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Find the *Newport ILS150CC* at our website: ***Click HERE***

mks

ILS Series

High-Performance Mid-Range Travel Linear Stages



Newport®

USER'S MANUAL

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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.

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Original instructions.

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EC Declaration of Conformity

ILS Series

Newport®

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: " ILS "
- Function: High Performance Linear Stage
- Models: M-/ILS50PP/CC/CCL/HA, M-/ILS100PP/CC/CCL/HA, M-/ILS150PP/CC/CCL/HA, M-/ILS200PP/CC/CCL/HA, M-/ILS250PP/CC/CCL/HA

– 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 16 May 2017
Hervé LE COINTE
Quality Director



DC1-EN rev:A

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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.

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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.

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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: +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.

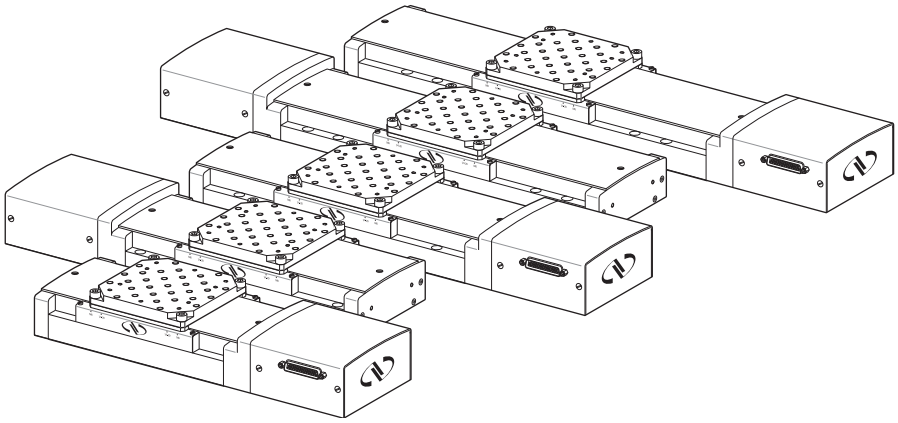
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High-Performance Mid-Range Travel Linear Stages ILS Series

1.0 Introduction

This manual provides operating instructions for the stage that you have purchased in the ILS Series:

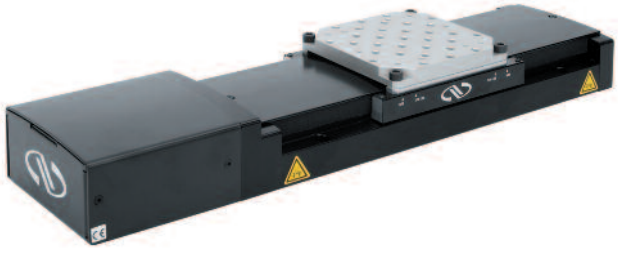
- (M-)ILS-PP
- (M-)ILS-CC
- (M-)ILS-CCL
- (M-)ILS-HA



ILS Series linear stages: 50, 100, 150, 200 and 250 mm travel ranges.

RECOMMENDATION

We recommend you read carefully the chapter “Connection to electronics” before using the (M-)ILS stage.



(M-)ILS150 translation stage.

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2.0 Description



Three (M-)ILS stages and one EQ120 bracket in an XYZ configuration.

The ILS Series linear stage offers 50–250 mm travel range and combines fast, sub-micron resolution motion with highly stiff and robust package designs. Its extruded aluminum body has been optimized to avoid bending effects caused by the different thermal expansion coefficients of the aluminum body and steel rails. The special U-profile also provides stiffness to the structure while keeping the mass low.

A preloaded, backlash-free ballscrew provides rapid movements with fast step and settling times. The screw is accurately profiled to reduce heating factors to a minimum and extend the lifetime of the stage. Recirculating ball bearings slides ensure accurate linear motion and avoid ball cage migration found on linear ball bearings or crossed roller bearings.

Position measurements are read on a 4000 cts/rev. encoder located directly on the screw to avoid additional screw/motor coupling errors. For more demanding precision positioning requirements, the HA versions feature an integrated linear scale providing 0.1 µm resolution feedback.

An upper rigid cover prevents damage to the drive train. ILS Series stages also feature a center mounted origin for repeatable initialization, limit switches to prevent over travel, and elastomeric end-of-run dampers for smooth emergency braking.

For optimal performance, we recommend the use of our motion controllers.

The ILS Series stages are supplied with a 3-meter cable for connection to our motion controllers.

2.1 Design Details

Base Material	Extruded Aluminum
Bearings	Double-row recirculating ball bearings
Drive Mechanism	Backlash-free ball screw
Drive Screw Pitch (mm)	2
Feedback	CC, CCL, PP: Screw mounted rotary encoder, 4,000 cts/rev, index pulse HA: Linear steel scale, 20 µm signal period, 0.1 µm resolution
Limit Switches	Optical
Origin	Optical, at center of travel, including mechanical zero signal
Cable	3 m long cable included

RoHS Compliant

NOTE

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

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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.

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:

$$Absolute\ Accuracy = On\text{-}Axis\ Accuracy + Correction\ Factor_{x}\ Travel$$

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 ($20^{\pm 1}$ °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**

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3.2 Mechanical Specifications

