



ISO 9001 · ISO 14001 CERTIFIED



Mixers and Related Equipments for Industrial Use

Hado

Product

Guide

HADO Co.,Ltd

Products- Unexcelled in Accuracy and Reliability

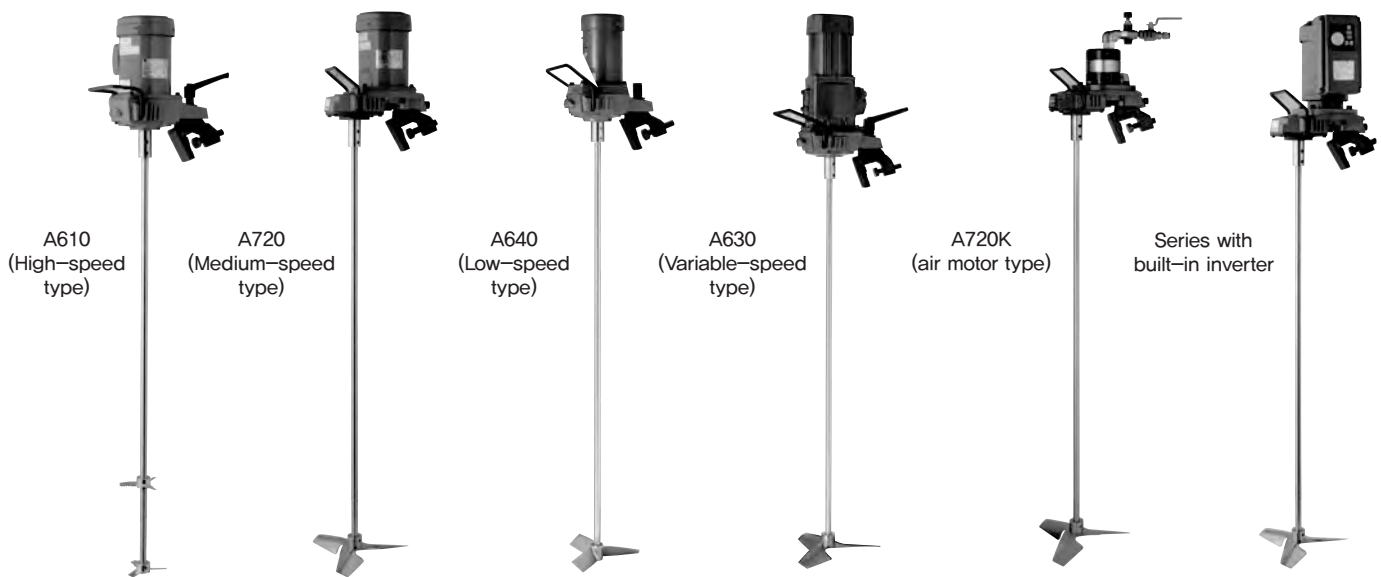
HADO mixers are the leading products in the industrial fields of petrochemicals and chemicals, pulp and paper, water and waste water treatment, FGD, oil and petroleum, mining and minerals, pharmaceuticals, slurry storage, and many other fluid applications.

HADO provides the agitators, the static mixers and chemical process equipment for fluid mixing applications. We always make efforts to upgrade the reliability, functionality and safety of the mixers by using flow visualizing methods and advanced CAE methods. HADO appreciates all of our global customers use. We will always make our excellence to keep high quality for our faithful customers

Mixers and Related Equipments for Industrial Use

PORTABLE MIXERS A-SERIES	2 · 3
MULTI S MIXERS TOP-MOUNT TYPE (S0~S2 SERIES)	4
MULTI S MIXERS SIDE-MOUNT TYPE (S0~S2 SERIES)	5
MULTI S MIXERS TOP AND SIDE-MOUNT TYPE (S3-S9 SERIES)	6 · 7
D-TYPE TOP MIXERS / E-TYPE TOP MIXERS	8 · 9
MIXING TORQUEMETER ST-3000 II	9
MULTI S MIXERS BELT REDUCTION TYPE (S3~S5 SERIES)	10
MULTI LINE MIXERS	11
SUPER SHEAR MIXER (SDCS TYPE)	11
LARGE AND SPECIAL MIXERS	12
LINE MIXER (STATIC TYPE)	13
SUPER-MIX SERIES (HIGH PERFORMANCE IMPELLERS)	14 · 15
IMPELLERS (CLASSIFICATION BY DISCHARGE CHARACTERISTICS)	16
LETTER OF REQUEST	17

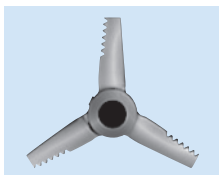
PORTABLE MIXERS A-SERIES



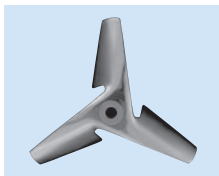
Clamp-type mixers are ideal for small lot production. These are compact and lightweight, low-priced, quality-enhanced, and maintenance free. They are also readily available.

- A610 (High-speed type) Design registered
Delivers maximum performance in applications where high shearing is required or where powdery substances must be forced into liquids for dissolution.
- A720 (Medium-speed type) Registered utility model/Design registered
It is suitable for mixing small and medium-volume liquids. Also, it is ideal for mixing ordinary soluble liquids, liquids for dilution and heat transfer, relatively easy to dissolve solids and liquids, dispersion, prevention of slurry setting, and uniform mixing.
- A640 (Low-speed type)
It is best suited for mixing liquids of relatively viscous liquids or for mixing in which foaming must be avoided.
- A630 (Variable-speed type)
It is capable of coping with changes in liquid viscosity, preventing excessive or insufficient mixing. Since the mixer can be operated at low speeds, operation can be safely performed while discharging the liquid from the tank.
- A720K (Air motor type)
The A520K driven by the air motor features a safe, explosion-proof construction. It is available with various values of rpm ranging from low rpm values to high rpm values, and eliminates problems, such as, motor burning and heat generation, even when it is overloaded.
- Series with built-in inverter
No space is required for separate inverter installation. The rotation speed can be easily and smoothly adjusted on the mixer body itself. Three versions are available in this series: high speed, medium speed, and low speed models.
- A760 (Medium-speed type)
Mixers are made of stainless steel to protect the product from rust and paint. It is ideal for fine chemical, pharmaceutical, and food processing applications.

■ Portable mixer impeller



- S15 Impeller (High-speed type) Design registered
This model rotates at high speed to generate a strong shearing force. The serration at the rear end of the blade generates a turbulent flow to break powder and fluid lumps, increasing the contact area of such lumps. This makes dispersion and dissolution extremely easy.



- P36 Impeller (Medium-speed type) Design registered
This superior hydrofoil impeller having camber and rake angle at each blade controls and converges the circumferential flow into a high-speed axial flow.



- L18 Impeller (Low-speed type)
The blades are finely twisted to control the direction of the discharge flow. The twisted blades also propel the liquid forcefully in the axial direction. This impeller proves effective in operations with low liquid level or where a large d/D value is required.

Specifications

●A610

Model	Motor		Speed(rpm)	
	Output (kW)	No. of Poles (P)	50Hz	60Hz
A610-0.065A	0.065	4	1,450	1,750
A610-0.1A	0.1	4	1,450	1,750
A610-0.1B	0.1	4	1,450	1,750
A610-0.2A	0.2	4	1,450	1,750
A610-0.2B	0.2	4	1,450	1,750
A610-0.4B	0.4	4	1,450	1,750
A615-0.4B	0.4	6	950	1,150
A610-0.75B	0.75	4	1,450	1,750
A615-0.75B	0.75	6	950	1,150
A610-1.5B	1.5	4	1,450	1,750

※ Two S15 impellers are supplied as standard accessories.

●A720

Model	Motor		Speed(rpm)	
	Output (kW)	No. of Poles (P)	50Hz	60Hz
A720-0.065A	0.065	4	300	360
A720-0.1A	0.1	4	300	360
A720-0.1B	0.1	4	300	360
A720-0.2A	0.2	4	300	360
A720-0.2B	0.2	4	300	360
A720-0.4B	0.4	4	300	360
A725-0.4B	0.4	6	200	240
A720-0.75B	0.75	4	300	360
A725-0.75B	0.75	6	200	240
A720-1.5B	1.5	4	300	360

※ One P36 impeller is supplied as a standard accessory.

●A630V

Model	Motor		Speed(rpm)
	Output (kW)	No. of Poles (P)	50Hz · 60Hz
A630V-0.06A	0.06	4	0~420
A630V-0.06B	0.06	4	0~420
A630V-0.09A	0.09	4	0~420
A630V-0.09B	0.09	4	0~420
A630V-0.2A	0.2	4	0~420
A630V-0.2B	0.2	4	0~420
A630V-0.4B	0.4	4	0~420
A630V-0.75B	0.75	4	0~420

※ One P36 impeller is supplied as a standard accessory.

●A640

Model	Motor		Speed(rpm)	
	Output (kW)	No. of Poles (P)	50Hz	60Hz
A640-0.1A	0.1	4	150	180
A640-0.1B	0.1	4	150	180
A640-0.2A	0.2	4	150	180
A640-0.2B	0.2	4	150	180
A640-0.4B	0.4	4	150	180
A640-0.75B	0.75	4	150	180

※ One L18 impeller is supplied as a standard accessory.

