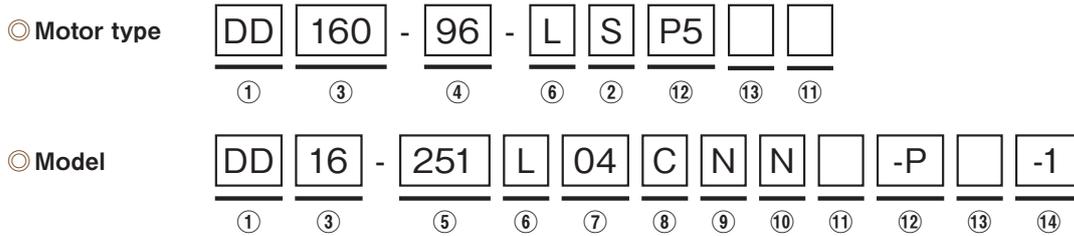


τDISC DD-s Series Model and motor type description



①	Product classification (1)	DD...τDISC DD-s Series	
②	Product classification (2)	Motor type	S...ND-s Series/ ND-s HS Series/ DD-s Series/ HD-s Series
③	Outside diameter	Motor type	160...160 mm 250...265 mm 400...420 mm 630...663 mm
		Model	16...160 mm 25...265 mm 40...420 mm 63...663 mm
④	Height	Example) 96 ...96 mm	
⑤	Rated output *1	Example) 251 ... $\frac{25}{1} = 25 \times 10^1 = 250$ W <div style="margin-left: 40px;">└ Exponential part of powers of 10 └ Significant figures</div>	
⑥	Motor flange	F...With flange	L...Flange less
⑦	Rated rotation speed	Rated rotation speed(unit: rps; to be rounded down to the whole number) Example) 04...4 rps	
⑧	Encoder type	C...Absolute encoder(absolute value for one revolution)	A...Incremental encoder
		H...DD630 system absolute encoder IPU built-in type absolute encoder(absolute value for one revolution)	
⑨	Cooling method	N...Natural air cooling	
⑩	Overseas standards	N...None	
⑪	Special model symbol	Without...Standard specification	
		R + sequential number...Quasi standard spec	S + sequential number...Special model spec
⑫	Table surface rotation accuracy *2	Motor type	None ...Standard specification
			P10 ...High accuracy 10 μm type(option)
			P5 ...High accuracy 5 μm type(option)
		Model	P3 ...High accuracy 3 μm type(option)
			None ...Standard specification
			-P ...DD160/250/400 Type: High accuracy 5 μm type(option) DD630 Type: High accuracy 10 μm type(option)
-P5 ...DD630 Type: High accuracy 5 μm type(option)			
-P3 ...DD160/250/400 Type: High accuracy 3 μm type(option)			
⑬	Parallelism	Without...Standard specification	
		H...Parallelization processing specification(option) *Not supported for the DD630 Type.	
⑭	Absolute position compensation option *3	Without...Without the Absolute position compensation option	
		-0...Compensation data to be transferred to the VPH servo driver by the user.	

*1 Approximate value.

*2 The high accuracy type of the DD160/250/400 Type supports 5 μm and 3 μm. The high accuracy type of the DD630 Type supports 10 μm and 5 μm.

*3 For details, refer to "Absolute position compensation function option system table" on p.42.

* Dimensions are subject to change without prior notice to improve the product. Before designing, download the latest dimensions from our website.

About the encoder type

The absolute encoder is the standard type of encoder in the DD-s Series lineup. Note that, since this is a battery-less type encoder, it cannot hold multiple turn data.

An incremental encoder type is also available on request for the following motor types.

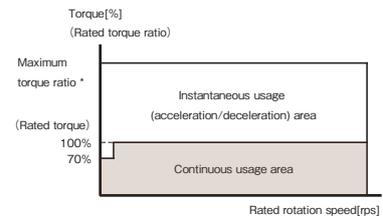
•DD160-96/146-LS(P5/P3) •DD250-90/138/163-LS(P5/P3)

This catalog only contains the specifications and dimensions of the absolute encoder type. The incremental encoder type differs in the detection pulse, resolution, cable diameter, connector shape, cable outlet, etc. For details, visit our website.

Common specifications

Ambient operating temperature	0 to 40°C
Ambient operating humidity	85%RH or less; no condensation
Installation location	Do not install in a harmful atmosphere containing corrosive gas, grinding oil, metal dust, oil, etc. Install in an indoor place not exposed to direct sunlight.
Installation direction	Horizontal with the rotor facing upward or downward. *When the installation direction is not horizontal, consult with our sales staff.
Cooling method	Natural air cooling
Insulation class	Class F
Withstand voltage	1,500 VAC, 1 minute
Protection class	IP44
Height above sea level	1,000 m or less
Vibration resistance	1G(3 directions, 2 hours each)
Shock resistance	30G(3 directions, 2 times each)

Torque characteristics



If the locking operation or an equivalent operation (ultra low speed rotation or reciprocation within a very small range of angles) is performed continuously, the electronic thermal value may be reduced for motor protection.
When you plan to perform the above operation, contact our sales staff.

τ DISC DD-s Series Individual specifications

Motor type *1		DD160-96-LS (P5/P3)	DD160-105-FS (P5/P3)	DD160-146-LS (P5/P3)
Model *1	DD16-	251L04CNN (-P/-P3)	251F04CNN (-P/-P3)	681L04CNN (-P/-P3)
Flange type		Flange less	With flange	Flange less
Power supply used	ACV	200	200	200
Outside diameter	mm	160	160	160
Height *2	mm	96(95.8)	105(104.8)	146(145.8)
Rated torque *3	N·m	10	10	27
Max torque *3	N·m	23	23	62.5
Rated rotation speed *3	rps	4	4	4
Rated output *3	W	251	251	678
Rated current *3	A	3.1	3.1	5
Encoder type		Absolute	Absolute	Absolute
Detection pulse	ppr	2,097,152	6,815,744	2,097,152
Detection resolution	arcsec	0.618	0.191	0.618
Allowable moment load *4	N·m	280	280	280
Allowable axial load *4	kN	22.5	22.5	22.5
Table surface rotation accuracy *5	Radial run out (no load) μm	30 (Standard) / 5 (High accuracy type) / 3 (High accuracy type)		
	Axial run out (no load) μm	30 (Standard) / 5 (High accuracy type) / 3 (High accuracy type)		
Parallelism *6	μm	40 (Standard) / 20 (Parallelization processing spec)	50 (Standard) / 20 (Parallelization processing spec)	40 (Standard) / 20 (Parallelization processing spec)
Absolute Positioning accuracy *7	arcsec	±50 (Standard) / ±10 (When the absolute position compensation function option is used)		
Repeated Positioning accuracy (when reciprocating)	arcsec	±1		
Rotor moment of inertia	kg·m ²	0.0058	0.0058	0.0074
Weight	kg	8.2	7.3	13.5
Magnetic pole detection method		Absolute position detection	Absolute position detection	Absolute position detection
Paired servo driver	VPH Series	NCR-H□	2401A-A-□□□	2801A-A-□□□

