



URS Series

Precision Rotation Stage



USER'S MANUAL

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

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.

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.**

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.

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Original instructions.

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EC Declaration of Conformity

URS Series



EU Declaration of Conformity

following Annex II-1A
of Directive 2006/42/EC on machinery

The manufacturer:

MICRO-CONTROLE Spectra-Physics,
9 rue du Bois Sauvage
F-91055 Evry FRANCE

Hereby declares that the machinery:

- Description: " URS "
- Function: Precision rotation stages
- Models: URS50/75/100/150/BCC/BPP/CPP .

the technical file of which was compiled by:

Mr Hervé LE COINTE, Quality Director,
MICRO-CONTROLE Spectra-Physics, Zone Industrielle - B.P.29
F-45340 Beaune La Rolande France

- complies with all the relevant provisions of the Directive 2006/42/EC on machinery.
- complies with all the relevant provisions of the Directive 2014/30/EU relating to electro-magnetic compatibility.
- complies with all the relevant provisions of the Directive 2011/65/EU relating to RoHS2.

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

- NF EN 61326-1:2013 « Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements »
- NF EN 55011:2010/A1:2011 Class A

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

- NF EN 61000-4-2
- NF EN 61000-4-3
- NF EN 61000-4-4
- NF EN 61000-4-5
- NF EN 61000-4-6

ORIGINAL DECLARATION

Done in Beaune La Rolande on 18 December 2017
Hervé LE COINTE
Quality Director



DC1-EN 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.

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

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.

Caution

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: +10 to +35 °C
 - 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

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.

Precision Rotation Stages

URS Series

1.0 Introduction

This manual provides operating instructions for the URS series rotation stages:

- URS50 to 150BCC
- URS50CPP
- URS75 to 150BPP



URS75BCC rotation stage.

RECOMMENDATION

We recommend you read carefully the chapter “Connection to electronics” before using the URS rotation stage.

2.0 Description

The URS Series provides precision 360° continuous motion in a low profile package. They meet the requirements of numerous research and industrial applications and may be assembled directly with Newport's VP (URS75), XM, GTS, ILS (URS100), IMS (URS100 and URS150) and other series of linear stages. URS rotation stages are available in two versions:

- The URS75BCC to URS150BCC DC-motor versions features an ultra-high resolution 8,000 cts/rev rotary encoder with index pulse for precision homing and is the recommended choice for applications requiring accurate bi-directional positioning. For the tightest position control, the rotary encoder is mounted directly on the worm screw. This eliminates most of the possible error sources associated with indirect read feedback devices. The high-torque of some DC motor versions provides the highest dynamic speed range and allows for rotating speeds up to 80 °/s. The URS50BCC DC-version is our smallest version and its motor encoder feature provides a very compact and easy to integrate version which can go up to 20 °/s with 100 N maximum load capacity.
- The stepper motor version is a more economical version for less demanding applications. When used with motion controllers with high micro-step capability, like the XPS or ESP301, low noise operation and very small incremental motions are guaranteed. The stepper motor versions do not use encoder feedback, but reach a position by the number of commanded steps and microsteps. For this purpose, the stepper motor is directly attached to the worm screw using a proprietary bellows coupling that has a high torsional stiffness, eliminating the need for a gear or belt drive. The high output torque of the stepper motor minimizes the risk of lost steps and provides good linearity between commanded microsteps and the actual motion of the stage.

Furthermore, except for the URS50 stages, all other versions feature adjustable limit switches to prevent over travel.

All URS rotation stages feature a proprietary ball bearing to provides a low-profile compact stage with exceptional stiffness, high reliability and outstanding wobble and eccentricity. The tilted worm screw arrangement allows for 4 symmetric mounting holes as compared to other designs that only feature 2 or 3 mounting holes. This enables the URS stages to provide better support of higher or off-centered loads. Additionally, the flexible preloading system for the worm gear was improved to guarantee a backlash-free operation with an MTBF of 20,000 hours.

2.1 Design Details

Based Material	Hardened steel body
Bearings	Large diameter ball bearings
Drive Mechanism	Ground worm gear with self-compensating preload Additional 1:14 gearbox for URS50BCC version Additional 1:2.75 drive belt for URS75BCC to URS150BCC versions
Worm Gear Ratio	URS50: 1:80 URS75 to URS150: 1:90
Feedback	URS50BCC: Encoder at motor rear, no index pulse URS75BCC to URS150BCC: Worm mounted 8,000 cts/rev encoder, index pulse URS-PP versions: None
Limit Switches	Two independently adjustable optical limit switches (Except URS50)
Origin	Optical, fixed at position 0° Typical 0.0005° repeatability for URS-CC versions and 0.04° repeatability for URS-PP versions
Manual Adjustment	Via allen wrench at the end of the worm screw. Allen wrench is included.
Cable	3 m long cable included

3.0 Characteristics

3.1 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.

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:

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

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.

Eccentricity

Displacement of the geometric center of a rotation stage from the rotation axis in the plane defined by bearings.

