SCHAEFFLER

Torque Motors
RIB Series

Contents

Benefits of rotary direct drives

Performance

No distortion of the motion profile

There is no elasticity, no play, no friction and no hysteresis in the drive train resulting from transmission or coupling elements.

Multi-pole motor

High torques are produced as a result of the multi-pole design. These torques are available from just above stall up to the continuous rated speed.

Thin, ring-shaped rotor

The motor has low inertia based on the thin, ring-shaped design with a large, free inner diameter, which yields high acceleration rates.

Direct position measurement

Direct position measurement and the rigid mechanical structure enable highly precise, dynamic positioning operations.

Controller compatibility

Schaeffler Industrial Drives torque motors are compatible with all standard controllers.

Operating costs

No additional moving parts

This reduces the effort of installing, adjusting and maintaining the drive assembly.

Minimal wear in the drive train

The drive train has a very long service life, even if subjected to extreme alternating loads, reducing machine downtime.

High availability

In addition to the longer service life and reduced wear, the robustness of the torque motors increases the availability of the overall machine.

Energy efficiency

Heat is reduced to a minimum, thus saving energy in the frequency converter and heat exchanger.

Design

Hollow shaft

The hollow shaft with a large inner diameter makes integration or lead-through of other assemblies possible (shafts, rotary distributors, supply lines, etc.). Bearing level, generation of force and effective working area can be located very close to one another.

Installation of primary part

The ring for the primary part can be easily integrated in the machine design due to the small space requirement (thin ring).

Small height

A very compact and low profile design with a high torque is achieved in combination with the large, free inner diameter (hollow shaft).

Few parts

The optimally engineered design makes it easier to integrate the active motor components into the final machine assembly. There are only a few, very durable parts, which minimizes the failure rate (= high MTBF*).

*MTBF: Mean time between failures

Features, benefits, applications

Features

RIB torque motors are slotted, permanent magnet excited AC synchronous direct drive motors with an internal rotor. The primary part is a fully cast stator with external liquid cooling. The secondary part comprises an interference ring with a large internal diameter and permanent magnets attached on the outside.

This motor series is optimised for maximum efficiency, which means: maximum torque in the available installation space at continuous speed and low power losses. The usable torque is available over a very large range. RIB motors are designed for high circumferential speeds in the air gap. The low torque fluctuations allow the motors to be used for precision applications.

RIB torque motors are offered:

- with stator heights in increments of 25 mm
- with various standard windings for different speeds
- in standard sizes

Standard: axial cable outlet

Option: tangential cable outlet

Option: radial cable outlet

Benefits

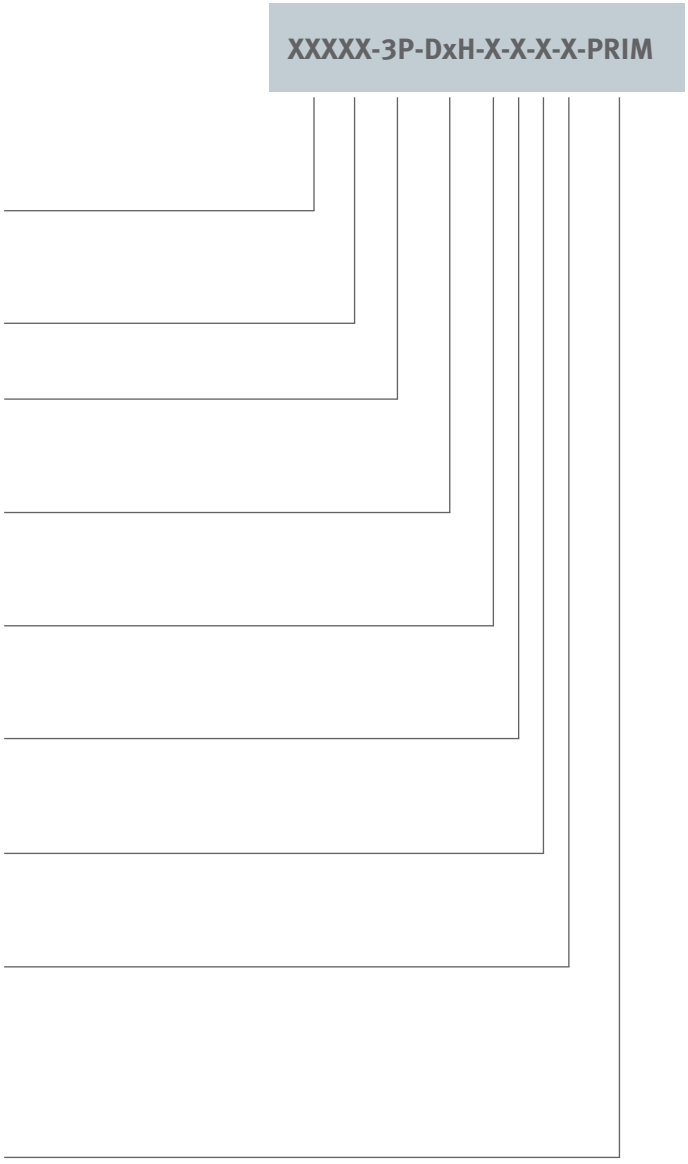
- Optimised for low power loss
- High dynamic response and system rigidity
- Compact design
- Maintenance-free
- Good synchronisation characteristics
- Reduced energy consumption with customised winding designs
- Cost savings through downsizing
- Higher machine accuracy due to reduced heat from the motor

Applications

- Machine tools (direct drive, CNC axis)
- NC rotary tables (direct drive)
- Indexing tables (cycle)
- Radial precision tracking units
- Automation technology
- Printing and packaging machines
- Servo presses

Type designation

RIB series, primary part



Short designation, motor

RIB RIB series, internal running motor

Model code

Number of motor phases

3P 3-phase

Motor size

Effective air gap diameter x active height [mm]

Winding type

XX Application-specific

Temperature monitoring

P PTC and Pt1000

Commutation type

O Without sensors, measuring system commutated

Model variant

M Standard built-in component

K With cooling in the ring (additional ring provided by Schaeffler Industrial Drives)

Motor part

PRIM Primary part

Type designation

RIB series, secondary part

XXXX-3P-DxH-X-SEK

Short designation, motor
RI Internal running motor

Model code

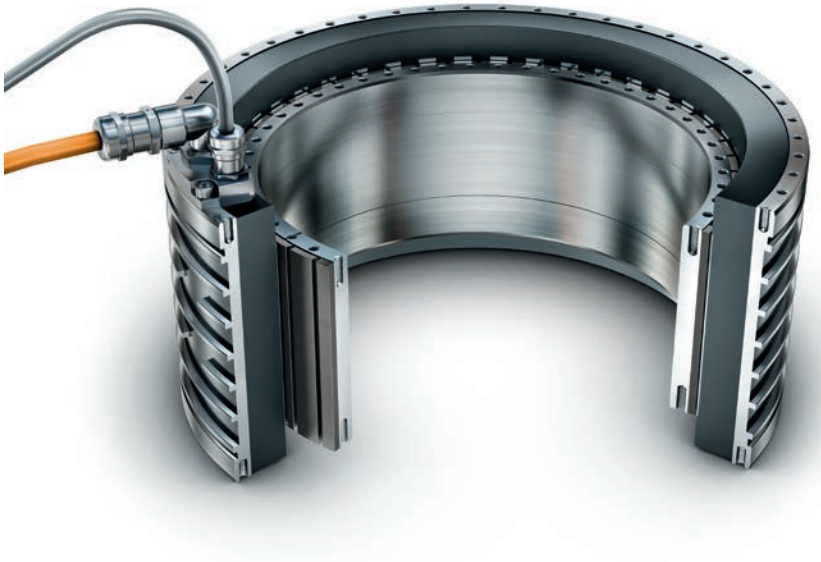
Number of motor phases
3P 3-phase

Motor size
Effective air gap diameter x active height [mm]

Model variant
M Standard built-in component

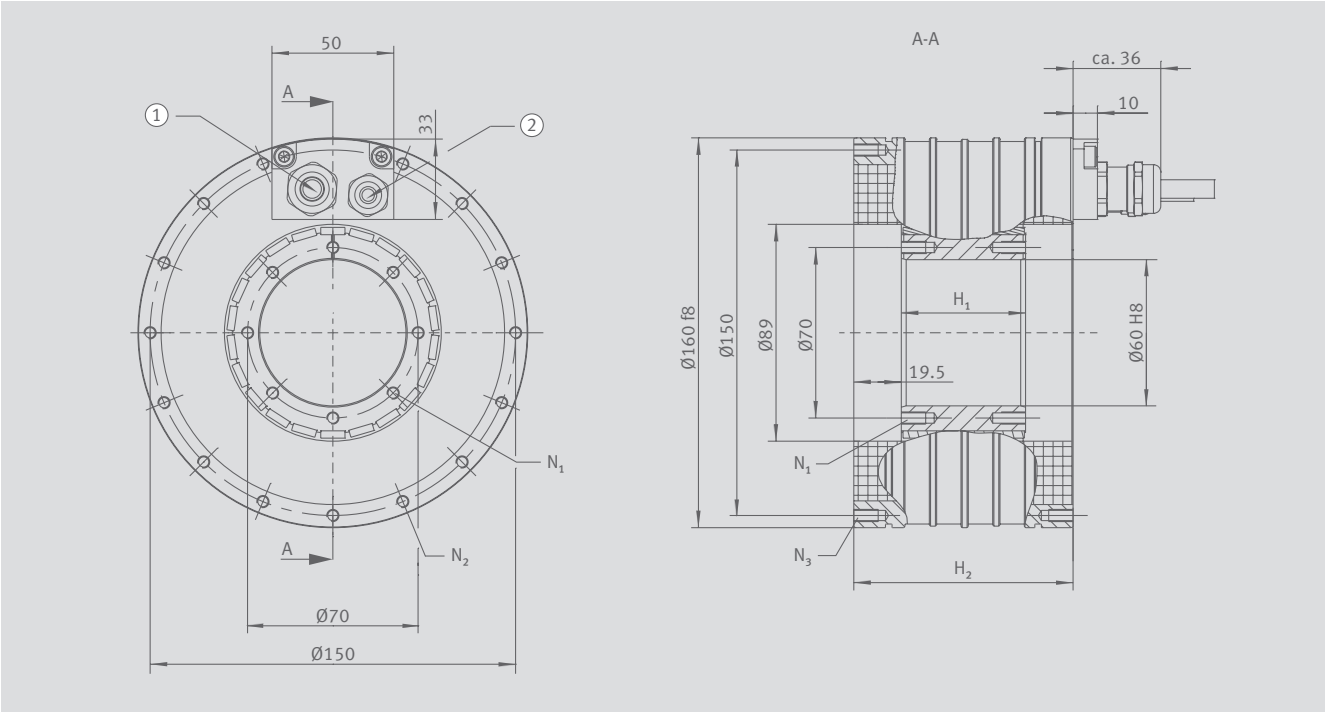
Motor part
SEK Secondary part

Cutaway model of an RIB torque motor



RIB11-3P-89xH

Drawing and mechanical parameters



Drawing RIB11-3P-89xH

① Motor cable ② Sensor cable

Motor size			**89x25**	**89x50**	**89x75**	**89x100**	**89x125**	**89x150**
Fastening thread of rotor	N_1		M5x10, 8x (45°)			M5x10, 16x (22.5°)		
Fastening thread of stator (cable side)	N_2		M5x10, 15x (22.5°)			M5x10, 15x (22.5°)		
Fastening thread of stator	N_3		M5x10, 16x (22.5°)			M5x10, 16x (22.5°)		
Height of rotor	H_1	mm	26.0	51.0	76.0	101.0	126.0	151.0
Height of stator	H_2	mm	70.0	90.0	110.0	140.0	165.0	190.0
Rotor mass	m_1	kg	0.5	1.1	1.6	2.2	2.7	3.2
Stator mass	m_2	kg	5.1	7.2	9.3	11.8	14.1	16.3
Moment of inertia of rotor	J	kgm^2	0.00075	0.0015	0.00225	0.0030	0.00375	0.0045
Axial attraction	F_a	kN	0.1	0.1	0.1	0.1	0.1	0.1
Radial attraction	F_r	kN/mm	0.5	1.0	1.5	2.0	2.4	2.9
Number of pole pairs	P		11	11	11	11	11	11

Subject to modifications without prior notification, where they serve technical progress. Tolerance range for values: ±10%
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-89xH

