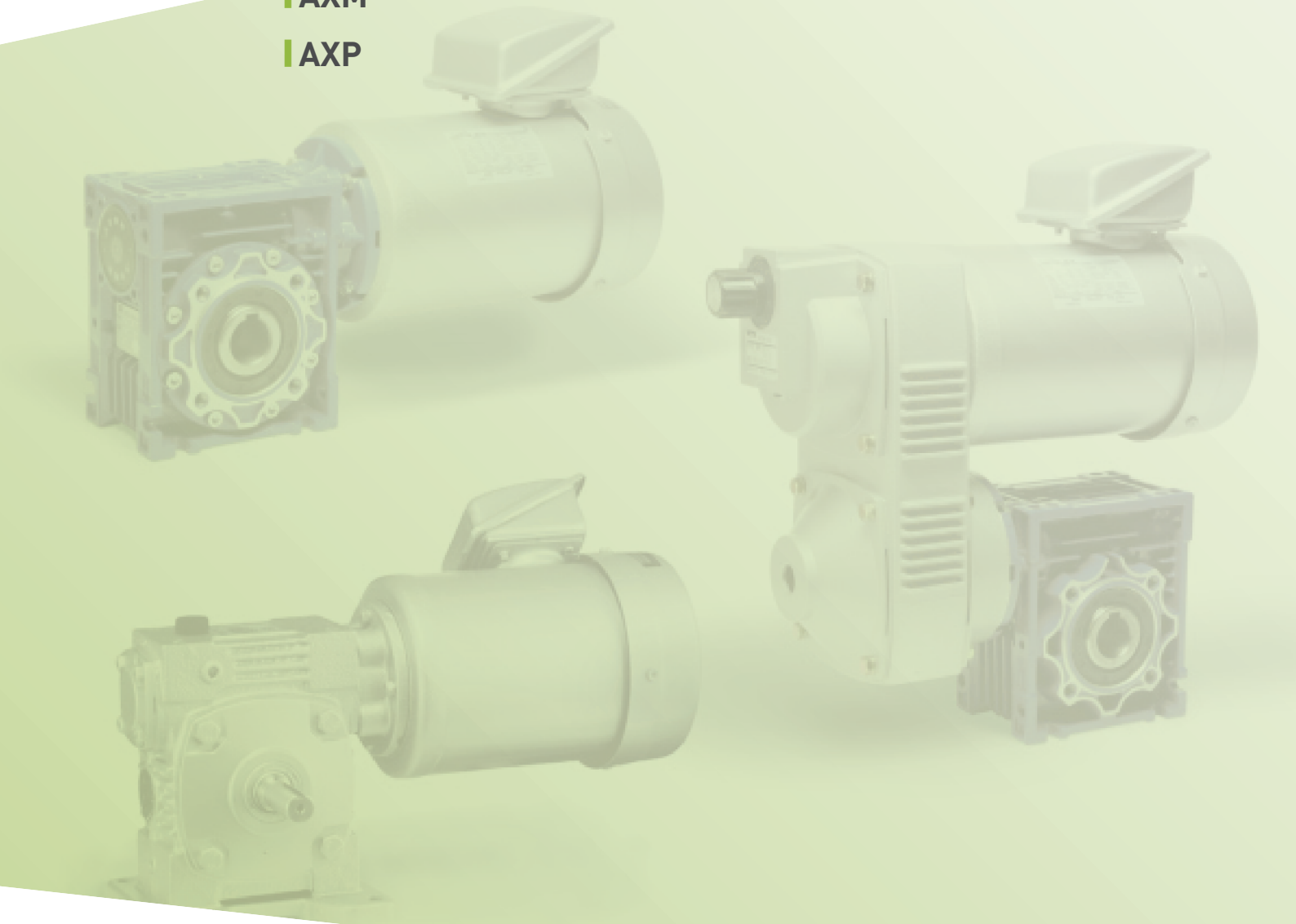
HOLLOW SHAFT / SOLID SHAFT SPEED CHANGERS AND REDUCERS

- RW mini
- RWM
- RWM BS
- RWP
- AXM
- AXP

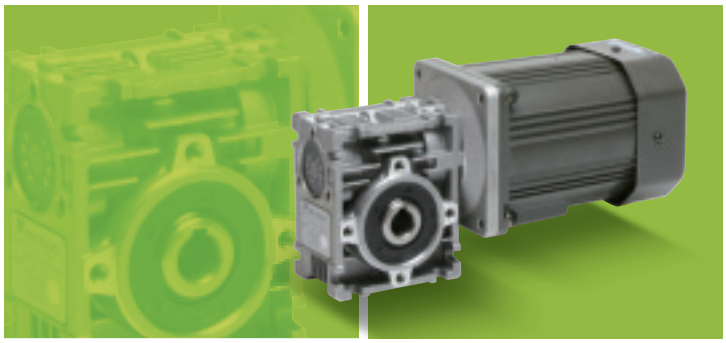


Hollow Shaft Geared Motor

RW mini

Motor output	60 W, 90 W (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

Compact Orthogonal-type Hollow Shaft Geared Motors with a 60 W or 90 W Output



Enables Reduction in Size and Mass of Machines

Power transmission parts such as a coupling, chain, and sprocket are not necessary. And the use of aluminum die cast for the housing enables reducing the mass of machines.

High Safety

Since the product can be directly mounted, the rotating part is not exposed to the outside. Thus, high safety is ensured without installing a safety cover.

High Water and Dust Resistance

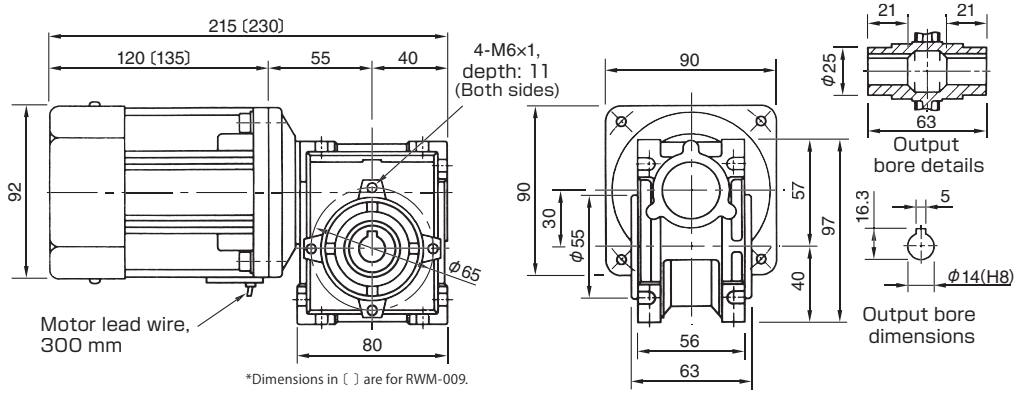
The motor and speed reducer have a high environmental resistance because they have an IP54-compliant structure.

Specifications

Model		Motor output [W]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reduction ratio	Output shaft rotation speed [min⁻¹]		Output shaft torque [N・m]		Mass [kg]
						50Hz	60Hz	50Hz	60Hz	
RWM-006-30	-10	60	4	Three-phase, 200/50, 200・220/60	1/10	135	163	3.4	2.9	3.6
	-20	60	4	Three-phase, 200/50, 200・220/60	1/20	67.5	81.3	6.1	5.1	3.6
	-30	60	4	Three-phase, 200/50, 200・220/60	1/30	45	54.2	8.2	6.8	3.6
RWM-009-30	-10	90	4	Three-phase, 200/50, 200・220/60	1/10	133	160	5.2	4.3	4.1
	-20	90	4	Three-phase, 200/50, 200・220/60	1/20	66.3	80	9.2	7.7	4.1
	-30	90	4	Three-phase, 200/50, 200・220/60	1/30	44.2	53.3	12.3	10.3	4.1

* The output shaft rotation speed and output shaft torque values are based on the rated motor load.

Dimensions



*Dimensions in ( ) are for RWM-009.

Unit [mm]

MODELS
RW mini
RWM
RWM BS
RWP
AXM
AXP

How to Place an Order

RWM-006-30-10-□-□

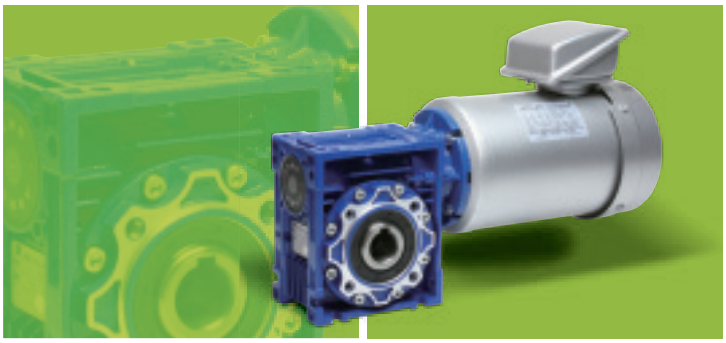
Size
Nominal speed reduction ratio
Option

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).

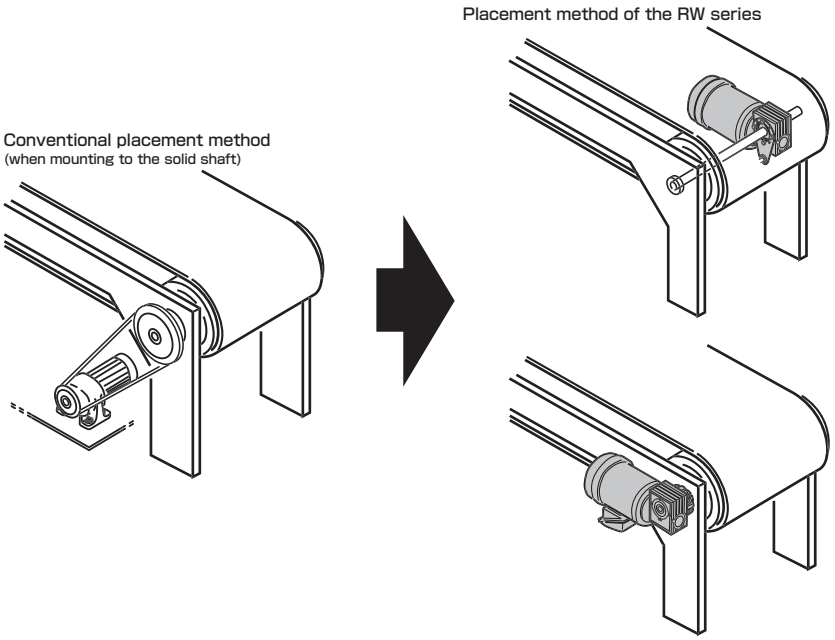
High Efficiency, Long Life, and Low Noise
The use of a highly efficient worm gear enables smoother movement and produces less noise than other gear mechanisms.

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

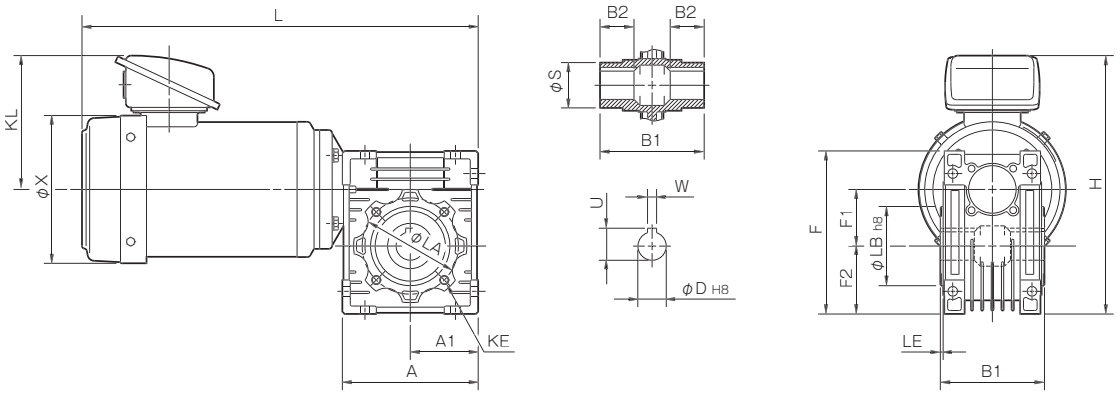
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
RWM-02-40-□-IE1	0.2	4	Three-phase, 200/50, 200・220/60	40	1/10	1/20	1/30	1/40	1/50	1/60	8.8
RWM-04-50-□-IE1	0.4	4	Three-phase, 200/50, 200・220/60	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^{-1}] 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.

How to Place an Order

RWM-07-63N-30-IE3-□-□

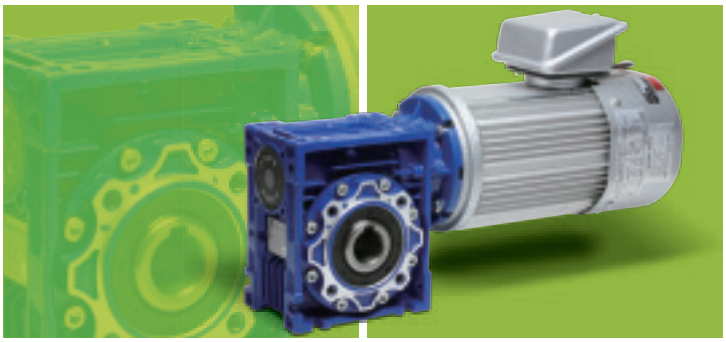
- Size
- Speed reducer frame number
- Nominal speed reduction ratio
- IE code: IE1: 02, 04; IE3: 07 or greater
- Option

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.

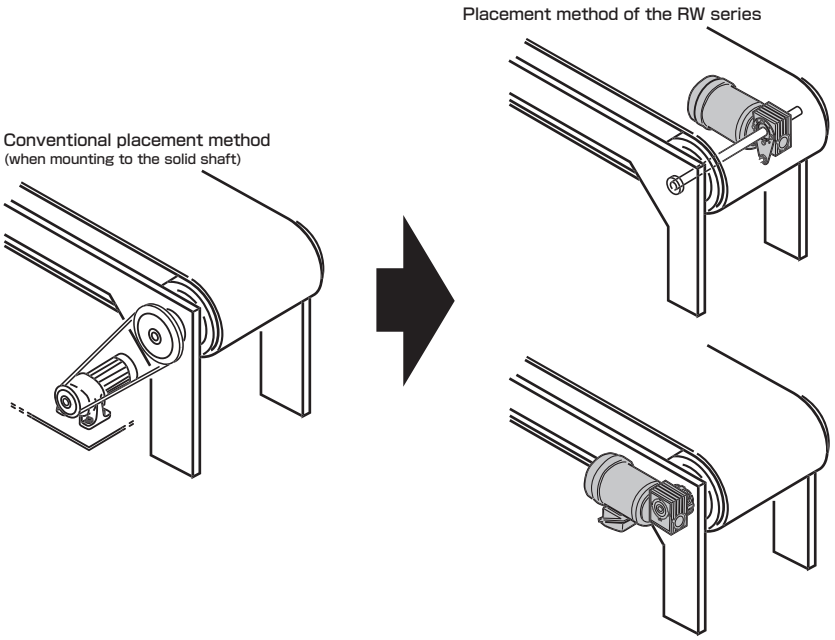
Quiet Operation

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	32

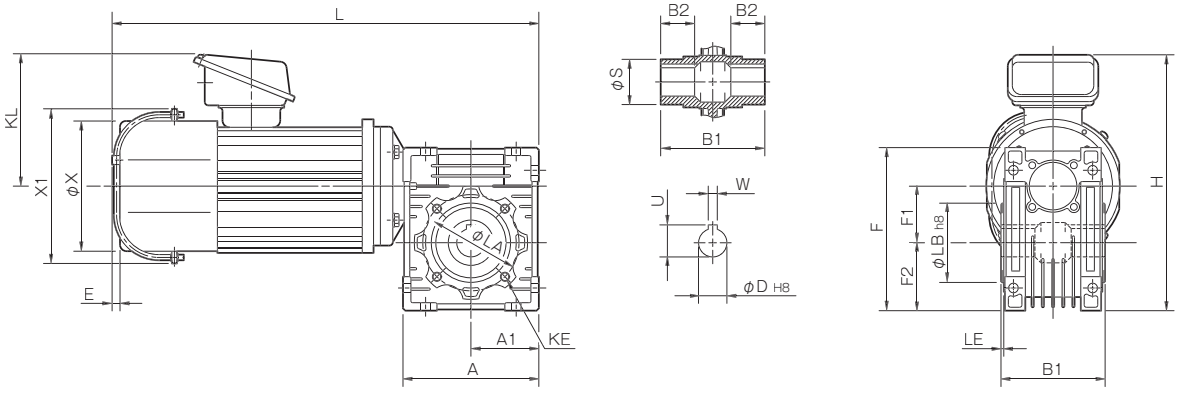
* The induction motors are fully sealed external fan motors that conform to the JIS C4210 standard (for 0.2 kW and 0.4 kW models) or the JIS C 4213 standard (for 0.75 kW models or higher).

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^2]	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	0.58×10^{-3}	0.1	0.03	0.2	0.5	BEM-A-62
RWM-04BS-50-□	Spring-actuated	4	DC 90	0.2	B	Continuous	0.8×10^{-3}	0.1	0.03	0.2	0.5	BEM-A-62
RWM-07BS-63N-□-IE3	Spring-actuated	7.5	DC 90	0.61	B	Continuous	2.3×10^{-3}	0.15	0.05	0.2	0.5	BEM-A-62
RWM-15BS-75N-□-IE3	Spring-actuated	15	DC 90	0.61	B	Continuous	4.5×10^{-3}	0.15	0.05	0.2	0.5	BEM-A-62

Model	Frequency [Hz]	Output shaft rotation speed [min^{-1}] 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	144.4	45.7	72.2	85.1	48.2	117	36.1	145	28.9	135	24.1	130
	60	173.4	38.3	86.7	71.3	57.8	97.6	43.4	123	34.7	135	28.9	130
RWM-15BS-75N-□-IE3	50	143	93.9	71.5	177	47.6	230	35.8	220	28.6	210	23.8	200
	60	172	79.2	86	150	57.3	211	43	220	34.4	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



Unit [mm]

Model	Dimensions of part											Dimensions of output part									
	A	A1	E	F	F1	F2	H	KL	L	X	X1	KE	LA	LB	LE	S	B1	B2	D	U	W
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	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	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.

How to Place an Order

RWM-07BS-63N-30-IE3-□-□

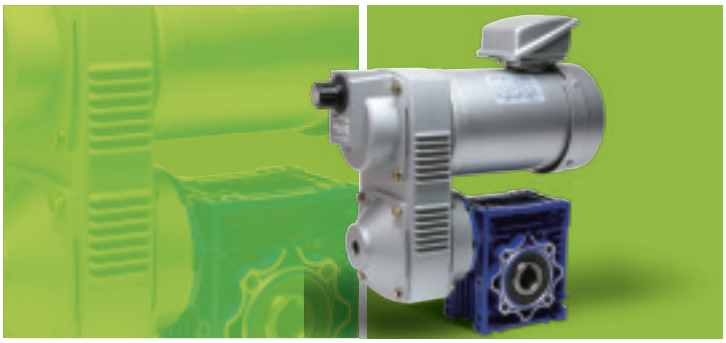
- Size
- Spring-actuated brake motor
- Speed reducer frame number
- Nominal speed reduction ratio
- IE code (for 07 or 15 only, use the IE3 designation)
- Option

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.

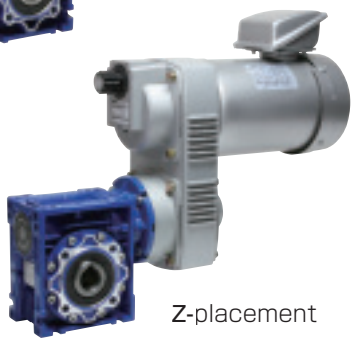
Torque Higher Than That of the Inverter
This model performs well even at low speeds where an inverter does not work well.
High torque operation at low speeds is also possible.

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

C-placement

There are two types of P modules depending on the placement position of the speed reducer: C-placement module and Z-placement module.
Please choose any one according to the mounting space and the machine design.



Z-placement

The speed can be fine-tuned with a rotary knob with a scale of 0 to 10. Furthermore, when the speed is changed, the speed can be confirmed by the movement of the needle on the scale plate.

Specifications

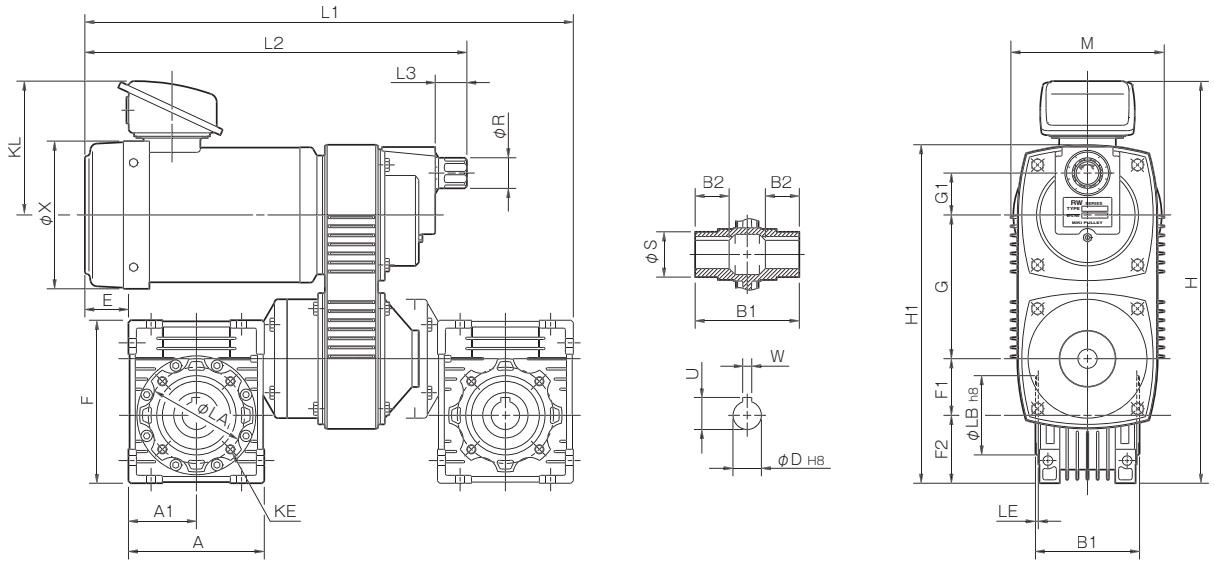
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
RWP-02-□-40-□-IE1	0.2	4	Three-phase, 200/50, 200・220/60	40	1/10	1/20	1/30	1/40	1/50	1/60	10.7
RWP-04-□-50-□-IE1	0.4	4	Three-phase, 200/50, 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^{-1}] and output shaft torque [N・m] per speed reduction ratio					
		1/10	1/20	1/30	1/40	1/50	1/60
	50	50 ～ 200	25 ～ 100	17 ～ 68	12.5 ～ 50	10 ～ 40	8.5 ～ 34
	60	60 ～ 240	30 ～ 120	20 ～ 80	15 ～ 60	12 ～ 48	10 ～ 40
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-□-50N-□-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.

How to Place an Order

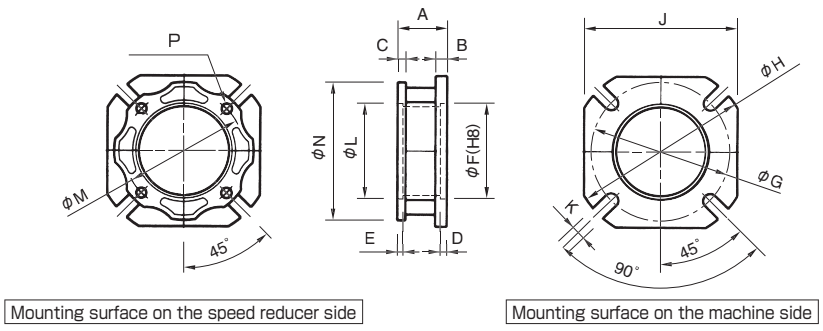
RWP-07-C-63N-30-IE3-□-□

- 07: Size
- C: Placement (C-placement, Z-placement)
- 63N: Speed reducer frame number
- 30: Nominal speed reduction ratio
- IE3: IE code (IE1: 02, 04; IE3: 07 or greater)
- □: Option

RW mini/RWM/RWM BS/RWP Models

Options

Output Flange F-□



Mounting surface on the speed reducer side

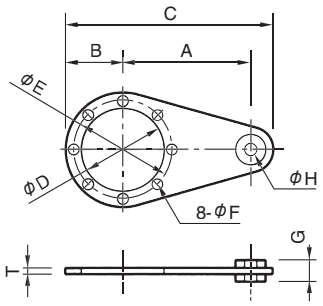
Mounting surface on the machine side

Unit [mm]

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	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-□

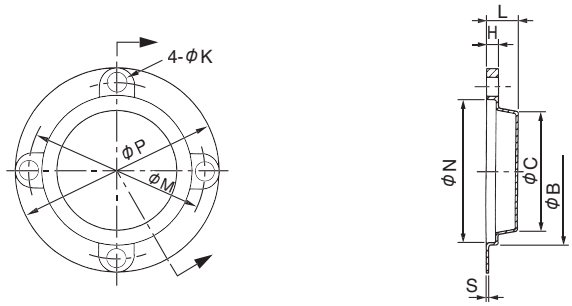


Unit [mm]

Model	A	B	C	D	E	F	G	H	T	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-□



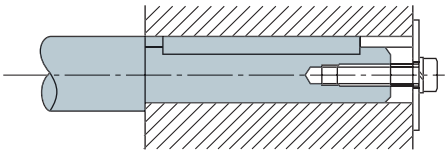
Unit [mm]

Model	P	M	K	N	C	B	S	H	L
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

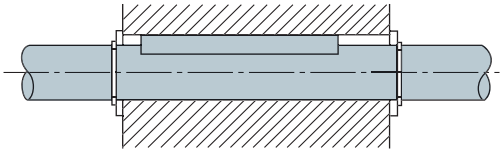
Items Checked for Design Purposes

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.

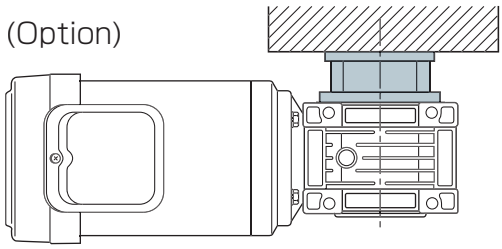


* Apply molybdenum disulfide grease (MoS_2) to the machine input shaft and inside the hole of the hollow shaft and then connect them.
* The recommended fitting tolerance for the machine input shaft is JIS:h7.

Mounting

The following two mounting methods are recommended.

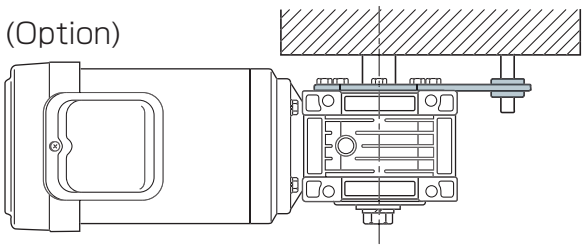
Output flange



* 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.

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℃ .
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.

RW mini/RWM/RWM BS/RWP Models

Wire Connection (RWM- □ BS)

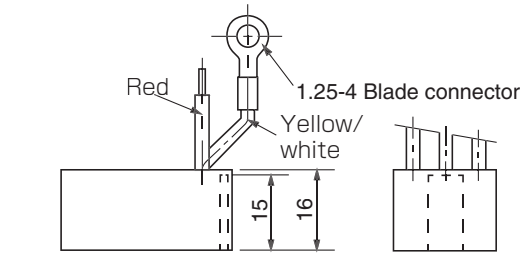
For details on the wire connection method, refer to the figure below.
The power supply is installed in the terminal box of the motor.
If you need quick braking, use the DC switching. In addition, use a varistor as a protection element.

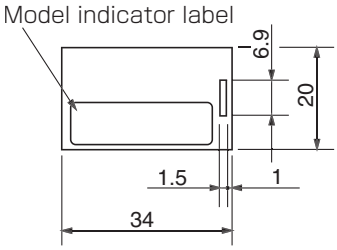
When braking with a brake using an inverter, be sure to use a combination of the circuit using an inverter shown in the figure below and the inverter's free-run stop.

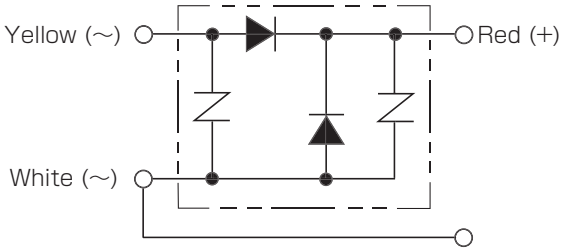
Varistor Specification

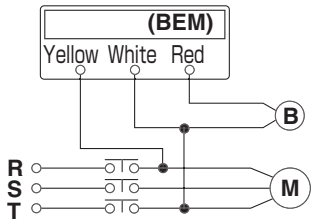
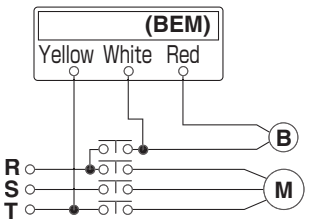
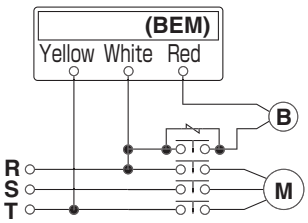
Motor capacity	Rated varistor voltage	Varistor voltage	Rated varistor power
0.2/0.4kW	250VAC	470V	0.2W
0.75/1.5kW	250VAC	470V	0.6W

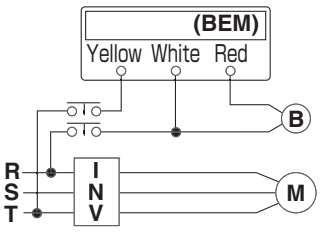
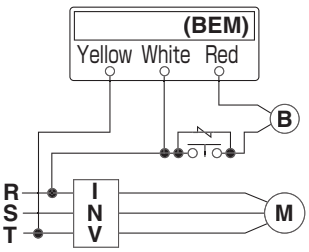
Power Supply BEM-A-62







AC simultaneous switching off	AC separate switching off	DC separate switching off
		

Symbol explanation	AC separate switching off (when using an inverter)	DC separate switching off (when using an inverter)
M: Motor B: Brake Z: Varistor INV: Inverter 200 VAC input between yellow and white 90 VDC output between red and white		

Selection

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.

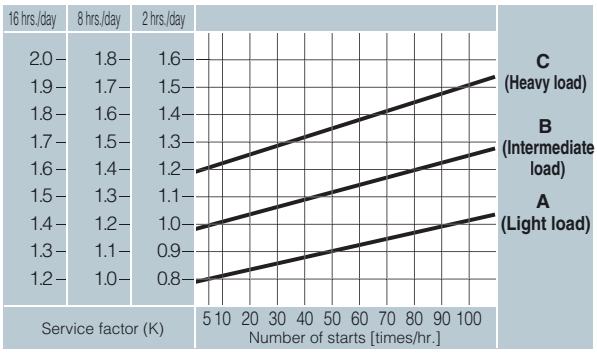
Service Factor (K)

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	
A (light load)	Uniform load without impact	Conveyor (uniform load), etc.
B (intermediate load)	Light impact load	Conveyor (variable feed), etc.
C (heavy load)	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 GD² 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℃	K × 1.0
30 ~ 40℃	K × 1.1 ~ 1.2

Selection Example

General-purpose conveyor (uniform load)

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

1. Determine the type of load from the table.
   Type of load = Uniform load without impact: A (light load)
2. 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
3. Correct the service factor (K) based on the table.
   1.0 x 1.0 = 1.0 (overall service factor K)
4. 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^{-1}, 59N・m)

Induction conveyor (variable feed)

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

1. 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
2. Correct the service factor (K) based on the table.
   1.65 x 1.2 = 1.98 (overall service factor K)
3. 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.

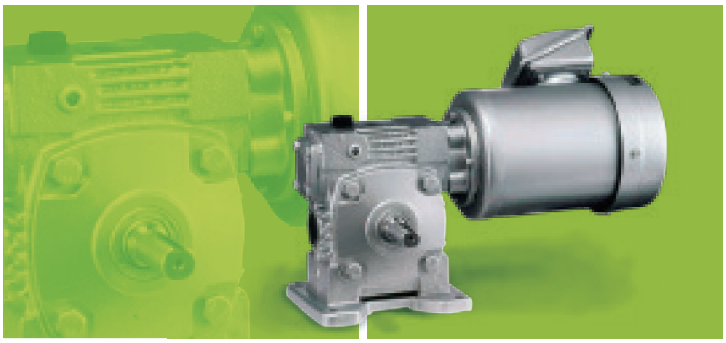
Final selected model	RWM-07-63N-30 (50Hz, 47.3 min^{-1}, 114N・m)

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)

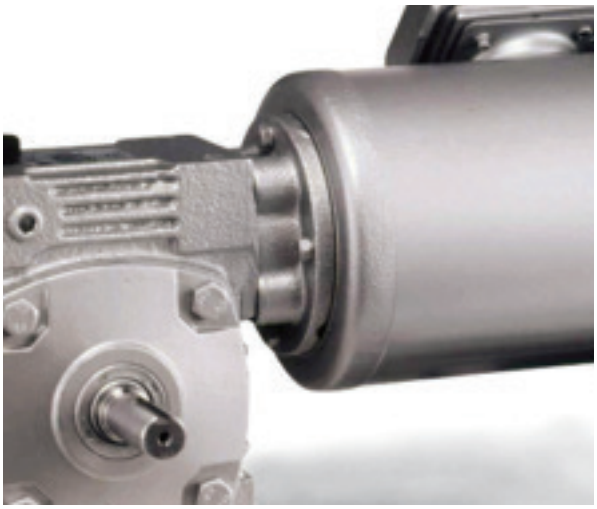


Module Consisting of a Speed Reducer and Motor

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

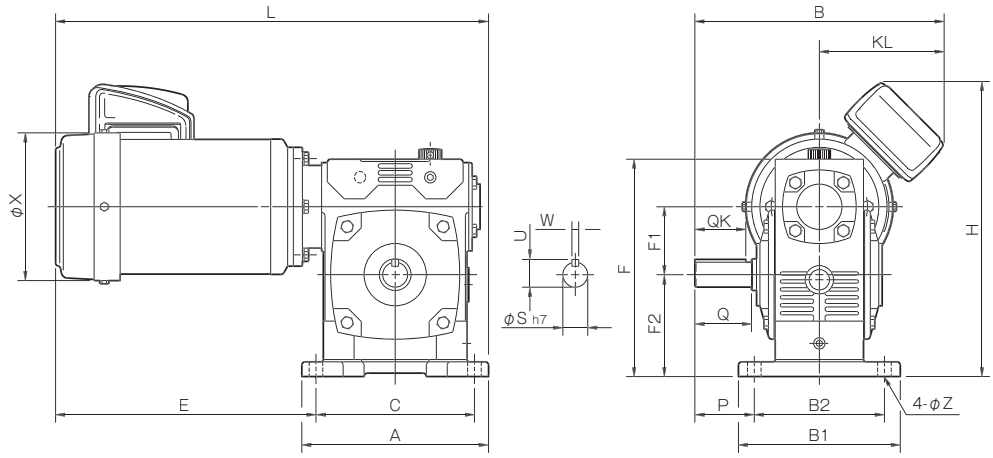
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
AXM-02-50-□-□-IE1	0.2	4	Three-phase, 200/50, 200・220/60	50	1/10	1/20	1/30	1/40	1/50	1/60	12.5
AXM-04-60-□-□-IE1	0.4	4	Three-phase, 200/50, 200・220/60	60	1/10	1/20	1/30	1/40	1/50	1/60	18
AXM-07-70-□-□-IE3	0.75	4	Three-phase, 200/50, 200・220/60	70	1/10	1/20	1/30	1/40	1/50	1/60	32.5
AXM-15-80-□-□-IE3	1.5	4	Three-phase, 200/50, 200・220/60	80	1/10	1/20	1/30	1/40	1/50	1/60	45.5

* 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^{-1}] 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
AXM-02-50-□-□-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-04-60-□-□-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-07-70-□-□-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-15-80-□-□-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]

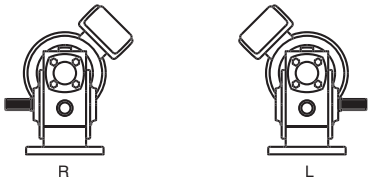
Model	Dimensions of part															Dimensions of output part				
	A	B	B1	B2	C	E	F	F1	F2	H	KL	L	P	X	Z	Q	QK	S	U	W
AXM-02-50-□-□-IE1	142	204	124	100	118	218.5	165	50	80	238	109	347.5	45	131	10	40	35	17	19	5
AXM-04-60-□-□-IE1	165	219	143	115	140	230	192	60	90	258	109	375	52.5	131	12	50	45	22	24.5	6
AXM-07-70-□-□-IE3	190	246.5	160	130	160	272.5	225	70	105	291.5	116.5	455.5	65	162	14	60	55	28	31	8
AXM-15-80-□-□-IE3	220	265.5	170	140	190	298.5	252	80	112	317	125	503.5	70	187	14	65	60	32	35	10

How to Place an Order

AXM-07-70-30-R-IE3

- Size
- Speed reducer frame number
- Nominal speed reduction ratio
- IE code IE1: 02, 04 IE3: 07 or greater
- Model

Type



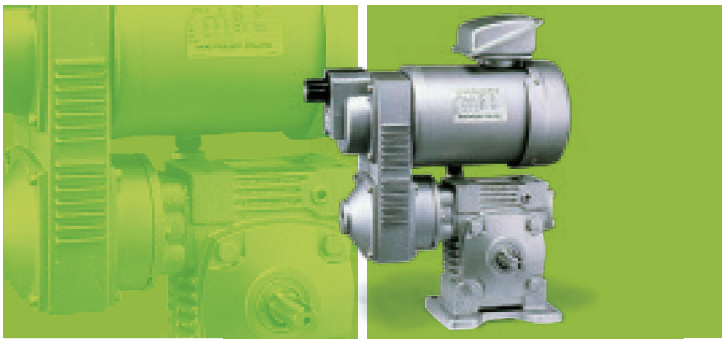
* The R (right) and L (left) letters indicate the output shaft directions viewed from the input shaft of the speed reducer.

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.

Rotation Adjustment
The speed can be fine-tuned with a rotary knob with a scale of 0 to 10.
Furthermore, when the speed is changed, the speed can be confirmed by the movement of the needle on the scale plate.

Specifications

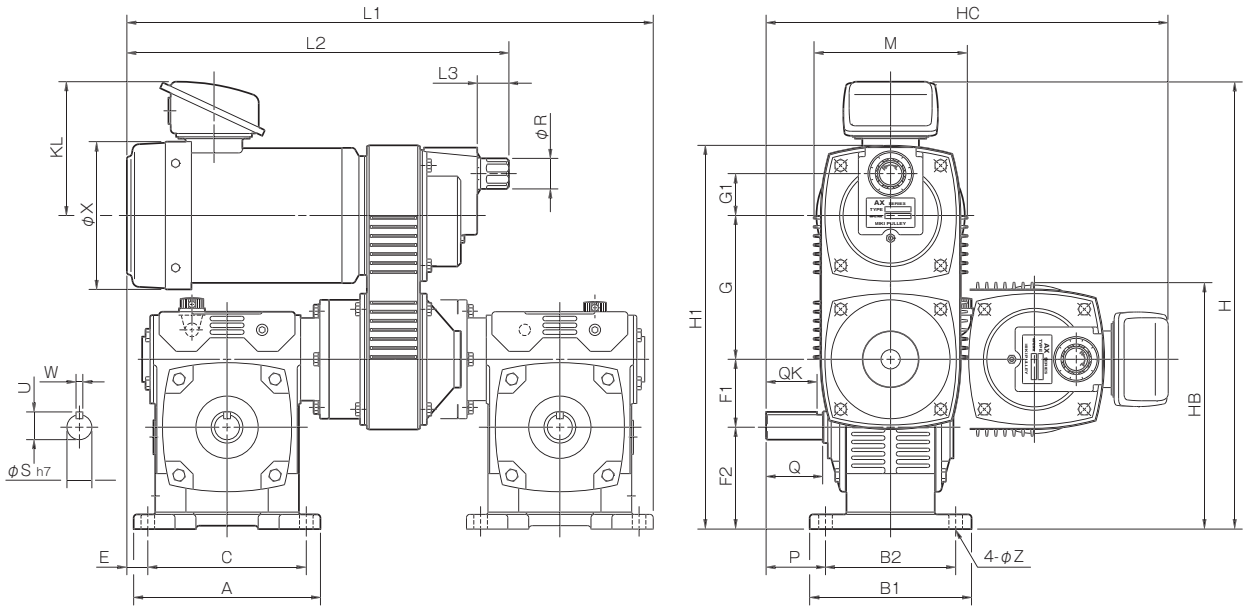
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed reducer frame number	Speed reduction ratio						Mass [kg]
					10	20	30	40	50	60	
AXP-02-□-50-□-□-IE1	0.2	4	Three-phase, 200/50, 200・220/60	50	1/10	1/20	1/30	1/40	1/50	1/60	14
AXP-04-□-60-□-□-IE1	0.4	4	Three-phase, 200/50, 200・220/60	60	1/10	1/20	1/30	1/40	1/50	1/60	21
AXP-07-□-70-□-□-IE3	0.75	4	Three-phase, 200/50, 200・220/60	70	1/10	1/20	1/30	1/40	1/50	1/60	36.5
AXP-15-□-80-□-□-IE3	1.5	4	Three-phase, 200/50, 200・220/60	80	1/10	1/20	1/30	1/40	1/50	1/60	54

* 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^{-1}] and output shaft torque [N・m] per speed reduction ratio					
		1/10	1/20	1/30	1/40	1/50	1/60
	50	50 ～ 200	25 ～ 100	17 ～ 68	12.5 ～ 50	10 ～ 40	8.5 ～ 34
	60	60 ～ 240	30 ～ 120	20 ～ 80	15 ～ 60	12 ～ 48	10 ～ 40
AXP-02-□-50-□-□-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-□-60-□-□-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-□-70-□-□-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-□-80-□-□-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



Unit [mm]

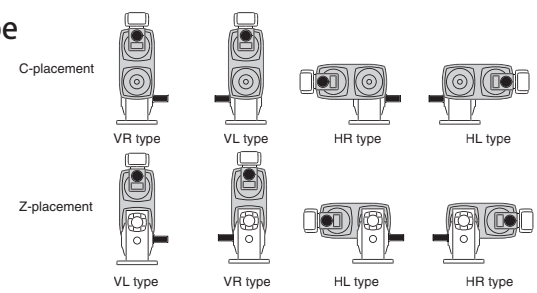
Model	Dimensions of part																						Dimensions of output shaft				
	A	B1	B2	C	E	F1	F2	G	G1	H	H1	HB	HC	KL	L1	L2	L3	M	P	R	X	Z	Q	QK	S	U	W
AXP-02-□-50-□-□-IE1	142	124	100	118	19	50	80	115	35	363	301	195.5	328	118	420	311	28	115	45	27	131	10	40	35	17	19	5
AXP-04-□-60-□-□-IE1	165	143	115	140	18.5	60	90	127	37	395	339	218	355	118	465	337.5	28	136	52.5	27	131	12	50	45	22	24.5	6
AXP-07-□-70-□-□-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-□-80-□-□-IE3	220	170	140	190	-9.5	80	112	176	60	509	458	457	292	141	621.5	450.5	41	200	70	37	187	14	65	60	32	35	10

How to Place an Order

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

- Size: 07
- Placement: C (C-placement, Z-placement)
- Speed reducer frame number: 70
- Nominal speed reduction ratio: 30
- Model: VR
- IE code: IE3 (IE1: 01, 02; IE3: 07 or greater)

Type



* The R (right) and L (left) letters indicate the output shaft directions viewed from the input shaft of the speed reducer.

