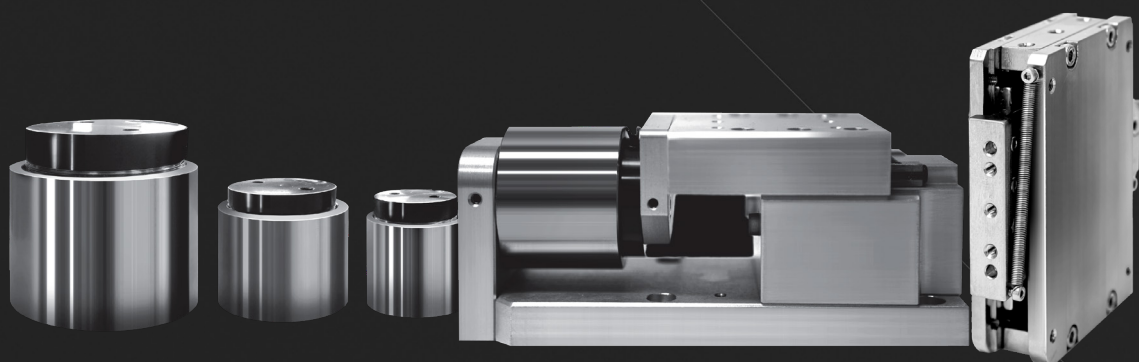




DIRECT DRIVE TECHNOLOGY
Product Catalogue



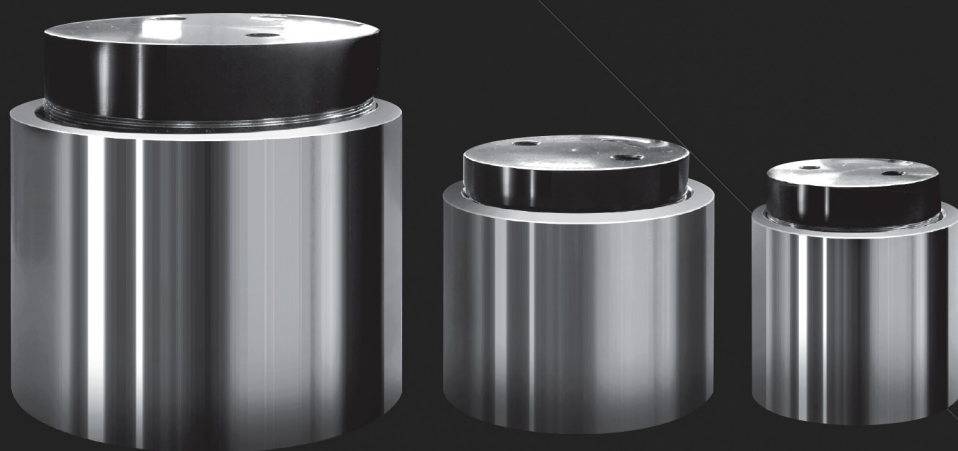
CVC/CVCA/RVC/RVCA SERIES

VOICE COIL MOTOR AND ACTUATOR

VERSION 4.2.1

PART NUMBERING SYSTEM

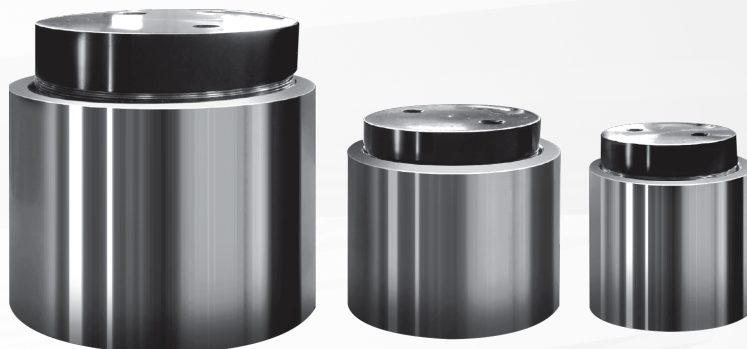
CVC - Circular Voice Coil	04
CVCA - Circular Voice Coil Actuator	18
RVC - Rectangular Voice Coil	28
RVCA - Rectangular Voice Coil Actuators	36



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

APPLICATION

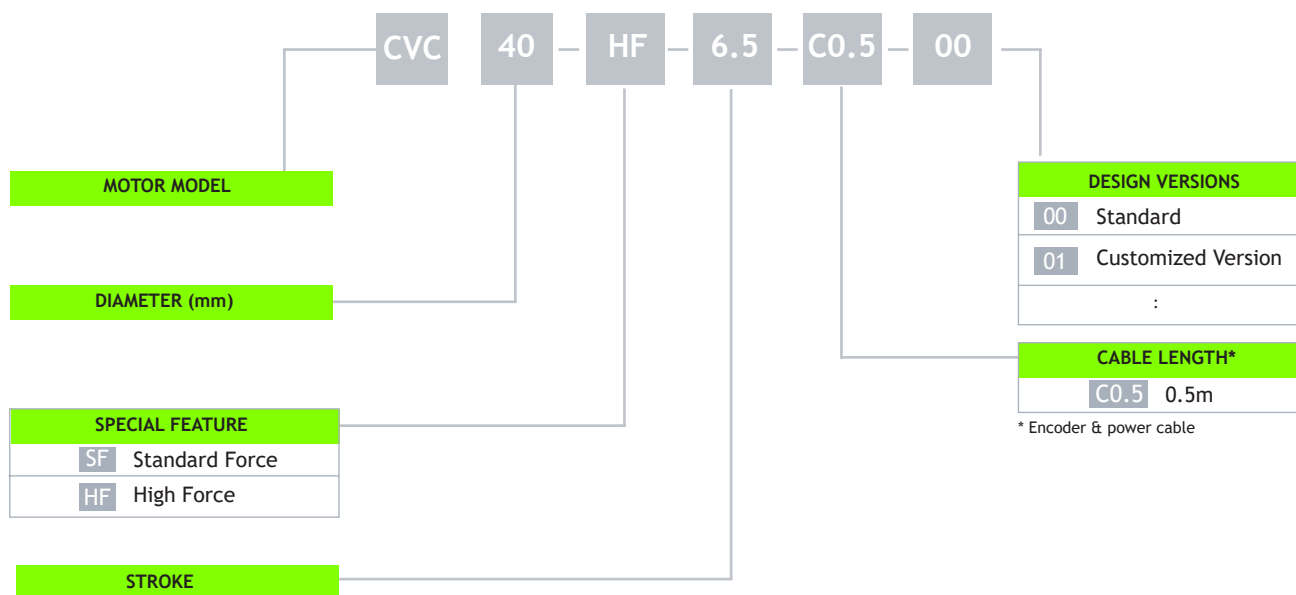
- Frequency oscillator
- Force/pressure control
- Camera Lens zoom/focus
- Syringe dispensing
- Biomed simulators
- Laser mirror steer/tilt
- General automation
- Dynamic Z-axis

**Technical specifications subject to change without prior notice*

ULTRA HIGH FREQUENCY

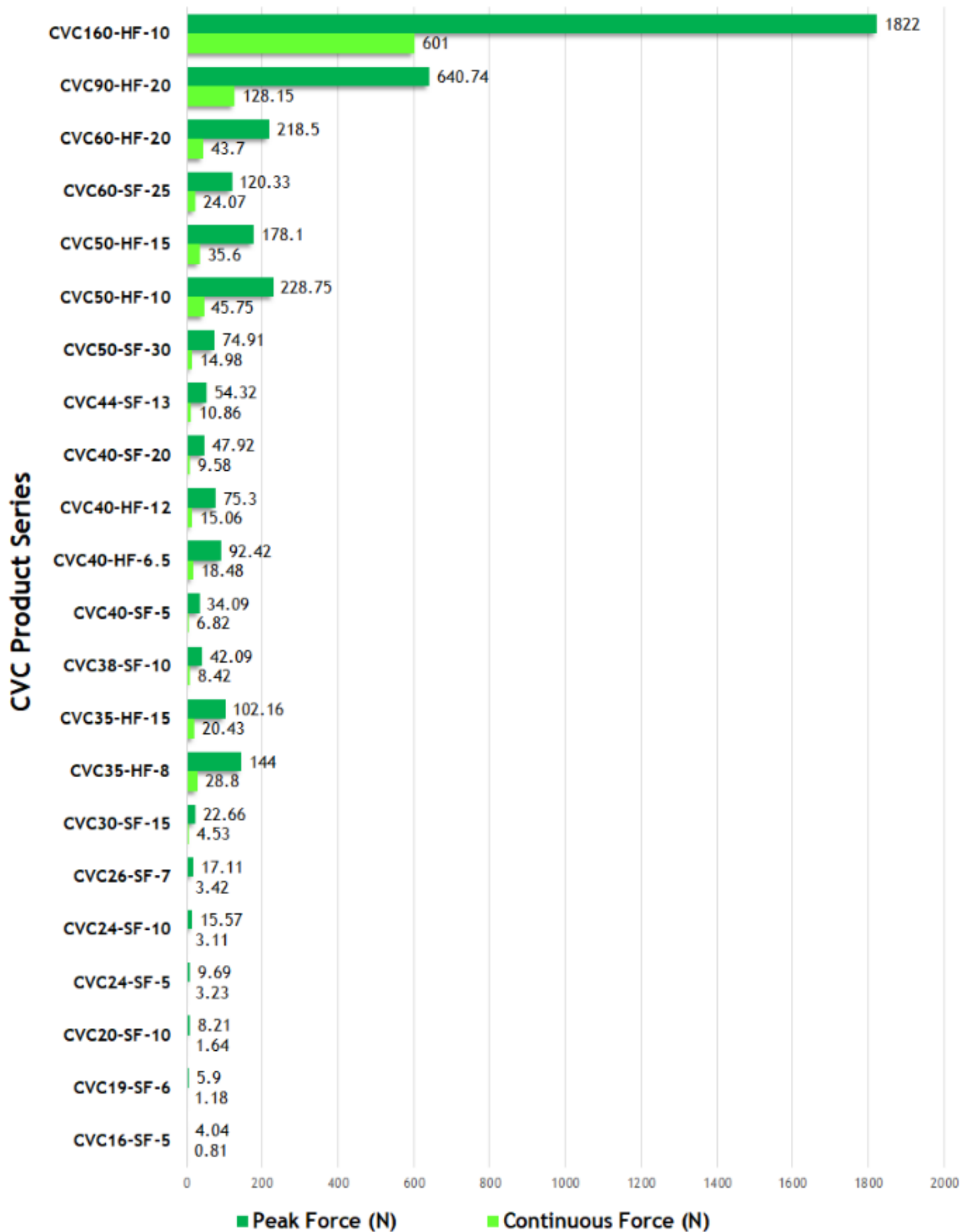
short stroke motion system

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

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:

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

CVC SERIES

CIRCULAR VOICE COIL MOTOR



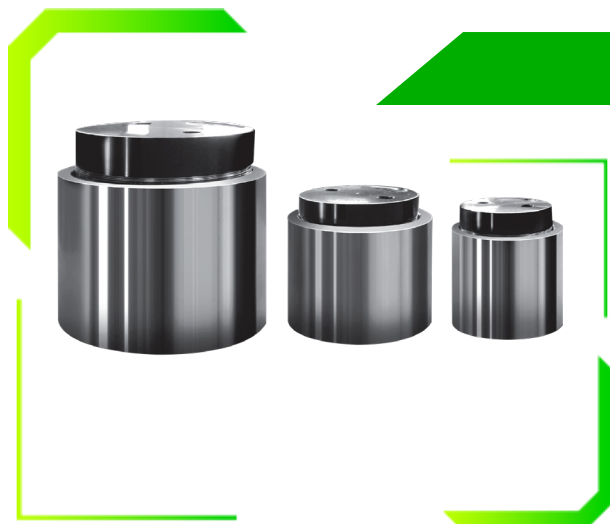
CVC SERIES

- 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	2.65	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:

- * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
- Specifications tolerance : ±10%.
- Peak force and current : 4% duty ratio and 1 second duration.
- 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	1.63	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

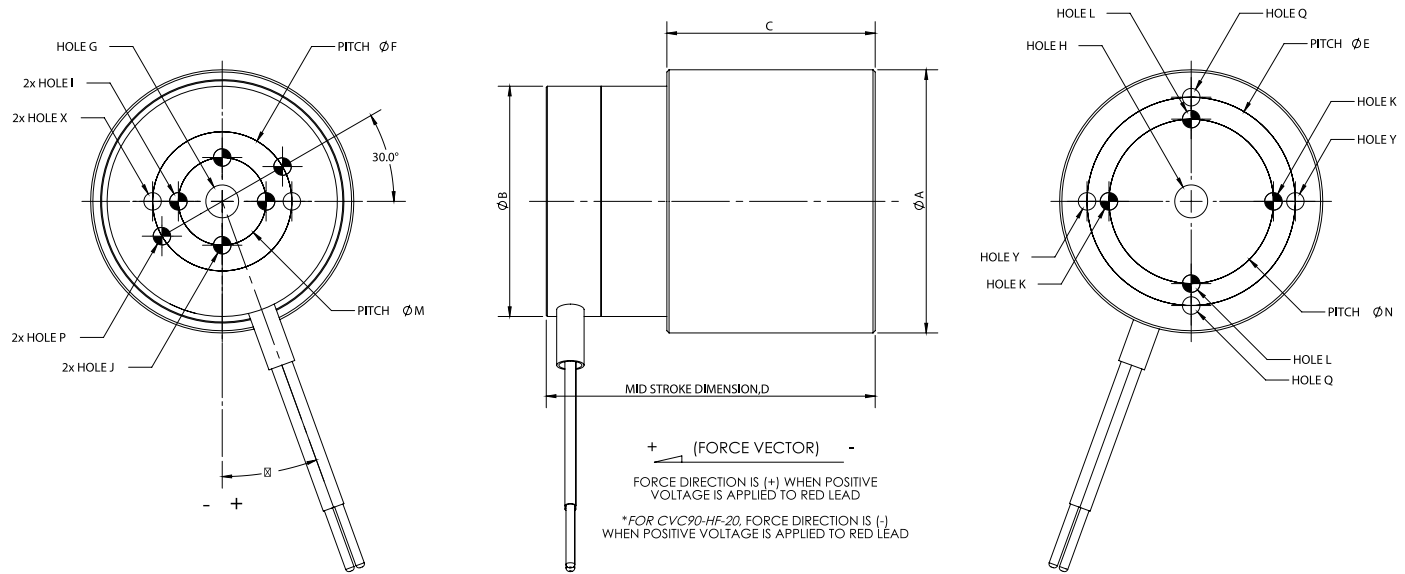
- Direct Drive
- Peak force to 640.74N, Continuous force to 128.15N
- Fast response, low moving mass
- Non contact between core and coil movement
- Excellent reliability

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.

