

# SPEED CHANGERS & REDUCERS

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COUPLINGS

ETP BUSHINGS

ELECTROMAGNETIC  
CLUTCHES & BRAKES

**SPEED CHANGERS  
& REDUCERS**

INVERTERS

LINEAR SHAFT DRIVES

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ROSTA

SERIES

HOLLOW SHAFT /  
SOLID SHAFT SPEED  
CHANGERS AND  
REDUCERS

BELT-TYPE  
STEPLESS SPEED  
CHANGER  
UNITS

STAND-ALONE  
BELT-TYPE  
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ZERO-MAX  
(STEPLESS SPEED  
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DC MOTORS

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ROTATION SPEED INDICATORS

DC Motors

Weight Type

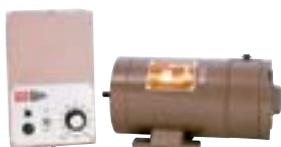
Differential Type

SCD

SYD

SD Stand-alone

SD Differential Type



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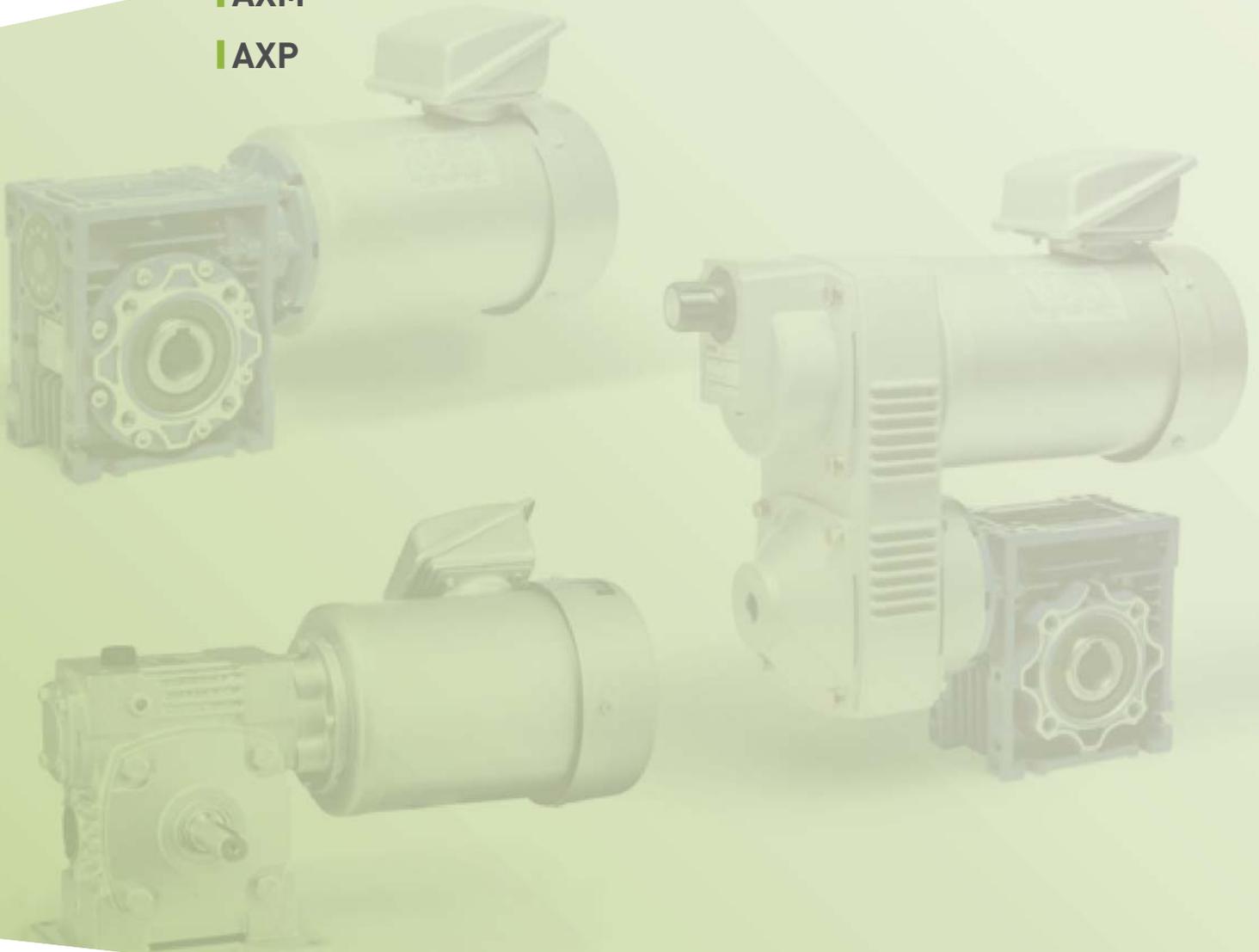
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# HOLLOW SHAFT / SOLID SHAFT SPEED CHANGERS AND REDUCERS

- | RW mini
- | RWM
- | RWM(BS)
- | RWP
- | AXM
- | AXP





## Hollow Shaft Geared Motor

# RWM

Motor output	0.2 kW to 1.5 kW (4-pole)
Power supply voltage	Three-phase, 200 V/50 Hz, 200 or 220 V/60 Hz
Speed reduction ratio	1/10, 1/20, 1/30, 1/40, 1/50, 1/60

## Compact and Lightweight Hollow Shaft Geared Motors



### Reduction in Mounting Time

All you need to do is just place the product in the driving part of the machine. It can be secured with an optional torque arm (rotation stopper) or an optional output flange.

### Free Mounting Direction

The product can be mounted freely in any direction because the structure is sealed (there is no oil fill plug or air vent hole).

### High Efficiency, Long Life, and Low Noise

The use of a highly efficient worm gear enables smoother movement and produces less noise than other gear mechanisms.

### Light and Compact

An aluminum die cast housing enables significant reduction of mass and size.

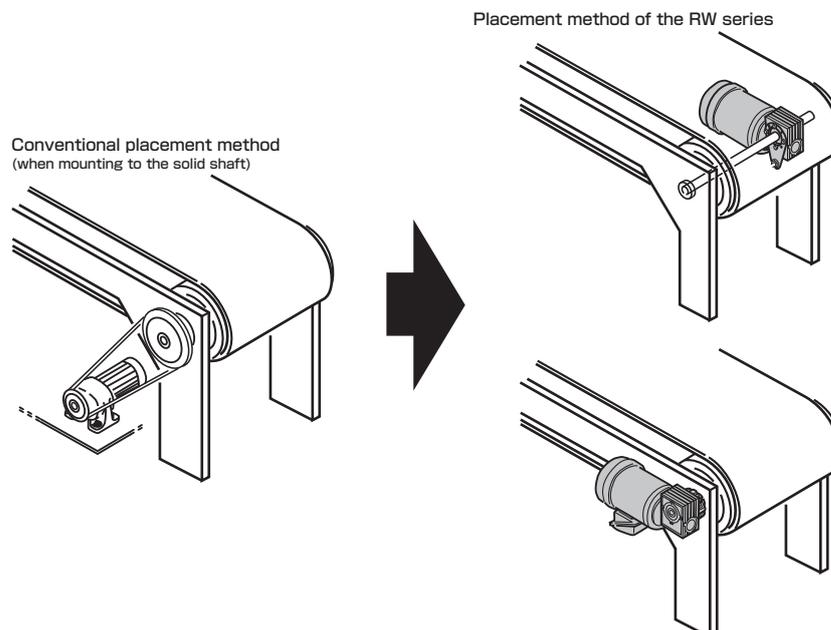
### Oil Replacement Is Not Required

The use of special long life oil eliminates the need to replace oil.

### Easy to Change Speed to Meet Requirements

Combined use with the inverter facilitates the addition of a speed changing function.