To download CAD data or product catalogs: www.mikipulley.co.jp Web code D005

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℃ to +40℃ .
* 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℃ .
* 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℃	VG 150	Gear oil type 2, no. 4
	5 ～ 40℃	VG 320	Gear oil type 2, no. 6
High load	− 10 ～ 5℃	VG 320	Gear oil type 2, no. 6
	5 ～ 40℃	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	0.31
0.4	60	0.44
0.75	70	0.81
1.5	80	0.94

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.

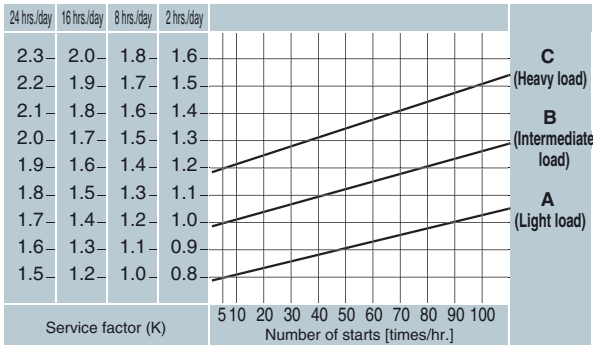
Service Factor (K)

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.

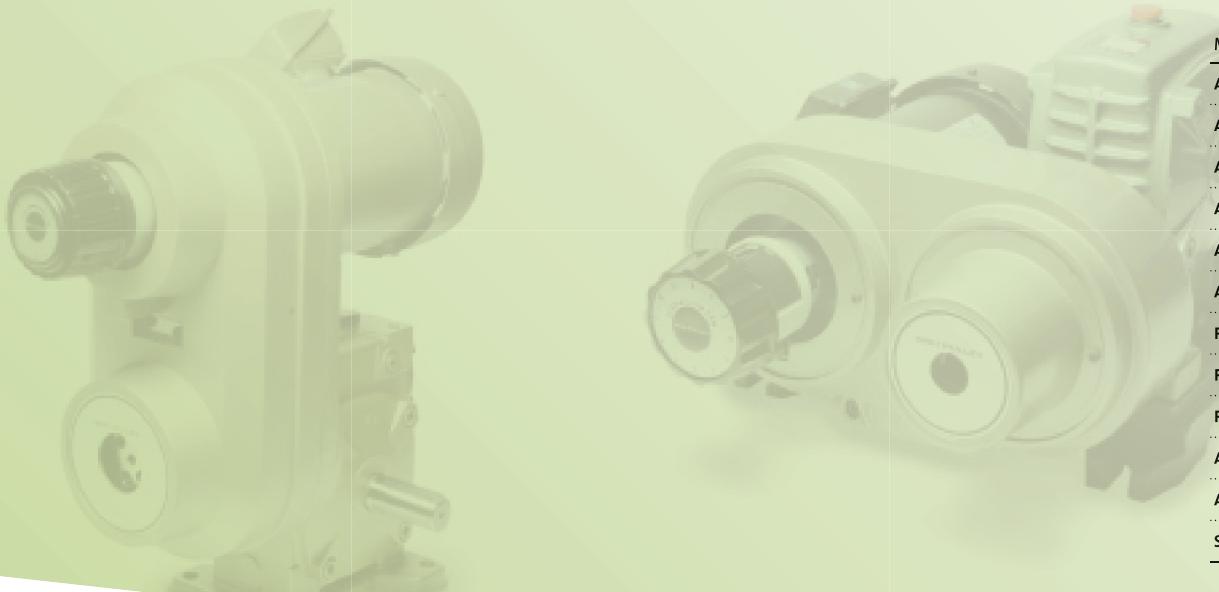


3. Correct the service factor (K) you obtained based on the table below.

Ambient temperature	Corrected value
− 10 ～ 5 ℃	K × 1.1 ～ 1.2
5 ～ 30 ℃	K × 1.0
30 ～ 40 ℃	K × 1.1 ～ 1.2

BELT-TYPE STEPLESS SPEED CHANGER UNITS

- ANS
- ANW NHN/PMN
- ANW NKN
- ANG GDN
- ACW
- ANB
- PDS
- PDC
- PDG BSN
- AHS
- AHM
- SPEED CHANGER BELTS



Belt-type Stepless Speed Changer Unit

ANS

Standard applied motor output	0.2 kW to 3.7 kW (4-pole)
Speed reduction ratio	1:4

Belt-type Stepless Speed Changer Changing Rotation Speed Freely

Speed Change Pulley Set

Saving Space

The model can be mounted directly to the machine so you can save space.

High Efficiency Design

The use of a disc spring increases power transmission efficiency.

Specifications

Model	Applied motor (4-pole) [kW]	Speed change ratio	Output rotation speed [min⁻¹]		Number of handle turns	Speed changer in use			
						Motor side		Machine side	
			50Hz	60Hz		Model	Mass [kg]	Model	Mass [kg]
ANS-02	0.2	1:4	500 ~ 2000	600 ~ 2400	5	AK-90-AN-11	1.5	PE-106-AN-12H	1.7
ANS-04	0.4	1:4	500 ~ 2000	600 ~ 2400	6	AK-106-AN-14N	1.7	PE-125-AN-15H	2.6
ANS-07	0.75	1:4	500 ~ 2000	600 ~ 2400	7	AK-125-AN-19N	2.8	PE-150-AN-18H	3.8
ANS-15	1.5	1:4	500 ~ 2000	600 ~ 2400	8.25	AK-150-AN-24N	3.8	PE-180-AN-22H	6.2
ANS-22	2.2	1:4	500 ~ 2000	600 ~ 2400	8.25	AK-160-AN-28N	3.7	PE-190-AN-25H	6.4
ANS-37	3.7	1:4	500 ~ 2000	600 ~ 2400	8.75	AK-180-AN-28N	7.0	PE-212-AN-30H	9.5

* The output rotation speed is that when a 3-phase 4-pole motor is mounted. Also use 1800 min⁻¹ or less for the input rotation speed.
* Coil springs are used for 02 and 04 models.

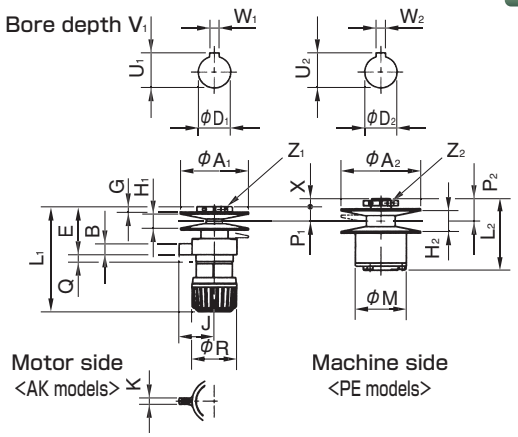
Distance between Shafts and Belt Number

Model	Distance between shafts [mm]	Belt number	Distance between shafts [mm]	Belt number	Distance between shafts [mm]	Belt number	Distance between shafts [mm]	Belt number	Distance between shafts [mm]	Belt number
ANS-02	108	1022V178S	140	1022V196S	163	1022V220S	172	1022V223	198	1022V247S
ANS-04	125	1422V210	140	1422V220	160	1422V236S	200	1422V266S	210	1422V270S
ANS-07	172	1422V266S	186	1422V270S	209	1422V290	224	1422V300S	263	1422V330S
ANS-15	185	1922V298S	217	1922V321	239	1922V338S	270	1922V363S	293	1922V381S
ANS-22	230	2322V341	270	2322V364S	314	2322V396S	344	2322V421S	372	2322V441K
ANS-37	250	2322V387S	274	2322V396S	304	2322V421S	333	2322V441K	386	2322V481

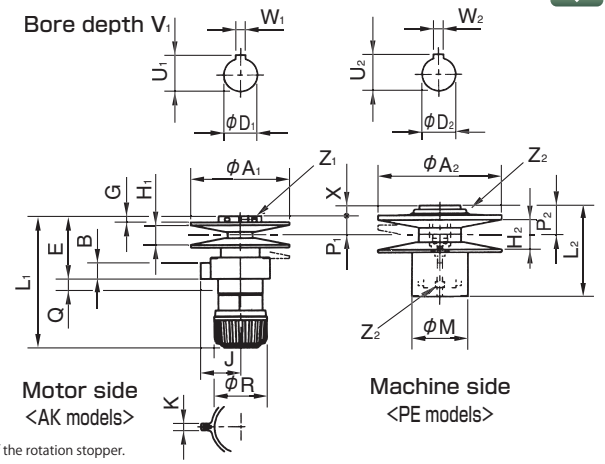
* If you need a distance between shafts other than the above, please consult with us.

Dimensions

ANS-02 and 04



ANS-07, 15, 22 and 37



Dimension K is the width of the rotation stopper.

Unit [mm]

Model	Model for motor-side speed changer	A1	B	E	G	H1	J	K	L1	P1	Q	R	Z1	D1	U1	W1	V1	max.P.D.	min.P.D.
ANS-02	AK-90-AN-11	90	17	66.5	9	16	55	10	153	20	10	70	M5	11	-	-	23	85	34.5
ANS-04	AK-106-AN-14N	106	17	74.5	8.5	22	55	10	163	22.5	12	70	M5	14	16	5	30	101	41
ANS-07	AK-125-AN-19N	125	24	83.5	8.5	22	60	10	184	22.5	14	80	M6	19	21.5	6	40	120	49.5
ANS-15	AK-150-AN-24N	150	24	94.5	9.5	30	60	10	198	28.5	16.5	80	M6	24	27	8	50	143	58.5
ANS-22	AK-160-AN-28N	150	24	105	14	36.5	60	10	208	36	16.5	80	2-M6	28	31	8	60	143	58.5
ANS-37	AK-180-AN-28N	180	φ10	102	10	36.5	80	φ10	240	32	17.5	80	M8	28	31	8	60	171	72.5

Unit [mm]

Model	Model for machine-side speed changer	A2	H2	L2	M	P2	Z2	D2	U2	W2	max.P.D.	min.P.D.	X
ANS-02	PE-106-AN-12H	106	25	90	70	22	M5	12	13.5	4	101	54.5	2
ANS-04	PE-125-AN-15H	125	32	111	80	35	M5	15	17	5	120	66	12.5
ANS-07	PE-150-AN-18H	155	34	110	72	36	M8	18	20.5	6	145	81.5	13.5
ANS-15	PE-180-AN-22H	185	45	137	83	44	M8	22	24.5	6	175	98	15.5
ANS-22	PE-190-AN-25H	185	51.5	150	83	53.5	M8	25	28	8	175	98	17.5
ANS-37	PE-212-AN-30H	216	54	161	90	49.5	M8	30	33	8	208	120	17.5

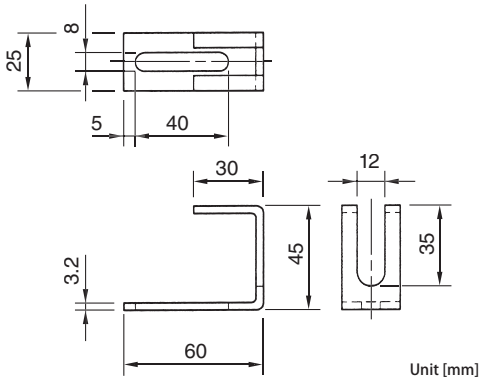
Machine-side speed changer bore diameter

Model	Unit model in use	Max. bore diameter [mm]	Nominal bore diameter	φ D2 [mm]	U2 [mm]	W2 [mm]	Bore depth [mm]
PE-106	ANS-02	15	10H	10	11.2	3	25
			12H*	12	13.5	4	30
			14H	14	16	5	30
PE-125	ANS-04	18	14H	14	16	5	40
			15H*	15	17	5	40
			18H	18	20.5	6	40
PE-150	ANS-07	22	18H*	18	20.5	6	40
			20H	20	22.5	6	40
			22H	22	24.5	6	50
PE-180	ANS-15	25	18H	18	20.5	6	40
			22H*	22	24.5	6	50
			25H	25	28	8	50
PE-190	ANS-22	25	25H*	25	28	8	50
PE-212	ANS-37	30	25H	25	28	8	50
			30H*	30	33	8	65

* The * mark indicates the standard bore diameter.
* If you need a bore diameter other than the above, please consult with us.

Rotation Stopper Support

This can be used for the rotation stopper of the handle.



Unit [mm]

How to Place an Order

ANS-02-11-12H-□

- ANS-02: Size
- 11: Nominal bore diameter for motor-side speed changer AK model
- 12H: Nominal bore diameter for machine-side speed changer PE model
- □: Options
  - Blank: Standard
  - SD: Rotation speed indicator
  - TH: Equipped with a square hole bushing for adjustments during machine stop

Model and nominal bore diameter for motor-side speed changer

AK-90-AN-11

- AK: ANS-use
- 90: Size
- 11: Nominal bore diameter, bore specifications
  - Blank: No key
  - N: Compliant with the new motor standards

Model and nominal bore diameter for machine-side speed changer

PE-106-AN-12H

- PE: ANS-use
- 106: Size
- 12H: Nominal bore diameter, bore specifications
  - H: Compliant with the new JIS standards

* Check the Machine-side speed changer bore diameter if you need non-standard bore diameters.

Belt-type Stepless Speed Changer Unit

ANW NHN / PMN

Motor output	0.2 kW to 3.7 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

Model Combining Speed Changer ANS Model with a Motor and Worm Speed Reducer

Integrated Model of a Speed Change Pulley, Motor, and Worm Speed Reducer

Compact Design

This is a model that integrates a speed change pulley, motor, and worm speed reducer.

High Efficiency Design

The use of a disc spring increases power transmission efficiency.

Variety of Shapes

A variety of shapes facilitates the installation design.

Specifications

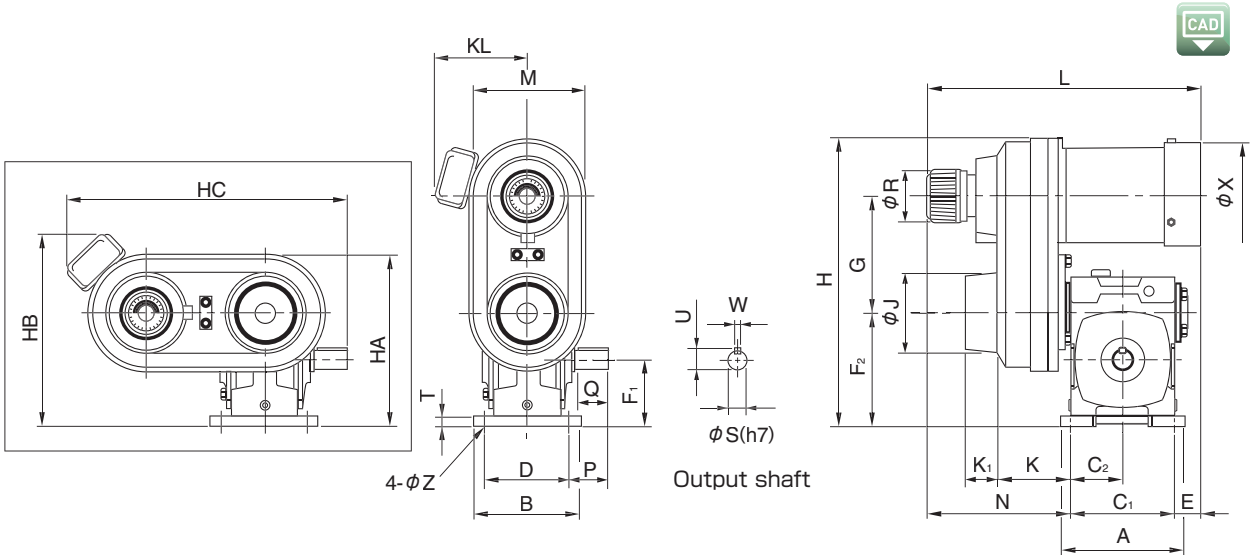
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed change ratio	Speed changer in use		Model for belt in use	Speed reducer	Mass [kg]
					Model for motor-side speed changer	Model for machine-side speed changer			
ANW-02NHN	0.2	4	Three-phase, 200/50, 200・220/60	1:4	AK-90-AN-11	PE-106-AN-12H	1022V196S	NHN-50	19
ANW-04NHN	0.4	4	Three-phase, 200/50, 200・220/60	1:4	AK-106-AN-14N	PE-125-AN-15H	1422V236S	NHN-60	28.5
ANW-07NHN	0.75	4	Three-phase, 200/50, 200・220/60	1:4	AK-125-AN-19N	PE-150-AN-18H	1422V270S	NHN-70	49
ANW-15NHN	1.5	4	Three-phase, 200/50, 200・220/60	1:4	AK-150-AN-24N	PE-180-AN-22H	1922V338S	NHN-80	80
ANW-22PMN	2.2	4	Three-phase, 200/50, 200・220/60	1:4	AK-160-AN-28N	PE-190-AN-25H	2322V341	N-PRM-25	91
ANW-37PMN	3.7	4	Three-phase, 200/50, 200・220/60	1:4	AK-180-AN-28N	PE-212-AN-30H	2322V387S	N-PRM-30	129

* 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).
* Coil springs are used for 02 and 04 models.

Model	Frequency [Hz]	Output shaft rotation speed [min^{-1}] and output shaft torque [N・m] per speed reduction ratio					
		1/10	1/20	1/30	1/40	1/50	1/60
	50	50 ～ 200	25 ～ 100	17 ～ 68	12.5 ～ 50	10 ～ 40	8.5 ～ 34
	60	60 ～ 240	30 ～ 120	20 ～ 80	15 ～ 60	12 ～ 48	10 ～ 40
ANW-02NHN	50	24.5 ～ 6.4	40.2 ～ 11.3	55.0 ～ 16.2	55.0 ～ 18.8	55.0 ～ 23.3	55.0 ～ 26.1
	60	19.6 ～ 5.1	32.1 ～ 9.1	44.8 ～ 13.0	48.9 ～ 15.0	55.0 ～ 18.6	55.0 ～ 20.9
ANW-04NHN	50	49.4 ～ 12.9	86.3 ～ 23.8	115 ～ 32.9	120 ～ 40.7	107 ～ 46.1	100 ～ 53.3
	60	39.5 ～ 10.3	69.1 ～ 19.0	92.0 ～ 26.3	109 ～ 32.5	103 ～ 36.9	95.3 ～ 42.6
ANW-07NHN	50	92.3 ～ 24.4	167 ～ 45.9	212 ～ 62.5	193 ～ 80.5	151 ～ 87.0	151 ～ 102
	60	73.8 ～ 19.5	134 ～ 36.7	173 ～ 50.0	186 ～ 64.4	145 ～ 69.6	144 ～ 81.7
ANW-15NHN	50	186 ～ 50.7	237 ～ 94.0	303 ～ 131	263 ～ 163	252 ～ 166	215 ～ 143
	60	153 ～ 40.9	224 ～ 75.8	288 ～ 106	251 ～ 131	242 ～ 159	204 ～ 143
ANW-22PMN	50	212 ～ 79.3	394 ～ 151	507 ～ 208	526 ～ 270	467 ～ 308	441 ～ 294
	60	178 ～ 66.1	331 ～ 126	430 ～ 173	502 ～ 225	448 ～ 271	420 ～ 294
ANW-37PMN	50	360 ～ 134	644 ～ 251	870 ～ 353	768 ～ 443	799 ～ 525	716 ～ 468
	60	303 ～ 112	546 ～ 210	742 ～ 294	733 ～ 369	766 ～ 475	676 ～ 468

* The output shaft torque may be limited to the rated value of the speed reducer.

Dimensions



Unit [mm]

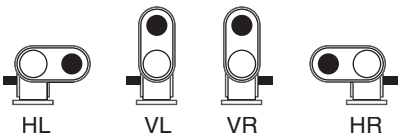
Model	ANW-02NHN	ANW-04NHN	ANW-07NHN	ANW-15NHN	ANW-22PMN	ANW-37PMN
A	142	165	190	220	270	320
B	124	143	160	170	190	230
C_1	118	140	160	190	220	260
C_2	59	70	80	95	110	130
D	100	115	130	140	155	180
E	56.5	48	40	44	66.5	75
F_1	80	90	105	112	150	180
F_2	130	150	175	192	250	300
G	140	160	186	239	230	250
H	340	389	456	541	590	678
J	98	108	134	155	140	150
K	79	89.5	104	117.5	139	137
K_1	40	44	42	53	57	74
L	345.5	373	417.5	462.5	542	627.5
M	139	158	190	220	220	255
N	171	185	217.5	228.5	255.5	292.5
P	45	52.5	65	70	92.5	100
Q	40	50	60	65	75	85
R	70	70	80	80	80	80
T	12	13	15	18	25	30
S	17	22	28	32	38	45
U	19	24.5	31	35	41	48.5
W	5	6	8	10	10	14
X	131	131	162	187	202	235
Z	10	12	14	14	15	18
KL	109	109	116.5	125	141.5	164.5
HA	200	229	270	302	360	428
HB	239	259	291.5	317	391	464.5
HC	344	379	432.5	504	510	568

How to Place an Order

ANW-07NHN-VR-30-IE3-□

- Size
- Speed reducer type
  NHN: 02, 04, 07, 15
  PMN: 22, 37
- Model
- Nominal speed reduction ratio
- IE code
  IE1: 02, 04
  IE3: 07 or greater
- Option

Type



HL VL VR HR

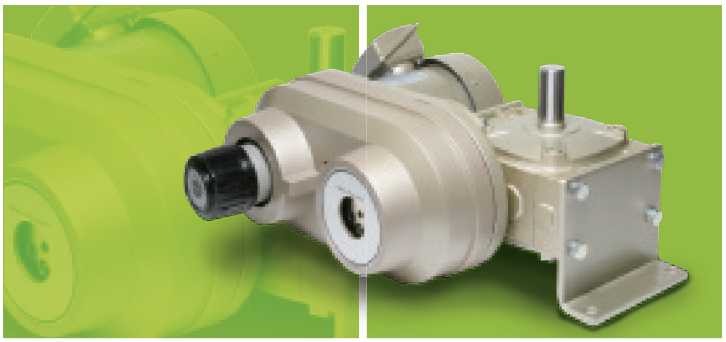
Please determine the type depending on which side of the handle the output shaft is located.

Belt-type Stepless Speed Changer Unit

ANW NKN

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

Model Combining Speed Changer ANS Model with a Motor and Worm Speed Reducer



Integrated Model of a Speed Change Pulley, Motor, and Worm Speed Reducer

Compact Design

This is a model that integrates a speed change pulley, motor, and worm speed reducer.

High Efficiency Design

The use of a disc spring increases power transmission efficiency.

Variety of Shapes

A variety of shapes facilitates the installation design.

Specifications

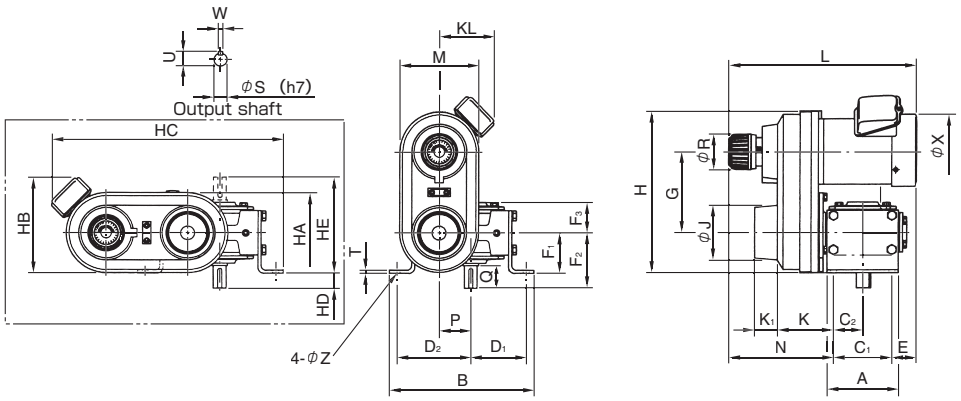
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed change ratio	Speed changer in use		Model for belt in use	Speed reducer	Mass [kg]
					Model for motor-side speed changer	Model for machine-side speed changer			
ANW-02NKN	0.2	4	Three-phase, 200/50, 200・220/60	1:4	AK-90-AN-11	PE-106-AN-12H	1022V196S	NKN-50	21
ANW-04NKN	0.4	4	Three-phase, 200/50, 200・220/60	1:4	AK-106-AN-14N	PE-125-AN-15H	1422V236S	NKN-60	31.5
ANW-07NKN	0.75	4	Three-phase, 200/50, 200・220/60	1:4	AK-125-AN-19N	PE-150-AN-18H	1422V270S	NKN-70	53
ANW-15NKN	1.5	4	Three-phase, 200/50, 200・220/60	1:4	AK-150-AN-24N	PE-180-AN-22H	1922V338S	NKN-80	85

* 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).
* Coil springs are used for 02 and 04 models.

Model	Frequency [Hz]	Output shaft rotation speed [min^{-1}] and output shaft torque [N・m] per speed reduction ratio					
		1/10	1/20	1/30	1/40	1/50	1/60
	50	50 ～ 200	25 ～ 100	17 ～ 68	12.5 ～ 50	10 ～ 40	8.5 ～ 34
	60	60 ～ 240	30 ～ 120	20 ～ 80	15 ～ 60	12 ～ 48	10 ～ 40
ANW-02NKN	50	24.5 ～ 6.4	40.2 ～ 11.3	55.0 ～ 16.2	55.0 ～ 18.8	55.0 ～ 23.3	55.0 ～ 26.1
	60	19.6 ～ 5.1	32.1 ～ 9.1	44.8 ～ 13.0	48.9 ～ 15.0	55.0 ～ 18.6	55.0 ～ 20.9
ANW-04NKN	50	49.4 ～ 12.9	86.3 ～ 23.8	115 ～ 32.9	120 ～ 40.7	107 ～ 46.1	100 ～ 53.3
	60	39.5 ～ 10.3	69.1 ～ 19.0	92.0 ～ 26.3	109 ～ 32.5	103 ～ 36.9	95.3 ～ 42.6
ANW-07NKN	50	92.3 ～ 24.4	167 ～ 45.9	212 ～ 62.5	193 ～ 80.5	151 ～ 87.0	151 ～ 102
	60	73.8 ～ 19.5	134 ～ 36.7	173 ～ 50.0	186 ～ 64.4	145 ～ 69.6	144 ～ 81.7
ANW-15NKN	50	186 ～ 50.7	237 ～ 94.0	303 ～ 131	263 ～ 163	252 ～ 166	215 ～ 143
	60	153 ～ 40.9	224 ～ 75.8	288 ～ 106	251 ～ 131	242 ～ 159	204 ～ 143

* The output shaft torque may be limited to the rated value of the speed reducer.

Dimensions



Unit [mm]

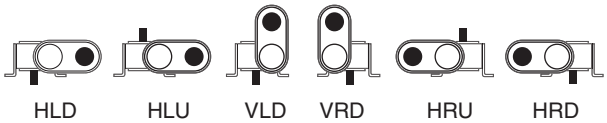
Model	ANW-02NKN	ANW-04NKN	ANW-07NKN	ANW-15NKN
A	120	135	160	175
B	240	277	309	350
C_1	95	115	135	150
C_2	47.5	57.5	67.5	75
D_1	95	110	122	136
D_2	115	137	157	184
E	67.5	60.5	52	63.5
F_1	70	80	100	115
F_2	95	110	130	140
F_3	50	55	65	70
G	140	160	186	239
H	279.5	319	381	464
J	98	108	134	155
K	90.5	102	115	137.5
K_1	40	44	42	53
L	345.5	373	417.5	462.5
M	139	158	190	220
N	183	197.5	230.5	249
P	50	60	70	80
Q	40	50	60	65
R	70	70	80	80
T	6	6	9	9
S	17	22	28	32
U	19	24.5	31	35
W	5	6	8	10
X	131	131	162	187
Z	10	12	14	14
KL	109	109	116.5	125
HA	139.5	159	195	225
HB	178.5	188	211.5	235
HC	449	454	509.5	595
HD	25	30	30	25
HE	165	190	230	255

How to Place an Order

ANW-07NKN-VRD-30-IE3-□

- Size: 07
- Speed reducer type: NKN
- Model: VRD
- Nominal speed reduction ratio: 30
- IE code: IE3 (IE1: 02, 04; IE3: 07 or greater)
- Option: □

Type



HLD HLU VLD VRD HRU HRD

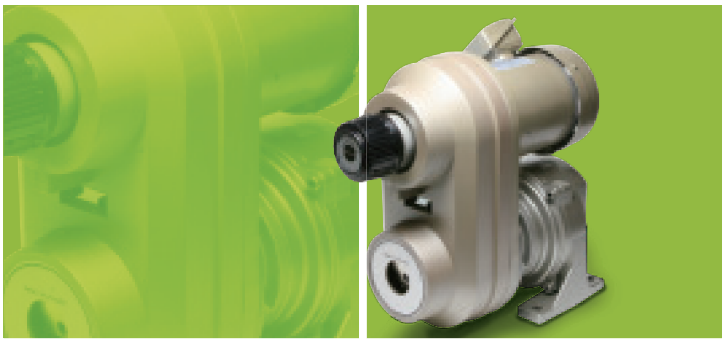
Please determine the type depending on which side of the handle the output shaft is located.

Belt-type Stepless Speed Changer Unit

ANG GDN

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	A: 1/5 to 1/25, B: 1/30 to 1/80

Model Combining Speed Changer ANS Model with a Motor and Coaxial Speed Reducer



Integrated Model of a Speed Change Pulley, Motor, and Coaxial Speed Reducer

Compact Design

This is a model that integrates a speed change pulley, motor, and coaxial speed reducer.

Maintenance including Oiling Is Not Required

Routine maintenance is not required because the coaxial speed reducer is oil free. (0.2 to 1.5 kW)

Specifications

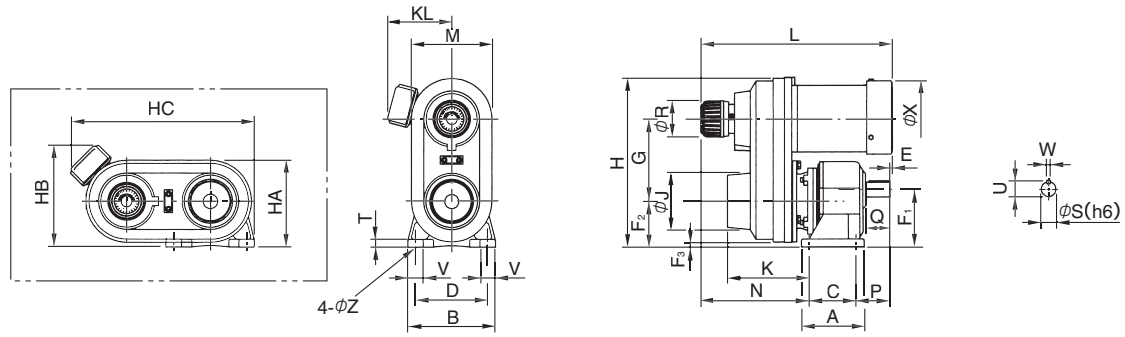
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed change ratio	Speed changer in use		Model for belt in use	Speed reducer	Mass [kg]	
					Model for motor-side speed changer	Model for machine-side speed changer			Frame A	Frame B
ANG-02GDN	0.2	4	Three-phase, 200/50, 200・220/60	1:4	AK-90-AN-11	PE-106-AN-12H	1022V196S	WL2-02	15	16
ANG-04GDN	0.4	4	Three-phase, 200/50, 200・220/60	1:4	AK-106-AN-14N	PE-125-AN-15H	1422V236S	WL2-04	21.5	23.5
ANG-07GDN	0.75	4	Three-phase, 200/50, 200・220/60	1:4	AK-125-AN-19N	PE-150-AN-20H	1422V270S	WL2-08	40	43
ANG-15GDN	1.5	4	Three-phase, 200/50, 200・220/60	1:4	AK-150-AN-24N	PE-180-AN-22H	1922V338S	WL2-15	71	91

* 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).
* Coil springs are used for 02 and 04 models.

Model	Frequency [Hz]	Output shaft rotation speed [min^{-1}] and output shaft torque [N・m] per speed reduction ratio									
		Frame A					Frame B				
		1/5	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60	1/80
	50	100 ～ 400	50 ～ 200	33.5 ～ 134	25 ～ 100	20 ～ 80	17 ～ 68	12.5 ～ 50	10 ～ 40	8.5 ～ 34	6.25 ～ 25
	60	120 ～ 480	60 ～ 240	40 ～ 160	30 ～ 120	24 ～ 96	20 ～ 80	15 ～ 60	12 ～ 48	10 ～ 40	7.5 ～ 30
ANG-02GDN	50	6 ～ 3.6	12 ～ 7.2	18 ～ 10.8	23 ～ 14.4	29 ～ 18	35 ～ 21.6	45 ～ 27.5	56 ～ 34.4	67 ～ 41.2	89 ～ 55
	60	6 ～ 2.7	12 ～ 5.4	18 ～ 8.1	23 ～ 10.8	29 ～ 13.5	35 ～ 16.2	45 ～ 20.6	56 ～ 25.6	67 ～ 30.9	89 ～ 41.2
ANG-04GDN	50	12 ～ 7.2	23 ～ 14.4	35 ～ 21.6	47 ～ 28.8	59 ～ 36	70 ～ 43.2	89 ～ 55	111 ～ 68.8	134 ～ 82.5	178 ～ 110.1
	60	12 ～ 6.3	23 ～ 11.7	35 ～ 17.5	47 ～ 23.4	59 ～ 29.2	70 ～ 35.1	89 ～ 44.7	111 ～ 55.9	134 ～ 67	178 ～ 89.4
ANG-07GDN	50	22 ～ 13.5	44 ～ 27	66 ～ 40.5	88 ～ 54	110 ～ 67.5	132 ～ 81	167 ～ 103.2	209 ～ 129	251 ～ 176.4	334 ～ 206.4
	60	22 ～ 10.8	44 ～ 21.6	66 ～ 32.4	88 ～ 43.2	110 ～ 54	132 ～ 64.8	167 ～ 82.5	209 ～ 103.2	251 ～ 123.8	334 ～ 165.1
ANG-15GDN	50	44 ～ 27.9	88 ～ 55.8	132 ～ 83.7	176 ～ 111.6	220 ～ 139.5	264 ～ 167.4	334 ～ 213.2	418 ～ 266.6	501 ～ 319.9	668 ～ 426.5
	60	44 ～ 22.5	88 ～ 45	132 ～ 67.5	176 ～ 90	220 ～ 112.5	264 ～ 135	334 ～ 172	418 ～ 215	501 ～ 258	668 ～ 334

* The output shaft torque may be limited to the rated value of the speed reducer.

Dimensions



Unit [mm]

Model	ANG-02GDN		ANG-04GDN		ANG-07GDN		ANG-15GDN	
	-A	-B	-A	-B	-A	-B	-A	-B
A	66	90	90	120	120	164	164	196
B	134	156	156	174	174	204	204	256
C	40	65	65	90	90	130	130	150
D	110	130	130	140	140	170	170	210
E	− 31.5	− 4.5	− 1.5	9.5	22	50	39.5	103.5
F_1	85	90	90	110	110	130	130	155
F_2	69	70	70	85	85	101	101	120
F_3	− 0.5	0.5	− 9	6	− 10	6	− 9	10
G	140	140	160	160	186	186	239	239
H	278.5	280	309	324	366	382	450	469
J	98	98	108	108	134	134	155	155
K	177	169	200	179	216	192	240	250
L	345.5	345.5	373	373	417.5	417.5	462.5	462.5
M	139	139	158	158	190	190	220	220
N	229	221	251.5	230.5	288	264	298	308
P	45	55	55	62	62	74	74	108
Q	30	40	40	45	45	55	55	82
R	70	70	70	70	80	80	80	80
T	10	12	12	15	15	15	15	20
V	27	28	28	37	37	40	40	50
S	18	22	22	28	28	32	32	42
U	20.5	24.5	24.5	31	31	35	35	45
W	6	6	6	8	8	10	10	12
X	131	131	131	131	162	162	187	187
Z	9	11	11	11	11	13	13	15
KL	109	109	109	109	116.5	116.5	125	125
HA	138.5	139.5	149	164	180	196	211	230
HB	178	179	179	194	201.5	217.5	226	245
HC	316	327	347	356	389.5	404.5	466	492

How to Place an Order

ANG-07GDN-A-V-25-IE3-□

- Size: 07GDN
- Speed reducer type: A
- Speed reducer frame type: V
- Nominal speed reduction ratio: 25
- IE code: IE3: 07 or greater (IE1: 02, 04)
- Option: □
- Model: ANG

Type

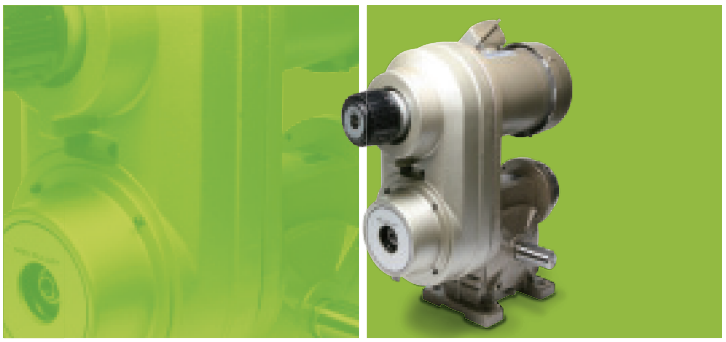
Please determine the type depending on which side of the handle the output shaft is located.

Belt-type Stepless Speed Changer Unit

ACW

Motor output	0.2 kW to 3.7 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

Model Combining Speed Changer ANS Model with an Electromagnetic Clutch and Brake, Motor, and Worm Speed Reducer



Integrated Model of a Speed Change Pulley, Worm Speed Reducer, and Electromagnetic Clutch and Brake, and Motor

Compact Design

This model combines a speed change pulley, worm speed reducer, and electromagnetic brake and motor.

Multi-functional Design

Optimal output rotation speed can be achieved and it is easy to perform start, stop, positioning, inching, and intermittent operations by combining a worm speed reducer and electromagnetic clutch and brake.

Specifications

Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed change ratio	Speed changer in use		Model for belt in use	Speed reducer	Mass [kg]
					Model for motor-side speed changer	Model for machine-side speed changer			
ACW-02PMN	0.2	4	Three-phase, 200/50, 200・220/60	1:4	AK-90-AN-11	PE-106-AC-12H	1022V196S	N-CPM-12	20
ACW-04PMN	0.4	4	Three-phase, 200/50, 200・220/60	1:4	AK-106-AN-14N	PE-125-AC-15H	1422V236S	N-CPM-15	28.5
ACW-07PMN	0.75	4	Three-phase, 200/50, 200・220/60	1:4	AK-125-AN-19N	PE-150-AC-18H	1422V270S	N-CPM-18	48
ACW-15PMN	1.5	4	Three-phase, 200/50, 200・220/60	1:4	AK-150-AN-24N	PE-180-AC-22H	1922V338S	N-CPM-22	78
ACW-22PMN	2.2	4	Three-phase, 200/50, 200・220/60	1:4	AK-180-AN-28N	PE-212-AC-25H	2322V387S	N-CPM-25	120
ACW-37PMN	3.7	4	Three-phase, 200/50, 200・220/60	1:4	AK-180-AN-28N	PE-212-AC-30H	2322V387S	N-CPM-30	143

* 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). * Coil springs are used for 02 and 04 models.

