

ONE-XY Series

Integrated XY Linear Motor Stages



Newport®

Experience | Solutions

USER'S MANUAL

Precision Motion – **Guaranteed™**

Warranty

Newport Corporation warrants this product to be free from defects in material and workmanship for a period of 1 year from the date of shipment. If found to be defective during the warranty period, the product will either be repaired or replaced at Newport's discretion.

To exercise this warranty, write or call your local Newport representative, or contact Newport headquarters in Irvine, California. You will be given prompt assistance and return instructions. Send the instrument, transportation prepaid, to the indicated service facility. Repairs will be made and the instrument returned, transportation prepaid. Repaired products are warranted for the balance of the original warranty period, or at least 90 days.

Limitation of Warranty

This warranty does not apply to defects resulting from modification or misuse of any product or part.

CAUTION

Warranty does not apply to damages resulting from:

- **Incorrect usage:**
 - **Load on the stage greater than maximum specified load.**
 - **Carriage speed higher than specified speed.**
 - **Improper grounding.**
 - **Connectors must be properly secured.**
 - **When the load on the stage represents an electrical risk, it must be connected to ground.**
 - **Excessive or improper cantilever loads.**
- **Modification of the stage or any part thereof.**



CAUTION

Please return equipment in the original (or equivalent) packing.

You will be responsible for damage incurred from inadequate packaging if the original packaging is not used.

This warranty is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness for a particular use. Newport Corporation shall not be liable for any indirect, special, or consequential damages.

No part of this manual may be reproduced or copied without the prior written approval of Newport Corporation.

This manual has been provided for information only and product specifications are subject to change without notice. Any changes will be reflected in future printings.

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EC Declaration of Conformity

ONE-XY



Year C € mark affixed: 2015

EU Declaration of Conformity

The manufacturer:

Newport Corp.
1791 Deere Avenue
Irvine, CA 92606 - USA

Hereby declares that the product:

- Description: " ONE-XY "
- Function: Integrated XY Linear Motor Stage
- Type of equipment: Special Purpose Laboratory Equipment Consisting of 2 Devices, an X & Y Axis Linear Motorized Stage and a CE Compliant Programmable Controller with Interconnect Cable

- complies with all the relevant provisions of the Directive 2014/30/EU relating to electromagnetic compatibility (EMC).
- complies with all the relevant provisions of the Directive 2006/95/EC relating to electrical equipment designed for use within certain voltage limits (Low Voltage).
- complies by exemption granted to test, Measurement and Control equipment with all the relevant provisions of the Directive 2011/65/EU relating to the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS2).

– was designed and built in accordance with the following harmonised standards:

- EN 61326-1:2013 « Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements »
- EN 61010-1:2010 « Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements »
- EN 55011:2009 Classe A

– was designed and built in accordance with the following other standards:

- | | |
|----------------|-----------------|
| • EN 61000-3-2 | • EN 61000-4-5 |
| • EN 61000-3-3 | • EN 61000-4-6 |
| • EN 61000-4-2 | • EN 61000-4-8 |
| • EN 61000-4-3 | • EN 61000-4-11 |
| • EN 61000-4-4 | • EN 62311 |

Date : 22/07/2015

Dominique DEVIDAL
Quality Director

MICRO-CONTROLE Spectra-Physics
Zone Industrielle
F-45340 Beaune La Rolande, France

DC2-FN rev A

Definitions and Symbols

The following terms and symbols are used in this documentation and also appear on the product where safety-related issues occur.

General Warning or Caution



The exclamation symbol may appear in warning and caution tables in this document. This symbol designates an area where personal injury or damage to the equipment is possible.

The following are definitions of the Warnings, Cautions and Notes that may be used in this manual to call attention to important information regarding personal safety, safety and preservation of the equipment, or important tips.



WARNING

Warning indicates a potentially dangerous situation which can result in bodily harm or death.



CAUTION

Caution indicates a potentially hazardous situation which can result in damage to product or equipment.

NOTE

Note indicates additional information that must be considered by the user or operator.

European Union CE Mark



The presence of the CE Mark on Newport Corporation equipment means that it has been designed, tested and certified as complying with all applicable European Union (CE) regulations and recommendations.

Warnings and Cautions



ATTENTION

This stage is a Class A device. In a residential environment, this device can cause electromagnetic interference. In this case, suitable measures must be taken by the user.

WARNING

When the ONE-XY stage is installed or combined with other instruments in a machine, additional testing to directive 2006/42/EC may be required. It is the responsibility of the end-user or integrator to perform a risk-analysis and the necessary tests to conform to the EC directives.

