KOCO
DC-MOTION

HOT PRODUCTS

A VARIETY OF APPLICATIONS

PRECISION DC CORELESS MOTOR

BRUSHLESS DC MOTOR

ELECTRONIC SPEED CONTROLLER

PRECISION GEARMOTOR

PRECISION SERVO MOTOR

DC CORELESS MOTOR

FLAT DC MOTOR

DC CORE MOTOR

MINI STEP MOTOR

SONIC MOTOR

...Intelligence in motion

ABOUT KOCO DC-MOTION

KOCO DC-MOTION, Inc. is a California, U.S. Corporation jointly owned by **Constar Micromotor Co., Ltd. of China** and **KOCO MOTION GmbH of Germany.** The company is a full service base of operations providing Application Engineering and Sales support to our North America customers.

Constar Micromotor Co., Ltd. is a high-tech motor design and manufacturing enterprise with headquarters in Shenzhen, China. The company has two manufacturing facilities: The Shenzhen GuangMing Micromotor Factory and the Chongqing Fuling Micromotor Factory, with a combined total area of 70.000 square meters and with 1200 employees.

Constar puts a premium emphasis on continued research and development, and seeks to hire top talent senior specialists in the mechanical and electrical/ electronic engineering fields.

Constar Shenzhen Factory ▶

▲ Constar Chongqing Factory, China

▲ One of Constar automated production lines

Constar's present manufacturing capacity is 100 million motors per year. Constar is competitive and supplies a high value product. The company has Global Brand Recognition in their primary markets such as: medical and healthcare devices, industrial automation and robotics, automotive, digital cameras, chemical analysis machines, security devices, avionics, optical instruments, portable construction devices, and avionic applications.

The company also participates on a joint Sino-Japanese development team. The Company has achieved technical breakthroughs in the field of motor design and manufacturing and holds many patents in its industry. Constar firmly believes that innovation and continued development is essential for success in the Global Economy with its new opportunities and challenges.

As a result of Constar's commitment to performance they have been awarded the following certifications:

- **ISO9001** for accuracy, quality, workmanship, and systemized manufacturing work flow.
- **TS 16949** for quality management system and methods.
- **ISO14001** for environmental management.

KOCO MOTION GmbH is located in Dauchingen, Germany, a town in the well known Black Forest region. The company is a manufacturer and distributor of small flat DC motors and special brushless DC motors (BLDC motors) as well as highly integrated motion control products.

KOCO MOTION GmbH and KOCO automotive GmbH, Germany ▶

▲ ***KOCO DC-MOTION, Inc., California***

▲ ***KOCO DC-MOTION Team, California***

The company has a close working relationship with Constar Micromotor Co. and has been importing and marketing their products in Europe. This, when considered together with the in-depth knowledge of motor manufacturing and markets held by KOCO MOTION, is a solid foundation for the jointly owned **KOCO DC-MOTION, Inc. in the United States.**

▲ ***Left to right:***
Albert Xiao – Application Engineer
Kevin Oda – Senior Application Engineer,
Carol Huang – Vice President Marketing & Sales,
Gerhard Kocherscheidt – President
Peter Thornton – Consultant

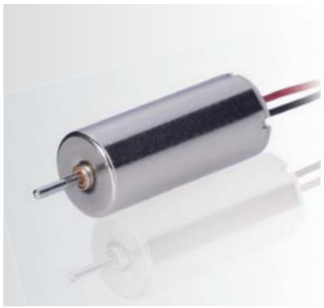
PRODUCTS

DC MOTORS AND BLDC MOTORS

The DC motors cover the power range of 0.06 to 1.670 Watts and include both "brush" and "brushless" (BLDC) types.
The brush types include both "ironcore rotor" and "ironless rotor" DC motors. The "ironless" motors are usually referred to as "Micromotors".
Micromotors are especially useful in applications requiring linear characteristics, maximum efficiency, and small space.
BLDC motors are particularly known for long life as there are no brushes and commutators to wear out since the motor commutation is done electronically and usually contain Hall sensors to determine commutation timing.

