

# ELECTROMAGNETIC CLUTCH AND BRAKE UNITS

## Application

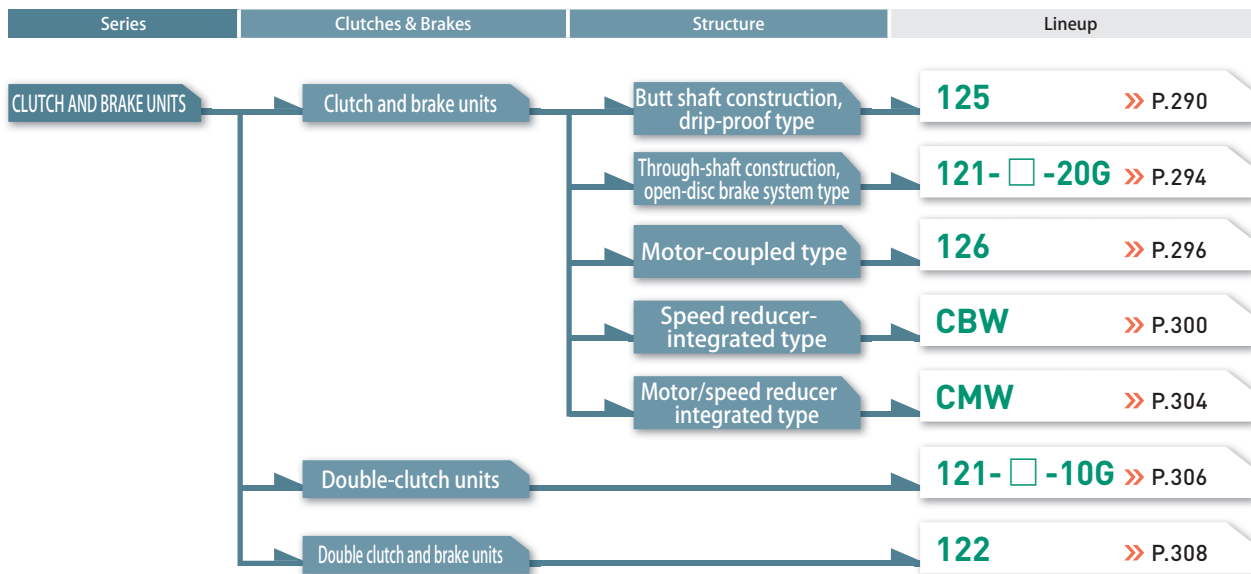
Printing machinery, bookbinding machinery, woodworking machinery, semiconductor manufacturing equipment

## Connection and Release, Required Functions Integrated in a Compact Form Factor, Electromagnetic Clutch and Brake Units

Multiple clutches and brakes are required when designing complex actions. You can select from our clutch and brake units to get the operation you require rather than just combine as many clutches and brakes you need. We provide not just clutch and brake combinations, but total solutions that also include motors, speed reducers and the like.



## Available Models



COUPLINGS

ETP BUSHINGS

**ELECTROMAGNETIC CLUTCHES & BRAKES**

SPEED CHANGERS & REDUCERS

INVERTERS

LINEAR SHAFT DRIVES

TORQUE LIMITERS

ROSTA

### SERIES

ELECTROMAGNETIC-ACTUATED MICRO CLUTCHES & BRAKES

ELECTROMAGNETIC-ACTUATED CLUTCHES & BRAKES

**ELECTROMAGNETIC CLUTCH & BRAKE UNITS**

SPRING-ACTUATED BRAKE

ELECTROMAGNETIC TOOTH CLUTCHES

BRAKE MOTORS

POWER SUPPLIES

## Model Selection

Model/Type	Torque [N·m]	Device		Shaft structure		Unitized construction		Position control	Forward/reverse operation	Two-step speed changing
		Clutch	Brake	Through-shaft	Butt shaft	Motor	Speed reducer			
<b>125</b>	2.4 ~ 160	◎	◎		◎			◎		
<b>121-□-20G</b>	5 ~ 320	◎	◎	◎				◎		
<b>126</b>	5 ~ 80	◎	◎		◎	◎		◎		
<b>CBW</b>	5 ~ 40	◎	◎	◎			◎	◎		
<b>CMW</b>	5 ~ 40	◎	◎	◎		◎	◎	◎		
<b>121-□-10G</b>	5 ~ 320	◎ (Double clutch)		◎					◎	◎
<b>122</b>	5 ~ 160	◎ (Double clutch)	◎	◎				◎	◎	◎

### MODELS

**125**

**121-□-20G**

**126**

**CBW**

**CMW**

**121-□-10G**

**122**

For details on selection, see P.310.

## Product Lineup

## 125



RoHS-compliant  
(125-□-12G only)

» P.290

#### Butt shaft construction, drip-proof type

Handling is made simpler by drip-proof construction that encloses clutch and brake inside a light alloy housing.

#### Mounting direction freedom

Disc springs are used, so this clutch/brake unit can be used vertically.

This design preserves the performance of clutch and brake to the maximum extent. Its construction is sturdy, yet lightmass. Its easy-to-use butt-connected construction is drip proof, making it suitable for a variety of general industrial machinery applications. The base can be either steel plate or cast (E type made to order). Mounting is simple and service life is long.

Unit types		125-□-12G	125-□-12E
Clutch/brake torque	[N·m]	2.4 ~ 80	5 ~ 160
Operating temperature	[°C]	-10 ~ +40	
Backlash		Zero	

## 121-□-20G



RoHS-compliant

» P.294

#### Through-shaft construction, open-disc brake system type

These are open-disc brake system type with clutch and brake mounted on the outside of a light alloy drum. They use through-shaft construction.

#### Ideal for winding or geared transmission

The construction holds up well under radial loads due to a wide bearing span, so they can be used under high tension when mounted with V pulleys, spur gears or the like.

#### Output shaft can be used in many applications

Through-shaft construction means that output is available on both sides of the shaft. Many mechanism layouts are possible, including using both ends in split driving or mounting a detection disc or the like on one end.

This design preserves the performance of clutch and brake to the maximum extent. Its construction is sturdy, yet lightmass. Its compact through-shaft construction is open, making it suitable for a variety of general industrial machinery applications. Mounting is simple and service life is long.

Clutch/brake torque	[N·m]	5 ~ 320
Operating temperature	[°C]	-10 ~ +40
Backlash		Zero

## 126



» P.296

#### Easy to mount and handle

These types directly connect 3-phase induction motors to clutch/brake units, requiring less installation space and eliminating cumbersome tasks such as centering and processing of mounts. Since the output shaft is simply engaged to the load, handling is easy.

#### Capable of high-frequency operation

These can repeatedly start and stop the output shaft without stopping the motor, so they can operate intermittently at a higher frequency than on/off operation of the motor.

#### Two ways to mount

Base and flange types are available. Decide which to use based on your installation location. Flange mountings have the same shape mounting surface as general-purpose flange motors, so they can be integrated with speed reducers.

These are practical units in which induction motors are directly connected to clutch/brake units in advance. Base and flange types are available.

