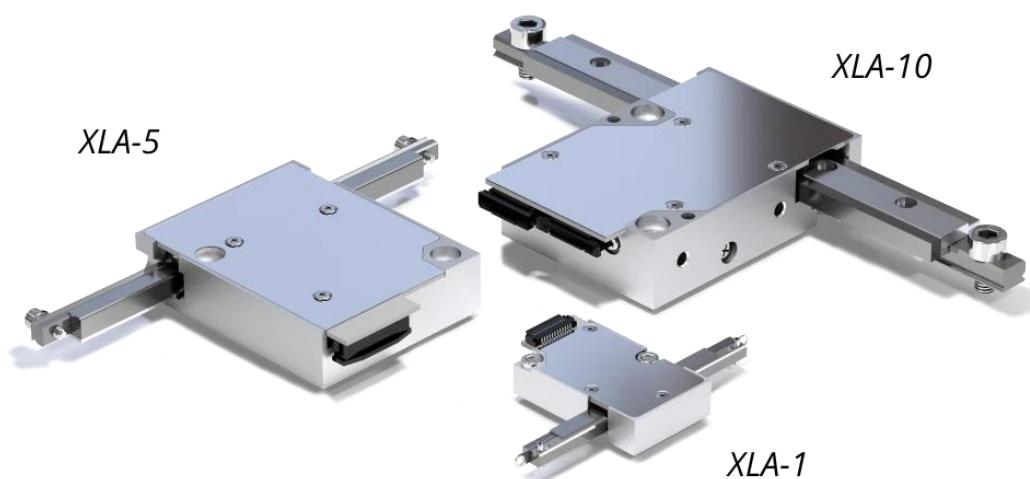


# Mechanical integration guide – XLA series



This guide provides step-by-step instructions for mechanically integrating the Xeryon XLA micro linear actuator into your application.

For full product specifications, drawings and dimensions, please refer to the respective product [specification sheets](#) on [xeryon.com](https://xeryon.com).

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# CAUTIONS



**Do NOT handle actuator without gloves.**

Always handle the actuator with caution.



**Do NOT contaminate white ceramic strip.**

The ceramic strip on the driving rod needs to be clean for optimal performance.

A contaminated strip leads to slippage and reduced force. If touched / contaminated, clean the strip with isopropanol (IPA) alcohol, and let the actuator burn in for 2 minutes at simple back-and-forth movement at medium speeds.



**Do NOT lubricate.**

You may notice the actuator rod does not move freely. This is by design.

The motor is spring-loaded against the actuator rod. Manually overriding the motor, whether powered on or off, is fine and does not cause damage.



**Do NOT remove the rod from the actuator body.**

Doing so will cause irreparable damage.



**Do NOT power the actuator when end stop screws are not present.**

Doing so will cause irreparable damage.



**Do NOT exceed the rated input voltage.**

Damage may occur.



**Do NOT insert or remove FFC cable while powered.**

Damage may occur.



**Do NOT exert excessive sideways loads on the FFC cable ZIF connectors.**

Damage may occur.



**XLA-5 only: Do NOT remove rod-end dampers (black O-ring), unless:**

the rod is rigidly fixed at that end. The damper ensures correct vibration behavior when the rod-end is free. Removing it without proper support may cause malfunction.



