TECNOTION®

direct drive in motion

QMT TORQUE MOTORS

Maximum torque

Accuracy redefined
UNLEASH THE POWER

The QMT torque motor series is specifically designed for the machine tooling market and combines excellent mechanical compatibility with the proven expertise that Tecnotion has built up in the semiconductor industry. The result is a synergy of power and accuracy, which enhances motion capabilities and thus improves the overall performance of your machine.

With its superior stall torque, this series is particularly well-suited for demanding applications in cutting, grinding, metrology and rotary indexing tables. Outstanding torque in a very compact design, makes QMT motors a perfect fit for heavy-duty tasks in small spaces.

The high force density minimizes the need for energy. Combined with the low cogging performance this results in cost savings and system efficiency, while guaranteeing precision that exceeds industry standards.

We direct drive your motion technology

Tecnotion direct drive motors are seamlessly integrated in a wide range of applications such as semiconductors, machine tooling, robotics, display applications and printing industry. Being an independent supplier of linear- and torque motors Tecnotion provides specialized motor technology to place in customer motion solutions. As global technology leader with almost 30 years of experience we always offer the best motor solution for your motion needs, whether it is catalogue or custom. With a wealth of experience, we are accustomed to design and build any motion question.

Support

At Tecnotion, we recognize that every use of our motors presents unique circumstances with different needs and challenges. Our team of Sales and Application Engineers have extensive experience in different application scenarios and work closely with our customers to find solutions that perfectly align with their requirements and objectives.

With our commitment to excellence and innovation, we remain determined in our mission to provide our customers with solutions that lead them to success in an ever-changing landscape.

Continuous innovation

At the heart of our company is an internal Research and Development (R&D) department that serves as an engine for innovation. This dedication to innovation not only fuels our deep knowledge of manufacturing processes, but also drives our commitment to excel in product design and performance, helping our customers meet the changing needs and expectations of their design.

In addition to our extensive range of off-the-shelf standard motors, we custom design motors for applications that have more unique requirements. Our team works closely with customers to understand their specific challenges and objectives.

Modern manufacturing

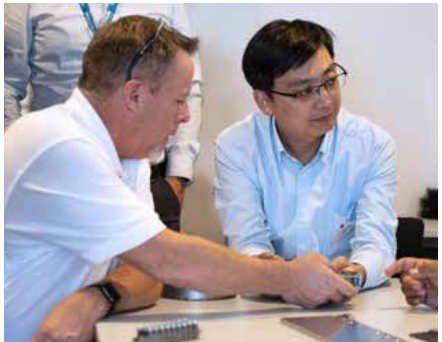
Our manufacturing capabilities are strategically distributed between our facilities in China, Vietnam and the Netherlands, each of which plays a vital role in delivering first-class products to our customers worldwide. This distribution enables us to meet the demands of mass production.

Our competence centre and headquarters in the Netherlands are dedicated to advanced motor technology and are the epicentre of innovation and precision engineering. Custom motors are also built here in our special state-of-the-art clean room environment, with extreme precision and an eye for quality. Tecnotion prides itself on maintaining the strictest quality standards in all facets of our operations. Our plants are ISO 9001 certified.

Global logistics

We ensure that our most popular products are in stock in our warehouses. This setup gives us quick access to our stock, regardless of your location. Whether you are near our European headquarters or on the other side of the world, our efficient shipping network ensures that your orders are processed quickly.

Even during periods of increased market activity, our flexible supply chain allows us to maintain fast delivery times, so your products reach you quickly and reliably. With our unwavering commitment to customer satisfaction and operational excellence, we strive to provide seamless and efficient service throughout the supply chain.



QMT motor series example

Series	rotor option	diameter	Stator height	Winding type
QMT	LA	230	70	I
QMT	HA	485	160	I

QMT-LA series

The QMT series is optimized for the machine tool market and is designed for excellent mechanical compatibility. The motors can also replace existing motors in your system design. Higher torque density will give your machine a real performance boost.
With outer diameters, ranging from 230mm till 485mm, the standard series can deliver 68-1666 Nm of continuous torque and 155-3585 Nm of ultimate torque.

QMT-HA series

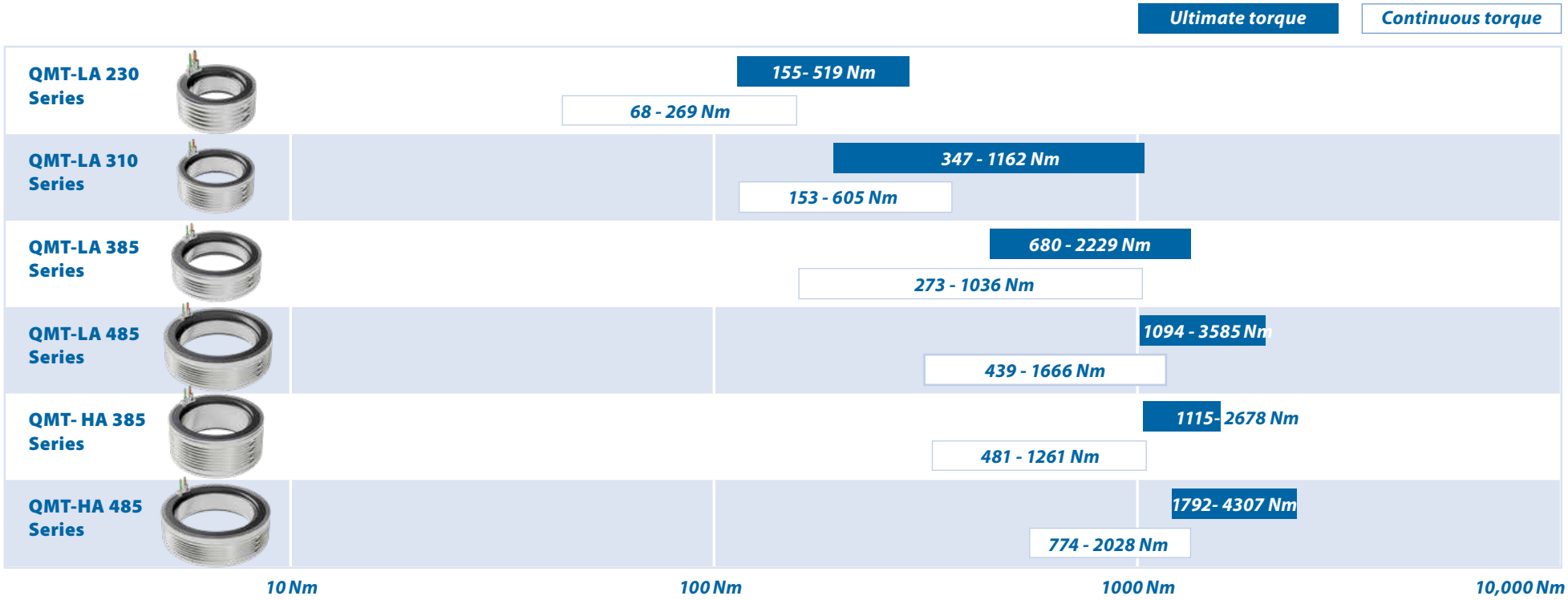
The HA series sets the new benchmark, delivering up to 80 % more performance with the same stator and rotor footprint. Larger coils inside combined with a higher rotor gives a enormous torque increase without any need of design changes.
The HA 385mm and 485mm diameter motors deliver 481-2028 Nm of continuous torque and 1115-4307 Nm of ultimate torque.

The standard series can be interchanged with the HA series, with the stator mounting remaining the same and only the rotor height making the difference.

QMT torque motor range

Like all our torque motors, the QMT motors can be integrated directly into the machine structure, while the large open inner diameter enables cable feedthrough. There is no contact between the rotor and stator, meaning no mechanical wear. Brushless torque motors eliminate the need for mechanical transmissions like gearboxes, belts, and speed reducers. Aluminum housing with integrated water-cooling channels is standard on QMT motors. Water cooling increases the motor's maximum performance by pushing the performance limits. In addition, the metal housing simplifies installation thanks to bolt holes.

The QMT series consists of two subseries: the standard (LA) and HA series. The shape and dimensions of the standard series are compatible with market conformity for machine tools and fit seamlessly into your existing design. The superior HA series has a larger rotor and delivers even higher performance thanks to its high power density, maximizing the efficiency of your machine.



