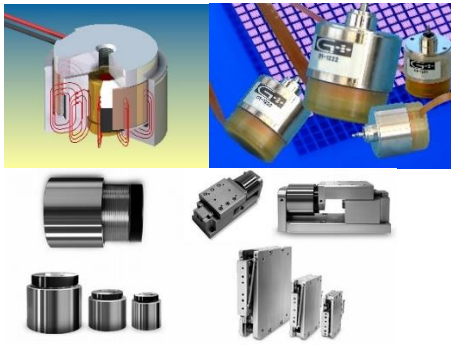


Tauchspulen-Aktoren Voice-Coil-Aktoren



- very small hysteresis / no latching force
- high dynamics due to small moving masses
- high overload capacity
- VM series: cylindrical design with sliding bearing; 1 to 220N continuous force, 16 to 102mm diameter, stroke up to approx. 30mm, optional FlexCircuit connection, i.e. stationary connecting wires, special designs (e.g. without guide and also rotary) possible; VM3850RB with linear ball bearing
- CVC series: cylindrical design without integral bearing, up to 110N continuous force, 16 to 90mm diameter, stroke up to approx. 25mm, optional versions with hollow shaft!

Voice coil motors are the technical implementation of the Lorentz force principle: the force of a current-carrying conductor in a permanent magnetic field is proportional to the magnetic field strength and the current. By reversing the direction of the current, the direction of the force also changes and thus bidirectional actuators with the same behaviour in both working directions can be realised - both rotary and linear. Electrically speaking, voice coil motors are single-phase motors and can be controlled like DC motors.

Voice coil actuators have a particularly small hysteresis and are therefore ideally suited for applications that require easily controllable movement in both directions. Noise generation, low overshooting or a very sensitive force can also be requirements that can be met well with voice coil motors.

Data of VM-Series Voice Coil Actuators with sliding bearings:

VM-Series	winding	stroke toal/ linear range	cont. force	cont. current	peak force	peak current	force constant (mid position)	voltage- constant (mid position)	coil resistance (at 25°C)	inductance	recommended operating voltage	coil mass	pot Mass	Ø (pot)	h (pot)	Ø / thread (shaft)
		mm	N	A	N	A	N/A	V/m/s	Ω	mH	Vdc	g	g	mm	mm	mm
VM1614	-100	5 / 4	0.8	0.29	2.3	0.96	2.4	2.4	43	4.0	48	3	15	16	14	2 / M2x4
	-180			0.9		2.9	0.74	0.75	4.5	0.3	24					
	-200			1.1		3.3	0.67	0.65	2.8	0.2	12 - 24					
VM2618 / VM2836*	-080	8 / 4	3.4	0.14	11	0.53	20.7	22	286	40	180	6	60	26.3 / 28	16 / 36	3 / M3x6
	-112			0.41		1.3	8.5	8.1	55	5.3	100					
	-180			0.77		3.0	3.6	3.2	9.6	1.3	24 - 48					
VM3322 / VM3334*	-090	6 / 4	5.0	0.18	14	0.58	24	24	173	44	180	9	140	33	22 / 34	3 / M3x6
	-125			0.34		1.1	13	13	47.7	13	100					
	-180			0.72		2.3	6	6	10.9	3	24 - 48					
	-315			2.4		7	2	2	1.0	0.2	24 - 48					
VM3850RB*	-200	6 / 5	7.2	0.48	24	1.74	13.8	13.8	22.6		48	17		35	51	3 / M3x7
	-280			1.08		5.33	4.5	4.5	4.5		24					
VM4032 / VM4040*	-200	12 / 9	10	0.7	26	2.0	12	14.4	26	7.8	100	25	230	40	31 / 40	4 / M4x8
	-250			0.9		2.3	10.5	11.2	12.8	5.2	48					
	-315			1.6		4.5	5.8	6.4	4.3	1.5	24					
VM5042 / VM5050*	-190	8 / 7	19	0.6	55	1.8	30.5	35	45	20	120	35	480	50.1	42 / 50	4 / M4x8
	-250			1.1		3.2	17.2	19.5	15.0	5.6	80					
	-400			2.6		7.7	7.1	8	2.5	1.3	24 - 48					
VM6340	-190	8 / 4	33	0.7	100	2.3	44	52	45	20	150	40	750	63.1	41	4 / M4x8
	-250			1.3		4	25	29	15.3	6.4	80					
	-400			3.1		10	10	12	2.5	2.1	48					
VM8054 / VM8080*	-250	32 / 15	43	0.55	130	2.1	62	86	85	77	180	150	1700	80	54 / 80	8 / M8x16
	-400			1.8		5.4	24	34	11.5	10.6	80					
VM102P	-355	8 / 6	222	1.5	700	4.8	147	147	33.4	9.5	180	325	4200	102	80	-
	-475			2.7		8.5	83	83	10.5	3.0	120					
	-710			6.0		19	37	37	2.1	0.6	48					
VM108-2P	-500	30 / 25	230	2.0	700	7.7	99	99	20,2		180	750	8.000	108	125	12 / M10x12
	-670			3.5		12.5	56	56	6.4		120					
	1000			7.7		28	25	25	1.3		48					