BRUSHLESS DC MOTOR (Interior Rotor)

DC CORE MOTOR (Vibration)

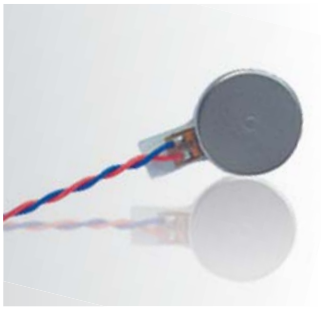


MICRO DC CORELESS MOTOR (Driving Series)

MINI STEP MOTOR (Permanent Magnet)

DC GEAR MOTOR

SERVO SYSTEM (Precious Metal brush)



FLAT DC MOTOR (Vibration)

FLAT DC MOTOR (Driving Series)

PRECISION DC CORELESS MOTORS

BRUSHLESS DC MOTORS

APPLICATION FIELDS

Globally recognized Micromotor manufacturer supplies professional indivudual solutions

PRECISION DC CORELESS MOTORS

The product features compact size, high efficiency, long operational lifetime, low vibration, little electromagnetic interference, excellent servo performance

BRUSHLESS DC MOTOR

The product features compact size, high efficiency, long operational lifetime, low vibration, little electromagnetic interference, excellent servo performance

DRIVING SYSTEM

Constar motors can be equipped with a corresponding precision gear box, encoder and controller providing a custom drive system.

SERVO SYSTEM

Constar servo systems consists of precision DC coreless motor (or brushless motor), high resolution optical encoder and gear box, featuring high resolution, high sensitivity and excellent controllability.

PRECISION DC CORELESS MOTORS

Coreless windings are utilized in our precision DC coreless motors (Micromotors). Due to an integrated structure consisting of a symmetrical winding, commutator and motor shaft, these motors are very smooth and stable running and without vibration. The motors are characterized by:

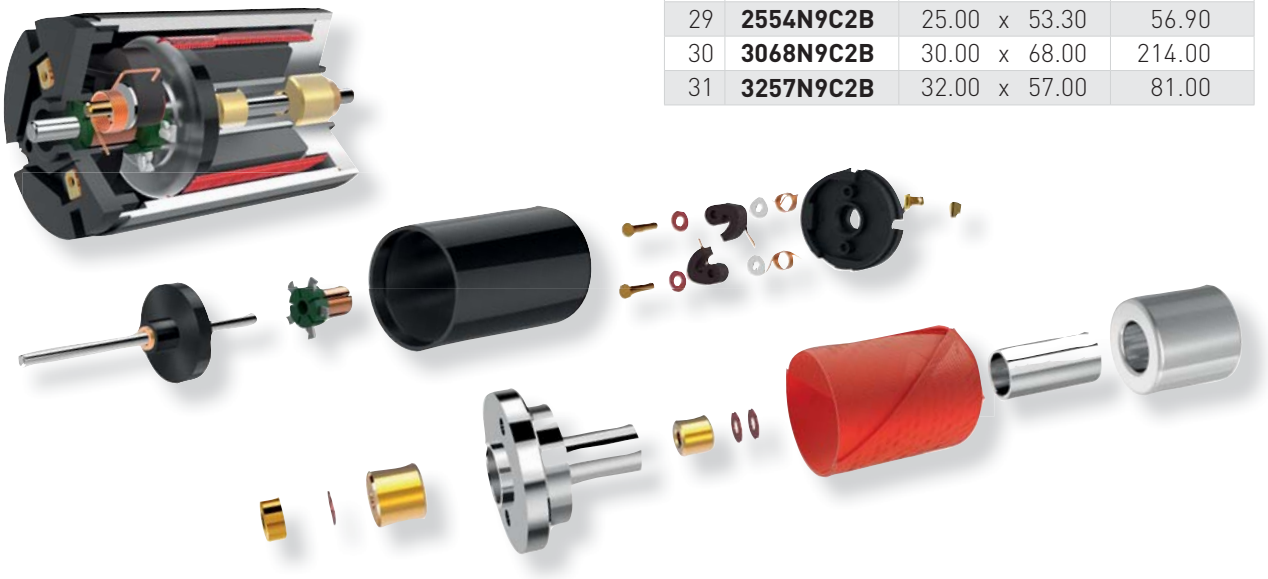
- **low inertia**
- **rapid acceleration**
- **high efficiency**
- **no cogging and linear output performance**

They have excellent speed regulation and servo performance. High performance Nd-Fe-B magnets are used, and the product is compact in size. The motor with precious metal commutation is used in low power applications, whereas carbon-brush commutation is used in higher power applications with long operational lifetime. The product is typically used for precision drives in medical equipment and devices, healthcare products, robotics, automotive, and industrial automation.

Typical applications

Precision drives in medical, health care, robotics, automobile and industrial automation fields, nail gun, etc.