Unit types		126-□-4B	126-□-4F-N
Clutch/brake torque	[N·m]	5 ~ 80	
Operating temperature	[°C]	-10 ~ +40	
Backlash		Zero	
Motor output	[kW]	0.2 to 3.7 3-phase 4-pole fully-sealed external fan type	

COUPLINGS

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SPEED CHANGERS & REDUCERS

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TORQUE LIMITERS

ROSTA

SERIES

ELECTROMAGNETIC-ACTUATED MICRO CLUTCHES & BRAKES

ELECTROMAGNETIC-ACTUATED CLUTCHES & BRAKES

ELECTROMAGNETIC CLUTCH & BRAKE UNITS

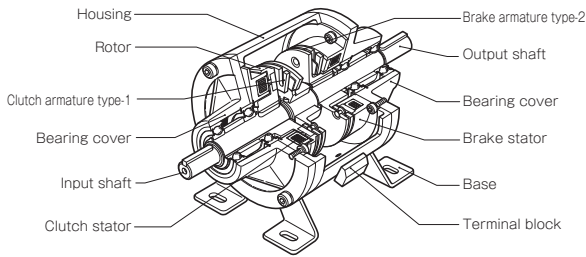
SPRING-ACTUATED BRAKE

ELECTROMAGNETIC TOOTH CLUTCHES

BRAKE MOTORS

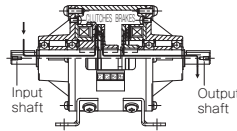
POWER SUPPLIES

Structure



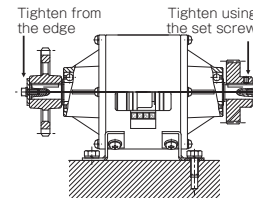
Power transmission

Input and output shafts are isolated. A pulley or the like is mounted on the input shaft, connecting it to the driver so it is always rotating. When electricity flows to the clutch, the two shafts are connected, and rotation is transmitted. If the brake mounted on the output shaft is supplied with electricity simultaneous with clutch current being shut off, the input and output shafts are isolated and the output shaft is quickly braked.

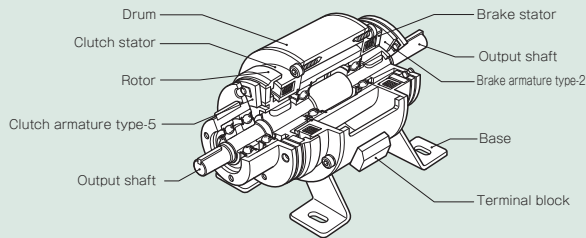


Mounting

The end faces of the input and output shafts are equipped with screw holes, so pulleys and the like can be easily mounted using jig accessories. They are attached by screwing them in from the end face or by using a set screw.

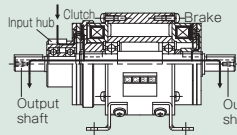


Structure



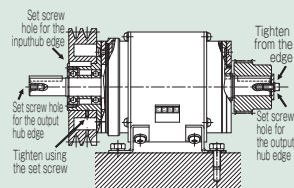
Power transmission

The input hub floats on the shaft on bearings, is connected to the drive by mounting pulleys or the like, and is always rotating. When electricity flows to the clutch, the output shaft is connected, and rotation is transmitted. If a brake mounted on the output shaft is supplied with electricity simultaneous with clutch current being shut off, the input and output shafts are isolated and the output shaft is quickly braked. They have excellent response performance, so they are capable of high-frequency intermittent operation.

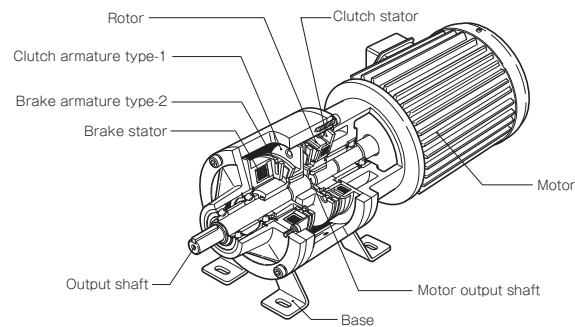


Mounting

The input hub and output shaft end face have screw holes, so they are pushed into each other using a jig accessory. Lock them in place either using a set screw or by pressing from the end face.

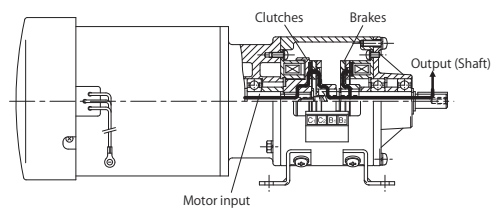


Structure



Power transmission

The motor shaft serves as the clutch input shaft, while the output shaft is isolated. When current flows to the clutch, the motor's rotation is transmitted to the output shaft via the clutch. If the brake is supplied with electricity simultaneous with clutch current being shut off, the output shaft is isolated from the motor side and instantly stopped.



MODELS

125

121-□-20G

126

CBW

CMW

121-□-10G

122

Product Lineup

# CBW



» P.300

**Compact, space saving**

These are very compact units that combine a worm reducer and clutch/brake in a single unit. They can greatly save on space required for mounting.

**Easy to mount and handle**

A V pulley comes mounted as standard on the input part, so simply connect it to a drive with a belt. Install the speed reducer to complete the mounting. No troublesome centering or processing is needed.

**Efficient starting and stopping**

Integration keeps self-inertia low, so the efficiency of starting and stopping is good. It can be combined with a speed changer for a wide range of speed changes, and excellent performance can be achieved in many applications, such as 360° rotation stop of the output shaft.

These are practical units in which worm reducers are directly connected to clutch/brake units in advance. A standard V belt pulley is installed on the input part of the clutch. Two models are available, based on worm reducer type.

Unit types	CBW-□N-H□	CBW-□N-B□
Speed reducer manufacturer	Hirai Reduction Gear Manufacturing Co.	Bellpony Co., Ltd.
Clutch/brake torque [N·m]	5 ~ 40	
Operating temperature [°C]	0 ~ +40	
Backlash	Zero (clutch/brake units)	

# CMW



» P.304

**Easy to mount and handle**

These types integrate induction motors, clutch/brake units, couplings, and speed reducers in a single unit, requiring less installation space and eliminating cumbersome tasks such as centering and processing of mounts. Since the output shaft is simply engaged to the load, handling is easy.

**Efficient starting and stopping**

Integration keeps self-inertia low, so the efficiency of starting and stopping is good.

**Capable of high-frequency operation**

These can repeatedly start and stop the output shaft without stopping the motor, so they can operate intermittently at a higher frequency than on/off operation of the motor.

These are practical units in which motors, clutch/brake units, and speed reducers are combined into a single unit in advance. An induction motor and a clutch are coupled by a MIKI PULLEY CENTAFLEX coupling, which features shock absorption, and then combined in a unit with a worm reducer to make a multifunction drive unit.

Clutch/brake torque [N·m]	5 ~ 40	
Operating temperature [°C]	0 ~ +40	
Backlash	Zero (clutch/brake units)	
Motor output [kW]	0.2 to 1.5 3-phase 4-pole fully-sealed external fan type	

# 121-□-10G



RoHS-compliant

» P.306

**Compact through-shaft construction**

This is an efficient unit whose basic design is the same as that of clutch/brake type 121. It is a strong construction for winding, gear transmission, and the like.

