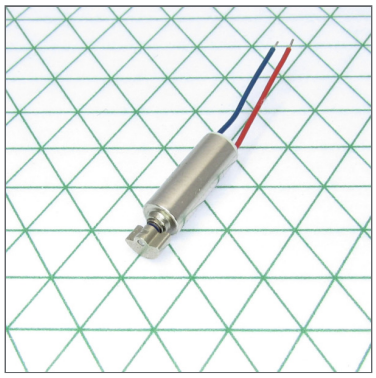
PRECISION MICRODRIVES™

Model No. 304-016.002

Product Data Sheet

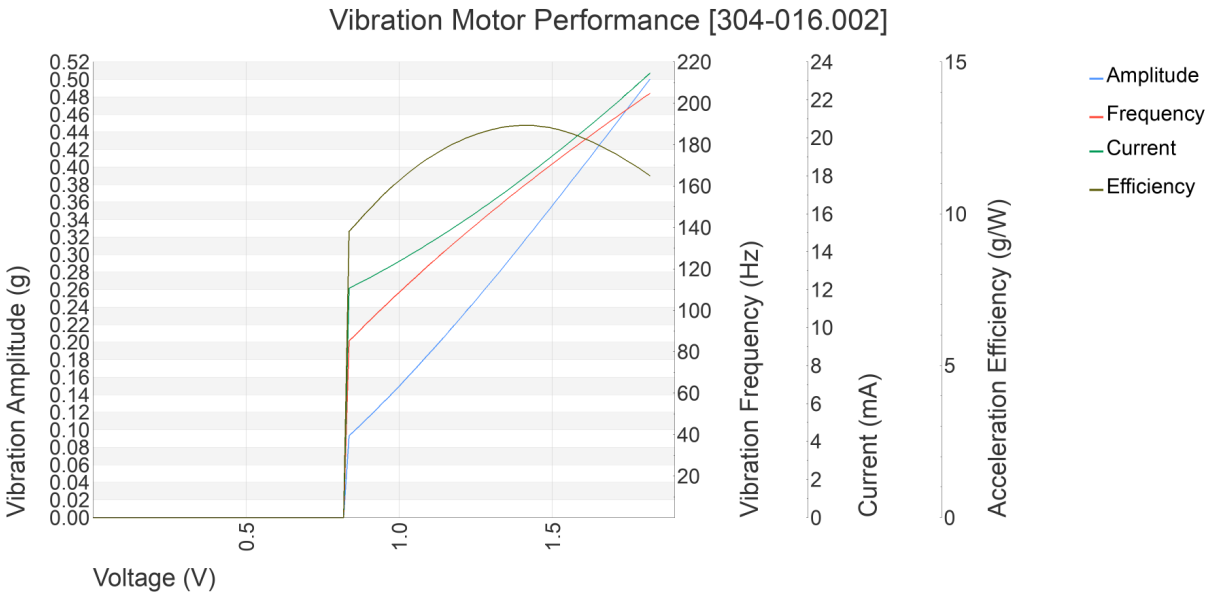
Range: Pico Vibe
Title: 4mm Vibration Motor
Type: 16mm Leads / No Bracket
Model: 304-016.002



4mm Vibration Motor
11mm Type
Shown on 6mm Isometric Grid

KEY FEATURES	
Body Diameter	4 mm [+/- 0.1]
Body Length	11 mm [+/- 0.2]
Ecc. Weight Radius	2 mm [+/- 0.1]
Ecc. Weight Length	2 mm [+/- 0.1]
Rated Operating Voltage	1.5 V
Rated Vibration Speed	10,700 rpm [+/- 2,200]
Typical Rated Operating Current	17 mA
Typical Norm. Amplitude	0.38 G

TYPICAL DC MOTOR PERFORMANCE CHARACTERISTICS



ORDERING INFORMATION

The model number fully defines the model, variant and additional features of the product. Please quote this number when ordering. For stocked types, testing and evaluation samples can be ordered directly through our online store.

FIND OUT HOW THIS PART COULD MEET YOUR SPECIFICATIONS

Email: enquiries@precisionmicrodrives.com
Call: +44 (0) 1932 252482

Looking for the perfect design?

