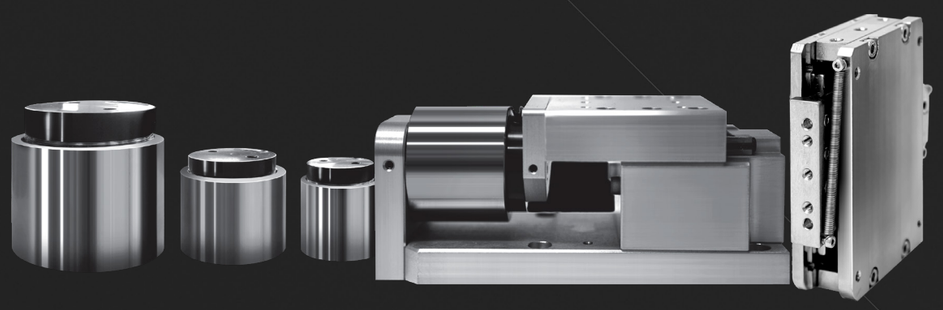
pba

SYSTEMS

DIRECT DRIVE TECHNOLOGY

Product Catalogue

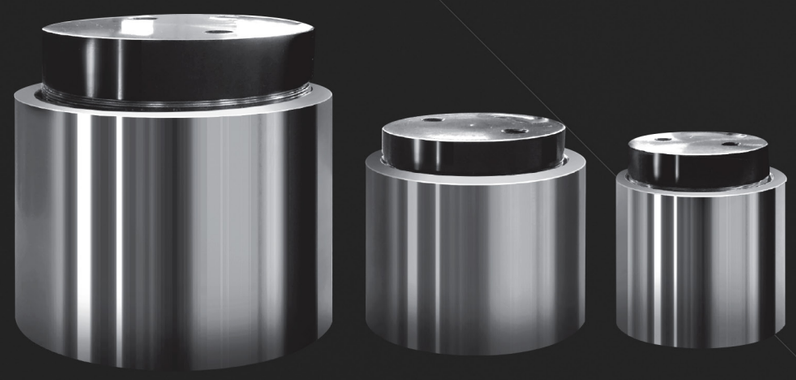


CVC/CVCA/RVC/RVCA SERIES

VOICE COIL MOTOR AND ACTUATOR

VERSION 4.2.0

PART NUMBERING SYSTEM

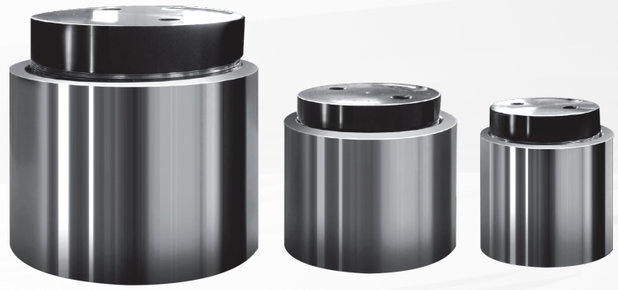


CVC SERIES

CIRCULAR VOICE COIL MOTORS

CVC SERIES

VOICE COILS MOTOR



Ultra-High Frequency for Short Stroke Motion Systems

PBA's Circular voice coil motors are simple electric linear motors consisting of a Magnetic housing and a lightweight coil. Voice coil motors do not need commutation and are often used for pure frequency oscillation. However, sub-micron positional control is easily achieved when worked in tandem with high-resolution linear encoders.

Applying a voltage across the terminals of the motor causes the motor to move to one direction. Reversing the polarity of the applied voltage will move the motor to the opposite direction. The generated force is proportional to the current that flows through the motor coil. This force is almost constant in the specified stroke range of the motor. The non-commutated motor construction increases reliability and the direct coupling of the motor to the load allows for dynamic acceleration/ deceleration and resultant high-speed operation.

- Zero Cogging, zero backlashes and zero hysteresis
- Extremely dynamic and high-frequency motion profile
- Negligible speed and force ripple at low speeds
- Multiple Diameter sizes and force options
- Simple operation – Only 2 terminals connections
- High force versions available
- Zero maintenance
- High reliability

**Technical specifications subject to change without prior notice*

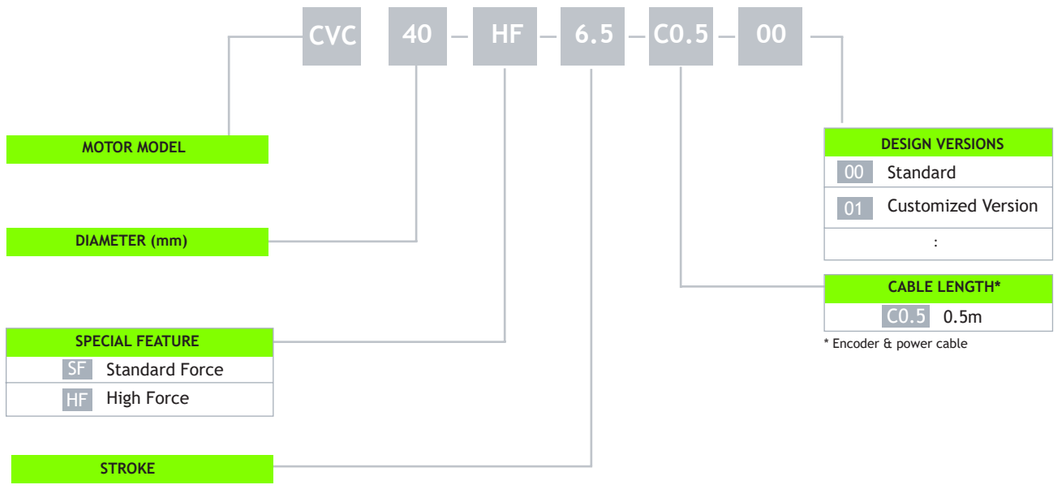
APPLICATION

- **Frequency oscillator**
- **Force/pressure control**
- **Camera Lens zoom/focus**
- **Syringe dispensing**
- **Biomed simulators**
- **Laser mirror steer/tilt**
- **General automation**
- **Dynamic Z-axis**

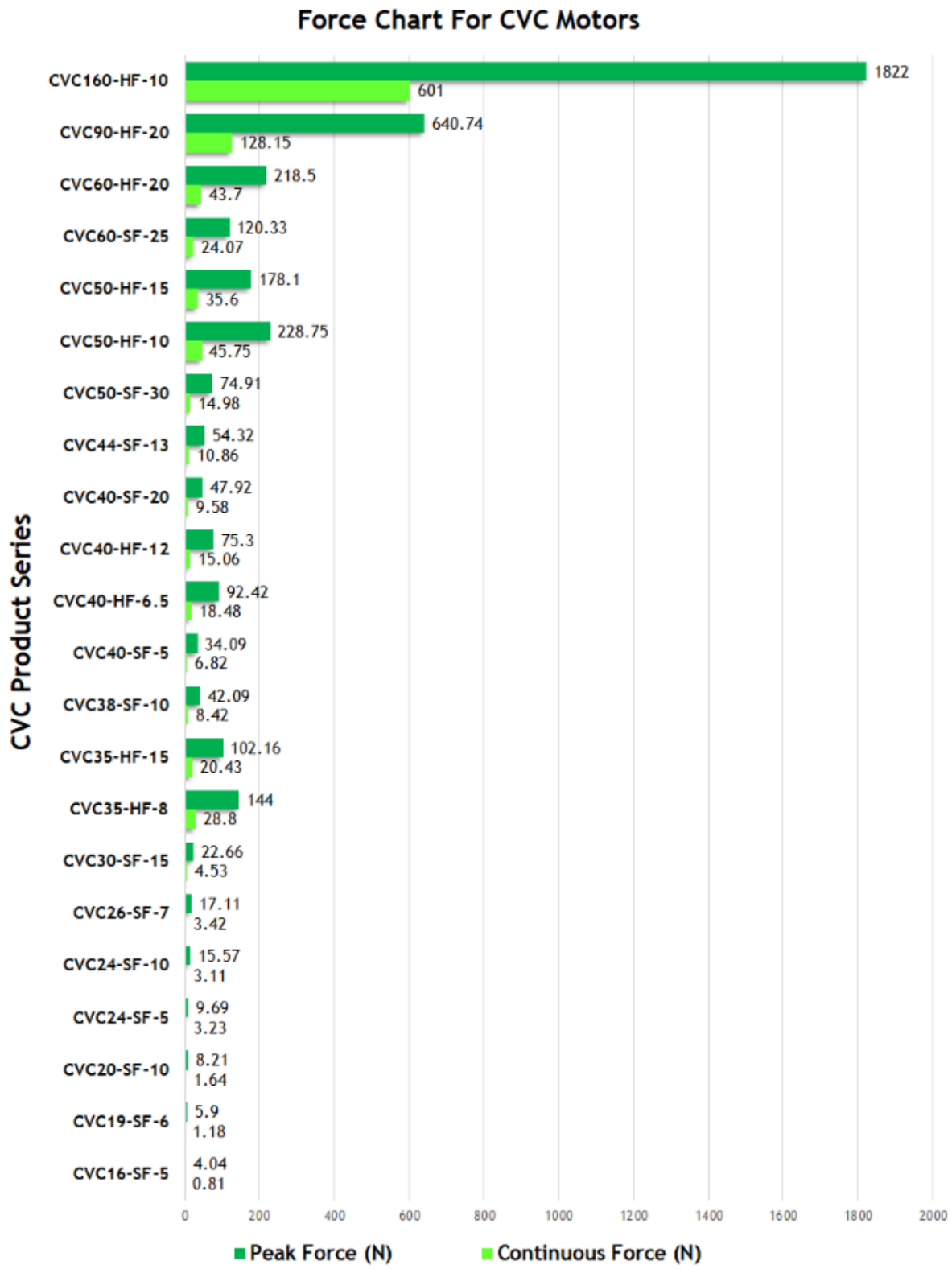
ULTRA HIGH FREQUENCY

short stroke motion system

Model	Stroke (mm)	Continuous Force (N)	Peak Force (N)	Continuous Current (A)	Peak Current (A)
CVC16-SF-5	5	0.81	4.04	1.01	5.06
CVC19-SF-6	6	1.18	5.90	0.91	4.54
CVC20-SF-10	10	1.64	8.21	0.86	4.28
CVC24-SF-5	5	3.23	9.69	0.95	2.85
CVC24-SF-10	10	3.11	15.57	0.90	4.50
CVC26-SF-7	7	3.42	17.11	0.58	2.90
CVC30-SF-15	15	4.53	22.66	0.63	3.13
CVC35-HF-8	8	28.80	144.00	0.80	4.00
CVC35-HF-15	15	20.43	102.16	0.80	3.98
CVC38-SF-10	10	8.42	42.09	0.75	3.76
CVC40-SF-5	5	6.82	34.09	0.88	4.41
CVC40-HF-6.5	6.5	18.48	92.42	0.72	3.59
CVC40-HF-12	12	15.06	75.30	0.60	3.00
CVC40-SF-20	20	9.58	47.92	0.63	3.13
CVC44-SF-13	13	10.86	54.32	1.12	5.60
CVC50-SF-30	30	14.98	74.91	0.85	4.23
CVC50-HF-10	10	45.75	228.75	1.25	6.25
CVC50-HF-15	15	35.60	178.10	1.30	6.50
CVC60-SF-25	25	24.07	120.33	1.17	5.85
CVC60-HF-20	20	43.70	218.50	0.95	4.75
CVC90-HF-20	20	128.15	640.74	3.15	15.77
CVC160-HF-10	10	601.00	1822.00	4.75	14.40



FORCE CHART FOR CVC MOTORS



CVC SERIES

CIRCULAR VOICE COIL MOTOR

CVC SERIES

- Direct Drive
- Peak force to 15.57N, Continuous force to 3.11N
- Fast response, low moving mass
- Non contact between core and coil movement
- Excellent reliability

SPECIFICATION		MODEL				
		CVC16-SF-5	CVC19-SF-6	CVC20-SF-10	CVC24-SF-5	CVC24-SF-10
Performance	**Unit**					
Stroke	mm	5	6	10	5	10
Peak Force	N	4.04	5.9	8.21	9.69	15.57
Continuous Stall Force @ 100°C*	N	0.71	1.03	1.43	3.06	2.70
Continuous Stall Force @ 125°C*	N	0.81	1.18	1.64	3.23	3.11
Peak Power @ 125°C*	W	60.99	81.72	94.18	31.4	126.5
Continuous Power @ 100°C	W	1.76	2.32	2.66	2.90	3.53
Continuous Power @ 125°C*	W	2.44	3.27	3.77	3.48	5.06
Electrical						
Peak Current	A	5.06	4.54	4.28	2.85	4.5
Continuous Stall Current @ 100°C*	A	0.892	0.793	0.746	0.90	0.78
Continuous Stall Current @ 125°C*	A	1.011	0.907	0.855	0.95	0.9
Force Constant @ Mid Stroke	N/A	0.80	1.30	1.92	3.40	3.46
Back EMF Constant @ Mid Stroke	V/m/s	0.80	1.30	1.92	3.40	3.46
Coil Resistance @ 25°C	ohm	1.70	2.83	3.67	2.75	4.45
Coil Resistance @ 100°C*	ohm	2.22	3.69	4.78	3.58	5.80
Coil Resistance @ 125°C*	ohm	2.39	3.97	5.15	3.86	6.25
Inductance @ 1kHz (Inside fully)	mH	0.14	0.29	0.44	0.30	0.65
Motor Constant @ 125°C*	N/√W	0.61	0.77	1.00	1.73	1.38
Max. Terminal Voltage	Vdc			48		
Thermal						
Thermal Resistance @ 100°C*	°C/W	42.55	32.34	28.18	25.84	21.25
Thermal Resistance @ 125°C*	°C/W	40.99	30.59	26.55	28.70	19.76
Max. Coil Temperature	°C			125		
Mechanical						
Coil Assembly Weight	kg	0.005	0.005	0.01	0.012	0.018
Magnet Assembly Weight	kg	0.01	0.023	0.032	0.0315	0.047
Clearance of Coil & Magnet Assembly	mm	0.5	0.3	0.4	0.4	0.5

Notes:
1. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
2. Specifications tolerance : ±10%.
3. Peak force and current : 4% duty ratio and 1 second duration.
4. Specifications are subject to change without prior notice.

CVC SERIES

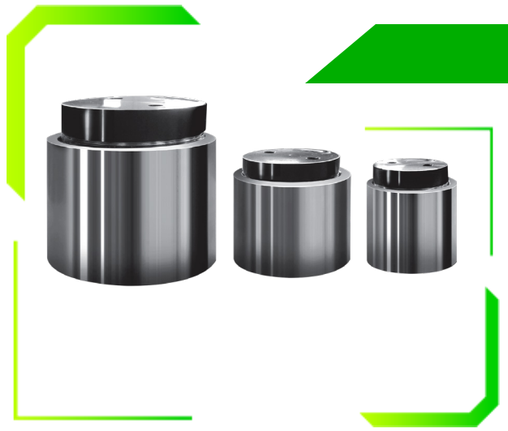
CIRCULAR VOICE COIL MOTOR

CVC SERIES

- Direct Drive
- Peak force to 42.09N, Continuous force to 8.42N
- Fast response, low moving mass
- Non contact between core and coil movement
- Excellent reliability

SPECIFICATION		MODEL				
		CVC26-SF-7	CVC30-SF-15	CVC35-HF-8	CVC35-HF-15	CVC38-SF-10
Performance	**Unit**					
Stroke	mm	7.0	22.66	8	15	10
Peak Force	N	17.11	3.97	144.00	102.16	42.09
Continuous Stall Force @ 100°C*	N	3.01	4.53	25.20	19.79	7.32
Continuous Stall Force @ 125°C*	N	3.42	154.89	28.80	20.43	8.42
Peak Power @ 125°C*	W	121.6	4.41	438.08	414.87	204.91
Continuous Power @ 100°C	W	3.49	6.20	12.45	14.45	5.75
Continuous Power @ 125°C*	W	4.87	3.27	17.52	16.59	8.20
Electrical						
Peak Current	A	2.90	3.13	4.00	3.98	3.76
Continuous Stall Current @ 100°C*	A	0.51	0.548	0.700	0.77	0.653
Continuous Stall Current @ 125°C*	A	0.58	0.626	0.800	0.80	0.751
Force Constant @ Mid Stroke	N/A	5.90	7.24	36.00	25.70	11.21
Back EMF Constant @ Mid Stroke	V/m/s	5.90	7.24	36.00	25.70	11.21
Coil Resistance @ 25°C	ohm	10.30	11.26	19.50	18.70	10.35
Coil Resistance @ 100°C*	ohm	13.42	14.67	25.41	24.37	13.49
Coil Resistance @ 125°C*	ohm	14.46	15.81	27.38	26.26	14.53
Inductance @ 1kHz (Inside fully)	mH	2.80	2.38	8.24	7.28	3.47
Motor Constant @ 125°C*	N/√W	1.55	2.16	8.15	5.02	3.48
Max. Terminal Voltage	Vdc			48		
Thermal						
Thermal Resistance @ 100°C*	°C/W	21.48	17.02	6.02	5.19	13.04
Thermal Resistance @ 125°C*	°C/W	20.55	16.14	5.71	6.03	12.20
Max. Coil Temperature	°C			125		
Mechanical						
Coil Assembly Weight	kg	0.016	0.025	0.11	0.08	0.045
Magnet Assembly Weight	kg	0.053	0.1	0.39	0.26	0.168
Clearance of Coil & Magnet Assembly	mm	0.5	0.5	0.5	0.5	0.5

Notes:
1. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
2. Specifications tolerance : ±10%.
3. Peak force and current : 4% duty ratio and 1 second duration.
4. Specifications are subject to change without prior notice.



