Linear DC Motors
## Linear DC Motors Comparison Table

<table>
<thead>
<tr>
<th>Model #</th>
<th>Stroke</th>
<th>Continuous Force</th>
<th>Intermittent Force @ 10% Duty Cycle</th>
<th>Force Constant</th>
<th>Coil Mass</th>
<th>Body Mass</th>
<th>Housing Outside Diameter</th>
<th>Housing Length</th>
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<tbody>
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<td>inch</td>
<td>1.0 oz</td>
<td>3.2 oz/oz/A</td>
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<td>0.500 inch</td>
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<td>mm</td>
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<td>9.5 mm</td>
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<td>12.7 mm</td>
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| LVCM-013-013-02  | 0.25   | inch             | 3.1 oz                              | 9.8 oz/oz/A    | 2.5 oz   | 0.19 oz/oz/A | 0.27 oz/oz               | 0.500 inch    |
|                  |        |                  |                                     |                |          |          |                           | 0.500 inch |
| Datasheet in PDF | 6.4    | mm               | 0.86 N                              | 2.73 N         | 0.69 oz/A| 5.4 gr     | 10.6 gr                  | 12.7 mm       |
|                  |        |                  |                                     |                |          |          |                           | 12.7 mm      |

| LVCM-013-019-02  | 0.50   | inch             | 2.9 oz                              | 9.2 oz/oz/A    | 2.8 oz   | 0.23 oz/oz/A | 0.37 oz/oz               | 0.500 inch    |
|                  |        |                  |                                     |                |          |          |                           | 0.750 inch   |
| Datasheet in PDF | 12.7   | mm               | 0.81 N                              | 2.55 N         | 0.77 oz/A| 6.4 gr     | 13.8 gr                  | 12.7 mm       |
|                  |        |                  |                                     |                |          |          |                           | 19.1 mm      |

| LVCM-013-025-02  | 0.75   | inch             | 2.9 oz                              | 9.0 oz/oz/A    | 2.9 oz   | 0.32 oz/oz/A | 0.49 oz/oz               | 0.500 inch    |
|                  |        |                  |                                     |                |          |          |                           | 1.000 inch   |
| Datasheet in PDF | 19.1   | mm               | 0.79 N                              | 2.51 N         | 0.80 oz/A| 9.0 gr     | 13.8 gr                  | 12.7 mm       |
|                  |        |                  |                                     |                |          |          |                           | 25.4 mm      |

| LVCM-013-032-02  | 1.00   | inch             | 2.5 oz                              | 7.9 oz/oz/A    | 2.7 oz   | 0.38 oz/oz/A | 0.60 oz/oz               | 0.500 inch    |
|                  |        |                  |                                     |                |          |          |                           | 1.250 inch   |
| Datasheet in PDF | 25.4   | mm               | 0.70 N                              | 2.20 N         | 0.76 oz/A| 10.8 gr     | 17 gr                    | 12.7 mm       |
|                  |        |                  |                                     |                |          |          |                           | 31.8 mm      |

<p>| LVCM-013-044-02  | 1.50   | inch             | 2.5 oz                              | 8.0 oz/oz/A    | 3.0 oz   | 0.52 oz/oz/A | 0.88 oz/oz               | 0.500 inch    |
|                  |        |                  |                                     |                |          |          |                           | 1.750 inch   |
| Datasheet in PDF | 38.1   | mm               | 0.71 N                              | 2.23 N         | 0.84 oz/A| 14.6 gr     | 25 gr                    | 12.7 mm       |
|                  |        |                  |                                     |                |          |          |                           | 44.5 mm      |</p>
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<td>19.3 oz</td>
<td>6.3 oz/A</td>
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<td>0.60 oz</td>
<td>0.625 inch</td>
<td>0.750 inch</td>
</tr>
<tr>
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<td>5.4 N</td>
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<td>17 gr</td>
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### Intermittent Force @10% Duty Cycle

