

Specifications

Flange type Torque Transducer by Optical Transformer method

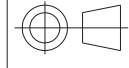
★ Composition apparatus

- ① Torque Transducer Model : TMHSA-□ NM
- ② Exclusive signal cable Model : CAC-176C- *M (selectable from 10m,20m,30m) 【Option】

★ Spec. of torque transducer

Model(Capacity indicated)	100NM	200NM	300NM	500NM	1KNM	2KNM	3KNM	5KNM	10KNM
Performance									
Rated capacity(R.C.)	±100Nm	±200Nm	±300Nm	±500Nm	±1kNm	±2kNm	±3kNm	±5kNm	±10kNm
Safe overload	150 %R.C.								
Ultimate overload	300 %R.C.								
Rated output(R.O.)	voltage : ±10 V frequency : 10±5 kHz								
Accuracy of detected value (include Nonlinearity, Hysteresis, Repeatability)	digital output : ±0.02 %R.O. voltage output : ±0.03 %R.O.								
Temperature									
Safe temperature range	-10 ℃ to 70 ℃								
Compensated temperature range	0 ℃ to 60 ℃								
Temperature effect on zero balance	0.02 %R.O./10℃								
Temperature effect on output	0.03 %LOAD/10℃								
Characteristics on rotation									
Maximum number of rotation[rpm]	25,000		22,000		16,000		14,000		12,000
Noise during rotation	0.5 %R.O.p-p(WB=1kHz)								
Others									
IP class	IP54								
Material	Rotor : Alloy steel Stator : Aluminum alloy								
Fatigue life	10 ⁷ times with rated load								
Mass[kg]	Rotor part	1.0		1.2	1.6	3.5		6.0	10.2
	Stator part	1.5							1.7

• Frequency output is raw output that is not calibrated.
On the customer side, it is necessary to convert to the torque value [N·m]
by using the value stated in the certificate.


				ミネベアミツミ株式会社 MinebeaMitsumi Inc. センシングデバイス事業部 Sensing Device Business Unit	 単位 UNIT mm 尺度 SCALE Free	材質 MATERIAL 表面粗さ SURF.ROUGH. 熱処理 HEAT TREAT. 表面処理 FINISH	作成日 DATE 2019/11/27 品名 DESCRIPTION OUTLINE 型式 MODEL NAME TMHSA 図番 DRAWING NO. KT54341-2	葉番 SHEET 1 / 9 改訂 REV. D
					一般公差 TOL DIMENSION L TOL <L ≤ 6 ±0.1 6 < L ≤ 30 ±0.2 30 < L ≤ 120 ±0.3 120 < L ≤ 400 ±0.5 400 < L ≤ 1000 ±0.8 角度 DEG ±0.5			
符号 MARK	日付 DATE	変更事項 REASON	ECN NO.					

★ Machine characteristics(Rotor part)

Model(Capacity indicated)	100NM	200NM	300NM	500NM	1KNM	2KNM	3KNM	5KNM	10KNM
Response Frequency [kHz]	1								
Inertia moment [kg·cm ²]	13.79	13.80	13.82	19.77	26.86	107.6	107.8	260.3	668.4
Torsion rigidity [kN·m/rad]	325.0	371.4	472.7	660.7	909.8	1515	1881	2647	4043
Torsion peculiar pitch [kHz]	4.757	5.161	5.822	5.701	5.899	3.801	4.258	3.233	2.489
Bending peculiar pitch (Radial direction) [kHz]	2.821	2.911	3.073	3.135	3.492	1.763	1.995	1.857	1.368
Bending peculiar pitch (Thrust direction) [kHz]	3.458	3.528	3.656	3.715	4.519	2.380	2.590	2.356	1.670
Twist angle at R.C. [°]	0.018	0.031	0.036	0.043	0.063	0.076	0.091	0.108	0.142
Accuracy safe bending load [N]	75	150	225	375	750	800	1000	1650	2750
Accuracy safe thrust load [N]	65	130	195	325	650	3750	12000	20000	22000

- Accuracy safety bending/thrust load is load value(actual measurement) which generate output error 0.05%R.O.
- Accuracy safety bending load is the result of loading at position 200mm from flange edge.
- All are the guarantee value over static load.

★ Accessories

- 1) Certificate
- 2) Instruction manual
- 3) Calibration software (Type:TMHSAD-01) 
- 2) USB cable 

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★ Supply power specification

Rated supply voltage [V]	22~26
Consumption current [A]	1 or less
Rated power consumption [W]	24 or less

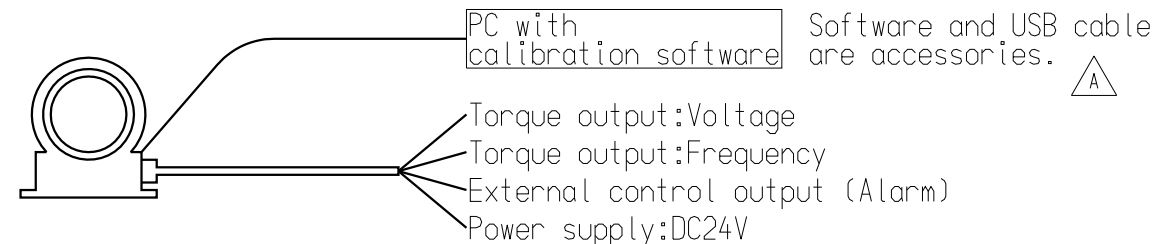
★ Output signal specification

Resistive load [kΩ]	2 or more
Output capacity load [μF]	0.1 or less

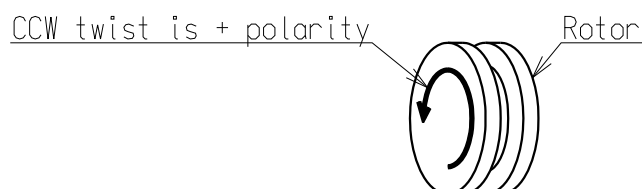
★ Output voltage correction function specification

By connecting the PC and stator with special software, the following corrections are possible.