CVC SERIES

CIRCULAR VOICE COIL MOTOR

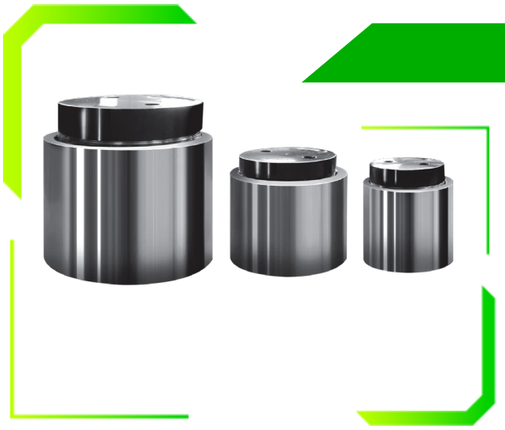
CVC SERIES

- Direct Drive
- Peak force to 54.32N, Continuous force to 10.86N
- Fast response, low moving mass
- Non contact between core and coil movement
- Excellent reliability

SPECIFICATION		MODEL				
		CVC40-SF-5	CVC40-HF-6.5	CVC40-HF-12	CVC40-SF-5	CVC44-SF-13
Performance	**Unit**					
Stroke	mm	5	6.5	12	20	13
Peak Force	N	34.09	92.42	75.30	47.92	54.32
Continuous Stall Force @ 100°C*	N	5.92	16.09	12.80	8.34	9.41
Continuous Stall Force @ 125°C*	N	6.82	18.48	15.06	9.58	10.86
Peak Power @ 125°C*	W	140.63	289.27	302.9	254.48	264.20
Continuous Power @ 100°C	W	3.94	8.13	8.12	7.16	7.36
Continuous Power @ 125°C*	W	5.63	11.57	12.12	10.18	10.57
Electrical						
Peak Current	A	4.41	3.59	3.00	3.13	5.60
Continuous Stall Current @ 100°C*	A	0.766	0.624	0.51	0.545	0.970
Continuous Stall Current @ 125°C*	A	0.882	0.717	0.60	0.626	1.120
Force Constant @ Mid Stroke	N/A	7.73	25.78	25.1	15.31	9.70
Back EMF Constant @ Mid Stroke	V/m/s	7.73	25.78	25.1	15.31	9.70
Coil Resistance @ 25°C	ohm	5.15	16.03	23.97	18.50	6.00
Coil Resistance @ 100°C*	ohm	6.71	20.89	31.23	24.11	7.82
Coil Resistance @ 125°C*	ohm	7.23	22.51	33.66	25.98	8.42
Inductance @ 1kHz (Inside fully)	mH	1.44	6.00	7.80	6.55	1.25
Motor Constant @ 125°C*	N/√W	3.41	6.44	4.33	3.00	3.96
Max. Terminal Voltage	Vdc	48		96	48	
Thermal						
Thermal Resistance @ 100°C*	°C/W	19.05	9.22	9.23	10.47	10.20
Thermal Resistance @ 125°C*	°C/W	17.78	8.64	8.25	9.82	9.46
Max. Coil Temperature	°C	125				
Mechanical						
Coil Assembly Weight	kg	0.023	0.075	0.085	0.06	0.04
Magnet Assembly Weight	kg	0.078	0.255	0.320	0.23	0.3
Clearance of Coil & Magnet Assembly	mm	0.5	0.5	0.5	0.5	0.5

Notes:

1. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
2. Specifications tolerance : ±10%.
3. Peak force and current : 4% duty ratio and 1 second duration.
4. Specifications are subject to change without prior notice.



CVC SERIES

CIRCULAR VOICE COIL MOTOR

CVC SERIES

- Direct Drive
- Peak force to 640.74N, Continuous force to 128.15N
- Fast response, low moving mass
- Non contact between core and coil movement
- Excellent reliability

SPECIFICATION		MODEL		
		CVC50-SF-30	CVC50-HF-10	CVC50-HF-15
Performance	**Unit**			
Stroke	mm	30	10	15
Peak Force	N	74.91	228.75	178.10
Continuous Stall Force @ 100°C*	N	13.14	41.36	33.40
Continuous Stall Force @ 125°C*	N	14.98	45.75	35.60
Peak Power @ 125°C*	W	334.14	449.75	450.9
Continuous Power @ 100°C	W	9.54	13.64	14.70
Continuous Power @ 125°C*	W	13.37	17.99	18.00
Electrical				
Peak Current	A	4.23	6.25	6.50
Continuous Stall Current @ 100°C*	A	0.742	1.13	1.22
Continuous Stall Current @ 125°C*	A	0.846	1.25	1.30
Force Constant @ Mid Stroke	N/A	17.71	36.60	27.40
Back EMF Constant @ Mid Stroke	V/m/s	17.71	36.60	27.40
Coil Resistance @ 25°C	ohm	13.30	8.20	7.60
Coil Resistance @ 100°C*	ohm	17.33	10.69	9.90
Coil Resistance @ 125°C*	ohm	18.67	11.51	10.67
Inductance @ 1kHz (Inside fully)	mH	4.2	3.10	3.10
Motor Constant @ 125°C*	N/√W	4.86	10.79	8.39
Max. Terminal Voltage	Vdc	48	96	48
Thermal				
Thermal Resistance @ 100°C*	°C/W	7.86	5.50	5.09
Thermal Resistance @ 125°C*	°C/W	7.48	5.56	5.55
Max. Coil Temperature	°C	125		
Mechanical				
Coil Assembly Weight	kg	0.1	0.132	0.134
Magnet Assembly Weight	kg	0.526	0.648	0.630
Clearance of Coil & Magnet Assembly	mm	0.5	0.7	0.5

Notes:

1. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
2. Specifications tolerance : ±10%.
3. Peak force and current : 4% duty ratio and 1 second duration.
4. Specifications are subject to change without prior notice.

CVC SERIES

CIRCULAR VOICE COIL MOTOR

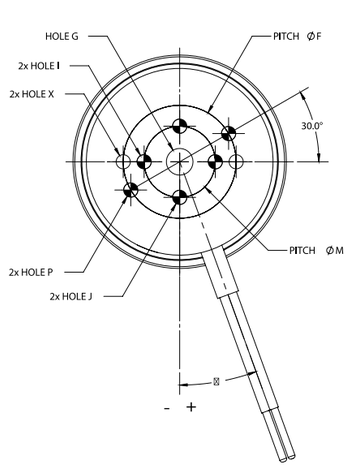
CVC SERIES

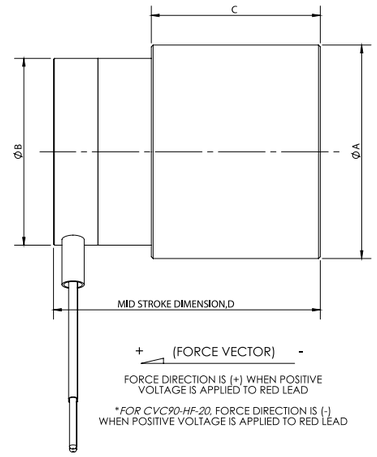
- Direct Drive
- Peak force to 640.74N, Continuous force to 128.15N
- Fast response, low moving mass
- Non contact between core and coil movement
- Excellent reliability

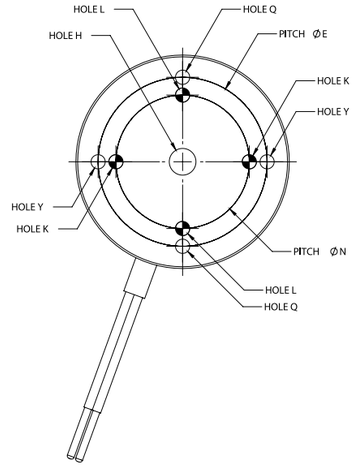
SPECIFICATION		MODEL			
		CVC60-SF-25	CVC60-HF-20	CVC90-HF-20	CVC160-HF-10
Performance	**Unit**				
Stroke	mm	25	20	20	10
Peak Force	N	120.33	218.50	640.74	1822
Continuous Stall Force @ 100°C*	N	20.90	37.72	111.41	601
Continuous Stall Force @ 125°C*	N	24.07	43.70	128.15	X607.3
Peak Power @ 125°C*	W	463.70	760.32	1204.70	1339.3
Continuous Power @ 100°C	W	12.98	21.03	33.80	135.2
Continuous Power @ 125°C*	W	18.55	30.41	48.19	148.8
Electrical					
Peak Current	A	5.85	4.75	15.77	14.4
Continuous Stall Current @ 100°C*	A	1.016	0.820	2.742	4.75
Continuous Stall Current @ 125°C*	A	1.170	0.950	3.154	4.8
Force Constant @ Mid Stroke	N/A	20.57	46.00	40.63	126.53
Back EMF Constant @ Mid Stroke	V/m/s	20.57	46.00	40.63	126.53
Coil Resistance @ 25°C	ohm	9.65	24.00	3.45	4.6
Coil Resistance @ 100°C*	ohm	12.57	31.27	4.50	5.99
Coil Resistance @ 125°C*	ohm	13.55	33.70	4.84	6.46
Inductance @ 1kHz (Inside fully)	mH	3.26	15.40	4.88	4.45
Motor Constant @ 125°C*	N/√W	6.62	9.39	21.87	49.79
Max. Terminal Voltage	Vdc	48.00	120.00		
Thermal					
Thermal Resistance @ 100°C*	°C/W	5.78	3.57	2.22	0.55
Thermal Resistance @ 125°C*	°C/W	5.39	3.29	2.08	0.67
Max. Coil Temperature	°C	125			
Mechanical					
Coil Assembly Weight	kg	0.2	0.41	1.19	2.2
Magnet Assembly Weight	kg	0.668	1.14	2.425	11.5
Clearance of Coil & Magnet Assembly	mm	0.7	0.6	0.75	1.5

Notes:
1. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
2. Specifications tolerance : ±10%.
3. Peak force and current : 4% duty ratio and 1 second duration.
4. Specifications are subject to change without prior notice.

CVC SERIES



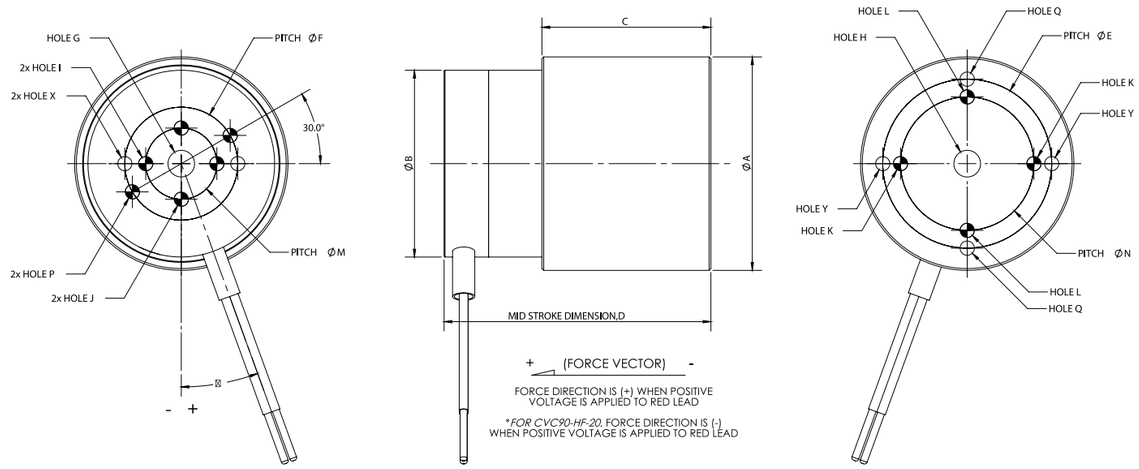




COIL	UNIT	CVC16-SF-5	CVC19-SF-6	CVC20-SF-10	CVC24-SF-5	CVC24-SF-10
A	mm	16.0	19.0	20.0	24	24.0
B	mm	13.4	15.7	16.6	21	21.0
C	mm	10.8	15.8	19.0	12.3	19.0
D	mm	16.5	24.0	31.0	19.7	30.0
E	mm	7.0	9.0	10.0	19.0	19.0
F	mm	7.0	9.0	10.0	12.7	12.7
G	mm	∅2.5(H7)↧2.8	∅3.0(H7)↧3.5	∅3.0(H7)↧3.5	∅3.0(H7)↧3.5	∅3.0(H7)↧3.5
H	mm	N/A	N/A	N/A	M2 ↧2.6	∅2.0 ↧1.7
I	mm	N/A	N/A	N/A	N/A	N/A
J	mm	N/A	N/A	N/A	N/A	N/A
K	mm	N/A	N/A	N/A	N/A	N/A
L	mm	N/A	N/A	N/A	M2 ↧2.6	N/A
M	mm	N/A	N/A	N/A	N/A	N/A
N	mm	N/A	N/A	N/A	11.1	N/A
P	mm	N/A	N/A	N/A	N/A	N/A
Q	mm	N/A	N/A	N/A	N/A	M2 ↧3.0
X	mm	M2.5 ↧2.8	M3 ↧4.7	M3 ↧6.2	M2 ↧4.7	M2 ↧5.0
Y	mm	M2.5 ↧1.8	M3 ↧2.5	M3 ↧2.6	M2 ↧3.0	M2 ↧2.0
⊖	DEGREE	10°	25°	20°	20°	20°

COIL	UNIT	CVC26-SF-7	CVC30-SF-15	CVC35-HF-8	CVC35-HF-15	CVC38-SF-10
A	mm	26.0	30.0	35.0	35.0	38.0
B	mm	22.0	24.6	30.4	30.4	31.2
C	mm	20.0	24.5	80.8	52.8	27.5
D	mm	27.5	39.0	92.5	67.5	39.0
E	mm	12.0	16.0	27.0	27	20.0
F	mm	12.0	12.6	12.6	12.6	20.0
G	mm	M3 ↧4.0	∅3.0↧3.5	∅3.0(H7)↧3.5	∅5.0(H7)↧6.0	∅3.0(H7)↧3.5
H	mm	N/A	N/A	N/A	∅5.0(H7)↧6.0	N/A
I	mm	N/A	N/A	N/A	N/A	N/A
J	mm	N/A	N/A	N/A	N/A	N/A
K	mm	N/A	N/A	N/A	N/A	N/A
L	mm	N/A	N/A	∅3.0(H7)↧5.0	N/A	N/A
M	mm	N/A	N/A	N/A	N/A	N/A
N	mm	N/A	N/A	27	27	N/A
P	mm	N/A	N/A	N/A	N/A	N/A
Q	mm	M3 ↧2.7	N/A	N/A	M4 ↧6.0	N/A
X	mm	M2.5 ↧4.0	M3 ↧6.2	M3 ↧6.0	M4 ↧6.0	M4 ↧6.5
Y	mm	N/A	M3 ↧3.2	M3 ↧5.0	N/A	M4 ↧3.9
⊖	DEGREE	20°	20°	-25°	-25°	20°

