



DIRECT DRIVE TECHNOLOGY

Product Catalogue

PDDRB SERIES

DIRECT DRIVE ROTARY MOTOR

VERSION 4.2.2

PDDRB SERIES

Features of Direct-Drive Motor

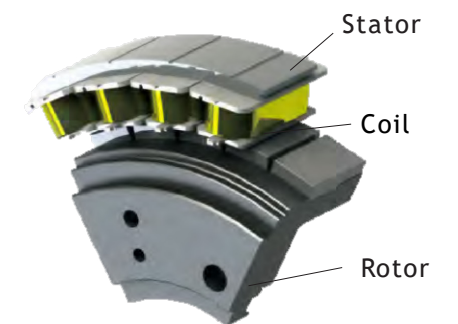


Optimally designed for high speed precise rotary applications

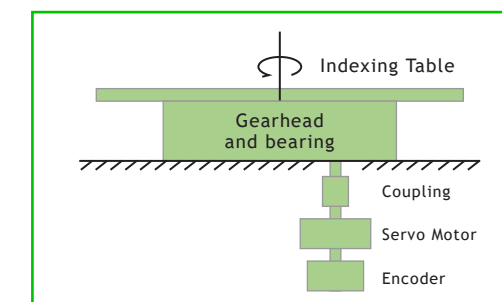
The PDDRB's integrated high-resolution encoder design ensures precise motion profiles when directly mounting a rotary table/load, eliminating accuracy loss from mechanical power transmission, saving space, and simplifying machine design

The PDDRB's special iron core construction design enables the motor to achieve a very high torque with almost negligible cogging forces, which is most favorable for constant speed precision applications.

- Optimal ratio of magnet and coil/slot
- Multiple permanent magnets used to reduce torque ripple
- Equipped with high energy permanent magnets

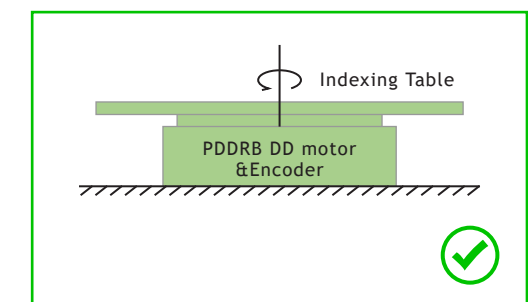


Comparison between conventional design and Direct-drive motor



Conventional method

- Constructed by a few power transmission components that lead to accuracy loss
- Potential gearhead backlash and coupling slippage issue
- Poor accuracy and repeatability
- Required more space for installation



With Direct drive motor

- Plug and play, easy integration into system.
- High resolution and excellent repeatability
- Minimum axial and radial run-out with large mounting surface.
- Compact module & Space saving
- Low maintenance

OVERVIEW

FEATURES



High Speed



High Precision



Anti-Cogging Design



Space Saving

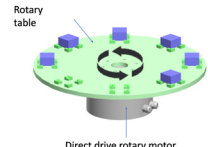


Zero Backlash

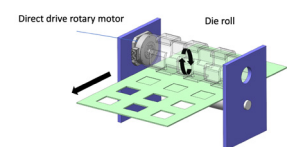


Centre hollow for wiring

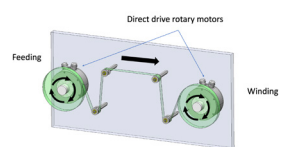
APPLICATION



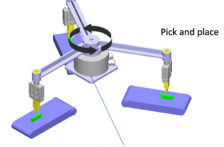
Indexing rotary table



Die cutter & printing



Feeding and winding



High speed pick & place

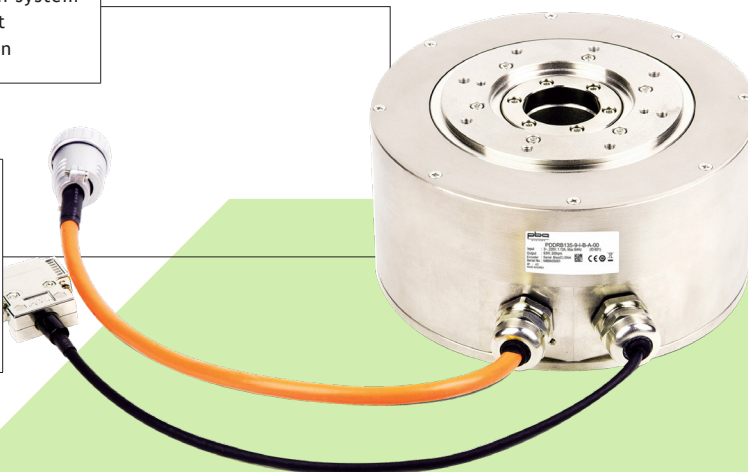
Flangeless Type

Flangeless Type

- Compact and lightweight
- Versatile, easy integration to motion system
- Wide range of motor size and output
- Ideal for space limitation application

Specification

- Diameter 135,175,230,290, 360 & 380mm (14models)
- Rated torque 3...330 N.m
- Peak torque 9...1000 N.m
- Rated speed 50...200 rpm
- Max speed 100...500rpm



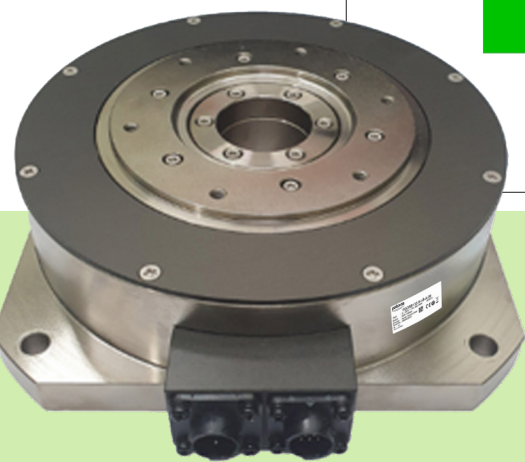
Flange Type

Flange Type

- Extremely low profile design, thickness <60mm
- Ideal solution to reduce centre of gravity of system
- Enhance stability where precision alignment is crucial
- Highly accessible, able to access mounting screws from top

Specification

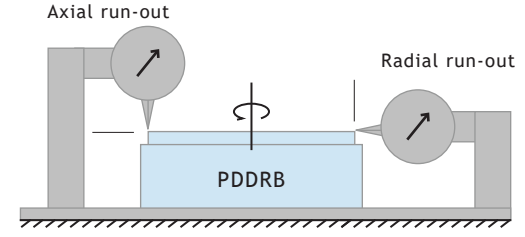
- 3 Flange sizes 135, 175 & 230mm
- Rated torque 3...12 N.m
- Peak torque 9...36 N.m
- Rated speed 200rpm
- Max speed 500rpm
- 24 bits BiSS-C Absolute encoder



CE

Ratings and specifications	
• Insulation class : Class B • Protection class: IP 40 • Cooling type : Fully enclosed self-cooling • Vibration class : V15 • Insulation resistance : 500 VDC, 10[MΩ]or higher • Insulation withstand voltage: 1500VAC, 1 minute	• Operating voltage: 200 VAC • Operating temperature: 0 - 40[°C] • Storage temperature: -10-60[°C] • Ambient humidity: 20 - 80% RH (Noncondensing) • Installation location: Place with no harmful substances such as corrosive / flammable gases, cutting fluid, metal dust or grease. Keep out of direct sunlight.

Extremely low run-out



Specification	µm
Axial run-out	15
Radial run-out	30

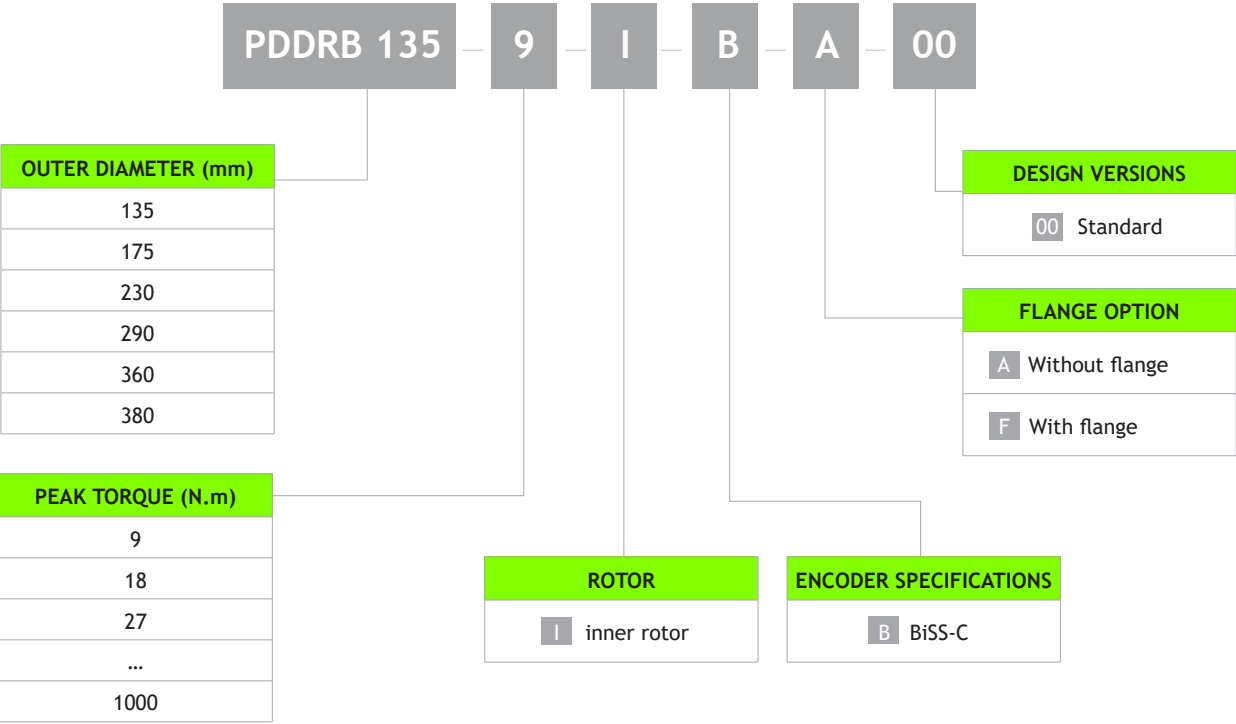
TABLE OF CONTENT

Type	Model	Page
Flangeless type	PDDRB 135	1
	PDDRB 175	2
	PDDRB 230	3
	PDDRB 290	4
	PDDRB 360	5
	PDDRB 380	5
Flange type	PDDRB 135	6
	PDDRB 175	7
	PDDRB 230	8