Newport is not liable for damages caused by not executing this responsibility.

Warnings

WARNING

The motion of objects of all types carries potential risks for operators. Ensure the protection of operators by prohibiting access to the dangerous area and by informing the personnel of the potential risks involved.

WARNING

The magnetic channel included in this device has the potential to disrupt pacemakers. Consequently, it is recommended that individuals maintain a distance of 1 meter or more from the stage as a precautionary measure.

WARNING

Do not use this stage when its motor is emitting smoke or is unusually hot to the touch or is emitting any unusual odor or noise or is in any other abnormal state.

Stop using the stage immediately, switch off the motor power and then disconnect the electronics power supply.



After checking that smoke is no longer being emitted contact your Newport service facility and request repairs. Never attempt to repair the stage yourself as this can be dangerous.

WARNING

Make sure that this stage is not exposed to moisture and that liquid does not get into the stage.

Nevertheless, if any liquid has entered the stage, switch off the motor power and then disconnect the electronics from power supply.

Contact your Newport service facility and request repairs.

WARNING

Do not insert or drop objects into this stage, this may cause an electric shock, or lock the drive.

Do not use this stage if any foreign objects have entered the stage. Switch off the motor power and then disconnect the electronics power supply.

Contact your Newport service facility for repairs.

WARNING

Do not place this stage in unstable locations such as on a wobbly table or sloping surface, where it may fall or tip over and cause injury.

If this stage has been dropped or the case has been damaged, switch off the motor power and then disconnect the electronics power supply.

Contact your Newport service facility and request repairs.

WARNING

Do not attempt to modify this stage; this may cause an electric shock or downgrade its performance.

WARNING

Do not exceed the usable depth indicated on the mounting holes (see section “Dimensions”). Longer screws can damage the mechanics or cause a short-circuit.

WARNING

Do not exceed speed and load limitations as specified in this manual.

Cautions

CAUTION

Do not place this stage in a hostile environment such as X-Rays, hard UV,... or in any vacuum environment.

CAUTION

Do not place this stage in a location affected by dust, oil fumes, steam or high humidity. This may cause an electric shock.

CAUTION

Do not leave this stage in places subject to extremely high temperatures or low temperatures. This may cause an electric shock.

- Operating temperature: 0 to +50 °C
 - Storage/Operating altitude: 1000 m
 - Storage/Operating humidity: 10 to 80% non-condensing
 - Storage temperature: -10 to +40 °C (in its original packaging)
-

CAUTION

Do not move this stage if its motor power is on.



Make sure that the cable to the electronics is disconnected before moving the stage. Failure to do so may damage the cable and cause an electrical shock.

CAUTION

Prior to transporting the stage, secure the axis by re-installing the shipping screws that lock the axis together.

CAUTION

Be careful that the stage is not bumped when it is being carried. This may cause it to malfunction.

CAUTION

When handling this stage, always unplug the equipment from the power source for safety.

CAUTION

When the carriage is in its end-of-run position, it is strongly recommended not to go beyond this point as this may damage the stage mechanism.

CAUTION

Contact your Newport service facility to request cleaning and specification control every year.

Integrated XY Linear Motor Stages

ONE-XY Series

1.0 Introduction

This manual provides operating instructions for the ONE-XY stage.

Inside this manual you will find useful information and technical references. It is recommended that the user download all support documentation from the ONE-XY page of the Newport website to have as reference.



ONE-XY350 Stage.

RECOMMENDATION

We recommend you carefully read the chapter “Connection to electronics” before using the ONE-XY stage.

2.0 Description

The ONE-XY series of integrated XY linear motor stages are designed to eliminate the integration of individual X and Y stages and increase system stiffness for dynamic applications. The available travel ranges from 60 mm to 400 mm, with precise orthogonality alignment between the X and Y axes.

The stages feature robust components and deliver high performance, making them ideal solutions for precision industrial applications such as semiconductor wafer inspection, microelectronics test and assembly, metrology, laser microprocessing.

The ONE-XY has a monolithic, aluminum middle plate that is stiffer than the conventional interface between two individual linear stages. The linear motor drive is an iron-less design that is suited for high precision positioning, but at the same time offers high dynamic performance. Cross-roller bearings provide high load capacity as well as straight trajectories.