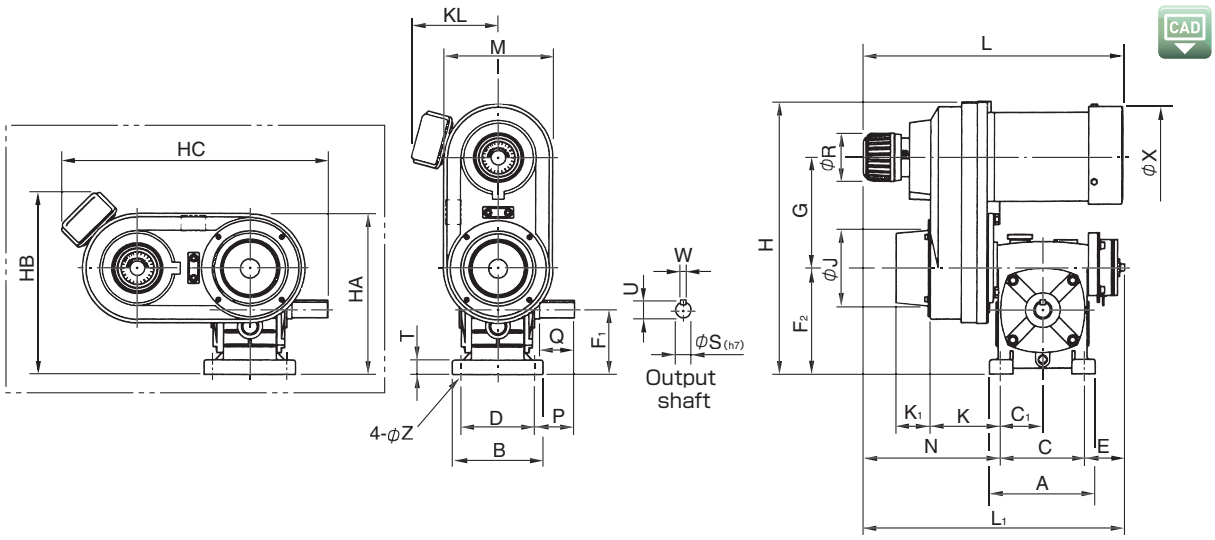
Model	Electromagnetic clutch and brake							
	Size	Dynamic friction torque [N・m]	Static friction torque [N・m]	Exciting voltage [V]	Capacity [W]	Current [A]	Resistance [Ω]	Heat resistance class
ACW-02PMN	06	5	5.5	DC 24	11	0.46	52	B
ACW-04PMN	08	10	11	DC 24	15	0.63	38	B
ACW-07PMN	10	20	22	DC 24	20	0.83	29	B
ACW-15PMN	12	40	45	DC 24	25	1.09	23	B
ACW-22PMN	16	80	90	DC 24	35	1.46	16	B
ACW-37PMN	16	80	90	DC 24	35	1.46	16	B

* If you use the device for a continuous or high-frequency operation, you need to consider how to prevent the temperature from rising. Please consult with us.

Model	Frequency [Hz]	Output shaft rotation speed [min^{-1}] and output shaft torque [N・m] per speed reduction ratio					
		1/10	1/20	1/30	1/40	1/50	1/60
	50	50 ~ 200	25 ~ 100	17 ~ 68	12.5 ~ 50	10 ~ 40	8.5 ~ 34
	60	60 ~ 240	30 ~ 120	20 ~ 80	15 ~ 60	12 ~ 48	10 ~ 40
ACW-02PMN	50	24.5 ~ 6.4	40.2 ~ 11.3	55.0 ~ 16.2	55.0 ~ 18.8	55.0 ~ 23.3	55.0 ~ 26.1
	60	19.6 ~ 5.1	32.1 ~ 9.1	44.8 ~ 13.0	48.9 ~ 15.0	55.0 ~ 18.6	55.0 ~ 20.9
ACW-04PMN	50	49.4 ~ 12.9	86.3 ~ 23.8	115 ~ 32.9	120 ~ 40.7	107 ~ 46.1	100 ~ 53.3
	60	39.5 ~ 10.3	69.1 ~ 19.0	92.0 ~ 26.3	109 ~ 32.5	103 ~ 36.9	95.3 ~ 42.6
ACW-07PMN	50	92.3 ~ 24.4	167 ~ 45.9	212 ~ 62.5	193 ~ 80.5	151 ~ 87.0	151 ~ 102
	60	73.8 ~ 19.5	134 ~ 36.7	173 ~ 50.0	186 ~ 64.4	145 ~ 69.6	144 ~ 81.7
ACW-15PMN	50	186 ~ 50.7	237 ~ 94.0	303 ~ 131	263 ~ 163	252 ~ 166	215 ~ 143
	60	153 ~ 40.9	224 ~ 75.8	288 ~ 106	251 ~ 131	242 ~ 159	204 ~ 143
ACW-22PMN	50	212 ~ 79.3	394 ~ 151	507 ~ 208	526 ~ 270	467 ~ 308	441 ~ 294
	60	178 ~ 66.1	331 ~ 126	430 ~ 173	502 ~ 225	448 ~ 271	420 ~ 294
ACW-37PMN	50	360 ~ 134	644 ~ 251	870 ~ 353	768 ~ 443	799 ~ 525	716 ~ 468
	60	303 ~ 112	546 ~ 210	742 ~ 294	733 ~ 369	766 ~ 475	676 ~ 468

* The output shaft torque may be limited to the rated value of the speed reducer.

Dimensions



Unit [mm]

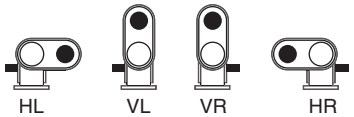
Model	ACW-02PMN	ACW-04PMN	ACW-07PMN	ACW-15PMN	ACW-22PMN	ACW-37PMN
A	140	150	190	220	270	320
B	120	130	150	170	190	230
C	110	120	150	180	220	260
C_1	55	60	75	90	110	130
D	95	105	115	135	155	180
E	52	57	64	62	81	85.5
F_1	80	90	105	120	150	180
F_2	130	150	175	200	250	300
G	140	160	186	239	250	250
H	340	389	456	541	590	678
J	98	108	134	158	190	190
K	83	101	109	123	143	148
K_1	57	49	53	60	105	105
L	345.5	373	417.5	462.5	542	627.5
L_1	337	372	437	476	599	648
M	139	158	190	220	255	255
N	175	195	223	234	298	302.5
P	47.5	57.5	72.5	72.5	92.5	100
Q	40	50	60	65	75	85
R	70	70	80	80	80	80
T	15	20	25	25	25	30
S	17	22	28	32	38	45
U	19	24.5	31	35	41	48.5
W	5	6	8	10	10	14
X	131	131	162	187	202	235
Z	11	11	15	15	15	18
KL	109	109	116.5	125	141.5	164.5
HA	200	229	270	310	378	428
HB	239	259	291.5	325	391.5	464.5
HC	344	379	432.5	504	547.5	567.5

How to Place an Order

ACW-07PMN-VR-30-IE3-□

- Size
- Speed reducer type
- Model
- Nominal speed reduction ratio
- IE code
  IE1: 02, 04
  IE3: 07 or greater
- Option

Type



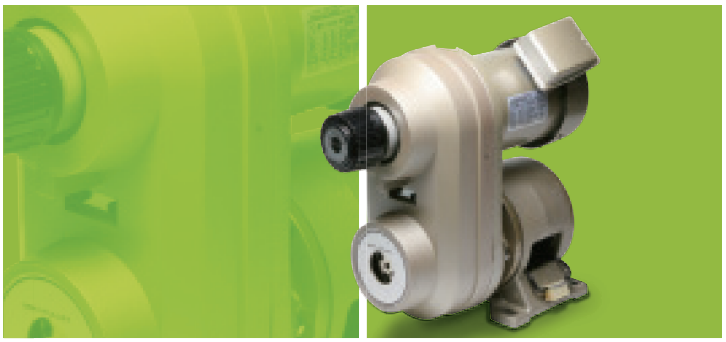
Please determine the type depending on which side of the handle the output shaft is located.

Belt-type Stepless Speed Changer Unit

ANB

Motor output	0.4 kW to 1.5 kW (4-pole)
Power supply voltage	Three-phase, 200 V/50 Hz, 200 or 220 V/60 Hz

Model Combining Speed Changer ANS Model with an Electromagnetic Clutch and Brake Unit, and Motor



Integrated Model of an Electromagnetic Clutch and Brake Unit, Motor, and Speed Change Pulley

Compact Design

This model combines an electromagnetic clutch and brake unit, motor, and speed change pulley.

Multi-functional Design

High-frequency start, stop, and inching operations at optimal rotation speed can be performed by incorporating an electromagnetic clutch and brake unit.

Specifications

Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed change ratio	Speed changer in use		Model for belt in use	Speed reducer O.H.L. [N]	Mass [kg]
					Model for motor-side speed changer	Model for machine-side speed changer			
ANB-04N	0.4	4	Three-phase, 200/50, 200・220/60	1:4	AK-106-AN-14N	PE-125-AN-15H	1422V236S	480	27.5
ANB-07N	0.75	4	Three-phase, 200/50, 200・220/60	1:4	AK-125-AN-19N	PE-150-AN-18H	1422V270S	700	50
ANB-15N	1.5	4	Three-phase, 200/50, 200・220/60	1:4	AK-150-AN-24N	PE-180-AN-22H	1922V338S	900	87

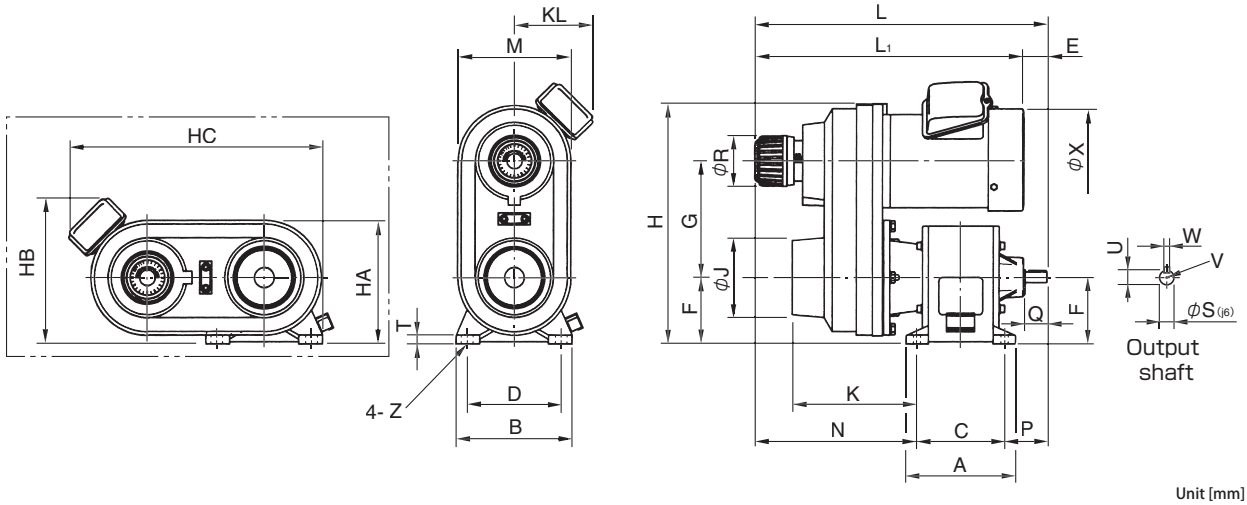
* The induction motors are fully sealed external fan motors that conform to the JIS C4210 standard (for 0.2 kW and 0.4 kW models) or the JIS C 4213 standard (for 0.75 kW models or higher).
* Coil springs are used for 02 and 04 models.

Model	Electromagnetic clutch and brake							
	Size	Dynamic friction torque [N・m]	Static friction torque [N・m]	Exciting voltage [V]	Capacity [W]	Current [A]	Resistance [Ω]	Heat resistance class
ANB-04N	08	10	11	DC 24	15	0.63	38	B
ANB-07N	10	20	22	DC 24	20	0.83	29	B
ANB-15N	12	40	45	DC 24	25	1.09	23	B

Model	Output shaft rotation speed [min^{-1}] and output shaft torque [N・m]	
	50Hz	60Hz
	500 ～ 2000	600 ～ 2400
ANB-04N	6.6 ～ 1.6	5.3 ～ 1.3
ANB-07N	12.2 ～ 3	9.8 ～ 2.4
ANB-15N	24.8 ～ 6.2	19.9 ～ 5

* If you use the device for a continuous or high-frequency operation, you need to consider how to prevent the temperature from rising. Please consult with us.

Dimensions



Unit [mm]

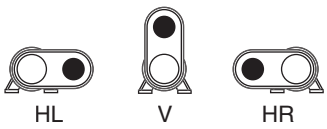
Model	ANB-04N	ANB-07N	ANB-15N
A	150	170	210
B	160	195	250
C	120	140	180
D	130	150	200
E	28	45.5	77.5
F	90	110	120
G	160	186	239
H	329	391	469
J	108	134	155
K	172	174	204
L	401	463	540
L1	373	417.5	462.5
M	158	190	220
N	223	245	261.5
P	58	78	98.5
Q	30	40	50
R	70	80	80
T	12	15	15
S	14	19	24
U	16	21.5	27
W	5	6	8
V	M4 depth 8	M6 depth 11	M6 depth 11
X	131	162	187
Z	9 × 16	11 × 25	12 × 30
KL	109	116.5	125
HA	169	205	230
HB	199	226.5	245
HC	349	400	489

How to Place an Order

ANB-07N-V-IE3-□

- 07N: Size
- V: Type
- IE3: IE code (IE1: 04, IE3: 07 or greater)
- □: Option

Type



Please determine the type depending on which side of the handle the output shaft is located.

ANS/ANW/ANG GDN/ACW/ANB Models

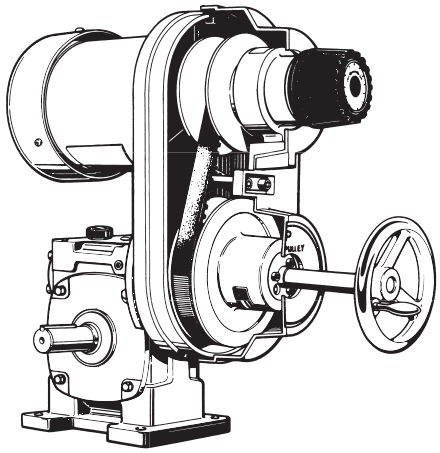
Options

Weight Type Index SD

A rotation speed indicator (SD model) can be built in the standard handle part.

Model	Number of handle turns [rotations]	SD model for AN
AN□-02-SD	5	SD-53B-B544
AN□-04-SD	6	SD-53B-B545
AN□-07-SD	7	SD-53B-B546
AN□-15-SD	8.25	SD-53B-B547
AN□-22-SD	8.25	SD-53B-B548
AN□-37-SD	8.75	SD-53B-B549

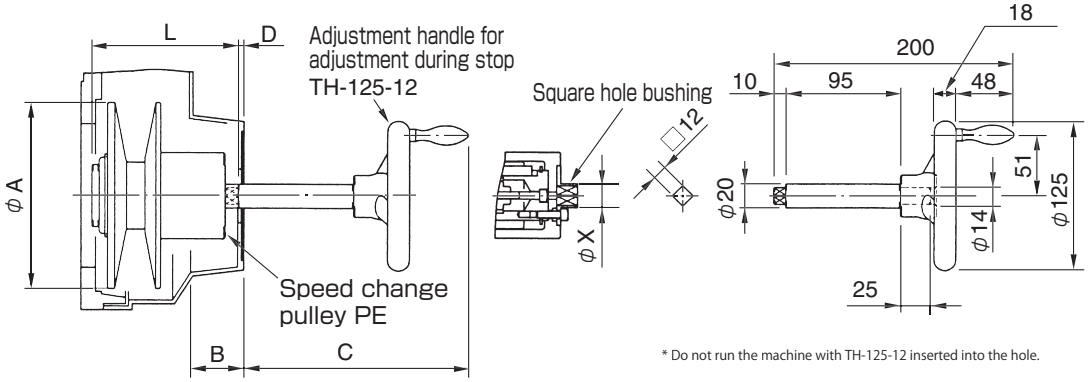
* A red zone corresponding to the number of turns of the handle is provided for the SD model for AN.



Handle Mounting Square Hole for Adjustment during Stop TH

Fine adjustments and positioning can be performed easily by using the handle inserted to this hole during machine stop.
Mount the adjustment handle for adjustment during stop TH to the square hole bushing of the PE model speed change pulley to perform fine adjustments and positioning.

* Please order an adjustment handle for adjustment during stop (TH-125-12) separately.



* Do not run the machine with TH-125-12 inserted into the hole.

■ When the AN unit is mounted

Unit [mm]

Model	A	B	C	D	L	X
AN□-02-TH	106	40	188	2	101	20
AN□-04-TH	125	44	188	2	122	20
AN□-07-TH	155	42	188	2	124	20
AN□-15-TH	185	53	185	5	151	20
AN□-22-TH	185	57	188	2	164	20
AN□-37-TH	216	74	189	1	175	20

■ When the ACW unit is mounted

Unit [mm]

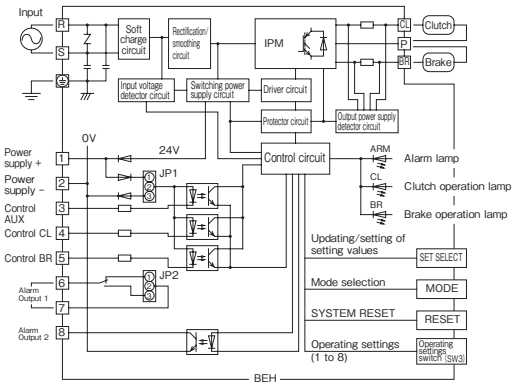
Model	A	B	C	D	L	X
ACW-02PMN-TH	106	57	207	−17	136.5	20
ACW-04PMN-TH	125	49	198.5	−8.5	137.5	34
ACW-07PMN-TH	155	53	202	−12	150	20
ACW-15PMN-TH	185	60	197.5	−7.5	170.5	20

Electromagnetic Clutch and Brake Power Supply Unit BEH

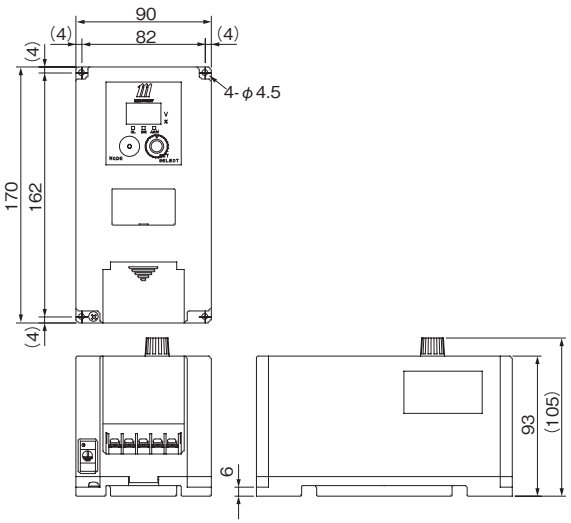
Just connect the device to the AC outlet power supply (100/200 VAC) to receive the 24 VDC excitation power supply necessary for the electromagnetic clutch and brake. In particular, a combination mode to interlock the electromagnetic clutch and the electromagnetic brake enables high-accuracy and high-speed operation. The high-performance power supply also includes an auto-tuning function to automatically detect the connected electromagnetic clutch and brake and set the optimal operating conditions, as well as a variety of protection functions; for example, wiring, connection, and setting errors are indicated by an alarm sound to allow the user to easily remove the cause of the error.

Applied unit	Power supply unit model	Input voltage [V]	Output voltage [V]	Output capacity [W]
ACW / ANB	BEH-10G	AC200 ~ 240	DC24	50
Common to all models	BEH-20G-1	AC100 ~ 120	DC24	100

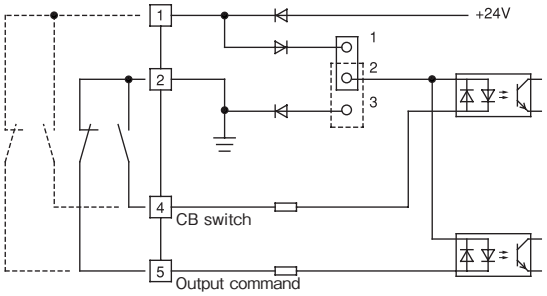
Structure



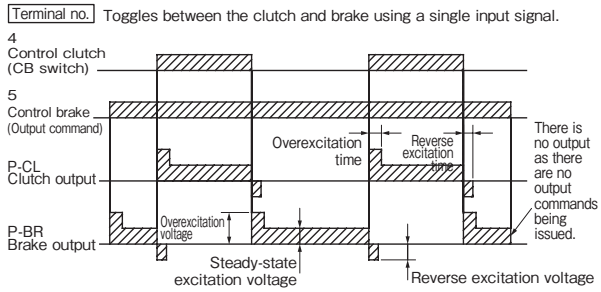
Dimensions



Wire Connection Method (Interlocked Mode - Operating Settings SW2 OFF)



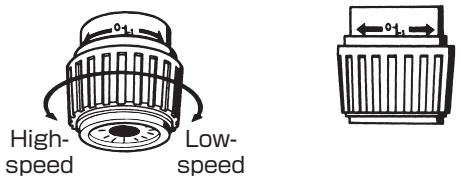
Time Chart



ANS/ANW/ANG GDN/ACW/ANB Models

Items Checked for Design Purposes

1. Avoid a humid place, a place where the ambient temperature is high, a place exposed to water or oil, a place where corrosive and flammable gases are present in the atmosphere, and select a well-ventilated place. Mount the device in a location that provides easy access for inspection.
   The operating ambient temperature range is -10℃ to +40℃ .
2. Turn the handle right (clockwise) to reduce speed and turn it left (counterclockwise) to increase speed.



3. Use the scale seal as a main scale and the scale plate on the handle as a vernier scale.
4. Do not turn the handle when the speed changer is stopped.
5. For the output rotation direction, you can use any direction.
6. Perform a test run and turn the handle to make sure there is no unusual vibration or noise.
7. If you use the device for a machine where normal-reverse operation is performed, or a repeated or impact load is applied, please consult with us.

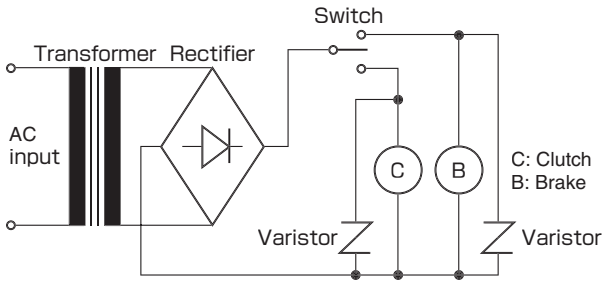
ANS

1. Use the AK model for the motor shaft and the PE model for the driven side.
2. The appropriate input rotation speed is 1500 to 1800 [min^{-1}]. (A 4-pole motor drive is appropriate.)
3. Before using the device, secure the rotation stopper part of the bearing case in the radial direction.
4. When mounting the speed changer, make sure the parallelism and perpendicularity of the travel line of the belt and the two shafts are correct.
5. When mounting the device to the machine, provide the rotating part with a cover.

ANW/ANG GDN/ANB/ACW

1. 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.
2. When mounting the sprocket and gear to the output shaft, make sure the overhang load does not exceed the specified value. When connecting the output shaft directly to the machine, use a flexible coupling and align the shaft center and mount it.
3. Do not hold the handle when moving the device.
4. Remove the air cap attached to the oil fill plug on the worm speed reducer after mounting the device.
5. If you mount the device in an atmosphere where oil, grease, and dust will enter the housing, provide the clutch and brake part with a protective cover. (ACW, ANB)
6. The temperature in the clutch and brake part significantly increases depending on the operating condition. Make sure it is well ventilated. (ACW, ANB)

Wiring the Clutch and Brake



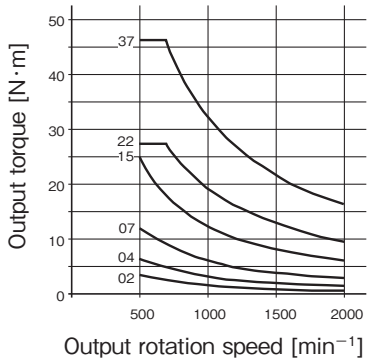
1. When using a clutch and brake, check to make sure the clutch and brake are not activated simultaneously.
2. The power supply for operating the clutch and brake is 24 VDC. A DC or AC power supply is used for the operating power supply by reducing voltage and rectifying current. (We offer a dedicated power supply.) The voltage fluctuation range is within ± 10%. Applying different voltages may deteriorate the performance or cause problems such as coil burnout.
3. The switch is located in the DC circuit. The on-off operation in the AC circuit slows the response time.
4. Connect the included protection elements (varistors) for absorbing surge to each of the clutch and the brake in parallel. However, if you use the power supply BEH model described in Options on the next page, you do not need to connect the varistors.

* Before changing between the normal and reverse directions, make sure the speed changer is stopped.
* Break-in is recommended to condition the engaging surfaces of gear teeth of the speed reducer. (Start with a low speed and gradually increase speed.)
* If you have not used the device for a long period of time, check the speed changer, speed changer belt, and speed reducer.
* Check the speed changer belt to make sure there is no unusual wear.
* A strong spring is installed in the speed changer (PE model). Do not disassemble it.

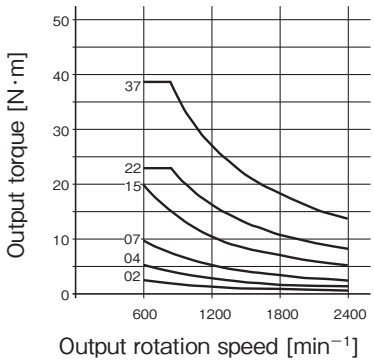
Performance and Characteristics

■ ANS: Output torque curve (when a 3-phase 4-pole motor is mounted)

50Hz

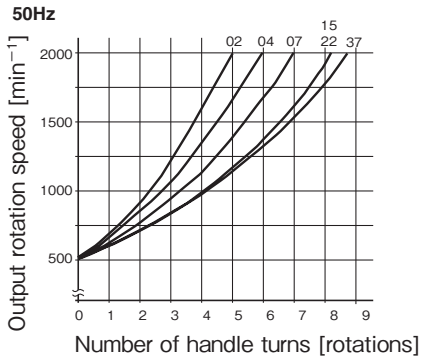


60Hz

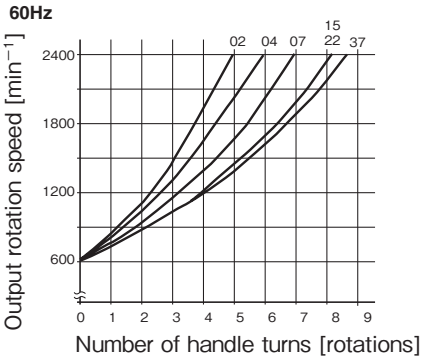


■ ANS: Number of handle turns and output rotation speed (when a 3-phase 4-pole motor is mounted)

50Hz

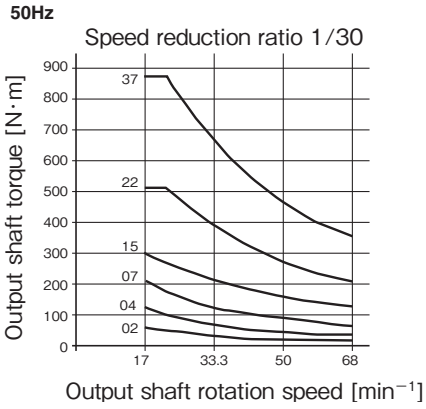


60Hz

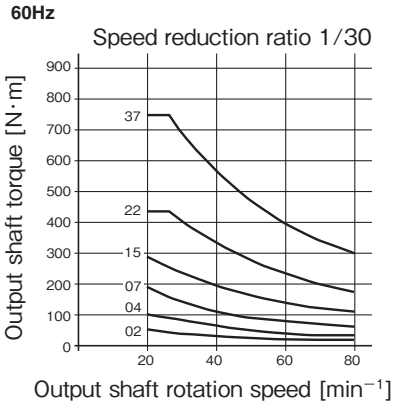


■ ANW: Output shaft torque curve

50Hz

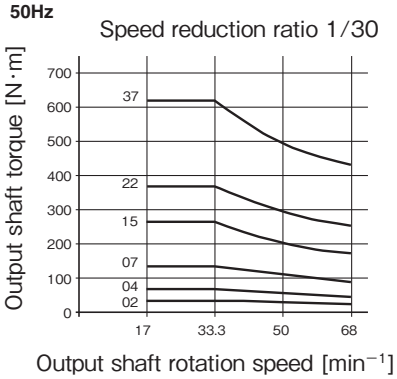


60Hz

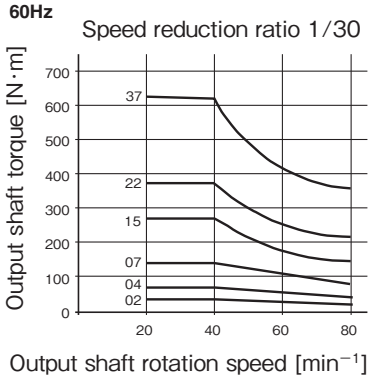


■ ANG GDN: Output shaft torque curve

50Hz



60Hz



Belt-type Stepless Speed Changer Unit

PDS

Standard applied motor output	0.2 kW to 3.7 kW (4-pole)
Speed change ratio	Approx. 1:4

Belt-type Stepless Speed Changer Changing Rotation Speed Freely

Large Speed Change Ratio

The combined use of two models of speed change pulleys (AK and PE models) achieves a large speed change ratio.

One Touch Speed Change Operation

Speed change operation is very easy because a rotation stopper is included in the device. Turn the handle right to reduce speed and turn it left to increase speed.

Easy-to-Read Handle Scale

Use the needle dial as a main scale and the rotation scale plate on the handle as a vernier scale.

Specifications

Model	Applied motor (4-pole) [kW]	Speed change ratio	Output rotation speed [min⁻¹]		Number of handle turns	Speed changer in use			
						Motor side		Machine side	
			50Hz	60Hz		Model	Mass [kg]	Model	Mass [kg]
PDS-02	0.2	1:4	500 ~ 2000	600 ~ 2400	5	AK-90-MA-11	1.3	PE-106-MA-12H	1.6
PDS-04	0.4	1:3.5	720 ~ 2520	870 ~ 3050	5.5	AK-124-MA-14N	2.4	PE-124-MA-15H	2.2
PDS-07	0.75	1:4	600 ~ 2400	720 ~ 2880	7.5	AK-140-MA-19N	2.8	PE-155-MA-18H	4
PDS-15	1.5	1:4	500 ~ 2000	600 ~ 2400	8.5	AK-155-MA-24N	3.7	PE-185-MA-22H	6
PDS-22	2.2	1:4.5	500 ~ 2250	600 ~ 2700	10.5	AK-185-MA-28N	5.4	PE-216-MA-25H	10
PDS-37	3.7	1:3	780 ~ 2350	940 ~ 2820	8.5	AK-216-MA-28N	6.9	PE-216-MA-30H	10

* The output rotation speed is that when a 3-phase 4-pole motor is mounted. Also use 1800 min⁻¹ or less for the input rotation speed.
* For applicable motor greater than 5.5 kW, please consult with us.

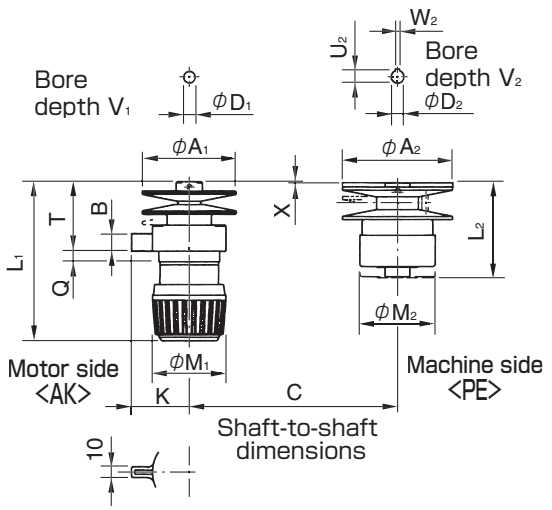
Belt Number and Distance between Shafts

Model	Distance between shafts [mm]	Belt number	Distance between shafts [mm]	Belt number	Distance between shafts [mm]	Belt number
PDS-02	163	1022V220S	172	1022V223	200	1022V247S
PDS-04	200	1422V270S	242	1422V300S	278	1422V330S
PDS-07	172	1422V270S	214	1422V300S	252	1422V330S
PDS-15	182	1922V298S	211	1922V321	235	1922V338S
PDS-22	230	2322V364S	275	2322V396S	306	2322V421S
PDS-37	247	2322V396S	279	2322V421S	304	2322V441K

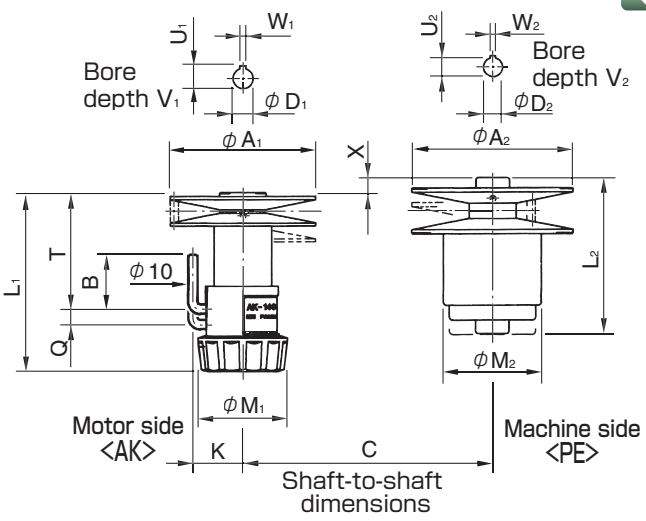
* The distance between shafts is dimension C in the Dimensions on the next page.

Dimensions

PDS-02



PDS-04 to 37



* This is the width of the rotation stopper.

Unit [mm]

Model	Model for motor-side speed changer	A1	M1	L1	B	K	Q	T	D1	U1	W1	V1	max.P.D.	min.P.D.
PDS-02	AK-90-MA-11	90	70	153	17	55	10	67	11	-	-	25	85	34.5
PDS-04	AK-124-MA-14N	124	86	164	53	48	11	107	14	16	5	30	114	58
PDS-07	AK-140-MA-19N	140	86	172	53	48	15	112	19	21.5	6	40	135	58
PDS-15	AK-155-MA-24N	155	86	205	53	48	17	142	24	27	8	50	148	60
PDS-22	AK-185-MA-28N	185	86	231	62	53	21	165	28	31	8	60	178	70
PDS-37	AK-216-MA-28N	216	86	240	74	53	17.5	175	28	31	8	60	200	110

Unit [mm]

Model	Model for machine-side speed changer	A2	M2	L2	D2	U2	W2	V2	max.P.D.	min.P.D.	X
PDS-02	PE-106-MA-12H	106	73	91	12	13.5	4	30	101	54.5	-1
PDS-04	PE-124-MA-15H	124	79	122	15	17	5	40	118	63	12
PDS-07	PE-155-MA-18H	155	94	151	18	20.5	6	45	150	77	14
PDS-15	PE-185-MA-22H	185	104	172	22	24.5	6	55	178	100	16.5
PDS-22	PE-216-MA-25H	216	126	205	25	28	8	50	208	112	17.5
PDS-37	PE-216-MA-30H	216	126	205	30	33	8	65	208	120	17.5

How to Place an Order

PDS-02-11-12H-□

- Size
- Nominal bore diameter for motor-side speed changer AK model
- Nominal bore diameter for machine-side speed changer PE model
- Options: Blank: Standard
  SD: Rotation speed indicator
  TH: Equipped with a square hole bushing for adjustments during machine stop

Model and nominal bore diameter for motor-side speed changer

AK-90-MA-11

- Size
- Nominal bore diameter, bore specifications
  Blank: No key
  N: Compliant with the new motor standards

Model and nominal bore diameter for machine-side speed changer

PE-106-MA-12H

- Size
- Nominal bore diameter, bore specifications
  H: Compliant with the new JIS standards

* Please contact Miki Pulley for assistance with non-standard bore diameters.

To download CAD data or product catalogs: www.mikipulley.co.jp Web code D013

Belt-type Stepless Speed Changer Unit

PDC

Motor output	0.2 kW to 3.7 kW (4-pole)
Power supply voltage	Three-phase, 200 V/50 Hz, 200 or 220 V/60 Hz

Extremely Simple Speed Changer Units

Unit Structure

The stepless speed changer unit combines the speed change pulley, motor and driven shaft with bed.

Large Speed Change Ratio

The combined use of two models of speed change pulleys (AK and PE models) achieves a large speed change ratio.

One Touch Speed Change Operation

Speed change operation is very easy because a rotation stopper is included in the device. Turn the handle right to reduce speed and turn it left to increase speed.

Easy-to-Read Handle Scale

Use the needle dial as a main scale and the rotation scale plate on the handle as a vernier scale.

Specifications

Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed change ratio	Speed changer in use		Model for belt in use	Mass [kg]
					Model for motor-side speed changer	Model for machine-side speed changer		
PDC-02N	0.2	4	Three-phase, 200/50, 200・220/60	1:4	AK-90-MA-11	PE-106-MA-12H	1022V220S	20.5
PDC-04N	0.4	4	Three-phase, 200/50, 200・220/60	1:3.5	AK-124-MA-14N	PE-124-MA-15H	1422V270S	30
PDC-07N	0.75	4	Three-phase, 200/50, 200・220/60	1:4	AK-140-MA-19N	PE-155-MA-18H	1422V270S	40
PDC-15N	1.5	4	Three-phase, 200/50, 200・220/60	1:4	AK-155-MA-24N	PE-185-MA-22H	1922V298S	58
PDC-22N	2.2	4	Three-phase, 200/50, 200・220/60	1:4.5	AK-185-MA-28N	PE-216-MA-25H	2322V364S	71.5
PDC-37N	3.7	4	Three-phase, 200/50, 200・220/60	1:3	AK-216-MA-28N	PE-216-MA-30H	2322V396S	88

* 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	Output shaft rotation speed [min^{-1}] and output shaft torque [N・m]			
	50Hz		60Hz	
	Output shaft rotation speed [min^{-1}]	Output shaft torque [N・m]	Output shaft rotation speed [min^{-1}]	Output shaft torque [N・m]
PDC-02N	500 ～ 2000	3 ～ 0.6	600 ～ 2400	2.4 ～ 0.5
PDC-04N	720 ～ 2520	3.6 ～ 1	870 ～ 3050	2.9 ～ 0.8
PDC-07N	600 ～ 2400	9.2 ～ 2.4	720 ～ 2880	7.5 ～ 2
PDC-15N	500 ～ 2000	19 ～ 5.4	600 ～ 2400	15 ～ 4.3
PDC-22N	500 ～ 2250	28 ～ 8.2	600 ～ 2700	22 ～ 6.6
PDC-37N	780 ～ 2350	40 ～ 11	940 ～ 2820	32 ～ 8.8

Dimensions

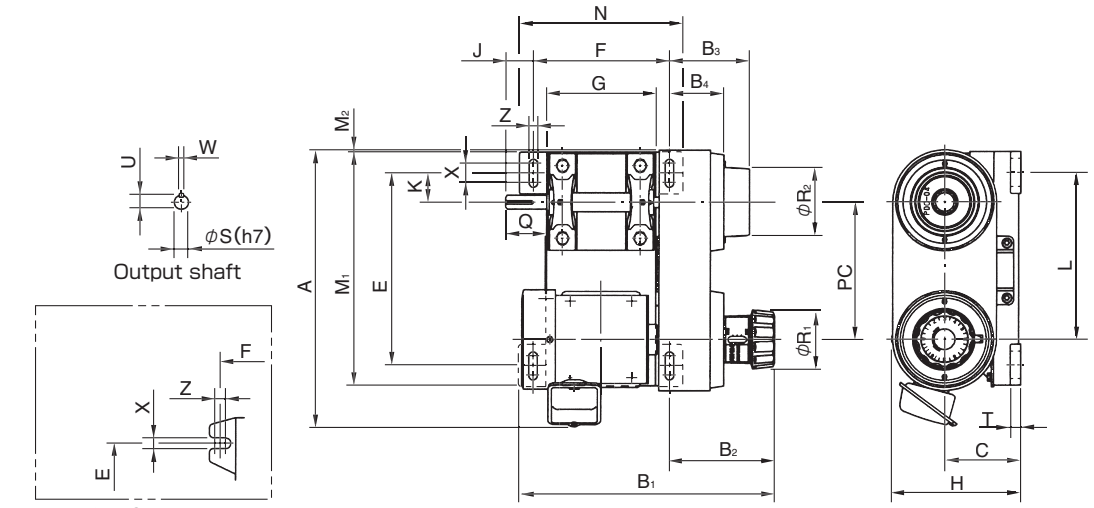


Diagram of PDC-02 Mounting Feet

Unit [mm]

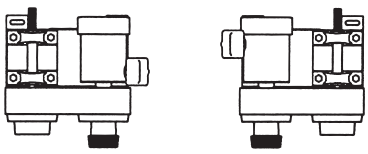
Type	PDC-02N	PDC-04N	PDC-07N	PDC-15N	PDC-22N	PDC-37N
A	322	399	396	433	513	557
B_1	346	374	425	485	570	580
B_2	138	155	165	195	230	240
B_3	90	120	145	165	200	210
B_4	55	85	75	105	130	140
C	95	110	120	130	140	152
E	240	280	290	320	390	390
F	180	200	240	270	320	320
G	150	160	200	230	280	280
H	165	185	210	235	264	276
J	45	40	65	65	80	85
K	35	42	58	67	64	64
L	198	242	230	249	294	309
M_1	300	340	350	380	450	450
M_2	0	3	3	8	31	31
N	200	240	280	310	360	360
PC	163	200	172	182	230	247
Q	60	60	85	85	100	105
R_1	70	86	86	86	86	86
R_2	90	100	110	121	150	150
T	15	15	20	20	20	20
X	11	28	25	25	25	25
Z	10	12	15	15	15	15
S	20	20	25	25	30	30
U	22.5	22.5	28	28	33	33
W	6	6	8	8	8	8

How to Place an Order

PDC-07N-R-IE3-□

- Size
- Model
- IE code
  IE1: 02, 04
  IE3: 07 or greater
- Option

Type



L R

Please determine the type depending on which side of the handle the output shaft is located.