Accuracy redefined

Machine tooling benefits

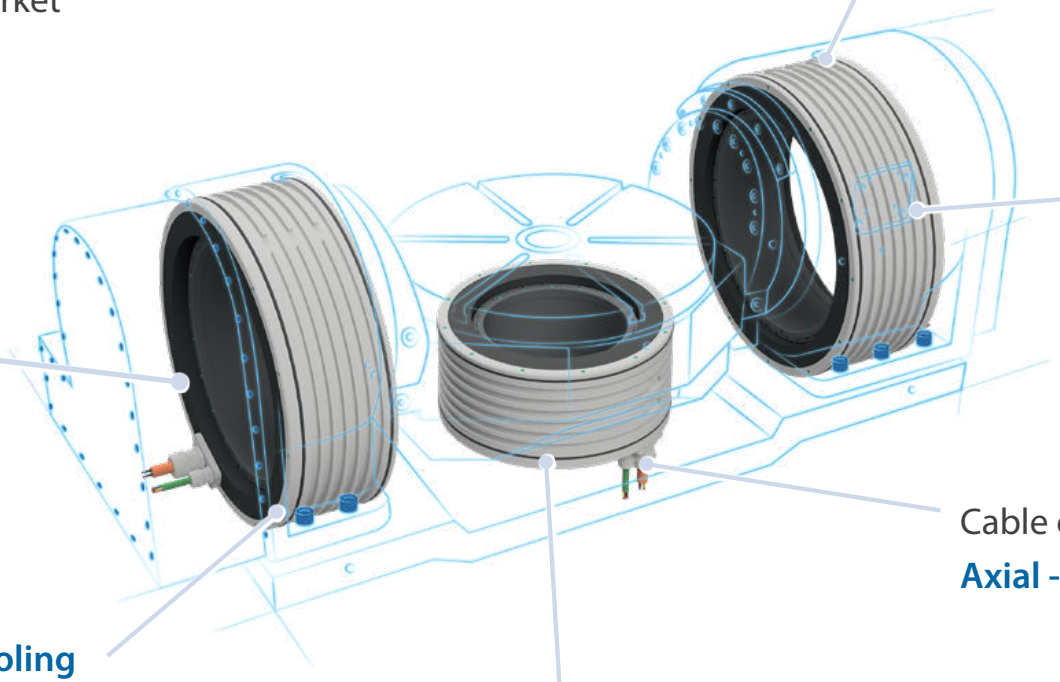
T/cm³
Highest torque density in the market

Low weight because of aluminium housing.

Rotor options

The standard rotor is form fit within machine tooling applications.

The 385 and 485-HA series can boost **40%** more power



Low thermal resistance for optimal thermal integration

Cable exit possibilities
Axial - radial - tangential - connectors

Water cooling
Increases maximum performance of the motor

Mechanical design
Conform market standard

Properties

Heavy duty

Perfectly suited for machine tooling

High stall and continuous torque

More power more troughput

PUR cables

Suitable for harsh conditions

Water cooling system

Low thermal resistance for optimal thermal integration

The 385-HA and 485-HA Series

Increased rotor size, up to 40% more power in the same footprint

LA Series - form fit

Produced for industry standards

Temperature management

Designed for 130°C

aluminium housing

Low weight results in high power density

Torque QMT-LA 230 series

QMT-LA 230 series, with a height of 90 mm

	Parameter	Remarks	Symbol	Unit	QMT-LA 230-70	QMT-LA 230-90	QMT-LA 230-110	QMT-LA 230-140
Performance	Winding type				I	I	I	I
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	V_{dc}	680			
	Ultimate torque @ 10 K/s increase	magnets @ 25°C	T_u	Nm	155	259	364	519
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	136	228	320	456
	Continuous torque[1]	coils @ 130°C	T_c	Nm	68	124	182	269
	Stall torque[1]	coils @ 130°C	T_s	Nm	52	96	140	207
	Maximum speed[2]	@ U_{max} @ T_c	n_{max}	rpm	712	387	211	152
	Motor torque constant	$I \leq I_c$	K_t	Nm/A_{rms}	9.0	15.0	21.0	30.0
	Motor constant	coils @ 25°C	K_m	$(Nm)^2/W$	7.6	15.2	23.2	35.5
Electrical	Ultimate current	magnets @ 25°C	I_u	A_{rms}	22.5	22.5	22.5	22.5
	Peak current	magnets @ 25°C	I_p	A_{rms}	17.4	17.4	17.4	17.4
	Continuous current[1]	coils @ 130°C	I_c	A_{rms}	7.6	8.3	8.7	9.0
	Stall current[1]	coils @ 130°C	I_s	A_{rms}	5.8	6.4	6.7	6.9
	Back EMF ph-ph$_{peak}$		K_e	V_{dc}/krpm	766	1282	1798	2564
	Back EMF ph-ph$_{rms}$		K_e	V_{ac}/krpm	542	907	1272	1813
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	3.54	4.94	6.35	8.45
	Induction per phase	$I < 0.6\ I_p$	L_{ph}	mH	12.5	20.9	29.3	41.7
	Electrical time constant	coils @ 25°C	τ_e	ms	3.5	4.2	4.6	4.9
Thermal	Continuous power loss[1]	coils @ 130°C	P_c	W	865	1447	2030	2895
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.127	0.076	0.054	0.038
	Thermal time constant			s	62	52	48	44
	Water cooling flow rate	for ΔT=8K	Φ_w	l/min	1.5	2.6	3.6	5.0
	Temperature cut-off / sensor				PTC130 (3x) / Pt1000 (3x)			
Mechanical	Stator OD		OD_s	mm	230			
	Rotor ID		ID_r	mm	140			
	Stator height		H_s	mm	70	90	110	140
	Rotor height		H_r	mm	31	51	71	101
	Poles		N_{mgn}		28			
	Rotor inertia		J_r	kgm^2	0.010	0.016	0.022	0.031
	Stator mass	ex. cables	m_s	kg	4.9	6.7	8.5	11.3
	Rotor mass		m_r	kg	1.6	2.6	3.7	5.2
	Total mass	ex. cables	m	kg	6.5	9.3	12.2	16.5
	Cable mass	all cables		kg/m	0.25			
	Cable type (power)	length 2 m	d	mm (AWG)	10.6 (13)			
	Cable type (sensor)	length 2 m	d	mm (AWG)	6.4 (25)			

All specifications ±10%

[1] These values are only applicable when the mounting surface is at 20°C and the motor is driven at continuous current. If these values differ in your application, please check our simulation tool.

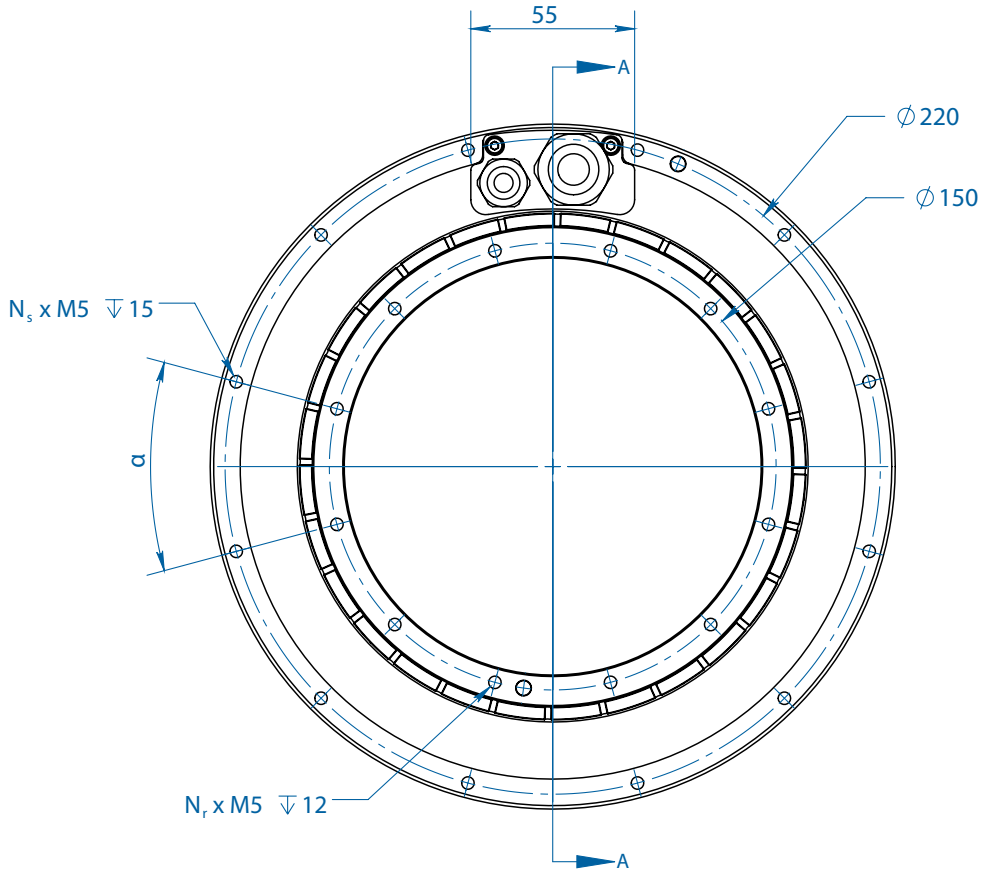
[2] Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

