τ DISC ND-s Series Model and motor type description

◎Motor type

ND	110	-	65	-	F	S	P	
②	④		⑤		⑥	③	⑫	⑬

◎Model

NMR	-	S	A	E	J	A2	A	-	131	A	P	
①		②	④	⑤	⑦	⑧	⑨		⑩	⑪	⑫	⑬

①	NMR···Direct drive motor Series			
②	Middle product classification(1)	Motor type	ND···ND-s Series/ ND-s HS Series	
		Model	S···ND-s Series/ ND-s HS Series	
③	Middle product classification(2)		S···ND-s Series/ ND-s HS Series/ DD-s Series/ HD-s Series	
④	Nominal diameter *1		With flange	Flange less
			A···110(Actual range 110 to 119 mm)	R···140(Actual range 140 to 149 mm)
			C···140(Actual range 140 to 149 mm)	S···180(Actual range 180 to 189 mm)
			D···180(Actual range 180 to 189 mm)	T···250(Actual range 250 to 269 mm)
			E···250(Actual range 250 to 269 mm)	U···400(Actual range 400 to 409 mm)
			F···400(Actual range 400 to 409 mm)	
⑤	Nominal height *1		With flange	Flange less
			M···55(Actual range 50 to 59 mm)	M···70(Actual range 60 to 69 mm)
			E···65(Actual range 60 to 79 mm)	E···70/95(Actual range 70 to 95 mm)
			U···85(Actual range 80 to 99 mm)	F···95(Actual range 96 to 119 mm)
				H···160(Actual range 150 to 169 mm)
⑥	Motor flange		F···With flange	L···Flange less
⑦	Encoder type		J···Absolute encoder(absolute value for one revolution)	I···Incremental encoder
⑧	Power supply voltage		A2···200 VAC	
			A1···100 VAC(ND110-s Type only)	
⑨	Order of design		A→B→C···Starting from A	
⑩	Rated output *2		Example) 131 ··· 13 1 =13×10[1] =130 W Exponential part of powers of 10 Significant figures	
⑪	Brake(with or without)		A···Without brake	
⑫	Table surface rotation accuracy		Without···Standard specification	P···High accuracy type(option)
⑬	Special model symbol		Without···Standard specification	
			-R + sequential number···Quasi standard specification	-S + sequential number···Special model specification

*1 The motor type is represented by a numerical value. Nominal dimensions may be different from actual dimensions. For details, refer to the dimensions.

*2 Approximate value.

* 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

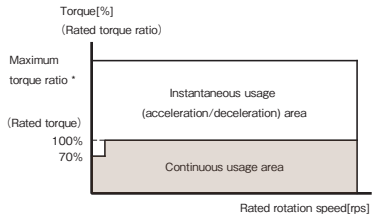
The absolute encoder is the standard type of encoder in the ND-s Series lineup. Note that, since this is a battery-less type encoder, it cannot hold multiple turn data.

An incremental encoder type is available on request. 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(for the flange less type only), etc. For details, visit our website.

Common specifications

Ambient operating temperature	0 to 40℃
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. * When the installation direction is not horizontal with the rotor facing upward, consult with our sales staff.
Cooling method	Natural air cooling
Insulation class	Class F
Withstand voltage	1,500 VAC, 1 minute
Protection class	IP42
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



* The maximum torque ratio depends on the motor type.
(Maximum torque/Rated torque)

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.

τDISC ND-s Series Individual specifications

Motor type *1			ND110-65-FS(P)			ND110-85-FS(P)	
Model *1		NMR-	SAEJA1A-101A(P)		SAEJA2A-131A(P)	SAUJA1A-181A(P)	SAUJA2A-221A(P)
Flange type			With flange			With flange	
Power supply used		ACV	100		200	100	200
Outside diameter		mm	112			112	
Height *2		mm	66(65.8)			86(85.8)	
Rated torque *3		N·m	3	3.4	4.2	5.9	7.1
Max torque *3		N·m	7.5	8.5	10.5	14.7	17.5
Rated rotation speed *3		rps	5			5	
Rated output *3		W	94	106	131	185	223
Rated current *3		A	2	2.3	2	3.4	2.5
Encoder type			Absolute			Absolute	
Detection pulse		ppr	2,097,152			2,097,152	
Detection resolution		arcsec	0.618			0.618	
Allowable moment load *4		N·m	6.1			6.1	
Allowable axial load *4		kN	1.1			1.1	
Table surface rotation accuracy *5	Radial run out(no load)	μm	30(Standard)/10(High accuracy type)				
	Axial run out(no load)	μm	30(Standard)/10(High accuracy type)				
Absolute Positioning accuracy *6		arcsec	±15(When the absolute position compensation function option is used)				
Repeated Positioning accuracy(when reciprocating)		arcsec	±2				
Rotor moment of inertia		kg·m²	0.00039			0.00061	
Weight		kg	2.2			3.1	
Magnetic pole detection method			Absolute position detection			Absolute position detection	
Paired servo driver	VPH Series	NCR-H□	1101A-A-□□□	1201A-A-□□□	2201A-A-□□□	1201A-A-□□□	2401A-A-□□□

Motor type *1			ND140-65-FS(P)	ND140-70-LS(P)	ND140-95-LS(P)
Model *1		NMR-	SCEJA2A-301A(P)	SREJA2A-301A(P)	SRFJA2A-471A(P)
Flange type			With flange	Flange less	Flange less
Power supply used		ACV	200	200	200
Outside diameter		mm	145	145	145
Height *2		mm	71(70.8)	73(72.8)	98(97.8)
Rated torque *3		N·m	9.6	9.6	15
Max torque *3		N·m	22	22	37
Rated rotation speed *3		rps	5	5	5
Rated output *3		W	301	301	471
Rated current *3		A	3.4	3.4	4
Encoder type			Absolute	Absolute	Absolute
Detection pulse		ppr	2,097,152	2,097,152	2,097,152
Detection resolution		arcsec	0.618	0.618	0.618
Allowable moment load *4		N·m	17.3	17.3	17.3
Allowable axial load *4		kN	2.4	2.4	2.4
Table surface rotation accuracy *5	Radial run out(no load)	μm	40(Standard)/10(High accuracy type)		
	Axial run out(no load)	μm	40(Standard)/10(High accuracy type)		
Absolute Positioning accuracy *6		arcsec	±15(When the absolute position compensation function option is used)		
Repeated Positioning accuracy(when reciprocating)		arcsec	±1		
Rotor moment of inertia		kg·m²	0.00077	0.00084	0.00134
Weight		kg	4.2	4.1	5.9
Magnetic pole detection method			Absolute position detection	Absolute position detection	Absolute position detection
Paired servo driver	VPH Series	NCR-H□	2401A-A-□□□	2401A-A-□□□	2801A-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 τDISC is mounted on a heat sink(aluminum plate) of one of the following sizes and operated at the ambient operating temperature.
- ND110 Type 300mm×300mm×22mm
- ND140 Type 640mm×450mm×50mm

*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 τDISC" on p.44.

*5 For details, refer to "High accuracy type option for τDISC table surface rotation accuracy" on p.43.

*6 For details, refer to "τDISC Absolute position compensation function option" on p.42.

τ DISC ND-s Series Individual specifications

Motor type *1			ND180-55-FS(P)	ND180-70-LS(P)	ND180-95-LS(P)
Model *1		NMR-	SDMJA2A-531A(P)	SSMJA2A-531A(P)	SSEJA2A-941A(P)
Flange type			With flange	Flange less	Flange less
Power supply used		ACV	200	200	200
Outside diameter		mm	180	180	180
Height *2		mm	58(57.8)	67(66.8)	94(93.8)
Rated torque *3		N·m	17	17	30
Max torque *3		N·m	40	40	75
Rated rotation speed *3		rps	5	5	5
Rated output *3		W	534	534	942
Rated current *3		A	5	5	6.5
Encoder type			Absolute	Absolute	Absolute
Detection pulse		ppr	2,097,152	2,097,152	2,097,152
Detection resolution		arcsec	0.618	0.618	0.618
Allowable moment load *4		N·m	20.5	27.3	27.3
Allowable axial load *4		kN	2	2.9	2.9
Table surface rotation accuracy *5	Radial run out(no load)	μm	50(Standard) / 10(High accuracy type)		
	Axial run out(no load)	μm	50(Standard) / 10(High accuracy type)		
Absolute Positioning accuracy *6		arcsec	±15(When the absolute position compensation function option is used)		
Repeated Positioning accuracy(when reciprocating)		arcsec	±1		
Rotor moment of inertia		kg·m²	0.0027	0.0031	0.0053
Weight		kg	5.3	5.8	8.8
Magnetic pole detection method			Absolute position detection	Absolute position detection	Absolute position detection
Paired servo driver	VPH Series	NCR-H□	2801A-A-□□□	2801A-A-□□□	2801A-A-□□□