To download CAD data or product catalogs: www.mikipulley.co.jp Web code D014

Belt-type Stepless Speed Changer Unit

PDG BSN

Motor output	0.2 kW to 3.7 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

Stepless Speed Changer Combining Speed Changer PDS Model with a Motor and Worm Speed Reducer

Unit Structure

The stepless speed changer combines the speed change pulley, motor and worm speed reducer with bed.

Large Speed Change Ratio

The combined use of two models of speed change pulleys (AK and PE models) achieves a large speed change ratio.

One Touch Speed Change Operation

Speed change operation is very easy because a rotation stopper is included in the device. Turn the handle right to reduce speed and turn it left to increase speed.

Easy-to-Read Handle Scale

Use the needle dial as a main scale and the rotation scale plate on the handle as a vernier scale.

Specifications

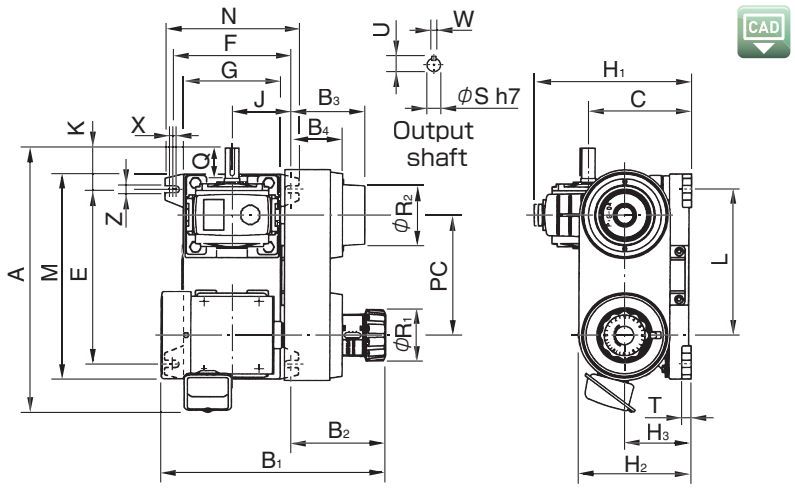
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed change ratio	Speed changer in use		Model for belt in use	Speed reducer	Mass [kg]
					Model for motor-side speed changer	Model for machine-side speed changer			
PDG-02BSN	0.2	4	Three-phase, 200/50, 200・220/60	1:4	AK-90-MA-11	PE-106-MA-12H	1022V220S	N-PA-12	21.5
PDG-04BSN	0.4	4	Three-phase, 200/50, 200・220/60	1:3.5	AK-124-MA-14N	PE-124-MA-15H	1422V270S	N-PA-15	33
PDG-07BSN	0.75	4	Three-phase, 200/50, 200・220/60	1:4	AK-140-MA-19N	PE-155-MA-18H	1422V270S	N-PA-18	51
PDG-15BSN	1.5	4	Three-phase, 200/50, 200・220/60	1:4	AK-155-MA-24N	PE-185-MA-22H	1922V298S	N-PA-22	74
PDG-22BSN	2.2	4	Three-phase, 200/50, 200・220/60	1:4.5	AK-185-MA-28N	PE-216-MA-25H	2322V364S	N-PA-25	103
PDG-37BSN	3.7	4	Three-phase, 200/50, 200・220/60	1:3	AK-216-MA-28N	PE-216-MA-30H	2322V396S	N-PA-30	152.5

* 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 and output shaft torque per speed reduction ratio											
		1/10		1/20		1/30		1/40		1/50		1/60	
		Output shaft rotation speed [min^{-1}]	Output shaft torque [N・m]	Output shaft rotation speed [min^{-1}]	Output shaft torque [N・m]	Output shaft rotation speed [min^{-1}]	Output shaft torque [N・m]	Output shaft rotation speed [min^{-1}]	Output shaft torque [N・m]	Output shaft rotation speed [min^{-1}]	Output shaft torque [N・m]	Output shaft rotation speed [min^{-1}]	Output shaft torque [N・m]
PDG-02BSN	50	50～200	23～4.8	25～100	41～8.9	17～68	54～12	12.5～50	54～15	10～40	54～18	8.5～34	54～21
	60	60～240	18～4	30～120	33～7.4	20～80	42～9.9	15～60	53～13	12～48	54～15	10～40	54～17
PDG-04BSN	50	72～252	27～8.1	36～126	48～15	24～84	64～20	18～63	76～25	15～52	99～32	12～42	95～35
	60	87～305	22～6.5	44～154	38～12	29～102	51～16	22～77	62～20	17～60	80～26	15～52	91～28
PDG-07BSN	50	60～240	70～20	30～120	130～37	20～80	170～50	15～60	190～63	12～48	200～77	10～40	190～89
	60	72～288	57～16	36～144	110～30	24～96	140～41	18～72	170～53	15～60	200～64	12～48	190～74
PDG-15BSN	50	50～200	150～44	25～100	220～81	17～68	290～110	12.5～50	250～140	10～40	280～170	8.5～34	260～190
	60	60～240	120～35	30～120	200～65	20～80	280～90	15～60	250～110	12～48	280～140	10～40	260～160
PDG-22BSN	50	50～225	220～67	25～113	400～130	17～75	500～180	12.5～56	500～230	10～45	450～280	8.5～37	420～300
	60	60～270	170～54	30～135	320～100	20～90	410～140	15～67	500～180	12～54	450～220	10～45	420～260
PDG-37BSN	50	78～235	320～91	39～118	570～170	26～78	770～240	20～59	730～300	16～47	770～390	13～39	680～430
	60	94～282	250～73	47～141	450～140	32～95	610～190	24～71	730～240	19～56	770～310	16～47	680～340

* The output shaft torque may be limited to the rated value of the speed reducer.

Dimensions



Unit [mm]

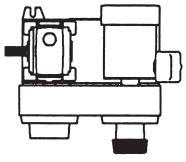
Model	PDG-02BSN	PDG-04BSN	PDG-07BSN	PDG-15BSN	PDG-22BSN	PDG-37BSN
A	347	434	436	468	559	622
B_1	346	374	425	485	570	650
B_2	138	160	165	195	230	230
B_3	90	125	145	165	200	200
B_4	55	85	75	105	130	130
C	145	170	190	210	240	280
E	240	290	290	320	390	410
F	180	195	240	270	320	390
G	150	160	200	230	280	330
H_1	220	255	290	320	375	440
H_2	165	185	210	235	265	285
H_3	95	110	120	130	140	160
J	90	98	120	135	160	195
K	60	68	73	73	93	110
L	198	242	230	249	308	327
M	290	340	350	380	450	490
N	200	220	280	310	360	450
PC	163	200	172	182	230	247
Q	40	50	60	65	75	85
R_1	70	86	86	86	86	86
R_2	90	100	110	121	150	150
T	15	15	20	20	20	20
X	10	10	10	10	10	20
Z	11	12	15	15	15	20
S	17	22	28	32	38	45
U	19	24.5	31	35	41	48.5
W	5	6	8	10	10	14

How to Place an Order

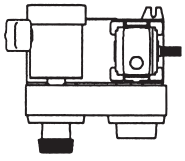
PDG-07BSN-R-30-IE3-□

- Size
- Model
- Nominal speed reduction ratio
- IE code (IE1: 02, 04; IE3: 07 or greater)
- Option

Type



L



R

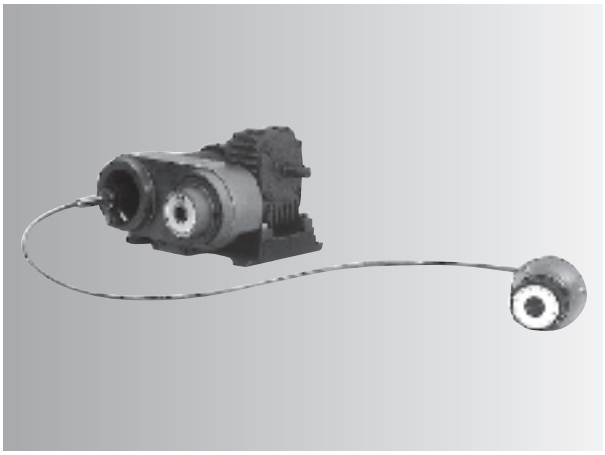
Please determine the type depending on which side of the handle the output shaft is located.

To download CAD data or product catalogs: www.mikipulley.co.jp Web code D015

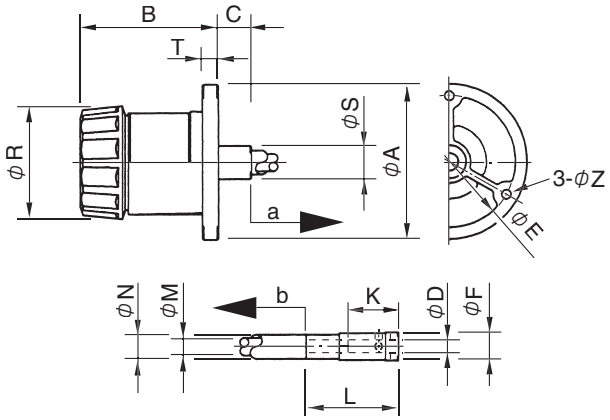
PDS/PDC/PDG BSN Models

Options

Remote Operation Device RF



RF is flexible-shaft remote operation device that enables remote operation by setting to belt-type stepless speed changer units. It is a prevalence model with a very simple construction mounting the flange to the handle part of AK model. Perform variable speed operation by rotating the speed change handle.



Model	Applied speed changer	Number of handle turns	Dimensions [mm]													
			A	B	C	D	E	F	K	L	M	N	R	S	T	Z
RFA-90	PDS・PDC・PDG-02	5	100	75	25	10	82	20	38	70	10	14	70	25	11	7
RFB-90		10														
RFA-124	PDS・PDC・PDG-04	5.5	118	94	25	10	100	20	38	70	10	14	86	25	12	7
RFB-124		11														
RFA-140	PDS・PDC・PDG-07	7.5	118	94	25	10	100	20	38	70	10	14	86	25	12	7
RFB-140		15														
RFA-155	PDS・PDC・PDG-15	8.5	118	94	25	10	100	20	38	70	10	14	86	25	12	7
RFB-155		17														
RFA-185	PDS・PDC・PDG-22	10.5	118	104	25	10	100	20	38	70	13	18	86	25	12	7
RFB-185		21														
RFA-216	PDS・PDC・PDG-37	8.5	118	104	25	10	100	20	38	70	13	18	86	25	12	7
RFB-216		17														

* The standard flexible shaft lengths are 1000 mm, 1600 mm, and 2500 mm. For models with other length, please contact Miki Pulley.
* Use the device with a bend radius of R300 or more.

How to Place an Order

For unit models

PDG – 02 BSN – R – 10 – IE1 – RF AB – SD – □

- Wire length, mm
- SD indicated only for models that come equipped with an index handle
- Type: Model A or Model B
- Belt-type speed changer model

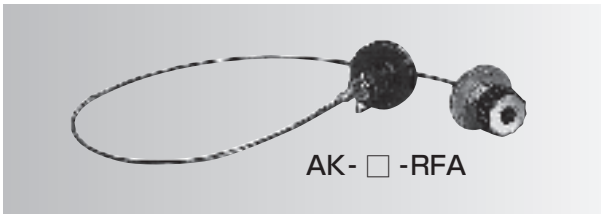
For stand-alone RF models

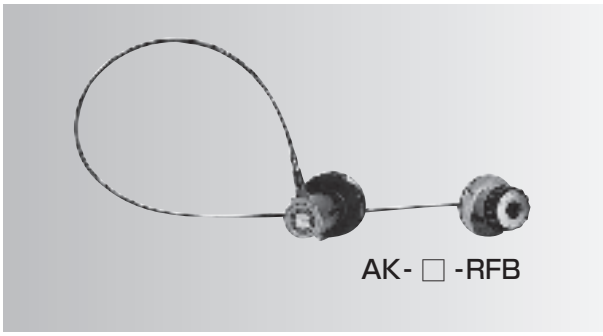
RF A/B – 90 – SD – □

- Wire length, mm
- SD indicated only for models that come equipped with an index handle
- Speed changer size
- Type

Speed Changer AK-□-RFA / AK-□-RFB for Remote Operation Device RF

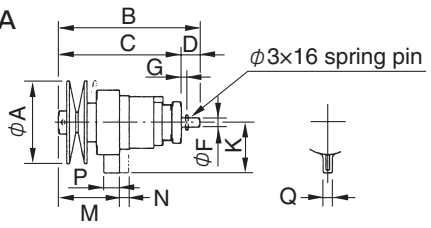
AK-□-RFA and AK-□-RFB are used for remote operations when connected with RF by flexible shaft. There are two types of speed changers: RFA type having a shaft in the axial direction and RFB type having a shaft at the right angle to axis.



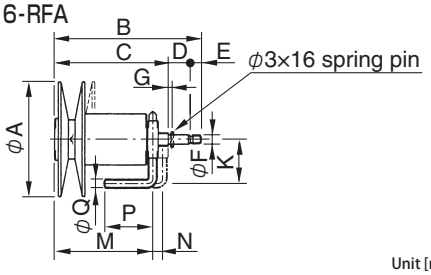


AK-□-RFA

AK-90-RFA



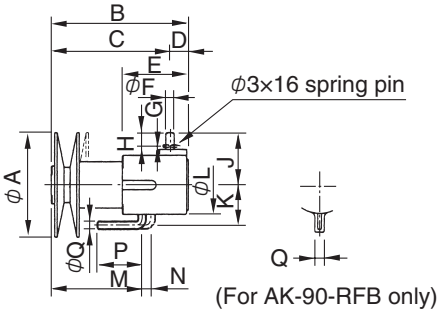
AK-124～216-RFA



Unit [mm]

Model	A	B	C	D	E	F	G	K	M	N	P	Q
AK-90-RFA	90	154	134	20	—	10	6	55	67	10	17	10
AK-124-RFA	124	160	124	24	12		4	48	107	11	53	
AK-140-RFA	140	169	133	24	12		4	48	112	15	53	
AK-155-RFA	155	201	165	24	12		4	48	142	17	53	
AK-185-RFA	185	228	192	24	12		4	53	165	21	62	
AK-216-RFA	216	236	200	24	12		4	53	175	17.5	74	

AK-□-RFB

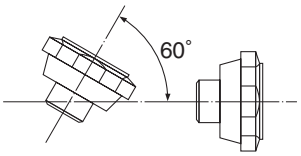


Unit [mm]

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
AK-90-RFB	90	171	149	22	78	10	4	20	62	55	70	67	10	17	10
AK-124-RFB	124	162	140							48	70	107	11	53	
AK-140-RFB	140	171	149							48	70	112	15	53	
AK-155-RFB	155	203	181							48	70	142	17	53	
AK-185-RFB	185	230	208							53	80	165	21	62	
AK-216-RFB	216	238	216							53	80	175	17.5	74	

Index Handle SD for Remote Operation Device RF

Needle moves when handle is rotated. When handle is rotated once, the little hand moves for one gradation. For this reason, it is possible to read the detailed degrees of handle turns. Mount it within the range from parallel to 60 degree, as shown in the diagram below.



Model	Applied index handle
RFA-90-SD	SD-53B-9L
RFA-124-SD	SD-53B-90A-9L
RFA-140-SD	
RFA-155-SD	
RFA-185-SD	SD-53B-90A-12L
RFA-216-SD	
RFB-90-SD	SD-53B-12L
RFB-124-SD	SD-53B-90A-12L
RFB-140-SD	SD-53B-90A-16L
RFB-155-SD	SD-53B-90A-25L
RFB-185-SD	
RFB-216-SD	

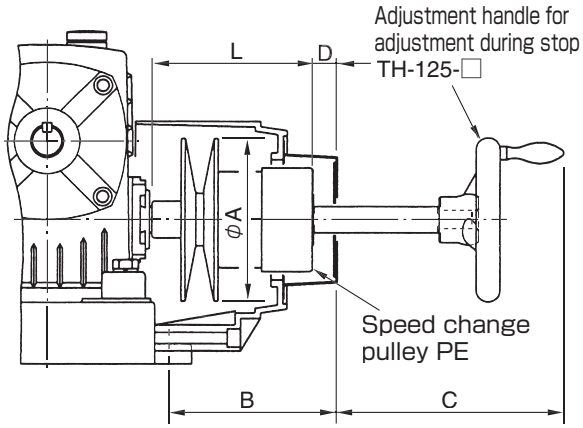
* Please note that dimensions of the handle somewhat differ if SD (rotation speed indicator) is mounted.

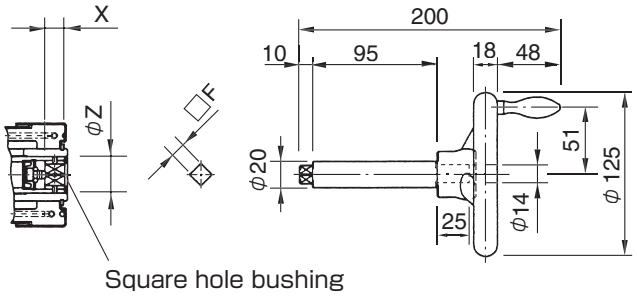
PDS/PDC/PDG BSN Models

Options

Handle Mounting Square Hole for Adjustment during Stop TH

Fine adjustments and positioning can be performed easily by using the handle inserted to this hole during machine stop.
Mount the adjustment handle for adjustment during stop TH to the square hole bushing of the PE model speed change pulley to perform fine adjustments and positioning.
Please order an adjustment handle for adjustment during stop (TH-125-□) separately.





* Do not run the machine with the handle inserted into the hole.

■ Dimensions When the Handle Is Attached to the PDG-BS Unit

Unit [mm]

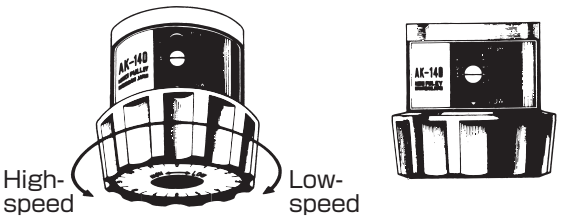
Handle model	Applied speed change pulley	A	B	C	D	□F	L	X	Z
TH-125-12	PE-106	106	90	176	14	12	91	15	24
TH-125-12	PE-124	124	125	169	21	12	122	15	28
TH-125-15	PE-155	155	145	176	14	15	151	15	32
TH-125-15	PE-185	185	165	172	18	15	172	20	40
TH-125-15	PE-216	216	200	175	15	15	205	20	50
TH-125-15	PE-216	216	200	165	25	15	205	20	50

How to Place an Order

TH-125-□
F dimension

Items Checked for Design Purposes

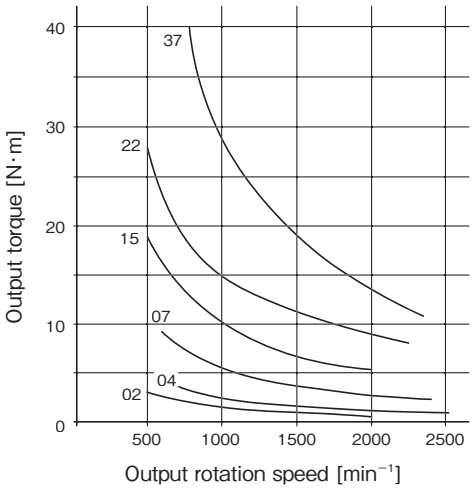
1. Avoid a humid or dusty place, a place where the ambient temperature is high, a place exposed to water or oil, and a place where corrosive and flammable gases are present in the atmosphere, and select a well-ventilated place. Mount the device in a location that provides easy access for inspection. The operating ambient temperature range is -10° C to +40° C.
2. Use the AK model for the motor shaft and the PE model for the driven side.
3. The appropriate input rotation speed range is 1500 to 1800 [min^{-1}]. (The 4-pole motor drive is appropriate.)
4. Before using the device, secure the rotation stopper rod in the radial direction. (PDS model)
5. When mounting the speed changer, make sure the parallelism and perpendicularity of the the travel line of the belt and two shafts are correct.
6. When mounting the device to the machine, provide the rotating part with a cover.
7. 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.
8. When mounting the sprocket and gear to the output shaft, make sure the overhang load does not exceed the specified value. When connecting the output shaft directly to the machine, use a flexible coupling and align the shaft center and mount it.
9. Do not hold the handle when moving the device.
10. Remove the air cap attached to the oil fill plug on the worm speed reducer after mounting the device.
11. If you use the device for a machine where normal-reverse operation is performed, or a repeated or impact load is applied, please consult with us.
12. Turn the handle right (clockwise) to reduce speed and turn it left (counterclockwise) to increase speed.



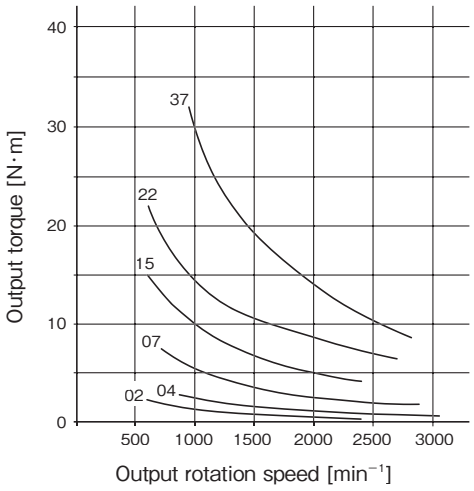
13. Use the needle dial as a main scale and the scale plate on the handle as a vernier scale.
14. Do not turn the handle when the speed changer is stopped.
15. For the output rotation direction, you can use any direction.
16. Perform a test run and turn the handle to make sure there is no unusual vibration or noise.
17. Check the output rotation speed.
18. Before changing between the normal and reverse directions, make sure the speed changer is stopped.
19. Break-in is recommended to condition the engaging surfaces of gear teeth of the speed reducer. (Start with a low speed and gradually increase speed.)
20. If you have not used the device for a long period of time, check the speed changer, speed changer belt, and speed reducer.
21. Check the speed changer belt to make sure there is no unusual wear.
22. A strong spring is installed in the speed changer (PE model). Do not disassemble it as it's so dangerous.

Output Torque Curves (when a 3-phase 4-pole Motor Is Mounted)

50Hz

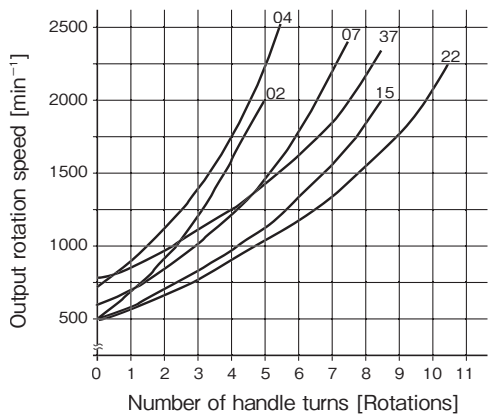


60Hz

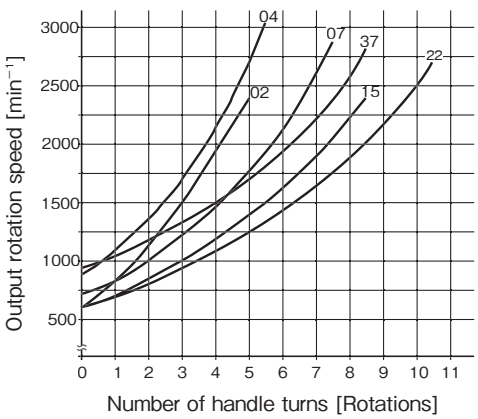


Number of Handle Turns and Output Rotation Speed (with a 3-phase 4-pole Motor Attached)

50Hz



60Hz

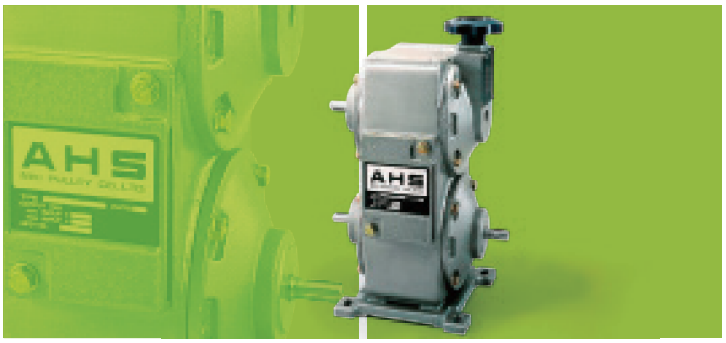


Belt-type Stepless Speed Changer Unit

AHS

Standard applied motor output	0.2 kW to 3.7 kW (4-pole)
Speed change ratio	1:4
CB torque	5.5 N・m to 90 N・m

Intermediate-type Speed Changer Unit That Can Be Mounted between Motor and Machine



- Intermediate-type speed changer unit that can be mounted between machines or between motor and machine
- Because the output shaft is through-shaft, operation of two machine is possible at an appropriate proportion.
- The AHS-A model for high-speed input and the AHS-LA model for low-speed input are available.

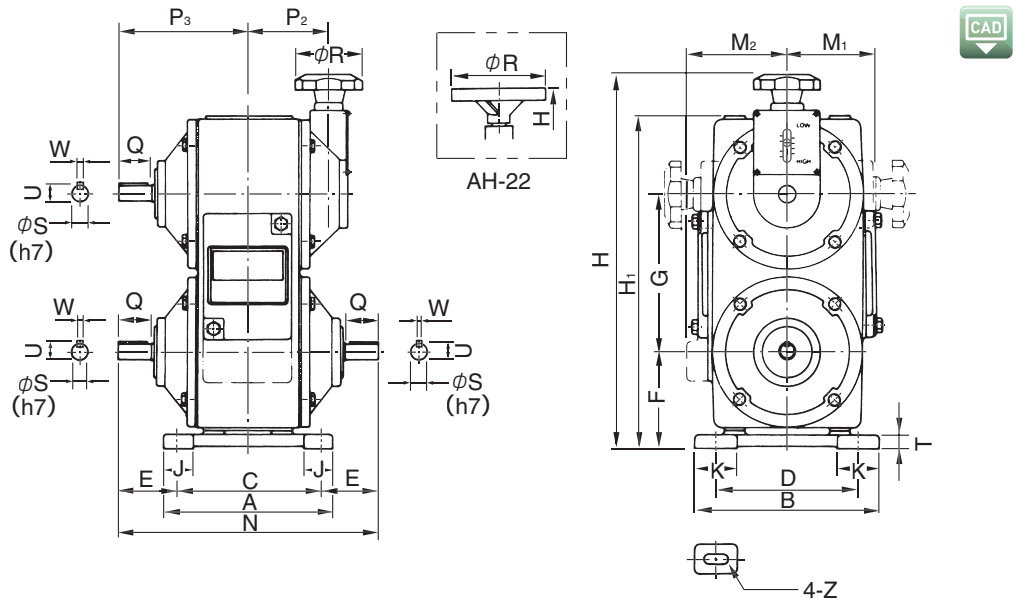
Specifications

Model	Transmission capacity (4-pole motor) [kW]	Standard specification speed changer						Electromagnetic clutch and brake							
		Speed change ratio	Output shaft rotation speed [min^{-1}]	Number of handle turns	Model for belt in use	A type Mass [kg]	B type Mass [kg]	Size	Dynamic friction torque [N・m]	Static friction torque [N・m]	Exciting voltage [V]	Capacity [W]	Current [A]	Resistance [Ω]	Heat resistance class
AHS-02-□	0.2	1:4	Input rotation speed × 0.42 ~ 1.68 *Input rotation speed Range：900 ~ 1800	11	1422V240S	17	19	06	5	5.5	DC 24	11	0.46	52	B
AHS-04-□	0.4	1:4		13	1422V270S	23	26	08	10	11	DC 24	15	0.63	38	B
AHS-07-□	0.75	1:4		14	1422V300S	32	36	10	20	22	DC 24	20	0.83	29	B
AHS-15-□	1.5	1:4		15	1922V363S	47	54	12	40	45	DC 24	25	1.09	23	B
AHS-22-□	2.2	1:4		17	2322V421S	97	108	16	80	90	DC 24	35	1.46	16	B
AHS-37-□	3.7	1:4		17	2322V421S	97	108	16	80	90	DC 24	35	1.46	16	B

Model	Transmission capacity (4-pole motor) [kW]	Standard specification speed changer						Electromagnetic clutch and brake							
		Speed change ratio	Output shaft rotation speed [min^{-1}]	Number of handle turns	Model for belt in use	A type Mass [kg]	B type Mass [kg]	Size	Dynamic friction torque [N・m]	Static friction torque [N・m]	Exciting voltage [V]	Capacity [W]	Current [A]	Resistance [Ω]	Heat resistance class
AHS-02L-□	0.2	1:4(1:3)	Input rotation speed × 0.5 ~ 2.0 (× 0.5 ~ 1.5) *Input rotation speed Range：500 ~ 900	11	1422V240S	17	19	06	5	5.5	DC 24	11	0.46	52	B
AHS-04L-□	0.4	1:4(1:3)		13	1422DV278	23	26	08	10	11	DC 24	15	0.63	38	B
AHS-07L-□	0.75	1:4(1:3)		14	1422DV314	32	36	10	20	22	DC 24	20	0.83	29	B
AHS-15L-□	1.5	1:4(1:3)		15	1922DV381	47	54	12	40	45	DC 24	25	1.09	23	B
AHS-22L-□	2.2	1:4(1:3)		17	2322DV454	97	108	16	80	90	DC 24	35	1.46	16	B
AHS-37L-□	3.7	1:4(1:3)		17	2322DV454	97	108	16	80	90	DC 24	35	1.46	16	B

* Specification in ( ) indicates AHS-□L-B low-speed input specification with clutch and brake.

Dimensions



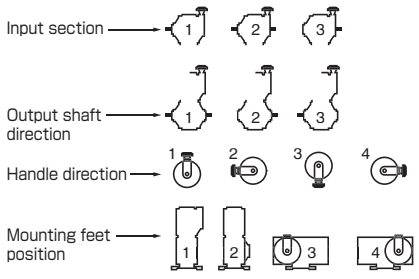
Unit [mm]

Model		AHS-02	AHS-04	AHS-07	AHS-15	AHS-22
A		190	200	230	260	320
B		200	220	250	280	320
C		160	170	200	230	260
D		160	170	200	230	260
E		52.5	70	80	80	100
F		105	115	135	155	185
G		170	188	213	255	300
H		409	447	502	584	705
H_1		360	397	453	534	635
J		30	35	45	50	60
K		40	50	50	50	60
M_1		97	106	117	138	170
M_2	A type	97	106	117	138	170
	B type	110	120	130	150	175
N		265	310	360	390	460
P_2		80	92	106	121	133
P_3		132.5	155	180	195	230
R		80	80	80	80	160
Q		30	40	50	50	60
S		14	19	24	24	28
U		16	21	27	27	31
W		5	5	7	7	7
T		12	17	20	25	25
Z		10 × 20	12 × 30	12 × 30	12 × 30	14 × 40

How to Place an Order

AHS-07L-B-0001-1111

- Size
- Output shaft function
  - Blank: Standard
  - L: For low-speed input
- Driven-side function
  - A: Standard
  - B: With clutch and brake
  - C: With clutch
- Mounting feet positions
- Handle direction
- Output shaft direction
- Input unit
- Input-side mechanism
  - 00: Without handle
  - 01: Standard (with handle)
  - 03: BG (with bevel gear)
  - 04: RF (flexible shaft-type remote operation)

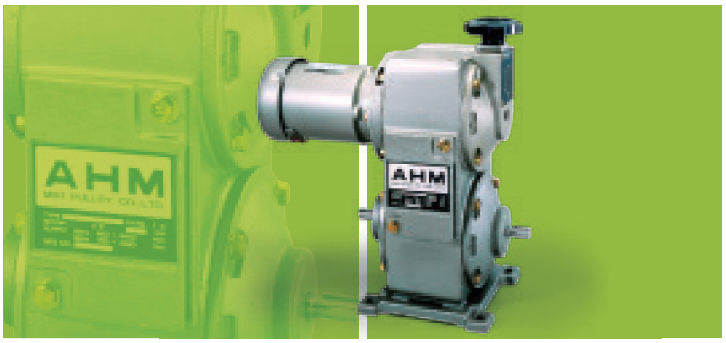


Belt-type Stepless Speed Changer Unit

AHM

Motor output	0.2 kW to 3.7 kW (4-pole)
Power supply voltage	Three-phase, 200 V/50 Hz, 200 or 220 V/60 Hz
CB torque	5.5 N・m to 90 N・m

Model with Motor and Speed Changer Integrated



Unit with motor and speed changer integrated. The standard type (A type) and the type with electromagnetic clutch and brake (B type) are available.

Specifications

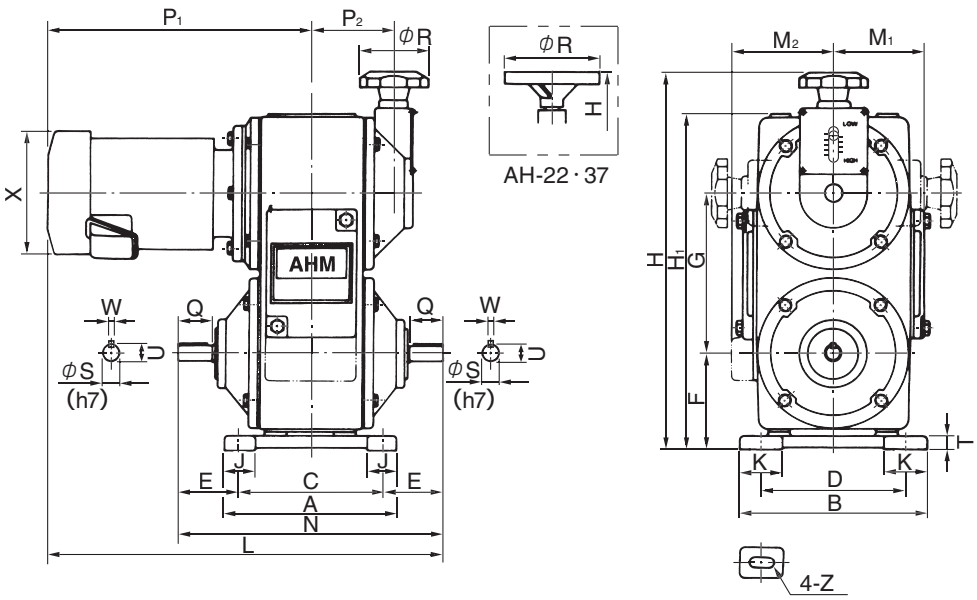
Model	Motor output [kW]	No. of poles	Power supply voltage [V], frequency [Hz]	Speed change ratio	Number of handle turns	Model for belt in use	A type Mass [kg]	B type Mass [kg]
AHM-02	0.2	4	Three-phase, 200/50, 200・220/60	1:4	11	1422V240S	24	26
AHM-04	0.4	4	Three-phase, 200/50, 200・220/60	1:4	13	1422V270S	33	36
AHM-07	0.75	4	Three-phase, 200/50, 200・220/60	1:4	14	1422V300S	48	52
AHM-15	1.5	4	Three-phase, 200/50, 200・220/60	1:4	15	1922V363S	70	77
AHM-22	2.2	4	Three-phase, 200/50, 200・220/60	1:4	17	2322V421S	130	141
AHM-37	3.7	4	Three-phase, 200/50, 200・220/60	1:4	17	2322V421S	141	152

* 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	Electromagnetic clutch and brake							
	Size	Dynamic friction torque [N・m]	Static friction torque [N・m]	Exciting voltage [V]	Capacity [W]	Current [A]	Resistance [Ω]	Heat resistance class
AHM-02-B	06	5	5.5	DC24	11	0.46	52	B
AHM-04-B	08	10	11	DC 24	15	0.63	38	B
AHM-07-B	10	20	22	DC 24	20	0.83	29	B
AHM-15-B	12	40	45	DC 24	25	1.09	23	B
AHM-22-B	16	80	90	DC 24	35	1.46	16	B
AHM-37-B	16	80	90	DC 24	35	1.46	16	B

Model	Output shaft rotation speed [min^{-1}] and output shaft torque [N・m]	
	50Hz	60Hz
	600 ～ 2400	720 ～ 2880
AHM-02	2.5 ～ 0.5	2.0 ～ 0.4
AHM-04	5.0 ～ 1.3	4.0 ～ 1.0
AHM-07	10 ～ 2.5	8.0 ～ 2.0
AHM-15	20 ～ 5.0	16 ～ 4.0
AHM-22	30 ～ 7.0	24 ～ 5.6
AHM-37	43 ～ 12	34 ～ 9.6

Dimensions



Unit [mm]

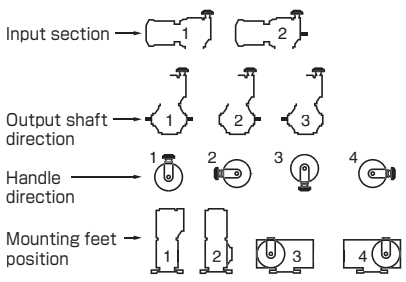
Model	AHM-02	AHM-04	AHM-07	AHM-15	AHM-22	AHM-37
A	190	200	230	260	320	320
B	200	220	250	280	320	320
C	160	170	200	230	260	260
D	160	170	200	230	260	260
E	52.5	70	80	80	100	100
F	105	115	135	155	185	185
G	170	188	213	255	300	300
H	409	447	502	584	705	705
H_1	360	397	453	534	635	635
J	30	35	45	50	60	60
K	40	50	50	50	60	60
L	414	467	493	593.5	661.5	691.5
M_1	97	106	117	138	170	170
M_2 A type	97	106	117	138	170	170
M_2 B type	110	120	130	150	175	175
N	265	310	360	390	460	460
P_1	281	312	313	398.5	431.5	461.5
P_2	80	92	106	121	133	133
R	80	80	80	80	160	160
Q	30	40	50	50	60	60
S	14	19	24	24	28	28
U	16	21	27	27	31	31
W	5	5	7	7	7	7
X	ϕ130	ϕ145	ϕ163	196	211	238
T	12	17	20	25	25	25
Z	10 × 20	12 × 30	12 × 30	12 × 30	14 × 40	14 × 40

* Dimension F is same for horizontal type. Dimensions L, P_1, and X differ depending on the motor manufacturer.

How to Place an Order

AHM-07-B-0001-1111-IE3

- Size
- Driven-side function
  A: Standard
  B: With clutch and brake
  C: With clutch
- Operation mechanism
  00: Without handle
  01: Standard (with handle)
  03: BG (with bevel gear)
  04: RF (flexible shaft-type remote operation)
- Input unit
- Output shaft direction
- Handle direction
- Mounting feet positions
- IE code
  IE1: 02, 04
  IE3: 07 or greater



To download CAD data or product catalogs: www.mikipulley.co.jp Web code D017

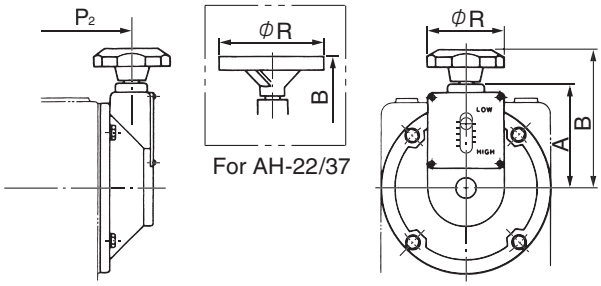
AHS/AHM Models

Options

Operation Function 01 (Standard Handle)

For the handle direction, you can select any direction (vertical and horizontal).
In addition to the standard handle, an optional SD handle with a rotation speed indicator is also available. (It can only be used for the horizontal handle.)

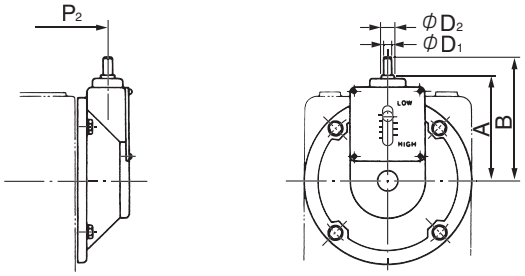
Model	A	B	P_2	R	Number of handle turns
AH-02	100	134	80	80	11
AH-04	110	144	92	80	13
AH-07	120	154	106	80	14
AH-15	140	174	121	80	15
AH-22	170	220	133	160	17
AH-37	170	220	133	160	17



Operation Function 00 (with No Handle)

If you want to remove the standard handle and mount your desired handle, or if you want to perform remote operation using a sprocket and universal joint, specify this suffix code 00.