Motor type *1		DD250-90-LS (P5/P3)	DD250-138-LS (P5/P3)	DD250-163-LS (P5/P3)
Model *1	DD25-	521L02CNN (-P/-P3)	102L02CNN (-P/-P3)	152L02CNN (-P/-P3)
Flange type		Flange less	Flange less	Flange less
Power supply used	ACV	200	200	200
Outside diameter	mm	265	265	265
Height *2	mm	90(89.8)	138(137.8)	163(162.8)
Rated torque *3	N·m	42	80	120
Max torque *3	N·m	100	190	300
Rated rotation speed *3	rps	2	2	2
Rated output *3	W	528	1,005	1,507
Rated current *3	A	6.3	10	10
Encoder type		Absolute	Absolute	Absolute
Detection pulse	ppr	6,815,744	6,815,744	6,815,744
Detection resolution	arcsec	0.191	0.191	0.191
Allowable moment load *4	N·m	315	450	450
Allowable axial load *4	kN	22.5	30	30
Table surface rotation accuracy *5	Radial run out (no load) μm	40 (Standard) / 5 (High accuracy type) / 3 (High accuracy type)		
	Axial run out (no load) μm	40 (Standard) / 5 (High accuracy type) / 3 (High accuracy type)		
Parallelism *6	μm	60 (Standard) / 20 (Parallelization processing specification)		
Absolute Positioning accuracy *7	arcsec	±50 (Standard) / ±10 (When the absolute position compensation function option is used)		
Repeated Positioning accuracy (when reciprocating)	arcsec	±1		
Rotor moment of inertia	kg·m ²	0.04	0.08	0.105
Weight	kg	20	34	42
Magnetic pole detection method		Absolute position detection	Absolute position detection	Absolute position detection
Paired servo driver	VPH Series	NCR-H□	2152A-A-□□□	2152A-A-□□□

*1 Shown in parentheses are the motor type and model of the high accuracy type (option).

*2 Shown in parentheses is the value of the high accuracy type (option).

*3 The specification values are those obtained when the τ DISC is mounted on a heat sink (aluminum plate) of one of the following sizes and operated at the ambient operating temperature.
· DD160 Type 640 mm×450 mm×50 mm / · DD250 Type 640 mm×450 mm×50 mm

*4 The life of the bearing and the run out accuracy differ depending on the load. For the points to note with regard to the allowable loads, refer to "About the allowable loads of τ DISC" on p.44.

*5 For details, refer to "High accuracy type option for τ DISC table surface rotation accuracy" on p.43. If you need radial or axial run out accuracy of more than 3 μm, contact our sales staff.

*6 The parallelization processing specification is an option that is added to the high accuracy type for table surface rotation accuracy. For details, refer to "τ DISC parallelization processing specification option" on p.43.

*7 For details, refer to "τ DISC Absolute position compensation function option" on p.42.

τ DISC DD-s Series Individual specifications

Motor type *1	DD400-150-LS(P5/P3)		DD400-200-LS(P5/P3)
Model *1	DD40-	322L02CNN(-P/-P3)	622L02CNN(-P/-P3)
Flange type	Flange less		Flange less
Power supply used	ACV	200	200
Outside diameter	mm	420	420
Height *2	mm	150(149.8)	200(199.8)
Rated torque *3	N·m	260	500
Max torque *3	N·m	650	1,250
Rated rotation speed *3	rps	2	2
Rated output *3	W	3,267	6,283
Rated current *3	A	24	34
Encoder type	Absolute		Absolute
Detection pulse	ppr	6,815,744	6,815,744
Detection resolution	arcsec	0.191	0.191
Allowable moment load *4	N·m	2,000	2,000
Allowable axial load *4	kN	44	44
Table surface rotation accuracy *5	Radial run out(no load) μm	40(Standard)/5(High accuracy type)/3(High accuracy type)	
	Axial run out(no load) μm	40(Standard)/5(High accuracy type)/3(High accuracy type)	
Parallelism *6	μm	100(Standard)/20(Parallelization processing specification)	
Absolute Positioning accuracy *7	arcsec	±50(Standard)/±10(When the absolute position compensation function option is used)	
Repeated Positioning accuracy(when reciprocating)	arcsec	±1	
Rotor moment of inertia	kg·m ²	0.402	0.648
Weight	kg	76	109
Magnetic pole detection method	Absolute position detection		Absolute position detection
Paired servo driver	VPH Series	NCR-H□	2332A-A-□□□

Motor type *1	DD400-250-LS(P5/P3) (1.5rps spec)	DD400-250-LS(P5/P3) (1rps spec)	DD400-250-LS(P5/P3) (2rps spe)
Model *1	DD40-	702L01CNN(-P/-P3)	472L01CNN(-P/-P3)
Flange type	Flange less		Flange less
Power supply used	ACV	200	200
Outside diameter	mm	420	420
Height *2	mm	250(249.8)	250(249.8)
Rated torque *3	N·m	750	750
Max torque *3	N·m	1,750(1,390 *7)	1,700
Rated rotation speed *3	rps	1.5	1
Rated output *3	W	7,068	4,712
Rated current *3	A	47	33
Encoder type	Absolute		Absolute
Detection pulse	ppr	6,815,744	6,815,744
Detection resolution	arcsec	0.191	0.191
Allowable moment load *4	N·m	3,000	3,000
Allowable axial load *4	kN	55	55
Table surface rotation accuracy *5	Radial run out(no load) μm	40(Standard)/5(High accuracy type)/3(High accuracy type)	
	Axial run out(no load) μm	40(Standard)/5(High accuracy type)/3(High accuracy type)	
Parallelism *6	μm	100(Standard)/20(Parallelization processing specification)	
Absolute Positioning accuracy *7	arcsec	±50(Standard)/±10(When the absolute position compensation function option is used)	
Repeated Positioning accuracy(when reciprocating)	arcsec	±1	
Rotor moment of inertia	kg·m ²	0.915	0.915
Weight	kg	140	140
Magnetic pole detection method	Absolute position detection		Absolute position detection
Paired servo driver	VPH Series	NCR-H□	2153A-A-□□□(2702A-A-□□□ *7)

Motor type *1	DD630-175-LS(P10/P5)	DD630-225-LS(P10/P5)	
Model *1	DD63-	842L01HNN(-P/-P5)	
Flange type	Flange less		
Power supply used	ACV	200	
Outside diameter	mm	663	
Height *2	mm	175(174.8)	
Rated torque *3	N·m	1,350	
Max torque *3	N·m	2,500	
Rated rotation speed *3	rps	1	
Rated output *3	W	8,400	
Rated current *3	A	46	
Encoder type	Absolute		
Detection pulse	ppr	12,582,912	
Detection resolution	arcsec	0.103	
Allowable moment load *4	N·m	7,000	
Allowable axial load *4	kN	100	
Table surface rotation accuracy *5	Radial run out(no load) μm	100(Standard)/10(High accuracy type)/5(High accuracy type)	
	Axial run out(no load) μm	100(Standard)/10(High accuracy type)/5(High accuracy type)	
Parallelism *6	μm	200(Standard)	
Absolute Positioning accuracy *7	arcsec	±50(Standard)/±10(When the absolute position compensation function option is used)	
Repeated Positioning accuracy(when reciprocating)	arcsec	±1	
Rotor moment of inertia	kg·m ²	4.3	5.2
Weight	kg	231	290
Magnetic pole detection method	Absolute position detection		
Paired servo driver	VPH Series	NCR-H□	2702A-A-□□□

*1 Shown in parentheses are the motor type and model of the high accuracy type(option).

