

IndraDyn S – MSK synchronous servo motors

The particularly outstanding features of the MSK range of motors are its wide power spectrum and narrow size increments. The high torque density of these synchronous servo motors allows a particularly compact design with maximum torques of up to 631 Nm.

Depending on the required accuracy, you can choose between encoder systems with low, medium, or high resolution. All encoder versions are available in a single-turn and multi-turn configuration.

With numerous additional options, the MSK motors can be upgraded and tailored exactly to the desired requirement. The MSK series is thus also ideal for applications beyond the typical standard applications of servo motors.

The combination with IndraDrive control units results in high-performance drive systems with flexible configuration that offer innovative solutions for new drive applications.

The wide performance range of the MSK series of motors is supplemented with a multitude of functional options.

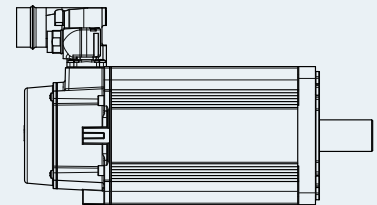


In addition to the different encoder systems, there is a wide choice of further options such as a shaft keyway, holding brake, and increased runout. For applications with high levels of continuous power, blower units for axial and radial mounting are available.

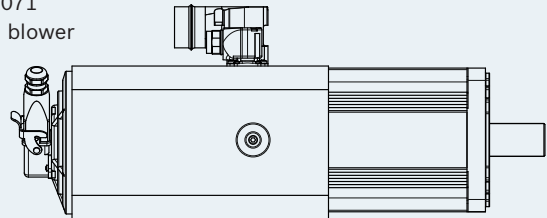
As with the MSK motors themselves, the blower motors also feature protection category IP65 as standard and are equipped with an integrated temperature sensor. This not only increases the reliability of the motors. The certified intrinsic safety of the blowers (“Thermally-Protected F” as per UL) also eliminates the need for an external motor circuit breaker. Liquid cooling is available for selected sizes for very high power applications.

Example MSK071

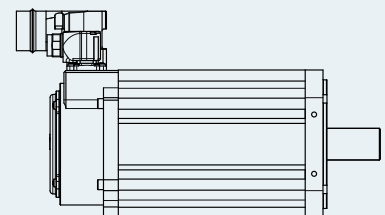
MSK071
Convection



MSK071
With blower

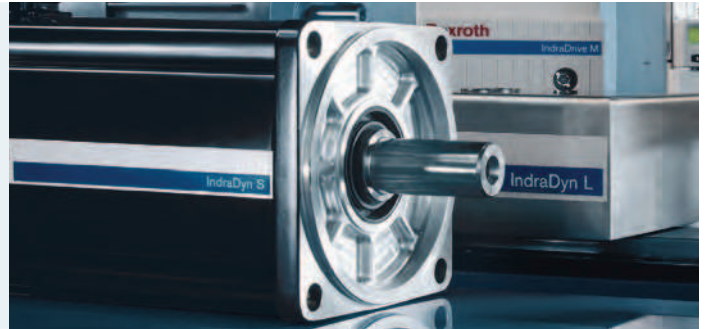


MSK071
Liquid cooling
system



Compact and powerful

- ▶ Maximum torques up to 631 Nm
- ▶ Maximum speeds up to 9,000 rpm
- ▶ Encoder systems for a wide and diverse range of applications
- ▶ High protection category IP65
- ▶ Choice of cooling systems



The simple step-by-step guide to ordering your MSK servo motor:

MSK 060C-0600-NN-S1-UG0-NN NN

Motor

- ▶ Overall size (e.g. "060")
- ▶ Overall length (e.g. "C")
- ▶ Winding (e.g. "0600")

Cooling system

- NN** = Natural convection
Blower can be fitted optionally from size 060
- FN**¹⁾ = Integrated liquid cooling system
- SA** = Integrated blower (only MSK133)

Encoder

- S1** = Single-turn encoder (Hiperface®), 128 signal periods
- M1** = Multi-turn encoder (Hiperface®), 128 signal periods with 4,096 revolutions absolute
- S2**²⁾ = Single-turn encoder (EnDat), 2,048 signal periods
- M2**²⁾ = Multi-turn encoder (EnDat) 2,048 signal periods with 4,096 revolutions absolute
- S3** = Single-turn encoder (Hiperface®), 16 signal periods
- M3** = Multi-turn encoder (Hiperface®), 16 signal periods with 4,096 revolutions absolute

Shaft

- G** = Plain shaft with shaft sealing ring
- P** = Keyway conforming to DIN 6885-1 and shaft sealing ring