●Series with built-in inverter

Model	Motor		Speed(rpm)
	Output (kW)	No. of Poles (P)	50Hz · 60Hz
A610-□BX	0.2~0.75	4	175~1,750
A620-□BX	0.2~0.75	4	36~360
A640-□BX	0.1~0.75	4	18~180

※ Motor: Totally-enclosed fan-cooled indoor type

※ Inverter: Fixed-torque type (6~60Hz)

※ For A640 (low-speed type), 12~120 & 9~90 min⁻¹ models are available.

●A720K

Model	Air motor model	Output (kW)	Air supply		Speed(rpm)
			Consumption (Nl /min)	Pressure (MPaG)	50Hz · 60Hz
A720-0.06K	VA15L	0.06	180	0.35	200 ~360
A720-0.1K	VA15L	0.1	230	0.5	200 ~360
A720-0.2K	VA30L	0.2	400	0.5	200 ~360
A720-0.4K	VA50L	0.4	790	0.6	200 ~360
A720-0.75K	VA100L	0.75	1,300	0.5	200 ~360

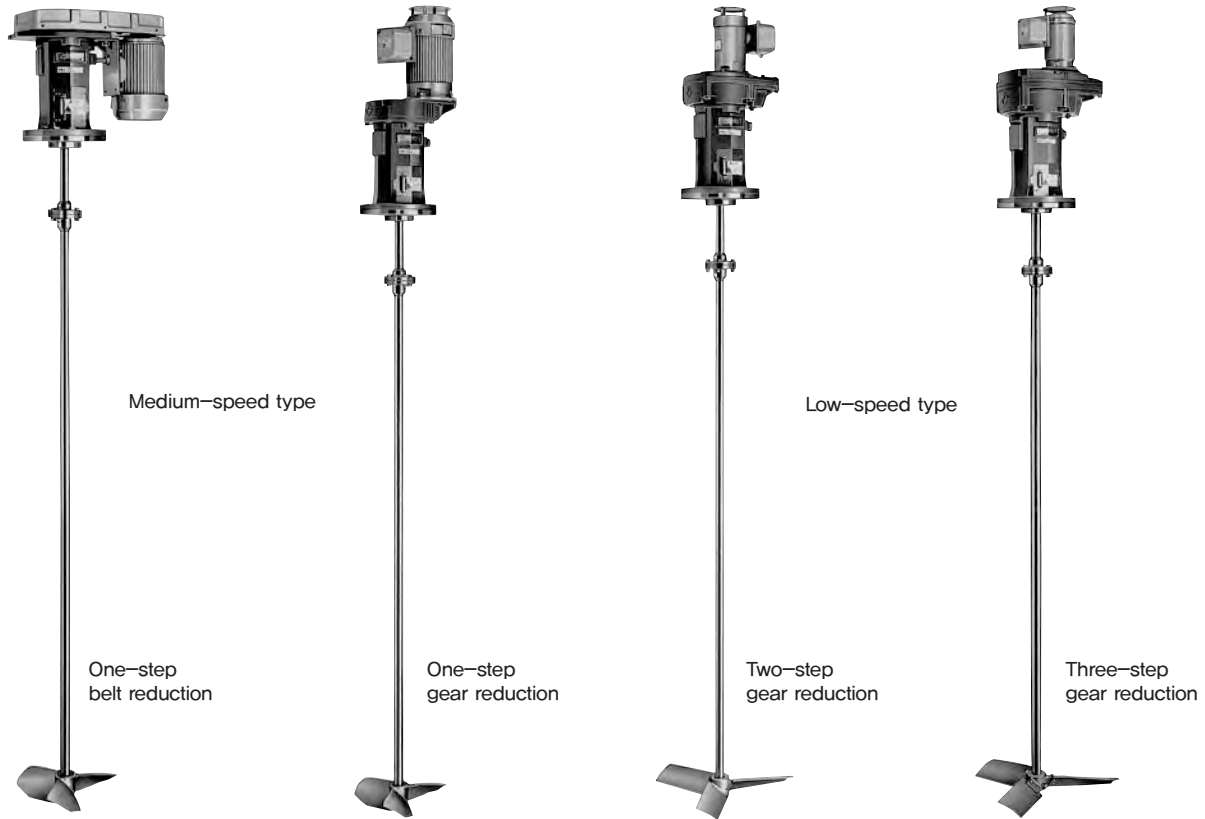
※ An air control unit (consisting of a filter, regulator, and lubricator), ball valve, speed controller, and silencer are supplied as standard accessories.

※ The air consumption rates are based on the motor output shaft speed of 1,800 min⁻¹.

※ One P36 impeller is supplied as a standard accessory.

※ Oil-less motors and stainless steel motors are available.

MULTI S MIXERS (S0~S2 SERIES) **Top-mount type**



Compact mixers in a wide range of variations (from 16.5 to 350rpm)

■ **Features**

- All mixer speeds are based on the AGMA so that the mixers deliver maximum performance.
- A high level of accuracy is achieved by the combination of high-precision pinions and bakelite gears, resulting in reduced operating noise.
- The V-belt employs saw-tooth-shaped cogs for improved bending and shows approximately 30% better transmission performance than conventional V-belts.
- New impellers have been developed for HADO multi-S mixers. The medium-speed-type mixers come with the HR700 impeller, and the low-speed-type mixers come with the HR600. Both types feature substantially improved mixing performance.

■ **Specifications**

● **Medium-speed 50Hz**

Transmission method	Output(kW)			
	One-step reduction(G · B)			
No. of Poles(P)	4		6	
	350	280	230	190
S-0	0.2	0.2	—	—
	0.4	0.4	—	—
S-1	0.75	0.75	0.4	0.4
	1.5	1.5	0.75	0.75
S-2	2.2	2.2	1.5	1.5
	3.7	—	2.2	2.2

● **Medium-speed 60Hz**

Transmission method	Output(kW)		
	One-step reduction (G · B)		
No. of Poles(P)	4	6	
Speed(rpm)	350	280	230
S-0	0.2	—	—
	0.4	—	—
S-1	0.75	0.4	0.4
	1.5	0.75	0.75
S-2	2.2	1.5	1.5
	3.7	2.2	2.2

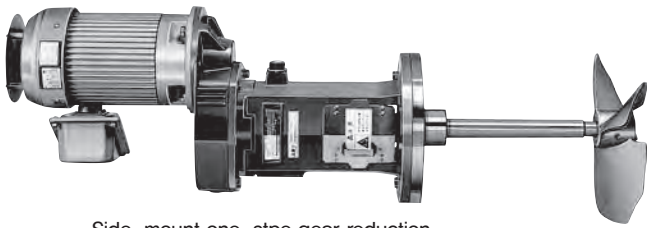
● **Low-speed 50Hz**

Transmission method	Output(kW)										
	Two-step reduction(G ₂)						Three-step reduction(G ₃)				
No. of Poles(P)	4			6			4				
Speed(rpm)	155	125	84	68	54	100	45	37	30	20	16.5
S-1	0.2	0.2	0.2	0.2	0.2	—	—	—	—	—	—
	0.4	0.4	0.4	0.4	0.4	—	—	—	—	—	—
S-2	0.75	0.75	0.75	0.75	0.75	0.4	0.4	0.2	0.2	0.2	0.2
	1.5	1.5	—	—	—	0.75	—	0.4	0.4	—	—

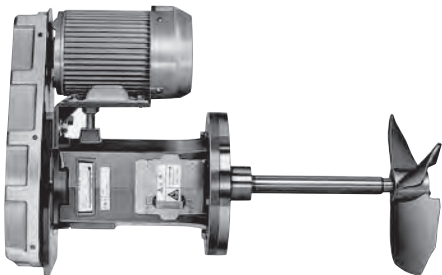
● **Low-speed 60Hz**

Transmission method	Output(kW)										
	Two-step reduction(G ₂)						Three-step reduction(G ₃)				
No. of Poles(P)	4			6			4				
Speed(rpm)	190	155	100	84	68	125	54	45	37	25	20
S-1	0.2	0.2	0.2	0.2	0.2	—	—	—	—	—	—
	0.4	0.4	0.4	0.4	0.4	—	—	—	—	—	—
S-2	0.75	0.75	0.75	0.75	0.75	0.4	0.4	0.2	0.2	0.2	0.2
	1.5	1.5	1.5	—	—	0.75	0.75	0.4	0.4	—	—

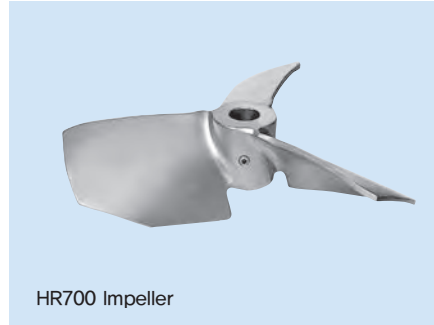
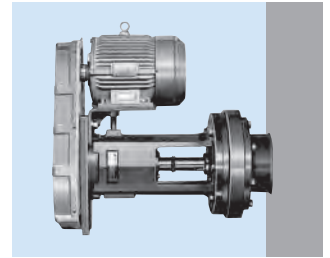
Side-mount type



Side-mount one-step gear reduction



Side-mount one-step belt reduction



HR700 Impeller

Patented Design registered

■ HR700 Impeller (Super-Mix)

- Equipped with a wash-out blade, which has a swept forward configuration.
- High-performance discharge impeller, which has a distinguished ability of preventing liquid separation at the blade tip.
- It can satisfy requirements of simultaneously mixing different substances, such as liquids, gases, solids, and powders, i.e., in solid-liquid mixing, as well as mixing compounds of these substances.