Precision position feedback is supplied by a highly repeatable linear scale mounted inside the stage. The encoder signals are interpolated by Newport's XPS motion controller with 50 nm MIM for outstanding Minimum Incremental Motion, repeatability, and stability. Absolute home position and limit signals are incorporated to improve repeatability and reliability, while simplifying the design with less electronics and mechanical parts.



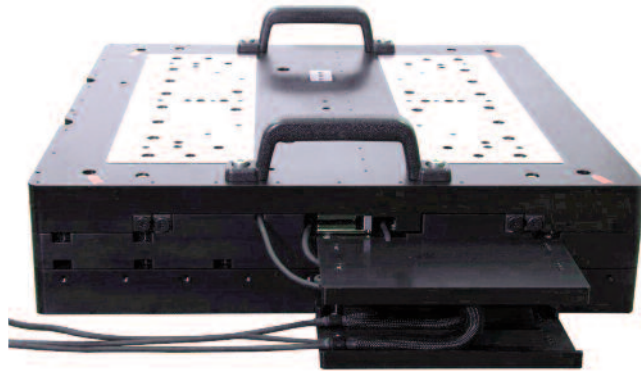
3.0 Stage Installation

3.1 Unpacking

The ONE-XY stage will be delivered to your site in packaging designed for safe transport. Larger ONE-XY stages will be delivered in Pelican cases. All accessories will be included in this case.

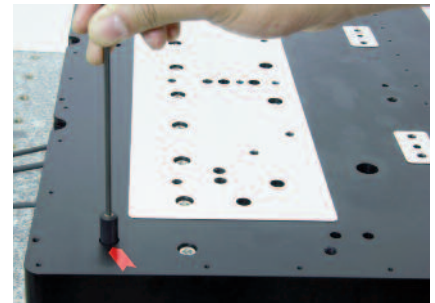
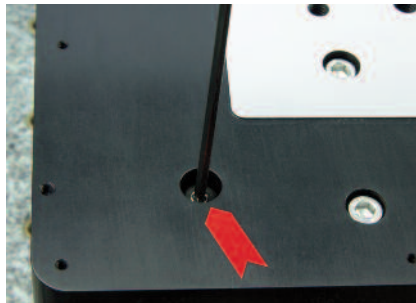


Attached to the body of the stage are handles for safe removal from packaging. It is recommended to carefully lift the stage from packaging using these handles.



CAUTION

The largest stages are quite heavy, and we recommend a two person job or by some cherry picker.



CAUTION

Before operating the stage, remove the screws that hold the stages during shipment.

NOTE

Put away shipping screws, in case the unit needs to be returned to the factory.

The stage will come delivered with a control report that indicates performance of your stage within guaranteed specification. These measurements were taken in a controlled environment under flat mounting conditions.

3.2 Mounting Conditions

ONE-XY stages require the following mounting conditions for best performance.

Installation Considerations

Mounting surface flatness	5 μ m
Mounting screw torque	7 Nm

Mounting holes to a table, whether a granite or flat steel table can be accessed by moving the stage manually

4.0 Connection to Newport Controllers

NOTE

Visit www.newport.com for compatible Newport controllers.

4.1 Warnings on Controllers

Controllers are intended for use by qualified personnel who recognize shock hazards and are familiar with safety precautions required to avoid possible injury. Read the controller user's manual carefully before operating the instrument and pay attention to all written warnings and cautions.

Specifications listed in this guide are based on operation with Newport Control and Drive Electronics. The XPS Controller is delivered with a configuration file that has been developed at the factory for operation in a no-load condition for immediate plug-and-play operation.

Newport has developed technical notes which guide the configuration process for operation of ONE-XY stages with a non-zero, application specific payload.

For operation under such conditions the Scaling Acceleration, Acceleration Limit and PID tuning parameters may need to be adjusted. Please download our tech notes on Scaling Acceleration, Tuning and configuring direct drive stages on the ONE-XY page of the Newport website.

For additional information about controllers, visit www.newport.com.

WARNING

Disconnect the power plug under the following circumstances:

- If the power cord or any attached cables are frayed or damaged in any way.
- If the power plug is damaged in any way.
- If the unit is exposed to rain, excessive moisture, or liquids are spilled on the unit.
- If the unit has been dropped or the case is damaged.
- If you suspect service or repair is required.
- Whenever you clean the electronics unit.



CAUTION

To protect the unit from damage, be sure to:

- Keep all air vents free of dirt and dust.
 - Keep all liquids away from the unit.
 - Do not expose the unit to excessive moisture (85% humidity).
 - Read this manual before using the unit for the first time.
-

WARNING

All attachment plug receptacles in the vicinity of this unit are to be of the grounding type and properly polarized.

