PIEZO ASSIST MOTOR®
USER MANUAL

(Ver0.1)

Mechano Transformer Corporation

Revision History

Version number	Date	Revised content	Approved by
0.1	20230815	English First Edition Ver0.1	Chee Sze Keat

TABLE OF CONTENTS

1 **Overview**..... *3*

2 **Installation/mounting**..... *3*

3 **Dimensions**..... *4*

4 **Specifications**..... *6*

5 **Applications examples**.....*7*

6 **Cautions During Handling** *8*

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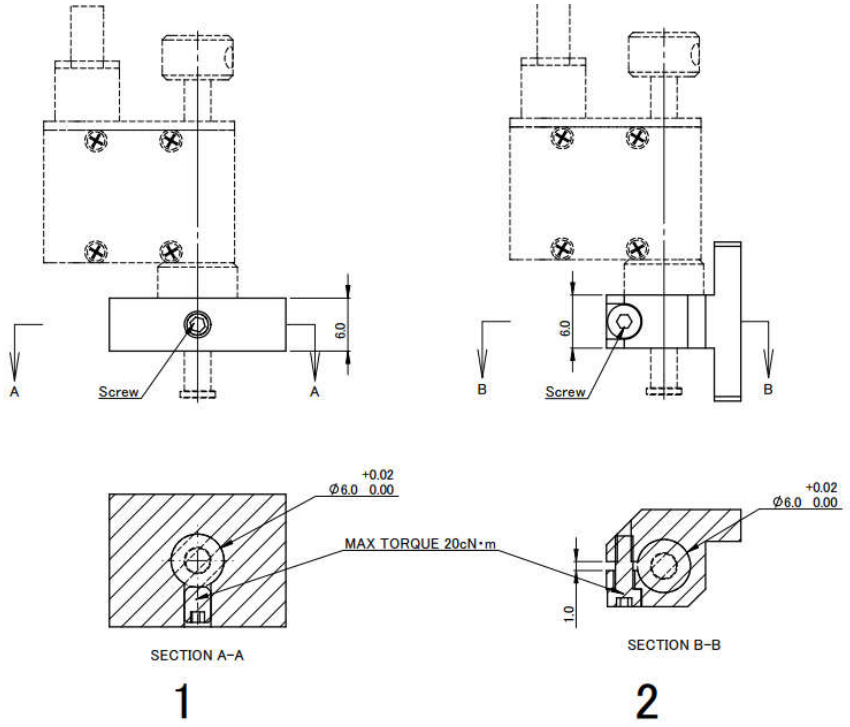
1 Overview

The Piezo Assist Motor® (PAM) is a kind of motor operate using inertia and friction to rotate a screw to create spiral movement with thrust force. By rotating the screw in clockwise or anti clockwise direction, the screw will move forward and backward. The screw used here is finely threaded, therefore a very fine movement such as about 20nm steps of moves can be realized.

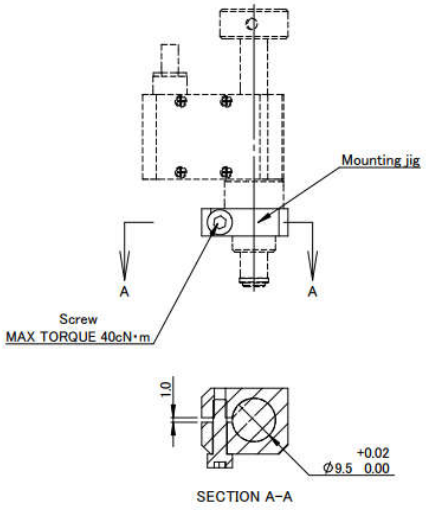
These PAM are designed to be used to drive the positioning stages, optical mounts etc. These PAM is capable to maintain the position without consuming any power. The PAM are tested and proved to work over 1 billion cycles. However, periodic maintenance will help to increase the operational stepping performance during its lifetime.

2 Installation/ mounting

Below shows the mounting method for PAM3-6.5 Piezo Assist Motor®.