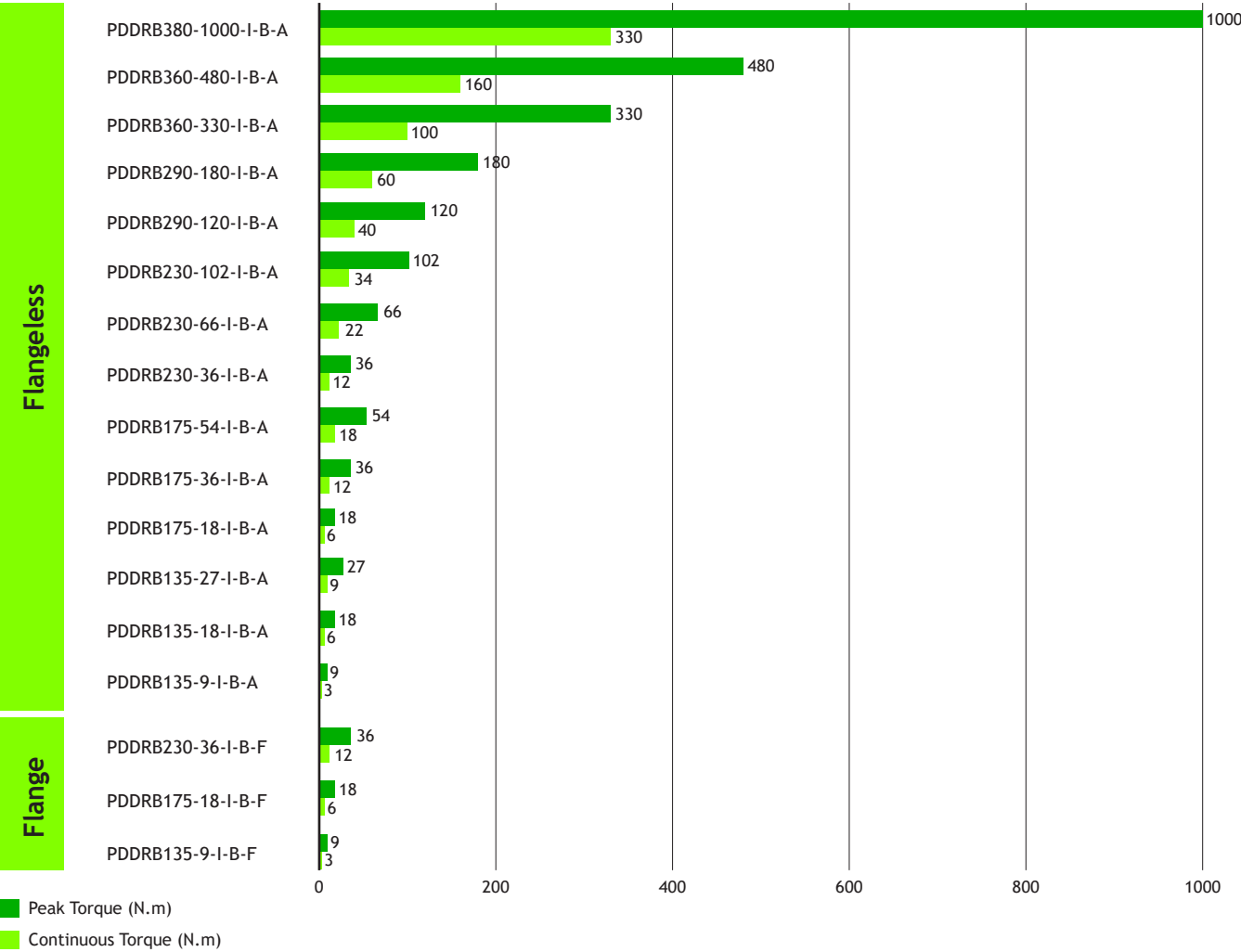
Product specification

Type	Model	Outer Diameter (mm)	Continuous Torque (N.m)	Peak Torque (N.m)	Continuous Current (A _{pk})	Peak Current (A _{pk})	Max Speed (RPS)
Flangeless type	PDDRB135-9-I-B-A	135	3	9	1.58	4.75	8.3
	PDDRB135-18-I-B-A		6	18	2.06	6.19	
	PDDRB135-27-I-B-A		9	27	3.72	11.16	
	PDDRB175-18-I-B-A	175	6	18	2.09	6.28	6.7
	PDDRB175-36-I-B-A		12	36	3.41	10.22	
	PDDRB175-54-I-B-A		18	54	4.24	12.73	
	PDDRB230-36-I-B-A	230	12	36	3.65	10.94	8.3
	PDDRB230-66-I-B-A		22	66	4.71	14.13	
	PDDRB230-102-I-B-A		34	102	8.09	24.26	
	PDDRB290-120-I-B-A	290	40	120	7.49	22.48	5
	PDDRB290-180-I-B-A		60	180	11.78	35.34	
	PDDRB360-330-I-B-A	360	100	330	13.40	40.21	4.2
	PDDRB360-480-I-B-A		160	480	20.64	61.93	
	PDDRB380-1000-I-B-A	380	330	1000	16.97	50.90	1.7
Flange type	PDDRB135-9-I-B-F	135	3	9	2.02	6.07	8.3
	PDDRB175-18-I-B-F	175	6	18	2.12	6.36	
	PDDRB230-36-I-B-F	230	12	36	3.68	11.03	

PART NUMBERING SYSTEM



PDDRB Torque Chart





PDDR SERIES

DIRECT DRIVE ROTARY MOTOR

PDDR135

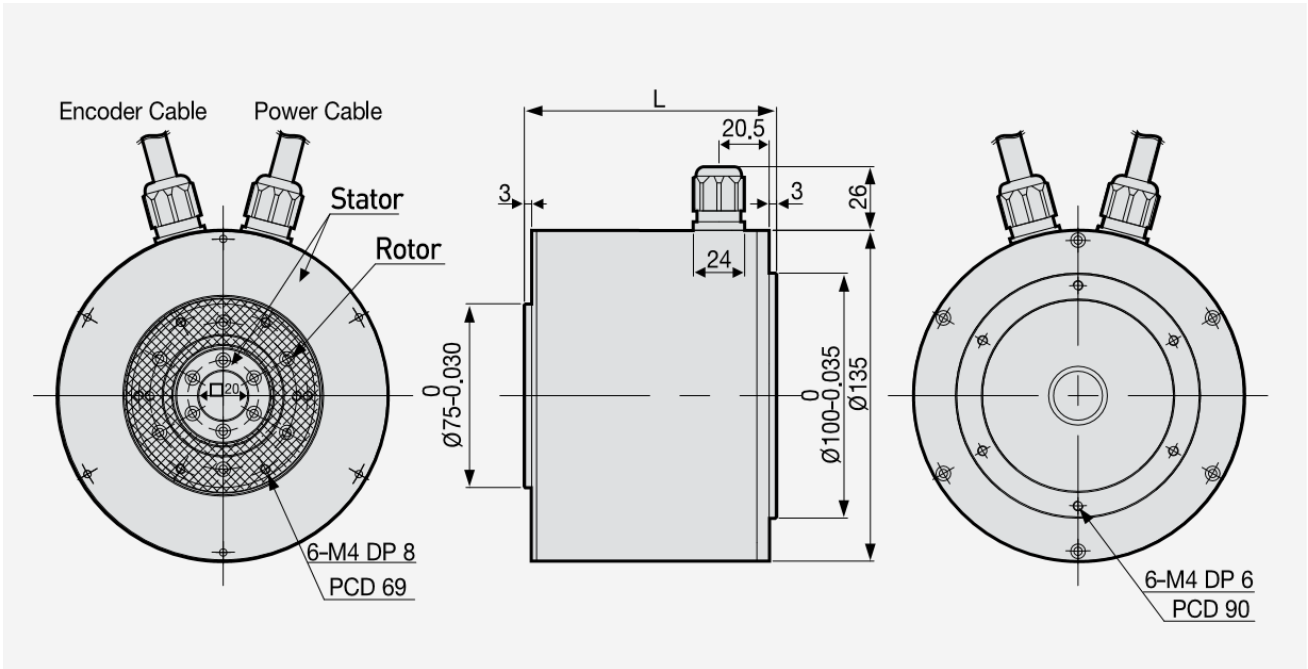
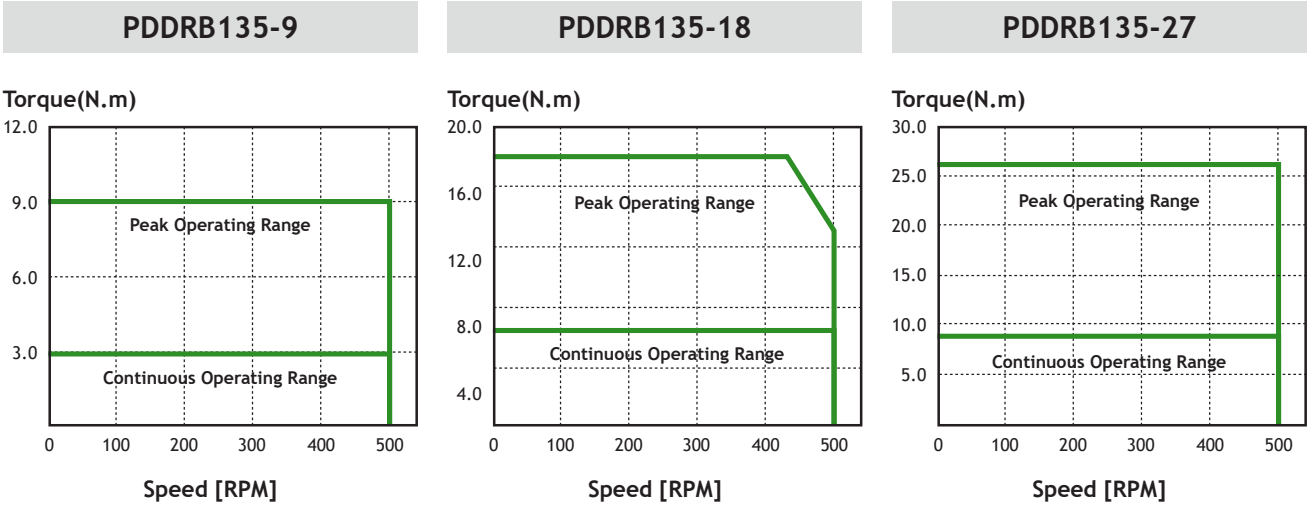
- Diameter 135 mm
- Rated torque 3...9 N.m
- Peak torque 9...27 N.m
- Max speed 8.3 RPS

SPECIFICATION		MODEL		
		PDDR135-9	PDDR135-18	PDDR135-27
Performance		Unit		
Peak Torque	N.m	9	18	27
Continuous Torque	N.m	3	6	9
Peak Power	W	189	378	564
Continuous Power	W	63	126	188
Electrical				
Peak Current	A ^{pk}	4.75	6.19	11.16
Continuous Current	A ^{pk}	1.58	2.06	3.72
Continuous Stall Current	A ^{rms}	1.12	1.46	2.63
Torque Constant	N.m/A ^{pk}	1.95	3.01	2.52
Back EMF Constant	V _{pk} /rad/s	14.25	21.95	18.18
Resistance L-L @ 25 °C	Ohm	10.0	9.7	3.9
Resistance L-L @ 100 °C	Ohm	13.0	12.6	5.0
Inductance L-L @ 1kHz	mH	47.67	55.74	23.54
Motor Constant	N.m/W	0.4	0.5	0.7
Max. Terminal Voltage	V _{dc}	187.5	238.8	220.6
Encoder type	--	20-bits Single turn serial encoder (BiSS-C Absolute)		
Thermal				
Max. Winding Temperature	°C	69.7	97.2	88.3
Mechanical				
Rotor Inertia	kg.m ²	0.00116	0.00184	0.00260
Motor Weight	kg	6.3	7.2	9.2
Number of Pole Pairs	N-S	10	10	10
Max. Speed	RPS	8.3		
Max. Axial Load	N	1500		
Max. Moment Load	N.m	40		
Axial Run-out (no load)	µm	15		
Radial Run-out (no load)	µm	30		
Repeatability	arc-sec	±1.3		
Accuracy	arc-sec	±30		

Notes:
1. A_{pk} = 1.414 * A_{rms}; V_{pk} = 1.414 * V_{rms}.
2. Specifications tolerance : ±10%.
3. Insulation resistance : 500 VDC, 10[MΩ] or higher
4. Peak force and current : 4% duty ratio and 1 second duration.
5. Insulation withstand voltage: 1500VAC, 1 minute
6. Operating voltage: 200 VAC
7. Specifications are subject to change without prior notice.