## Placement Method



## Specifications

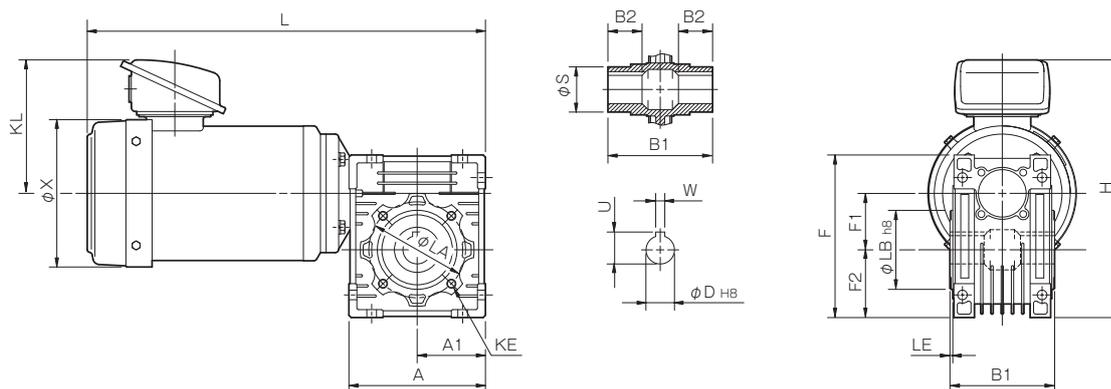
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
RWM-02-40-□-IE1	0.2	4	Three-phase, 200/50, 200 · 220/60	40	1/10	1/20	1/30	1/40	1/50	1/60	8.8
RWM-04-50-□-IE1	0.4	4	Three-phase, 200/50, 200 · 220/60	50	1/10	1/20	1/30	1/40	1/50	1/60	12
RWM-07-63N-□-IE3	0.75	4	Three-phase, 200/50, 200 · 220/60	63N	1/10	1/20	1/30	1/40	1/50	1/60	23.2
RWM-15-75N-□-IE3	1.5	4	Three-phase, 200/50, 200 · 220/60	75N	1/10	1/20	1/30	1/40	1/50	1/60	33

\* The induction motors are fully sealed external fan motors that conform to the JIS C4210 standard (for 0.2 kW and 0.4 kW models) or the JIS C 4213 standard (for 0.75 kW models or higher).

Model	Frequency [Hz]	Output shaft rotation speed [min <sup>-1</sup> ] and output shaft torque [N · m] per speed reduction ratio											
		1/10		1/20		1/30		1/40		1/50		1/60	
		Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque
RWM-02-40-□-IE1	50	143	11.6	71.5	21.2	47.7	28.6	35.8	35.4	28.6	39	23.8	36
	60	171.5	9.6	85.8	17.7	57.2	23.8	42.9	29.5	34.3	35.2	28.6	36
RWM-04-50-□-IE1	50	142.5	23.5	71.3	43.2	47.5	59	35.6	73.2	28.5	73	23.8	68
	60	171	19.6	85.5	36	57	49.2	42.8	61	34.2	73	28.5	68
RWM-07-63N-□-IE3	50	144	44.7	72	83.3	48	114	36	144	28.8	135	24	130
	60	172.5	37.3	86.3	69.4	57.5	95.1	43.1	120	34.5	135	28.8	130
RWM-15-75N-□-IE3	50	145	94.9	72.5	179	48.3	230	36.3	220	29	210	24.2	200
	60	174	79.2	87	150	58	211	43.5	220	34.8	210	29	200

\* The output shaft rotation speed and output shaft torque values are based on the 200V 50/60Hz rated load. However, the output shaft torque may be limited to the rated value of the speed reducer.

## Dimensions

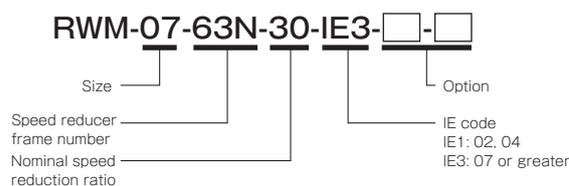


Unit [mm]

Model	Dimensions of part									Dimensions of output part									
	A	A1	F	F1	F2	H	KL	L	X	KE	LA	LB	LE	S	B1	B2	D	U	W
RWM-02-40-□-IE1	100	50	121.5	40	50	208	118	312.5	131	4-M6-8	75	60	2.5	30	78	26	18	20.8	6
RWM-04-50-□-IE1	120	60	144	50	60	228	118	350	131	4-M8-9	85	70	2.5	40	92	30	25	28.3	8
RWM-07-63N-□-IE3	144	72	179	63	72	263.5	128.5	414.5	162	8-M8-11	95	80	3	45	112	36	25	28.3	8
RWM-15-75N-□-IE3	178	89	209	75	86	302	141	480	187	8-M8-12	115	95	3	50	120	40	28	31.3	8

\* The output part tap hole KE dimension is equal to the quantity minus the nominal diameter of the screw threads minus the screw depth, where the quantity is for one side.

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DC MOTORS

ROTATION SPEED INDICATORS

MODELS

RW mini

RWM

RWM(BS)

RWP

AXM

AXP

## Hollow Shaft Geared Motor with Brake

# RWM(BS)

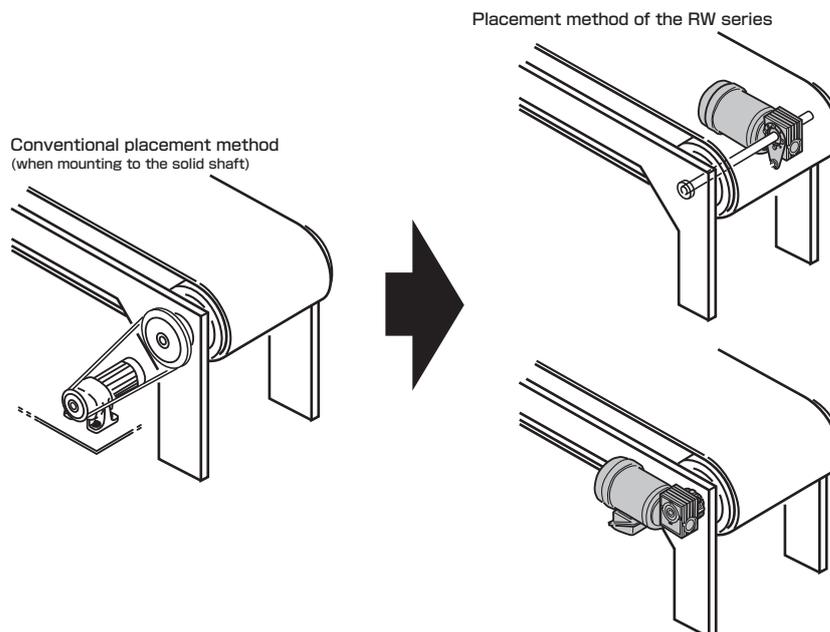
Motor output	0.2 kW to 1.5 kW (4-pole)
Power supply voltage	Three-phase, 200 V/50 Hz, 200 or 220 V/60 Hz
Speed reduction ratio	1/10, 1/20, 1/30, 1/40, 1/50, 1/60

## Hollow Shaft Geared Motor with Brake Using a Spring-actuated Brake Motor for the RWM Motor



- Reduction in Mounting Space and Number of Mounting Parts**  
 A mounting base, coupling, and chain are not required because the product can be mounted directly to the drive shaft of the machine.
- Built-in Power Supply**  
 A small power supply is included in the product and handling is easy.
- Quiet Operation**  
 The rotating part (disc) is fully integrated with the motor shaft so the operation is quiet.
- High Responsiveness**  
 When the power is turned off, the motor is immediately braked and held. A release lever to manually release the brake comes with the motor.

### Placement Method



## Specifications

Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
RWM-02BS-40-□	0.2	4	Three-phase, 200/50, 200 · 220/60	40	1/10	1/20	1/30	1/40	1/50	1/60	8.3
RWM-04BS-50-□	0.4	4	Three-phase, 200/50, 200 · 220/60	50	1/10	1/20	1/30	1/40	1/50	1/60	10.7
RWM-07BS-63N-□-IE3	0.75	4	Three-phase, 200/50, 200 · 220/60	63N	1/10	1/20	1/30	1/40	1/50	1/60	24
RWM-15BS-75N-□-IE3	1.5	4	Three-phase, 200/50, 200 · 220/60	75N	1/10	1/20	1/30	1/40	1/50	1/60	31

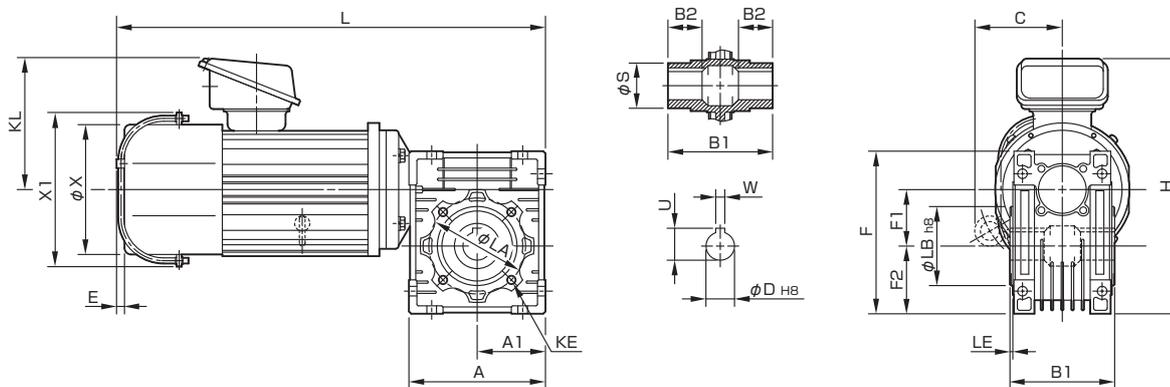
\* The induction motors are fully sealed external fan motors that conform to the JIS C4210 standard (for 0.2 kW and 0.4 kW models) or the JIS C 4213 standard (for 0.75 kW models or higher).