Performance data

Motor size			**89x25**	**89x25**	**89x50**	**89x50**	**89x75**	**89x75**
Winding variant			**Z0.9**	**Z1.7**	**Z0.9**	**Z1.7**	**Z0.9**	**Z1.7**
Ultimate torque (1 s) at I_u	T_u	Nm	33	33	72	72	110	110
Peak torque (saturation range) at I_p	T_p	Nm	30	30	67	67	102	102
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	19	19	42	42	62	62
Continuous torque, not cooled at I_c	T_c	Nm	7	7	15	15	23	23
Stall torque, cooled at I_{sw}	T_{sw}	Nm	14.4	14.4	31.6	31.6	46.4	46.4
Cogging torque at I = 0	T_{cog}	Nm	0.10	0.10	0.21	0.21	0.32	0.32
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	1668	3419	790	1647	512	1091
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	682	682	682	682	512	682
Ultimate current (1 s)	I_u	A_{rms}	21.1	42.2	21.1	42.2	21.1	42.2
Peak current (saturation range)	I_p	A_{rms}	16.9	33.8	16.9	33.8	16.9	33.8
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	7.7	15.4	8.4	16.9	8.3	16.5
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	2.5	5.1	2.9	5.8	3.0	5.9
Stall current, cooled	I_{sw}	A_{rms}	5.6	11.1	6.1	12.1	5.9	11.9
Power loss at T_p (25°C)	P_{lp}	W	1971	1971	2957	2957	4337	4337
Power loss at T_{cw}	P_{lw}	W	556	556	995	995	1401	1401
Power loss at T_c (25°C)	P_{lc}	W	44	44	89	89	133	133
Motor constant (25°C)	k_m	Nm/√W	0.99	0.99	1.61	1.61	2.00	2.00
Torque constant	k_T	Nm/A_{rms}	2.6	1.3	5.2	2.6	7.8	3.9
Back EMF constant, phase to phase	k_u	V/(rad/s)	2.1	1.1	4.2	2.1	6.4	3.2
Electrical resistance, phase to phase	R_{25}	Ω	4.6	1.2	6.9	1.7	10.1	2.5
Inductance, phase to phase	L	mH	25.0	6.3	47.5	11.9	71.3	17.8
Cooling water flow	dV/dt	l/min	1.6	1.6	2.9	2.9	4.0	4.0
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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RIB11-3P-89xH

Performance data

Size			89x100	89x100	89x125	89x125	89x150	89x150
Winding variant			**Z1.4**	**Z2.7**	**Z1.4**	**Z2.7**	**Z1.4**	**Z2.7**
Ultimate torque (1 s) at I_u	T_u	Nm	147	147	184	184	221	221
Peak torque (saturation range) at I_p	T_p	Nm	134	134	167	167	200	200
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	79	79	100	100	121	121
Continuous torque, not cooled at I_c	T_c	Nm	31	31	40	40	49	49
Stall torque, cooled at I_{sw}	T_{sw}	Nm	59.8	59.8	75.6	75.6	91.3	91.3
Cogging torque at I = 0	T_{cog}	Nm	0.43	0.43	0.53	0.53	0.64	0.64
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	682	1430	532	1127	434	928
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	682	682	532	682	434	682
Ultimate current (1 s)	I_u	A_{rms}	35.5	70.9	35.5	70.9	35.5	70.9
Peak current (saturation range)	I_p	A_{rms}	28.4	56.7	28.4	56.7	28.4	56.7
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	13.4	26.8	13.5	27.1	13.6	27.3
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	5.0	10.0	5.1	10.3	5.3	10.5
Stall current, cooled	I_{sw}	A_{rms}	9.6	19.3	9.8	19.5	9.8	19.7
Power loss at T_p (25°C)	P_{lp}	W	5723	5723	6783	6783	7737	7737
Power loss at T_{cw}	P_{lw}	W	1725	1725	2090	2090	2419	2419
Power loss at T_c (25°C)	P_{lc}	W	177	177	221	221	266	266
Motor constant (25°C)	k_m	Nm/√W	2.32	2.32	2.67	2.67	3.00	3.00
Torque constant	k_T	Nm/A_{rms}	6.2	3.1	7.7	3.9	9.3	4.6
Back EMF constant, phase to phase	k_u	V/(rad/s)	5.1	2.5	6.3	3.2	7.6	3.8
Electrical resistance, phase to phase	R_{25}	Ω	4.7	1.2	5.6	1.4	6.4	1.6
Inductance, phase to phase	L	mH	33.7	8.4	42.1	10.5	50.5	12.6
Cooling water flow	dV/dt	l/min	4.9	4.9	6.0	6.0	6.9	6.9
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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We recommend a detailed application review by our engineering team for suitable motor selection.

More performance and precision thanks to a modular system for rotary tables and swivel-type axes

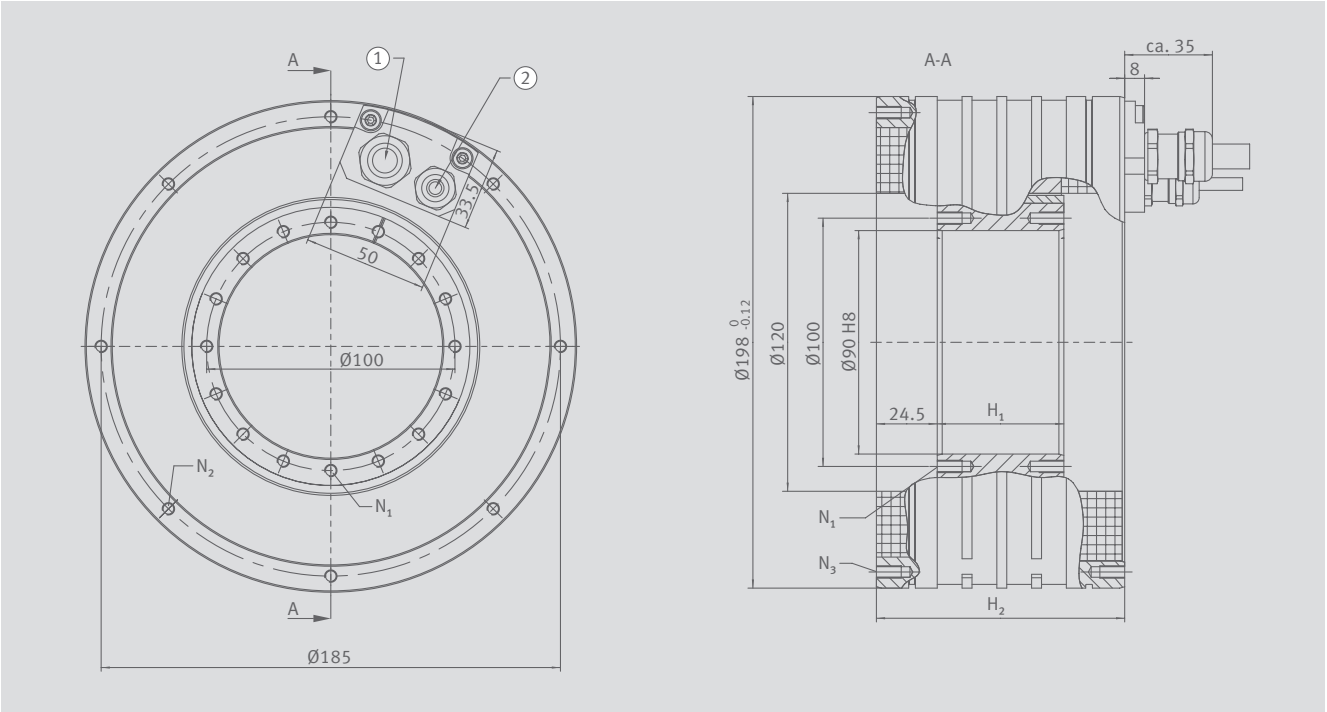
In directly driven rotary tables and swivel-type axes, the torque motor, the rotary table bearing and the angular measuring system constitute a complex system with a large number of interactions regarding heat flow, cogging, speed and acceleration capability, rigidity, frictional torque and positioning accuracy. It is therefore highly beneficial if all three components are provided by a single source and are perfectly matched to each other in one modular system.

Schaeffler Industrial Drives offers torque motor series for an extremely wide range of applications, while Schaeffler offers bearing series and an angular measuring system integrated into the bearing.

Modular system for rotary tables (OBR)

RIB11-3P-120xH

Drawing and mechanical parameters



Drawing RIB11-3P-120xH

① Motor cable ② Sensor cable

Motor size			**120x25**	**120x50**	**120x75**	**120x100**	**120x125**	**120x150**
Fastening thread of rotor	N_1		M5x10, 16x (22.5°)			M6x10, 16x (22.5°)		
Fastening thread of stator (cable side)	N_2		M5x10, 8x (45°)			M5x10, 15x (22.5°)		
Fastening thread of stator	N_3		M5x10, 8x (45°)			M5x10, 16x (22.5°)		
Height of rotor	H_1	mm	26.0	51.0	76.0	101.0	126.0	151.0
Height of stator	H_2	mm	80.0	100.0	120.0	150.0	175.0	200.0
Rotor mass	m_1	kg	0.9	1.7	2.6	3.4	4.3	5.1
Stator mass	m_2	kg	7.9	10.8	13.7	17.2	20.4	23.6
Moment of inertia of rotor	J	kgm^2	0.0046	0.0092	0.0138	0.0184	0.0230	0.0276
Axial attraction	F_a	kN	0.16	0.16	0.16	0.16	0.16	0.16
Radial attraction	F_r	kN/mm	0.5	0.9	1.4	1.8	2.2	2.7
Number of pole pairs	P		11	11	11	11	11	11

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We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-120xH

Performance data

Motor size			**120x25**	**120x25**	**120x50**	**120x75**	**120x75**
Winding variant			**Z0.7**	**Z1.5**	**Z1.5**	**Z1.4**	**Z2.9**
Ultimate torque (1 s) at I_u	T_u	Nm	68	68	157	236	236
Peak torque (saturation range) at I_p	T_p	Nm	62	62	139	208	208
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	32	32	77	126	126
Continuous torque, not cooled at I_c	T_c	Nm	10	10	26	45	45
Stall torque, cooled at I_{sw}	T_{sw}	Nm	25	25	59	97	97
Cogging torque at I = 0	T_{cog}	Nm	0.2	0.2	0.4	0.6	0.6
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	886	1843	849	479	1005
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	682	682	682	479	682
Ultimate current (1 s)	I_u	A_{rms}	18.0	36.1	36.1	32.2	64.5
Peak current (saturation range)	I_p	A_{rms}	14.4	28.8	28.8	25.8	51.6
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	6.4	12.7	14.1	13.7	27.5
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	1.9	3.7	4.7	4.8	9.6
Stall current, cooled	I_{sw}	A_{rms}	4.8	9.6	10.6	10.3	20.6
Power loss at T_p (25°C)	P_{lp}	W	2472	2472	3794	4425	4425
Power loss at T_{cw}	P_{lw}	W	651	651	1222	1697	1697
Power loss at T_c (25°C)	P_{lc}	W	41	41	102	153	153
Motor constant (25°C)	k_m	Nm/√W	1.51	1.51	2.62	3.63	3.63
Torque constant	k_T	Nm/A_{rms}	5.2	2.6	5.6	9.4	4.7
Back EMF constant, phase to phase	k_u	V/(rad/s)	4.2	2.1	4.6	7.7	3.8
Electrical resistance, phase to phase	R_{25}	Ω	7.92	1.98	3.04	4.44	1.11
Inductance, phase to phase	L	mH	51.37	12.84	23.51	42.81	10.70
Cooling water flow	dV/dt	l/min	1.9	1.9	3.5	4.9	4.9
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600

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RIB11-3P-120xH

Performance data

Motor size			**120x100**	**120x100**	**120x125**	**120x125**	**120x150**	**120x150**
Winding variant			**Z1.4**	**Z2.9**	**Z1.4**	**Z2.9**	**Z1.5**	**Z2.9**
Ultimate torque (1 s) at I_u	T_u	Nm	314	314	393	393	471	471
Peak torque (saturation range) at I_p	T_p	Nm	277	277	346	346	416	416
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	171	171	219	219	250	264
Continuous torque, not cooled at I_c	T_c	Nm	62	62	80	80	92	98
Stall torque, cooled at I_{sw}	T_{sw}	Nm	131	131	167	167	191	202
Cogging torque at I = 0	T_{cog}	Nm	0.8	0.8	1.0	1.0	1.3	1.3
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	356	758	276	598	260	495
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	356	682	276	598	260	495
Ultimate current (1 s)	I_u	A_{rms}	32.2	64.5	32.2	64.5	36.1	64.5
Peak current (saturation range)	I_p	A_{rms}	25.8	51.6	25.8	51.6	28.8	51.6
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	13.9	27.9	14.3	28.6	15.2	28.8
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	5.0	10.0	5.1	10.2	5.5	10.4
Stall current, cooled	I_{sw}	A_{rms}	10.5	20.9	10.7	21.4	11.4	21.6
Power loss at T_p (25°C)	P_{lp}	W	5454	5454	6483	6483	8393	7512
Power loss at T_{cw}	P_{lw}	W	2153	2153	2688	2688	3158	3158
Power loss at T_c (25°C)	P_{lc}	W	205	205	256	256	307	307
Motor constant (25°C)	k_m	Nm/√W	4.36	4.36	5.00	5.00	5.28	5.58
Torque constant	k_T	Nm/A_{rms}	12.5	6.2	15.6	7.8	16.8	9.4
Back EMF constant, phase to phase	k_u	V/(rad/s)	10.2	5.1	12.8	6.4	13.7	7.7
Electrical resistance, phase to phase	R_{25}	Ω	5.47	1.37	6.50	1.62	6.72	1.88
Inductance, phase to phase	L	mH	54.13	13.53	66.20	16.55	62.07	19.42
Cooling water flow	dV/dt	l/min	6.2	6.2	7.7	7.7	9.0	9.0
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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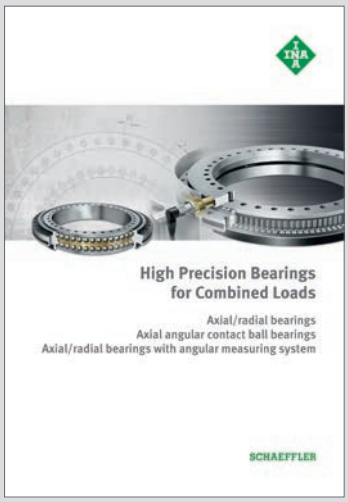
The ideal bearing for every application

The rotary table bearings from Schaeffler enable rotary table designs for every field of application. The focus is always on maximising customer benefits in terms of productivity and component quality. With maximum rigidity and the lowest possible frictional torques, they are also ideal for use with direct drives.