Valuable, compact and, lightweight side-mount mixers to choose from by the drive method.

■ Features

- The side-mount type is suitable for mixing liquids of medium or low viscosity in a deep tank.
- Though this type is compact and lightweight, it can perform partially strong agitation as it can be mounted in the chosen position.
- By mounting the mixer on the tank in an off-set position, the need for baffle plates can be eliminated without affecting the steady flow of liquid.

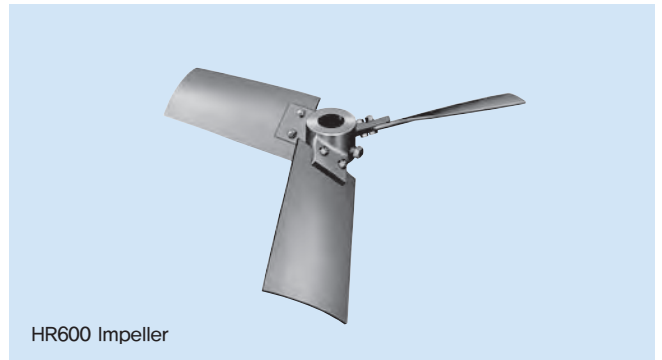
■ Specifications

● Medium-speed 50Hz

Transmission method	Output(kW)		
	One-step reduction (G · B)		
No. of Poles(P)	4	6	
Speed(rpm)	350	280	230
S-0	0.2	0.2	—
	0.4	0.4	—
S-1	0.75	0.75	0.4
	1.5	1.5	0.75
S-2	2.2	2.2	1.5
	3.7	—	2.2

● Medium-speed 60Hz

Transmission method	Output(kW)		
	One-step reduction (G · B)		
No. of Poles(P)	4	6	
Speed(rpm)	350	280	230
S-0	0.2	—	—
	0.4	—	—
S-1	0.75	0.4	0.4
	1.5	0.75	0.75
S-2	2.2	1.5	1.5
	3.7	2.2	2.2

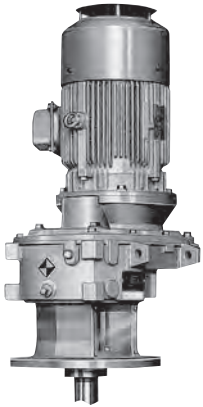


HR600 Impeller

■ HR600 Impeller (Super-Mix)

- The blades are finely twisted to control the direction of the discharge flow. The twisted blades also propel the liquid in the axial direction.
- The HR600 impeller proves effective in operations with low liquid level or where a large d/D value is required.
- It is suited for prevention of sedimentation as well as suspending solid and liquid mixing, and for moderate mixing when foaming and shearing are not desired.

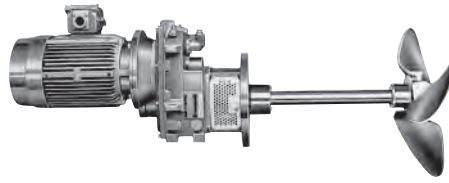
MULTI S MIXERS (S3~S9 SERIES) Top and side-mount type



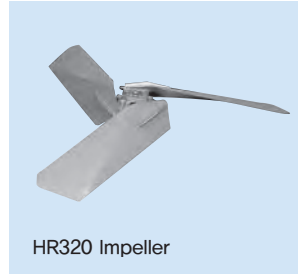
S4 Series



S5 Series



S4 side-mount one-step gear reduction type



HR320 Impeller



HR320S Impeller

Medium to large-sized mixers with a wide range of variations (from 0.75 to 90 kW)

■ Features

- A new twist is added in the arrangement of gears. Interchangeability of components is further advanced.
- The number of speed and motor output combinations is substantially increased to 17.
- An impeller having a simple three-bladed axial flow design in one stage has been developed, featuring a high discharge coefficient and a low drag coefficient.

The impeller features a high discharge rate.

■ Features

◆HR320 Impeller

- The impeller has an angular advance, which directs the liquid flow towards the shaft center.
- Due to the angular advance, liquid flow separation from the rear of the blade is minimized; thus, a large discharge is achieved.

◆HR320S Impeller

- Employs a double-bladed configuration, which produces the same effect as that of a slotted flap and leading edge slat of an aircraft. This enables high discharge speed.
- HADO's original wing-tip blade has eliminated the need for a stabilizer ring and enabled operations in cases where the liquid level passes over the impeller position.

■ Specifications

●Side-mount model variations (50Hz/60Hz)

		Motor output(kW)								
		Speed(rpm)	3.7	5.5	7.5	11	15	18.5	22	30
One-step reduction	50 Hz	350		S3	S3	S4	S4	S5	S5	S5
		280		S3	S3	S4	S4	S5	S5	S5
		230 (*)	S3	S3	S4	S4	S5	S5	S5	
	60 Hz	350		S3	S3	S4	S4	S5	S5	S5
		280 (*)	S3	S3	S4	S4	S5	S5	S5	
		230 (*)	S3	S3	S4	S4	S5	S5	S5	

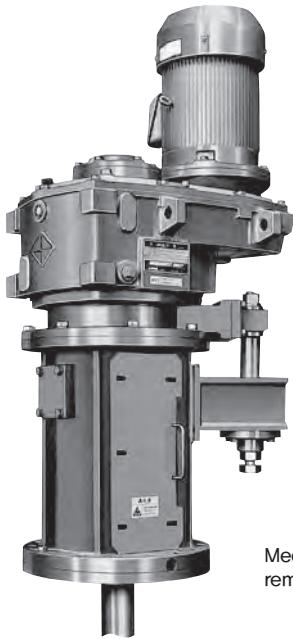
※ (*) in the above table indicates 6P motor.

■ Specifications

●Top-mount model variations (50Hz)

		Motor output(kW)																	
		Speed (rpm)	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	
One-step reduction		350					S3	S3	S4	S4	S5	S5	S5						
		280					S3	S3	S4	S4	S5	S5	S5						
		230(*)				S3	S3	S4	S4	S5	S5	S5							
		190(*)				S3	S3	S4	S4	S5	S5	S5							
Two-step reduction		155			S3	S3	S4	S4	S5	S5	S6	S6	S6	S7	S7	S8L	S8L	S8L	
		125		S3	S3	S3	S4	S4	S5	S5	S6	S6	S6	S7	S7	S8L	S8L	S8L	
		100		S3	S3	S4	S4	S4	S5	S5	S6	S6	S6	S7	S7	S8L	S8L	S8L	
		84		S3	S3	S4	S4	S5	S5	S6	S6	S6	S7	S7	S7	S8L	S8L	S8L	
		68		S3	S3	S4	S5	S5	S5	S6	S6	S6	S6	S7(*)	S7(*)	S7(*)	S8L(*)	S8L(*)	S8H(*)
		56										S6	S7(*)	S7(*)	S7(*)	S8L(*)	S8H(*)		
Three-step reduction		56	S3	S3	S4	S4	S5	S5	S6	S6									
		45	S3	S3	S4	S5	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	
		37	S3	S4	S4	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	S9H	
		30	S3	S4	S4	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	S9H		
		25	S3	S4	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	S9H		
		20	S4	S4	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	S9H		
		16.5(*)	S4	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	S9H			
13.5(*)	S4	S5	S5	S6	S7	S7			S8H	S9L	S9H	S9H							

※ (*) in the above table indicates 6P motor.

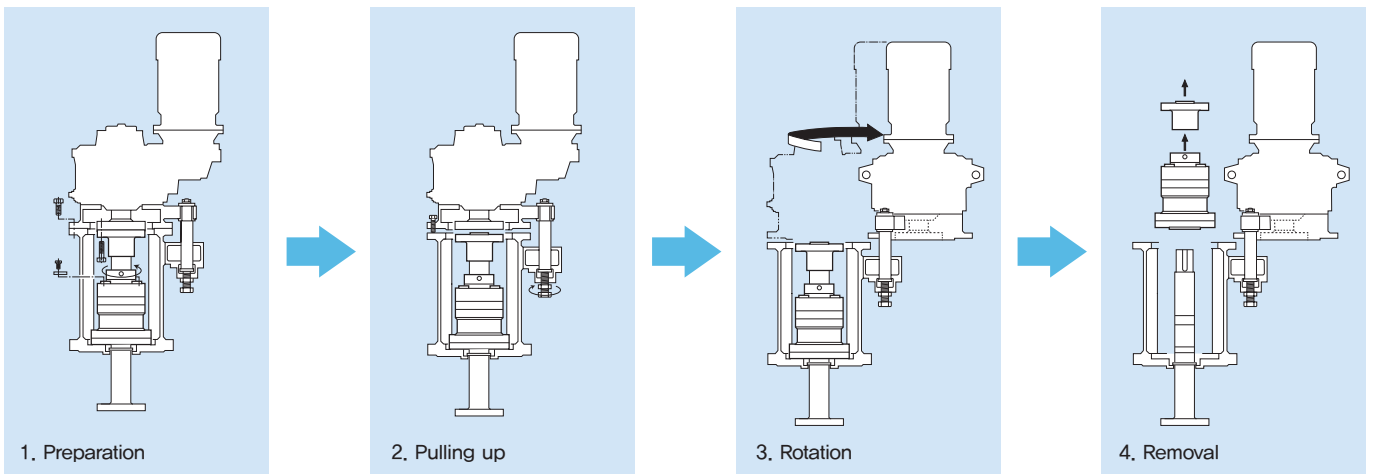


Mechanical seal removable mixer

Mixers that allow easy replacement of mechanical seal

■ Features

- The existing mechanical seal can be easily replaced with a new one without removing the reduction gear unit.
- The reduction gear unit can be swung aside to allow the mechanical seal to be pulled out overhead.
- The time required for maintenance is significantly reduced.