*2 Shown in parentheses is the value of the high accuracy type(option).

*3 The specification values are those obtained when the τ DISC is mounted on a heat sink (aluminum plate) of one of the following sizes and operated at the ambient operating temperature.
 · DD400 Type 1140 mm×700 mm×80 mm+490 mm×490 mm×40 mm(Two plates stacked)
 · DD630 Type 1140 mm×700 mm×80 mm+700 mm×700 mm×80 mm(Two plates stacked)

*4 The life of the bearing and the run out accuracy differ depending on the load. For the points to note with regard to the allowable loads, refer to "About the allowable loads of τ DISC" on p.44.

*5 For details, refer to "High accuracy type option for τ DISC table surface rotation accuracy" on p.43. If you need radial or axial run out accuracy of more than 3 μm, contact our sales staff.

*6 The parallelization processing specification is an option that is added to the high accuracy type for table surface rotation accuracy. For details, refer to "τ DISC parallelization processing specification option" on p.43.

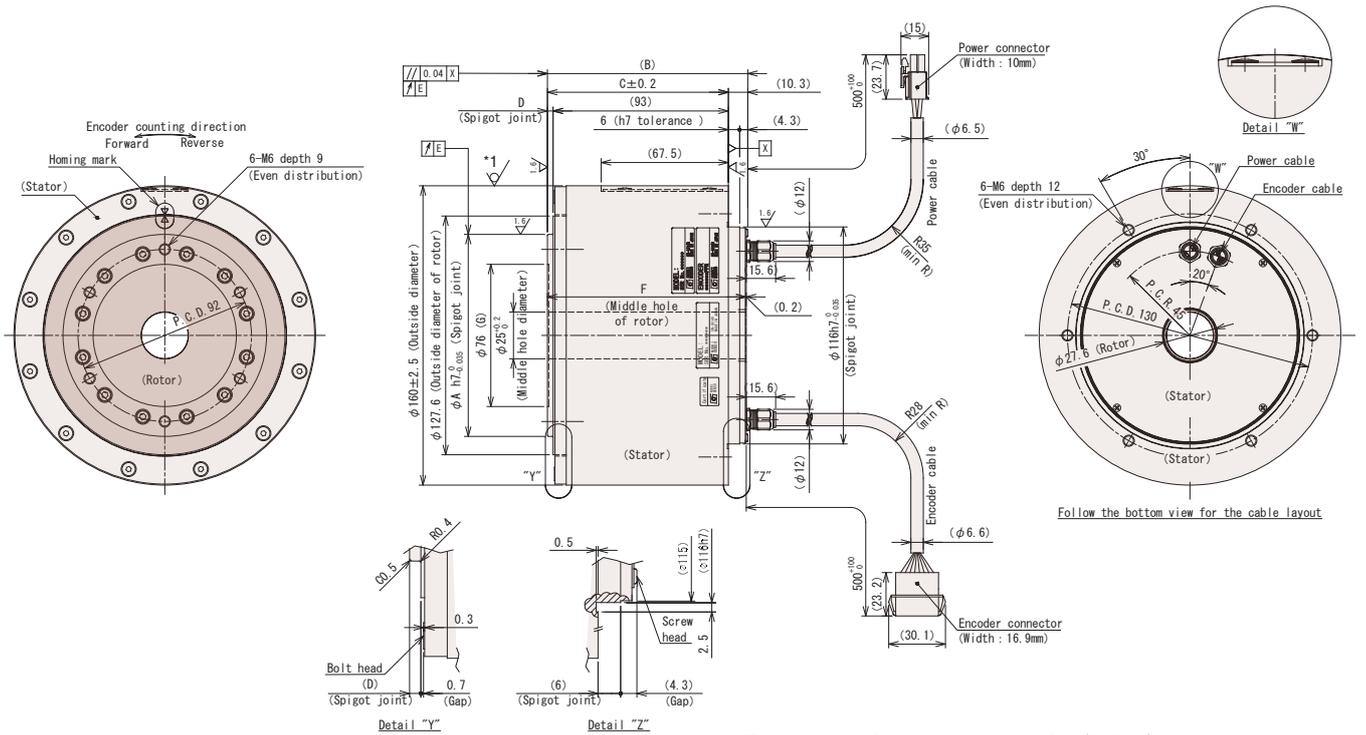
*7 For details, refer to "τ DISC Absolute position compensation function option" on p.42.

*8 Shown in parentheses is the maximum torque of the Paired servo driver.

τ DISC DD-s Series Dimensions

DD160-96-LS(P5/P3)

DD16-251L04CNN(-P/-P3)