**XLA-5 only: Do NOT exceed the thread depth of the rod's inner holes.**

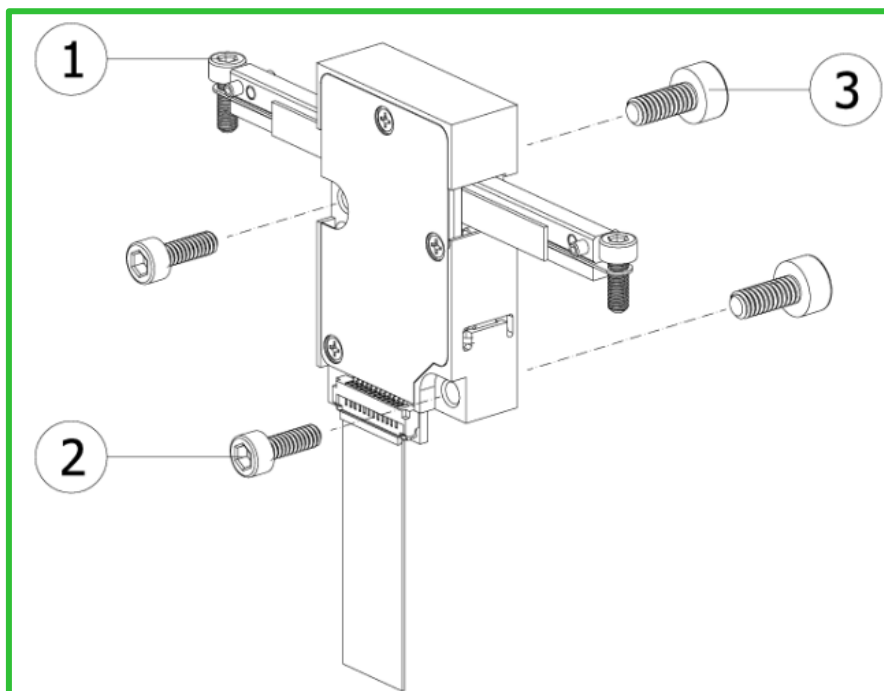
Doing so will loosen the ceramic drive strip and cause irreparable damage.

# MOUNTING POINTS

The XLA is a versatile actuator that can be mounted in a variety of ways. Before we walk through the different options, let's take a look at the dimensions and mounting points of each XLA.

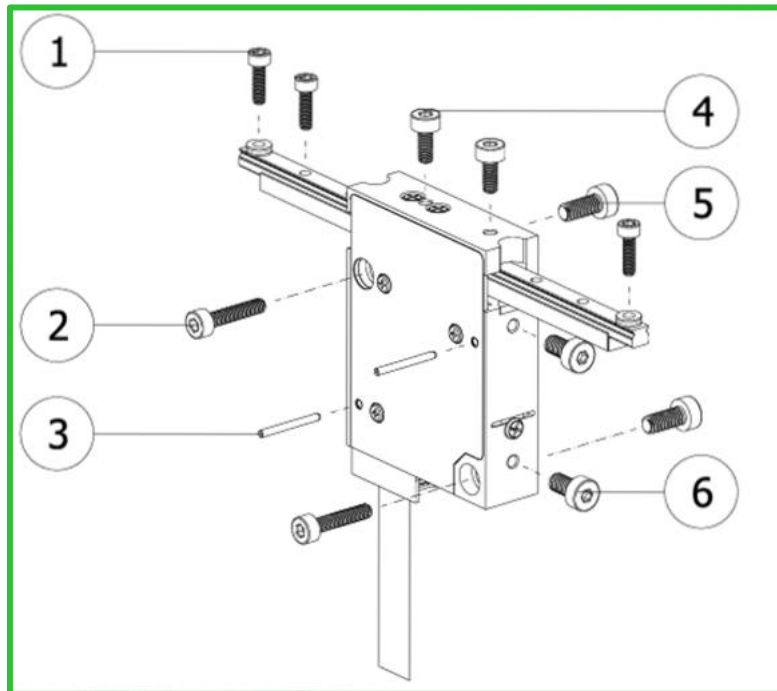
Although the XLA-1, XLA-5 and XLA-10 are similar in appearance and functionality, they differ in several aspects, including mounting requirements. This guide highlights these differences to help ensure easy integration.