**Multi-function unit**

This single unit can perform functions such as two-step speed changing, forward/reverse operation, and power distribution, so the transmission mechanism can be simplified.

These are compact, open units that place two clutches (101-□-15) on a through-shaft. Since one unit can perform many functions, and is also easy to install and handle, the transmission mechanism can be simplified.

Clutch torque [N·m]	5 ~ 320	
Operating temperature [°C]	-10 ~ +40	
Backlash	Zero	

# 122



RoHS-compliant

» P.308

**Compact through-shaft construction**

These unique units have everything placed extremely skilfully on the through-shaft. They are suitable for winding, gear transmission, and the like.

**Multi-function unit**

These multifunction units perform complex and precision control in a single unit, including two-step speed changing, stopping at predetermined positions, and high-frequency forward/reverse operation. The transmission mechanism can be greatly simplified.

**Easy handling**

They not only perform many functions, they also are easy to build into machinery, just like other units.

These are units unlike any other, which combine two clutches (101-□-15G) with a brake (111-□-12G) in a compact form factor. They provide high-precision positioning and applied control of complex operations from a single unit. Installation and handling are as easy as on other units.

Clutch/brake torque [N·m]	5 ~ 160	
Operating temperature [°C]	-10 ~ +40	
Backlash	Zero	

SERIES

ELECTROMAGNETIC-ACTUATED MICRO CLUTCHES & BRAKES

ELECTROMAGNETIC-ACTUATED CLUTCHES & BRAKES

ELECTROMAGNETIC CLUTCH & BRAKE UNITS

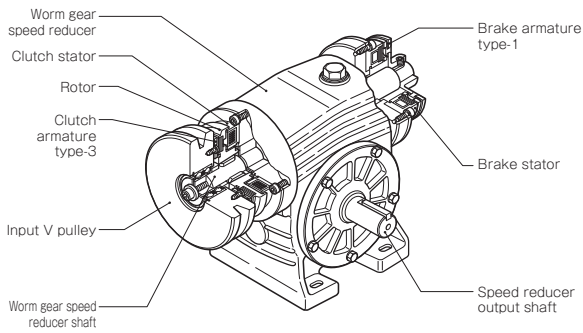
SPRING-ACTUATED BRAKE

ELECTROMAGNETIC TOOTH CLUTCHES

BRAKE MOTORS

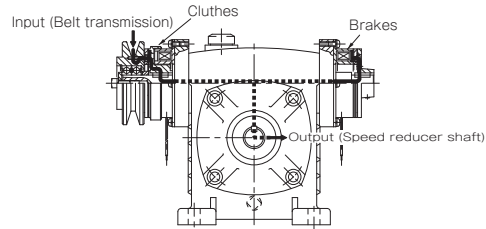
POWER SUPPLIES

Structure

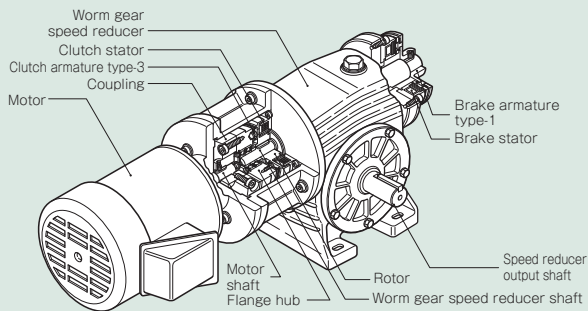


Power transmission

A V pulley is installed on the input part of the clutch, connected by a belt to the drive, and rotates continuously. When current flows to the clutch, rotation is transmitted to the worm shaft, and the output shaft of the speed reducer rotates. If the brake is supplied with electricity when clutch current is shut off, the output shaft stops.

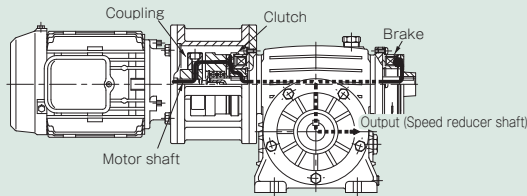


Structure

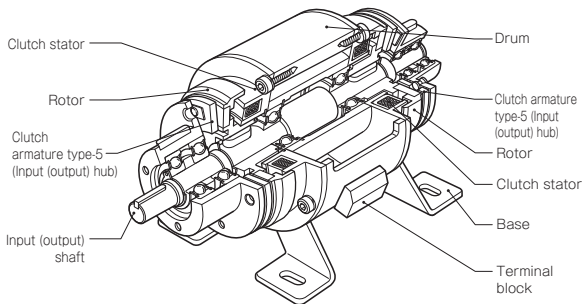


Power transmission

The motor shaft becomes the clutch input shaft via a CENTAFLEX coupling, and the worm shaft is isolated. When current flows to the clutch, the motor's rotation is transmitted to the worm shaft via the clutch, and the output shaft of the speed reducer rotates. If the brake is supplied with electricity when clutch current is shut off, the output shaft stops.

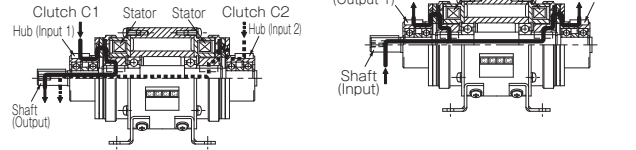


Structure



Power transmission

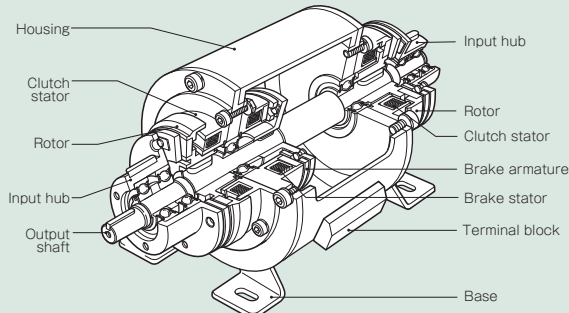
Two clutches, C1 and C2, have a hub shape on the armature side; a V pulley or the like is installed on each. When the hub is used as the input, different force power is connected to the two hubs and they rotate continuously. When current runs to clutch C1, power is transmitted to the shaft via the rotor. When C1 current is shut off and current simultaneously sent to C2, the power switches quickly and the new power is transmitted to the shaft. When the shaft is used as the input, the drive and shaft engage and rotation is continuous. When current flows to the clutches, power is transmitted via the armature to the hub that serves as output.



Mounting

Installation of these units and mounting of components and the like is the same as for 121-□-20G type clutch/brake units.

Structure

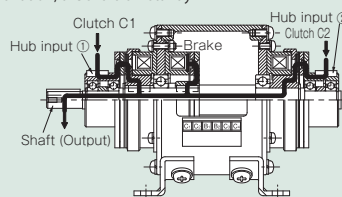


Power transmission

Different force power is connected to the input hubs of the two clutches C1 and C2 to make them rotate continuously. When current flows to clutch C1, that power is transmitted and the output shaft rotates. When C1 current is shut off and current simultaneously sent to C2, power switches quickly and the new power is transmitted to the shaft. If the brake is supplied with electricity simultaneous with clutch current being shut off, the shaft is instantly stopped.