Other versions

- N** = Standard
- S**¹⁾ = Ex-protected version conforming to Equipment Group II, Category 3, G and D

Shaft runout

- N** = Standard, in conjunction with S1/M1 or S3/M3 encoder only
- R** = Reduced, linear movement conforming to DIN 42955, in conjunction with S2 or M2 encoder only

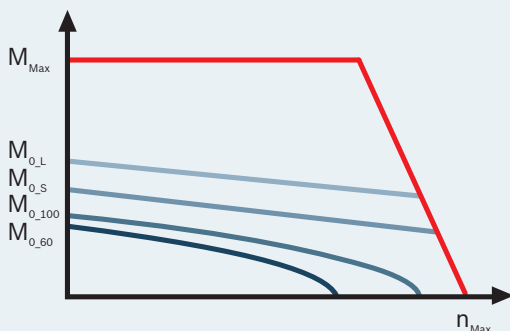
Holding brake¹⁾

- 0** = Without holding brake
- 1** = With electr. released holding brake
- 2** = With heavy-duty holding brake
- 3** = With extra-heavy-duty holding brake

¹⁾ Only for certain sizes
See the product documentation for an exact breakdown

²⁾ For sizes 040 to 131

Example curve



Continuous torque at standstill M_0

$M_{0,L}$ = Liquid-cooled

$M_{0,S}$ = Surface-ventilated

$M_{0,100}$ = 100K, non-insulated design

$M_{0,60}$ = 60K, insulated design

See the following pages for an overview of the motor data

IndraDyn S – technical data

Type	Maximum speed ¹⁾	Continuous torque at standstill				Maximum torque	Continuous current at standstill				Maximum current
		60K	100K	Blower	L cooling		60K	100K	Blower	L cooling	
	n_{Max} rpm	$M_{0,60}$ Nm	$M_{0,100}$ Nm	$M_{0,S}^{2)}$ Nm	$M_{0,L}^{2)}$ Nm	M_{Max} Nm	$I_{0,60}$ A	$I_{0,100}$ A	$I_{0,S}^{2)}$ A	$I_{0,L}^{2)}$ A	I_{Max} A
MSK030B-0900-NN	9.000	0,4	0,45	–	–	1,8	1,5	1,7	–	–	6,8
MSK030C-0900-NN	9.000	0,8	0,9	–	–	4	1,5	1,7	–	–	6,8
MSK040B-0450-NN	6.000	1,7	1,9	–	–	5,1	1,5	1,7	–	–	6
MSK040B-0600-NN	7.500	1,7	1,9	–	–	5,1	2	2,2	–	–	8
MSK040C-0450-NN	6.000	2,7	3,1	–	–	8,1	2,4	3,1	–	–	9,6
MSK040C-0600-NN	7.500	2,7	3,1	–	–	8,1	3,1	4,7	–	–	12,4
MSK043C-0600-NN	7.500	2,7	3,1	–	–	12,5	3,6	4,3	–	–	18,5
MSK050B-0300-NN	4.300	3	3,4	–	–	9	1,8	2	–	–	7,2
MSK050B-0450-NN	6.000	3	3,4	–	–	9	2,8	3,2	–	–	11,2
MSK050B-0600-NN	6.000	3	3,4	–	–	9	3,7	4,2	–	–	14,8
MSK050C-0300-NN	4.700	5	5,5	–	–	15	3,1	3,4	–	–	12,4
MSK050C-0450-NN	6.000	5	5,5	–	–	15	4,7	5,2	–	–	18,8
MSK050C-0600-NN	6.000	5	5,5	–	–	15	6,2	6,8	–	–	24,8
MSK060B-0300-NN	4.800	5	5,5	–	–	15	3	3,3	–	–	12
MSK060B-0600-NN	6.000	5	5,5	–	–	15	6,1	6,7	–	–	24,4
MSK060C-0300-NN	4.900	8	8,8	12	–	24	4,8	5,3	7,2	–	19,2
MSK060C-0600-NN	6.000	8	8,8	12	–	24	9,5	10,5	14,3	–	38