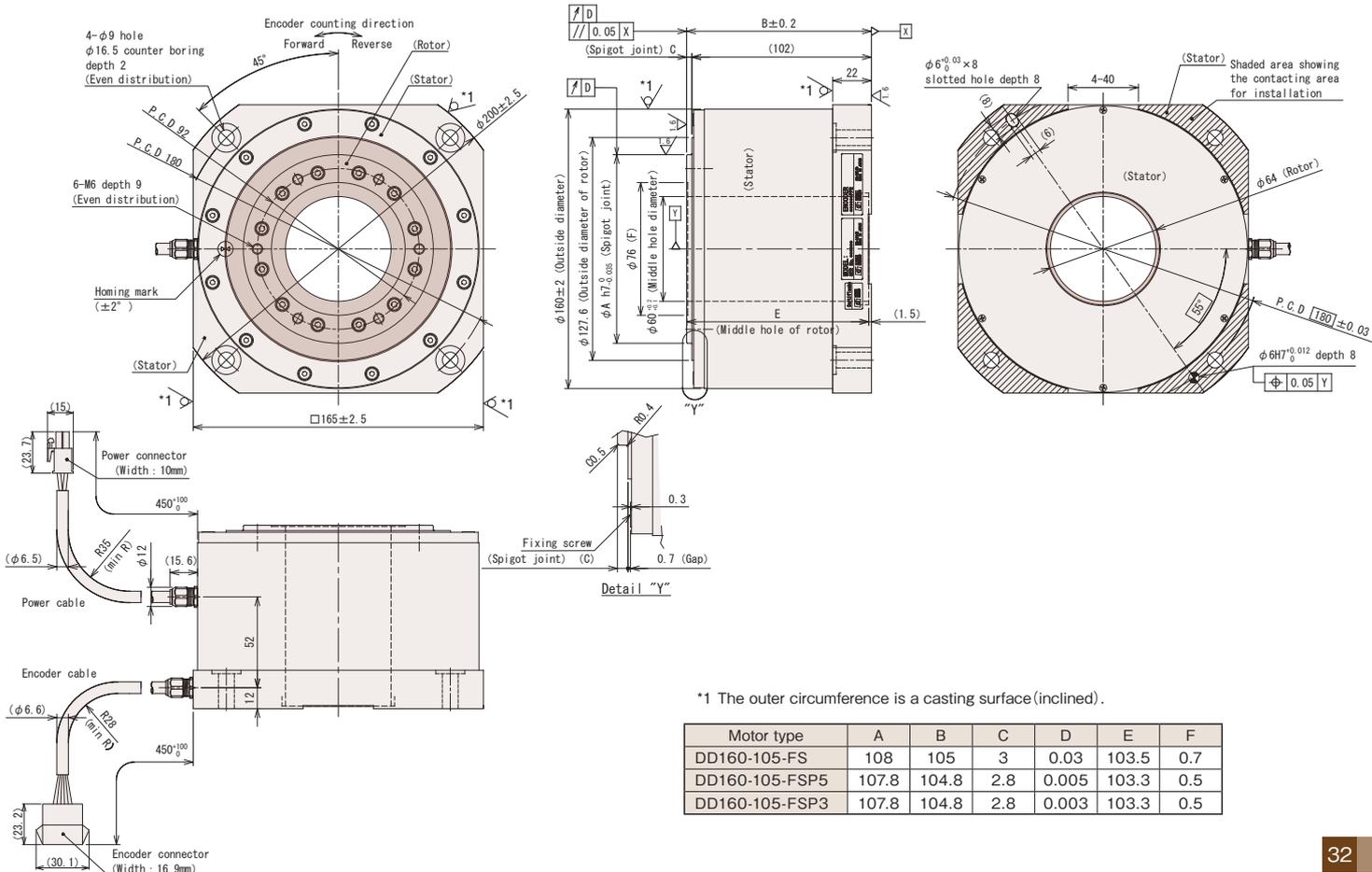


*1 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G
DD160-96-LS	108	106.3	96	3	0.03	105.3	0.7
DD160-96-LSP5	107.8	106.1	95.8	2.8	0.005	105.1	0.5
DD160-96-LSP3	107.8	106.1	95.8	2.8	0.003	105.1	0.5

DD160-105-FS(P5/P3)

DD16-251F04CNN(-P/-P3)



*1 The outer circumference is a casting surface (inclined).

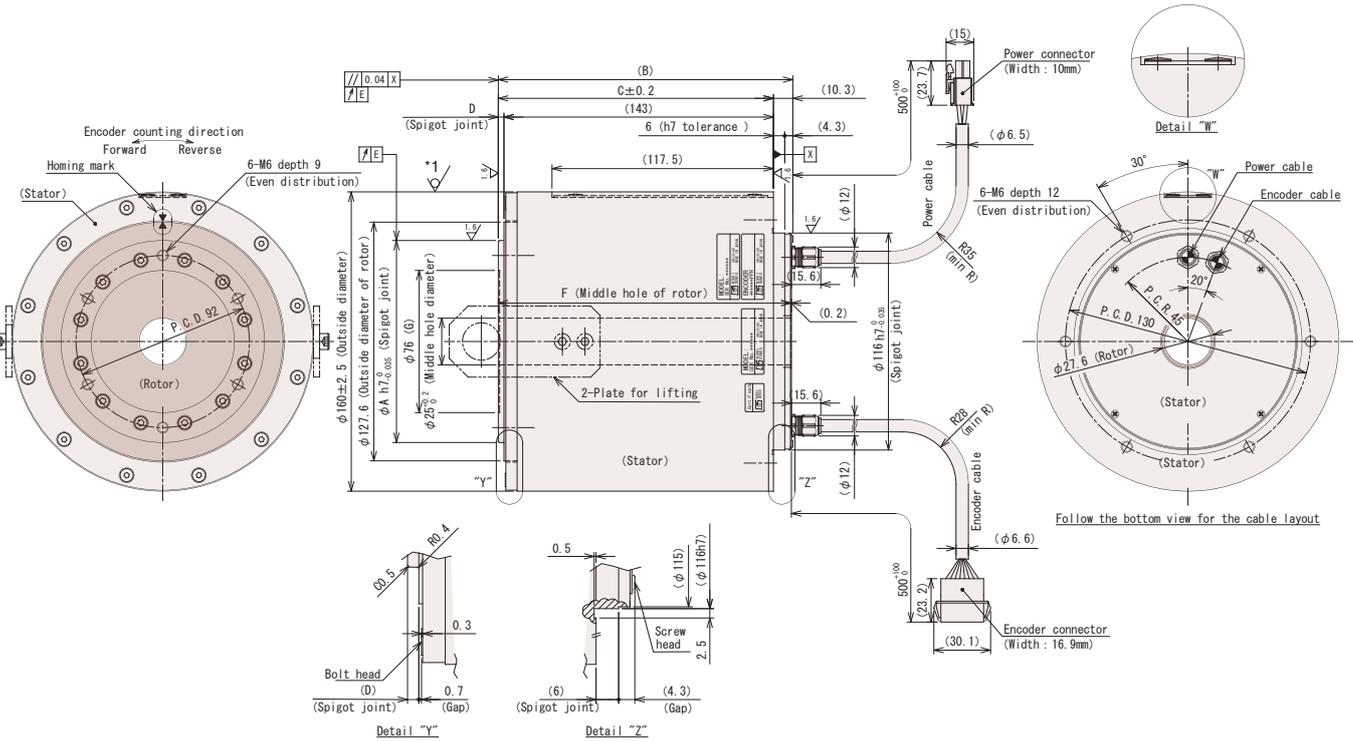
Motor type	A	B	C	D	E	F
DD160-105-FS	108	105	3	0.03	103.5	0.7
DD160-105-FSP5	107.8	104.8	2.8	0.005	103.3	0.5
DD160-105-FSP3	107.8	104.8	2.8	0.003	103.3	0.5

τDISC DD-s Series Dimensions

DD160-146-LS(P5/P3)

DD16-681L04CNN (-P/-P3)

τDISC DD-s Series

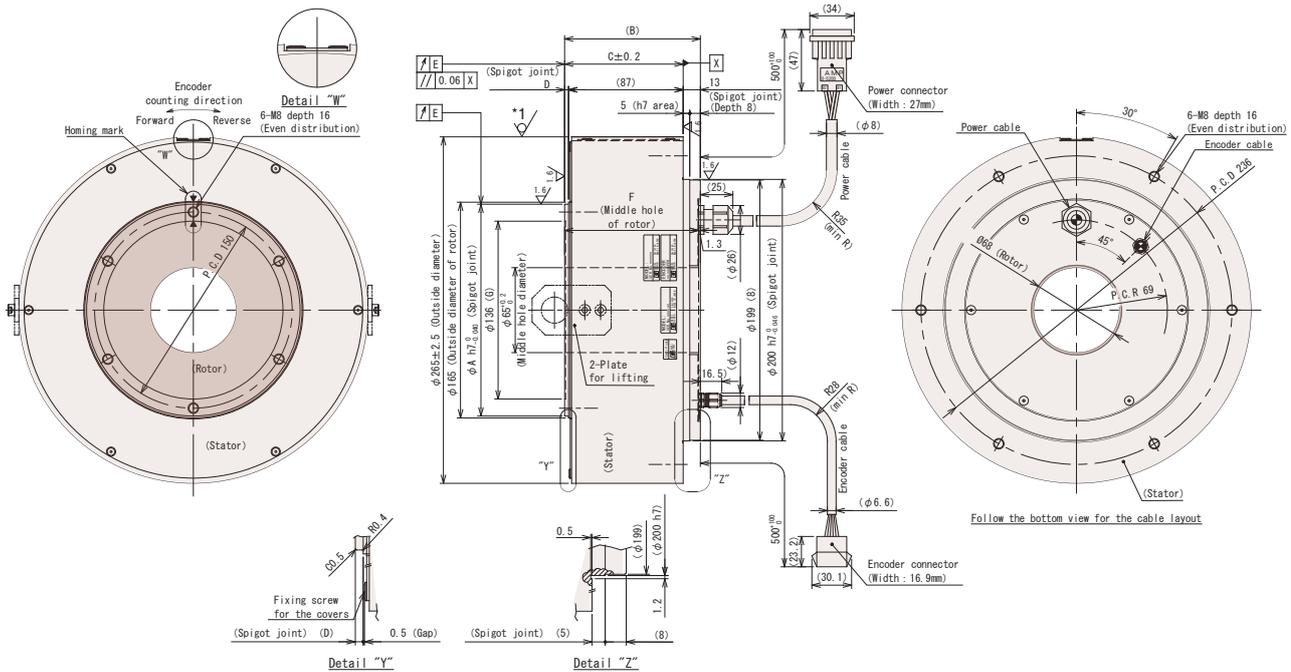


*1 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G
DD160-146-LS	108	156.3	146	3	0.03	155.3	0.7
DD160-146-LSP5	107.8	156.1	145.8	2.8	0.005	155.1	0.5
DD160-146-LSP3	107.8	156.1	145.8	2.8	0.003	155.1	0.5