Contact your electrician to check your receptacles.

WARNING

This product operates with voltages that can be lethal. Pushing objects of any kind into stage slots or holes, or spilling any liquid on the product, may affect voltage points or short out parts. Any unauthorized access to internal electronics represents a potential shock hazard and precaution should be taken.

4.2 Connection

On each stage there is a label which indicates the stage name and serial number.

**WARNING**

Always turn the controller's power OFF before connecting to a stage.

Stages may be connected to the rear panel motor connectors labeled "Motor..." at any time prior to power-up with the supplied cable assemblies.

4.3 Cables

ONE-XY stages are delivered with a set of three 5-meter cables that can be directly connected to the Newport controller.

WARNING

ONE-XY Series translation stages can only operate with cable lengths of 3 m or less.

**WARNING**

These cables are shielded. For correct operation, make sure to lock connectors (ground continuity provided by cables).

WARNING

Keep the cables at a safe distance from other electrical cables in your environment to avoid potential cross talk.

5.0 Connection to Non-Newport Controllers

Newport stages can be operated with Non-Newport controllers. However, under such operational conditions Newport makes no guarantee regarding achievable specifications. To aid Newport customers using non-Newport Controllers with ONE-XY stages we have provided wiring conventions and motor characteristics below. It should be noted, damage caused by improper configuration or operation while in use with non-Newport controllers is not covered by the warranty.

Please refer to Design Details and Specifications for more information to help configure the stage with your controller. Newport also provides a tech note on configuring third party stages with Newport controllers on ONE-XY website, which may be useful as a reference.



WARNING

Newport is not responsible for malfunctions or damage to a stage and other hardware when used with non- Newport controllers.

6.0 Characteristics

6.1 Definitions

Specifications of our products are established in reference to ISO 230 standard part II “Determination of accuracy and repeatability of positioning numerically controlled axes”.

This standard gives the definition of position uncertainty which depends on the 3 following parameters:

(Absolute) Accuracy

Difference between ideal position and real position.

On-Axis Accuracy

Difference between ideal position and real position after the compensation of linear errors.

Linear errors include: cosine errors, inaccuracy of screw or linear scale pitch, angular deviation at the measuring point (Abbe error) and thermal expansion effects. All Newport motion electronics can compensate for linear errors.

The relation between absolute accuracy and on-axis accuracy is as follows:

$$\text{Absolute Accuracy} = \text{On-Axis Accuracy} + \text{Correction Factor} \times \text{Travel}$$

Repeatability

Ability of a system to achieve a commanded position over many attempts.

Reversal Value (Hysteresis)

Difference between actual position values obtained for a given target position when approached from opposite directions.

Minimum Incremental Motion (MIM or Sensitivity)

The smallest increment of motion a device is capable of delivering consistently and reliably.

Resolution

The smallest increment that a motion device can theoretically move and/or detect. Resolution is not achievable, whereas MIM, is the real output of a motion system.

Yaw, Pitch

Rotation of carriage around the Z axis (Yaw) or Y axis (Pitch), when it moves.

The testing of on-axis accuracy, repeatability, and reversal error are made systematically with test equipment in an air-conditioned room (20^{±1} °C).

A linear cycle with 21 data points on the travel and 4 cycles in each direction gives a total of 164 points.

Guaranteed Specifications

Guaranteed maximum performance values are verified per Newport's A167 metrology test procedure. For more information, please consult the metrology tutorial section in the Newport catalog or at www.newport.com

6.2 Design Details

Base Material	Aluminum
Bearings	High precision crossed roller bearings
Drive System	3-phase synchronous ironless core linear motor
Motor Initialization	Done by controller
Feedback	Non-contact optical encoder
Limit & Home Switches	Integrated home and end of travel limits
Cable	High Flex, 10M cycle, 3 m length
MTBF	20,000 hours



NOTE

This product complies with the RoHS directive (Restriction of Hazardous Substances).