	Motor No.	Dia x Length (max) in mm	Max. Power in W
1	**0615N5M**	6.00 x 15.00	0.83
2	**0816N5M**	8.00 x 16.20	0.34
3	**1020N5M**	10.00 x 20.70	4.04
4	**1025N5M**	10.00 x 24.00	1.59
5	**1221N5M2B**	12.00 x 21.00	1.96
6	**1221N7M**	12.00 x 21.00	2.00
7	**1230N5M**	12.40 x 30.90	3.40
8	**1230N7M**	12.40 x 30.70	6.23
9	**1331N5M**	13.00 x 31.50	2.23
10	**1515N5M**	15.00 x 15.20	5.14
11	**1620N5M**	16.00 x 20.00	3.43
12	**1625N5C**	16.00 x 25.60	2.60
13	**1625N5M**	16.00 x 25.20	2.89
14	**1625N9M**	16.00 x 25.20	2.60
15	**1627N5M(1)**	16.00 x 27.00	4.90
16	**1627N5M(2)**	16.00 x 27.00	3.00
17	**1630N5C**	16.00 x 29.60	12.40
18	**1630N5M2B**	16.00 x 30.00	4.10
19	**1735N5C2B**	17.00 x 35.00	6.80
20	**1925N9M**	19.00 x 25.20	5.00
21	**2224N5M2B**	22.00 x 24.20	17.70
22	**2225N5M**	22.00 x 25.30	6.10
23	**2232N5M**	22.00 x 31.60	8.30
24	**2232N9M**	22.00 x 31.60	8.30
25	**2233N5C**	22.00 x 33.70	24.30
26	**2233N5M2B**	22.00 x 33.20	5.00
27	**2433N5M2B**	24.00 x 32.80	10.10
28	**2543N9C2B**	25.00 x 43.50	52.90
29	**2554N9C2B**	25.00 x 53.30	56.90
30	**3068N9C2B**	30.00 x 68.00	214.00
31	**3257N9C2B**	32.00 x 57.00	81.00



BRUSHLESS DC MOTORS

The brushless dc motor (BLDC) utilizes electronic commutation instead of mechanical commutation which overcomes the weaknesses of contact-type (brush) commutation, while providing excellent reliability and extremely long lifetime. Attributes of the motor's excellent performance include:

- **high reliability**
- **high rotational speed**
- **excellent size to power ratio**
- **high short-term overload capability**
- **low EMI**
- **good speed regulation**
- **can operate in certain poor environment conditions**

These motors are frequently used in application fields such as medical equipment, robotics, industrial equipment, UAV, electrical tools, and small household appliances.

Typical applications

Precision drives in medical equipment, industrial automation fields, Aeromodelling, UAV gimbals and handheld gimbals, etc.