Wobble

Tilt of rotation axis during rotation of a stage, measured on a reference surface.

The testing of accuracy, repeatability, and reversal error are made systematically with test equipment in controlled environment (20^{±1} °C).

A linear cycle with 21 data points on the travel and 4 cycles in each direction gives a total of 168 points.

Guaranteed and Typical 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

3.2 Mechanical Specifications



	URS50CPP	URS50BCC	URS75BPP to URS150BPP	URS75BCC to URS150BCC
Travel Range (°)	360 continuous ⁽¹⁾			
Minimum Incremental Motion (°)	0.0005	0.001	0.0002	0.002
Uni-directional Repeatability ⁽²⁾ , Typical (Guaranteed) (°)	±0.0006 (±0.001)	±0.0003 (±0.001)	±0.00035 (±0.001)	±0.00035 (±0.001)
Bi-directional Repeatability ⁽²⁾ , Typical (Guaranteed) (°)	±0.001 (±0.003)	±0.0005 (±0.002)	±0.0044 (±0.006)	±0.0014 (±0.003)
Accuracy ⁽²⁾ , Typical (Guaranteed) (°)	±0.012 (±0.025)	±0.010 (±0.020)	±0.008 (±0.015)	±0.006 (±0.0115)
Maximum Speed (°/s)	40	20	40	80
Wobble ⁽²⁾ , Typical (Guaranteed) (μrad)	±12 (±25)			
Eccentricity ⁽²⁾ , Typical (μm)	URS50: ±3.0		URS75: ±0.3 URS100: ±0.4 URS150: ±0.5	
MTBF	20000 h @ 25% load and a 10% duty cycle			

⁽¹⁾ With disabled limit switches.

⁽²⁾ For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at www.newport.com



CAUTION

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

3.3 Load Specification Definitions

Normal Load Capacity (Cz)

Maximum load a rotation stage can move while maintaining specifications.

This value is given with speed and acceleration specified for each rotation stage, and with a load perpendicular to bearings.

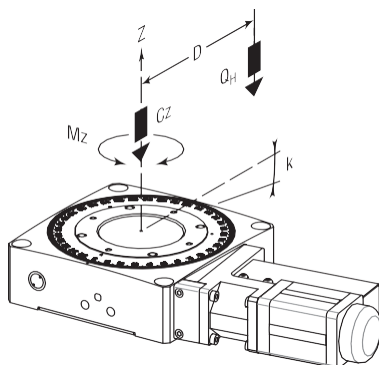
Off-Centered Load (Q)

Maximum cantilever-load a rotation stage can move: $Q \leq Cz \div (1 + D/a)$

D: Cantilever distance.

a: Construction parameter.

3.4 Load Characteristics and Stiffness



	URS50	URS75	URS100	URS150
Cz, Normal centered load capacity (N)	100	200	300	300
a, Construction parameter (mm)	20	25	35	55
Kα, Transversal compliance (μrad/Nm)	100	30	10	5
Mz, Nominal torque (Nm)	±0.25	±0.5	±1	±2
Q, Off-center load (N)	Q ≤Cz ÷ (1 + D/a)			
Where D = Cantilever distance (mm)				

3.5 Stage Weights

Weights indicated into the below table are average values without any cable.

	Weight [lb (kg)]
URS50	1.5 (0.7)
URS75	3.7 (1.7)
URS100	4.4 (2.0)
URS150	7.5 (3.4)
3-meter MSCABLE-3 Cable	0.66 (0.3)

The weight difference between drive units is not significant.

4.0 Drives and Motors

4.1 Stepper Drive Versions

The URS-PP stages are driven by a 2-phase stepper motor.

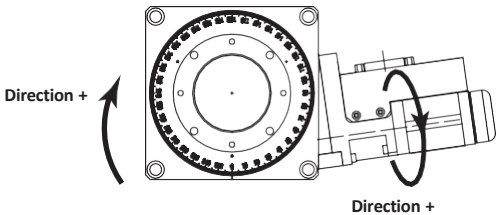
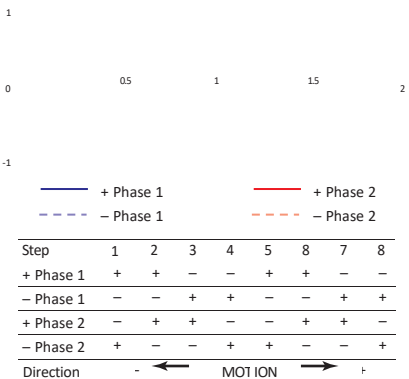
- URS50CPP: 1 full step = 0.0225°.
- URS75BPP to URS150BPP: 1 full step = 0.02°.

Stepper Motor Performance Specifications and Characteristics

	Resolution ⁽¹⁾ (°)	Speed (°/s)	Angle by Step (°)	RMS Current per Phase (A)	Resistance (Ω)	Inductance (mH)
URS50CPP	0.0225	40	1.8	0.42	5.6	3.4
URS75 to 150BPP	0.02	40	1.8	0.71	1.7	2.8

¹⁾ When used with Newport motion controllers, these motors are driven in a dynamic micro-stepping mode (software commutation). In this case, the mechanical sensitivity is approx. 1/100 of a full step.