Below shows the mounting method for PAM6-13 Piezo Assist Motor®.



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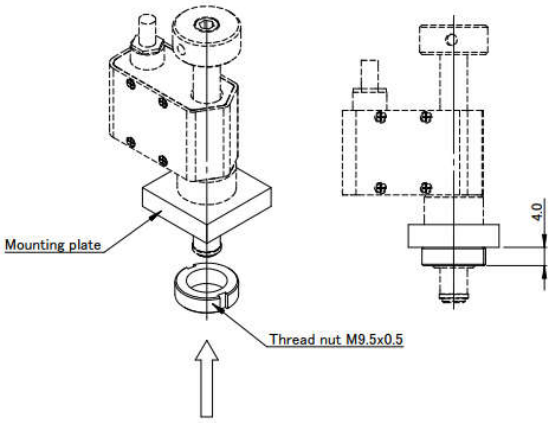

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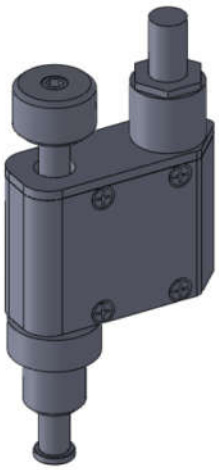
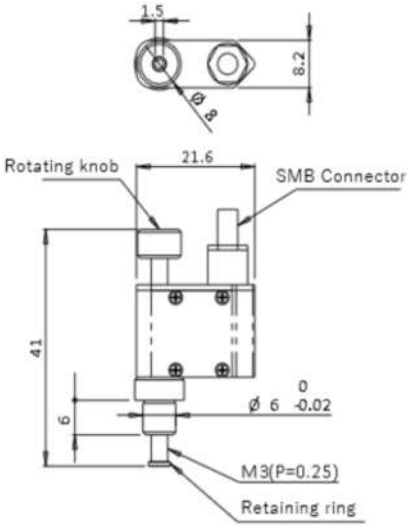
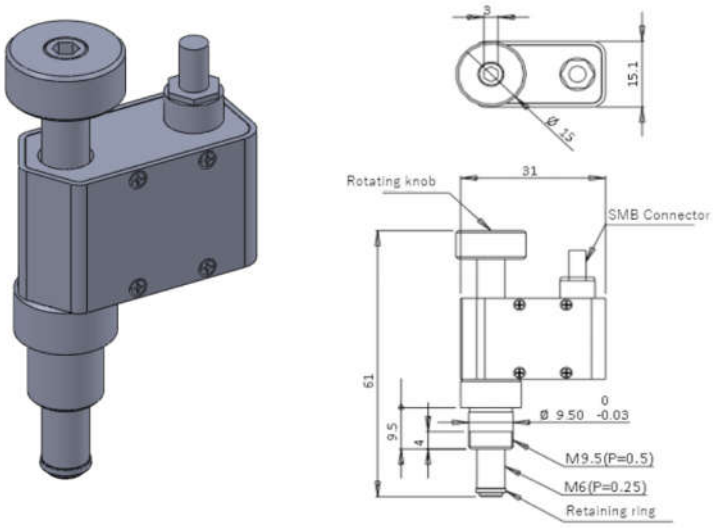
3 Dimensions

The dimension of the PAM3-6.5 Piezo Assist Motor® is shown below.





The dimension of the PAM6-13 Piezo Assist Motor® is shown below.