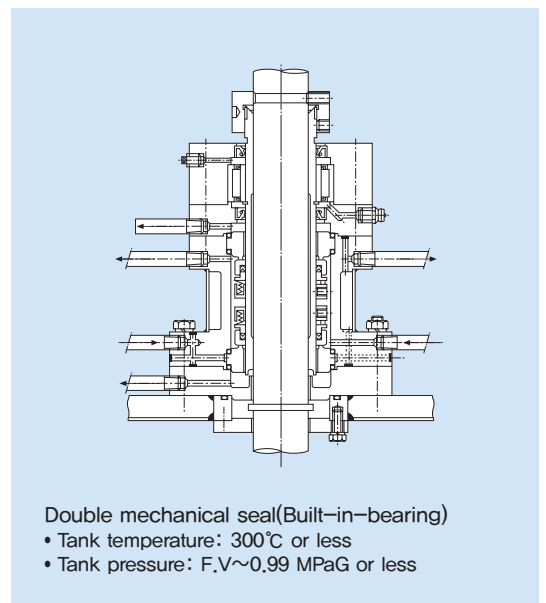


■ Specifications

● Top-mount model variations (60Hz)

	Speed (rpm)	Motor output(kW)																
		0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	
One-step reduction	350					S3	S3	S4	S4	S5	S5	S5						
	280(*)				S3	S3	S4	S4	S5	S5	S5							
	230(*)				S3	S3	S4	S4	S5	S5	S5							
Two-step reduction	190			S3	S3	S4	S4	S5	S5	S6	S6	S7	S7	S8L	S8L	S8L		
	155			S3	S3	S4	S4	S5	S5	S6	S6	S7	S7	S8L	S8L	S8L		
	125		S3	S3	S3	S4	S4	S5	S5	S6	S6	S7	S7	S8L	S8L	S8L		
	100		S3	S3	S4	S4	S4	S5	S5	S6	S6	S7	S7	S8L	S8L	S8L		
	84		S3	S3	S4	S4	S5	S5	S6	S6	S7(*)	S7(*)	S8L(*)	S8L(*)	S8L(*)			
68								S6	S6	S7(*)	S7(*)	S8L(*)	S8L(*)	S8H(*)				
Three-step reduction	68		S3	S3	S4	S5	S5	S5	S6									
	56	S3	S3	S4	S4	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S9L	S9L		
	45	S3	S3	S4	S5	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S9L	S9H		
	37	S3	S4	S4	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	S9H	
	30	S3	S4	S4	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	S9H		
	25	S3	S4	S5	S5	S6	S6	S7	S7	S7	S8L	S8L	S8H	S9L	S9H	S9H		
20(*)	S4	S4	S5	S6	S6	S7	S7	S8L	S8L	S8H	S9L	S9H	S9H					
16.5(*)	S4	S5	S5	S6	S6	S7	S7	S8L	S8H	S9L	S9H	S9H						

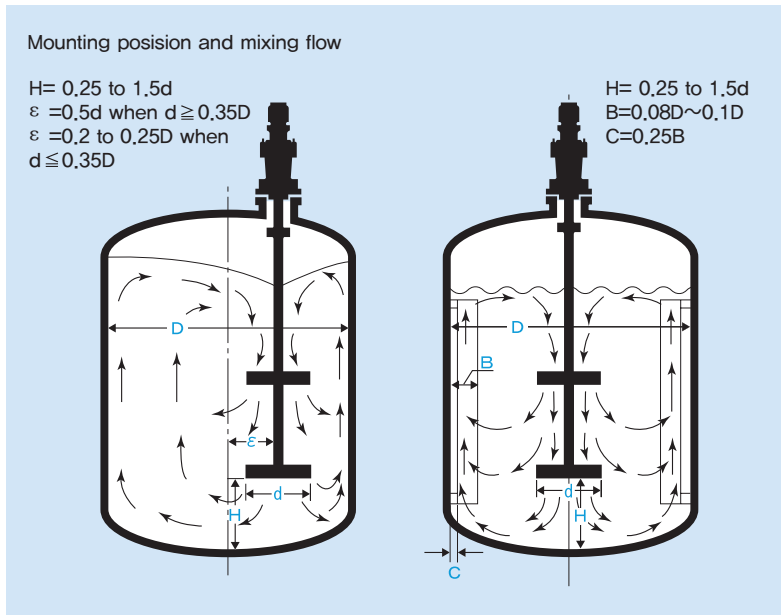
※ (*) in the above table indicates 6P motor.



D-TYPE TOP MIXERS / E-TYPE TOP MIXERS



D-type top mixers



E-type top mixers

Patented Registered utility model

Mixers that allow virtually all commercially available reduction gears and speed changers

■ Features

- Seven different sizes are available so that any commercially available reduction gear, speed changer, or motor can be used.
- The capacity ranges from 0.4 kW to 150 kW, with most mixers designed for large low-speed models.

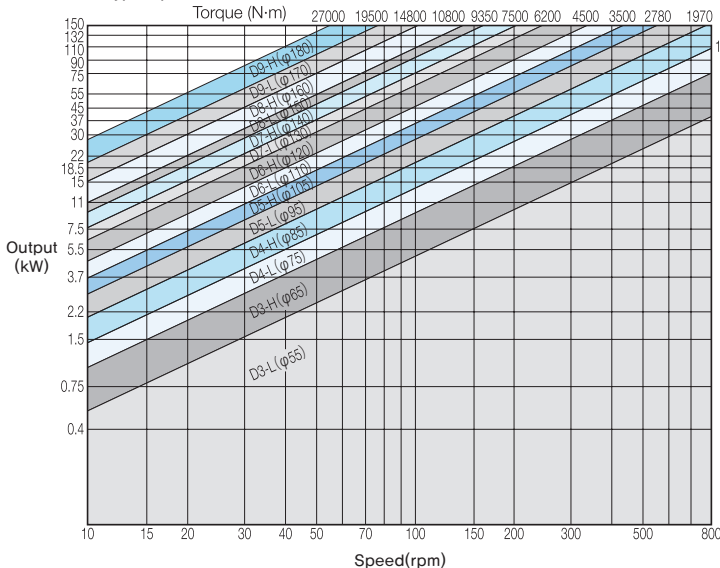
Easily detachable mechanical seal type mixers

■ Features

- The sleeve-type mechanical seal unit is easy to remove from the side of the mounting frame.
- All the tools needed to disassemble and reassemble the mixer are provided. No additional tools are required.
- Troublesome centering is eliminated because of the adoption of spigot joint construction.

■ Specifications

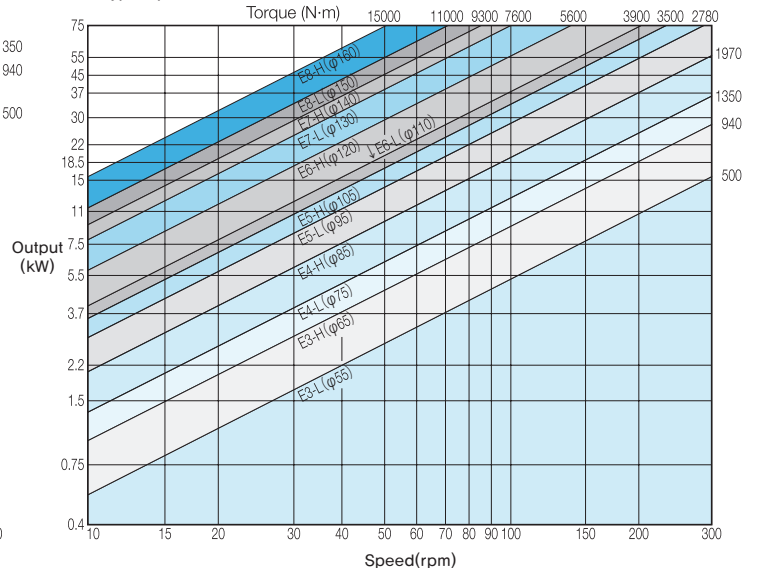
● D-type top mixers



* D-type top mixers are available depending on the torque range. The table on the left provides a guideline. The torque can be obtained when the speed and power output are known. The frame number and drive shaft diameter can be determined simultaneously.

■ Specifications

● E-type top mixers

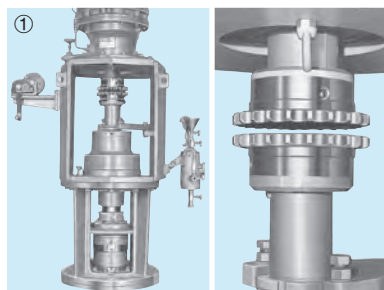


* E-type top mixers are available depending on the torque range. The table on the left provides a guideline. The torque can be obtained when the speed and power output are known. The frame number and drive shaft diameter can be determined simultaneously.