		PP, CC, CCL[1]	HA
Travel Range (mm)		50, 100, 150, 200, 250	
Minimum Incremental Motion (µm)		1.0	0.3
Uni-directional Repeatability, Typical (Guaranteed) (µm)		1.0	0.4
Bi-directional Repeatability, Typical (Guaranteed)[2] (µm)	ILS50:	±0.40 (±1.0)	±0.10 (±0.35)
	ILS100:	±0.40 (±1.0)	±0.10 (±0.35)
	ILS150:	±0.45 (±1.0)	±0.15 (±0.35)
	ILS200:	±0.45 (±1.0)	±0.15 (±0.35)
	ILS250:	±0.60 (±1.0)	±0.15 (±0.35)
Accuracy CC, PP & CCL, Typical (Guaranteed)[2] (µm)	ILS50:	±0.6 (±1.5)	±0.3 (±2.0)
	ILS100:	±0.8 (±2.0)	±0.6 (±1.5)
	ILS150:	±1.5 (±2.5)	±1.2 (±2.0)
	ILS200:	±1.2 (±3.7)	±0.8 (±3.0)
	ILS250:	±1.7 (±5.0)	±1.5 (±3.75)
Maximum Speed (mm/s)		PP, CCL: 50 CC: 100	100
Pitch, Typical (Guaranteed)[2][3] (µrad)	ILS50:	±15 (±25)	±17 (±25)
	ILS100:	±20 (±100)	±25 (±50)
	ILS150:	±37 (±75)	±50 (±75)
	ILS200:	±37 (±100)	±35 (±100)
	ILS250:	±42 (±125)	±45 (±125)
Yaw, Typical (Guaranteed)[2][3] (µrad)	ILS50:	±12 (±25)	±7 (±25)
	ILS100:	±17 (±37)	±17 (±37)
	ILS150:	±20 (±65)	±25 (±65)
	ILS200:	±25 (±80)	±25 (±80)
	ILS250:	±25 (±95)	±30 (±95)
MTBF (h)		20,000	

1) *ILS-CCL used with the SMC100CC controller only.*
2) *Shown are peak to peak, guaranteed specifications or ±half the value as sometimes shown. For the definition of typical specifications which are about 2X better than the guaranteed values, visit www.newport.com for the Motion Control Metrology Primer.*
3) *To obtain arcsec units, divide µrad value by 4.8.*

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 stage can move while maintaining specifications.

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

	(M-)ILS-PP	(M-)ILS-CC (M-)ILS-HA	(M-)ILS-CC
Specified Speed (mm/s)	50	100	50
Specified Acceleration (mm/s²)	250	500	250

Axial Load Capacity (±Cx)

Maximum load along the direction of the drive train.

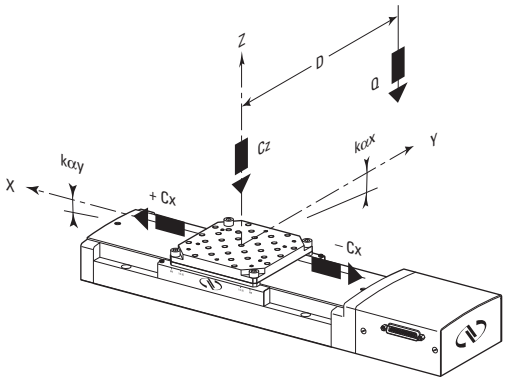
Off-Centered Load (Q)

Maximum cantilever-load a stage can move: $Q \leq Cz \div (1 + D/60)$

D: Cantilever distance.

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3.4 Load Characteristics and Stiffness



Cz, Normal center load capacity on bearings	250 N
+Cx/-Cx, Direct/Inverse load capacity on X axis	<40 N
kαx, Compliance in roll	15 µrad/Nm
kαy, Compliance in pitch	10 µrad/Nm
kαz, Compliance in yaw	10 µrad/Nm
Q, Off-center load with D = Cantilever distance in mm	Q ≤Cz ÷ (1 + D/60)

3.5 Stage Weights

Weights indicated into the below table are average values for stages with a typical drive unit installed.

	Weight [lb (kg)]
(M-)ILS50	9.3 (4.2)
(M-)ILS100	9.9 (4.5)
(M-)ILS150	10.6 (4.8)
(M-)ILS200	11.2 (5.1)
(M-)ILS250	11.9 (5.4)
3-meter MMCABLE-3 Cable	1.54 (0.7)
3-meter MCAB-3 Cable	1.32 (0.6)

The weight variation between drive units is not very significant.

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4.0 Drives and Motors

4.1 Stepper Drive Version

One stepper-motor configuration is available: (M-)ILS-PP.

This version is equipped with a 4000 cts/rev. rotary encoder located directly on the screw, and is driven in micro-step.

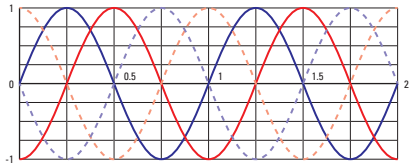
Micro-Step Drive

This is the drive for stepper or pulse-driven motors, transmitted by the electronic unit, which entails a theoretical movement of the motor by one fraction of a full-step. For these translation stages, the micro-step is equivalent to 1/20 of the full-step.

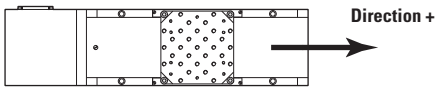
Stepper Motor Performance Specifications and Characteristics

	Resolution (µm)	Speed (mm/s)	Angle by Step (°)	RMS Current per Phase (A)	Resistance (Ω)	Inductance (mH)
ILS-PP	0.5	50	1.8	0.85	6	8.6

Command Signals for the Stepper Motor



Step	1	2	3	4	5	8	7	8
+ Phase 1	+	+	–	–	+	+	–	–
– Phase 1	–	–	+	+	–	–	+	+
+ Phase 2	–	+	+	–	–	+	+	–
– Phase 2	+	–	–	+	+	–	–	+
Direction	– ←			MOTION			→ +	



4.2 DC-Servo Drive Versions

Three DC-motor configurations are available:

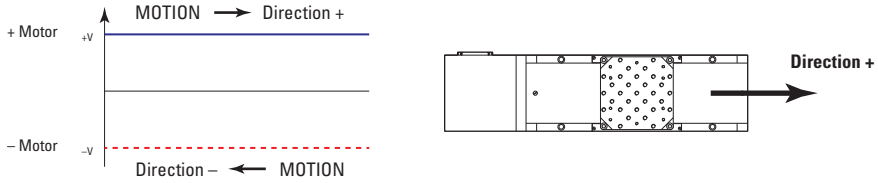
- Two versions equipped with a 4000 cts/rev. rotary encoder located directly on the screw: (M-)ILS-CC and (M-)ILS-CCL.
- One version equipped with a linear encoder: (M-)ILS-HA.

