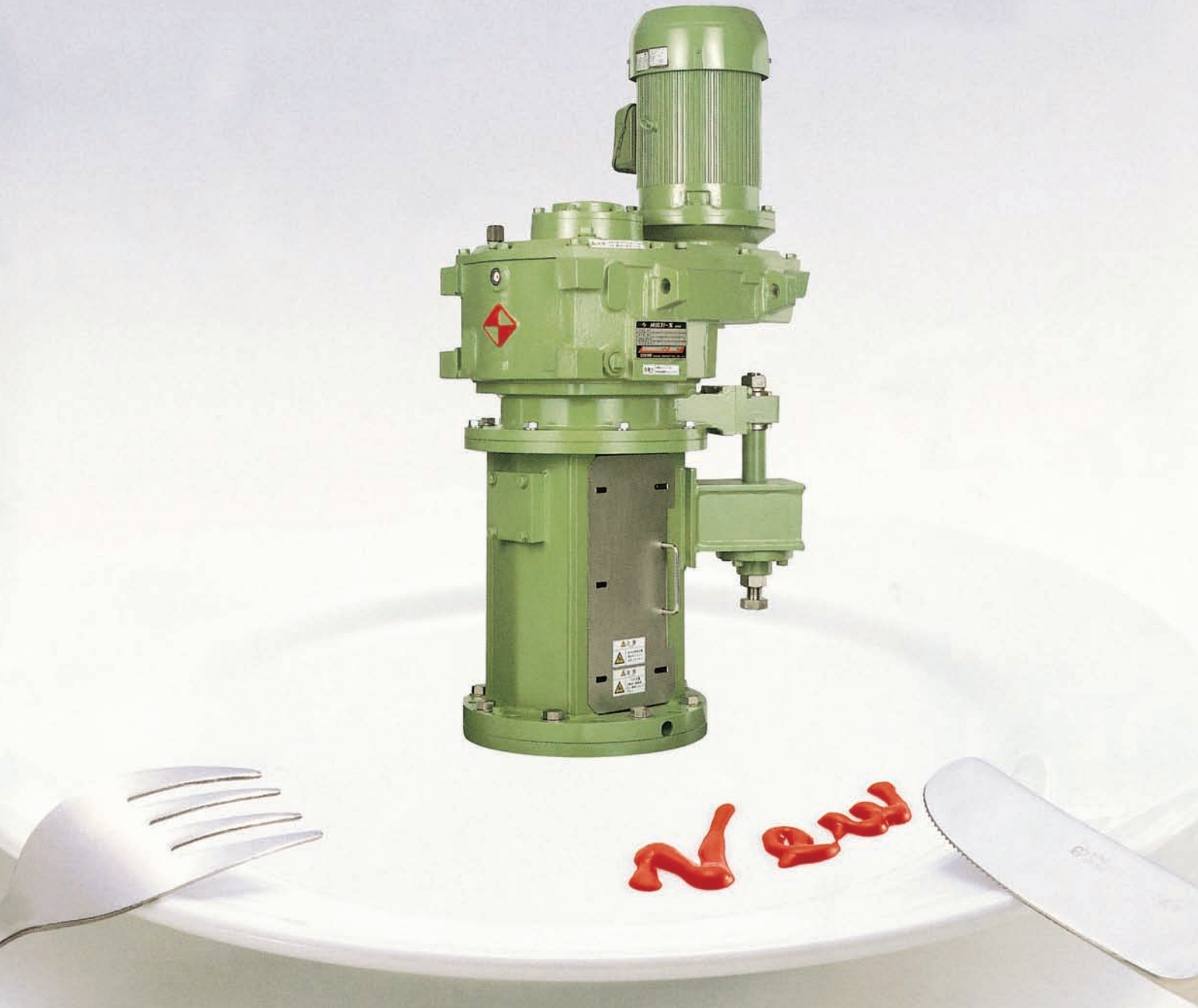


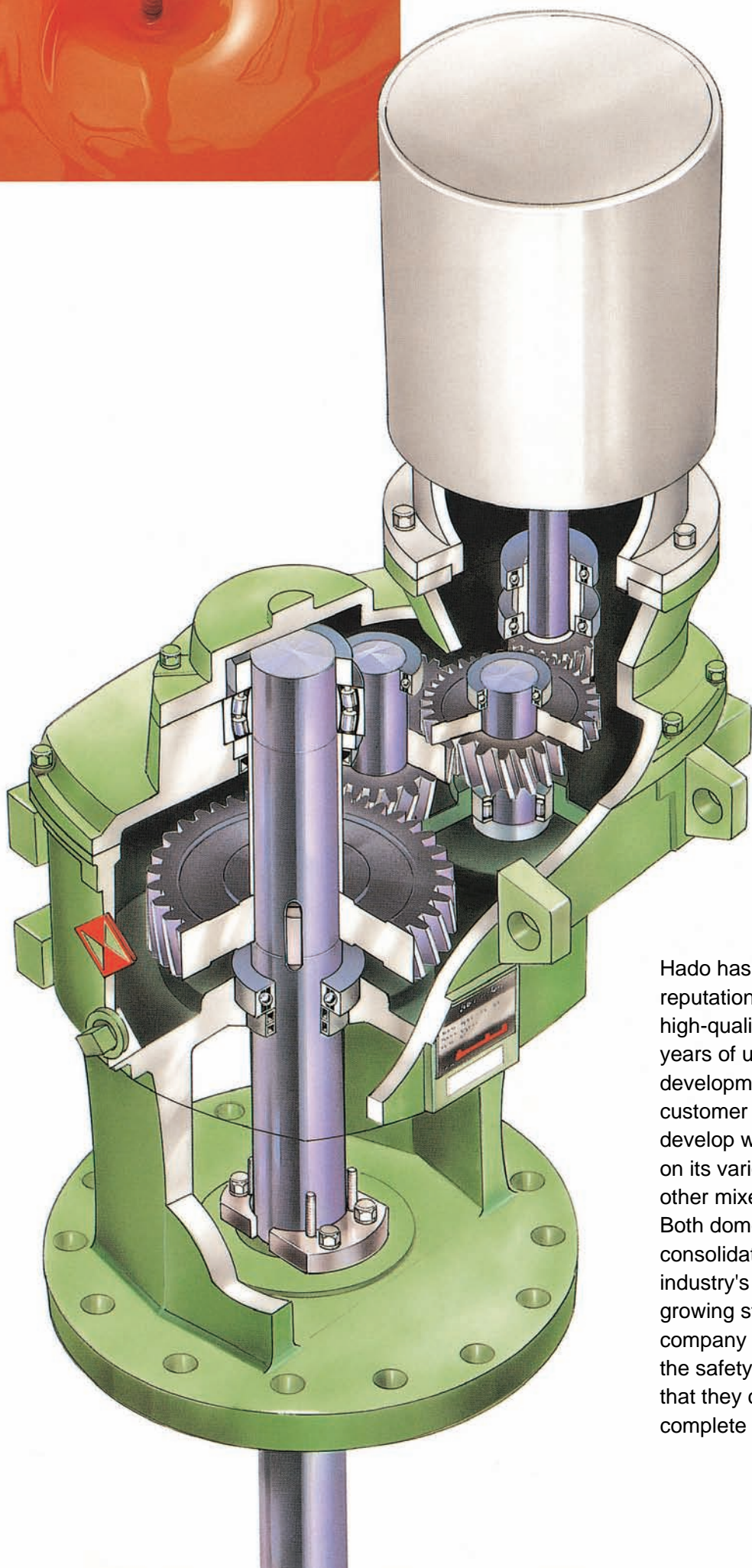


KS A/ISO 9001:2000 CERTIFIED

HADO-SATAKE MULTI S MIXERS

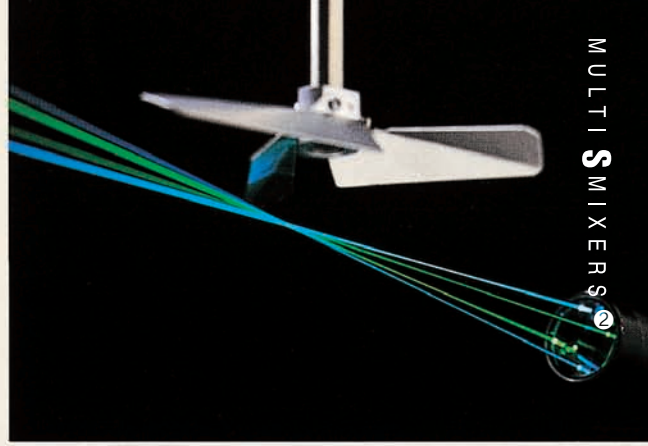
S3~S9 Series





New Release!

Hado has established its present reputation as a prominent manufacturer of high-quality mixers through more than 32 years of uncompromising research and development efforts. To continually meet customer demands, Hado continues to develop widely-ranging expertise based on its various measuring techniques which other mixer manufacturers cannot offer. Both domestically and abroad, Hado has consolidated its operation bases as the industry's pioneer and its exports are growing steadily. Furthermore, the company is strictly committed to ensuring the safety and quality of its products so that they can always be relied on with complete confidence by their users.



