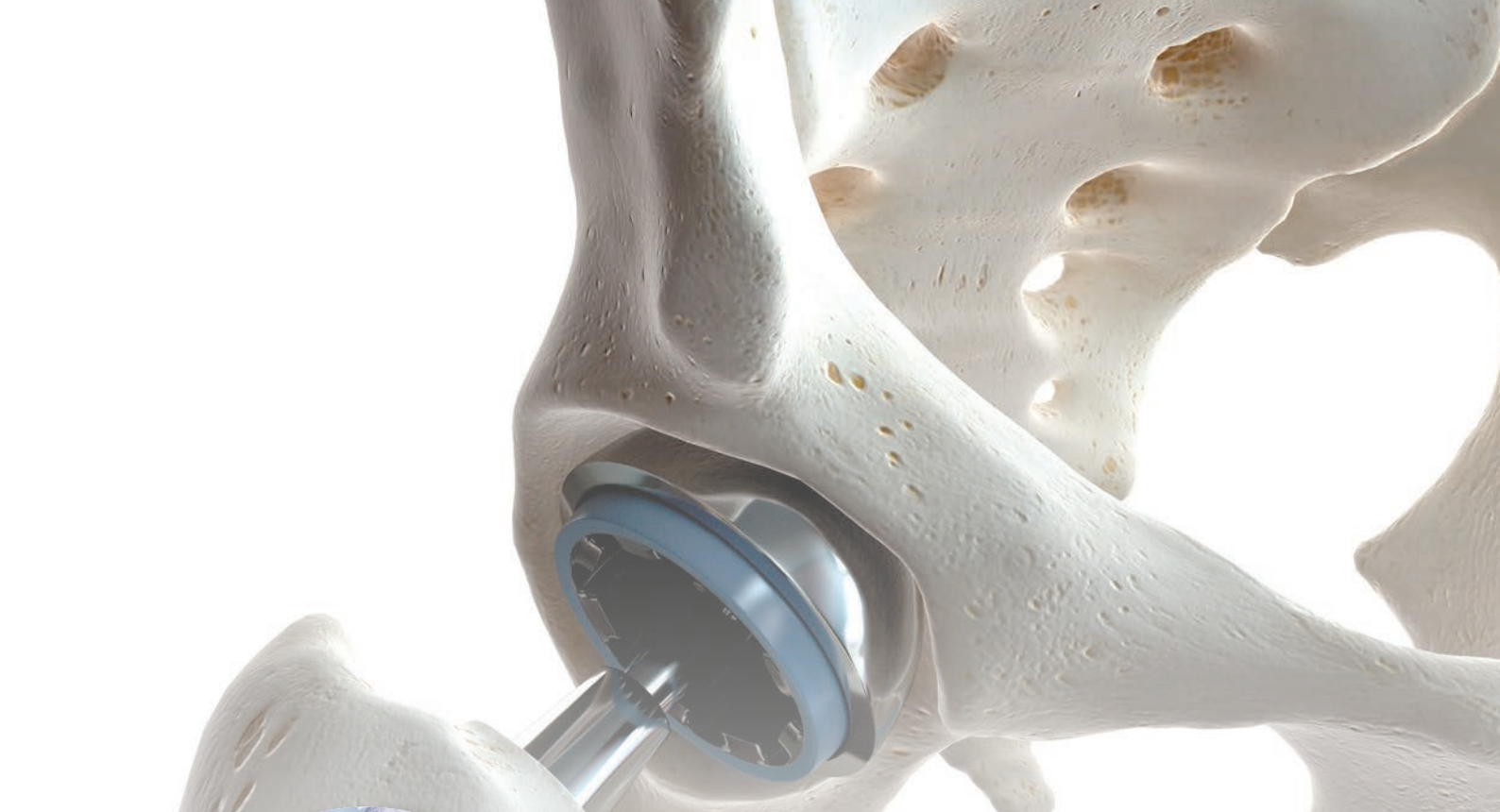


ELECTROMAG
MABUCHI MOTOR GROUP

Motor solutions for surgical applications

Orthopedic power tools
Powered ENT, neuro and spine drills
Surgical robotics

NEW
PRODUCTS

Motor solutions for surgical applications

Since 2003, Mabuchi Motor Electromag has been developing high-speed ultra-quiet brushless DC motors for critical healthcare applications.