Command Signals for the Stepper Motors



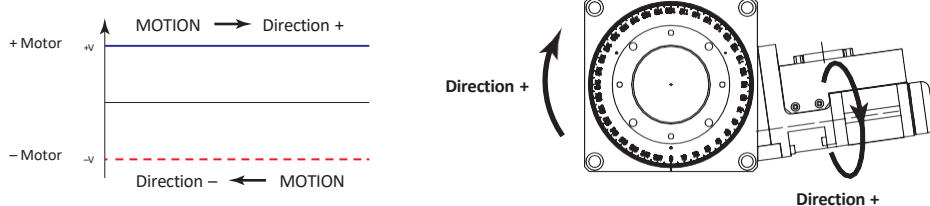
4.2 DC-Motor Drive Version

The URS-BCC stages are driven by a DC servo motor.

DC-Motor Performance Specifications and Characteristics

	Resolution (°)	Speed (°/s)	Nominal Voltage (V)	Max RMS Current (A)	Max. Peak Current (A)	Resistance (Ω)	Inductance (mH)	Tachometer Const. (V/krpm)
URS50BCC	0.00016	20	24	0.15	0.21	54.6	1.2	—
URS75 to 150BCC	0.0005	80	48	0.9	1.8	2.52	0.51	—

Command Signals for the DC-Motors



In the above drawings, + Motor signal is referenced to - Motor signal.

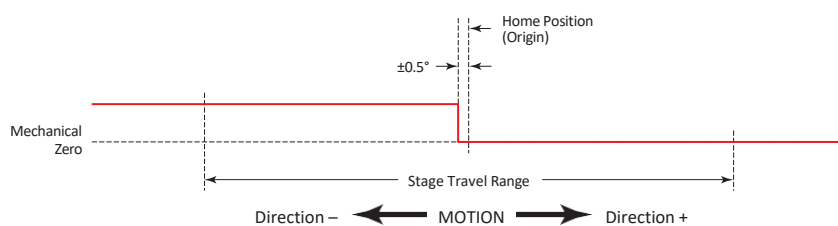
- ① When the stage moves in + Direction, the + Motor voltage is higher than - Motor voltage.
- ② When the stage moves in - Direction, the + Motor voltage is lower than - Motor voltage.

4.3 Sensor Position

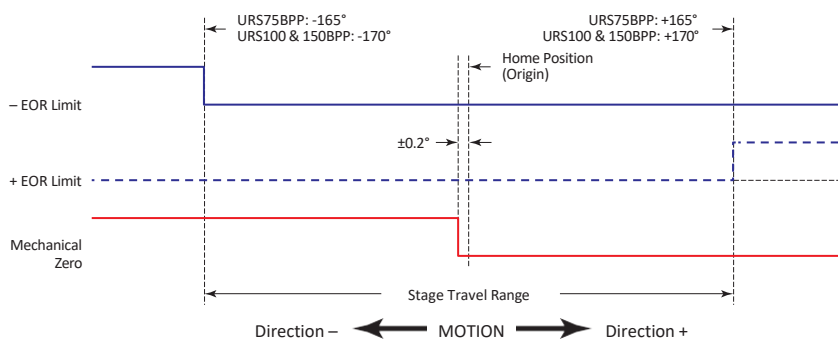
NOTE

- No End-of-Run limits on URS50 rotation stages.
- Before using a URS rotation stage, make sure that it is positioned close to the zero graduation in order to be properly initialized at the time of its first connection.