Zero adjustment [%R.O.]	±2
Symmetry correction[%R.O.]	±10
Moving average [times]	select from 1,2,4,8,16,32,64,128,256,512 initial:1
Low pass filter [Hz]	select from 1,10,30,50,100,300,500,1k initial:1k Above is -3dB±1dB
Invert the output polarity with respect to the twist direction	



【Torsion direction and output polarity under standard condition】

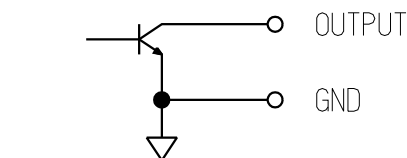


★ LED for status indication specification

Nonal operation state	Lit Green
Light quantity lower state	Blinking Green
Alarm condition	Lit Red

★ External control output signal

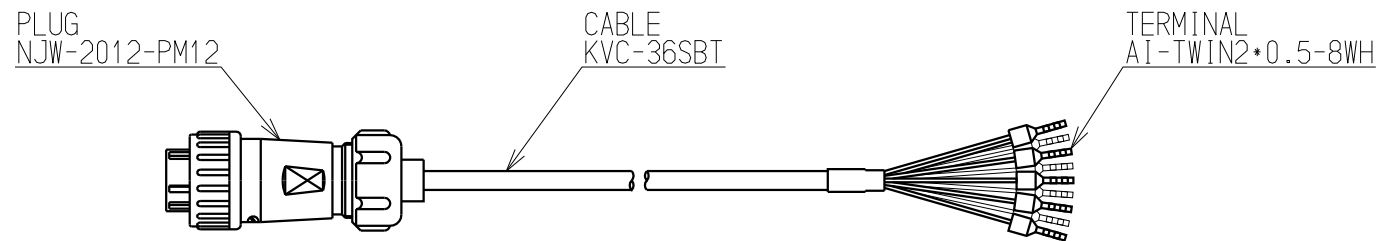
Alarm: Open collector ON when the light quantity decreases



Open collector rating Vce=DC80Vmax, Ic=DC800mAmax
※The internal circuit is insulated by a photocoupler

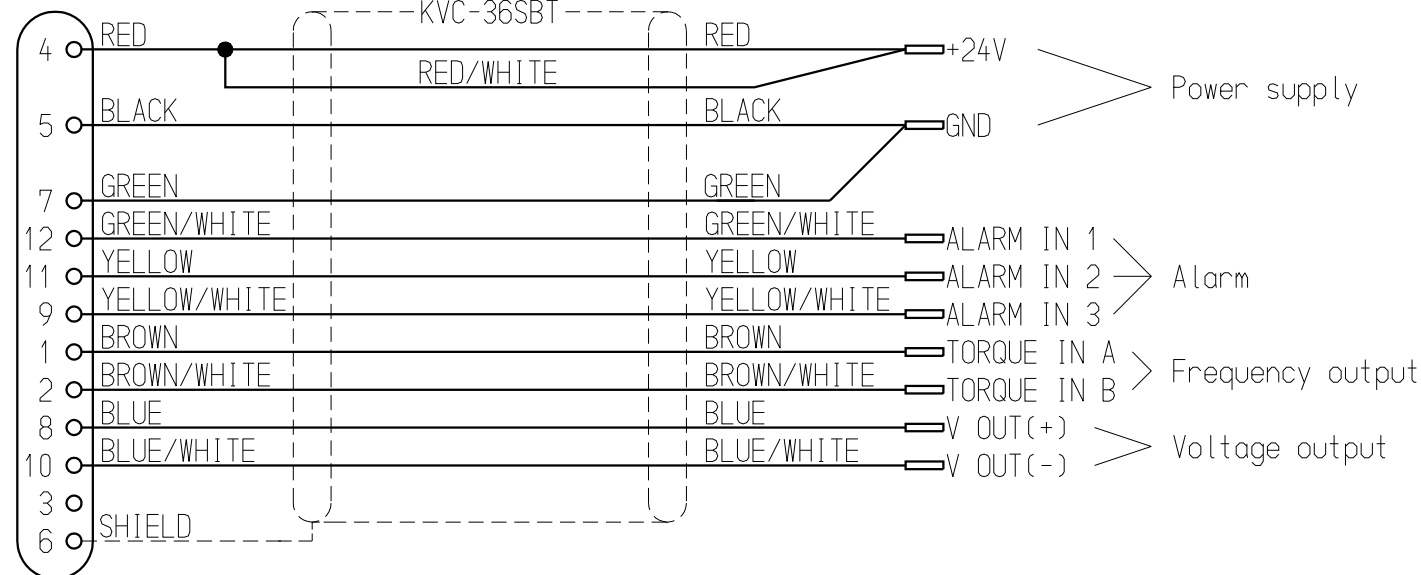
【Information on optional items】

★ Exclusive signal cable(CAC-176C-*M) specification



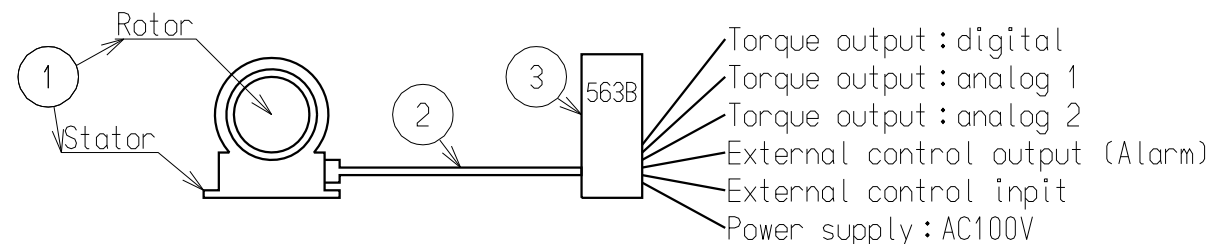
【Stator side】
PIN No.