We can help.

Precision Microdrives is an ISO 9001:2015 trusted designer and manufacturer of miniature, cost-effective, and well engineered motors and mechanisms. We are specialists in,

- Trusted precision motor design
- Flexible motor & mechanism manufacturing
- Dependable quality control & after-sales support
- Industry leading motor testing and validation

Our UK based motor design engineers, will support you through the complex process of specifying, developing, validating, and mass manufacturing, a custom motor or mechanism. The result? A part perfect for your application.

Delivered, On-Time & To Spec.

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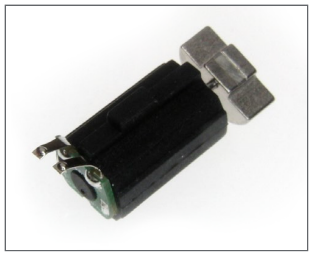
DESIGN FOR APPLICATION CASE STUDIES

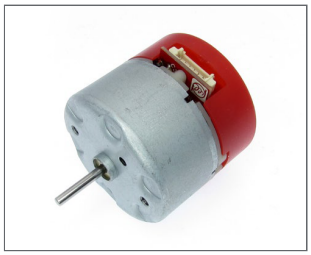
ENCAPSULATED VIBRATION MOTOR FOR A CPR TRAINING DUMMY

- Low volume, high value manufacturing
- Custom CNC machined enclosure
- Optimised haptic performance
- Custom PCB including EMI filters
- Part no. 334-401.001



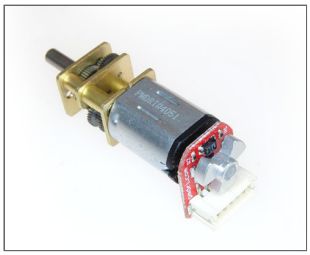
VIBRATION MOTOR HIGHLY OPTIMISED FOR RUGGEDISED FIRE AND POLICE EMERGENCY RADIOS

- High volume production
- Optimised for emergency services application
- Ruggedised design with custom rubber ‘suspension’ cover
- Custom PCB with spring legs for simplified production assembly times
- Part no. 308-104.001



PRECISION SPEED AND TORQUE CONTROLLED SERVO WITH INTEGRATED TUNABLE PID LOOP FOR SINGLE-USE SCIENTIFIC INSTRUMENT.

- Medium volume, high value assembly
- Proprietary PID controller converts cost-effective motor design into a precision servo
- Adapted control software including digital IO (to customer’s specification)
- Part no. 132-100.001



CUSTOMISED PRECISION GEAR MOTOR WITH ROBUST OPTICAL ENCODER

- High volume production
- Application specific output shaft
- Tailored motor performance curves
- Rear motor shaft with noise resistant optical encoder
- Part no. 212-116.001

PHYSICAL SPECIFICATION

PARAMETER	CONDITIONS	SPECIFICATION
Body Diameter	Max body diameter or max face dimension where non-circular	4 mm [+/- 0.1]
Body Length	Excl. shafts, leads and terminals	11 mm [+/- 0.2]
Unit Weight		1 g
No. of Output Shafts		1
Ecc. Weight Radius	Radius from shaft for non-cylindrical weights	2 mm [+/- 0.1]
Ecc. Weight Length		2 mm [+/- 0.1]

CONSTRUCTION SPECIFICATION

PARAMETER	CONDITIONS	SPECIFICATION
Motor Construction		Coreless
Commutation		Precious Metal Brush
No. of Poles		3
Bearing Type		Sintered Bronze

LEADS & CONNECTORS SPECIFICATION

PARAMETER	CONDITIONS	SPECIFICATION
Lead Length	Lead lengths defined as total length or between motor and connector	16 mm [+/- 2]
Lead Strip Length		2 mm [+/- 0.5]
Lead Wire Gauge		32 AWG
Lead Configuration		Straight