	Motor No.	Dia x Length (max) in mm	Max. Power in W
1	**B1020N**	10.00 x 20.00	11.50
2	**B1215N2B**	12.00 x 15.00	4.60
3	**B1220N2B**	12.00 x 20.00	3.30
4	**B1230N2B**	12.00 x 30.00	7.80
5	**BH0831NH**	8.00 x 31.00	6.00
6	**BH1659NH2B**	16.00 x 58.60	488.00
7	**BH2245NH2B**	22.00 x 45.00	717.00
8	**BH2260NH2B**	22.00 x 59.70	1242.00
9	**B1329N2B**	13.00 x 29.00	4.20
10	**B1635N2B**	16.00 x 35.00	100.00
11	**BS1635NB2B**	16.00 x 35.00	4.00
12	**B2040N2B**	20.00 x 40.00	31.00
13	**BS2835NB2B**	28.00 x 35.00	88.00
14	**B1233NH2B**	12.00 x 32.80	10.00
15	**B1250NH2B**	12.70 x 50.00	9.00
16	**BS1635NBH2B**	16.00 x 35.00	6.00
17	**B2440NH2B**	24.00 x 40.00	56.00
18	**B2950NH2B**	29.00 x 50.00	105.00
19	**BS3240NBH2B**	31.00 x 40.00	6.00
20	**B3265NH2B**	32.00 x 65.00	215.00
21	**B4040NH2B**	40.00 x 39.10	52.60
22	**BO1511N2B**	14.20 x 12.00	29.00
23	**BO1613N2B**	16.00 x 13.30	12.00
24	**BO1815N2B**	18.00 x 14.50	49.00
25	**BO2316N2B**	22.80 x 10.20	79.00
26	**BO2814N2B**	27.60 x 14.30	84.00
27	**BO2820N2B**	27.60 x 20.10	263.00
28	**BO2824N2B**	27.70 x 24.00	198.00
29	**BO2826N2B**	27.60 x 25.80	254.00
30	**BO2828N2B**	27.70 x 29.40	395.00
31	**BO3518N2B**	35.00 x 18.50	103.00
32	**BO3823N2B**	37.60 x 23.00	318.00
33	**BF3211N2B**	32.00 x 11.20	8.00
34	**BO3828NB2B**	37.10 x 27.60	93.00
35	**BO4830N2B**	48.00 x 30.00	560.00
36	**BO6133N2B**	61.20 x 33.00	749.00
37	**BO8724N2B**	87.00 x 22.30	1892.00
38	**BO1410NB2B**	14.20 x 9.60	0.60
39	**BO1509NBH2B**	15.50 x 8.70	3.20
40	**BO1709NB2B**	17.00 x 9.50	5.20
41	**BO1808NBH2B**	17.50 x 8.50	1.60
42	**BO2008NBH2B**	20.00 x 8.50	1.00
43	**BO2010NB2B**	20.00 x 10.00	15.00
44	**BO2015NB2B**	21.20 x 15.20	9.00
45	**BO2414NB2B**	24.50 x 14.00	7.80
46	**BO3216NB2B**	31.50 x 15.90	32.70
47	**BO3518NB2B**	34.50 x 18.00	3.30
48	**BO4316NB2B**	43.20 x 16.40	37.00
49	**BO2914NBH2B**	46.00 x 43.00 x 14.00	13.70
50	**BO4326NBH2B**	42.80 x 26.70	711.00
51	**BO6452N3B**	63.00 x 52.00	7165.00
52	**B2040NIE2B**	20.00 x 40.00	0.18
53	**B2135NIE2B**	21.00 x 35.00	2.00
54	**B7584FBHIE2B**	75.00 x 84.00	49.00

ELECTRONIC SPEED CONTROLLER

The electronic speed controller has specifically designed software and hardware utilizing high quality materials and components. It is a high efficiency SMART controller that is

- **easy to operate**
- **has a low temperature rise**
- **low electromagnetic interference**
- **is designed for optimum use with our motors**

The controller can also be provided with customized ESC including closed-loop control

Typical applications

- CPAP machines
- Medical Injection Pumps
- Electrical tools
- Pumps
- Blowers
- Multi-rotor drones

	Characteristics		BL_S 20A	BL_S 30A	X310	X420
1	Contant current	A	20	30	10	20
2	Peak current (10 s)	A	30	40	20	30
3	LiPo		2 – 4 S	2 – 4 S	2 – 3 S	2 – 4 S
4	BEC		No	No	No	No
5	Weight	g	< 5.1	< 5.8	< 8.2	< 18.2
6	PCB size	mm	14.5*26	14.5*26	16.5*28	22*32