Technical Excellence and Reliability through Hado's Safety and Quality Control System

C·O·N·T·E·N·T·S

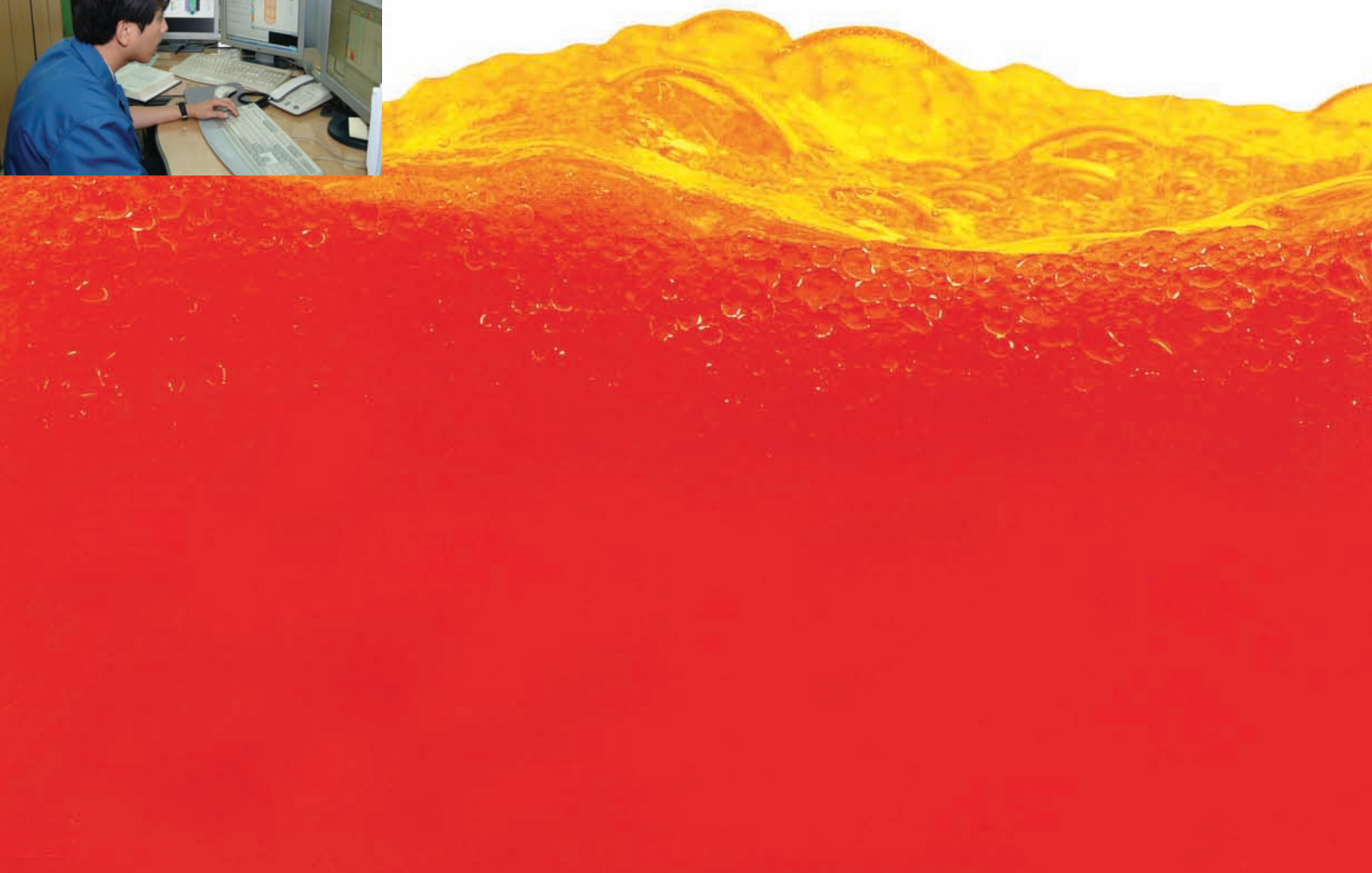
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Mixers of the New Century



By making the best use of advanced measuring techniques, flow visualizing methods, image analyzing systems, Laser Doppler Velocity meters (LDV) and Computational Fluid Dynamics (CFD). Hado has further upgraded the reliability, functionality and safety of its mixers. The company's mixer series has been newly joined by those which allow for safe and easy removal of mechanical seals in case of need. Hado is pleased to present the latest lineup of its superb new-generation mixers.

1. Mixers are made more compact through the rearrangement of gear arrays.
2. Substantial cost reduction is made possible through the increased use of common parts.
3. The combination of rotation speed and motor output can be set in 17 different steps, a range far greater than that of preceding models.
4. The newly-developed 3-bladed axial flow, 1-stage impeller achieves a high discharge coefficient and a low drag coefficient. This simplified impeller provides even higher performance than 4-bladed pitched paddle, 2-stage impellers.
5. These mixers can be used with any type of motor sold on the market.
6. With some of these new mixers, mechanical seals can be easily attached or detached without removing the mixers from their place of installation.





S5 top-mount mixer with removable mechanical seal system



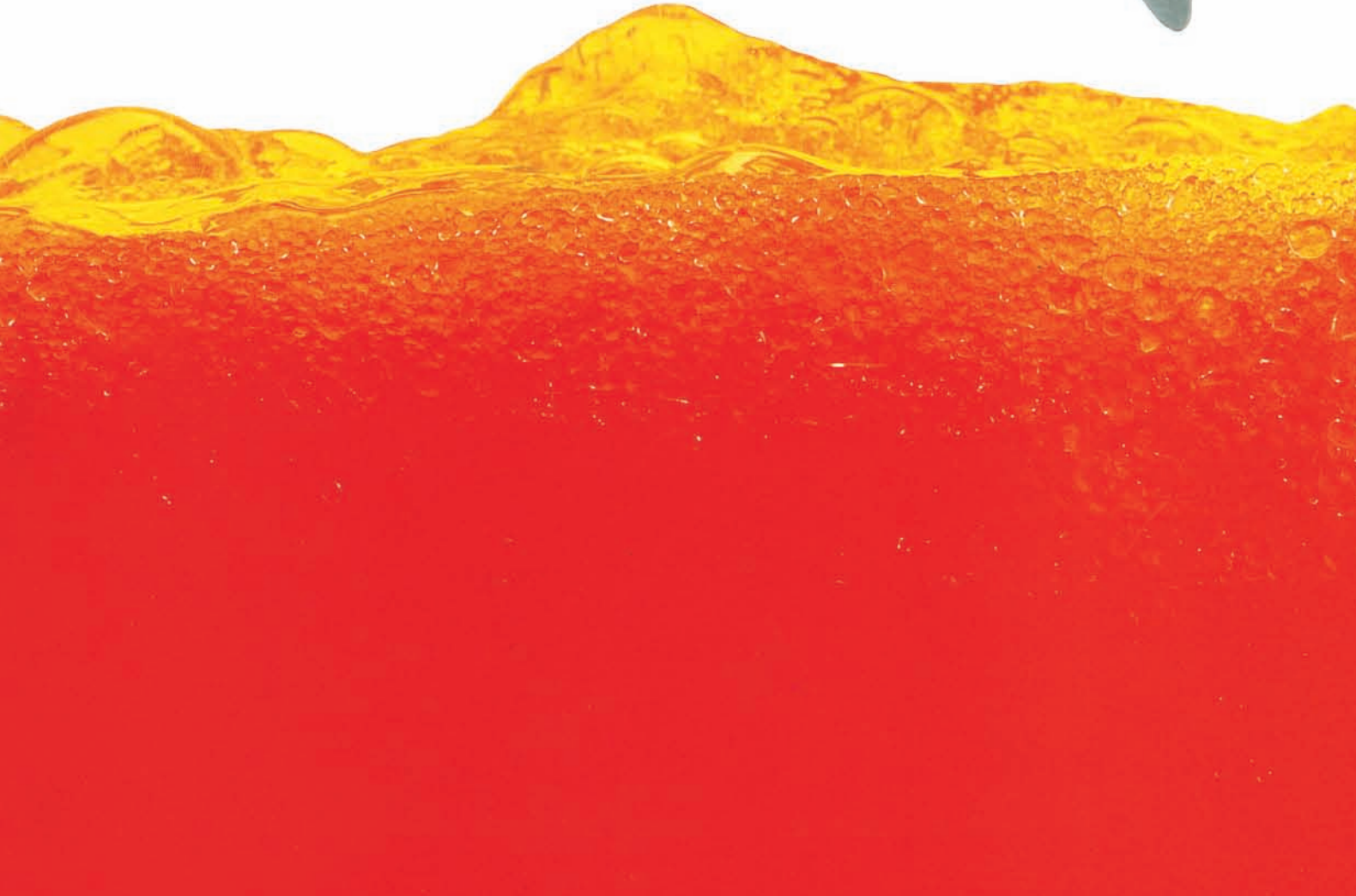
S5 top-mount two/ three-step gear reduction type

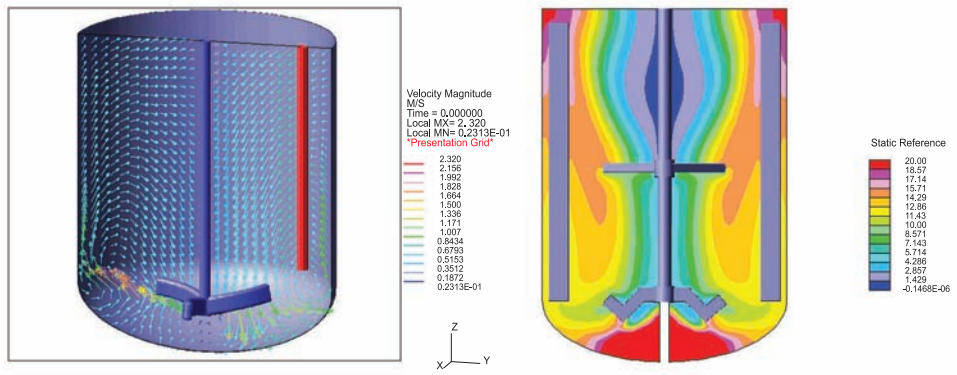


S4 top-mount one-step gear reduction type



S4 side-mount one-step gear reduction type





Impeller Performance Comparison

Type	4-blade pitched paddle $\theta = 45^\circ$	HR320	HR320S
Motor output N_p [-]	1.10	0.42	0.52
Discharge flow coefficient N_{qd} [-]	0.63	0.62	0.60
Discharge flow per power unit $N_{qd}/N_p^{1/3}$ [-]	0.61	0.83	0.74
Required power per unit discharge flow N_p/N_{qd}^3 [-]	4.40	1.76	2.41
Ratio of maximum discharge flow velocity to blade tip speed V_{max}/V_{tip}	0.43	0.33	0.39



(Note) Above performance comparison made with C/d of 1.0
 (C: Impeller installation height, d: Impeller diameter)

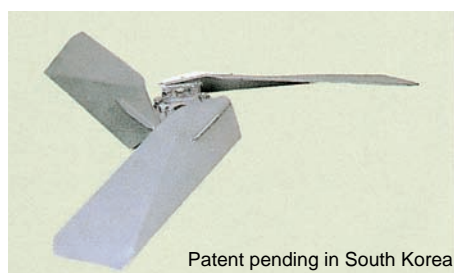
Impellers that Embody Our Commitment to Detail

Multi S Mixer Impellers

Impellers play an integral part in the mixing mechanism. Our mixers come with 3-bladed axial flow-single stage impellers for use in the low Reynolds number range as well as for general use based on our high-tech measurement research using the Laser Doppler

Velocity Meter (LDV). By optimally combining the motor output (N_p value) and discharge coefficient (N_{qd} value), 1-stage HR320 impellers can provide better performance than 4-bladed pitched paddle, 2-stage impellers.