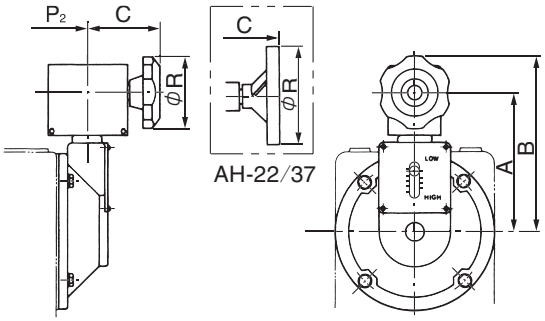
Model	A	B	D_1	D_2	P_2	Number of handle turns
AH-02	101	121	10	15	80	11
AH-04	111	131	10	15	92	13
AH-07	121	141	10	15	106	14
AH-15	141	161	10	16	121	15
AH-22	171	191	10	16	133	17
AH-37	171	191	10	16	133	17



Operation Function 03 (Right Angle Handle)

This is a right angle handle with a bevel gear mounted to the handle part. In addition to the standard handle, an SD handle (with a rotation speed indicator) is also available.

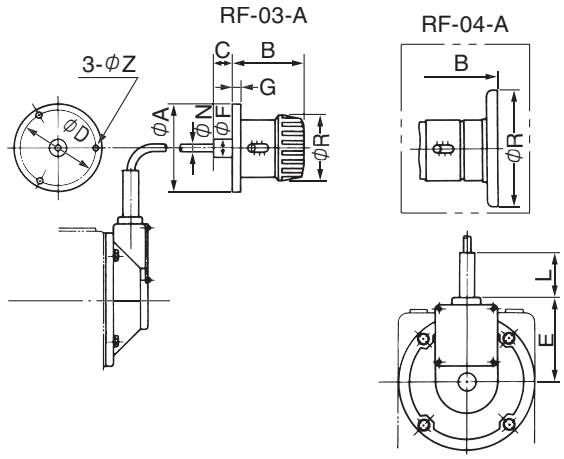
Model	A	B	P_2	C	R	Number of handle turns
AH-02	150	190	80	80	80	11
AH-04	160	200	92	80	80	13
AH-07	170	210	106	80	80	14
AH-15	190	230	121	80	80	15
AH-22	220	300	133	100	160	17
AH-37	220	300	133	100	160	17



Operation Function 04 (Flexible-shaft Type Remote Operation)

Remote control is available at low cost.
The standard flexible shaft lengths are 1000 mm, 1600 mm, and 2500 mm.
Use the device with a bend radius of R300 or more.

Model	A	B	C	D	E	F	G	L	N	R	Z	Number of handle turns	RF model
AH-02	118	93	25	100	100	25	12	70	14	86	7	11	RF-03-A
AH-04					110							13	
AH-07		121			120				18	160		14	RF-04-A
AH-15					140							15	
AH-22					170							17	
AH-37													



Items Checked for Design Purposes

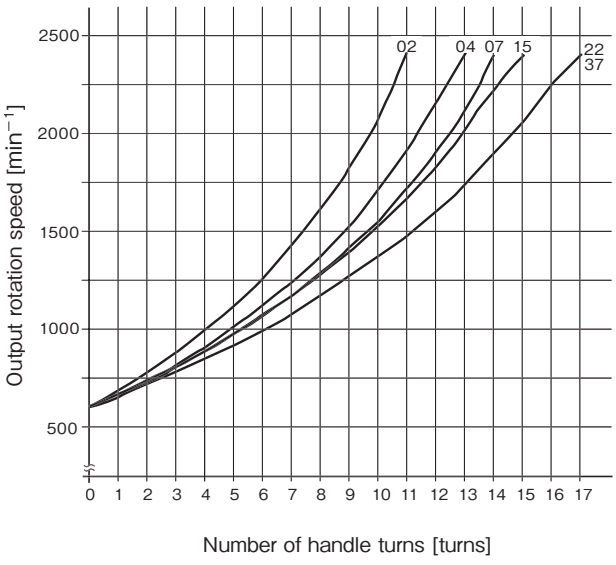
1. Avoid a humid or dusty place, a place where the ambient temperature is high, a place exposed to water or oil, and a place where corrosive and flammable gases are present in the atmosphere, and select a well-ventilated place. Mount the device in a location that provides easy access for inspection. The operating ambient temperature range is -10℃ to 40℃ .
2. Mount the device above the floor level, 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.
3. 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 and align the shaft center and mount it.
4. The temperature in the clutch and brake part significantly increases depending on the operating condition. Make sure it is well ventilated. (AH-B type)
5. Turn the handle right (clockwise) to reduce speed and turn it left (counterclockwise) to increase speed.
6. Read the scale pointed by the needle in the handle flange part.
7. Do not turn the handle when the speed changer is stopped.
8. For the output rotation direction, you can use any direction.
9. Perform a test run and turn the handle to make sure there is no unusual vibration or noise.
10. Check the output rotation speed.
11. Before changing between the normal and reverse directions, make sure the motor is stopped.
12. Use the power supply unit shown at right for units with an electromagnetic clutch and brake.

Just connect the device to the AC outlet power supply (100/200 VAC) to receive the 24 VDC excitation power supply necessary for the electromagnetic clutch and brake. In particular, a combination mode to interlock the electromagnetic clutch and the electromagnetic brake enables high-accuracy and high-speed operation. The high-performance power supply also includes an auto-tuning function to automatically detect the connected electromagnetic clutch and brake and set the optimal operating conditions, as well as a variety of protection functions; for example, wiring, connection, and setting errors are indicated by an alarm sound to allow the user to easily remove the cause of the error.

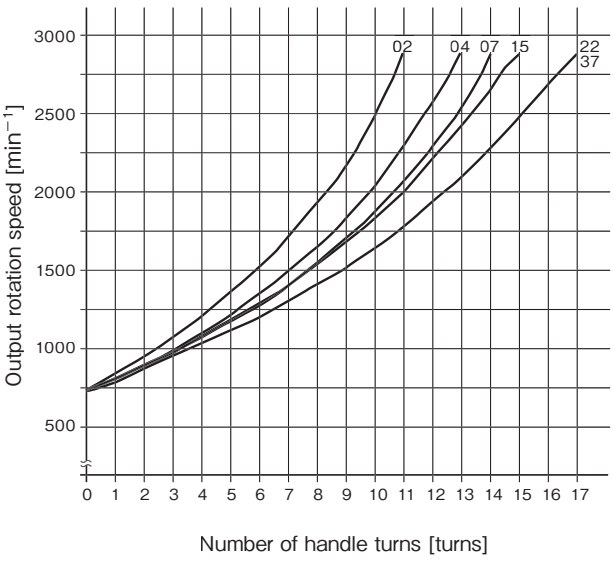
Applied unit	Power supply model	Input voltage [V]	Output voltage [V]	Output capacity [W]
Common to all AHS/AHM models	BEH-10G	AC200 ～ 240	DC24	50
	BEH-20G-1	AC100 ～ 120	DC24	100

AHM: Number of Handle Turns and Output Shaft Rotation Speed

50Hz



60Hz

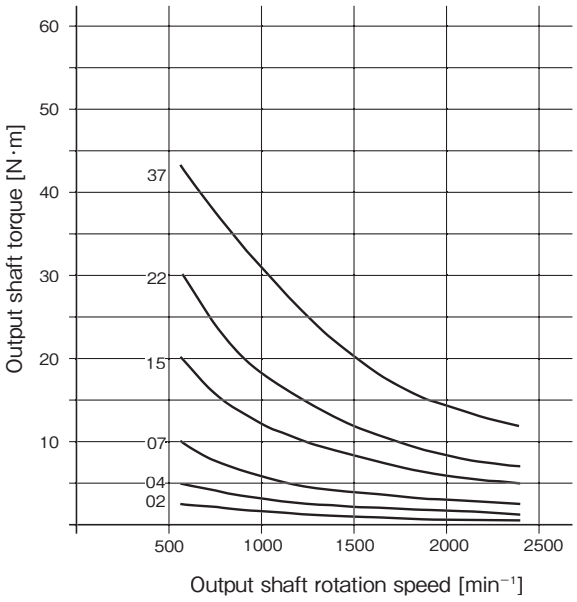


AHS/AHM Models

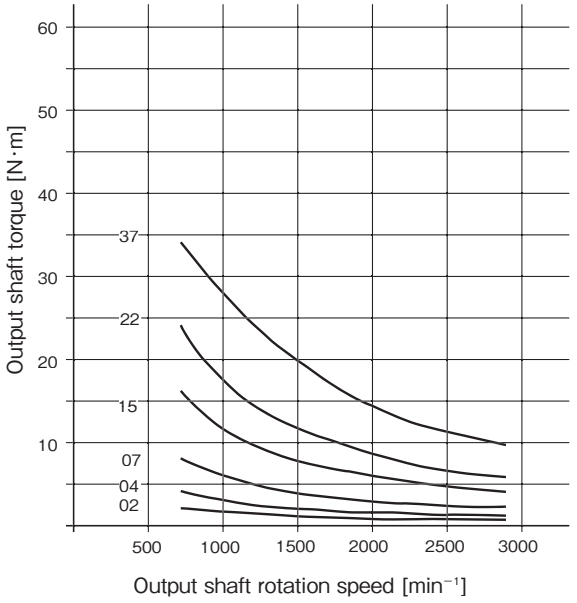
Items Checked for Design Purposes

AHM: Output Shaft Torque Curves

50Hz

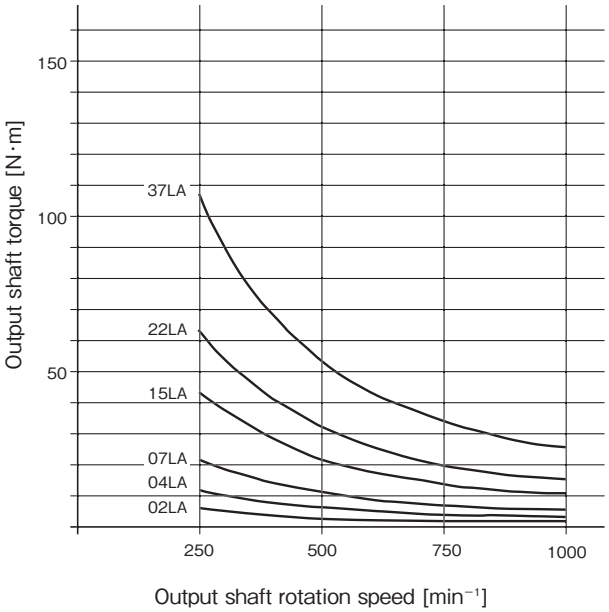


60Hz

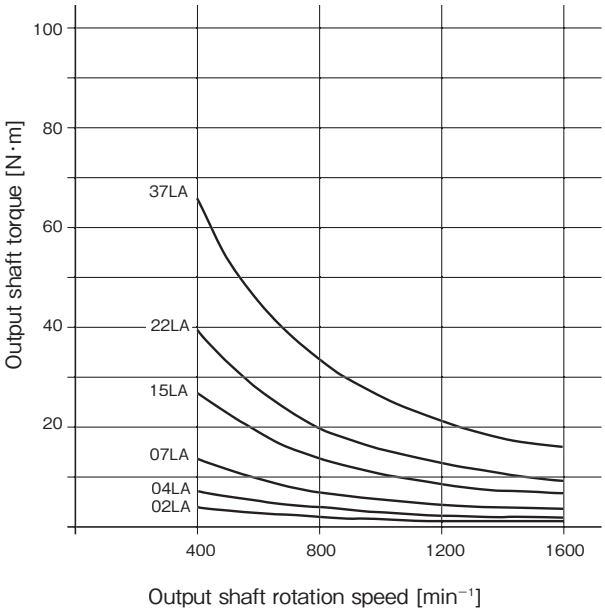


AHS-LA: Output Shaft Torque Curves

500 min⁻¹ at input



800 min⁻¹ at input



Belt-type Stepless Speed Changer Units

SPEED CHANGER BELTS

There are the following three types of belts used for the belt-type units (belt-type stepless speed changers).

Wide Speed Changer Belt

This is a belt specifically designed for changing speed. The inside is cog-shaped to increase flexibility. This belt is designed so that the size of speed changers can be reduced and the speed change ratio can be increased.

Double Cog Belt

This belt is double cog-shaped to increase power transmission capability and flexibility.

Standard V-Belt

JIS standard M, A, B, C, (D), and (E) belt models

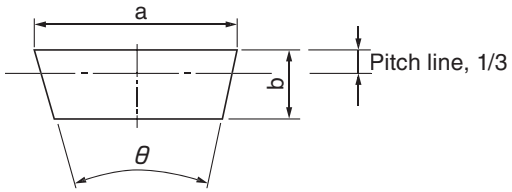
Wide Speed Changer Belts

Model	1022V			1422V			1922V			2322V			2926V			4430V			4836V		
a [mm]	16			22			30			36.5			46			70			76		
b [mm]	6			8			11			12			14			17			22		
θ [°]	22			22			22			22			26			30			38		
	Belt number	Belt's external perimeter [mm]	Pitch perimeter [mm]	Belt number	Belt's external perimeter [mm]	Pitch perimeter [mm]	Belt number	Belt's external perimeter [mm]	Pitch perimeter [mm]	Belt number	Belt's external perimeter [mm]	Pitch perimeter [mm]	Belt number	Belt's external perimeter [mm]	Pitch perimeter [mm]	Belt number	Belt's external perimeter [mm]	Pitch perimeter [mm]	Belt number	Belt's external perimeter [mm]	Pitch perimeter [mm]
	178S	465	448	210	532	515	(256S)	671	649	341	866	841	(471S)	1219	1191	(510S)	1321	1283	(850)	2178	2132
	185	470	457	220	560	543	(277)	716	694	364S	945	920	(491S)	1270	1241	548S	1410	1372	(909)	2328	2282
	192S	484	471	236S	600	584	(282)	737	715	381	972	948	(521S)	1346	1318	(555)	1435	1397			
	196S	513	501	240S	625	608	292	773	750	387S	984	959	(546S)	1410	1382	(578)	1499	1461			
	220S	560	548	255	648	631	298S	785	764	396S	1030	1005	(574)	1481	1453	(610)	1575	1537			
	223	577	564	258	660	643	(317)	805	784	421S	1090	1065	(586)	1511	1483	(630)	1626	1588			
	228	592	579	266S	680	663	321	838	817	441K	1146	1121	(606S)	1562	1534	(660)	1702	1664			
	247S	628	615	270S	700	681	325	827	806	481	1250	1225	(616)	1608	1580	(670)	1727	1689			
	(295)	749	737	290	752	735	338S	880	859	521	1341	1316	(636)	1636	1608	(690)	1778	1740			
				300S	780	764	355	923	902	(541)	1400	1375	(646)	1664	1636	(700)	1803	1765			
				325	840	823	363S	942	921	601S	1554	1529	(666)	1714	1686	(730)	1880	1842			
				330S	855	838	381S	986	964	(621)	1600	1575	(686)	1765	1737	(740S)	1905	1867			
				340	879	863	(386S)	998	976	(661)	1712	1687	(706)	1816	1788	790S	2032	1994			
				(359)	912	895	(403S)	1052	1030	(681)	1748	1732	(726)	1867	1839	(850S)	2184	2146			
				360S	932	916	417S	1080	1058	(721)	1864	1839	(786S)	2019	1991	(910)	2337	2299			
				380	981	964	(426S)	1102	1080	(801)	2068	2043	(856S)	2195	2167	(970S)	2489	2451			
				400S	1036	1020	443S	1145	1124				(906)	2324	2295						
				(420S)	1087	1071	(454S)	1173	1151												
				(466S)	1194	1178	484S	1250	1228												
				(480)	1237	1221	(526S)	1354	1332												
				(540)	1392	1376	544	1400	1378												
				(600)	1542	1526	(604)	1554	1532												
				(720)	1846	1830	(646)	1661	1639												
							(666)	1712	1690												
							(686)	1760	1738												
							(756)	1941	1919												
							(846)	2169	2147												
Unit Mass [kg/m]	0.12			0.23			0.43			0.57			0.84			1.56			2.03		

* Letters S and K at the end of the belt numbers just indicate a difference in the rubber composition and the material of the core. These belts can be used normally.
* The belt numbers in parentheses indicate that these belts are made to order.
* Mass (kg) = unit mass (kg/m) x belt's external perimeter (m)

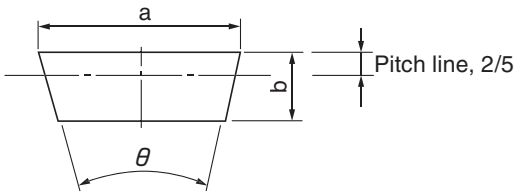
How to Place an Order

1022V178S
Model — Belt number



Speed Changer Belts

Double Cog Belts



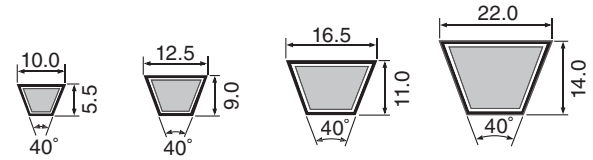
Model	Belt's external perimeter [mm]	Pitch perimeter [mm]	a [mm]	b [mm]	θ° [°]	Unit mass [kg/m]
1422DV278	708	673	24	14	24	0.30
1422DV314	798	763	24	14	24	0.30
1922DV381	968	933	33	14	24	0.46
2322DV454	1155	1110	39	18	24	0.60
2926DV490	1246	1196	46	20	26	0.87
4430DV548S	1433	1378	70	22	32	1.80

* Letter S at the end of the model just indicates a difference in the rubber composition. This belt can be used normally.
* Mass (kg) = unit mass (kg/m) x belt's external perimeter (m)

How to Place an Order

1422DV 278
Model — Belt number

Standard V-Belts



M belt　A belt　B belt　C belt

Model	M	A	B	C
Unit mass (kg/m)	0.07	0.12	0.20	0.37

Nominal number	Belt's external perimeter [mm]	Nominal number	Belt's external perimeter [mm]	Nominal number	Belt's external perimeter [mm]	Nominal number	Belt's external perimeter [mm]	Nominal number	Belt's external perimeter [mm]	Nominal number	Belt's external perimeter [mm]	Nominal number	Belt's external perimeter [mm]	Nominal number	Belt's external perimeter [mm]
21	533	31	787	41	1041	51	1295	61	1549	71	1803	81	2057	91	2311
22	559	32	813	42	1067	52	1321	62	1575	72	1829	82	2083	92	2337
23	584	33	838	43	1092	53	1346	63	1600	73	1854	83	2108	93	2362
24	610	34	864	44	1118	54	1372	64	1626	74	1880	84	2134	94	2388
25	635	35	889	45	1143	55	1397	65	1651	75	1905	85	2159	95	2413
26	660	36	914	46	1168	56	1422	66	1676	76	1930	86	2184	96	2438
27	686	37	940	47	1194	57	1448	67	1702	77	1956	87	2210	97	2464
28	711	38	965	48	1219	58	1473	68	1727	78	1981	88	2235	98	2489
29	737	39	991	49	1245	59	1499	69	1753	79	2007	89	2261	99	2515
30	762	40	1016	50	1270	60	1524	70	1778	80	2032	90	2286	100	2540

* Mass (kg) = unit mass (kg/m) x belt's external perimeter (m)

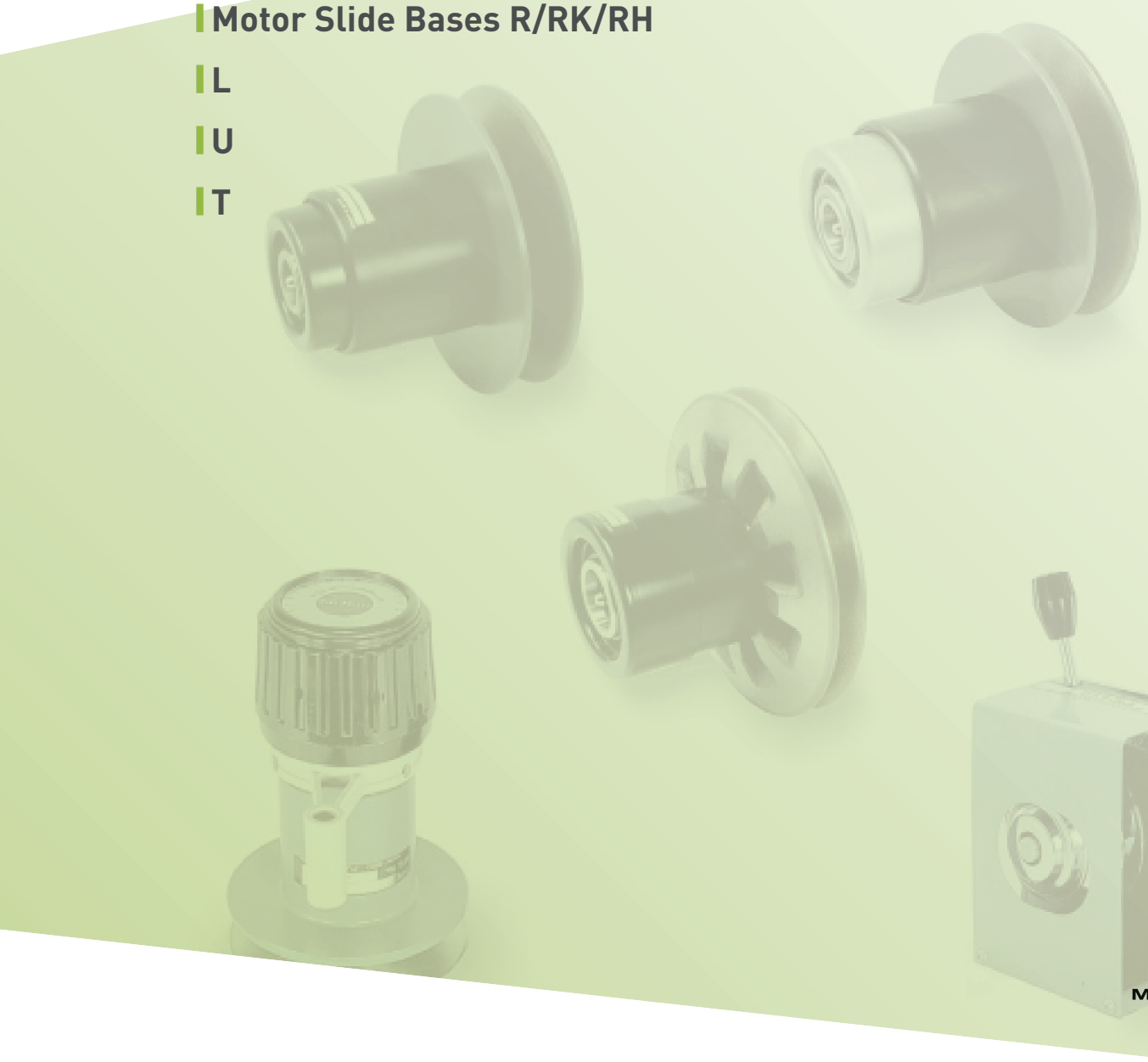
How to Place an Order

A-21
Model — Belt number

To download CAD data or product catalogs: www.mikipulley.co.jp
Web code Double Cog Belts D019 Standard V-Belts D020

STAND-ALONE BELT-TYPE STEPLESS SPEED CHANGERS

- P
- AP
- PL
- PK
- PF
- Motor Slide Bases R/RK/RH
- L
- U
- T

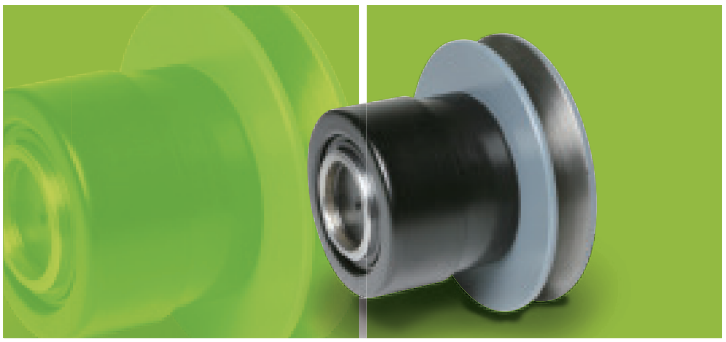


Stand-alone Belt-type Stepless Speed Changer

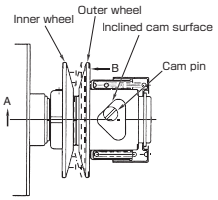
P

Standard applied motor output	0.2 kW to 3.7 kW (4-pole)
Speed change ratio	Approx. 1:1.5
External pulley diameter	86 mm to 218 mm

A VARI-DIA Pulley Using a Standard V-Belt



- Using a Standard V-Belt
- A Cam Mechanism Prevents Slip
- An Adapter Facilitates Mounting



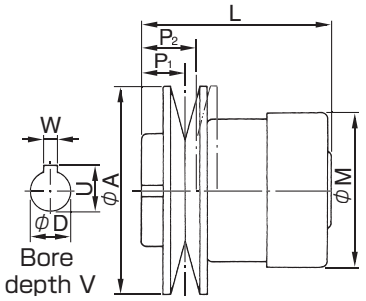
Specifications

Model	Motor in use (4P)	Speed reduction ratio	Belt	Transmission capacity [kW]			Mass [kg]
				High speed	Intermediate speed	Low speed	
P - 86-MA	0.2 ~ 0.4 kW	1:1.5	A	0.7	0.4	0.3	1.1
P - 98-MA	0.4 ~ 0.75 kW	1:1.4	A	1.2	0.7	0.4	1.8
P-106-MA	0.4 ~ 0.75 kW	1:1.6	B	1.3	0.9	0.6	2.0
P-124-MA	0.75 ~ 1.5 kW	1:1.5	B	1.8	1.2	0.8	3.0
P-164-MA	1.5 ~ 2.2 kW	1:1.5	C	3.2	2.2	1.2	6.0
P-218	2.2 ~ 3.7 kW	1:1.4	C	6.2	4.4	3.2	14.0

Types of Adapters

Model	ϕ D [mm]	Bore depth [mm]
P - 86-MA	10 11 12 13 14 15 16	30
P - 98-MA	11 12 13 14 15 16 18 19	40
P-106-MA		40
P-124-MA	14 15 16 18 19 20 22 24 25	50
P-164-MA		50
P-218	22 25 28	60

Dimensions



Unit [mm]

Model	A	P_1	P_2	L	M	D		W		U		V	Max. P.D.	Min. P.D.	Movement distance
P - 86-MA	86	18	21.5	78	63	11	14	—	—	—	—	30	77	51	20
P - 98-MA	98	19	22.5	85	73	14	19	5	6	16	21.5	40	89	62	21
P-106-MA	106	21	26	96	73	14	19	5	6	16	21.5	40	95	58	29
P-124-MA	124	22	27	101	84	19	24	6	8	21.5	27	50	113	75	30
P-164-MA	164	25	32	130	102	24	*28	8		27	31	50	150	96	42
P-218	218	27	34	163	132	28		8		31		60	204	150	42

Movement distance refers to a distance to move the motor that is required to change speed. If a repeated load (brake, motor, etc.) is imposed, specify the key method.
* The bore of the P-164 for a 2.2 kW motor is a straight type.
For details on motor slide bases, refer to the Motor Slide Bases section.

Driven Side Rotation Speed

(Rotation speed by driven pulley diameter when mounted to a 4-pole motor) 50 Hz,1430 min^{-1} 60 Hz,1720 min^{-1}

Unit [min^{-1}]

Model		4 in.	6 in.	8 in.	10 in.	12 in.	14 in.	16 in.	18 in.
P - 86-MA	50Hz	785 ~ 1180	510 ~ 765	375 ~ 560					
	60Hz	945 ~ 1420	610 ~ 920	450 ~ 675					
P - 98-MA	50Hz	970 ~ 1365	630 ~ 880	460 ~ 650					
	60Hz	1165 ~ 1645	755 ~ 1060	555 ~ 780					
P-106-MA	50Hz		585 ~ 950	425 ~ 690					
	60Hz		705 ~ 1150	510 ~ 830					
P-124-MA	50Hz		760 ~ 1140	560 ~ 840	440 ~ 665				
	60Hz		910 ~ 1370	670 ~ 1010	530 ~ 800				
P-164-MA	50Hz			720 ~ 1120	570 ~ 885	475 ~ 735			
	60Hz			865 ~ 1350	685 ~ 1065	570 ~ 885			
P-218	50Hz				890 ~ 1205	740 ~ 1000	625 ~ 850	545 ~ 740	485 ~ 660
	60Hz				1070 ~ 1445	890 ~ 1205	750 ~ 1020	655 ~ 890	585 ~ 790

How to Place an Order

P-86-MA-11
Size — Bore diameter

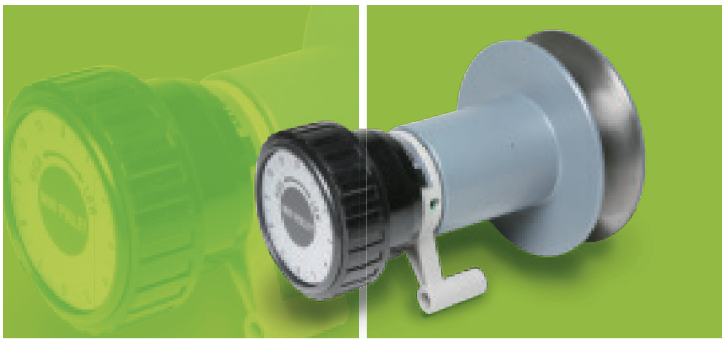
To download CAD data or product catalogs: www.mikipulley.co.jp Web code D021

Stand-alone Belt-type Stepless Speed Changer

AP

Standard applied motor output	0.2 kW to 3.7 kW (4-pole)
Speed change ratio	Approx. 1:1.5
External pulley diameter	86 mm to 218 mm

Speed Change without Changing the Distance between Shafts



- Using a Standard V-Belt
- An Adapter Facilitates Mounting
- Speed Can Be Changed without Changing the Distance between Shafts
- AP Is Used in Combination with P

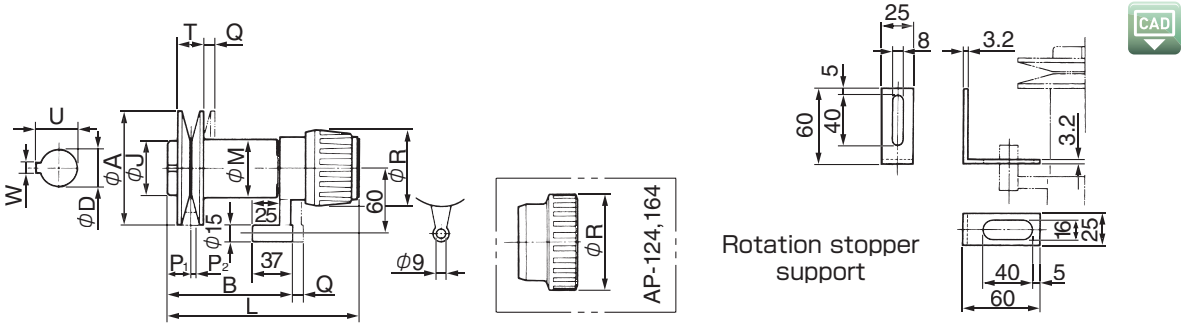
Types of Adapters

Model	ϕ D [mm]	Bore depth [mm]
AP - 86-MA	10 11 12 13 14 15 16	30
AP - 98-MA	11 12 13 14 15 16 18 19	40
AP-124-MA	14 15 16 18 19 20 22 24 25	50
AP-164-MA		50

Specifications

Model	Motor in use	Driven side speed changer	Belt	Speed change ratio	50Hz		60Hz	
					Output rotation speed [min^{-1}]	Output torque [N・m]	Output rotation speed [min^{-1}]	Output torque [N・m]
AP - 86-MA	0.2 kW4P	P-86-MA	A	1:2.2	950 ～ 2150	1.6 ～ 0.7	1140 ～ 2590	1.4 ～ 0.6
	0.2 kW4P	P-98-MA	A	1:2	820 ～ 1720	1.9 ～ 0.9	990 ～ 2060	1.6 ～ 0.8
AP - 98-MA	0.4 kW4P	P-98-MA	A	1:2	1000 ～ 2050	3.1 ～ 1.5	1200 ～ 2460	2.6 ～ 1.3
	0.4 kW4P	P-124-MA	A	1:1.9	890 ～ 1710	3.5 ～ 1.8	1070 ～ 2060	2.9 ～ 1.5
AP-124-MA	0.75kW4P	P-124-MA	B	1:2.2	950 ～ 2150	6.1 ～ 2.7	1140 ～ 2590	5.1 ～ 2.3
	0.75kW4P	P-164-MA	B	1:2	810 ～ 1660	7.2 ～ 3.5	970 ～ 2000	6.0 ～ 2.9
AP-164-MA	1.5 kW4P	P-164-MA	C	1:2.4	920 ～ 2230	12.7 ～ 5.2	1110 ～ 2680	10.5 ～ 4.4
	1.5 kW4P	P-218	C	1:2	680 ～ 1360	17.2 ～ 8.6	810 ～ 1640	14.4 ～ 7.1

Dimensions



(4-pole motor, 50 Hz 1430 min^{-1}, 60 Hz 1720 min^{-1})

Unit [mm]

Model	A	B	J	L	M	P_1	P_2	Q	R	T	D	W	U	max. P.D.	min. P.D.	Mass [kg]
AP - 86-MA	86	93	46	156	54	18	3.5	7	70	18	11	—	—	77	51	1.7
AP - 98-MA	98	103	50	166	54	19	3.5	7	70	20	14	5	16	89	62	1.9
AP-124-MA	124	126	68	196	62	22	5	10	88	24	19	6	21.5	113	75	3.2
AP-164-MA	164	137	68	211	66	25	7	14.5	88	30	24	8	27	150	96	4.8

* Use 1800 min^{-1} or less for the input rotation speed. (The 4-pole motor drive is appropriate)

Belt Number and Distance between Shafts

Model	Driven side speed changer	Belt number	Belt number	Belt number	Belt number	Belt number	Belt number
		Distance between shafts [mm]	Distance between shafts [mm]	Distance between shafts [mm]	Distance between shafts [mm]	Distance between shafts [mm]	Distance between shafts [mm]
AP-86-MA	P-86-MA	A-20	A-21	A-22	A-23	A-24	A-25
		153	165	179	191	204	216
AP-86-MA	P-98-MA	A-20	A-21	A-22	A-23	A-24	A-25
		143	155	169	181	194	206
AP-98-MA	P-98-MA	A-21	A-22	A-23	A-24	A-25	A-26
		147	160	172	186	198	211
AP-98-MA	P-124-MA	A-23	A-24	A-25	A-26	A-27	A-28
		163	177	189	202	215	227
AP-124-MA	P-124-MA	B-25	B-26	B-27	B-28	B-29	B-30
		168	181	194	206	220	232
AP-124-MA	P-164-MA	B-28	B-29	B-30	B-31	B-32	B-33
		190	203	216	228	241	254
AP-164-MA	P-164-MA	C-32	C-33	C-34	C-35	C-36	C-37
		211	224	237	249	262	275
AP-164-MA	P-218	C-38	C-39	C-40	C-41	C-42	C-43
		241	254	267	279	293	305

* For details on the travel line, refer to the following page.

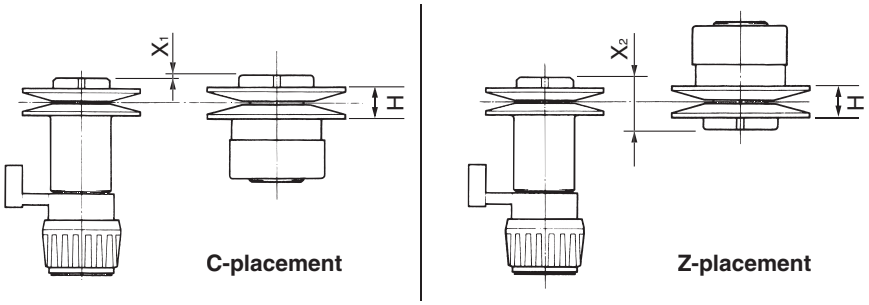
How to Place an Order

AP-86-MA-11

Size — Bore diameter

AP Models

Placement



The belt travel lines X are shown as below.

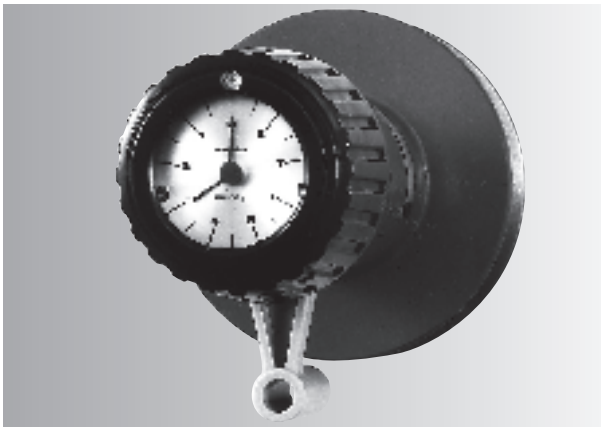
Combination	AP-86-MA P-86-MA	AP-86-MA P-98-MA	AP-98-MA P-98-MA	AP-98-MA P-124-MA	AP-124-MA P-124-MA	AP-124-MA P-164-MA	AP-164-MA P-164-MA	AP-164-MA P-218
H	25	24.5	25	31	34	39.5	44	42.5
C-placement X_1	0	1	0	3	0	3	0	1.5
Z-placement X_2	39.5	40.5	41.5	44.5	49	52	57	58.5

Items Checked for Design Purposes

1. Use the AP model on the drive (motor) side and the P model on the driven side.
2. Use 900 to 1800 min^{-1} for the input rotation speed range.
3. Before mounting the AP model, be sure to lock the rotation stopper rod part of the AP model with the included rotation stopper support.
   If the included rotation stopper support cannot be used, secure the rotation stopper so that it can be slid effortlessly.
4. Avoid a humid or dusty 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 in the atmosphere, and select a well-ventilated place. Mount the device in a location that provides easy access for inspection. The operating ambient temperature range is -10℃ to 40℃ .
5. Securely mount the device to the shaft. When mounting the device to the machine, provide the rotating part with a cover.
6. Do not turn the handle when the speed changer is stopped.
7. If you will use the device for a machine where normal-reverse operation is performed, or a repeated or impact load is imposed, please consult with us.

Options

Handle with Turn Indicator



A rotation speed indicator (SD model) can be mounted in the standard handle part.

Model	Number of handle turns	SD model
AP-86 -MA-□-SD	3.5	SD-53B-5L
AP-98 -MA-□-SD	3.5	
AP-124-MA-□-SD	5	SD-75B-9L
AP-164-MA-□-SD	7	

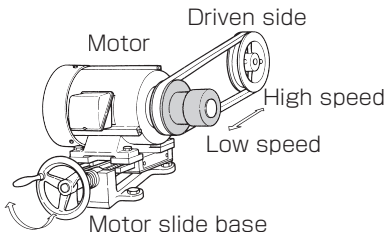
Stand-alone Belt-type Stepless Speed Changer

PL

Standard applied motor output	0.2 kW to 1.5 kW (4-pole)
Speed change ratio	Approx. 1:2
External pulley diameter	116 mm to 212 mm

The Model Designed to Increase the Speed Change Ratio

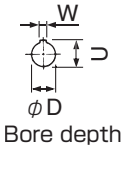
- Using a Standard V-Belt
- Large Speed Change Ratio

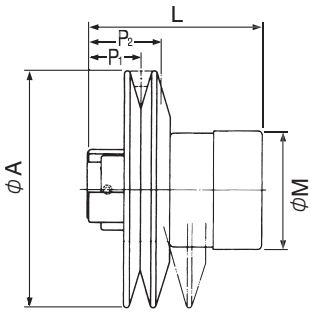


Specifications

Model	Motor in use [kW] (4P)	Speed change ratio	Belt	Transmission capacity [kW]			Mass [kg]
				High speed rotation	Intermediate speed rotation	Low speed rotation	
PL-116-11	0.2	1 : 2.3	M	0.5	0.3	0.2	2.0
PL-140-14N	0.4	1 : 2	A	2.1	1.4	0.6	2.7
PL-170-19N	0.75	1 : 2.1	B	3.6	2.4	1.0	5.5
PL-210-24N	1.5	1 : 2.4	B	5.2	3.1	1.5	7.8

Dimensions





Unit [mm]

Model	A	P_1	P_2	L	M	D	W	U	V	Max. P.D.	Min. P.D.	Movement distance
PL-116-11	116	24	33.5	90	56	11	—	—	40	111	48	49
PL-140-14N	140	28	38	97	84	14	5	16	40	131	65	52
PL-170-19N	170	38.5	52	126	84	19	6	21.5	50	159	74	67
PL-210-24N	212	41	59	148	95	24	8	27	60	201	83	93

* Movement distance refers to a distance to move the motor for changing speed.