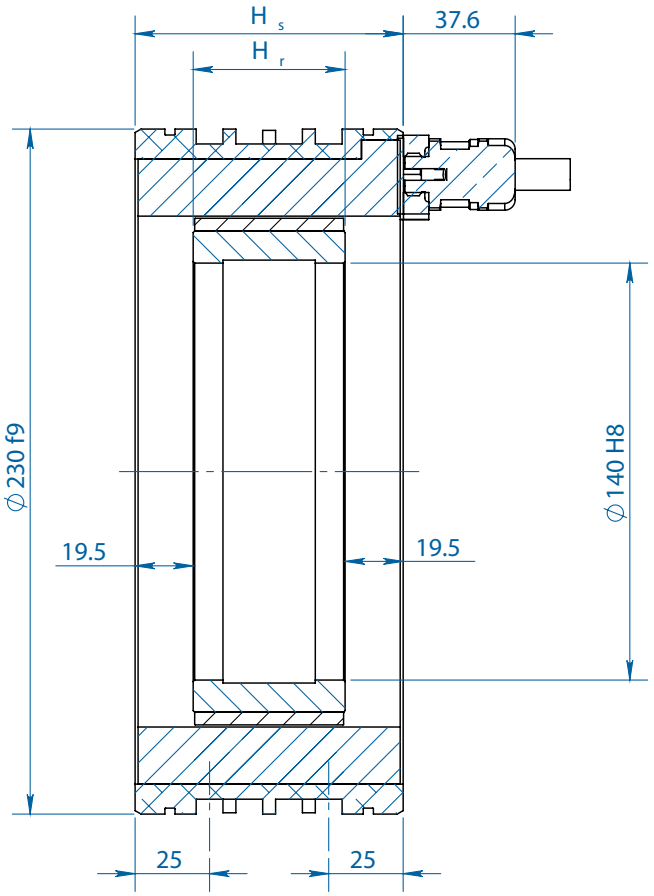
Series approvals

Series partly approved, full approval pending:

Please contact us for the latest status

QMT-LA 230





SECTION A-A

Motor type	H_s	H_r	N_s	N_r	α
QMT-LA 230-70	70	31	12	12	30
QMT-LA 230-90	90	51	12	12	30
QMT-LA 230-110	110	71	12	12	30
QMT-LA 230-140	140	101	23	24	15

** All sizes are in mm*

Torque QMT-LA 310 series

QMT-LA 310 series, with a height of 110 mm

	Parameter	Remarks	Symbol	Unit	QMT-LA 310-70	QMT-LA 310-90	QMT-LA 310-110	QMT-LA 310-140
Performance	Winding type				I	I	I	I
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	V_{dc}	680			
	Ultimate torque @ 10 K/s increase	magnets @ 25°C	T_u	Nm	347	581	815	1162
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	305	511	717	1023
	Continuous torque[1]	coils @ 130°C	T_c	Nm	153	280	410	605
	Stall torque[1]	coils @ 130°C	T_s	Nm	118	216	316	466
	Maximum speed[2]	@ U_{max} @ T_c	n_{max}	rpm	675	376	251	160
	Motor torque constant	$I \leq I_c$	K_t	Nm/A_{rms}	9.8	16.5	23.1	32.9
	Motor constant	coils @ 25°C	K_m	$(Nm)^2/W$	25.6	51.3	78.3	119.8
Electrical	Ultimate current	magnets @ 25°C	I_u	A_{rms}	45.8	45.8	45.8	45.8
	Peak current	magnets @ 25°C	I_p	A_{rms}	35.5	35.5	35.5	35.5
	Continuous current[1]	coils @ 130°C	I_c	A_{rms}	15.5	17.0	17.8	18.4
	Stall current[1]	coils @ 130°C	I_s	A_{rms}	12.0	13.1	13.7	14.2
	Back EMF ph-ph$_{peak}$		K_e	V_{dc}/krpm	841	1407	1974	2815
	Back EMF ph-ph$_{rms}$		K_e	V_{ac}/krpm	595	995	1396	1990
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	1.26	1.76	2.27	3.02
	Induction per phase	$I < 0.6\ I_p$	L_{ph}	mH	4.4	7.4	10.3	14.7
	Electrical time constant	coils @ 25°C	τ_e	ms	3.5	4.2	4.6	4.9
Thermal	Continuous power loss[1]	coils @ 130°C	P_c	W	1297	2171	3045	4342
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.085	0.051	0.036	0.025
	Thermal time constant			s	61	51	47	44
	Water cooling flow rate	for ΔT=8K	Φ_w	l/min	2.3	3.8	5.4	7.6
	Temperature cut-off / sensor				PTC130 (3x) / Pt1000 (3x)			
Mechanical	Stator OD		OD_s	mm	310			
	Rotor ID		ID_r	mm	220			
	Stator height		H_s	mm	70	90	110	140
	Rotor height		H_r	mm	31	51	71	101
	Poles		N_{mgn}		42			
	Rotor inertia		J_r	kgm^2	0.033	0.055	0.076	0.108
	Stator mass	ex. cables	m_s	kg	7.0	9.7	12.4	16.4
	Rotor mass		m_r	kg	2.4	3.9	5.5	7.8
	Total mass	ex. cables	m	kg	9.4	13.6	17.9	24.2
	Cable mass	all cables		kg/m	0.25			
	Cable type (power)	length 2 m	d	mm (AWG)	10.6 (13)			
	Cable type (sensor)	length 2 m	d	mm (AWG)	6.4 (25)			

All specifications ±10%

[1] These values are only applicable when the mounting surface is at 20°C and the motor is driven at continuous current. If these values differ in your application, please check our simulation tool.

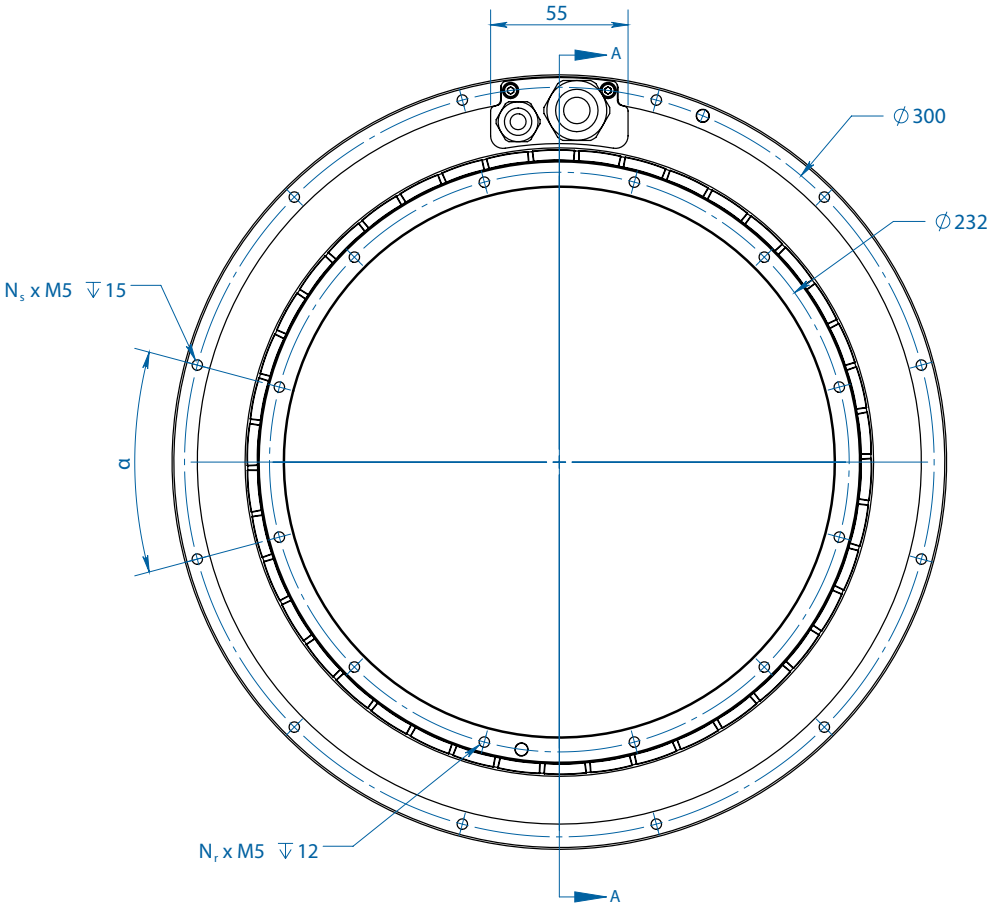
[2] Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