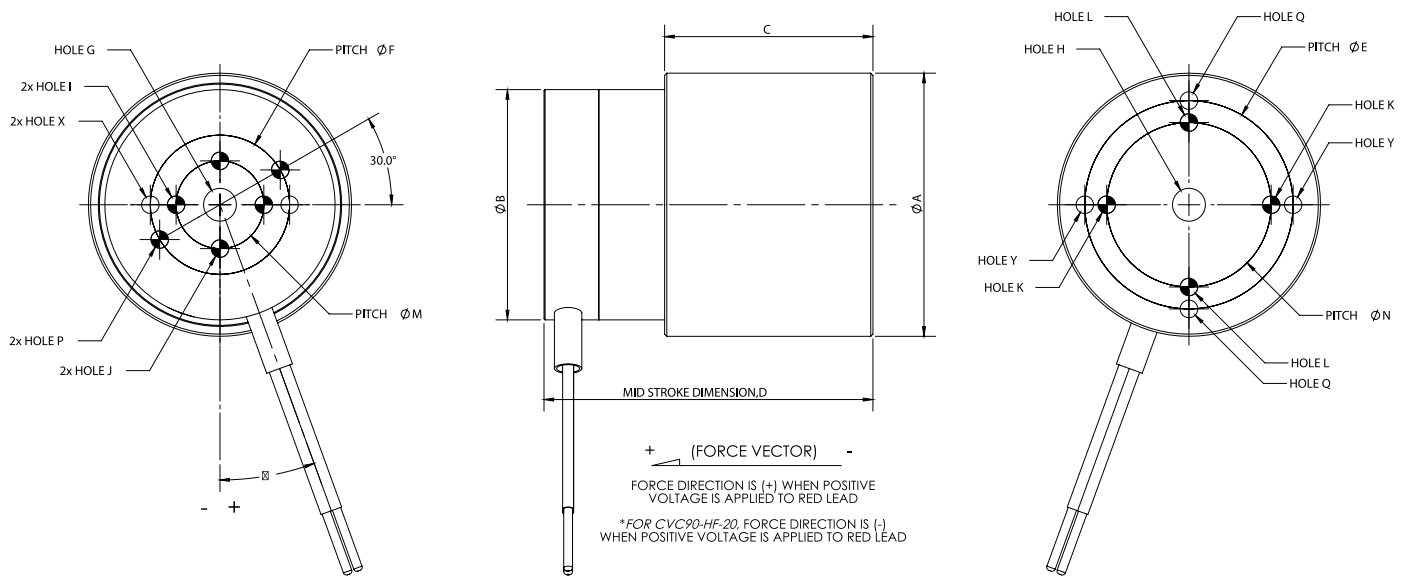
CVC SERIES



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	$\phi 2.5(H7) \nabla 2.8$	$\phi 3.0(H7) \nabla 3.5$	$\phi 3.0(H7) \nabla 3.5$	$\phi 3.0(H7) \nabla 3.5$	$\phi 3.0(H7) \nabla 3.5$
H	mm	N/A	N/A	N/A	M2 $\nabla 2.6$	$\phi 2.0 \nabla 1.7$
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 $\nabla 2.6$	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 $\nabla 3.0$
X	mm	M2.5 $\nabla 2.8$	M3 $\nabla 4.7$	M3 $\nabla 6.2$	M2 $\nabla 4.7$	M2 $\nabla 5.0$
Y	mm	M2.5 $\nabla 1.8$	M3 $\nabla 2.5$	M3 $\nabla 2.6$	M2 $\nabla 3.0$	M2 $\nabla 2.0$
θ	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 $\nabla 4.0$	$\phi 3.0 \nabla 3.5$	$\phi 3.0(H7) \nabla 3.5$	$\phi 5.0(H7) \nabla 6.0$	$\phi 3.0(H7) \nabla 3.5$
H	mm	N/A	N/A	N/A	$\phi 5.0(H7) \nabla 6.0$	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	$\phi 3.0(H7) \nabla 5.0$	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 $\nabla 2.7$	N/A	N/A	M4 $\nabla 6.0$	N/A
X	mm	M2.5 $\nabla 4.0$	M3 $\nabla 6.2$	M3 $\nabla 6.0$	M4 $\nabla 6.0$	M4 $\nabla 6.5$
Y	mm	N/A	M3 $\nabla 3.2$	M3 $\nabla 5.0$	N/A	M4 $\nabla 3.9$
θ	DEGREE	20°	20°	-25°	-25°	20°

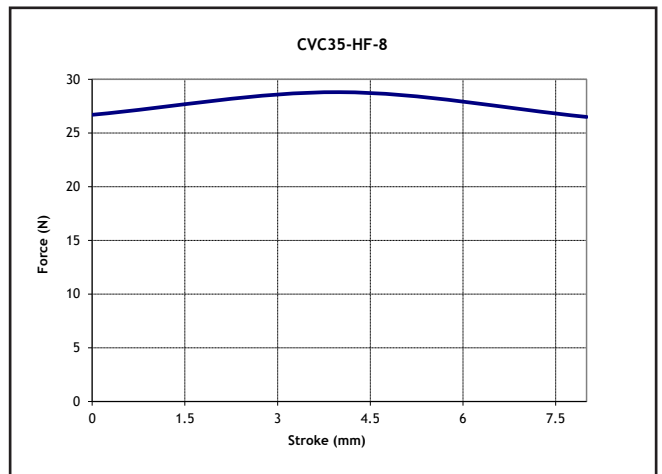
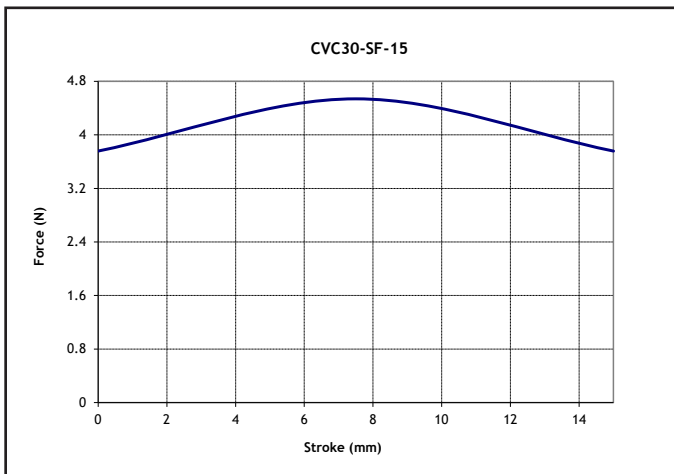
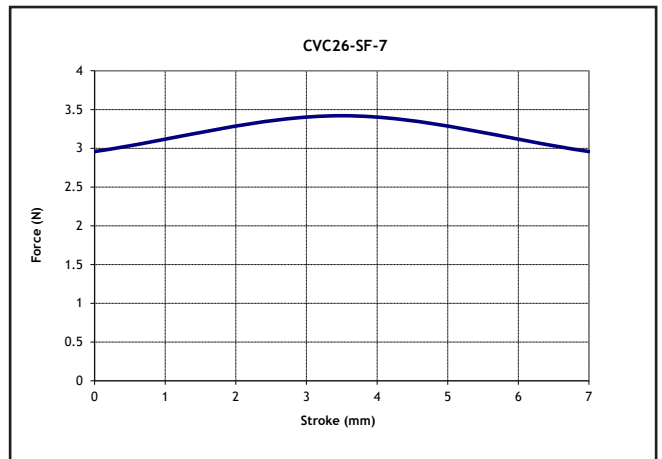
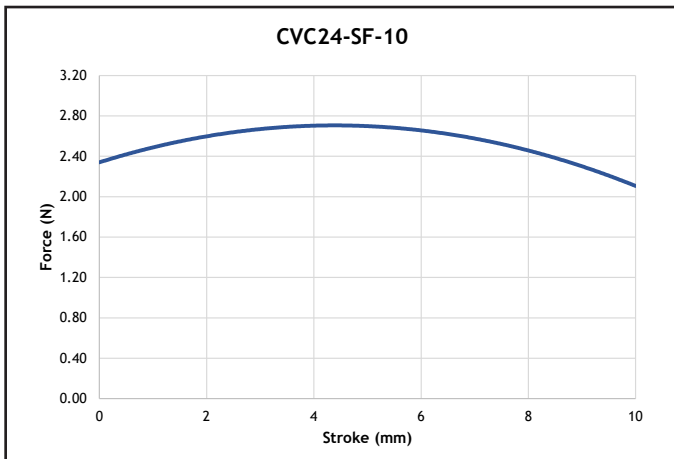
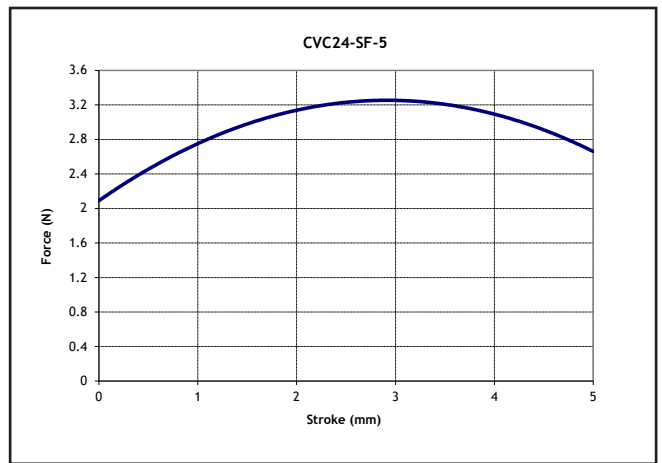
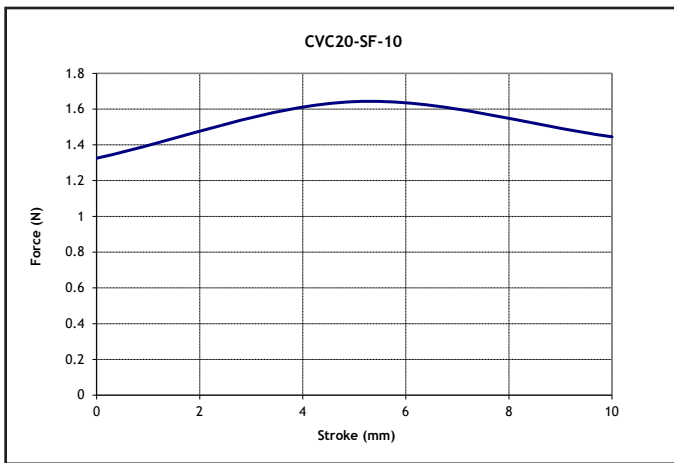
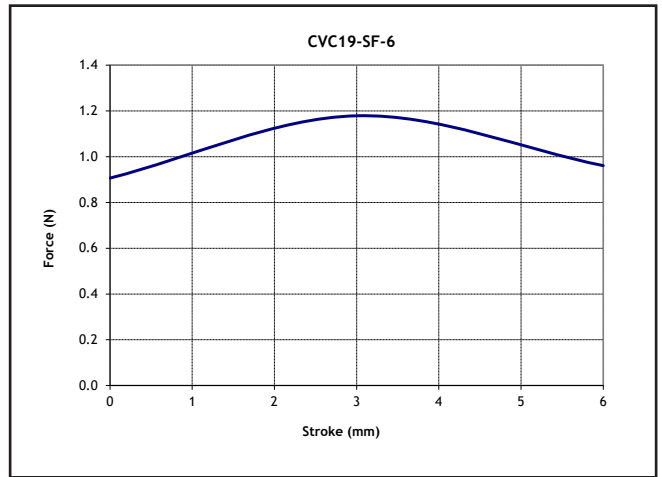
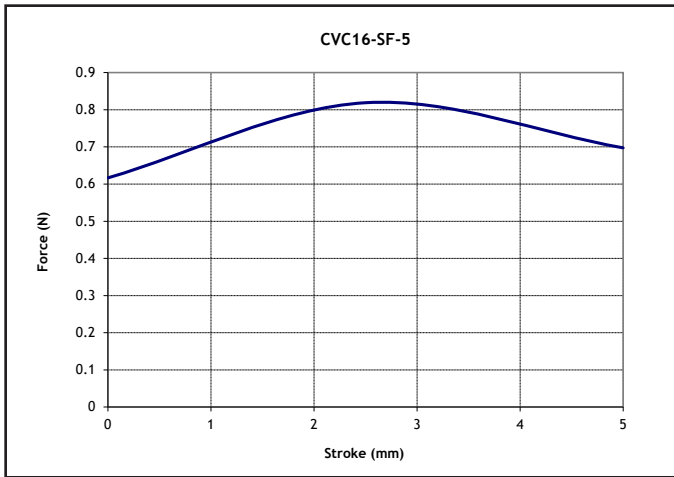
CVC SERIES