DC-Motor Performance Specifications and Characteristics

	Resolution (µm)	Speed (mm/s)	Nominal Voltage (V)	Max RMS Current (A)	Max. Peak Current (A)	Resistance (Ω)	Inductance (mH)	Tachometer Const. (V/krpm)
ILS-CC	0.5	100	24	2.2	4	1.75	0.47	–
ILS-CCL	0.5	50	24	1.5	3	1.75	0.47	–
ILS-HA	0.1	100	48	2	4	1.16	0.33	–

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Command Signals for the DC-Motors

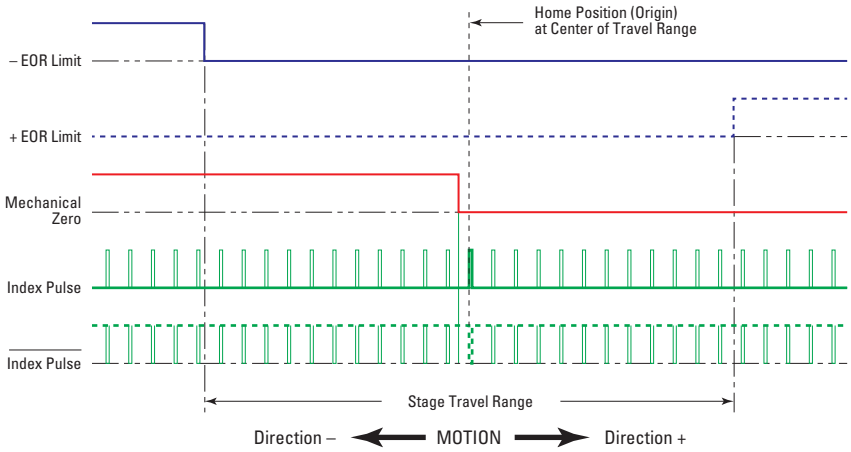


In the above drawings, + Motor signal is referred to – Motor signal.

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



End-of-Run and Mechanical Zero are 5 V open collector type.

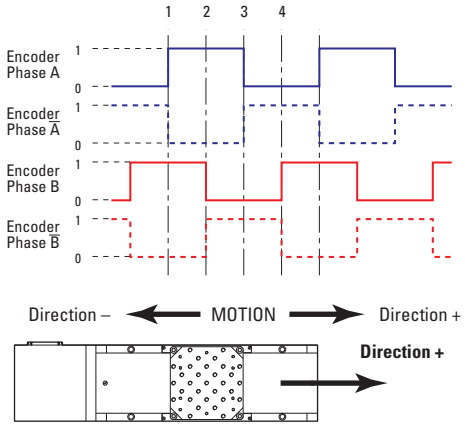
The Index Pulse provides a repeatable Home Position at ±1 step.

CAUTION

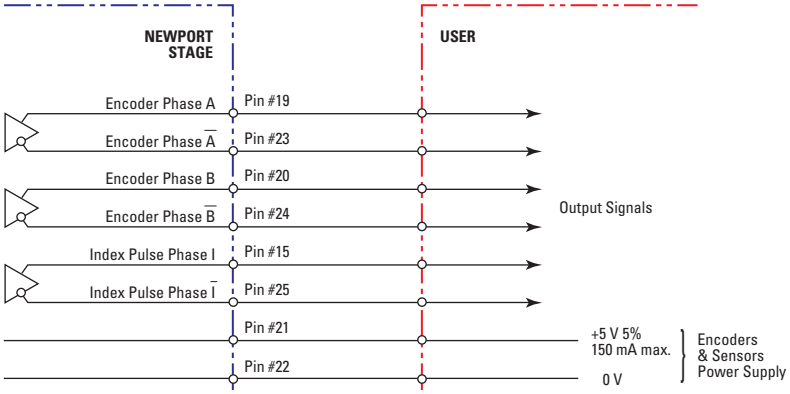
"End-of-Run" and "Mechanical Zero" are active signals and should not be connected to any other source.

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4.4 Feedback Signal Position



The incremental sensor consists of a optical scale and an encoder head. When the carriages of the stage move, the encoder head generates square signals in quadrature, sent to pins #19, #20, #23 and #24 of the SUB-D25 connector.

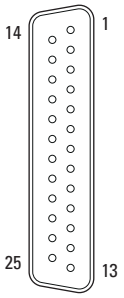


"Encoder" and "Index Pulse" are "differential pair" (type RS-422) type output signals. Using these signals permits a high immunity to noise. Emission circuits generally used by Newport are 26LS31 or MC3487. Reception circuits to use are 26LS32 or MC3486.

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4.5 Pinouts

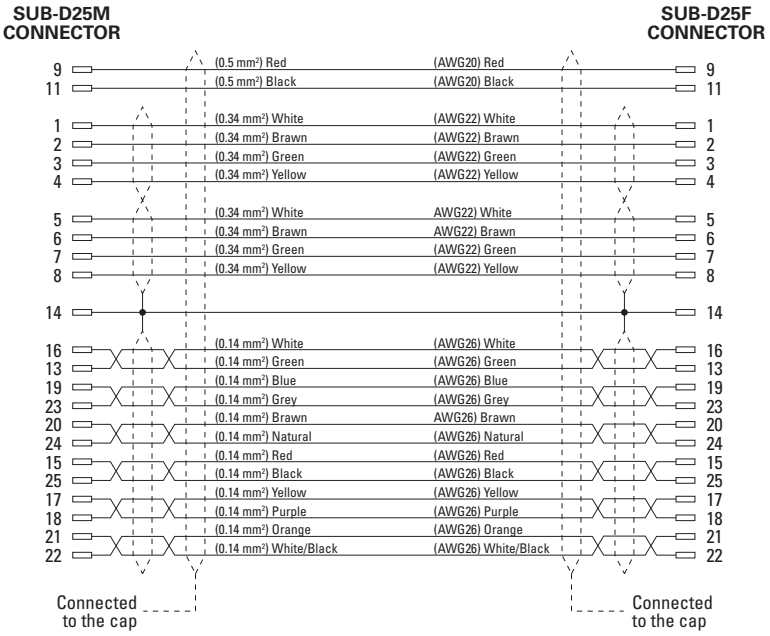
The SUB-D25 connection for the ILS stages is given in the following table:



	ILS-PP		ILS-CC, ILS-CCL & ILS-HA
1	Phase 1a	**1**	N.C.
2	N.C.	**2**	N.C.
3	Phase 1b	**3**	N.C.
4	N.C.	**4**	N.C.
5	Phase 2a	**5**	+ Motor
6	N.C.	**6**	+ Motor
7	Phase 2b	**7**	– Motor
8	N.C.	**8**	– Motor
9	N.C.	**9**	N.C.
10	N.C.	**10**	N.C.
11	N.C.	**11**	N.C.
12	N.C.	**12**	N.C.
13	Mechanical Zero	**13**	Mechanical Zero
14	Ground	**14**	Ground
15	Index Pulse I	**15**	Index Pulse I
16	0 V	**16**	0 V
17	+ End-of-Run	**17**	+ End-of-Run
18	– End-of-Run	**18**	– End-of-Run
19	Encoder Phase A	**19**	Encoder Phase A
20	Encoder Phase B	**20**	Encoder Phase B
21	+5 V	**21**	+5 V
22	0 V	**22**	0 V
23	Encoder Phase /A	**23**	Encoder Phase /A
24	Encoder Phase /B	**24**	Encoder Phase /B
25	Index Pulse /I	**25**	Index Pulse /I

4.6 MMCABLE-3 Cable

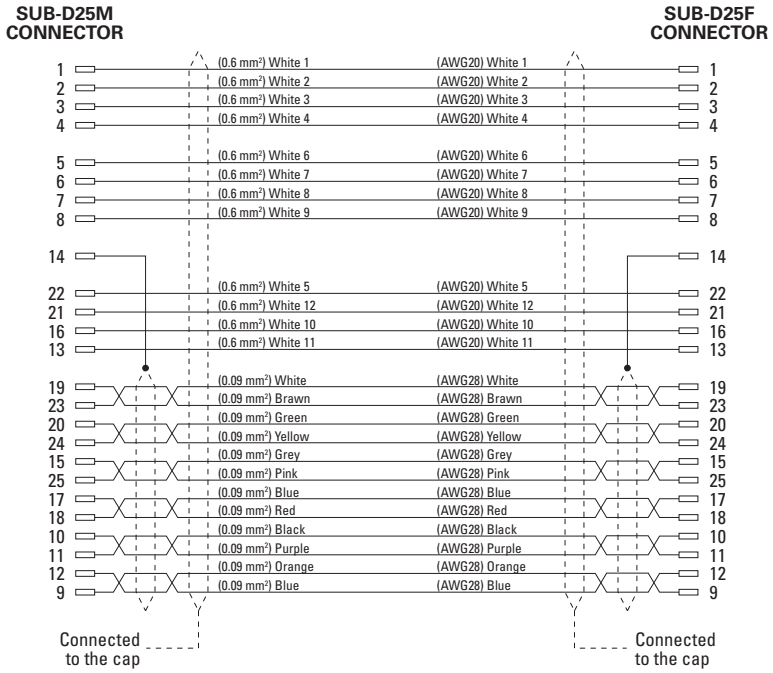
A 3-meter MMCABLE-3 cable is supplied with ILS-PP stages (see section 5.3: ”Cables”).



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4.7 MCAB-3 Cable

A 3-meter MCAB-3 cable is supplied with ILS-CC, ILS-CCL and ILS-HA stages (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.**

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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

On each stage is represented a label which indicates its name and its 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 any time prior to power-up with the supplied cable assemblies.

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.

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5.3 Cables

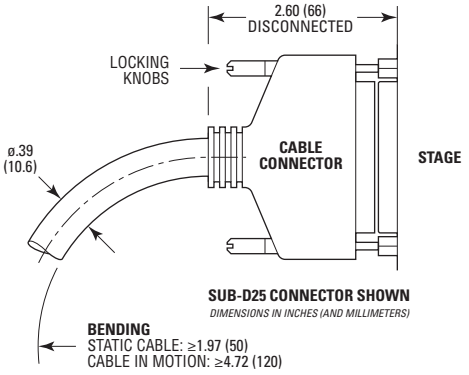
Our stages are delivered with a 3-meter cable according to the ILS stage you bought:

- ILS-PP: **MMCABLE-3**
- ILS-CC, ILS-CCL & ILS-HA: **MCAB-3**

This cable is equipped with a SUB-D25M connector so it can be directly connected to our controllers/drivers.

5.4 MMCABLE-3 Cable





WARNING

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

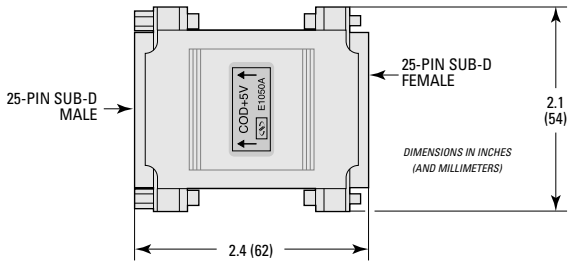
For applications where the standard 3-meter cable (**MMCABLE-3**) included with your stage is not adequate, Newport offers longer length cables designed to ensure the integrity of your positioning application.

These cables are specially shielded and terminated with Newport's standard SUB-D25 connectors. They are available in 5-m (**MMCABLE-5**), 7-m (**MMCABLE-7**) or 10-m (**MMCABLE-10**) lengths.

WARNING

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

For cable lengths in excess of 3 meters, we recommend the **MMCABLE-REG** to ensure a high quality, regulated 5 V supply to the stages.