Model	Braking method	Brake rated torque [N · m]	Brake voltage [V]	Brake current [A]	Brake heat-resistance class	Brake rating	Motor moment of inertia [kg · m <sup>2</sup> ]	Braking delay time [s]		Gap [mm]		Built-in brake power supply type
								Limit for AC	Limit for DC	Rating	Limit	
RWM-02BS-40-□	Spring-actuated	2	DC 90	0.2	B	Continuous	$0.58 \times 10^{-3}$	0.1	0.03	0.2	0.5	BEM-A-62
RWM-04BS-50-□	Spring-actuated	4	DC 90	0.2	B	Continuous	$0.8 \times 10^{-3}$	0.1	0.03	0.2	0.5	BEM-A-62
RWM-07BS-63N-□-IE3	Spring-actuated	8	DC 90	0.61	B	Continuous	$2.3 \times 10^{-3}$	0.15	0.05	0.2	0.5	BEM-A-64
RWM-15BS-75N-□-IE3	Spring-actuated	15	DC 90	0.61	B	Continuous	$4.5 \times 10^{-3}$	0.15	0.05	0.2	0.5	BEM-A-64

Model	Frequency [Hz]	Output shaft rotation speed [min <sup>-1</sup> ] and output shaft torque [N · m] per speed reduction ratio											
		1/10		1/20		1/30		1/40		1/50		1/60	
		Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque
RWM-02BS-40-□	50	141.5	11.7	70.8	21.5	47.2	28.9	35.4	35.8	28.3	39	23.6	36
	60	170	9.7	85	17.9	56.7	24.1	42.5	29.8	34	35.5	28.3	36
RWM-04BS-50-□	50	138	24.3	69	44.6	46	60.9	34.5	75.6	27.6	73	23	68
	60	165	20.3	82.5	37.3	55	51	41.3	63.2	33	73	27.5	68
RWM-07BS-63N-□-IE3	50	144	45.7	72	85.1	48	117	36	145	28.8	135	24	130
	60	173	38.3	86.5	71.3	57.7	97.6	43.3	123	34.6	135	28.8	130
RWM-15BS-75N-□-IE3	50	144	93.9	72	177	48	230	36	220	28.8	210	24	200
	60	171.5	79.2	85.8	150	57.2	211	42.9	220	34.3	210	28.6	200

\* The output shaft rotation speed and output shaft torque values are based on the 200V 50/60Hz rated load. However, the output shaft torque may be limited to the rated value of the speed reducer.

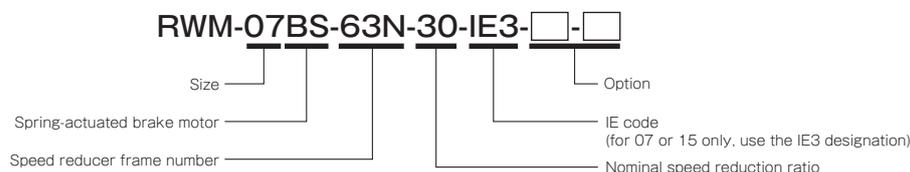
## Dimensions



Model	Dimensions of part											Dimensions of output part										Unit [mm]
	A	A1	E	F	F1	F2	H	KL	L	X	X1	C	KE	LA	LB	LE	S	B1	B2	D	U	
RWM-02BS-40-□	100	50	7	121.5	40	50	206	116	339	124	137	-	4-M6-8	75	60	2.5	30	78	26	18	20.8	6
RWM-04BS-50-□	120	60	7	144	50	60	226	116	377	124	137	-	4-M8-9	85	70	2.5	40	92	30	25	28.3	8
RWM-07BS-63N-□-IE3	144	72	5	179	63	72	263	128	486	162	183	100	8-M8-11	95	80	3	45	112	36	25	28.3	8
RWM-15BS-75N-□-IE3	178	89	-	209	75	86	296	135	560.5	182	203	105	8-M8-12	115	95	3	50	120	40	28	31.3	8

\* The output part tap hole KE dimension is equal to the quantity minus the nominal diameter of the screw threads minus the screw depth, where the quantity is for one side.

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DC MOTORS

ROTATION SPEED INDICATORS

MODELS

RW mini

RWM

RWM(BS)

RWP

AXM

AXP

## Hollow Shaft Belt-type Speed Changer Unit

# RWP

Motor output	0.2 kW to 1.5 kW (4-pole)
Power supply voltage	Three-phase, 200 V/50 Hz, 200 or 220 V/60 Hz
Speed reduction ratio	1/10, 1/20, 1/30, 1/40, 1/50, 1/60

## The Model Consisting of Hollow Shaft Geared Motor RWM and a Belt-type Stepless Speed Changer



### Compact and Light

The mass is about 30% lighter and the size is about 20% smaller than our conventional 0.4-kW belt-type stepless speed changer unit.

### Speed Is Changed with a Rotary Knob

Speed can easily be changed with your fingers using a rotary knob with a 27-mm external diameter (size: 02 and 04 only).

### Simple Sealed Enclosure Type with High Environmental Resistance and High Safety

The use of a heat-resistant belt ensures a long life even when used in a sealed enclosure.

### Torque Higher Than That of the Inverter

This model performs well even at low speeds where an inverter does not work well.

High torque operation at low speeds is also possible.

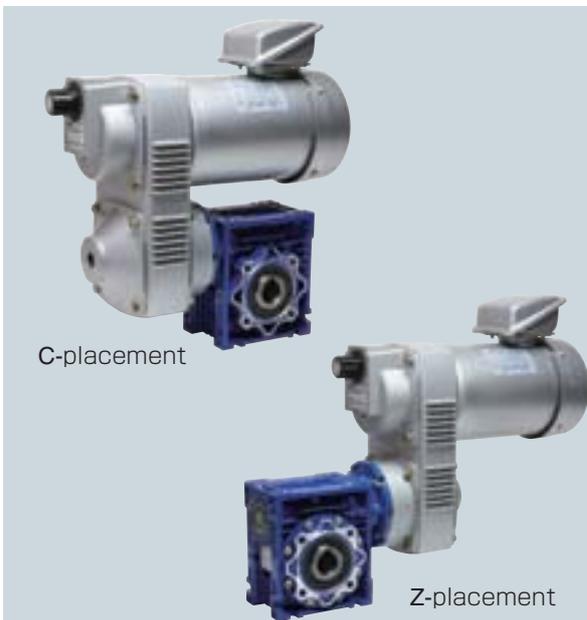
### Easy Mounting, and Total Cost Can Be Reduced

The product can be mounted directly to the input shaft of the machine, so the space of the driving part can be saved, and the mounting time and total cost can be reduced.

### Type

Available in two types, C-placement and Z-placement depending on the placement position of the speed reducer.

Choose the best one according to the mounting space and the machine design.



C-placement

Z-placement

### Rotary adjustment

When the speed is changed with the rotary knob, the speed can be confirmed by the movement of the needle on the scale plate.



The speed can be fine-tuned with the rotary knob with a scale of 0 to 10.



## Specifications

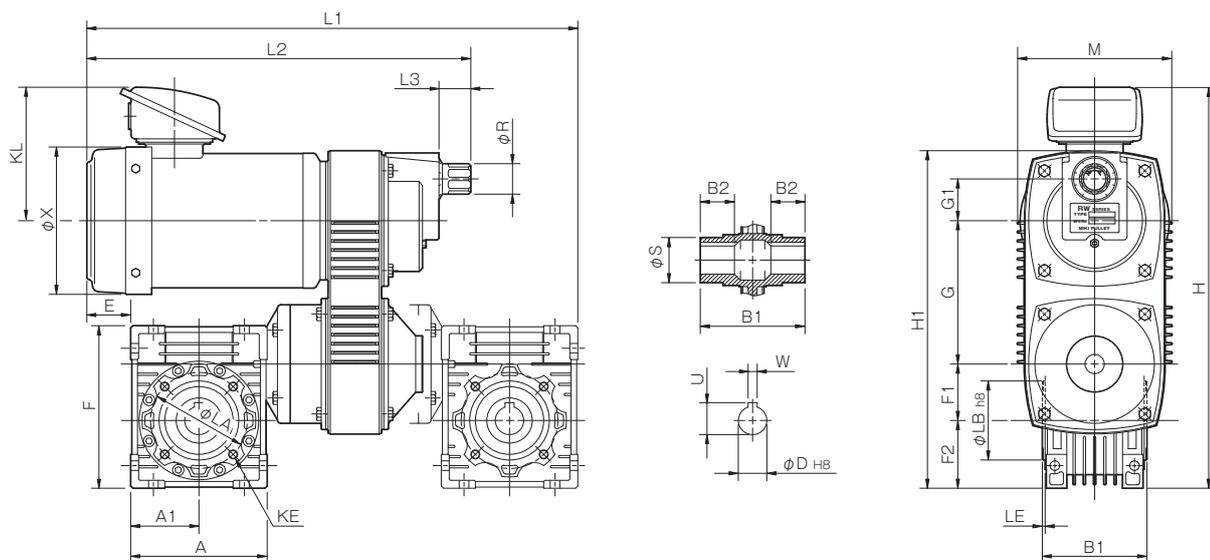
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
RWP-02-□-40-□-IE1	0.2	4	Three-phase, 200/50, 200 · 220/60	40	1/10	1/20	1/30	1/40	1/50	1/60	10.7
RWP-04-□-50-□-IE1	0.4	4	Three-phase, 200/50, 200 · 220/60	50	1/10	1/20	1/30	1/40	1/50	1/60	15.4
RWP-07-□-63N-□-IE3	0.75	4	Three-phase, 200/50, 200 · 220/60	63N	1/10	1/20	1/30	1/40	1/50	1/60	27.3
RWP-15-□-75N-□-IE3	1.5	4	Three-phase, 200/50, 200 · 220/60	75N	1/10	1/20	1/30	1/40	1/50	1/60	39.9