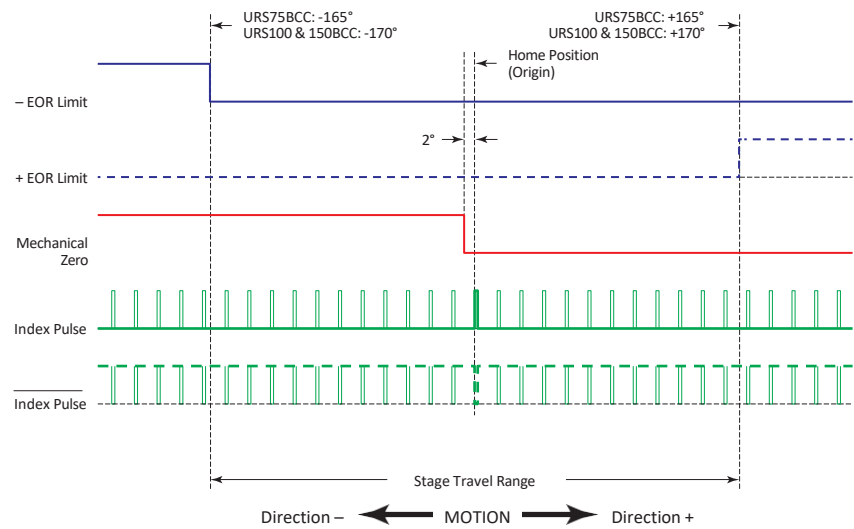
URS50 Sensor



URS75BPP to URS150BPP Sensors



URS75BCC to URS150BCC Sensors



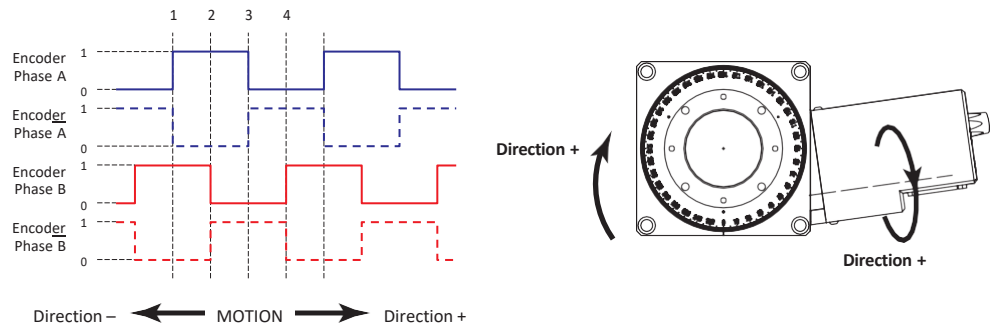
End-of-Run and Mechanical Zero are 5 V open collector type.
The Index Pulse provides a repeatable Home Position at ± 1 step.



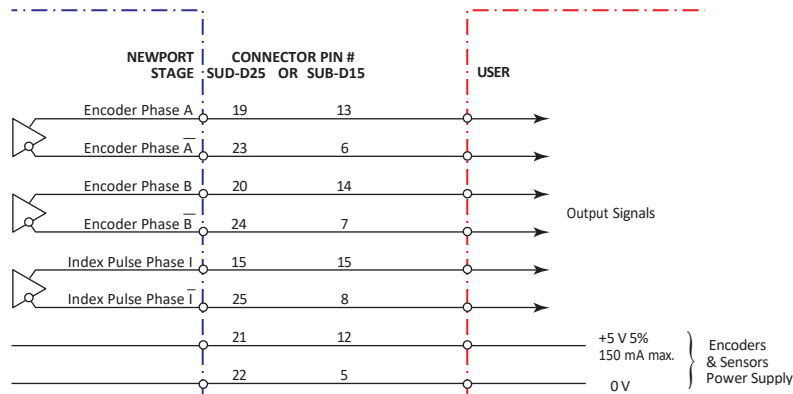
CAUTION

“End-of-Run” and “Mechanical Zero” are active signals and should not be connected to any other source.

4.4 Feedback Signal Position for URS-BCC Stages



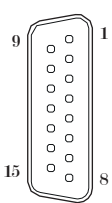
The incremental sensor consists of an optical scale and an encoder head. When the carriage moves, the encoder head generates square signals in quadrature and sends to #6, #7, #13 and #14 of the SUB-D15 connector.



“Encoder” and “Index Pulse” are “differential pair” (type RS-422) type output signals. Using these signals permits a high immunity to noise. Emission circuits generally used by Newport are 26LS31 or MC3487. Reception circuits to use are 26LS32 or MC3486.

4.5 Pinouts

The pinout diagram for the URS stage SUB-D15M connectors are shown below.