Motor type *1			ND250-55-FS(P)	ND250-70-LS(P)	ND250-95-LS(P)
Model *1		NMR-	SEMJA2A-791A(P)	STEJA2A-791A(P)	STFJA2A-152A(P)
Flange type			With flange	Flange less	Flange less
Power supply used		ACV	200	200	200
Outside diameter		mm	254	260	260
Height *2		mm	58(57.8)	73(72.8)	98(97.8)
Rated torque *3		N·m	42	42	80
Max torque *3		N·m	100	100	190
Rated rotation speed *3		rps	3	3	3
Rated output *3		W	791	791	1,507
Rated current *3		A	6	6	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	60	244	244
Allowable axial load *4		kN	3.5	12.9	12.9
Table surface rotation accuracy *5	Radial run out(no load)	μm	50(Standard) / 10(High accuracy type)		
	Axial run out(no load)	μm	50(Standard) / 10(High accuracy type)		
Absolute Positioning accuracy *6		arcsec	±15(When the absolute position compensation function option is used)		
Repeated Positioning accuracy(when reciprocating)		arcsec	±1		
Rotor moment of inertia		kg·m²	0.022	0.023	0.039
Weight		kg	10.7	12.5	18.5
Magnetic pole detection method			Absolute position detection	Absolute position detection	Absolute position detection
Paired servo driver	VPH Series	NCR-H□	2801A-A-□□□	2801A-A-□□□	2152A-A-□□□

Motor type *1			ND400-65-FS(P)	ND400-70-LS(P)	ND400-95-LS(P)	ND400-160-LS(P)
Model *1		NMR-	SFEJA2A-182A(P)	SUEJA2A-182A(P)	SUFJA2A-322A(P)	SUHJA2A-622A(P)
Flange type			With flange	Flange less	Flange less	Flange less
Power supply used		ACV	200	200	200	200
Outside diameter		mm	408	408	408	408
Height *2		mm	77(76.8)	73(72.8)	98(97.8)	160(159.8)
Rated torque *3		N·m	150	150	260	500
Max torque *3		N·m	300	300	650	1,000
Rated rotation speed *3		rps	2	2	2	2
Rated output *3		W	1,884	1,884	3,267	6,283
Rated current *3		A	15	15	24	36
Encoder type			Absolute	Absolute	Absolute	Absolute
Detection pulse		ppr	6,815,744	6,815,744	6,815,744	6,815,744
Detection resolution		arcsec	0.191	0.191	0.191	0.191
Allowable moment load *4		N·m	315	315	315	315
Allowable axial load *4		kN	14.5	14.5	14.5	14.5
Table surface rotation accuracy *5	Radial run out(no load)	μm	50(Standard) / 10(High accuracy type)			
	Axial run out(no load)	μm	50(Standard) / 10(High accuracy type)			
Absolute Positioning accuracy *6		arcsec	±15(When the absolute position compensation function option is used)			
Repeated Positioning accuracy(when reciprocating)		arcsec	±1			
Rotor moment of inertia		kg·m²	0.142	0.142	0.224	0.393
Weight		kg	32	32	45	75
Magnetic pole detection method			Absolute position detection	Absolute position detection	Absolute position detection	Absolute position detection
Paired servo driver	VPH Series	NCR-H□	2222A-A-□□□	2222A-A-□□□	2332A-A-□□□	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.
- ND180 Type 640 mm×450 mm×50 mm
- ND250 Type 640 mm×450 mm×50 mm
- ND400 Type 1140 mm×700 mm×80 mm
  +490 mm×490 mm×40 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.

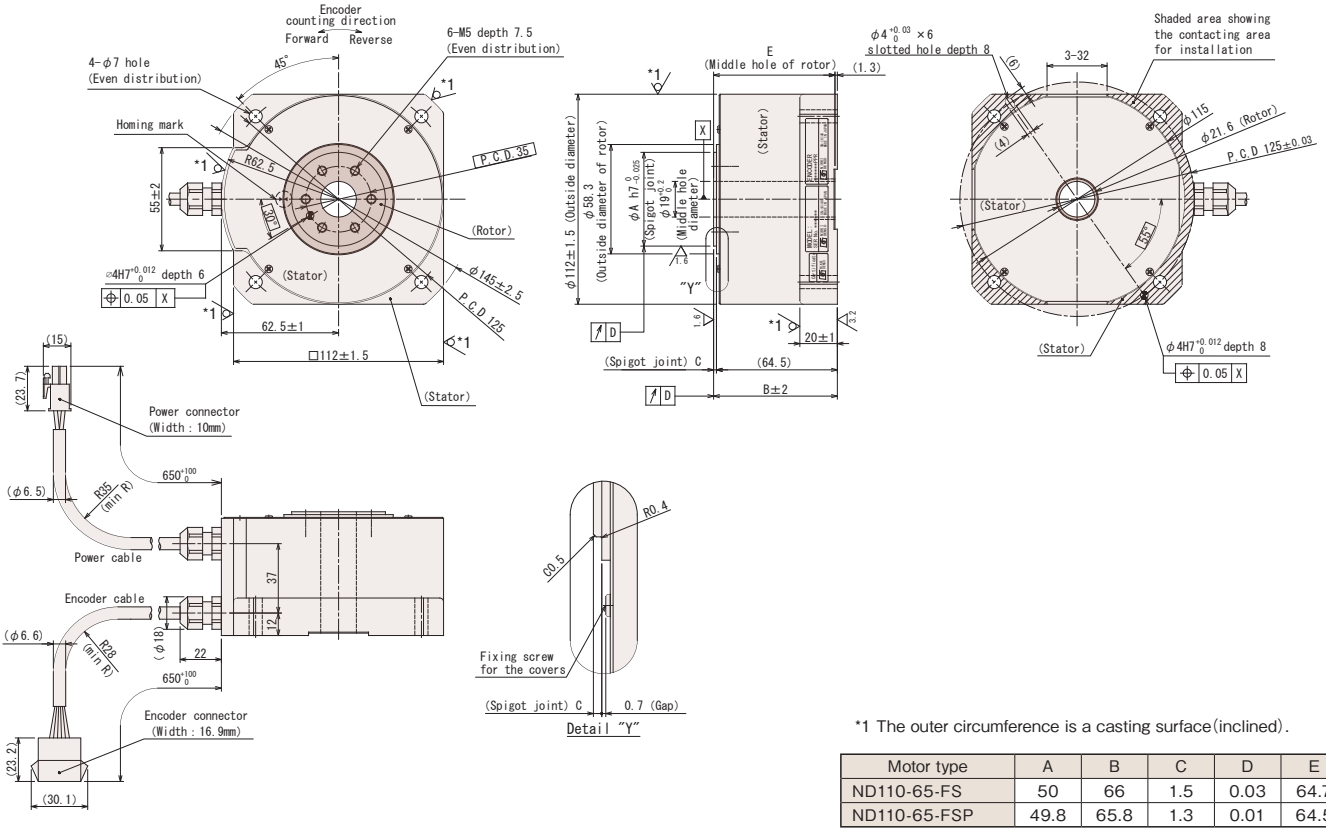
*6 For details, refer to "τ DISC Absolute position compensation function option" on p.42.

τDISC ND-s Series Dimensions

◎ND110-65-FS(P)

NMR-SAEJA1A-101A(P)

NMR-SAEJA2A-131A(P)



