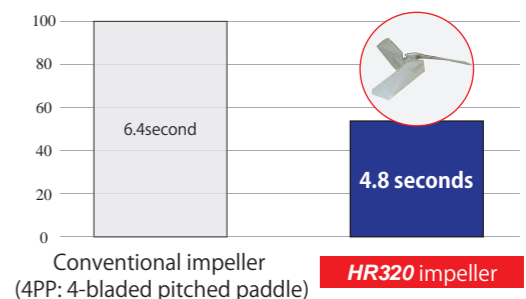
The HR320 impeller features a single-stage curved design blade that combines the effect of advanced blade and twisted down towards the tip of the blade. This impeller is for low-speed type mixer that minimize flow separation at the back of the blade and enhanced flow discharged performance as well.

The Effects of HR320 Impeller (Energy and Time Saving)

[Energy Saving] Mixing power **reduced by 60%**
Condition for comparison: Mixing time constant (Number of circulation Qv [1/s] constant)



[Time Saving] Mixing time **reduced by 25%**
Condition for comparison: Mixing power per unit volume constant (Pv [kW/m³] constant)



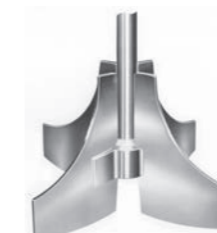
Others Various types of Supermix series We can recommend you the most suitable impeller. Feel free to consult us!!

HS100 impeller
[Main applications] Gas-liquid mixing, Gas absorption



The HS100 impeller features extremely low power number as a turbine impeller (power number is approx. 65% lower than conventional 6FT impeller). It has high flow effect and high gas absorption performance compared to the conventional turbine impeller. The flow is concentrated by the lift force of the impeller blades at low power. Additionally, strong shearing and breaking effects are produced by utilizing the pressure gradient and fluctuation of the flow discharge field.

HS604 impeller
[Main applications] Solid-liquid mixing, slurry



The HS604 impeller was researched and developed not only as a single impeller blade but also as a mixing device including the mixing tank. It enhanced mixing effect in "uniform distribution system" such as solid-liquid and slurry mixing by controlling the pressure distribution inside tank.

MR210 impeller
[Main applications] Reaction system, Medium to High Viscous



The MR210 impeller is a high-efficient type of impeller that enhanced mixing performance at low power. This can be achieved by considering the vertical impeller blade area in regards of pressure distribution inside tank. Additionally, the suction flow from the liquid is reinforced by the clearance effect between the main impeller blade and shaft. This enables optimum flow effect and mixing effect to be achieved with less impeller blade area and simple impeller design.

Supermix video is available!!



Satake Chemical Equipment MFG., Ltd.
Movie collections of our products

- Various type of mixers
- Various type of impellers etc.

Achievements and trusted in a wide range of fields

Energy and petroleum industry

Crude oil, Asphalt, Pitch, Surfactants, Emulsion fuel, Biofuel, Nuclear power, Various storage tanks, etc.

Coal industry

COM, CWM, Surfactants, etc.

Metal industry

Quenching tank, Heat resistant furnace material, Cooling water, Wire manufacturing, Aluminum hydroxide, Molten lead, Plating, etc.

Oil and fat industry

Soap, Animal and vegetable oil, Butter, Lard, Tallow, Margarine, Lubricant, Cooking oil, Various storage tanks, etc.

Synthetic resin industry

Vinyl chloride, Polyester, Adhesive, Cellulose, Plastic, Polypropylene, ABS resin, etc.

Dye industry

Colored powder, Titanium oxide, Viscose, Pigment, etc.

Paint industry

Ink, Paint, Solvent, etc.

Pharmaceutical industry

Dye, Perfume, Emulsion, Various medical products, Cosmetics, Synthetic medicines, etc.

Livestock agriculture industry

Fertilizer (Phosphoric acid, Potash, Ammonium sulfate, Lime) Feed, Ammonia, Insect repellent, Pesticide, etc.

Electronic industry

Ceramics, Magnetic iron powder, Iron oxide, Silicone, etc.

Rubber industry

Natural rubber, Synthetic rubber, Latex, Solvent, etc.

Textile industry

Acrylic fiber, Acetate, Nylon, Polyester, Vinylon, Solvent, Adhesive paste, etc.

Paper making industry

Pulp, Casein, Kaolin, Talc, Clay, Size, Aluminum sulfate, PVA, CMC, Black liquor, Green liquor, Paint, Rosin, Magnesium hydroxide, etc.

Ceramic engineering

Ceramic clay, Insulator, Glaze, etc.

Civil engineering and construction industry

Cement, Mortar, Paint, etc.

Food industry

Cream, Chocolate, Milk, Sauce, Mayonnaise, Dressing, Fruit juice, Ketchup, Coffee, Seasoner, Salt, Sugar, Flour, Food additives, Sweetener, Perfume, Colorant, etc.

Brewing industry

Sake, Whiskey, Beer, Shochu, Diatomite, etc.

Fermentation industry

Soy sauce, Vinegar, Miso, Unrefined sake, Bio reactor, etc.

Other plant equipment

Chemical dissolution, Coal, Heat transfer oil, Cutting oil, etc.

Prevention of air pollution

Caustic soda, Calcium carbonate, Flue gas desulfurization, etc.

Water purifying plant

City water, Industrial water, Active carbon, Chlorine, Caustic soda, Chemicals, etc.

Waste water and effluent treatment plant

Polymer coagulant, Diatomite, Aluminum sulfate, Ferric sulfate, Caustic soda, Sulfuric acid, Sludge tank, Biological reactor, Sodium hypochlorite, Rapid mixing, Moderate mixing, etc.

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ISO 9001 certificate acquisition

Tokyo office • Osaka office



Scope of review:
Development, design, manufacture,
repair, and sales management of
mixing devices

ISO 14001 certificate acquisition

Tokyo office • Osaka office
Chubu sales service center



Satake Multi-S Mixer® and Supermix® are registered trademarks of Satake Chemical Equipment MFG., Ltd.

We are constantly committed to improve the quality of our products, thereby the design and specifications of our products may differ from those shown in the catalog. Please understand this in advance.



We are dedicated to
manufacture products that
satisfy our customers and are safe to use.

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