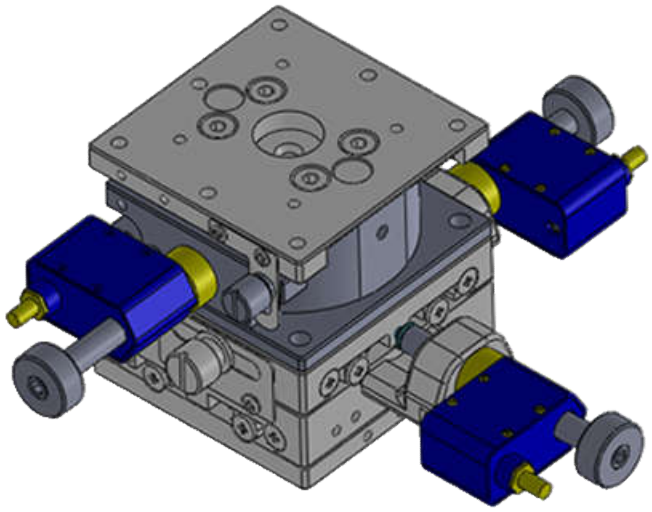


4 Specification

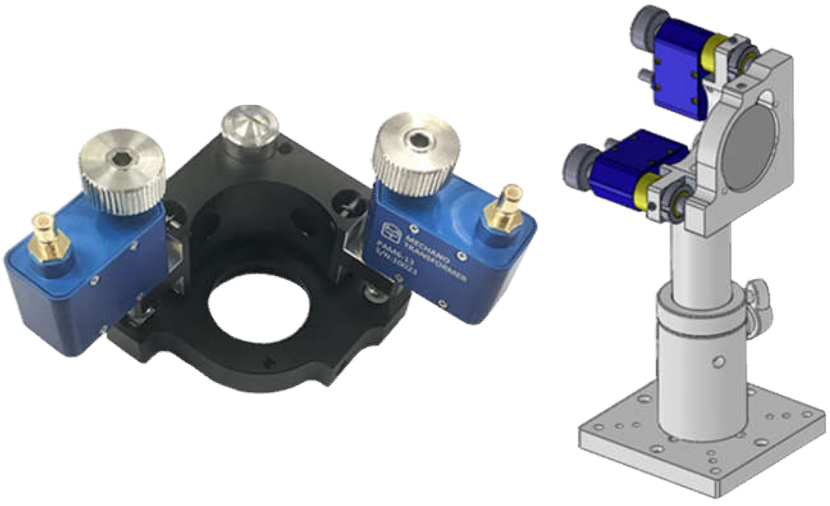
Product Name	PAM3-6.5	PAM6-13
Minimum Movement (nm)	Below 30	Below 25
Maximum Load Capacity (N)	Above 13	Above 29.4
Maximum Drive Frequency (Hz)	2000	2000
Moving Speed (mm/min)	1.5	1.5
Travel range (mm)	Above 6.5 (Maximum 9)	Above 13 (Maximum18)
Mounting Part (mm)	φ6 shank	M9x0.5 screw
Dimension (mm)	41x21.6x8.2	61x31x15.1
Operating Temperature	0～40°C	0～40°C
Storage Temperature	0～40°C	0～40°C
Ambient Humidity	10～80%RH (No condensation)	10～80%RH (No condensation)
Connector	SMB connector	SMB connector
Lifespan	Above $1x10^9$ pulse	Above $1x10^9$ pulse
Weight (kg)	0.02	0.05

5 Applications examples

1） Attached to the precision stage.



2） Attached to the optical mounts



6 Cautions During Handling

1. The Piezo Assist Motor is applied high voltage during operations. Please only use the designated driver/controller like PAMC-104 or PAMc4-485 to drive the motors.
2. Please switch off the driver/controller when you need to unplugged or plug the cable from the motors or the driver/controller
3. Do not disassemble or modify the Piezo Assist Motor.
4. Do not use the motors near any flammable materials or locations with high moisture or humidity.
5. Turn off the driver power supply if abnormal smell, noises, overheating, heat dissipation are detected.
6. Do not turn on the driver after dropping or applying shock to driver.
7. Do not touch the PAM during operation as high voltage is applied during operations.
8. If only the screw of the motors is driven into an end stop, manually you can turn the adjustment knob.
9. PAM is an open loop device. You need to set up a closed loop if you need a absolute position.
10. During the operations, the PAM makes high pitch noise.
11. Move the knob from one end to another end to redistribute the grease from times to times. The grease may turn hard if long time the motors is not use. If that happen, you may rotate the knob manually from one end to another.

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