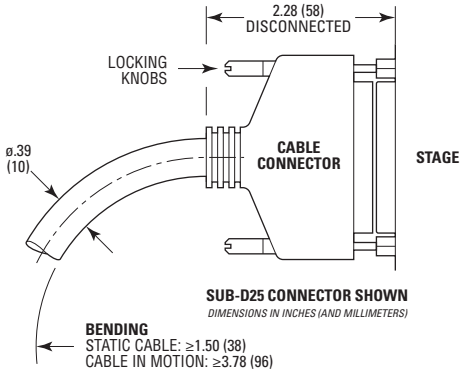


This regulator is available as an option. Please note that for best efficiency, this regulator should be attached to the stage to re-adjust the 5 V coming from the controller through the long cable.

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5.5 MCAB-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 (**MCAB-3**) included with your stage is not adequate, Newport offers longer length cables designed to ensure the integrity of your positioning application.

These cables are specially shielded and terminated with Newport's standard SUB-D25 connectors. They are available in 5-m (**MCAB-5**), 7-m (**MCAB-7**) or 10-m (**MCAB-10**) lengths.

WARNING

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

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6.0 Connection to Non-Newport Electronics

6.1 Connections

WARNING

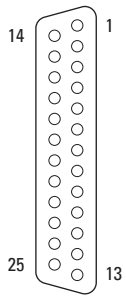
Newport is not responsible for malfunction or damage to a ILS when it is used with non- Newport controllers.

WARNING

Newport guarantees "CE" compliance of the ILS only if they are used with Newport cables and controllers.

Nevertheless, the figure below shows the wiring when a ILS is used with non-Newport controllers.

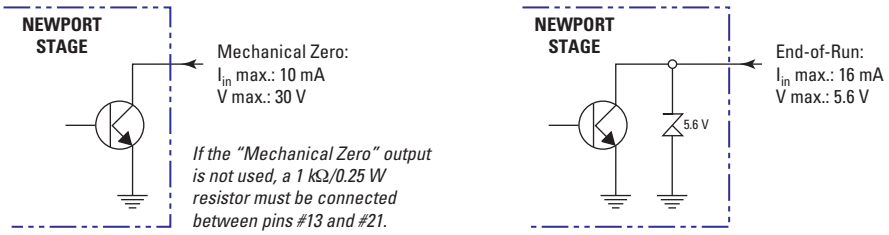




Sub-D25M Connector	ILS-PP	ILS-CC, ILS-CCL & ILS-HA
1	Phase 1a	N.C.
2	N.C.	N.C.
3	Phase 1b	N.C.
4	N.C.	N.C.
5	Phase 2a	+ Motor
6	N.C.	+ Motor
7	Phase 2b	– Motor
8	N.C.	– Motor
14	Ground	Ground
16	0 V	0 V
13	Mechanical Zero [1]	Mechanical Zero [1]
19	Encoder Phase A	Encoder Phase A
23	Encoder Phase /A	Encoder Phase /A
20	Encoder Phase B	Encoder Phase B
24	Encoder Phase /B	Encoder Phase /B
15	Index Pulse I	Index Pulse I
25	Index Pulse /I	Index Pulse /I
17	+ End-of-Run [2]	+ End-of-Run [2]
18	– End-of-Run [2]	– End-of-Run [2]
21	+5 V	+5 V
22	0 V	0 V

[1] The Mechanical Zero logic signal is open collector type. It supports until 30 V and 10 mA.

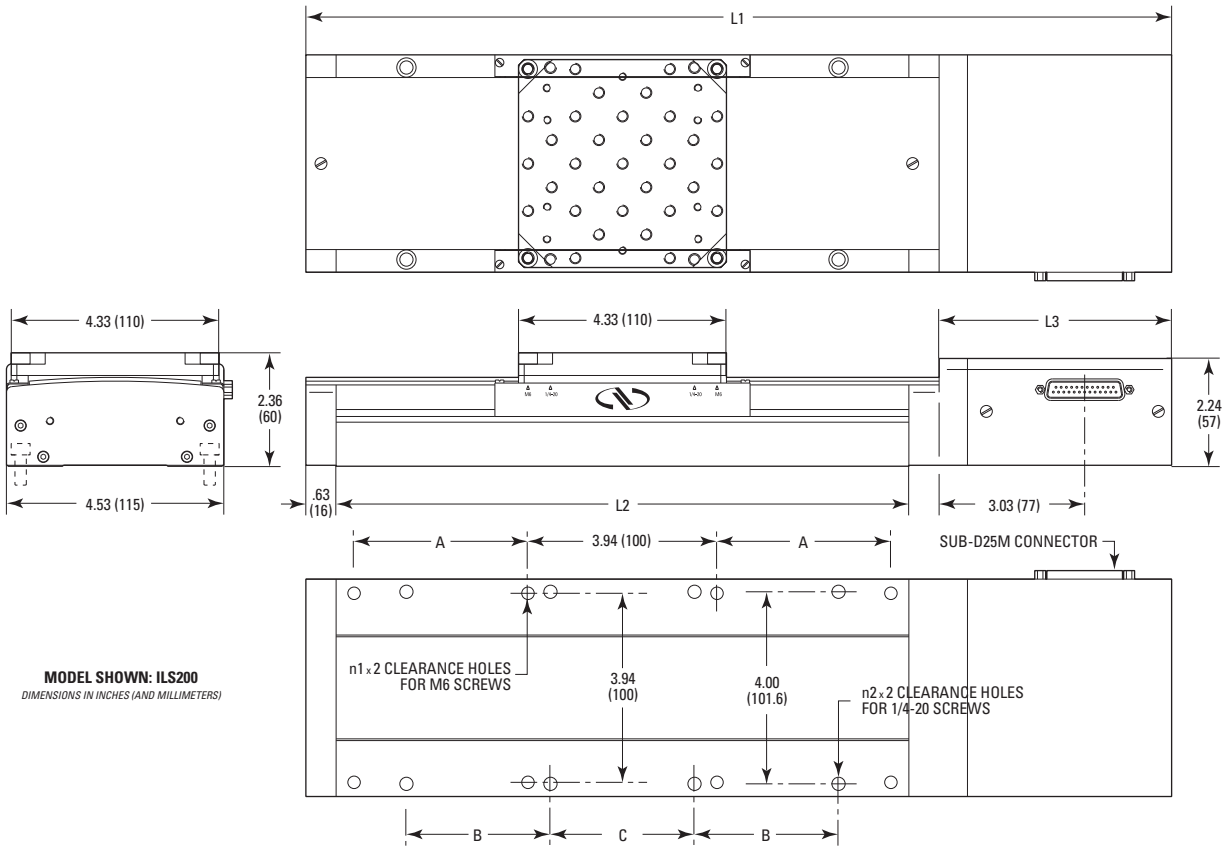
[2] Open collector type with a 5.6 V protective Zener diode.