How to Place an Order

PL-116-11
Size — Nominal hole diameter

Stand-alone Belt-type Stepless Speed Changer

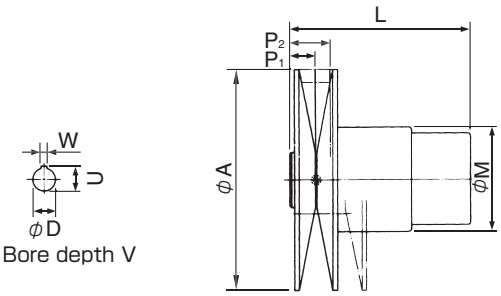
PK

Standard applied motor output	0.2 kW to 11 kW (4-pole) , 11 kW to 18.5 kW (6-pole)
Speed change ratio	Approx. 1:3
External pulley diameter	150 mm to 400 mm

A VARI-DIA Pulley Using a Wide Speed Changer Belt

- Using a Wide Speed Changer Belt
- Large Speed Change Ratio
- Large Transmission Capacity

Dimensions



Unit [mm]

Model	A	P_1	P_2	L	M	D	W	U	V	Max. P.D.	Min. P.D.	Movement distance
PK-150-14N-044	150	19	28.5	120	81	14	5	16	30	144	48	75
PK-200-19N-074	200	23	35.5	160	95	19	6	21.5	40	192	64	101
PK-200-24N-154						24	8	27	50			
PK-250-28N-224	250	31	49.5	210	126	28	8	31	60	240	80	126
PK-250-28N-374												
PK-300-38N-554	305	50	76	300	143	38	10	41	80	290	96	152
PK-300-38N-754												
PK-300-42N-1104						42	12	45	110			
PK-355-42N-1106	355	54	81.5	355	214	42	12	45	110	343	137	162
PK-355-48N-1506						48	14	51.5				
PK-400-55N-1806	400	51	77	355	214	55	16	59	110	388	194	152

* Movement distance refers to a distance to move the motor for changing speed.

Specifications

Model	Applied motor [kW]	Speed change ratio	Belt	Transmission capacity [kW]			Mass [kg]
				High speed rotation	Intermediate speed rotation	Low speed rotation	
PK-150-14N-044	0.4 (4P)	1 : 3	1422V	1.5	1.0	0.4	3.2
PK-200-19N-074	0.75 (4P)	1 : 3	1922V	3.7	2.3	0.5	6.2
PK-200-24N-154	1.5 (4P)						
PK-250-28N-224	2.2 (4P)	1 : 3	2926V	8.0	5.2	1.1	13
PK-250-28N-374	3.7 (4P)						
PK-300-38N-554	5.5 (4P)	1 : 3	4430V	13	12	2.5	24
PK-300-38N-754	7.5 (4P)						
PK-300-42N-1104	11 (4P)						
PK-355-42N-1106	11 (6P)	1 : 2.5	4430V	16	11	5.5	58
PK-355-48N-1506	15 (6P)						
PK-400-55N-1806	18.5 (6P)	1 : 2	4430V	18	15	9.8	66

* If you want to use a slide base for the PK-355/400, please consult with us.

Driven Side Rotation Speed (when 1430 min^{-1} (50 Hz) or 1720 min^{-1} (60 Hz) are input with 4-pole motor)

Unit [min^{-1}]

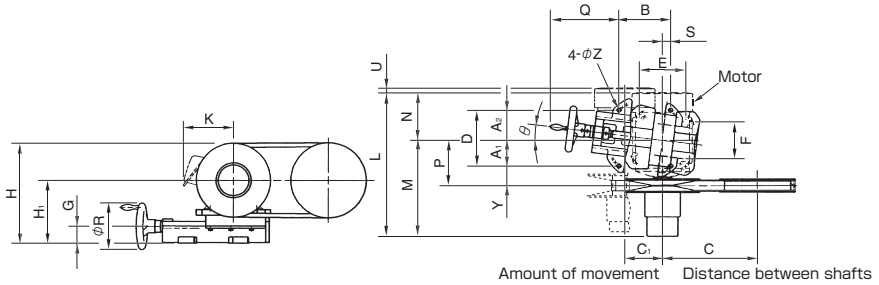
Model \ Driven side pulley diameter		6 in.	8 in.	10 in.	12 in.	14 in.	16 in.	20 in.	24 in.
PK-150	50Hz	470 ~ 1410	350 ~ 1050	280 ~ 840	230 ~ 690				
	60Hz	565 ~ 1700	420 ~ 1260	335 ~ 1010	275 ~ 830				
PK-200	50Hz	640 ~ 1920	470 ~ 1410	380 ~ 1140	310 ~ 930				
	60Hz	765 ~ 2300	565 ~ 1700	460 ~ 1380	375 ~ 1130				
PK-250	50Hz			470 ~ 1410	390 ~ 1170	330 ~ 990	290 ~ 870		
	60Hz			565 ~ 1700	470 ~ 1410	395 ~ 1190	345 ~ 1040		
PK-300	50Hz			580 ~ 1740	470 ~ 1410	400 ~ 1200	350 ~ 1050		
	60Hz			695 ~ 2090	565 ~ 1700	480 ~ 1440	420 ~ 1260		
PK-355*	50Hz				440 ~ 1100	380 ~ 950	330 ~ 825	260 ~ 655	
	60Hz				530 ~ 1325	450 ~ 1130	395 ~ 985	310 ~ 780	
PK-400*	50Hz					530 ~ 1060	470 ~ 940	370 ~ 740	310 ~ 620
	60Hz					635 ~ 1270	565 ~ 1130	445 ~ 890	370 ~ 740

* The values for the model with * mark: When 950 min^{-1} (50 Hz) or 1130 min^{-1} (60 Hz) are input with 6-pole motor.
* For details on the driven side pulley, refer to P471. For the driven side pulley, be sure to use one with the same diameter or larger.

Maintaining a Constant Belt Travel Line

The PK pulley is open at one side. So every time the distance between shafts is increased or decreased to change speed, the belt travel line is moved between P_1 and P_2. However, since this type uses a wide speed changer belt, the travel line must be maintained constant relatively strictly. Therefore, the pulley itself must be moved backward or forward when the distance between shafts is increased or reduced. A motor slide base (RK) is required to do this.

This base can simultaneously increase/decrease the distance between shafts and move the pulley forward/backward. Thus, the belt travel line can always be maintained constant using this base.



Unit [mm]

Model	Applied speed changer	Applied motor	A_1	A_2	B	C_1	D	E	F	G	H	H_1	K	L	M	N	P	Q	R	S	U	Y	Z	θ [°]
RK-05	PK-150-14N-044	0.4kW (4P)	75	85	140	75	160	112	90	20	195	121	127	330	210	116	109	150	125	33	9	34	11	7
RK-20	PK-200-19N-074	0.75kW (4P)	69	81	140	101	150	125	100	45	270	170	135	390	260	130	123	195	125	22	12	54	11	7
	PK-200-24N-154	1.5kW (4P)						140	125		280	180	151	430	279	151	142					73		
RK-50	PK-250-28N-224	2.2kW (4P)	90	110	200	126	200	160	140	50	310	200	162	510	343	167	164	186	140	40	19	74	11	9
	PK-250-28N-374	3.7kW (4P)						190	140		335	212	172	524	350	174	171					81		
RK-100	PK-300-38N-554	5.5kW (4P)	146	174	250	152	320	216	140	60	390	252	206	663	459	204	209	249	200	52	26	63	15	10
	PK-300-38N-754	7.5kW (4P)						216	178		390	252	206	701	478	223	228					82		
RK-200	PK-300-42N-1104	11kW (4P)	146	174	250	152	320	254	210	60	440	280	263	785	513	272	263	249	200	48	27	116	15	10
	PK-355-42N-1106	11kW (6P)						254	254		440	280	263	884	590	294	289					143		

How to Place an Order

PK-150-14N-044
- Size
- Nominally correct motor
- Nominal hole diameter

Stand-alone Belt-type Stepless Speed Changer

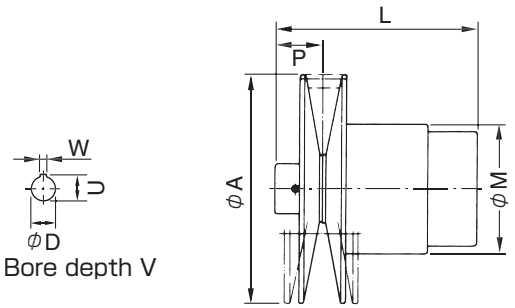
PF

Standard applied motor output	0.4 kW to 3.7 kW (4-pole)
Speed change ratio	1:2.4
External pulley diameter	155 mm to 250 mm

Outstanding Belt Life Span

- Using a Wide Speed Changer Belt
- Open on Both Ends
- Easy Mounting
- The Belt Travel Line Is Always Maintained Constant so the Belt Life Span Is Outstanding.
- Both the Speed Changer and Belt Are Spaciously Designed to Achieve Superior Durability.

Dimensions



Unit [mm]

Model	A	P	L	M	D	U	W	V	Max. P.D.	Min. P.D.	Movement distance
PF-155-14N	155	29	140	94	14	16	5	30	150	62	69
PF-155-19N					19	21.5	6	40			
PF-185-19N	185	38	163	104	19	21.5	6	40	178	74	82
PF-185-24N					24	27	8	50			
PF-216-24N	216	51	203	127	24	27	8	50	208	86	96
PF-216-28N					28	31		60			
PF-250-28N	250	54	252	154	28	31	8	60	241	100	111
PF-250-28N											

* Movement distance refers to a distance to move the motor for changing speed.

Specifications

Model	Applied motor [kW] (4P)	Speed change ratio	Belt	Transmission capacity (kW)			Mass [kg]
				High speed rotation	Intermediate speed rotation	Low speed rotation	
PF-155-14N	0.4	1 : 2.4	1422V	1.6	1.1	0.4	4
PF-155-19N	0.75						
PF-185-19N	0.75	1 : 2.4	1922V	3.6	2.2	0.5	6
PF-185-24N	1.5						
PF-216-24N	1.5	1 : 2.4	2322V	5.2	3.8	1.1	10
PF-216-28N	2.2						
PF-250-28N	2.2	1 : 2.4	2926V	8.0	6.2	2.0	19
PF-250-28N	3.7						

Driven Side Rotation Speed (when 1430 min^{-1} (50 Hz) or 1720 min^{-1} (60 Hz) are input with 4-pole motor), Belt Number and Distance between Shafts

Model	Driven side external pulley diameter	Driven side rotation speed [min^{-1}]	Belt and distance between shafts [mm] (when C = PF model max. P.D.)					
PF-155	6 in.	600 ~ 1440	Belt number	1422V360S	1422V400S	1422V420S	1422V466S	1422V480
		720 ~ 1728	Distance between shafts [mm]	224	276	301	355	376
	8 in.	445 ~ 1060	Belt number	1422V400S	1422V420S	1422V466S	1422V480	1422V540
		535 ~ 1290	Distance between shafts [mm]	234	260	312	334	413
PF-185	8 in.	520 ~ 1285	Belt number	1922V403S	1922V417S	1922V426S	1922V443S	1922V454S
		625 ~ 1545	Distance between shafts [mm]	220	234	245	267	280
	10 in.	415 ~ 1020	Belt number	1922V454S	1922V484S	1922V526S	1922V544	1922V604
		500 ~ 1230	Distance between shafts [mm]	238	277	329	352	430
PF-216	10 in.	495 ~ 1200	Belt number	2322V481	2322V521	2322V541	2322V601S	2322V621
		600 ~ 1440	Distance between shafts [mm]	254	299	329	406	429
	12 in.	415 ~ 1000	Belt number	2322V541	2322V601S	2322V621	2322V661	2322V681
		500 ~ 1205	Distance between shafts [mm]	287	364	387	444	462
PF-250	12 in.	485 ~ 1165	Belt number	2926V574	2926V586	2926V606S	2926V616	2926V636
		580 ~ 1400	Distance between shafts [mm]	303	318	344	366	381
	14 in.	410 ~ 990	Belt number	2926V616	2926V636	2926V646	2926V666	2926V686
		495 ~ 1185	Distance between shafts [mm]	321	336	350	375	401

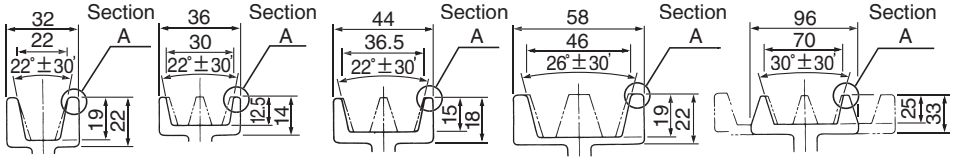
* For the driven side pulley, be sure to use one with the same diameter or larger.

Driven Side Pulley

(V-pulley for a wide speed changer belt)

The cross-sectional shape of the wide speed changer belt is different from that of the standard V-belt. So a commercially available V-pulley cannot be used as is. To use a V-pulley, purchase a JIS standard multi V-pulley and modify it to adjust the V-groove shape to the shape of wide speed changer belt.

Commercially available V-pulleys	Belt size
C type 1 belt	1422V
A type 2 belts	1922V
B type 2 belts	2322V
C type 2 belts	2926V
D type 4 belts	4430V

Belt size	1422V	1922V	2322V	2926V	4430V	
Commercially available V-pulleys	C type 1 belt	A type 2 belts	B type 2 belts	C type 2 belts	D type 4 belts	Surface roughness
Machining drawing						

* For the driven side pulley, purchase a commercially available V-pulley and modify it. The same applies for the driven side pulley of the PK model.

How to Place an Order

PF-155-14N

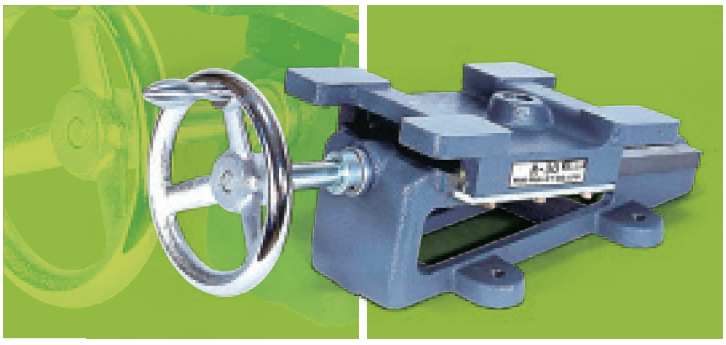
Size — Nominal hole diameter

Motor Slide Bases

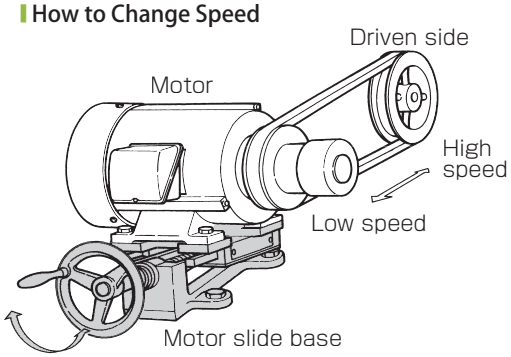
R/RK/RH

Standard applied motor output	0.2 kW to 18.5 kW (4-pole)
Movable distance	0 mm to 200 mm

Motor Slide Base for Easy Speed Change



How to Change Speed



Specifications

Model	Applied motor [kW]	Motor frame number	Movable distance [mm]	Applicable speed changer model				Mass [kg]
				P model	PL model	PK model	PF model	
R-05	0.2 (4-pole)	63	70	P-86	PL-116-11			8.5
	0.4 (4-pole)	71		P-86/P-98/P-106	PL-140-14N		PF-155-14N	
	0.75 (4-pole)	80		P-98/P-106/P-124	PL-170-19N		PF-155-19N/PF-185-19N	
R-20	1.5 (4-pole)	90L	110	P-124/P-164	PL-210-24N		PF-185-24N/PF-216-24N	10.5
R-30	2.2 (4-pole)	100L	140	P-164/P-218			PF-216-28N/PF-250-28N	16
RK-05	0.2 (4-pole)	63	90	P-86	PL-116-11			5.5
	0.4 (4-pole)	71		P-86/P-98/P-106	PL-140-14N	PK-150-14N-044	PF-155-14N	
RK-20	0.75 (4-pole)	80	140	P-98/P-106/P-124	PL-170-19N	PK-200-19N-074	PF-155-19N/PF-185-19N	11
	1.5 (4-pole)	90L		P-124/P-164	PL-210-24N	PK-200-24N-154	PF-185-24N/PF-216-24N	
RK-50	2.2 (4-pole)	100L	160	P-164/P-218		PK-250-28N-224	PF-216-28N/PF-250-28N	18.5
	3.7 (4-pole)	112M		P-218		PK-250-28N-374	PF-250-28N	
RK-100	5.5 (4-pole)	132S	200			PK-300-38N-554		40
	7.5 (4-pole)	132M				PK-300-38N-754		
RK-200	11 (4-pole)	160M	200			PK-300-42N-1104		43
	11 (6-pole)	160L				PK-355-42N-1106		
	15 (4-pole)	160L						
	18.5 (4-pole)*	160L						
RH-50	3.7 (4-pole)	112M	170	P-218			PF-250-28N	25
	5.5 (4-pole)	132S						

* The 18.5-kW (4-pole) motor of the RK-200 is supposed to use a drip proof frame number 160L.

How to Place an Order

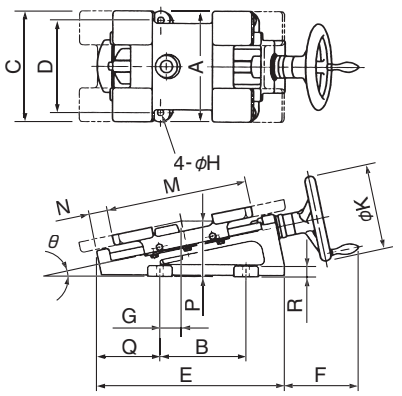
R-05 (Model: R, Size: 05)

RK-05 (Model: RK, Size: 05)

RH-50 (Model: RH, Size: 50)

Dimensions

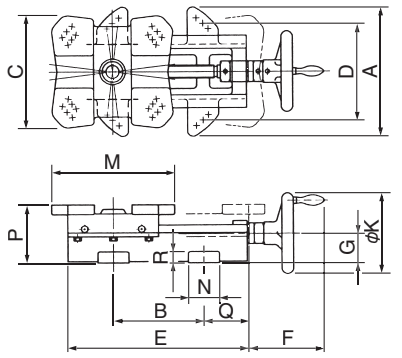
■ R-□



Unit [mm]

Model	A	B	C	D	E	F	G	H	K	M	N	P	Q	R	θ [°]
R-05	145	120	130	115	245	100	15	10.5	125	180	27	86	92	16	12
R-20	180	140	180	150	305	120	35	10.5	140	230	30	90	102	17	12
R-30	200	160	190	160	365	200	42	13	160	270	42	114	123	17	12

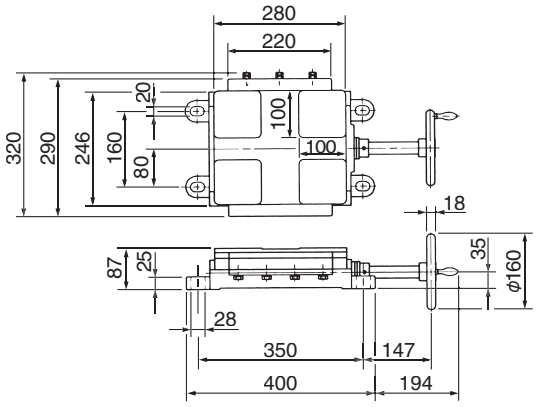
■ RK-□



Unit [mm]

Model	A	B	C	D	E	F	G	K	M	N	P	Q	R
RK-05	200	140	131	160	222	110	20	125	153	40	50	42	10
RK-20	200	140	175	150	280	122	45	125	190	48	90	70	17
RK-50	260	200	210	200	320	128	50	140	250	60	100	60	17
RK-100	390	250	252	320	450	150	60	200	283	90	120	100	20
RK-200	390	250	350	320	450	150	60	200	350	90	120	100	20

■ RH-50



Unit [mm]

How to mount the motor to the slide base

* Determine the position to mount the motor and create tapped (threaded) holes on the slide base.
* Secure the legs of the motor with bolts. Mount the speed changer to the motor shaft.

P/AP/PL/PK/PF/R/RK/RH Models

Items Checked for Design Purposes

Design Capacity

The design capacity can be calculated with the following expression. For the torque constant, however, obtain the capacity for the maximum and minimum rotation of the driven shaft.

$Prd = Pr \times F$

Prd: Design capacity [kW]
F: Correction factor based on load characteristic
Pr: Transmission capacity [kW]

■ Correction factor based on the load characteristic: F

Load characteristic	Operating time per day		
	8 hours	16 hours	24 hours
Light load (When the load is constant, the rated capacity is not exceeded, and the number of starts and stops is small)	1.0	1.1	1.2
Medium load (the maximum load is 125% or less)	1.2	1.3	1.4
Heavy load (the maximum load is 150% or less)	1.3	1.4	1.5

Relational expression for the torque capacity

$$T\,[N \cdot m] = 9550 \times \frac{P}{N}$$

T: Transmission torque [N・m]
P: Transmission capacity [kW]
N: Rotation speed [min^{-1}]

Input Shaft Rotation Speed

The speed change pulley is designed to be normally mounted to a 4-pole motor, so make sure at the design phase that the belt's peripheral speed does not exceed 25 m/sec at the maximum rotation speed.
Furthermore, the speed change pulley is designed to use the belt's low speed limit. If it is used at a lower rotation speed than the rated one, the belt's life span may be adversely affected.
In addition, the more the rotation speed decreases, the slower the speed change operation becomes. Therefore, the standard minimum rotation speed is about 500 min^{-1}.

Calculation of the belt's peripheral speed

$$V = \frac{\pi \times D \times N}{60 \times 1000}$$

V: Belt's peripheral speed [m/sec]
D: Pulley's pitch diameter [mm]
N: Rotation speed [min^{-1}]

How to Obtain the Driven Shaft's Rotation Speed

Your desired rotation speed range can be obtained by selecting an appropriate driven pulley for the speed change pulley. The appropriate pitch diameter range that can be selected for the driven pulley is from the same diameter as the maximum pitch diameter (max. P.D) of the speed change pulley to around twice of it. Obtain the rotation speed of the driven shaft with the following expression.

$$N_{max} = \frac{d_{max} \times n}{D}$$ ····· maximum rotation speed [min^{-1}]

$$N_{min} = \frac{d_{min} \times n}{D} \text{ or } \frac{N_{max}}{\alpha}$$ ····· minimum rotation speed [min^{-1}]

n: Speed change pulley's rotation speed [min^{-1}]
d_{max}: Speed change pulley's maximum pitch diameter [mm]
d_{min}: Speed change pulley's minimum pitch diameter [mm]
α: Speed change pulley's speed change ratio
D: Driven pulley's pitch diameter [mm]

Selecting the Belt Size

Selecting the type

Consider the design capacity and the maximum and minimum rotation speed of the driven shaft.
If there are two candidate types, make a design based on the two types, and select the one that matches the design purpose.

Trial calculation of the distance between shafts (guide)

To place a speed change pulley, you must determine the distance between shafts. It varies depending on the diameter of the driven pulley, the length of the available belt, the space of the machine and equipment, etc. A trial calculation must be performed according to these conditions.

The standard distance between shafts can be calculated with the following expression.

Shortest distance between shafts $C_{min} = \frac{(D_1 + D_2)}{2} + 50$ [mm]

Longest distance between shafts $C_{max} = 1.5\,(D_1 + D_2)$ [mm]

D_1: Speed change pulley's external diameter [mm]
D_2: Driven pulley's external diameter [mm]

How to obtain the belt length

When the driven pulley and guide distance between shafts (C) are calculated, calculate the belt length (L) with the following expression.

$$L = 2C + \frac{\pi}{2}(D + d_{min}) + \frac{(D - d_{min})^2}{4C}$$

L: Belt's pitch perimeter [mm]
d_{min}: Speed change pulley's minimum pitch diameter [mm]
D: Driven pulley's pitch diameter [mm]

Based on the obtained L, select one with the appropriate length.

■ How to obtain the distance between shafts

Obtain the actual distance between shafts (C) from the selected belt. Calculate it with the following expression.

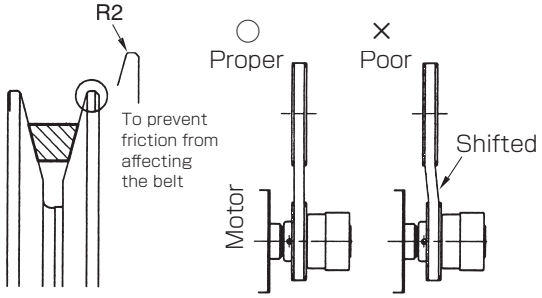
$$C = \frac{b + \sqrt{b^2 - 8\,(D - d_{min})^2}}{8}$$ However, $b = 2L - \pi\,(D + d_{min})$

d_{min}: Speed change pulley's minimum pitch diameter [mm]
D: Driven pulley's pitch diameter [mm]

Note that this distance between shafts is one when the speed change pulley is farthest away from the driven shaft. When speed is changed, the distance between shafts is decreased accordingly. Take this into consideration when you determine the mounting space.

Other Precautions

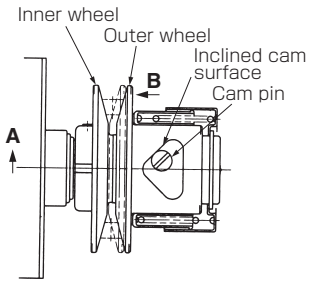
1. Avoid a humid or dusty place, a place where the ambient temperature is high, a place exposed to water or oil, and a place where corrosive and flammable gases are present in the atmosphere, and select a well-ventilated place. Mount the device in a location that provides easy access for inspection. The operating ambient temperature range is -10℃ to 40℃ .
2. When mounting the speed changer, make sure the parallelism and perpendicularity of the travel line of the belt and two shafts are correct. Attention needs to be paid, in particular, to a wide speed changer belt.
3. When mounting the device to the machine, provide the rotating part with a cover.
4. Select a stable mounting base to make sure it does not vibrate. 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.
5. When using a motor with a slide base, provide a stopper for the slide base to make sure the belt is not detached or does not become too tight.
6. If you will use the device for a machine where normal-reverse operation is performed, or a repeated or impact load is applied, please consult with us.
7. Chamfer the V-groove of the driven pulley about R2 as shown in the figure below to increase the durability of the belt.



■ Cam mechanism

The outer wheel (moving wheel) of the speed change pulley is pushed by a spring. However, if the load changes, the tension of the V-belt changes, so the spring is pushed back and the belt moves to the inside, resulting in non-uniform rotation. The P model has a cam mechanism to prevent such non-uniform rotation.

As shown in the figure below, when the motor shaft rotates in the direction of arrow A, the cam pin attached to the main body rotates the outer wheel through the inclined surface of the cam. Accordingly, a force indicated by arrow B increases in proportion to an increase in the load applied to the V-belt and pushes the V-belt out as shown by the virtual line and increases the speed. When a load is not applied, the V-belt is loose and does not apply excessive force to the bearing or other parts. When a load is applied, the V-belt becomes moderately tight and the speed is increased to prevent a slip on the V-pulley and compensates for a decrease in the rotation speed of the motor. Thus, the rotation of the driven shaft can be maintained constant.



■ Key method with no cam mechanism

A key method is available for applications where an impact load is applied, normal-reverse operation is performed repeatedly, or the device is mounted to the brake motor. For this type, the inner and outer wheels are linked with a sliding key instead of a cam pin, and a strong spring appropriate to the belt's transmission capacity is used. Even if an impact load is applied, it is absorbed by the belt and spring, so excessive force is not applied to the machine.

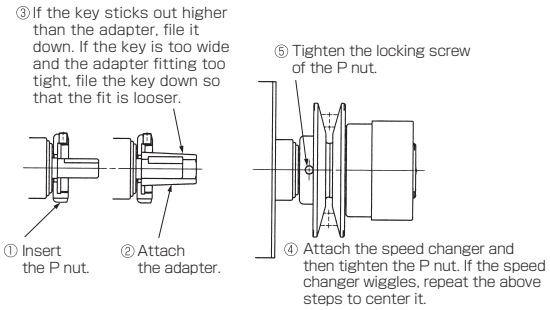
How to Mount to the Motor Shaft

■ Adapter method

Models using the adapter method (all types of the P and AP model) use a tapered sleeve (adapter) for mounting the device to motors or other shafts in order to avoid a shock to the speed changer main body.

Insert the adapter into the tapered hole of the inner wheel and tighten the nut (P nut) to push the adapter in to secure it to the shaft with a wedge effect.

Follow the following procedure to mount the device to the motor shaft.



■ Straight method

All types of the PL, PK, and PF models use a straight method. The mounting holes are straight. The device is connected to the motor or other shafts with a standard key and set screws.

When mounting the device, first place the V-belt to the V-groove of the speed change pulley to protect the pulley in order not to give a shock to the speed changer main body, and then apply the device to the pulley shaft end and gently hammer it in place. Firmly tighten the two set screws at two points, one on the keyway and the other one at a right angle to it.

There is a type where the set screws are not visible from the outside. They can be seen by opening the pulley using the belt.

Operation and Run

1. Do not perform speed changing operation when the speed change pulley is stopped.
2. For the rotation direction, you can use any direction.
3. Before changing between the normal and reverse directions, make sure the speed changer is stopped. (Do not do this with the P and PL models.)
4. For the P, PL, PK, and PF models that change speed by changing the distance between shafts, moving the motor closer to the machine increases the speed and moving it away from the motor decreases the speed.
5. Use a motor slide base (R or RK model) also to change the distance between shafts.
6. Place a stopper to the motor slide base to prevent the belt from becoming too tight or coming out of the pulley at a low or high speed.
7. If have not used the device for a long period of time, check the pulley surface for rust and check the belt.
8. Apply oil to the device at regular intervals (once every 1 to 6 months), and change the speed from high to low several times once a week to prevent the oil film in the sliding portion of the pulley from breaking down.
9. Check the belt to make sure there is no unusual wear.
10. A strong spring is installed in the speed change pulley. Never disassemble it because doing so is dangerous.

Stand-alone Belt-type Stepless Speed Changer

L

Speed Is Changed by Operating the Lever

Transmission capacity	0.2 kW to 2.2 kW
Speed change ratio	1:2 to 1:6
External pulley diameter	103 mm to 260 mm

Speed Changer with Lever

Speed can be changed quickly by changing the lever angle.

How to Place an Order

LA-100
Model — Size

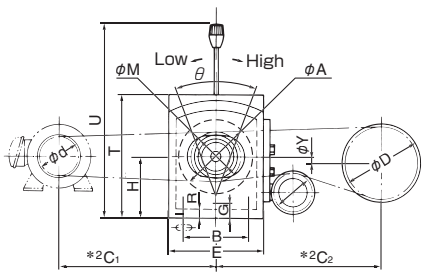
Specifications

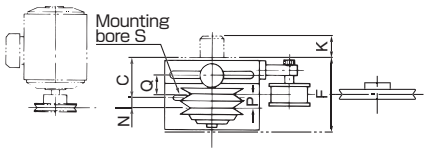
Model			LA-100			LB-140			LB-160						LC-210			LC-260					
Belt in use			A belt x1												B belt x1						C belt x1		
Speed change ratio			1 : 2			1 : 4			1:4			1:2			1:4			1 : 4			1 : 2		
Transmission capacity [kW]			0.2			0.2 ~ 0.4			0.4 ~ 0.75						0.75			1.5 ~ 2.2					
Driven shaft rotation speed			Max.	Intermediate	Min.	Max.	Intermediate	Min.	Max.	Intermediate	Min.	Max.	Intermediate	Min.	Max.	Intermediate	Min.	Max.	Intermediate	Min.	Max.	Intermediate	Min.
Transmission capacity [kW]	Motor pulley's external diameter [in.]	2	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18												
		2 1/2	0.3	0.3	0.26	0.3	0.3	0.18	0.3	0.3	0.18												
		3	0.38	0.38	0.3	0.37	0.37	0.22	0.37	0.37	0.22												
		3 1/2				0.45	0.67	0.26	0.52	0.67	0.26	0.52	0.52	0.52	0.52	0.52	0.45	0.52	0.52	0.52			
		4				0.52	0.9	0.3	0.6	0.9	0.3	0.9	0.9	0.67	0.67	0.67	0.45	0.67	0.67	0.67			
		4 1/2				0.6	1.05	0.33	0.67	1.12	0.33	1.05	1.05	0.75	0.97	1.05	0.45	1.05	1.05	0.75			
		5							0.75	1.27	0.37	1.12	1.42	0.75	1.12	1.42	0.52	1.42	1.42	0.82	1.35	1.35	1.35
		5 1/2							0.82	1.35	0.41	1.27	1.57	0.9	1.2	1.8	0.6	1.8	1.8	0.9			
		6							0.9	1.42	0.45	1.35	1.65	0.9	1.27	2.25	0.67	1.95	2.25	0.97	2.25	2.25	2.25
		6 1/2													1.35	2.4	0.67	2.1	2.62	1.05			
		7													1.5	2.47	0.75	2.25	3.0	1.12	3.37	3.37	2.4
		8																			3.52	3.52	2.47
Mass [kg]			3.9			7.6			15						21			37					

* The speed change ratio for the LK-110 (mass of 4 kg) with a transmission capacity of 0.1 kw using M belt is 1:5.

Dimensions

CAD





Unit [mm]

Model	A	B	C	E	F	G	H	N	P	Q	R	S	T	U	M	K	θ [°]
LK-110	116	105	58	165	125	24	105	29	23	25	18	11 × 30	200	327	80	24	32
LA-100	103	105	58	165	120	24	104	23	19	25	18	11 × 30	200	327	79	—	16
*1LB-140	140	120	75	185	140	27	118	19	25	42	20	11 × 28	235	356	98.5	—	33
*1LB-160	170	140	87	222	153	33	138	25	29	54	21	11 × 40	260	440	116/127	—	35/19
*1LC-210	212	155	104	262	191	42	162	20	37	67	28	14 × 56	290	472	142	—	39
*1LC-260	260	218	121	320	236	42	197	27	43	84	28	19 × 67	380	531	174/188	—	37/21

* Models indicated by *1 include a tension pulley (J= φ 70).
* Calculate C_1 and C_2 indicated by *2 by reference to Items Checked for Design Purposes.
* M: Medium pitch diameter

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Stand-alone Belt-type Stepless Speed Changer

U

Speed Is Changed by Operating the Handle

Transmission capacity	0.2 kW to 2.2 kW
Speed change ratio	1:2 to 1:6
External pulley diameter	103 mm to 260 mm

Speed Changer with Handle

The speed change ratio is large and the belt travel line is maintained constant.

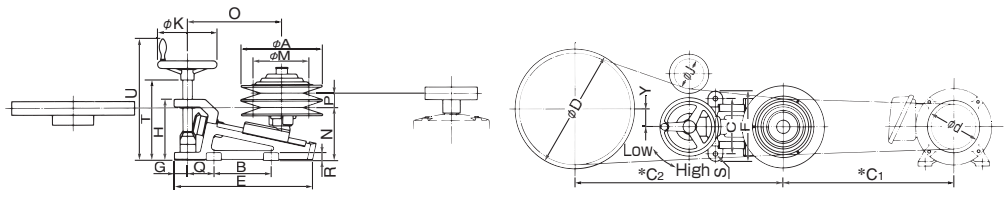
How to Place an Order

UB-160
Model — Size

Specifications

Model			UB-160						UC-210			UC-260					
Belt in use			A belt x1			B belt x1			B belt x1			B belt x1			C belt x1		
Speed change ratio			1 : 5			1 : 3			1 : 6			1:6			1 : 3		
Transmission capacity [kW]			0.4 ~ 0.75						0.75			1.5 ~ 2.2					
Driven shaft rotation speed			Max.	Intermediate	Min.	Max.	Intermediate	Min.	Max.	Intermediate	Min.	Max.	Intermediate	Min.	Max.	Intermediate	Min.
Transmission capacity [kW]	Motor pulley's external diameter [in.]	3 1/2	0.45	0.67	0.2	0.52	0.52	0.52	0.52	0.52	0.3	0.52	0.52	0.45			
		4	0.52	0.9	0.26	0.67	0.67	0.52	0.67	0.67	0.33	0.67	0.67	0.48			
		4 1/2	0.6	1.12	0.3	0.9	1.05	0.56	0.82	1.05	0.37	1.05	1.05	0.56			
		5	0.67	1.27	0.33	0.97	1.42	0.6	0.9	1.42	0.41	1.27	1.42	0.63	1.35	1.35	1.35
		5 1/2	0.75	1.37	0.37	1.05	1.57	0.63	0.97	1.8	0.45	1.42	1.8	0.71			
		6	0.82	1.42	0.37	1.2	1.65	0.67	1.05	2.25	0.52	1.5	2.25	0.75	2.25	3.0	1.35
		6 1/2							1.2	2.4	0.6	1.6	2.62	0.82			
		7							1.35	2.47	0.67	1.8	3.0	0.9	2.4	3.37	1.42
		8													2.55	4.5	1.5
Mass [kg]			14			14			20			34			34		

Dimensions



Unit [mm]

Model	A	B	C	E	F	G	H	J	K	N	P	Q	R	S	T	U	M	O	Number of handle turns	Movement distance
UB-160	170	120	115	295	145	30	125	70	125	108	29	56	15	11.5	175	270	116 127	190	24 17	75 53
UC-210	212	140	150	350	180	30	140	70	140	118	37	85	16	11.5	202	298	142	225	30	92
UC-260	260	160	160	415	200	30	157	70	160	154	43	107	17	14	246	363	174 188	250	37 29	116 82

* Calculate C_1 and C_2 indicated by * by reference to Items Checked for Design Purposes.
* M: Medium pitch diameter

Stand-alone Belt-type Stepless Speed Changer

T

Transmission capacity	0.2 kW to 2.2 kW
Speed change ratio	1:2 to 1:6
External pulley diameter	103 mm to 260 mm

Speed Can Be Changed Freely

Speed Can Be Changed Freely

This speed changer can be incorporated into a machine and used as part of the equipment.

How to Place an Order

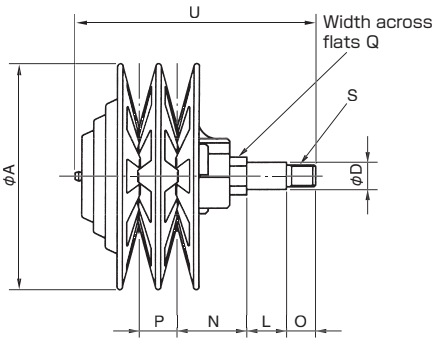
T-100
Size

Specifications

Model	Transmission capacity [kW]	Belt	Speed change ratio	Mass [kg]
T-100	0.2	A	1 : 2	1.8
T-140	0.2	A	1 : 4	3.1
T-160	0.4	A	1 : 5	5.2
	0.75	B	1 : 3	
T-210	0.75	B	1 : 6	9.3
T-260	1.5	B	1 : 6	18
	2.2	C	1 : 3	

* The T model is an intermediate wheel pulley to be incorporated into equipment. It is not for the maintenance of the L and U models.
This product requires a moving device. Please contact with us for details.

Dimensions



Unit [mm]

Model	A	P	N	L	O	U	D	S	Q	Min.P.D.	Mid.P.D.	Max.P.D.
T-100	103	19	40	25	15	135	16	M12	19	64	79	94
T-140	140	25	43	25	15	145	16	M12	19	60	98.5	131
T-160	170	29	53	30	22	185	20	M16	24	71 95	116 127	161 159
T-210	212	37	62	40	22	215	26	M20	30	84	142	201
T-260	260	43	85	50	27	275	32	M20	36	99 131	174 188	249 246

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L/U/T Models

Items Checked for Design Purposes

Speed Change Ratio

You need to consider various conditions to select the best model, and one of them is the speed change ratio.
That change ratio is expressed as how many times faster the maximum output side rotation speed is relative to the minimum rotation speed.
For example, when the minimum and maximum rotation speeds are 500 and 2,000 min^{-1} respectively, the speed change ratio is 1:4.
The speed change ratio of a speed change pulley can be calculated as: $(\text{max. P.D}/\text{min. P.D})^2$.

How to Calculate the Rotation Speed

You can set various driven-side rotation speeds for a speed change pulley by selecting suitable pitch diameters for the motor pulley and driven-side pulley.
Select a motor pulley with a rated size suited to your operating conditions from the table showing the transmission capacity of each model.
The driven-side rotation speed can be obtained based on the pitch diameter, but a simpler method is given below.
First, select the motor pulley diameter (d) and driven pulley diameter (D) without considering the speed change ratio.
This gives you the center rotation speed.

$$\text{Motor rotation} \times \frac{d}{D} = \text{center rotation speed}$$

If the speed change ratio is i,
the minimum rotation speed is (center rotation speed x $1/\sqrt{i}$),
the maximum rotation speed is (center rotation speed x $\sqrt{i}$).
When selecting a V-pulley, you are recommended to use one of a commercially available size. A table for quickly obtaining the center rotation speed is available on the next page. If you need a very low rotation speed, consider placing the speed reducer after the speed change pulley.

Appropriate Distance between Shafts

The speed change pulley must be moved by a large amount between the fixed motor and machine to change the speed, and since the speed change ratio is large, the movement amount is large and the winding angle also changes, so the belt travel line is displaced to a certain degree. Select as large a distance between shafts as possible to reduce the adverse influence on the belt life span. Relational expressions for the appropriate distance between shafts are defined as follow. Calculate the distance between shafts using these relational expressions.

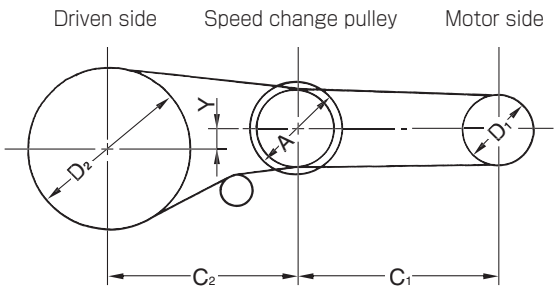
Distance between motor shaft and speed change pulley shaft (C_1)

$C_1 > 2 \times A$, where A indicates the speed change pulley's external diameter.

Distance between speed change pulley shaft and driven shaft (C_2)

$C_2 > A + D_2$, where D_2 indicates the driven pulley's external diameter.

Make sure the centers of the motor shaft, speed change pulley shaft, and driven shaft are aligned on a straight line. If the driven pulley's external diameter is larger than the speed change pulley's external diameter, displace the center of the driven pulley by Y (=1/3x(D_2 - A)).