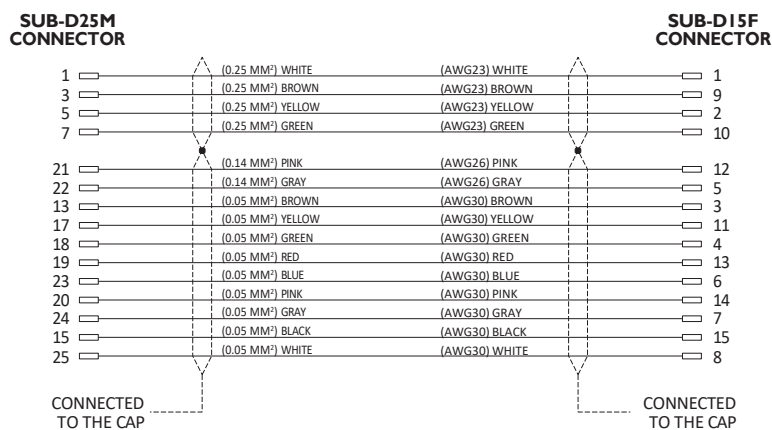


URS50CPP	URS75BPP to URS150BPP	URS50BCC	URS75BCC to URS150BCC
1 + Phase 1	1 + Phase 1	1 RESERVED *	1 RESERVED *
2 + Phase 2	2 + Phase 2	2 + Motor	2 + Motor
3 Mechanical Zero	3 Mechanical Zero	3 Mechanical Zero	3 Mechanical Zero
4 RESERVED *	4 – End-of-Run	4 RESERVED *	4 – End-of-Run
5 0V	5 0V	5 0V	5 0V
6 RESERVED *	6 RESERVED *	6 Encoder Phase /A	6 Encoder Phase /A
7 RESERVED *	7 RESERVED *	7 Encoder Phase /B	7 Encoder Phase /B
8 RESERVED *	8 RESERVED *	8 RESERVED *	8 Index Pulse /I
9 – Phase 1	9 – Phase 1	9 RESERVED *	9 RESERVED *
10 – Phase 2	10 – Phase 2	10 – Motor	10 – Motor
11 RESERVED *	11 + End-of-Run	11 RESERVED *	11 + End-of-Run
12 +5 V	12 +5 V	12 +5 V	12 +5 V
13 RESERVED *	13 RESERVED *	13 Encoder Phase A	13 Encoder Phase A
14 RESERVED *	14 RESERVED *	14 Encoder Phase B	14 Encoder Phase B
15 RESERVED *	15 RESERVED *	15 RESERVED *	15 Index Pulse I

*: must be connected for continuity of service (see MSCABLE-3 cable)

4.6 MSCABLE-3 Cable

A 3-meter MSCABLE-3 cable is supplied with each URS stage (see section 5.3: “Cables”).



5.0 Connection to Newport Controllers

5.1 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.

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 is equipped with a 3-wire grounding type plug.

Any interruption of the grounding connection can create an electric shock hazard.

If you are unable to insert the plug into your wall plug receptacle, contact your electrician to perform the necessary alterations to ensure that the green (green-yellow) wire is attached to earth ground.

WARNING

This product operates with voltages that can be lethal.

Pushing objects of any kind into cabinet slots or holes, or spilling any liquid on the product, may touch hazardous voltage points or short out parts.

5.2 Connection

There is a label on every stage indicating its part and serial numbers.



WARNING

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

NOTE

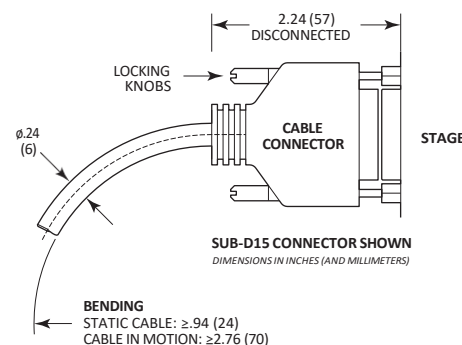


These stages are ESP compatible. Enhanced System Performance is Newport's exclusive technology that enables Newport ESP motion controllers to recognize the connected Newport ESP stage and upload the stage parameters. This ensures that the user can operate the motion system quickly and safely.

5.3 Cables

URS stages are delivered with **MSCABLE-3** 3-meter cables. These cables are equipped with a SUB-D15F and a SUB-D25M connectors for direct connection to Newport Controllers.

5.4 MSCABLE-3 Cable



WARNING

This cable is shielded correctly. For a correct operation, make sure to lock connectors (ground continuity provided by the cable).

For applications where the standard 3-meter cable (**MSCABLE-3**) included with your stage is not adequate, Newport offers a 10-m longer length cable (**MSCABLE-10**) designed to ensure the integrity of your positioning application.

REMARK

The cross section of the MSCAB-10 cable is different from the one of the MSCABLE-3 cable to allow a longer length. The MSCAB-10 cable has the same mechanical properties as the MCAB-10 cable.

These cables are specially shielded and terminated with Newport's standard SUB-D15 and SUB-D25 connectors.



WARNING

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

6.0 Connection to Non-Newport Electronics

6.1 Connections

WARNING

Newport is not responsible for malfunction or damage of URS stages when used with non-Newport controllers.

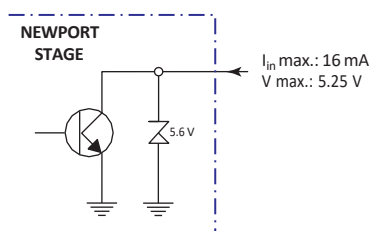
WARNING

Newport guarantees “CE” compliance of URS stages only if used with Newport cables and controllers.



It is the customer's responsibility to modify the cable and take care of sensor signal connections, when using the stage with non-Newport controllers.

End-of-Runs and Mechanical Zero are open collector type with a 5.6 V protective Zener diode.