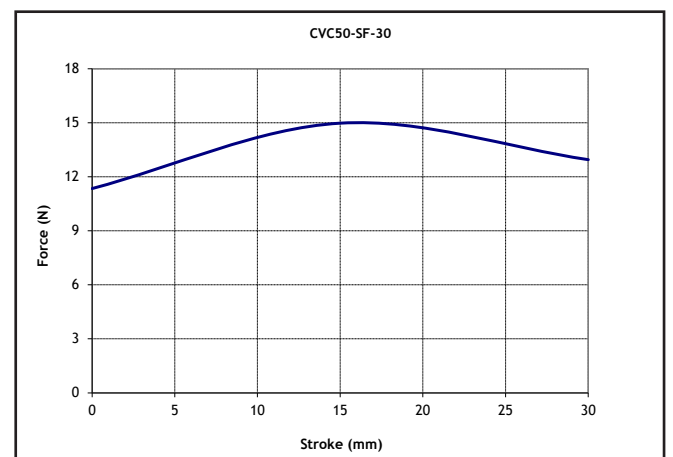
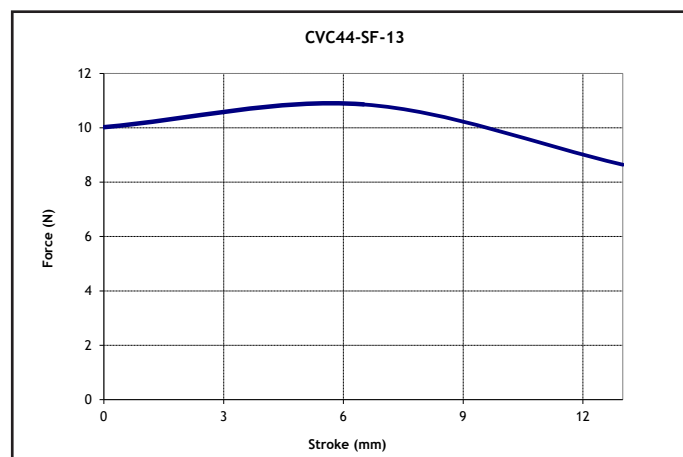
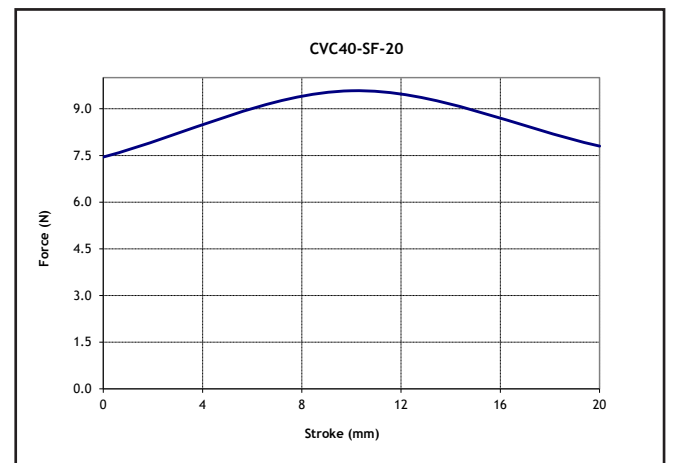
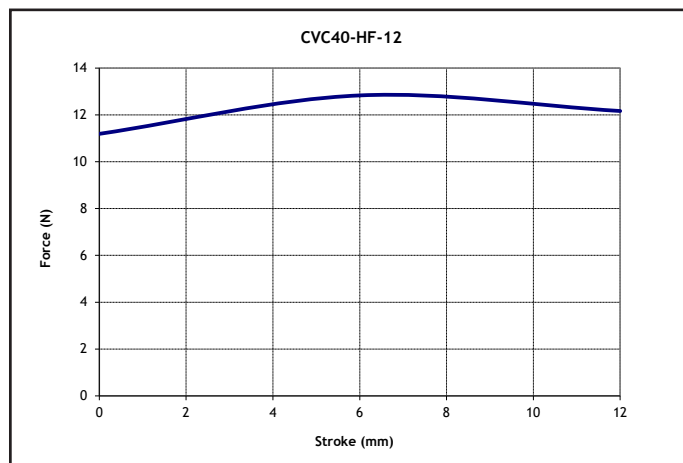
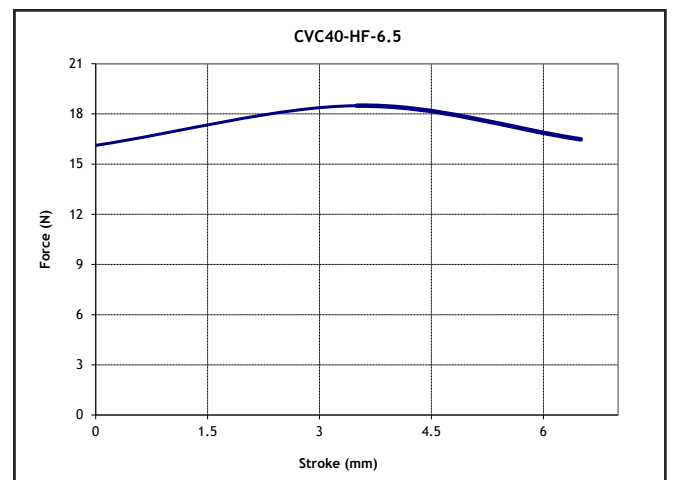
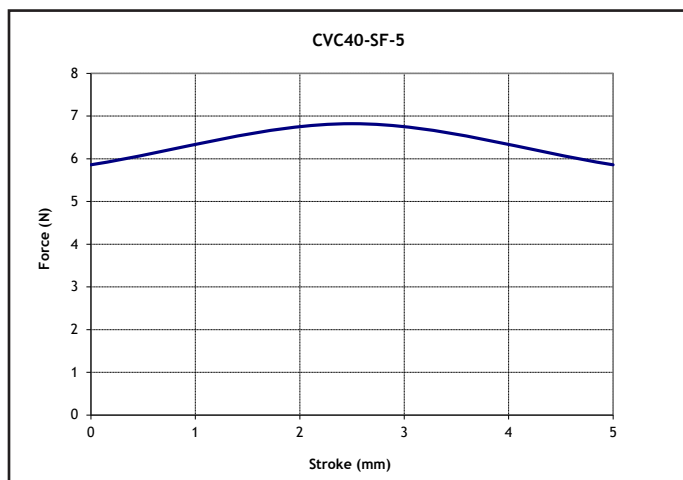
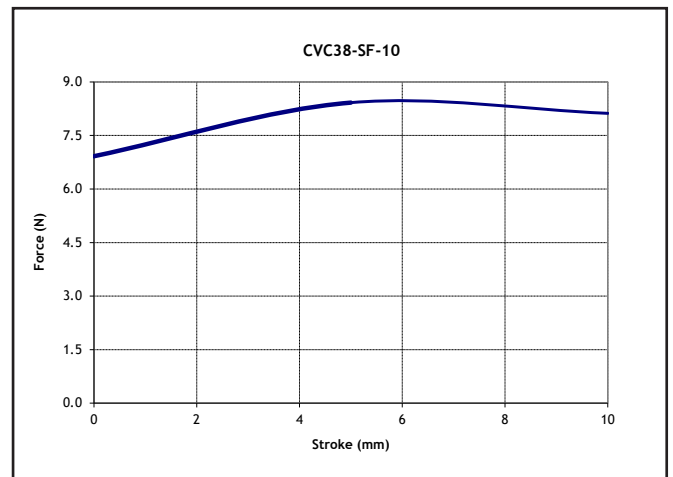
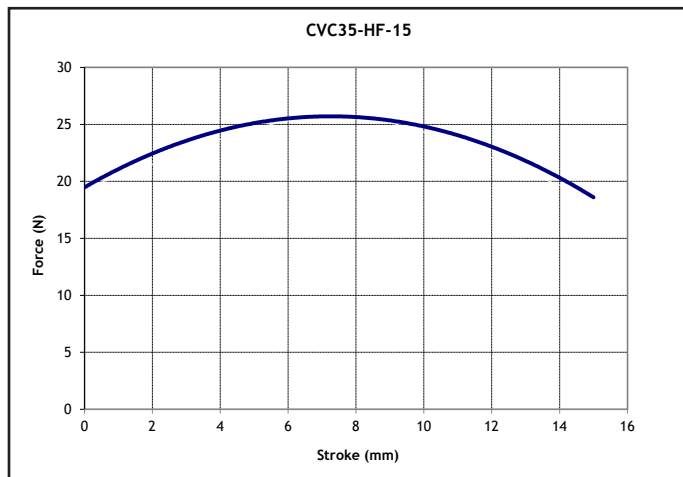
COIL	UNIT	CVC40-SF-5	CVC40-HF-6.5	CVC40-HF-12	CVC40-SF-20	CVC44-SF-13	CVC50-SF-30
A	mm	40	40	40	40	44	50
B	mm	34	34.8	33.2	33.2	37.2	42.4
C	mm	12	40.5	44.7	32.5	31.8	43
D	mm	17.5	49.3	55	49.8	44.5	67.6
E	mm	20	20	20	20	25.4	20
F	mm	20	20	20	20	19.1	20
G	mm	Ø 3.0 (H7) ± 2.7	Ø 3.0 (H7) ± 3.5	Ø 4.0 (H7) ± 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

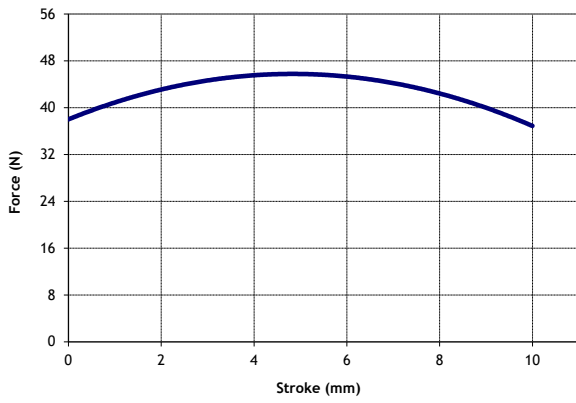


GRAPH: FORCE VS STROKE



GRAPH: FORCE VS STROKE

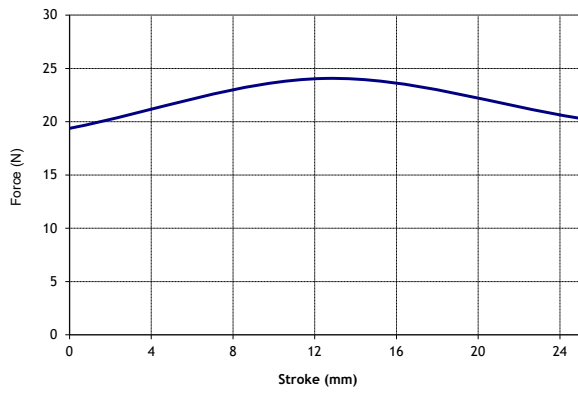
CVC50-HF-10



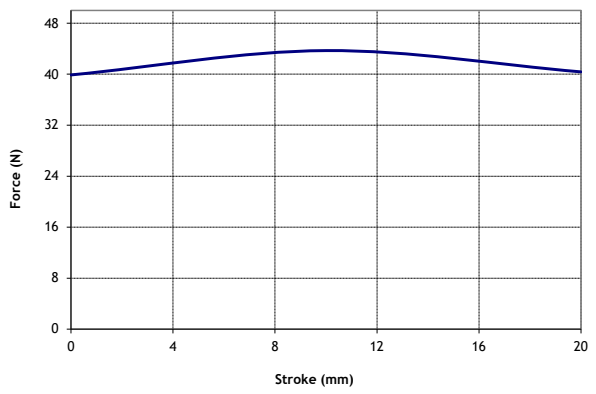
CVC50-HF-15



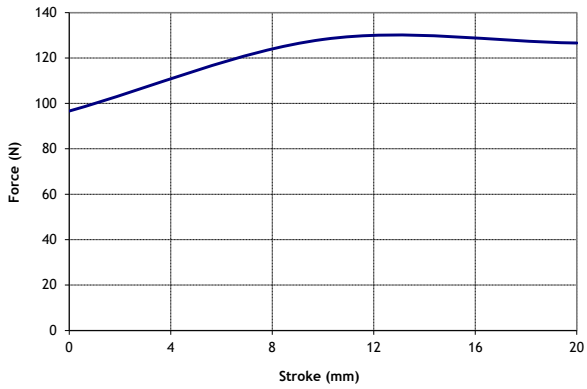
CVC60-SF-25



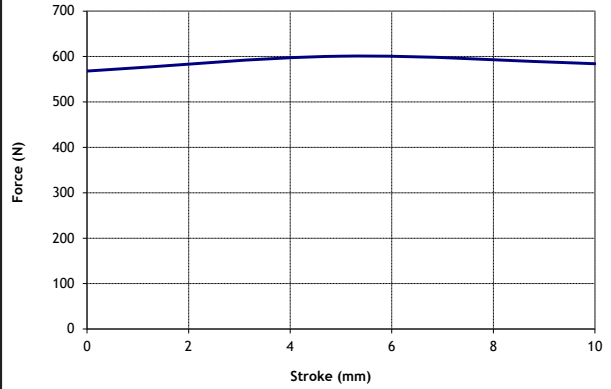
CVC60-HF-20

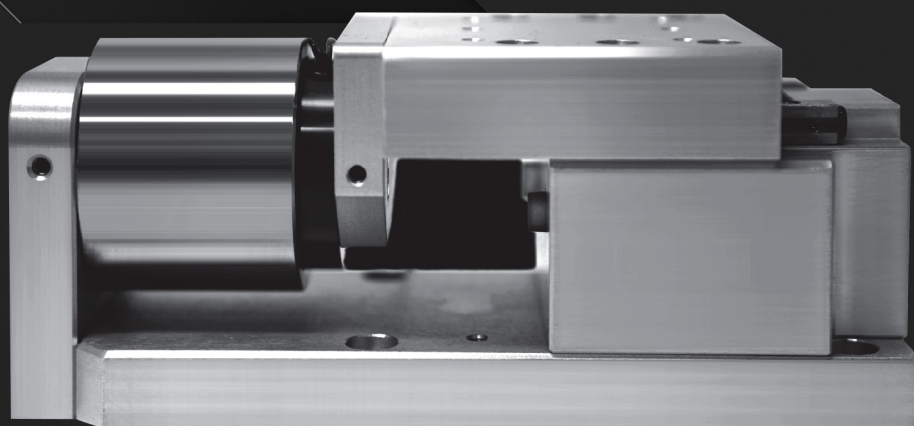


CVC90-HF-20



CVC160-HF-10





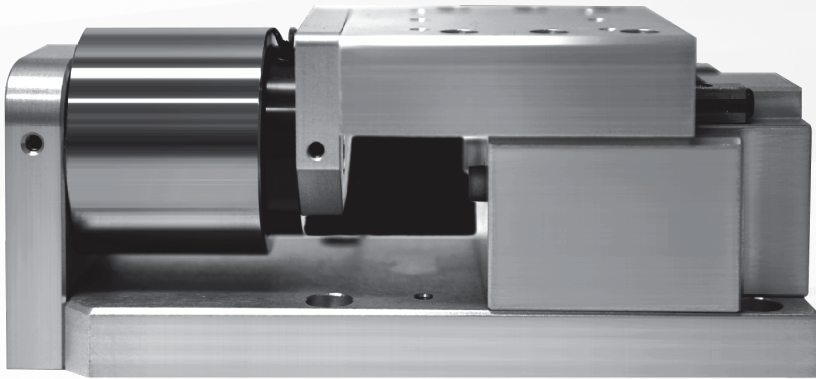
CVCA SERIES

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.

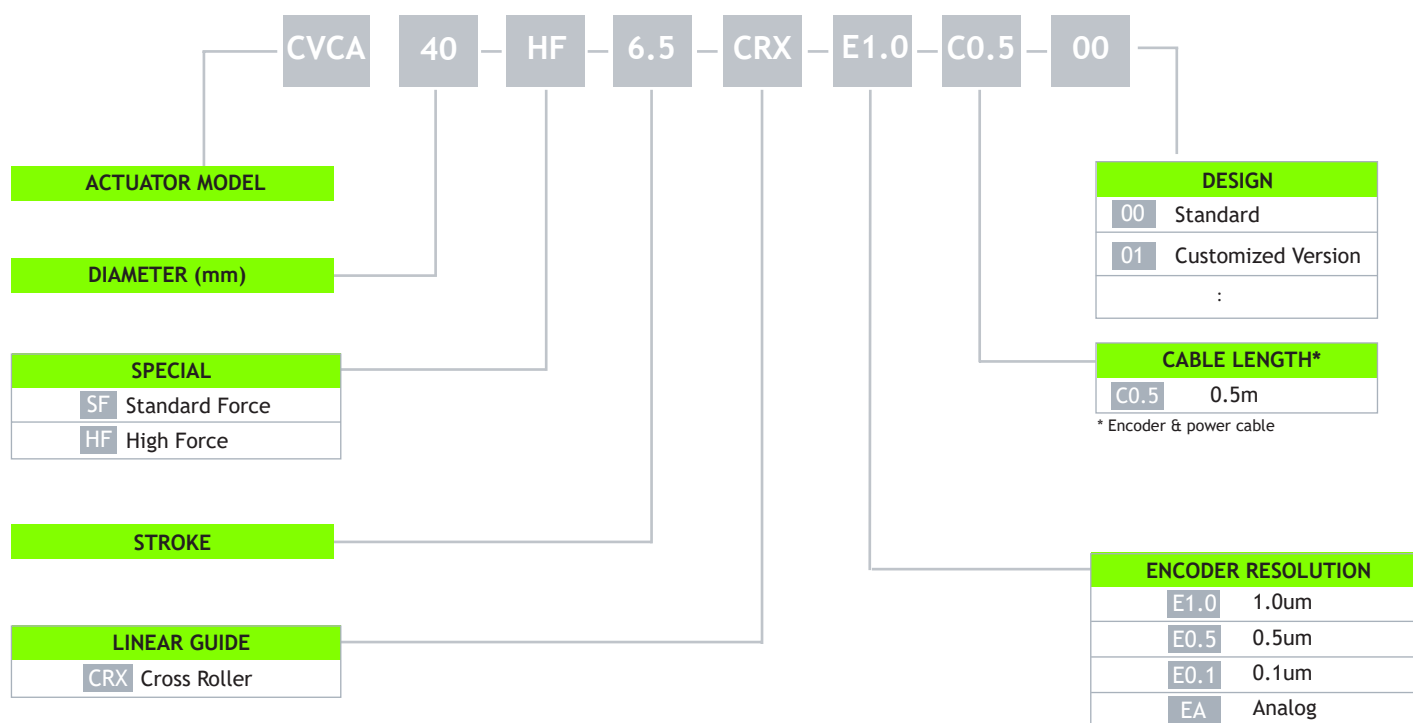
A perfect combination for majority voice coil applications requiring precise quick oscillation at high accelerations of light payloads.