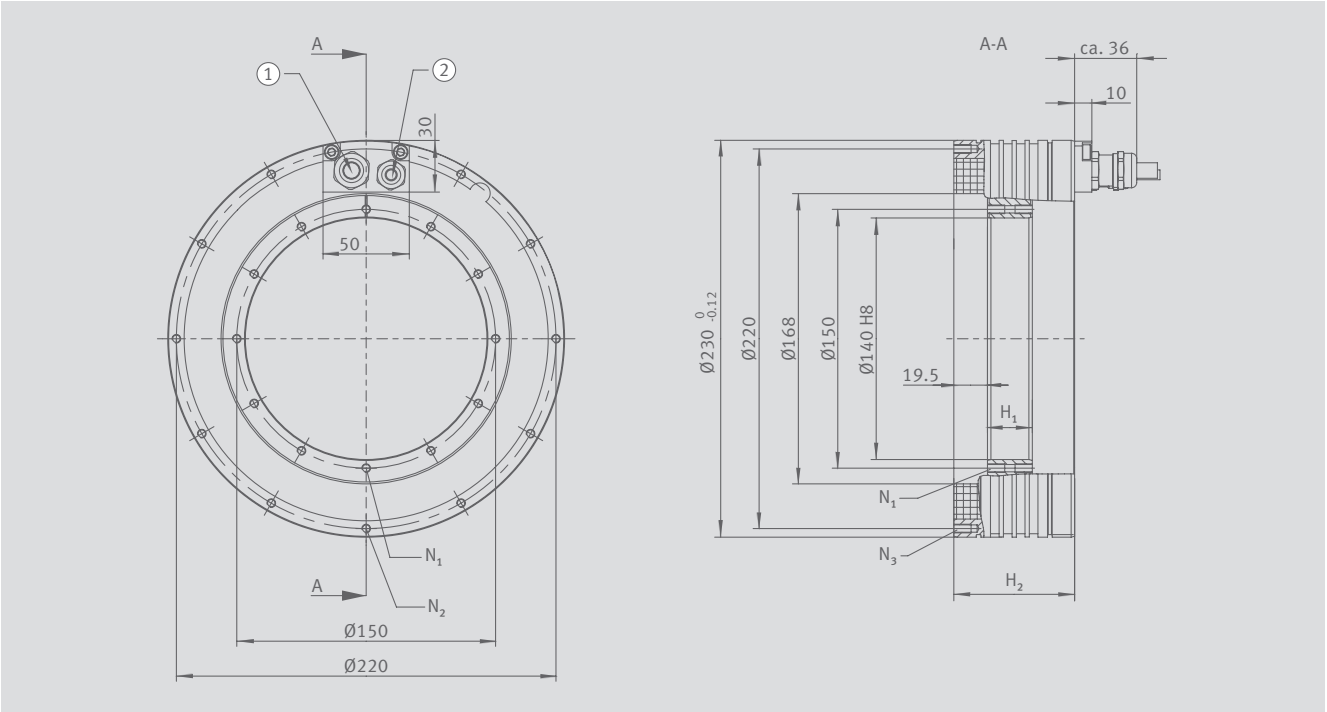
Rotary table bearings YRTC-XL, YRTS & ZKLDF (ORY)



High precision bearings for combined loads (TPI 120)

RIB17-3P-168xH

Drawing and mechanical parameters



Drawing RIB17-3P-168xH

① Motor cable ② Sensor cable

Motor size			**168x25**	**168x50**	**168x75**	**168x100**	**168x125**	**168x150**	**168x175**
Fastening thread of rotor	N_1		M5x10, 12x (30°)		M5x10, 24x (15°)			M6x10, 24x (15°)	
Fastening thread of stator (cable side)	N_2		M5x10, 11x (30°)		M5x10, 21x (15°)			M5x10, 21x (15°)	
Fastening thread of stator	N_3		M5x10, 12x (30°)		M5x10, 24x (15°)			M5x10, 24x (15°)	
Height of rotor	H_1	mm	26.0	51.0	76.0	101.0	126.0	151.0	176.0
Height of stator	H_2	mm	70.0	90.0	115.0	140.0	165.0	190.0	215.0
Rotor mass	m_1	kg	1.2	2.4	3.6	4.8	6.0	7.2	8.4
Stator mass	m_2	kg	7.2	10.1	13.3	16.5	19.8	23.0	26.2
Moment of inertia of rotor	J	kgm^2	0.0071	0.0141	0.0211	0.0282	0.0353	0.0424	0.0494
Axial attraction	F_a	kN	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Radial attraction	F_r	kN/mm	1.0	2.0	3.0	3.9	4.9	5.9	6.8
Number of pole pairs	P		17	17	17	17	17	17	17

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We recommend a detailed application review by our engineering team for suitable motor selection.

RIB17-3P-168xH

Performance data

Motor size			**168x25**	**168x25**	**168x50**	**168x50**	**168x75**	**168x75**
Winding variant			**Z0.7**	**Z1.4**	**Z0.7**	**Z1.4**	**Z1.8**	**Z3.4**
Ultimate torque (1 s) at I_u	T_u	Nm	130	130	272	272	408	408
Peak torque (saturation range) at I_p	T_p	Nm	112	112	233	233	350	350
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	58	58	123	123	185	185
Continuous torque, not cooled at I_c	T_c	Nm	16	16	37	37	58	58
Stall torque, cooled at I_{sw}	T_{sw}	Nm	43	43	90	90	137	137
Cogging torque at I = 0	T_{cog}	Nm	0.59	0.59	1.16	1.16	1.69	1.69
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	585	1242	272	602	504	1061
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	441	441	272	441	441	441
Ultimate current (1 s)	I_u	A_{rms}	19.3	38.7	19.3	38.7	48.6	97.3
Peak current (saturation range)	I_p	A_{rms}	15.5	30.9	15.5	30.9	38.9	77.8
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	6.9	13.8	7.2	14.5	18.4	36.8
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	1.9	3.7	2.2	4.3	5.7	11.4
Stall current, cooled	I_{sw}	A_{rms}	5.0	10.0	5.3	10.5	13.4	26.7
Power loss at T_p (25°C)	P_{lp}	W	3402	3402	5053	5053	6975	6975
Power loss at T_{cw}	P_{lw}	W	912	912	1487	1487	2098	2098
Power loss at T_c (25°C)	P_{lc}	W	50	50	99	99	149	149
Motor constant (25°C)	k_m	Nm/√W	2.25	2.25	3.73	3.73	4.76	4.76
Torque constant	k_T	Nm/A_{rms}	8.5	4.2	17.1	8.6	10.2	5.1
Back EMF constant, phase to phase	k_u	V/(rad/s)	6.9	3.5	14.0	7.0	8.3	4.2
Electrical resistance, phase to phase	R_{25}	Ω	9.5	2.4	14.1	3.5	3.1	0.8
Inductance, phase to phase	L	mH	37.3	9.3	69.3	17.3	16.1	4.0
Cooling water flow	dV/dt	l/min	2.6	2.6	4.3	4.3	6.0	6.0
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB17-3P-168xH

Performance data

Motor size			**168x100**	**168x100**	**168x125**	**168x125**	**168x150**	**168x150**
Winding variant			**Z1.8**	**Z3.4**	**Z1.8**	**Z3.4**	**Z1.8**	**Z3.4**
Ultimate torque (1 s) at I_u	T_u	Nm	544	544	690	690	816	816
Peak torque (saturation range) at I_p	T_p	Nm	467	467	591	591	700	700
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	249	249	305	305	372	372
Continuous torque, not cooled at I_c	T_c	Nm	80	80	100	100	126	126
Stall torque, cooled at I_{sw}	T_{sw}	Nm	184	184	221	221	273	273
Cogging torque at I = 0	T_{cog}	Nm	2.25	2.25	2.81	2.81	3.57	3.57
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	370	790	282	611	231	509
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	370	441	282	441	231	441
Ultimate current (1 s)	I_u	A_{rms}	48.6	97.3	48.6	97.3	48.6	97.3
Peak current (saturation range)	I_p	A_{rms}	38.9	77.8	38.9	77.8	38.9	77.8
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	18.6	37.3	18.3	36.5	18.4	36.7
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	5.9	11.8	6.0	11.9	6.2	12.3
Stall current, cooled	I_{sw}	A_{rms}	13.5	27.0	13.3	26.5	13.3	26.7
Power loss at T_p (25°C)	P_{lp}	W	8643	8643	10579	10579	11914	11914
Power loss at T_{cw}	P_{lw}	W	2662	2662	3131	3131	3564	3564
Power loss at T_c (25°C)	P_{lc}	W	199	199	249	249	298	298
Motor constant (25°C)	k_m	Nm/√W	5.71	5.71	6.32	6.32	7.29	7.29
Torque constant	k_T	Nm/A_{rms}	13.6	6.8	16.7	8.4	20.5	10.2
Back EMF constant, phase to phase	k_u	V/(rad/s)	11.1	5.6	13.6	6.8	16.7	8.4
Electrical resistance, phase to phase	R_{25}	Ω	3.8	1.0	4.7	1.2	5.2	1.3
Inductance, phase to phase	L	mH	20.8	5.2	28.6	7.1	32.3	8.1
Cooling water flow	dV/dt	l/min	7.8	7.8	9.0	9.0	10.3	10.3
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB17-3P-168xH

Performance data

Motor size			**168x175**	**168x175**
Winding variant			**Z1.8**	**Z3.4**
Ultimate torque (1 s) at I_u	T_u	Nm	951	951
Peak torque (saturation range) at I_p	T_p	Nm	817	817
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	429	429
Continuous torque, not cooled at I_c	T_c	Nm	144	144
Stall torque, cooled at I_{sw}	T_{sw}	Nm	314	314
Cogging torque at I = 0	T_{cog}	Nm	3.94	3.94
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	191	430
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	191	430
Ultimate current (1 s)	I_u	A_{rms}	48.6	97.3
Peak current (saturation range)	I_p	A_{rms}	38.9	77.8
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	18.2	36.3
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	6.0	12.1
Stall current, cooled	I_{sw}	A_{rms}	13.2	26.4
Power loss at T_p (25°C)	P_{lp}	W	14450	14450
Power loss at T_{cw}	P_{lw}	W	4226	4226
Power loss at T_c (25°C)	P_{lc}	W	348	348
Motor constant (25°C)	k_m	Nm/√W	7.72	7.72
Torque constant	k_T	Nm/A_{rms}	23.9	11.9
Back EMF constant, phase to phase	k_u	V/(rad/s)	19.5	9.7
Electrical resistance, phase to phase	R_{25}	Ω	6.4	1.6
Inductance, phase to phase	L	mH	37.8	9.5
Cooling water flow	dV/dt	l/min	12.5	12.5
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110
DC link voltage	U_{DCL}	V	600	600