MSK061B-0300-NN	4.200	3,5	3,9	–	–	14	1,9	2,1	–	–	8,6
MSK061C-0200-NN	3.100	8	9	12	–	32	3,2	3,6	4,8	–	14,4
MSK061C-0300-NN	4.200	8	9	12	–	32	4,3	4,8	6,5	–	19,4
MSK061C-0600-NN	6.000	8	9	12	–	32	7,7	8,7	11,6	–	34,7
MSK070C-0150-NN	2.500	13	14,5	19,5	–	33	4,1	4,6	6,2	–	12,6
MSK070C-0300-NN	5.500	13	14,5	19,5	–	33	8,2	9,2	12,3	–	25
MSK070C-0450-NN	6.000	13	14,5	19,5	–	33	12,3	13,7	18,5	–	36,9
MSK070D-0150-NN	2.700	17,5	20	26,3	–	52,5	6,2	7,1	9,3	–	24,8
MSK070D-0300-NN	4.900	17,5	20	26,3	–	52,5	11	12,6	16,5	–	33
MSK070D-0450-NN	6.000	17,5	20	26,3	–	52,5	16,6	22	24,9	–	49,8
MSK070E-0150-NN	2.200	23	25	34,5	–	70	6,4	7	9,6	–	25,6
MSK070E-0300-NN	5.300	23	25	34,5	–	65	15,4	16,7	23,1	–	49,3
MSK070E-0450-NN	6.000	23	25	34,5	–	60	19,3	21	29	–	57,9
MSK071C-0200-NN	3.500	12	14	18	22,8	44	5,2	6,1	7,8	9,9	23,4
MSK071C-0300-NN	5.000	12	14	18	22,8	44	7,3	8,5	11	13,9	32,9
MSK071C-0450-NN	5.800	12	14	18	22,8	44	8,9	10,4	13,4	16,9	40,1
MSK071D-0200-NN	3.200	17,5	20	26,3	33,3	66	7,3	8,6	11	13,9	32,8
MSK071D-0300-NN	3.800	17,5	20	26,3	33,3	66	9,1	10,7	13,5	17,2	40,5
MSK071D-0450-NN	6.000	17,5	20	26,3	33,3	66	15,4	17,6	23,1	30,3	69,3
MSK071E-0200-NN	3.400	23	28	34,5	43,7	84	10,1	12,6	15,2	19	45,5
MSK071E-0300-NN	4.200	23	28	34,5	43,7	84	12,5	15,2	18,8	24,9	56,3
MSK071E-0450-NN	6.000	23	28	34,5	43,7	84	20	24,4	30	38	90,1
MSK075C-0200-NN	4.100	12	12,5	18	–	44	6,3	7,3	9,5	–	28,4
MSK075C-0300-NN	5.000	12	12,5	18	–	44	8,4	8,8	12,6	–	37,8
MSK075C-0450-NN	6.000	12	12,5	18	–	44	12,6	13,1	18,9	–	56,7
MSK075D-0200-NN	3.800	17	18,5	25,5	–	64	8,3	9	12,5	–	37,4
MSK075D-0300-NN	4.800	17	18,5	25,5	–	66	11,7	12,7	17,6	–	52,7
MSK075D-0450-NN	6.000	17	18,5	25,5	–	64	16,5	18	24,8	–	74,3
MSK075E-0200-NN	3.850	21	23	31,5	–	88	10,2	11,2	15,3	–	45,9
MSK075E-0300-NN	5.200	21	23	31,5	39,9	88	14,2	15,6	21,3	27	63,9
MSK075E-0450-NN	6.000	21	23	31,5	39,9	88	18,6	20,4	27,9	35,3	83,7
MSK076C-0300-NN	4.700	12	13,5	18	–	43,5	7,2	8,1	10,8	–	32,4
MSK076C-0450-NN	5.000	12	13,5	18	–	43,5	12,2	13,7	18,3	–	54,9

All specifications relate to the basic version of the motor with encoder S1, without holding brake