OPERATIONAL SPECIFICATION

PARAMETER	CONDITIONS	SPECIFICATION
Rated Operating Voltage		1.5 V
Rated Vibration Speed	At rated voltage using the inertial test load	10,700 rpm [+/- 2,200]
Max. Rated Operating Current	At rated voltage using the inertial test load	25 mA
Max. Start Voltage	Certified starting voltage. Measured at no load, where applicable	1.1 V
Max. Operating Voltage		1.8 V
Rated Inertial Test Load	Mass of rated load standard test sled	100 g
Min. Vibration Amplitude	Peak-to-peak value at rated voltage using the inertial test load	0.23 G
Max. Start Current	At rated voltage	60 mA

Important: The characteristics of the motor is the typical operating parameters of the product. The data herein offers design guidance information only and supplied batches are validated for conformity against the specifications on the previous page.

TYPICAL PERFORMANCE CHARACTERISTICS

PARAMETER	CONDITIONS	SPECIFICATION
Typical Rated Operating Current	At rated voltage using the inertial test load	17 mA
Typical Vibration Amplitude	Peak-to-peak value at rated voltage using the inertial test load	0.38 G
Typical Start Current	At rated voltage	43 mA
Typical Vibration Efficiency	At rated voltage using the inertial test load	16.3 G/W
Typical Norm. Amplitude	Peak-to-peak vibration amplitude normalised by the inertial test load at rated voltage	0.38 G
Typical Start Voltage	Measured at no load, where applicable	0.8 V
Typical Terminal Resistance		35 Ohm
Typical Terminal Inductance		93 uH

TYPICAL HAPTIC CHARACTERISTICS

PARAMETER	CONDITIONS	SPECIFICATION
Typical Lag Time	At rated voltage using the inertial test load	28 ms
Typical Rise Time	At rated voltage using the inertial test load	33.5 ms
Typical Stop Time	At rated voltage using the inertial test load	16.5 ms
Typical Active Brake Time	Time taken from steady-state to 0.04 G under inverse polarity at max. voltage	14 ms