Mounting

Installation of these units and mounting of components and the like is the same as for 121-□-20G type clutch/brake units.



MODELS

125

121-□-20G

126

CBW

CMW

121-□-10G

122

## Customization

### Examples of Special Cases

#### ■ Special friction material (lining) specifications

In addition to standard friction materials, high-torque friction materials and long-life friction materials can also be handled. When using non-standard friction materials, the friction torque and total work will differ from catalog specifications tables. Contact Miki Pulley for details.

#### ■ Special voltage specifications

The standard voltage of clutch and brakes is DC 24 V. Special voltages such as DC 12 V, 90 V and 180 V can also be handled.

#### ■ New JIS standard compliance for input and output shafts

Input/output shaft parts other than those of 126-□-4F-N, CBW-□-N-□, and CMW-□-N-H□H are compliant with old JIS standards. They can also be made compliant with new JIS standards. Contact Miki Pulley for details.

\* Please understand that we may not be able to meet all such special specifications, depending on the usage conditions, dimensional restrictions, clutch and brake sizes, mounting restrictions and the like.

#### ■ V pulleys, sprockets, etc.

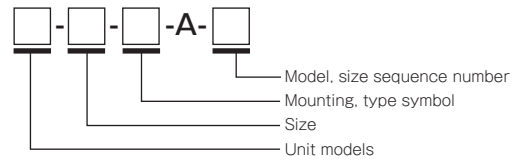
Input and output components that meet your needs, for example, by having V pulleys (including with different pulley diameters), sprockets, or timing pulleys, can be designed and produced.

#### ■ Integrated or unitized products

We can also produce units that combine motors, speed reducers, couplings and the like to meet your needs.

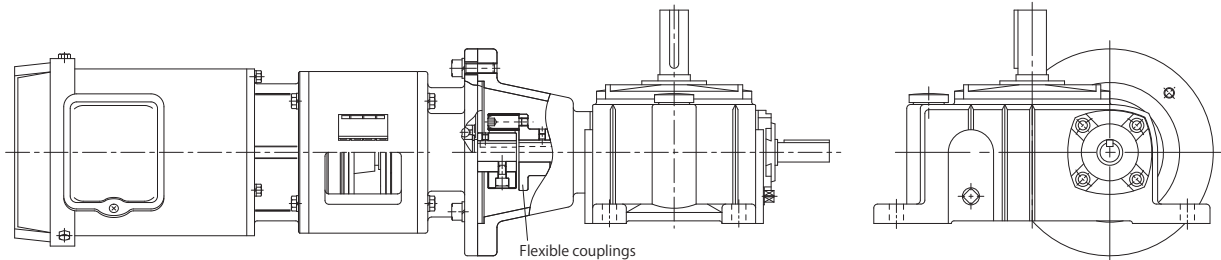
### How to Place an Order

After exchanging delivery specifications for designing a product to meet your particular requirements (special production), we will custom manufacture it using the type name at right.

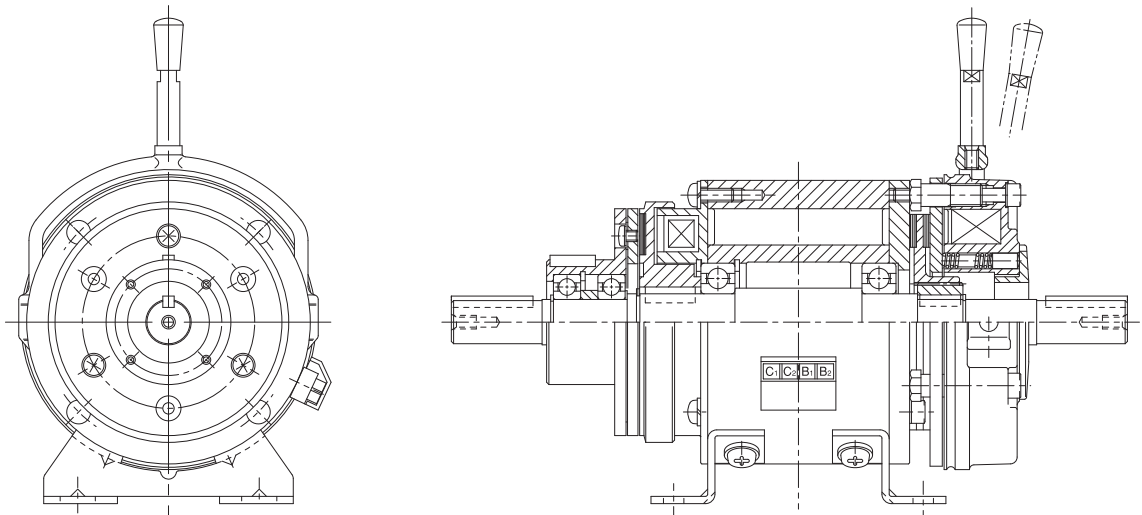


### Special Application Examples

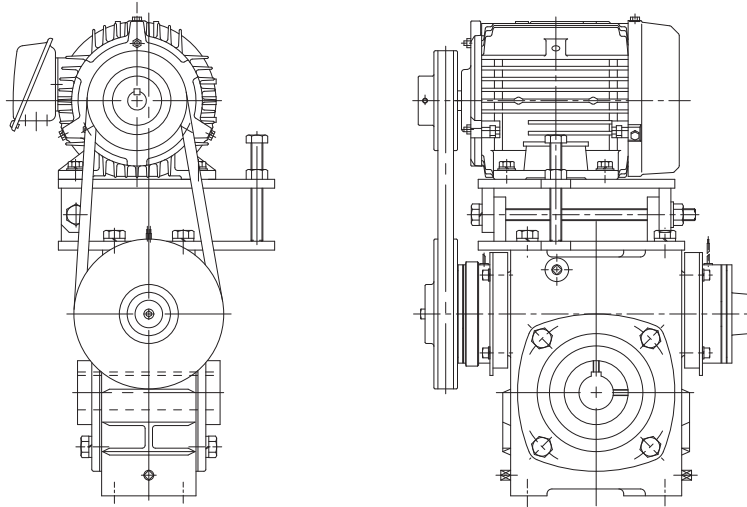
#### ■ Integrated unit that uses a coupling to connect a 126 model with an above-shaft worm reducer



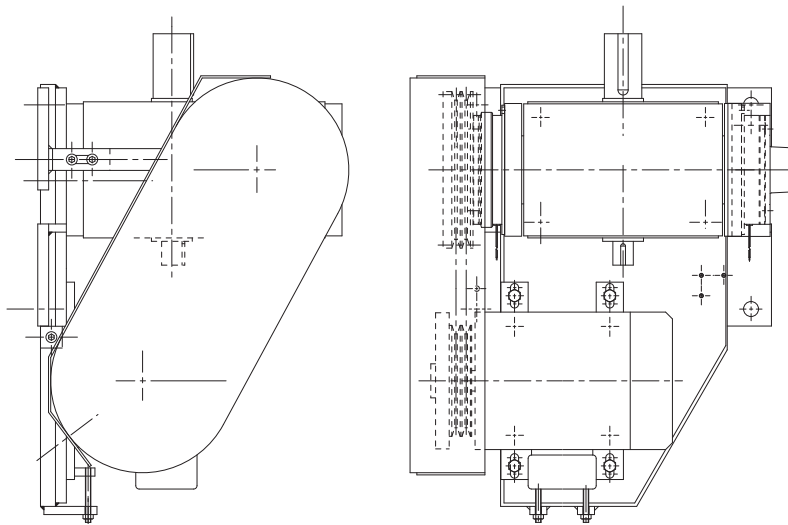
#### ■ Unit that uses a spring-actuated brake as the brake of a model 121 clutch/brake unit