6.3 Mechanical Specifications

	ONE-XY60		ONE-XY100		ONE-XY200		ONE-XY300	
	ONE-XY60	ONE-XY60HA	ONE-XY100	ONE-XY100HA	ONE-XY200	ONE-XY200HA	ONE-XY300	ONE-XY300HA
Minimum Incremental Motion (µm)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
On-Axis Accuracy (µm)	±3	±0.3	±3	±0.3	±4	±0.4	±6	±0.6
Bi-directional Repeatability (nm)		±30		±30		±30		±30
Straightness (µm)		±2		±2		±4		±10
Flatness ⁽²⁾ (µm)		±2.5		±3		±4		±8
Pitch/Yaw ⁽³⁾ (µrad)		58		58		72		86
Roll ⁽³⁾ (µrad)		58		58		72		48
Orthogonality ⁽³⁾ (µrad)		96		96		96		96
Max. Speed ⁽³⁾ (m/s)		0.3		0.4		0.5		0.3
Max. Acceleration ⁽³⁾ (G)		0.3		0.3		0.2		0.2
Max. Load Capacity (N)		100		120		150		350
Weight [lb (kg)]		6.4 (2.9)		12.8 (5.8)		26.4 (12)		165 (75)



¹⁾ Specifications measured on stage centerline, 50 mm above mounting surface. Newport provides NIST traceable, test results.

²⁾ Flatness specifications dependent on system base. Contact Newport for more information.

³⁾ Stage performance values at no load. Does not account for drive or resolution effects.

⁴⁾ To obtain arcsec units, divide mrad value by 4.8.

Note: Speed and acceleration can be higher with other driver options.

NOTE

The following specifications are controller/drive dependent. Refer to the ONE-XY Series page on www.newport.com for specifications achievable with specific Newport controller/drive combination.

- MIM
- Accuracy
- Repeatability
- Max Speed
- Max Acceleration



CAUTION

To reach stated specifications, the stages must be fixed on a plane surface with a flatness of 5 µm.

6.4 Hard Stop

Hard stops are supplied, only for emergency use.

6.5 Load Characteristics and Stiffness

Normal Load Capacity (Cz)

Maximum load a stage can move while maintaining specifications.

NOTE

For other than centered loads, please contact Newport technical support.

6.6 Motor characteristics (Direct Drive Brushless Motor)

	ONE-XY50	ONE-XY100	ONE-XY200	ONE-XY300	ONE-XY400
Magnet Pitch [N-N] (mm)	30.48	30.48	30.48	30.48	30.48
Max. Voltage [Line to Line] ⁽¹⁾ (V)	500	500	500	500	500
Electrical Time Constant (ms)	0.19	0.19	0.20	0.20	0.20
Max. Motor Temperature (°C)	130	130	130	130	130
Motor Connection	DELTA	DELTA	DELTA	DELTA	DELTA
Motor Constant (N ² /W)					
Force Constant (N/Apk)	8.1	16.3	28.7	43.0	57.4
Phase Resistance [@ 25 °C] ⁽²⁾ (Ω)	5.8	11.6	11.7	17.6	23.5
Phase Resistance [@ 130 °C] ⁽²⁾ (Ω)	8.2	16.4	16.6	24.9	33.2
Thermal Resistance (°C/W)					
Inductance (mH)	1.1	2.1	2.3	3.5	4.7
Continuous Force ⁽³⁾ (N)	23	47	93	140	186
Continuous Current ⁽³⁾ (Apk)	2.9	2.9	3.2	3.2	3.2
Peak Force ⁽⁴⁾ (N)	75	151	295	442	589
Peak Current ⁽⁴⁾ (NApk)	9.2	9.2	10.3	10.3	10.3
Back EMF Constant (V/m/s)	8.1	16.3	28.7	43.0	57.4

¹⁾ Back EMF plus IR drop must not exceed maximum line to line bus voltage.

²⁾ Resistance values do not include cable resistance. Cable resistance adds 0.146 ohm/m for Delta connection and 0.44 ohm/m for Wye Connection.

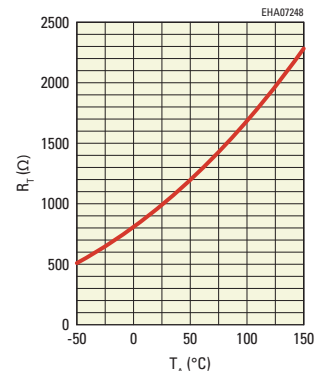
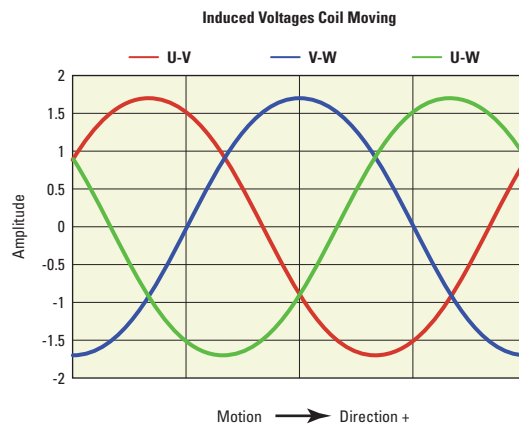
³⁾ Continuous operating limits are based on continuous operation at maximum temperature with aluminum heat sink (300mm x 12.5mm x motor length).

