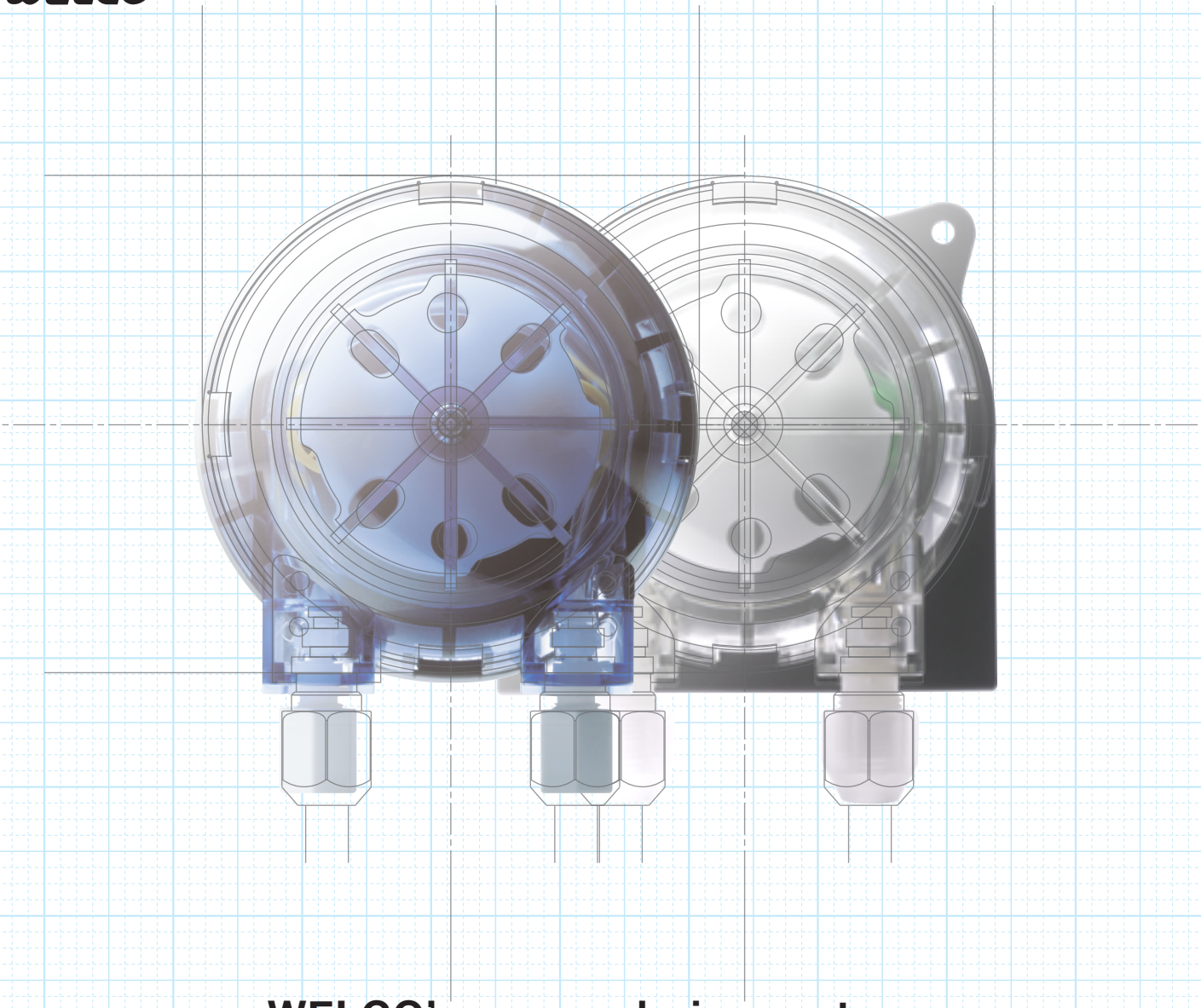
Pump Your Needs.