* with FlexCircuit-connection

Data of CVC-Series Voice-Coil-Motors without guidance

CVC-Series	stroke	cont. force	cont. current	peak force	peak current	force constant (mid position)	voltage-constant (mid position)	coil resistance (at 25°C)	inductance	recommended operating voltage	coil mass	pot Mass	Ø (pot)	h (pot)	Ø / thread (shaft)
	mm	N	A	N	A	N/A	V / m/s	Ω	mH	Vdc	g	g	mm	mm	mm
CVC16-SF-5	5	0.71	0.89	4.04	5.06	0.80	0.80	1.70	0.14	48	5	10	16	10.8	16.5
CVC19-SF-6	6.4	1.03	0.79	5.90	4.54	1.30	1.30	2.83	0.29	48	5	23	19	15.8	24.0
CVC20-SF-10	10	1.43	0.74	8.21	4.28	1.92	1.92	3.67	0.44	48	10	32	20	19.0	31.0
CVC24-SF-12	11	2.39	0.75	13.52	4.25	3.18	3.18	4.77	1.20	48	18	45	24	19.0	30.0
CVC26-SF-7	7	3.01	0.51	17.11	2.90	5.90	5.90	11.16	2.95	48	16	53	26	20.0	27.5
CVC30-SF-15	15	3.97	0.54	22.66	3.13	7.24	7.24	11.26	2.38	48	25	100	30	24.5	39.0
CVC30-SF-30	30	5.13	1.25	16.24	3.96	4.10	4.10	6.70	tbd	48	45	198	30	43.0	64.8
CVC35-HF-8	8	25.2	0.70	144.0	4.00	36.00	36.00	19.50	8.24	48	110	390	35	80.8	92.5
CVC38-SF-10	10	7.32	0.65	42.09	3.76	11.21	11.21	10.35	3.47	48	45	168	38	27.5	39.0
CVC40-SF-5	5	5.92	0.76	34.09	4.41	7.73	7.73	5.15	1.44	48	23	78	40	12.0	17.5
CVC40-HF-6.5	6.5	16.09	0.62	92.42	3.59	25.78	25.78	16.03	5.52	48	75	255	40	40.5	49.3
CVC40-SF-20	20	8.34	0.54	47.92	3.13	15.31	15.31	17.50	5.59	48	60	230	40	32.5	49.8
CVC44-SF-13	13	9.41	0.97	54.32	5.60	9.70	9.70	6.00	1.25	48	40	300	44	31.8	44.5
CVC50-SF-30	30	13.14	0.74	74.91	4.23	17.71	17.71	15.19	4.14	48	100	526	50	43.0	67.6
CVC60-SF-25	25	20.90	1.01	120.3	5.85	20.57	20.57	9.65	3.26	48	200	668	60	43.5	66.1
CVC60-HF-20	20	37.72	0.82	218.5	4.75	46.00	46.00	24.00	15.4	120	410	1.140	60	90.0	118.0
CVC90-HF-20	20	111.4	2.74	640.7	15.7	40.63	40.63	3.45	4.88	120	1190	2425	90	90.0	109.4



Another approach for voice coil actuators or in this case also moving coil actuators are the CBL / LCA series from SMAC: these are ready-made actuators with integrated precision bearings and encoders up to 0.1µm resolution; stroke up to 250mm. For longer strokes these actuators are 3-phase. They are designed to replace pneumatic actuators and LVDTs! There are also versions with slides instead of push rods; linear-rotary actuators and grippers are also available.