\* The induction motors are fully sealed external fan motors that conform to the JIS C4210 standard (for 0.2 kW and 0.4 kW models) or the JIS C 4213 standard (for 0.75 kW models or higher).

Model	Frequency [Hz]	Output shaft rotation speed [min <sup>-1</sup> ] and output shaft torque [N · m] per speed reduction ratio					
		1/10	1/20	1/30	1/40	1/50	1/60
		50	60	50	60	50	60
RWP-02-□-40-□-IE1	50	14.2 ~ 6.7	25.2 ~ 12.3	33.5 ~ 17	41 ~ 20.8	45 ~ 25.2	46 ~ 28.8
	60	13.6 ~ 5.1	24.1 ~ 9.4	32.1 ~ 13.1	39.4 ~ 16.1	45 ~ 19.5	45 ~ 22
RWP-04-□-50-□-IE1	50	29.2 ~ 13.6	53.3 ~ 25	71 ~ 35	84.4 ~ 43.5	91 ~ 51.2	83 ~ 57.6
	60	26.4 ~ 11.2	48.8 ~ 20.5	64.4 ~ 28.9	79.2 ~ 36.4	85 ~ 42.9	80 ~ 47.6
RWP-07-□-63N-□-IE3	50	55.9 ~ 25.8	101 ~ 48.6	130 ~ 66.6	163 ~ 84	173 ~ 99	160 ~ 112
	60	50.8 ~ 20.9	91.8 ~ 39.4	121 ~ 54	154 ~ 69.1	168 ~ 81.6	155 ~ 93.6
RWP-15-□-75N-□-IE3	50	113 ~ 53.9	207 ~ 103	277 ~ 141	280 ~ 181	250 ~ 190	240 ~ 180
	60	103 ~ 44	191 ~ 86	260 ~ 116	270 ~ 148	240 ~ 170	235 ~ 160

\* The output shaft rotation speed and output shaft torque values are based on the 200V 50/60Hz rated load. However, the output shaft torque may be limited to the rated value of the speed reducer.

## Dimensions

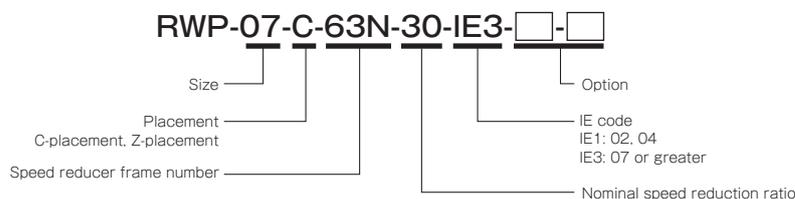


Unit [mm]

Model	Dimensions of part													Dimensions of output part													
	A	A1	E	F	F1	F2	G	G1	H	H1	KL	L1	L2	L3	M	R	X	KE	LA	LB	LE	S	B1	B2	D	U	W
RWP-02-□-40-□-IE1	100	50	43	121.5	40	50	115	35	323	258	118	384	311	28	115	27	131	4-M6-8	75	60	2.5	30	78	26	18	20.8	6
RWP-04-□-50-□-IE1	120	60	38.5	144	50	60	127	37	355	299	118	432.5	337.5	28	136	27	131	4-M8-9	85	70	2.5	40	92	30	25	28.3	8
RWP-07-□-63N-□-IE3	144	72	11.5	179	63	72	156	45	419.5	367	128.5	510.5	390.5	41	168	37	162	8-M8-11	95	80	3	45	112	36	25	28.3	8
RWP-15-□-75N-□-IE3	178	89	-3	209	75	86	176	60	478	427	141	598	450.5	41	200	37	187	8-M8-12	115	95	3	50	120	40	28	31.3	8

\* The output part tap hole KE dimension is equal to the quantity minus the nominal diameter of the screw threads minus the screw depth, where the quantity is for one side.

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STAND-ALONE BELT-TYPE STEPLESS SPEED CHANGERS

ZERO-MAX (STEPLESS SPEED CHANGERS)

DC MOTORS

ROTATION SPEED INDICATORS

MODELS

RW mini

RWM

RWM(BS)

RWP

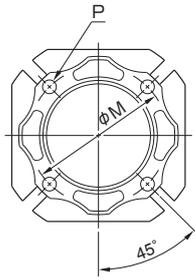
AXM

AXP

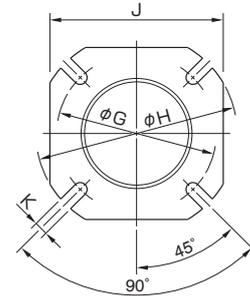
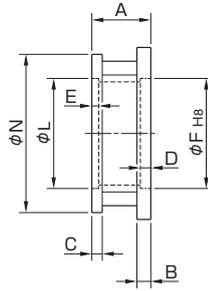
# RW mini/RWM/RWM(BS)/RWP Models

## Options

### Output Flange F- □



Mounting surface on the speed reducer side



Mounting surface on the machine side

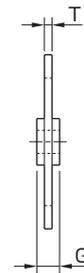
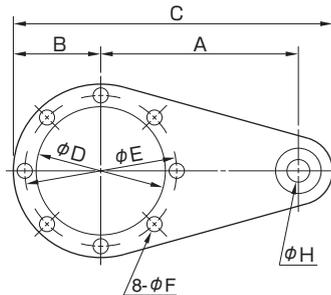


Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Unit [mm]
															Mass [kg]
F-30	25.5	6	6	4	4	50	68	80	70	6.5	55	65	75	4-φ6.5	0.07
F-40	30.5	7	5	4	3.5	60	87	110	95	9	60	75	87	4-φ6.5	0.14
F-50	46.5	9	8.5	5	4	70	90	125	110	11	70	85	100	4-φ9	0.23
F-63	29	10	—	6	6	115	150	180	142	11	80	95	110	8-φ9	0.29
F-75	54	13	—	6	7	130	165	200	170	14	95	115	140	8-φ9	0.65

\* This can be mounted to either the right side or the left side of the flange part of the speed reducer. You can mount it in any direction.

\* For output flange F-30, the mounting hole on the speed reducer side is at an angle of 45° to the mounting hole on the machine side.

### Torque Arm TA- □

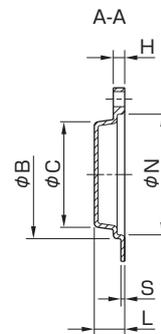
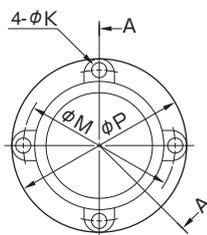


Model	A	B	C	D	E	F	G	H	T	Unit [mm]
										Mass [kg]
TA-30	85	38	138	55	65	7	14	8	4	0.2
TA-40	100	44	162	60	75	7	14	9	4	0.23
TA-50	100	50	168	70	85	9	14	9	4	0.3
TA-63	150	55	223	80	95	9	14	9	6	0.58
TA-75	200	70	300	95	115	9	25	19	6	1.2

\* This can be mounted to either the right side or the left side of the flange part of the speed reducer. You can mount it in any direction.

\* The φ H part of TA-40 to 75 is provided with a rubber bushing for damping vibration.