WELCO

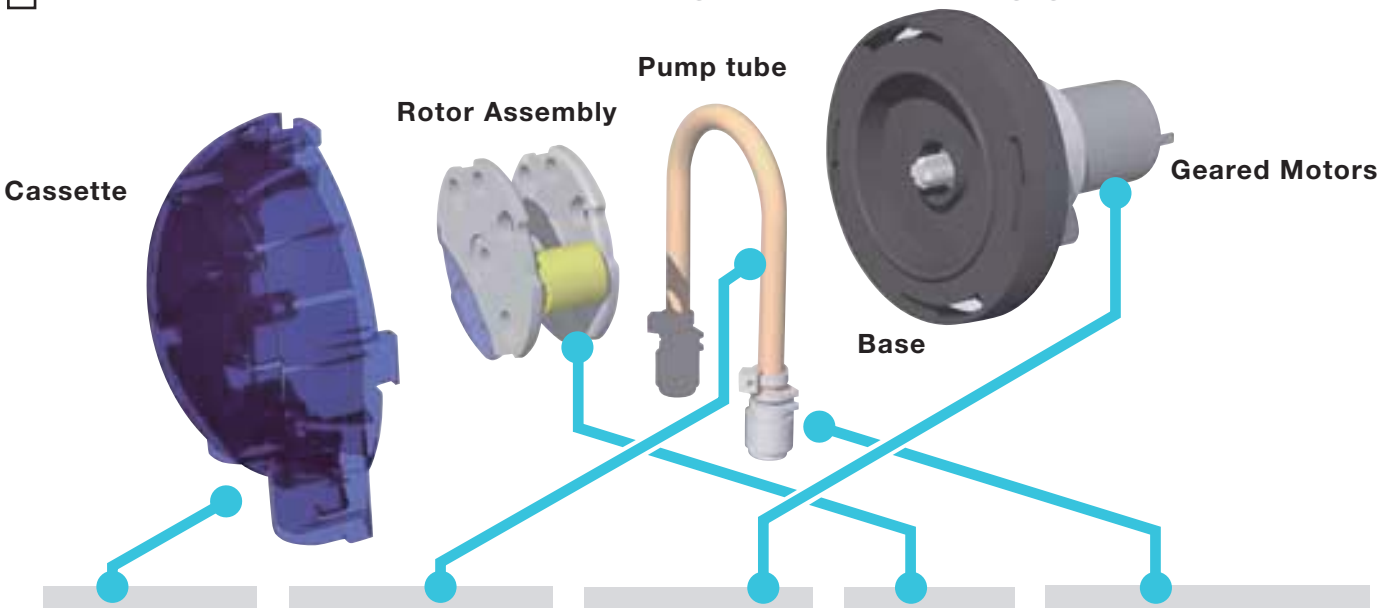


WELCO's easy ordering system
can match the best product to the customer's needs

WP1000 / WP1100
PERISTALTIC PUMP
SELECTION GUIDE

WELCO Peristaltic pumps use a custom ordering system that enables part types and sizes to be selected according to the desired application.

Selection method for customization of pumps
Select the part number according to the following guide



Series name

WP10
(WP1000)

WP11
(WP1100)

*Available tube size:
3/16"or 1/4" only

Pump tube type

TYGON 3355/3350	S
TYGON 2001	U
TYGON E-LFL	EL
PHARMED BPT	P
Norprene A-60-G	N
Norprene A-60-F	NF
Fluran F-5500-A	F
TYGOPRENE XL-60	XL
W TUBE	W

Geared motor type

S/M/L/DS/DM
12/24VDC
Brush motor

BA/FB/GA
Stepper motor

CM/CL/CD
Brushless motor

EE/EF
230/110VAC
Synchronous motor

Number of rollers

2: 2rollers

4: 4rollers

tube fitting type

W4

WM3

WM4

J8

J4

WI6

WT6

N or Blank

No fitting

Example	❶	❷	Tube Size ❸	❹	❺	❻	Option ❼	❽
WP10	–	P	1/8	DS	2	– W4	– C	P

❷ Pump tube type: Material (Selectable according to fluid type)

WP10 – P 1/8 ☐☐ – ☐ – ☐☐

Tube type	Product Description
TYGON 3355/3350 **S**	"Long service life silicon tubes" with excellent interior flatness Meets USP Class VI, FDA criteria
TYGON 2001 **U**	Chemically resistant to a wide range of fluids, such as soap and detergent dispensing, water purification lines, food contact applications and chemical transfer. Meets FDA criteria for food contact.
TYGON E-LFL **EL**	"Longest flex life of any clear Tygon tubing" "Extremely low particle spallation" "Broad chemical resistance" Meets USP Class VI, ISO 10993 and FDA criteria
PHARMED BPT **P**	"Chemical manufacturing and bio-tubes" with long service life and excellent acid and alkali resistance Meets USP Class VI, FDA and NSF 51 criteria
Norprene A-60-G **N**	"Industrial tubes" High performance alternative to general purpose rubber tubing
Norprene A-60-F **NF**	"Compatible with virtually all common sanitizers and cleaners." "Can be autoclaved repeatedly." Meets FDA, 3-A and NSF 51 criteria
Fluran F-5500-A **F**	"Fluorine tubes" that are resistant to corrosive chemicals, oils, and fuels, etc.
TYGOPRENE XL-60 **XL**	DEHP-free, long life in peristaltic pumps. This tubing can be considered an alternative to silicones and PVC when longer pump life is required. FDA approved for food contact and meets NSF 51 criteria
W TUBE **W**	"Dual wall tubes" that are resistant to chemicals. Inner layers : Polyolefin Outer layers : Thermoplastic Elastomers