## 1. XLA-1



Fastener	Size	Mounting	Max. screw depth	Max. torque
1 – Allen bolt	M 1,4	Non-threaded hole, rod mounting	/	8 cNm
2 – Allen bolt	M 1,6	Threaded thru-hole, external mounting	4,5 mm	16 cNm
3 – Allen bolt	M 2	Threaded hole, body mounting	4,5 mm	34 cNm

## 2. XLA-5



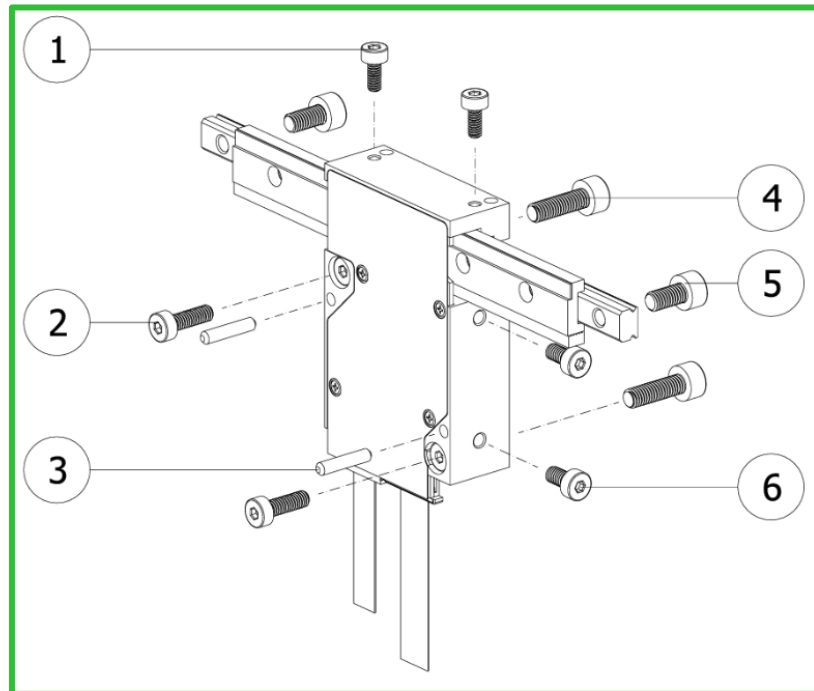
Fastener	Size	Mounting	Max. screw depth	Max. torque
1 – Allen bolt	M 1,6	Threaded hole, rod mounting ( <u>outer</u> )	6,0 mm*	0.5 cNm**
1 – Allen bolt	M 1,6	Threaded hole, rod mounting ( <u>inner</u> )***	1,5 mm	16 cNm
2 – Allen bolt	M 2	Threaded thru-hole, external mounting	4,5 mm	34 cNm
3 - Locating pin	H7	Body alignment	/	/
4 – Allen bolt	M 2	Threaded hole, body mounting	2,0 mm	34 cNm
5 – Allen bolt	M 2,5	Threaded hole, body mounting	4,5 mm	60 cNm
6 – Allen bolt	M 2	Threaded hole, body mounting	5,5 mm	34 cNm

\*Exceeding this number will not damage the actuator, but slightly limit the actuator's travel range.

\*\*When rod-end damper (black O-ring) is removed, maximum tightening torque is 16 cNm. Only remove the damper when rigidly mounting that specific rod-end.

\*\*\*Do NOT exceed the maximum thread depth of the rod's inner mounting holes. Doing so will loosen the ceramic drive strip located directly below, and cause irreparable damage.

### 3. XLA-10



Fastener	Size	Mounting	Max. screw depth	Max. torque
1 – Allen bolt	M 2	Threaded hole, body mounting	4,5 mm	34 cNm
2 – Allen bolt	M 2,5	Threaded thru-hole, external mounting	6,0 mm	60 cNm
3 – Locating pin	H7	Body alignment	/	/
4 – Allen bolt	M 3	Threaded hole, body mounting	6,0 mm	120 cNm
5 – Allen bolt	M 3	Threaded hole, rod mounting	5,5 mm	120 cNm
6 – Allen bolt	M 2,5	Threaded hole, body mounting	6,0 mm	60 cNm