### Output Cover OC- □

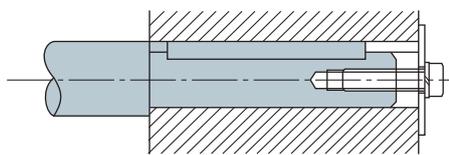


Model	P	M	K	N	C	B	S	H	L	Unit [mm]
										Mass [kg]
OC-30	75	65	7	56	49	58	1	5	13	
OC-40	87	75	8	62	51	64	1	5	13.5	
OC-50	100	85	10	72	53	74	1	5	14	
OC-63	110	95	10	82	61	84	1	5	15.5	
OC-75	140	115	10	97	72	99	1	5	16.5	

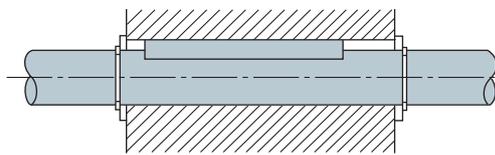
## Items Checked for Design Purposes

### Securing the Product to the Machine Shaft (Recommended Example)

If there is a step on the machine input shaft, secure the product with a bolt from the shaft end.



If there is no step on the machine input shaft, secure the product with a stop ring or something similar in the thrust direction.

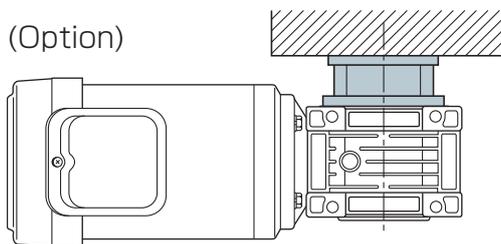


- \* Apply molybdenum disulfide grease (MoS<sub>2</sub>) to the machine input shaft and inside the hole of the hollow shaft and then connect them.
- \* The recommended fitting tolerance for the machine input shaft is JIS:h7.

### Mounting

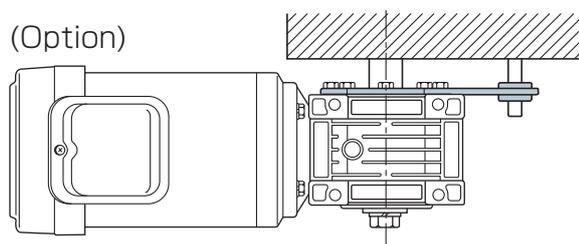
The following two mounting methods are recommended.

#### Output flange



- \* The output flange can be mounted to either the right side or the left side of the output part of the speed reducer.
- \* When securing with an output flange, you need to consider the centering (concentricity, perpendicularity, etc).
- \* Be careful not to apply excessive force to the machine input shaft and speed reducer case bearing.
- \* The output flange mounting bolts for the speed reducer main unit are included in the accessories.
- \* If you want to use a mounting method other than the output flange and torque arm mounting methods, please consult with us.

#### Torque arm



- \* The rotation stop part of torque arms of size #40 or more is provided with a rubber bushing for damping vibration and shock.
- \* The torque arm can be mounted to either the right side or the left side of the output part of the speed reducer.
- \* You need to provide some flexibility to the rotation stop part of the torque arm to make sure that excessive force is not applied to the joint between the speed reducer and machine input shaft.
- \* The torque arm mounting bolts for the speed reducer main unit are included in the accessories.

### Output Cover

- \* A cover for the speed reducer output part is available for the RW series to increase safety.
- \* The rotating part is not exposed to the outside by attaching the output flange (F) and output cover (OC).
- \* The output cover can be mounted to either the right side or the left side of the output part of the speed reducer.

#### Recommended output cover mounting bolts

Frame number	Bolt size
30	M6 × 12
40	M6 × 12
50	M8 × 12
63	M8 × 12
75	M8 × 12

### Oil Seal

The RW series uses an oil seal for the shaft seal device for oil. This is a contact oil seal so it has a limited life span. Check the oil seal at the following intervals depending on the operating condition, and if an oil leak is found, please contact us.

- In normal operating condition  
Check at an interval of one or two years.
- In harsh operating condition  
Check at an interval of one year.
- Use with a food machine, etc.  
If the product is used, in particular, with equipment susceptible to oil, provide a protective cover and grease tray or something similar, or please consult with us in advance.

#### Harsh condition examples

- The ambient temperature exceeds 35°C .
- The daily operating time exceeds 12 hours.
- The on-off operation or normal-reverse operation are performed frequently.
- There is a lot of dust.
- Corrosive gases, chemical vapors, etc. are present in the atmosphere.



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SERIES

HOLLOW SHAFT /  
SOLID SHAFT SPEED  
CHANGERS AND  
REDUCERSBELT-TYPE  
STEPLESS SPEED  
CHANGER  
UNITSSTAND-ALONE  
BELT-TYPE  
STEPLESS SPEED  
CHANGERSZERO-MAX  
(STEPLESS SPEED  
CHANGERS)

DC MOTORS

ROTATION SPEED  
INDICATORS

MODELS

RW mini

RWM

RWM(BS)

RWP

AXM

AXP

# RW mini/RWM/RWM(BS)/RWP Models

## Wire Connection (RWM- □ BS)

For details on the wire connection method, refer to the figure below. The power supply is installed in the terminal box of the motor. If you need quick braking, use the DC switching. In addition, use a varistor as a protection element.

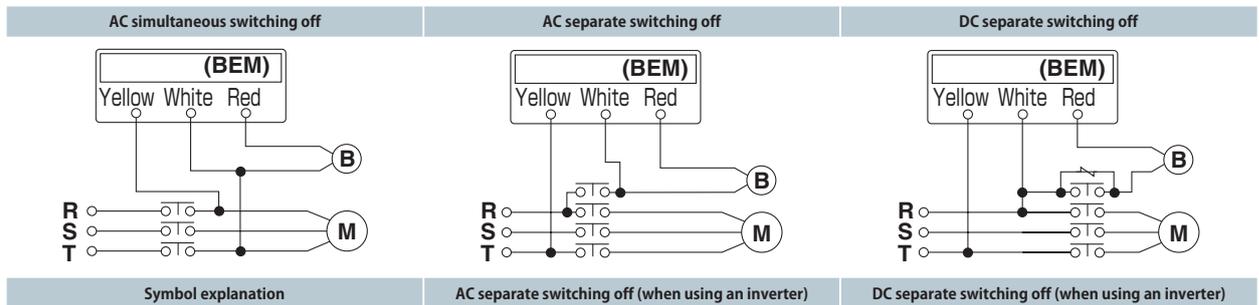
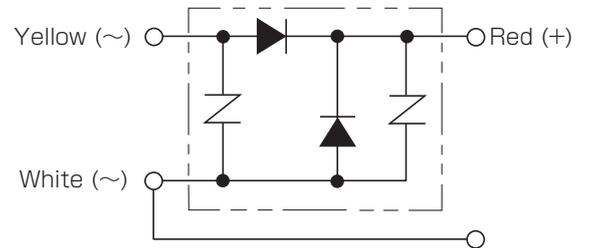
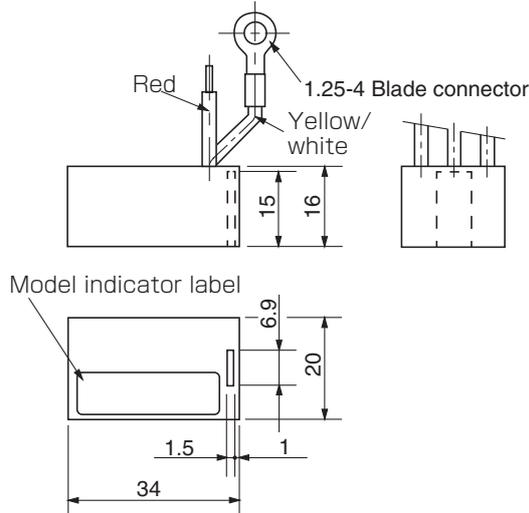
When braking with a brake using an inverter, be sure to use a combination of the circuit using an inverter shown in the figure below and the inverter's free-run stop.

### Varistor Specification

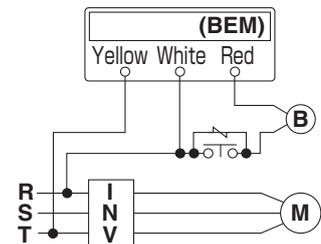
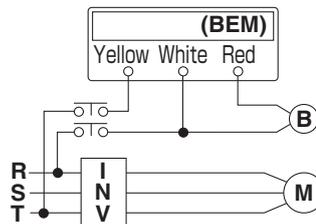
Motor capacity	Rated varistor voltage	Varistor voltage	Rated varistor power
0.2/0.4kW	250VAC	470V	0.2W
0.75/1.5kW	250VAC	470V	0.6W

### Power Supply

Model	Applied motor output
BEM-A-62	0.2 · 0.4kW
BEM-A-64	0.75 · 1.5kW



M: Motor  
 B: Brake  
 Z: Varistor  
 INV: Inverter  
 200 VAC input between yellow and white  
 90 VDC output between red and white



**Selection**

**I Selection Procedure**

**1. Torque value (load)**

Check the machine load, and select the speed reducer frame number by estimating the factor based on the rated torque in the catalog.