Note: TYGON, Pharmed, Norprene, Fluran and Tygoprene are manufactured by Saint-Gobain Group.

Note: When selecting tubes with a 3/16" inner diameter, as long as there are no specification or shape-related issues, use of the WP1100 is recommended.

❸ Pump tube type: Tube size (inner diameter) (Selectable according to the tube material and number of rollers)

WP1000

Model name (inner diameter)	1/16	3/32	1/8	4
Inner diameter	1.6mm (1/16")	2.4mm (3/32")	3.2mm (1/8")	4mm (-)
Available tube material	P	S / P	All type (of)	W / P
Number of rollers	2 / 4	2 / 4	2 / 4	2 / 4

WP1100

Model name (inner diameter)	3/16	1/4
Inner diameter	4.8mm (3/16")	6.4mm(1/4")
Available tube material	XL Not suitable	EL,XL Not suitable
Number of rollers	2 / 4	2

Caution: Tube type F3/16" and U3/16" cannot be used with four rollers due to its high hardness.

Flow amount benchmark (flow amount per rotation)

Inside diameter of tube (inches)	1.6mm (1/16")		2.4mm (3/32")		3.2mm (1/8")		4mm		4.8mm (3/16")		6.4mm(1/4")	
Number of rollers	2	4	2	4	2	4	2	4	2	4	2	-
WP1000 Flow amount (mL)	-	0.2	0.5	0.45	0.9	0.8	1.45	1.2	1.95	1.6	3.0	-

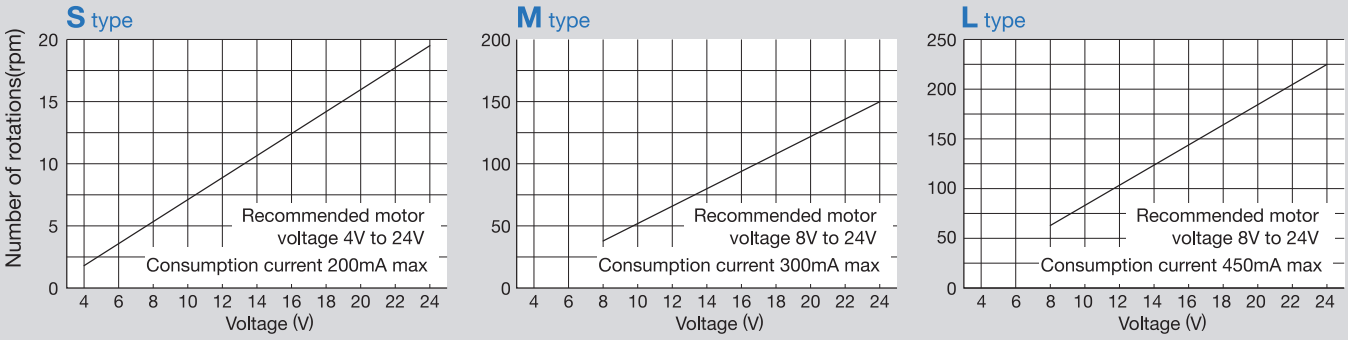
Caution: The above table describes the initial benchmark flow amounts during water suction. This may vary considerably depending on the tube type, use period, ambient temperature, and lot tolerances, etc. Measure the specifications with reasonable leeway.