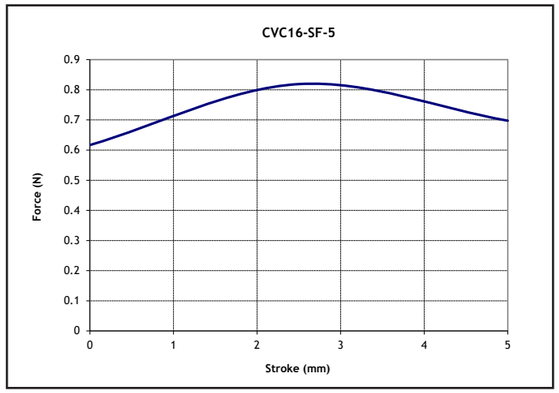
CVC SERIES

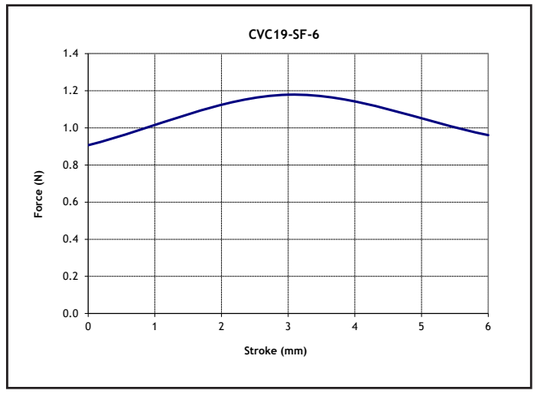


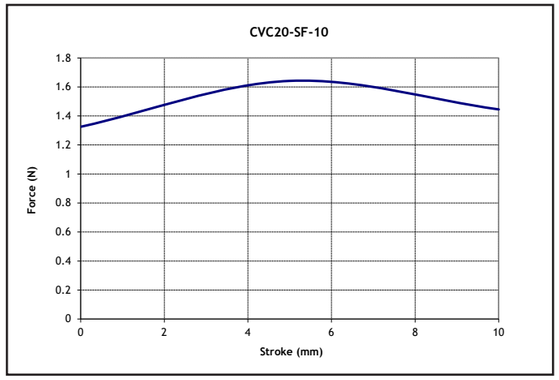
COIL	UNIT	CVC40-SF-5	CVC40-HF-6.5	CVC40-HF-12	CVC40-SF-20	CVC44-SF-13	CVC50-SF-30
A	mm	40	40	40	40	44	50
B	mm	34	34.8	33.2	33.2	37.2	42.4
C	mm	12	40.5	44.7	32.5	31.8	43
D	mm	17.5	49.3	55	49.8	44.5	67.6
E	mm	20	20	20	20	25.4	20
F	mm	20	20	20	20	19.1	20
G	mm	Ø 3.0 (H7) ↧ 2.7	Ø 3.0 (H7) ↧ 3.5	Ø 4.0 (H7) ↧ 4.0	Ø 3.0 (H7) ↧ 3.5	Ø 6.0 (H7) ↧ 6.2	Ø 4.0 (H7) ↧ 7.6
H	mm	N/A	N/A	N/A	N/A	N/A	Ø 4.0 ↧ 3.8
I	mm	N/A	N/A	N/A	N/A	N/A	N/A
J	mm	N/A	N/A	N/A	N/A	N/A	N/A
K	mm	N/A	N/A	N/A	N/A	N/A	N/A
L	mm	N/A	N/A	N/A	N/A	N/A	N/A
M	mm	N/A	N/A	N/A	N/A	N/A	N/A
N	mm	N/A	N/A	N/A	N/A	N/A	N/A
P	mm	N/A	N/A	N/A	N/A	N/A	N/A
Q	mm	N/A	N/A	N/A	N/A	N/A	N/A
X	mm	M4 ↧ 2.7	M4 ↧ 5.2	M4 ↧ 4.0	M4 ↧ 6.2	M4 ↧ 6.2	M4 ↧ 7.6
Y	mm	M4 ↧ 2.7	M4 ↧ 3.7	M4 ↧ 3.5	M4 ↧ 3.7	M4 ↧ 4.0	M4 ↧ 3.8
ϴ	DEGREE	20°	-25°	20°	20°	20°	30°

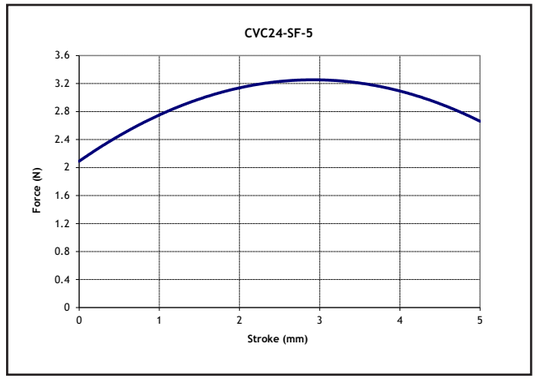
COIL	UNIT	CVC50-HF-10	CVC50-HF-15	CVC60-SF-25	CVC60-HF-20	CVC90-HF-20	CVC160-HF-10
A	mm	50	50	60	60	90	160
B	mm	42.8	42.8	50.6	52	81.6	140.5
C	mm	59.8	54.4	43.5	90	90	100
D	mm	70.3	67.5	66.1	118	109.4	120
E	mm	30	30	30	44	48	110
F	mm	28	28	30	44	40	85
G	mm	Ø4.0 (H7) ↧ 5.0	Ø4.0 (H7) ↧ 4.0	n3.0 (H7) ↧ 3.5	Ø8.0 (H7) THRU	Ø12.0 (H7) THRU	Ø28.0 ↧ 14.0
H	mm	Ø4.0 ↧ 6.0	n4.0 ↧ 5.0	N/A	n8.0 THRU	Ø12.0 (H7) THRU	n24.0 THRU
I	mm	N/A	N/A	N/A	Ø3.0 (H7) ↧ 5.0	N/A	N/A
J	mm	N/A	N/A	N/A	N/A	Ø4.0 (H7) ↧ 6.0	N/A
K	mm	Ø3.0 (H7) ↧ 5.0	Ø3.0 (H7) ↧ 5.0	N/A	Ø3.0 (H7) ↧ 5.0	N/A	Ø5.0 (H7) ↧ 6.0 (hole position refer to drawing)
L	mm	N/A	N/A	N/A	N/A	Ø4.0 (H7) ↧ 5.0	N/A
M	mm	N/A	N/A	N/A	32	40	N/A
N	mm	30	30	N/A	32	34	110
P	mm	Ø3.0 (H7) ↧ 5.0	Ø3.0 (H7) ↧ 4.0	N/A	N/A	N/A	Ø5.0 (H7) ↧ 6.0
Q	mm	M4 ↧ 6.0	M4 ↧ 5.0	N/A	N/A	N/A	N/A
X	mm	M4 ↧ 5.0	M4 ↧ 4.0	M5 ↧ 10.0	M5 ↧ 10.0	M6 ↧ 7.9	6X M5 ↧ 8.0 (hole position refer to drawing)
Y	mm	N/A	N/A	M5 ↧ 4.5	M5 ↧ 10.0	M6 ↧ 9.0	6X M5 ↧ 8.0 (hole position refer to drawing)
ϴ	DEGREE	20°	20°	20°	20°	-56°	-60°