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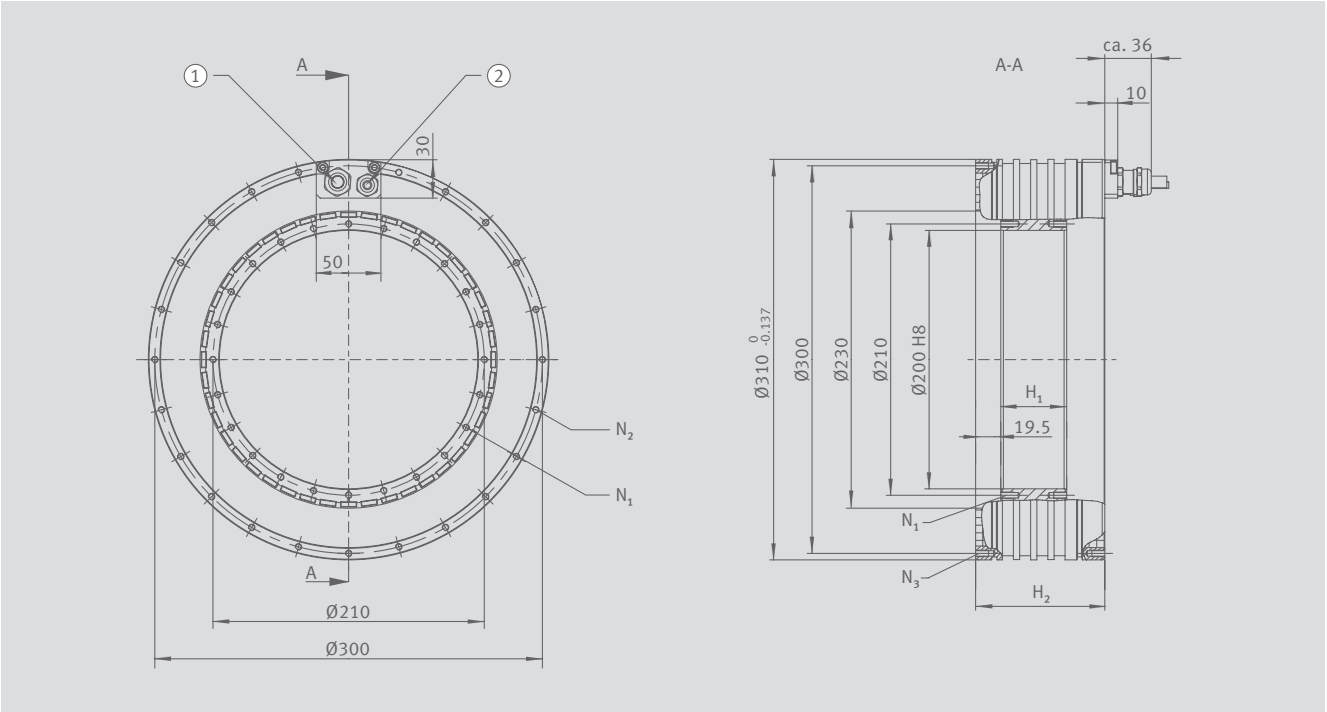
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-230xH

Drawing and mechanical parameters



Drawing RIB11-3P-230xH

① Motor cable ② Sensor cable

Motor size			**230x25**	**230x50**	**230x75**	**230x100**	**230x125**	**230x150**	**230x175**
Fastening thread of rotor	N_1		M5x10, 24x (15°)			M5x10, 48x (7.5°)			
Fastening thread of stator (cable side)	N_2		M5x10, 23x (15°)			M5x10, 45x (7.5°)			
Fastening thread of stator	N_3		M5x10, 24x (15°)			M5x10, 48x (7.5°)			
Height of rotor	H_1	mm	26.0	51.0	76.0	101.0	126.0	151.0	176.0
Height of stator	H_2	mm	80.0	100.0	120.0	150.0	175.0	200.0	225.0
Rotor mass	m_1	kg	1.8	3.5	5.3	7.0	8.8	10.5	12.3
Stator mass	m_2	kg	13.2	17.9	22.7	28.4	33.7	39.0	44.4
Moment of inertia of rotor	J	kgm^2	0.0192	0.0384	0.0576	0.0768	0.0960	0.1152	0.1344
Axial attraction	F_a	kN	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Radial attraction	F_r	kN/mm	1.0	2.0	3.0	4.0	5.0	6.0	7.0
Number of pole pairs	P		22	22	22	22	22	22	22

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We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-230xH

Performance data

Motor size			**230x25**	**230x25**	**230x50**	**230x50**	**230x75**	**230x75**
Winding variant			**Z1.8**	**Z3.3**	**Z1.8**	**Z3.3**	**Z1.8**	**Z3.3**
Ultimate torque (1 s) at I_u	T_u	Nm	239	239	501	501	774	774
Peak torque (saturation range) at I_p	T_p	Nm	219	219	457	457	703	703
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	130	130	277	277	422	422
Continuous torque, not cooled at I_c	T_c	Nm	39	39	92	92	147	147
Stall torque, cooled at I_{sw}	T_{sw}	Nm	106	106	225	225	342	342
Cogging torque at I = 0	T_{cog}	Nm	0.42	0.42	0.83	0.83	1.25	1.25
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	555	1143	255	534	166	355
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	341	341	255	341	166	341
Ultimate current (1 s)	I_u	A_{rms}	42.7	85.4	42.7	85.4	42.7	85.4
Peak current (saturation range)	I_p	A_{rms}	34.2	68.3	34.2	68.3	34.2	68.3
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	16.3	32.6	16.8	33.6	17.1	34.2
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	4.3	8.7	5.0	10.1	5.4	10.7
Stall current, cooled	I_{sw}	A_{rms}	12.4	24.8	12.8	25.5	13.0	26.0
Power loss at T_p (25°C)	P_{lp}	W	4252	4252	6336	6336	8379	8379
Power loss at T_{cw}	P_{lw}	W	1337	1337	2114	2114	2891	2891
Power loss at T_c (25°C)	P_{lc}	W	69	69	137	137	206	206
Motor constant (25°C)	k_m	Nm/√W	4.66	4.66	7.87	7.87	10.25	10.25
Torque constant	k_T	Nm/A_{rms}	8.9	4.4	18.3	9.2	27.5	13.7
Back EMF constant, phase to phase	k_u	V/(rad/s)	7.3	3.6	15.0	7.5	22.4	11.2
Electrical resistance, phase to phase	R_{25}	Ω	2.4	0.6	3.6	0.9	4.8	1.2
Inductance, phase to phase	L	mH	16.5	4.1	34.6	8.7	49.9	12.5
Cooling water flow	dV/dt	l/min	3.9	3.9	6.1	6.1	8.3	8.3
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	120	120	120	120	120	120
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-230xH

Performance data

Motor size			**230x100**	**230x100**	**230x125**	**230x125**	**230x150**	**230x150**
Winding variant			**Z1.8**	**Z3.3**	**Z3.0**	**Z4.5**	**Z3.0**	**Z4.5**
Ultimate torque (1 s) at I_u	T_u	Nm	1032	1032	1289	1289	1550	1550
Peak torque (saturation range) at I_p	T_p	Nm	938	938	1172	1172	1409	1409
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	567	567	702	702	852	852
Continuous torque, not cooled at I_c	T_c	Nm	202	202	254	254	312	312
Stall torque, cooled at I_{sw}	T_{sw}	Nm	460	460	569	569	691	691
Cogging torque at I = 0	T_{cog}	Nm	1.67	1.67	2.08	2.08	2.50	2.50
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	122	266	182	386	148	317
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	122	266	182	341	148	317
Ultimate current (1 s)	I_u	A_{rms}	42.7	85.4	74.7	149.4	74.7	149.4
Peak current (saturation range)	I_p	A_{rms}	34.2	68.3	59.8	119.6	59.8	119.6
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	17.2	34.4	29.8	59.6	30.1	60.2
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	5.5	11.1	9.7	19.5	9.9	19.9
Stall current, cooled	I_{sw}	A_{rms}	13.1	26.2	22.7	45.3	22.9	45.8
Power loss at T_p (25°C)	P_{lp}	W	10463	10463	12941	12941	14916	14916
Power loss at T_{cw}	P_{lw}	W	3668	3668	4445	4445	5222	5222
Power loss at T_c (25°C)	P_{lc}	W	274	274	343	343	411	411
Motor constant (25°C)	k_m	Nm/√W	12.22	12.22	13.74	13.74	15.39	15.39
Torque constant	k_T	Nm/A_{rms}	36.6	18.3	26.1	13.1	31.4	15.7
Back EMF constant, phase to phase	k_u	V/(rad/s)	29.9	14.9	21.3	10.7	25.7	12.8
Electrical resistance, phase to phase	R_{25}	Ω	6.0	1.5	2.4	0.6	2.8	0.7
Inductance, phase to phase	L	mH	63.4	15.8	25.3	6.3	30.5	7.6
Cooling water flow	dV/dt	l/min	10.5	10.5	12.7	12.7	15.0	15.0
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	120	120	120	120	120	120
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-230xH

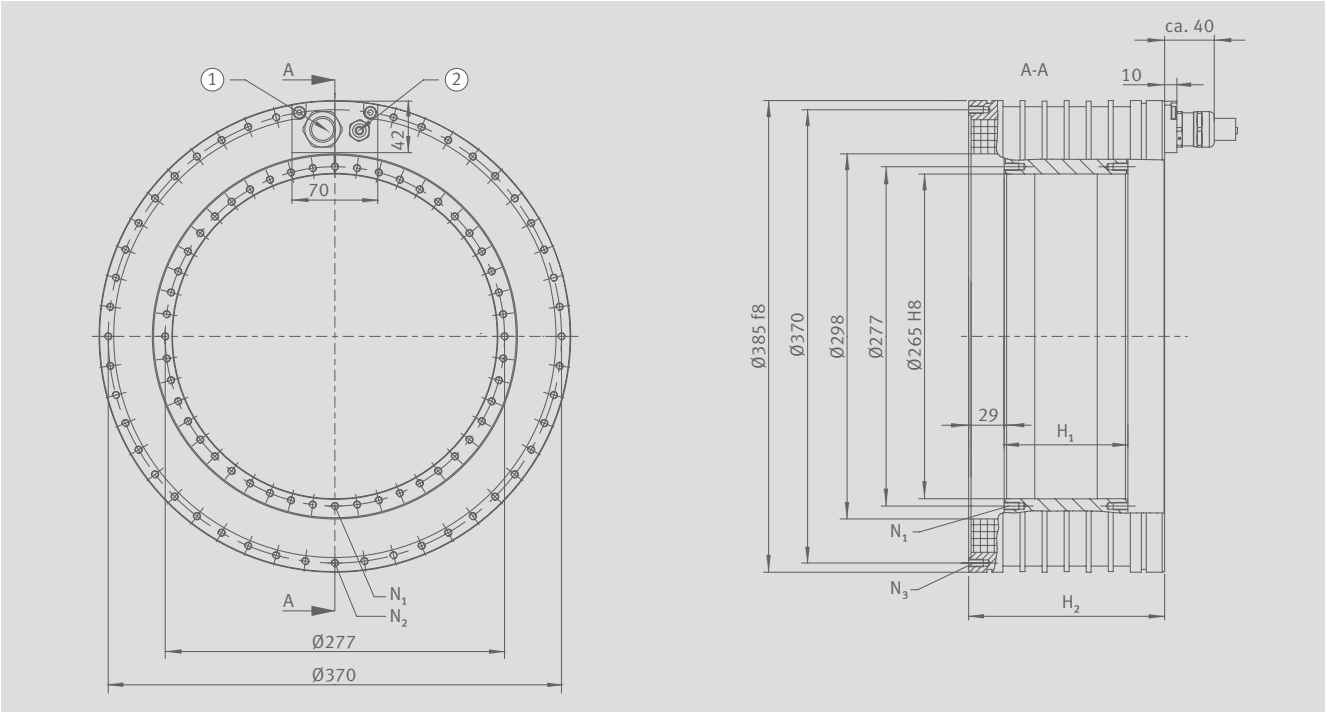
Performance data

Motor size			**230x175**	**230x175**
Winding variant			**Z3.0**	**Z4.5**
Ultimate torque (1 s) at I_u	T_u	Nm	1809	1809
Peak torque (saturation range) at I_p	T_p	Nm	1644	1644
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	997	997
Continuous torque, not cooled at I_c	T_c	Nm	368	368
Stall torque, cooled at I_{sw}	T_{sw}	Nm	808	808
Cogging torque at I = 0	T_{cog}	Nm	2.92	2.92
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	124	269
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	124	269
Ultimate current (1 s)	I_u	A_{rms}	74.7	149.4
Peak current (saturation range)	I_p	A_{rms}	59.8	119.6
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	30.2	60.4
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	10.0	20.1
Stall current, cooled	I_{sw}	A_{rms}	23.0	45.9
Power loss at T_p (25°C)	P_{lp}	W	17017	17017
Power loss at T_{cw}	P_{lw}	W	5999	5999
Power loss at T_c (25°C)	P_{lc}	W	480	480
Motor constant (25°C)	k_m	Nm/√W	16.81	16.81
Torque constant	k_T	Nm/A_{rms}	36.7	18.3
Back EMF constant, phase to phase	k_u	V/(rad/s)	29.9	15.0
Electrical resistance, phase to phase	R_{25}	Ω	3.2	0.8
Inductance, phase to phase	L	mH	35.6	8.9
Cooling water flow	dV/dt	l/min	17.2	17.2
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	120	120
DC link voltage	U_{DCL}	V	600	600

Subject to modifications without prior notification, where they serve technical progress. Tolerance range for values: ±10%
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB13-3P-298xH

Drawing and mechanical parameters



Drawing RIB13-3P-298xH

① Motor cable ② Sensor cable

Motor size			**298x25**	**298x50**	**298x75**	**298x100**	**298x125**	**298x150**	**298x175**
Fastening thread of rotor	N_1		M6x12, 24x (15°)			M6x12, 48x (7.5°)			
Fastening thread of stator (cable side)	N_2		M6x12, 23x (15°)			M6x12, 45x (7.5°)			
Fastening thread of stator	N_3		M6x12, 24x (15°)			M6x12, 48x (7.5°)			
Height of rotor	H_1	mm	26.0	51.0	76.0	101.0	126.0	151.0	176.0
Height of stator	H_2	mm	90.0	110.0	130.0	160.0	185.0	210.0	235.0
Rotor mass	m_1	kg	2.6	5.1	7.7	10.2	12.8	15.3	17.9
Stator mass	m_2	kg	20.9	28.2	35.2	44.2	51.9	59.7	67.6
Moment of inertia of rotor	J	kgm^2	0.05	0.10	0.15	0.20	0.25	0.30	0.35
Axial attraction	F_a	kN	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Radial attraction	F_r	kN/mm	1.3	2.6	3.8	5.1	6.4	7.6	8.9
Number of pole pairs	P		26	26	26	26	26	26	26