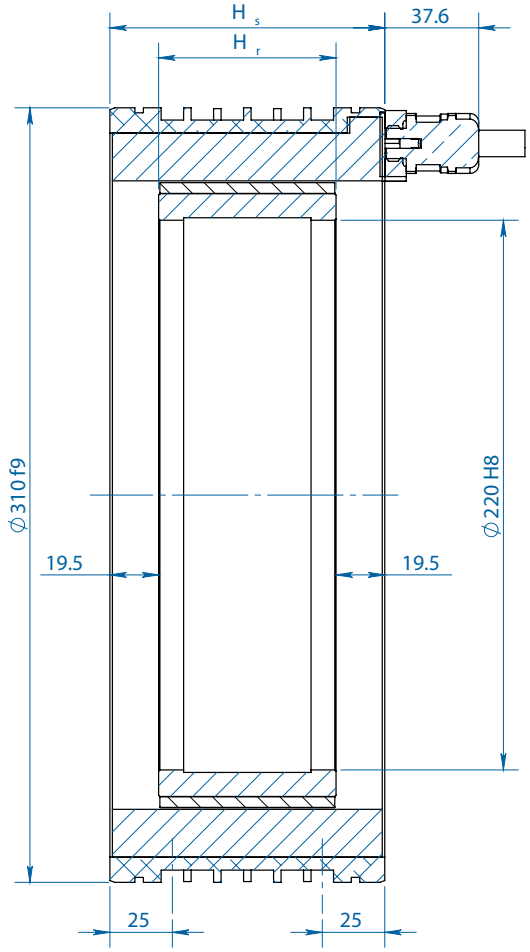
Series approvals

Series partly approved, full approval pending:

Please contact us for the latest status

QMT-LA 310





SECTION A-A

Motor type	H_s	H_r	N_s	N_r	α
QMT-LA-310-70	70	31	12	12	30
QMT-LA-310-90	90	51	12	12	30
QMT-LA-310-110	110	71	12	12	30
QMT-LA-310-140	140	101	23	24	15

** All sizes are in mm*

Torque QMT-LA 385 series

QMT-LA 385 series, with a height of 110 mm

	Parameter	Remarks	Symbol	Unit	QMT-LA 385-90	QMT-LA 385-110	QMT-LA 385-130	QMT-LA 385-160
Performance	Winding type				I	I	I	I
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	V_{dc}	680			
	Ultimate torque @ 10 K/s increase	magnets @ 25°C	T_u	Nm	680	1115	1563	2229
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	602	987	1384	1973
	Continuous torque[1]	coils @ 130°C	T_c	Nm	273	481	703	1036
	Stall torque[1]	coils @ 130°C	T_s	Nm	210	371	541	798
	Maximum speed[2]	@ U_{max} @ T_c	n_{max}	rpm	279	154	99	58
	Motor torque constant	$I \leq I_c$	K_t	Nm/A_{rms}	21.2	34.7	48.7	69.5
	Motor constant	coils @ 25°C	K_m	$(Nm)^2/W$	65.6	124.6	189.6	288.6
Electrical	Ultimate current	magnets @ 25°C	I_u	A_{rms}	45.8	45.8	45.8	45.8
	Peak current	magnets @ 25°C	I_p	A_{rms}	35.5	35.5	35.5	35.5
	Continuous current[1]	coils @ 130°C	I_c	A_{rms}	12.9	13.9	14.4	14.9
	Stall current[1]	coils @ 130°C	I_s	A_{rms}	9.9	10.7	11.1	11.5
	Back EMF ph-ph$_{peak}$		K_e	V_{dc}/krpm	1813	2971	4167	5941
	Back EMF ph-ph$_{rms}$		K_e	V_{ac}/krpm	1282	2101	2946	4201
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	2.28	3.23	4.18	5.58
	Induction per phase	$I < 0.6\ I_p$	L_{ph}	mH	11.9	19.6	27.4	39.1
	Electrical time constant	coils @ 25°C	τ_e	ms	5.2	6.1	6.6	7.0
Thermal	Continuous power loss[1]	coils @ 130°C	P_c	W	1611	2640	3702	5279
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.068	0.042	0.030	0.021
	Thermal time constant			s	90	77	71	67
	Water cooling flow rate	for ΔT=8K	Φ_w	l/min	2.9	4.7	6.6	9.6
	Temperature cut-off / sensor				PTC130 (3x) / Pt1000 (3x)			
Mechanical	Stator OD		OD_s	mm	385			
	Rotor ID		ID_r	mm	265			
	Stator height		H_s	mm	90	110	130	160
	Rotor height		H_r	mm	31	51	71	101
	Poles		N_{mgn}		56			
	Rotor inertia		J_r	kgm^2	0.065	0.107	0.149	0.211
	Stator mass	ex. cables	m_s	kg	14.0	18.9	23.9	31.2
	Rotor mass		m_r	kg	3.3	5.4	7.5	10.6
	Total mass	ex. cables	m	kg	17.3	24.3	31.4	41.8
	Cable mass	all cables		kg/m	0.25			
	Cable type (power)	length 2 m	d	mm (AWG)	10.6 (13)			
	Cable type (sensor)	length 2 m	d	mm (AWG)	6.4 (25)			

All specifications ±10%

[1] *These values are only applicable when the mounting surface is at 20°C and the motor is driven at continuous current. If these values differ in your application, please check our simulation tool.*

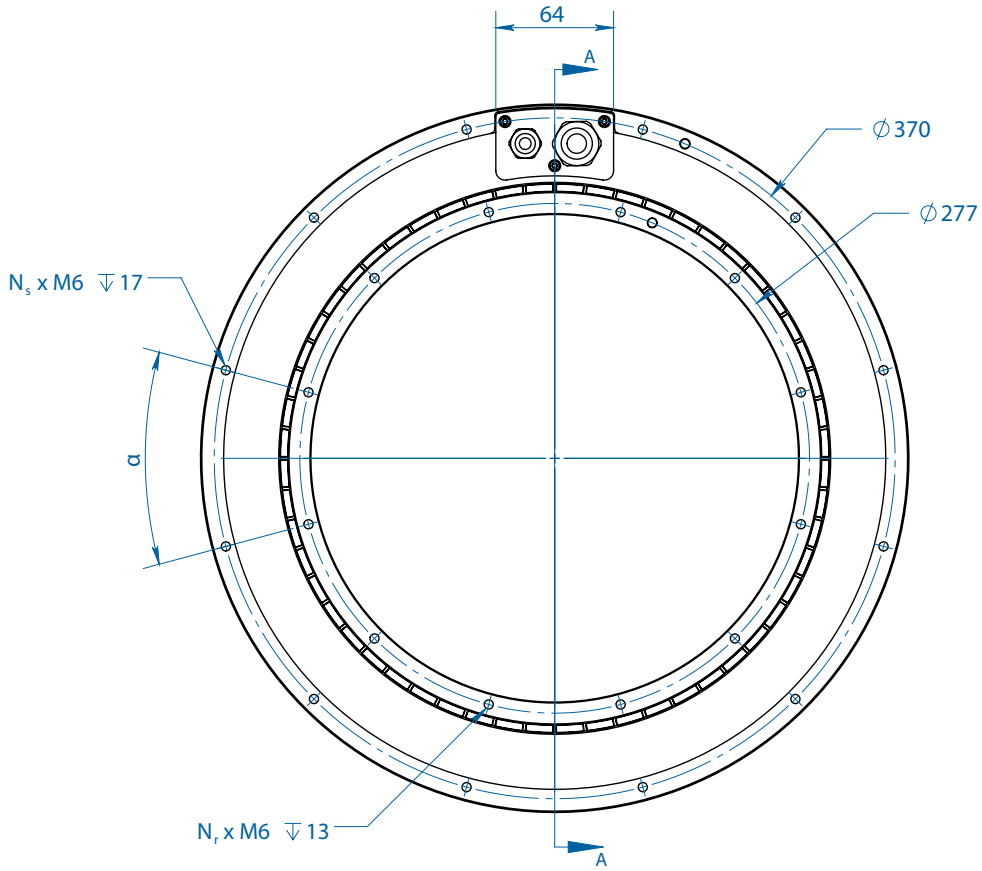
[2] *Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.*

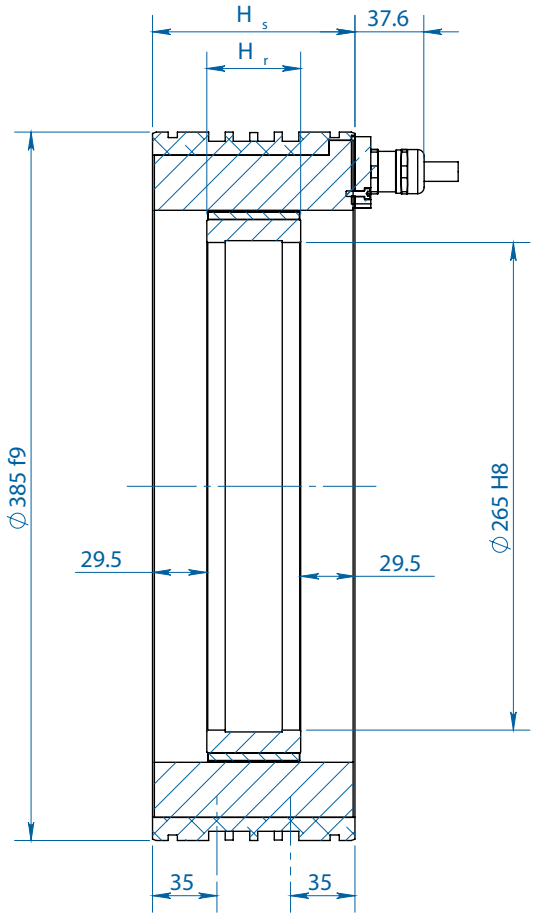
Series approvals

Series partly approved, full approval pending:

Please contact us for the latest status

QMT-LA 385





SECTION A-A

Motor type	H_s	H_r	N_s	N_r	α
QMT-LA-385-90	90	31	12	12	30
QMT-LA-385-110	110	51	12	12	30
QMT-LA-385-130	130	71	12	12	30
QMT-LA-385-160	160	101	23	24	15

** All sizes are in mm*

Torque QMT-LA 485 series

QMT-LA 485 series, with a height of 130 mm

	Parameter	Remarks	Symbol	Unit	QMT-LA 485-90	QMT-LA 485-110	QMT-LA 485-130	QMT-LA 485-160
Performance	Winding type				I	I	I	I
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	V_{dc}	680			
	Ultimate torque @ 10 K/s increase	magnets @ 25°C	T_u	Nm	1094	1792	2514	3585
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	969	1587	2226	3174
	Continuous torque[1]	coils @ 130°C	T_c	Nm	439	774	1131	1666
	Stall torque[1]	coils @ 130°C	T_s	Nm	338	596	871	1283
	Maximum speed[2]	@ U_{max} @ T_c	n_{max}	rpm	168	90	56	30
	Motor torque constant	$I \leq I_c$	K_t	Nm/A_{rms}	34.1	55.9	78.4	111.7
	Motor constant	coils @ 25°C	K_m	$(Nm)^2/W$	135.8	257.9	392.1	597.1
Electrical	Ultimate current	magnets @ 25°C	I_u	A_{rms}	45.8	45.8	45.8	45.8
	Peak current	magnets @ 25°C	I_p	A_{rms}	35.5	35.5	35.5	35.5
	Continuous current[1]	coils @ 130°C	I_c	A_{rms}	12.9	13.9	14.4	14.9
	Stall current[1]	coils @ 130°C	I_s	A_{rms}	9.9	10.7	11.1	11.5
	Back EMF ph-ph$_{peak}$		K_e	V_{dc}/krpm	2916	4777	6700	9554
	Back EMF ph-ph$_{rms}$		K_e	V_{ac}/krpm	2062	3378	4738	6756
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	2.86	4.04	5.22	6.97
	Induction per phase	$I < 0.6\ I_p$	L_{ph}	mH	14.9	24.4	34.3	48.9
	Electrical time constant	coils @ 25°C	τ_e	ms	5.2	6.1	6.6	7.0
Thermal	Continuous power loss[1]	coils @ 130°C	P_c	W	2014	3300	4628	6599
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.055	0.033	0.024	0.017
	Thermal time constant			s	90	77	71	67
	Water cooling flow	for ΔT=8K	Φ_w	l/min	3.6	6.1	8.3	12.0
	Temperature cut-off / sensor				PTC130 (3x) / Pt1000 (3x)			
Mechanical	Stator OD		OD_s	mm	485			
	Rotor ID		ID_r	mm	345			
	Stator height		H_s	mm	90	110	130	160
	Rotor height		H_r	mm	31	51	71	101
	Poles		N_{mgn}		70			
	Rotor inertia		J_r	kgm^2	0.163	0.269	0.375	0.534
	Stator mass	ex. cables	m_s	kg	20.5	27.6	34.7	45.7
	Rotor mass		m_r	kg	4.9	8.1	11.2	16.0
	Total mass	ex. cables	m	kg	25.4	35.7	45.9	61.7
	Cable mass	all cables		kg/m	0.25			
	Cable type (power)	length 2 m	d	mm (AWG)	10.6 (13)			
	Cable type (sensor)	length 2 m	d	mm (AWG)	6.4 (25)			

All specifications ±10%

[1] These values are only applicable when the mounting surface is at 20°C and the motor is driven at continuous current. If these values differ in your application, please check our simulation tool.

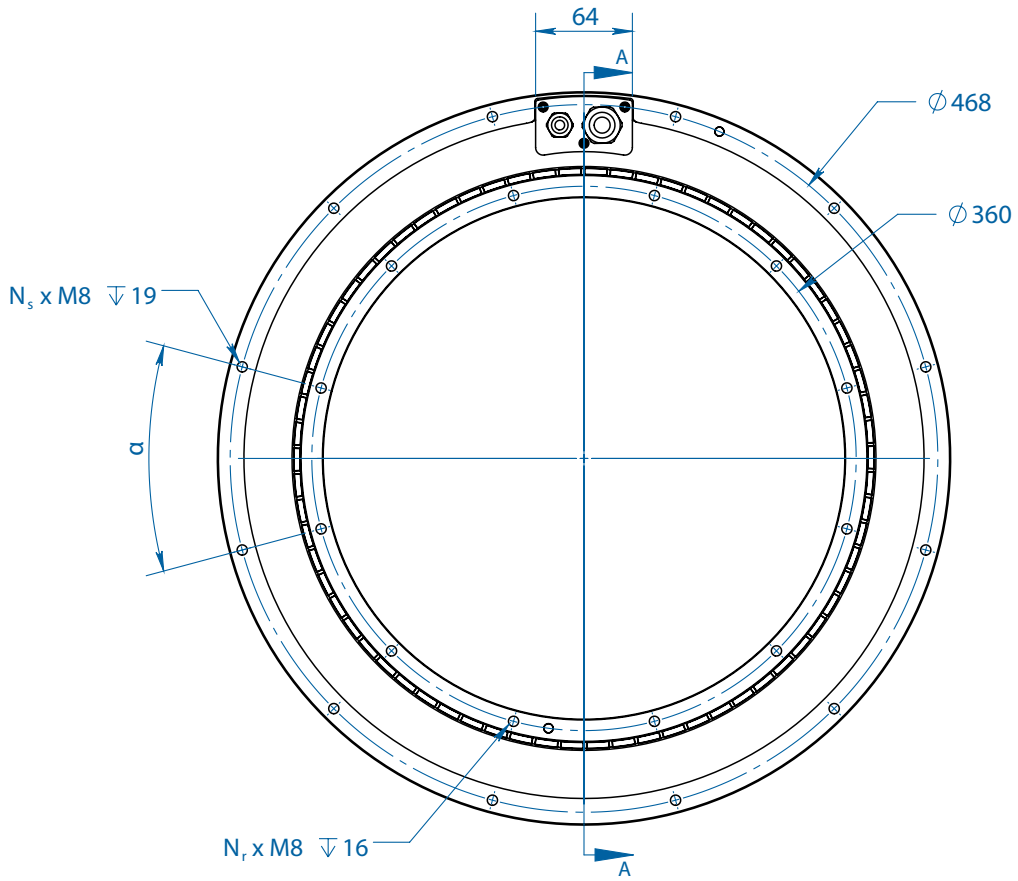
[2] Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.

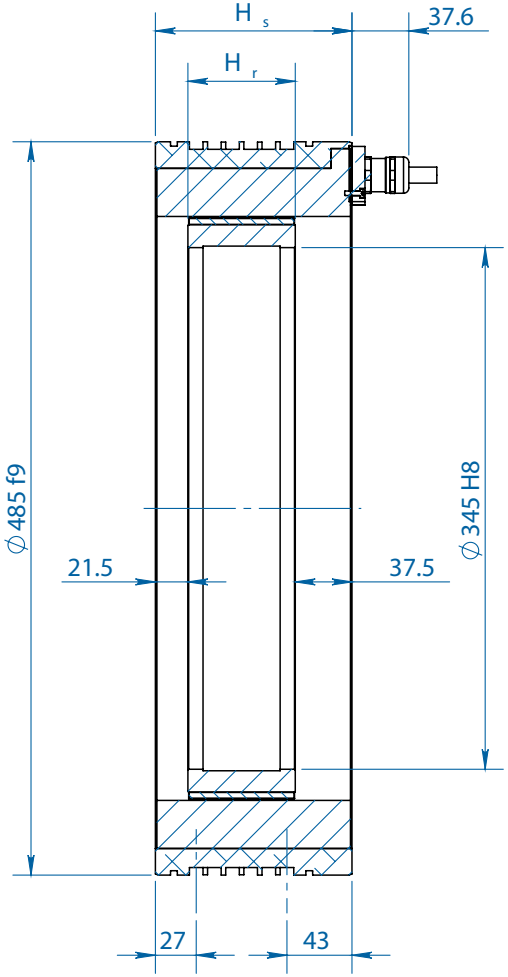
Series approvals

Series partly approved, full approval pending:

Please contact us for the latest status

QMT-LA 485





SECTION A-A

Motor type	H_s	H_r	N_s	N_r	α
QMT-LA-485-90	90	31	12	12	30
QMT-LA-485-110	110	51	12	12	30
QMT-LA-485-130	130	71	12	12	30
QMT-LA-485-160	160	101	23	24	15