**2. Output rotation speed (speed reduction ratio)**

Determine and select the output rotation speed based on the rated rotation speed in the catalog. Selection of the output rotation speed is important for a hollow shaft speed reducer.

\* Unlike with a solid shaft speed reducer, the rotation speed cannot be adjusted later by changing the sprocket or pulley.

**3. Operating time (hours/day) and start frequency (number of starts/hour)**

Check the operating time and start frequency when you select the speed reducer frame number.

**4. Ambient temperature**

Determine the service factor (K) based on the operating ambient temperature.

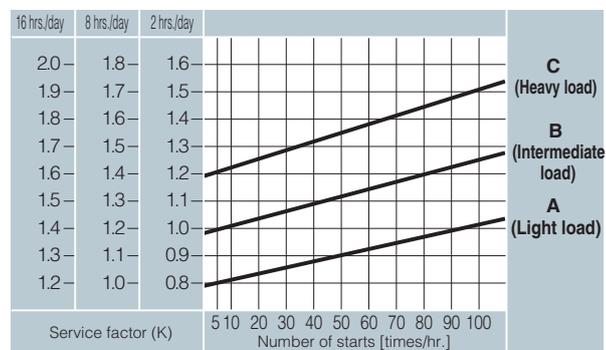
**I Service Factor (K)**

The service factor (K) is an important element for selection. Please give it sufficient consideration when making the selection.

1. Determine the type of machine load, A, B, or C, from the table below.

Type of load	Operating condition	
<b>A (light load)</b>	Uniform load without impact	Conveyor (uniform load), etc.
<b>B (intermediate load)</b>	Light impact load	Conveyor (variable feed), etc.
<b>C (heavy load)</b>	Heavy impact load	Press, crushing machine, etc.

2. Obtain the service factor (K) from the graph based on the operating time and number of starts.



\* If you need to perform operation for more than 16 hours/day, please consult with us.  
 \* If the number of starts is large or if the GD<sup>2</sup> value is large, please consult with us.

3. Correct the service factor (K) you obtained based on the table below.

Ambient temperature	Corrected value
-10 ~ 30°C	K × 1.0
30 ~ 40°C	K × 1.1 ~ 1.2

**I Selection Example**

**General-purpose conveyor (uniform load)**

Torque value: 40 N·m (50 Hz)	Operating time: 8 hours/day
Rotation speed: about 50 min <sup>-1</sup> (50 Hz)	Start frequency: Several times/day
Speed reduction ratio: 1/30	Ambient temperature: 20° C indoors (with air-conditioner)

- Determine the type of load from the table.  
**Type of load = Uniform load without impact: A (light load)**
- Find the intersection between the A (light load) line and frequency 5 times/hour line in the graph, and obtain the service factor (K) value for the operating time of 8 hours/day.

K=1.0

- Correct the service factor (K) based on the table.  
 $1.0 \times 1.0 = 1.0$  (overall service factor K)
- Based on the above, select the frame number whose speed reduction ratio is 1/30 and whose torque value is greater than 40 N·m (50 Hz) and closest to 40 N·m.

Final selected model	RWM-04-50-30 (50Hz, 47.5 min <sup>-1</sup> , 59N · m)
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**Induction conveyor (variable feed)**

Torque value: 40 N·m (50 Hz)	Operating time: 14 hours/day
Rotation speed: about 50 min <sup>-1</sup> (50 Hz)	Start frequency: 100 times/hour
Speed reduction ratio: 1/30	Ambient temperature: 35° C indoors (with air-conditioner)

- Follow the same procedure as that for the above selection example to find the intersection between the B (intermediate load) line and frequency 100 times/hour line, and obtain the service factor (K) value for the operating time of 16 hours/day.

K = 1.65

- Correct the service factor (K) based on the table.  
 $1.65 \times 1.2 = 1.98$  (overall service factor K)
- Based on the above, select the frame number whose speed reduction ratio is 1/30 and whose torque value is greater than 79.2 N·m (40 N·m x 1.98) and closest to 79.2 N·m.

Final selected model	RWM-07-63N-30 (50Hz, 47.3 min <sup>-1</sup> , 114N · m)
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**SERIES**

**HOLLOW SHAFT / SOLID SHAFT SPEED CHANGERS AND REDUCERS**

BELT-TYPE STEPLESS SPEED CHANGER UNITS

STAND-ALONE BELT-TYPE STEPLESS SPEED CHANGERS

ZERO-MAX (STEPLESS SPEED CHANGERS)

DC MOTORS

ROTATION SPEED INDICATORS

**MODELS**

RW mini

RWM

RWM(BS)

RWP

AXM

AXP

## Solid Shaft Geared Motor

# AXM

Motor output	0.2 kW to 1.5 kW (4-pole)
Power supply voltage	Three-phase, 200 V/50 Hz, 200 or 220 V/60 Hz
Speed reduction ratio	1/10, 1/20, 1/30, 1/40, 1/50, 1/60

## Solid Shaft Geared Motor with 0.2-kW to 1.5-kW Motor Output (4-pole)



### Module Consisting of a Speed Reducer and Motor

An extremely compact design using the B14 flange motor helps save machine space.

### Compact and Easy to Handle

Compact with B14 flange. Easy-to-handle solid shaft type.



### Speed Changer also Available

While an inverter can be used for changing speeds, our lineup of AXP models have a belt-type stepless speed changer built in and are worry free. Can be installed interchangeably.



## Specifications

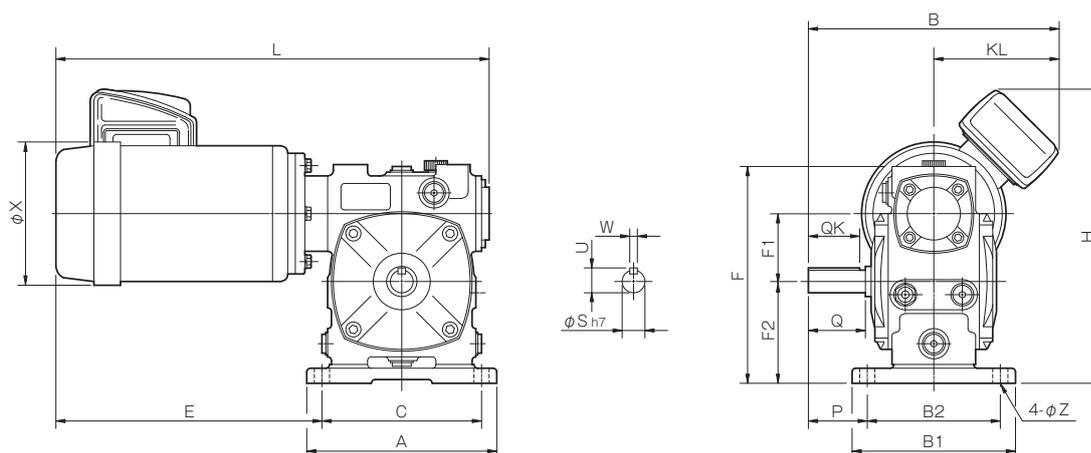
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
AXM-02-50N-□-□-IE1	0.2	4	Three-phase, 200/50, 200 · 220/60	50	1/10	1/20	1/30	1/40	1/50	1/60	14
AXM-04-60N-□-□-IE1	0.4	4	Three-phase, 200/50, 200 · 220/60	60	1/10	1/20	1/30	1/40	1/50	1/60	17
AXM-07-70N-□-□-IE3	0.75	4	Three-phase, 200/50, 200 · 220/60	70	1/10	1/20	1/30	1/40	1/50	1/60	32
AXM-15-80N-□-□-IE3	1.5	4	Three-phase, 200/50, 200 · 220/60	80	1/10	1/20	1/30	1/40	1/50	1/60	43

\* The induction motors are fully sealed external fan motors that conform to the JIS C4210 standard (for 0.2 kW and 0.4 kW models) or the JIS C 4213 standard (for 0.75 kW models or higher).