❹ Geared motor types

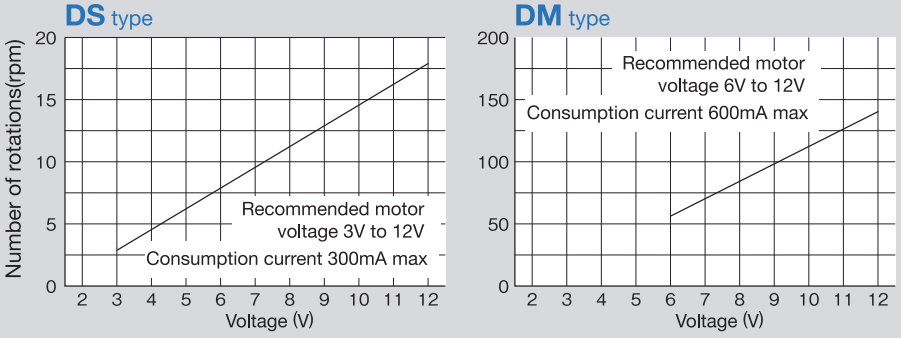
WP10 – P | 1/8 | DS | ☐ – ☐ – ☐☐

DC Brush Motor & Gear

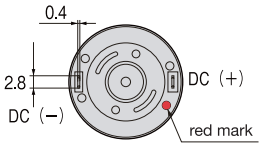
24VDC Brush Motor & Gear: Three types are selectable (low, medium and high speeds)



12VDC Brush Motor & Gear: Two types are selectable (low and medium speeds)



Motor wiring and terminal dimensions diagrams

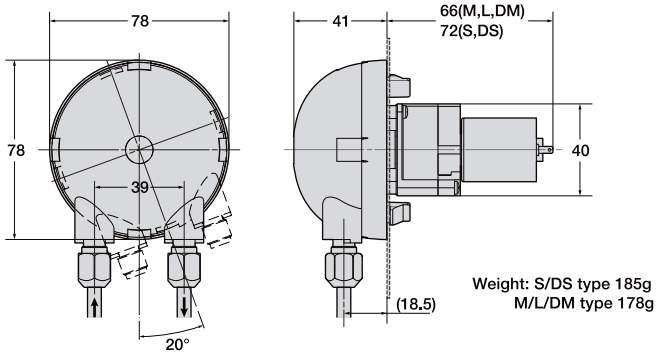


(unit: mm)

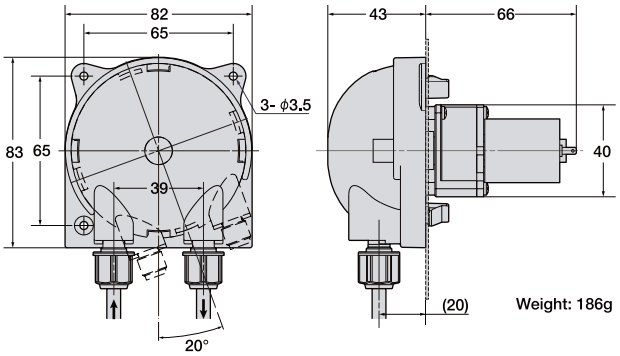
Caution: The consumption current described above is the value during normal operations.
An approximately threefold inrush current occurs during rotation startup.

Dimensions (unit: mm)

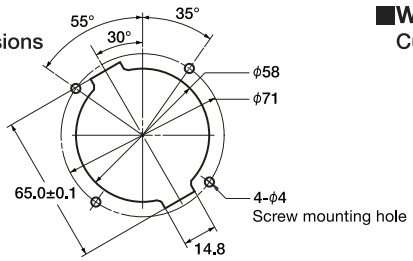
■WP1000



■WP1100

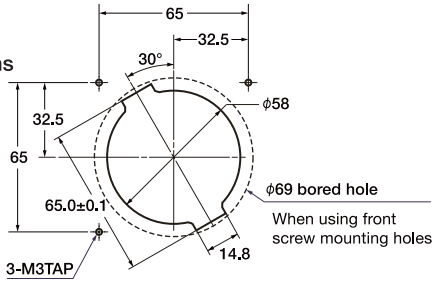


■WP1000
Cutting hole dimensions



Panel thickness: 1.0 to 1.2mm

■WP1100
Cutting hole dimensions



WP10 – P 1/8 CM 2 – ☐ – ☐☐

DC Brushless Motor & Gear

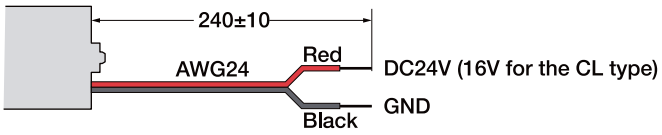
Three types are selectable (medium and high speeds)