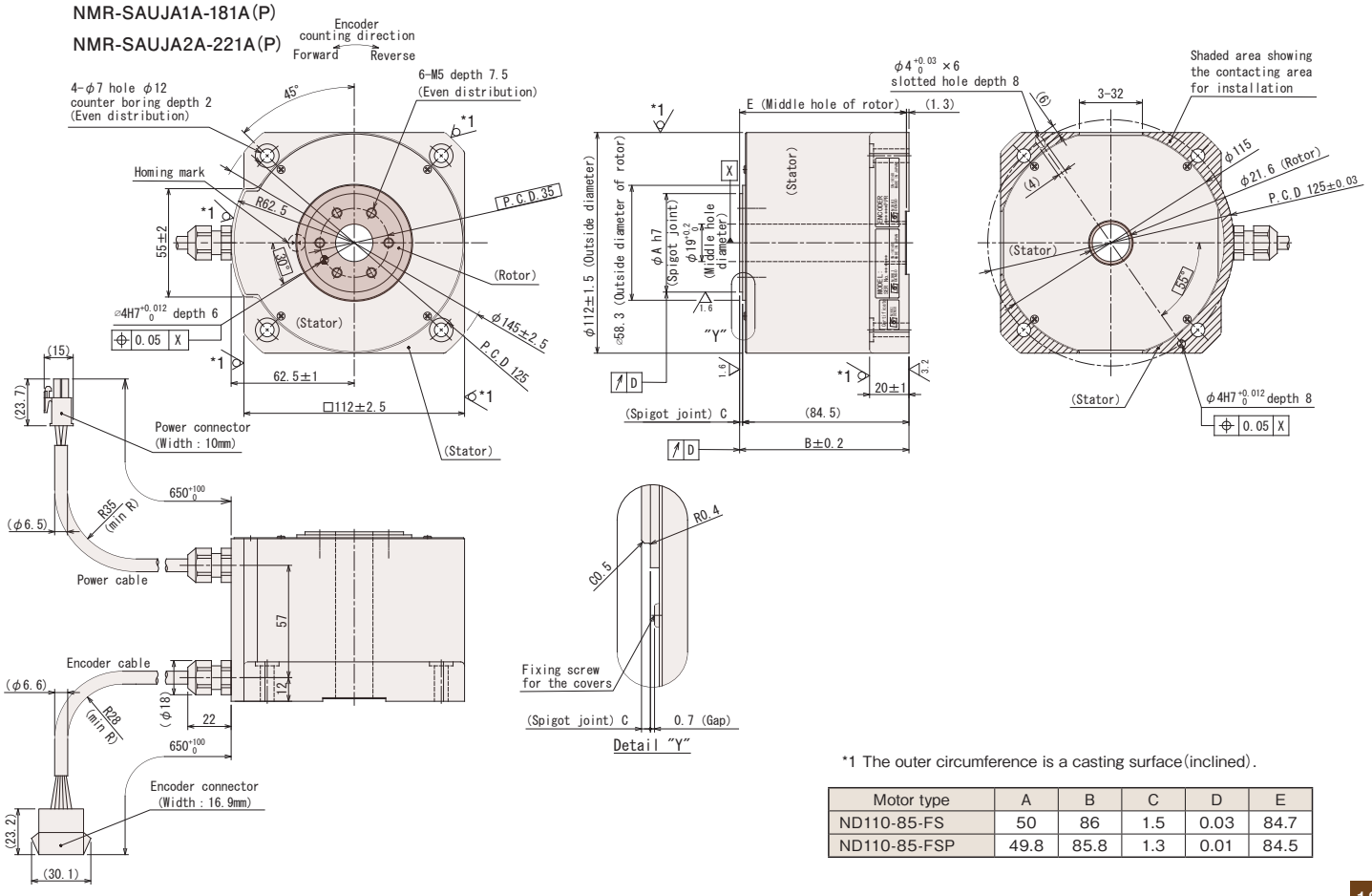
*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E
ND110-65-FS	50	66	1.5	0.03	64.7
ND110-65-FSP	49.8	65.8	1.3	0.01	64.5

◎ND110-85-FS(P)

NMR-SAUJA1A-181A(P)

NMR-SAUJA2A-221A(P)



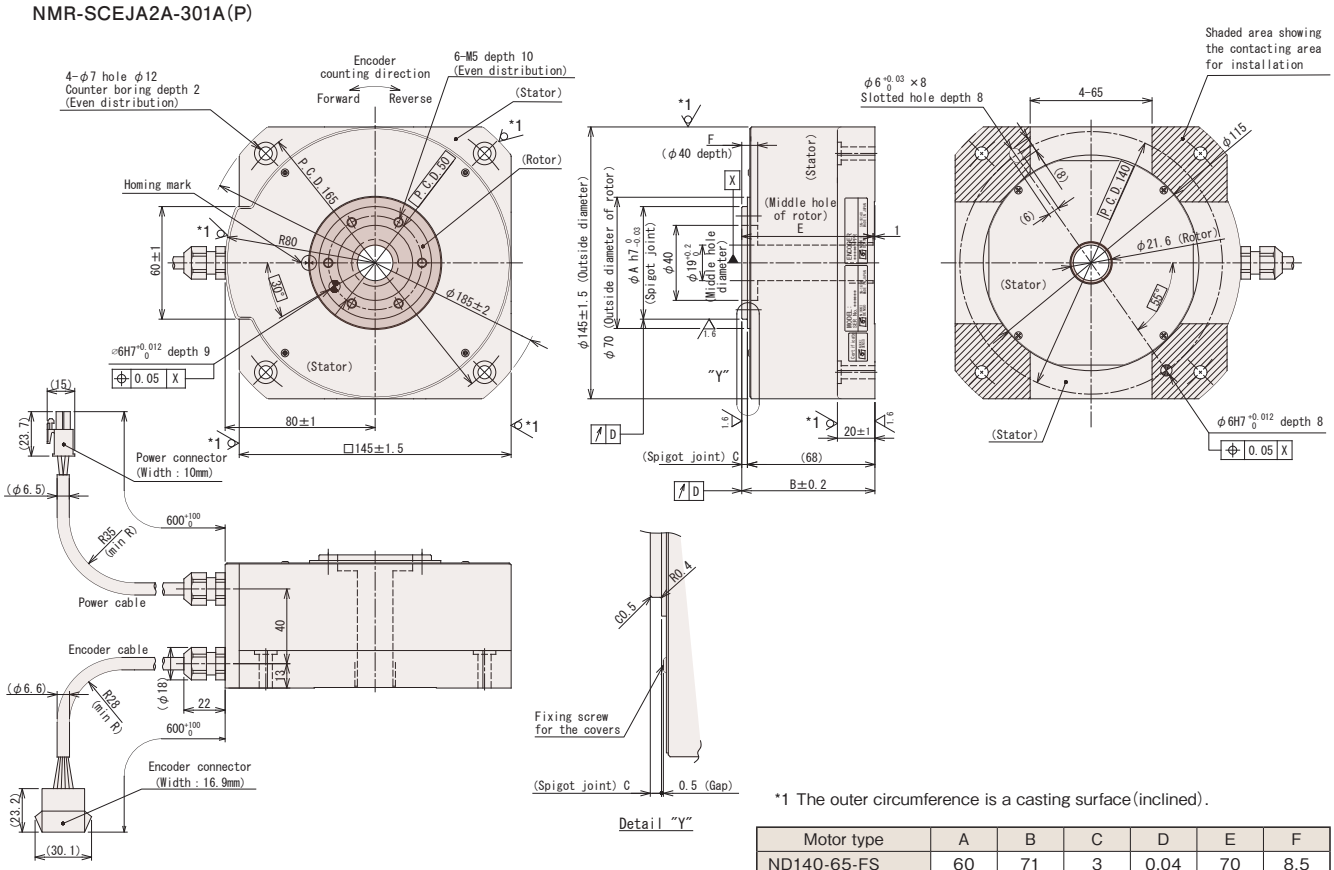
*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E
ND110-85-FS	50	86	1.5	0.03	84.7
ND110-85-FSP	49.8	85.8	1.3	0.01	84.5

τDISC ND-s Series Dimensions

◎ND140-65-FS(P)

NMR-SCEJA2A-301A(P)