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7.0 Dimensions

7.1 (M-)ILS Stages



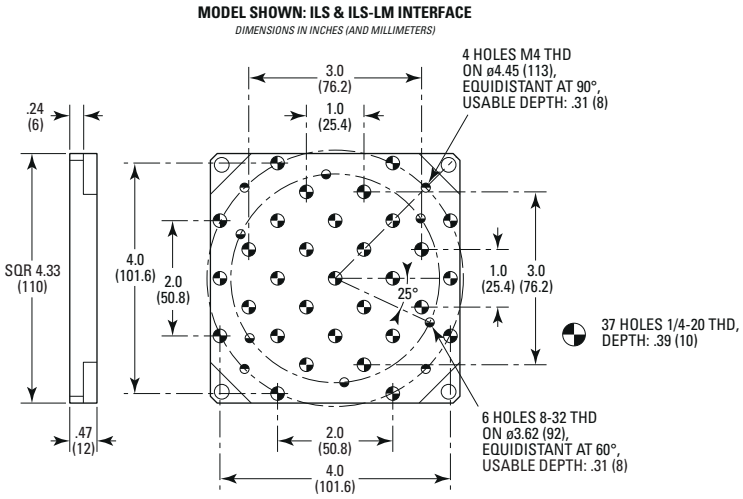
MODEL SHOWN: ILS200
DIMENSIONS IN INCHES (AND MILLIMETERS)

							VERSIONS CC, CCL AND PP		VERSION CCHA	
MODEL (METRIC)	A	n1	B	C	n2	L2	L1	L3	L1	L3
(M-)ILS50	–	2	–	5.0 (127)	2	8 (203)	14 (358)	4.8 (123)	15.5 (394)	6.3 (159)
(M-)ILS100	–	2	–	3.0 (76.2)	2	10 (253)	16 (408)	4.8 (123)	17.5 (444)	6.3 (159)
(M-)ILS150	–	2	3.0 (76.2)	3.0 (76.2)	4	12 (303)	18 (458)	4.8 (123)	19.4 (494)	6.3 (159)
(M-)ILS200	3.94 (100)	4	3.0 (76.2)	3.0 (76.2)	4	14 (353)	20 (508)	4.8 (123)	21.4 (544)	6.3 (159)
(M-)ILS250	3.94 (100)	4	3.0 (76.2)	3.0 (76.2)	4	16 (403)	22 (558)	4.8 (123)	23.4 (594)	6.3 (159)

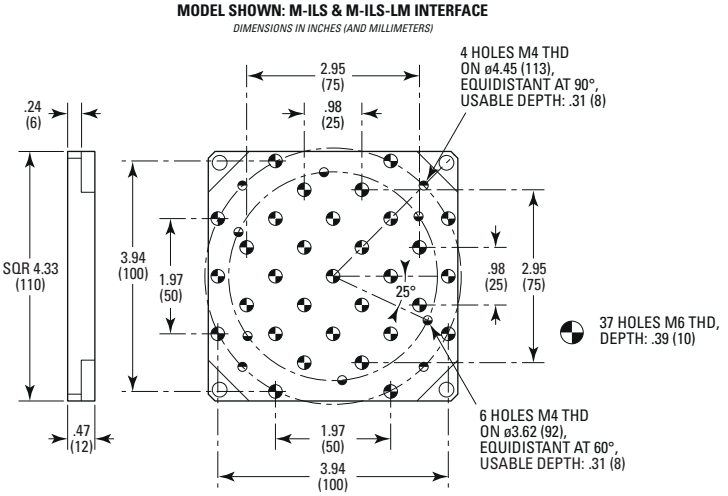
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7.2 Top Plate Interface

ILS Stages Top Plate Interface



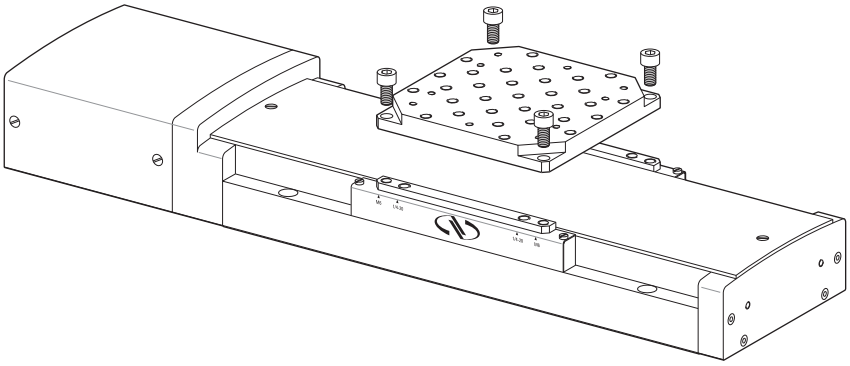
M-ILS Stages Top Plate Interface



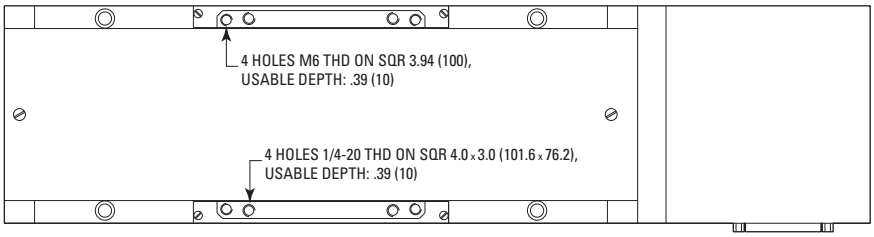
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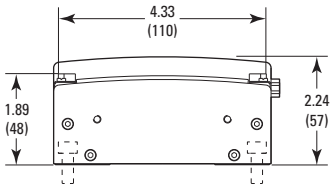
7.3 ILS Stages without Top Plate Interface