- 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

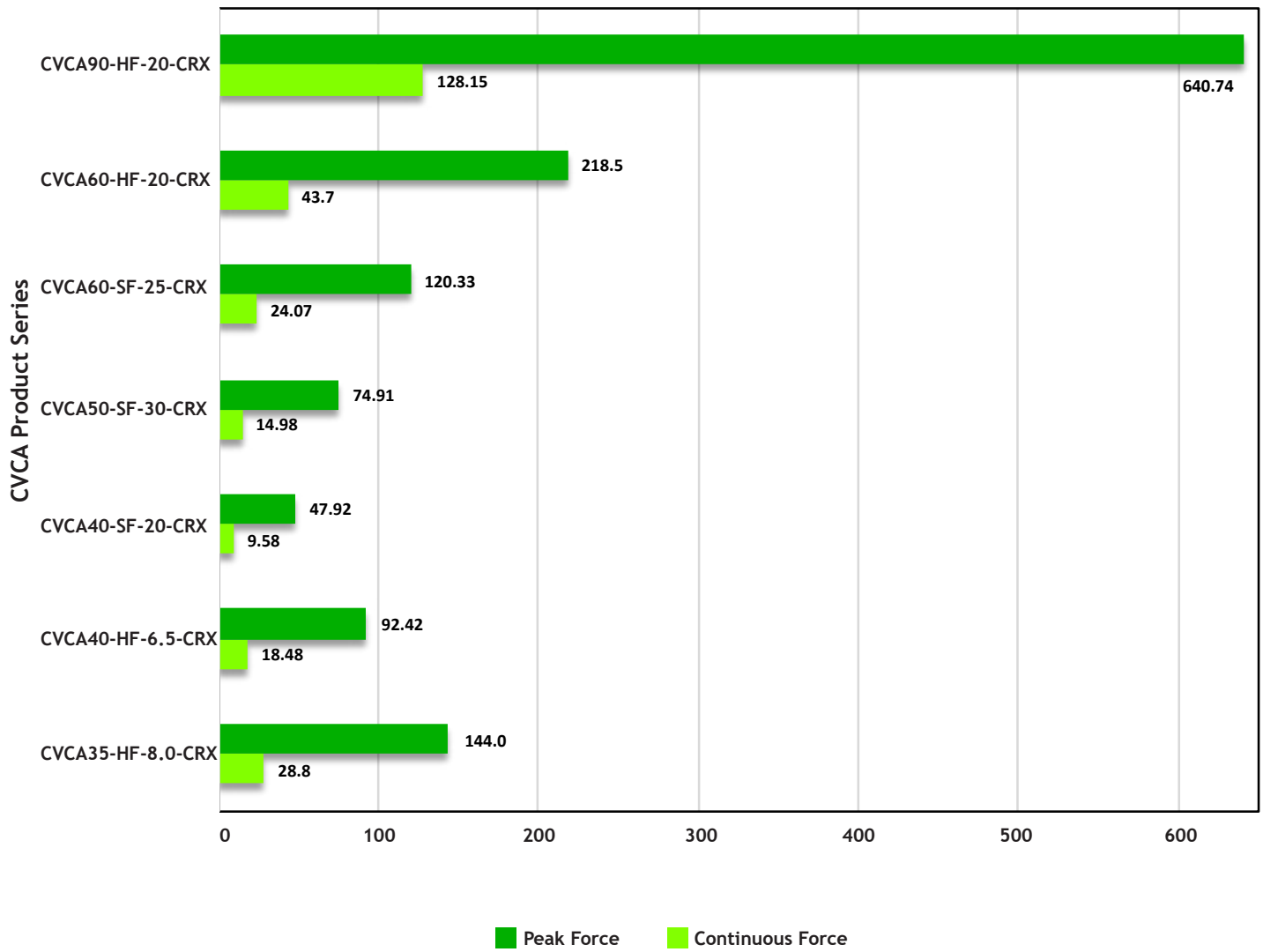
powered by circular voice coil

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



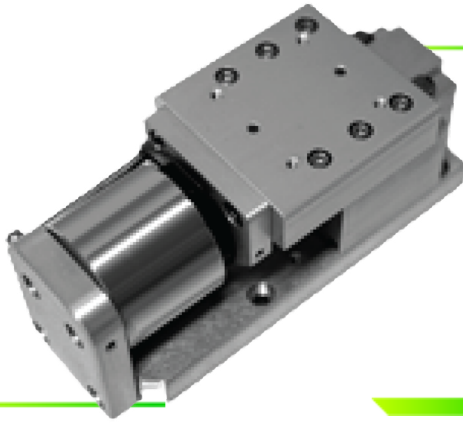
FORCE CHART FOR CVCA MOTORS

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					
MY	Nm	2.63	2.5	2.95	7.01
MR	Nm	1.98	1.98	1.98	3.98
MP	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

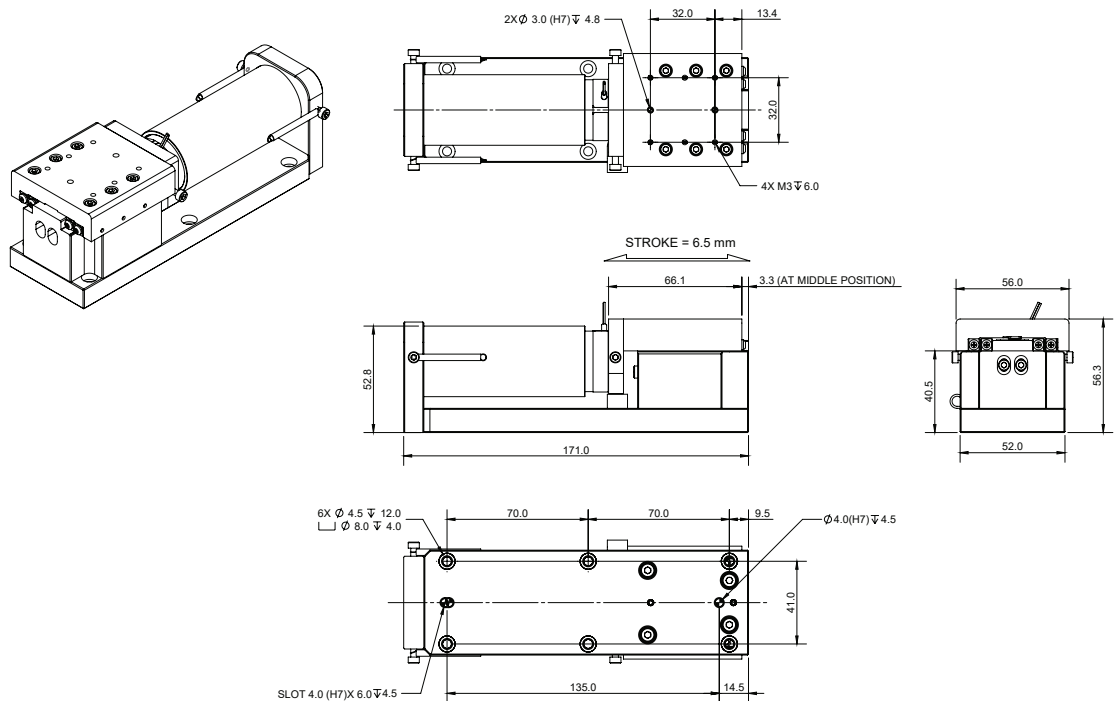
CVCA SERIES

- 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

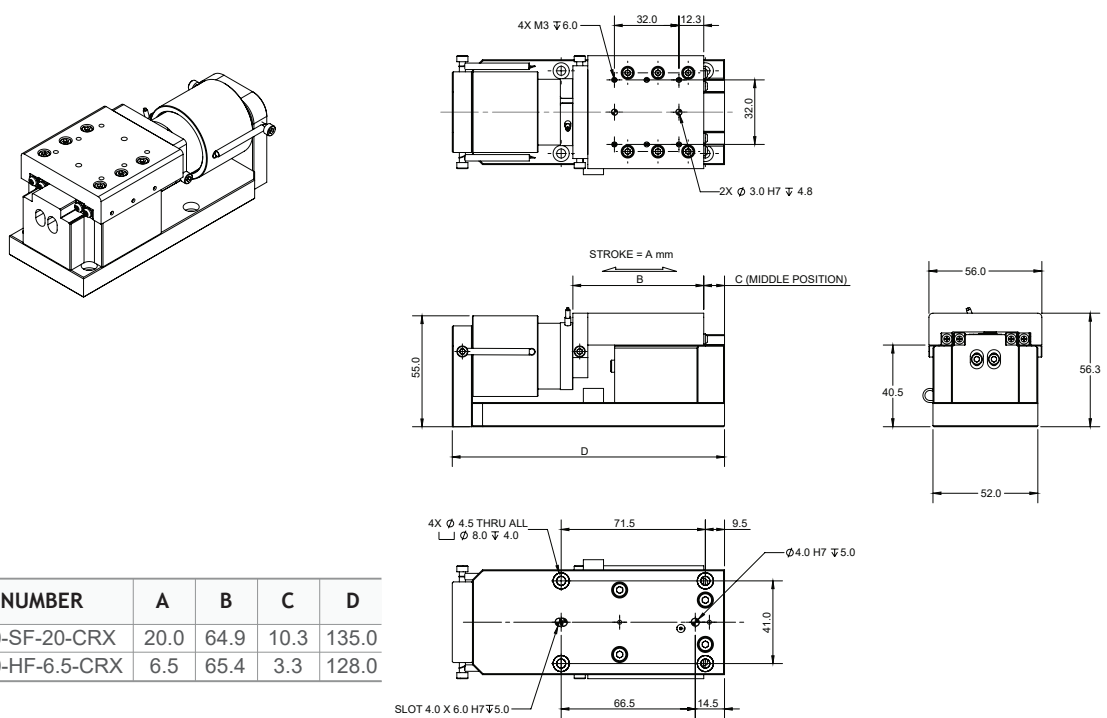
SPECIFICATION		MODEL		
		CVCA60-SF-25-CRX	CVCA60-HF-20-CRX	CVCA90-HF-20-CRX
Performance	Unit			
Stroke	mm	25	20	
Peak Force	N	120.33	218.50	640.74
Continuous Stall Force @ 100°C*	N	20.90	37.72	111.41
Continuous Stall Force @ 125°C*	N	24.07	43.70	128.15
Peak Power @ 125°C*	W	463.70	760.32	1204.70
Continuous 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.