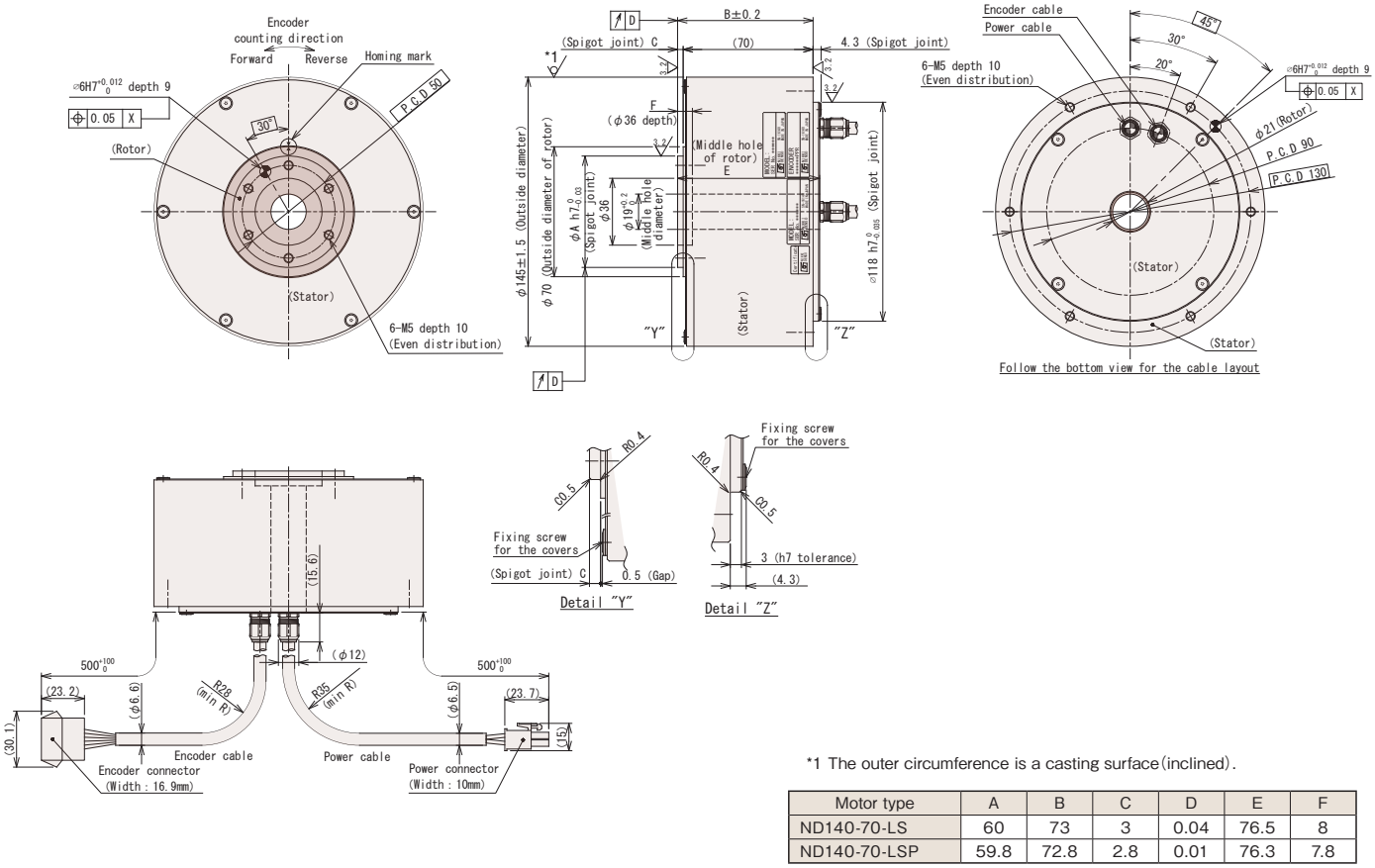


*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND140-65-FS	60	71	3	0.04	70	8.5
ND140-65-FSP	59.8	70.8	2.8	0.01	69.8	8.3

◎ND140-70-LS(P)

NMR-SREJA2A-301A(P)



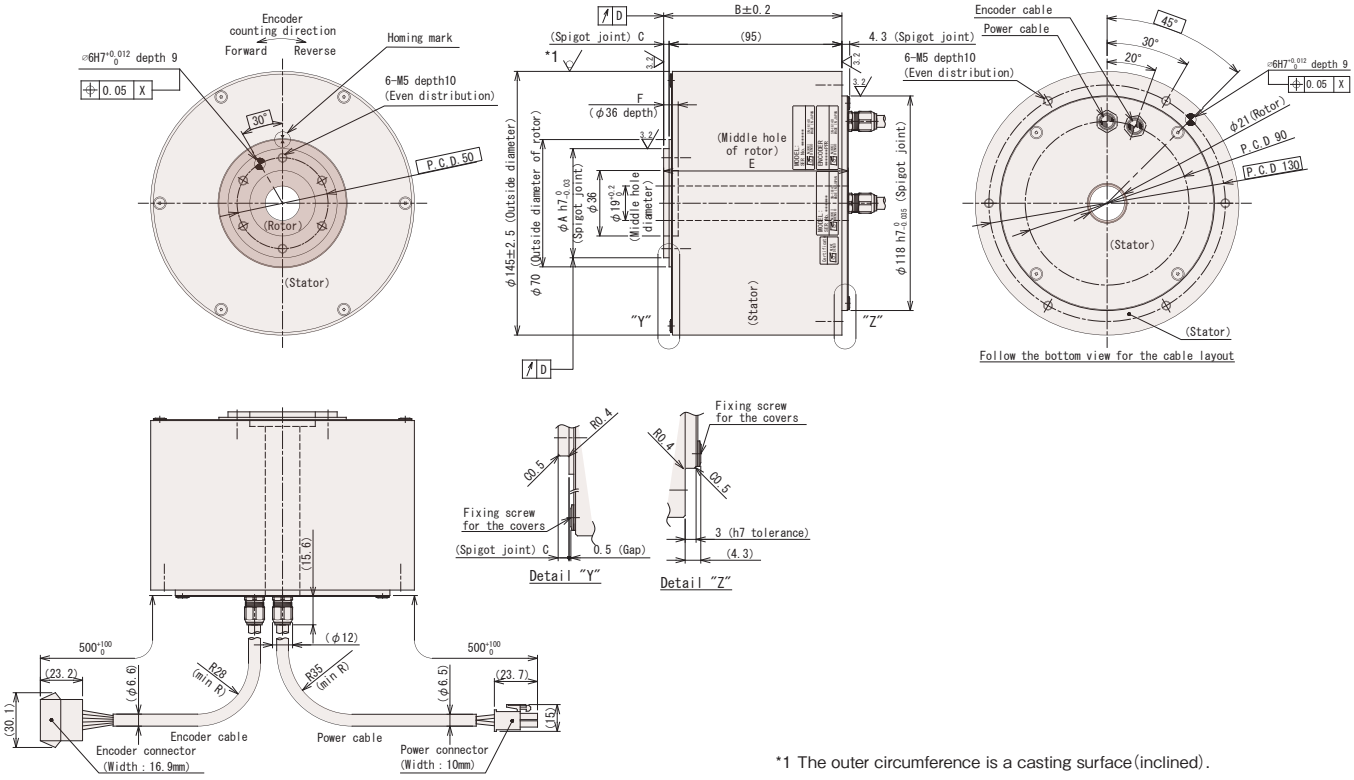
*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND140-70-LS	60	73	3	0.04	76.5	8
ND140-70-LSP	59.8	72.8	2.8	0.01	76.3	7.8

τDISC ND-s Series Dimensions

◎ND140-95-LS(P)

NMR-SRFJA2A-471A(P)

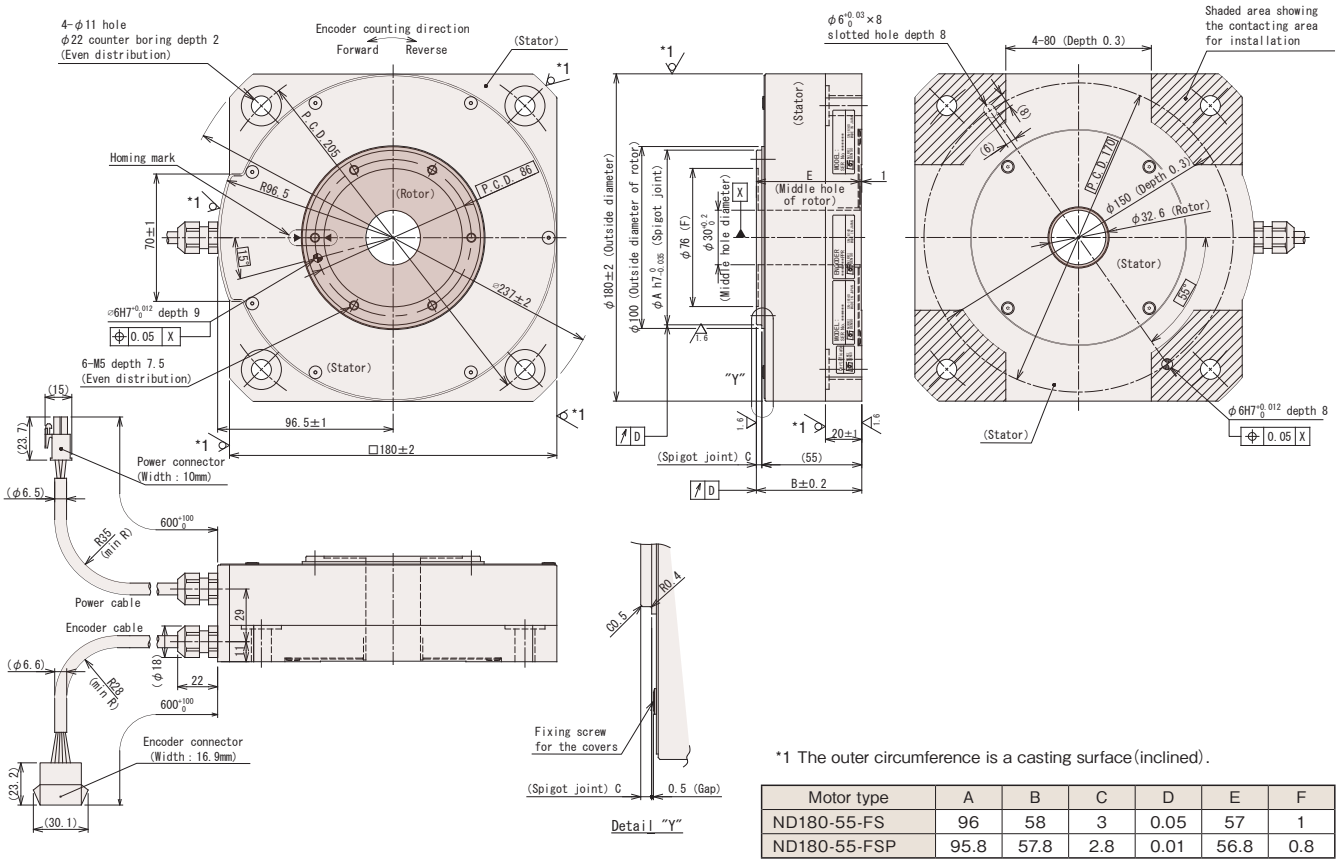


*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND140-95-LS	60	98	3	0.04	101.5	8
ND140-95-LSP	59.8	97.8	2.8	0.01	101.3	7.8

◎ND180-55-FS(P)

NMR-SDMJA2A-531A(P)



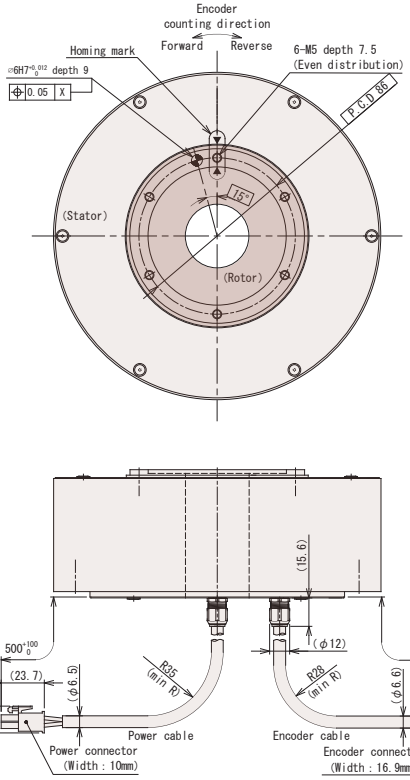
*1 The outer circumference is a casting surface(inclined).