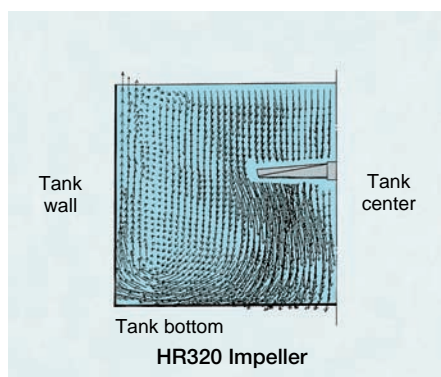
HR320 Impeller



Patent pending in South Korea

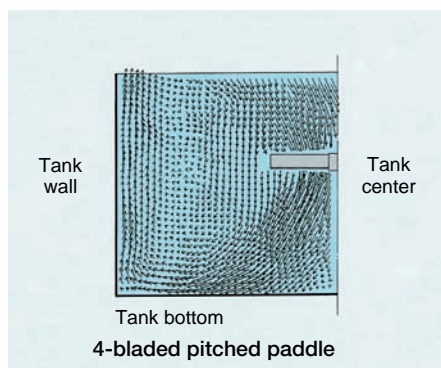
By mounting the mixer off center, the angular advance of the impeller causes the liquid to flow in the axial direction. Also, by slightly changing the bending angles from the root of the blade through the leading edge, flow separation from the rear surface of the blade is minimized and high discharging flow is obtained. The discharging capacity has been improved by more than 70% compared with our conventional 4-bladed pitched paddle, 2-stage impellers, thus achieving energy saving.

- By directly welding the impeller to the mixing shaft instead of key cutting the steel plate welded impeller boss, the impeller and the mixing shaft can be inserted directly into the mixing tank in one unit through the mounting flange. Thus, the mounting process has been simplified. (HR320 HR320S)



HR320 Impeller

Visualized flow pattern near the mixing blade by image processing



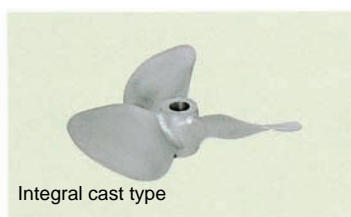
4-bladed pitched paddle

Visualized flow pattern near the mixing blade by image processing

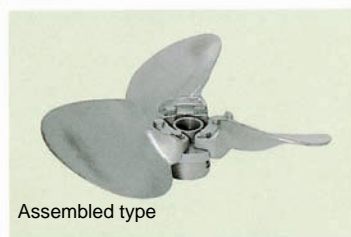
AF100 Impeller (Side-mount Type)

AF100 features an air-foil cross section obtained after a series of studies and experiments aimed at improvement of the blade discharge performance. It features a flat blade with a skewback, designed to minimize impact fluctuation due to inherent cavitation. This impeller reduces the impact fluctuation during rotation, to dramatically increase the discharge efficiency. This makes the AF100 an ideal choice for side-mount agitators.

- Stainless steel casting.
- Integral casting (up to 680mm blade diameter) and assembled version (for blade diameters over 700mm).

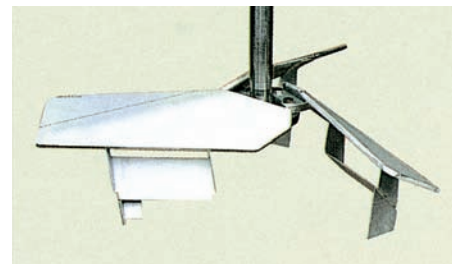


Integral cast type



Assembled type

HR320S Impeller

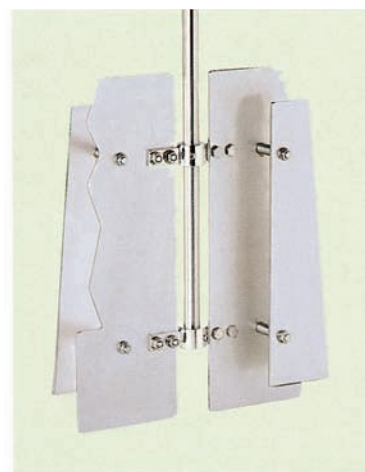


Patent pending in U.S.A. and Taiwan

The impeller's surface pressure control function and large attack angle, combined with its advance blade effect, prevent surface peeling. In addition, the double-blade structure similar to that of the slotted flaps and leading-edge slats of an airplane increases the discharging velocity.

This impeller is especially suited for the agitation of solid and liquid mixtures.

MR205 Impeller



Utility model patent pending in Taiwan

The major pressure gap generated between the positive pressure portion of the main blade and negative pressure portion of the auxiliary blade produces strong discharging flow in the radial direction even with a highly-viscous liquid. Also, by installing the impeller with its larger diameter end at the bottom, a strong upward stream can be generated from the tank bottom toward the liquid surface.

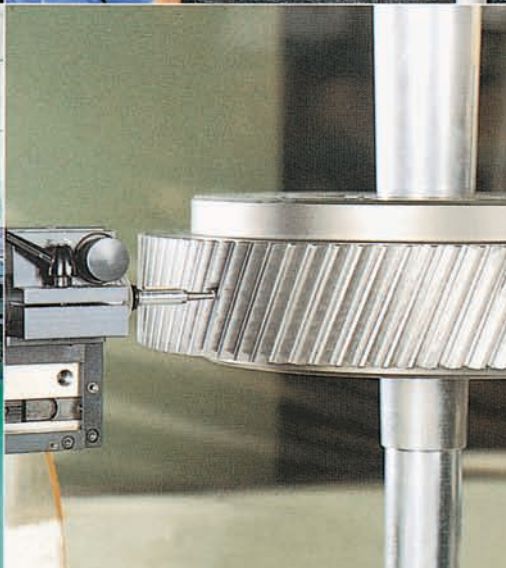
It is ideally suited for mixing liquids which differ in their specific gravity and viscosity, as well as for suspension and polymerization of high-density slurries.



Ensuring Safety and Quality Control

Hado's mixers all carry ▲ labels to indicate that we are actively involved in the comprehensive safety control and quality assurance system with due consideration given to the PL (Product Liability) Law. Our quality assurance system covers the entire process from product development all the way through to the sale and after-sale services. Each independent process of this system is adeptly handled by the sections and departments in charge which have their established quality assurance programs. Hado's R&D and other sections are staffed by highly-skilled and experienced personnel. The company's techniques and expertise based on such human resources are effectively implemented at its plants which are complete with various high-tech equipment and inspection facilities including FMS.

This is why Hado's Multi S Mixers, produced under strict safety and quality control, can always be relied on by their users.



Consult Us to Select Optimal Models that Meet Your Desired Applications

Top-mount Model Variations (50 Hz)

		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 gear 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 gear 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	S8H
	68		S3	S3	S4	S5	S5	S5	S6	S6	S6	S7(*)	S7(*)	S7(*)	S8L(*)	S8L(*)	S8H(*)	
	56										S6	S7(*)	S7(*)		S8L(*)	S8H(*)		
Three-step gear reduction	56	S3	S3	S4	S4	S5	S5	S6	S6				S7					
	45	S3	S3	S4	S5	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	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	S8L	S8L	S8H	S9L	S9H	S9H			
	20	S4	S4	S5	S5	S6	S6	S7	S7	S8L	S8H	S9L	S9H	S9H				
	16.5(*)	S4	S5	S5	S6	S6	S7	S7	S8L	S8H	S9L	S9H	S9H					
	13.5(*)	S4	S5	S5	S6	S7	S7		S8H	S9L	S9H	S9H						

(*) in the above table indicates 6P motor

Top-mount Model Variations (60 Hz)

		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 gear 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 gear reduction	190			S3	S3	S4	S4	S5	S5	S6	S6	S6	S7	S7	S8L	S8L	S8L	
	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										S6	S6	S6	S7(*)	S7(*)	S8L(*)	S8L(*)	S8H(*)
Three-step gear reduction	68		S3	S3	S4	S5	S5	S5	S6									
	56	S3	S3	S4	S4	S5	S5	S6	S6	S7	S7	S7	S7	S8L	S8H	S9L	S9L	
	45	S3	S3	S4	S5	S5	S5	S6	S6	S7	S7	S7	S8L	S8H	S8H	S9L	S9H	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	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

Side-mount Model Variations (50/60 Hz)

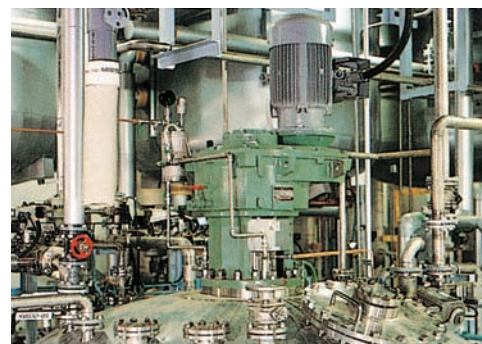
		Motor output (kW)								
		Speed (rpm)	3.7	5.5	7.5	11	15	18.5	22	30
One-step gear reduction	50 Hz	350		S3	S3	S4	S4	S5	S5	S5
		280(*)		S3	S3	S4	S4	S5	S5	S5
		230(*)	S3	S3	S4	S4	S5	S5	S5	
	60 Hz	350		S3	S3	S4	S4	S5	S5	S5
		280(*)	S3	S3	S4	S4	S5	S5	S5	
		230(*)	S3	S3	S4	S4	S5	S5	S5	

*S3 series: Up to 132MJ base size for motor installation (flange outside diameter: 300).