PDDR135

Speed-Torque Chart



Model	External Dimensions(mm)	Weight(kg)
	L	
PDDRB135-9	78	6.3
PDDRB135-18	100	7.2
PDDRB135-27	124	9.2



PDDR SERIES
DIRECT DRIVE ROTARY MOTOR

PDDR175

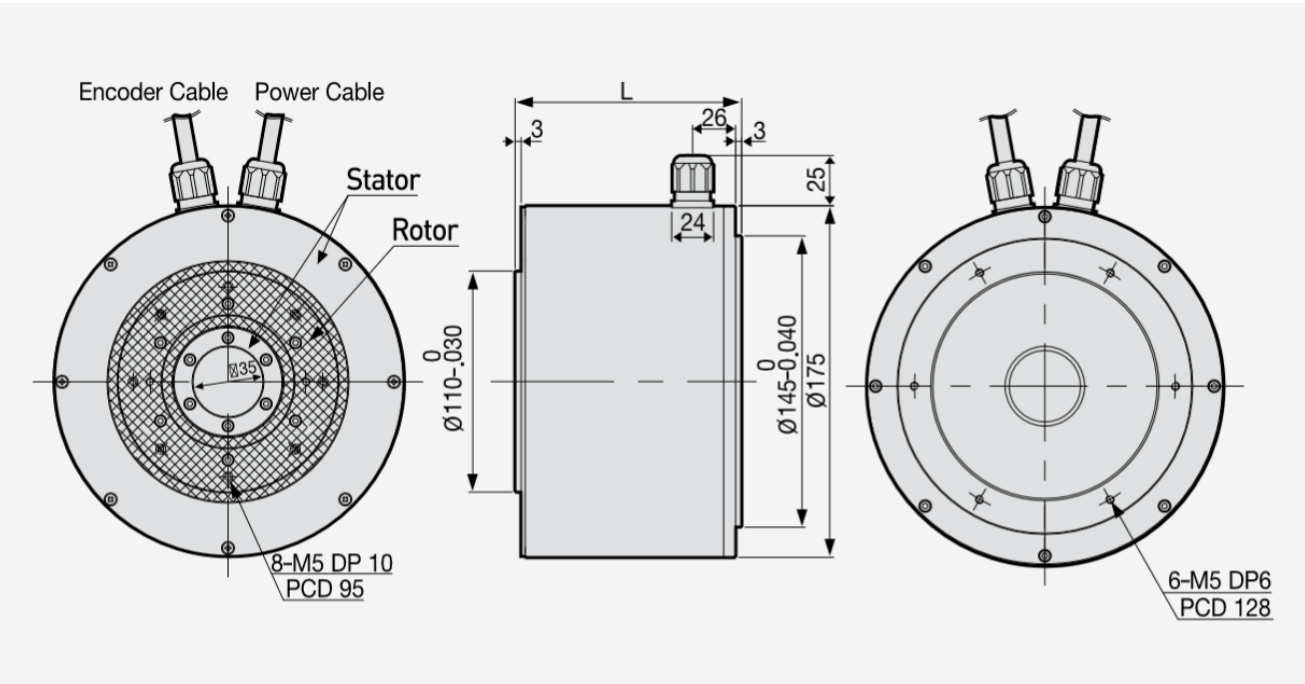
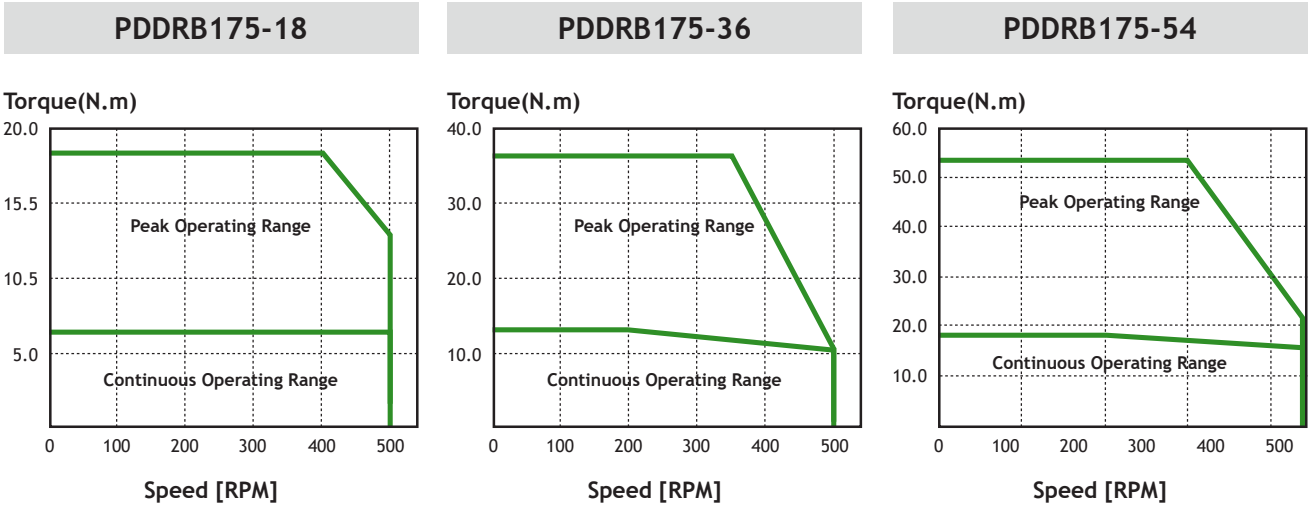
- Diameter 175 mm
- Rated torque 6...18 N.m
- Peak torque 18...54 N.m
- Max speed 6.7...8.3 RPS

SPECIFICATION		MODEL		
		PDDRB175-18	PDDRB175-36	PDDRB175-54
Performance		Unit		
Peak Torque	N.m	18	36	54
Continuous Torque	N.m	6	12	18
Peak Power	W	378	753	1131
Continuous Power	W	126	251	377
Electrical				
Peak Current	A ^{pk}	6.28	10.22	12.73
Continuous Current	A ^{pk}	2.09	3.41	4.24
Continuous Stall Current	A ^{rms}	1.48	2.41	3.00
Torque Constant	N.m/A ^{pk}	2.96	3.63	4.33
Back EMF Constant	Vpk/rad/s	21.59	26.53	31.6
Resistance L-L @ 25 °C	Ohm	9.5	5.6	4.9
Resistance L-L @ 100 °C	Ohm	12.3	7.3	6.4
Inductance L-L @ 1kHz	mH	20.12	13.65	12.2
Motor Constant	N.m//W	0.5	0.8	0.9
Max. Terminal Voltage	Vdc	220.7	234.3	231.5
Encoder type	--	20-bits Single turn serial encoder (BiSS-C Absolute)		
Thermal				
Max. Winding Temperature	°C	87.3	101.1	100.3
Mechanical				
Rotor Inertia	kg.m ²	0.00458	0.00704	0.00949
Motor Weight	kg	8.7	10.6	12.6
Number of Pole Pairs	N-S	16	16	16
Max. Speed	RPS	8.3		6.7
Max. Axial Load	N	3300		
Max. Moment Load	N.m	70		
Axial Run-out (no load)	µm	15		
Radial Run-out (no load)	µm	30		
Repeatability	arc-sec	±1.3		
Accuracy	arc-sec	±30		

Notes:
1. A_{pk} = 1.414 * Arms; V_{pk} = 1.414 * V_{rms}.
2. Specifications tolerance : ±10%.
3. Insulation resistance : 500 VDC, 10[MΩ] or higher
4. Peak force and current : 4% duty ratio and 1 second duration.
5. Insulation withstand voltage: 1500VAC, 1 minute
6. Operating voltage: 200 VAC
7. Specifications are subject to change without prior notice.

PDDR175

Speed-Torque Chart



Model	External Dimensions(mm)	Weight(kg)
	L	
PDDRB175-18	77	8.7
PDDRB175-36	95	10.6
PDDRB175-54	113	12.6