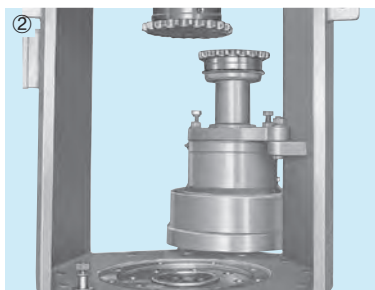
D-TYPE TOP MIXERS / E-TYPE TOP MIXERS

E-type Top Mixers Disassembly method of the mechanical seal unit

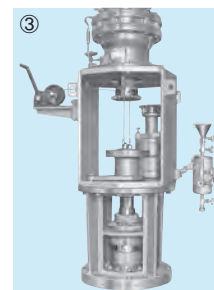
Patented structure



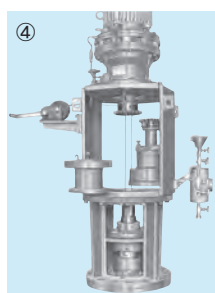
① Remove the roller chain from the chain coupling.



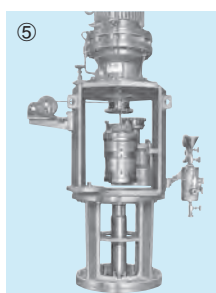
② Turn and move the bearing unit.



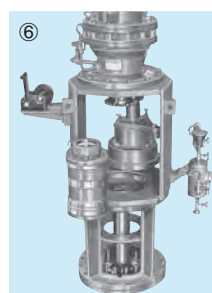
③ Remove the flange coupling.



④ Remove the fixed plate.



⑤ Hoist the mechanical seal unit.



⑥ Place the unit on the jig plate. Turn and move.



Disassembly method:
See the separate catalog for details.

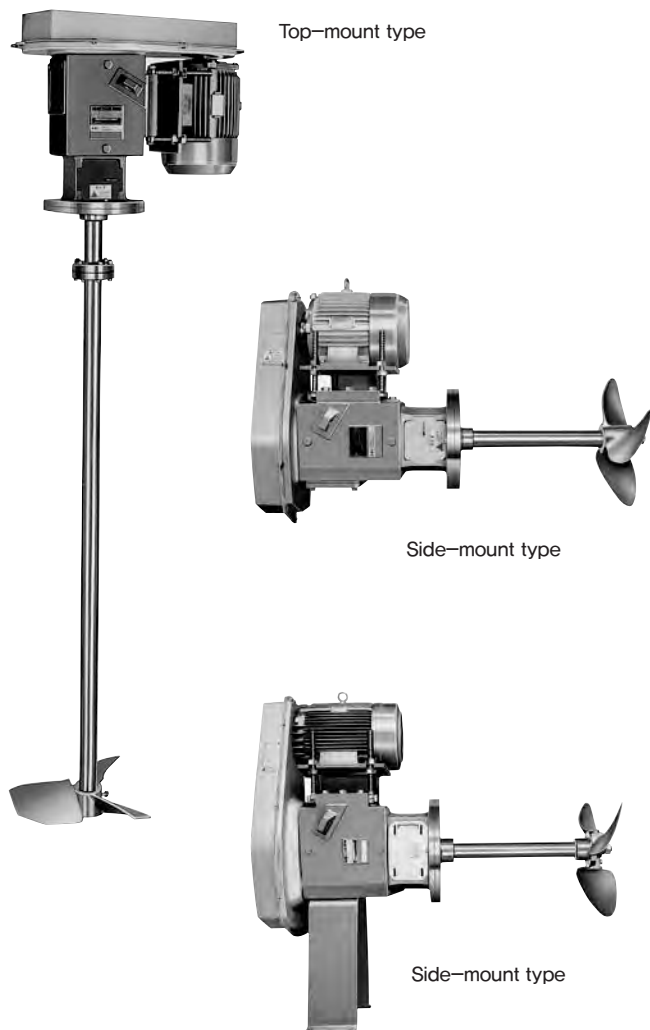
MIXING TORQUEMETER **ST-3000 II**

■ Application

- To collect the basic data of mixing (power, N_p).
- To determine the best mixing conditions and need for up-scaling.
- To measure reaction, change of physical properties during mixing, etc.
- Physical properties and quality control of slurry, mixtures, etc.

Upgraded to ST-3000 II with the addition of air-purging and associated software (optional).

- A maximum torque of 0.32 N·m facilitates mixing of substances having a wide range of viscosities from low to medium to high.
- The attached control box features a touch type panel for easy, interactive operation.
- Among the newly introduced functions is the "PC control" feature that enables operation from a PC after installation of the associated software StirPC for ST-3000 II (optional).
- Pressurized air is introduced from the air purge inlet to protect the main unit from corrosive gases.
- The standard package includes five impellers, which include three impellers from the high performance impellers super-mix series.
- The main unit and control box are lightweight and compact for greater portability.



Compact design: Side mount is of a special value

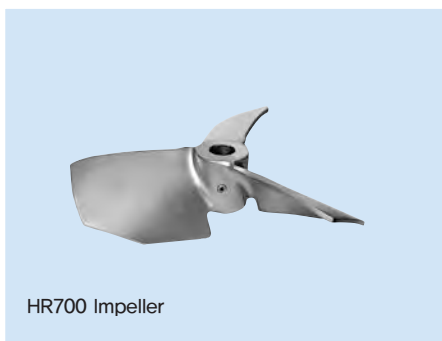
■ Features

- Our user-friendly design has improved ease in handling, maintenance, and inspection.
- High-performance impellers were developed for exclusive use in side-mount type models
- It employs a high power transmission V-belt, which has a long service life and exhibits high resistance to oil and heat. It is also electrostatic shielded.
- A wide selection allows for operation under conditions varying from 3.7 kW to 30 kW through belt reduction.

■ Specifications

● Belt reduction

Speed (rpm) 50Hz · 60Hz	Motor output(kW)							
	3.7	5.5	7.5	11	15	18.5	22	30
350(4P)		S-3	S-3	S-3	S-4	S-4	S-4	S-5
230(6P)	S-3	S-3	S-3	S-4	S-4	S-5	S-5	

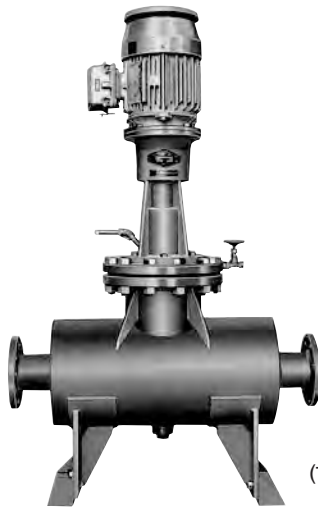


■ HR700 Impeller (Super-Mix)

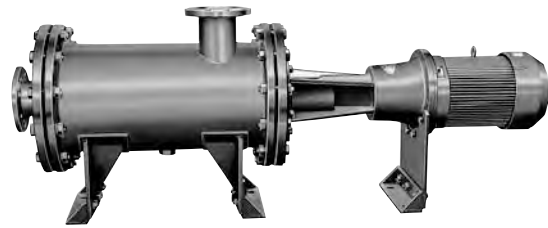
- Equipped with a wash-out blade, which has a swept forward configuration.
- High-performance discharge impeller, which has a distinguished ability of preventing liquid separation at the blade tip.
- It can satisfy requirements of simultaneously mixing different substances, such as liquids, gases, solids, and powders, i.e., in solid-liquid mixing, as well as mixing compounds of these substances.

MULTI LINE MIXERS

Registered utility model



Multi line mixer (Top-mount type)



Multi line mixer (Side-mount type)

■ Specifications

Model	Motor				Applicable viscosity (mPa · s)	Processing amount (m ³ /h)
	Output (kW)	No. of poles (P)	Speed (rpm)			
			50Hz	60Hz		
MS14-MPR (Side-mount type)	0.4	4	1,450	1,750	1 ~ 3,000	10 ~ 0.6
MT14-MPR (Top-mount type)	0.75				1 ~ 10,000	18 ~ 0.6
	1.5				1 ~ 20,000	32 ~ 0.6
MS24-MPR	2.2	4	1,450	1,750	1 ~ 30,000	45 ~ 0.8
MT24-MPR	3.7				1 ~ 50,000	70 ~ 1.0
MS26-MPR	5.5	6	960	1,150	1 ~ 50,000	120 ~ 1.6
MT26-MPR						
L 86-MPR	7.5	6	960	1,150	1 ~ 50,000	160 ~ 2.0
L 76-MPR	11					220 ~ 3.0
L 88-MPR L 78-MPR	15	8	730	880	1 ~ 50,000	300 ~ 4.0
	18.5					370 ~ 4.8
	22					450 ~ 6.0
	30					540 ~ 7.0
	37					600 ~ 8.0
	45					720 ~ 9.5
	55					800 ~ 10.0

Installed in existing pipelines for continuous, high-shear mixing

■ Features

- Can be used with both horizontal and vertical pipelines.
- Combined with other equipment, this mixer provides a mixing process suitable for each particular purpose.
- A HADO multi-line mixer only 1/2000th the size of a conventional batch-type mixer can process an equal amount of materials. Moreover, the multi-line mixer's mixing efficiency is also three times greater.