⁴⁾ Maximum on time at peak operating limits is 10 seconds.



CAUTION

High RMS current will generate motor heating which will degrade characteristics of the stage, including such attributes as repeatability, accuracy, etc...



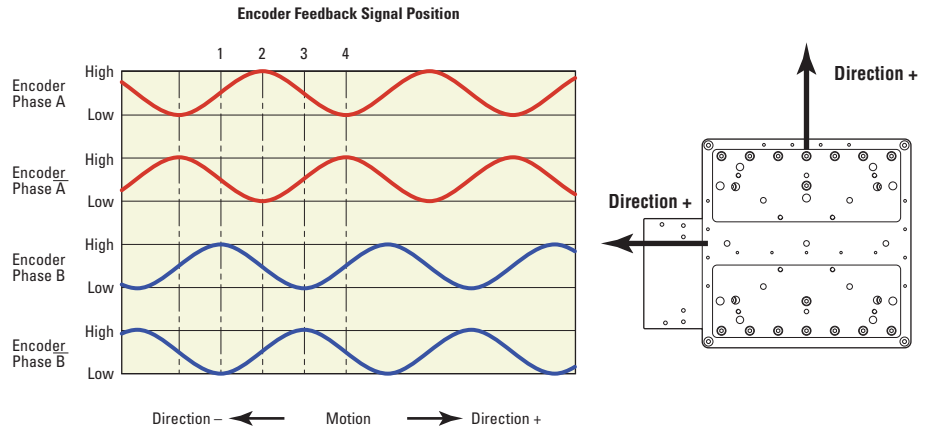
Positive Temperature Coefficient Thermistor; resistance as a function of temperature. Motor heating is typically restricted to 20 °C with Newport Controllers.

NOTE

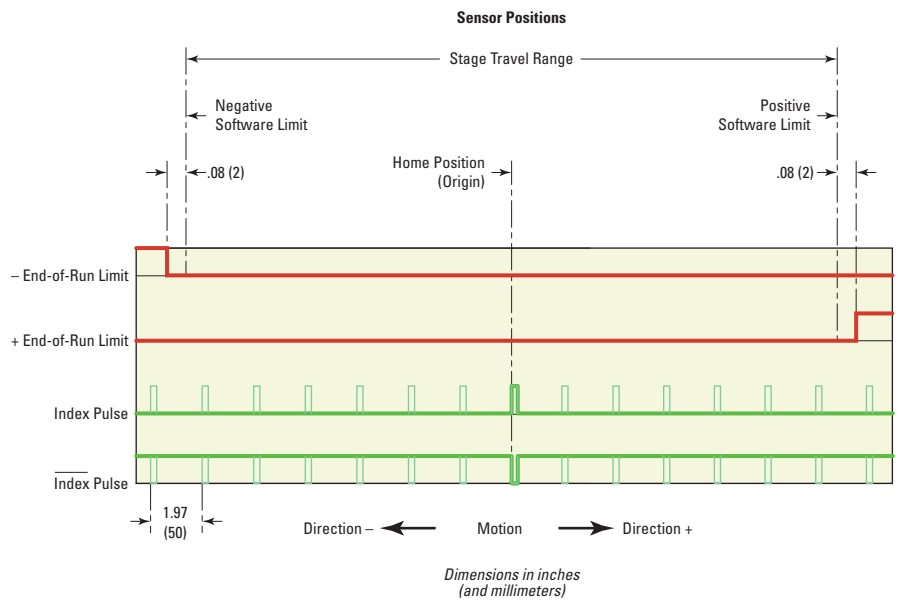
The values above indicate voltage induced by energized coil of one phase on next phase coil. A positive value for U-V would indicate a higher voltage on U relative to V.

6.7 Encoder

Signal description / Voltage / wiring	Renishaw standard 1 Vpp
Reference mark position	see drawing "Sensor Positions"
Resolution	Scale pitch 20 μm
Maximum speed	10 m/s



6.8 Sensor Positions



7.0 Connectors and Cables

7.1 Pinouts

SUB-D pinouts for ONE-XY stages are provided in the following tables:

Motor (SUB-D9M Connector)



1	U Motor
2	U Motor
3	V Motor
4	V Motor
5	Thermistor 1
6	W Motor
7	W Motor
8	Shield Ground
9	Thermistor 2

- Max. voltage: 96 V
- Max. rms Current: 3.1 A

WARNING



GROUNDING: The stage's protective ground is located on pin #8 of the motor power connector.