PDDRB SERIES

DIRECT DRIVE ROTARY MOTOR



PDDRB230

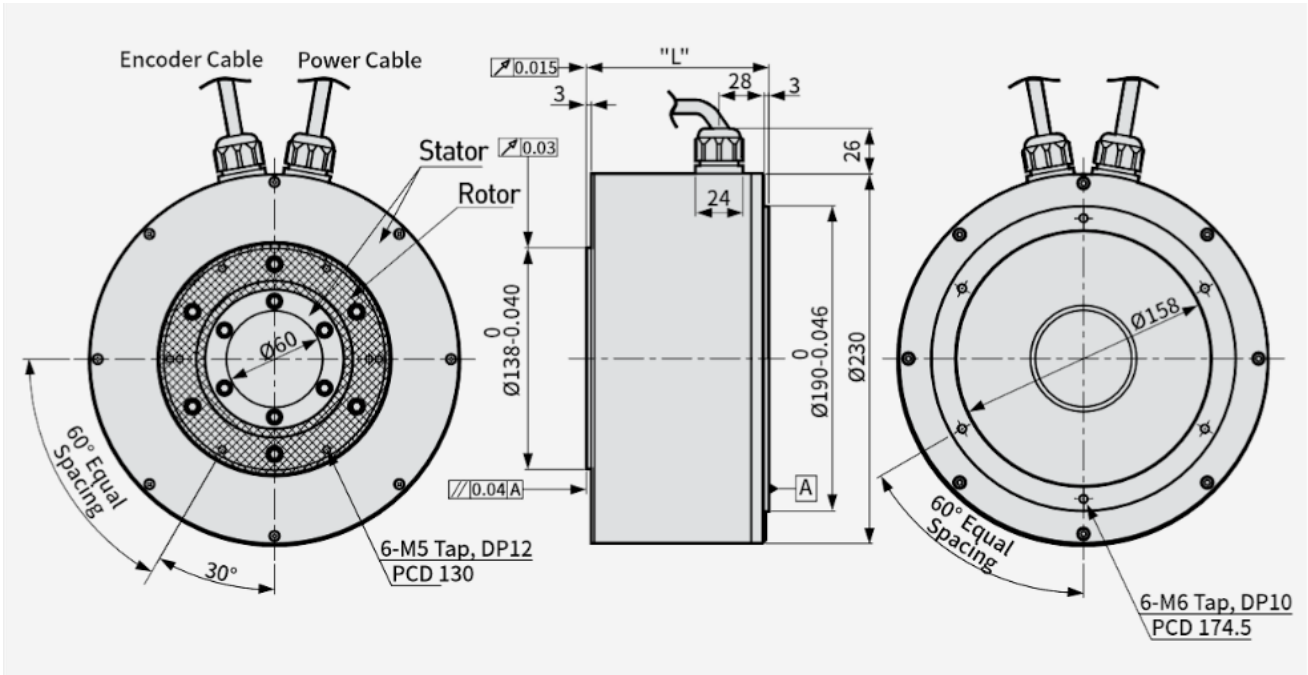
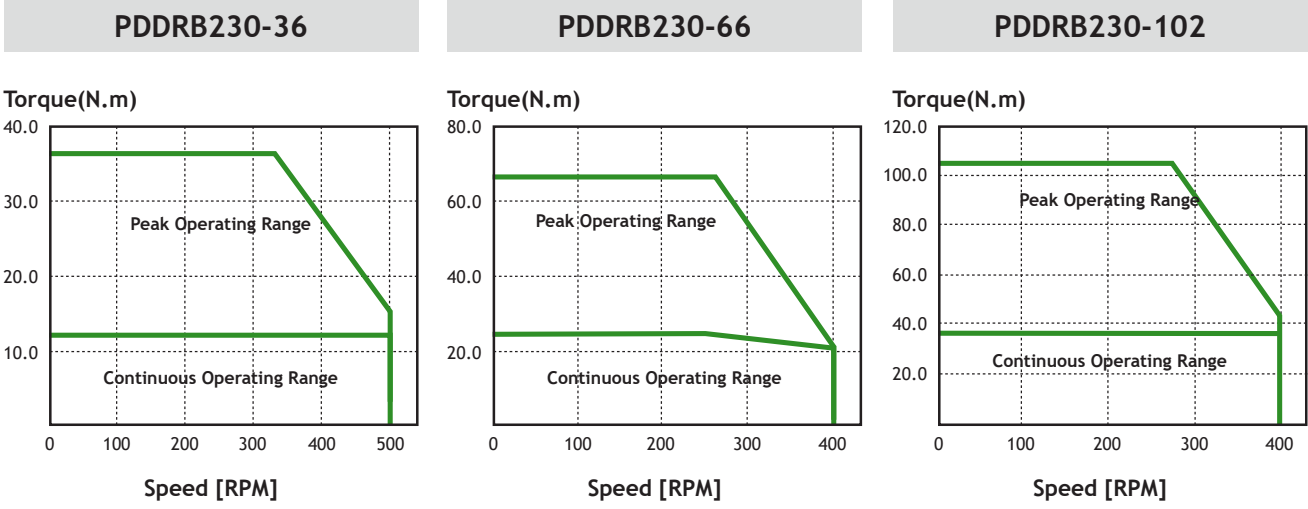
- Diameter 230 mm
- Rated torque 12...34 N.m
- Peak torque 38...102 N.m
- Max speed 6.7...8.3 RPS

SPECIFICATION		MODEL		
		PDDRB230-36	PDDRB230-66	PDDRB230-102
Performance		Unit		
Peak Torque	N.m	36	66	102
Continuous Torque	N.m	12	22	34
Peak Power	W	753	1383	2136
Continuous Power	W	251	461	712
Electrical				
Peak Current	A ^{pk}	10.94	14.13	24.26
Continuous Current	A ^{pk}	3.65	4.71	8.09
Continuous Stall Current	A ^{rms}	2.58	3.33	5.72
Torque Constant	N.m/A ^{pk}	3.39	4.82	4.34
Back EMF Constant	Vpk/rad/s	24.79	20.9	31.66
Resistance L-L @ 25 °C	Ohm	4.0	3.1	1.5
Resistance L-L @ 100 °C	Ohm	5.2	4.1	2.0
Inductance L-L @ 1kHz	mH	31.51	27.47	15.18
Motor Constant	N.m//W	0.8	1	1.8
Max. Terminal Voltage	Vdc	246.4	250.5	241.6
Encoder type	--	20-bits Single turn serial encoder (BiSS-C Absolute)		
Thermal				
Max. Winding Temperature	°C	78.9	73.4	94.1
Mechanical				
Rotor Inertia	kg.m ²	0.00947	0.01411	0.01097
Motor Weight	kg	17.3	19.6	21.9
Number of Pole Pairs	N-S	16	16	16
Max. Speed	RPS	8.3	6.7	
Max. Axial Load	N	4000		
Max. Moment Load	N.m	93		
Axial Run-out (no load)	µm	15		
Radial Run-out (no load)	µm	30		
Repeatability	arc-sec	±1.3		
Accuracy	arc-sec	±30		

Notes:
1. Apk = 1.414 * Arms; Vpk = 1.414 * Vrms.
2. Specifications tolerance : ±10%.
3. Insulation resistance : 500 VDC, 10[MΩ]or higher
4. Peak force and current : 4% duty ratio and 1 second duration.
5. Insulation withstand voltage: 1500VAC, 1 minute
6. Operating voltage: 200 VAC
7. Specifications are subject to change without prior notice.

PDDRB230

Speed-Torque Chart



Model	External Dimensions(mm)	Weight(kg)
	L	
PDDRB230-36	82.5	17.3
PDDRB230-66	100.5	19.6
PDDRB230-102	118.5	21.9



PDDR SERIES

DIRECT DRIVE ROTARY MOTOR

PDDR290

- Diameter 290 mm
- Rated torque 40...60 N.m
- Peak torque 120...180 N.m
- Max speed 5.0 RPS

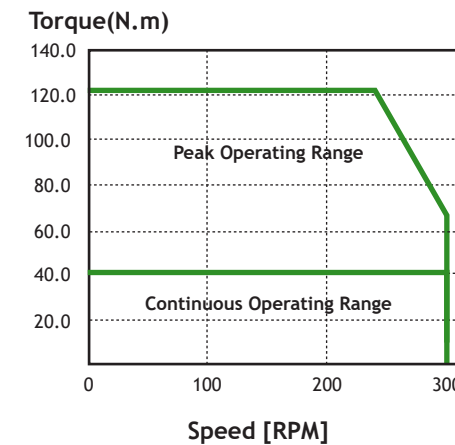
SPECIFICATION		MODEL	
		PDDR290-120	PDDR290-180
Performance		Unit	
Peak Torque	N.m	120	180
Continuous Torque	N.m	40	60
Peak Power	W	2514	3771
Continuous Power	W	838	1257
Electrical			
Peak Current	A ^{pk}	22.48	35.34
Continuous Current	A ^{pk}	7.49	11.78
Continuous Stall Current	A ^{rms}	5.30	8.33
Torque Constant	N.m/A ^{pk}	5.5	5.25
Back EMF Constant	Vpk/rad/s	40.16	38.33
Resistance L-L @ 25 °C	Ohm	1.9	1.1
Resistance L-L @ 100 °C	Ohm	2.5	1.4
Inductance L-L @ 1kHz	mH	15.1	8.97
Motor Constant	N.m//W	1.4	1.7
Max. Terminal Voltage	Vdc	239.5	239.5
Encoder type	--	20-bits Single turn serial encoder (BiSS-C Absolute)	
Thermal			
Max. Winding Temperature	°C	81.5	102.7
Mechanical			
Rotor Inertia	kg.m ²	0.04272	0.05879
Motor Weight	kg	28.2	35
Number of Pole Pairs	N-S	24	24
Max. Speed	RPS	5	
Max. Axial Load	N	11000	
Max. Moment Load	N.m	250	
Axial Run-out (no load)	µm	15	
Radial Run-out (no load)	µm	30	
Repeatability	arc-sec	±1.3	
Accuracy	arc-sec	±30	

Notes:
1. Apk = 1.414 * Arms; Vpk = 1.414 * Vrms.
2. Specifications tolerance : ±10%.
3. Insulation resistance : 500 VDC, 10[MΩ] or higher
4. Peak force and current : 4% duty ratio and 1 second duration.
5. Insulation withstand voltage: 1500VAC, 1 minute
6. Operating voltage: 200 VAC
7. Specifications are subject to change without prior notice.

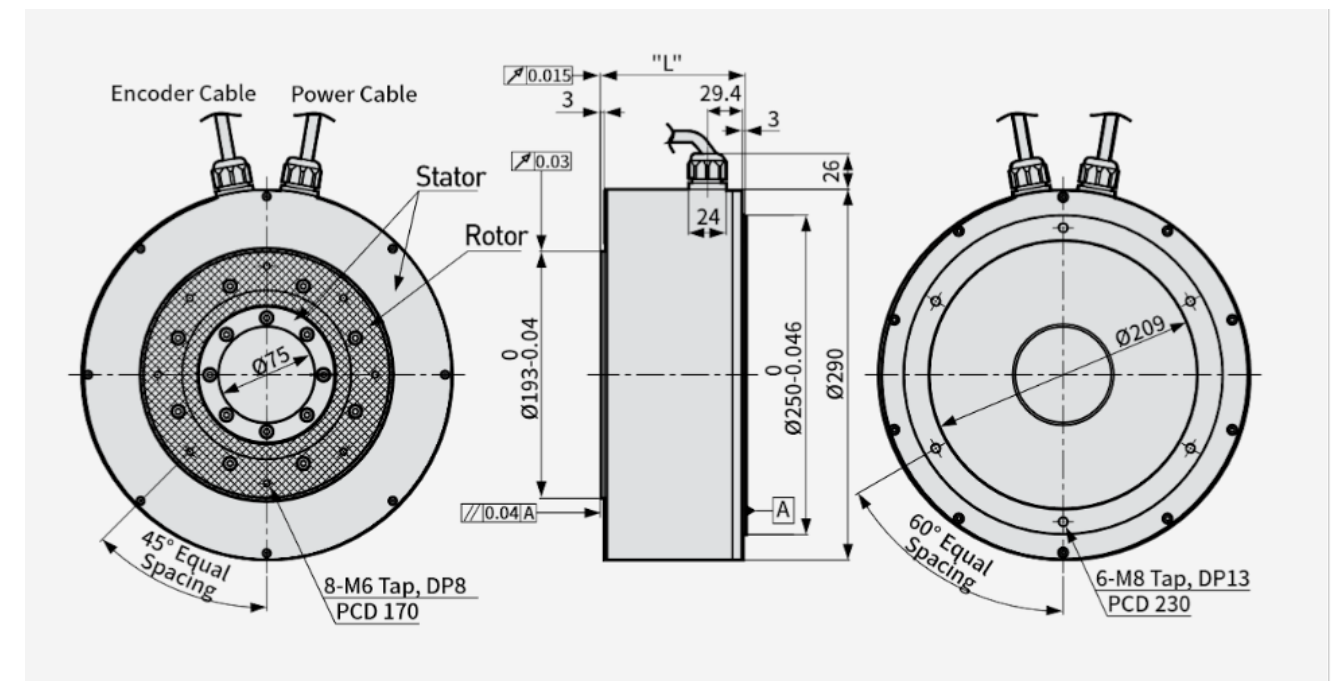
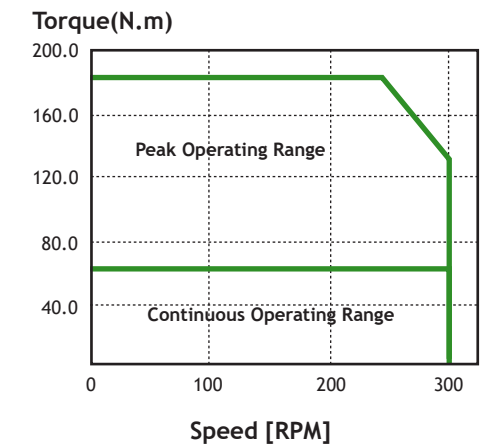
PDDR290