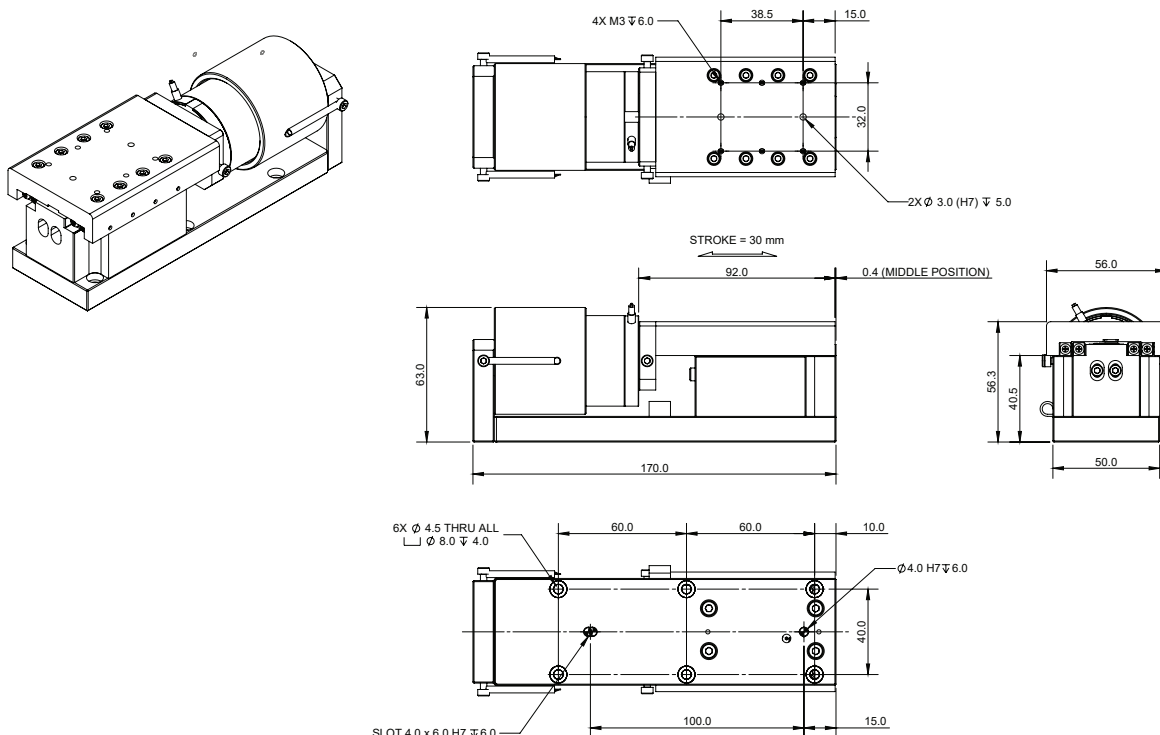
CVCA 35



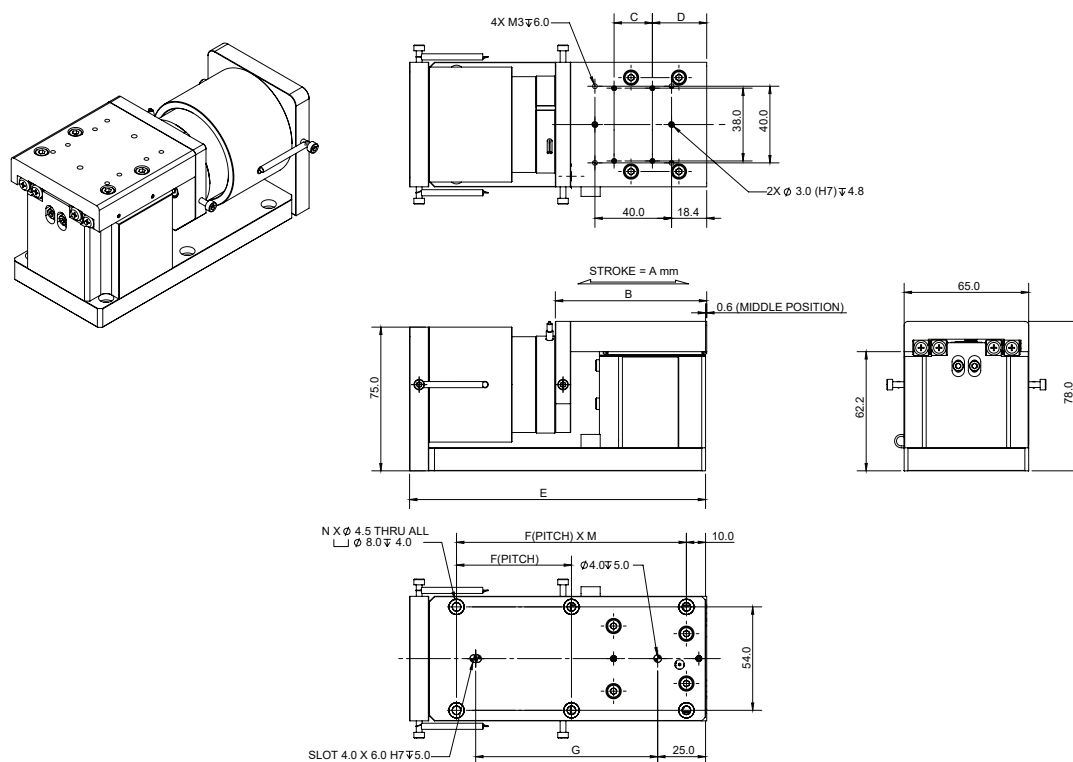
CVCA 40



CVCA 50

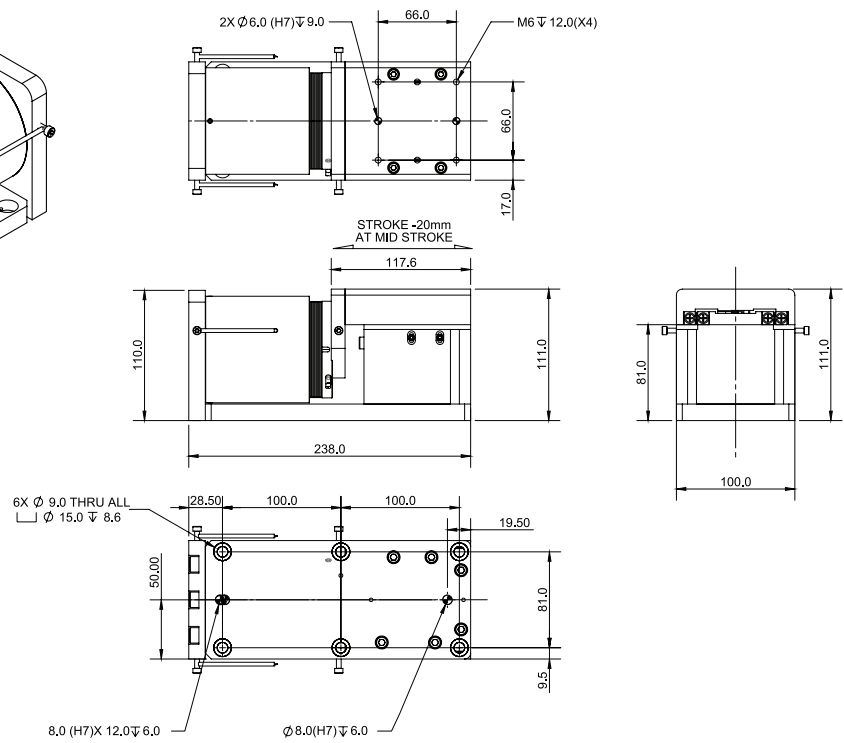
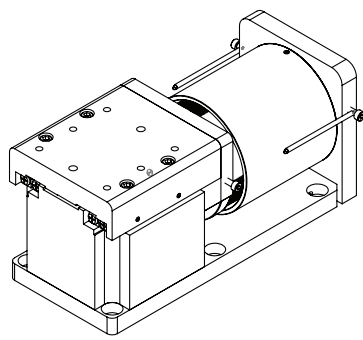


CVCA 60

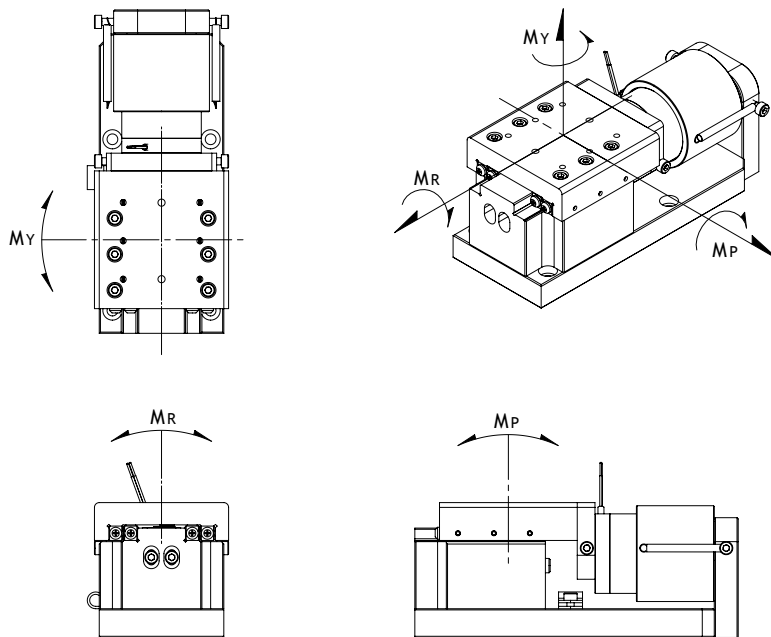


PART NUMBER	A	B	C	D	E	F	G	M	N
CVCA60-SF-25-CRX	25.0	79.0	20.0	28.4	154.5	60.0	95.0	2	6
CVCA60-HF-20-CRX	20.0	76.5	24.5	27.0	203.9	58.0	135.0	3	8

CVCA 90



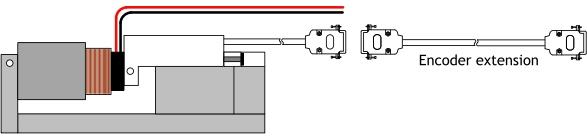
CVCA Static Moment Data



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

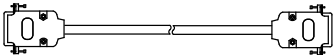
CVCA SERIES EXTENSION CABLE

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

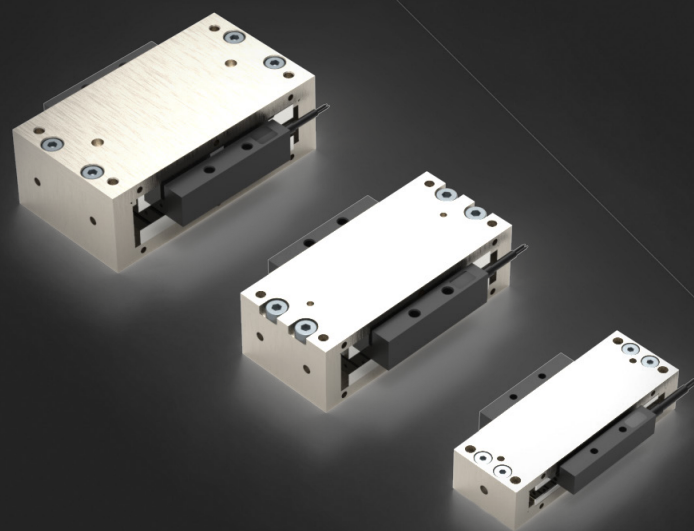


Renishaw ATOM Ri Interface Connector Pin Out

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				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

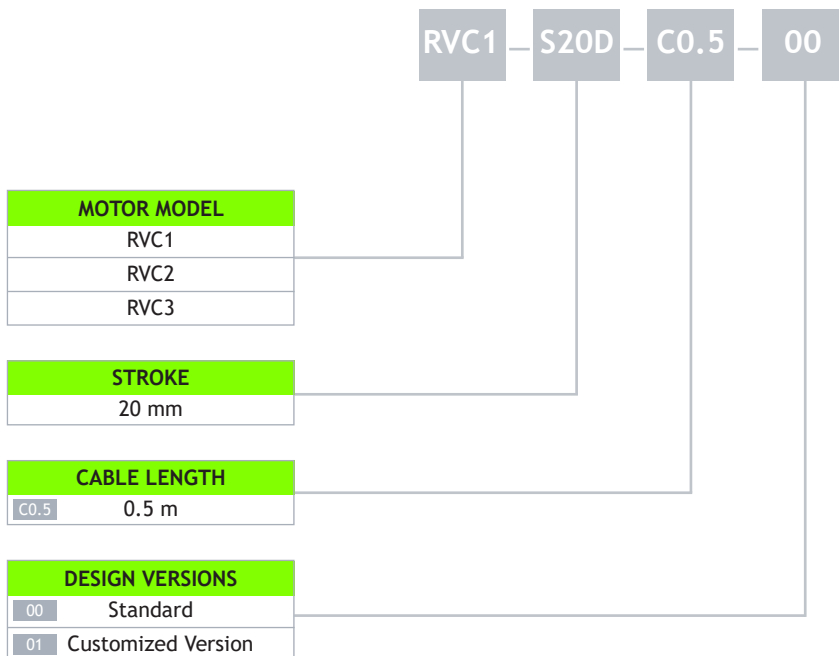
APPLICATION

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

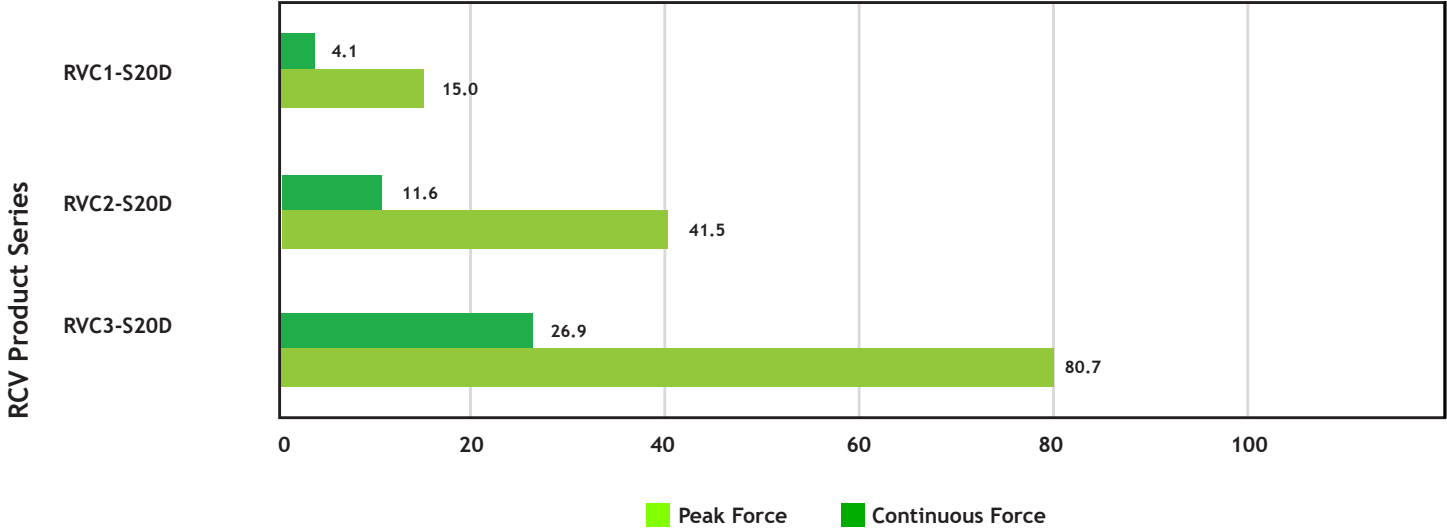
RVC SUMMARY TABLE

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

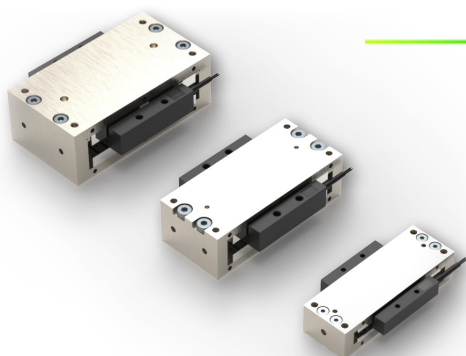


Force Chart For RCV Motors



RVC SERIES

RECTANGULAR VOICE COIL MOTOR



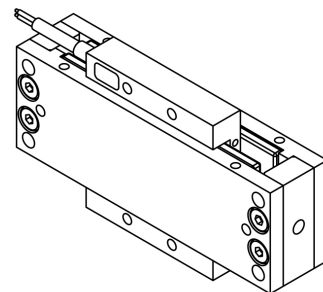
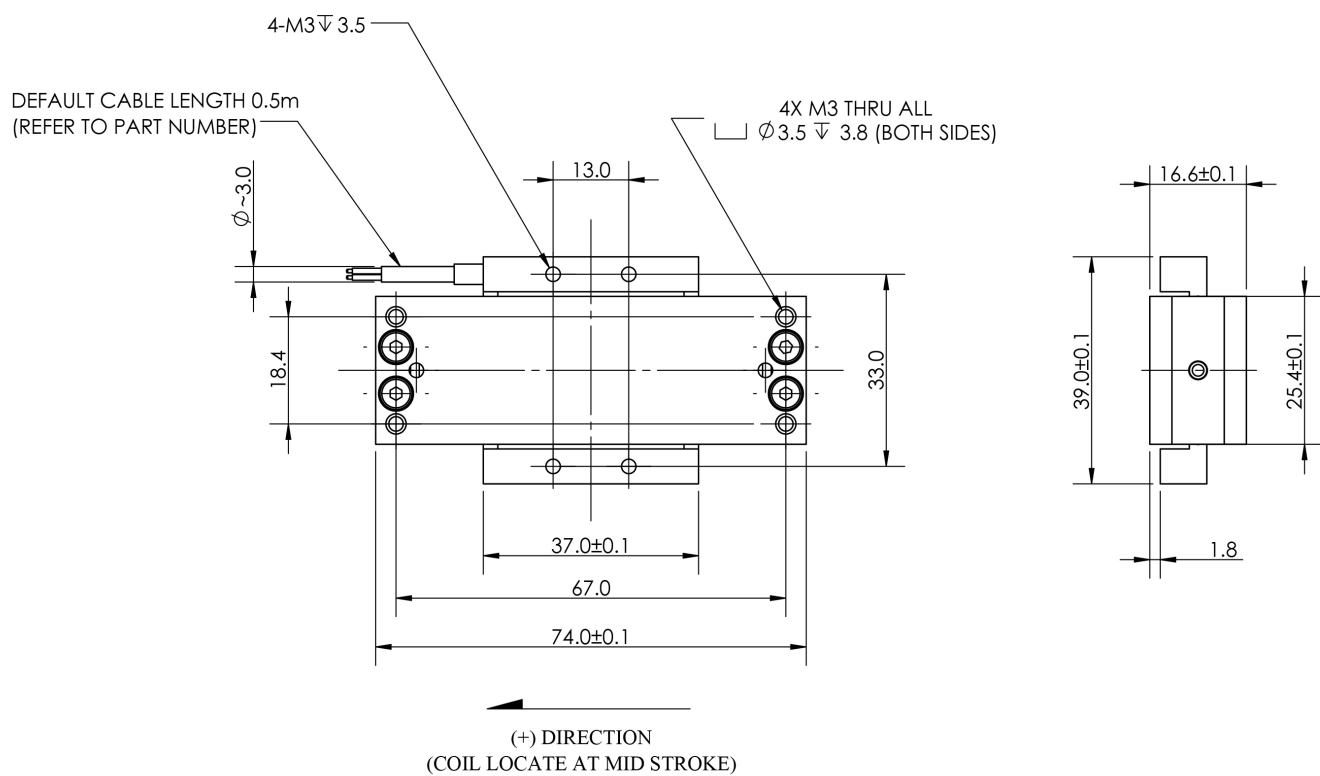
RVC SERIES