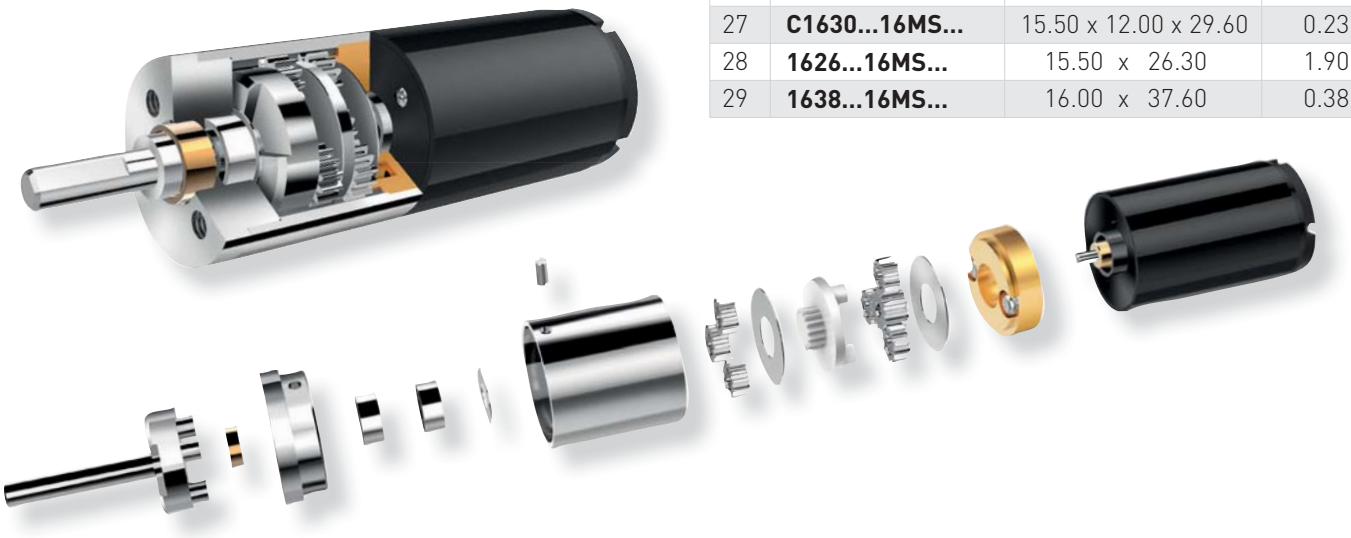
PRECISION GEARMOTORS

Precision gearboxes, of various structural configurations and a range of gear ratios, are available for mounting to a chosen drive motor thus providing speed reduction at increased torque. Depending upon the final output torque and the drive motor size, gearboxes are available in both spur gear and planetary gear configurations. These precision gearmotors are widely used in the fields of medical equipment, scientific instruments, security systems and locks, industrial equipment, personal healthcare products, audio and visual products, and high-end hobby products.

Typical applications

Precision control fields such as medical instruments, industrial control, medical equipment, security equipment, audio and visual products, high-end hobby applications, personal health care products, etc.

	Motor No.	Dia x Length (max) in mm	Max. Power in W
1	**06**...06MP...**	6.00 x 31.90	0.07
2	**08**...08MP...**	8.00 x 38.80	0.24
3	**10**...10MP...**	10.00 x 43.30	0.39
4	**12**...12MP...**	12.40 x 62.70	2.30
5	**12**...13MP...**	13.00 x 60.10	2.30
6	**16**...16MP...**	16.00 x 56.65	1.47
7	**22**...22MP...**	22.00 x 81.30	5.49
8	**25**...25MP...**	25.00 x 85.70	21.25
9	**29**...29MP...**	29.00 x 100.50	43.00
10	**32**...32MP...**	32.00 x 112.70	19.29
11	**BO43**...42MP...**	43.00 x 87.00	156.68
12	**BO48**...52MP...**	48.00 x 100.80	98.48
13	**BO61**...62MP...**	61.20 x 113.30	237.16
14	**L0616...06PP...**	6.10 x 16.00	0.02
15	**C1019...10PP...(1)**	10.00 x 19.45	0.08
16	**C1019...10PP...(2)**	10.00 x 19.50	0.08
17	**C1019...10PP...(3)**	10.00 x 19.50	0.08
18	**C1238...12PP...(1)**	12.00 x 37.80	0.29
19	**C1222...12PP...**	12.00 x 22.15	0.11
20	**C1228...12PP...**	12.00 x 27.80	0.20
21	**C1238...12PP...(2)**	12.00 x 37.80	0.43
22	**S15**...12MS...**	15.00 x 21.90	
23	**C12**...12MS...**	10.00 x 12.00 x 26.10	0.31
24	**C12**...14MS...**	14.00 x 26.10	0.31
25	**C1630...13MS...**	15.50 x 12.00 x 29.60	0.73
26	**C1631...14MS...**	15.50 x 12.00 x 30.60	0.23
27	**C1630...16MS...**	15.50 x 12.00 x 29.60	0.23
28	**1626...16MS...**	15.50 x 26.30	1.90
29	**1638...16MS...**	16.00 x 37.60	0.38



PRECISION SERVO MOTORS

The PRECISION SERVO MOTOR is highly reliable and delivers excellent performance over extremely long lifetime. The motor produces high rotation speed with good speed regulation and low EMI. The motor has high short-term overload capacity and can operate in certain poor environment conditions. Frequent applications markets are medical/surgical equipment, robotics, industrial automation, UAV, electric tools, and small consumer appliances.