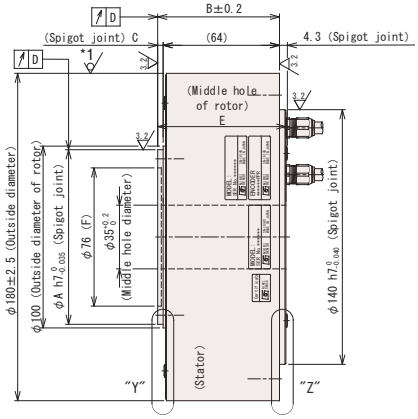
Motor type	A	B	C	D	E	F
ND180-55-FS	96	58	3	0.05	57	1
ND180-55-FSP	95.8	57.8	2.8	0.01	56.8	0.8

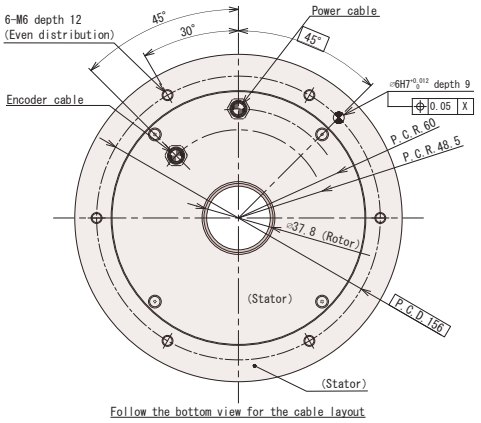
τDISC ND-s Series Dimensions

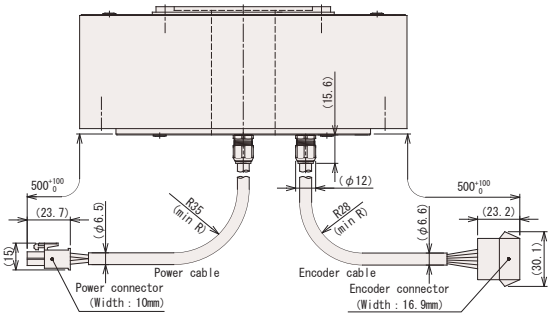
◎ND180-70-LS(P)

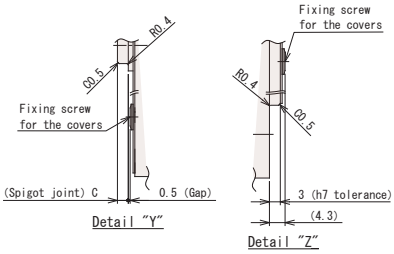
NMR-SSMJA2A-531A(P)









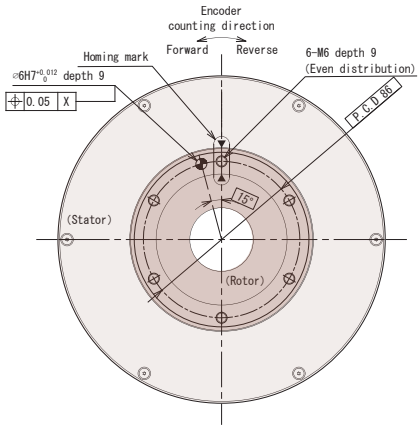


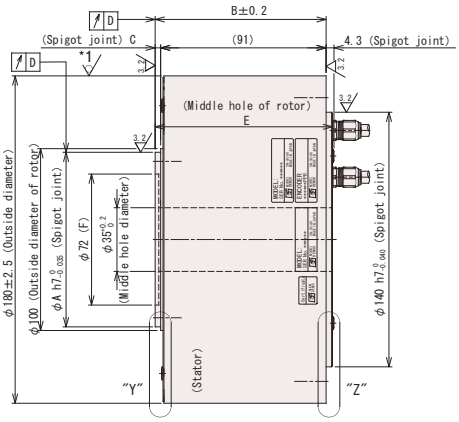
*1 The outer circumference is a casting surface(inclined).

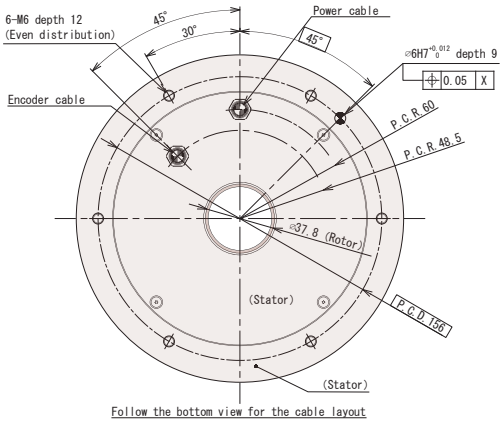
Motor type	A	B	C	D	E	F
ND180-70-LS	96	67	3	0.05	70.5	2
ND180-70-LSP	95.8	66.8	2.8	0.01	70.3	1.8

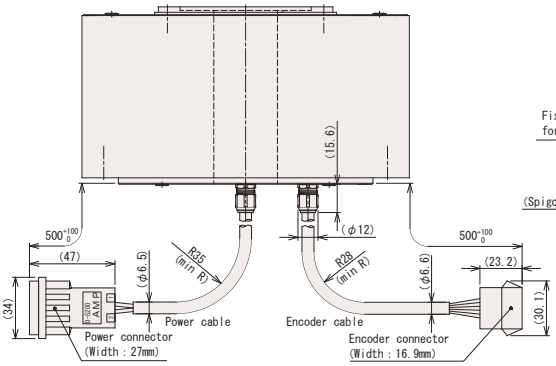
◎ND180-95-LS(P)

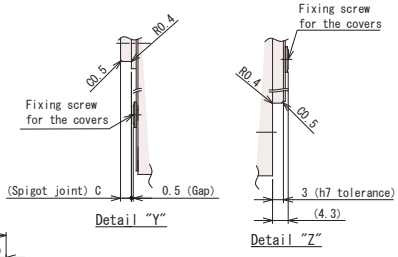
NMR-SSEJA2A-941A(P)