- 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

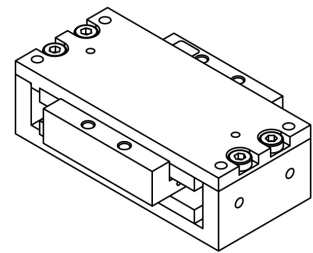
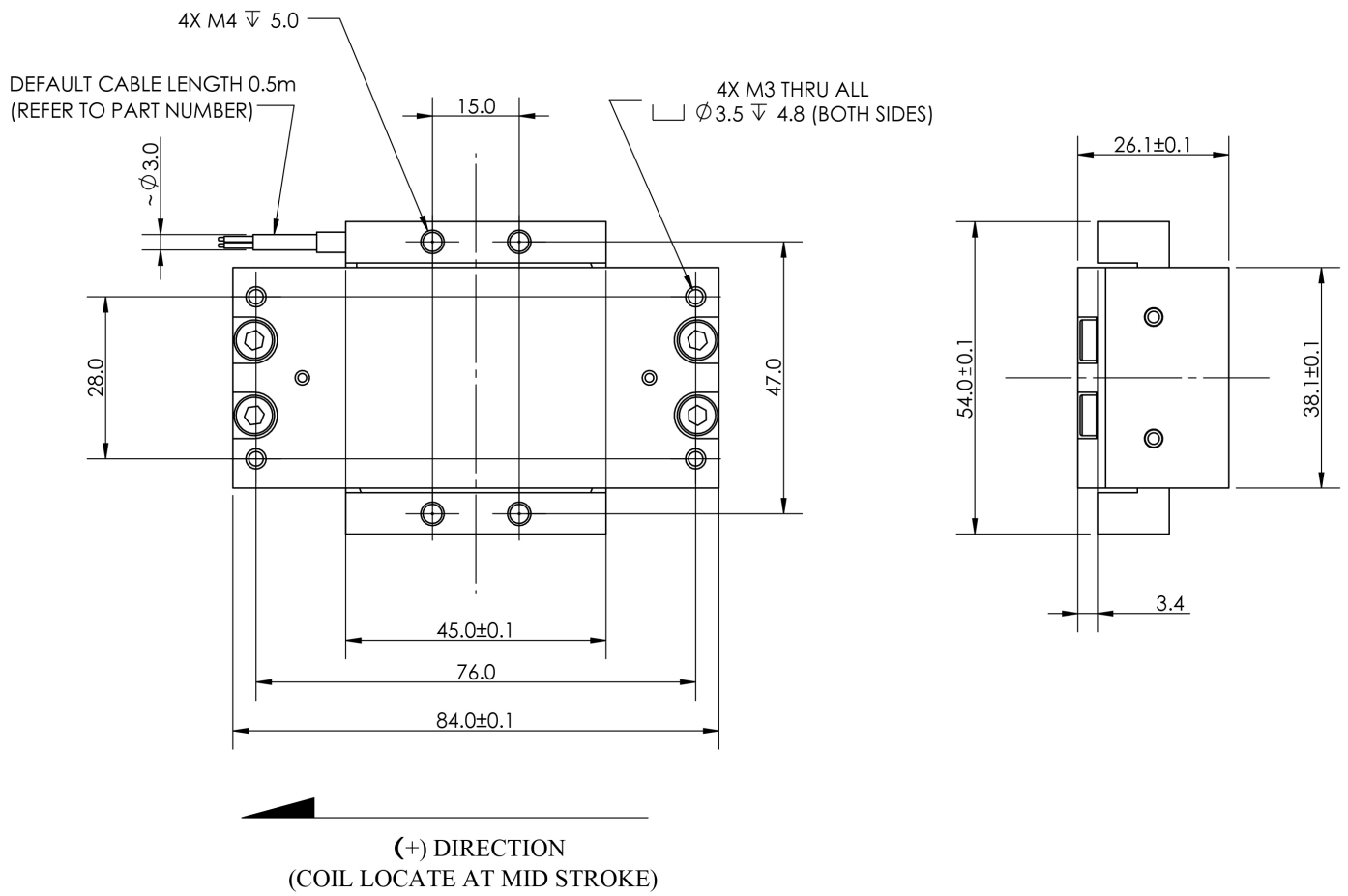
SPECIFICATION		MODEL		
Performance	Unit	RVC1-S20D	RVC2-S20D	RVC3-S20D
Stroke	mm	20.0	20.0	20.0
Peak Force	N	15.0	41.5	80.7
Continuous Stall Force @ 100°C*	N	4.1	11.6	26.9
Continuous Power @ 100°C*	W	4.5	9.4	17.6
Electrical				
Peak Current	A	4.4	5.0	7.8
Continuous Stall Current @ 100°C*	A	1.2	1.4	2.6
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

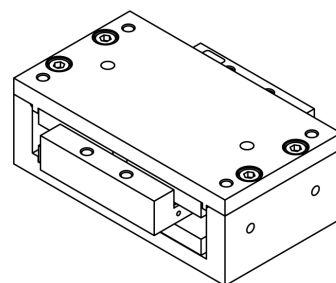
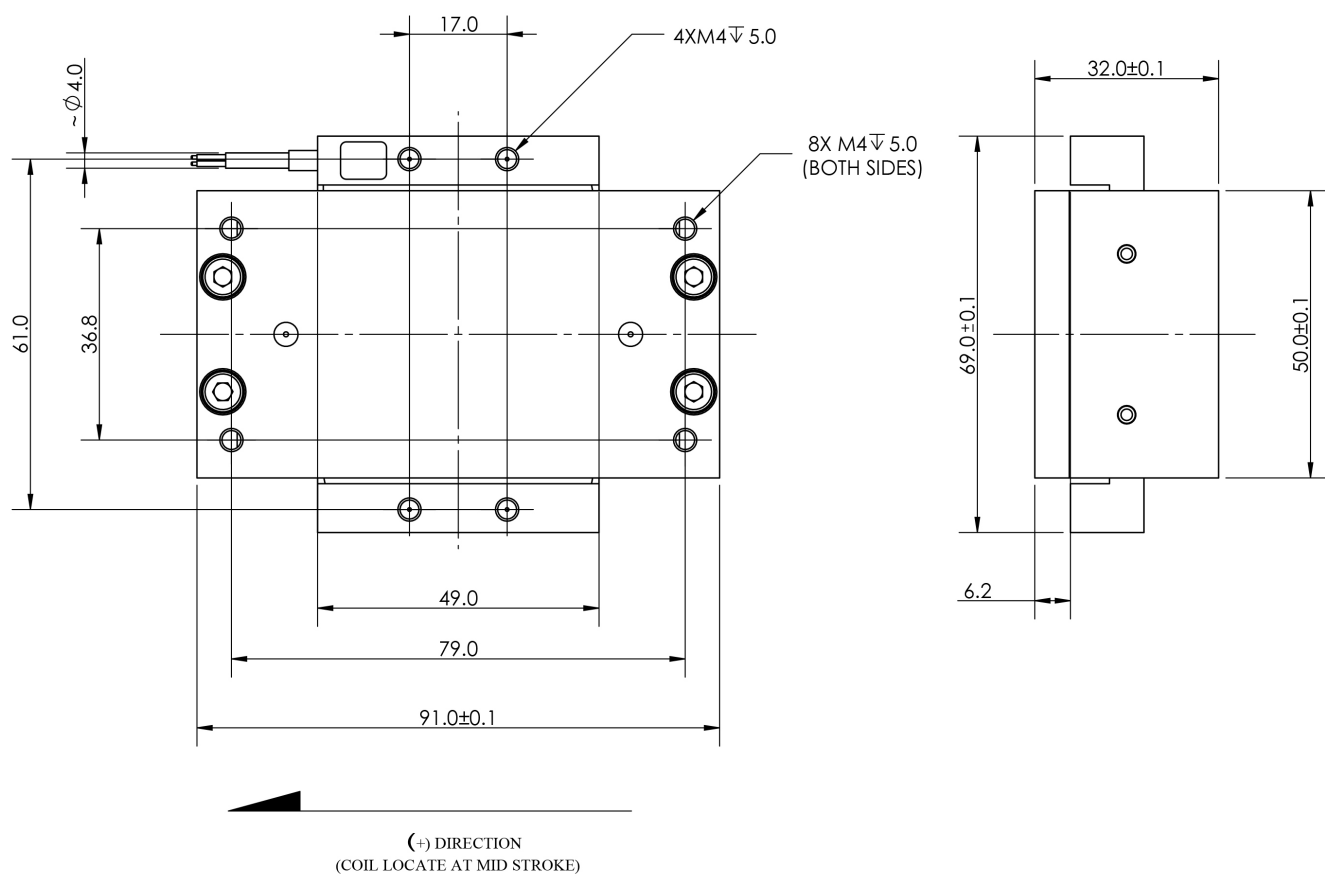
Notes:

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







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.

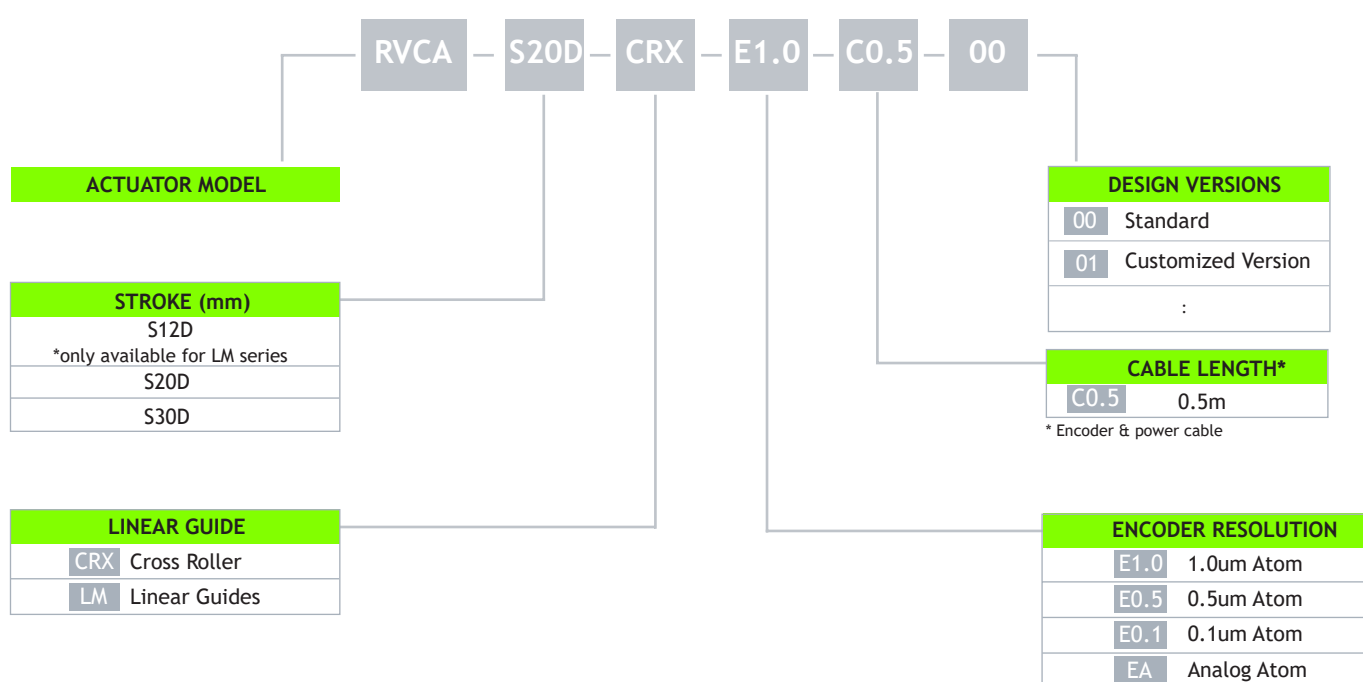
RVCA stages are built with precision cross roller guides that provide high rigidity to complement the high acceleration capability of the CVC module which has very low electrical/mechanical time constants and zero hysteresis. The actuator is specially developed for high precision frequency motion of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