# MECHANICAL INTEGRATION

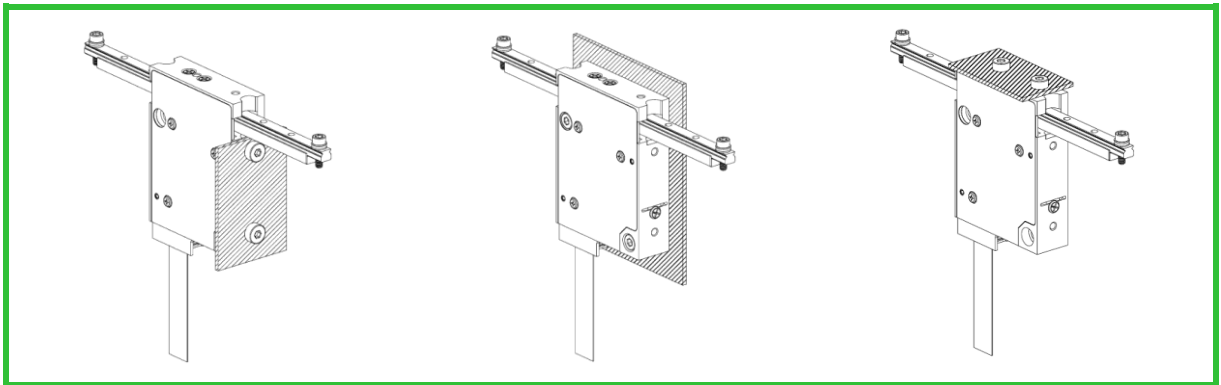
When integrating the XLA, several design options have to be considered. The most important considerations are:

## 1. Configuration

The first consideration is whether the XLA will be body-mounted or rod-mounted. Both options are viable and have their own set of guidelines.

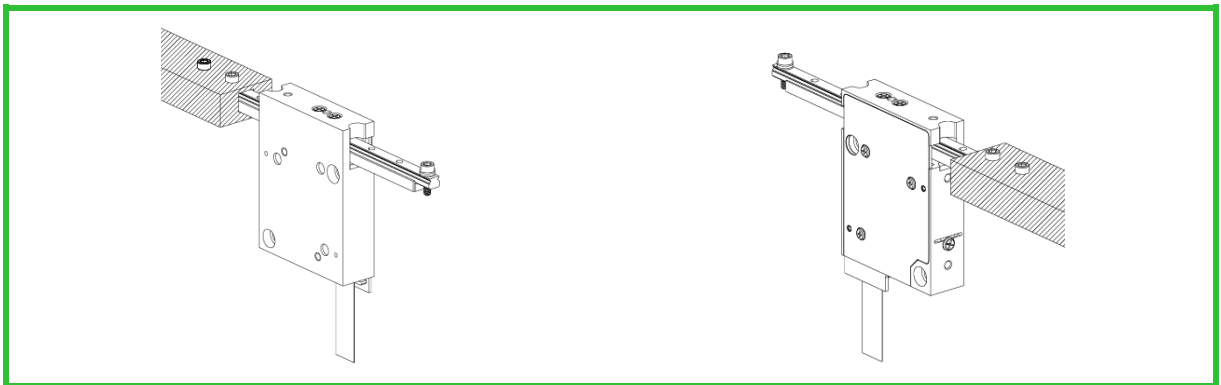
Please note that the mounting surfaces also serve as reference surfaces.

- a) **Body-mounted configuration:** The body is fixed, resulting in a moving rod.