Speed-Torque Chart

PDDR290-120



PDDR290-180



Model	External Dimensions(mm)	Weight(kg)
	L	
PDDRB290-120	95.4	28.5
PDDRB290-180	113.4	35

PDDRB SERIES

DIRECT DRIVE ROTARY MOTOR



PDDRB360

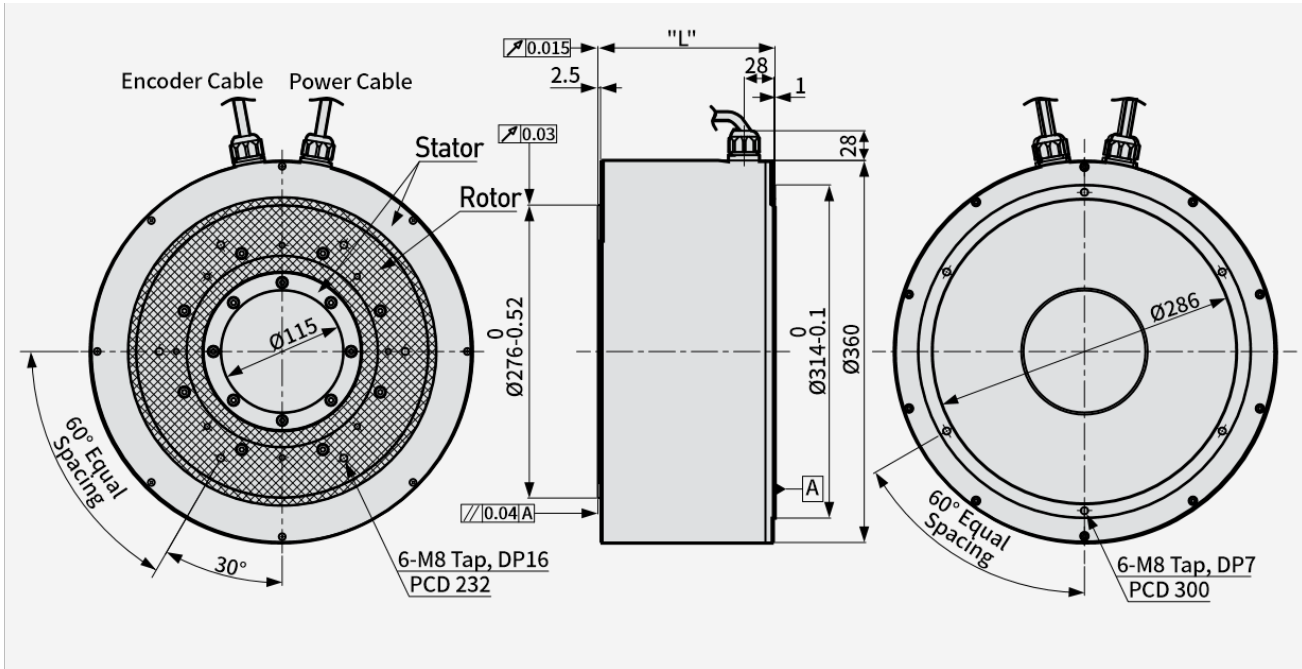
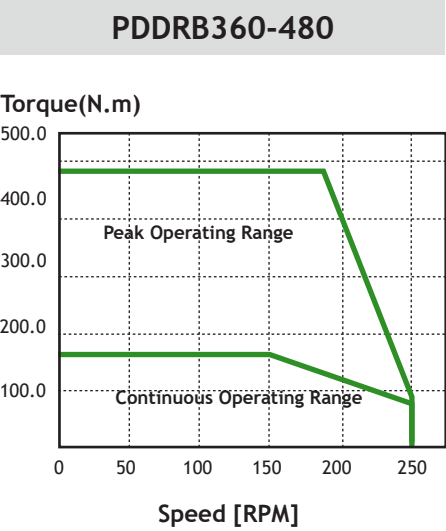
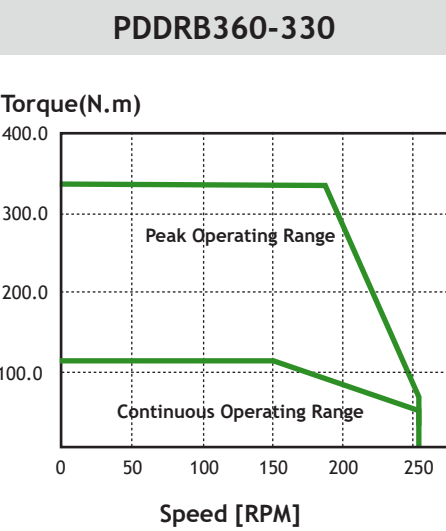
- Diameter 360 mm
- Rated torque 100...160 N.m
- Peak torque 330...480 N.m
- Max speed 4.2 RPS

SPECIFICATION		MODEL	
		PDDRB360-330	PDDRB360-480
Performance		Unit	
Peak Torque	N.m	330	480
Continuous Torque	N.m	100	160
Peak Power	W	5184	7539
Continuous Power	W	1728	2513
Electrical			
Peak Current	A ^{pk}	40.21	61.93
Continuous Current	A ^{pk}	13.4	20.64
Continuous Stall Current	A ^{rms}	9.48	14.60
Torque Constant	N.m/A ^{pk}	8.45	7.98
Back EMF Constant	Vpk/rad/s	61.75	58.34
Resistance L-L @ 25 °C	Ohm	0.9	0.5
Resistance L-L @ 100 °C	Ohm	1.2	0.7
Inductance L-L @ 1kHz	mH	4.56	3.32
Motor Constant	N.m/W	2.4	3.2
Max. Terminal Voltage	Vdc	264.7	250.8
Encoder type	--	20-bits Single turn serial encoder (BiSS-C Absolute)	
Thermal			
Max. Winding Temperature	°C	92.9	97.7
Mechanical			
Rotor Inertia	kg.m ²	0.25070	0.34570
Motor Weight	kg	54	70.3
Number of Pole Pairs	N-S	32	32
Max. Speed	RPS	4.2	
Max. Axial Load	N	15000	
Max. Moment Load	N.m	350	
Axial Run-out (no load)	µm	15	
Radial Run-out (no load)	µm	30	
Repeatability	arc-sec	±1.3	
Accuracy	arc-sec	±30	

Notes:
1. Apk = 1.414 * Arms; Vpk = 1.414 * Vrms.
2. Specifications tolerance : ±10%.
3. Insulation resistance : 500 VDC, 10[MΩ] or higher
4. Peak force and current : 4% duty ratio and 1 second duration.
5. Insulation withstand voltage: 1500VAC, 1 minute
6. Operating voltage: 200 VAC
7. Specifications are subject to change without prior notice.

PDDRB290

Speed-Torque Chart



Model	External Dimensions(mm)	Weight(kg)
	L	
PDDRB360-330	131	54
PDDRB360-480	167	70.3

PDDRB SERIES

DIRECT DRIVE ROTARY MOTOR



PDDRB380

- Diameter 380 mm
- Rated torque 330 N.m
- Peak torque 1000 N.m
- Max speed 17 RPS

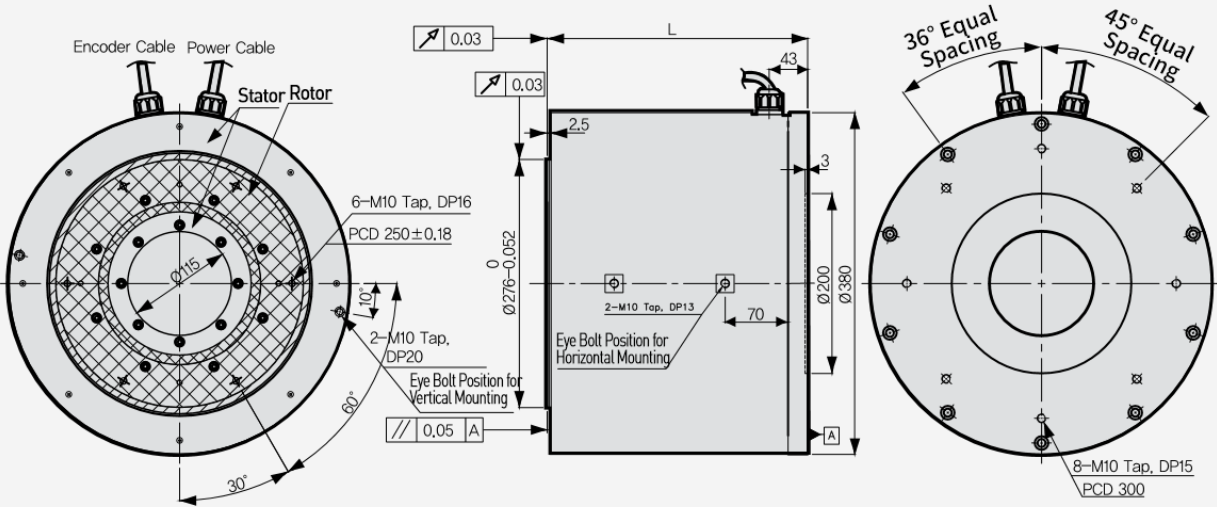
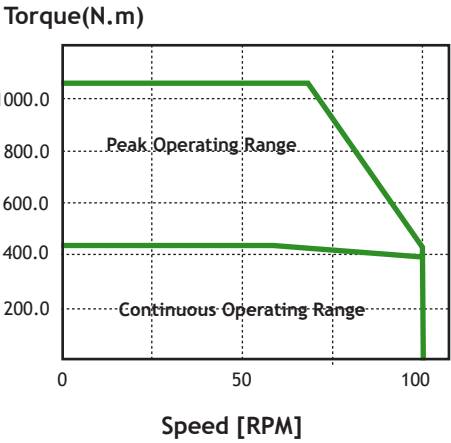
SPECIFICATION		MODEL
		PDDRB380-1000
Performance		Unit
Peak Torque	N.m	1000
Continuous Torque	N.m	330
Peak Power	W	5184
Continuous Power	W	1728
Electrical		
Peak Current	A ^{pk}	50.9
Continuous Current	A ^{pk}	16.97
Continuous Stall Current	A ^{rms}	12.00
Torque Constant	N.m/A ^{pk}	20.22
Back EMF Constant	Vpk/rad/s	147.79
Resistance L-L @ 25°C	Ohm	1.3
Resistance L-L @ 100°C	Ohm	1.6
Inductance L-L @ 1kHz	mH	7.74
Motor Constant	N.m/W	7.9
Max. Terminal Voltage	Vdc	256.8
Encoder type	--	20-bits Single turn serial encoder (BISS-C Absolute)
Thermal		
Max. Winding Temperature	°C	88.8
Mechanical		
Rotor Inertia	kg.m ²	0.64490
Motor Weight	kg	162
Number of Pole Pairs	N-S	32
Max. Speed	RPS	1.7
Max. Axial Load	N	21000
Max. Moment Load	N.m	450
Axial Run-out (no load)	µm	15
Radial Run-out (no load)	µm	30
Repeatability	arc-sec	±1.3
Accuracy	arc-sec	±30

Notes:
1. Apk = 1.414 * Arms; Vpk = 1.414 * Vrms.
2. Specifications tolerance : ±10%.
3. Insulation resistance : 500 VDC, 10[MΩ]or higher
4. Peak force and current : 4% duty ratio and 1 second duration.
5. Insulation withstand voltage: 1500VAC, 1 minute
6. Operating voltage: 200 VAC
7. Specifications are subject to change without prior notice.