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We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB13-3P-298xH

Performance data

Motor size			**298x25**	**298x25**	**298x25**	**298x50**	**298x50**	**298x50**
Winding variant			**Z1.7**	**Z2.9**	**Z3.8**	**Z1.7**	**Z2.9**	**Z3.8**
Ultimate torque (1 s) at I_u	T_u	Nm	353	353	353	754	754	754
Peak torque (saturation range) at I_p	T_p	Nm	312	312	312	664	664	664
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	177	183	180	421	434	427
Continuous torque, not cooled at I_c	T_c	Nm	60	62	61	144	148	146
Stall torque, cooled at I_{sw}	T_{sw}	Nm	140	144	142	332	343	337
Cogging torque at I = 0	T_{cog}	Nm	0.4	0.4	0.4	0.8	0.8	0.8
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	393	644	1097	181	300	516
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	288	288	288	189	288	288
Ultimate current (1 s)	I_u	A_{rms}	37.1	60.0	100.0	37.1	60.0	100.0
Peak current (saturation range)	I_p	A_{rms}	29.7	48.0	80.0	29.7	48.0	80.0
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	15.3	25.5	41.8	17.2	28.7	47.1
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	5.0	8.3	13.6	5.6	9.3	15.3
Stall current, cooled	I_{sw}	A_{rms}	11.5	19.1	31.4	12.9	21.5	35.3
Power loss at T_p (25°C)	P_{lp}	W	3770	3542	3654	4795	4506	4647
Power loss at T_{cw}	P_{lw}	W	1350	1350	1350	2178	2178	2178
Power loss at T_c (25°C)	P_{lc}	W	105	105	105	170	170	170
Motor constant (25°C)	k_m	Nm/√W	5.90	6.09	6.00	11.03	11.38	11.20
Torque constant	k_T	Nm/A_{rms}	12.2	7.5	4.5	25.7	15.9	9.5
Back EMF constant, phase to phase	k_u	V/(rad/s)	10.0	6.2	3.7	21.0	13.0	7.8
Electrical resistance, phase to phase	R_{25}	Ω	2.85	1.02	0.38	3.62	1.30	0.48
Inductance, phase to phase	L	mH	20.16	7.73	2.78	37.64	14.43	5.19
Cooling water flow	dV/dt	l/min	3.9	3.9	3.9	6.4	6.4	6.4
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

Subject to modifications without prior notification, where they serve technical progress. Tolerance range for values: ±10%
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB13-3P-298xH

Performance data

Motor size			**298x75**	**298x75**	**298x75**	**298x100**	**298x100**	**298x100**
Winding variant			**Z1.7**	**Z2.9**	**Z3.8**	**Z1.7**	**Z2.9**	**Z3.8**
Ultimate torque (1 s) at I_u	T_u	Nm	1130	1130	1130	1507	1507	1507
Peak torque (saturation range) at I_p	T_p	Nm	996	996	996	1328	1328	1328
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	631	651	641	852	879	865
Continuous torque, not cooled at I_c	T_c	Nm	247	254	250	343	354	349
Stall torque, cooled at I_{sw}	T_{sw}	Nm	488	503	496	659	680	669
Cogging torque at I = 0	T_{cog}	Nm	1.3	1.3	1.3	1.7	1.7	1.7
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	121	205	356	86	150	262
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	121	205	288	86	150	262
Ultimate current (1 s)	I_u	A_{rms}	37.1	60.0	100.0	37.1	60.0	100.0
Peak current (saturation range)	I_p	A_{rms}	29.7	48.0	80.0	29.7	48.0	80.0
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	17.2	28.7	47.1	17.5	29.1	47.7
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	6.4	10.7	17.5	6.7	11.1	18.3
Stall current, cooled	I_{sw}	A_{rms}	12.9	21.5	35.4	13.1	21.8	35.8
Power loss at T_p (25°C)	P_{lp}	W	6785	6376	6577	8293	7793	8083
Power loss at T_{cw}	P_{lw}	W	3085	3085	3085	3867	3867	3867
Power loss at T_c (25°C)	P_{lc}	W	315	315	315	420	420	420
Motor constant (25°C)	k_m	Nm/√W	13.90	14.33	14.11	16.76	17.29	17.02
Torque constant	k_T	Nm/A_{rms}	38.5	23.8	14.3	51.4	31.8	19.1
Back EMF constant, phase to phase	k_u	V/(rad/s)	31.4	19.5	11.7	41.9	26.0	15.6
Electrical resistance, phase to phase	R_{25}	Ω	5.12	1.84	0.68	6.26	2.25	0.84
Inductance, phase to phase	L	mH	50.40	19.31	6.95	67.20	25.75	9.27
Cooling water flow	dV/dt	l/min	8.8	8.8	8.8	11.1	11.1	11.1
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

Subject to modifications without prior notification, where they serve technical progress. Tolerance range for values: ±10%
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB13-3P-298xH

Performance data

Motor size			**298x125**	**298x125**	**298x150**	**298x150**	**298x175**	**298x175**
Winding variant			**Z2.9**	**Z3.8**	**Z2.9**	**Z3.8**	**Z2.9**	**Z3.8**
Ultimate torque (1 s) at I_u	T_u	Nm	1884	1884	2261	2261	2637	2637
Peak torque (saturation range) at I_p	T_p	Nm	1660	1660	1992	1992	2324	2324
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	1101	1084	1317	1296	1552	1528
Continuous torque, not cooled at I_c	T_c	Nm	455	448	557	549	659	649
Stall torque, cooled at I_{sw}	T_{sw}	Nm	852	839	1019	1003	1200	1182
Cogging torque at I = 0	T_{cog}	Nm	2.1	2.1	2.5	2.5	2.9	2.9
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	118	209	97	173	81	146
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	118	209	97	173	81	146
Ultimate current (1 s)	I_u	A_{rms}	60.0	100.0	60.0	100.0	60.0	100.0
Peak current (saturation range)	I_p	A_{rms}	48.0	80.0	48.0	80.0	48.0	80.0
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	29.2	47.9	29.1	47.7	29.4	48.2
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	11.5	18.8	11.7	19.2	11.9	19.5
Stall current, cooled	I_{sw}	A_{rms}	21.9	35.9	21.8	35.8	22.0	36.1
Power loss at T_p (25°C)	P_{lp}	W	9210	9500	10627	10961	12044	12422
Power loss at T_{cw}	P_{lw}	W	4593	4593	5262	5262	6085	6085
Power loss at T_c (25°C)	P_{lc}	W	525	525	629	629	734	734
Motor constant (25°C)	k_m	Nm/√W	19.88	19.57	22.21	21.87	24.34	23.96
Torque constant	k_T	Nm/A_{rms}	39.7	23.8	47.7	28.6	55.6	33.4
Back EMF constant, phase to phase	k_u	V/(rad/s)	32.4	19.5	38.9	23.4	45.4	27.3
Electrical resistance, phase to phase	R_{25}	Ω	2.66	0.99	3.07	1.14	3.48	1.29
Inductance, phase to phase	L	mH	31.55	11.36	37.47	13.49	43.26	15.58
Cooling water flow	dV/dt	l/min	13.2	13.2	15.1	15.1	17.4	17.4
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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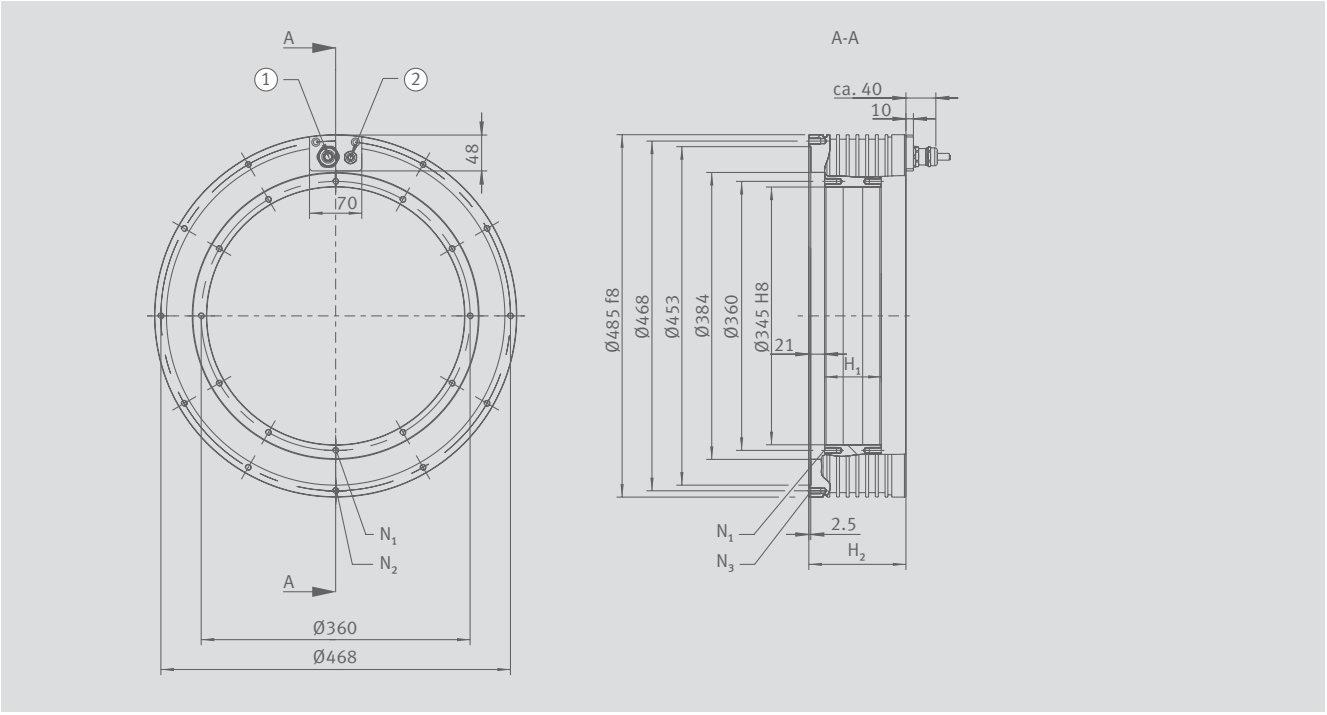
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-384xH

Drawing and mechanical parameters



Drawing RIB11-3P-384xH

① Motor cable ② Sensor cable

Motor size			**384x25**	**384x50**	**384x75**	**384x100**	**384x125**	**384x150**	**384x175**
Fastening thread of rotor	N_1		M8x16, 12x (30°)			M8x16, 24x (15°)			M8x16, 48x (7.5°)
Fastening thread of stator (cable side)	N_2		M8x16, 11x (30°)			M8x16, 23x (15°)			M8x16, 45x (7.5°)
Fastening thread of stator	N_3		M8x16, 12x (30°)			M8x16, 24x (15°)			M8x16, 48x (7.5°)
Height of rotor	H_1	mm	26.0	51.0	76.0	101.0	126.0	151.0	176.0
Height of stator	H_2	mm	90.0	110.0	130.0	160.0	185.0	210.0	235.0
Rotor mass	m_1	kg	4.0	8.0	12.0	16.0	20.0	24.0	28.0
Stator mass	m_2	kg	30.3	41.0	52.0	65.7	78.6	91.4	104.1
Moment of inertia of rotor	J	kgm^2	0.13	0.26	0.39	0.52	0.65	0.78	0.91
Axial attraction	F_a	kN	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Radial attraction	F_r	kN/mm	1.8	3.6	5.3	7.1	8.8	10.6	12.4
Number of pole pairs	P		33	33	33	33	33	33	33

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We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-384xH