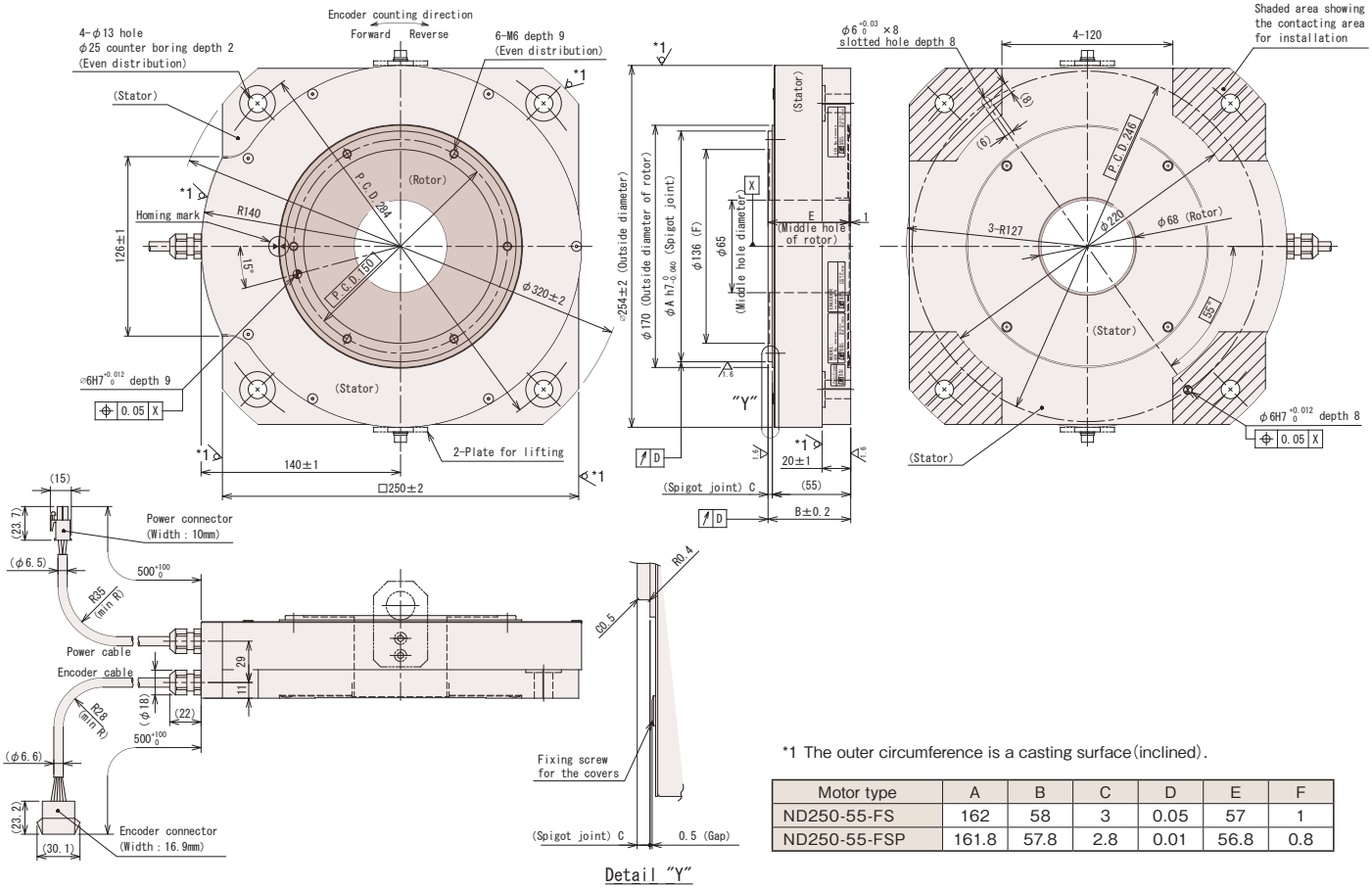
*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND180-95-LS	96	94	3	0.05	97.5	2
ND180-95-LSP	95.8	93.8	2.8	0.01	97.3	1.8

τDISC ND-s Series Dimensions

◎ND250-55-FS(P)

NMR-SEMJA2A-791A(P)

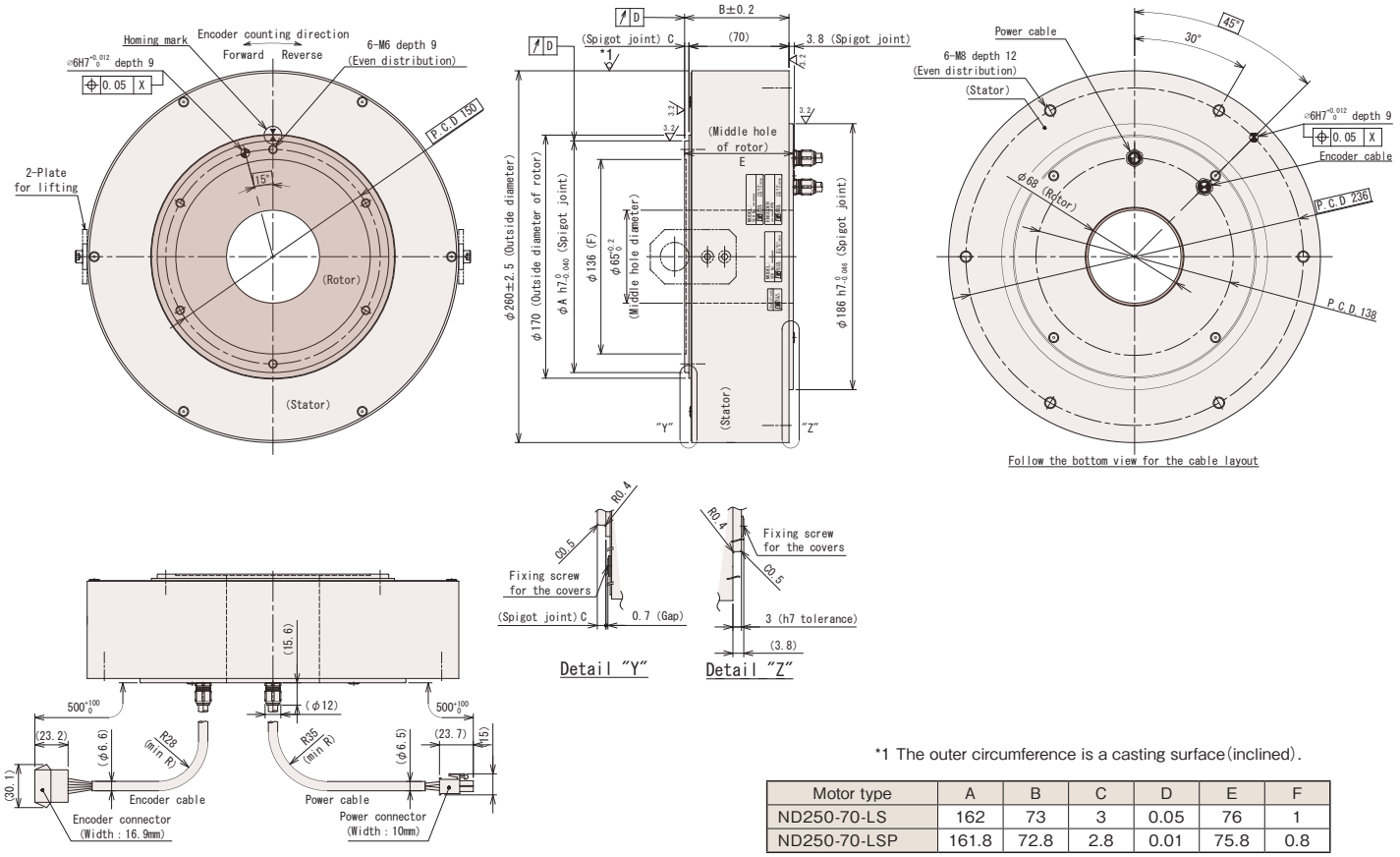


*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND250-55-FS	162	58	3	0.05	57	1
ND250-55-FSP	161.8	57.8	2.8	0.01	56.8	0.8

◎ND250-70-LS(P)

NMR-STEJA2A-791A(P)



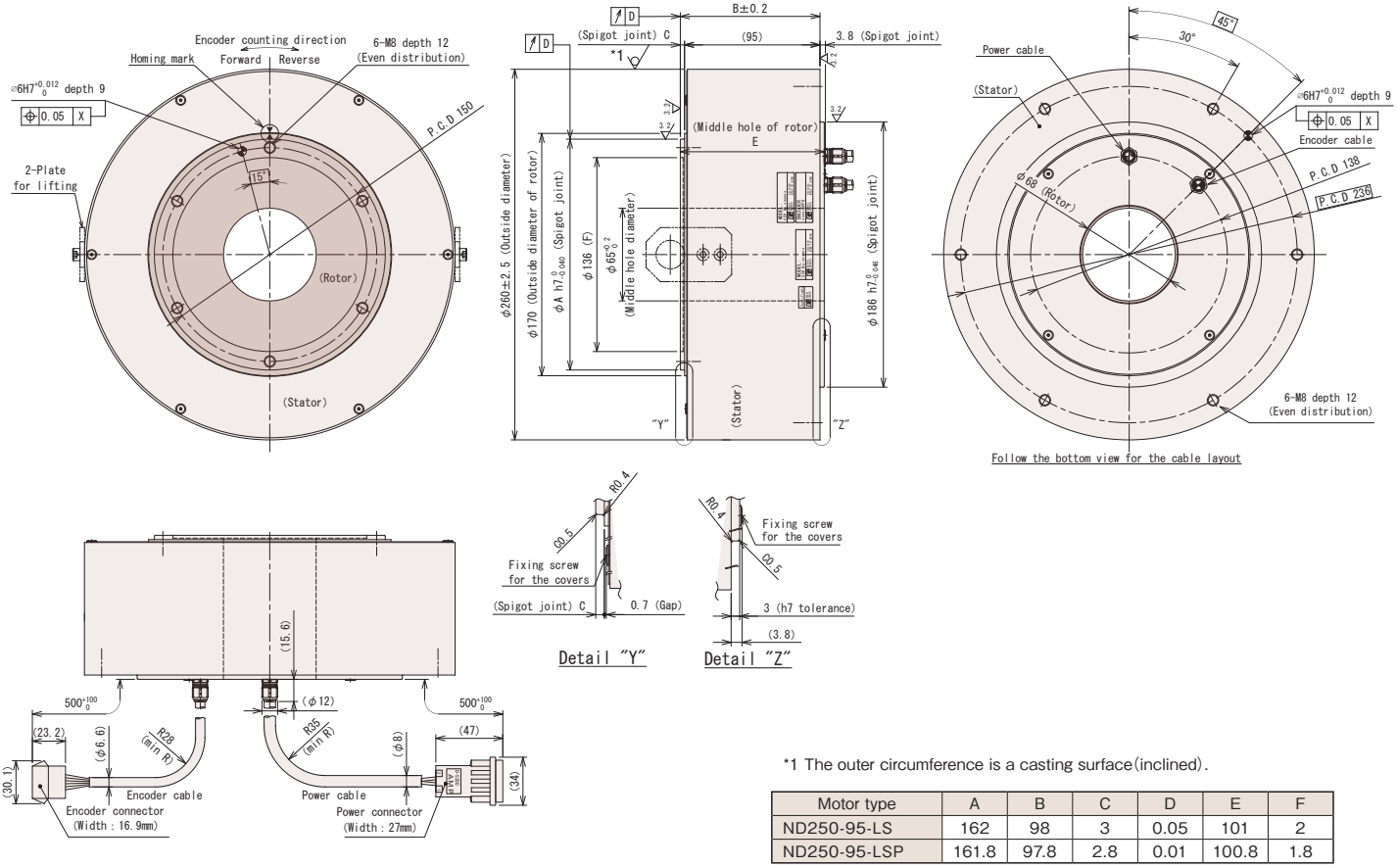
*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND250-70-LS	162	73	3	0.05	76	1
ND250-70-LSP	161.8	72.8	2.8	0.01	75.8	0.8