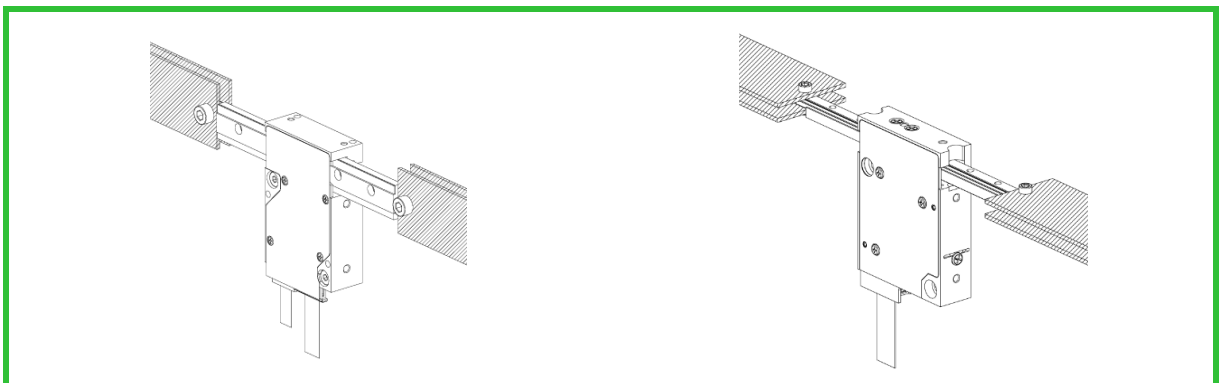


- b) **Rod-mounted configuration:** The rod is fixed, resulting in a moving body.

1. Single-sided rod mounting (for XLA-5: leave o-ring on at free side)



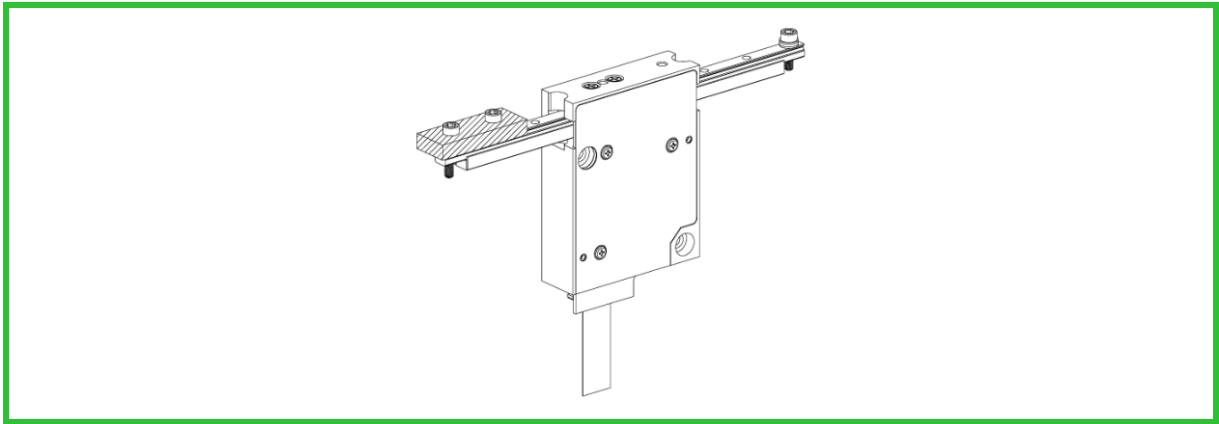
2. Double-sided rod mounting (for XLA-5: remove both o-rings)



## 2. Payload guiding

The second consideration is if and how the payload will be guided. The XLA is typically used in one of the following configurations:

- a) **Unguided:** A light unguided payload is moved. No external guideway used.