※ Models of 7.5 kW or larger power are not included in the multi-mixer series. They are coded according to the former system: L-7 is the top-mount type and L-8 is the side-mount type.

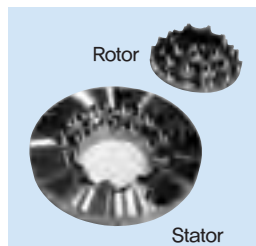
※ The specifications are based on mixing one kind of liquid. For other applications such as dissolving powder, kindly consult us.

※ Mixers with 2-pole motors are also available on request.

SUPER SHEAR MIXERS SDCS-type in-line dispersion mixers



In-line dispersion mixers SDCS-type



Rotor

Stator

Assembled in ducting for continuous dispersion and discharging

■ Features

Despite the small size, these compact, in-line dispersion mixers deliver high dispersion and pumping required for continuous, large-volume processing.

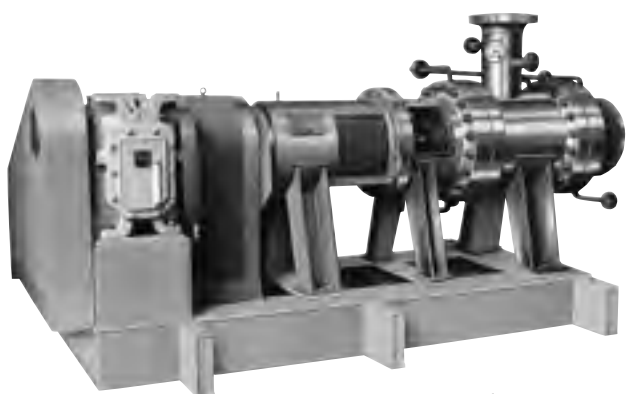
■ Specifications

● SDCS-type in-line dispersion mixers

Model	Motor		Applicable viscosity (mPa · s)	Processing amount (m ³ /h)
	Output (kW)	Max. Speed (rpm)		
060M-1.5	1.5	~5,000	0.1~1,000	1.9
075M-3.7	3.7	~5,000		3.8
100M-5.5	5.5	~3,600		6.5
125M-15	15	~3,600		8.4
150M-22	22	~3,000		12

LARGE AND SPECIAL MIXERS

Introducing large and special mixers



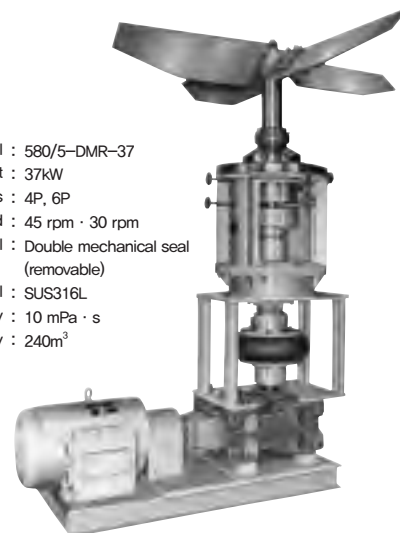
Model : L8 4/6 - BGPR-55
 Output : 55kW
 Number of poles : 4P, 6P
 Speed : 40 rpm · 60 rpm
 Shaft seal : Gland packing seal
 Material : SUS304
 Viscosity : 1,000 to 15,000,000 mPa · s
 Liquid capacity : 0.058m³



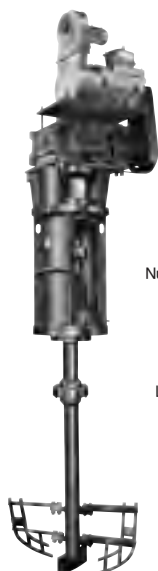
Model : 575-BDPR-55
 Output : 55kW
 Number of poles : 6P
 Speed : 32/23 rpm
 Shaft seal : Gland packing seal
 Material : SUS316
 Viscosity : 26,000~67,000 mPa · s
 Liquid capacity : 41m³



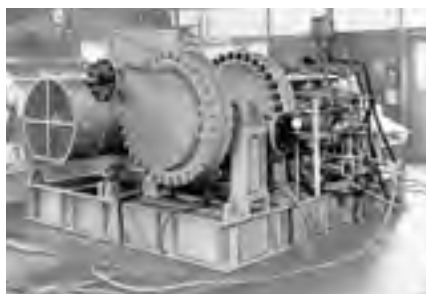
Model : ET104-DMR-55
 Output : 55KW
 Number of poles : 4P
 Speed : 36 rpm
 Shaft seal : Double mechanical seal
 Material : SS
 Viscosity : 5,000~12,000 mPa · s
 Liquid capacity : 328m³



Model : 580/5-DMR-37
 Output : 37kW
 Number of poles : 4P, 6P
 Speed : 45 rpm · 30 rpm
 Shaft seal : Double mechanical seal
 (removable)
 Material : SUS316L
 Viscosity : 10 mPa · s
 Liquid capacity : 240m³



Model : 570-BDRM-55
 Output : 55kW
 Number of poles : 4P
 Speed : 10~40 rpm
 Shaft seal : Double mechanical seal
 Material : SUS316
 Viscosity : 450,000 mPa · s
 Liquid capacity : 1.3m³

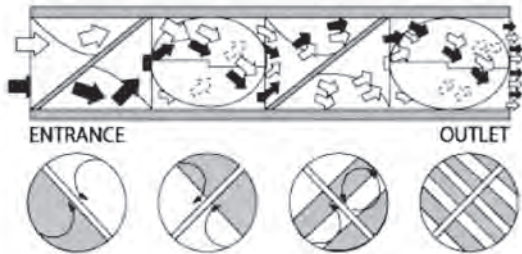


Model : L84-BMR-400SI
 Output : 400kW
 Number of poles : 4P
 Speed : 1,080 to 1,250 rpm
 Shaft seal : Double mechanical seal
 Material : SUS304, Tungsten,
 C,S,wear-resistant rubber lining
 Viscosity : 585 to 1,990 mPa · s
 Liquid capacity : 0.665m³

LINE MIXER STATIC TYPE

Static Line Mixer Series

Mechanism of mixing



Product



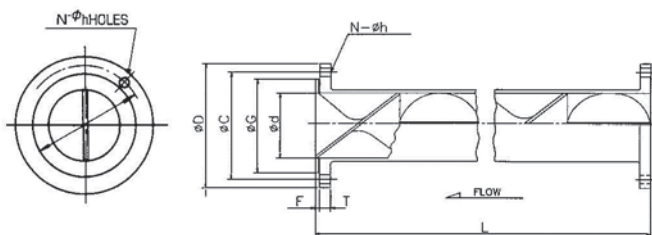
Features

- Simple construction and compact no rotation parts, competitive price and less maintenance compared with other type of mixers.
- On line installation but less pressure drop static line mixer. It is possible to install on existing pipe line without change pump.
- Applicable for various mixing of fluids for liquid, gas to gas, several gaseous mixing, etc combining numbers of elements.
- Easy maintenance clean by washing fluid will be enough and easy to dismantle.
- Safety and less energy no agitator, just mixing on pipeline.

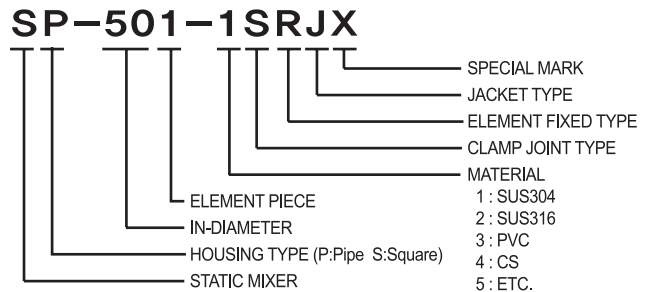
Specifications

SP	SP--		1unit (Lmm)	mm (JIS 10K)					
	d mm	cm ²		D	C	G	T	F	N-h
10	12.7	1.01	90	90	65	46	12	4.5	4-15
15	16.1	1.79	90	95	70	51	12	4.5	4-15
20	21.4	3.27	120	100	75	62	14	4.5	4-15
25	27.2	5.40	140	125	90	67	14	4.5	4-19
40	41.2	12.7	2140	140	105	81	16	4.5	4-19
50	52.7	21.0	265	155	120	96	16	5.5	4-19
65	65.9	33.1	330	175	140	116	18	5.5	4-19
80	78.1	46.3	395	185	150	126	18	5.5	8-19
100	102.3	80.1	505	210	175	151	18	5.5	8-19
125	126.6	122.0	640	250	210	182	20	10.5	8-23
150	151.0	174.5	770	280	240	212	22	10.5	8-23
200	203.3	316.4	1050	330	290	262	22	12.5	12-23
250	254.4	471.3	1300	400	355	324	24	12.5	12-25
300	305.5	679.2	1550	4450	400	368	24	17.5	16-25
350	339.6	846.4	1750	490	445	413	26	17.5	16-25
400	390.4	1109.6	2000	560	510	475	28	17.5	16-27
450	441.2	1408.5	2250	620	565	530	30	17.5	20-27
500	459.0	1745.3	2500	675	620	585	30	17.5	20-27

* Please request us your requirements other than the above table.