** All sizes are in mm*

Torque QMT-HA 385 series with high rotor

QMT-HA 385 series, with a height of 136 mm

	Parameter	Remarks	Symbol	Unit	QMT-HA 385-90	QMT-HA 385-110	QMT-HA 385-130	QMT-HA 385-160
Performance	Winding type				I	I	I	I
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	V_{dc}	680			
	Ultimate torque @ 10 K/s increase	magnets @ 25°C	T_u	Nm	1115	1563	2012	2678
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	987	1384	1781	2371
	Continuous torque[1]	coils @ 130°C	T_c	Nm	481	703	927	1261
	Stall torque[1]	coils @ 130°C	T_s	Nm	371	541	714	971
	Maximum speed[2]	@ U_{max} @ T_c	n_{max}	rpm	154	99	69	42
	Motor torque constant	$I \leq I_c$	K_t	Nm/A_{rms}	34.7	48.7	62.7	83.5
	Motor constant	coils @ 25°C	K_m	$(Nm)^2/W$	124.6	189.6	256.1	356.0
Electrical	Ultimate current	magnets @ 25°C	I_u	A_{rms}	45.8	45.8	45.8	45.8
	Peak current	magnets @ 25°C	I_p	A_{rms}	35.5	35.5	35.5	35.5
	Continuous current[1]	coils @ 130°C	I_c	A_{rms}	13.9	14.4	14.8	15.1
	Stall current[1]	coils @ 130°C	I_s	A_{rms}	10.7	11.1	11.4	11.6
	Back EMF ph-ph$_{peak}$		K_e	V_{dc}/krpm	2971	4167	5363	7137
	Back EMF ph-ph$_{rms}$		K_e	V_{ac}/krpm	2101	2946	3792	5047
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	3.23	4.18	5.12	6.52
	Induction per phase	$I < 0.6\ I_p$	L_{ph}	mH	19.6	27.4	35.3	47.0
	Electrical time constant	coils @ 25°C	τ_e	ms	6.1	6.6	6.9	7.2
Thermal	Continuous power loss[1]	coils @ 130°C	P_c	W	2640	3702	4765	6342
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.042	0.030	0.023	0.017
	Thermal time constant			s	77	71	68	65
	Water cooling flow rate	for ΔT=8K	Φ_w	l/min	4.7	6.6	8.6	11.5
	Temperature cut-off / sensor				PTC130 (3x) / Pt1000 (3x)			
Mechanical	Stator OD		OD_s	mm	385			
	Rotor ID		ID_r	mm	265			
	Stator height		H_s	mm	90	110	130	160
	Rotor height		H_r	mm	51	71	91	121
	Poles		N_{mgn}		56			
	Rotor inertia		J_r	kgm^2	0.107	0.149	0.190	0.253
	Stator mass	ex. cables	m_s	kg	16.7	21.6	26.5	33.8
	Rotor mass		m_r	kg	5.4	7.5	9.6	12.8
	Total mass	ex. cables	m	kg	22.1	29.1	36.1	46.6
	Cable mass	all cables		kg/m	0.25			
	Cable type (power)	length 2 m	d	mm (AWG)	10.6 (13)			
	Cable type (sensor)	length 2 m	d	mm (AWG)	6.4 (25)			

All specifications ±10%

[1] *These values are only applicable when the mounting surface is at 20°C and the motor is driven at continuous current. If these values differ in your application, please check our simulation tool.*

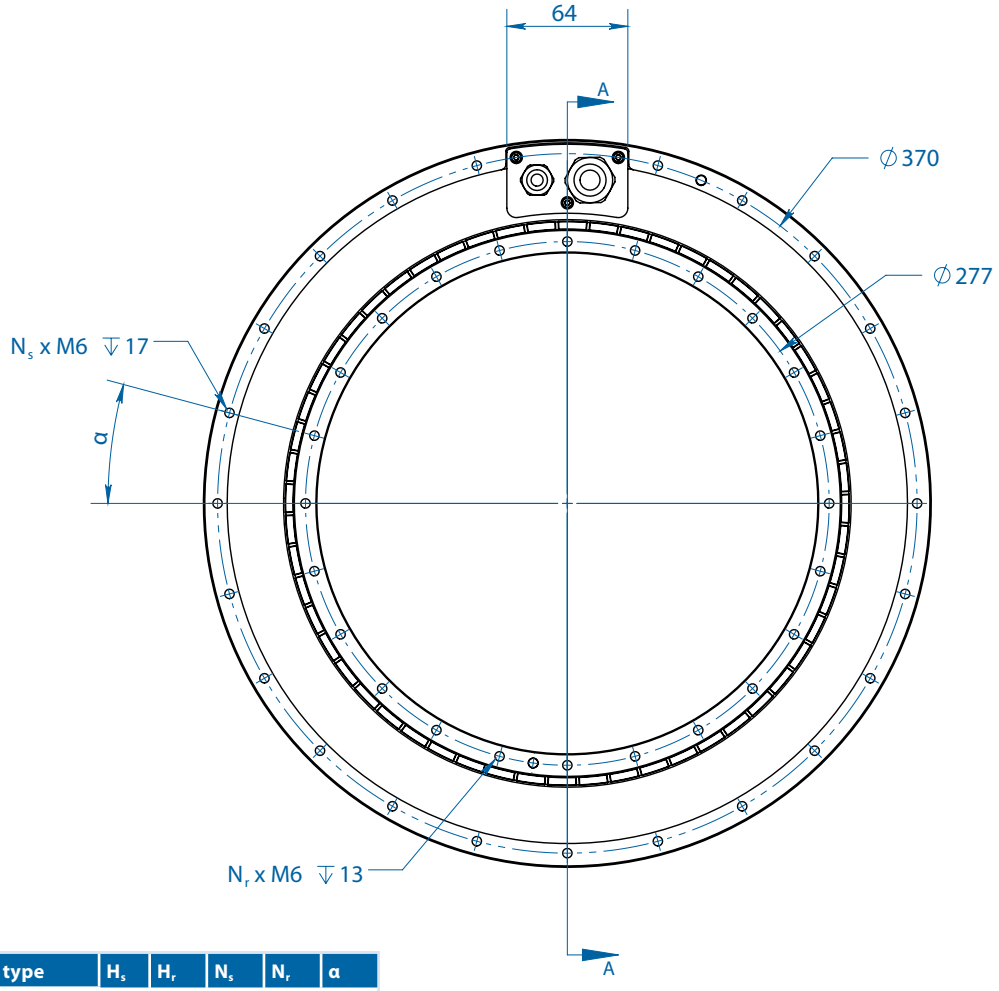
[2] *Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.*

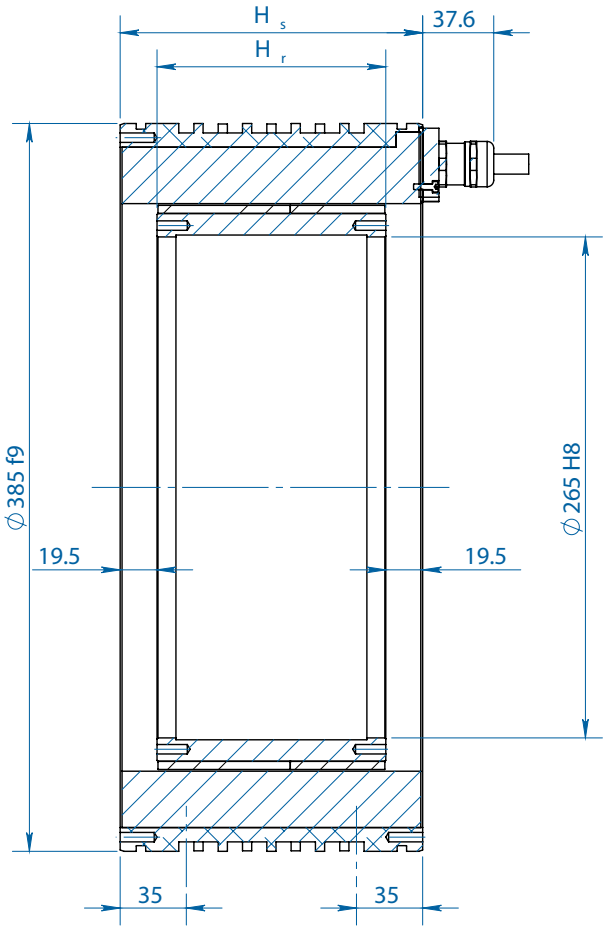
Series approvals

Series partly approved, full approval pending:

Please contact us for the latest status

QMT-HA 385





SECTION A-A

Motor type	H_s	H_r	N_s	N_r	α
QMT-HA-385-90	90	51	12	12	30
QMT-HA-385-110	110	71	12	12	30
QMT-HA-385-130	130	91	12	12	30
QMT-HA-385-160	160	121	23	24	15