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<th>Description</th>
<th>Value (N)</th>
<th>Value (Oz)</th>
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<td>Continuous Force</td>
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<td>Force Constant</td>
<td>0.80 N/A</td>
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<td>Back EMF Constant</td>
<td>0.80 V/m/s</td>
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<tr>
<td>Stroke</td>
<td>19.1 mm</td>
<td>0.75 IN</td>
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<tr>
<td>Coil Clearance Per Side</td>
<td>0.33 mm</td>
<td>0.013 IN</td>
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<tr>
<td>Coil Assy Mass</td>
<td>9.0 GR</td>
<td>0.32 OZ</td>
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<td>Body Mass</td>
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<td>Coil Resistance</td>
<td>4.6 Ohms</td>
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<tr>
<td>Max Continuous Power</td>
<td>4.5 W</td>
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**Notes:**
- All values at 25°C
- Unless otherwise specified

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**Linear Voice Coil Motor**

- **Contract:**
  - **DRN:** 
  - **CHKD:**
  - **APPV'D:**

- **Material:**
  - **Finish:** TBD

- **Dimensions:**
  - All dimensions are in inches (mm).
  - Tolerances on decimals and fractions: ±1/25 ±1/2.

---

**Graph:**

- **Continued Force**
- **Stroke (mm)**
  - Force (N)
    - 2.4
    - 1.8
    - 1.2
    - 0.8
    - 0.7
    - 0.6
    - 0.5
    - 0.4
  - Stroke (IN)
    - 0.00
    - 0.15
    - 0.30
    - 0.45
    - 0.60
    - 0.75

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**Revisions:**

- **Zone:**
- **Letter:**
- **Description:**
- **Date:**
- **Checked:**
- **Approved:**

---

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### Linear Voice Coil Motor Specifications

**Dimensions are in inches (mm):**
- Tolerances on:
  - Decimals
  - Fractions
  - Angles
- ±1/25 ±1/2º
- ±.005 ±.01

**Material:**
- Used on: [TBD]
- Next Assy: [APPLICATION]

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<th>Component</th>
<th>Value 1</th>
<th>Value 2</th>
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<td>8.0 oz</td>
</tr>
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<td>Continuous Force</td>
<td>0.71 N</td>
<td>2.5 oz</td>
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<tr>
<td>Force Constant</td>
<td>0.84 N/A</td>
<td>3.0 oz/A</td>
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<td>Back EMF Constant</td>
<td>0.84 V/A/s</td>
<td>0.021 V/A/s</td>
</tr>
<tr>
<td>Stroke</td>
<td>38.1 mm</td>
<td>1.50 in</td>
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<tr>
<td>Coil Clearance Per Side</td>
<td>0.33 mm</td>
<td>0.013 in</td>
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<tr>
<td>Coil Ass'y Mass</td>
<td>14.6 GR</td>
<td>0.52 oz</td>
</tr>
<tr>
<td>Body Mass</td>
<td>25.0 GR</td>
<td>0.88 oz</td>
</tr>
<tr>
<td>Coil Resistance</td>
<td>8.5 Ohms</td>
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<td>Coil Inductance @120 Hz</td>
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<td>Max Continuous Power</td>
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**Notes:**
- All values at 25°C
- Unless otherwise specified

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**Shown at Mid-Stroke**

<table>
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<th>FORCE (oz)</th>
<th>STROKE (mm)</th>
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<td>3.0</td>
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<td>18.0</td>
<td>0.50</td>
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<tr>
<td>24.0</td>
<td>0.40</td>
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<tr>
<td>30.0</td>
<td>0.30</td>
</tr>
<tr>
<td>36.0</td>
<td>0.20</td>
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---

**Linear Voice Coil Motor**

**Contract:**
- DRN: [TBD]
- CHKD: [APPVVD]
- Used on: [APPLICATION]
- Next Assy: [APPLICATION]

**Scale:** 2 / 1

---

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SHOWN AT MID-STROKE

\[ \varnothing 0.750 \ (19.1) \quad 1.31 \ (33.3) \quad 0.875 \ (22.2) \]