If you are using grounds other than those provided by Newport, you must connect pin #8 to a ground connection.

Encoder and End-of-Runs (SUB-D15M Connector)



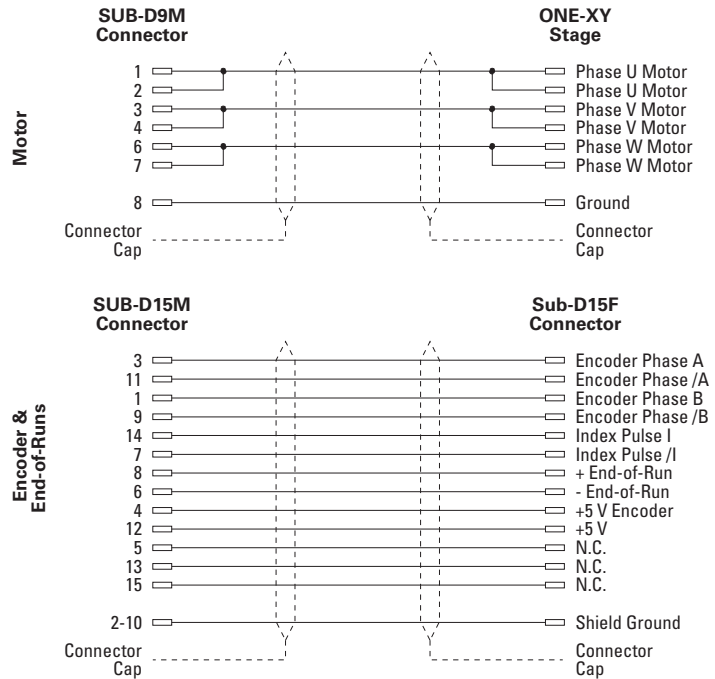
1	Encoder Phase B
2	Shield Ground
3	Encoder Phase A
4	+5 V Encoder
5	N.C.
6	- End-of-Run
7	Index Pulse /I
8	+ End-of-Run
9	Encoder Phase /B
10	Shield Ground
11	Encoder Phase /A
12	+5 V
13	N.C.
14	Index Pulse I
15	N.C.

7.2 ONE-XY Cable Wiring

All ONE-XY stages are delivered with the three cables required for operation. The wiring diagrams and connectors for these cables are provided in the following diagrams. When operating the non-Newport controllers, it is recommended to adhere to the wiring conventions presented here and to use cabling with similar characteristics.

WARNING

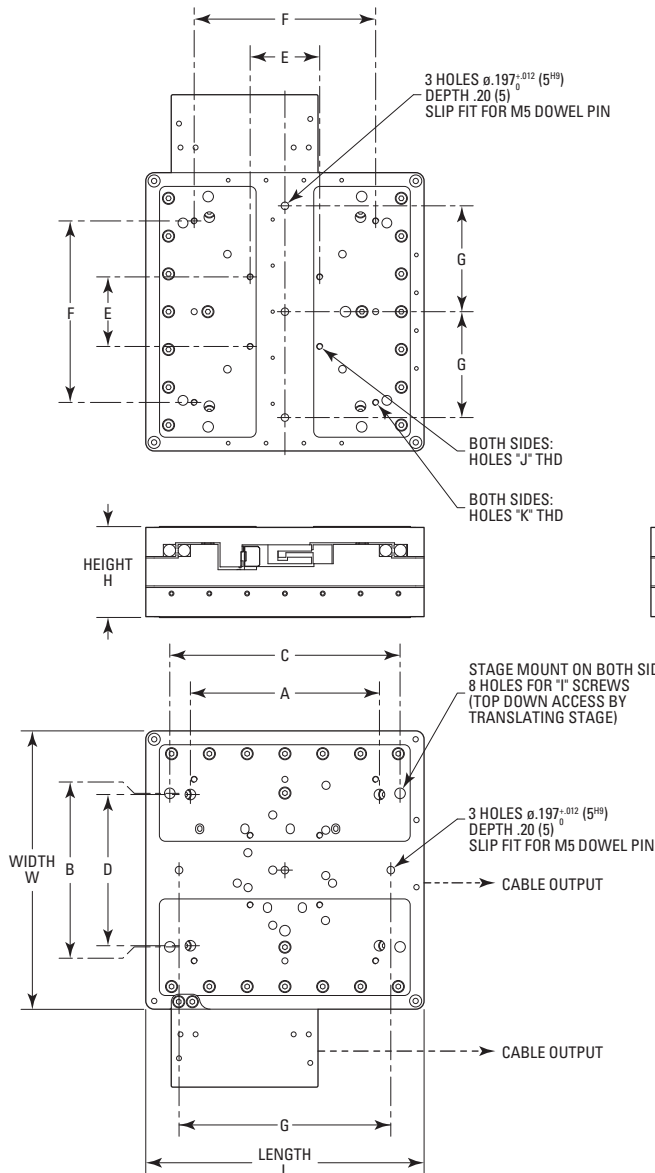
Newport guarantees “CE” compliance of the ONE-XY translation stages only if they are used with Newport cables and controllers.