*S4 series: Up to 160LJ base size for motor installation (flange outside diameter: 350).

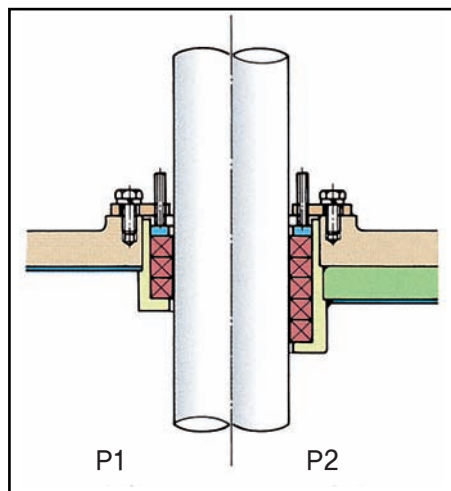
*S5 series: Up to 200LJ base size for motor installation (flange outside diameter: 450).

(*) in the above table indicates 6P motor



Shaft Sealing System Variations

The following shaft sealing systems are available.



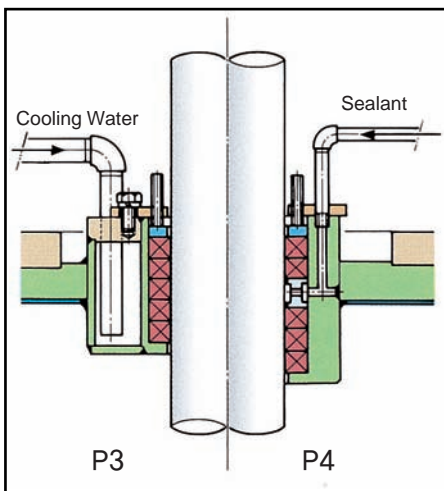
Gland Packing Seal

P1 type

- Tank temperature: 100°C or less
- Tank pressure: Atmosphere
- This system is not pressure tight. It is suitable for simple sealing.

P2 type

- Tank temperature: 100°C or less
- Tank pressure: 0.3 kgf/cm²G (2.94 x 10⁻²MpaG) or less
- Suited for use under low tank pressures.



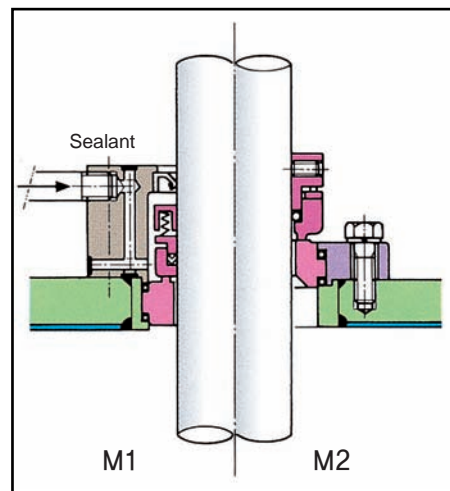
Gland Packing Seal

P3 type

- Tank temperature: between 100°C and 170°C
- Tank pressure: 0.3 kgf/cm²G (2.94 x 10⁻²MpaG) or less
- Suited for use under the tank temperature of 80°C or more

P4 type

- Tank temperature: 100°C or less
- Tank pressure: 1.0 kgf/cm²G (9.81 x 10⁻²MpaG) or less
- Inject the lubricant periodically through the middle portion of the gland packing. The packing at the rear end of the lantern ring seals off the flow leakage while the packing at the front end seals off the lubricant.



Single mechanical seal Dry mechanical seal

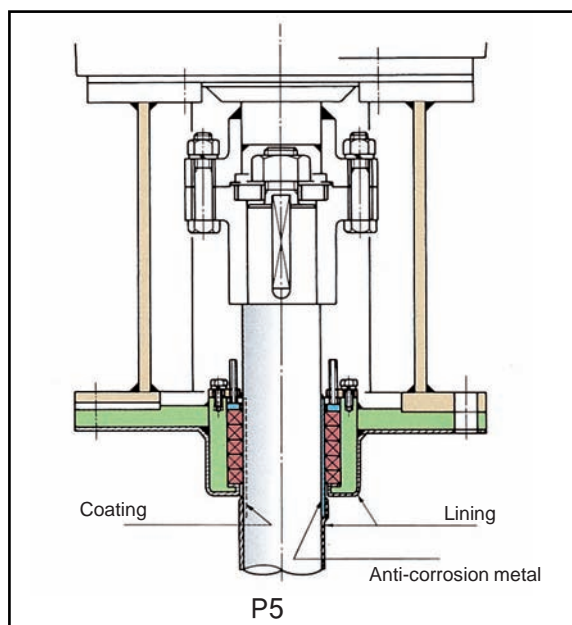
(For use in vacuum type mixing tanks)

M1 type

- Tank temperature: 100°C or less
- Tank pressure: F.V-0.3 kgf/cm²G (2.94 x 10⁻²MpaG) or less
- Generally used in vacuum type mixing tanks where leakage must be avoided. Provides excellent sealing.

M2 type

- Tank temperature: 150°C or less
- Tank pressure: F.V-1.0 kgf/cm²G (9.81 x 10⁻²MpaG) or less
- Does not require the use of any sealant and thereby is ideal when the mixture or reaction between the sealant and the tank gas or liquid must be avoided.

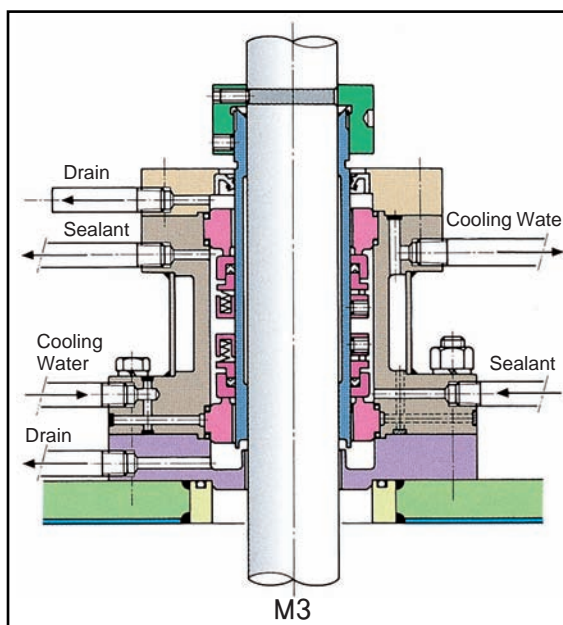


Gland packing seal

(The surfaces exposed to gas or liquid are either lined or coated)

P5 type

- Tank temperature: 100°C or less
- Tank pressure: 0.3 kgf/cm²G (2.94 x 10⁻²MpaG) or less
- Various metal linings and coatings (hastelloy, stellite, colmonoy, hard chrome plating, ceramic) are applied on the sliding surface of the gland packing.



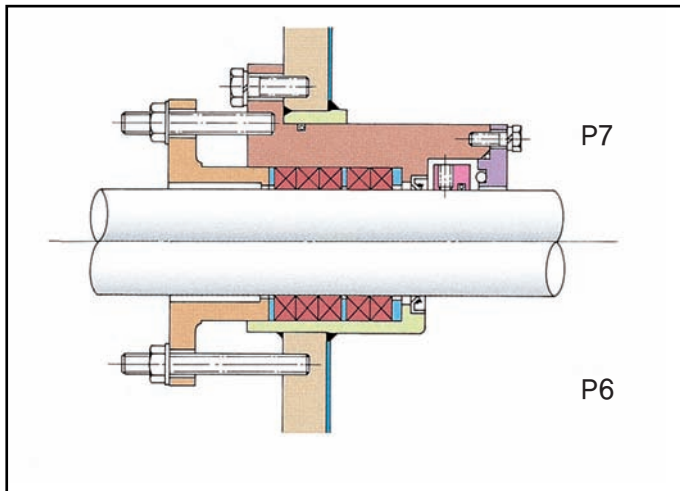
Double mechanical seal

(Unbalanced type)

M3 type

- Tank temperature: 300°C or less
- Tank pressure: F.V-9.9 kgf/cm²G (0.97 MpaG) or less (Balanced type)
- Tank temperature: 300°C or less
- Tank pressure: F.V-10 kgf/cm²G (0.98 MpaG) or less
- Generally used in an environment where leakage must be avoided. Provides excellent sealing under high/low temperature, high pressure and vacuum conditions.

The Following Shaft Sealing Systems Are Available (Side-mount Type).



Gland packing seal (provisional seal)

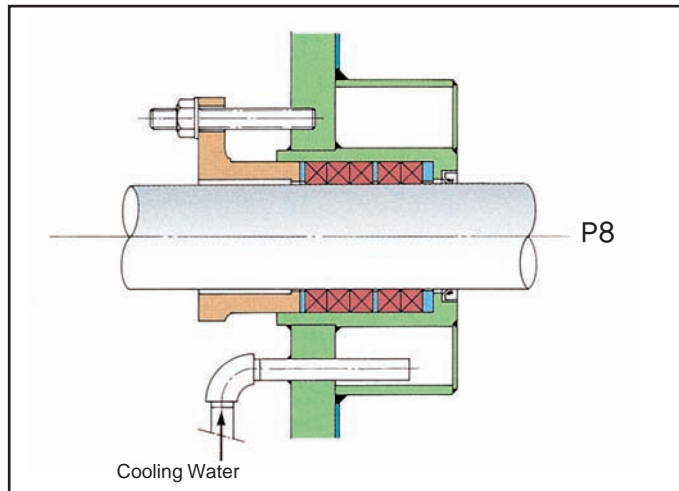
P7 type

- Tank temperature: 100°C or less
- Tank pressure: 1.0 kgf/cm²G(9.81 x 10² paG) or less
- Gland packing can be replaced while tank is full.