	Motor No.	Dia x Length (max) in mm	Max. Power in W
1	**0837M5**M****	8.00 x 37.00	0.13
2	**1043M5**M****	10.00 x 43.00	0.76
3	**1238M7**M****	12.00 x 38.00	0.57
4	**1654C5**M****	16.00 x 54.00	2.11
5	**2281C5**M****	22.00 x 81.00	7.20
6	**2581C9**M****	25.00 x 81.00	14.57

Typical medical applications

- Insulin pumps
- MLC radiation therapy
- Blood analyzers
- Automated medicine dispensers
- Medical gimbal cameras
- Intelligent prostheses

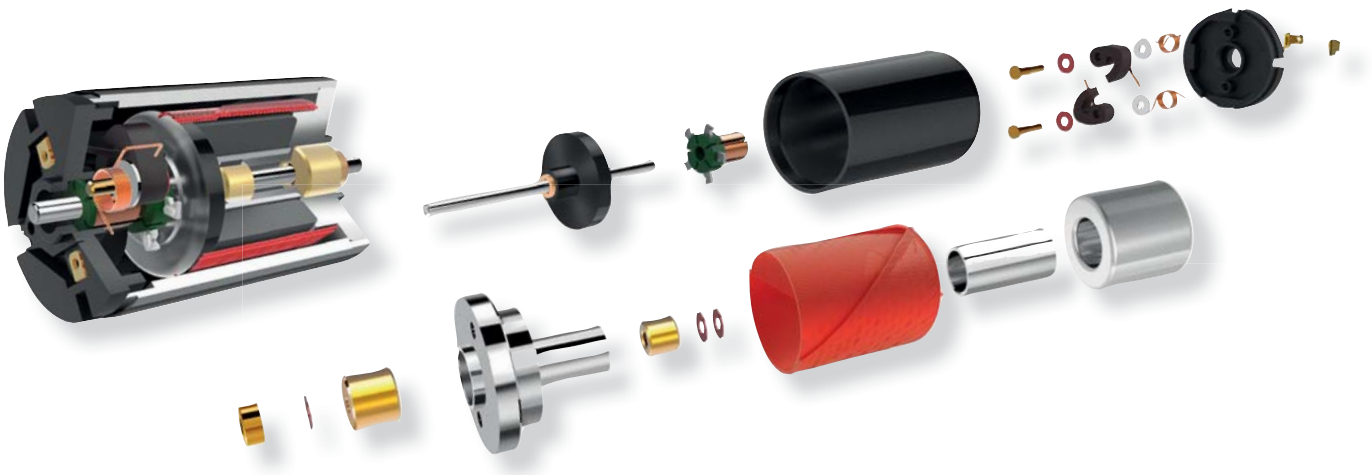
DC CORELESS MOTORS

Utilizing precious metal brushes, high performance Nd-Fe-B magnet, small gauge high strength enamelled winding wire, the motor is a compact, light weight precision product. This high efficiency motor features low starting voltage and low power consumption. As a drive motor, some typical applications include small household appliances, mini UAV's, and remote control hobby products. The motor also provides the vibration function in wearable health care equipment, mobile phones and tablet PC's.

Typical applications

Mini UAV, remote control actuators, aerocrafts, mini household appliances, wearable devices, mobile phones, tablet PCs, health care equipment, etc.

	Motor No.	Dia x Length (max) in mm	Max. Power in W
1	**L0408N3M**	4.08 x 8.10	0.16
2	**L0410N3M**	4.08 x 10.10	0.19
3	**L0412N3M**	4.08 x 12.10	0.36
4	**L0510N3M**	5.00 x 12.10	0.22
5	**L0609N3M**	6.00 x 9.00	0.22
6	**L0610N5M**	6.00 x 10.40	0.90
7	**L0612N3M**	6.00 x 12.20	0.70
8	**L0612N5M**	6.00 x 12.20	1.80
9	**L0614N5M**	6.00 x 13.90	1.40
10	**L0615N5M**	6.00 x 15.00	1.10
11	**L0710N5M**	7.00 x 10.20	1.90
12	**L0714N5M**	7.00 x 14.10	1.30
13	**L0716N5M**	7.00 x 16.70	4.20
14	**L0720N5M**	7.00 x 20.00	4.10
15	**L0816N5M**	7.00 x 16.70	1.59
16	**L8.520N5M**	8.50 x 20.40	7.93
17	**L0820N5M**	8.00 x 20.00	7.08
18	**L8.523N5M**	8.50 x 23.00	5.96
19	**L1013N3M**	10.00 x 13.00	0.40
20	**L1015N5M**	10.00 x 15.00	1.90
21	**L1020N5M**	10.00 x 20.70	17.40
22	**L1212N5M**	12.00 x 12.30	2.70
23	**L1213N5M**	12.00 x 13.00	2.20
24	**L1215N5M**	12.00 x 14.60	5.00
25	**L1416N5M**	14.00 x 16.30	2.20
26	**L1515N5M**	15.00 x 15.20	8.50
27	**L1620N5M**	16.00 x 19.60	1.60
28	**L1625N5M**	16.00 x 25.00	2.80
29	**L1630N5M**	16.00 x 30.00	6.40
30	**L1718N5M**	17.40 x 18.10	11.30
31	**L1722N5M**	17.40 x 22.10	19.70
32	**L2233N5M**	22.00 x 33.00	7.00
33	**VL0408N3M**	4.08 x 8.10	Vibration
34	**VL0510N3M**	5.00 x 9.80	Vibration
35	**VL0610N5M**	6.00 x 10.40	Vibration
36	**VL0612N3M**	6.00 x 12.20	Vibration
37	**VL0614N5M**	6.00 x 13.90	Vibration
38	**VL0615N5M**	7.00 x 15.30	Vibration
39	**VL0716N5M**	7.00 x 16.70	Vibration
40	**VL1015N3M**	10.00 x 15.00	Vibration