Model	Frequency [Hz]	Output shaft rotation speed [ $\text{min}^{-1}$ ] and output shaft torque [ $\text{N} \cdot \text{m}$ ] per speed reduction ratio											
		1/10		1/20		1/30		1/40		1/50		1/60	
		Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque	Rotation speed	Torque
AXM-02-50N-□-□-IE1	50	143	10.7	71.5	18.7	47.7	26.2	35.8	30.3	28.6	36.7	23.8	40.9
	60	171.5	9.1	85.8	16	57.2	22.6	42.9	26.4	34.3	32.1	28.6	35.9
AXM-04-60N-□-□-IE1	50	142.5	21.7	71.3	39.5	47.5	54.1	35.6	66.4	28.5	75.4	23.8	75.5
	60	171	18.3	85.5	33.6	57	46.4	42.8	57.2	34.2	64.6	28.5	70.9
AXM-07-70N-□-□-IE3	50	144	41.3	72	76.9	48	105	36	133	28.8	112	24	114
	60	172.5	34.6	86.3	65.1	57.5	88.1	43.1	114	34.5	105	28.8	106
AXM-15-80N-□-□-IE3	50	145	84.8	72.5	156	48.3	215	36.3	193	29	191	24.2	162
	60	174	71.5	87	132	58	183	43.5	179	34.8	177	29	151

\* The output shaft rotation speed and output shaft torque values are based on the 200V 50/60Hz rated load. However, the output shaft torque may be limited to the rated value of the speed reducer.

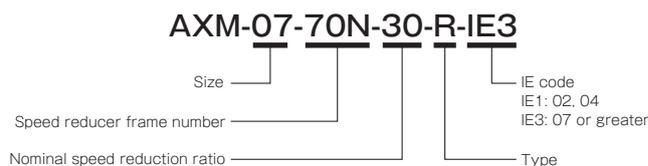
## Dimensions



Unit [mm]

Model	Dimensions of part											Dimensions of output part								
	A	B	B1	B2	C	E	F	F1	F2	H	KL	L	P	X	Z	Q	QK	S	U	W
AXM-02-50N-□-□-IE1	142	204	124	100	118	221.5	165	50	80	239	109	351.5	45	131	10	40	35	17	19	5
AXM-04-60N-□-□-IE1	165	219	143	115	140	233	192	60	90	258	109	385.5	52.5	131	12	50	45	22	24.5	6
AXM-07-70N-□-□-IE3	190	246.5	160	130	160	270.5	225	70	105	291.5	116.5	445.5	65	162	14	60	55	28	31	8
AXM-15-80N-□-□-IE3	220	265	170	140	190	295.5	252	80	112	317	125	494	70	187	14	65	60	32	35	10

## How to Place an Order



## I Type



\* Type indicates the direction of the output shaft as viewed from the input shaft of the speed reducer.

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MODELS

RW mini

RWM

RWM(BS)

RWP

AXM

AXP

## Solid Shaft Belt-type Speed Changer Unit

# AXP

Motor output	0.2 kW to 1.5 kW (4-pole)
Power supply voltage	Three-phase, 200 V/50 Hz, 200 or 220 V/60 Hz
Speed reduction ratio	1/10, 1/20, 1/30, 1/40, 1/50, 1/60

### The Model Consisting of Solid Shaft Geared Motor AXM and a Belt-type Stepless Speed Changer



#### Compact and Light

The mass is about 20% lighter and the size is about 20% smaller than our conventional 0.4-kW belt-type stepless speed changer unit.

#### Speed Is Changed with a Rotary Knob

Speed can easily be changed with your fingers using a rotary knob with a 27-mm external diameter (size: 02 and 04 only).

#### Simple Sealed Enclosure Type with High Environmental Resistance and High Safety

The use of a heat-resistant belt ensures a long life even when used in a sealed enclosure.

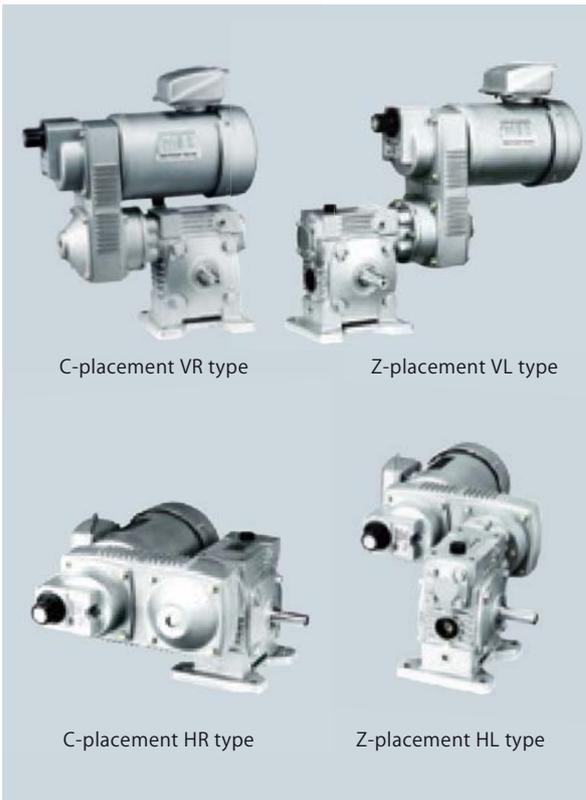
#### Torque Higher Than That of the Inverter

This model performs well even at low speeds where an inverter does not work well.

High torque operation at low speeds is also possible.

#### Assorted Types

The speed changer can also be placed vertically or horizontally with both C-placement and Z-placement types, as depends on the placement position of the speed reducer.



C-placement VR type

Z-placement VL type

C-placement HR type

Z-placement HL type

#### Rotary adjustment

When the speed is changed with the rotary knob, the speed can be confirmed by the movement of the needle on the scale plate.



The speed can be fine-tuned with the rotary knob with a scale of 0 to 10.



## Specifications

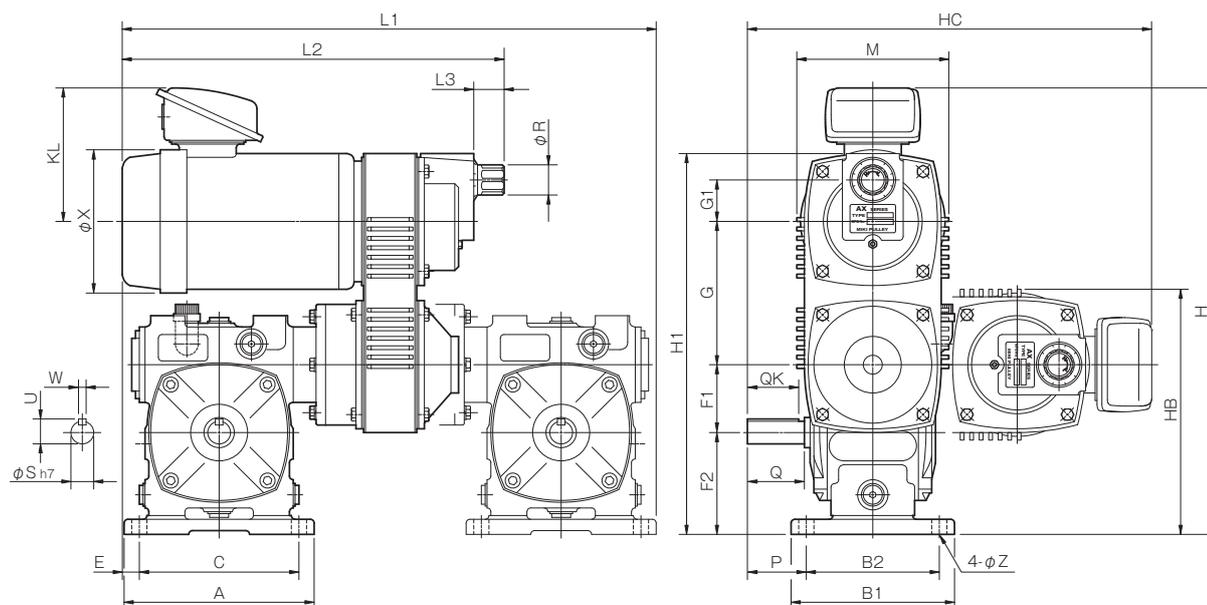
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
AXP-02-□-50N-□-□-IE1	0.2	4	Three-phase, 200/50, 200 · 220/60	50	1/10	1/20	1/30	1/40	1/50	1/60	15
AXP-04-□-60N-□-□-IE1	0.4	4	Three-phase, 200/50, 200 · 220/60	60	1/10	1/20	1/30	1/40	1/50	1/60	20
AXP-07-□-70N-□-□-IE3	0.75	4	Three-phase, 200/50, 200 · 220/60	70	1/10	1/20	1/30	1/40	1/50	1/60	36
AXP-15-□-80N-□-□-IE3	1.5	4	Three-phase, 200/50, 200 · 220/60	80	1/10	1/20	1/30	1/40	1/50	1/60	52

\* The induction motors are fully sealed external fan motors that conform to the JIS C4210 standard (for 0.2 kW and 0.4 kW models) or the JIS C 4213 standard (for 0.75 kW models or higher).