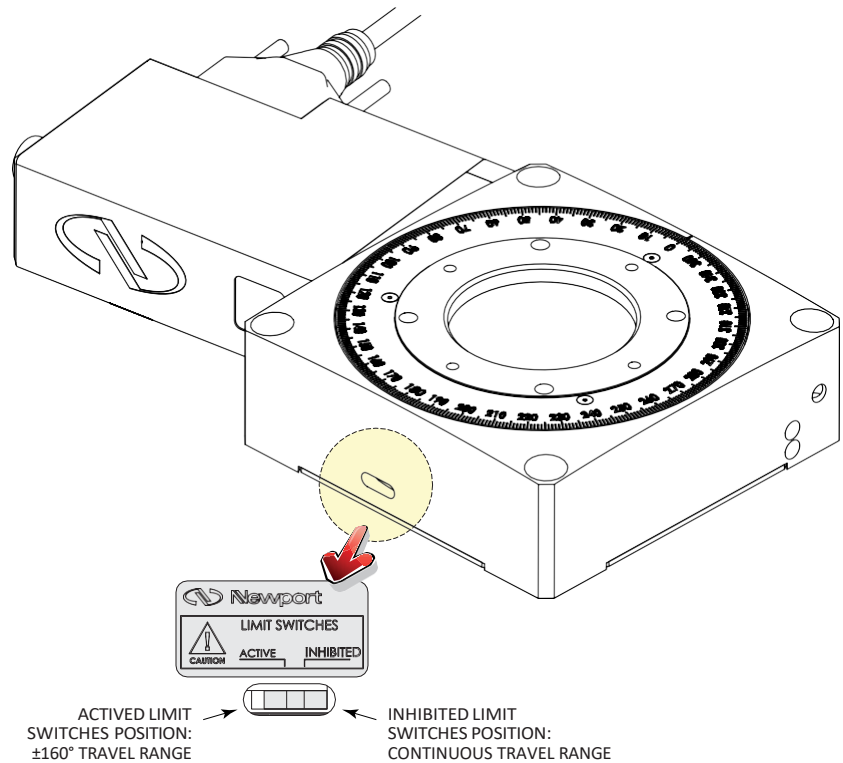


7.0 Disabling of Limit Switches

NOTE

No End-of-Run limits on URS50 rotation stages.

Except URS50 stages, all other URS stages are equipped with $\pm 160^\circ$ optical limit switches. These limit switches can be disabled for continuous 360° rotation.



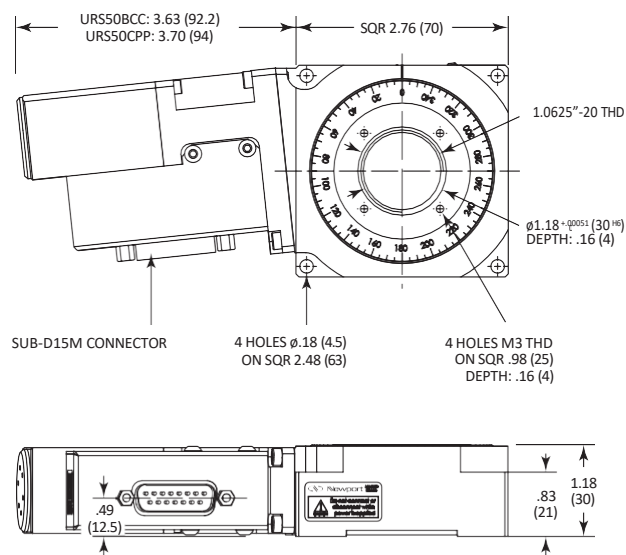
NOTE

On request, these limit switches can be set in factory at the desired position. Please contact our sales engineers.

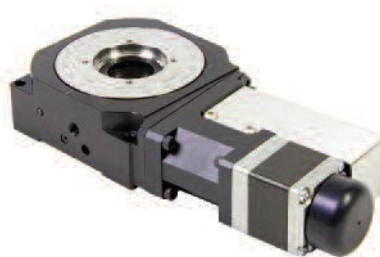
The limit switches default position is $\pm 160^\circ$.

8.0 Dimensions

8.1 URS50 Stages



MODEL SHOWN: URS50BCC
DIMENSIONS IN INCHES (AND MILLIMETERS)