PDDRB290

Speed-Torque Chart

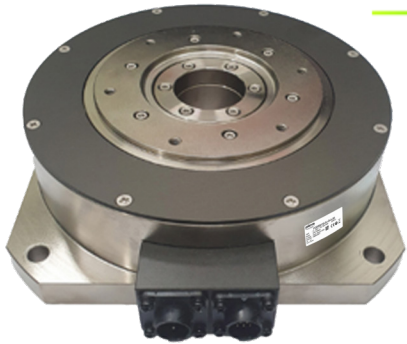
PDDRB380-1000



Model	External Dimensions(mm)	Weight(kg)
	L	
PDDRB380-1000	290	162

PDDRB SERIES

DIRECT DRIVE ROTARY MOTOR



PDDRB Flange type

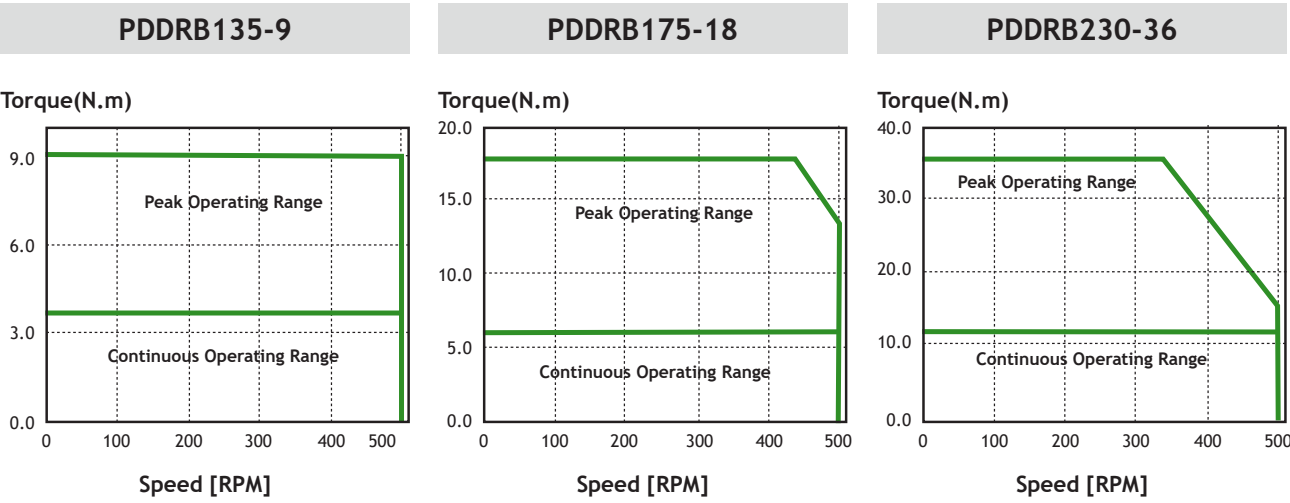
- Flange size 135,175 & 230mm
- Rated torque 3...12 N.m
- Peak torque 9...36 N.m
- Max speed 8.3 RPS

SPECIFICATION		MODEL		
		PDDRB135-9	PDDRB175-18	PDDRB230-36
Performance		Unit		
Peak Torque	N.m	9	18	36
Continuous Torque	N.m	3	6	12
Peak Power	W	189	378	753
Continuous Power	W	63	126	251
Electrical				
Peak Current	A ^{pk}	6.07	6.36	11.03
Continuous Current	A ^{pk}	2.02	2.12	3.68
Continuous Stall Current	A ^{rms}	1.43	1.50	2.60
Torque Constant	N.m/A ^{pk}	1.57	2.96	3.39
Back EMF Constant	Vpk/rad/s	11.47	21.59	24.79
Resistance L-L @ 25 °C	Ohm	11.5	9.5	4.0
Resistance L-L @ 100 °C	Ohm	15.0	12.3	5.2
Inductance L-L @ 1kHz	mH	47.3	20.12	31.51
Motor Constant	N.m/√W	0.4	0.5	0.8
Max. Terminal Voltage	Vdc	196.8	221	246.4
Encoder type	--	20-bits Single turn serial encoder (BiSS-C Absolute)		
Thermal				
Max. Winding Temperature	°C	73.2	76.8	67.4
Mechanical				
Rotor Inertia	kg.m ²	0.00103	0.00581	0.01100
Motor Weight	kg	3.8	6.9	12.3
Number of Pole Pairs	N-S	10	16	16
Max. Speed	RPS	8.3		
Max. Axial Load	N	1500	3300	3600
Max. Moment Load	N.m	40	70	80
Axial Run-out (no load)	µm	15		
Radial Run-out (no load)	µm	30		
Repeatability	arc-sec	±1.3		
Accuracy	arc-sec	±30		

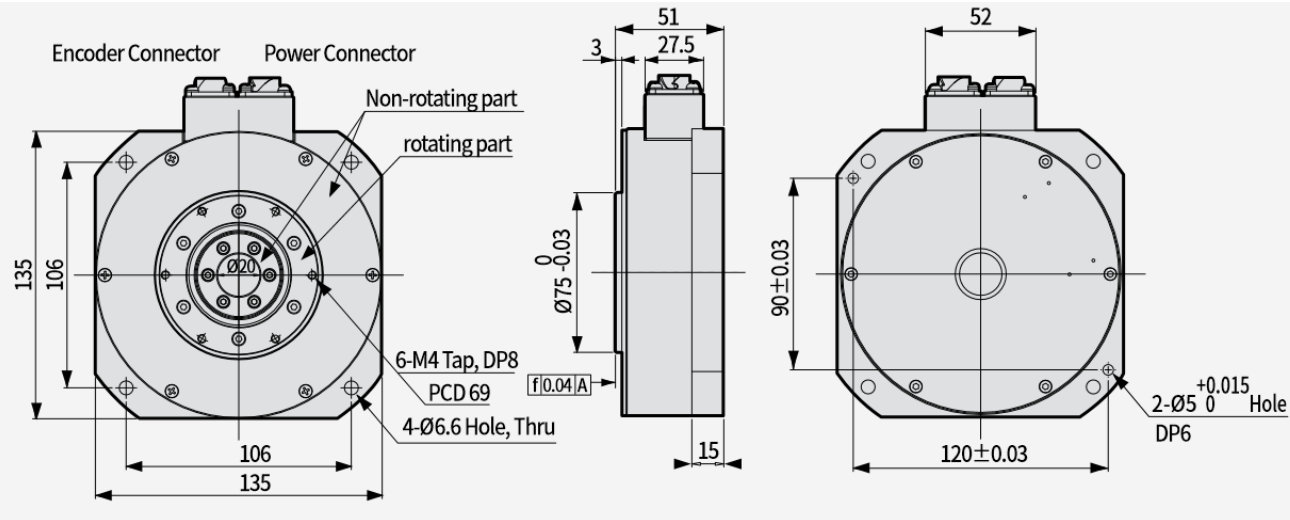
Notes:
1. Apk = 1.414 * Arms; Vpk = 1.414 * Vrms.
2. Specifications tolerance : ±10%.
3. Insulation resistance : 500 VDC, 10[MΩ] or higher
4. Peak force and current : 4% duty ratio and 1 second duration.
5. Insulation withstand voltage: 1500VAC, 1 minute
6. Operating voltage: 200 VAC
7. Specifications are subject to change without prior notice.