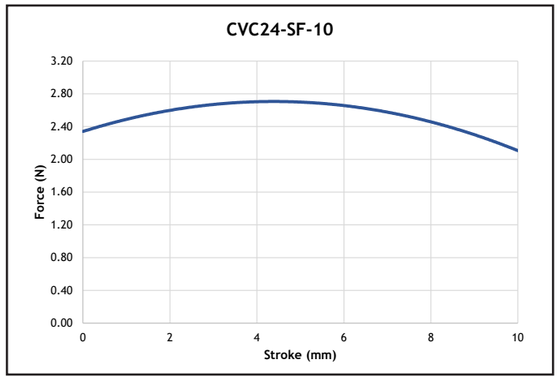
GRAPH: FORCE VS STROKE

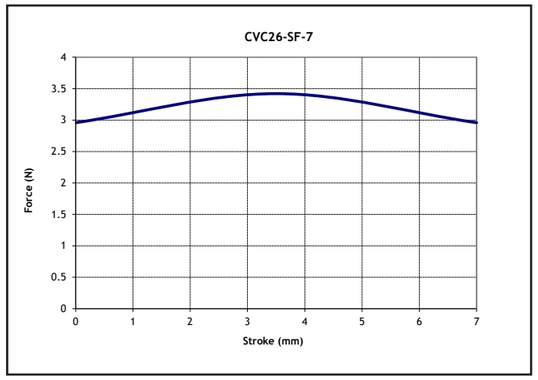


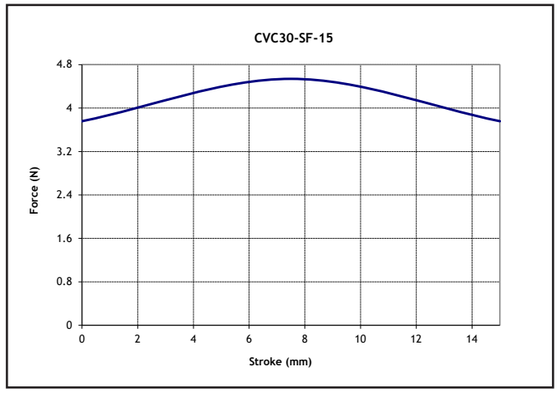


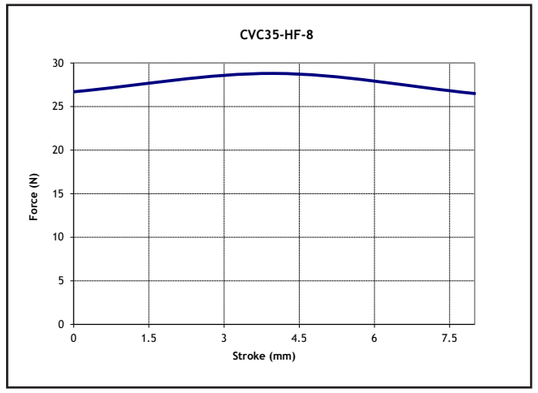




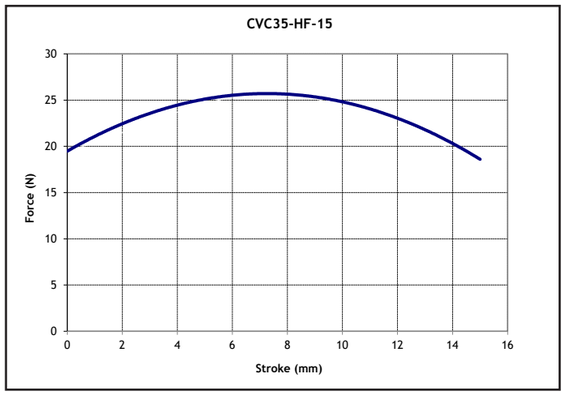


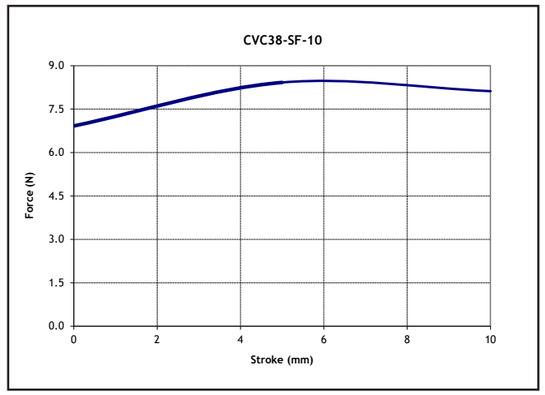


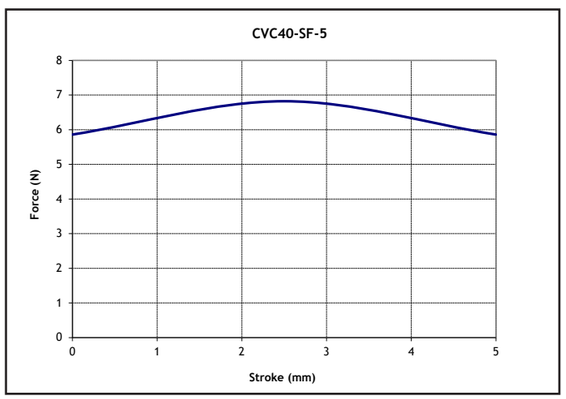


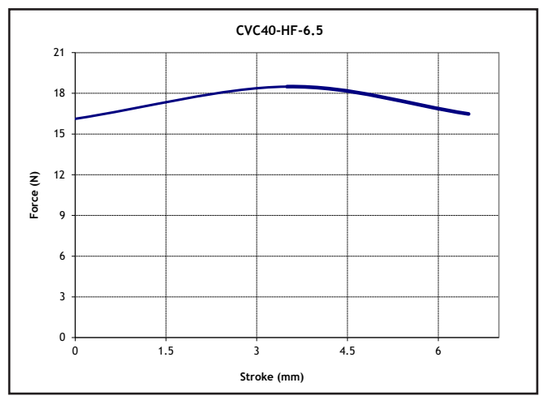


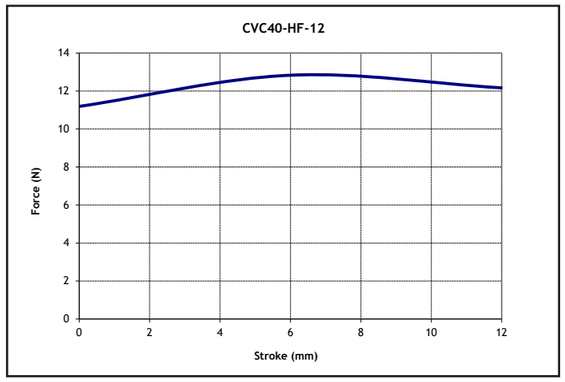
GRAPH: FORCE VS STROKE

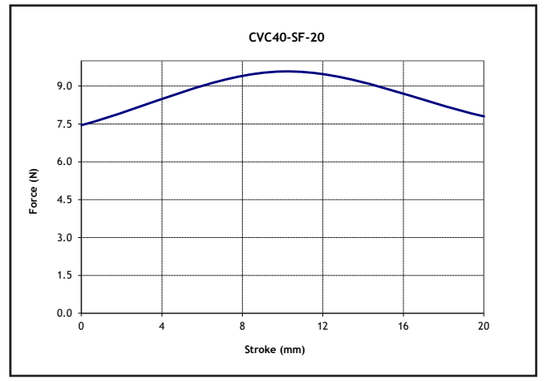


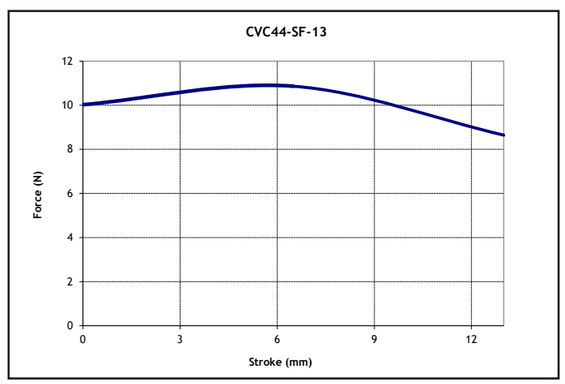


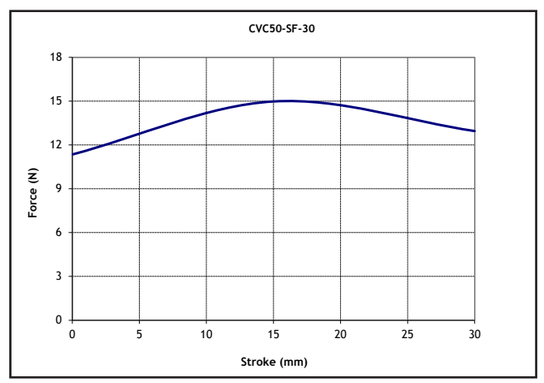




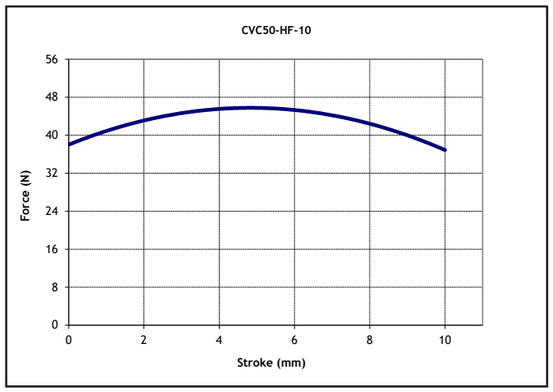


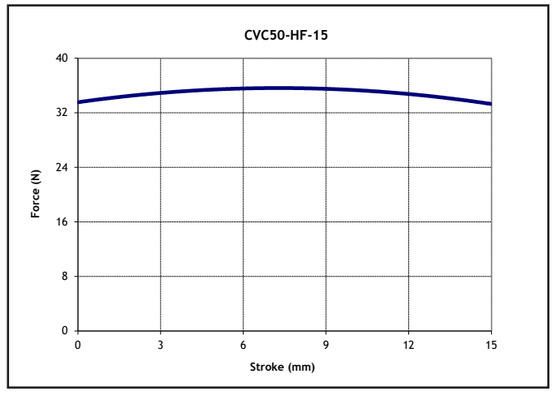


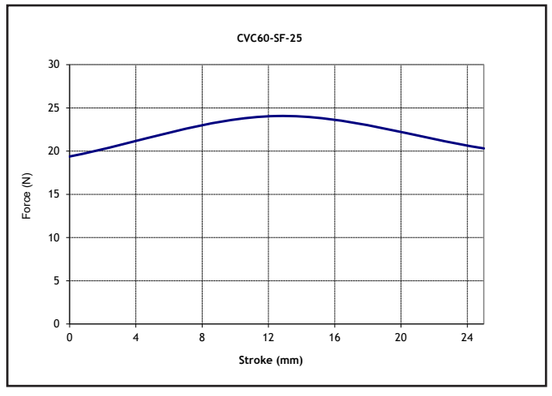


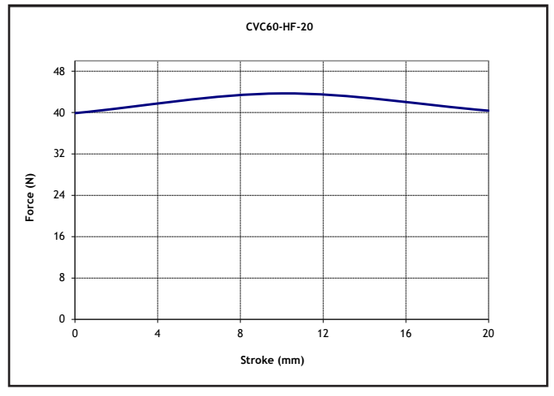


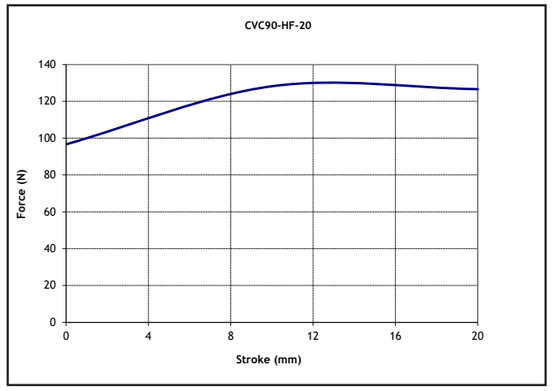
GRAPH: FORCE VS STROKE

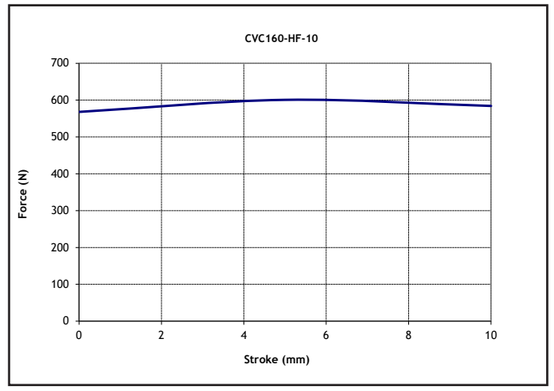


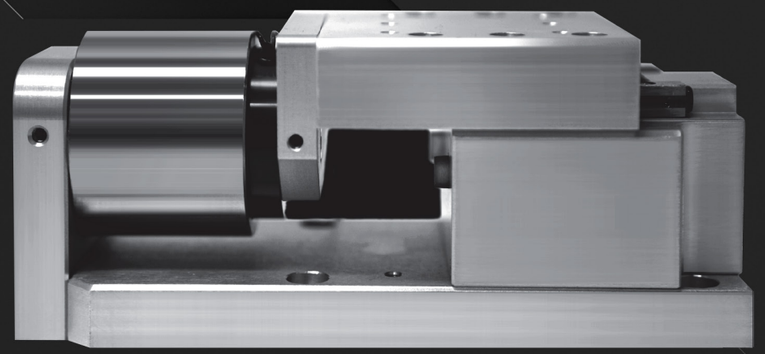










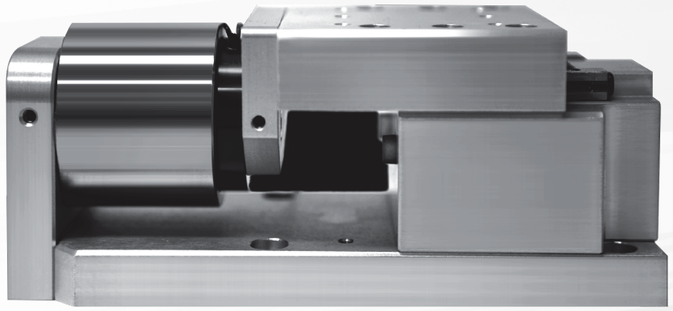


CVCA SERIES

CIRCULAR VOICE COIL ACTUATOR

CVCA SERIES

VOICE COIL ACTUATOR



Ultra-High Frequency CVC Voice Coil Actuator

PBA's Circular Voice Coil Positioning Stage is a compact stage ideal for closed-loop short stroke positioning applications where precision, repeatability and low speed/force ripple are of utmost importance.

CVCA stages are built with precision cross roller guides that provide high rigidity to complement the high acceleration capability of the CVC module which has very low electrical/mechanical time constants and zero hysteresis.

A perfect combination for majority voice coil applications requiring precise quick oscillation at high accelerations of light payloads.

- Cross roller bearing for excellent precision and rigidity
- Zero cogging, zero-backlash and zero hysteresis
- Low moving mass, fast response
- Integrated linear encoder
- Ease of use, plug and play
- Excellent reliability
- Sub-micron resolution possibilities

ULTRA HIGH FREQUENCY
powered by circular voice coil

Model	Stroke (mm)	Continuous Force (N)	Peak Force (N)	Continuous Current (A)	Peak Current (A)
CVCA35-HF-8.0-CRX	8	28.8	144.0	0.8	4.0
CVCA40-HF-6.5-CRX	6.5	18.48	92.42	0.717	3.59
CVCA40-SF-20-CRX	20	9.58	47.92	0.626	3.13
CVCA50-SF-30-CRX	30	14.98	74.91	0.846	4.23
CVCA60-SF-25-CRX	25	24.07	120.33	1.17	5.85
CVCA60-HF-20-CRX	20	43.7	218.5	0.95	4.75
CVCA90-HF-20-CRX	20	128.15	640.74	3.154	15.77

CVCA — 40 — HF — 6.5 — CRX — E1.0 — C0.5 — 00

ACTUATOR MODEL

DIAMETER (mm)

SPECIAL
- SF Standard Force
- HF High Force

STROKE

LINEAR GUIDE
- CRX Cross Roller

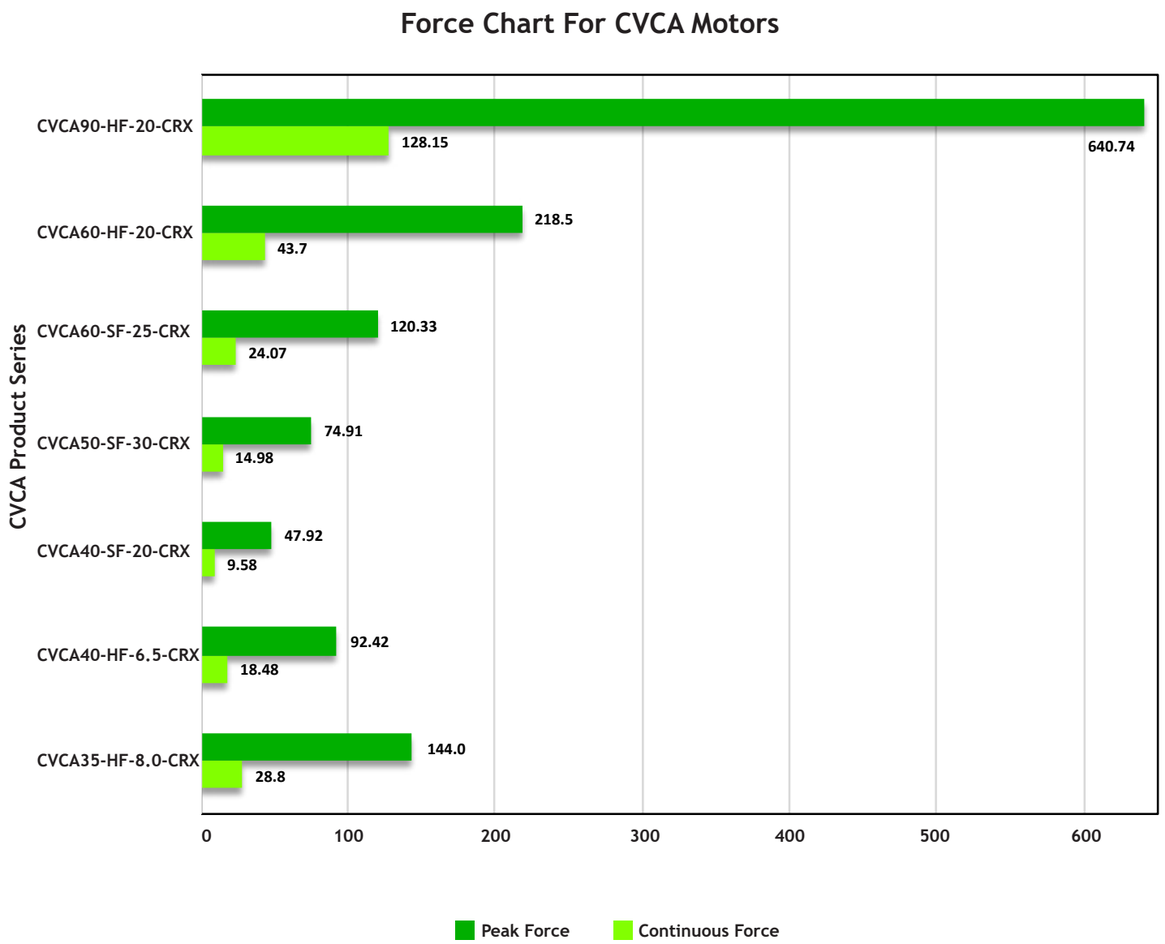
ENCODER RESOLUTION
- E1.0 1.0um
- E0.5 0.5um
- E0.1 0.1um
- EA Analog

CABLE LENGTH*
- C0.5 0.5m

* Encoder & power cable

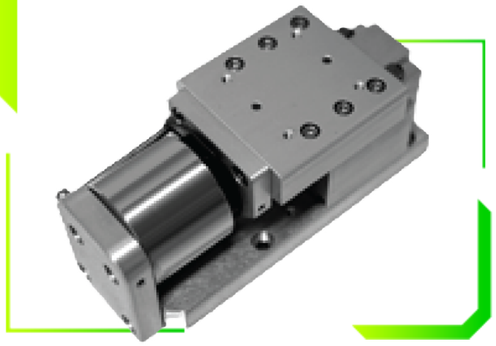
DESIGN
- 00 Standard
- 01 Customized Version
- :

FORCE CHART FOR CVCA MOTORS



CVCA SERIES

VOICE COIL ACTUATOR



CVCA SERIES

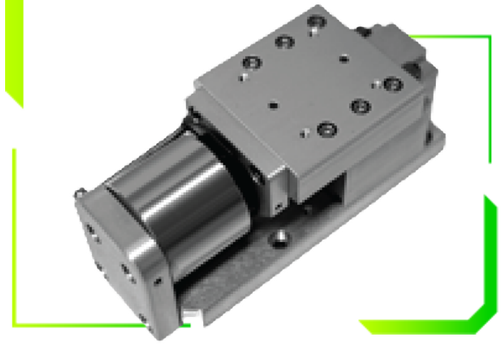
- Direct Drive, cogging free
- Peak force to 74.91N, Continuous force to 14.98N
- Fast response, low moving mass
- Non contact between core and coil movement
- Excellent reliability

SPECIFICATION		MODEL			
		CVCA35-HF-8.0-CRX	CVCA40-HF-6.5-CRX	CVCA40-SF-20-CRX	CVCA50-SF-30-CRX
Performance	**Unit**				
Stroke	mm	8	6.5	20	30
Peak Force	N	144.00	92.42	47.92	74.91
Continuous Stall Force @ 100°C*	N	25.2	16.09	8.34	13.14
Continuous Stall Force @ 125°C*	N	28.8	18.48	9.58	14.98
Peak Power @ 125°C*	W	438.08	289.27	254.48	334.14
Continuous Power @ 100°C	W	12.45	8.13	7.16	9.54
Continuous Power @ 125°C*	W	17.52	11.57	10.18	13.37
Electrical					
Peak Current	A	4.00	3.59	3.13	4.23
Continuous Stall Current @ 100°C*	A	0.7	0.624	0.545	0.742
Continuous Stall Current @ 125°C*	A	0.8	0.717	0.626	0.846
Force Constant @ Mid Stroke	N/A	36	25.78	15.31	17.71
Back EMF Constant @ Mid Stroke	V/m/s	36	25.78	15.31	17.71
Coil Resistance @ 25°C	ohm	19.5	16.03	18.50	13.3
Coil Resistance @ 100°C*	ohm	25.41	20.89	24.11	17.33
Coil Resistance @ 125°C*	ohm	27.38	22.51	25.98	18.67
Inductance @ 1kHz (Inside fully)	mH	8.24	6.00	6.55	4.2
Motor Constant @ 125°C*	N/√W	8.15	6.44	3.00	4.86
Max. Terminal Voltage	Vdc	48			
Thermal					
Thermal Resistance @ 100°C*	°C/W	6.02	9.22	10.47	7.86
Thermal Resistance @ 125°C*	°C/W	5.71	8.64	9.28	7.48
Max. Coil Temperature	°C	125			
Mechanical Specifications					
Moving Mass	kg	0.28	0.25	0.215	0.347
Total Mass	kg	1.23	0.902	0.916	1.404
Repeatability**	um	±1.5			
Accuracy***	um	±3um/25mm			
Straightness***	um	±3um/25mm			
Flatness***	um	±3um/25mm			
Static Moments					
M_Y	Nm	2.63	2.5	2.95	7.01
M_R	Nm	1.98	1.98	1.98	3.98
M_P	Nm	3.09	3.05	3.47	8.25

Notes:
1. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
2. Specifications tolerance : ±10%.
3. ** Depend on encoder resolution.
4. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
5. Peak force and current : 4% duty ratio and 1 second duration.
6. Specifications are subject to change without prior notice.