τDISC ND-s Series Dimensions

◎ND250-95-LS(P)

NMR-STFJA2A-152A(P)

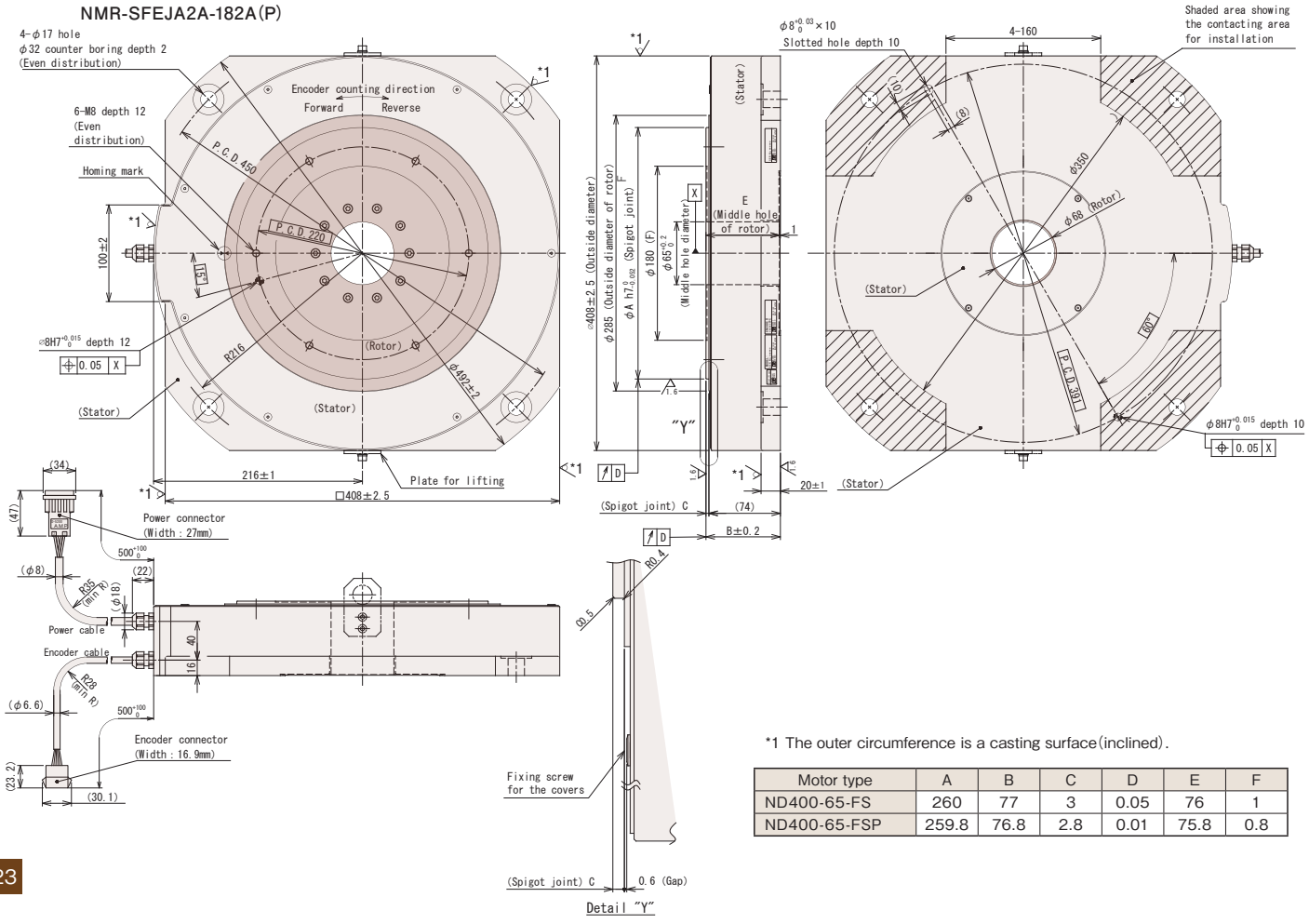


*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND250-95-LS	162	98	3	0.05	101	2
ND250-95-LSP	161.8	97.8	2.8	0.01	100.8	1.8

◎ND400-65-FS(P)

NMR-SFEJA2A-182A(P)



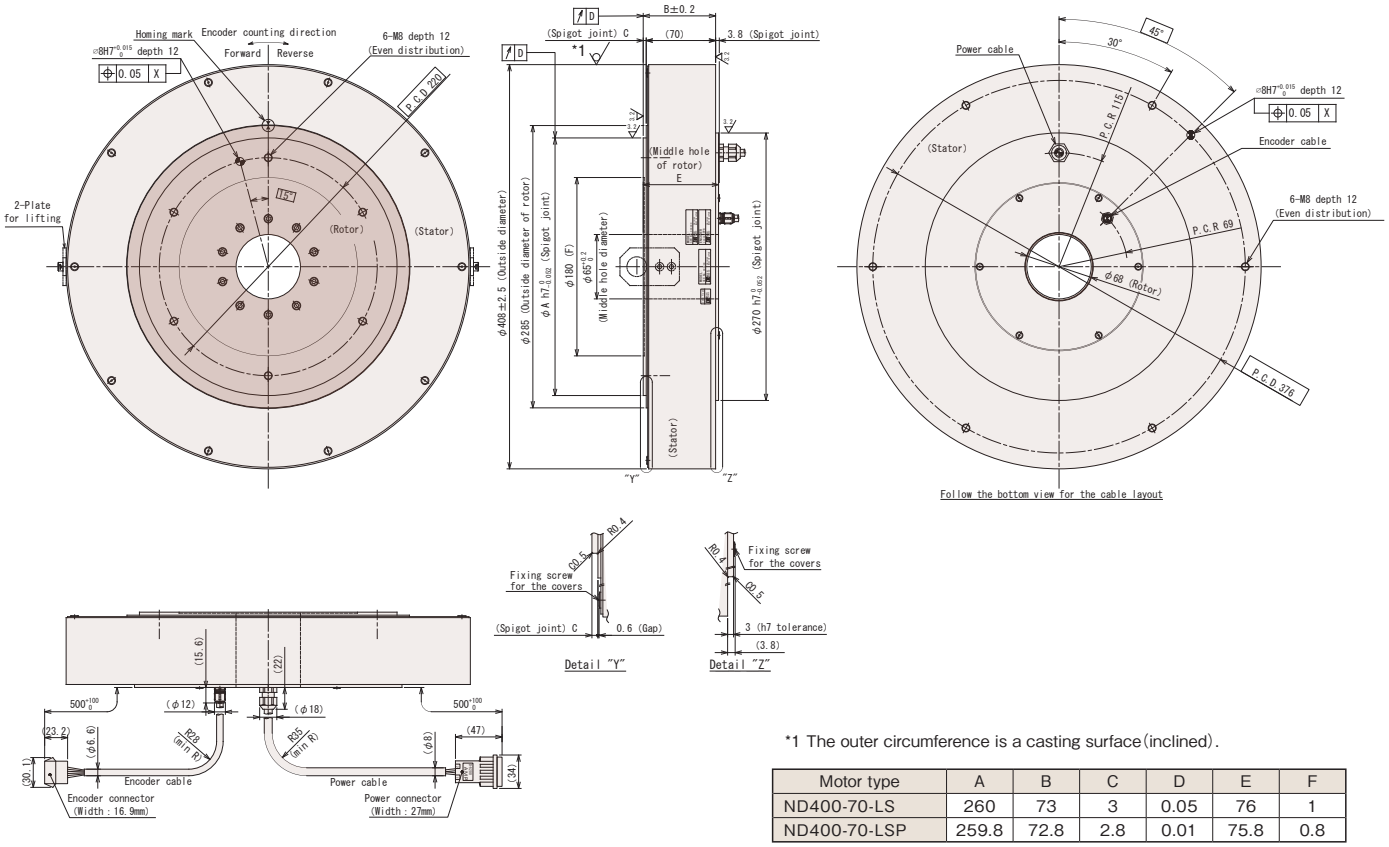
*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND400-65-FS	260	77	3	0.05	76	1
ND400-65-FSP	259.8	76.8	2.8	0.01	75.8	0.8