Gland packing seal (standard)

P6 type

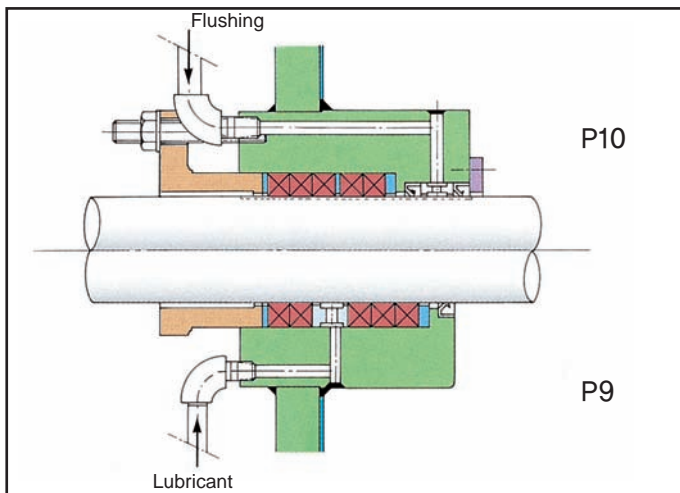
- Tank temperature: 100°C or less
- Tank pressure: 1.0 kgf/cm²G(9.81 x 10² paG) or less



Gland packing seal (forced cooling)

P8 type

- Tank temperature: 100°C and 170°C
- Tank pressure: 1.0 kgf/cm²G(9.81 x 10² paG) or less
- Cooling water introduced in jacket for tank temperatures over 80°C.



Gland packing seal (for slurry applications)

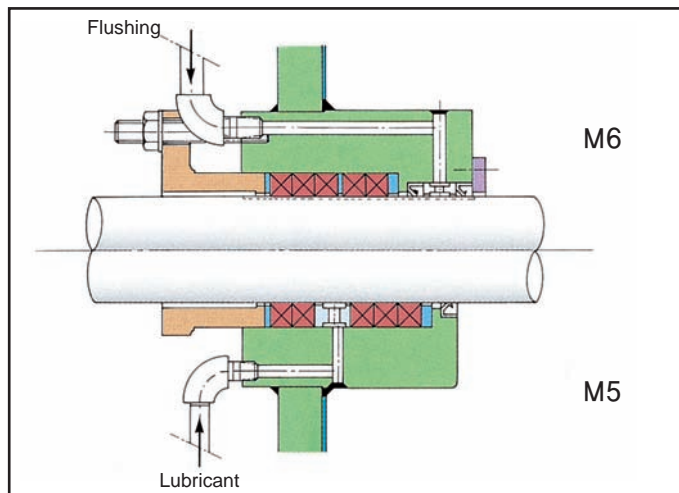
P10 type

- Tank temperature: 100°C or less
- Tank pressure: 1.0 kgf/cm²G(9.81 x 10² paG) or less
- The shaft surface at the seal is hardened and flushing water is introduced (2 to 3 liters/min) to prevent slurry from entering the seal.

Gland packing seal

P9 type

- Tank temperature: 100°C or less
- Tank pressure: 1.0 kgf/cm²G(9.81 x 10² MpaG) or less
- Inject the lubricant periodically through the middle portion of the gland packing. The packing at the rear end of the lantern ring seals off the flow leakage while the packing at the front end seals off the lubricant.



Single mechanical seal

M6 type

- Tank temperature: 100°C or less
- Tank pressure: 3.0 kgf/cm²G(2.94x 10² paG) or less
- Generally use where leakage must be avoided. Provides excellent sealing.

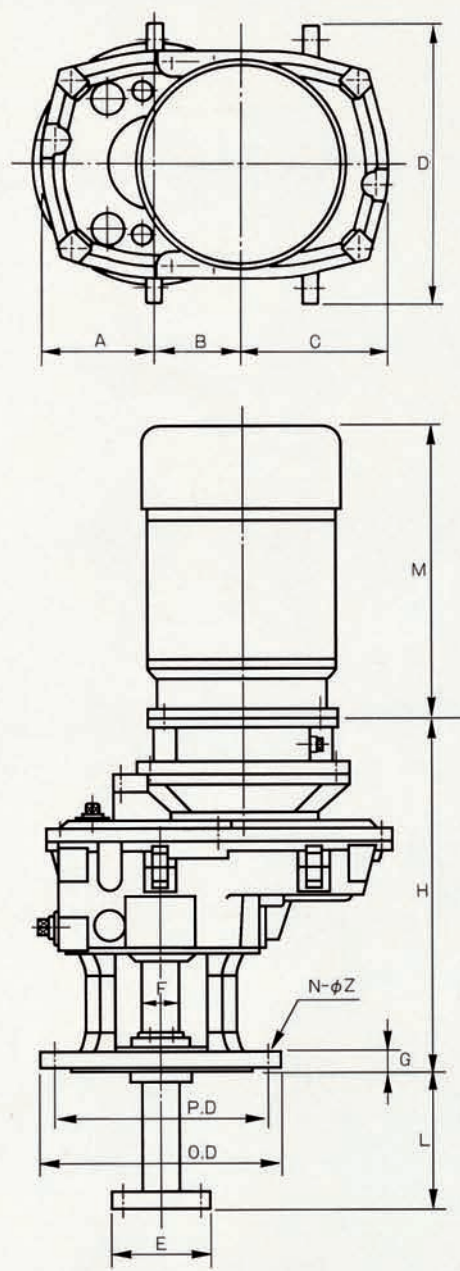
Single mechanical seal + Gland packing

M5 type

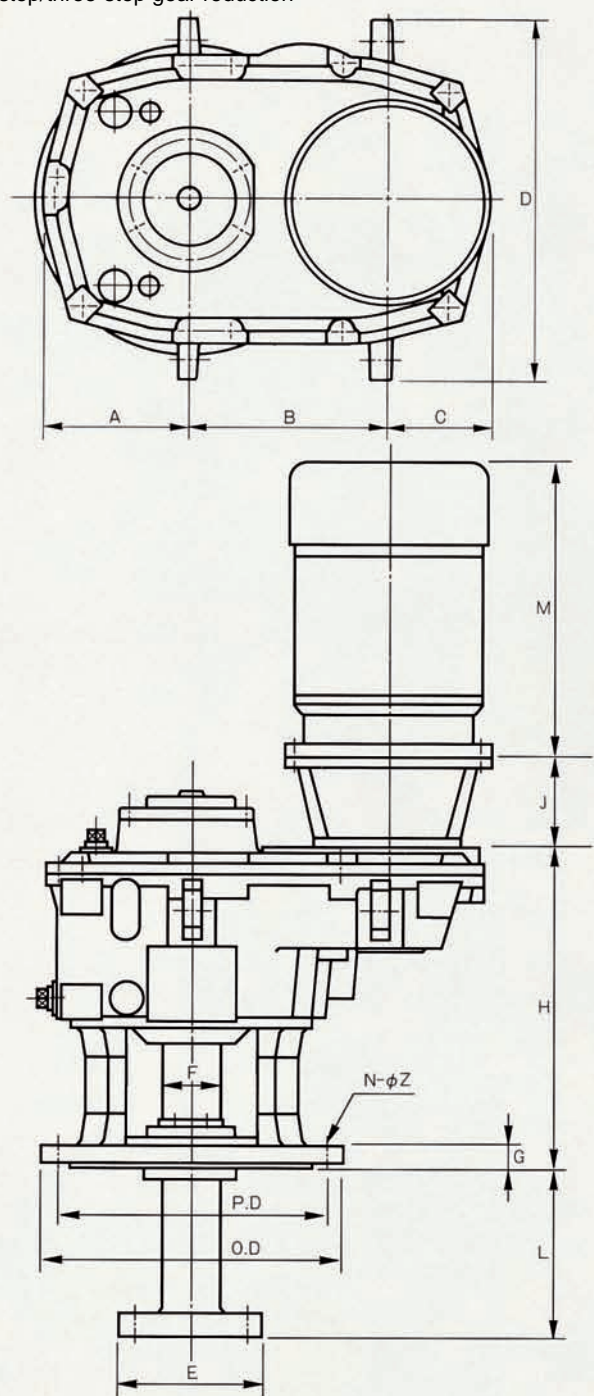
- Tank temperature: 100C or less
- Tank pressure: 3.0 kgf/cm²G(2.94x 10² paG) or less
- If the mechanical seal fails, the gland packing is retightened to seal the tank contents.

Compact, Lightweight and Economical, Hado's Multi S-Mixers Embody the Needs of Today

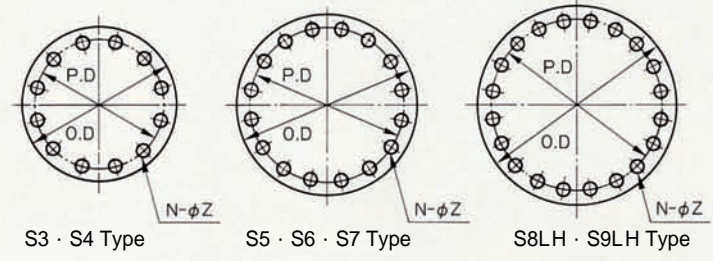
One-step gear reduction



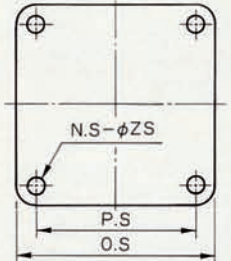
Two-step/three-step gear reduction



Round flange



Square flange(option)



Because Hado makes every effort to improve the quality of its products, the product delivered to you may differ somewhat from the shape or specifications of the product described in this catalog.