Geared motor Specification

Geared motor model	CM type	CD type	CL type
Configuration	Brushless motor & 1:64 Gear head	Brushless motor & 1:42 Gear head	Brushless motor & 1:8 Gear head
Operation Voltage	DC16V to DC24V	DC16V to DC24V	DC16V
Current ※1	Less than 400mA	Less than 600mA	Less than 800mA
Pump Rev.	Approx. 47 to 70rpm at DC16 to 24V (100mNm Load)	Approx. 78 to 117rpm at DC16 to 24V (100mNm Load)	Approx. 348rpm at DC16V (100mNm Load)※2
Rotatory direction	CW		
Motor operating temperature	less than 70℃		
	This motor is equipped with an IC inside its casing. When the drive IC reaches a predefined temperature, the motor power is shuts down automatically. There is no guarantee that a power motor having been shut down due to temperature will be reusable.		
Motor lock protection	2sec TYP		
	If the motor locks up, the motor power will be shut down within a predefined time. The motor will restart upon power-up.		
Life	5,000hr (Geared motor) ※Not a guaranteed value.		

※1.Caution: The consumption current described above is the value during normal operations. An approximately threefold inrush current occurs during rotation startup.
※2.The flow rate of the CL (6.4mm) type is lower than the value calculated by the flow rate per rotation number of rotations, and is approximately 700mL per minute.

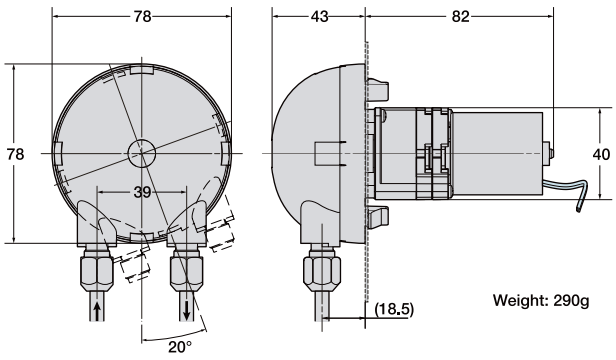
■Motor wiring terminal dimensions diagrams



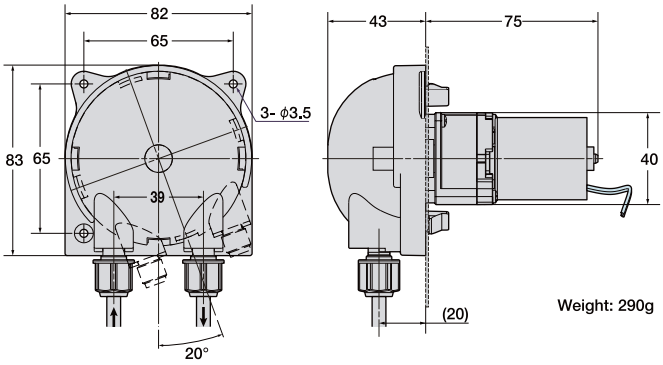
Circuit protection
This motor is not equipped with a circuit for protection against overvoltage and connection to terminals at the incorrect polarity. Be careful not to apply surge voltages that exceed the rated voltage and not to connect to the incorrect polarity.

Dimensions (unit: mm)