Integrated drive unit that connects a motor and special type of CBW model (hollow-shaft worm reducer) with a belt



Integrated drive unit, covered with a safety cover, that connects a motor and a special CBW model worm reducer with a belt



COUPLINGS

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**ELECTROMAGNETIC  
CLUTCH & BRAKE  
UNITS**

SPRING-ACTUATED  
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POWER SUPPLIES

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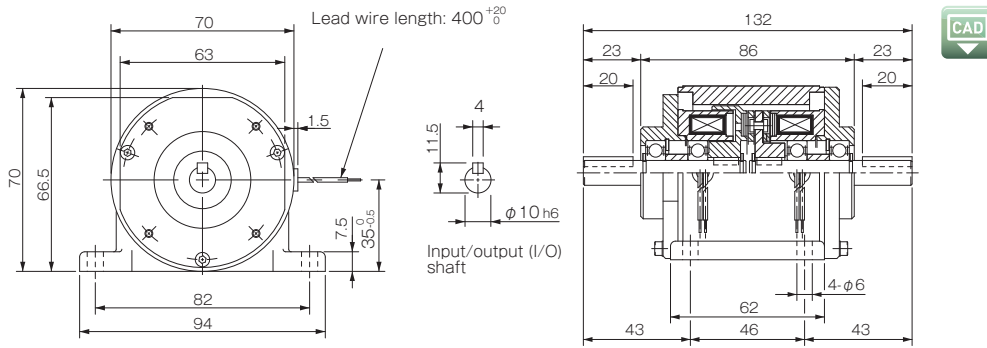
# 125 Models Clutch/Brake Units

## Specifications (125-□-12G)

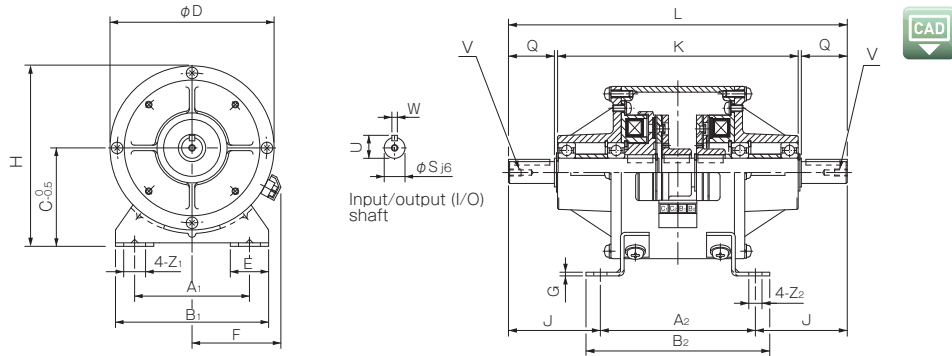
Model	Size	Dynamic friction torque $T_d$ [N·m]	Static friction torque $T_s$ [N·m]	Coil (at 20°C)				Heat resistance class	Max. rotation speed [min <sup>-1</sup> ]	Rotating part moment of inertia J [kg·m <sup>2</sup> ]	Total work performed until readjustment of the air gap $E_r$ [J]	Armature pull-in time $t_a$ [s]	Torque build-up time $t_p$ [s]	Torque decaying time $t_d$ [s]	Mass [kg]
				Voltage [V]	Wattage [W]	Current [A]	Resistance [ $\Omega$ ]								
125-05-12G	05	2.4	—	DC24	10	0.42	58	B	3000	$2.4 \times 10^{-5}$	$9 \times 10^6$	C:0.012 B:0.010	C:0.031 B:0.023	C:0.040 B:0.012	1.2
125-06-12G	06	5	5.5	DC24	11	0.46	52	B	3000	$1.28 \times 10^{-4}$	$36 \times 10^6$	C:0.020 B:0.015	C:0.041 B:0.033	C:0.020 B:0.015	2.1
125-08-12G	08	10	11	DC24	15	0.63	38	B	3000	$3.70 \times 10^{-4}$	$60 \times 10^6$	C:0.023 B:0.016	C:0.051 B:0.042	C:0.030 B:0.025	4.2
125-10-12G	10	20	22	DC24	20	0.83	29	B	3000	$1.40 \times 10^{-3}$	$130 \times 10^6$	C:0.025 B:0.018	C:0.063 B:0.056	C:0.050 B:0.030	6.8
125-12-12G	12	40	45	DC24	25	1.09	23	B	3000	$3.85 \times 10^{-3}$	$250 \times 10^6$	C:0.040 B:0.027	C:0.115 B:0.090	C:0.065 B:0.050	12
125-16-12G	16	80	90	DC24	35	1.46	16	B	3000	$1.35 \times 10^{-2}$	$470 \times 10^6$	C:0.050 B:0.035	C:0.160 B:0.127	C:0.085 B:0.055	22

\* The dynamic friction torque,  $T_d$ , is measured at a relative speed of 100 min<sup>-1</sup>.

## Dimensions (125-05-12G)



## Dimensions (125-□-12G)



Unit [mm]

Size	Dimensions of part															Dimensions of shaft				
	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	C	D	E	F	G	H	J	K	L	Z <sub>1</sub>	Z <sub>2</sub>	Q	S	U	V	W
06	65	90	90	105	65	100	27.5	61	2.6	115	48.5	132	187	13.5	6.5	25	11	12.5	M4 × 0.7, length: 8	4
08	80	110	110	130	80	125	32.5	72	3.2	142.5	63	171	236	15.5	9	30	14	16	M4 × 0.7, length: 8	5
10	105	135	140	160	90	150	35	81	3.2	165	80	210	295	20	11.5	40	19	21	M6 × 1, length: 11	5
12	135	160	175	185	112	190	42.5	97	4.5	207	108	270	376	24	11	50	24	27	M6 × 1, length: 11	7
16	155	200	200	230	132	230	45	109	6	247	145	362	490	28	14	60	28	31	M6 × 1, length: 11	7

\* The input/output shaft keyways are old JIS standard class 2 while the key is old JIS standard class 1.

\* When inserting pulleys or the like onto input/output shafts, use the supplied insertion set.