CVCA SERIES

VOICE COIL ACTUATOR



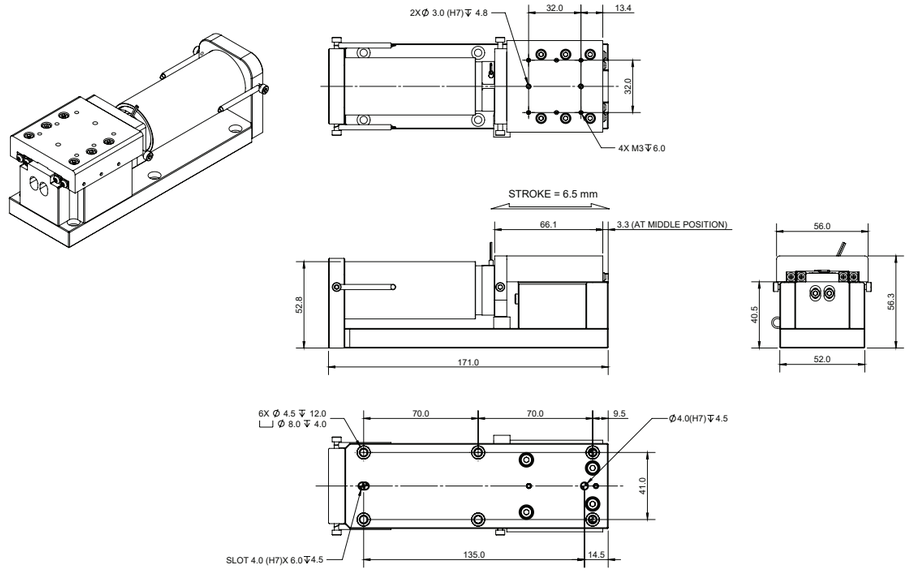
CVCA SERIES

- Direct Drive, cogging free
- Peak force to 640.74N, Continuous force to 128.15N
- Fast response, low moving mass
- Non contact between core and coil movement
- Excellent reliability

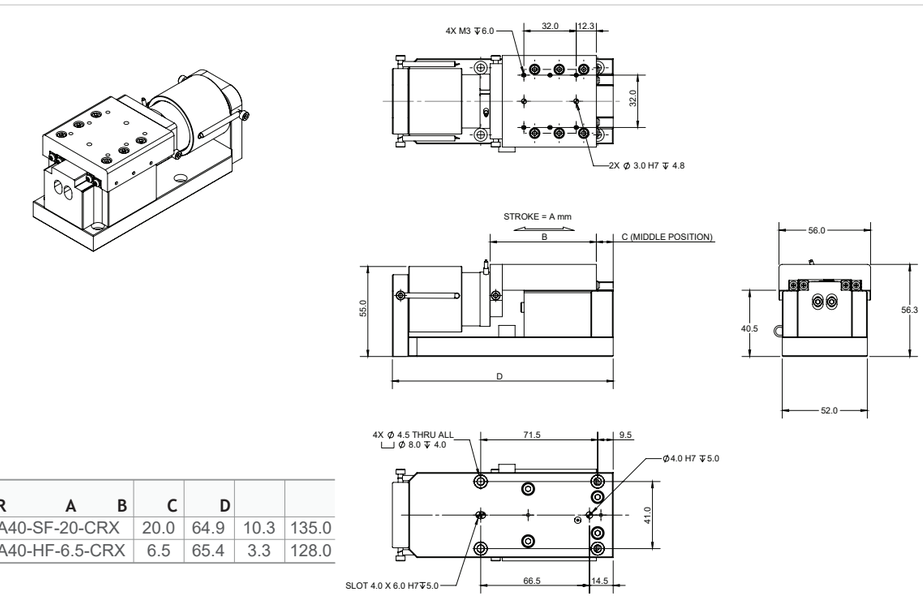
SPECIFICATION		MODEL		
		CVCA60-SF-25-CRX	CVCA60-HF-20-CRX	CVCA90-HF-20-CRX
Performance	**Unit**			
Stroke	mm	25	20	
Peak Force	N	120.33	218.50	640.74
Continuous Stall Force @ 100°C*	N	20.90	37.72	111.41
Continuous Stall Force @ 125°C*	N	24.07	43.70	128.15
Peak Power @ 125°C*	W	463.70	760.32	1204.70
Continuous Power @ 100°C	W	12.98	21.03	33.80
Continuous Power @ 125°C*	W	18.55	30.41	48.19
Electrical				
Peak Current	A	5.85	4.75	15.77
Continuous Stall Current @ 100°C*	A	1.016	0.820	2.742
Continuous Stall Current @ 125°C*	A	1.170	0.950	3.154
Force Constant @ Mid Stroke	N/A	20.57	46.00	40.63
Back EMF Constant @ Mid Stroke	V/m/s	20.57	46.00	40.63
Coil Resistance @ 25°C	ohm	9.65	24.00	3.45
Coil Resistance @ 100°C*	ohm	12.57	31.27	4.50
Coil Resistance @ 125°C*	ohm	13.55	33.70	4.48
Inductance @ 1kHz (Inside fully)	mH	3.26	15.40	4.88
Motor Constant @ 125°C*	N/√W	6.62	9.39	21.87
Max. Terminal Voltage	Vdc	48	120	
Thermal				
Thermal Resistance @ 100°C*	°C/W	5.78	3.57	2.22
Thermal Resistance @ 125°C*	°C/W	5.39	3.29	2.08
Max. Coil Temperature	°C	125		
Mechanical Specifications				
Moving Mass	kg	0.474	0.679	1.85
Total Mass	kg	2.035	2.817	6.9
Repeatability**	um	±1.5		
Accuracy***	um	±3um/25mm		
Straightness***	um	±3um/25mm		
Flatness***	um	±3um/25mm		
Static Moments				
M_Y	Nm	31.24	29.99	25.10
M_R	Nm	21.94	21.94	21.43
M_P	Nm	36.76	35.29	29.53

Notes:
1. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
2. Specifications tolerance : ±10%.
3. ** Depend on encoder resolution.
4. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
5. Peak force and current : 4% duty ratio and 1 second duration.
6. Specifications are subject to change without prior notice.

CVCA 35

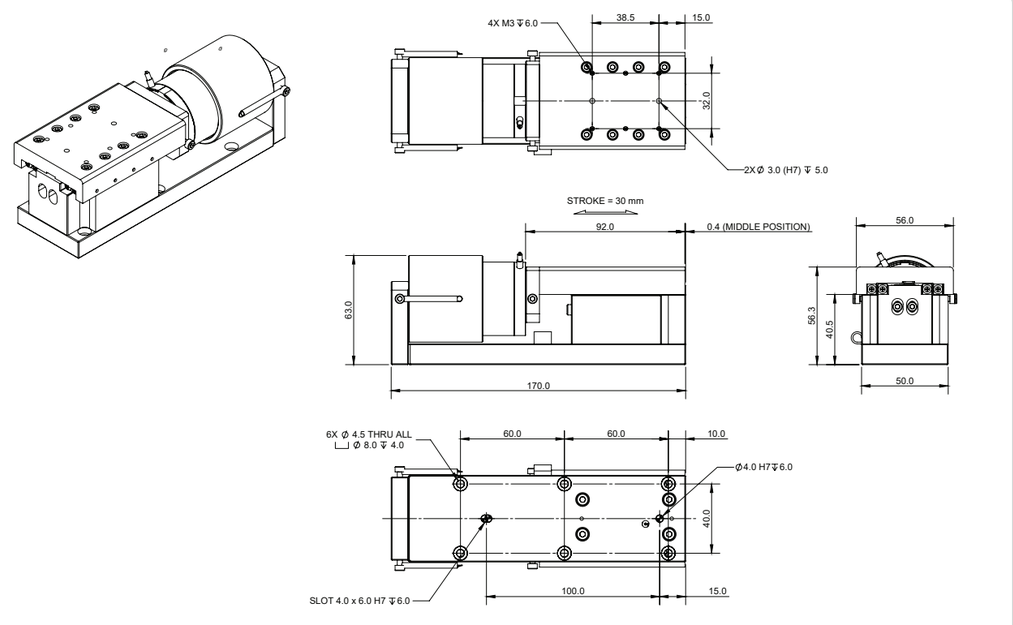


CVCA 40

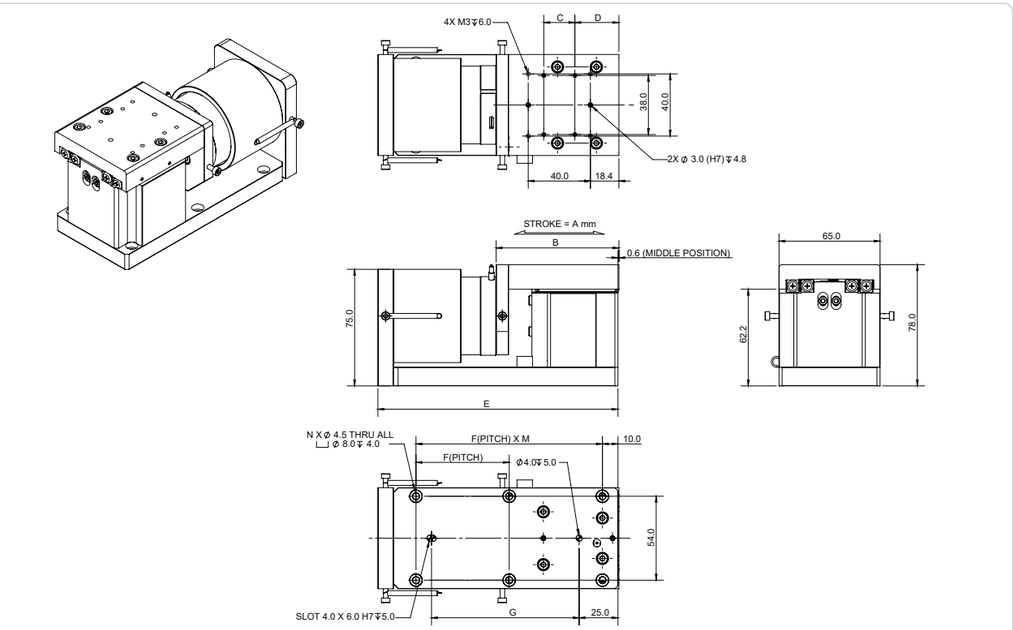


PART NUMBER	A	B	C	D		
CVCA40-SF-20-CRX	20.0	64.9	10.3	135.0		
CVCA40-HF-6.5-CRX	6.5	65.4	3.3	128.0		

CVCA 50

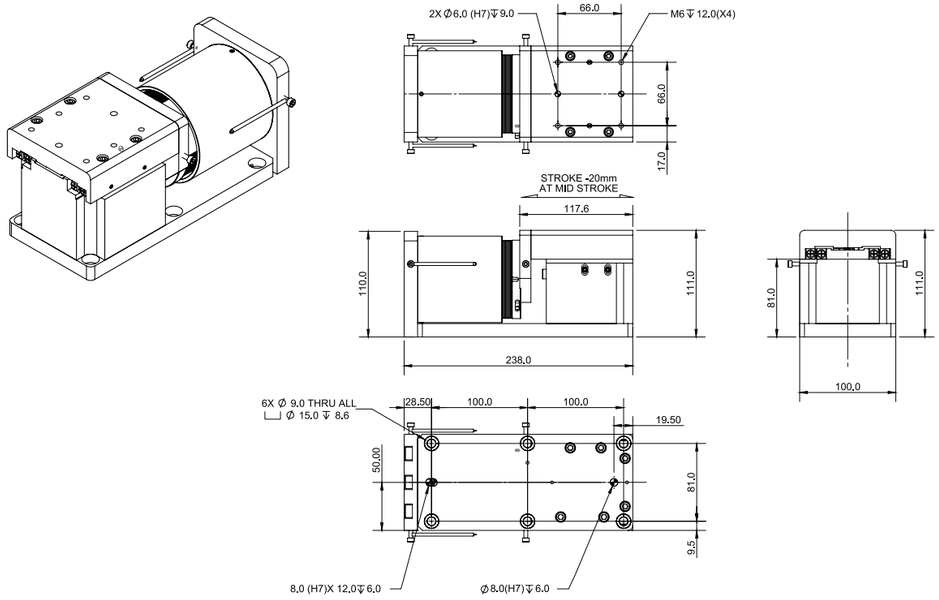


CVCA 60

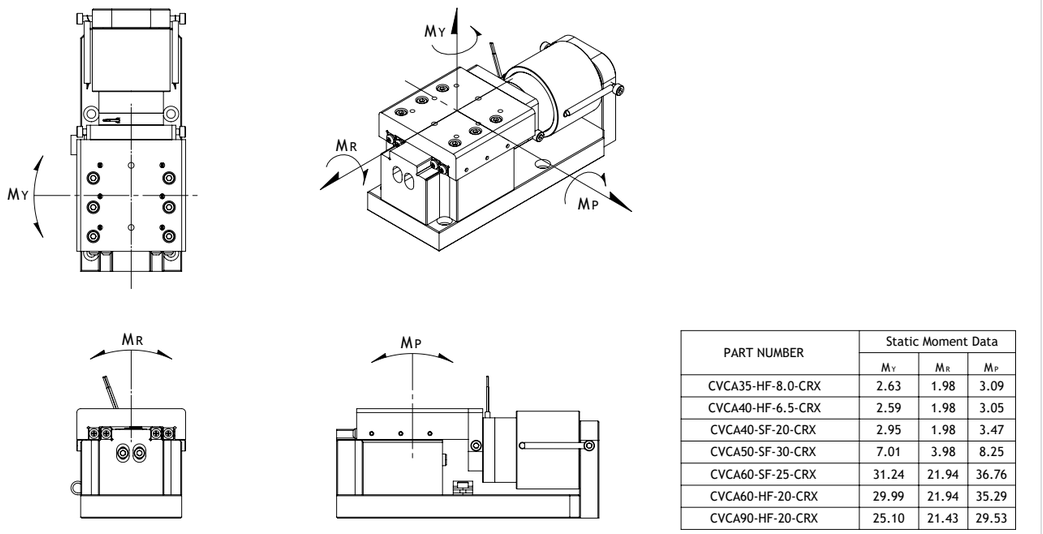


PART NUMBER	A	B	C	D	E	F	G	M	N
CVCA60-SF-25-CRX	25.0	79.0	20.0	28.4	154.5	60.0	95.0	2	6
CVCA60-HF-20-CRX	20.0	76.5	24.5	27.0	203.9	58.0	135.0	3	8

CVCA 90



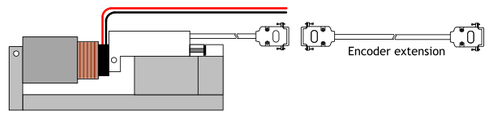
CVCA Static Moment Data



PART NUMBER	Static Moment Data		
	M_Y	M_R	M_P
CVCA35-HF-8.0-CRX	2.63	1.98	3.09
CVCA40-HF-6.5-CRX	2.59	1.98	3.05
CVCA40-SF-20-CRX	2.95	1.98	3.47
CVCA50-SF-30-CRX	7.01	3.98	8.25
CVCA60-SF-25-CRX	31.24	21.94	36.76
CVCA60-HF-20-CRX	29.99	21.94	35.29
CVCA90-HF-20-CRX	25.10	21.43	29.53

CVCA SERIES EXTENSION CABLE

Connection example:
CVCA☐-☐-CRX-E☐-C☐-00

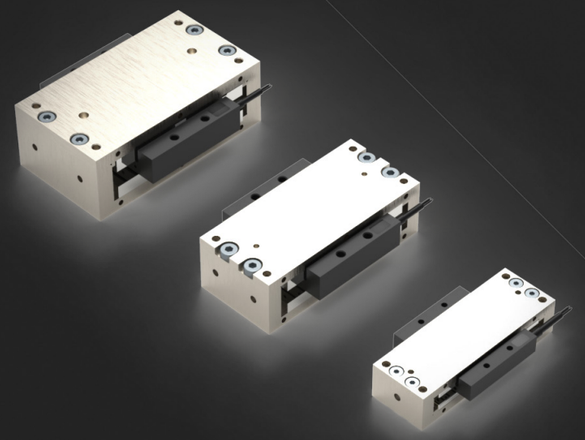


Renishaw ATOM Ri Interface Connector Pin Out

15 pin D Sub Male Connector	ENCODER (DIGITAL)	ENCODER (ANALOG)
1	-	COSINE-
2	GND	SINE-
3	-	Z+
4	Z-	+5V
5	B-	+5V
6	A-	-
7	+5V	-
8	+5V	-
9	GND	COSINE+
10	-	SINE+
11	-	Z-
12	Z+	GND
13	B+	GND
14	A+	-
15	-	-
Case	Shield	Shield

Extension Cable			Part Number
Encoder Extension Cable		CABLE: 00 RGH41, VIONIC, QUANTIC Digital; 00A RGH41 Analog; 01 RH200 Digital; 01B RH200 Analog; 05 ATOM Ri Interface Digital; 05A ATOM Ri Interface Analog CABLE LENGTH (X.X): 0.5 0.5 meter; 1.0 1.0 meter; 2.0 2.0 meter; 3.0 3.0 meter (standard)	CBL_EXT_REN05_X.X
			CBL_EXT_REN05A_X.X

Notes: 1. X.X is the length of the cable in meters 2. For customized cable length, contact PBA

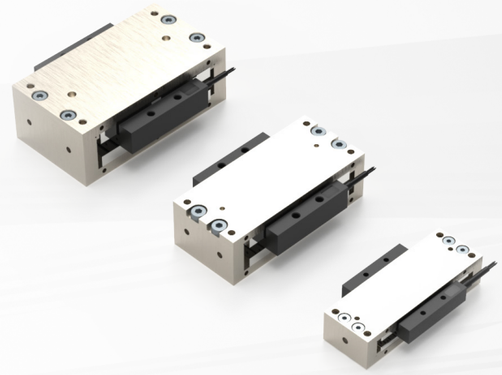


RVC SERIES

RECTANGULAR VOICE COIL

RVC SERIES

RECTANGULAR VOICE COIL



Ultra-High Frequency for Short Stroke Motion Systems

PBA's Rectangular voice coil motors are straightforward linear electric motors consisting of a magnetic housing and a lightweight coil. These motors operate without the need for commutation and are commonly utilized for pure frequency oscillation. However, when paired with high-resolution linear encoders, they can easily achieve precise sub-micron positional control.