DD250-90-LS(P5/P3)

DD25-521L02CNN (-P/-P3)



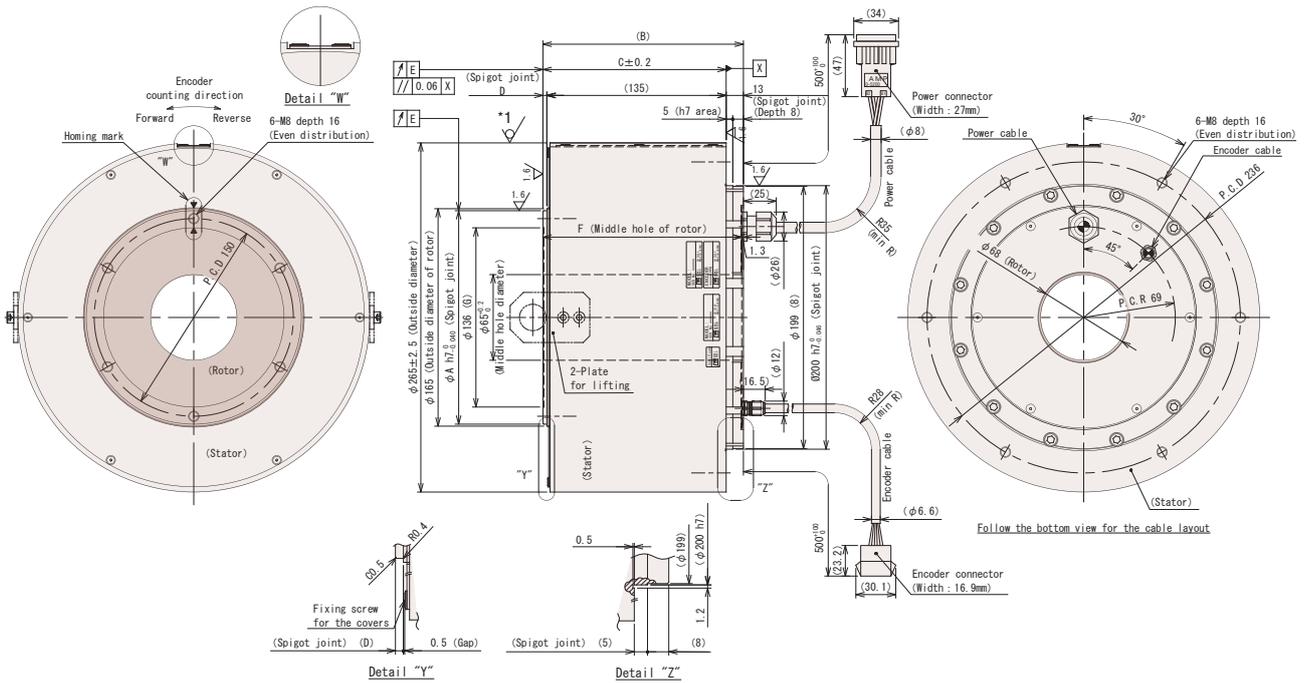
*1 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G
DD250-90-LS	162	103	90	3	0.04	101.7	0.7
DD250-90-LSP5	161.8	102.8	89.8	2.8	0.005	101.5	0.5
DD250-90-LSP3	161.8	102.8	89.8	2.8	0.003	101.5	0.5

τ DISC DD-s Series Dimensions

DD250-138-LS(P5/P3)

DD25-102L02CNN (-P/-P3)

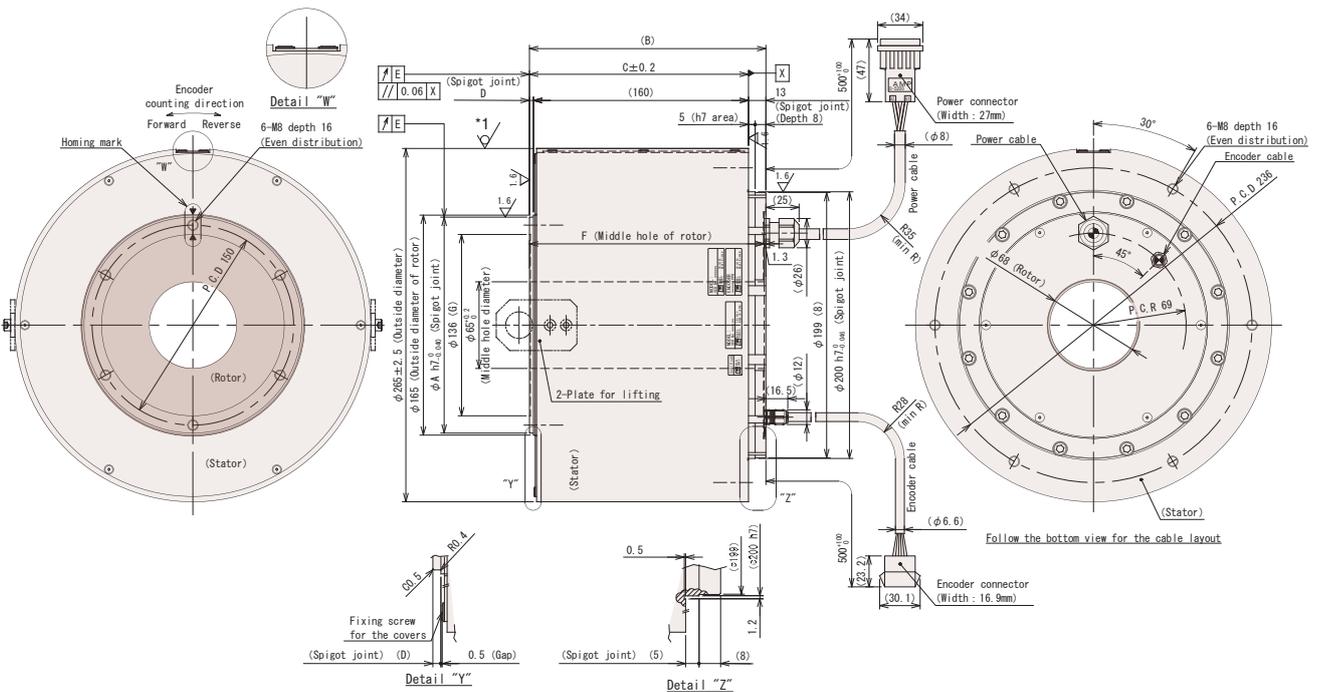


*1 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G
DD250-138-LS	162	151	138	3	0.04	149.7	0.7
DD250-138-LSP5	161.8	150.8	137.8	2.8	0.005	149.5	0.5
DD250-138-LSP3	161.8	150.8	137.8	2.8	0.003	149.5	0.5