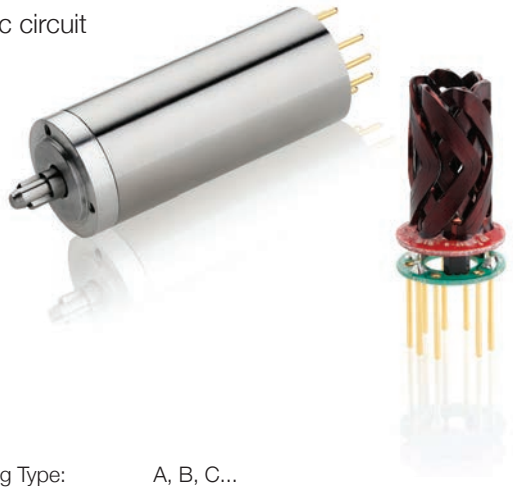
For surgical applications, Mabuchi Motor Electromag offers a range of autoclavable 16, 22 and 30 mm solutions integrating a patented coil technology that reduces losses and provides a high torque density. Electromag motors feature a distinctive balancing process and a slotless design that eliminates cogging. The result: virtually no noise and vibrations for higher precision and user comfort.

All motors are customizable allowing optimal integration.

Solutions overview

Features

- Autoclavable BLDC motors
- Highest torque density thanks to a patented coil technology
- Available with integrated gearbox
- Available with or without Hall sensors
- Electrical interface using lead wires or pins
- Cannulated or plain shafts
- Customizable interfaces and magnetic circuit

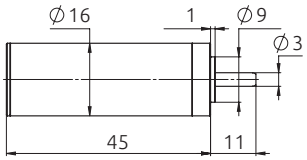


Motor designation: 22 SL L 1 -A

22	Motor diameter:	16, 22, 30
SL	Technology:	SL-Slotless
L	Length:	S-Short, L-Long
1	Number of pole pairs:	1 (2 poles), 2 (4 poles)
-A	Winding Type:	A, B, C...

16SLS1

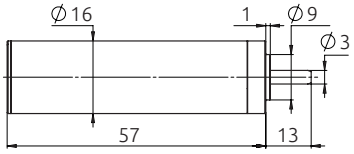
2-pole 16 mm brushless DC motor



ELECTRICAL CONFIGURATION	VOLTAGE	NO-LOAD SPEED	POWER [1]	SPEED [1]	TORQUE [1]	CURRENT [1]	TORQUE AT (CURRENT)	BACK-EMF CONSTANT	MOTOR CONSTANT	TORQUE CONSTANT	PHASE-PHASE RESISTANCE [2]
	V	rpm	W	rpm	mNm	A	mNm	V/krpm	mNm/√W	mNm/A	Ohm
16SLS1-A	18	87 000	88	84 000	10	5.1	20 (10)	0.21	5.6	2.0	0.124
	12	58 000	76	54 000	13	6.8	20 (10)	0.21	5.6	2.0	0.124
16SLS1-B	24	67 000	83	63 000	13	3.7	34 (10)	0.36	5.6	3.4	0.371
	18	50 500	68	46 000	14	4.1	34 (10)	0.36	5.6	3.4	0.371
16SLS1-C	48	67 000	83	63 000	13	1.8	68 (10)	0.72	5.6	6.8	1.486
	24	33 500	46	29 000	15	2.2	68 (10)	0.72	5.6	6.8	1.486

16SLL1

2-pole 16 mm brushless DC motor



ELECTRICAL CONFIGURATION	VOLTAGE	NO-LOAD SPEED	POWER [1]	SPEED [1]	TORQUE [1]	CURRENT [1]	TORQUE AT (CURRENT)	BACK-EMF CONSTANT	MOTOR CONSTANT	TORQUE CONSTANT	PHASE-PHASE RESISTANCE [2]
	V	rpm	W	rpm	mNm	A	mNm	V/krpm	mNm/√W	mNm/A	Ohm
16SLL1-A	24	75 500	173	71 000	23	8.7	27 (10)	0.32	9.3	3.0	0.107
	18	56 500	134	52 000	25	9.2	27 (10)	0.32	9.3	3.0	0.107
16SLL1-B	48	87 000	193	83 000	22	4.8	46 (10)	0.55	9.3	5.3	0.320
	24	43 500	103	38 500	25	5.5	46 (10)	0.55	9.3	5.3	0.320
16SLL1-C	48	43 500	103	38 500	25	2.7	93 (10)	1.10	9.3	10.5	1.280
	24	22 000	47	17 000	26	2.8	93 (10)	1.10	9.3	10.5	1.280