【Terminal side】



★ Configuration when adding a transmitter(OPT-563B)

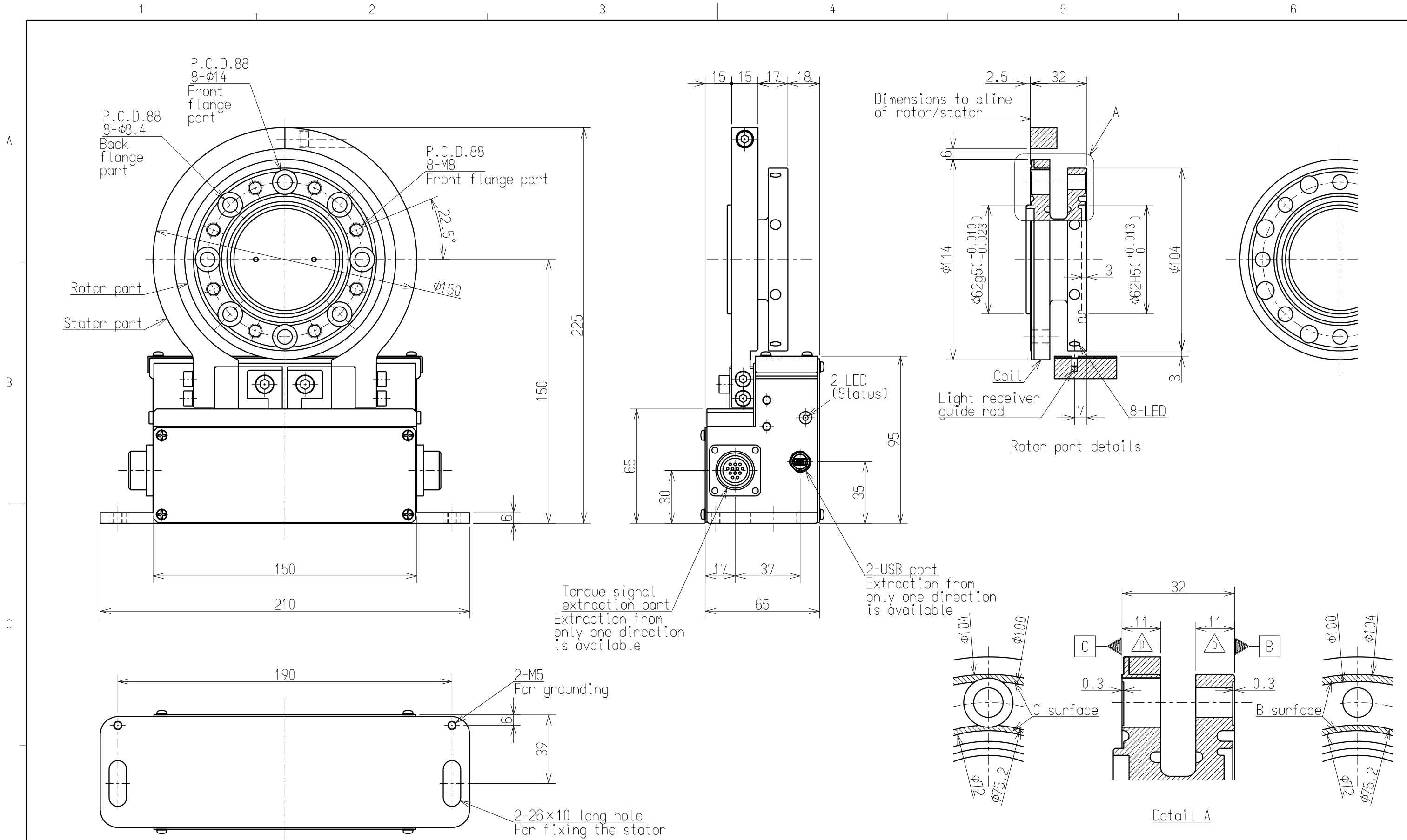
- ① Torque Transducer Model: TMHSA- □NM
- ② Exclusive signal cable Model: CAC-176B- *M(selectable from 10m,20m,30m) 【Option】
- ③ Exclusive transmitter Model: OPT-563B 【Option】



- For torque output, two are selected from voltage/frequency/current and one is selected from various digital outputs. Accuracy at digital output is 0.02%R.O.
- With torque value indication
- AC100V power supply required.
- By the button operation of the transmitter, calibration/auto zero/change of the average possible.
- The calibration data is in the transmitter and 4 data can be registered.
- Rotation speed display and output are possible by using rotation detection mechanism.