**How to Place an Order**

**125-06-12G**

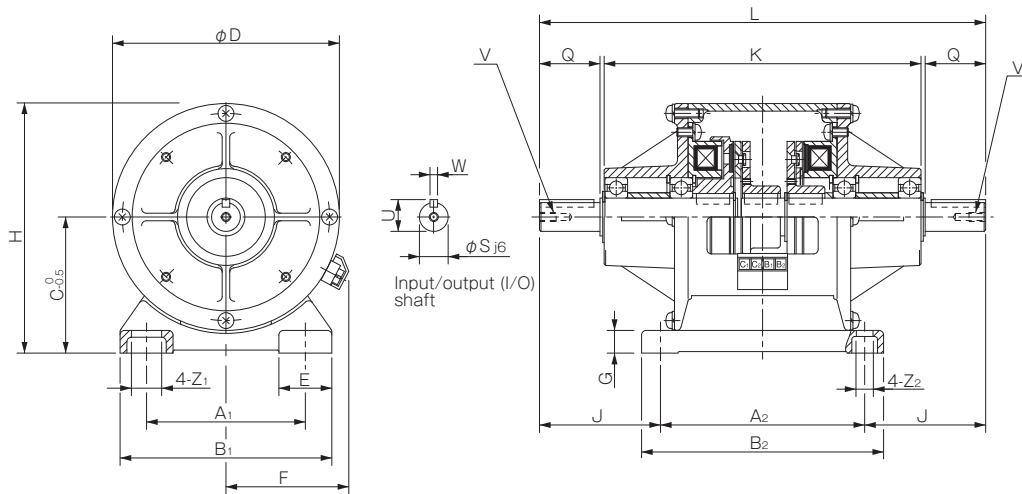
Size      Base

## Specifications (125-□-12E) Made to Order

Model	Size	Dynamic friction torque $T_d$ [N·m]	Static friction torque $T_s$ [N·m]	Coil (at 20°C)				Heat resistance class	Max. rotation speed [min <sup>-1</sup> ]	Rotating part moment of inertia J [kg·m <sup>2</sup> ]	Total work performed until readjustment of the air gap $E_r$ [J]	Armature pull-in time $t_a$ [s]	Torque rise time $t_p$ [s]	Torque extinction time $t_e$ [s]	Mass [kg]
				Voltage [V]	Wattage [W]	Current [A]	Resistance [ $\Omega$ ]								
125-06-12E	06	5	5.5	DC24	11	0.46	52	B	3000	$1.28 \times 10^{-4}$	$36 \times 10^6$	C:0.020 B:0.015	C:0.041 B:0.033	C:0.020 B:0.015	2.1
125-08-12E	08	10	11	DC24	15	0.63	38	B	3000	$3.70 \times 10^{-4}$	$60 \times 10^6$	C:0.023 B:0.016	C:0.051 B:0.042	C:0.030 B:0.025	4.2
125-10-12E	10	20	22	DC24	20	0.83	29	B	3000	$1.40 \times 10^{-3}$	$130 \times 10^6$	C:0.025 B:0.018	C:0.063 B:0.056	C:0.050 B:0.030	6.8
125-12-12E	12	40	45	DC24	25	1.09	23	B	3000	$3.85 \times 10^{-3}$	$250 \times 10^6$	C:0.040 B:0.027	C:0.115 B:0.090	C:0.065 B:0.050	12
125-16-12E	16	80	90	DC24	35	1.46	16	B	3000	$1.35 \times 10^{-2}$	$470 \times 10^6$	C:0.050 B:0.035	C:0.160 B:0.127	C:0.085 B:0.055	22
125-20-12E	20	160	175	DC24	45	1.86	13	B	2500	$4.08 \times 10^{-2}$	$10 \times 10^5$	C:0.090 B:0.065	C:0.250 B:0.207	C:0.130 B:0.070	49

\*The dynamic friction torque,  $T_d$ , is measured at a relative speed of 100 min<sup>-1</sup>.

## Dimensions (125-□-12E) Made to Order



Unit [mm]

Size	Dimensions of part													Dimensions of shaft						
	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	C	D	E	F	G	H	J	K	L	Z <sub>1</sub>	Z <sub>2</sub>	Q	S	U	V	W
06	65	90	90	105	65	100	27.5	61	10	115	48.5	132	187	13.5	6.5	25	11	12.5	M4 × 0.7, length: 8	4
08	80	110	110	130	80	125	32.5	72	12	142.5	63	171	236	15.5	9	30	14	16	M4 × 0.7, length: 8	5
10	105	135	140	160	90	150	35	81	15	165	80	210	295	20	11.5	40	19	21	M6 × 1, length: 11	5
12	135	160	175	185	112	190	42.5	97	15	207	108	270	376	24.5	11	50	24	27	M6 × 1, length: 11	7
16	155	200	200	230	132	230	45	109	18	247	145	362	490	28	14	60	28	31	M6 × 1, length: 11	7
20	195	240	240	270	160	290	47.5	124	20	305	188	448	616	28	14	80	38	41.5	M10 × 1.5, length: 17	10

\* The input/output shaft keyways are old JIS standard class 2 while the key is old JIS standard class 1.

\* When inserting pulleys or the like onto input/output shafts, use the supplied insertion set.

How to Place an Order

125-06-12E

Size \_\_\_\_\_ Base casting (Made to Order): E

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SERIES

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ELECTROMAGNETIC-ACTUATED CLUTCHES & BRAKES

ELECTROMAGNETIC CLUTCH & BRAKE UNITS

SPRING-ACTUATED BRAKE

ELECTROMAGNETIC TOOTH CLUTCHES

BRAKE MOTORS

POWER SUPPLIES

MODELS

125

121-□-20G

126

CBW

CMW

121-□-10G

122

# 125 Models

## List of Stand-alone Clutches and Brakes Used

Model	Stand-alone clutch system	Stand-alone braking system	Bearing number	
			Input part	Output part
125-05-12	-	-	6000	6000
125-06-12	101-06-11G 24V R15JIS A15JIS	111-06-12G 24V 15JIS	6202	6202
125-08-12	101-08-11G 24V R20JIS A20JIS	111-08-12G 24V 20JIS	6004	6004
125-10-12	101-10-11G 24V R25JIS A25JIS	111-10-12G 24V 25JIS	6205	6205
125-12-12	101-12-11G 24V R30JIS A30JIS	111-12-12G 24V 30JIS	6206	6206
125-16-12	101-16-11G 24V R40JIS A40JIS	111-16-12G 24V 40JIS	6208	6208
125-20-12	101-20-11G 24V R50JIS A50JIS	111-20-12G 24V 50JIS	6211	6211

## Recommended Power Supplies and Accessory Parts

Model	Recommended power supplies	Accessory parts			
		Circuit protector (Varistor), qty. 2	Tightening collar	Screw stock	Hexagonal nut
125-05-12	BEH-10G	NVD07SCD082 or an equivalent	-	-	-
125-06-12	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M4 × 55 (hex-socket bolt), qty. 1	M4, qty. 1
125-08-12	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M4 × 55 (hex-socket bolt), qty. 1	M4, qty. 1
125-10-12	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M6 × 100, qty. 1	M6, qty. 2
125-12-12	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M6 × 100, qty. 1	M6, qty. 2
125-16-12	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M6 × 100, qty. 1	M6, qty. 2
125-20-12	BEH-20G	NVD07SCD082 or an equivalent	Qty. 1	M10 × 160, qty. 1	M10, qty. 2

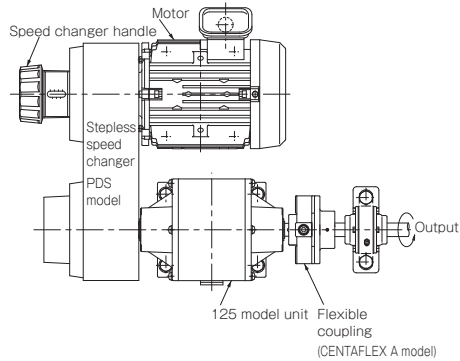
\* NVD □ SCD □ parts are manufactured by KOA Corporation.