Notes

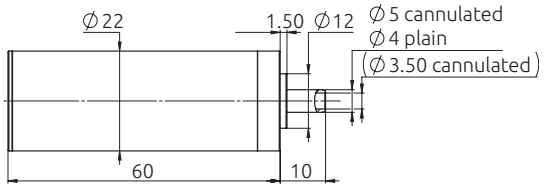
- Please contact us for the complete motor data sheet
- Other configurations available upon request
- Specifications are subject to change without prior notice

[1] Maximum continuous mechanical power. Continuous values are obtained using a heat sink that reduces the motor thermal resistance by 50% (typical case). Continuous operation is possible up until the maximum winding temperature has been reached. Beyond this point, intermittent operation or additional cooling should be considered.

[2] Resistance values are for a motor with pin terminals. If the motor is equipped with lead wires, the resistance value must be adapted.

22SLL1

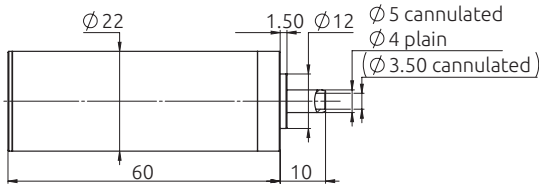
2-pole 22 mm brushless DC motor



ELECTRICAL CONFIGURATION	VOLTAGE	NO-LOAD SPEED	POWER [1]	SPEED [1]	TORQUE [1]	CURRENT [1]	TORQUE AT (CURRENT)	BACK-EMF CONSTANT	MOTOR CONSTANT	TORQUE CONSTANT	PHASE-PHASE RESISTANCE [2]
	V	rpm	W	rpm	mNm	A	mNm	V/krpm	mNm/√W	mNm/A	Ohm
22SLL1-A	14.4	54 000	217	52 000	40	15.6	77 (30)	0.26	13.2	2.6	0.038
	9.6	36 000	160	33 500	45	17.8	77 (30)	0.26	13.2	2.6	0.038
22SLL1-B	24	47 000	197	44 500	42	8.7	146 (30)	0.46	13.2	4.9	0.137
	14.4	28 000	126	25 500	47	9.7	146 (30)	0.46	13.2	4.9	0.137
22SLL1-C	24	26 000	117	23 500	48	5.4	265 (30)	0.91	13.2	8.8	0.447
	14.4	15 500	67	13 000	49	5.6	265 (30)	0.91	13.2	8.8	0.447

22SLL2

4-pole 22 mm brushless DC motor



ELECTRICAL CONFIGURATION	VOLTAGE	NO-LOAD SPEED	POWER [1]	SPEED [1]	TORQUE [1]	CURRENT [1]	TORQUE AT (CURRENT)	BACK-EMF CONSTANT	MOTOR CONSTANT	TORQUE CONSTANT	PHASE-PHASE RESISTANCE [2]
	V	rpm	W	rpm	mNm	A	mNm	V/krpm	mNm/√W	mNm/A	Ohm
22SLL2-A	24	45 500	153	45 000	33	6.5	150 (30)	0.50	24.1	5.0	0.043
	18	34 500	217	33 500	62	12.4	150 (30)	0.50	24.1	5.0	0.043
22SLL2-B	24	26 500	198	25 500	74	8.6	259 (30)	0.86	24.1	8.6	0.128
	18	20 000	158	18 500	82	9.4	259 (30)	0.86	24.1	8.6	0.128
22SLL2-C	48	26 000	196	25 000	75	4.3	519 (30)	1.73	24.1	17.3	0.514
	24	13 000	105	11 500	87	5.1	519 (30)	1.73	24.1	17.3	0.514

Notes

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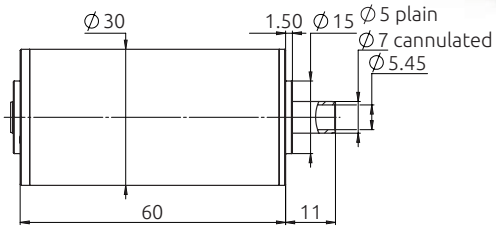
- Specifications are subject to change without prior notice

[1] Maximum continuous mechanical power. Continuous values are obtained using a heat sink that reduces the motor thermal resistance by 50% (typical case). Continuous operation is possible up until the maximum winding temperature has been reached. Beyond this point, intermittent operation or additional cooling should be considered.

[2] Resistance values are for a motor with pin terminals. If the motor is equipped with lead wires, the resistance value must be adapted.