■ WP10 - ☐☐CM

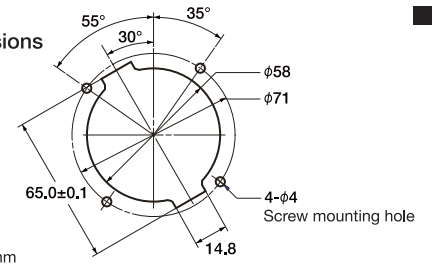


■ WP11 - ☐☐CL



■WP1000

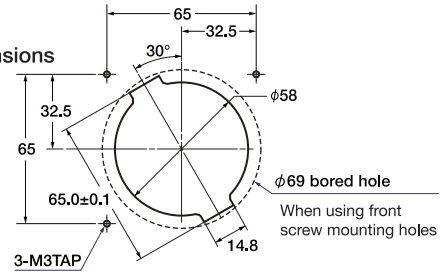
Cutting hole dimensions



Panel thickness: 1.0 to 1.2mm

■WP1100

Cutting hole dimensions



WP10 – P 1/8 FB ☐ – ☐ – ☐☐

Stepper Motor & Gear

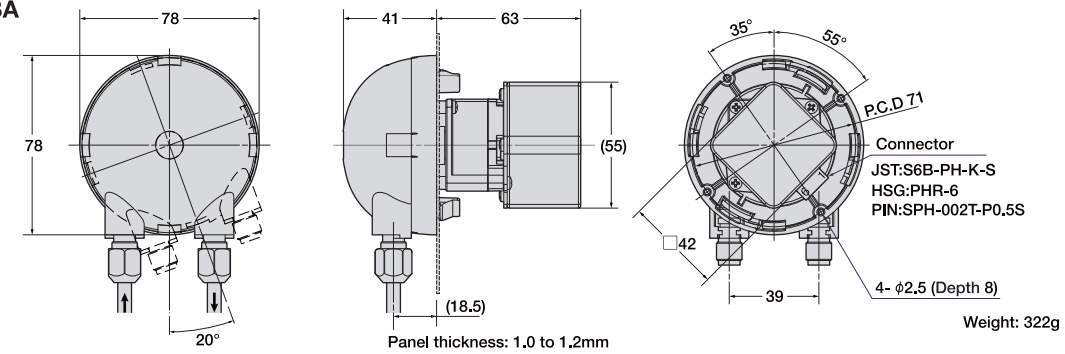
Four types of stepper motors can be selected
according to the application and the product series

Geared motor Specification

Geared motor model	FB type	BA type	GA type	GD type
Configuration	Hybrid stepper motor & 1: 64 Gear ratio	Hybrid stepper motor & 1: 8 Gear ratio	Hybrid stepper motor & 1:8 Gear ratio	Hybrid stepper motor & 1:42 Gear ratio
Number of phases and motor type	2 phase / BI polar system		2 phase / UNI polar system	
Rated Voltage	1.92V	1.76V	3.5V	
Rated Current	0.8A / Phase	1.1A / Phase	1.2A / Phase	
Step Angle	0.0140625° (Half step)	0.1125° (Half step)	0.1125° (Half step)	0.022° (Half step)
RPM	0 to 20rpm	20 to 150rpm	20 to 150rpm	0 to 29rpm
Duty Ratio	Max. 50%			
Winding Resistance	2.4Ω±10%	1.6Ω±10%	2.9Ω±10%	
Inductance	2.5mH	2.6mH	4.0mH	
Motor Insulation Class	B			
Motor operating temperature	less than 80℃			
Life	5,000hr (Geared motor) ※Not a guaranteed value.			

Dimensions (unit: mm)

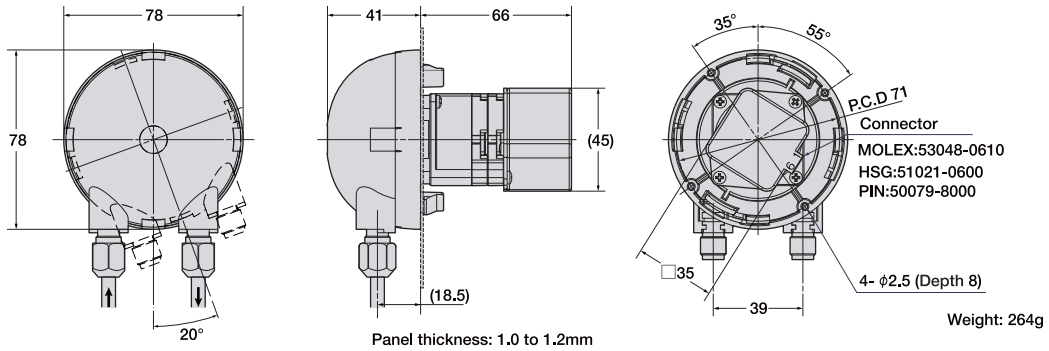
■WP10 - ☐☐BA



Panel thickness: 1.0 to 1.2mm

Weight: 322g

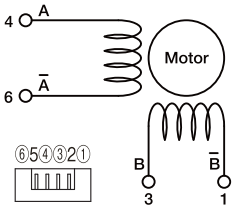
■WP10 - ☐☐FB



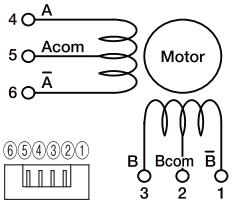
Panel thickness: 1.0 to 1.2mm

Weight: 264g

■BI POLAR Winding Diagram



■UNI POLAR Winding Diagram



WP11 – P | 1/8 | EE | 2 – ☐ – ☐☐

AC Synchronous Geared motor

Geared motor Specification

Geared motor model	EE type	EF type
Configulation	AC Synchronous Geared motor	
Operation Voltage	AC230V (220-240V)	AC110V (110-120V)
Hertz	50Hz	50/60Hz
Input	8W	
Pump Rev.	20rpm	18/22rpm
Direction of rotation	CW	
Drive Mode	5min (DUTY30%) ※Operating continuously is not possible.	
Motor Insulation Class	F	
Motor operating temperature	less than 60℃	
Life	2,000hr (Geared motor) ※Not a guaranteed value.	