\* Varistors need not be used when a BEH model overexcitation electromagnetic power supply is used. For details, refer to the section on power supplies.

## Mounting Example

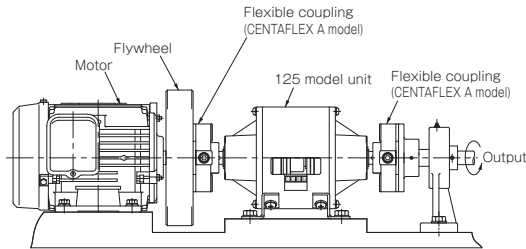
### In Combination with Speed Changers

Clutches and brakes are generally used after motors and speed changers. This unit was designed so that it can be used in combination with a Miki Pulley belt-type stepless speed changer. We provide items precombined into sets. Contact Miki Pulley for details.



### Examples of Direct Connection to Motors

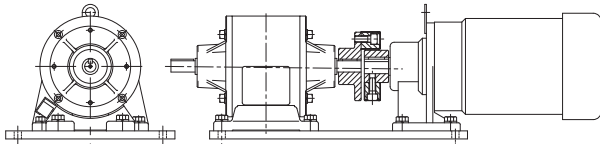
Couplings generally have small inertial moments compared to pulleys, sprockets and the like, so they are often used in combination with clutches and brakes. This unit is often combined with our flexible couplings (CENTAFLEX) in particular. It is very effective to mount it on the motor side in combination with a flywheel.



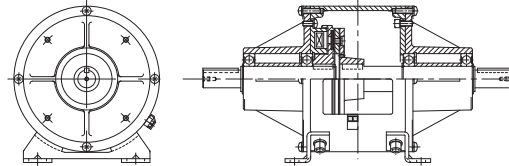
## Special Types

In addition to the special application examples shown below, drivers can also be set, and units can be provided with pulleys, sprockets, and the like. Contact Miki Pulley for details.

### One-piece Unit Connected to Geared Motor and Coupling



### Clutch Unit (No Brake)



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UNITS

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BRAKE

ELECTROMAGNETIC  
TOOTH CLUTCHES

BRAKE MOTORS

POWER SUPPLIES

#### MODELS

125

121-□-20G

126

CBW

CMW

121-□-10G

122

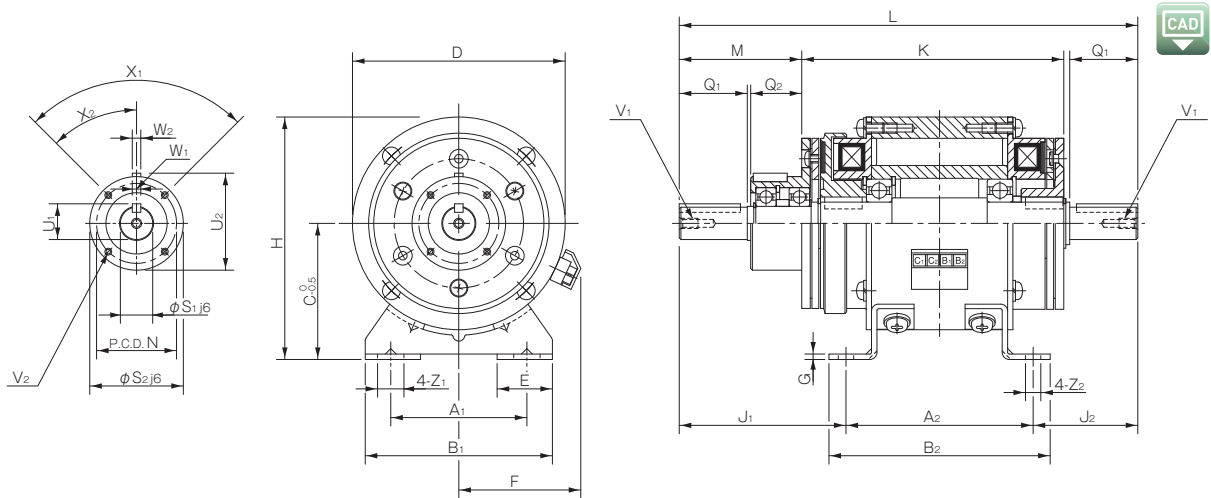
# 121-□-20G Types Clutch/Brake Units

## Specifications

Model	Size	Dynamic friction torque $T_d$ [N·m]	Static friction torque $T_s$ [N·m]	Coil (at 20°C)				Heat resistance class	Max. rotation speed [min <sup>-1</sup> ]	Rotating part moment of inertia J [kg·m <sup>2</sup> ]	Total work performed until readjustment of the air gap $E_r$ [J]	Armature pull-in time $t_a$ [s]	Torque build-up time $t_p$ [s]	Torque decaying time $t_d$ [s]	Mass [kg]
				Voltage [V]	Wattage [W]	Current [A]	Resistance [Ω]								
121-06-20G	06	5	5.5	DC24	11	0.46	52	B	3000	$1.43 \times 10^{-4}$	$36 \times 10^6$	C:0.020 B:0.015	C:0.041 B:0.033	C:0.020 B:0.015	1.5
121-08-20G	08	10	11	DC24	15	0.63	38	B	3000	$4.23 \times 10^{-4}$	$60 \times 10^6$	C:0.023 B:0.016	C:0.051 B:0.042	C:0.030 B:0.025	2.7
121-10-20G	10	20	22	DC24	20	0.83	29	B	3000	$1.42 \times 10^{-3}$	$130 \times 10^6$	C:0.025 B:0.018	C:0.063 B:0.056	C:0.050 B:0.030	5.5
121-12-20G	12	40	45	DC24	25	1.09	23	B	3000	$4.18 \times 10^{-3}$	$250 \times 10^6$	C:0.040 B:0.027	C:0.115 B:0.090	C:0.065 B:0.050	9.6
121-16-20G	16	80	90	DC24	35	1.46	16	B	3000	$1.34 \times 10^{-2}$	$470 \times 10^6$	C:0.050 B:0.035	C:0.160 B:0.127	C:0.085 B:0.055	18.5
121-20-20G	20	160	175	DC24	45	1.88	13	B	2500	$4.13 \times 10^{-2}$	$10 \times 10^8$	C:0.090 B:0.065	C:0.250 B:0.200	C:0.130 B:0.070	35
121-25-20G	25	320	350	DC24	60	2.50	9.6	B	2000	$1.02 \times 10^{-1}$	$20 \times 10^8$	C:0.115 B:0.085	C:0.335 B:0.275	C:0.210 B:0.125	64

\*The dynamic friction torque,  $T_d$ , is measured at a relative speed of 100 min<sup>-1</sup>.