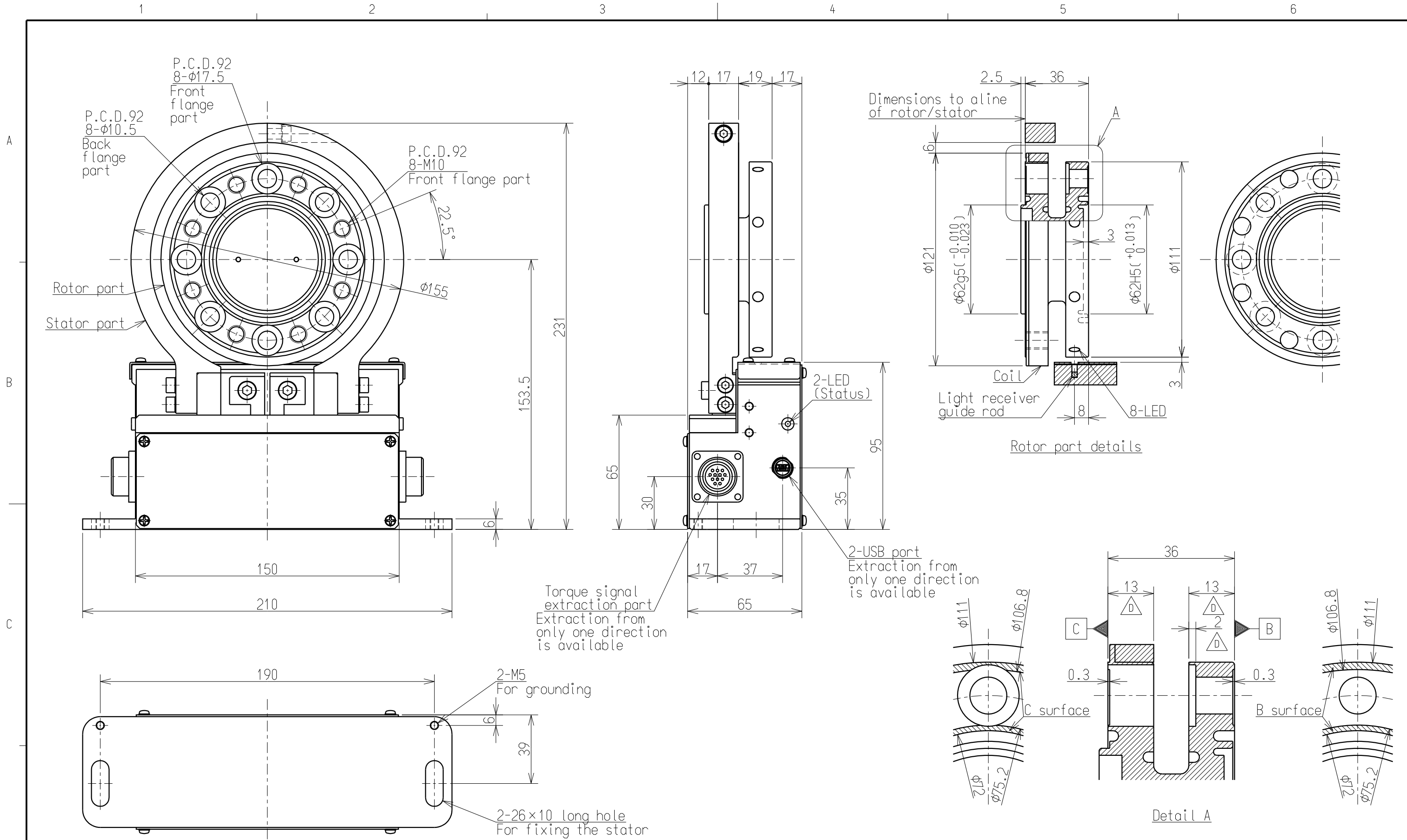
※For details, refer to the specification of OPT-563B.

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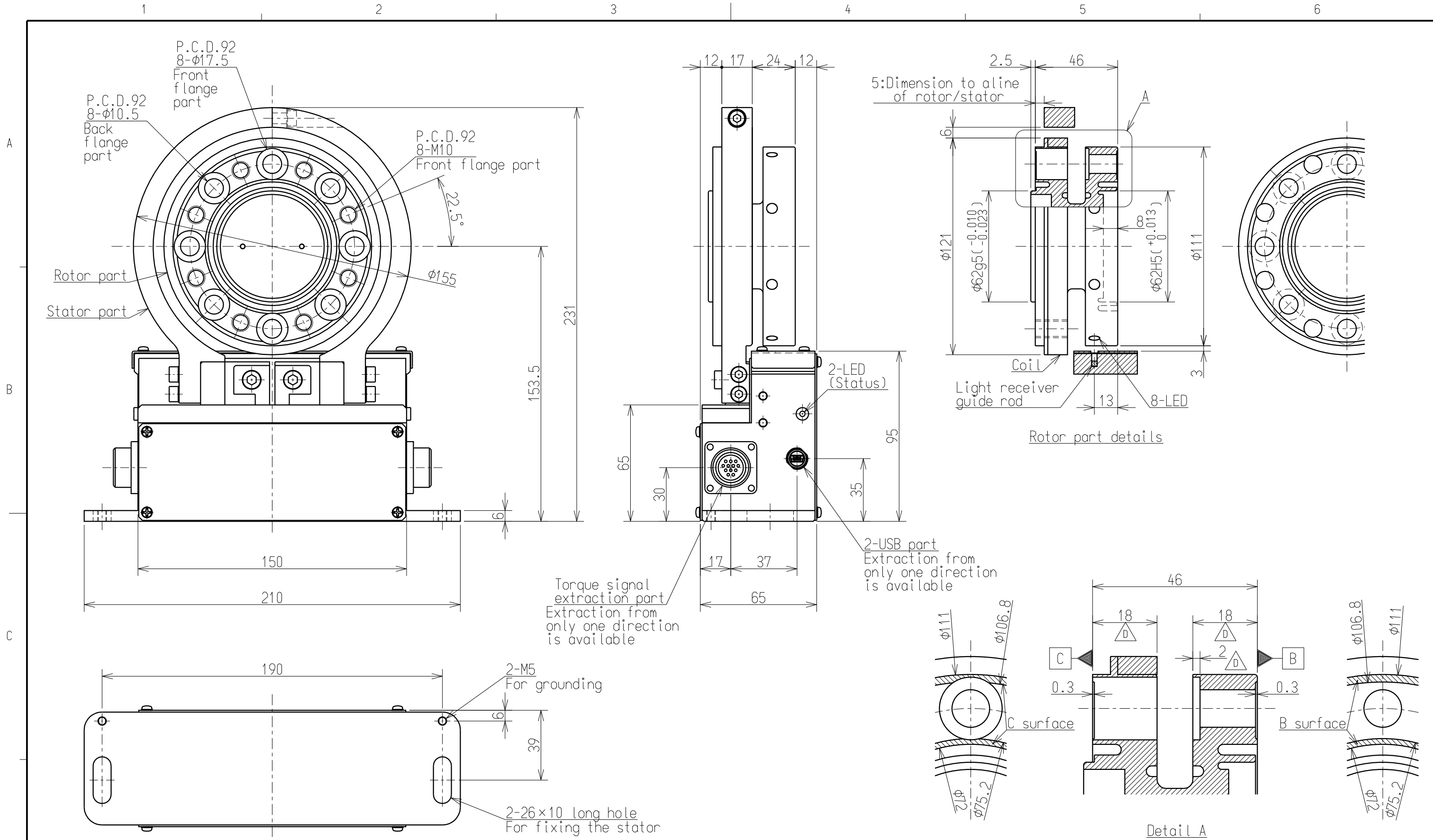
TMHSA-100NM, 200NM, 300NM