By applying a voltage across the motor's terminals, it can be moved in one direction. Reversing the polarity of the applied voltage causes the motor to move in the opposite direction. The force generated by the motor is directly proportional to the current flowing through the motor coil, and it remains almost constant within the specified stroke range. The non-commutated motor design enhances reliability, while the direct coupling between the motor and the load enables dynamic acceleration/deceleration and high-speed operation.

Key features of PBA's Rectangular voice coil motors include:

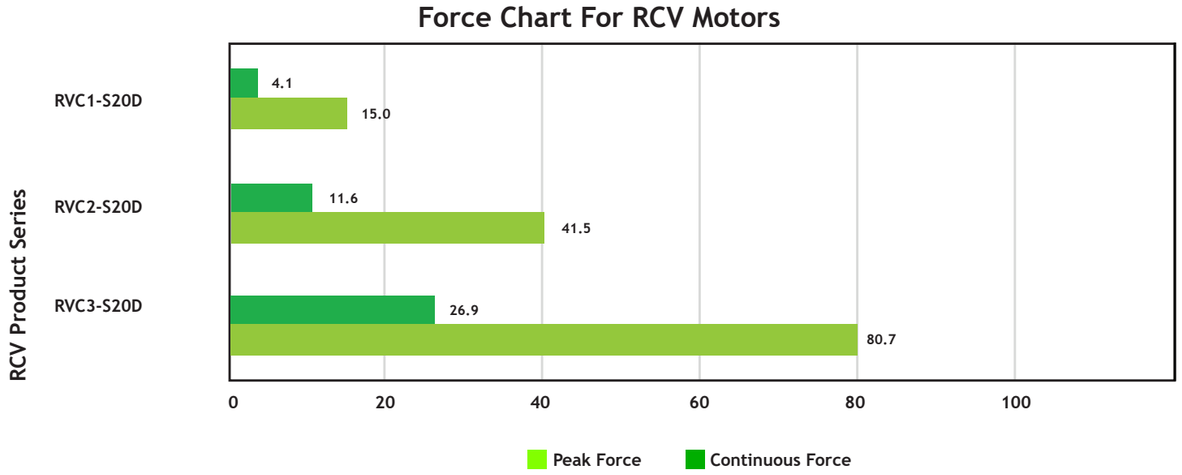
- Zero cogging, backlash, and hysteresis
- Exceptionally dynamic with a high-frequency motion profile
- Minimal speed and force ripple, especially at low speeds
- Available in various sizes and force options
- Simple operation with only two terminal connections required
- High-force versions are also available
- Requires no maintenance

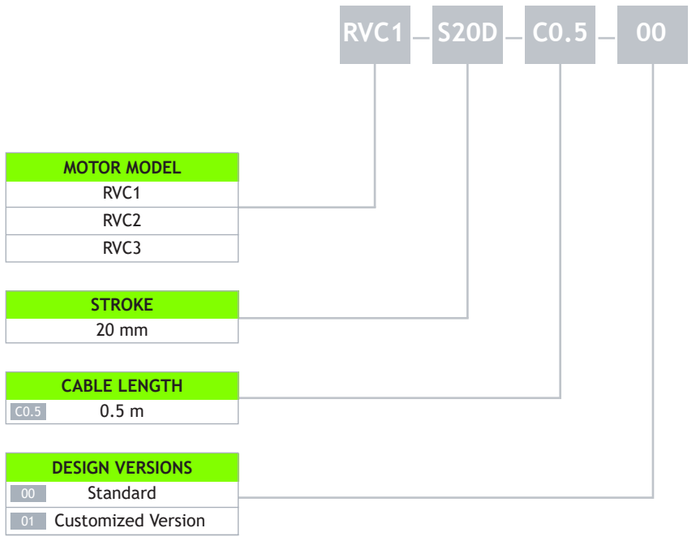
APPLICATION

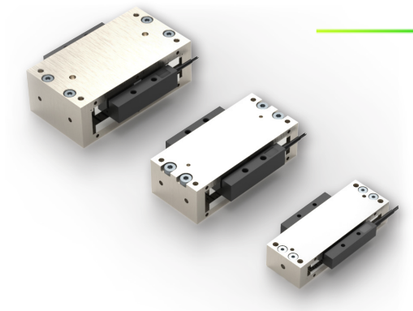
- **Precision automation**
- **Dynamic Z-axis**
- **Frequency oscillator**
- **Force & Pressure control**
- **Camera lens focusing**
- **Syringe dispensing**
- **Biomed simulator**
- **Laser mirror steer & tilt**

RVC SUMMARY TABLE
powered by Rectangular voice coil

Model	Stroke (mm)	Continuous Force (N)	Peak Force (N)	Continuous Current (A)	Peak Current (A)
RVC1-S20D	20.0	4.1	15.0	1.2	4.4
RVC2-S20D	20.0	11.6	41.5	1.4	5.0
RVC3-S20D	20.0	26.9	80.7	2.6	7.8





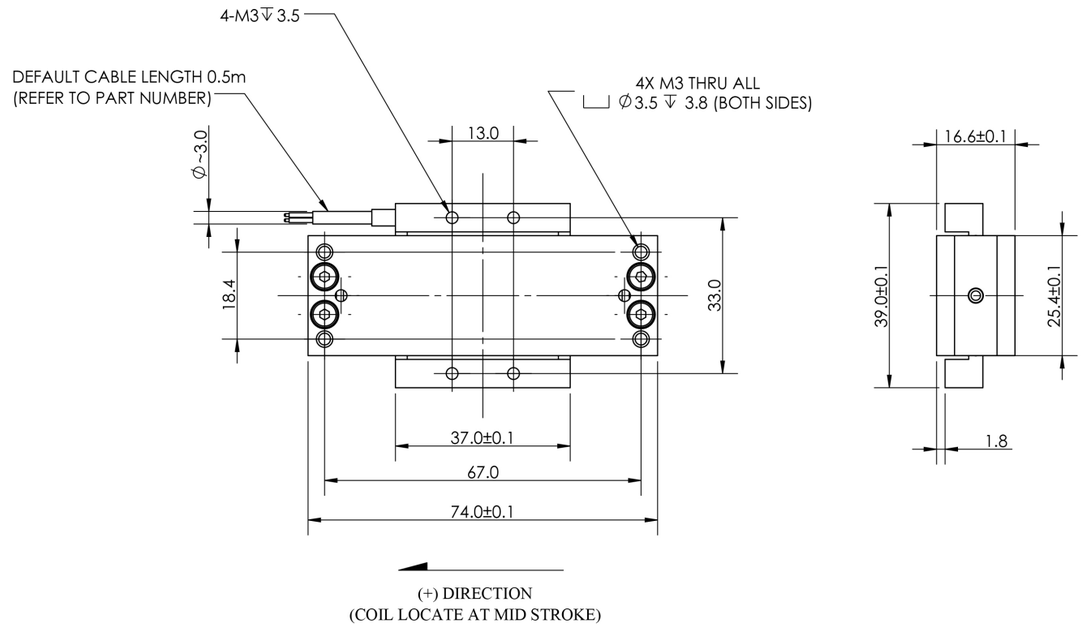


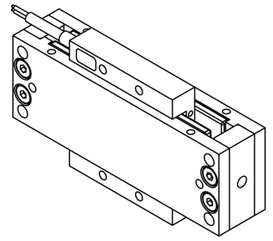
RVC SERIES

- Direct drive, zero cogging, zero backlash voice coil motors
- Smooth motion at low speeds with limitless resolution
- No contact between coil and core movement
- Low coil mass with very fast response and bandwidth

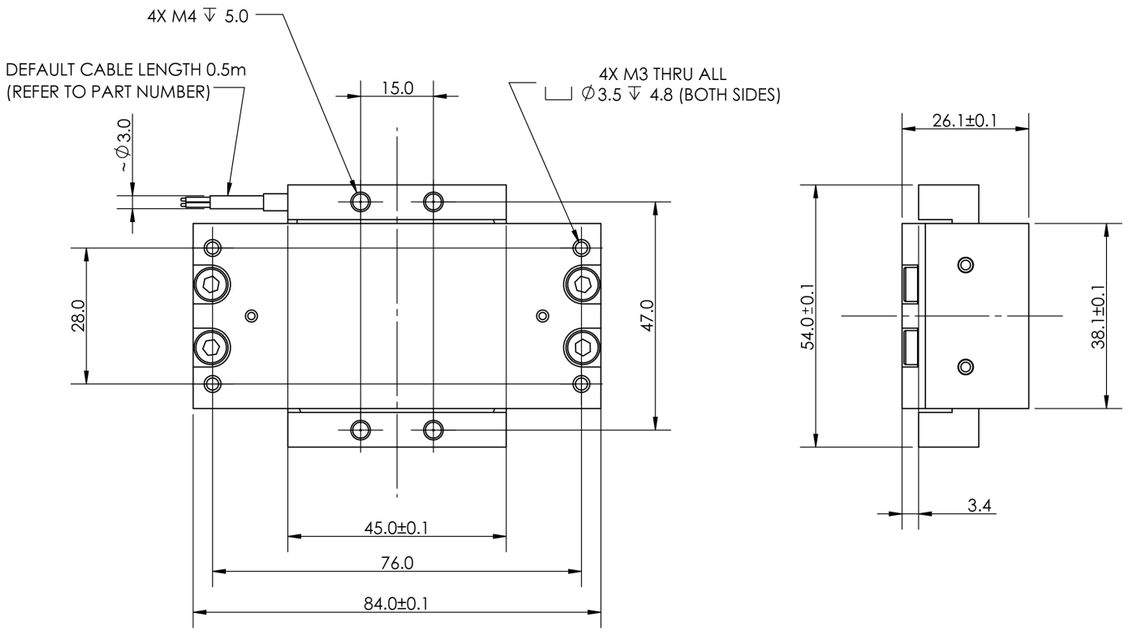
SPECIFICATION		MODEL		
Performance	**Unit**	RVC1-S20D	RVC2-S20D	RVC3-S20D
Stroke	mm	20.0	20.0	20.0
Peak Force	N	15.0	41.5	80.7
Continuous Stall Force @ 100°C*	N	4.1	11.6	26.9
Continuous Power @ 100°C*	W	4.5	9.4	17.6
Electrical				
Peak Current	A	4.4	5.0	7.8
Continuous Stall Current @ 100°C*	A	1.2	1.4	2.6
Force Constant @ Mid Stroke	N / A	3.4	8.3	10.4
Back EMF Constant @ Mid Stroke	V / m/s	3.4	8.3	10.4
Coil Resistance @ 25°C	ohm	2.4	3.7	2.0
Coil Resistance @ 100°C*	ohm	3.1	4.8	2.6
Inductance @ 1kHz (Inside fully)	mH	0.45	TBI	TBI
Motor Constant @ 100°C*	N / √W	1.9	3.8	6.4
Max. Terminal Voltage	Vdc	48.0	60.0	60.0
Thermal				
Thermal Resistance @ 100°C*	°C / W	16.65	7.94	4.26
Max. Coil Temperature	°C	125	125	125
Mechanical				
Coil Assembly Weight	kg	0.021	0.057	0.070
Magnet Assembly Weight	kg	0.191	0.487	0.888
Air Gap	mm	0.5	0.6	0.8

Notes:
1. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
2. Specifications tolerance : ±10%.
3. Peak force and current : 4% duty ratio and 1 second duration.
4. Specifications are subject to change without prior notice.

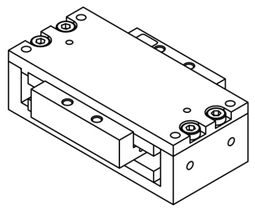




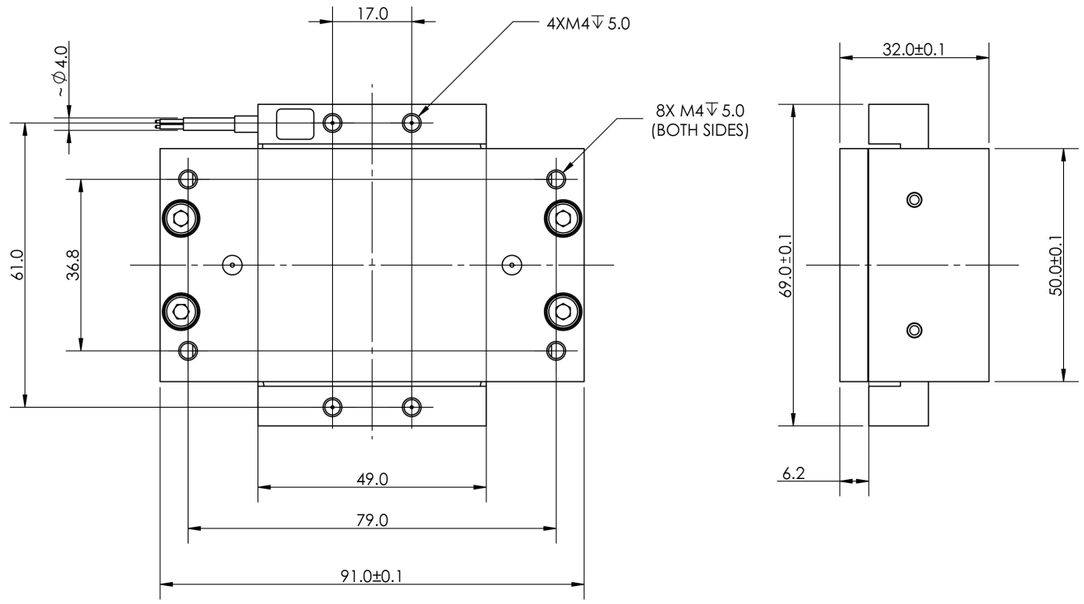
RVC2-S20D



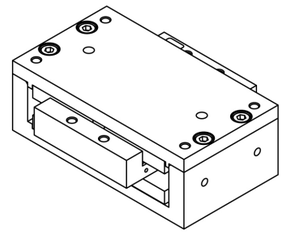
(+) DIRECTION
(COIL LOCATE AT MID STROKE)



RVC3-S20D



(+) DIRECTION
(COIL LOCATE AT MID STROKE)



RVCA SERIES

RECTANGULAR VOICE COIL ACTUATOR

RVCA SERIES

RECTANGULAR VOICE COIL ACTUATOR

Ultra-High Frequency for Short Stroke Motion Systems

Rectangular Voice Coil Actuators (RVCA) actuators are preferred to circular versions especially in designs where space constraints are critical in linear motion applications. The flat rectangular voice coil design has similar characteristics to the normal common circular voice coil assemblies.

RVCA stages are built with precision cross roller guides that provide high rigidity to complement the high acceleration capability of the CVC module which has very low electrical/mechanical time constants and zero hysteresis. The actuator is specially developed for high precision frequency motion of short strokes (<50mm).