## Dimensions



Unit [mm]

Size	Dimensions of part																Dimensions of shaft												
	A1	A2	B1	B2	C	D	E	F	G	H	J1	J2	K	L	M	N	Z1	Z2	Q1	Q2	S1	S2	U1	U2	V1	V2	X1	X2	W12
06	52.5	75	80	90	55	80	27.5	53	2.6	95	65.5	40.5	105.5	181	47	33	13.5	6.5	25	20	11	38	12.5	39.5	M4 × 0.7, length: 8	3-M4 × 0.7, length: 4	3-120°	60°	4
08	65	90	90	105	65	100	27.5	61	2.6	115	78.5	48.5	126.5	217	57	37	13.5	6.5	30	25	14	45	16	47	M4 × 0.7, length: 8	3-M4 × 0.7, length: 6	3-120°	60°	5
10	80	110	110	130	80	125	32.5	72	3.2	142.5	98	62	154	270	72	47	15.5	9	40	30	19	55	21	57	M6 × 1, length: 11	4-M4 × 0.7, length: 8	4-90°	45°	5
12	105	135	140	160	90	150	35	81	3.2	165	121	73.5	184	330	92	52	20	11.5	50	40	24	64	27	67	M6 × 1, length: 11	4-M4 × 0.7, length: 8	4-90°	45°	7
16	135	160	175	185	112	190	43	97	4.5	207	149	90	221	399	113	62	24.5	11.5	60	50	28	75	31	78	M6 × 1, length: 11	6-M5 × 0.8, length: 8	6-60°	30°	7
20	155	200	200	230	132	230	45	109	6	247	187	117	276	504	142	74.5	28	14	80	60	38	90	41.5	93.5	M10 × 1.5, length: 17	4-M6 × 1, length: 12	4-90°	45°	10
25	195	240	240	270	160	290	47.5	124	20	305	238	154	334	632	183	101.5	28	14	110	70	42	115	45.5	118.5	M10 × 1.5, length: 17	8-M6 × 1, length: 12	8-45°	22.5°	12

\* The input/output shaft keyways are old JIS standard class 2 while the key is old JIS standard class 1. Note that the keyway dimensions of the unit hub part do not conform to the old JIS standard. Check them on the dimensions table above.

\* When inserting pulleys or the like onto input/output shafts, use the supplied insertion set.

\* The 121-25-20G base is a casting.

**How to Place an Order**

**121-06-20G**



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BRAKEELECTROMAGNETIC  
TOOTH CLUTCHES

BRAKE MOTORS

POWER SUPPLIES

MODELS

125

121-□-20G

126

CBW

CMW

121-□-10G

122

## List of Stand-alone Clutches and Brakes Used

Model	Stand-alone clutch system				Stand-alone braking system			Bearing number	
								Main shaft part	Hub part
121-06-20G	101-06-15G	24V	R15JIS	A12JIS	111-06-12G	24V	15JIS	6202	6001
121-08-20G	101-08-15G	24V	R20JIS	A15JIS	111-08-12G	24V	20JIS	6004	6002
121-10-20G	101-10-15G	24V	R25JIS	A20JIS	111-10-12G	24V	25JIS	6205	6004
121-12-20G	101-12-15G	24V	R30JIS	A25JIS	111-12-12G	24V	30JIS	6206	6005
121-16-20G	101-16-15G	24V	R40JIS	A30JIS	111-16-12G	24V	40JIS	6208	6006
121-20-20G	101-20-15G	24V	R50JIS	A40JIS	111-20-12G	24V	50JIS	6211	6008
121-25-20G	101-25-15G	24V	R60JIS	A50JIS	111-25-12G	24V	60JIS	6214	6010

## Recommended Power Supplies and Accessory Parts

Model	Recommended power supplies	Accessory parts				
		Circuit protector (Varistor), qty. 2	Tightening collar	Screw stock	Presser foot	Hexagonal nut
121-06-20G	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M4 × 55, qty. 3	Qty. 1	M4, qty. 3
121-08-20G	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M4 × 55, qty. 3	Qty. 1	M4, qty. 3
121-10-20G	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M4 × 55, qty. 3	Qty. 1	M4, qty. 3
121-12-20G	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M4 × 55, qty. 2/M6 × 100, qty. 1	Qty. 1	M4, qty. 2/M6, qty. 1
121-16-20G	BEH-10G	NVD07SCD082 or an equivalent	Qty. 1	M5 × 70, qty. 2/M6 × 100, qty. 1	Qty. 1	M5, qty. 2/M6, qty. 1
121-20-20G	BEH-20G	NVD07SCD082 or an equivalent	Qty. 1	M6 × 160, qty. 2/M10 × 220, qty. 1	Qty. 1	M6, qty. 4/M10, qty. 2
121-25-20G	BEH-20G	NVD07SCD082 or an equivalent	Qty. 1	M6 × 160, qty. 2/M10 × 220, qty. 1	Qty. 1	M6, qty. 4/M10, qty. 2

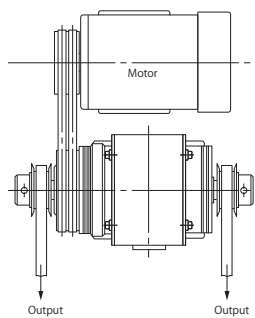
\* NVD □ SCD □ parts are manufactured by KOA Corporation.

\* Varistors need not be used when a BEH model overexcitation electromagnetic power supply is used. For details, refer to the section on power supplies.

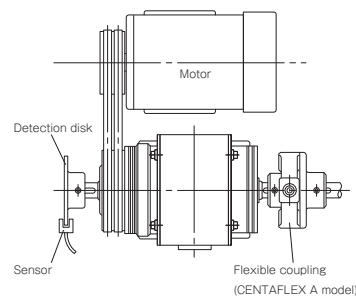
## Mounting Example

This clutch/brake unit allows the output shaft to be used in two locations, so both outputs can be used simultaneously, or one can be connected to a load and a rotation detection disk mounted to the other. A variety of transmission paths can be used in layouts.

### Example with Two Outputs



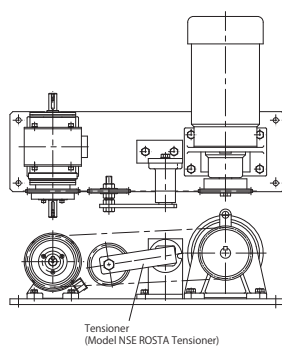
### Example with Detection Disk on One Side



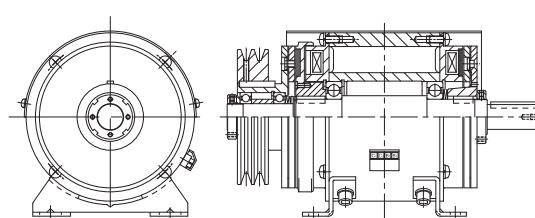
## Special Types

In addition to the special application examples shown below, drivers can also be set, and units can be provided with pulleys, sprockets, and the like. Contact Miki Pulley for details.

### One-piece Unit Connected by Geared Motor and Sprocket



### Clutch/Brake Unit with V Pulley Mounted on Input Side





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