Belt Length

When the appropriate distance between shafts is determined, calculate the length of the belts with the expressions below using the data you obtained previously: the motor pulley's pitch diameter (D_1), driven pulley's pitch diameter (D_2), and speed change pulley's medium pitch diameter (M in the specifications table = pitch diameter when 2 belts are placed around the same diameter). Select a belt that is slightly longer because heat may be generated if the belt is too tight.

Motor side belt length

$$L_1 = 2C_1 + \frac{\pi}{2}(M + D_1) + \frac{(M - D_1)^2}{4C_1}$$

Driven side belt length

$$L_1 = 2C_2 + \frac{\pi}{2}(M + D_2) + \frac{(M - D_2)^2}{4C_2}$$

In general, when the belt speed is increased with belt transmission systems, in other words, when the external diameter of the motor pulley is increased, the transmission power can be increased accordingly. But you must be aware of the fact that when the rotation speed of machines is increased, the used capacity is also increased accordingly. Pay attention to this fact when you select a speed changer and V-pulley.

How to Increase the Life Span of the Speed Changer

The speed changer needs to be oiled. Apply oil to the speed changer at regular intervals (once every 1 to 6 months), and change the speed from high to low several times once a week to prevent the oil film in the sliding portion of the pulley from breaking down.

Other Check Points

- Select a motor pulley that will result in the rotation speed of the speed changer being within 2000 min^{-1}.
- The speed changer can be mounted in any position, vertically, laterally, and horizontally.
- The tension pulley can be mounted on any side, but in principle, it is mounted on the slack side of the V-belt.
- The speed cannot be changed when the speed changer is stopped.
- Chamfer the V-groove of the V-pulley about R2 to increase the durability of the belt.

L/U/T Models

Items Checked for Design Purposes

Table for Quickly Obtaining Center Rotation Speed

Motor side V-pulley's external diameter (in.) — Motor 1720 min^{-1} (60 Hz)

Driven side V-pulley's external diameter (in.)

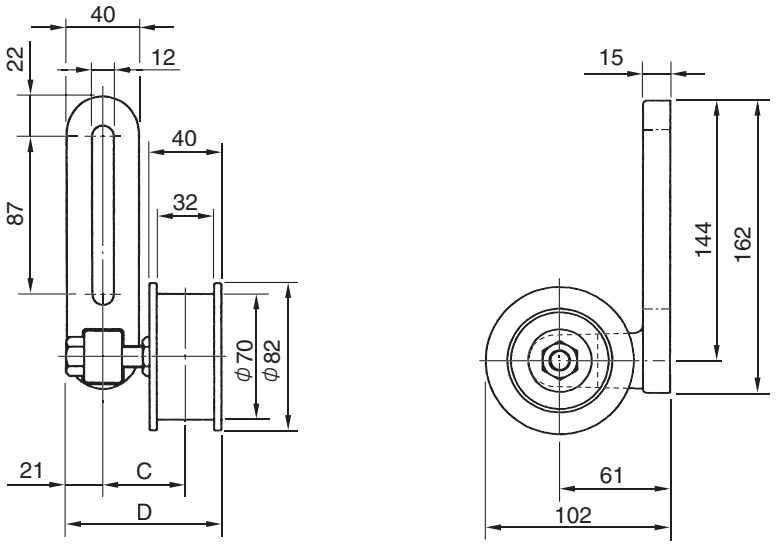
Driven side V-pulley's external diameter (in.)	Motor side V-pulley's external diameter (in.)																												Driven side V-pulley's external diameter (in.)
2	1430						20	18	16	15	14	13	12	11	10	9	8	7	6½	6	5½	5	4½	4	3½	3	2½	2	
2½	1097	1430					1429	1283	1137	1065	992	937	848	774	702	630	557	483	447	411	375	337	301	265	229	193	157	120	24
3	890	1160	1430				1562	1402	1244	1164	1085	1005	925	846	767	686	607	528	489	449	409	370	330	289	249	210	170	131	22
3½	748	975	1203	1430			1720	1545	1371	1288	1195	1108	1020	931	845	757	669	581	538	494	451	406	363	320	279	232	189	145	20
4	645	842	1038	1234	1430			1720	1526	1428	1330	1233	1135	1037	941	843	745	648	599	554	502	452	404	356	306	258	209	160	18
4½	568	738	912	1085	1257	1430			1720	1610	1500	1390	1280	1170	1061	951	841	731	676	623	566	511	456	401	346	291	240	181	16
5	506	661	814	968	1123	1276	1430			1720	1603	1485	1367	1250	1135	1015	899	781	722	662	604	545	487	428	370	311	256	193	15
5½	458	596	735	874	1012	1153	1291	1430			1720	1594	1467	1342	1216	1091	963	838	774	712	648	585	523	459	397	334	272	208	14
6	416	543	670	797	923	1070	1177	1303	1430			1720	1584	1467	1312	1176	1040	905	836	767	700	632	564	495	428	360	290	224	13
6½	383	499	615	732	848	965	1081	1197	1314	1430			1720	1572	1448	1276	1237	982	908	836	759	686	612	538	464	390	317	243	12
7	355	462	569	676	785	892	1000	1108	1216	1323	1430			1720	1558	1397	1276	1073	992	912	831	750	670	588	507	428	347	267	11
8	308	402	495	588	682	775	869	962	1055	1150	1243	1430			1720	1541	1397	1185	1095	1006	917	829	740	650	561	471	382	294	10
9	272	355	438	521	604	686	768	853	934	1017	1100	1264	1430			1720	1521	1323	1223	1123	1022	924	820	726	626	526	427	327	9
10	245	318	392	466	541	615	689	763	837	911	985	1134	1280	1430			1720	1495	1383	1269	1158	1045	932	820	707	595	483	370	8
11	222	289	356	422	489	556	624	691	758	825	892	1028	1162	1296	1430			1720	1591	1462	1331	1262	1073	944	814	685	556	427	7
12	202	263	325	386	448	509	571	632	693	755	817	940	1061	1184	1307	1430			1720	1581	1440	1300	1161	1020	881	740	600	461	6½
13	186	243	299	356	410	469	525	582	633	695	752	865	978	1091	1204	1317	1430			1720	1570	1416	1263	1120	958	807	660	501	6
14	173	225	277	330	382	435	486	539	592	644	696	801	907	1011	1115	1220	1325	1430			1720	1553	1386	1219	1051	884	724	550	5½
15	160	210	259	308	356	405	458	502	551	601	649	747	844	942	1040	1137	1234	1339	1430			1720	1534	1350	1164	979	795	609	5
16	150	196	242	287	333	379	425	470	516	562	608	699	791	882	972	1064	1155	1247	1339	1430			1720	1512	1306	1097	893	683	4½
18	133	175	215	255	296	336	376	417	461	498	539	619	701	782	862	944	1025	1105	1187	1268	1430			1720	1484	1249	1012	776	4
20	120	156	193	229	266	302	338	375	410	448	483	556	629	702	774	848	921	994	1065	1140	1284	1430			1720	1447	1173	900	3½
22	109	142	175	207	240	275	308	340	373	406	439	505	571	638	704	769	835	901	968	1034	1166	1298				1720	1395	1070	3
24	100	130	160	190	220	250	280	311	342	372	402	463	523	583	644	705	765	825	885	947	1067	1188					1720	1319	2½
	2	2½	3	3½	4	4½	5	5½	6	6½	7	8	9	10	11	12	13	14	15	16	18	20						1720	2

Motor side V-pulley's external diameter (in.) — Motor 1430 min^{-1} (50 Hz)

Calculations on this table are based on the A-type belt. There is an error for the B-type and C-type belts. When using a B-type of 4-inch or more or a C-type belt of 7-inch or more, the error is about 2%, which is tolerable for practical use.

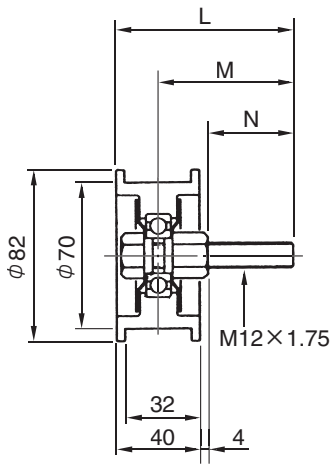
Options

Tension Pulley Set (Tension assembly)



Tension pulley set model	C	D	Applied speed changer model	Used tension pulley part model
Tension assembly L, small	46	87	LB-140,160	TP-1-A
Tension assembly L, large	61	102	LC-210,260	TP-1-B

Tension Pulley Part

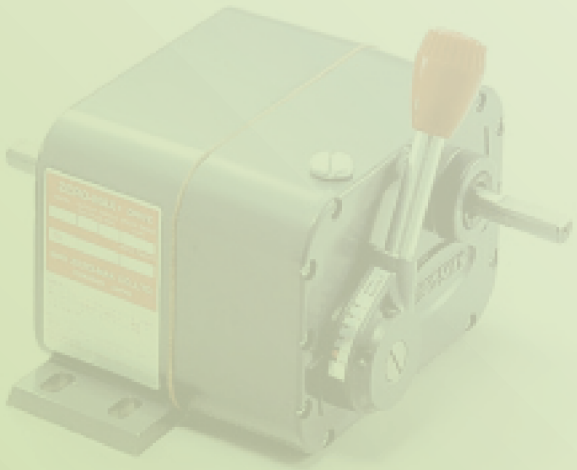


Tension pulley part model	L	M	N
TP-1-A	85	65	41
TP-1-B	102	82	58

ZERO-MAX (STEPLESS SPEED CHANGERS)

S

MS



S/MS Models

Product Models

Stand-alone Zero-Max

S

Output shaft torque
1.38 to 14.0 N·m

Zero-Max with Motor

MS

Output shaft torque
1.38 to 6.90 N·m

Operating Principles

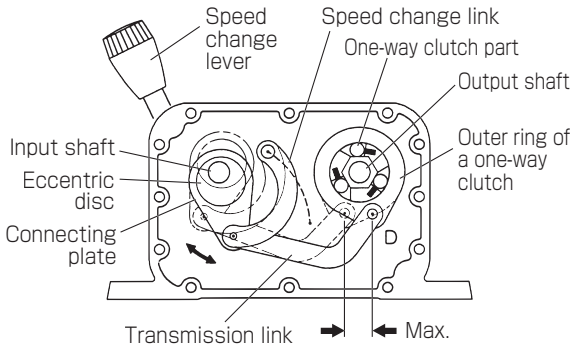
The structure consists of a link mechanism and one-way clutch as shown in the figure on the right, and these are arranged in four rows in the axial direction. An eccentric disc is attached to the input shaft, and the eccentric discs in the rows are arranged on the circumference at an angle of 90° to each other surrounding the input shaft. Thus, the following mechanism is created: the rotational motion of the input shaft is converted once to the reciprocating motion, which then is converted to the rotational motion by each of the one-way clutches of the output shaft part.
The output rotation speed can be changed steplessly by freely changing the amplitude of this reciprocating motion with a speed change lever.

When Rotating at Maximum Speed

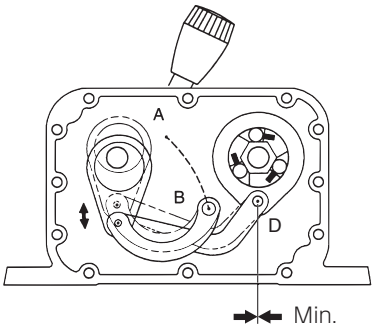
When the input shaft is rotated, the eccentric disc attached to it is rotated around the input shaft. The eccentric disc and connecting plate are fitted together so that they can be rotated freely, thus the oscillating motion is generated around A in the speed change link. The motion in C at this point is transmitted to D by the transmission link, so the oscillating motion is also generated around the outer ring of the one-way clutch. Each of the one-way clutches in the rows converts this oscillating motion to the rotational motion. Thus, the output shaft generates continuous rotational motion.

When Rotating at Minimum Speed

The center of oscillation of the speed change link moves to B in the figure by moving the speed change lever to the zero position. Thus, the direction of the oscillating motion of the speed change link is changed and C moves up and down as shown in the figure. As a result, only a small amount of motion is transmitted to D, so almost no rotational motion is generated around the output shaft.



<When rotating at maximum speed>



<When rotating at minimum speed>

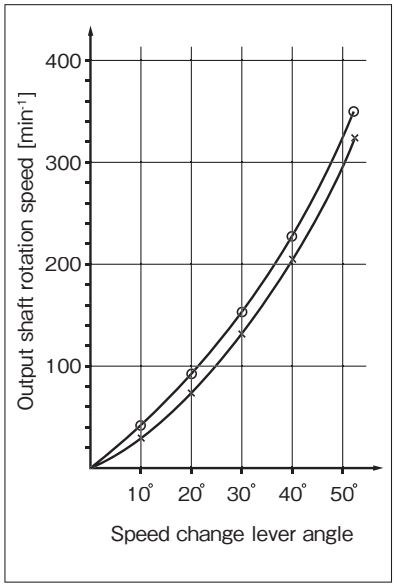
Load Characteristics

The output shaft rotation speed of the Zero-Max changes as shown in the figures below depending on the load torque value. (Input: 1500 min^{-1}, constant)

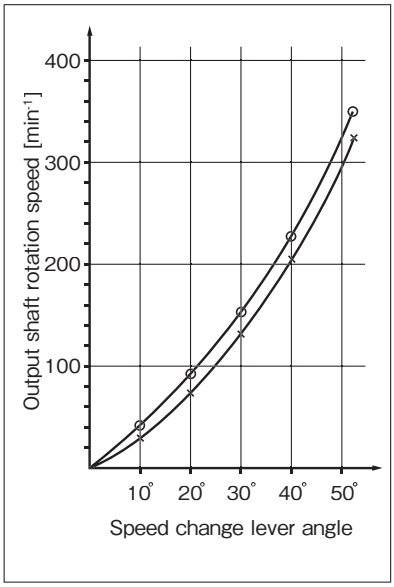
○: No load ×: Rated load

* Rated load means the rated output shaft torque load.
* Values in the figures below are typical characteristic values.

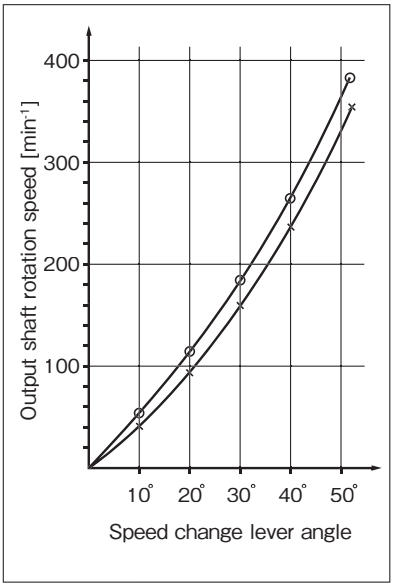
■ E1/E2



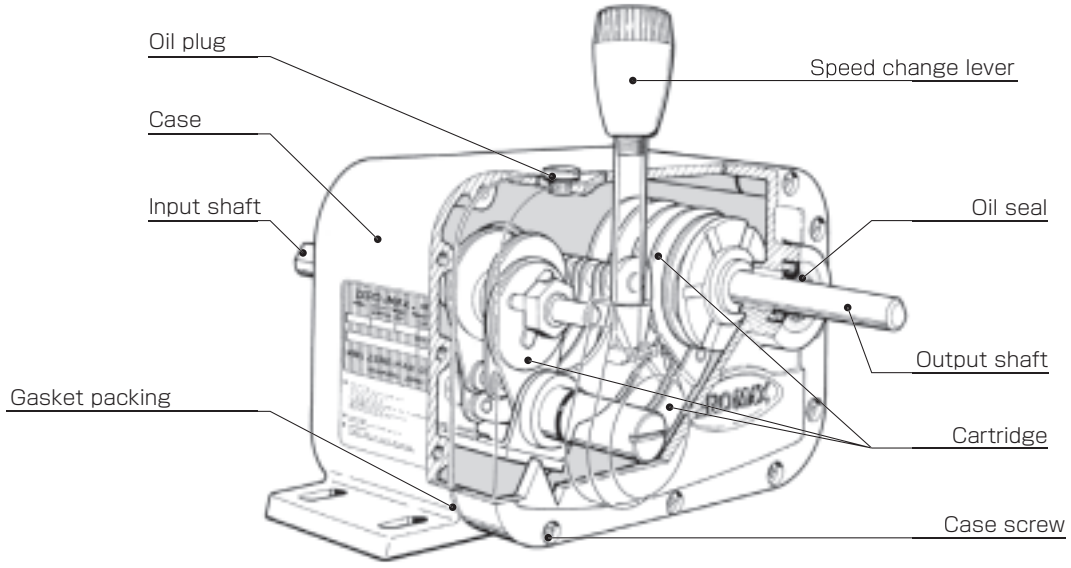
■ JK1/JK2



■ Y1/Y2



Structure



This speed changer is filled with lubricating oil.

Zero-Max (Stepless Speed Changer)

S

Standard applied motor output	0.2 kW to 0.4 kW (4-pole)
Rated output shaft torque	1.38 N • m to 6.90 N • m
Output shaft rotation speed	0 to 300, 315 min^{-1}/50 Hz, 0 to 360, 380 min^{-1}/60 Hz

Speed Can Be Changed Instantaneously from Zero to Maximum Rotation

Easy Speed Changing
The lever can be operated with one hand, and speed can be changed quickly. In addition, speed can be changed, regardless of whether the machine is running or stopped.

Wide Speed Change Range
The speed change ratio for continuous operation is 1:12, and an almost unlimited speed change range can be used for other operations.

Mechanical Auto Control Is Available
A special lever allows you to perform auto control, such as constant tension feed.

Compact Design
It is easy to handle the device because it is very small and light.

Easy Maintenance
Routine maintenance is easy.

Stepless Speed Change

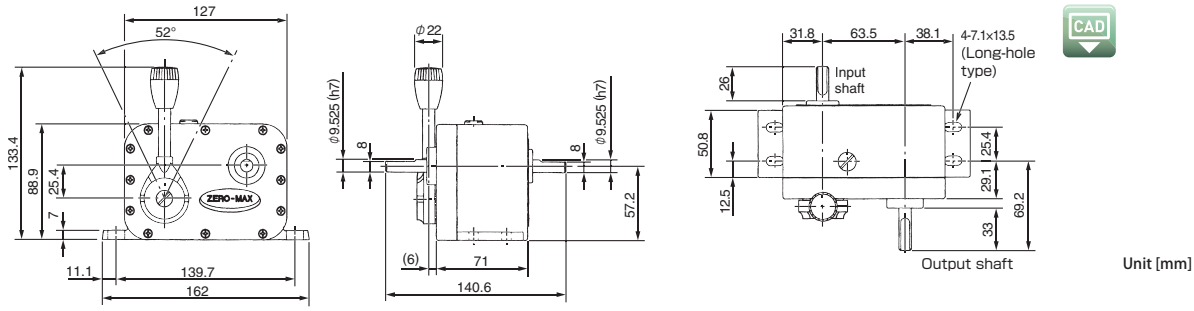
Specifications

Model		E1	E2	JK1	JK2	Y1	Y2
Output shaft rotation direction *		Counterclockwise	Clockwise	Counterclockwise	Clockwise	Counterclockwise	Clockwise
Rated output shaft torque	[N·m]	1.38	1.38	2.88	2.88	6.90	6.90
Output shaft rotation speed	[min⁻¹]	0 ~ 300 (1430 [min⁻¹] at input)	0 ~ 300 (1430 [min⁻¹] at input)	0 ~ 300 (1430 [min⁻¹] at input)	0 ~ 300 (1430 [min⁻¹] at input)	0 ~ 315 (1430 [min⁻¹] at input)	0 ~ 315 (1430 [min⁻¹] at input)
		0 ~ 360 (1720 [min⁻¹] at input)	0 ~ 360 (1720 [min⁻¹] at input)	0 ~ 360 (1720 [min⁻¹] at input)	0 ~ 360 (1720 [min⁻¹] at input)	0 ~ 380 (1720 [min⁻¹] at input)	0 ~ 380 (1720 [min⁻¹] at input)
Mass	[kg]	1.4	1.4	1.9	1.9	4.8	4.8

* The rated output shaft torque value is constant across the entire speed change range. * A rated output shaft torque 11.5 N·m (QX model) is also available. Please consult with us.
* The output shaft rotation speed values are based on the rated load.
* The * mark indicates the rotation direction viewed from the output shaft end.

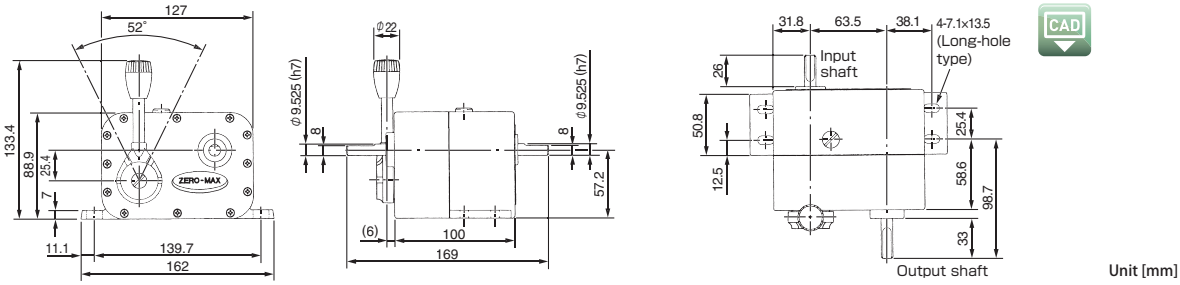
Dimensions

E1/E2



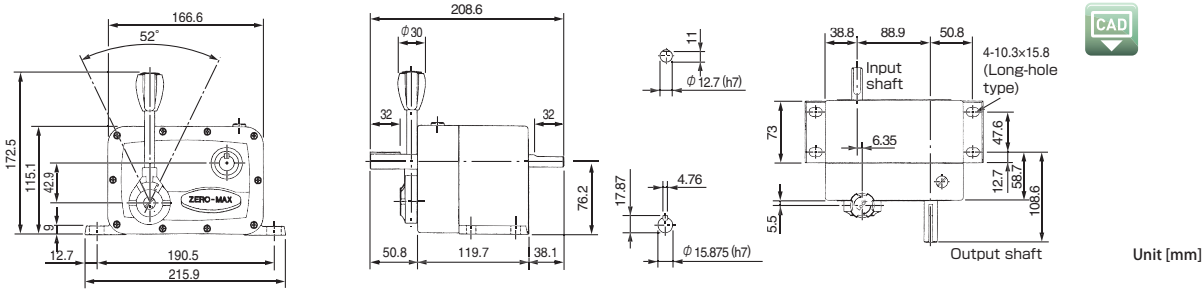
Unit [mm]

JK1/JK2



Unit [mm]

Y1/Y2



Unit [mm]

How to Place an Order

E 1
Size — Output shaft rotation direction

Zero-Max (Stepless Speed Changer)

MS

Motor output	0.2 kW to 0.4 kW (4-pole)
Rated output shaft torque	1.38 N • m to 6.90 N • m
Output shaft rotation speed	0 to 300, 330 min^{-1}/50 Hz, 0 to 360, 400 min^{-1}/60 Hz

A Motor Is Integrated into an Easy-to-Operate Speed Changer

Easy Speed Changing
The lever can be operated with one hand, and speed can be changed quickly. In addition, speed can be changed, regardless of whether the machine is running or stopped.

Wide Speed Change Range
The speed change ratio for continuous operation is 1:12, and an almost unlimited speed change range can be used for other operations.

Mechanical Auto Control Is Available
A special lever allows you to perform auto control, such as constant tension feed.

Compact Design
The device is very small, even including the motor, and easy to handle.

Easy Maintenance
Routine maintenance is easy.

Stepless Speed Change

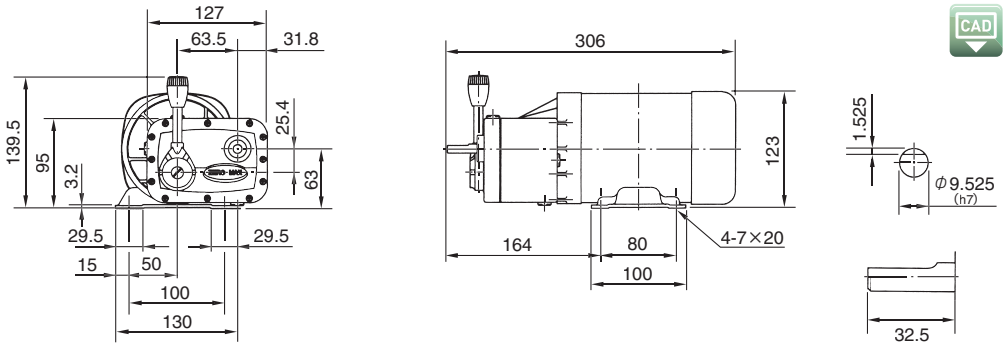
Specifications

Model		M3-E1	M3-E2	M3-JK1	M3-JK2	M3-Y1	M3-Y2
Output shaft rotation direction *		Counterclockwise	Clockwise	Counterclockwise	Clockwise	Counterclockwise	Clockwise
Rated output shaft torque [N·m]		1.38	1.38	2.88	2.88	6.90	6.90
Output shaft rotation speed [min^{-1}]	50Hz	0 ~ 300	0 ~ 300	0 ~ 300	0 ~ 300	0 ~ 330	0 ~ 330
	60Hz	0 ~ 360	0 ~ 360	0 ~ 360	0 ~ 360	0 ~ 400	0 ~ 400
Motor specifications [kW] (4P)		0.2	0.2	0.2	0.2	0.4	0.4
Mass [kg]		7.5	7.5	8.3	8.3	14.3	14.3

* The rated output shaft torque value is constant across the entire speed change range. * A single-phase motor type (M2-□) is also available. Please consult with us.
* The output shaft rotation speed values are based on the rated load.
* The * mark indicates the rotation direction viewed from the output shaft end.

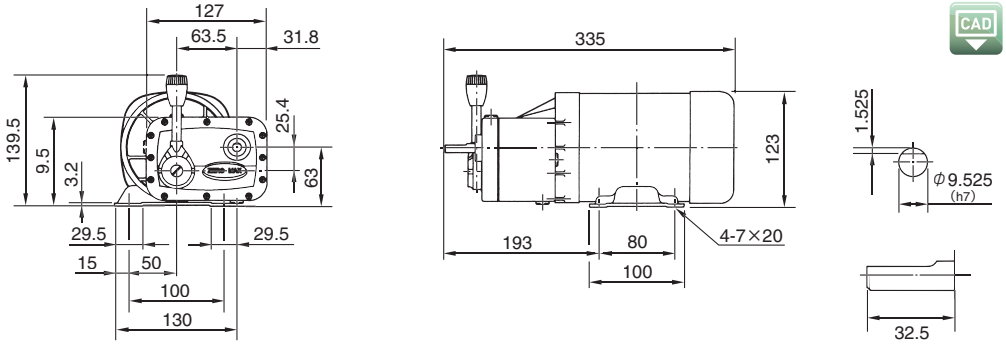
Dimensions

M3-E1/M3-E2



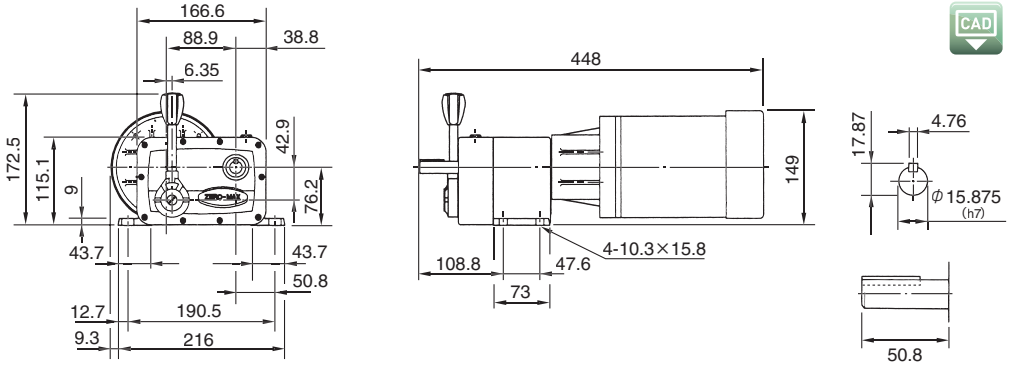
Unit [mm]

M3-JK1/M3-JK2



Unit [mm]

M3-Y1/M3-Y2



Unit [mm]

How to Place an Order

M3-E1

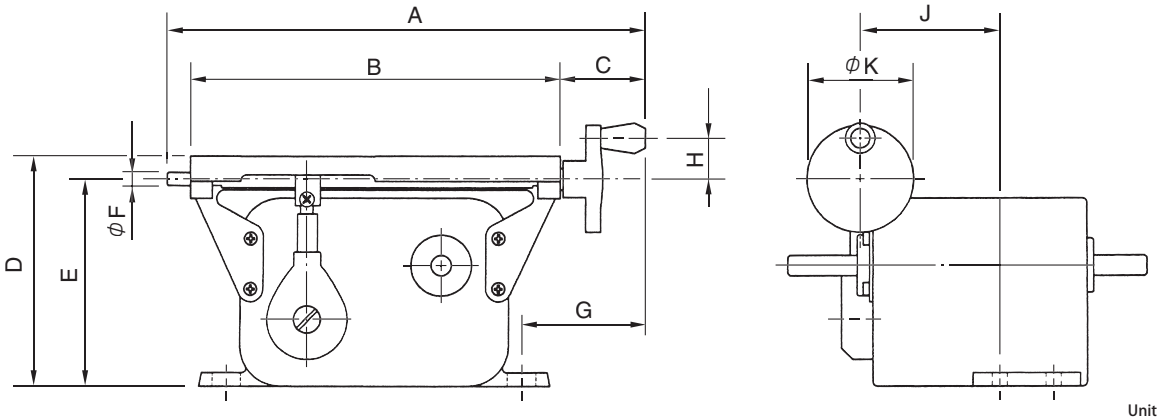
- With 3-phase motor
- Size
- Output shaft rotation direction

S/MS Models

Options

Screw Controller

If you need to make fine-tuning when changing speed, use the Zero-Max with a screw controller. The screw controller can be attached to both the S and MS models. A model with standard lever also can be modified to attach the screw controller (option). When placing an order, specify the screw controller after the Zero-Max model.



Unit [mm]

Model	A	B	C	D	E	F	G	H	J	K
E	226.5	175.5	40	108	98	6	58	19	38	50
JK	226.5	175.5	40	108	98	6	58	19	67	50
Y	225	173	40	133	126	6	32	10	65	50

* If you want to mount the handle in the reverse direction or if you want a handle that turns in the reverse direction, please consult with us.

Items Checked for Design Purposes

Overload Protection

A torque limiter is included in the E1, E2, JK1, and JK2 models to protect the main body against a large impact load. When the torque limiter is activated, a sound occurs. When you hear it, immediately stop the machine and remove the cause of the overload.
A torque limiter is not included in the Y1 and Y2 models. If an overload is applied, use overload protection equipment (torque tender).

Ventilation Plug

For the E1, E2, JK1, and JK2 models of the MS model, replace the sealed oil plug with the included ventilation plug before using the device. For other models, replacement is not required.

Used Oil

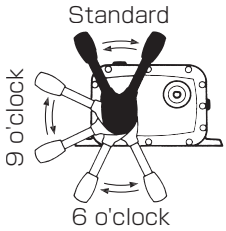
The Zero-Max is filled with diesel engine oil.

* SAE viscosity: 40
* API service category: CC grade

When replacing oil, be sure to use the above oil. Use of inappropriate oil may cause a failure. The fill amount is as follows.

E1/E2: 0.35ℓ M3-E1/E2: 0.40ℓ
JK1/JK2: 0.55ℓ M3-JK1/JK2: 0.60ℓ
Y1/Y2: 1.20ℓ M3-Y1/Y2: 1.20ℓ

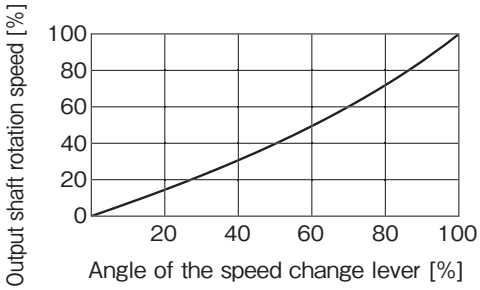
Operating Angle of the Speed Change Lever



Model	Operating angle
E1, E2, JK1, JK2, Y1, Y2	52 °

For the E and JK models, the speed change lever can be mounted in the standard, 9 o'clock, or 6 o'clock direction, and for other models, it can be mounted in any position between the standard and 6 o'clock directions.

Speed Change Lever Angle and Output Shaft Rotation Speed



The speed change lever angle is not proportional to the output shaft rotation speed. For details, refer to the item of Load Characteristics described above.

Maximum Allowable Overhang Load and Thrust Load

Model	Overhang load [N]		Thrust load [N]
	Input shaft	Output shaft	Input and output shafts
E/JK	120	120	120
Y	180	150	350

The overhang load is a value at the middle point of the entire shaft length.

If a pulley and sprocket are used in a winding manner and impact and variable loads are applied, it is recommended to make a design with the allowable overhang load value of about 70% or less.

Mount a V-pulley, etc. to the root of the output shaft and if the pulley have a boss, mount it so that the boss comes outside.

Service Factor Based on the Load Characteristics: K

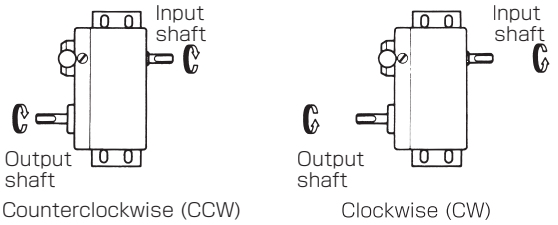
Load condition	Factor
Constant	1.0
Variable	1.5
Impact	2.0

Multiply the load torque by a factor. Select a model that result in the calculated value being less than the rated output shaft torque.

Characteristics for Negative Load

If a large negative load is applied to the Zero-Max, the one-way clutch inside may slip due to its structure, resulting in an overrun of the output shaft. If there is the possibility that a negative load is applied to the Zero-Max in the design stage, please consult with us.

Rotation Direction of the Input and Output Shafts



The rotation direction of the input and output shafts is structurally limited. The rotation direction of the output shaft for each model is as follows viewed from the output shaft end.

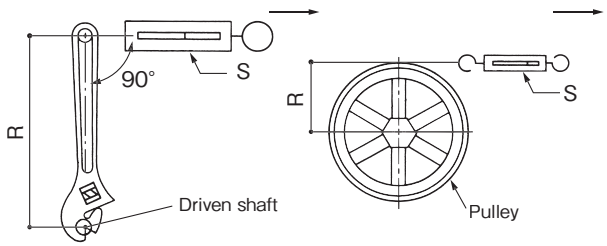
The rotation direction of the input shaft in this case must also be the same direction viewed from the output shaft end. The rotation direction of the output shaft of the Zero-Max is limited by the model and not by the rotation direction of the input shaft. Accordingly, even if the rotation direction of the input shaft is reversed, the rotation direction of the output shaft cannot be changed. If the rotation direction of the input shaft is reversed from the specified direction, the operating state of the link mechanism inside changes and the maximum rotation speed of the output shaft increases, so vibration and noise increase and the oil temperature rises, resulting in a shorter life span.

Rotation Speed of the Input and Output Shafts

The maximum rotation speed of the input shaft is 1800 min^{-1}. The minimum rotation speed cannot be specified, but a too low rotation speed is not desirable if the rotation accuracy of the output shaft is required. (600 min^{-1} or more is recommended.) The speed change range of the output shaft slightly varies depending on the model. Speed can be changed freely within this range with the speed change lever, but 8 to 100% of the maximum rotation speed of the output shaft is recommended for the continuous operating range. If less than 8% of the maximum rotation seed is used continuously, the set rotation speed may become unstable due to a change in the load torque, so there is the possibility that durability will decrease slightly.

Selection

Select the appropriate Zero-Max model based on the rated output shaft torque. The rated output shaft torque is constant across the entire rotation range of the output shaft. Select a model that will not result in the machine side load torque exceeding this value. If the machine side load torque cannot be calculated, obtain it by measurement. For the measurement, it is useful to use a torque wrench or a spring scale as shown in the figure on the left.



Read the value of S when the motion starts and calculate the torque with the following expression.

$T\,[N\cdot m] = S\,[N] \times R\,[m]$

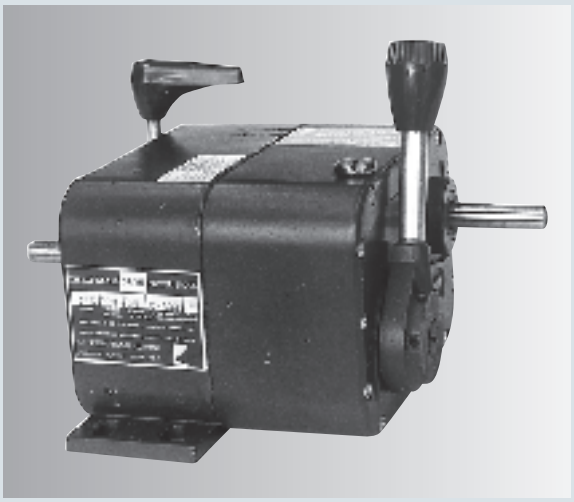
Multiply the load torque value calculated this way by service factor K. Use this value to select a model.

S/MS Models

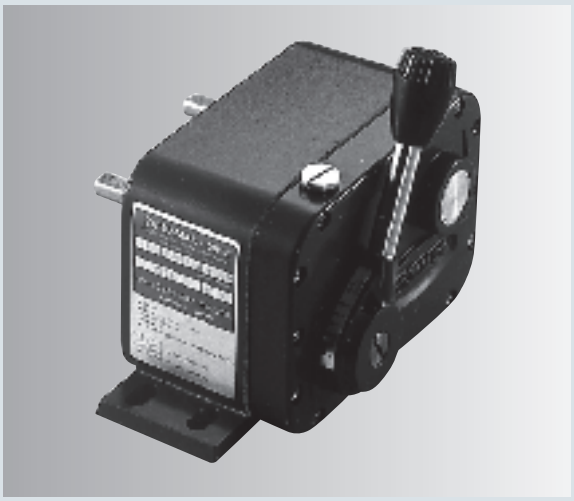
Special Types

Zero-Max

With Single-Phase Motor



For Normal-Reverse Rotation



Coaxial Direction Input and Output Shaft

DC MOTORS

SCD

SYD

DC Motor

SCD

High-performance Model with Feedback Control Capability

Rated output	0.1 kW to 3.7 kW
Power supply voltage	Single-phase, 100 or 200 V/50 Hz, 100 or 200 V/60 Hz
Speed change range	80 min^{-1} to 2500 min^{-1}

Stepless Speed Change and Stable Rotation

Speed can be changed with stable rotation steplessly across the entire range from a high rated speed of 2500 or 1750 min^{-1} to a low speed of 1/30 of the rated speed.

Safe Protection Function

A current limiting circuit and fuse prevent overload at startup and during operation and protect the motor and control board.

High Rotation Accuracy

A constant voltage circuit, load compensation circuit, and magnetic field temperature compensation circuit are installed on the control board, and the rotation accuracy is as high as ± 2% against changes in the load and power supply.

Specifications

Model			Motor	SCD-100/100-E	SCD-100/200-E	SCD-200/100-E	SCD-200/200-E	SCD-400-E	SCD-750-E	SCD-1500-E	SCD-2200-E	SCD-3700-E
			Control board	SCD-100/100-Y	SCD-100/200-Y	SCD-200/100-Y	SCD-200/200-Y	SCD-400-Y	SCD-750-Y	SCD-1500-Y	SCD-2200-Y	SCD-3700-Y
Rated output [kW]				0.1	0.1	0.2	0.2	0.4	0.75	1.5	2.2	3.7
Rated torque [N·m]				0.39	0.39	0.78	0.78	1.56	2.92	8.34	12.20	20.60
Rotation range [min^{-1}]				0 ~ 2500							0 ~ 1750	
Speed change range [min^{-1}]				80 ~ 2500						60 ~ 1750		
Power supply (AC)	Voltage [V]			100	200	100	200	200	200	200	200	200
	Frequency/phase			Single phase, 50/60 Hz								
	Allowable voltage fluctuation range			± 10%								
	Current*1 [A]			2.3	1.2	4.5	2.3	4.5	9.0	18	27	40
Output (DC)	Armature voltage [V]			80	160	80	160	160	160	160	160	160
	Armature current [A]			1.7	0.85	3.2	1.6	3.0	6.0	11.5	17.5	26.2
	Magnetic field voltage [V]			90	180	90	180	180	180	180	180	180
	Magnetic field current [A]			0.09	0.17	0.40	0.22	0.28	0.27	0.55	0.58	0.69
Motor type				Fully-closed C flange						Drip-proof C flange		
Rotor moment of inertia [kg·m^2]				0.0010	0.0010	0.0016	0.0016	0.004	0.004	0.015	0.026	0.043
Fuse	Armature side*2	FU1 [A]		10	10	10	10	10	16	30	50	100
		FU2 [A]		10	10	10	10	10	16	30	50	100
	Magnetic field side	FU3 [A]		0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0
		FU4 [A]		-	-	-	-	0.5	0.5	0.5	0.5	0.5
Control method				Constant speed control by constant voltage, IR compensation, and magnetic field temperature compensation								
Components				DC motor/control board								
Standard operating specifications				Power supply switch/speed setter								
Carbon brush	Model/number of brushes			SCD-100-BL x2				SCD-400-BL x4		SCD-1500-BL x2		
	Dimensions [mm]			6 × 8 × 20 (H × W × L)				8 × 6 × 24 (H × W × L)		10 × 25 × 35 (H × W × L)		
Control board mass [kg]				3.0				4.5		8.4		
Motor mass [kg]				13.2		17.5		23.8	24.0	43	50	63

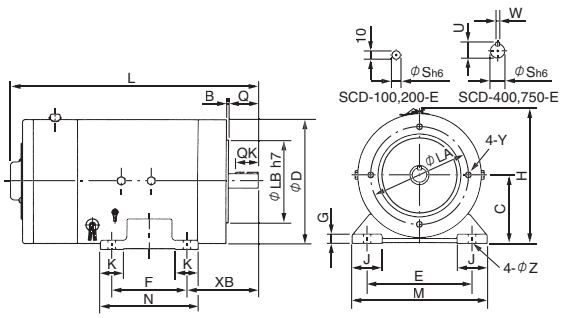
*1: For reference.
*2: Use the specified fast-blow fuse. The FU1 for models with output of 0.1 or 0.2 kW is a power supply fuse. (glass tube)
*For the specifications of motors with brake and terminal box, refer to Options.