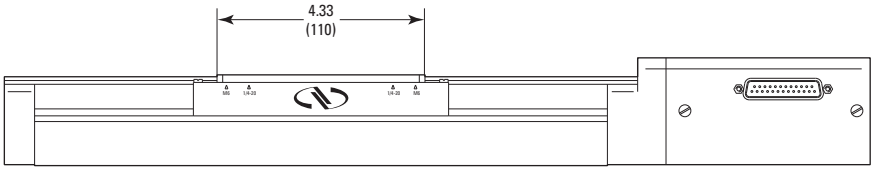
Sometimes, it is necessary to remove the top plate interface of a (M-)ILS stage (to make an XY assembly, for example).



To do that, just unscrew the 4 CHc M6 x .47 (12) on SQR 3.94 (100) screws at the 4 corners of the plate with the wrench supplied with the stage. Both ILS and M-ILS stages will then have the same following interfaces:







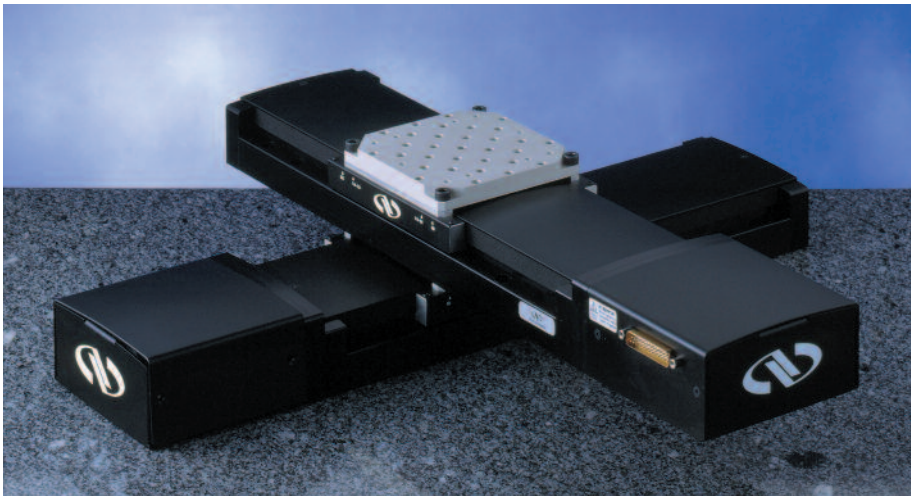


WARNING

To put back the interface plate on the carriage, a 7 Nm lightening moment must be apply on each screw, whatever the class of the M6 screw used.

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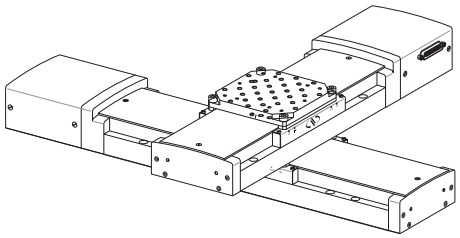
8.0 XY Assemblies

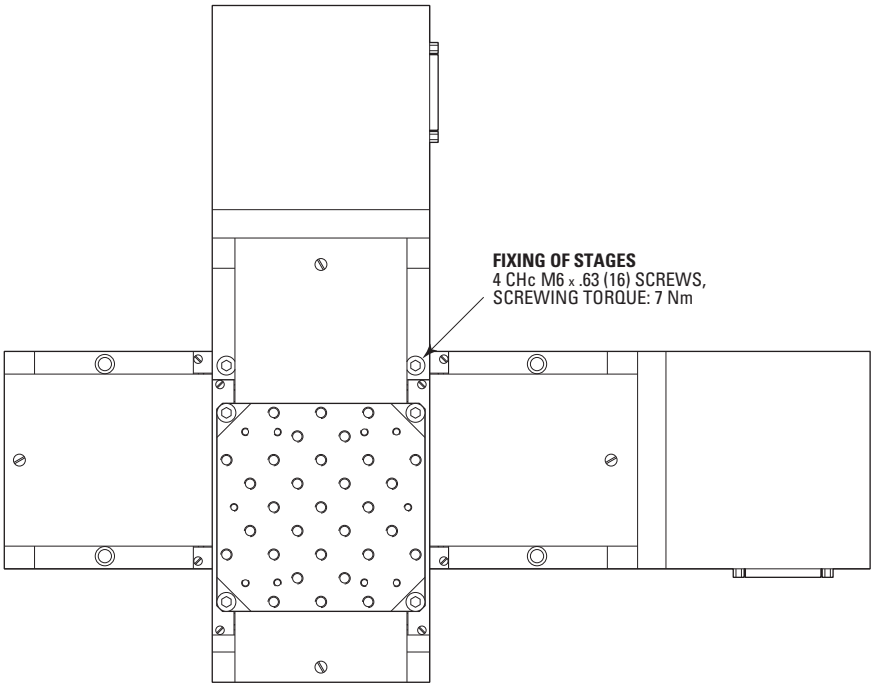


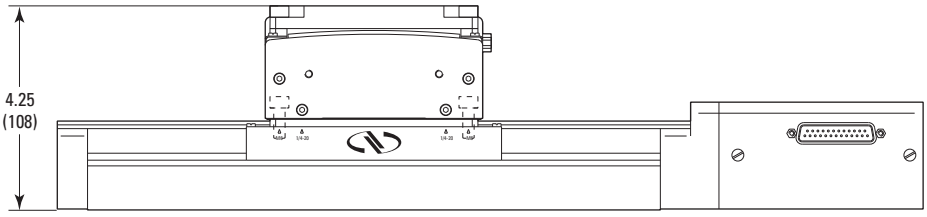
ATTENTION

All configurations of XY travel ranges are possible. However, it is recommended to place the (M-)ILS stage with the longer travel range at the bottom.

