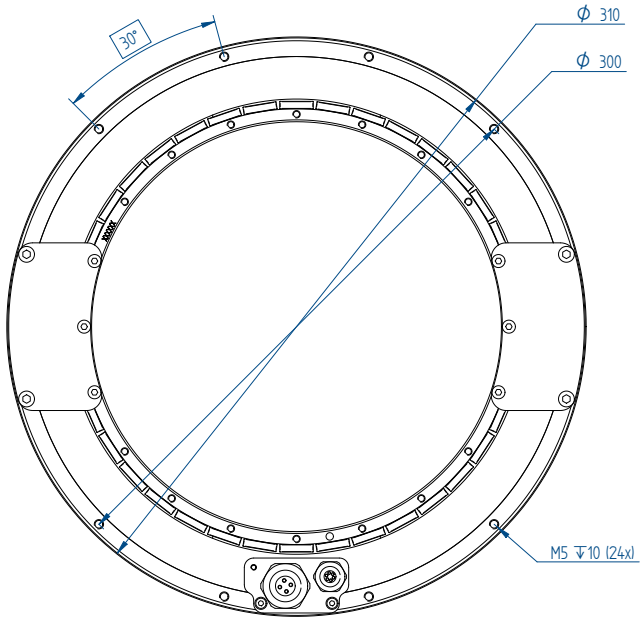
TECNOTION®

THE LINEAR MOTOR COMPANY

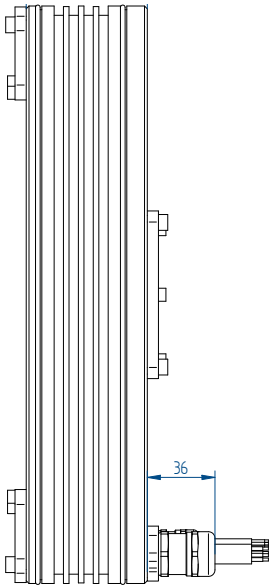
Frameless torque motor series

Mounting instructions and tolerances can be found in the torque installation manual. Manuals and 3D CAD files can be downloaded from our website.

STATOR



QTL-A 310-65



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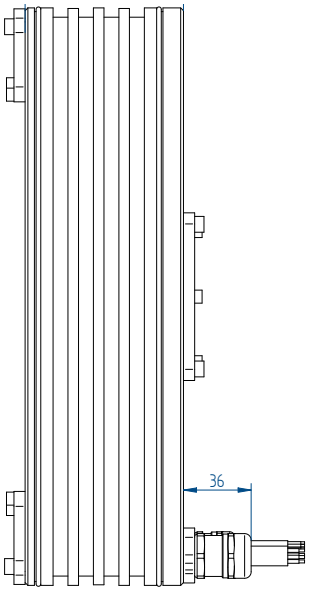

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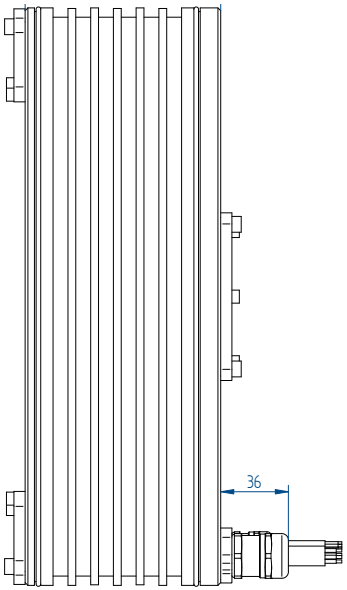
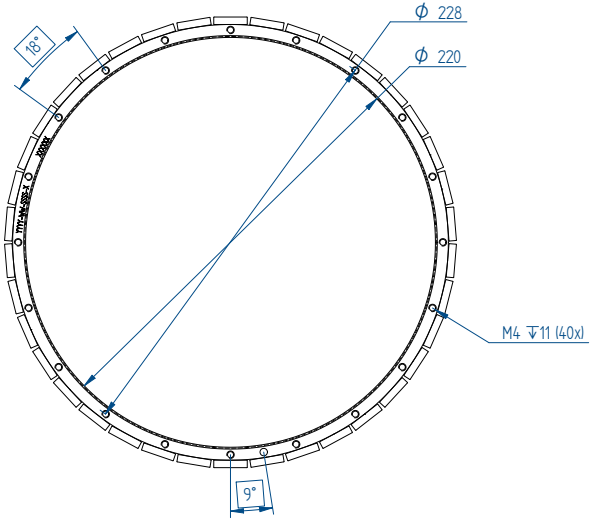
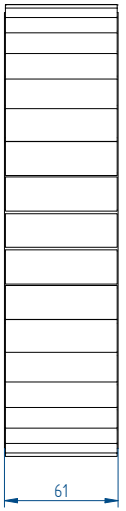
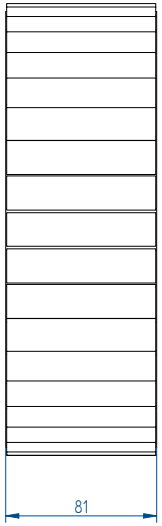