Standard Dimensions (Top-mount Type)

	Series	Motor output(kW)		Dimensions (mm)																Approximate weight of mixer main unit (kg) (Motor weight in bracket)			
		4P	6P	0.D	P.D	O.S	P.S	G	NH.Z	N.S	f.ZS	F	E	H	J	L	A	B	C	D	M		
One-step gear reduction	S3	5.5	3.7	350	310	350	305	24	12-23	4	24	55	137	510	-	200	162	119	214	402	400	224	(80)
		7.5	5.5																		400	224	(80)
	S4	11	7.5	400	355	400	350	26	12-25	4	24	65	157	579	-	200	175	138	216	444	485	313	(110)
		15	11																		525	333	(130)
	S5	18.5	15	445	400	445	395	28	16-25	4	26	85	207	683	-	250	208	176	251	522	575	528	(195)
22		18.5	575																		528	(195)	
S3	0.75	-	400	355	400	350	26	12-25	4	24	55	137	364	-	200	162	224	109	402	260	149	(17)	
	1.5	-																		312	156	(24)	
S4	2.2	-	400	355	400	350	26	12-25	4	24	65	157	391	-	200	175	239	115	444	328	163	(30)	
	3.7	-																		355	181	(48)	
	5.5	-																		400	259	(80)	
	7.5	-																		400	259	(80)	
	11	-																		400	259	(80)	
S5	2.2	1.5	445	400	445	395	28	16-25	4	26	85	207	453	12	250	208	287	141	522	328	313	(30)	
	3.7	2.2																		355	331	(48)	
	5.5	-																		400	362	(80)	
	7.5	-																		400	362	(80)	
	11	-																		485	385	(110)	
S6	15	-	490	445	490	435	28	16-25	4	28	105	237	553	18	300	251	346	175	623	400	537	(80)	
	18.5	-																		400	537	(80)	
	22	-																		485	560	(110)	
	30	-																		525	580	(130)	
	30	-																		575	696	(195)	
S7	-	5.5	560	510	560	490	30	16-27	4	35	120	275	656	18	350	265	381	180	680	400	807	(80)	
	11	7.5																		485	830	(110)	
	15	11																		525	850	(130)	
	18.5	-																		575	966	(195)	
	22	-																		615	996	(225)	
S8L	30	22	620	565	-	-	32	20-27	-	-	130	295	727	205	350	290	429	225	762	575	1,309	(130)	
	37	18.5																		615	1,339	(225)	
	45	-																		660	1,453	(325)	
	55	45																		685	1,470	(365)	
	75	55																		975	1,740	(630)	
S8H	22	15	620	565	-	-	32	20-27	-	-	150	335	727	205	350	290	429	225	762	575	1,399	(195)	
	30	18.5																		615	1,429	(225)	
	37	-																		660	1,543	(325)	
	45	-																		685	1,560	(365)	
	55	-																		975	1,830	(630)	
S9L	-	55	745	680	-	-	34	20-33	-	-	160	347	833	217	400	353	530	225	921	615	2,067	(225)	
	30	18.5																		660	2,167	(325)	
	37	30																		685	2,212	(365)	
	45	-																		975	2,482	(630)	
	55	-																		1,075	2,572	(720)	
S9H	-	22	745	680	-	-	34	20-33	-	-	180	395	833	217	400	353	530	225	921	615	2,197	(225)	
	37	30																		660	2,297	(325)	
	45	37																		685	2,342	(365)	
	55	45																		975	2,612	(630)	
	75	-																		1,075	2,702	(720)	

*Dimensions J and C marked with asterisks in the table are based on the fully-closed, external fan, indoor-type motor made of HYOSUNG. Those dimensions may vary in the case of a safety-added explosionproof motor and explosionproof motor type of 22 kW or more. Also those dimensions may vary depending on the motor manufacturer.

*Dimension M marked with an asterisk and machine weight are based on the fully-closed, external fan, indoor-type motor made of HYOSUNG.



Model coding is as follows

S T 5 4 - G₃ P R - 7.5 L I

Inverter drive

Torque type

L: Low torque
H: High torque
(S8-S9 Series only)

Motor capacity
0.75 to 90 kW(3.7 to 30 kW
for side-mount type)

Top-mount flange type

R: Round flange
S: Square flange(option)

Side-mount type

L: Foot mount
H: Hanging mount

Shaft sealing system

P: Gland packing seal
M: Mechanical seal
E: Removable mechanical seal system

Drive system

G: One-step gear reduction
G2: Two-step gear reduction(for top-mount type only)
G3: Three-step gear reduction(for top-mount type only)

Motor pole number

4: 4 poles
6: 6 poles

Multi Mixer Series

5: S5 series S3-S9 series
(Side-mount type available in S3, S4, and S5 series)

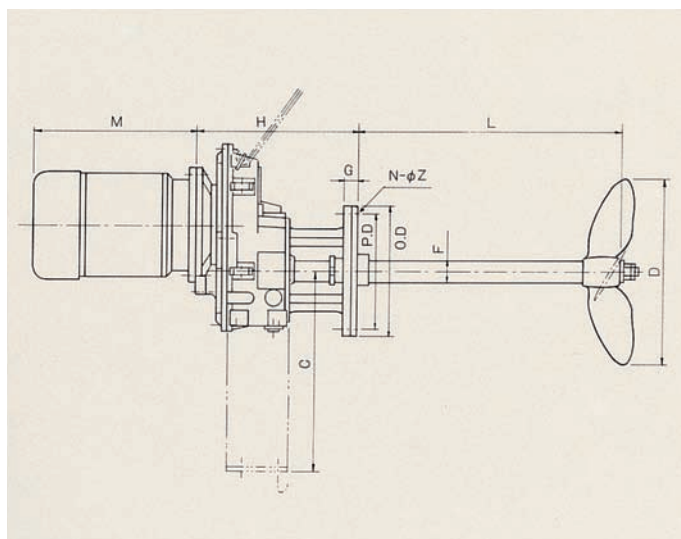
Mixer mounting direction

T: Top-mount type
S: Side-mount type

Satake Multi S Mixer

(Standard finish color Ral No.6011)



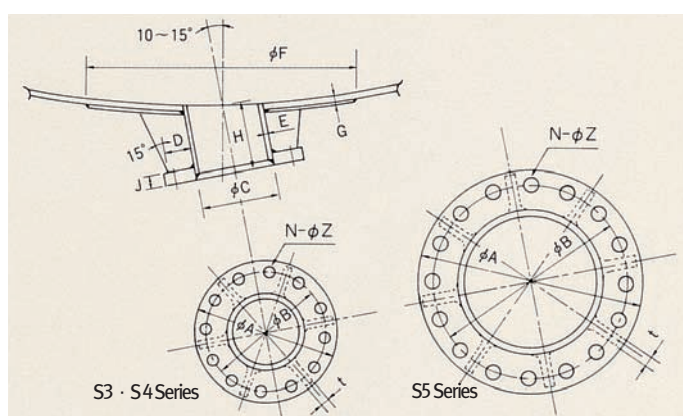


Nozzle Dimensions for Mounting (Side-mount Type)

Refer to the table below when mounting a side-mount agitator onto a steel agitation tank. If the tank thickness does not provide sufficient strength, use hanger bars, supports, or other appropriate reinforcements.

unit : mm

Series	Nozzle size	A	B	C	D	E	F	G	H	J	t	Z
S3	225 ^A	350	310	241.8	50	9.0	750	9	120	22	12	23
S4	250 ^A	400	355	267.4	55	9.3	850	9	130	24	12	25
S5	300 ^A	445	400	318.5	55	10.3	950	12	150	24	16	25



Standard Dimensions (Side-mount Type)

	Series	Speed (rpm)	Motor output (kW)	No. of polarities	Dimensions mm										Weight (kg)	
					OD	P.D	N-φZ	G	F	L	H	C	M	D		
One-step gear reduction	S3	350	5.5	4	∅ 350	∅ 310	12-23	47	55	550	533	745	400	500	241	
			7.5	4									400	530	242	
		280	5.5	4									400	530	242	
			7.5	4									400	600	246	
			3.7	6									400	500	241	
			5.5	6									400	530	242	
			230	3.7									6	400	590	247
				5.5									6	400	650	250
	S4	350	11	4	∅ 350	∅ 310	12-23	51	65	650	604	885	485	590	337	
			15	4									525	630	360	
		280	11	4									485	650	342	
			15	4									525	680	367	
			7.5	6									485	600	338	
			11	6									525	650	362	
			230	7.5									6	485	680	338
				11									6	525	740	377
	S5	350	18.5	4	∅ 445	∅ 400	16-25	53	85	850	708	994	575	650	573	
			22	4									575	680	578	
			30	4									615	710	617	
			18.5	4									575	710	587	
		280	22	4									575	740	588	
			30	4									615	790	611	
			15	6									575	680	578	
			18.5	6									615	710	617	
		230	22	6									615	740	618	
			15	6									575	790	591	
			18.5	6									615	830	627	
			22	6									615	860	631	

Estimated mixer unit weight and Dimension M are based on a fully-closed, external fan, outdoor motor manufactured by HYOSUNG.