Performance data

Motor size			**384x25**	**384x25**	**384x25**	**384x50**	**384x50**	**384x50**
Winding variant			**Z1.7**	**Z2.5**	**Z3.7**	**Z1.7**	**Z2.5**	**Z3.7**
Ultimate torque (1 s) at I_u	T_u	Nm	573	573	573	1182	1182	1182
Peak torque (saturation range) at I_p	T_p	Nm	512	512	512	1057	1057	1057
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	307	307	302	655	655	645
Continuous torque, not cooled at I_c	T_c	Nm	97	97	95	233	233	229
Stall torque, cooled at I_{sw}	T_{sw}	Nm	233	233	230	498	498	490
Cogging torque at I = 0	T_{cog}	Nm	1.54	1.54	1.54	3.07	3.07	3.07
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	213	328	599	108	169	313
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	213	227	227	108	169	227
Ultimate current (1 s)	I_u	A_{rms}	40.7	61.1	108.4	40.7	61.1	108.4
Peak current (saturation range)	I_p	A_{rms}	32.6	48.9	86.7	32.6	48.9	86.7
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	16.3	24.5	42.7	16.9	25.3	44.2
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	4.7	7.0	12.3	5.5	8.2	14.3
Stall current, cooled	I_{sw}	A_{rms}	11.8	17.6	30.8	12.2	18.2	31.8
Power loss at T_p (25°C)	P_{lp}	W	5163	5163	5327	7599	7599	7840
Power loss at T_{cw}	P_{lw}	W	1737	1737	1737	2735	2735	2735
Power loss at T_c (25°C)	P_{lc}	W	107	107	107	213	213	213
Motor constant (25°C)	k_m	Nm/√W	9.38	9.38	9.23	15.95	15.95	15.71
Torque constant	k_T	Nm/A_{rms}	20.7	13.8	7.8	42.7	28.4	16.0
Back EMF constant, phase to phase	k_u	V/(rad/s)	16.9	11.3	6.3	34.8	23.2	13.1
Electrical resistance, phase to phase	R_{25}	Ω	3.2	1.4	0.5	4.8	2.1	0.7
Inductance, phase to phase	L	mH	30.8	13.7	4.3	50.4	22.4	7.1
Cooling water flow	dV/dt	l/min	5.0	5.0	5.0	7.8	7.8	7.8
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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RIB11-3P-384xH

Performance data

Motor size			**384x75**	**384x75**	**384x75**	**384x100**	**384x100**
Winding variant			**Z1.7**	**Z2.5**	**Z3.7**	**Z2.5**	**Z3.7**
Ultimate torque (1 s) at I_u	T_u	Nm	1828	1828	1828	2462	2462
Peak torque (saturation range) at I_p	T_p	Nm	1634	1634	1634	2201	2201
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	1022	1022	1006	1372	1351
Continuous torque, not cooled at I_c	T_c	Nm	384	384	378	536	527
Stall torque, cooled at I_{sw}	T_{sw}	Nm	776	776	764	1042	1026
Cogging torque at I = 0	T_{cog}	Nm	4.61	4.61	4.61	6.14	6.14
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	69	111	207	81	154
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	69	111	207	81	154
Ultimate current (1 s)	I_u	A_{rms}	40.7	61.1	108.4	61.1	108.4
Peak current (saturation range)	I_p	A_{rms}	32.6	48.9	86.7	48.9	86.7
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	17.0	25.5	44.6	25.5	44.5
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	5.8	8.7	15.2	9.0	15.8
Stall current, cooled	I_{sw}	A_{rms}	12.3	18.4	32.1	18.3	32.0
Power loss at T_p (25°C)	P_{lp}	W	10034	10034	10353	12469	12865
Power loss at T_{cw}	P_{lw}	W	3671	3671	3671	4539	4539
Power loss at T_c (25°C)	P_{lc}	W	320	320	320	427	427
Motor constant (25°C)	k_m	Nm/√W	21.47	21.47	21.14	25.93	25.53
Torque constant	k_T	Nm/A_{rms}	66.0	44.0	24.8	59.2	33.4
Back EMF constant, phase to phase	k_u	V/(rad/s)	53.9	35.9	20.2	48.4	27.3
Electrical resistance, phase to phase	R_{25}	Ω	6.3	2.8	0.9	3.5	1.1
Inductance, phase to phase	L	mH	70.1	31.2	9.9	39.9	12.7
Cooling water flow	dV/dt	l/min	10.5	10.5	10.5	13.0	13.0
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600

Subject to modifications without prior notification, where they serve technical progress. Tolerance range for values: ±10%
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB11-3P-384xH

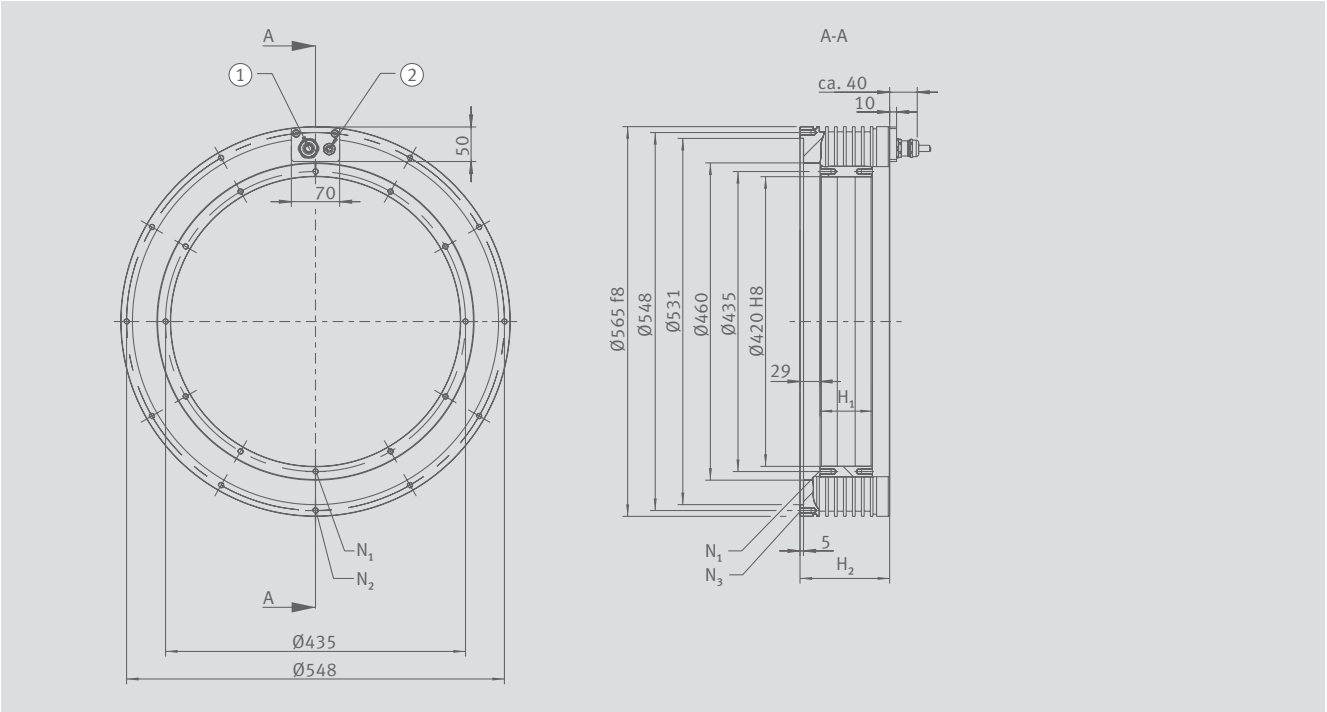
Performance data

Motor size			**384x125**	**384x125**	**384x150**	**384x150**	**384x175**	**384x175**
Winding variant			**Z2.5**	**Z3.7**	**Z2.5**	**Z4.0**	**Z2.5**	**Z4.0**
Ultimate torque (1 s) at I_u	T_u	Nm	3077	3077	3692	3692	4308	4308
Peak torque (saturation range) at I_p	T_p	Nm	2751	2751	3301	3301	3852	3852
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	1738	1711	2106	2106	2473	2473
Continuous torque, not cooled at I_c	T_c	Nm	685	674	835	835	985	985
Stall torque, cooled at I_{sw}	T_{sw}	Nm	1320	1300	1599	1599	1879	1879
Cogging torque at I = 0	T_{cog}	Nm	7.68	7.68	9.21	9.21	10.75	10.75
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	63	122	51	114	42	96
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	63	122	51	114	42	96
Ultimate current (1 s)	I_u	A_{rms}	61.1	108.4	61.1	122.2	61.1	122.2
Peak current (saturation range)	I_p	A_{rms}	48.9	86.7	48.9	97.8	48.9	97.8
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	25.8	45.1	26.0	52.1	26.2	52.4
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	9.3	16.2	9.4	18.8	9.5	19.0
Stall current, cooled	I_{sw}	A_{rms}	18.6	32.4	18.7	37.5	18.9	37.8
Power loss at T_p (25°C)	P_{lp}	W	14905	15378	17340	17340	19776	19776
Power loss at T_{cw}	P_{lw}	W	5570	5570	6602	6602	7633	7633
Power loss at T_c (25°C)	P_{lc}	W	534	534	640	640	747	747
Motor constant (25°C)	k_m	Nm/√W	29.65	29.19	32.99	32.99	36.04	36.04
Torque constant	k_T	Nm/A_{rms}	74.0	41.7	88.8	44.4	103.7	51.8
Back EMF constant, phase to phase	k_u	V/(rad/s)	60.5	34.1	72.5	36.3	84.6	42.3
Electrical resistance, phase to phase	R_{25}	Ω	4.2	1.4	4.8	1.2	5.5	1.4
Inductance, phase to phase	L	mH	48.7	15.5	57.4	14.3	66.1	16.5
Cooling water flow	dV/dt	l/min	16.0	16.0	18.9	18.9	14.6	14.6
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	7.5	7.5
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

Subject to modifications without prior notification, where they serve technical progress. Tolerance range for values: ±10%
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB19-3P-460xH

Drawing and mechanical parameters



Drawing RIB19-3P-460xH

① Motor cable ② Sensor cable

Motor size			**460x25**	**460x50**	**460x75**	**460x100**	**460x125**	**460x150**	**460x175**
Fastening thread of rotor	N_1		M8x16, 12x (30°)		M8x16, 24x (15°)			M8x16, 48x (7.5°)	
Fastening thread of stator (cable side)	N_2		M8x16, 11x (30°)		M8x16, 23x (15°)			M8x16, 45x (7.5°)	
Fastening thread of stator	N_3		M8x16, 12x (30°)		M8x16, 24x (15°)			M8x16, 48x (7.5°)	
Height of rotor	H_1	mm	26.0	51.0	76.0	101.0	126.0	151.0	176.0
Height of stator	H_2	mm	90.0	110.0	130.0	160.0	185.0	210.0	235.0
Rotor mass	m_1	kg	4.9	9.8	14.6	19.5	24.4	29.3	34.2
Stator mass	m_2	kg	37.6	50.4	63.4	79.1	93.5	107.8	122.1
Moment of inertia of rotor	J	kgm^2	0.24	0.47	0.71	0.94	1.18	1.41	1.65
Axial attraction	F_a	kN	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Radial attraction	F_r	kN/mm	1.9	3.8	5.7	7.5	9.4	11.3	13.2
Number of pole pairs	P		38	38	38	38	38	38	38

Subject to modifications without prior notification, where they serve technical progress. Tolerance range for values: ±10%
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB19-3P-460xH

Performance data

Motor size			**460x25**	**460x25**	**460x25**	**460x50**	**460x50**	**460x50**
Winding variant			**Z1.7**	**Z2.5**	**Z3.8**	**Z1.7**	**Z2.5**	**Z3.8**
Ultimate torque (1 s) at I_u	T_u	Nm	888	888	888	1813	1813	1813
Peak torque (saturation range) at I_p	T_p	Nm	755	755	755	1541	1541	1541
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	447	436	434	977	953	950
Continuous torque, not cooled at I_c	T_c	Nm	137	134	134	335	327	326
Stall torque, cooled at I_{sw}	T_{sw}	Nm	334	326	325	731	713	711
Cogging torque at I = 0	T_{cog}	Nm	1.97	1.97	1.97	3.95	3.95	3.95
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	143	226	419	69	112	211
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	143	197	197	70	112	197
Ultimate current (1 s)	I_u	A_{rms}	41.2	62.3	112.4	41.2	62.3	112.4
Peak current (saturation range)	I_p	A_{rms}	30.4	46.0	83.0	30.4	46.0	83.0
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	15.7	23.2	41.8	16.9	24.9	44.8
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	4.6	6.9	12.3	5.5	8.2	14.7
Stall current, cooled	I_{sw}	A_{rms}	11.4	16.9	30.3	12.2	18.1	32.5
Power loss at T_p (25°C)	P_{lp}	W	5349	5623	5658	7508	7892	7941
Power loss at T_{cw}	P_{lw}	W	1927	1927	1927	3103	3103	3103
Power loss at T_c (25°C)	P_{lc}	W	125	125	125	250	250	250
Motor constant (25°C)	k_m	Nm/√W	12.28	11.98	11.94	21.17	20.65	20.58
Torque constant	k_T	Nm/A_{rms}	29.6	19.5	10.8	60.3	39.9	22.1
Back EMF constant, phase to phase	k_u	V/(rad/s)	24.1	15.9	8.8	49.3	32.6	18.0
Electrical resistance, phase to phase	R_{25}	Ω	3.9	1.8	0.5	5.4	2.5	0.8
Inductance, phase to phase	L	mH	39.5	17.3	5.3	68.9	30.1	9.2
Cooling water flow	dV/dt	l/min	5.5	5.5	5.5	8.9	8.9	8.9
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

Subject to modifications without prior notification, where they serve technical progress. Tolerance range for values: ±10%
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB19-3P-460xH