** All sizes are in mm*

Torque QMT-HA 485 series with high rotor

QMT-HA 485 series, with a height of 130 mm

	Parameter	Remarks	Symbol	Unit	QMT-HA 485-90	QMT-HA 485-110	QMT-HA 485-130	QMT-HA 485-160
Performance	Winding type				I	I	I	I
	Motor type, max voltage ph-ph	3-phase synchronous	U_{max}	V_{dc}	680			
	Ultimate torque @ 10 K/s increase	magnets @ 25°C	T_u	Nm	1792	2514	3236	4307
	Peak torque @ 6 K/s increase	magnets @ 25°C	T_p	Nm	1587	2226	2864	3812
	Continuous torque[1]	coils @ 130°C	T_c	Nm	774	1131	1491	2028
	Stall torque[1]	coils @ 130°C	T_s	Nm	596	871	1148	1561
	Maximum speed[2]	@ U_{max} @ T_c	n_{max}	rpm	90	56	37	20
	Motor torque constant	$I \leq I_c$	K_t	Nm/A_{rms}	55.9	78.4	100.9	134.2
	Motor constant	coils @ 25°C	K_m	$(Nm)^2/W$	257.9	392.1	529.8	736.5
Electrical	Ultimate current	magnets @ 25°C	I_u	A_{rms}	45.8	45.8	45.8	45.8
	Peak current	magnets @ 25°C	I_p	A_{rms}	35.5	35.5	35.5	35.5
	Continuous current[1]	coils @ 130°C	I_c	A_{rms}	13.9	14.4	14.8	15.1
	Stall current[1]	coils @ 130°C	I_s	A_{rms}	10.7	11.1	11.4	11.6
	Back EMF ph-ph$_{peak}$		K_e	V_{dc}/krpm	4777	6700	8624	11478
	Back EMF ph-ph$_{rms}$		K_e	V_{ac}/krpm	3378	4738	6098	8116
	Resistance per phase	coils @ 25°C ex. cable	R_{ph}	Ω	4.04	5.22	6.40	8.16
	Induction per phase	$I < 0.6\ I_p$	L_{ph}	mH	24.4	34.3	44.1	58.7
	Electrical time constant	coils @ 25°C	τ_e	ms	6.1	6.6	6.9	7.2
Thermal	Continuous power loss[1]	coils @ 130°C	P_c	W	3300	4628	5957	7928
	Thermal resistance	coils to mount. sfc.	R_{th}	K/W	0.033	0.024	0.018	0.014
	Thermal time constant			s	77	71	68	65
	Water cooling flow rate	for ΔT=8K	Φ_w	l/min	6.1	8.3	10.7	14.4
	Temperature cut-off / sensor				PTC130 (3x) / Pt1000 (3x)			
Mechanical	Stator OD		OD_s	mm	485			
	Rotor ID		ID_r	mm	345			
	Stator height		H_s	mm	90	110	130	160
	Rotor height		H_r	mm	51	71	91	121
	Poles		N_{mgn}		70			
	Rotor inertia		J_r	kgm^2	0.269	0.375	0.481	0.639
	Stator mass	ex. cables	m_s	kg	24.5	31.7	38.9	49.7
	Rotor mass		m_r	kg	8.1	11.2	14.4	19.1
	Total mass	ex. cables	m	kg	32.6	42.9	53.3	68.8
	Cable mass	all cables		kg/m	0.25			
	Cable type (power)	length 2 m	d	mm (AWG)	10.6 (13)			
	Cable type (sensor)	length 2 m	d	mm (AWG)	6.4 (25)			

All specifications ±10%

[1] *These values are only applicable when the mounting surface is at 20°C and the motor is driven at continuous current. If these values differ in your application, please check our simulation tool.*

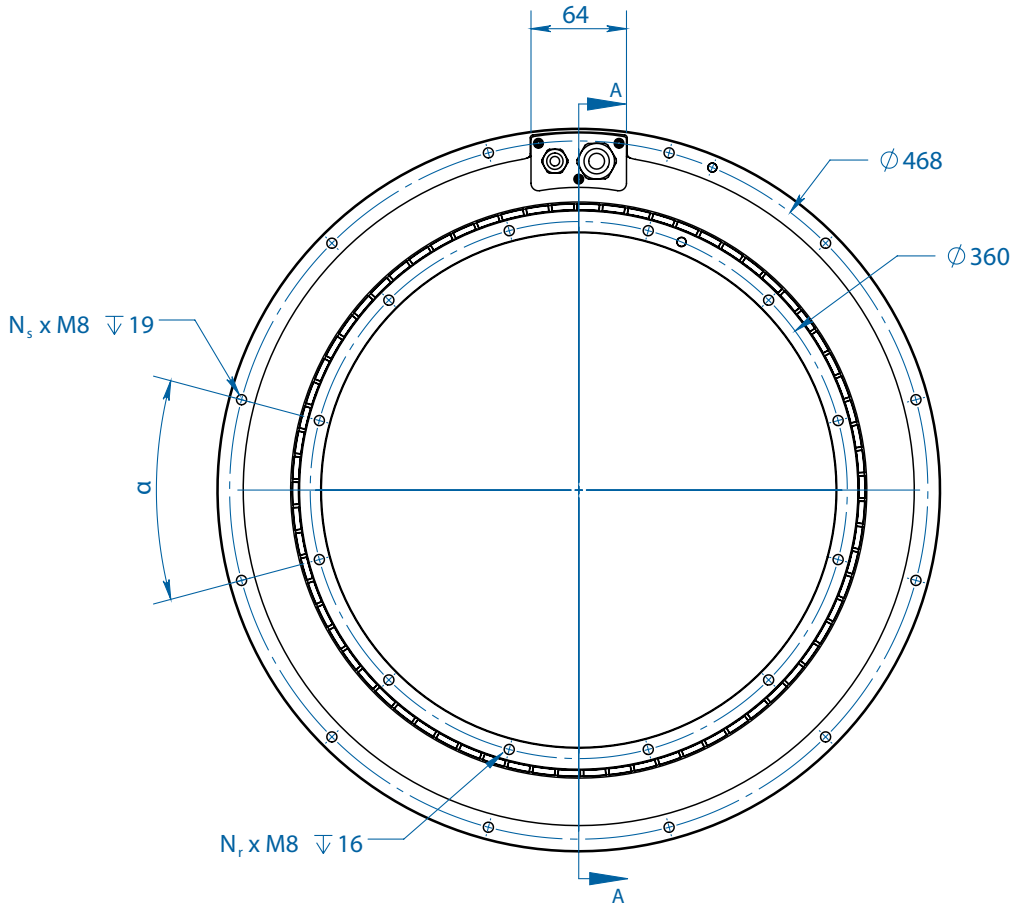
[2] *Actual values depend on bus voltage. Please check the T/n diagram in our manual or online simulation tool.*

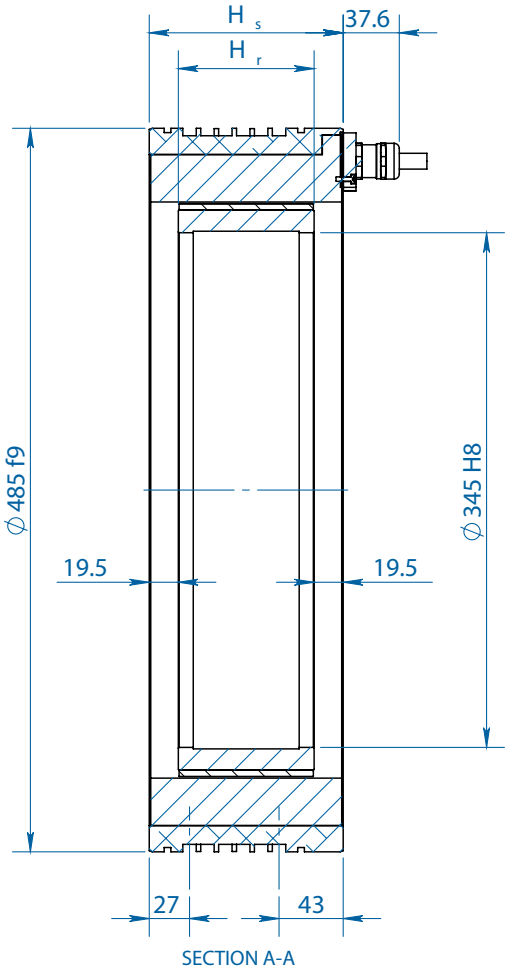
Series approvals

Series partly approved, full approval pending:

Please contact us for the latest status

QMT-HA 485





Motor type	Hs	Hr	Ns	Nr	α
QMT-HA-485-90	90	51	12	12	30
QMT-HA-485-110	110	71	12	12	30
QMT-HA-485-130	130	91	12	12	30
QMT-HA-485-160	160	121	23	24	15