- Compact and streamline form factor
- Cross roller bearing for excellent precision and rigidity
- Zero cogging, zero-backlash and zero hysteresis
- Low moving mass, fast response
- Integrated linear encoder
- Ease of use, plug and play
- Excellent reliability
- Sub-micron Resolution possibilities

ULTRA HIGH FREQUENCY
rectangular voice coil actuators

Model	Stroke (mm)	Continuous Force (N)	Peak Force (N)	Continuous Current (A)	Peak Current (A)
RVCA-S20D-CRX	20	9.8	29.5	1.31	3.94
RVCA-S30D-CRX	30	27.2	81.6	2.02	6.05
RVCA-S12D-LM	12	4.2	12.6	1.17	3.51
RVCA-S20D-LM	20	9.8	29.5	1.31	3.94
RVCA-S30D-LM	30	27.2	81.6	2.02	6.05

RVCA – S20D – CRX – E1.0 – C0.5 – 00

ACTUATOR MODEL

STROKE (mm)

S12D *only available for LM series
S20D
S30D

LINEAR GUIDE

CRX	Cross Roller
LM	Linear Guides

DESIGN VERSIONS

00	Standard
01	Customized Version
:	

CABLE LENGTH*

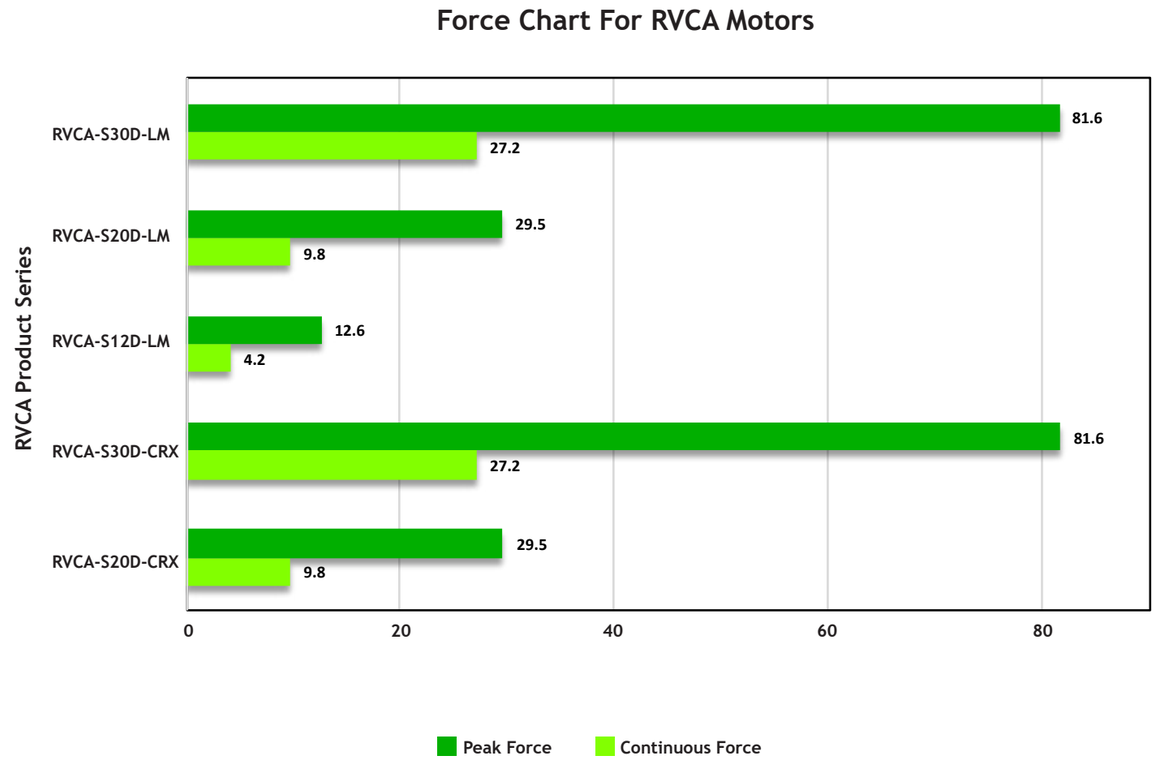
C0.5	0.5m

* Encoder & power cable

ENCODER RESOLUTION

E1.0	1.0um Atom
E0.5	0.5um Atom
E0.1	0.1um Atom
EA	Analog Atom

FORCE CHART FOR RVCA MOTORS



RVCA SERIES

RECTANGULAR VOICE COIL ACTUATOR

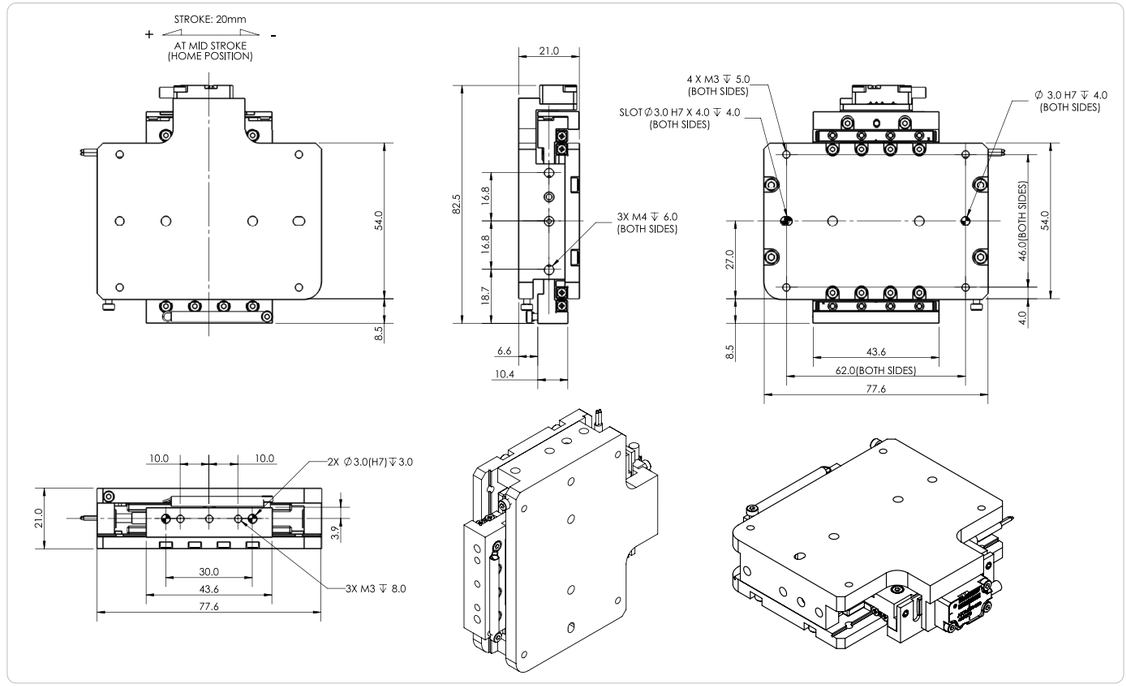
RVCA SERIES

- Ideal for high speed pick-and-place applications
- Peak force to 81.7N, Continuous force to 27.3N
- Cross roller bearing for excellent precision and rigidity
- Direct drive, cogging free
- Low moving mass, fast response
- Integrated linear encoder
- Ease of use, plug and play
- Excellent reliability

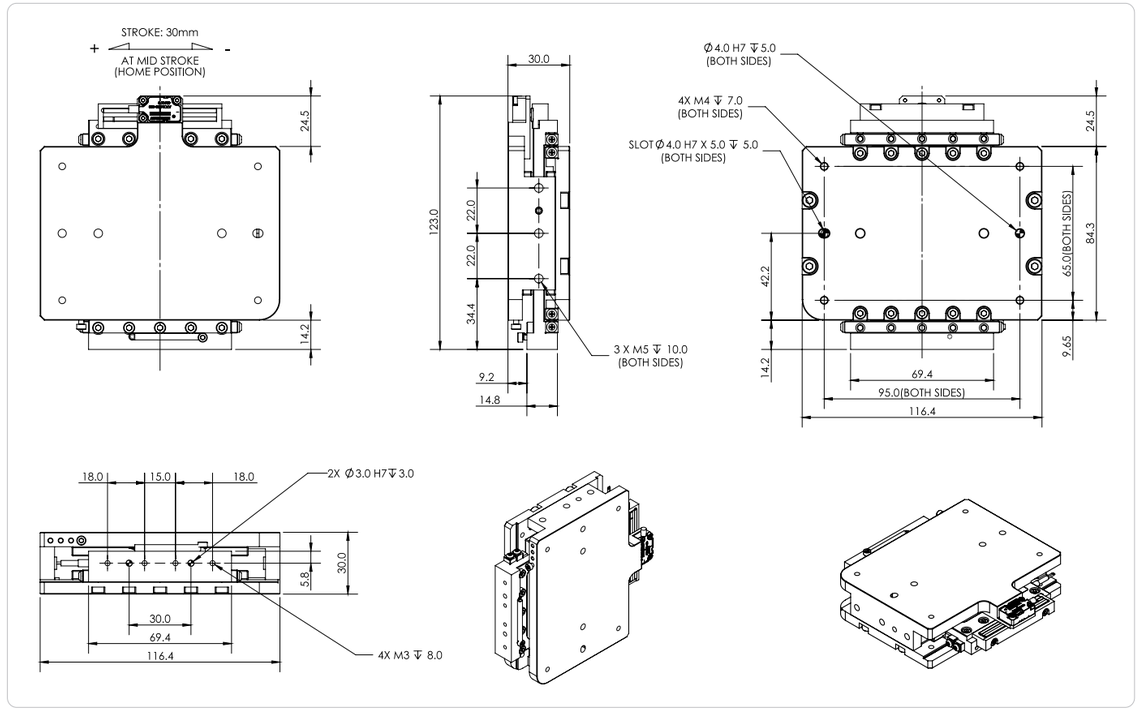
SPECIFICATION		MODEL	
		RVCA-S20D-CRX	RVCA-S30D-CRX
Performance	**Unit**		
Stroke	mm	20	30
Peak Force	N	29.5	81.7
Continuous Stall Force @ 100°C*	N	8.6	24.0
Continuous Stall Force @ 125°C*	N	9.8	27.3
Peak Power @ 125°C*	W	91.4	226.1
Continuous Power @ 100°C	W	7.3	18.2
Continuous Power @ 125°C*	W	10.2	25.2
Electrical			
Peak Current	A	3.94	6.1
Continuous Stall Current @ 100°C*	A	1.15	1.8
Continuous Stall Current @ 125°C*	A	1.31	2.0
Force Constant @ Mid Stroke	N/A	7.50	13.5
Back EMF Constant @ Mid Stroke	V/m/s	7.50	13.5
Coil Resistance @ 25°C	ohm	4.20	4.4
Coil Resistance @ 100°C*	ohm	5.47	5.7
Coil Resistance @ 125°C*	ohm	5.90	6.2
Inductance @ 1kHz (Inside fully)	mH	1.03	1.9
Motor Constant @ 125°C*	N/√W	3.09	5.4
Max. Terminal Voltage	Vdc	48	100
Thermal			
Thermal Resistance @ 100°C*	°C/W	10.31	4.1
Thermal Resistance @ 125°C*	°C/W	9.85	4.0
Max. Coil Temperature	°C	125	
Mechanical Specifications			
Moving Mass	kg	0.070	0.250
Total Mass	kg	0.580	1.870
Repeatability**	um	± 1.0	± 1.0
Straightness***	um	± 3.0	± 3.0
Flatness***	um	± 3.0	± 3.0
Static Moments			
M_Y	Nm	2.8	19.4
M_R	Nm	3.1	19.9
M_P	Nm	3.3	22.8

Notes:
1. * Ambient temperature 25°C, natural convection, no heat sink.
2. Specifications tolerance - inductance +/-30%, all others +/-10%.
3. ** Depend on encoder resolution.
4. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
5. Peak force and current :4% duty ratio and 1 second duration.
6. Specifications are subject to change without prior notice.

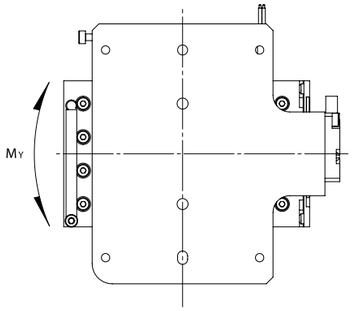
RVCA-S20D-CRX

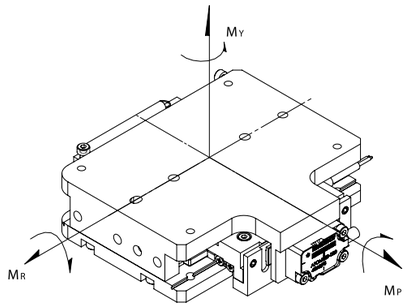


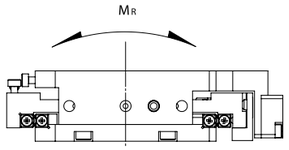
RVCA-S30D-CRX

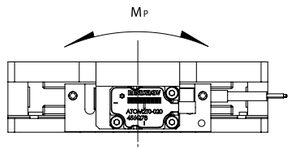


RVCA Static Moment Data









RVCA STATIC MOMENT (N.m)			
MODEL NO	MY	MR	MP
RVCA-S20D-CRX	2.8	3.1	3.3
RVCA-S30D-CRX	19.4	19.9	22.8

RVCA SERIES

RECTANGULAR VOICE COIL ACTUATOR

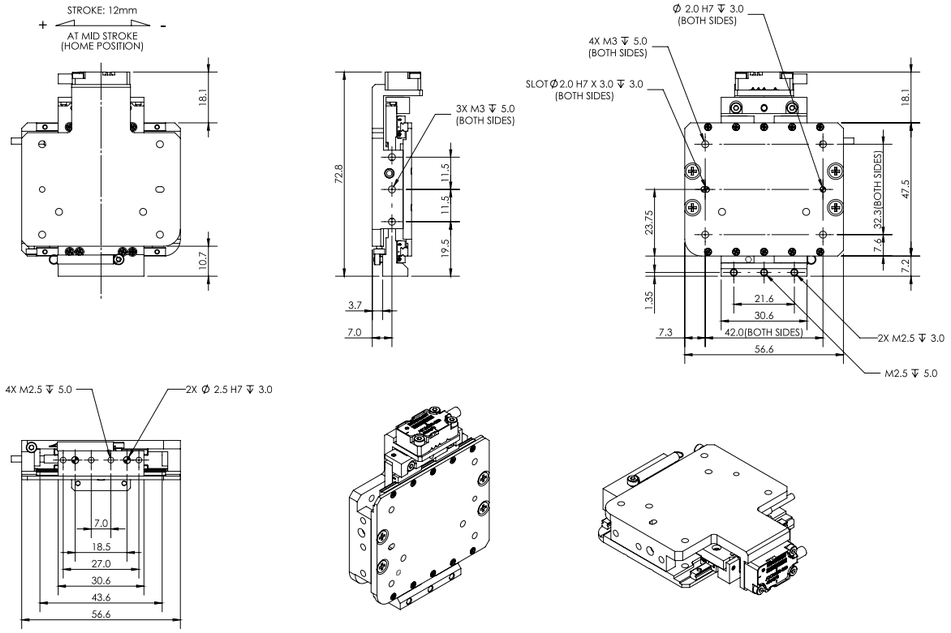
RVCA SERIES

- Ideal for high speed pick-and-place applications
- Peak force to 81.7N, Continuous force to 27.3N
- Direct drive, cogging free
- Low moving mass, fast response
- Integrated linear encoder
- Ease of use, plug and play
- Excellent reliability