PDDRB230

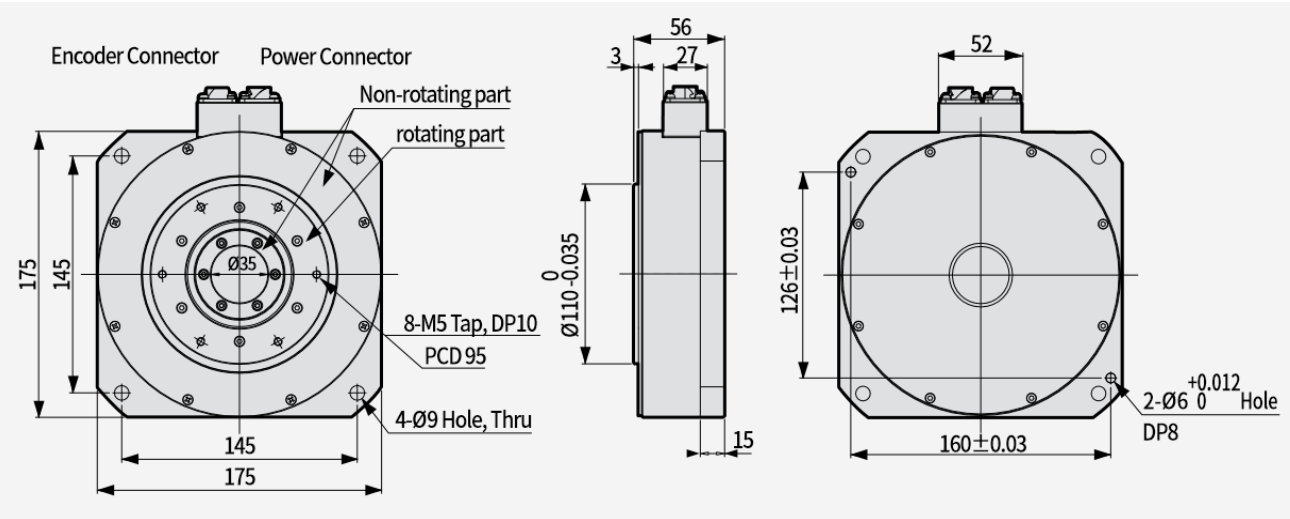
Speed-Torque Chart



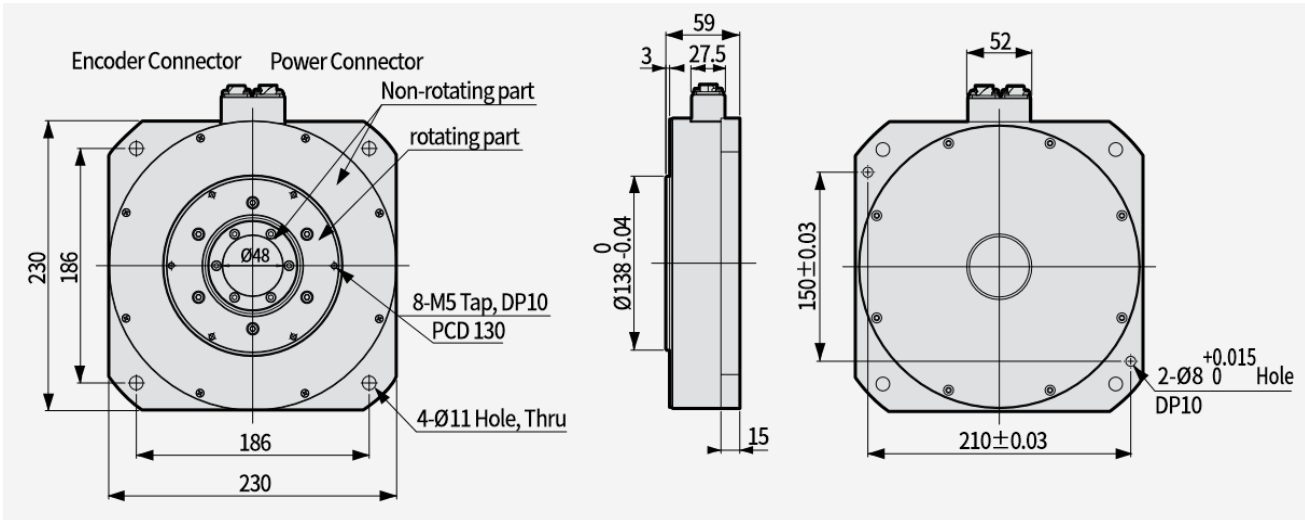
PDDRB135-9



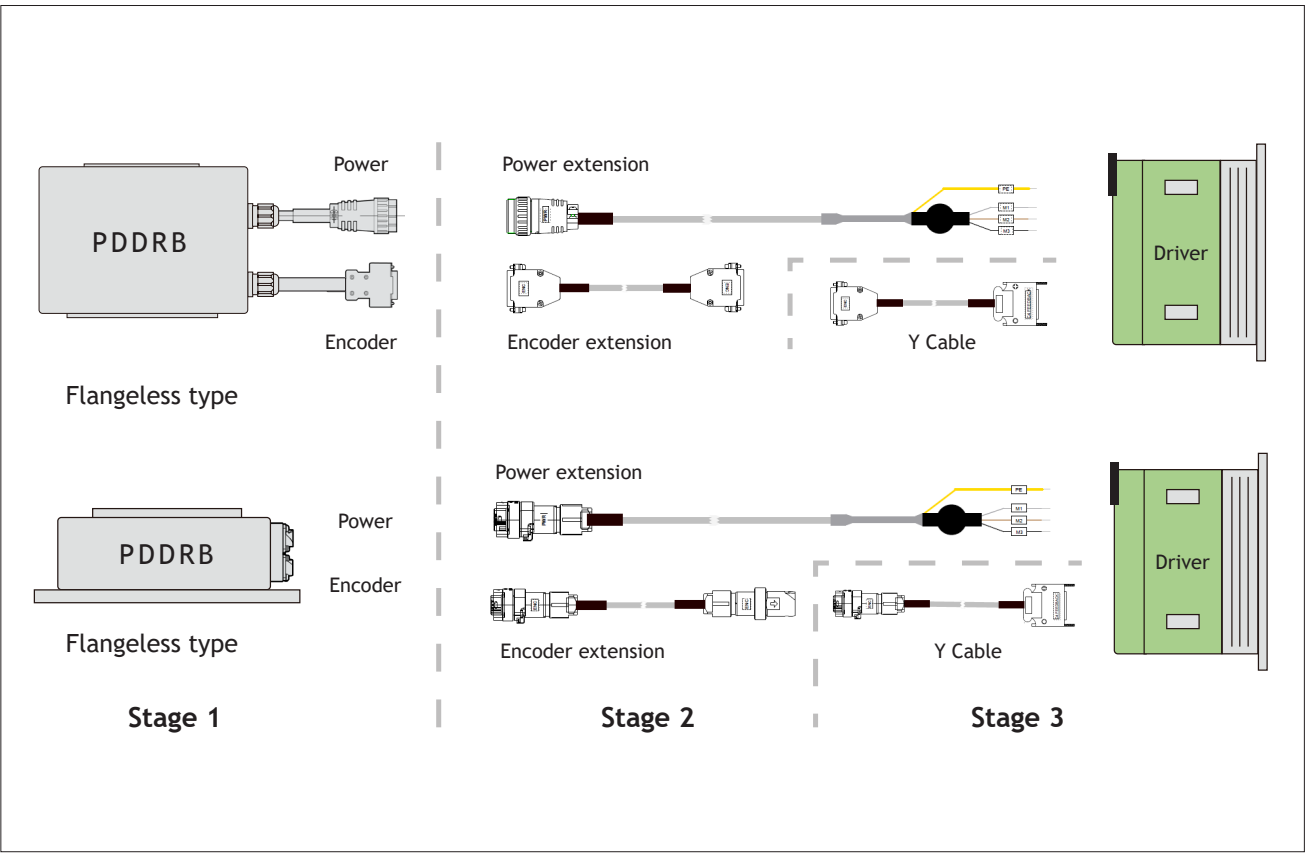
PDDRB175-18



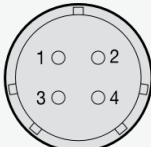
PDDR230-36

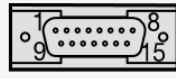
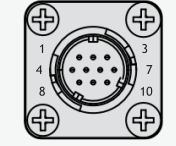


CABLE OPTION



STAGE 1 | PDDR SERIES CABLE COLOUR CODE AND PIN OUT

TYPE	MOTOR PHASE PIN OUT															
Flangeless	 NJC-24-4-PM	<table><tr><th colspan="2">Contents</th><th>Pin No</th></tr><tr><td rowspan="3">LEAD WIRE</td><td>U</td><td>1</td></tr><tr><td>V</td><td>2</td></tr><tr><td>W</td><td>3</td></tr><tr><td colspan="2">Ground</td><td>4</td></tr></table>		Contents		Pin No	LEAD WIRE	U	1	V	2	W	3	Ground		4
		Contents		Pin No												
LEAD WIRE	U	1														
	V	2														
	W	3														
Ground		4														
(PDDRB135/175/230/290/360/380-A)																
Flange	 JN1AS04MK1(JAE)	<table><tr><th colspan="2">Contents</th><th>Pin No</th></tr><tr><td rowspan="3">LEAD WIRE</td><td>U</td><td>1</td></tr><tr><td>V</td><td>2</td></tr><tr><td>W</td><td>3</td></tr><tr><td colspan="2">FG</td><td>4</td></tr></table>		Contents		Pin No	LEAD WIRE	U	1	V	2	W	3	FG		4
		Contents		Pin No												
LEAD WIRE	U	1														
	V	2														
	W	3														
FG		4														
(PDDRB135/175/230-F)																

TYPE	MOTOR PHASE PIN OUT			
Flangeless	 D-Sub Connector(15pins)			
	Encoder cable			
	No	Encoder signal	No	Encoder signal
	1	MA	9	+5 V
	2	SLO	10	-
	3	-	11	-
	4	0 V	12	-
	5	SHIELD	13	-
	6	MA	14	-
	7	SLO	15	-
	8	-		
(PDDR230/290/360/380-A)				
Flange	 JN1AS10ML1-R(JAE)			
	Encoder cable			
	No	Encoder signal	No	Encoder signal
	1	MA	6	MA
	2	SLO	7	SLO
	3	-	8	-
	4	0 V	9	+5 V
	5	SHIELD	10	-

STAGE 2 | PDDRBA SERIES EXTENSION CABLE

TYPE	Extension cable		Part number
Flangeless	Power extension cable		CBL_EXT_PWR1_PDDRBA_UL_CC_X.X
	Encoder extension cable		CBL_EXT_ENC_PDDRBA_UL_X.X
Flange	Power extension cable		CBL_EXT_PWR2_PDDRBF_UL_CC_X.X
	Encoder extension cable		CBL_EXT_ENC_PDDRBF_UL_CC_X.X

Power extension Ferrite core pin out

TYPE	PIN OUT	
Flangeless		
Flange		

PE	Yellow
M1	Grey
M2	Brown
M3	Black

STAGE 3 | PDDRBA SERIES CABLE

TYPE	Y Cable	Part number
Flangeless		CBL_MT_C4_ENC_PDDRBA_UL_0.5
Flange		CBL_MT_C4_ENC_PDDRBF_UL_CC_0.5

Notes: 1. X.X is the length of the cable in meters 2. For customized cable length, please contact PBA

Customer Name:	Date (DD/MM/YY):
Contact Email:	

PBA DDR MOTOR SELECTION QUESTIONNAIRE

1. Application Description

1a. Application Sketch With Approx Dimensions

2. Load Parameter (Please Circle Accordingly)

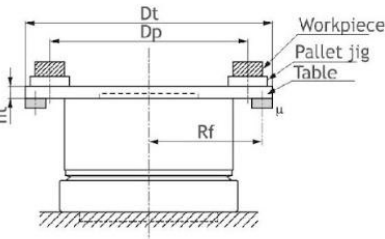
Table	a) Load moment of inertia	kg.m ²	
	Frictional torque	N.m	
	b) Table top shape		Disk / Rectangular Plate
	Material		Steel / Aluminium
	Dimension	Dt (mm)	
	Plate thickness	ht (mm)	
	Weight	m1 (kg)	
	c) Quantity	nw (pc.)	
	Max. weight	mw (kg/pc.)	
	Installation center	Dp (mm)	
Pallet Jig	d) Quantity	np (pc.)	
	Max. weight	mp (kg/pc.)	

Mounting Requirements


☐ Bottom mount


☐ Wall mount


☐ Upside-down



3. Motion Parameter

	Profile 1	Profile 2	Profile 3
Rotational angle (θ)			
Moving time			
Moving speed			
Dwell time			

4. Command/Bus (Please Circle Accordingly)

Pulse and direction / Analog / EtherCAT / IO trigger / Other : _____

5. Encoder (Please Circle Accordingly)

Incremental / Analog	
Resolution	cpr 327680 / 518400 / 655360 / 864000

6. Motion Precision

Accuracy	arcsec
Repeatability	arcsec

7. Mechanical Specification (Please Circle Accordingly)

Axial run-out	um	5 / 10 / 20
Radial run-out	um	5 / 10 / 20
Space constraints (H x W)	mm	

8. Working Environment

Room temperature	°C
Clean room class	

9. Additional Requirements (Please Tick (✓) Accordingly)

Motor extension cable length	Flexible cable	Amplifier	Controller	Other: _____
m				

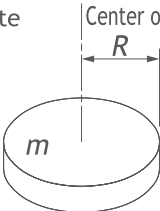
10. Remarks: If you have any special motion request for sizing procedure, please specify your requirement in below remarks.