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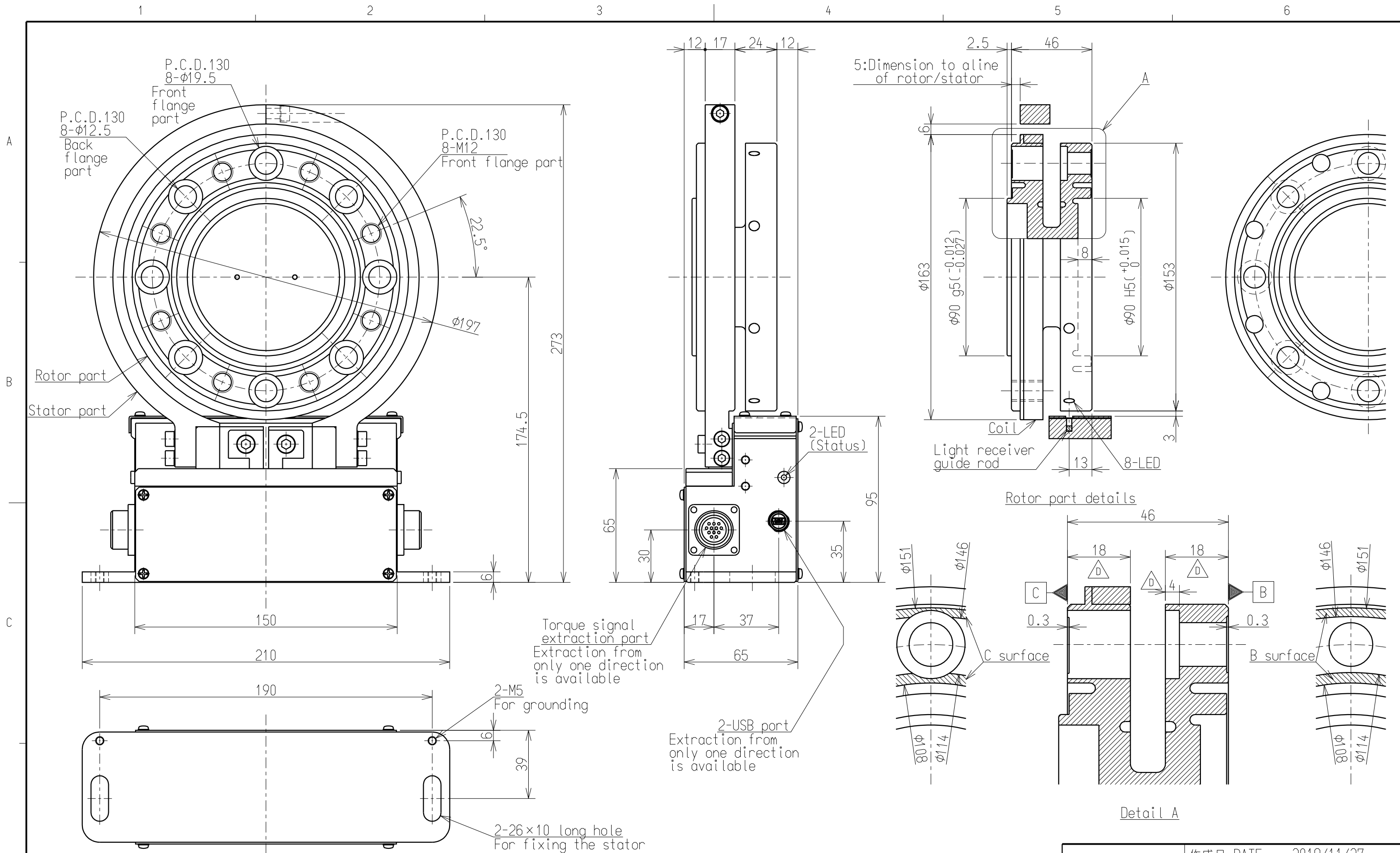
TMHSA-500NM