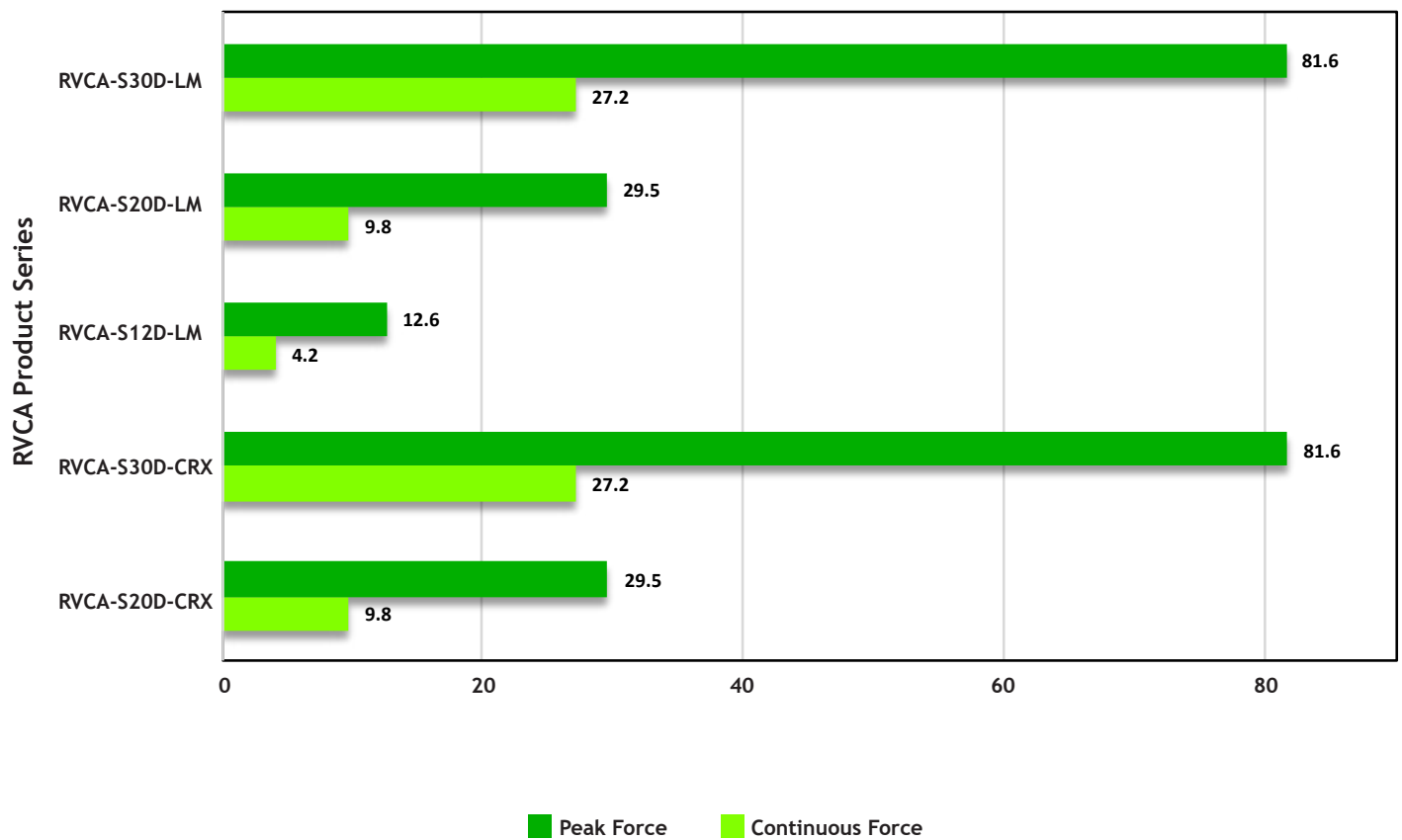
rectangular voice coil actuators

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



FORCE CHART FOR RVCA MOTORS

Force Chart For RVCA Motors



RVCA SERIES

RECTANGULAR VOICE COIL ACTUATOR

RVCA SERIES

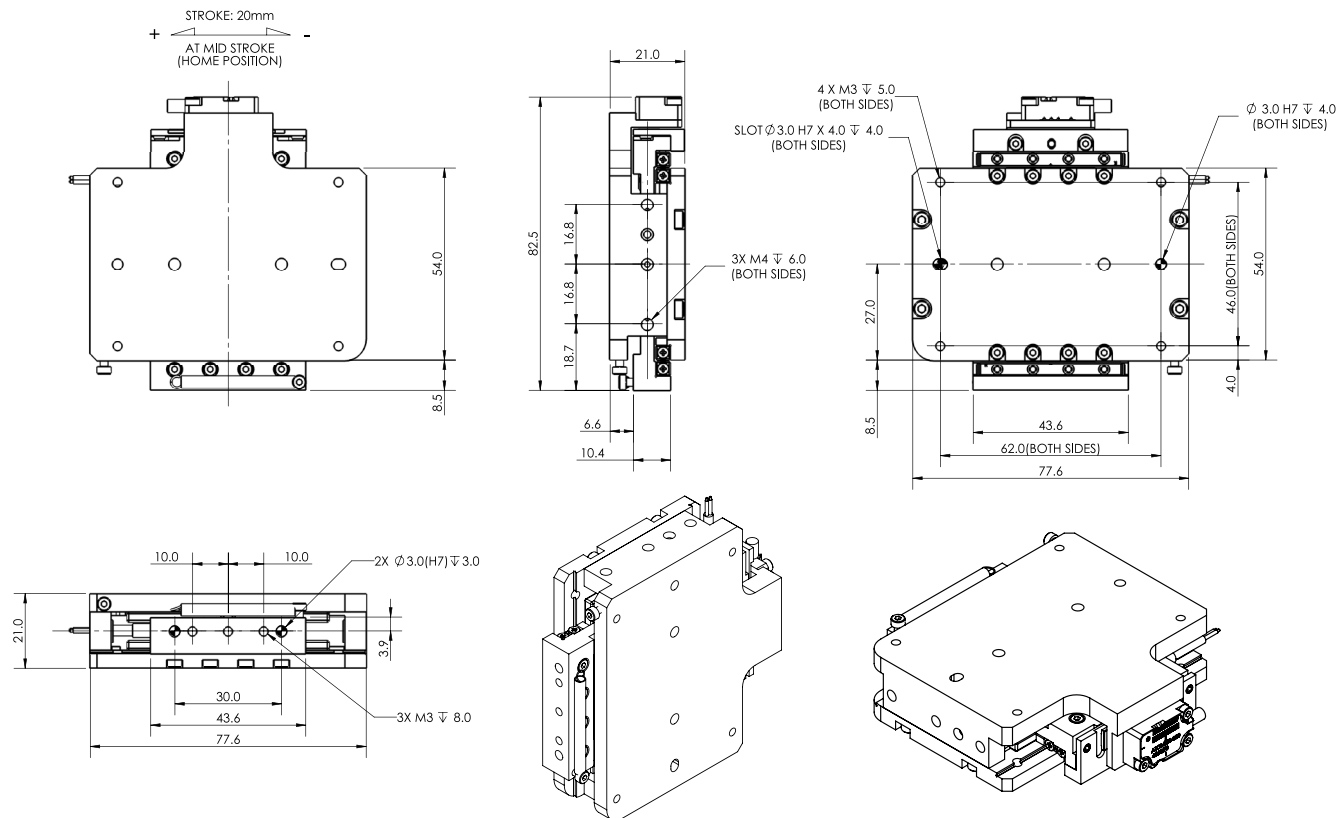
- Ideal for high speed pick-and-place applications
- Peak force to 81.7N, Continuous force to 27.3N
- Cross roller bearing for excellent precision and rigidity
- Direct drive, cogging free
- Low moving mass, fast response
- Integrated linear encoder
- Ease of use, plug and play
- Excellent reliability

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			
MY	Nm	2.8	19.4
MR	Nm	3.1	19.9
MP	Nm	3.3	22.8

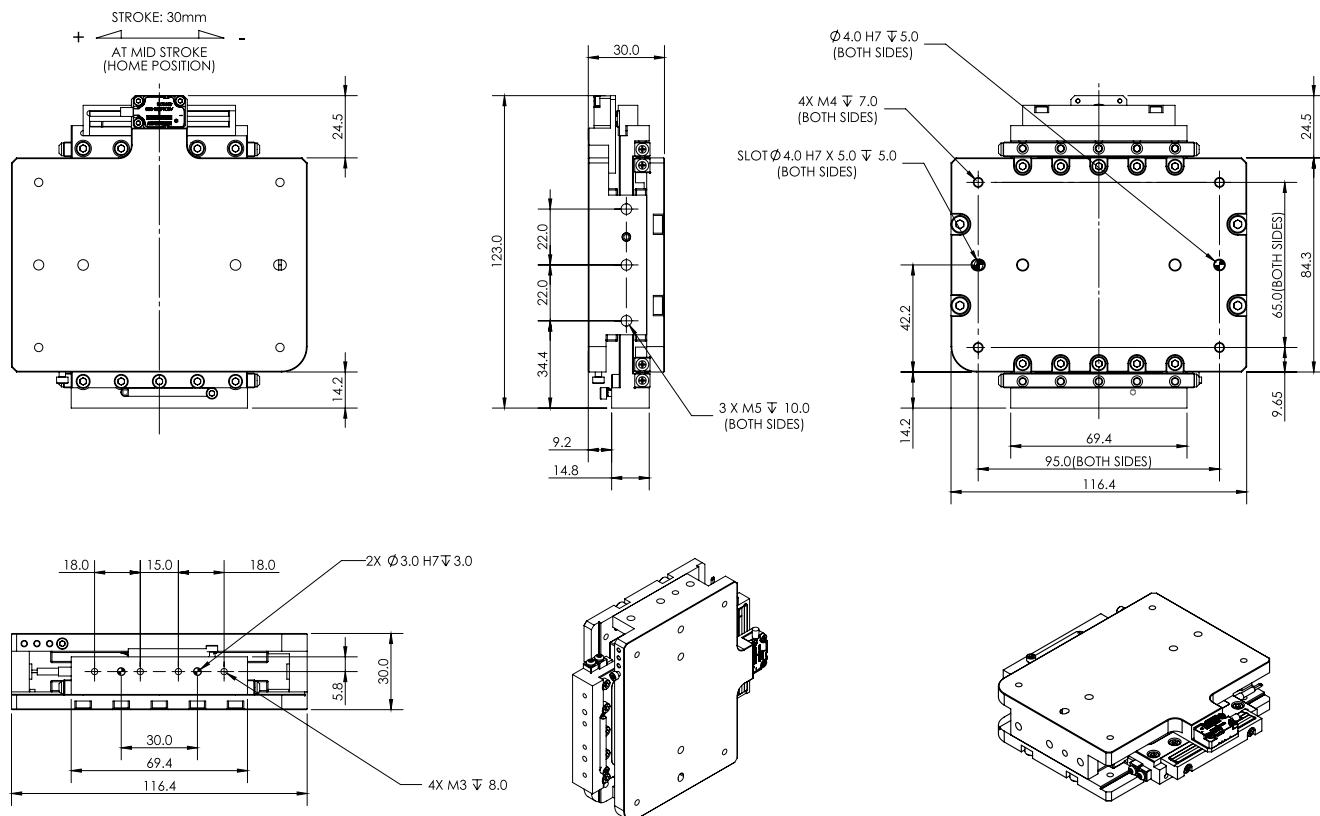
Notes:

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

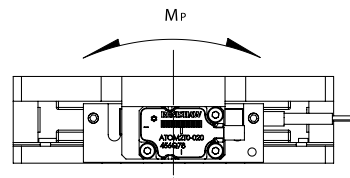
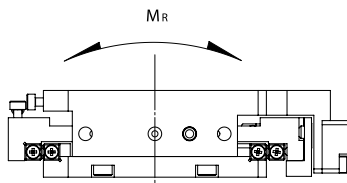
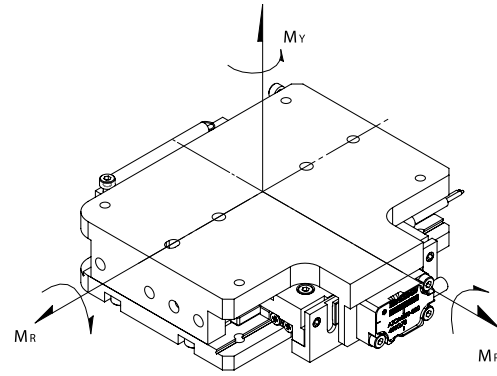
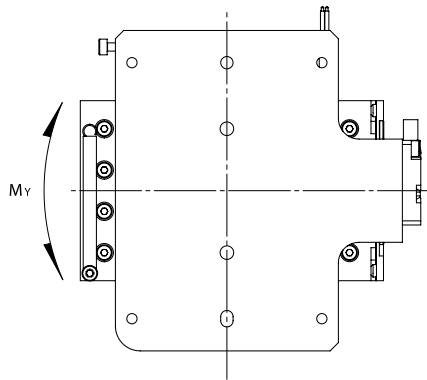
RVCA-S20D-CRX



RVCA-S30D-CRX



RVCA Static Moment Data



RVCA STATIC MOMENT (N.m)			
MODEL NO	M _Y	M _R	M _P
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

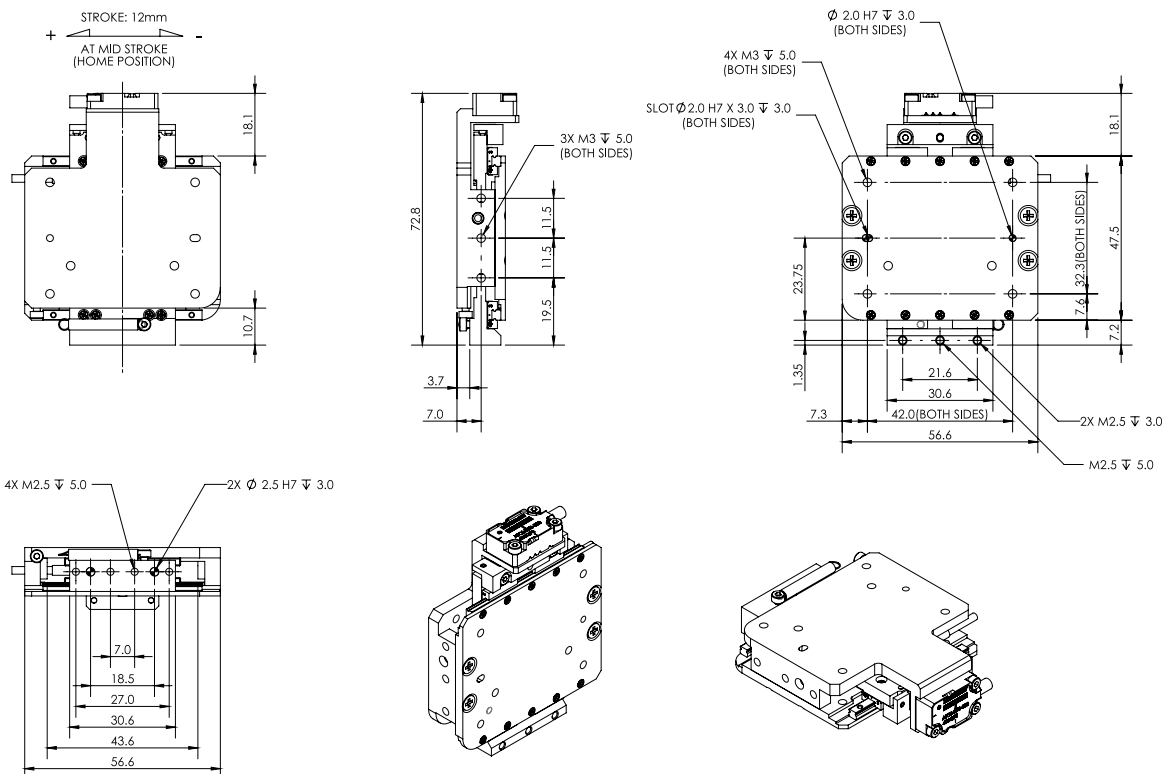
- Ideal for high speed pick-and-place applications
- Peak force to 81.7N, Continuous force to 27.3N
- Direct drive, cogging free
- Low moving mass, fast response
- Integrated linear encoder
- Ease of use, plug and play
- Excellent reliability

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				
M _Y	Nm	1.9	5.5	3.0
M _R	Nm	0.9	2.0	4.5
M _P	Nm	4.3	8.4	17.4

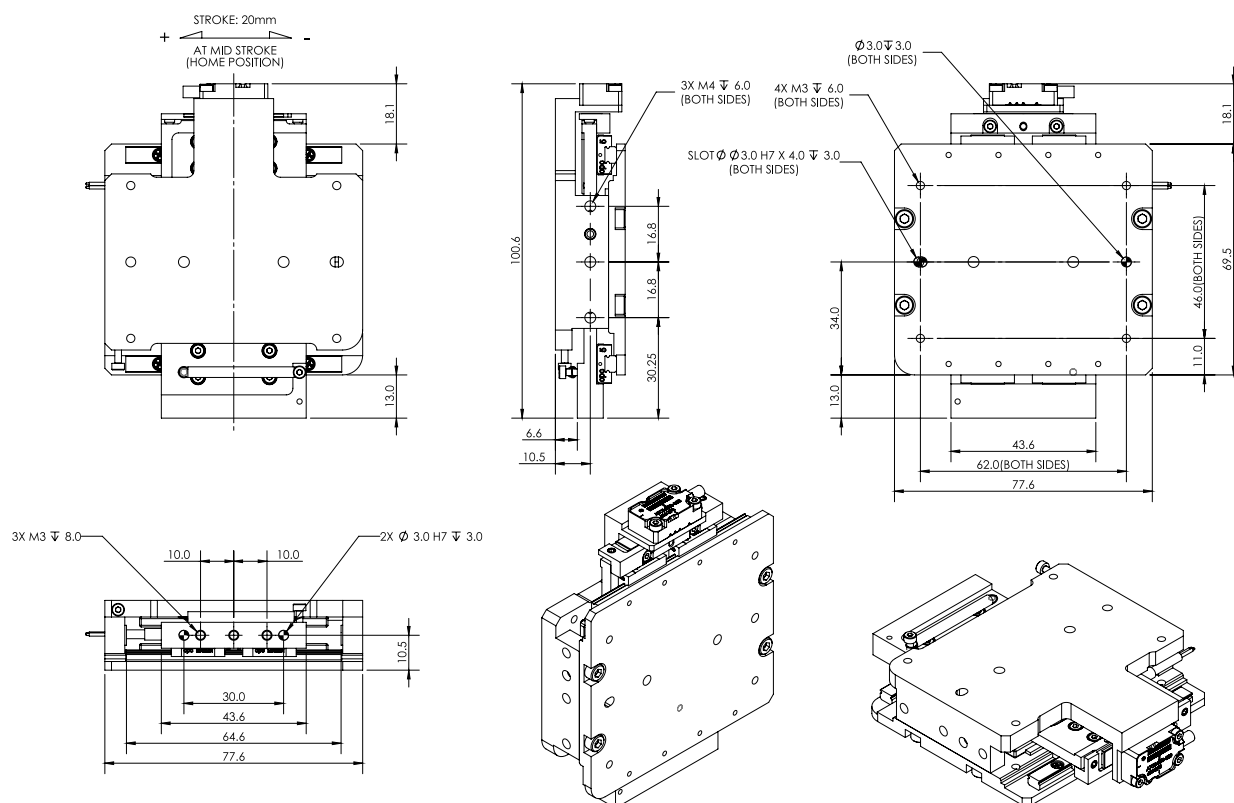
Notes:

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

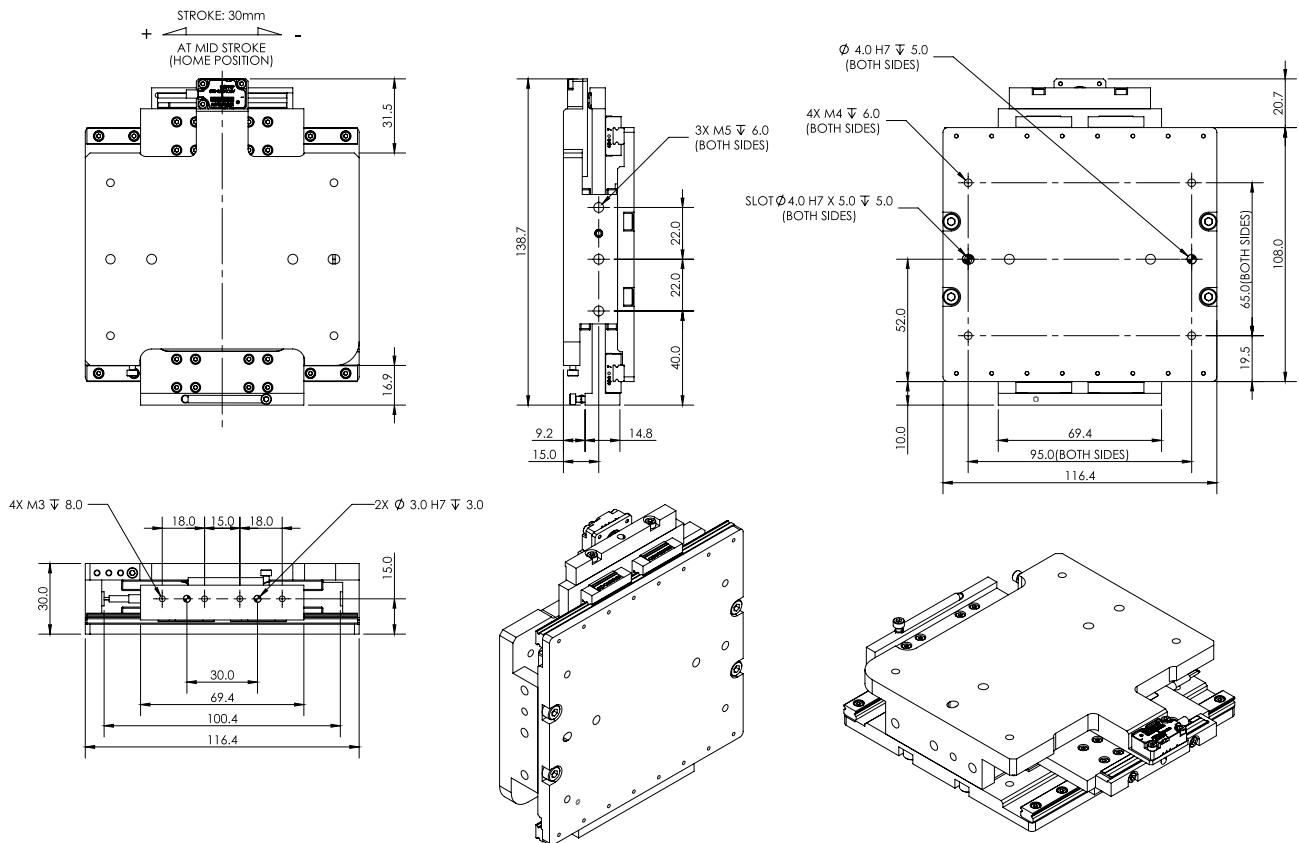
RVCA-S12D-LM



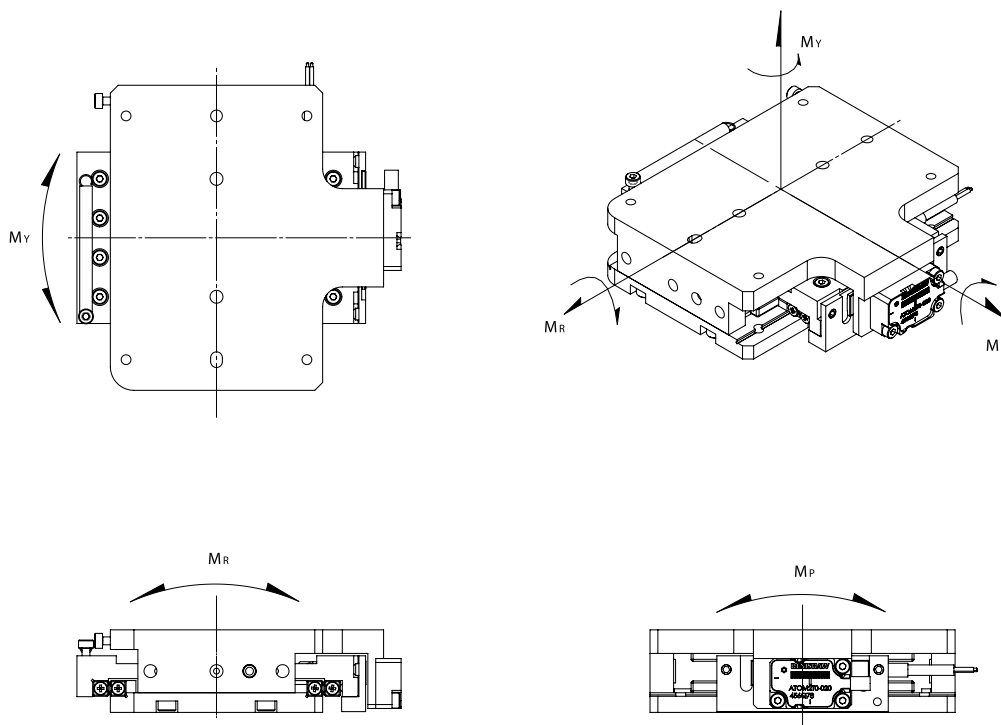
RVCA-S20D-LM



RVCA-S30D-LM



RVCA Static Moment Data

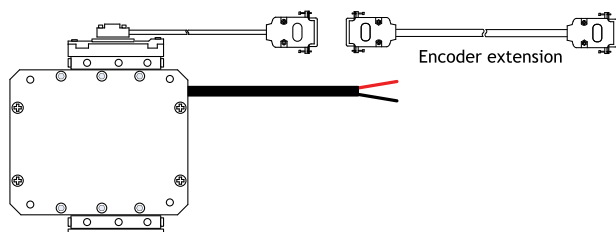


RVCA STATIC MOMENT (N.m)			
MODEL NO	MY	MR	MP
RVCA-S12D-LM	1.9	0.9	4.3
RVCA-S20D-LM	5.5	2.0	8.4
RVCA-S30D-LM	3.0	4.5	17.4

RVCA SERIES EXTENTION CABLE

Connection example:

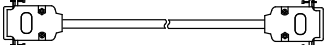
RVCA-S□D-CRX-E□-C□-00



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

Encoder
Extension
Cable



CABLE		CABLE LENGTH (X.X)	
00	RGH41, VIONIC, QUANTIC Digital	0.5	0.5 meter
00A	RGH41 Analog	1.0	1.0 meter
01	RH200 Digital	2.0	2.0 meter
01B	RH200 Analog	3.0	3.0 meter (standard)
05	ATOM Ri Interface Digital		
05A	ATOM Ri Interface Analog		

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 QUESTIONNAIRE

1. Application Description

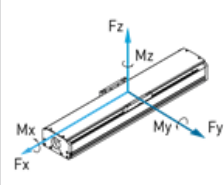
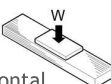
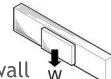
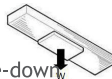
1a. Application Sketch With Approx Dimensions

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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

	☐ Horizontal 	☐ Vertical 
	☐ Sidewall 	☐ Upside-down 

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	

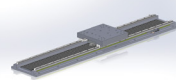
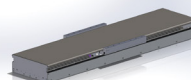
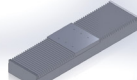
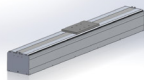
8. Working Environment

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.

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PBA SYSTEMS LINEAR MOTOR SIZER SOFTWARE



PBA Systems is a one-stop robotics provider with a focus on the development of core technology to offer a robust range of products and solutions in precision robotics and general robotics - enabling companies to thrive by making Industry 4.0 technology accessible to the market.

Our core strength is in design, development, and manufacturing of direct drive motor design and manufacturing, motion control, and precision modular assemblies.

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Contact Us:
**Tel: +(65) 6576 6766
Fax: +(65) 6576 6768**



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

PBA Motor Sizer

Application Version: 10.7.0.0 | Local Database Version: 7.0.16 | Server Database Version: 7.0.16

Guest About PBA Online

Motor Sizer

Project Details
Customer Name PBA Project Name XYZ Date 6/1/2022 Project Data Version 7.0.16

Axis Details
Axis Name X Motor Category DXB Safety Margin 20 300

Profiles

No	Motion Profile	Travel Distnc (m)	Travel Time (s)	Max. Speed (m/s)	Max. Accel. (m/s^2)	Dwell Time (s)	Mass of Load (Kg)	Angle Of Incl. (°)	Direction	Coefficient of Friction	Opposing Force (N)	Ambient Temp. (°C)	RMS Force (N)	Peak Force (N)	Frictional Force (N)	Accel. Time (s)	Cruise Time (s)	Decel. Time (s)	Total Time (s)
1	Trapezoidal	1.000	1.000	1.500	4.500	0.100	10.000	0.000	▶	0.003	0.000	30.000	35.034	45.294	0.294	0.333	0.333	0.333	1.100
2	Trapezoidal	0.500	1.000	0.750	2.250	0.000	20.000	0.000	▶	0.003	0.000	30.000	36.747	45.589	0.589	0.333	0.333	0.333	1.000
3	Trapezoidal	0.500	1.000	0.750	2.250	0.000	30.000	0.000	▶	0.003	0.000	30.000	55.121	68.383	0.883	0.333	0.333	0.333	1.000

Final Calculations for Axis

Required RMS Force	43.026 N	Recommended Motor	Safety (%)
Required Peak Force	68.383 N	DX30B-C2-S	32
Total Travel Distance	2.000 m	DX30B-C2-P	32
Total Cycle Time	3.100 s	DX50B-C2-S	101
Total Dwell Time	0.100 s	DX50B-C2-P	101
Max Speed	1.500 m/s	DX50BT-C2-P	101
Max Acceleration	4.500 m/s^2	DX50BT-C4-P	294
Max. Ambient Temp.	30.000 °C		

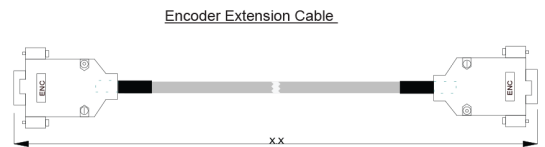
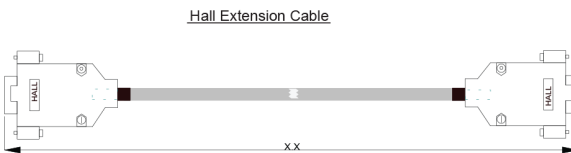
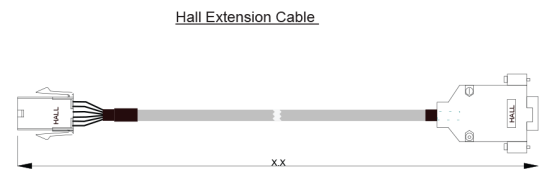
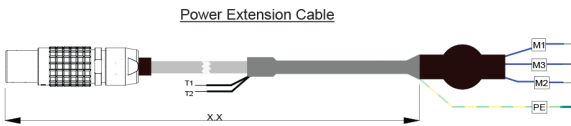
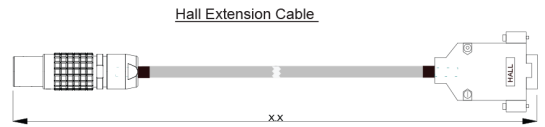
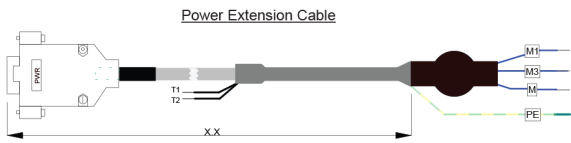
Selected Motor

Motor	DX50B-C2-S		
Continuous Force	89.00 N	L To L Resistance	8.40 ohm
Peak Force	446.00 N	L To L Inductance	6.22 mH
Continuous Current	2.63 A	Continuous Power	60.00 W
Peak Current	13.13 A	Peak Power	1502.00 W
Motor Constant	11.51 N/v/W	Coil Weight	0.520 kg
Force Constant	34.00 N/A	Coil Length	121.00 mm
Back EMF Constant	39.10 V/(m/s)	Attractive Force	0.00 N

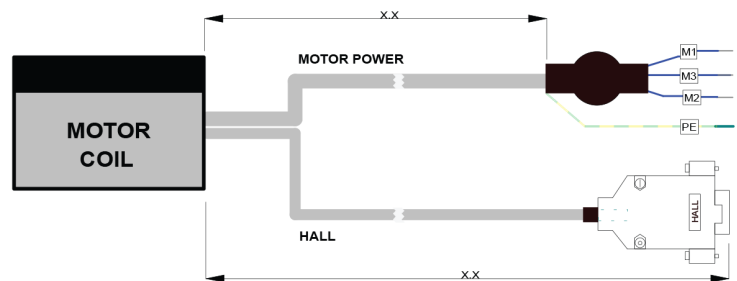
Calculated Motor Values for Application

Reqd. RMS Force	44.21 N	Reqd. Peak Force	69.57 N
Cont. Current	1.30 A	Peak Current	2.05 A
Coil Temp	48.03 °C	DC Bus Voltage	70.42 V
Safety Factor	101.29 %		
Servo Drive Model	MT-6/25-230AP1		
Cont. Current	6.30 A	Peak Current	25.40 A

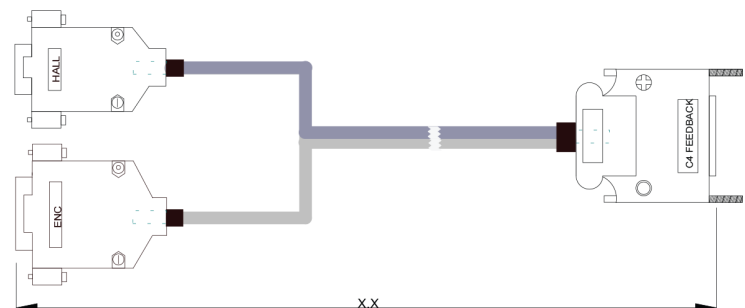
APPENDIX



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

PBA GROUP

Singapore

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Fax: +65 6576 6768
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Website: www.pbasolutions.com

PBA Technology Pte. Ltd.

Tel: +65 6576 6760
Fax: +65 6576 6761
Email: enquiry@pbatechnology.com
Website: www.pbatechnology.com

PBA Spindles Pte. Ltd.

Tel: +65 6576 6778
Fax: +65 6576 6782
Email: sales@pba-spindles.com
Website: www.pba-spindles.com

RACE

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