Data of CBL- / LCA-Series Voice-Coil-Actuators with precision linear bearing and encoder

CBL- / LCA-Serie	Stroke	Cont. Force	Cont. Current	Peak force	Peak current	Force constant	Rec. voltage	Moving mass	Total mass	ØxL / LxBxH	Ø (shaft)
	mm	N	A	N	A	N/A	Vdc	g	g	mm	mm
CBL35-010-55-1	10	6	0.67	15	1.5	9.0	24	40	450	35 x 96	8
CBL35-010-75-1	10	8.8	0.66	22	1.6	13.4	48	40	450	35 x 96	8
CBL35-015-55-1	15	4	0.57	10	1.5	7.0	24	60	500	35 x 101	8
CBL35-025-55-1	25	3.4	0.59	8.5	1.5	5.8	24	60	600	35 x 111	8
CBL35-025-75-1	25	5.6	0.64	14	1.6	8.8	48	60	600	35 x 111	8
CBL50-010-55-1	10	13	0.59	33	1.5	22	24	130	1140	50 x 123	10
CBL50-010-75-2	10	20	0.80	50	2.0	25	48	160	1300	50 x 165	10
CBL50-025-55-2	25	11	0.59	28	1.5	18.6	24	200	2000	50 x 205	10
LCA8-010-52-2	10	ca. 2	0.62	4	1.7	3.2	24	25	160	95x50x8	5
LCA8-025-15-3*	25	ca. 1	0.45	2.6	1.3	2.2	24	27	180	110x50x8	5
LCA8-050-15-3*	50	ca. 1	0.45	2.6	1.3	2.2	24	30	220	135x50x8	5
LCA16-010-55-2	10	2.5	0.58	6	1.5	4.3	24	45	435	60x110x16	6
LCA16-010-75-2	10	5	0.77	13	1.5	6.5	48	45	435	60x110x16	6
LCA25-010-55-1	10	3	0.50	8	1.5	6	24	40	270	55x70x25	8
LCA25-010-55-2	10	6	1.09	16	3.0	5.5	24	85	450	60x115x25	8
LCA25-010-75-1	10	5	0.63	12	1.5	8	48	40	270	55x70x25	8
LCA25-010-75-2	10	9	1.13	22	3.5	8	48	85	450	60x115x25	8
LCA25-025-35-6*	25	9	0.62	22	1.6	14.5	48	76	530	60x130x25	8
LCA25-050-35-6*	50	9	0.62	22	1.6	14.5	48	82	tbd	60x155x25	8
LCA25-100-35-6*	100	9	0.62	22	1.6	14.5	48	100	tbd	60x205x25	8
LCA25-150-35-6*	150	9	0.62	22	1.6	14.5	48	120	tbd	60x258x25	8
LCA25-200-35-6*	200	9	0.62	22	1.6	14.5	48	140	tbd	60x310x25	8
LCA50-025-75-1	25	20	0.50	50	1.5	40	48	335	2.157	100x125x50	10
LCA50-050-35-6*	50	36	0.54	90	1.7	67	48	665	tbd	115x300x50	10
LCA50-050-75-2	50	34	1.13	85	3.0	30	48	465	4.340	100x215x50	10
LCA50-100-35-6*	100	46	0.68	110	1.7	68	48	665	5.700	115x300x50	10
LCA50-150-35-6*	150	40	0.61	100	1.7	66	48	825	8.000	115x350x50	10
LCA50-250-35-6*	250	36	0.54	90	1.7	67	48	1.000	14.000	115x450x50	10

* 3-phase winding (Moving Coil Actuator)