Easy Replacement of Mechanical Seal Is the Feature We Are Proud of

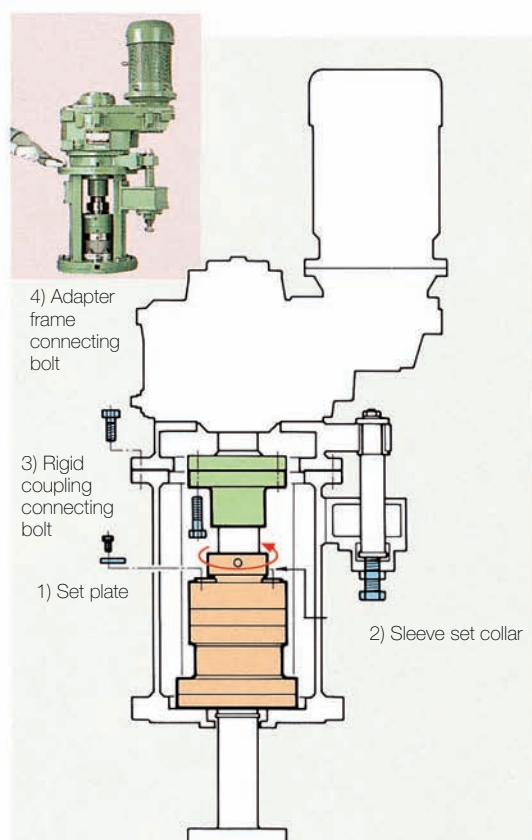
Easily Replaceable Mechanical Seals

1. You can easily replace mechanical seals without removing the reduction parts of the mixers even when they are installed under a low ceiling.
2. Reduction parts can be swung to the side so that the mechanical seal unit can be pulled off upward without any interference.
3. Due to the substantial reduction in maintenance time, prolonged stoppage of the operation can be avoided, thus contributing to a higher operation rate.
4. A winch complete with a simple support is optionally available for pulling up and removing the mechanical seal unit.
5. The mechanical seal unit can be removed for safe disassembly, repair, reassembly and leak test at a location away from the operation site.
6. We also offer simplified mixers with a removable mechanical seal system that are not equipped with a gear reduction rotation mechanism (Fig 3). For these models, a winch or other device installed at the mixer installation site can be used to remove the gear reduction unit. (Other mechanisms are identical to those of standard models.)

Advantages of the Mechanical Seal

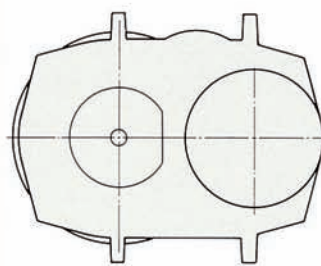
The mechanical seal system is generally used in an environment where leakage must be avoided. It provides excellent sealing performance even under high temperature and high pressure conditions.

1. Virtually no leakage (3ml/h or less).
2. The end face contact reduces the sliding area, thereby minimizing friction loss and power consumption.
3. No damage to the drive shaft.
4. Can be used under high PV value conditions. (Unbalanced type: 9.9 kgf/cm²G, Balanced type: 10 kgf/cm²G)
5. Can withstand continual operation over 1 to 2 years.
6. By employing the cooling device, it can be used in high temperature liquids (up to +300°C). It can also withstand use in low temperature liquids (-50°C).
7. Retightening and torque adjustment is not necessary.

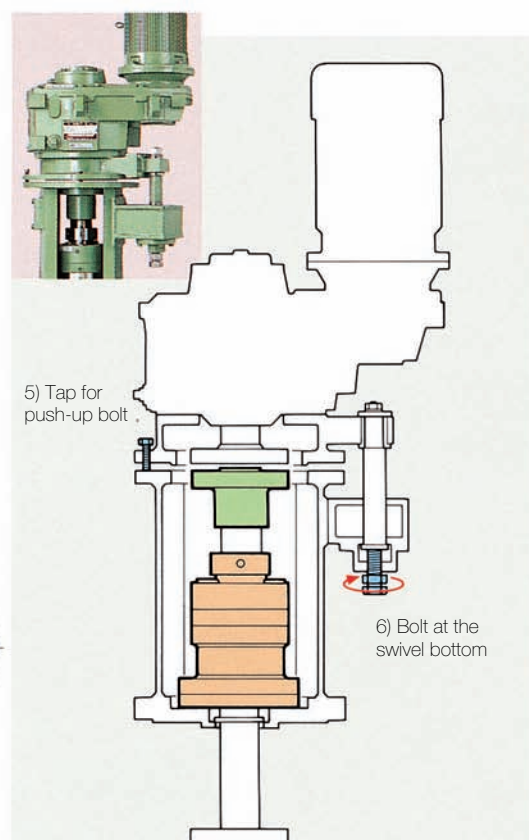


1. Preparation

- Set the tank pressure to normal. (Dangerous gases must be displaced inside container.)
- Mount the set plate 1) to the mechanical seal sleeve.
- Loosen the sleeve set collar 2).
- Loosen the rigid coupling connecting bolt 3).
- Loosen the adapter frame connecting bolt 4).



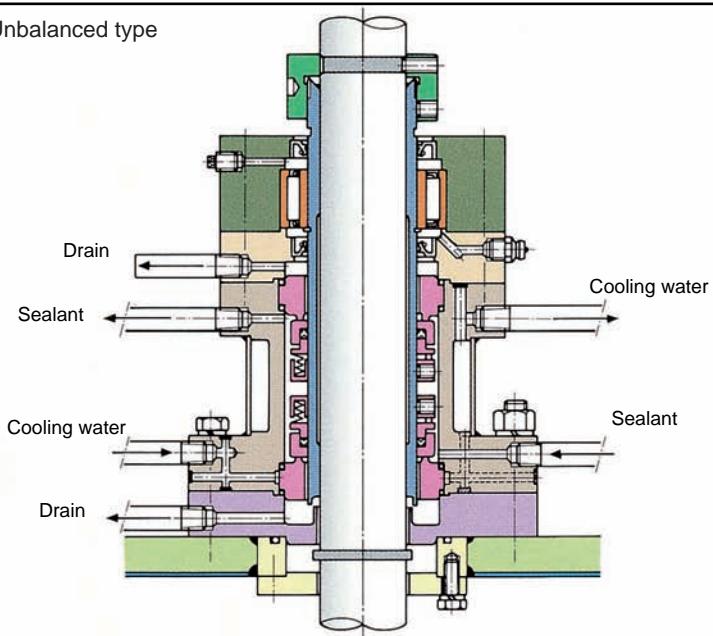
Plain view



2. Pulling up

- Fasten the tap for push-up bolt 5) into the adapter frame.
- Fasten the bolt at the swivel bottom 6) and the tap for push-up bolt 5) alternately.
- The frame portion and the reduction gear unit are separated.

Unbalanced type



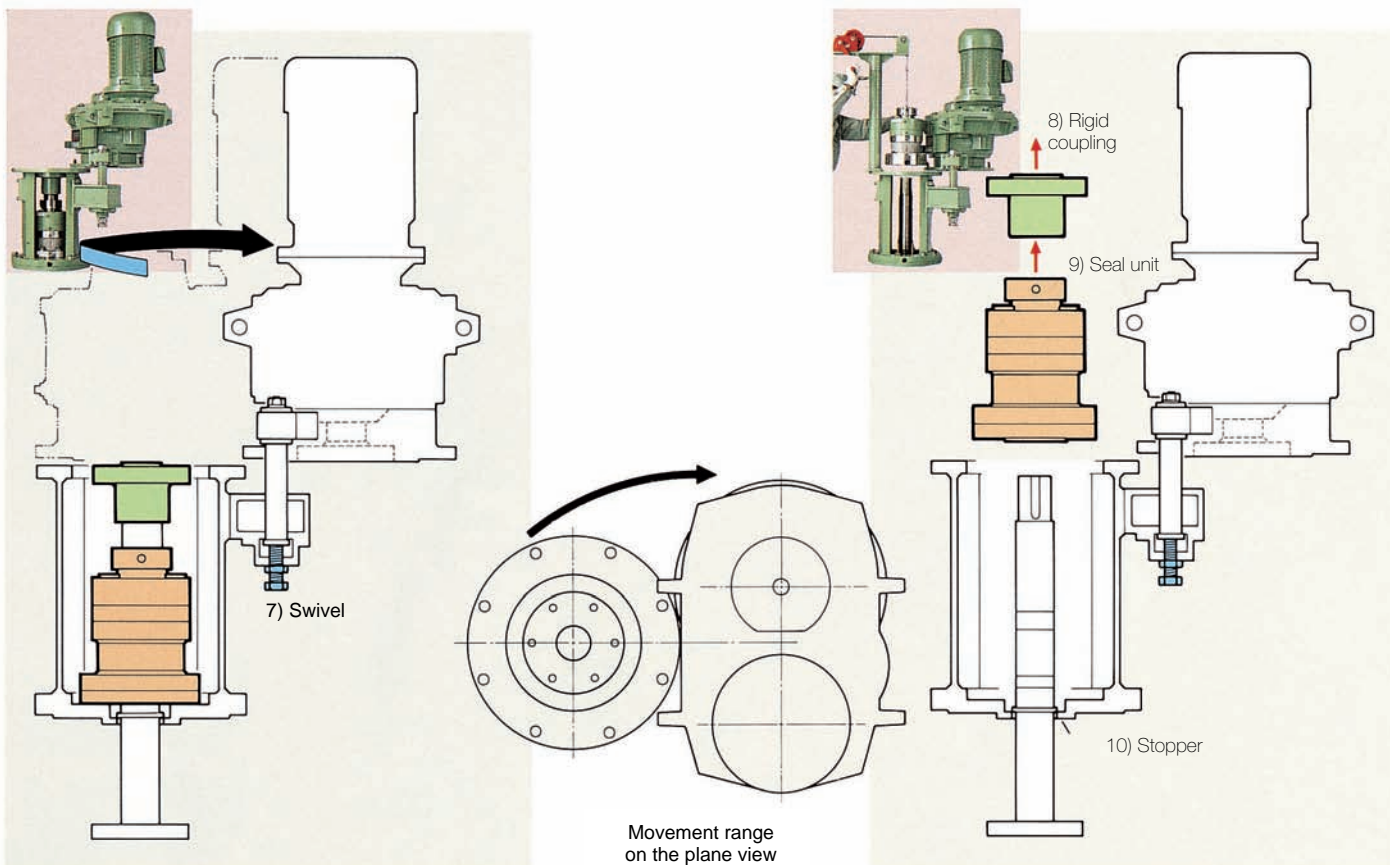
Double mechanical seal (Built-in bearing)
(Unbalanced type)

M4 type

- Tank temperature: 300°C or less
- Tank pressure: F.V-9.9 kgf/cm²G(0.97MPaG) or less

(Balanced type)

- Tank temperature: 200°C or less
- Tank pressure: F.V-10 kgf/cm²G(0.98MPaG) or less
- Generally used in an environment where leakage must be avoided. Provides excellent sealing under high/low temperature, high pressure and vacuum conditions. With the built-in bearing, the shaft deflection of the mechanical seal sliding surface is minimized, contributing to higher sealing performance.