Model code



Applications

- Dissolving chemicals to solution
- Mixing of various fuels, oils
- Mixing additives, pH control mixing.
- Other various mixing

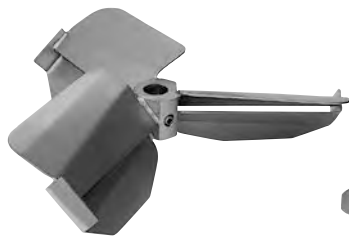
Guide line of numbers of elements

- Low viscosity mixing (1:1) 4
 - Water and additives (100:1) 6-8
 - Other applications are also available
- Please ask us your application

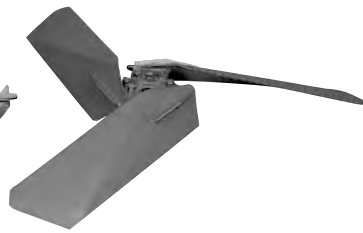
SUPER-MIX SERIES (HIGH PERFORMANCE IMPELLERS)



HR100



HV200



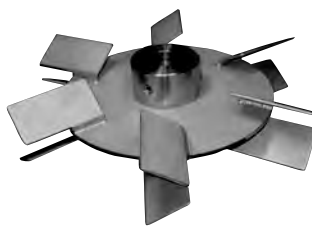
HR320



HR700



HR800



HS100



HS600

High-performance impellers based on high advanced flow control technology

■ Features

◆ HR100 Impeller Design registered

- The HR100 is a simple configuration that can be made simply by pressing to bend along straight lines, yet this energy-saving low-shear impeller excels in discharge performance.
- The HR100 impeller is suitable for solid-liquid mixing and uniform suspension of easy-to-crush and lightweight particles.
- Generates more discharge flow from less power than the conventional three-propeller system.

◆ HV200 Impeller Patented

- HADO's unique double-bladed impeller incorporates the effects of a 3-wide-bladed impeller and auxiliary blades.
- The slotted flap effect of the slotted flap cancels flow separation behind the main blades. This contributes to a substantial increase in discharge rates and maximum discharge speeds.

◆ HR320 Impeller Design registered/Patent pending

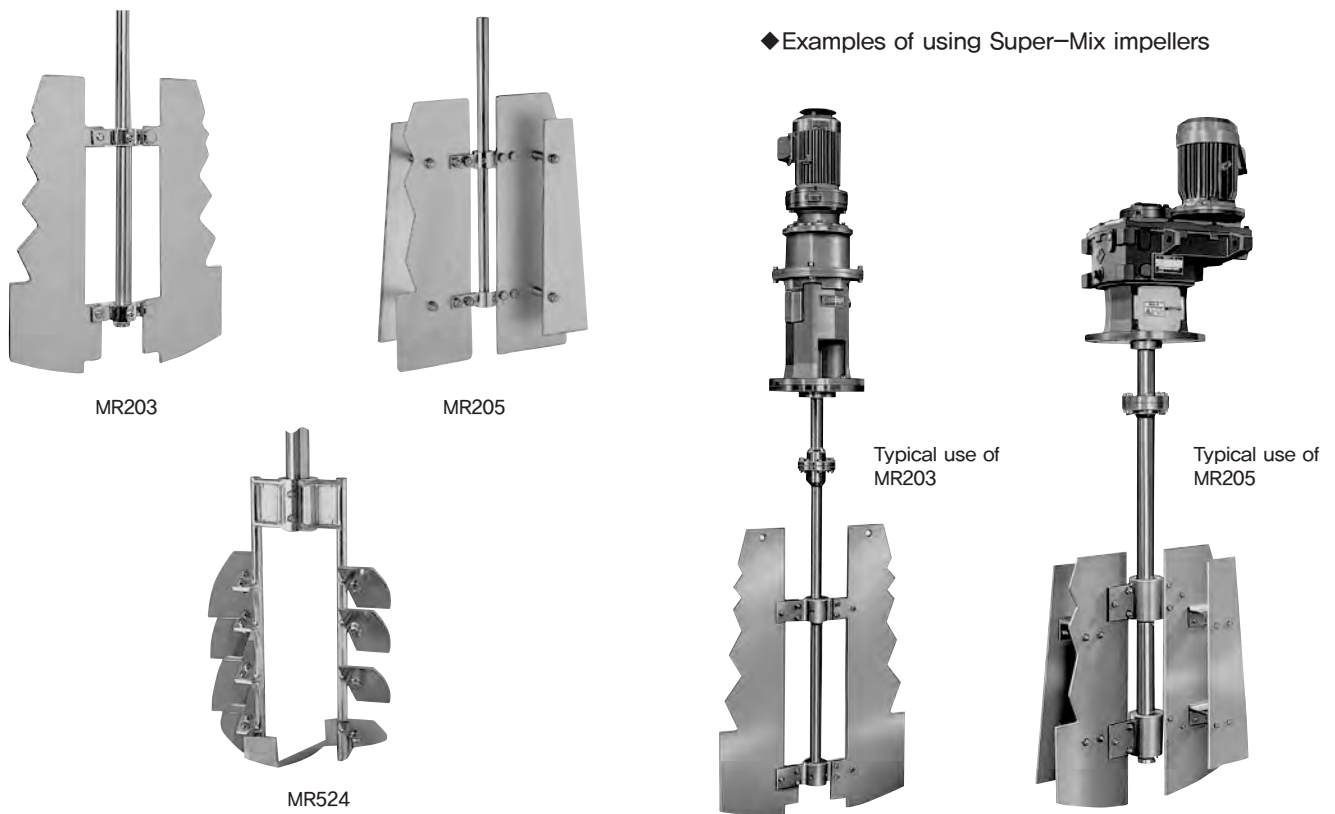
- The forward-blade twist-down effect prevents liquid flow separation at the blade tip and increases discharge capacity.
- Ideal for operations where the liquid level passes over the impeller position, installations with unusually low blade positioning heights, and solid-liquid mixing.
- Substantial improvement of efficiency as compared to the conventional 4-piece pitched paddle system.

◆ HR700 Impeller Design registered/Patented

- This high-discharge impeller reflects the special efforts undertaken to determine the optimal blade surface shape and camber ratio that prevents separation at the blade tip, and the dihedral angle that contributes to the discharge performance.
- Ideal for simultaneous mixing of different substances such as, liquids, gases, solids, and powders, i.e., in solid-liquid mixing, as well as for mixing compounds of these substances.
- Efficiency has been increased substantially as compared to the conventional 3-propeller system.

◆ HR800 Patent pending

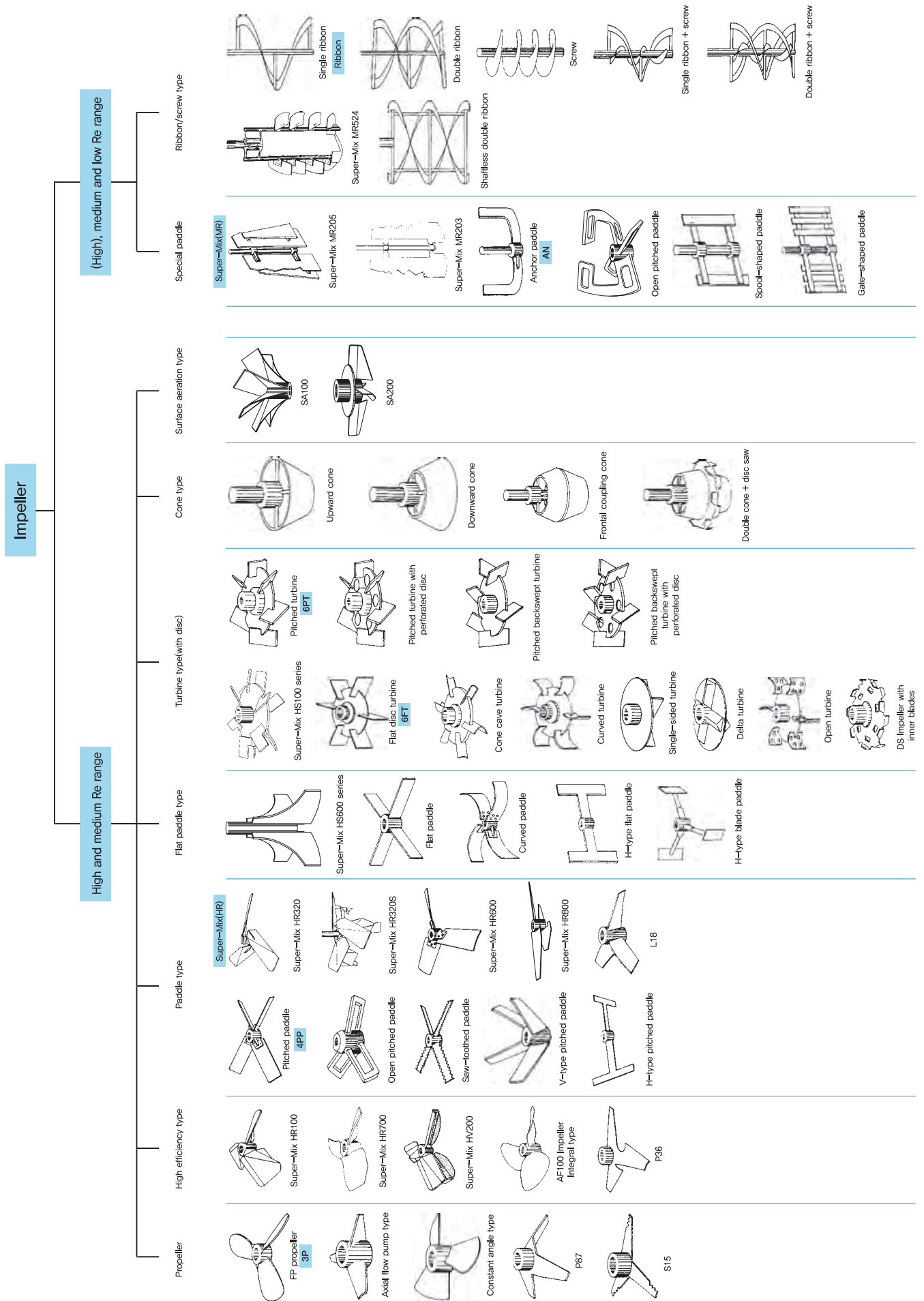
- Double-blade effects from the combination of low-power, high-performance discharge-type main blades, and overlapping smaller blades with a large angle of attack.
- Ideal for storage tanks for solid-liquid mixing.