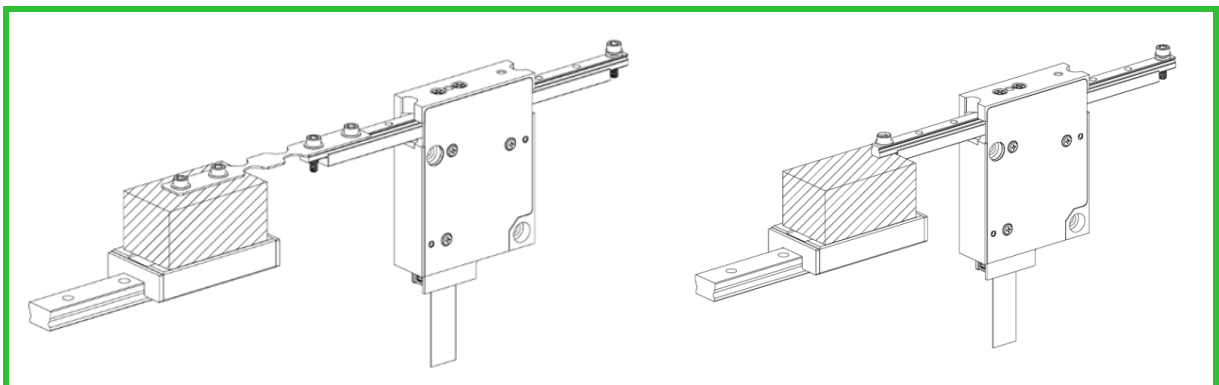
XLA-1: Not recommended.

XLA-5: Recommended – see [XLA-5 spec sheet](#) for load limitations.

XLA-10: Recommended – see [XLA-10 spec sheet](#) for load limitations.

Rigid payload mounting is advised.

- b) **Guided:** A guided payload is moved. External guideway is necessary.



XLA-1: Recommended.

XLA-5: Recommended.

XLA-10: Recommended.

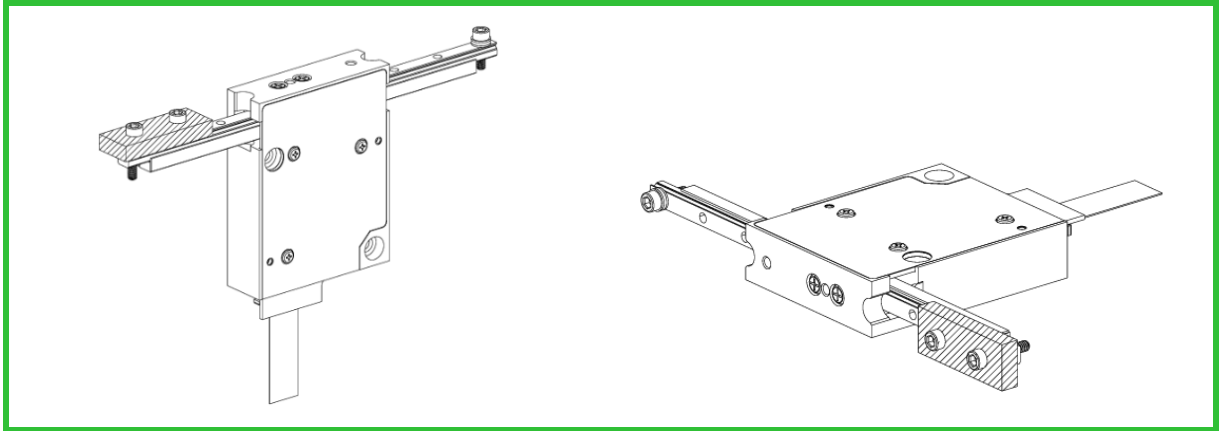
**Important:** If perfect alignment (right illustration) cannot be guaranteed, a flexible coupling (left illustration) should be used to attach the actuator to the payload.

*Note: If actuator is body-mounted at the through-holes: These holes allow for slight play which can be used to align the actuator with the payload guiding.*