DD250-163-LS(P5/P3)

DD25-152L02CNN (-P/-P3)



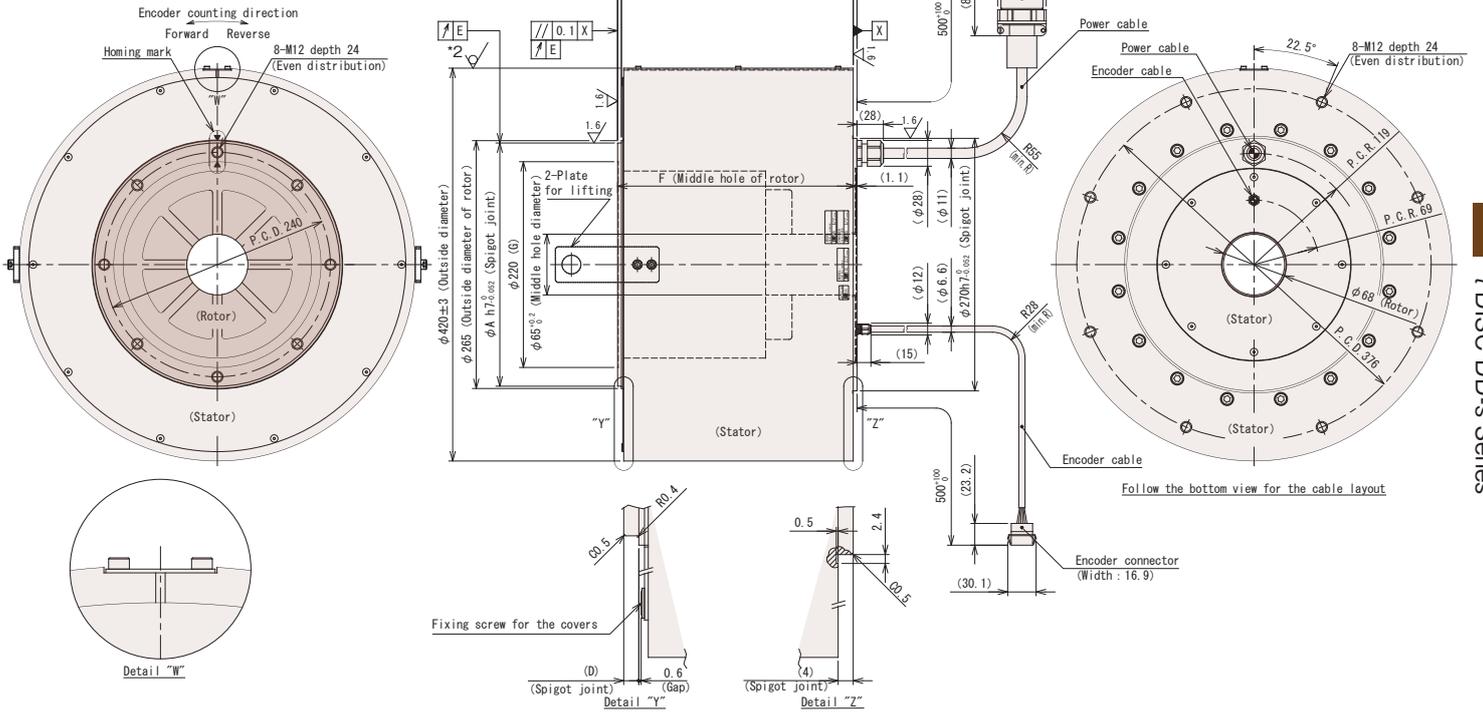
*1 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G
DD250-163-LS	162	176	163	3	0.04	174.7	0.7
DD250-163-LSP5	161.8	175.8	162.8	2.8	0.005	174.5	0.5
DD250-163-LSP3	161.8	175.8	162.8	2.8	0.003	174.5	0.5

τ DISC DD-s Series Dimensions

DD400-250-LS(P5/P3) (1.5rps spec)

DD40-702L01CNN (-P/-P3)

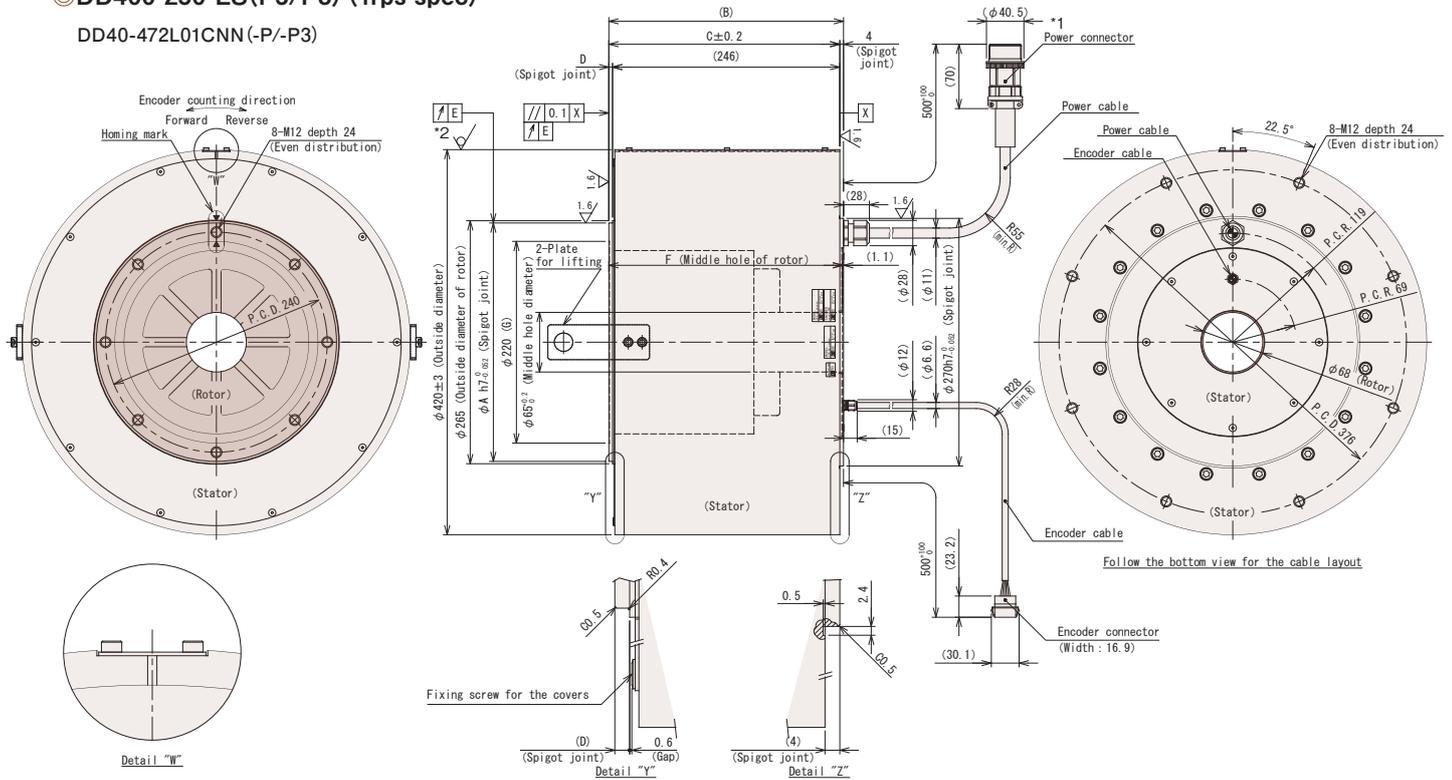


- *1 The diameter of the panel guide insertion and removal hole for the power connector should be $\phi 75$ as the standard.
- *2 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G
DD400-250-LS(1.5rps spec)	260	254	250	4	0.04	252.9	0.7
DD400-250-LSP5(1.5rps spec)	259.8	253.8	249.8	3.8	0.005	252.7	0.5
DD400-250-LSP3(1.5rps spec)	259.8	253.8	249.8	3.8	0.003	252.7	0.5