τDISC ND-s Series Dimensions

◎ND400-70-LS(P)

NMR-SUEJA2A-182A(P)

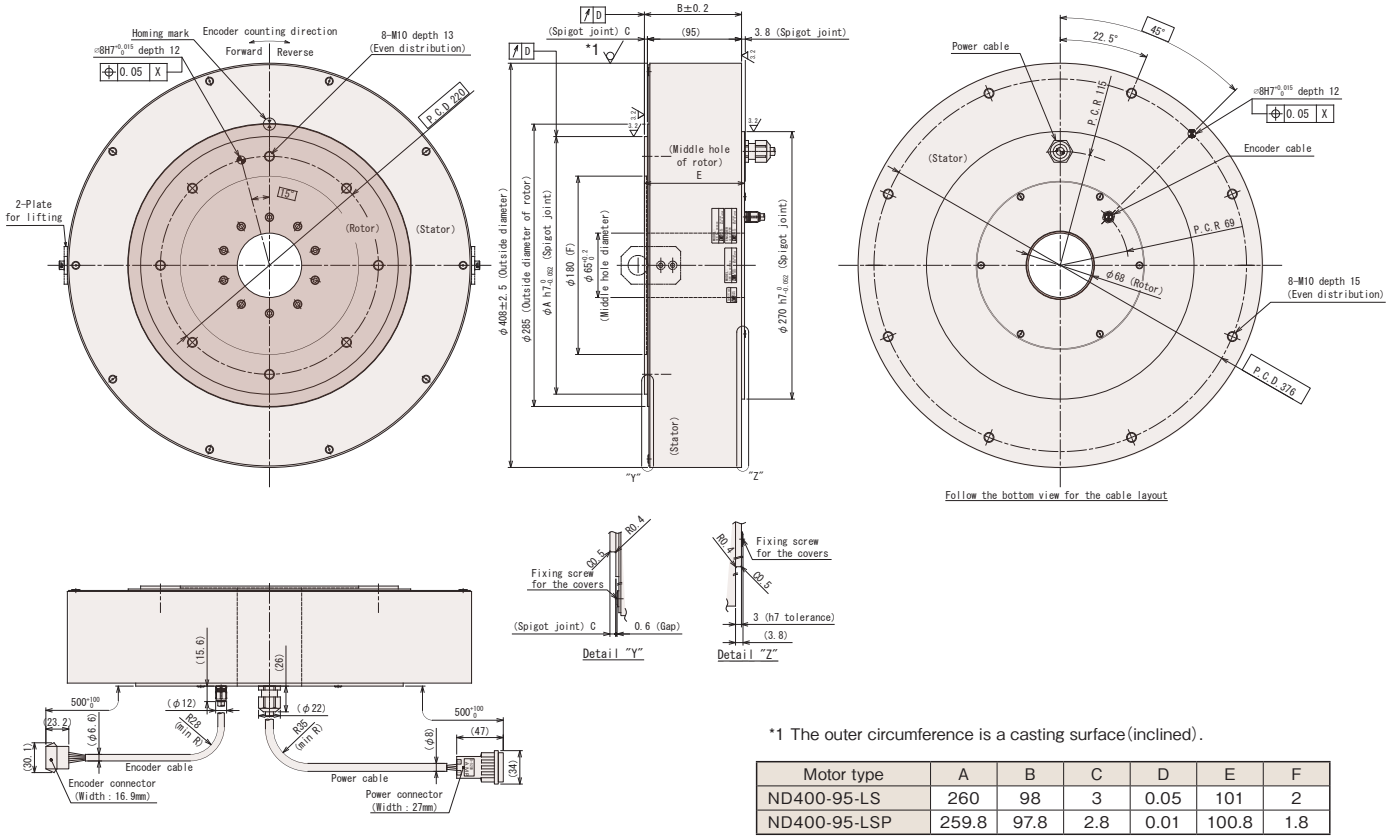


*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND400-70-LS	260	73	3	0.05	76	1
ND400-70-LSP	259.8	72.8	2.8	0.01	75.8	0.8

◎ND400-95-LS(P)

NMR-SUFJA2A-322A(P)



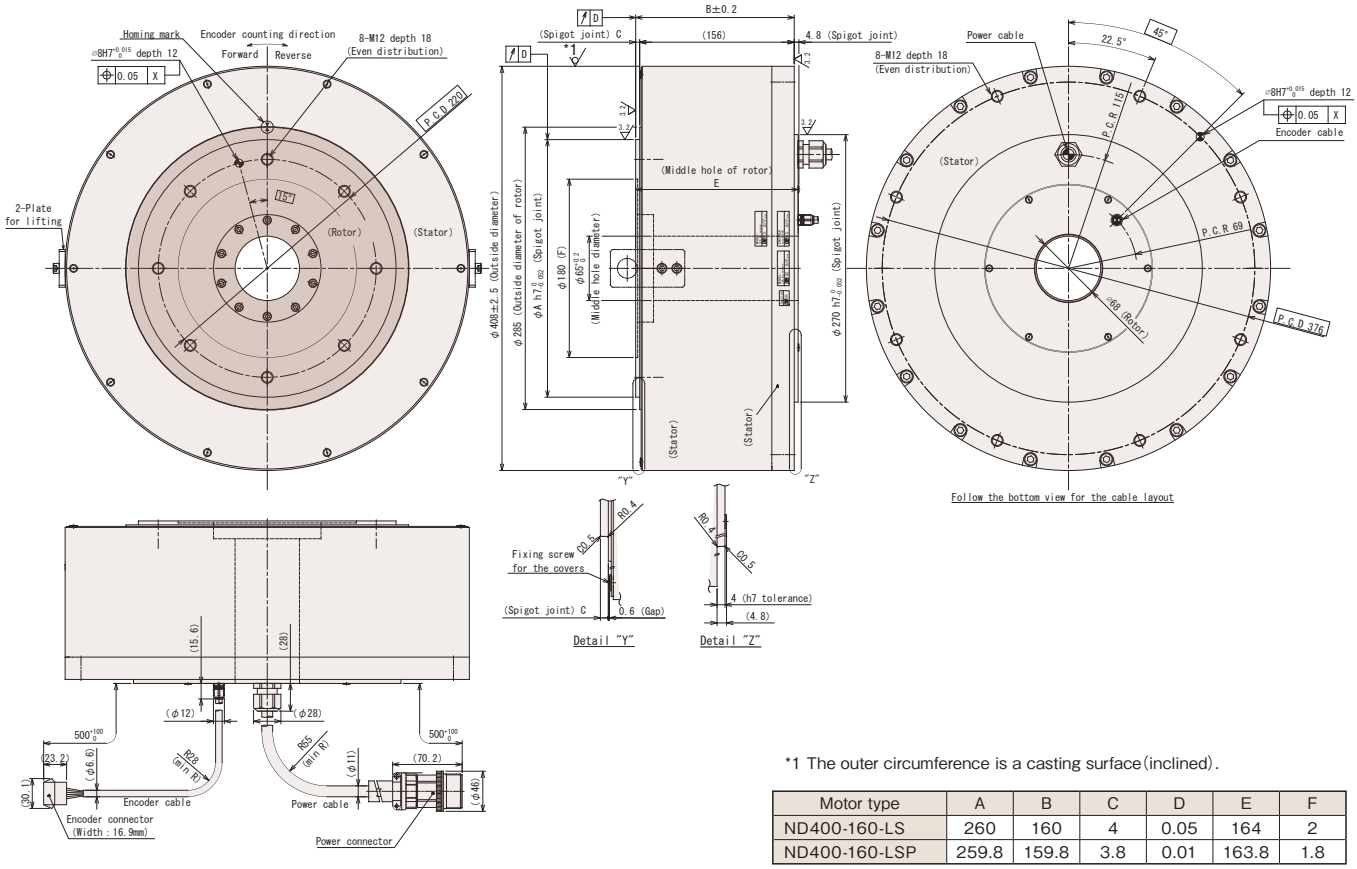
*1 The outer circumference is a casting surface(inclined).

Motor type	A	B	C	D	E	F
ND400-95-LS	260	98	3	0.05	101	2
ND400-95-LSP	259.8	97.8	2.8	0.01	100.8	1.8

■τDISC ND-s Series Dimensions

◎ND400-160-LS(P)

NMR-SUHJA2A-622A(P)



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

Motor type	A	B	C	D	E	F
ND400-160-LS	260	160	4	0.05	164	2
ND400-160-LSP	259.8	159.8	3.8	0.01	163.8	1.8