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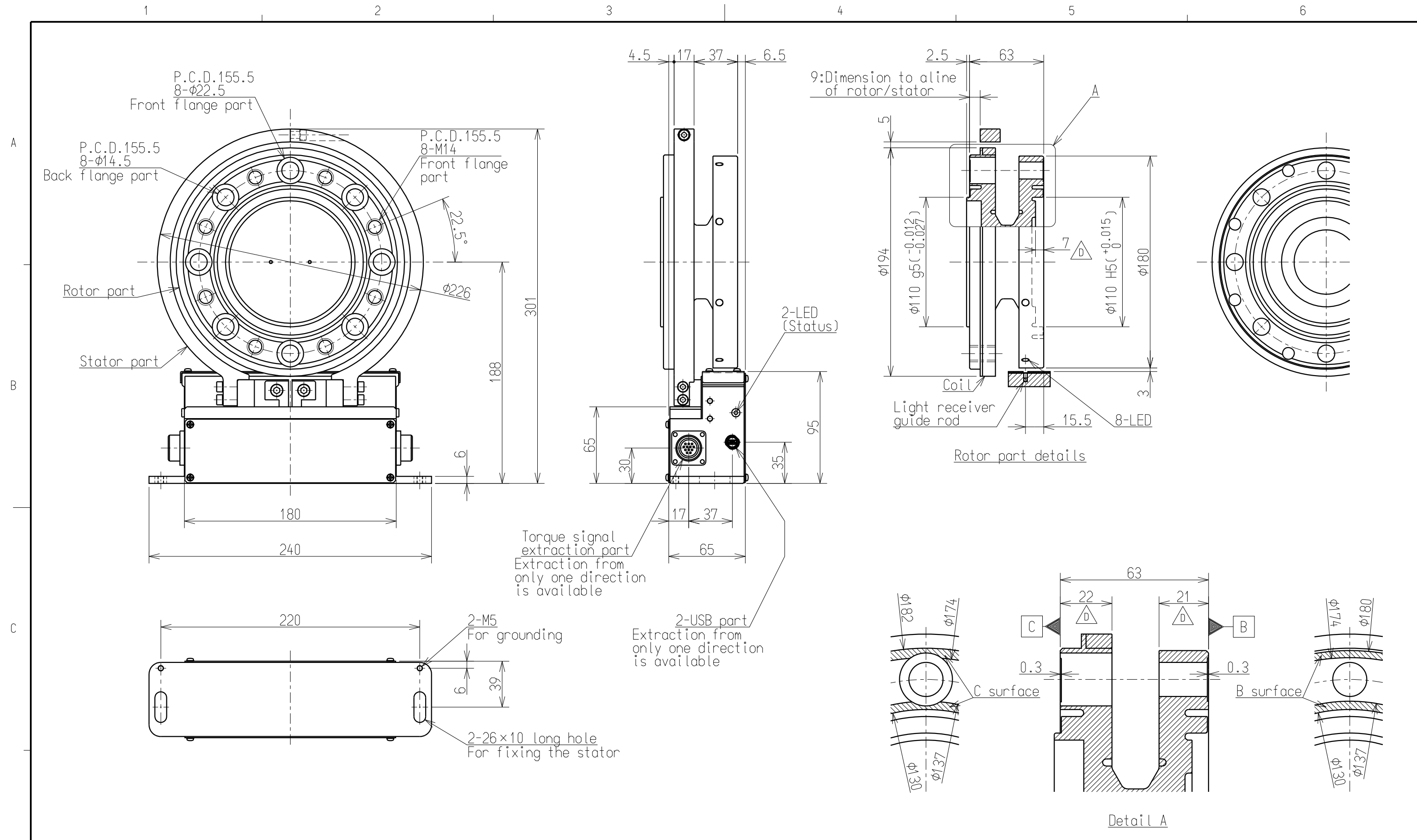
TMHSA-1KNM