The maximum travel range of the top level (M-)ILS stage depends on the cantilever load and dynamic specifications to reach.



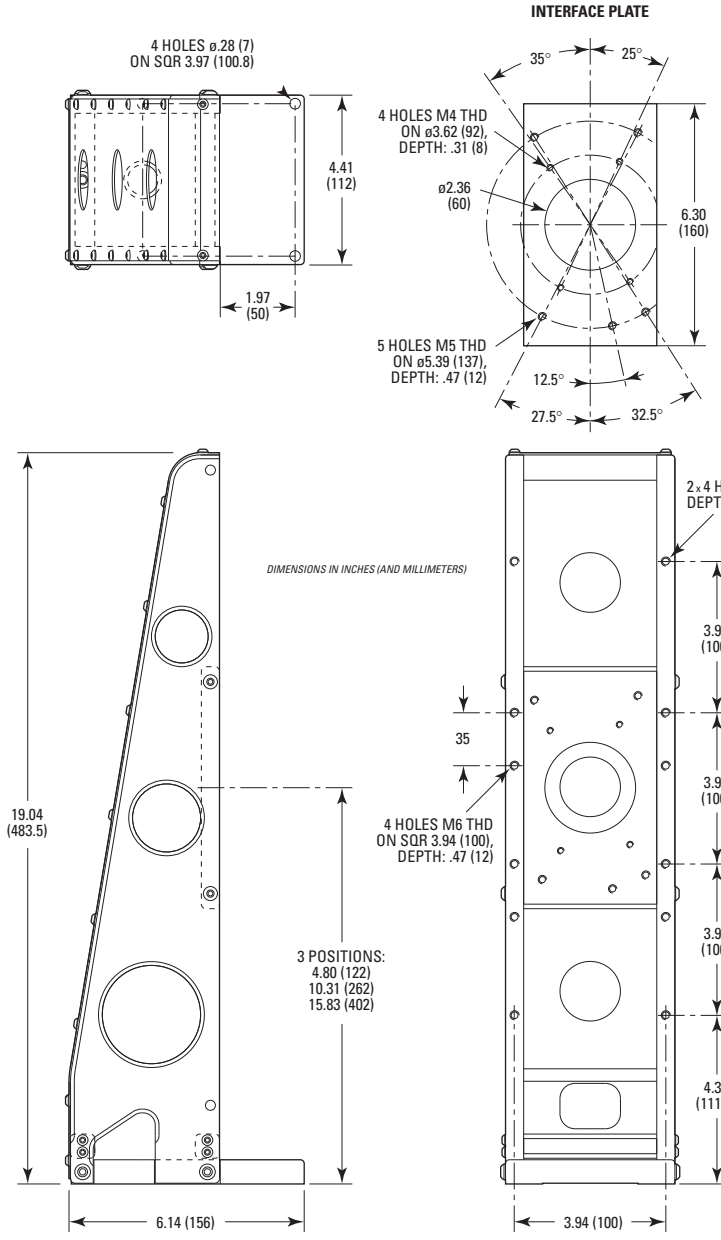




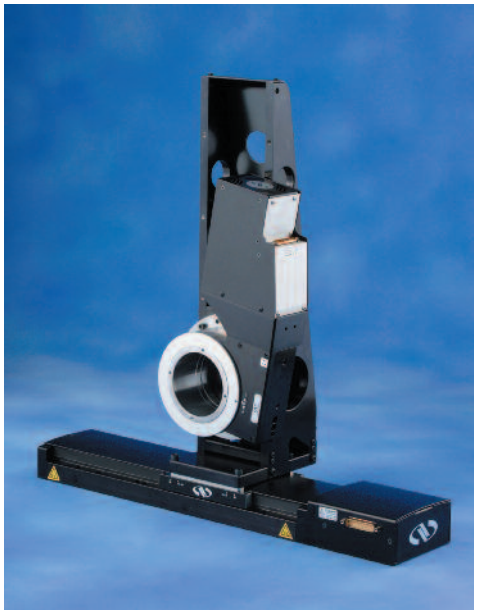
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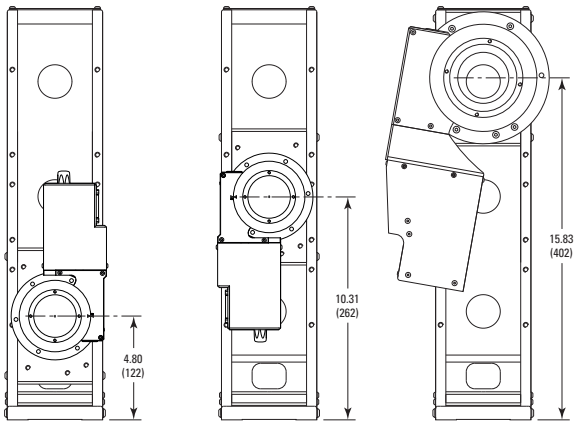
9.0 Accessory: EQ120 Bracket

Newport's EQ120 bracket (to order separately) is ideal for mounting our (M-)ILS or (M-)IMS Series of linear stages and RVS80 or RV120 rotation stages for stable and stiff muti-axis positioning systems.









Interface plate position of the EQ120 bracket.

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10.0 Maintenance

RECOMMENDATION

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

10.1 Maintenance

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

PRECAUTIONS

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

RECOMMENDATION

It is recommended to return your ILS 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.

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 ILS stage to Newport once a year for recalibration to its original specifications.

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Service Form

Your Local Representative
Tel.: _____
Fax: _____

Name: _____ Return authorization #: _____
(Please obtain prior to return of item)

Company: _____

Address: _____ Date: _____

Country: _____ Phone Number: _____

P.O. Number: _____ Fax Number: _____

Item(s) Being Returned:

Model #: _____ Serial #: _____

Description: _____

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

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