Formula of moment of inertia

(m : Weight of object (kg))

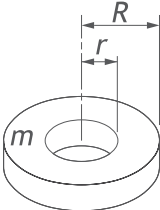
● A When rotation center is own shaft

1. Circular plate (cylinder)



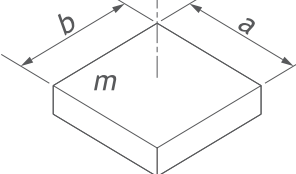
$I = \frac{mR^2}{2}$

2. Hollow circular plate (hollow cylinder)



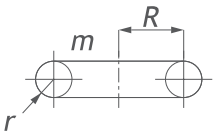
$I = \frac{m(R^2 + r^2)}{2}$

3. Direct hexagonal side finish body



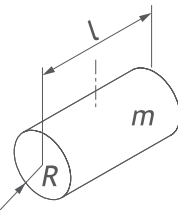
$I = \frac{m(a^2 + b^2)}{12}$

4. Ring



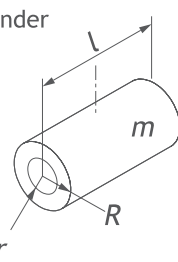
$I = \frac{m(4R^2 + 3r^2)}{4}$

5. Cylinder



$I = \frac{m(3R^2 + l^2)}{12}$

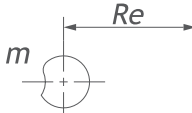
6. Hollow cylinder



$I = \frac{m(R^2 + r^2 + l^2/3)}{4}$

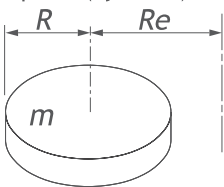
● B When rotation center differs from own shaft

1. Any shape (if small very well)



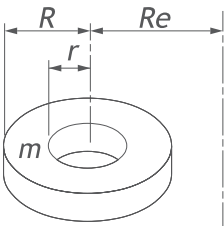
$I = mRe^2$

2. Circular plate (cylinder)



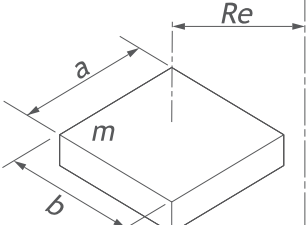
$I = m\left(\frac{R^2}{2} + Re^2\right)$

3. Hollow circular plate (hollow cylinder)



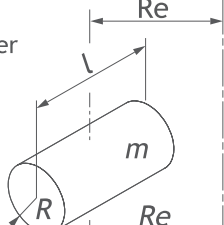
$I = m\left(\frac{R^2 + r^2}{2} + Re^2\right)$

4. Direct hexagonal side finish body



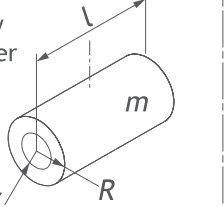
$I = m\left(\frac{a^2 + b^2}{12} + Re^2\right)$

5. Cylinder



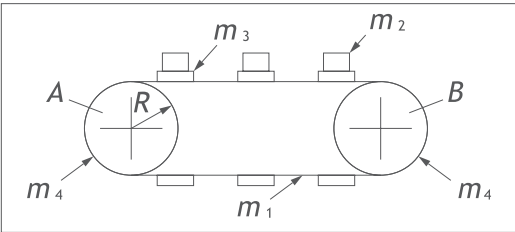
$I = m\left(\frac{3R^2 + l^2}{12} + Re^2\right)$

6. Hollow cylinder



$I = m\left(\frac{R^2 + r^2 + l^2/3}{4} + Re^2\right)$

● For conveyer



m_1 : Chain weight
 m_2 : Workpiece total weight
 m_3 : Jig (pallet) total weight
 m_4 : Sprocket A (drive) + B total weight
 R : Drive side sprocket radius

$$I = (m_1 + m_2 + m_3 + \frac{m_4}{2}) \cdot R^2$$

PBA Systems Linear Motor Sizer Software



PBA Systems is a one-stop robotics provider with a focus on the development of core technology to offer a robust range of products and solutions in precision robotics and general robotics - enabling companies to thrive by making Industry 4.0 technology accessible to the market.

Our core strength is in design, development, and manufacturing of direct drive motor design and manufacturing, motion control, and precision modular assemblies.

Address:
**505 Yishun Industrial Park, A,
Singapore 768733**

Contact Us:
**Tel: +(65) 6576 6766
Fax: +(65) 6576 6768**



PBA SYSTEMS LINEAR MOTOR SIZER SOFTWARE

PBA Systems Motor Sizer Software is available to download from our website to assist in the calculation and selection.

Kindly visit us at www.pbasystems.com.sg or simply scan the QR CODE

SIMULATED PERFORMANCE CHARTS



Application Version: 11.0.0.0 | Local Database Version: 8.0.21 | Server Database Version: 8.0.21

Motor Sizer

Project Details

Customer Name PBA Customer Project Name Project1 Date 2023/12/5

Project Data Version 8.0.21

Axis Details

Axis Name New Axis Motor Category PLA_PIX Safety Margin 100 800 Actuator Max Distance 1000 mm

Profiles

No	Motion Profile	Travel Distance (m)	Travel Time (s)	Max. Speed (m/s)	Max. Accel. (m/s^2)	Dwell Time (s)	Mass of Load (Kg)	Angle Of Incl. (°)	Direction	Coefficient of Friction	Opposing Force (N)	Ambient Temp. (°C)	RMS Force (N)	Peak Force (N)	Frictional Force (N)	Accel. Time (s)	Cruise Time (s)	Decel. Time (s)	Total Time (s)
1	Custom	1.000	0.750	2.000	8.000	0.000	5.000	0.000		0.003	0.000	30.000	32.660	40.147	0.147	0.250	0.250	0.250	0.000

PLA140-PIX150B-050-C3-TC-NH-OE0.1-C-1024-00

Final Calculations for Axis

Required RMS Force	32.660 N
Required Peak Force	40.147 N
Total Travel Distance	1.000 m
Total Cycle Time	0.750 s
Total Dwell Time	0.000 s
Max Speed	2.000 m/s
Max Acceleration	8.000 m/s^2
Max Ambient Temp.	30.000 °C

Recommended Motor Safety (%)

PLA140-PIX150B-050-C3	121
PLA140-PIX150B-050-C4	175
PLA180-PIX150B-075-C2	149
PLA180-PIX150B-075-C3	245
PLA220-PIX150B-100-C2	216
PLA140-PIX250B-050-C1	108

Selected Motor

Motor PLA140-PIX150B-050-C3

Continuous Force	104.00 N	L To L Resistance	6.80 ohm
Peak Force	363.00 N	L To L Inductance	16.50 mH
Continuous Current	3.30 A	Continuous Power	71.00 W
Peak Current	12.70 A	Peak Power	1081.00 W
Motor Constant	12.40 N/VV	Carriage Moving Mass	2.300 kg
Force Constant	32.00 N/A	Coil Length	142.00 mm
Back EMF Constant	36.90 V/(m/s)	Attraction Force	630.00 N

Calculated Motor Values for Application

Reqd. RMS Force	47.73 N	Reqd. Peak Force	60.50 N
Cont. Current	1.49 A	Peak Current	1.89 A
Coil Temp	42.62 °C	DC Bus Voltage	86.66 V
S.F. Current	121.25 %	L.F. Current	45.20 %
S.F. Force	117.89 %	L.F. Force	45.89 %

Servo Drive Model MT-6/25-230AP1

Cont. Current	6.30 A	Peak Current	25.40 A
---------------	--------	--------------	---------

PBA GROUP

Singapore

505 Yishun Industrial Park A, PBA Building, Singapore 768733

PBA Systems Pte. Ltd.

Tel: +65 6576 6767
Fax: +65 6576 6768
Email: sales@pbasystems.com.sg
Website: www.pbasystems.com.sg

PBA Solutions Pte. Ltd.

Tel: +65 6576 6767
Fax: +65 6576 6768
Email: enquiry@pbasolutions.com
Website: www.pbasolutions.com

PBA Technology Pte. Ltd.

Tel: +65 6576 6760
Fax: +65 6576 6761
Email: enquiry@pbatechnology.com
Website: www.pbatechnology.com

PBA Spindles Pte. Ltd.

Tel: +65 6576 6778
Fax: +65 6576 6782
Email: sales@pba-spindles.com
Website: www.pba-spindles.com

RACE

Tel: +65 6576 6766
Fax: +65 6576 6768
Email: enquiries@raceacademy.com.sg
Website: www.raceacademy.com.sg

Malaysia

PBA Systems (M) Sdn. Bhd.

No 1, Jalan Anggerik Mokara 31/61,
Seksyen 31 Kota Kemuning,
40460 Shah Alam, Selangor, Malaysia
Tel: +(60) 3 5131 2266
Fax:
Email: sales@my.pbagroup.net

PBA Advantech (M) Sdn. Bhd.

No. 20, Jalan Anggerik Mokara 31/50,
Seksyen 31 Kota Kemuning, 40460
Shah Alam, Selangor, Malaysia
Tel: +(60) 3 5525 4101/ 02/ 03
Fax: +(60) 3 5525 4106
Email: malaysia@pbagroup.net

PBA Systems (PG) Sdn. Bhd.

Email: sales@my.pbagroup.net

PBA Leader Motion Sdn. Bhd.

93, Solok Bayan Lepas, Taman
Perindustrian Bayan Lepas FASA IV,
11900 Bayan Lepas, Pulau Pinang,
Malaysia
Tel: +(60) 4 637 1915 (3 hunting lines)
Fax: +(60) 4 637 1917
Email: sales@my.pbagroup.net

Greater China

碧綠威自動化(深圳)有限公司
PBA Systems (China) Co., Ltd

深圳市宝安区航城街道航城智慧
安防科技园A栋8层806,
邮编: 518100
No 806, Block A, Hangcheng
Smart Security Science Park,
Hangcheng Street, Bao'an
District, ShenZhen, China
518100
Tel: +86 755 2167 7507
Fax: +86 755 2167 7506
Email: sales_cn@pbagroup.net

碧綠威自動化(苏州)有限公司
PBA Systems (Suzhou) Co., Ltd.

苏州吴中经济开发区越溪北官渡
路22号1幢, 邮编: 215104
Building 1, No. 22, Beiguandu
Road, Yuexi Street,
Economic Development Zone,
Wuzhong District,
Suzhou City, Jiangsu Province,
China 215104
Email: sales_cn@pbagroup.net

碧綠威自動化股份有限公司
PBA Systems (Taiwan) Co., Ltd.

24250新北市新莊區新北大道三
段7號2樓之5
2F.-5B, No.7, Sec. 3, New Taipei
Blvd. Xinzhuang Dist., New
Taipei City 242 Taiwan 24250
Tel: +02 8521 9408
Fax: +02 8521 9409
Email: info.tw@pbagroup.net

Japan

PBA Systems Japan Co., Ltd

2F Kuwano Building, 6-23-4,
Jingu-mae, Shibuya ward,
Tokyo 150-0001, Japan
Email: info.jp@pbagroup.net

Korea

PBA Korea Co., Ltd.

25, Omokcheon-ro 108 beon-gil,
Gwonseon-gu, Suwon-si,
Gyeonggi-do, Republic of Korea
Tel: +82 31 278 6876
Fax: +82 31 278 6877
Email: info.kr@pbagroup.net

Thailand

PBA Systems (Thailand) Co. Ltd.

372 Moo 5 Samrong Nuea Subdistrict
Mueang Samut Prakan District
Samut Prakan Province 10270
Bangkok, Thailand
Tel: +66 2 012 2153
Fax: +66 2 614 4400
Email: support@th.pbagroup.net

India

Rep Office

512, Shivai Plaza Marol,
Andheri East, Mumbai
400059 Maharashtra, India
Email: info.in@pbagroup.net

Europe

PBA Netherlands BV

Zilverparkkade 7,
8232WJ, Lelystad
The Netherlands
Tel: +31 85 745 0026
Email: info@pbasystems.eu

PBA SYSTEMS PTE LTD

**505 Yishun Industrial Park A
PBA Building, Singapore 768733**

**Tel: +(65) 6576 6766
Fax: +(65) 6576 6768**

Email: sales@pbasystems.com.sg