■ Features

- ◆ **HS100** Patented
 - Improved liquid fluidization along with higher gas absorption ($k_L a$) over the conventional turbine.
 - Ideal for gas-liquid and gas-solid-liquid mixing operations.
- ◆ **HS600 Impeller** Design registered/Patent pending
 - Installation near the tank bottom means greater acceptance of liquid surface fluctuation and better particle uniformity for extraction.
 - The highly uniform dispersion is ideal for solid-liquid mixing and slurry mixing.
- ◆ **MR203 Impeller** Design registered
 - The trapezoidal shape towards the tank bottom and the clearance effect at the shaft center are combined to produce a strong suction flow and large-volume circulation.
 - Ideal for applications in which adhesion must be prevented or where the cleaning effect is critical, and it is available in a wide range of variant designs to meet specific needs.
- ◆ **MR205 Impeller** Design registered/Registered utility model/Patent pending
 - The double-blade effect produces a strong, radial discharge flow even for high-viscosity liquids. An upward liquid flow is formed from the tank bottom towards the liquid surface. This contributes to high mixing performance.
 - Ideal for reaction systems that accompany change in physical properties in operations, such as, mixing medium to high-viscosity fluids, mixing liquids that vary in specific gravity or viscosity, and suspending slurry of high concentration.
- ◆ **MR524 Impeller** Patented
 - Significantly high mixing performance at Reynolds number < 1 .
 - The multi-stage, inclined blade design ensures better mixing performance regardless of liquid volume fluctuation. This eliminates the poor mixing performance associated with the conventional ribbon blades.

IMPELLERS (CLASSIFICATION BY DISCHARGE CHARACTERISTICS)



Letter of Request

HR : Hado Request



530-2, Gajwa-Dong, Seo-Gu
Incheon, 404-250 Korea
T E L : +82-32-583-6321~8
F A X : +82-32-583-6329
e-mail : hado@hado.co.kr

Company			
Project		User Contact	
Job No.		e-mail	
Item No.		Tel No.	
Job Site		Fax No.	
Hado Records	<input type="checkbox"/> Yes (HADO Job No. _____)	-M-	<input type="checkbox"/> No

Mixing Purpose

- Liquid-Liquid Mixing
 Solid-Liquid Mixing
 Gas-Liquid Mixing
 Gas-Solid-Liquid Mixing
 Mixing
 Reaction
 Dispersing
 Heat Transfer
 Suspension
 Dissolve
 Emulsification
 Crystalization
 Sinking Prevention

Substance	Phase	Quantity [m ³]	Temperature [°C]	Viscosity [Mpa · s]	Density [kg/m ³]	Particle Size [μm]	Concentration [wt/vol%]	Remark
Mixture								

Op. Quantity	Max. m ³ Nor. m ³ Min. m ³
Op. Time	<input type="checkbox"/> Continuous (Hr / Year:Period) <input type="checkbox"/> Batch (Hr / Batch: Batch/Day)
Mixing Time	
Empty Operation	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Foot Bearing <input type="checkbox"/> Yes (Material:) <input type="checkbox"/> No
Installation	<input type="checkbox"/> Flange (<input type="checkbox"/> Top <input type="checkbox"/> Side <input type="checkbox"/> Bottom) <input type="checkbox"/> Clamp <input type="checkbox"/> Stand

Tank

Shape	<input type="checkbox"/> Cylinder Capacity m ³
Top-Shape	<input type="checkbox"/> Flat <input type="checkbox"/> Cone <input type="checkbox"/> 10% Dish <input type="checkbox"/> 2:1 Ellips <input type="checkbox"/> Etc.()
Bottom-Shape	<input type="checkbox"/> Flat <input type="checkbox"/> Cone <input type="checkbox"/> 10% Dish <input type="checkbox"/> 2:1 Ellips <input type="checkbox"/> Etc.()
Dimension	T.L-T.L mm × I,D mm (L mm × W mm × H)
Temperature	(Des. / Ope.)°C Pressure (Des. / Ope.)MPa · G
Regulation	<input type="checkbox"/> Baffle <input type="checkbox"/> Yes (EA) <input type="checkbox"/> No
Mounting	<input type="checkbox"/> Center <input type="checkbox"/> Off Center(Distance mm)

Place

Place	<input type="checkbox"/> Indoor <input type="checkbox"/> Outdoor <input type="checkbox"/> Indoor but Outdoor Spec.
Temperature	

Mixer

Mixing Tendency	<input type="checkbox"/> HR <input type="checkbox"/> Violent <input type="checkbox"/> Medium <input type="checkbox"/> Mild <input type="checkbox"/> Motor (kW) <input type="checkbox"/> Pv (kW/m ³)
Speed	<input type="checkbox"/> HR <input type="checkbox"/> ()rpm <input type="checkbox"/> Flange <input type="checkbox"/> HR (JIS, 10K) <input type="checkbox"/> ()
Impeller	<input type="checkbox"/> HR <input type="checkbox"/> 3P <input type="checkbox"/> 4PP <input type="checkbox"/> 6FT <input type="checkbox"/> 6PT <input type="checkbox"/> Ribbon <input type="checkbox"/> Super-Mix <input type="checkbox"/> ()
Wet Part Material	<input type="checkbox"/> SUS304 <input type="checkbox"/> SUS316 <input type="checkbox"/> C,S <input type="checkbox"/> Lining (<input type="checkbox"/> Rubber <input type="checkbox"/> FRP <input type="checkbox"/> Teflon) <input type="checkbox"/> Buffing(#) <input type="checkbox"/> Electro Polishing <input type="checkbox"/> Acid Cleaning
Seal	<input type="checkbox"/> Open <input type="checkbox"/> Oil Seal <input type="checkbox"/> Gland Packing <input type="checkbox"/> Mechanical Seal (<input type="checkbox"/> Dry <input type="checkbox"/> Single <input type="checkbox"/> Double) <input type="checkbox"/> OPU (Sealant :) <input type="checkbox"/> Non-seal <input type="checkbox"/> Gland Packing () <input type="checkbox"/> Gasket Material () <input type="checkbox"/> Etc. ()
Drive	<input type="checkbox"/> Motor <input type="checkbox"/> Air Motor <input type="checkbox"/> Oil Pressure Motor <input type="checkbox"/> Maker () <input type="checkbox"/> Constant <input type="checkbox"/> Variable (<input type="checkbox"/> Mechanical() <input type="checkbox"/> Inverter)
Explosion Proof	<input type="checkbox"/> TEFC <input type="checkbox"/> Exe II T3 <input type="checkbox"/> Exd IIB T4 <input type="checkbox"/> Water Proof · IP() <input type="checkbox"/> ()
Power	<input type="checkbox"/> V Hz Ph. Poles
Supplied	<input type="checkbox"/> Motor <input type="checkbox"/> Reducer <input type="checkbox"/> OPU <input type="checkbox"/> () <input type="checkbox"/> Paint <input type="checkbox"/> HR (RAL6011) <input type="checkbox"/> ()
Spare Part	<input type="checkbox"/> No. <input type="checkbox"/> 1Y Spare <input type="checkbox"/> 2Y Spare <input type="checkbox"/> Etc.()

INDUSTRIAL PROCESS APPLICATIONS

+Oil and petroleum	+Fertilization
+Petrochemicals	+Fermentation
+Rubber	+Flue gas desulfurization
+Resin	+Electric materials
+Chemicals	+Ceramics
+Pharmaceuticals	+Foods
+Pulp and papers	+Water and waste water treatment
+Fibers	+Slurry storage
+Paint	+Mining and minerals



**Headquarter
and Plant**

530-2, Gajwa-dong, Seo-gu
Incheon 404-250, Korea
TEL : +82-32-583-6321
FAX : +82-32-583-6329
E-mail : hado@hado.co.kr
Website : <http://www.hado.co.kr>

**Shanghai
Office**

Room 9002, Yongxin Building
887 Huaihai Road(M)
Shanghai 200020, China
TEL : +86-21-6437-7101
FAX : +86-21-6437-7102

Joint Venture & Technical Licensor
SATAKE CHEMICAL EQUIPMENT MFG., LTD., JAPAN
Technical Licensor
SAKURA SEISAKUSHO, LTD., JAPAN