DD400-250-LS(P5/P3) (1rps spec)

DD40-472L01CNN (-P/-P3)



- *1 The diameter of the panel guide insertion and removal hole for the power connector should be $\phi 50$ as the standard.
- *2 The outer circumference is a casting surface (inclined).

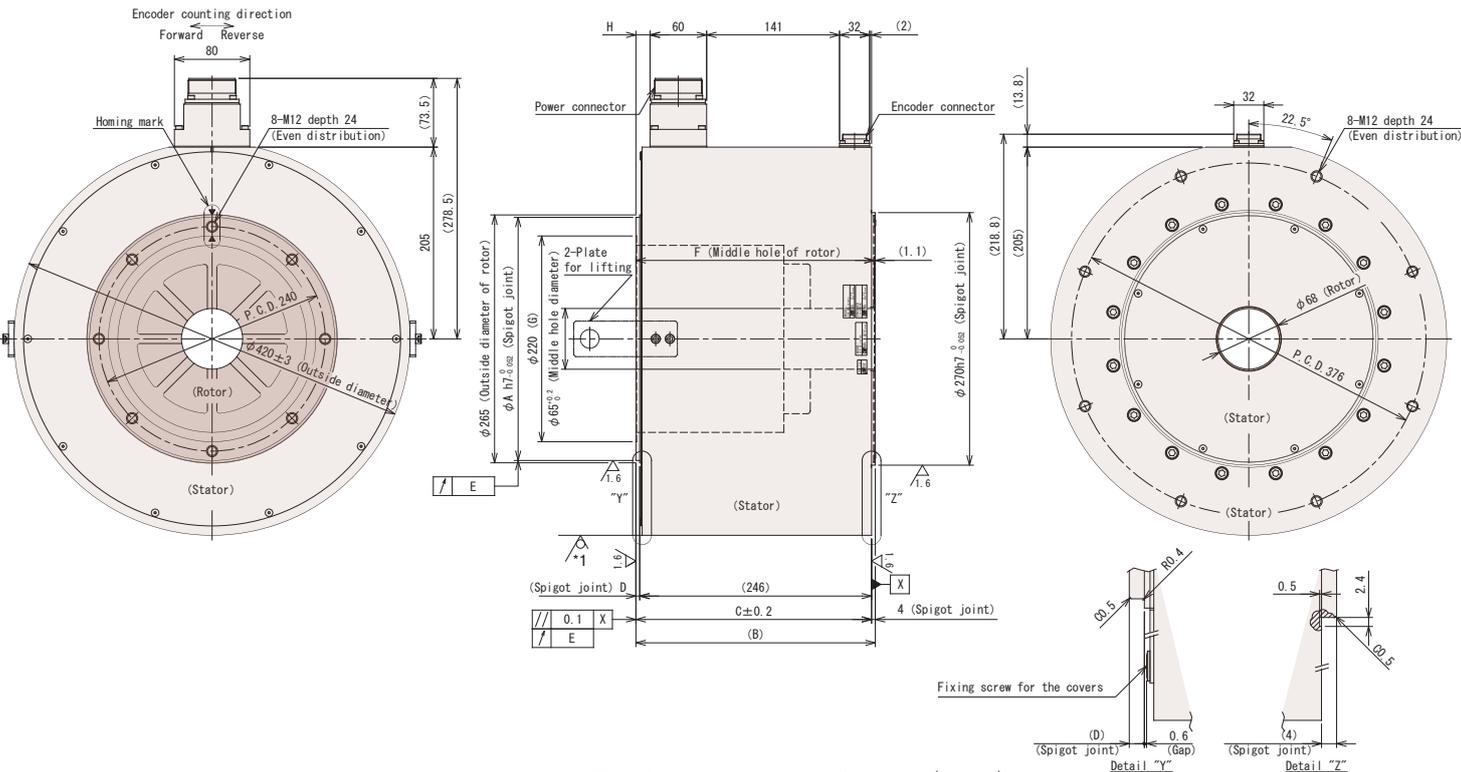
Motor type	A	B	C	D	E	F	G
DD400-250-LS(1rps spec)	260	254	250	4	0.04	252.9	0.7
DD400-250-LSP5(1rps spec)	259.8	253.8	249.8	3.8	0.005	252.7	0.5
DD400-250-LSP3(1rps spec)	259.8	253.8	249.8	3.8	0.003	252.7	0.5

τDISC DD-s Series Dimensions

DD400-250-LS(P5/P3) (2rps spec)

DD40-942L02CNN (-P/-P3)