URS50CPP



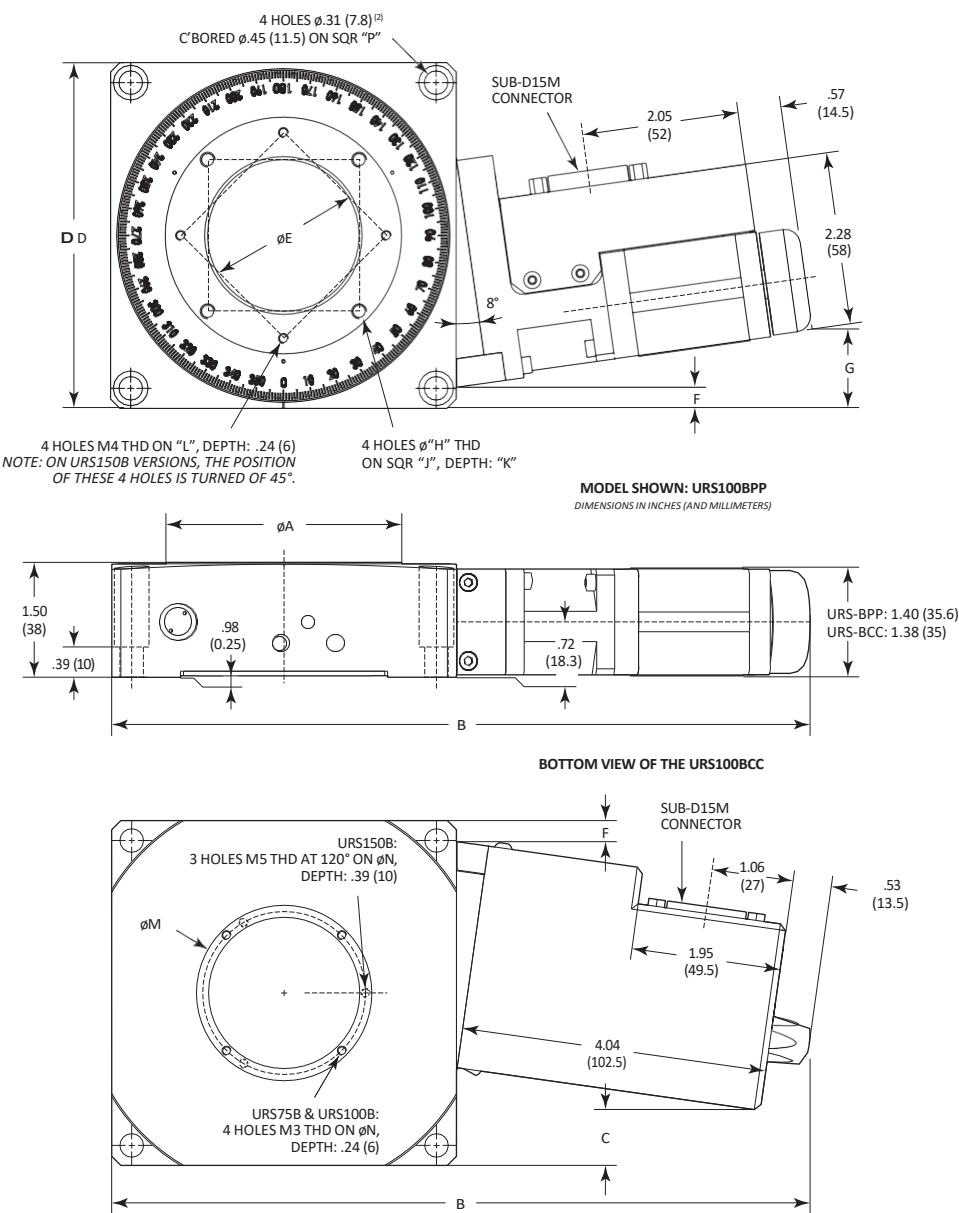
URS50BCC



NOTE

URS50 rotation stages are equipped with a hole for grounding M3 THD, usable depth: .24 (6).

8.2 URS75B to URS150B Stages



	A	B	C	D	E	F	G	H	J	K	L	M	N	P
URS75B	1.97 (50)	8.19 (208)	-.06 ⁽¹⁾ (-1.5) ⁽¹⁾	3.54 (90)	1.18 ⁺ _{-.0051} (30 ^{+.005} _{-.005})	.08 (2)	.83 (21)	M3	1.26 (32)	.24 (6)	—	1.50 (38)	1.34 (34)	2.98 (75.6)
URS100B	3.07 (78)	9.13 (232)	.71 (18)	4.49 (114)	1.97 ⁺ _{-.00063} (50 ^{+.001} _{-.0006})	.26 (6.5)	1.02 (26)	M6	1.97 (50)	.24 (6)	SQR 1.89 (SQR 48)	2.28 (58)	2.13 (54)	3.97 (100.8)
URS150B	5.20 (132)	11.14 (283)	2.56 (65)	6.50 (165)	3.54 ⁺ _{-.00087} (90 ^{+.001} _{-.0009})	.41 (10.5)	1.14 (29)	M4	2.95 (75)	.31 (8)	$\phi 4.92$ ($\phi 125$)	4.13 (105)	3.86 (98)	5.91 AND 6 ⁽²⁾ (150 AND 152.4) ⁽²⁾

NOTES:
⁽¹⁾ THE DRIVE BOX OF THE URS75BCC EXCEEDS .06 IN. (1.5 MM) FROM THE BODY.
⁽²⁾ URS150B: 4 SLOTS COUNTERBORED.