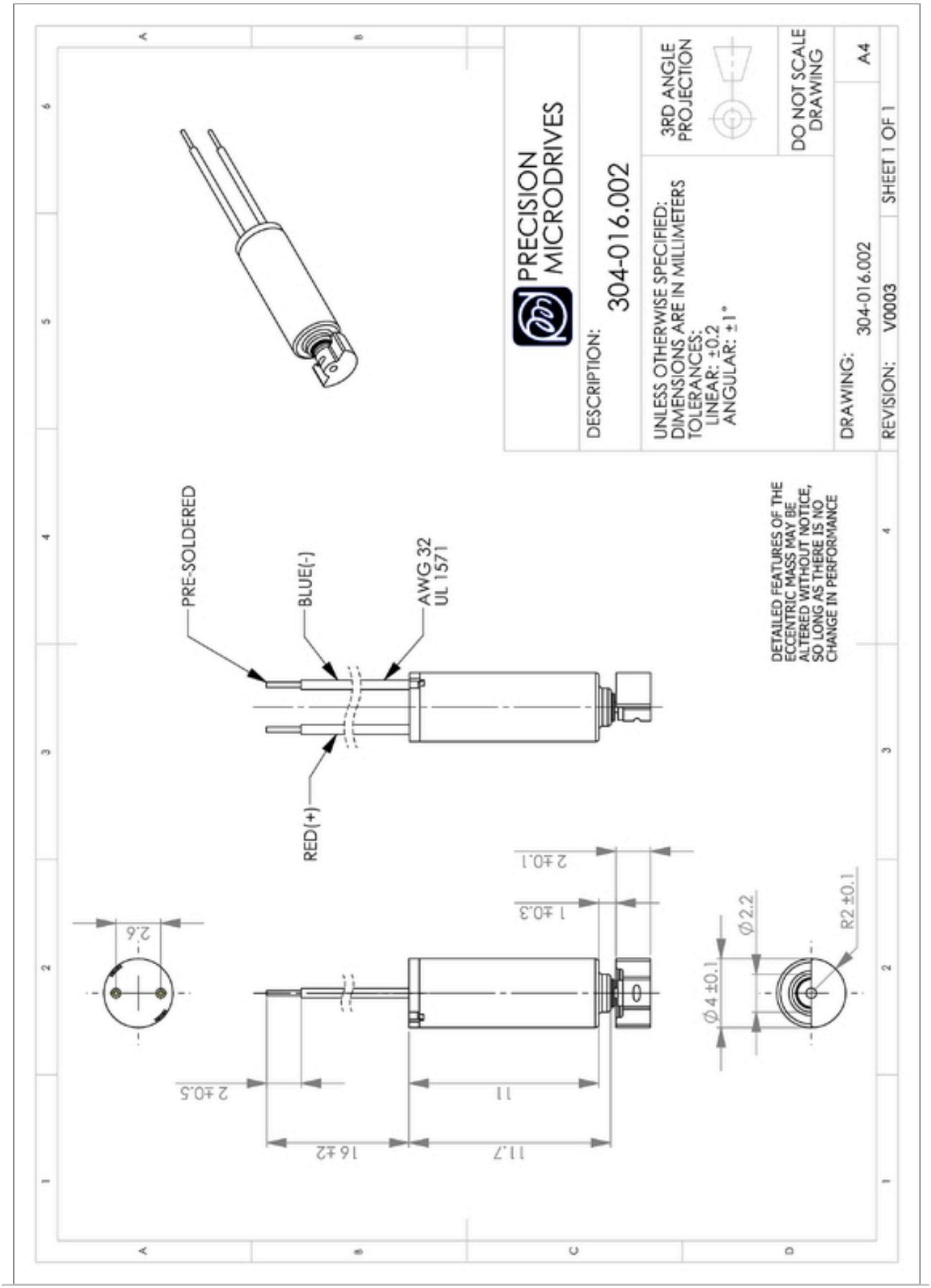
ENVIRONMENTAL CHARACTERISTICS

PARAMETER	CONDITIONS	SPECIFICATION
Max. Operating Temp.		60 Deg.C
Min. Operating Temp.		-20 Deg.C
Max. Storage & Transportation Temp.		80 Deg.C
Min. Storage & Transportation Temp.		-40 Deg.C

TYPICAL PACKING CONDITIONS

PARAMETER	CONDITIONS	SPECIFICATION
Carton Type		Boxed Trays

PRODUCT DIMENSIONAL SPECIFICATION



HOW TO ORDER

Call or email us with your order requirements at:
Email: **enquiries@precisionmicrodrives.com**
Phone: **+44 (0) 1932 252482**

Please quote the full part number when ordering or making an enquiry. Some products can be ordered in smaller volumes directly from our website: **www.precisionmicrodrives.com**

DATASHEET REVISION AND VERSION NUMBERING

We aim to provide ou customer with the most detailed product information available. Sometimes changes are necessary, and these will be controlled by our engineering change request and notification process. To track datasheet versions we use both a 'production revision number' and a 'document version number'. These can be found at the bottom of every page. Inc some cases, such as documentation errors, the document version number can increase without triggering a product revision.

LIFE SUPPORT AND MISSION CRITICAL APPLICATION POLICY

PRECISION MICRODRIVES PRODUCTS ARE NOT AUTHORISED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR OTHER CRITICAL APPLICATION SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF PRECISION MICRODRIVES LIMITED.

As used herein:

1. Life support devices or systems are devices or systems which,
    1.1. are intended for surgical implant into the body, or
    1.2. support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user or a third party.
2. A critical component is any component of a life support device or any other system or machine whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

BATCH NUMBERING, MANUFACTURING, TRACEABILITY AND LABELLING

Every part of manufactured by Precision Microdrives is at minimum identified and traced via a batch number. Where physically practical, we try to make each part with a batch number. In addition, some parts carry a lot code or barcode serial numbers. If traceability is a core requirement for your purchase, let us know and we'll outline the production options for you.

STANDARD QUALITY CONTROLS AND ISO 9001

Precision quality control is one of our 3 key competitive advantages. All motors that we produce undergo 100% line inspection followed by strict and detailed batch sample testing in accordance with ISO 2859. All of the processes operated at Precision Microdrives are managed within our ISO 9001 quality system.

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