Performance data

Motor size			**460x75**	**460x75**	**460x100**	**460x100**	**460x125**	**460x125**
Winding variant			**Z2.5**	**Z3.8**	**Z2.5**	**Z3.8**	**Z2.5**	**Z3.8**
Ultimate torque (1 s) at I_u	T_u	Nm	2775	2775	3751	3751	4689	4689
Peak torque (saturation range) at I_p	T_p	Nm	2330	2330	3144	3144	3930	3930
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	1417	1413	1961	1955	2494	2486
Continuous torque, not cooled at I_c	T_c	Nm	522	520	726	723	931	929
Stall torque, cooled at I_{sw}	T_{sw}	Nm	1061	1057	1467	1462	1866	1860
Cogging torque at I = 0	T_{cog}	Nm	5.92	5.92	7.89	7.89	9.87	9.87
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	75	144	54	106	41	83
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	75	144	54	106	41	83
Ultimate current (1 s)	I_u	A_{rms}	62.3	112.4	62.3	112.4	62.3	112.4
Peak current (saturation range)	I_p	A_{rms}	46.0	83.0	46.0	83.0	46.0	83.0
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	24.4	44.0	25.1	45.2	25.5	46.0
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	8.6	15.4	8.9	16.0	9.2	16.5
Stall current, cooled	I_{sw}	A_{rms}	17.7	31.9	18.2	32.8	18.5	33.3
Power loss at T_p (25°C)	P_{lp}	W	10851	10919	13318	13401	15784	15882
Power loss at T_{cw}	P_{lw}	W	4112	4112	5322	5322	6531	6531
Power loss at T_c (25°C)	P_{lc}	W	375	375	500	500	626	626
Motor constant (25°C)	k_m	Nm/√W	26.95	26.87	32.44	32.33	37.24	37.13
Torque constant	k_T	Nm/A_{rms}	61.0	33.8	81.4	45.1	101.7	56.3
Back EMF constant, phase to phase	k_u	V/(rad/s)	49.8	27.6	66.4	36.8	83.0	46.0
Electrical resistance, phase to phase	R_{25}	Ω	3.4	1.1	4.2	1.3	5.0	1.5
Inductance, phase to phase	L	mH	41.4	12.7	52.3	16.1	65.4	20.1
Cooling water flow	dV/dt	l/min	11.8	11.8	15.2	15.2	18.7	18.7
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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RIB19-3P-460xH

Performance data

Motor size			**460x125**	**460x150**	**460x150**	**460x175**	**460x175**
Winding variant			**Z4.9**	**Z3.8**	**Z4.9**	**Z3.8**	**Z4.9**
Ultimate torque (1 s) at I_u	T_u	Nm	4689	5739	5739	6695	6695
Peak torque (saturation range) at I_p	T_p	Nm	3930	4811	4811	5612	5612
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	2557	3081	3169	3628	3731
Continuous torque, not cooled at I_c	T_c	Nm	955	1158	1191	1369	1408
Stall torque, cooled at I_{sw}	T_{sw}	Nm	1913	2305	2371	2714	2791
Cogging torque at I = 0	T_{cog}	Nm	9.87	11.84	11.84	13.82	13.82
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	125	67	103	56	86
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	125	67	103	56	86
Ultimate current (1 s)	I_u	A_{rms}	164.6	112.4	164.6	112.4	164.6
Peak current (saturation range)	I_p	A_{rms}	121.6	83.0	121.6	83.0	121.6
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	69.2	46.5	70.1	47.0	70.7
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	24.8	16.8	25.3	17.0	25.6
Stall current, cooled	I_{sw}	A_{rms}	50.2	33.8	50.8	34.1	51.3
Power loss at T_p (25°C)	P_{lp}	W	15016	18364	17362	20846	19708
Power loss at T_{cw}	P_{lw}	W	6531	7740	7740	8950	8950
Power loss at T_c (25°C)	P_{lc}	W	626	751	751	876	876
Motor constant (25°C)	k_m	Nm/√W	38.18	42.26	43.46	46.28	47.59
Torque constant	k_T	Nm/A_{rms}	38.5	69.0	47.1	80.5	55.0
Back EMF constant, phase to phase	k_u	V/(rad/s)	31.4	56.3	38.5	65.7	44.9
Electrical resistance, phase to phase	R_{25}	Ω	0.7	1.8	0.8	2.0	0.9
Inductance, phase to phase	L	mH	9.4	23.1	10.8	27.0	12.6
Cooling water flow	dV/dt	l/min	18.7	14.8	14.8	17.1	17.1
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	7.5	7.5	7.5	7.5
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600

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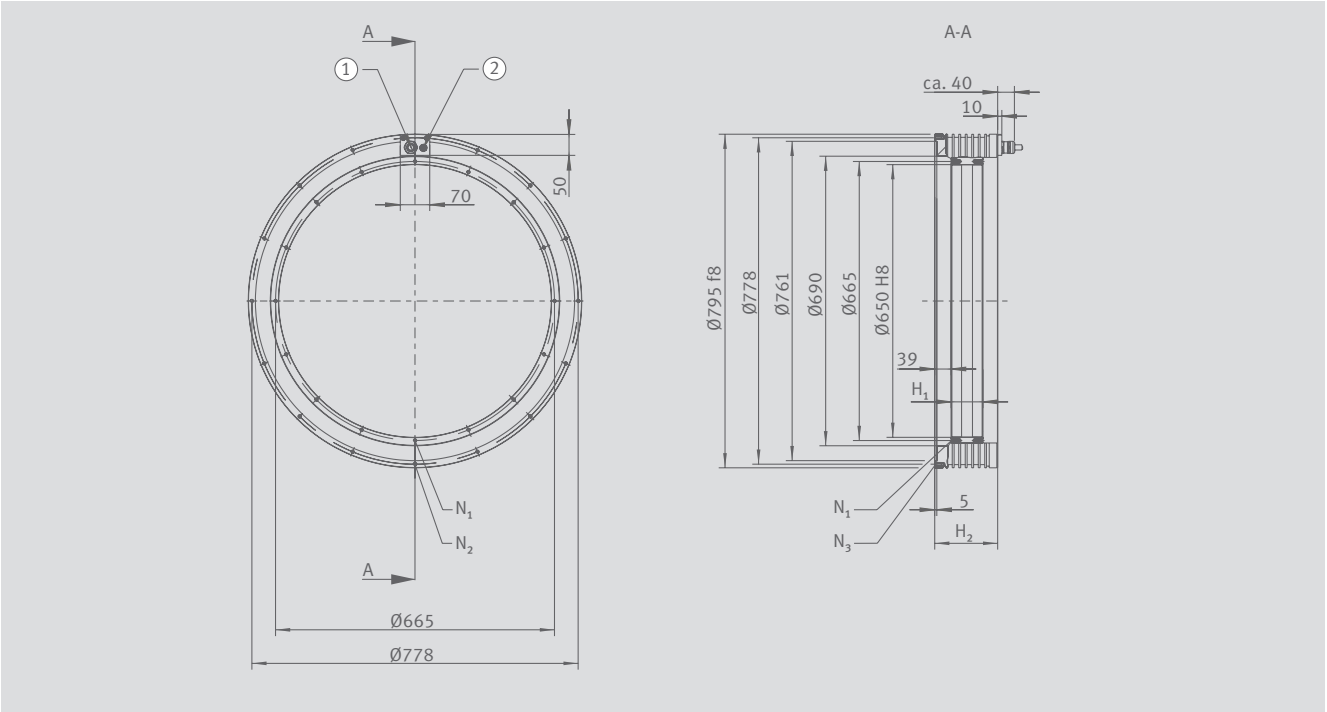
We would be glad to provide additional data and drawings on request.
We recommend a detailed application review by our engineering team for suitable motor selection.

RIB13-3P-690xH

Drawing and mechanical parameters



Drawing RIB13-3P-690xH

① Motor cable ② Sensor cable

Motor size			**690x25**	**690x50**	**690x75**	**690x100**	**690x125**	**690x150**	**690x175**
Fastening thread of rotor	N_1		M8x16, 16x (22.5°)		M8x16, 32x (11.25°)		M8x16, 64x (5.625°)		
Fastening thread of stator (cable side)	N_2		M8x16, 15x (22.5°)		M8x16, 31x (11.25°)		M8x16, 61x (5.625°)		
Fastening thread of stator	N_3		M8x16, 16x (22.5°)		M8x16, 32x (11.25°)		M8x16, 64x (5.625°)		
Height of rotor	H_1	mm	26.0	51.0	76.0	101.0	126.0	151.0	176.0
Height of stator	H_2	mm	110.0	130.0	150.0	180.0	205.0	230.0	255.0
Rotor mass	m_1	kg	7.6	15.2	22.8	30.4	38.0	45.6	53.2
Stator mass	m_2	kg	62.9	81.6	99.8	122.9	143.2	163.7	184.1
Moment of inertia of rotor	J	kgm^2	0.85	1.70	2.55	3.40	4.25	5.10	5.95
Axial attraction	F_a	kN	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Radial attraction	F_r	kN/mm	3.3	6.6	9.9	13.1	16.4	19.7	23.0
Number of pole pairs	P		65	65	65	65	65	65	65

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RIB13-3P-690xH

Performance data

Motor size			**690x25**	**690x25**	**690x25**	**690x50**	**690x50**	**690x75**
Winding variant			**Z2.2**	**Z3.3**	**Z4.2**	**Z3.3**	**Z4.2**	**Z3.3**
Ultimate torque (1 s) at I_u	T_u	Nm	1978	1978	1978	4059	4059	6244
Peak torque (saturation range) at I_p	T_p	Nm	1768	1768	1768	3627	3627	5579
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	989	956	989	2094	2166	3288
Continuous torque, not cooled at I_c	T_c	Nm	356	344	356	829	857	1363
Stall torque, cooled at I_{sw}	T_{sw}	Nm	769	743	769	1628	1684	2557
Cogging torque at I = 0	T_{cog}	Nm	1.47	1.47	1.47	2.94	2.94	4.41
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	70	123	184	66	101	44
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	70	115	115	66	101	44
Ultimate current (1 s)	I_u	A_{rms}	49.1	81.5	122.7	81.5	122.7	81.5
Peak current (saturation range)	I_p	A_{rms}	39.3	65.2	98.2	65.2	98.2	65.2
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	19.3	30.9	48.2	33.0	51.5	33.7
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	6.8	10.9	17.0	12.8	20.0	13.7
Stall current, cooled	I_{sw}	A_{rms}	14.7	23.6	36.7	25.2	39.2	25.7
Power loss at T_p (25°C)	P_{lp}	W	7758	8303	7758	12076	11284	15850
Power loss at T_{cw}	P_{lw}	W	2510	2510	2510	4160	4160	5690
Power loss at T_c (25°C)	P_{lc}	W	233	233	233	466	466	699
Motor constant (25°C)	k_m	Nm/√W	23.34	22.56	23.34	38.38	39.70	51.53
Torque constant	k_T	Nm/A_{rms}	52.3	31.5	20.9	64.7	42.9	99.5
Back EMF constant, phase to phase	k_u	V/(rad/s)	42.7	25.7	17.1	52.8	35.1	81.3
Electrical resistance, phase to phase	R_{25}	Ω	3.4	1.3	0.5	1.9	0.8	2.5
Inductance, phase to phase	L	mH	41.4	15.0	6.6	23.1	10.2	31.0
Cooling water flow	dV/dt	l/min	7.4	7.4	7.4	12.3	12.3	16.9
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	5.0	5.0	5.0	5.0	5.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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RIB13-3P-690xH

Performance data

Motor size			**690x75**	**690x100**	**690x100**	**690x100**	**690x125**	**690x125**
Winding variant			**Z4.2**	**Z3.3**	**Z4.2**	**Z5.9**	**Z3.3**	**Z4.2**
Ultimate torque (1 s) at I_u	T_u	Nm	6244	8366	8366	8366	10457	10457
Peak torque (saturation range) at I_p	T_p	Nm	5579	7475	7475	7475	9343	9343
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	3401	4504	4659	4504	5712	5909
Continuous torque, not cooled at I_c	T_c	Nm	1410	1895	1960	1895	2425	2508
Stall torque, cooled at I_{sw}	T_{sw}	Nm	2645	3502	3623	3502	4441	4595
Cogging torque at I = 0	T_{cog}	Nm	4.41	2.94	2.94	2.94	7.35	7.35
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	68	32	51	90	25	40
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	68	32	51	90	25	40
Ultimate current (1 s)	I_u	A_{rms}	122.7	81.5	122.7	203.7	81.5	122.7
Peak current (saturation range)	I_p	A_{rms}	98.2	65.2	98.2	163.0	65.2	98.2
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	52.5	34.5	53.7	86.2	35.0	54.5
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	21.3	14.2	22.1	35.5	14.5	22.7
Stall current, cooled	I_{sw}	A_{rms}	40.0	26.3	40.9	65.7	26.6	41.5
Power loss at T_p (25°C)	P_{lp}	W	14811	19624	18337	19624	23398	21864
Power loss at T_{cw}	P_{lw}	W	5690	7364	7364	7364	9037	9037
Power loss at T_c (25°C)	P_{lc}	W	699	932	932	932	1165	1165
Motor constant (25°C)	k_m	Nm/√W	53.30	62.05	64.19	62.05	71.03	73.48
Torque constant	k_T	Nm/A_{rms}	66.1	133.3	88.5	53.3	166.7	110.6
Back EMF constant, phase to phase	k_u	V/(rad/s)	53.9	108.9	72.3	43.5	136.1	90.3
Electrical resistance, phase to phase	R_{25}	Ω	1.0	3.1	1.3	0.5	3.7	1.5
Inductance, phase to phase	L	mH	13.7	37.6	16.6	6.0	46.1	20.3
Cooling water flow	dV/dt	l/min	16.9	14.6	14.6	14.6	17.9	17.9
Cooling water temperature difference	$\Delta\vartheta$	K	5.0	7.5	7.5	7.5	7.5	7.5
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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RIB13-3P-690xH