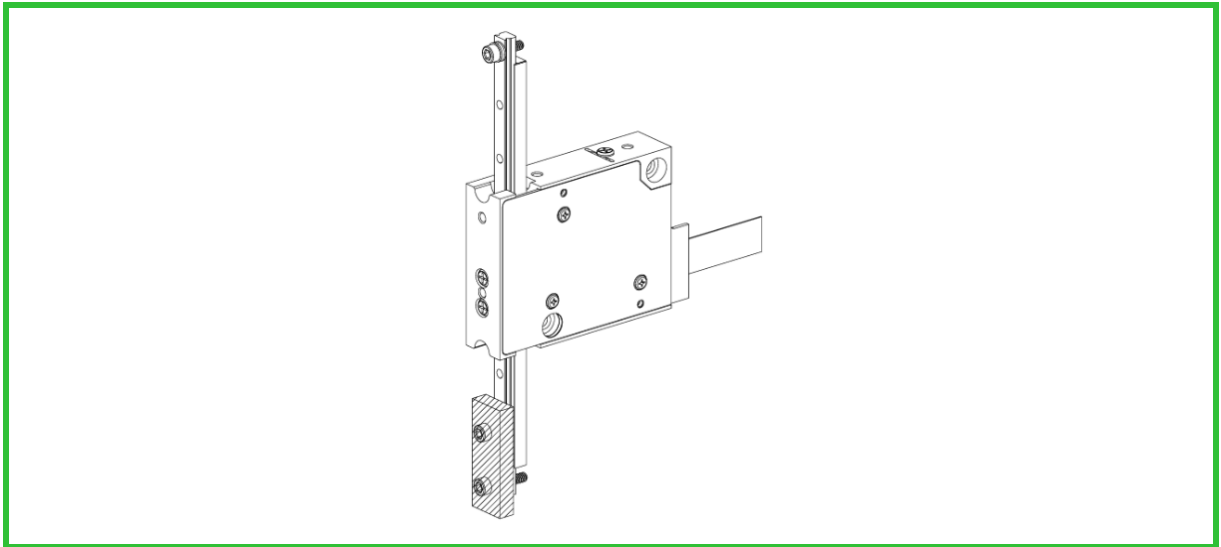
### 3. Orientation

The XLA is suitable for prolonged use at any angle. The most commonly applied mounting orientations are:

- a) **Horizontal:** moving the payload along a horizontal plane.



- b) **Vertical:** moving the payload along a vertical plane.



In vertical or inclined orientations, payload capacity is reduced due to gravitational load (66% reduction at a 90° vertical orientation).

When using the external XD-OEM controller, tuning may be necessary for optimal performance. See chapter 'Tuning' in the [XD-OEM controller manual](#) on our website.

When using an XLA with integrated controller, tuning is **not** necessary.

## 4. Cable handling

Xeryon XLA series actuators use **Molex FFC cables**.



**Caution:** Sideward loads on the FFC cables at the ZIF connectors should be avoided. Failing to do so could result in irreparable damage. Make sure to always insert the FFC cables straight and in line with the connector.

Actuator	Molex item code
XLA-1, external controller	<a href="#">15266-0138</a> (12 core, 0.50 mm pitch, 305 mm)
XLA-5, external controller	<a href="#">15266-0138</a> (12 core, 0.50 mm pitch, 305 mm)
XLA-5, integrated controller	<a href="#">15018-0181</a> (16 core, 0.50 mm pitch, 305 mm)*
XLA-10, external controller (encoder)**	<a href="#">15266-0138</a> (12 core, 0.50 mm pitch, 305 mm)
XLA-10, external controller (motor)**	<a href="#">15267-0721</a> (4 core, 1.00 mm pitch, 305 mm)

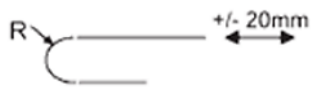
\*The XLA-5 with integrated controller features a cable with latching ears for stronger retention.

\*\*The XLA-10 uses two FFC cables: one for the encoder and one for the motor.

For cable orientation and mounting instructions, please refer to the XLA [quick start guide](#).

## LIFETIME

Typical specifications include:

Description	Test condition	Requirement
Folding	Folded manually at 180°	Continuity after 20 times
Flex-life	Speed: 100 cycles/minute 	75,000 cycles at radius R 10 mm 750,000 cycles at radius R 20 mm

Full specifications can be found on the [manufacturer's website](#).

## CONTACT INFORMATION

Have any questions about integrating our actuators?

Please contact us: [support@xeryon.com](mailto:support@xeryon.com)

General inquiries: [sales@xeryon.com](mailto:sales@xeryon.com)

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