τDISC DD-s Series

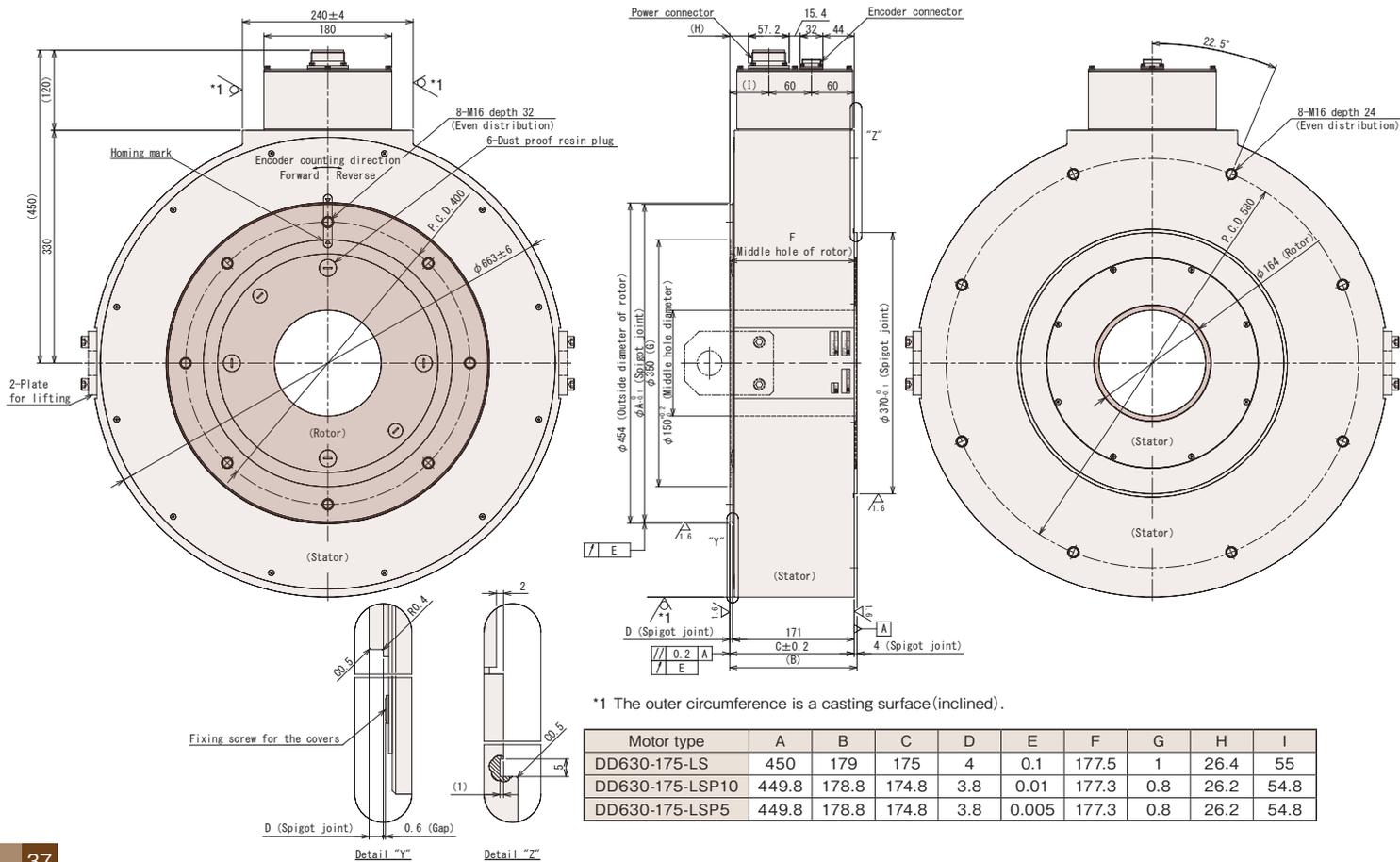


*1 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G	H
DD400-250-LS (2rps spec)	260	254	250	4	0.04	252.9	0.7	15
DD400-250-LSP5 (2rps spec)	259.8	253.8	249.8	3.8	0.005	252.7	0.5	14.8
DD400-250-LSP3 (2rps spec)	259.8	253.8	249.8	3.8	0.003	252.7	0.5	14.8

DD630-175-LS(P10/P5)

DD63-842L01HNN (-P/-P5)



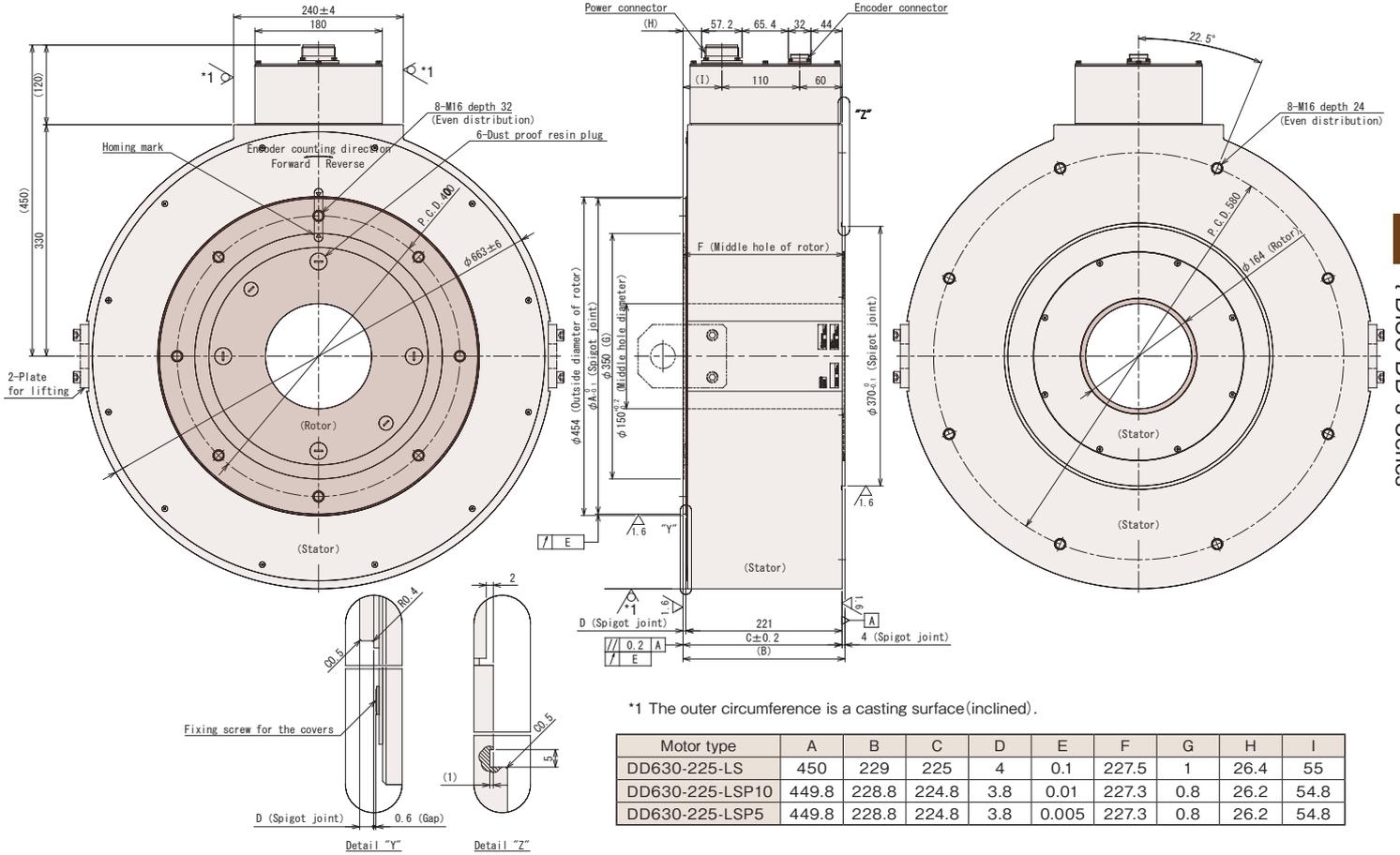
*1 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G	H	I
DD630-175-LS	450	179	175	4	0.1	177.5	1	26.4	55
DD630-175-LSP10	449.8	178.8	174.8	3.8	0.01	177.3	0.8	26.2	54.8
DD630-175-LSP5	449.8	178.8	174.8	3.8	0.005	177.3	0.8	26.2	54.8

τ DISC DD-s Series Dimensions

○ DD630-225-LS(P10/P5)

DD63-123L01HNN(-P/-P5)



*1 The outer circumference is a casting surface (inclined).

Motor type	A	B	C	D	E	F	G	H	I
DD630-225-LS	450	229	225	4	0.1	227.5	1	26.4	55
DD630-225-LSP10	449.8	228.8	224.8	3.8	0.01	227.3	0.8	26.2	54.8
DD630-225-LSP5	449.8	228.8	224.8	3.8	0.005	227.3	0.8	26.2	54.8