8-32 UNC-2B
0.16 (4) DP

6-32 UNC-2B
0.16 (4) DP

INTERMITTENT FORCE @ 10% DUTY CYCLE
7.1 N \quad 25.7 OZ

CONTINUOUS FORCE
2.3 N \quad 8.1 OZ

FORCE CONSTANT
1.6 N/A \quad 5.74 OZ/A

BACK EMF CONSTANT
1.6 v/m/s \quad 0.041 v/m/s

STROKE
12.7 mm \quad 0.50 IN

COIL CLEARANCE PER SIDE
0.38 mm \quad 0.015 IN

COIL ASSY MASS
11 GR \quad 0.39 OZ

BODY MASS
36 GR \quad 1.3 OZ

COIL RESISTANCE
2.5 Ohms

COIL INDUCTANCE @ 120 Hz
0.57 mH

MAX CONTINUOUS POWER
5.0 W

ALL VALUES AT 25°C

DIMENSIONS ARE IN INCHES (mm)

TOLERANCES ON:
DECIMALS: FRACTIONS: ANGLES:
XXX: XX: \pm \frac{1}{125}: \pm \frac{1}{2}°
\pm .005: \pm 0.1
UNLESS OTHERWISE SPECIFIED

MOTORTOM
LINEAR VOICE COIL MOTOR

NOTES:
UNLESS OTHERWISE SPECIFIED

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SHOWN AT MID-STROKE

10-32 UNF-2B
0.20 (5) DP

6-32 UNC-2B
0.20 (5) DP
2PL

PEAK FORCE 16.0 N 57.7 OZ
CONTINUOUS FORCE 5.1 N 18.2 OZ
FORCE CONSTANT 3.75 N/A 13.5 OZ/A
STROKE 15.2 mm 0.600 IN
COIL CLEARANCE PER SIDE 0.38 mm 0.015 IN
COIL ASSY MASS 27 GR 0.95 OZ
BODY MASS 78 GR 2.75 OZ
COIL RESISTANCE @ 25°C 4.9 Ohms
COIL INDUCTANCE @ 120 Hz 2.1 mH
MAX CONTINUOUS POWER 9 W

ALL VALUES AT 25°C
SHOWN AT MID-STROKE

**DIMENSIONS**

- **INTERMITTENT FORCE 10% DUTY CYCLE**
  - 14.4 N, 3.2 LB
- **CONTINUOUS FORCE**
  - 4.6 N, 1.0 LB
- **FORCE CONSTANT**
  - 3.9 N/A, 0.88 LB/A
- **BACK EMF CONSTANT**
  - 3.9 v/A, 0.100 V/A
- **STROKE**
  - 25.4 mm, 1.00 IN
- **COIL CLEARANCE PER SIDE**
  - 0.38 mm, 0.015 IN
- **COIL ASSY MASS**
  - 35 GR, 1.22 OZ
- **BODY MASS**
  - 102 GR, 3.6 OZ
- **COIL RESISTANCE**
  - 7.4 Ohms
- **COIL INDUCTANCE @20 Hz**
  - 3.4 mH
- **MAX CONTINUOUS POWER**
  - 10.0 W

**NOTES:**

UNLESS OTHERWISE SPECIFIED

**ALL VALUES AT 25°C**
SHOWN AT MID-STROKE

10-32 UNF-2B X 0.25 [6.4] DP (2)

INTERMITTENT FORCE @10% DUTY CYCLE 70.4 N 15.8 LB
CONTINUOUS FORCE 22.2 N 5.0 LB
FORCE CONSTANT 12.3 N/A 2.8 LB/A
BACK EMF CONSTANT 12.3 v/m/s 0.31 v/m/s
STROKE 12.7 mm 0.50 IN
COIL CLEARANCE PER SIDE 0.38 mm 0.015 IN
COIL ASSY MASS 64 GR 2.3 OZ
BODY MASS 320 GR 11.3 OZ
COIL RESISTANCE 6.1 Ohms
COIL INDUCTANCE @ 1000 Hz 3.8 mH
MAX CONTINUOUS POWER 20.0 W

DIMENSIONS ARE IN INCHES (mm)

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INTERMITTENT FORCE @ 15% DUTY CYCLE
74.8 N | 16.9 LB
CONTINUOUS FORCE
23.7 N | 5.3 LB
FORCE CONSTANT
6.9 N/A | 1.6 LB/A
BACK EMF CONSTANT
6.9 V/M/S | 0.18 V/N/S
STROKE
12.7 mm | 0.50 IN
COIL CLEARANCE PER SIDE
0.38 mm | 0.015 IN
COIL ASSY MASS
92 GR | 3.2 OZ
BODY MASS
326 GR | 11.5 OZ
COIL RESISTANCE
1.7 Ohms
COIL INDUCTANCE @ 1000 Hz
0.6 mH
MAX CONTINUOUS POWER
20 W