Dimensions

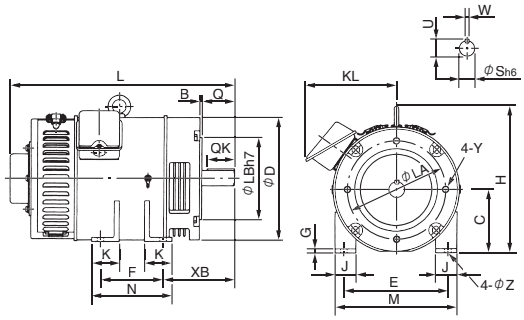
Motors

SCD-100/200/400-E (Fully-Closed Type)

SCD-750-E (Drop-Proof Type)



SCD-1500/2200/3700-E (Drip-Proof Type)

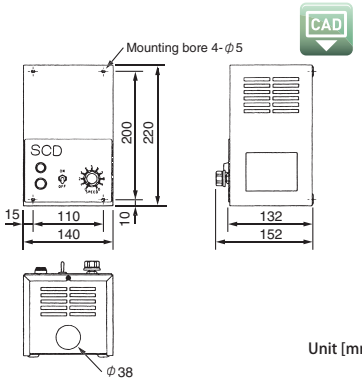


Unit [mm]

Model	SCD- 100/100 100/200 -E	SCD- 200/100 200/200 -E	SCD-400-E	SCD-750-E	SCD-1500-E	SCD-2200-E	SCD-3700-E
C	75	75	90	90	114	114	114
D	135	135	164	164	223	223	223
L	263	303	329	354	409	436	499
XB	75	75	95	95	130	130	140
M	140	140	180	180	222	222	222
N	110	110	130	130	146	210	210
E	112	112	140	140	190	190	190
F	90	90	100	100	114	178	178
J	40	40	40	40	38	38	38
K	20	20	30	30	50	50	50
G	10	10	12	12	7	7	7
H	150	150	179	179	267	267	276
Q	25	25	40	40	60	60	70
QK	20	20	30	30	50	50	50
S	11	11	19	19	28	28	28
W	-	-	5	5	7	7	7
U	-	-	21	21	31	31	31
LA	118	118	130	130	180	180	180
LB	100	100	110	110	150	150	150
Y	M6	M6	M8	M8	M12	M12	M12
KL	-	-	-	-	166	166	166
B	3	3	3	3	4	4	4
Z	7	7	10	10	12	12	12

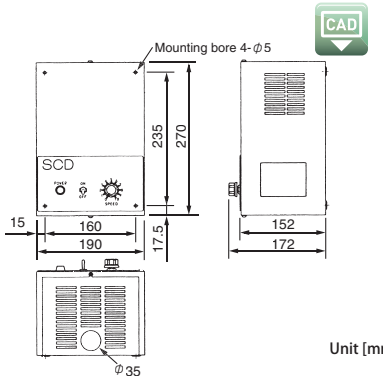
Control Boards

SCD-100/200-Y



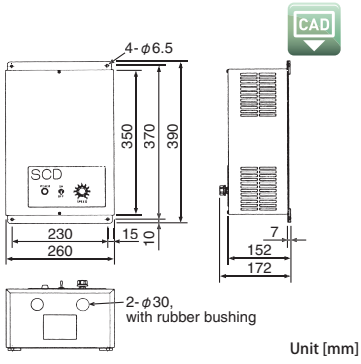
Unit [mm]

SCD-400/750-Y



Unit [mm]

SCD-1500/2200/3700-Y



Unit [mm]

How to Place an Order

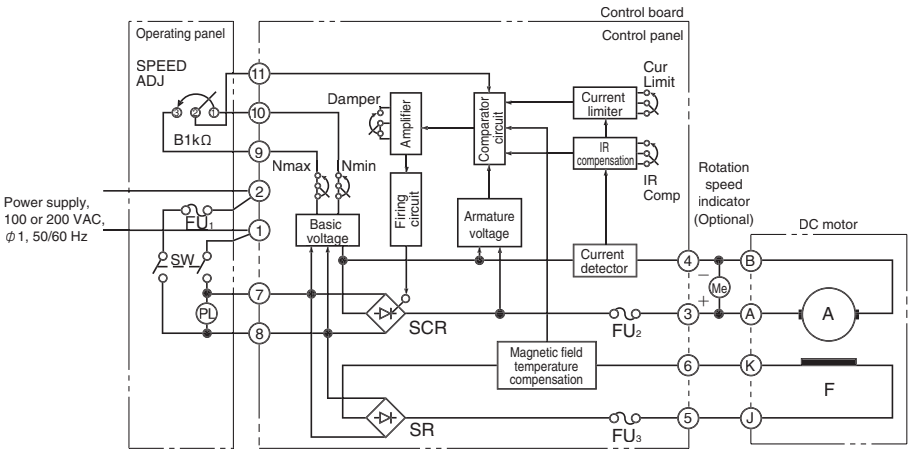
Motor SCD-100/100-E
Rated output — Input voltage

Control board SCD-100/100-Y
Rated output — Input voltage

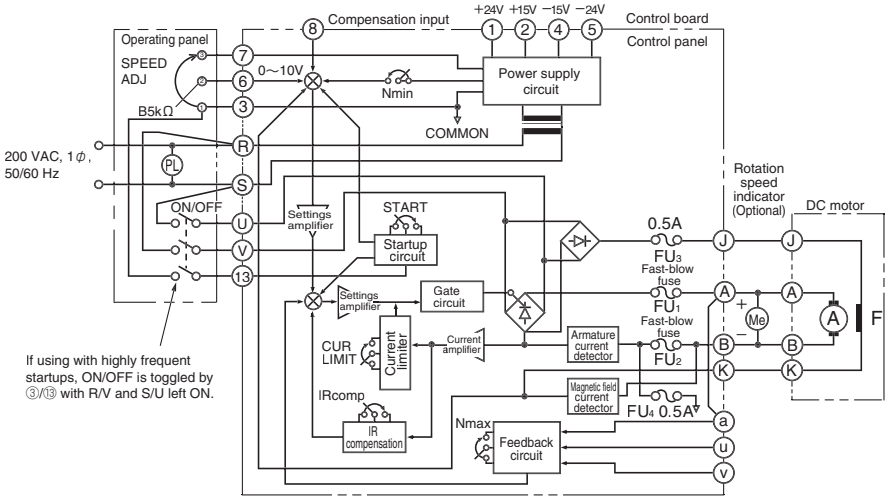
SCD Models

Connection Diagram

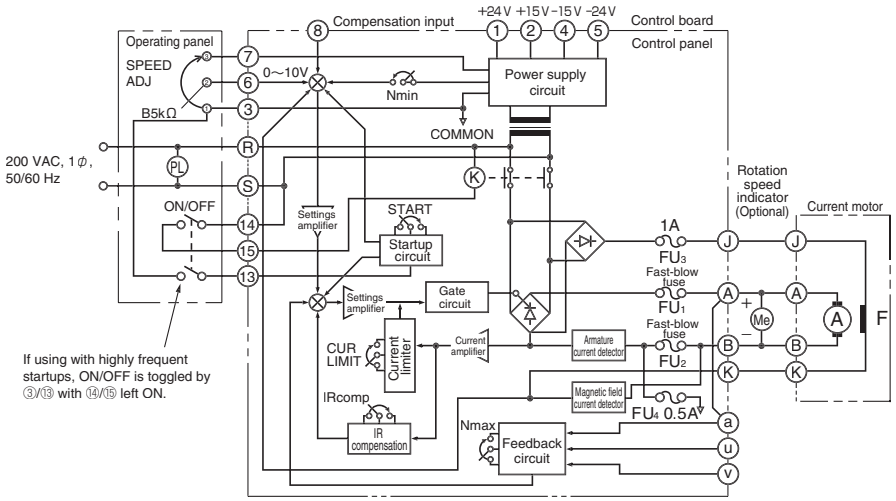
SCD-100/200-E/Y



SCD-400/750-E/Y

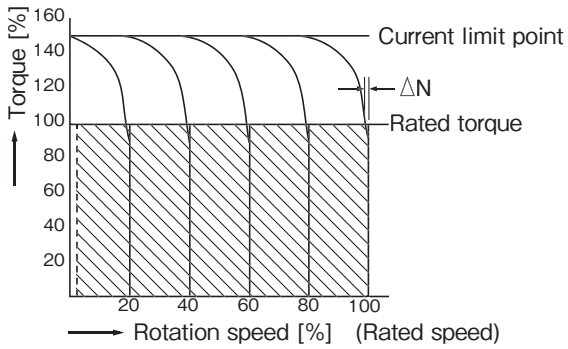


SCD-1500/2200/3700-E/Y



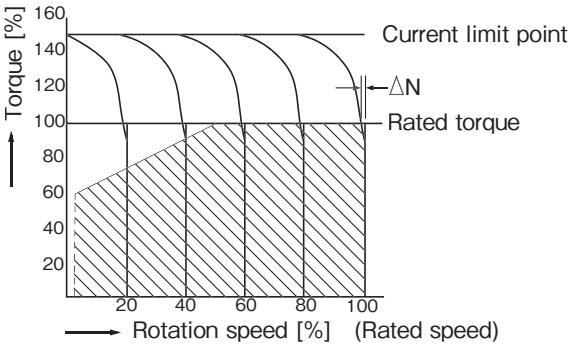
Characteristics

SCD-100/200/400-E/Y (Fully-Closed Type)



* The curve in the graph shows the relationship between the load and rotation speed.
Δ N shows a speed change when the load is changed from 0 to 100%.
The speed under 150% load is 0.
* The shaded area shows the continuous operating range. Continuous operation is possible within the speed change range with 100% torque (rated torque).

SCD-750/1500/2200/3700-E/Y (Drip-Proof Type)



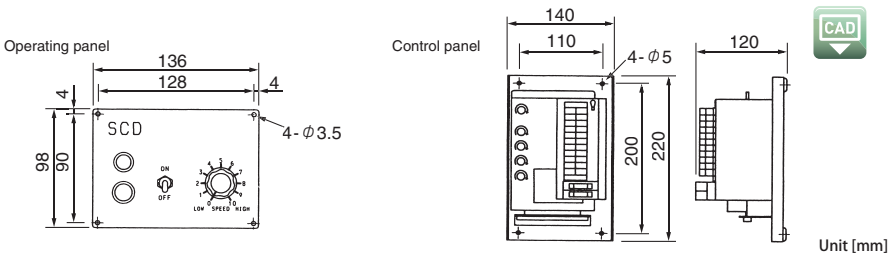
* The curve in the graph shows the relationship between the load and rotation speed.
Δ N shows a speed change when the load is changed from 0 to 100%.
The speed under 150% load is 0.
* The shaded area shows the continuous operating range. The torque is limited at low speeds as shown in the figure. However, operation with 100% torque (rated torque) is possible over a short period of time.

Options

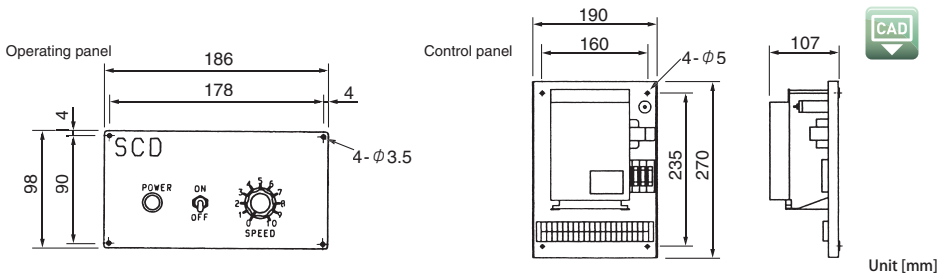
Panel Type Control Board

The control board can be used as a panel type by removing its cover.

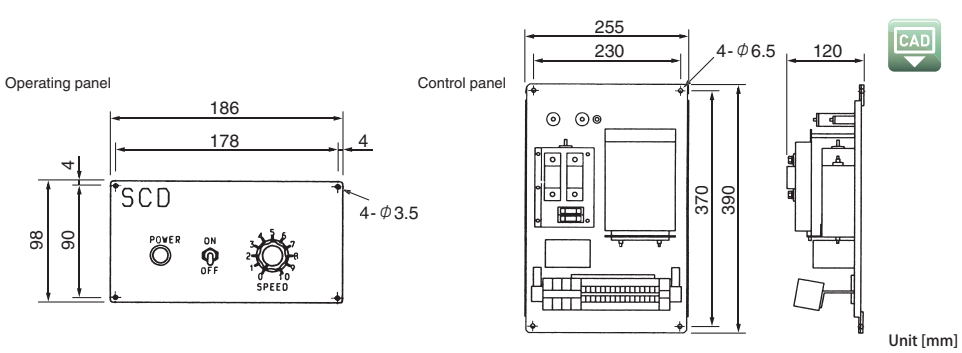
SCD-100/200-Y



SCD-400/750-Y



SCD-1500/2200/3700-Y



DC Motor

SYD

Low-cost Model Limited to the Speed Control Function

Rated output	0.1 kW to 1.5 kW
Power supply voltage	Single-phase, 100 or 200 V/50 Hz, 100 or 200 V/60 Hz
Speed change range	125 min^{-1} to 2500 min^{-1}

Stepless Speed Change and Stable Rotation

Speed can be changed with stable rotation steplessly across the entire range from a high rated speed of 2500 min^{-1} to a low speed of 1/20 of the rated speed.

Safe Protection Function

A current limiting circuit and fuse prevent overload at startup and during operation and protect the motor and control board.

High Rotation Accuracy

A constant voltage circuit, load compensation circuit, and magnetic field temperature compensation circuit are installed on the control board, and the rotation accuracy is as high as ± 2% against changes in the load and power supply.

Specifications

Model			Motor	SYD-100/100-E	SYD-100/200-E	SYD-200/100-E	SYD-200/200-E	SYD-400-E	SYD-750-E	SYD-1500-E
			Control board	SYD-100/100-□	SYD-100/200-□	SYD-200/100-□	SYD-200/200-□	SYD-400-□	SYD-750-□	SYD-1500-□
Rated output [kW]				0.1	0.1	0.2	0.2	0.4	0.75	1.5
Rated torque [N·m]				0.39	0.39	0.78	0.78	1.56	2.92	5.84
Rotation range [min^{-1}]				0 ~ 2500						
Speed change range [min^{-1}]				125 ~ 2500						
Power supply (AC)	Voltage [V]			100	200	100	200	200	200	200
	Frequency/phase			Single phase, 50/60 Hz						
	Allowable voltage fluctuation range			± 10%						
	Current*1 [A]			2.3	1.2	4.5	2.3	4.5	9.0	18.0
Output (DC)	Armature voltage [V]			80	160	80	160	160	160	160
	Armature current [A]			1.7	0.85	3.2	1.6	3.0	6.0	11.5
	Magnetic field voltage [V]			85	175	85	175	175	175	175
	Magnetic field current [A]			0.09	0.14	0.09	0.17	0.23	0.27	0.38
Motor type				Fully-closed C flange					Drip-proof C flange	
Rotor moment of inertia [kg·m^2]				0.0010	0.0010	0.0016	0.0016	0.0016	0.004	0.007
Fuse	Armature side*2	FU1 [A]		10					16	20
	Magnetic field side	FU2 [A]		0.5 (glass tube)						
Control method				Constant speed control by constant voltage, IR compensation, and magnetic field temperature compensation						
Components				DC motor/control board						
Standard operating specifications				Power supply switch/speed setter						
Carbon brush	Model/number of brushes			SCD-100-BL x2				SYD-400-BL x2	SCD-400-BL x4	
	Dimensions [mm]			6 × 8 × 20 (H × W × L)				8 × 6 × 24 (H × W × L)	8 × 6 × 24 (H × W × L)	
Control board mass [kg]				1.6					1.7	3.8
Motor mass [kg]				10.5		13.2		16.5	24.0	36.0

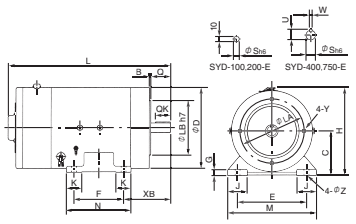
*1: Reference value.
*2: Use the specified fast-blow fuse.
* For the specifications of motors with brake and terminal box, refer to Options.

Dimensions

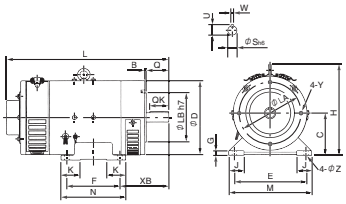
Motors

SYD-100/200-E (Fully-Closed Type)

SYD-400/750-E (Drip-Proof Type)



SYD-1500-E (Drip-Proof Type)

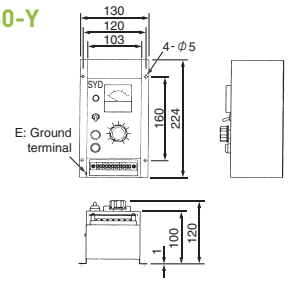


Unit [mm]

Model	SYD- 100/100 100/200 -E	SYD- 200/100 200/200 -E	SYD-400-E	SYD-750-E	SYD-1500-E
C	75	75	75	90	112
D	135	135	135	164	196
L	230	263	303	354	429
XB	60	75	75	95	130
M	140	140	140	180	220
N	110	110	110	130	170
E	112	112	112	140	190
F	90	90	90	100	140
J	30	30	30	40	40
K	20	20	20	30	50
G	10	10	10	12	12
H	150	150	150	179	243
Q	25	25	25	40	60
QK	20	20	20	30	50
S	11	11	14	19	24
W	—	—	5	5	7
U	—	—	16	21	27
LA	118	118	118	130	165
LB	100	100	100	110	130
Y	M6	M6	M6	M8	M10
B	3	3	3	3	4
Z	7	7	7	10	12

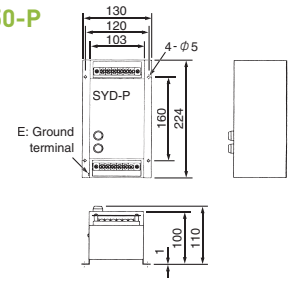
Control Boards

SYD-100 to 750-Y



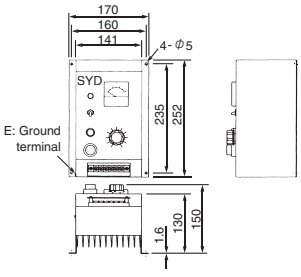
Unit [mm]

SYD-100 to 750-P



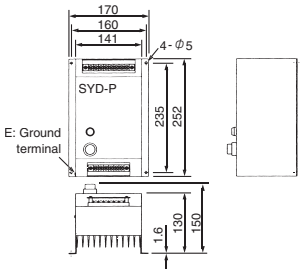
Unit [mm]

SYD-1500-Y



Unit [mm]

SYD-1500-P



Unit [mm]

How to Place an Order

Motor SYD-100/100-E
Rated output — Input voltage

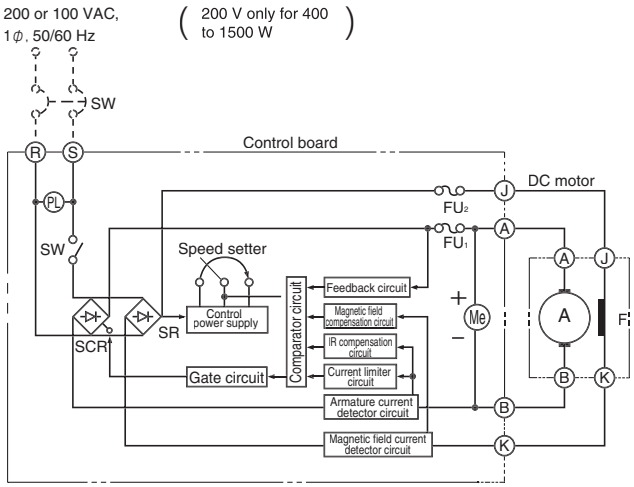
Control board SYD-100/100-Y
Rated output — Type Y-type: Y; P-type: P — Input voltage

SYD Models

Connection Diagram

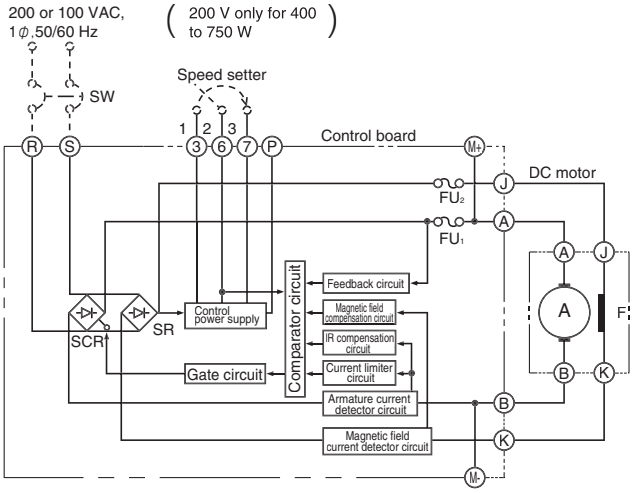
Connection between motor and Y-type control board

SYD-100 to 1500-E/Y

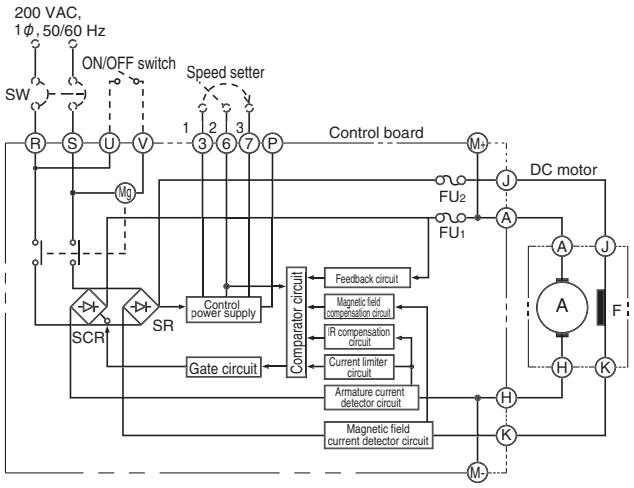


Connection between motor and P-type control board

SYD-100 to 750-E/P



SYD-1500-E/P

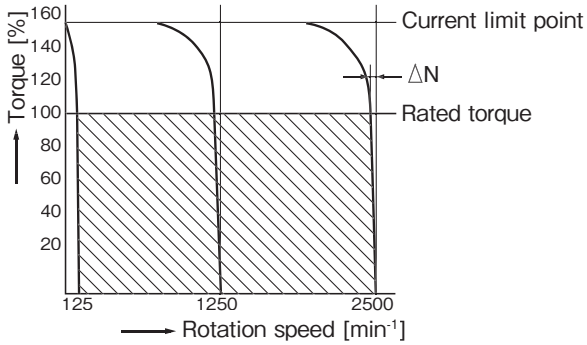


* Use the specified voltage (displayed on the name plate) for the input power supply.
* The rotation direction in the above connection is counterclockwise viewed from the output shaft. If you need the clockwise direction, change A and B (H).

Characteristics

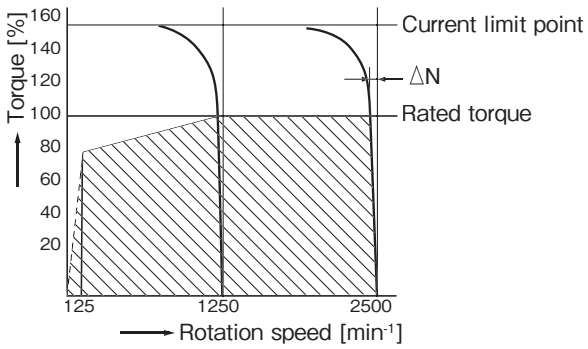
The following figures show the characteristics and continuous operating range of DC motors.

SYD-100/200-E/Y (Fully-Closed Type)



* The curve in the graph shows the relationship between the load and rotation speed. Δ N shows a speed change when the load is changed from 0 to 100%. The speed under 150% load is 0.
* The shaded area shows the continuous operating range. Continuous operation is possible within the speed change range with 100% torque (rated torque).

SYD-400/750/1500-E/Y (Drip-Proof Type)



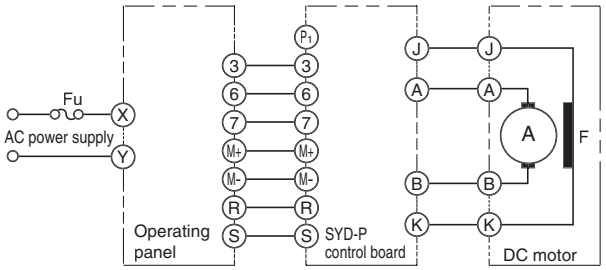
* The curve in the graph shows the relationship between the load and rotation speed. Δ N shows a speed change when the load is changed from 0 to 100%. The speed under 150% load is 0.
* The shaded area shows the continuous operating range. The torque is limited at low speeds as shown in the figure. However, operation with 100% torque (rated torque) is possible over a short period of time.

Options

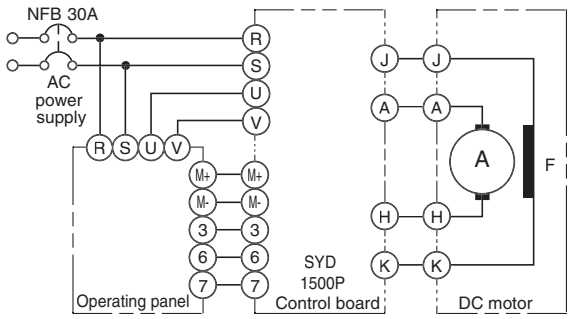
Operation Panel

For example, this operation panel can be used to perform operation on the surface of the centralized control board that incorporates the P-type control board.

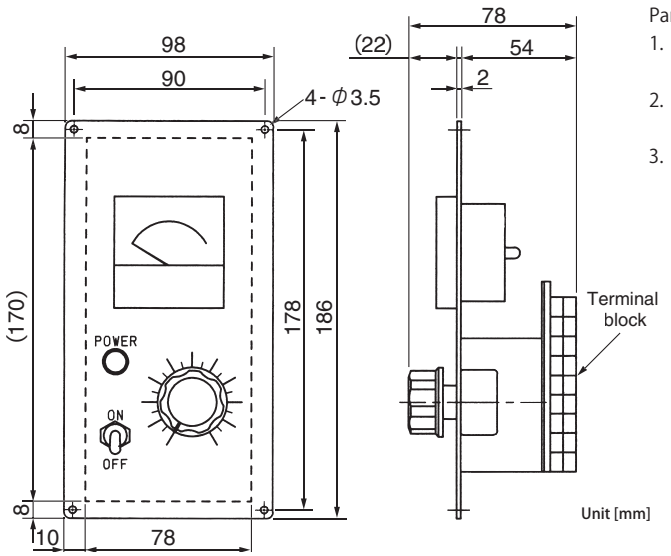
Connection diagram (SYD-100 to 750-P)



Connection diagram (SYD-1500-P)



Dimensional drawing (common to SYD-100 to 1500)



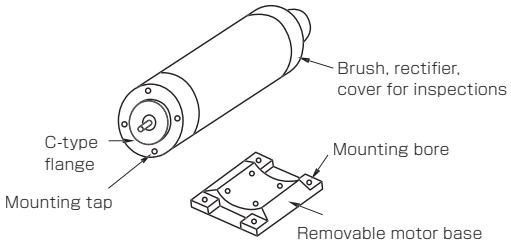
Panel cutout dimensions: 170 x 78 mm (height x width)

1. Make sure the numbers and letters between the operating panel and control board match when connecting wires.
2. Connect the AC power supply to terminals Ⓧ and Ⓨ (Ⓡ and Ⓢ for SYD-1500-P) on the operating panel.
3. Be sure to install a fuse in the AC power supply.

SCD/SYD Models

Items Checked for Design Purposes

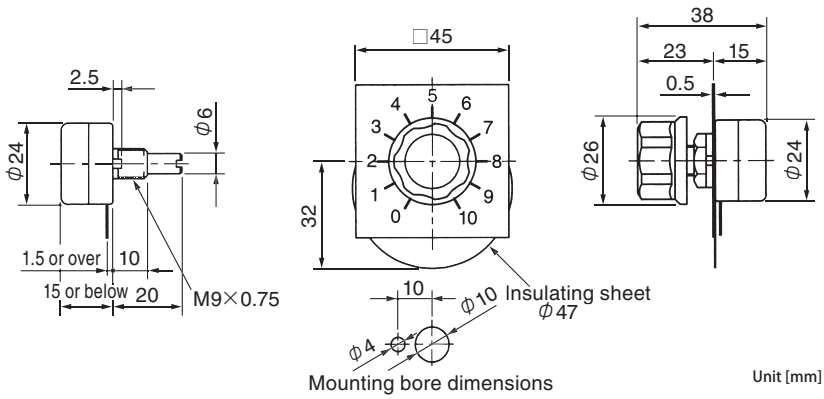
1. Temperature rise: Motors of up to 750 W have Class B insulation and motors of 1.5 kW or more have Class F insulation. Accordingly, the temperature rise limit of the armature winding is 90℃ and 110℃ . If the load is appropriate, the temperature of the outer frame is usually about 15℃ to 25℃ lower than the temperature of the winding. Therefore, it is so hot that you cannot touch it for a long time. However, you may continue operation if the temperature does not exceed the above value.
2. Rotation direction: The rotation can be changed freely in any direction (left or right) by changing the voltage direction of the armature while keeping constant the direction of the magnetic field current.
3. Grounding: Be sure to ground the motor frame and the chassis of the control board. Note that if an isolation transformer is not used on the AC input side, do not ground any part of the AC, DC, and control circuits except for the motor frame and the chassis.
4. Motor mounting direction: The motor can be mounted vertically in any direction (upward and downward). However, excessive thrust may be applied to the bearing depending on the load.
5. Flange mounting: The base of motors of 100 to 750 W is removable. When the base is removed, the motor can be mounted with a C-type flange (defined by the NEMA standards) on the output shaft end face.



Options

<Common to SCD and SYD>

Speed Setter VR Set (Included in SYD-P)



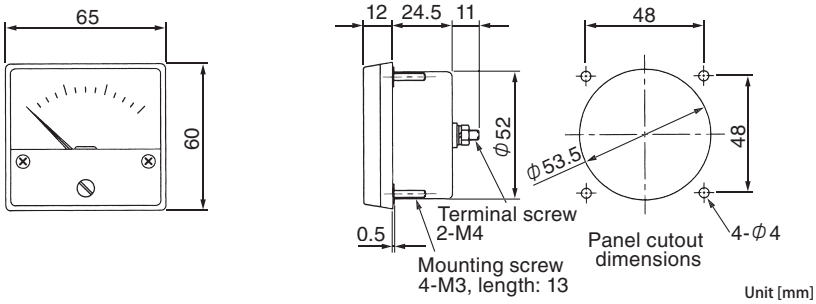
Unit [mm]

Model	For the VR set 24 (B5K-OHM)
Resistance	5 kΩ
Characteristics	B

Model	For the VR set 24 (B1K-OHM)
Resistance	1 kΩ
Characteristics	B

* The resistance for SCD models with 100/200-W output is 1 kΩ .

Rotation Speed Indicator RD-6V



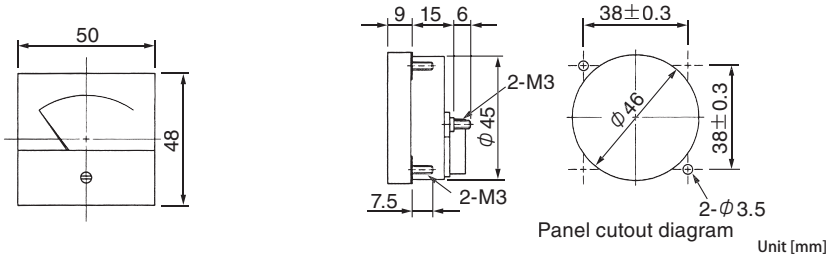
Unit [mm]

Detection voltage		FS voltage
Armature	Power supply 100 V	100 VDC
	Power supply 200 V	200 VDC

1. For the armature, connect the positive side to terminal A and the negative side to terminal B (H). (SCD)
2. For the control board, connect to M+ and M- terminals of the P-type control board. (SYD)

Rotation Speed Indicator KS-5-5

SY series standard rotation speed indicator

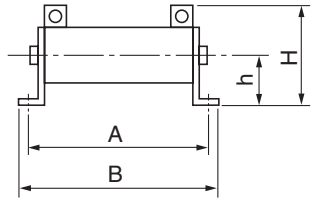


Unit [mm]

Detection voltage		FS voltage
Armature	Power supply 100 V	100 VDC
	Power supply 200 V	200 VDC

1. Connect to M+ and M- terminals of the P-type control board.
2. Not applicable to the EF type.

Vitreous Enamel Resistor for Dynamic Braking



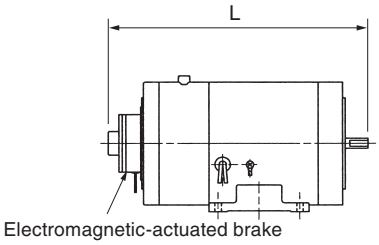
* Braking capacity if the braking current at the rated speed is 150%.

Applied motor	Standard braking		Braking resistor dimensions [mm]			
	Resistance [Ω]	Capacity [W]	A	B	H	h
SCD·SYD-100/100-E	50	50	114	140	51	26
SCD·SYD-100/200-E	50	50	114	140	51	26
SCD·SYD-200/100-E	50	50	114	140	51	26
SCD·SYD-200/200-E	50	50	114	140	51	26
SCD·SYD-400-E	20	100	179	205	54	26
SCD·SYD-750-E	20	100	179	205	54	26
SCD·SYD-1500-E	8	500	347	383	96	50
SCD-2200-E	6	800	387	417	88	38
SCD-3700-E	4	1000	347	383	96	50

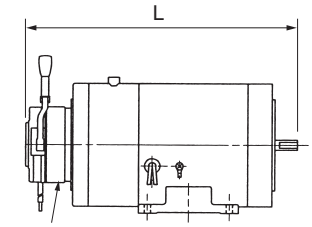
* The values of the SCD-2200-E and 3700-E are combined resistance values. Please contact us for details.

Motors with Electromagnetic Brake, EA/EC

An electromagnetic brake can be mounted on the opposite side of the output shaft. There are two types of brakes: electromagnetic-actuated type (EA type, where the brake is activated when it is energized) and spring-actuated type (EC type, where the brake is released when it is energized).



EA type



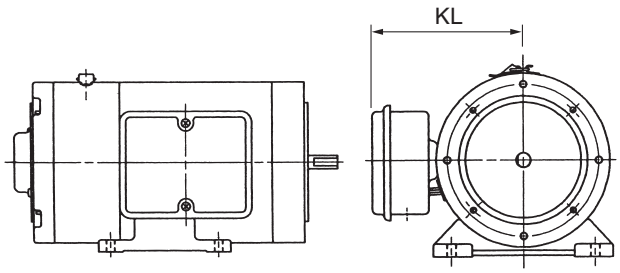
EC type

Motor output [kW]	Electromagnetic-actuated brake model	Exciting voltage [DC.V]	L-dimension extension [mm]	Spring-actuated brake model	Exciting voltage [DC.V]	L-dimension extension [mm]
0.1	111-06-11G 24V 15JIS		22	438-06-16 24V 11JIS		36
0.2	111-06-11G 24V 15JIS		22	438-06-16 24V 11JIS		36
0.4	111-06-11G 24V 15JIS		22	438-06-16 24V 11JIS		36
0.75	111-06-11G 24V 15JIS	24	22	458-08-16 24V 11JIS	24	42
1.5	111-10-12G 24V 20JIS		8	458-10-16 24V 20JIS		25
2.2	111-10-12G 24V 20JIS		8	458-12-16 24V 20JIS		36
3.7	111-12-12G 24V 20JIS		8	458-12-16 24V 20JIS		36

* To modify the standard DC motor to attach a brake, attachments are required in addition to the above brake. Please consult with us for details.

Motor with Terminal Box, EH

A terminal box can be mounted to motors of 0.1 to 1.5 kW.



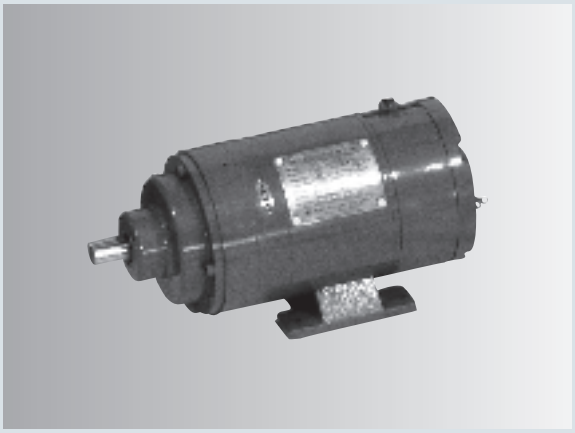
Motor output [kW]	KL dimension [mm]	
	SCD	SYD
0.1	117	117
0.2	117	117
0.4	132	117
0.75	132	132
1.5	—	148

* Comes as standard with SCD models with the output of 1.5 kW or more

DC Motors

Made to Order

DC Motors

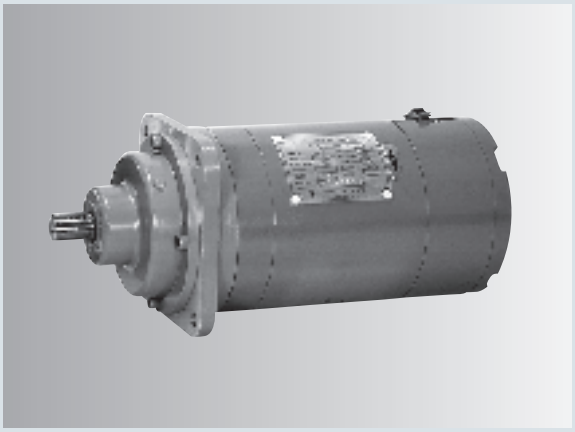


SCG/SYG

With Coaxial Speed Reducer (Base Mounting)

SCG	Speed reduction ratio
100/100 100/200	5, 10, 25, 50, 100
200/100 200/200	5, 10, 25, 50
400	5, 10, 20, 30
750	5, 10, 20, 30
1500	10, 20, 30
2200	10, 20, 30
3700	10, 20, 30

SYG	Speed reduction ratio
100/100 100/200	5, 10, 25, 50, 100
200/100 200/200	5, 10, 25, 50
400	5, 10, 30, 50
750	5, 10, 30, 50

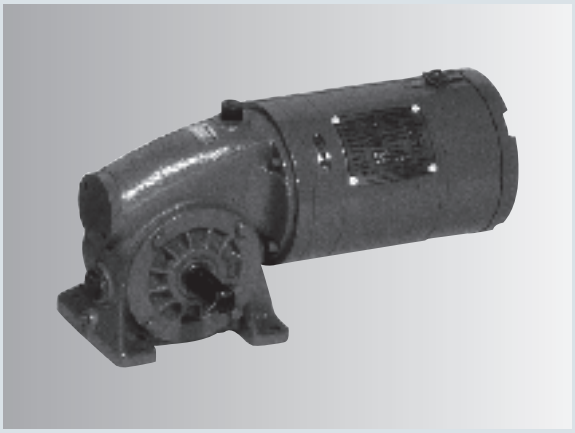


SCE/SYE

With Coaxial Speed Reducer (Flange Mounting)

SCE	Speed reduction ratio
100/100 100/200	5, 10, 25, 50, 100
200/100 200/200	5, 10, 25, 50
400	5, 10, 20, 30
750	5, 10, 20, 30
1500	10, 20, 30
2200	10, 20, 30
3700	10, 20, 30

SYE	Speed reduction ratio
100/100 100/200	5, 10, 25, 50, 100
200/100 200/200	5, 10, 25, 50
400	5, 10, 30, 50
750	5, 10, 30, 50



SCW/SYW

With Worm Speed Reducer (Base Mounting)

SCW	Speed reduction ratio
100/100 100/200	10, 20, 30, 40, 50, 60
200/100 200/200	10, 20, 30, 40, 50, 60
400	10, 20, 30, 40, 50, 60
750	10, 20, 30, 40
1500	10, 20, 30, 40
2200	10, 20, 30, 40
3700	10, 20, 30, 40

SYW	Speed reduction ratio
100/100 100/200	10, 20, 30, 40, 50, 60
200/100 200/200	10, 20, 30, 40, 50, 60
400	10, 20, 30, 40, 50, 60
750	10, 20, 30, 40, 50, 60

* If you have questions about the dimensions and specifications, please consult with us.