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TMHSA-2KNM, 3KNM

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△ TMHSA-5KNM

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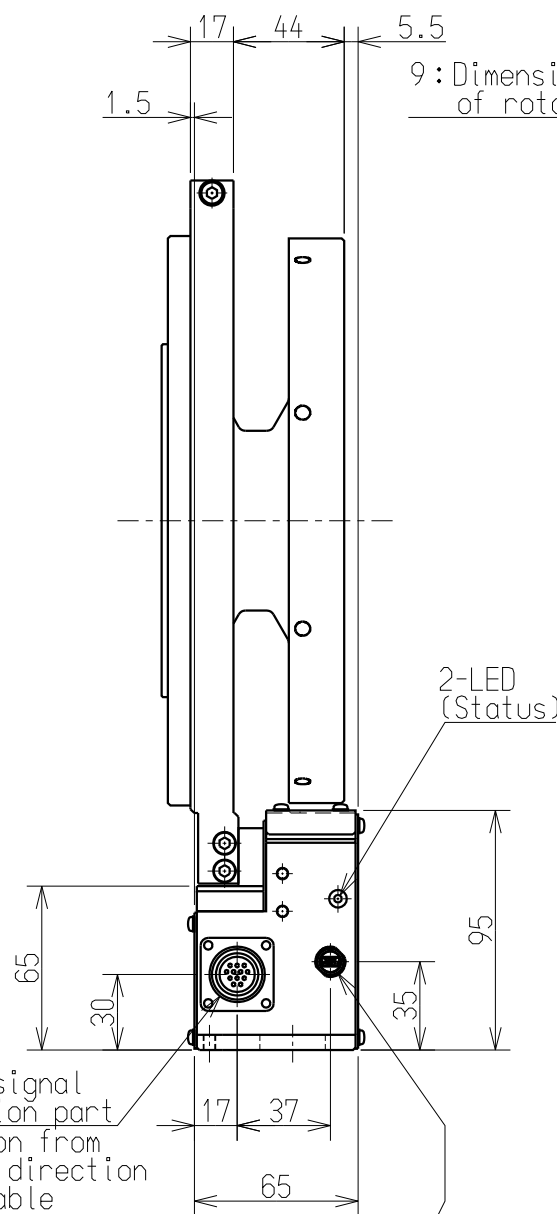
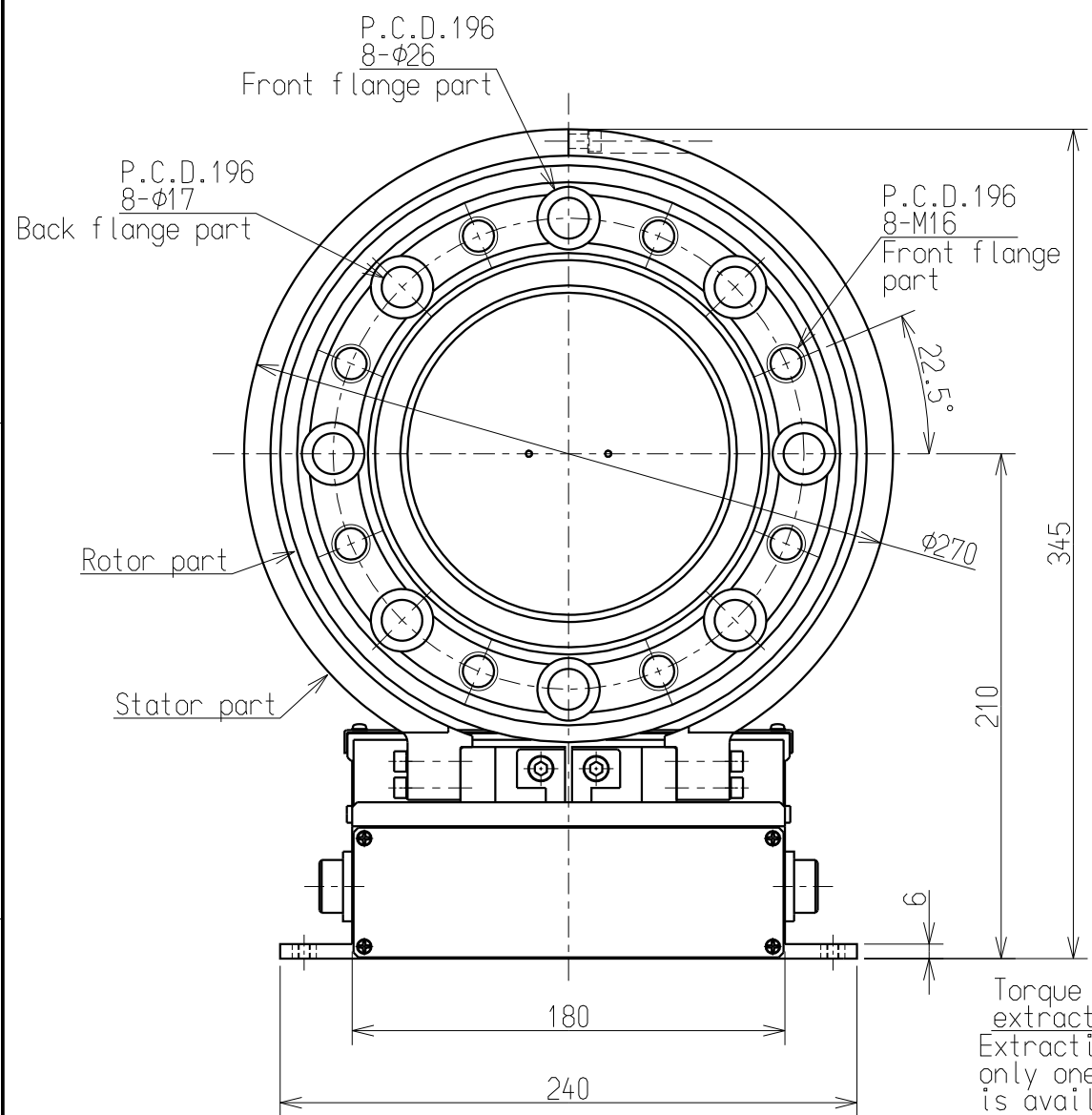
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A