ALL VALUES AT 25°C

DIMENSIONS ARE IN INCHES (mm)
DECIMALS, FRACTIONS, ANGLES
XXX XX ± 1/25 ± 1/2°
0.005 ± 0.01
UNLESS OTHERWISE SPECIFIED

NOTES:
UNLESS OTHERWISE SPECIFIED

MOTICONT
LINEAR VOICE COIL MOTOR

REV.: 1
DWC. NO.: LVCM-051-025-01
SIZE CODE: A
APPROVED:
APPLICATION: NEXT ASSY
FINISH: DRN
CONTRACT: CHNO

1/1 SHEET 1 OF 1
SCALE: 1/1
SHOWN AT MID-STROKE

10-32 UNF-2B X 0.38 [9.7] DP (2)

DIMENSIONS ARE IN INCHES (mm)
TOLERANCES ON:
DECIMALS FRACTIONS ANGLES
XXX ± 1/25 ± 1/2°
005 ± 0.1
UNLESS OTHERWISE SPECIFIED

NOTE:
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MOLICONT
LINEAR VOICE COIL MOTOR

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<td>LVCM-051-051-01</td>
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</tbody>
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SCALE: 1 / 1 SHEET 1 OF 1
SHOWN AT MID-STROKE

INTERMITTENT FORCE @ 10% DUTY CYCLE
CONTINUOUS FORCE
FORCE CONSTANT
BACK EMF CONSTANT
STROKE
COIL CLEARANCE PER SIDE
COIL ASSY MASS
BODY MASS
COIL RESISTANCE
COIL INDUCTANCE @ 1000 Hz
MAX CONTINUOUS POWER

10-32 UNF-2B X 0.38 [9.7] DP (2)

CONTINUOUS FORCE

DIMENSIONS ARE IN INCHES (mm)
TOLERANCES ON:
DECIMALS, FRACTIONS, ANGLES
XXX .XX ± 1/25 ± 1/2°
.005±.01 UNLESS OTHERWISE SPECIFIED

NOTES:
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MOTICONT
LINEAR VOICE COIL MOTOR

DESIGNER
CHECKED
APPROVED

REV.

SCALE: 1:1 SHEET 1 OF 1
### Intermittent Force @ 0.1% Duty Cycle

<table>
<thead>
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<th>Description</th>
<th>Value</th>
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<tr>
<td>Continuous Force</td>
<td>21.5 N</td>
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<tr>
<td>Force Constant</td>
<td>10.6 N/A</td>
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<tr>
<td>Back EMF Constant</td>
<td>10.6 V/M/S</td>
</tr>
<tr>
<td>Stroke</td>
<td>133.4 mm</td>
</tr>
<tr>
<td>Coil Clearance Per Side</td>
<td>0.38 mm</td>
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<tr>
<td>Coil Assy Mass</td>
<td>340 GR</td>
</tr>
<tr>
<td>Body Mass</td>
<td>2100 GR</td>
</tr>
<tr>
<td>Coil Resistance</td>
<td>12.2 Ohms</td>
</tr>
<tr>
<td>Coil Inductance @ 1000 Hz</td>
<td>6.8 mH</td>
</tr>
<tr>
<td>Max Continuous Power</td>
<td>50 W</td>
</tr>
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</table>

**Notes:**
- All values are at 25°C
- Unless otherwise specified

### Linear Voice Coil Motor

- **Material:** [Details not provided]
- **Contract:** [Details not provided]
- **Finish:** [Details not provided]
- **Application:** [Details not provided]
- **Dimensions:** All values are in inches (mm)
  - Tolerances: ±1/25 ±1/2°
  - Unless otherwise specified

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SHOWN AT MID-STROKE

10-32 UNF-2B
X 0.38 [9.5] DP (4)

INTERMITTENT FORCE (80% DUTY CYCLE) 204.4 N 45.9 LB
CONTINUOUS FORCE
FORCE CONSTANT
BACK EMF CONSTANT
STROKE
COIL CLEARANCE PER SIDE
COIL ASSY MASS
BODY MASS
COIL RESISTANCE
COIL INDUCTANCE @ 1000 Hz
MAX CONTINUOUS POWER