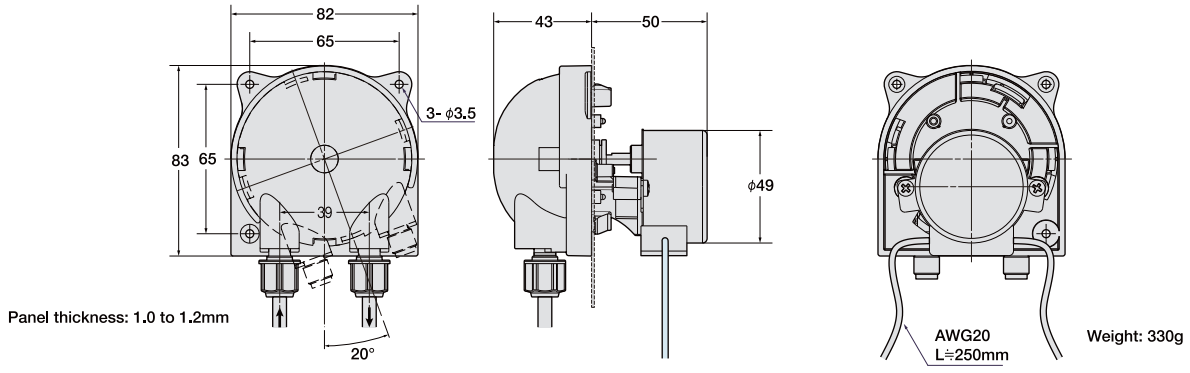
Flow amount benchmark (flow amount per rotation)

Tubing material	Tubing size I.D.(inch)	Number of roller	Flow amount (mL)
S, P, N, F NF, EL, XL	2.4mm (3/32")	2	0.5
	3.2mm (1/8")		0.9
	4.8mm (3/16")		1.95

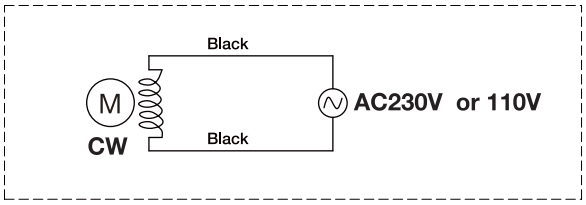
Caution: AC Synchronous Geared motor cannot be used with 4 rollers due to low torque.

Dimensions (unit: mm)

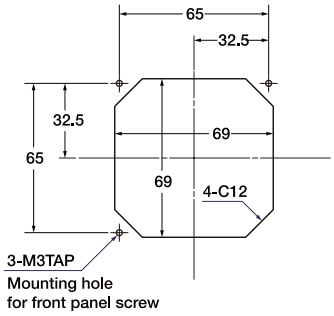
■WP11 - ☐☐EE
■WP11 - ☐☐EF



■Winding Diagram



■Cutting hole dimensions



❻ Tube fitting type: Varied lineup that is selectable according to requirements

WP10 – P | 1/8 | DS | 2 – W4 – ☐☐

W4

- Connectable hose sizes (OD)
  1/4”(6.4mm) or 6mm
- Available pump tube sizes & pump series
  WP1000: 1/8”(3.2mm), 4mm,
  WP1100: 3/16”(4.8mm), 1/4”(6.4mm)

Fitting consists of compression nut, sleeve and insert. Supports various hose hardnesses.

WM3

- Connectable hose sizes (OD)
  3mm
- Available pump tube sizes & pump series
  WP1000: 1/16”(1.6mm), 3/32”(2.4mm), 1/8”(3.2mm)
  WP1100: N/A

Fitting consists of compression nut and sleeve. Supports various hose hardnesses
Nut and sleeve will vary according to hose size.

WM4

- Connectable hose sizes (OD)
  4mm
- Available pump tube sizes & pump series
  WP1000: 1/16”(1.6mm), 3/32”(2.4mm), 1/8”(3.2mm)
  WP1100: N/A

Fitting consists of compression nut and sleeve. Supports various hose hardnesses
Nut and sleeve will vary according to hose size.