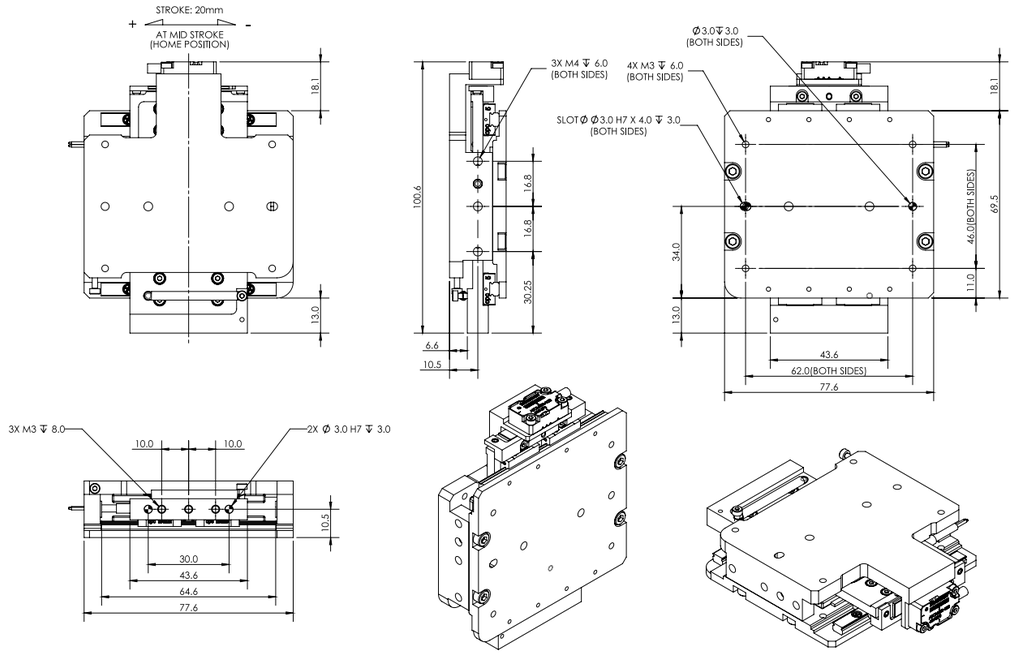
SPECIFICATION		MODEL		
		RVCA-S12D-LM	RVCA-S20D-LM	RVCA-S30D-LM
Performance	**Unit**			
Stroke	mm	12	20	30
Peak Force	N	12.6	29.5	81.7
Continuous Stall Force @ 100°C*	N	3.7	8.6	24.0
Continuous Stall Force @ 125°C*	N	4.2	9.8	27.3
Peak Power @ 125°C*	W	51.9	91.4	226.1
Continuous Power @ 100°C	W	4.2	7.3	18.2
Continuous Power @ 125°C*	W	5.8	10.2	25.2
Electrical				
Peak Current	A	3.51	3.94	6.1
Continuous Stall Current @ 100°C*	A	1.04	1.15	1.8
Continuous Stall Current @ 125°C*	A	1.17	1.31	2.0
Force Constant @ Mid Stroke	N/A	3.60	7.50	13.5
Back EMF Constant @ Mid Stroke	V/m/s	3.60	7.50	13.5
Coil Resistance @ 25°C	ohm	3.00	4.20	4.4
Coil Resistance @ 100°C*	ohm	3.91	5.47	5.7
Coil Resistance @ 125°C*	ohm	4.21	5.90	6.2
Inductance @ 1kHz (Inside fully)	mH	0.32	1.03	1.9
Motor Constant @ 125°C*	N/√W	1.75	3.09	5.4
Max. Terminal Voltage	Vdc	48		100
Thermal				
Thermal Resistance @ 100°C*	°C/W	17.88	10.31	4.1
Thermal Resistance @ 125°C*	°C/W	17.34	9.85	4.0
Max. Coil Temperature	°C	125		
Mechanical Specifications				
Moving Mass	kg	0.030	0.078	0.240
Total Mass	kg	0.230	0.613	1.950
Repeatability**	um	± 1.0	± 1.0	± 1.0
Straightness***	um	± 3.0	± 3.0	± 3.0
Flatness***	um	± 3.0	± 3.0	± 3.0
Static Moments				
MY	Nm	1.9	5.5	3.0
MR	Nm	0.9	2.0	4.5
MP	Nm	4.3	8.4	17.4

Notes:
1. * Ambient temperature 25ºC, natural convection, no heat sink.
2. Specifications tolerance - inductance +/-30%, all others +/-10%.
3. ** Depend on encoder resolution.
4. *** Specific accuracy, straightness and flatness requirement, contact PBA for more information.
5. Peak force and current :4% duty ratio and 1 second duration.
6. Specifications are subject to change without prior notice.

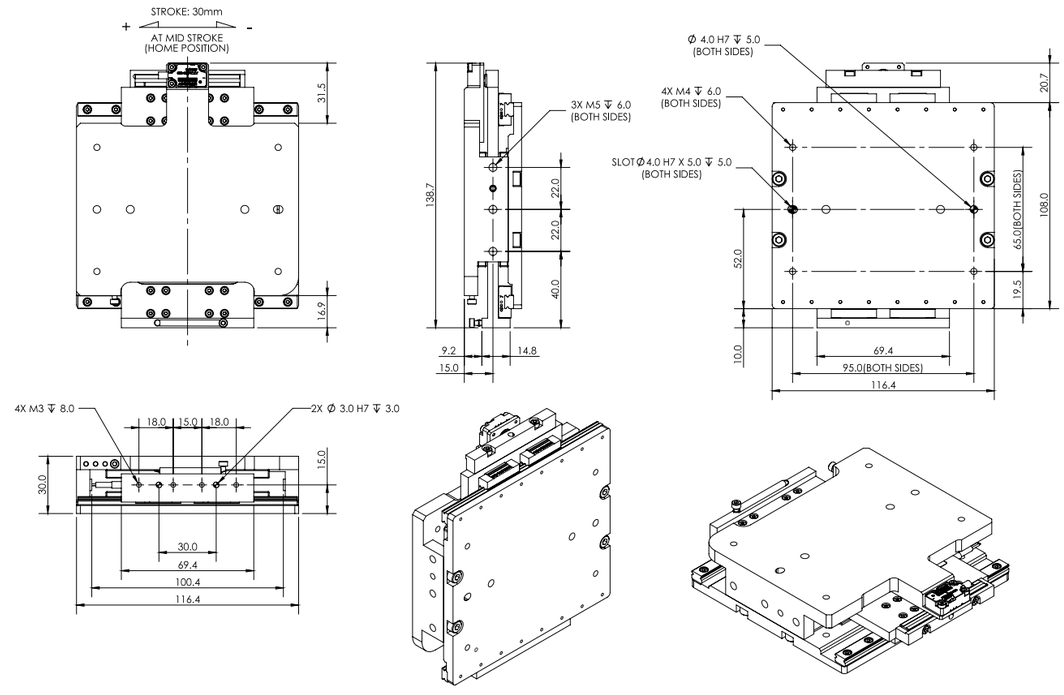
RVCA-S12D-LM



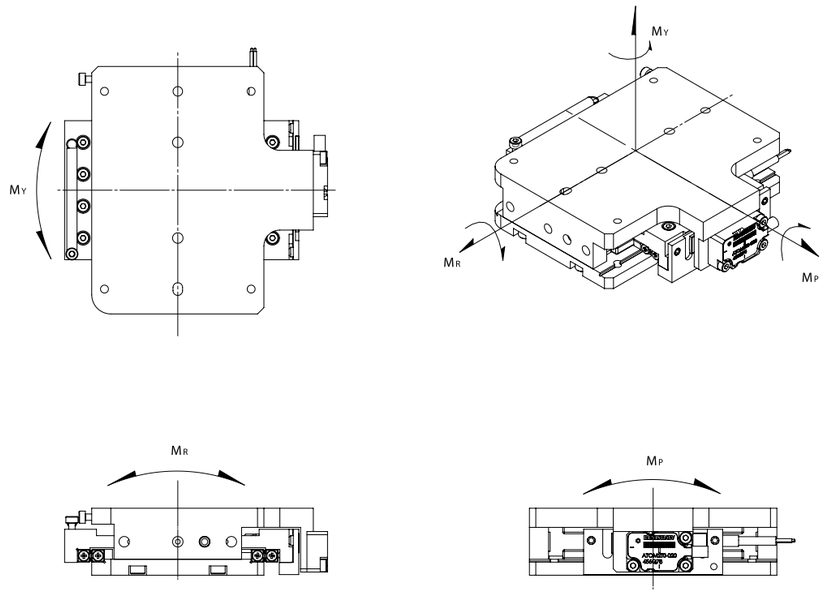
RVCA-S20D-LM



RVCA-S30D-LM



RVCA Static Moment Data

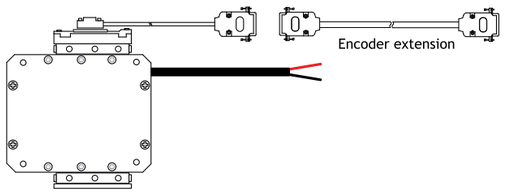


RVCA STATIC MOMENT (N.m)			
MODEL NO	MY	MR	MP
RVCA-S12D-LM	1.9	0.9	4.3
RVCA-S20D-LM	5.5	2.0	8.4
RVCA-S30D-LM	3.0	4.5	17.4

RVCA SERIES EXTENTION CABLE

Connection example:

RVCA-S☐D-CRX-E☐-C☐-00



Renishaw ATOM Ri Interface Connector Pin Out

15 pin D Sub Male Connector	ENCODER (DIGITAL)	ENCODER (ANALOG)
1	-	COSINE-
2	GND	SINE-
3	-	Z+
4	Z-	+5V
5	B-	+5V
6	A-	-
7	+5V	-
8	+5V	-
9	GND	COSINE+
10	-	SINE+
11	-	Z-
12	Z+	GND
13	B+	GND
14	A+	-
15	-	-
Case	Shield	Shield

Extension Cable			Part Number
Encoder Extension Cable		CABLE: 00 RGH41, VIONIC, QUANTIC Digital; 00A RGH41 Analog; 01 RH200 Digital; 01B RH200 Analog; 05 ATOM Ri Interface Digital; 05A ATOM Ri Interface Analog CABLE LENGTH (X.X): 0.5 0.5 meter; 1.0 1.0 meter; 2.0 2.0 meter; 3.0 3.0 meter (standard)	CBL_EXT_REN05_X.X CBL_EXT_REN05A_X.X

Notes: 1. X.X is the length of the cable in meters 2. For customized cable length, contact PBA

Application Form - Linear Motor Selection

Customer Name:	Date (DD/MM/YY):
Contact Email:	

PBA LINEAR MOTOR SELECTION QUESTIONAIRE

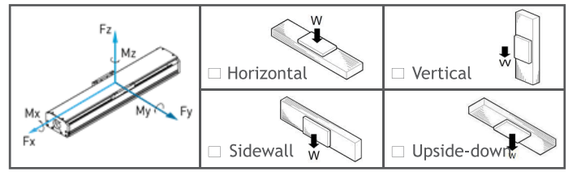
1. Application Description

1a. Application Sketch With Approx Dimensions

2. Load Parameter

Moving mass (without motor coil)	kg				
Frictional force	N				
Opposing force	N				
Mx	N.m	My	N.m	Mz	N.m

Stage Requirements



3. Motion Parameter

		Profile 1	Profile 2	Profile 3
Moving distance	mm			
Moving time	s			
Moving velocity	m/s			
Acceleration	m/s^2			
Dwell time	s			

4. Command/Bus (Please Circle Accordingly)

Pulse and direction / Analog / EtherCAT / IO trigger / Other : _____

5. Encoder (Please Circle Accordingly)

Resolution	um	
Incremental / Absolute / Analog		

6. Motion Precision

Accuracy	um/mm	
Repeatability	um	

7. Mechanical Specification

Effective stroke	mm	
Flatness	um/mm	
Straightness	um/mm	
Space constraints (L x W x H)	mm	

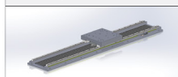
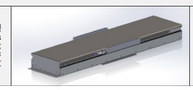
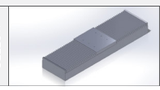
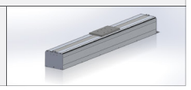
8. Working Environment

Room temperature	°C	
Clean room class		

9. Additional Requirements (Please Tick ( )Accordingly)

Motor cable length	Controller	Amplifier	Encoder	Other: _____
m				

10. Actuator

Open Frame	Enclosed					
	PARTIAL		BELLOW		STRIP SEAL	

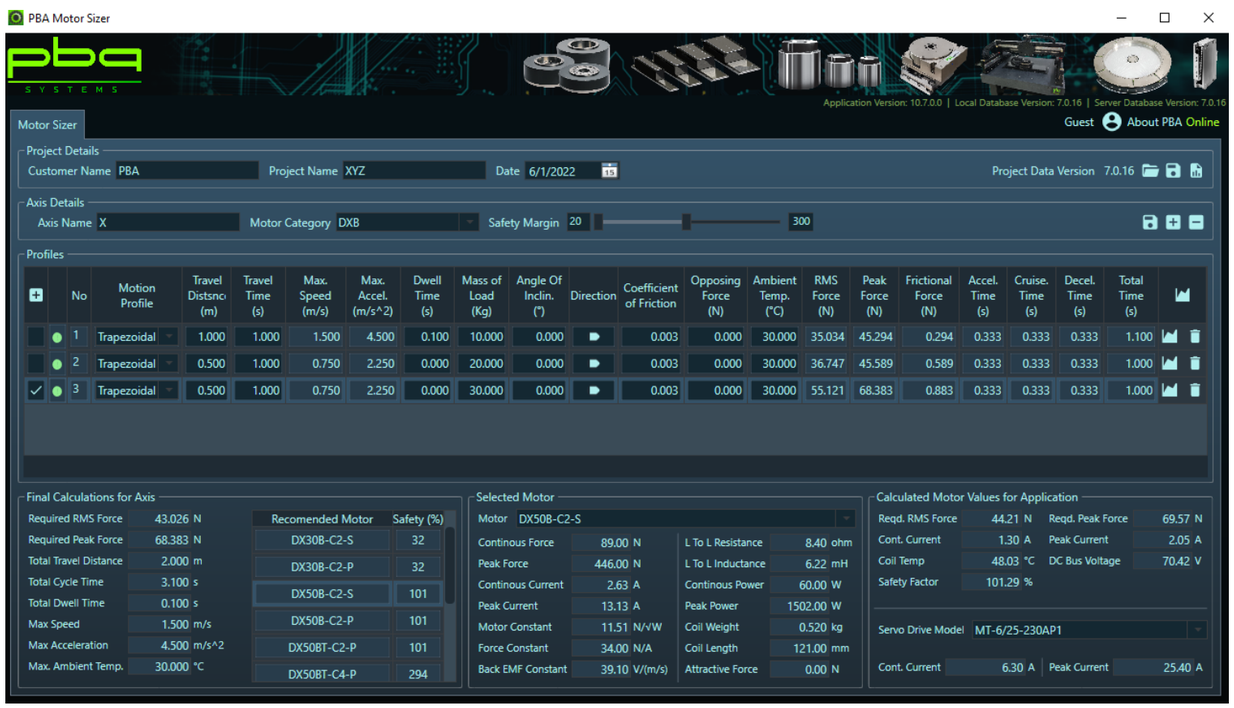
11. Remarks: If you have any special motion request for sizing procedure, please specify your requirement in below remarks.

PBA SYSTEMS LINEAR MOTOR SIZER SOFTWARE

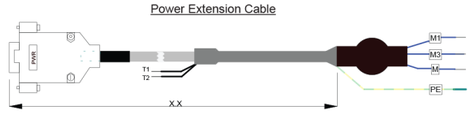
PBA Systems Motor Sizer Software is available to download from our website to assist in the calculation and selection.

Kindly visit us at www.pbasystems.com.sg or simply scan the QR CODE

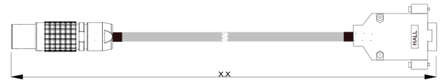
SIMULATED PERFORMANCE CHARTS



Power Extension Cable



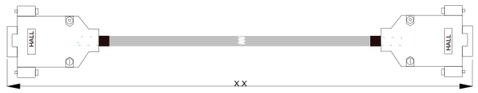
Hall Extension Cable



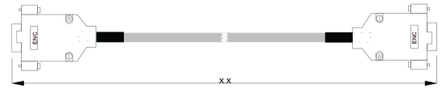
Power Extension Cable

Hall Extension Cable

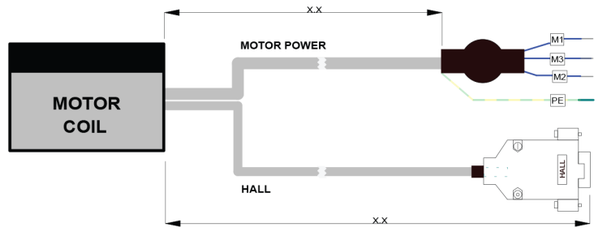
Hall Extension Cable



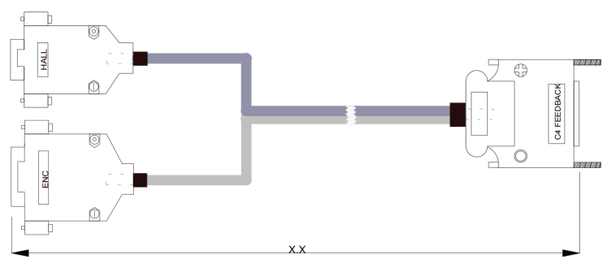
Encoder Extension Cable



MOTOR POWER HALL CABLE



MAXTUNE FEEDBACK CABLE



Notes:
1. X.X is the length of the cable in meter with a tolerance of $^{+0.10}_{-0}$
2. All measurements are in meters (m) unless stated

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