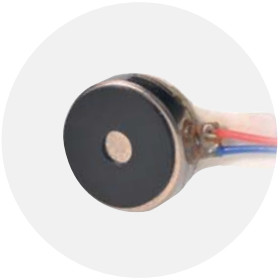
FLAT DC MOTORS

The flat DC motor features a unique and practical design structure. The motor was awarded second prize for technological progress in a contest held in Shenzhen and was also granted a national patent. The motor is well suited for electronic products with limited space. Due to its small size and available built-in vibrator, the product is widely used in wearable health care products, mobile phones, and tablet PC's.

Typical applications

Intercom systems, gamepads, wearable devices, mobile phones, tablet PCs, health care equipment, mini electronic products, high-end hobby applications, etc.

	Motor No.	Dia x Length (max) in mm	Max. Power in W
1	**2007RFN**	20.00 x 7.20	1.6
2	**0720RFN**	7.00 x 2.10	
3	**0820RFN**	8.00 x 2.70	
4	**0827RFN**	8.00 x 2.70	
5	**0834RFN**	8.00 x 2.70	
6	**1020RFN**	10.00 x 2.70	
7	**1027RFN**	10.00 x 2.70	
8	**1030RFN**	10.00 x 2.70	
9	**1034RFN**	10.00 x 2.70	
10	**1234RFN**	12.00 x 3.40	



DC CORE MOTORS

As the name implies, this motor contains an iron core over which the winding is made. The product features stable and reliable performance. For heavy load applications requiring long operational life, a carbon brush structure is available. The drive motor series are widely used in applications of security equipment, small electronic products, remote control model aircraft, personal care products, and portable electric tools. The motor is also available in a vibration series which are widely used in communication devices and health care equipment.

Typical applications

Automotive products, breast pumps, power tools, mini electronic products, portable tools, security equipment, remote control aerocrafts, personal caring products, etc.

	Motor No.	Dia x Length (max) in mm	Max. Power in W
1	**C1012F43**	10.00 x 12.60	0.84
2	**C1015F13**	10.00 x 15.00	0.70
3	**C1212F13**	12.00 x 12.20	0.52
4	**C1215F13**	12.00 x 15.10	1.18
5	**C1220F35**	12.00 x 20.60	1.75
6	**C1627F34H**	15.50 x 26.40	0.85
7	**C1718R14**	17.00 x 17.80	3.71
8	**C1723R14**	17.00 x 22.80	3.85
9	**C2430R23**	24.40 x 30.80	3.91
10	**C2032F41**	20.30 x 32.00	2.10
11	**C2838R**	27.50 x 37.65	22.41

MINI STEP MOTORS

The mini step motor features a rational permanent magnet (PM) design.
In an open loop system the motor performs very reliably with good positioning precision and repeatability. When properly matched with driving electronics, various incremental steps can be achieved (half step, micro steps).

Typical applications
Security systems, office automation systems, medical equipment, mini household appliances, high-end hobby applications, etc.