¹⁾ At 750 V DC bus voltage

²⁾ S = Fan cooled. / L = Liquid cooled

³⁾ Flange size 150 mm for MSK071 with liquid cooling system

Type	Moment of inertia	Dimensions										Weight		
		J	A	B	B_S ²⁾	B_L ²⁾	C	Ø D	Ø E	Ø F	Ø G		H	m
		kgm ²	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	kg
MSK030B-0900-NN	0,000013	54	152,5	—	—	20	9	40	63	4,5	98,5	1,3		
MSK030C-0900-NN	0,00003	54	188	—	—	20	9	40	63	4,5	98,5	1,9		
MSK040B-0450-NN	0,0001	82	155,5	—	—	30	14	50	95	6,6	124,5	2,8		
MSK040B-0600-NN	0,0001	82	155,5	—	—	30	14	50	95	6,6	124,5	2,8		
MSK040C-0450-NN	0,00014	82	185,5	—	—	30	14	50	95	6,6	124,5	3,6		
MSK040C-0600-NN	0,00014	82	185,5	—	—	30	14	50	95	6,6	124,5	3,6		
MSK043C-0600-NN	0,000083	82	185,5	—	—	30	14	50	95	6,6	124,5	3,6		
MSK050B-0300-NN	0,00028	98	173	—	—	40	19	95	115	9	134,5	4		
MSK050B-0450-NN	0,00028	98	173	—	—	40	19	95	115	9	134,5	4		
MSK050B-0600-NN	0,00028	98	173	—	—	40	19	95	115	9	134,5	4		
MSK050C-0300-NN	0,00033	98	203	—	—	40	19	95	115	9	134,5	5,4		
MSK050C-0450-NN	0,00033	98	203	—	—	40	19	95	115	9	134,5	5,4		
MSK050C-0600-NN	0,00033	98	203	—	—	40	19	95	115	9	134,5	5,4		
MSK060B-0300-NN	0,00048	116	181	—	—	50	24	95	130	9	156	5,7		
MSK060B-0600-NN	0,00048	116	181	—	—	50	24	95	130	9	156	5,7		
MSK060C-0300-NN	0,0008	116	226	395	—	50	24	95	130	9	156	8,4		
MSK060C-0600-NN	0,0008	116	226	395	—	50	24	95	130	9	156	8,4		
MSK061B-0300-NN	0,00044	116	223	—	—	40	19	95	130	9	156	5,7		
MSK061C-0200-NN	0,000752	116	264	432	—	40	19	95	130	9	156	8,3		
MSK061C-0300-NN	0,000752	116	264	432	—	40	19	95	130	9	156	8,3		
MSK061C-0600-NN	0,000752	116	264	432	—	40	19	95	130	9	156	8,3		
MSK070C-0150-NN	0,00291	140	238	429	—	58	32	130	165	11	202	11,7		
MSK070C-0300-NN	0,00291	140	238	429	—	58	32	130	165	11	202	11,7		
MSK070C-0450-NN	0,00291	140	238	429	—	58	32	130	165	11	202	11,7		
MSK070D-0150-NN	0,00375	140	268	459	—	58	32	130	165	11	202	14		
MSK070D-0300-NN	0,00375	140	268	459	—	58	32	130	165	11	202	14		
MSK070D-0450-NN	0,00375	140	268	459	—	58	32	130	165	11	202	14		
MSK070E-0150-NN	0,00458	140	298	489	—	58	32	130	165	11	202	16,2		
MSK070E-0300-NN	0,00458	140	298	489	—	58	32	130	165	11	202	16,2		
MSK070E-0450-NN	0,00458	140	298	489	—	58	32	130	165	11	202	16,2		
MSK071C-0200-NN	0,00173	140 ³⁾	272	463	276	58	32	130	165	11	202	13,9		
MSK071C-0300-NN	0,00173	140 ³⁾	272	463	276	58	32	130	165	11	202	13,9		
MSK071C-0450-NN	0,00173	140 ³⁾	272	463	276	58	32	130	165	11	202	13,9		
MSK071D-0200-NN	0,0023	140 ³⁾	312	503	316	58	32	130	165	11	202	18		
MSK071D-0300-NN	0,0023	140 ³⁾	312	503	316	58	32	130	165	11	202	18		
MSK071D-0450-NN	0,0023	140 ³⁾	312	503	316	58	32	130	165	11	202	18		
MSK071E-0200-NN	0,0029	140 ³⁾	352	543	356	58	32	130	165	11	202	23,5		
MSK071E-0300-NN	0,0029	140 ³⁾	352	543	356	58	32	130	165	11	202	23,5		
MSK071E-0450-NN	0,0029	140 ³⁾	352	543	356	58	32	130	165	11	202	23,5		
MSK075C-0200-NN	0,00352	140	307	498	—	58	32	130	165	11	202	14,8		
MSK075C-0300-NN	0,00352	140	307	498	—	58	32	130	165	11	202	14,8		
MSK075C-0450-NN	0,00352	140	307	498	—	58	32	130	165	11	202	14,8		
MSK075D-0200-NN	0,0049	140	347	538	—	58	32	130	165	11	202	19		
MSK075D-0300-NN	0,0049	140	347	538	—	58	32	130	165	11	202	19		
MSK075D-0450-NN	0,0049	140	347	538	—	58	32	130	165	11	202	19		
MSK075E-0200-NN	0,00613	140	387	578	391	58	32	130	165	11	202	22,5		
MSK075E-0300-NN	0,00613	140	387	578	391	58	32	130	165	11	202	22,5		
MSK075E-0450-NN	0,00613	140	387	578	391	58	32	130	165	11	202	22,5		
MSK076C-0300-NN	0,0043	140	292,5	462	—	50	24	110	165	11	180	13,8		
MSK076C-0450-NN	0,0043	140	292,5	462	—	50	24	110	165	11	180	13,8		