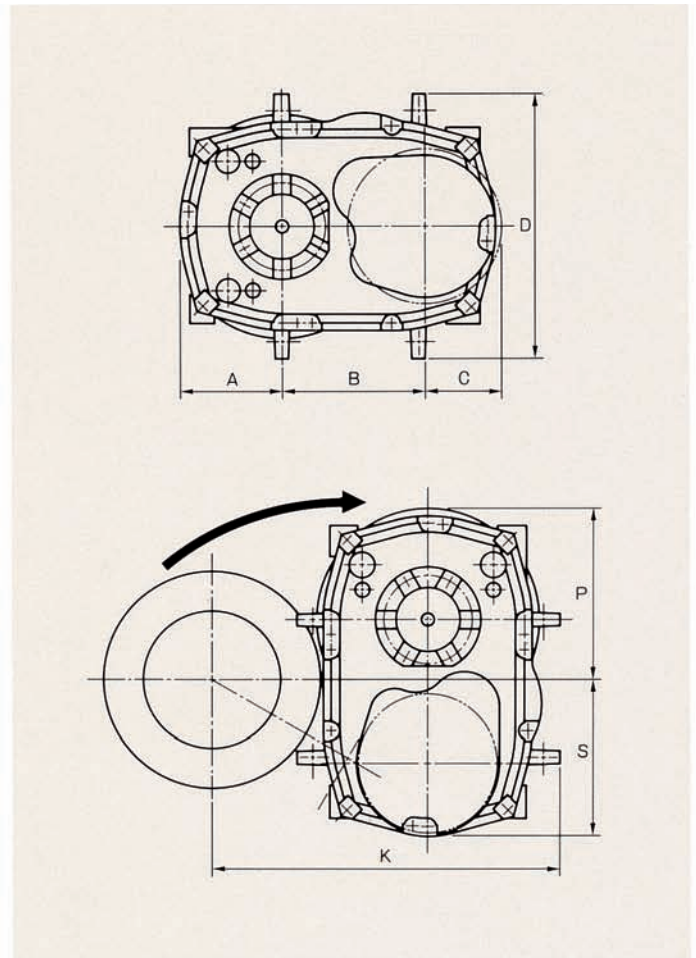
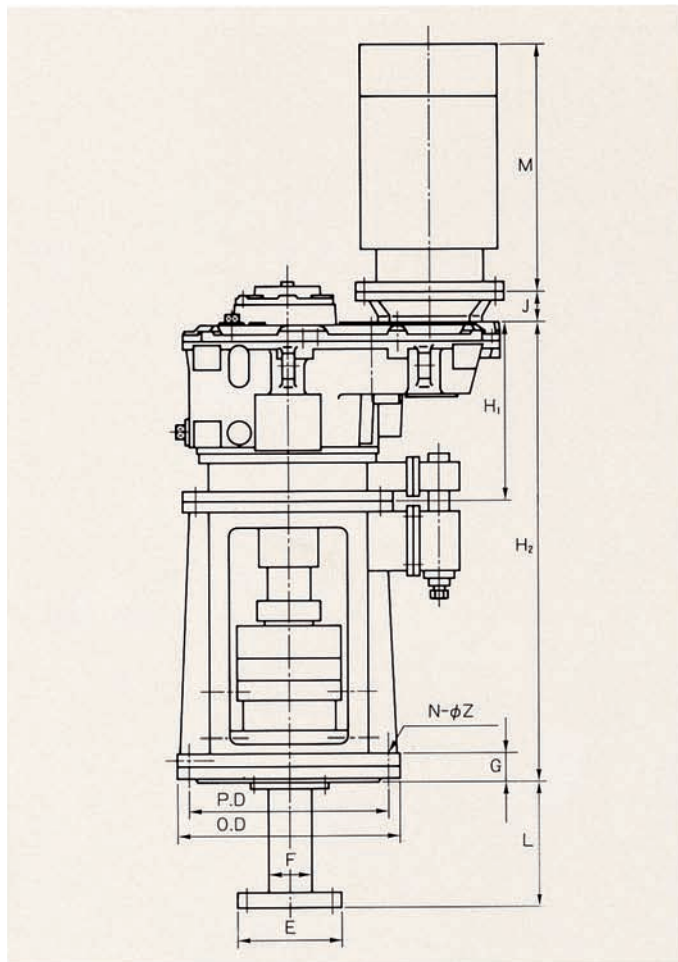
3. Rotation

- Use the swivel 7) as a supporting point to rotate the reduction gear unit slowly by hand.

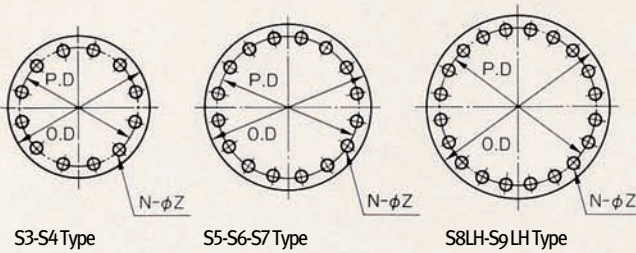
4. Removal

- Remove the rigid coupling 8) in the upward direction.
- Remove the seal unit 9) in the upward direction while keeping the drive shaft on the stopper at the flange bottom.
- A temporary seal system is available by option in which the temporary seal is activated to replace the seal without changing the inner tank pressure.

Featuring Operational Ease, Convenience and Prolonged Life



Round Flange



Standard Dimensions (Top-mount Type)

	Series	Motor output(kW)		Dimensions mm																Approximate weight of mixer main unit (kg) (Motor weight in bracket)			
		4P	6P	O.D	P.D	G	N-∅Z	F	E	L	H ₁	H ₂	J*	A	B	C*	D	K	P	S*	M*		
One-step gear reduction	S3	5.5	3.7	350	310	59	12-23	55	137	200	272	681	146	162	119	214	402	468	234	261	400	351	(80)
		7.5	5.5																		400	351	(80)
	S4	11	7.5	400	355	61	12-25	65	157	200	329	770	188	175	138	216	446	530	258	271	485	467	(110)
		15	11																		525	467	(130)
	S5	18.5	15	445	400	61	16-25	85	207	250	389	885	230	208	176	251	522	607	301	334	575	747	(195)
		22	-																		575	747	(195)
30		18.5	615																		777	(225)	
Two-step gear reduction • Three-step gear reduction	S3	0.75	-	400	355	61	12-25	55	137	200	272	681	-	162	224	109	402	468	234	261	260	276	(17)
		1.5	-										312			283					(24)		
		2.2	-										328			290					(30)		
		3.7	-										355			318					(48)		
	S4	0.75	-	400	355	61	12-25	65	157	200	329	770	-	175	239	115	446	530	258	271	260	348	(17)
		1.5	0.75										312			355					(24)		
		2.2	1.5										328			362					(30)		
		3.7	-										355			380					(48)		
		5.5	-										400			413					(80)		
	S5	2.2	1.5	445	400	61	16-25	85	207	250	389	885	12	208	287	141	522	607	301	355	328	532	(30)
		3.7	2.2										355			550					(48)		
		5.5	-										400			581					(80)		
		7.5	-										400			581					(80)		
		11	-										485			604					(110)		
	S6	5.5	3.7	560	510	71	16-27	105	237	300	480	1,076	18	251	346	175	623	722	361	411	400	914	(80)
		7.5	5.5										400			914					(80)		
		11	-										485			937					(110)		
		15	-										525			937					(130)		
		18.5	-										575			1,073					(195)		
	S7	-	5.5	620	565	73	20-27	120	275	350	560	1,183	18	265	381	180	680	814	392	434	400	1,283	(80)
		11	7.5										485			1,256					(110)		
		15	11										525			1,276					(130)		
		18.5	-										575			1,392					(195)		
		22	22										615			1,422					(225)		
S8L	18.5	-	745	680	80	20-33	130	295	350	659	1,319	205	290	429	201	762	982	451	469	575	1,982	(195)	
	22	15										615			2,012					(225)			
	30	18.5										660			2,126					(325)			
	37	-										685			2,143					(365)			
	45	-										975			2,413					(630)			
	55	45										1,075			2,503					(720)			
	75	55										575			2,117					(195)			
S8H	22	15	745	680	80	20-33	150	335	350	659	1,379	205	290	429	201	762	982	451	469	615	2,147	(225)	
	30	18.5										660			2,261					(325)			
	37	-										685			2,278					(365)			
	45	-										975			2,548					(630)			
	55	-										1,075			2,638					(720)			
S9L	-	22	845	780	82	24-33	160	347	400	775	1,532	217	353	530	208	921	1,143	536	555	615	3,112	(225)	
	37	30										660			3,212					(325)			
	45	-										685			3,262					(365)			
	55	-										975			3,527					(630)			
	75	-										1,075			3,617					(720)			
S9H	-	22	845	780	82	24-33	180	395	400	775	1,612	217	353	530	208	921	1,143	536	555	615	3,327	(225)	
	37	30										660			3,447					(325)			
	45	37										685			3,492					(365)			
	55	45										975			3,762					(630)			
	75	-										1,075			3,852					(720)			

*Dimensions J, C and S marked with asterisks in the table are based on the fully-closed, external fan, indoor-type motor made of HYOSUNG. Those dimensions may vary in the case of a safety-added explosionproof motor and explosionproof motor type of 22 kW or more. Also those dimensions may vary depending on the motor manufacturer.

*Dimension M marked with an asterisk and machine weight are based on the fully-closed, external fan, indoor-type motor made of HYOSUNG.

—— 期待를 設計하고, 信賴를 製作하여, 良心을 納品합니다. ——



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