J8

- Connectable hose sizes (OD)
  1/8”(3.2mm) (Nylon or Polyethylene)
- Available pump tube sizes & pump series
  WP1000: 3/32”(2.4mm), 1/8”(3.2mm)
  WP1100: N/A

Nut and sleeve are integrated. Excellent workability.
Suitable for polyethylene, nylon and other plastic hoses.

J4

- Connectable hose sizes (OD)
  1/4”(6.4mm) (Nylon or Polyethylene)
- Available pump tube sizes & pump series
  WP1000: 1/8”(3.2mm), 4mm,
  WP1100: 3/16”(4.8mm), 1/4”(6.4mm)

Nut and sleeve are integrated. Excellent workability.
Suitable for polyethylene, nylon and other plastic hoses.

WI6

- Connectable hose sizes (OD)
  6mm (Nylon or Polyethylene)
- Available pump tube sizes & pump series
  WP1000: 1/8”(3.2mm), 4mm,
  WP1100: 3/16”(4.8mm), 1/4”(6.4mm)

Nut and sleeve are integrated. Excellent workability.
Suitable for polyethylene, nylon and other plastic hoses.

WT6

- Connectable hose sizes
  6mm (Note: ID size)
- Available pump tube sizes & pump series
  WP1000: 1/8”(3.2mm), 4mm,
  WP1100: 3/16”(4.8mm), 1/4”(6.4mm)

Barbed type. Inserted directly into hose and used.

N or Blank

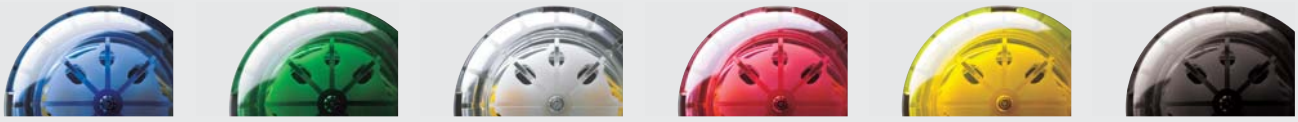
- Connectable hose sizes (OD)
  N/A
- Available pump tube sizes & pump series
  WP1000: 1/8”(3.2mm), 4mm,
  WP1100: 3/16”(4.8mm), 1/4”(6.4mm)

No fitting. For the case in which a customer connects their own original fitting, or when using a special length pump tube.
Note: If the pump tube has a large diameter, the flow rate tolerance should be increased.

7 Color variation

A 5-color lineup that can be classified for use according to the type of liquids used

WP10 – P 1/8 DS 2 – W6 – B



B: Blue　G: Green　C: Clear　R: Red　Y: Yellow　UV: Black (Special order item)

※There is also a lineup of panels to which the pump can be easily mounted

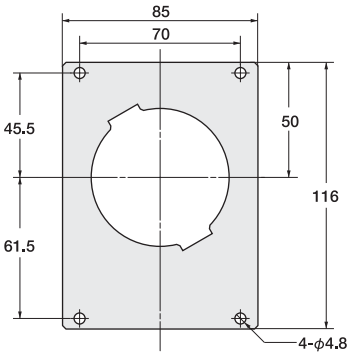
8 Using an optional panel

There is also a lineup of panels to which the pump can be easily mounted

WP1000 – P 3.2 DS 2 – W6 – B P

P = with bracket
N or **Blank** = without bracket

■ **Option bracket dimensions (unit: mm)**



Thickness: 1.2mm
Material properties: SUS304

General specifications

Recommended installation height	2.0m max
Liquid temperature range	5 to 50°C (41°F to 122°F)
Specified environment temperature range	0 to 50°C (32°F to 122°F)
Specified ambient humidity range	20% to 80% (with no condensation)
Certifications&Approvals	E209254 CE RoHS NSF COMPONENT

⚠Precautions

1. When selecting a tube, the customer should perform a verification test to verify the chemical suitability according to the usage environment and the intended application.
2. Regardless of the pump tube type, the phenomenon of peeling from inside of the tube starts with small amounts.
3. This product was not designed for medical use. Do not use for medical applications.
4. This product is not waterproof. If using in water-filled environments, design to protect against water.
5. Numerical data listed in this catalog reflect conditions measured over short periods of time. Their accuracy for long-term use is not assured.
6. There is a tendency for the flow rate to increase until the tube becomes acclimated, and even among the same model, different lots may have different flow rates within the specified tolerances. Also, the rotating speed of the DC motor may fluctuate depending on the load conditions and changes in the motor temperature. During the design stage, be sure to select a motor with ample capacity.

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