** All sizes are in mm*

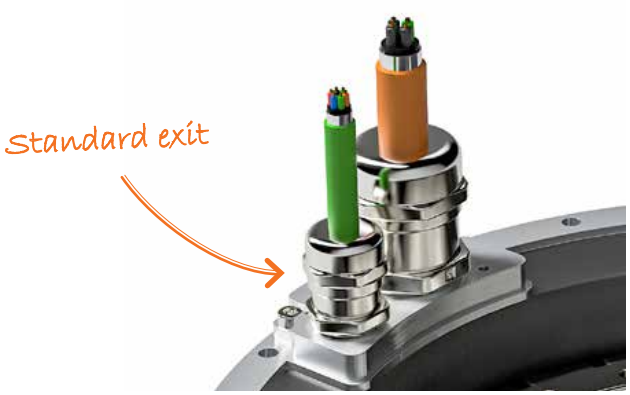
Cable exits

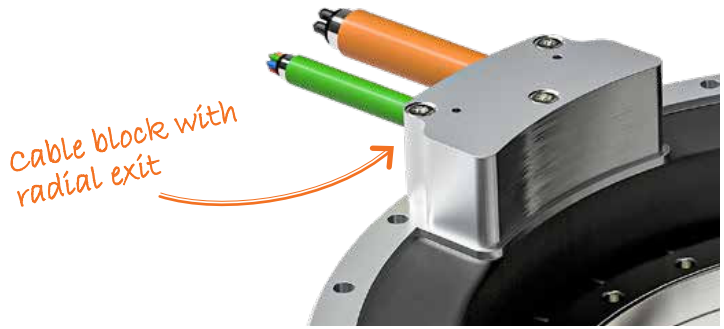
For the QMT-series

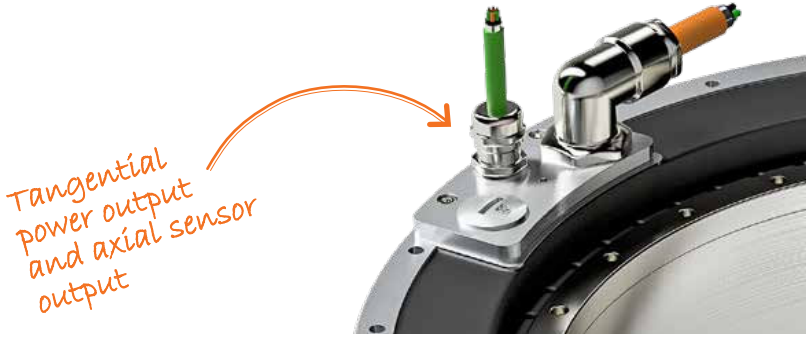
Multiple cable exit options are available for the QMT motors. The standard cable exit is axial.

A radial exit can be made with a cable block. Another predefined option is a tangential power output with an axial sensor output.

Please contact Tecnotion if your application desires a special exit or connector.







What more Machine tooling Torque motors can Tecnotion offer?

QTL motors

Where QMT motors are superior in Stall Torque, the QTL motors are big in Peak Force. This series is suitable for a variety of markets including rotary indexing tables, printing machinery and material handling but also performs in specific machinetool applications where there is a big focus on weight and peak force.

Sizes ranging from 210-485 outer diameter, with 65, 85 and 105mm height.

Lower stator and rotor mass

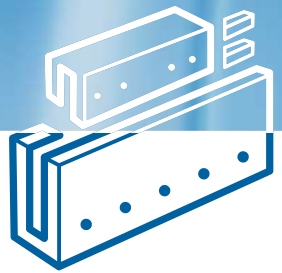
Larger inner diameter

High rotor & ultra thin design

Optimized for peak torque at 100 °C.

www.tecnotion.com/QTL

We direct drive your motion technology



Ironless linear motors

F_p 5.1-4200 N F_c 2.6-846 N

Superior precision with accurate force constant and speed

In contrast to iron core motors, these motors feature an ironless coil unit, therefore no attraction force or cogging between the coil unit and the magnet track. This gives ironless motors their light weight, superior precision, a linear force constant, and extremely dynamic velocity, acceleration, and deceleration.

Perfect for many industries, such as semiconductor, display, inspection, medical, automation, and optics.

www.tecnotion.com/ironless

Custom motors

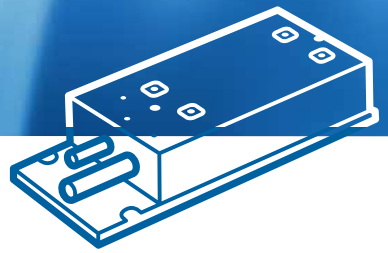
Motor solutions

Adapt standard motor series to meet your needs

In case the standard motor series are not sufficient for your application, it is also possible to have these motors customized in a variety of ways. Customization can range from simple modifications, like adding a connector, to fully tailor-made motors designed from scratch.

Some examples: custom windings, cable confection, additional sensors, additional certifications and customization for vacuum applications. For more information please contact Tecnotion.

www.tecnotion.com/custom



Iron core linear motors

F_u 120-6750 N F_c 60-3000 N

Extremely high force in a modular compact design

Designed and constructed with an iron core, these series offer an high continuous force for their size, starting at 60 N for the small TM, up to 3000 N for the water cooled TBW. Peak forces are even higher, reaching up to 6000 N.

A small footprint, modular design, and high force density enable very flexible application designs, using iron core linear motors. Suitable for many applications such as printing, digital cutting, and machine tooling.

www.tecnotion.com/ironcore

QTR & QTL torque motors

T_u 0.64-2202 Nm T_c 0.29-907 Nm

Increased accuracy and dynamic performance of your application

Tecnotion torque motor series features superior torque density, low thermal resistance, low cogging and housed design. Motors can be very slim in height but large in diameter (for large axles and turntables) or have a 'height' close to their diameter, resulting in a compact but high-torque motor.

The torque series consists of different outer diameters ranging from 65mm to 485mm for the largest motor and various building heights ranging from 17mm up to 105mm.

www.tecnotion.com/torque

TECNOTION® direct drive in motion

Motor simulation tool

Analyze your application

Size your application with the motor selection and simulation tool

Online motor simulation software helps you find the best motor for the application and generate reports within seconds, without having to make time consuming calculations by hand.

The motor sizing simulation tool helps to select the right torque or linear motor, using your application characteristics. The tool will provide you with diagrams for position, velocity, acceleration, jerk, torque, power, voltage, current, temperature and torque vs. velocity.

www.tecnotion.com/simtool

Article numbers

Series	Article	Article code
QMT	QMT-LA-230-70-I	121214
QMT	QMT-LA-230-90-I	121102
QMT	QMT-LA-230-110-I	121215
QMT	QMT-LA-230-140-I	121216
QMT	QMT-LA-310-70-I	121217
QMT	QMT-LA-310-90-I	121218
QMT	QMT-LA-310-110-I	121219
QMT	QMT-LA-310-140-I	121220
QMT	QMT-LA-385-90-I	121221
QMT	QMT-LA-385-110-I	121222
QMT	QMT-LA-385-130-I	121224
QMT	QMT-LA-385-160-I	121225

Series	Article	Article code
QMT	QMT-HA-385-90-I	121226
QMT	QMT-HA-385-110-I	121227
QMT	QMT-HA-385-130-I	121228
QMT	QMT-HA-385-160-I	121229
QMT	QMT-LA-485-90-I	121230
QMT	QMT-LA-485-110-I	121231
QMT	QMT-LA-485-130-I	121232
QMT	QMT-LA-485-160-I	121233
QMT	QMT-HA-485-90-I	121234
QMT	QMT-HA-485-110-I	121235
QMT	QMT-HA-485-130-I	121236
QMT	QMT-HA-485-160-I	121237

TECNOTION
direct drive in motion

Tecnotion Headquarters
Newton 10
7609 RR Almelo
The Netherlands

Tel. +31 (0)546 536 300
Fax +31 (0)546 536 380
sales@tecnotion.com

Tecnotion West Europe
Newton 10
7609 RR Almelo
The Netherlands
P.O. Box 23, 7600 AA Almelo
The Netherlands

Tel. +31 (0)546 536 300
sales@tecnotion.com

Tecnotion D-A-CH
Elsenheimerstraße 59
80687 Munich
Germany

Tel. +49 89 381537-400
Fax +49 89 381537-409
info@tecnotion.de

Tecnotion East Europe
Ul. Ryżowa 49
02-495 Warsaw
Poland

Tel. +48 606 544 046
info@tecnotion.pl

Tecnotion Rep. of Korea
Room #909,
DongJin IT Tower,
30, Sangwon 12-gil
Seongdong-gu
Seoul South Korea

Tel. +82 (0)10 4540 5599
korea@tecnotion.com

Tecnotion USA
200 Broadhollow Rd -
Suite 207
Melville, NY, 11747
United States

Tel. +01 (631) 983-2833
salesusa@tecnotion.com

Tecnotion China
Building 15
369 Lushan Road
SND NEP, Suzhou
China

Tel. +86-512-68760183
sales@tecnotion.com.cn

www.tecnotion.com/QMT

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