Performance data

Motor size			**690x125**	**690x150**	**690x150**	**690x150**	**690x175**	**690x175**
Winding variant			**Z5.9**	**Z3.3**	**Z4.2**	**Z5.9**	**Z4.2**	**Z5.9**
Ultimate torque (1 s) at I_u	T_u	Nm	10457	12549	12549	12549	14640	14640
Peak torque (saturation range) at I_p	T_p	Nm	9343	11212	11212	11212	13081	13081
Continuous torque, cooled at I_{cw}	T_{cw}	Nm	5712	6924	7163	6924	8421	8140
Continuous torque, not cooled at I_c	T_c	Nm	2425	2958	3060	2958	3613	3493
Stall torque, cooled at I_{sw}	T_{sw}	Nm	4441	5384	5570	5384	6548	6329
Cogging torque at I = 0	T_{cog}	Nm	7.35	4.41	4.41	4.41	10.30	10.30
Knee speed at I_{cw} and U_{DCL}	n_{lw}	rpm	71	19	32	58	27	47
Continuous speed (S1), cooled at I_{cw}	n_{lwS1}	rpm	71	19	32	58	27	47
Ultimate current (1 s)	I_u	A_{rms}	203.7	81.5	122.7	203.7	122.7	203.7
Peak current (saturation range)	I_p	A_{rms}	163.0	65.2	98.2	163.0	98.2	163.0
Continuous current, cooled at P_{lw}	I_{cw}	A_{rms}	87.4	35.3	55.1	88.3	55.5	89.0
Continuous current, not cooled at P_{lc}	I_c	A_{rms}	36.4	14.8	23.0	37.0	23.3	37.4
Stall current, cooled	I_{sw}	A_{rms}	66.6	26.9	42.0	67.3	42.3	67.8
Power loss at T_p (25°C)	P_{lp}	W	23398	27172	25390	27172	28916	30946
Power loss at T_{cw}	P_{lw}	W	9037	10711	10711	10711	12384	12384
Power loss at T_c (25°C)	P_{lc}	W	1165	1399	1399	1399	1632	1632
Motor constant (25°C)	k_m	Nm/√W	71.03	79.09	81.82	79.09	89.45	86.47
Torque constant	k_T	Nm/A_{rms}	66.7	200.0	132.8	80.0	154.9	93.3
Back EMF constant, phase to phase	k_u	V/(rad/s)	54.4	163.3	108.4	65.3	126.5	76.2
Electrical resistance, phase to phase	R_{25}	Ω	0.6	4.3	1.8	0.7	2.0	0.8
Inductance, phase to phase	L	mH	7.4	55.3	24.4	8.8	28.4	11.5
Cooling water flow	dV/dt	l/min	17.9	15.9	15.9	15.9	18.4	18.4
Cooling water temperature difference	$\Delta\vartheta$	K	7.5	10.0	10.0	10.0	10.0	10.0
Motor temperature switch-off threshold	ϑ	°C	110	110	110	110	110	110
DC link voltage	U_{DCL}	V	600	600	600	600	600	600

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Checklist for your inquiry

Torque motors

Please fill out the following checklist so we can answer your inquiry as quickly and precisely as possible.
Do not hesitate to contact the Schaeffler sales team if you have any questions.

Company _____

Contact name _____

Sector · Project name _____

Phone _____

E-mail _____

Application

_____

_____

_____

Predominant operating mode

☐ Continuous operation (S1, e.g. in NC axes)

☐ Intermittent operation (S6, e.g. in cycled applications)

Operating several motors in parallel

☐ Yes
- ☐ Tandem arrangement
- ☐ Janus arrangement

☐ No

Motor type (if known) _____

Any required compatibility to

Manufacturer _____ Type _____

Installation space

Min. internal diameter / max. external diameter / max. height [mm]

_____ / _____ / _____

Required operating points

Operating point 1

Torque _____ Speed _____

☐ Continuous operation (S1) ☐ Intermittent operation (S6)

☐ Standstill

Operating point 2

Torque _____ Speed _____

☐ Continuous operation (S1) ☐ Intermittent operation (S6)

☐ Standstill

Frequency converter

Manufacturer _____ Type _____

DC link voltage [V_{DC}] _____ Continuous operation

Peak current _____ current (S1) _____

Cooling

☐ Water (standard) ☐ Natural convection/not cooled
☐ Other

Cable outlet

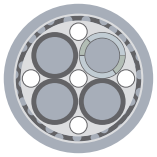
☐ Axial (standard)

☐ Tangential

☐ Radial

Cable type · cable length

☐ Separate motor and sensor cables ☐ 1 m standard, open ends



Other types and lengths upon request.

O-rings

Seals required for water-cooled motors
☐ Yes ☐ No

Temperature monitoring

☐ PTC and Pt1000

Technical documentation

☐ Paper ☐ CD
Language _____

Requirement · quantity

☐ One-time requirement
☐ Prototype
☐ Series

Contact

Schaeffler Industrial Drives AG & Co. KG
Phone +49 3681 7574-0 · sales-sid@schaeffler.com

Glossary

Symbol	Meaning	Unit	Explanation
T_u	Ultimate torque	Nm	Torque at high saturation in the magnetic circuit resulting from the ultimate current. May be approached briefly (<1 s) only if the stator is cold (approx. 60 °C) and magnet temperatures are below 60 °C. At higher temperatures, there is a risk of demagnetisation of the rotor and thermal destruction of the stator within a very short period of time. The ultimate torque should not be used as a dimensioning variable, but must be observed in the case of short-circuit braking.
T_p	Peak torque	Nm	Short duration (1 – 3 s) torque at I_p which is reliably attained in the saturation range and at all operating temperatures. With magnet temperatures up to 60 °C and in pulsed mode, T_p can be increased up to the value of T_u.
T_{cw}	Continuous torque, cooled	Nm	Motor torque at I_{cw} which is available as a continuous torque in nominal operation with water cooling and a maximum temperature gradient of approx. 100 K between the winding and cooling fluid.
T_c	Continuous torque, not cooled	Nm	Continuous motor torque at continuous current I_c which the motor can be operated at for thermally stable operation without external cooling, but is heated up in doing so.
T_{sw}	Stall torque, cooled	Nm	Torque that can be produced when the motor is stationary and with pole change frequencies up to approx. 0.1 Hz.
T_{cog}	Cogging torque	Nm	Torque which acts in a pulsating manner depending on the rotor position. The specified value is the peak value in the de-energized state.
n_{lw}	Knee speed	rpm	Winding-dependent speed limit without taking the dynamic heat losses into account when operating at I_{cw} and without field weakening. The torque drops significantly after this point.
n_{lwS1}	Continuous speed (S1), cooled	rpm	Speed limit up to which the motor can be continuously operated at I_{cw}.
I_u	Ultimate current	A_{rms}	Effective current at which the magnetic circuit has high saturation. It is determined either by the maximum current density in the winding or by the incipient risk of demagnetisation at a magnet temperature of 80 °C.
I_p	Peak current	A_{rms}	Effective current in the iron saturation range which should be used as the dimensioning variable (see also T_p). When the rotor is only moderately warm (magnet temperature max. 60 °C) and pulsed mode is used (max. 1 – 3 s), I_p can be increased to the limit value I_u.
I_{cw}	Continuous current, cooled	A_{rms}	Effective current which is permissible during continuous operation with water cooling above a pole change frequency of 0.1 Hz.

Symbol	Meaning	Unit	Explanation
I_c	Continuous current, not cooled	A_{rms}	Effective current at which the associated power loss leads to relatively low heating of the motor without forced cooling, depending on the size of the mounting base.
I_{sw}	Stall current, cooled	A_{rms}	Effective continuous current when the motor is stationary and with pole change frequencies up to approx. 0.1 Hz. Owing to the varying power distribution in the motor phases, the motor current must be reduced to this value to prevent local overheating. This is based on the most unfavourable rotor position from a thermal perspective.
P_l	Power loss	W	The thermal output resulting in the motor winding which leads to a time-dependent temperature increase subject to the operating mode (current) and the environmental conditions (cooling). In the upper dynamic range (at T_p), P_l is particularly high due to the squared dependence on current, whereas the warming in the continuous current range is relatively low. P_l is calculated in a simplified manner with the aid of the motor constant k_m for a movement section with the required torque T: $P_l = (T/k_m)^2$
P_{lp}	Power loss	W	Power loss at I_p
P_{lw}	Power loss	W	Power loss at I_{cw}
P_{lc}	Power loss	W	Power loss at I_c
k_m	Motor constant	Nm/√W	Constant which expresses the relation between the generated torque and the power loss, i.e. the efficiency of the motor. It depends on the temperature and is only completely accurate during static operation as well as in the linear dynamic range of the motor, e.g. in positioning procedures at low speeds and torques. If the winding temperature is 130 °C, the motor constant reduces to 0.85 times its normal value.
k_T	Torque constant	Nm/A_{rms}	Constant which, when multiplied by the current in the linear dynamic range, represents the motor torque that is being produced: $T = I_c \cdot k_T$.
k_u	Back EMF constant	V/(rad/s)	Constant which (in generator operation), when multiplied by the speed, produces the armature countervoltage (peak value) resulting at the motor terminals: $U_{EMF} = k_u \cdot n$
R_{25}	Electric resistance	Ω	Winding resistance between two motor phases at 25 °C. At 130 °C, it increases to approx. 1.4 times its normal value.
L	Inductance, phase to phase	mH	Inductance between two motor phases, applies to the linear range between torque and current.
dV/dt	Cooling water flow	l/min	Flow rate required to achieve the specified cooling water temperature difference $\Delta\vartheta$ with power loss P_{lw}.

Glossary

Symbol	Meaning	Unit	Explanation
$\Delta\vartheta$	Cooling water temperature difference	K	Maximum temperature difference between coolant inlet and outlet
ϑ	Motor temperature switch-off threshold	°C	With continuous operation at I_{cw} (water-cooled), the motor settles just under the temperature switching limit. If this temperature is exceeded – measured by the PTC sensor – a trigger device must switch off the servo controller in order to protect the motor.
U_{DCL}	DC link voltage	V	DC link voltage or supply voltage of the power actuators. The higher the speed and the countervoltage that rises with it and the greater the losses that depend on the frequency, the higher the voltage has to be.
P	Number of pole pairs		Number of magnetic pole pairs on the rotor
$f_p(n)$	Pole change frequency	Hz	Calculated from the speed and number of pole pairs of the motor: $f_p(n)$ [Hz] = n [rpm] / 60 · P
F_a	Axial attraction	kN	Magnetic force which draws the rotor into the stator.
F_r	Radial attraction	kN/mm	Magnetic force between rotor and stator which changes depending on the eccentricity of the rotor relative to the stator.

Modular system for rotary tables

Schaeffler offers a highly-specialized modular system that allows customers to select exactly the right components for their rotary tables and rotary axes – that includes high-speed, high-performance and high-precision designs.

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	Frictional torque ++ Speed + Rigidity +++ Axial/radial runout +++	Frictional torque ++ Speed ++ Rigidity ++ Axial/radial runout ++	Frictional torque +++ Speed +++ Rigidity + Axial/radial runout ++
RIB  Torque density +++ Speed + Accuracy ++	Positioning axes, simultaneous machining	Positioning axes, simultaneous machining	Positioning axes, simultaneous machining
RKI  Torque density +++ Speed ++ Accuracy +(+)	Gear machining (plane milling)	Combined machining (turn-milling), gear machining (plane milling)	Combined machining (turning/milling)
SRV  Torque density + Speed +++ Accuracy +++	Ultra-precision machining, positioning table and swivel-type axes	Combined machining (turning/milling), gear grinding	Turning, combined machining (turning/milling, grinding/hard turning), spindle applications

"+" Suitable "++" Very suitable "+++" Extremely suitable

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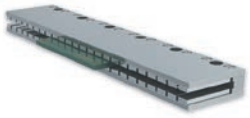
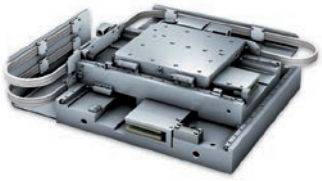
Linear actuators 	TorqueSense 	Linear motors 
Modules and tables 	SpindleSense 	Positioning systems 

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