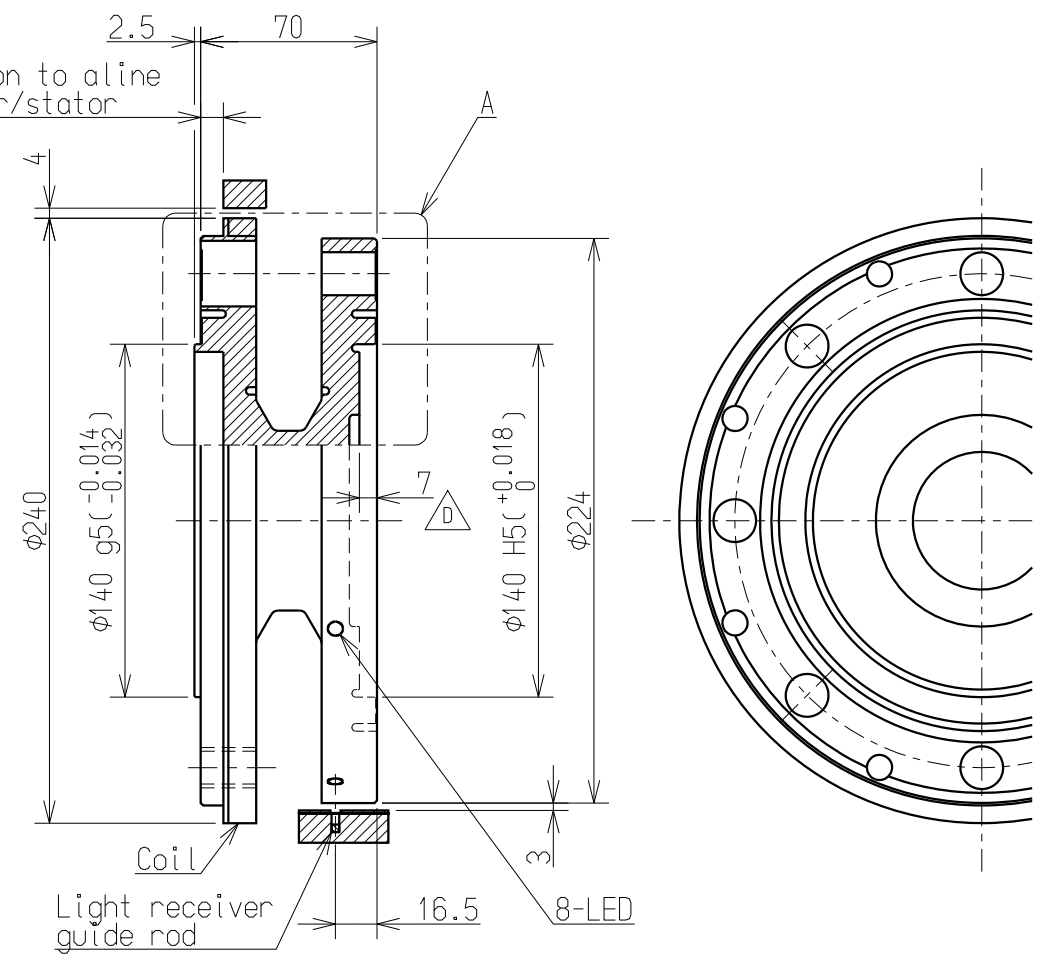
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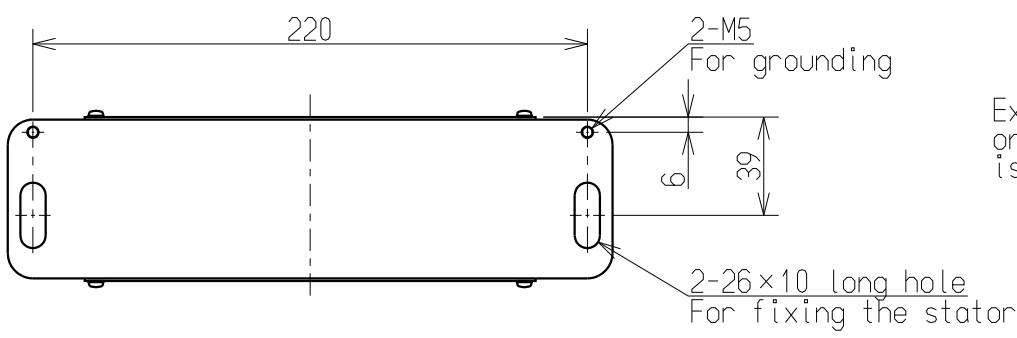
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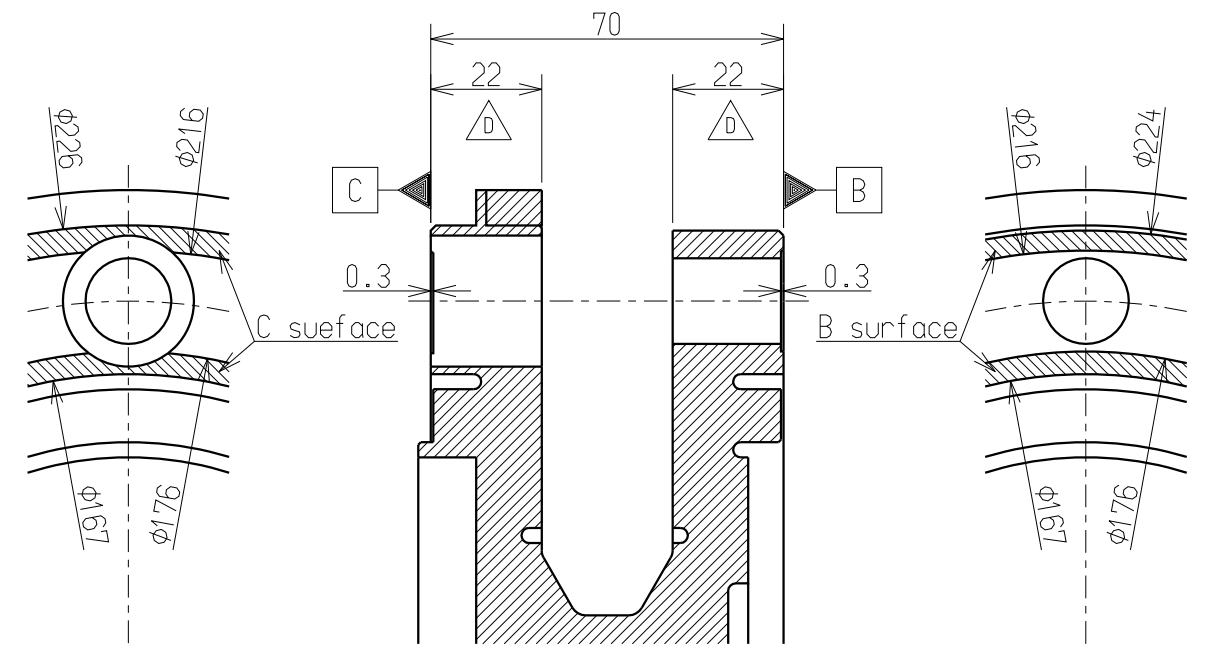
9: Dimension to align of rotor/stator



Rotor part details



2-USB port
Extraction from only one direction is available



Detail A

△ TMHSA-10KNM

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