30SLL1

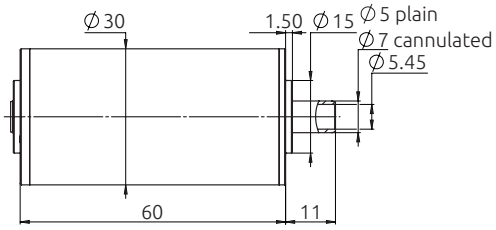
2-pole 30 mm brushless DC motor



ELECTRICAL CONFIGURATION	VOLTAGE	NO-LOAD SPEED	POWER [1]	SPEED [1]	TORQUE [1]	CURRENT [1]	TORQUE AT (CURRENT)	BACK-EMF CONSTANT	MOTOR CONSTANT	TORQUE CONSTANT	PHASE-PHASE RESISTANCE [2]
	V	rpm	W	rpm	mNm	A	mNm	V/krpm	mNm/√W	mNm/A	Ohm
30SLL1-A	14.4	39 500	313	38 000	79	22.6	104 (30)	0.37	21.0	3.5	0.028
	9.6	26 500	228	24 500	89	25.6	104 (30)	0.37	21.0	3.5	0.028
30SLL1-B	14.4	23 000	201	21 000	91	15.1	181 (30)	0.63	21.0	6.0	0.083
	9.6	15 000	130	13 000	95	15.8	181 (30)	0.63	21.0	6.0	0.083
30SLL1-C	14.4	11 500	96	9 500	97	8.0	361 (30)	1.27	21.0	12.0	0.330
	9.6	7 500	56	5 500	98	8.1	361 (30)	1.27	21.0	12.0	0.330

30SLL2

4-pole 30 mm brushless DC motor



ELECTRICAL CONFIGURATION	VOLTAGE	NO-LOAD SPEED	POWER [1]	SPEED [1]	TORQUE [1]	CURRENT [1]	TORQUE AT (CURRENT)	BACK-EMF CONSTANT	MOTOR CONSTANT	TORQUE CONSTANT	PHASE-PHASE RESISTANCE [2]
	V	rpm	W	rpm	mNm	A	mNm	V/krpm	mNm/√W	mNm/A	Ohm
30SLL2-A	16	18 500	131	18 000	69	9.6	216 (30)	0.86	45.1	8.2	0.033
	12	14 000	151	13 000	111	15.4	216 (30)	0.86	45.1	8.2	0.033
30SLL2-B	24	16 000	150	15 000	96	7.6	375 (30)	1.49	45.1	14.2	0.099
	16	11 000	134	10 000	128	10.3	375 (30)	1.49	45.1	14.2	0.099
30SLL2-C	48	16 000	150	15 000	96	3.8	750 (30)	2.97	45.1	28.4	0.396
	24	8 000	103	7 000	141	5.6	750 (30)	2.97	45.1	28.4	0.396

Notes

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- Specifications are subject to change without prior notice

[1] Maximum continuous mechanical power. Continuous values are obtained using a heat sink that reduces the motor thermal resistance by 50% (typical case). Continuous operation is possible up until the maximum winding temperature has been reached. Beyond this point, intermittent operation or additional cooling should be considered.

[2] Resistance values are for a motor with pin terminals. If the motor is equipped with lead wires, the resistance value must be adapted.

Who we are

Mabuchi Motor Electromag SA headquartered in Ecublens, Switzerland, is a leading expert in the development and manufacturing of brushless DC motors for demanding applications up to 300 W. One of the hallmark features of Electromag motors is their quietness and low vibration level for speeds up to 100,000 rpm. Renowned for their reliability, Electromag motors offer highest efficiency, in particular thanks to a patented winding technology. Mabuchi Motor Electromag SA is ISO9001 and ISO13485 certified.

Since 2021, Mabuchi Motor Electromag SA is part of Mabuchi Motor Group that is listed on the Tokyo Stock Exchange and employs more than 21,000 employees worldwide. Mabuchi Motor is a leading motor provider to automotive, industrial, healthcare and consumer markets.

Innovation

Design

Customization

Production

ultra-quiet high-speed motors

Mabuchi Motor Electromag SA
Chemin du Dévent 7
Z.I. Larges Pièces A
1024 Ecublens
Switzerland
+41 (0)21 694 16 00
info@electromag.ch
www.electromag.ch

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MABUCHI MOTOR GROUP

ISO 9001 CERTIFIED

ISO 13485 CERTIFIED

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