ALL VALUES AT 25°C

CONTINUOUS FORCE

DIMENSIONS ARE IN INCHES (mm)
TOLERANCES ON:
DECIMALS FRACTIONS ANGLES
XXX .XXX ± 1/25 ± 1/2°
.005 ± .001
UNLESS OTHERWISE SPECIFIED

MOTICOM
LINEAR VOICE COIL MOTOR

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INTERMITTENT FORCE @ 10% DUTY CYCLE: 205.1 N 45.5 lb
CONTINUOUS FORCE: 64.0 N 14.4 lb
FORCE CONSTANT: 11.0 N/A 2.5 lb/°A
BACK EMF CONSTANT: 11.0 V/M/S 0.28 V/IN/S
STROKE: 38.1 mm 1.50 in
COIL CLEARANCE PER SIDE: 0.64 mm 0.025 in
COIL ASSY MASS: 305 gr 0.67 lb
BODY MASS: 1.53 kg 3.37 lb
COIL RESISTANCE: 1.5 Ohms
COIL INDUCTANCE @ 1000 Hz: 1.0 mH
MAX CONTINUOUS POWER: 50 W

NOTES:
UNLESS OTHERWISE SPECIFIED

DIMS: 2.750 [69.9] 1.000 [25.4]
1.750 [44.5]
10-32 UNF-2B X 0.38 [9.5] DP (4)

SHOWN AT MID-STROKE

CONTINUOUS FORCE
FORCE (LB) 15.0 12.0 6.0 6.0 12.0 15.0
STROKE (mm) 40 60 50 50 40 60
STROKE (IN) 1.50 1.50 1.50 1.50 1.50 1.50

MOTICON
LINEAR VOICE COIL MOTOR

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INTERMITTENT FORCE @ 10% DUTY CYCLE
CONTINUOUS FORCE
FORCE CONSTANT
BACK EMF CONSTANT
STROKE
COIL CLEARANCE PER SIDE
COIL ASSY MASS
BODY MASS
COIL RESISTANCE
COIL INDUCTANCE @ 1000 Hz
MAX CONTINUOUS POWER

ALL VALUES AT 25°C

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DIMENSIONS ARE IN INCHES (mm)

TOLERANCES ON:
- DECIMALS ± 1/128
- FRACTIONS ± 1/64
- ANGLES ± 1/2°

UNLESS OTHERWISE SPECIFIED

MATERIAL
FINISH

LINEAR VOICE COIL MOTOR

DRN
CHKD
APPROVED
APPROVED

SHEET 1 OF 1
SCALE: 1/2
REV.
LVCM-095-064-01 1
SHOWN AT MID-STROKE

INTERMITTENT FORCE @ 10% DUTY CYCLE
351.3 N  79.0 LB

CONTINUOUS FORCE
111.2 N  25.0 LB

FORCE CONSTANT
22.2 N/A  5.0 LB/A

BACK EMF CONSTANT
22.2 V/M/S  0.57 V/IN/S

STROKE
63.5 mm  2.50 IN

COIL CLEARANCE PER SIDE
0.64 mm  0.025 IN

COIL ASSY MASS
632 GR  1.39 LB

BODY MASS
4.14 KG  9.14 LB

COIL RESISTANCE
3.0 Ohms

COIL INDUCTANCE @ 1000 Hz
2.1 mH

MAX CONTINUOUS POWER
75 W

ALL VALUES AT 25°C

FORCE (N)

STROK (mm)

FORCE (LB)

CONTINUOUS FORCE

TOLERANCES ON:
- DECIMALS: FRACTIONS: ANGLES
- ± 1/25 ± 1/2° ± 0.005 ± 0.01

DIMENSIONS ARE IN INCHES (mm)

MOTICONT

LINEAR VOICE COIL MOTOR

NOTES:
- UNLESS OTHERWISE SPECIFIED

MATERIAL

CONTRACT

DRN

EHRO

APPROV

APPROV

SIZE  CODE  DWG. NO.  REV.

SCALE: 1 / 2  SHEET 1 OF 1

ZON  LETTER DESCRIPTION DATE CHECKED APPROVED

1

1

1

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1