Model	Frequency [Hz]	Output shaft rotation speed [min <sup>-1</sup> ] and output shaft torque [N · m] per speed reduction ratio					
		1/10	1/20	1/30	1/40	1/50	1/60
		50	60	50	60	50	60
AXP-02-□-50N-□-□-IE1	50	14 ~ 7	22 ~ 12	31 ~ 17	34 ~ 19	41 ~ 24	45 ~ 27
	60	13 ~ 5	22 ~ 9	30 ~ 13	33 ~ 15	40 ~ 18	44 ~ 20
AXP-04-□-60N-□-□-IE1	50	28 ~ 13	49 ~ 24	65 ~ 33	77 ~ 41	84 ~ 47	96 ~ 54
	60	25 ~ 11	44 ~ 20	59 ~ 27	71 ~ 33	78 ~ 38	89 ~ 44
AXP-07-□-70N-□-□-IE3	50	53 ~ 25	95 ~ 46	123 ~ 63	155 ~ 81	151 ~ 87	151 ~ 102
	60	48 ~ 20	87 ~ 37	113 ~ 50	143 ~ 65	145 ~ 70	144 ~ 82
AXP-15-□-80N-□-□-IE3	50	106 ~ 51	187 ~ 94	250 ~ 131	263 ~ 164	252 ~ 166	215 ~ 143
	60	96 ~ 41	170 ~ 76	228 ~ 106	251 ~ 132	242 ~ 159	204 ~ 143

\* The output shaft rotation speed and output shaft torque values are based on the 200V 50/60Hz rated load. However, the output shaft torque may be limited to the rated value of the speed reducer.

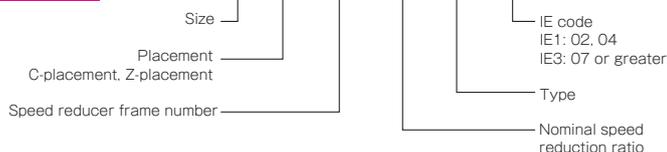
## Dimensions



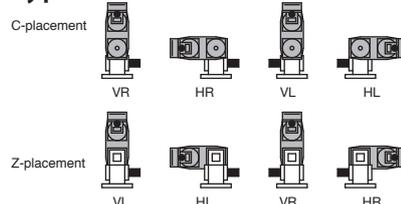
Model	Dimensions of part																Dimensions of output shaft							Unit [mm]			
	A	B1	B2	C	E	F1	F2	G	G1	H	H1	HB	HC	KL	L1	L2	L3	M	P	R	X	Z	Q	QK	S	U	W
AXP-02-□-50N-□-□-IE1	142	124	100	118	16	50	80	115	35	363	301	195.5	328	118	423	311	28	115	45	27	131	10	40	35	17	19	5
AXP-04-□-60N-□-□-IE1	165	143	115	140	15.5	60	90	127	37	395	339	218	355	118	468	337.5	28	136	52.5	27	131	12	50	45	22	24.5	6
AXP-07-□-70N-□-□-IE3	190	160	130	160	4.5	70	105	156	45	460	407	414.5	259	128.5	541.5	390.5	41	168	65	37	162	14	60	55	28	31	8
AXP-15-□-80N-□-□-IE3	220	170	140	190	-6.5	80	112	176	60	509	458	457	292	141	618.5	450.5	41	200	70	37	187	14	65	60	32	35	10

## How to Place an Order

AXP-07-C-70N-30-VR-IE3



## Type



\* Type indicates the direction of the output shaft as viewed from the input shaft of the speed reducer.

COUPLINGS

ETP BUSHINGS

ELECTROMAGNETIC CLUTCHES & BRAKES

SPEED CHANGERS & REDUCERS

INVERTERS

LINEAR SHAFT DRIVES

TORQUE LIMITERS

ROSTA

## SERIES

HOLLOW SHAFT / SOLID SHAFT SPEED CHANGERS AND REDUCERS

BELT-TYPE

STEPLESS SPEED CHANGER UNITS

STAND-ALONE BELT-TYPE STEPLESS SPEED CHANGERS

ZERO-MAX (STEPLESS SPEED CHANGERS)

DC MOTORS

ROTATION SPEED INDICATORS

## MODELS

RW mini

RWM

RWM(BS)

RWP

AXM

AXP

# AXM/AXP Models

## Items Checked for Design Purposes

- \* Avoid a humid place, a place where the ambient temperature is high, a place exposed to water or oil, and a place where corrosive and flammable gases are present, and select a well-ventilated place. In addition, mount the device in a location that provides easy access for inspection. The operating ambient temperature range is -10°C to +40°C.
- \* Mount the device on the floor surface, and select a stable mounting base to make sure it does not vibrate. When you mount the device above the floor level, make sure the base surface is somewhat higher than the floor surface and moisture is not absorbed. The device may vibrate during use if it is not mounted properly. Be sure to mount it securely using mounting bolts of an adequate strength.
- \* Be sufficiently careful to avoid the overhang load when mounting the sprocket and gear to the output shaft. When connecting the output shaft directly to the machine, use a flexible coupling or something similar, and align the shaft center and mount it.
- \* For the output shaft rotation direction, you can use any direction.
- \* Before changing between the normal and reverse directions, make sure the motor is stopped.
- \* Break-in is recommended to condition the engaging surfaces of gear teeth of the speed reducer.
- \* Do not turn the handle when the speed changer is stopped. (When using the AXP model)
- \* Before using the device, please carefully read the instruction manual.

## Oil Seal

The AX series uses an oil seal for the shaft seal device for oil. This is a contact oil seal so it has a limited life span. Check the oil seal at the following intervals depending on the operating condition, and if an oil leak is found, please contact us.

1. In normal operating condition  
Check at an interval of one or two years.
2. In harsh operating condition  
Check at an interval of one year.
3. Use with a food machine, etc.  
If the product is used, in particular, with equipment susceptible to oil, provide a protective cover and grease tray or something similar, or please consult with us in advance.

### Harsh condition examples

- \* The ambient temperature exceeds 35°C.
- \* The daily operating time exceeds 12 hours.
- \* The on-off operation or normal-reverse operation are performed frequently.
- \* There is a lot of dust.
- \* Corrosive gases, chemical vapors, etc. are present in the atmosphere.

## Gear Oils for the AX Series Speed Reducers

Ambient temperature	Standards	ISO viscosity grade	JIS
Normal load	- 10 ~ 5°C	VG 150	Gear oil type 2, no. 4
	5 ~ 40°C	VG 320	Gear oil type 2, no. 6
High load	- 10 ~ 5°C	VG 320	Gear oil type 2, no. 6
	5 ~ 40°C	VG 460	Gear oil type 2, no. 7

## Oil Amounts for the AX Series Speed Reducers

Motor output [kW]	Speed reducer frame number	Oil amount [L]
0.2	50	0.25
0.4	60	0.41
0.75	70	0.67
1.5	80	1.00

## Selection

### Selection Procedures

- 1. Torque value (load)**  
Check the machine load, and select the speed reducer frame number by estimating the factor based on the rated torque in the catalog.
- 2. Output shaft rotation speed (speed reduction ratio)**  
Determine and select the output shaft rotation speed based on the rated rotation speed in the catalog. Selection of the output shaft rotation speed is important for a solid shaft speed reducer.
- 3. Operating time (hours/day) and start frequency (number of starts/hour)**  
Check the operating time and start frequency when you select the speed reducer frame number.
- 4. Ambient temperature**  
Determine the service factor (K) based on the operating ambient temperature.

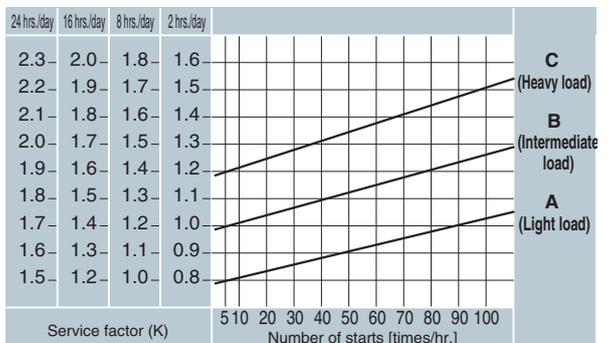
### Service Factor (K)

The service factor (K) is an important element for selection. Please give it sufficient consideration when making the selection.

1. Determine the type of machine load, A, B, or C, from the table below.

Operating conditions	Examples	Type of load
Uniform load without impact	Conveyor (uniform load), etc.	A (light load)
Light impact load	Conveyor (variable feed), etc.	B (intermediate load)
Heavy impact load	Press, crushing machine, etc.	C (heavy load)

2. Obtain the service factor (K) from the graph based on the operating time and number of starts.



3. Correct the service factor (K) you obtained based on the table below.

Ambient temperature	Corrected value
- 10 ~ 5°C	K × 1.1 ~ 1.2
5 ~ 30°C	K × 1.0
30 ~ 40°C	K × 1.1 ~ 1.2