ROTOR







Torque QTL-A 310 series
with cooling ring

	Parameter	Remarks	Symbol	Unit	QTL-A 310-65	QTL-A 310-85	QTL-A 310-105
Performance	Winding type				N	N	N
	Motortype max. voltage ph-ph	3-phase synchronous		$V_{ac\,rms}$ (V_{dc})	480 (680)		
	Ultimate torque @ 20°C/s increase	magnet @ 25°C	T_u	Nm	389	583	778
	Peak torque @ 6°C/s increase	magnet @ 25°C	T_p	Nm	316	474	632
	Continuous torque	coil @ 100°C	T_c	Nm	151	241	331
	Stall torque	coil @ 100°C	T_s	Nm	107	170	234
	Maximum speed[1]	@ Tc @ 680 Vdc	n_{max}	rpm	298	182	124
	Motor torque constant	up to Ic	K_t	Nm/A_{rms}	19.7	29.5	39.3
	Motor constant	coils @ 25°C	K_m	$(Nm)^2/W$	27.0	45.5	64.7
Electrical	Ultimate current	magnet @ 25°C	I_u	A_{rms}	22.0	22.0	22.0
	Peak current	magnet @ 25°C	I_p	A_{rms}	16.9	16.9	16.9
	Maximum continuous current[2]	coils @ 100°C	I_c	A_{rms}	7.70	8.16	8.42
	Stall current[2]	coils @ 100°C	I_s	A_{rms}	5.44	5.77	5.96
	Back EMF phase-$phase_{peak}$		K_e	V/krpm	1681	2521	3362
	Back EMF phase-$phase_{RMS}$		K_e	V/krpm	1189	1783	2377
	Coil resistance per phase	coils @ 25°C ex. cable	R	Ω	4.77	6.37	7.96
	Coil induction per phase	I < 0.6 Ip	L	mH	23.9	34.7	45.5
	Electrical time constant		τ_e	ms	5.0	5.5	5.7
	Poles		N_{mgn}	nr	38	38	38
Thermal	Continuous power loss	coils @ 100°C	P_c	W	1102	1653	2204
	Thermal resistance[3]	coils to mount. sfc.	R_{th}	°C/W	0.073	0.048	0.036
	Thermal time constant		τ_{th}	s	49	44	41
	Water cooling flow	for ΔT=3K	Φ_W	l/min	5.3	7.9	10.5
	Water cooling pressure drop	order of magnitude	ΔP_w	bar	1.0	1.4	2.0
	Temperature cut-off / sensor				PTC 1kΩ (3x) / PT1000 (3x)		
Mechanical	Stator OD		OD_S	mm	310		
	Rotor ID		ID_R	mm	220		
	Motor height		H_{motor}	mm	65	85	105
	Lamination stack height		H_{arm}	mm	40	60	80
	Rotor inertia		J_R	$kg*m^2$	0.031	0.046	0.061
	Stator mass	excluding cables	M_S	kg	7.4	10.1	12.9
	Rotor mass		M_R	kg	2.3	3.5	4.7
	Total mass	excluding cables	M_T	kg	9.7	13.6	17.6
	Cable mass	all cables	m	g	500		
	Cable type (power)	length 2 m	d	mm (AWG)	10.6 (13)		
	Cable type (sensor)	length 2 m	d	mm (AWG)	6.4 (25)		

QTL 310 series, with a height of 85 mm

All specifications ±10%

1. *Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.*
2. *These values are only applicable when the mounting surface is at 20°C and the motor is driven at maximum continuous current. If these values differ in your application, please check our simulation tool or manual.*
3. *Rth based on given water flow and pressure.*

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