	Motor No.	Dia x Length (max) in mm	Max. Torque in mNm
1	**1011P0209**	10.00 x 10.20	0.40
2	**1511P0209**	15.00 x 11.60	1.00
3	**3515P0489**	35.00 x 15.00	10.00

SONIC MOTORS

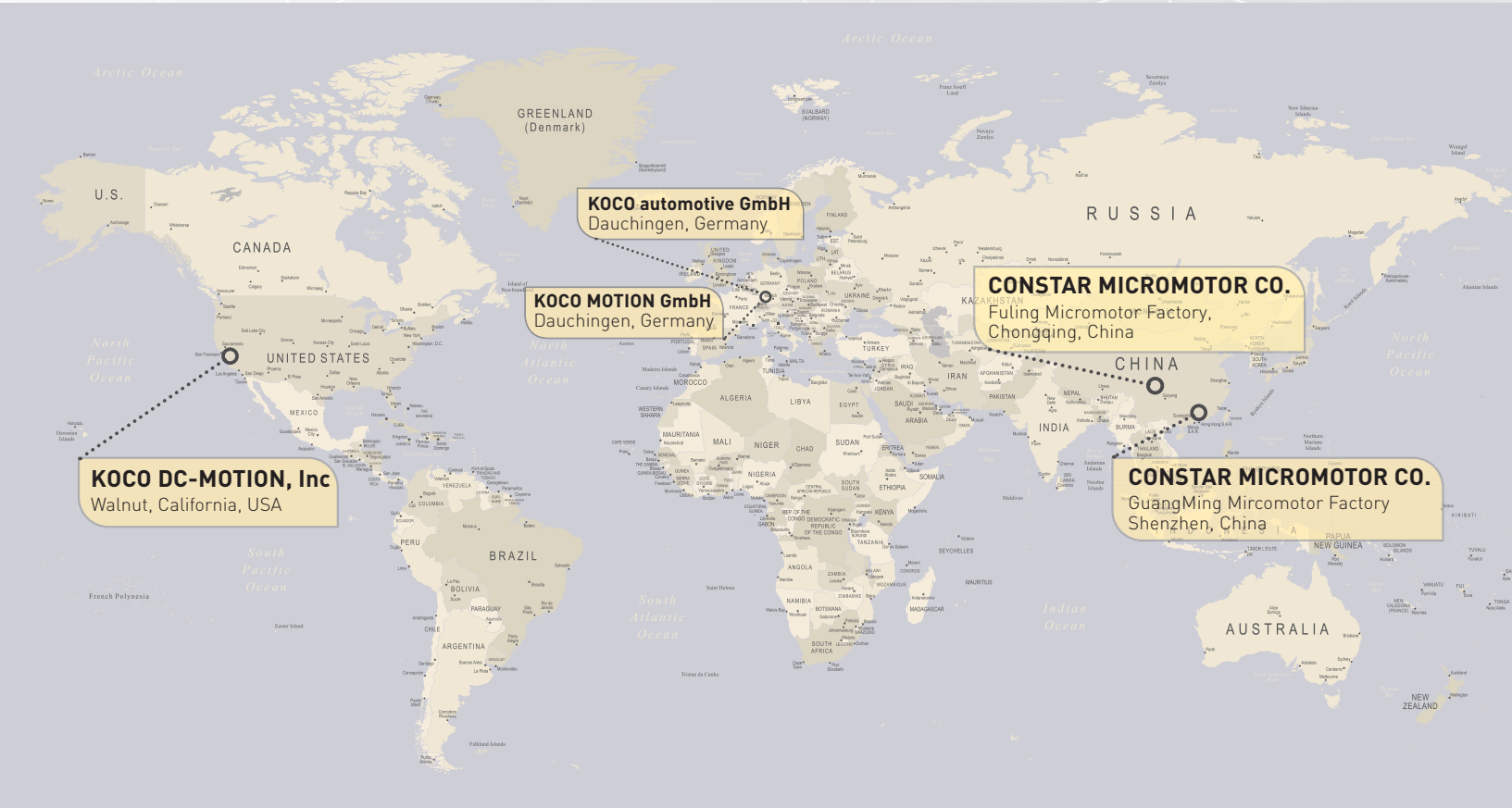
Our Sonic Motor, featuring novel design and ingenious structure, was granted a national patent. It is novel design, ingenious structure, characterized by low noise, high frequency, high torque, long lifetime.

Typical applications

Electric toothbrushes, health care equipment, cleaning equipment, washing brush, facial massager, etc.

	Motor No.	Dia x Length (max) in mm	Max. Load Frequency Times/minute
1	**1434ZDF**	11.50 x 14.50 x 34.00	39600
2	**1640ZDF**	12.00 x 16.00 x 39.80	42000
3	**1839ZDF**	13.50 x 18.30 x 40.05	33600
4	**2038ZDF**	14.00 x 20.30 x 38.30	31000
5	**2724ZDR**	27.00 x 23.50	20400
6	**2734ZDR**	27.00 x 33.50	20400

SALES REPRESENTATIVES



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