NOTE

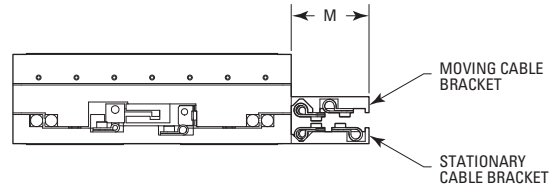
This is the wiring of the cables that provided with the connection to Newport Controllers, for third party controllers, we recommend using a cable with similar characteristics: Chapters 7.1 (Pinouts) and 7.2 (ONE-XY Cable Wiring).

8.0 Dimensions



MODEL	TRAVEL	L	W	H	A
ONE-XY60	2.36 (60)	4.92 (125)	4.92 (125)	2.36 (60)	4.0 (101.6)
ONE-XY100	3.94 (100)	7.24 (184)	7.24 (184)	2.36 (60)	6.0 (152.4)
ONE-XY200	7.87 (200)	10.83 (275)	10.83 (275)	2.36 (60)	6.0 (152.4)
ONE-XY300	11.81 (300)	19.69 (500)	19.69 (500)	3.94 (100)	12.0 (304.8)

MODEL SHOWN: ONE-XY100
DIMENSIONS IN INCHES (AND MILLIMETERS)



MODEL	B	C	D	E	F
ONE-XY60	3.0 (76.2)	3.94 (100)	2.95 (75)	1.81 (46)	2.36 (60)
ONE-XY100	4.0 (101.6)	4.92 (125)	3.94 (100)	1.81 (46)	4.72 (120)
ONE-XY200	6.0 (152.4)	6.89 (175)	4.92 (125)	4.72 (120)	6.69 (170)
ONE-XY300	8.0 (203.2)	13.78 (350)	9.84 (250)	6.69 & 8.86 (170 & 225)	10.83 (275)

MODEL	G	I	J	K	M
ONE-XY60	1.38 (35)	1/4-20 or M6	4 HOLES M4	4 HOLES M5	-
ONE-XY100	2.76 (70)	1/4-20 or M6	4 HOLES M4	6 HOLES M5	2.05 (52)
ONE-XY200	2.76 (70)	1/4-20 or M6	8 HOLES M5	6 HOLES M6	2.56 (65)
ONE-XY300	3.94 (100)	5/16-18 or M8	8 HOLES M6	6 HOLES M8	3.78 (96)

9.0 Maintenance

RECOMMENDATION

It is recommended to contact our After Sales Service which will know to define the appropriate maintenance for your application.

9.1 Maintenance

The ONE-XY stage requires no particular maintenance. Nevertheless, this is a precision mechanical device that must be kept and operated with caution.

PRECAUTIONS

The ONE-XY stage must be used or stocked in a clean environment, without dust, humidity, solvents or other substances.

RECOMMENDATION

It is recommended to return your ONE-XY stage to Newport's After Sales Service after every 2000 hours of use for lubrication.

If your stage is mounted on a workstation and cannot be easily removed, please contact Newport's After Sales Service for further instructions.

9.2 Repair

NOTE

Install the shipping screws to hold down the stage prior to packing.



CAUTION

Never attempt to disassemble a component of the stage that has not been covered in this manual.

This can cause a malfunction of the stage.

If you observe a malfunction in your stage, please contact us immediately to arrange for repair.



CAUTION

Any attempt to disassemble or repair a stage without prior authorization will void the warranty.

9.3 Calibration

CAUTION

It is recommended to return your ONE-XY stage to Newport once a year for recalibration to its original specifications.



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