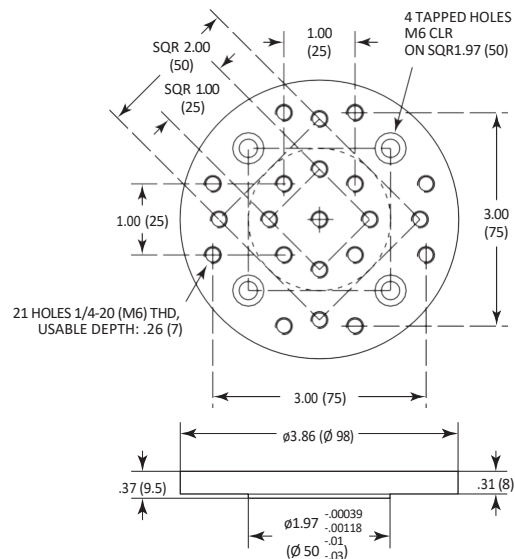


URS100BPP

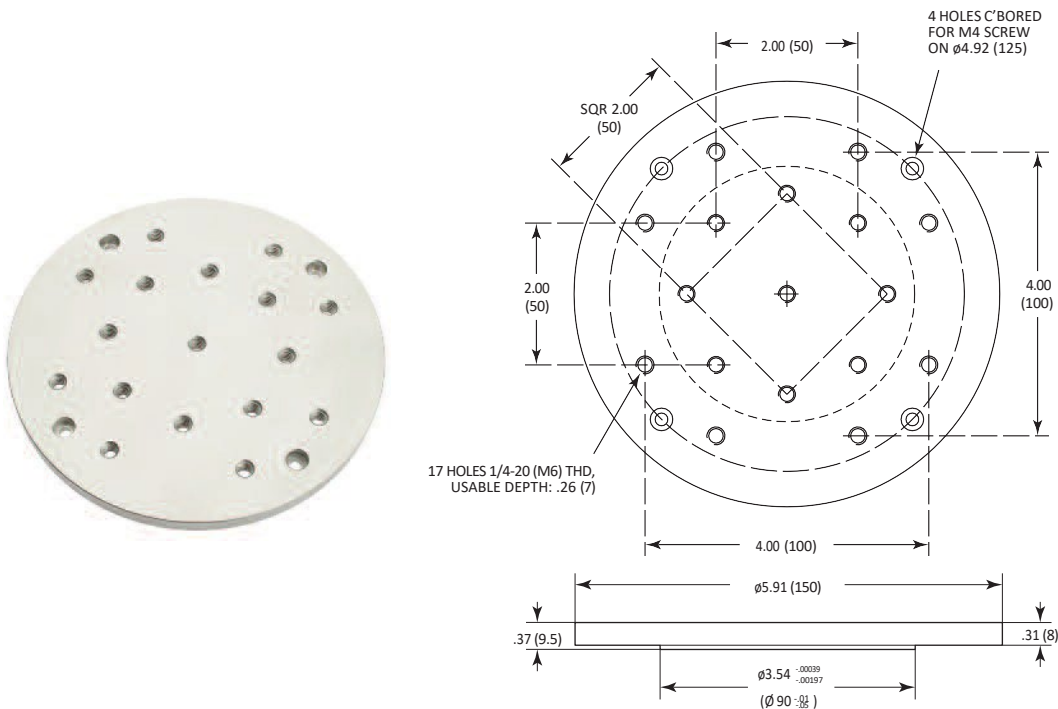


URS100BCC

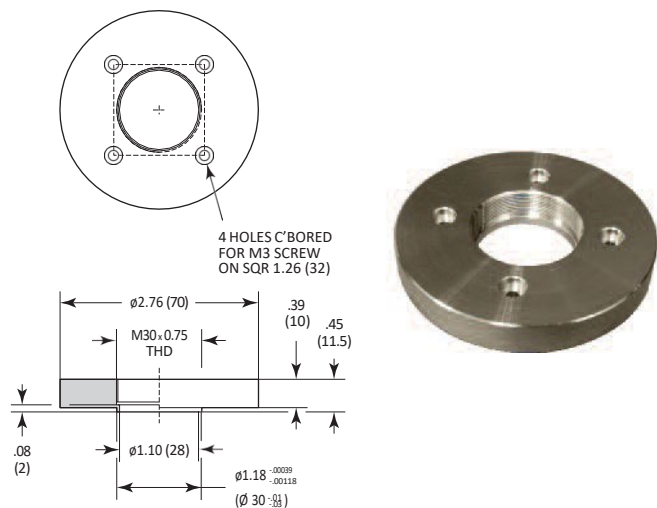
9.3 (M-)URS100TP: Solid Top Mounting Plate for URS100



9.4 (M-)URS150TP: Solid Top Mounting Plate for URS150



9.5 URS75P1: 1" Diameter Optics Holder for URS75 Stages



10.0 Maintenance

RECOMMENDATION

Please contact Technical Sales Support team for recommendations on application specific maintenance.

10.1 Maintenance

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

PRECAUTIONS

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

RECOMMENDATION

It is recommended to return the stage to Newport for re-lubriaction after 2000 hours of use.

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

10.2 Repair

CAUTION



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

To disassemble a non specified component can cause a malfunction of the stage.

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



CAUTION

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

10.3 Calibration



CAUTION

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

Service Form

Your Local Representative

Tel.:

Fax: _____

Name: _____

Company: _____

Address: _____

Country:

P.O. Number:

Return authorization #: _____

(Please obtain prior to return of item)

Date: _____

Phone Number:

Fax Number:

Item(s) Being Returned:

Model #:

Serial #:

Description:

Reasons of return of goods (please list any specific problems): _____



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