GCM102(/M)

30 mm Cage System Mount
For Small Beam Diameter Galvos

User Guide



Original Instructions

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Chapter 1 Overview

1.1 Description

The GCM102(/M) cage system adapter is used to mount the GVSX02 dual-axis galvo systems into a 30 mm cage system. The galvo motors can be fitted and aligned without dismantling the mount

On the beam input side, the mount features SM1 and SM05 threads for mounting lens tubes. The output side is threaded SM2, which can be converted to M25 x 0.75 by fitting the GCMA1 or SM2A33 adapters. The mounting face features an array of M6, M4 and M3 (1/4-20, 4-40 and 8-32 UNC) threaded holes for use in mounting to our range of 1.5 OD posts, and XT66 construction rails.

Note: The input and output beams are on different planes. Cage systems should be adapted accordingly.



Fig. 1.1 GCM102 Cage Mount, post mounted with lens and cage rods fitted

Chapter 2 Safety

2.1 Safety Information

For the continuing safety of the operators of this equipment, and the protection of the equipment itself, the operator should take note of the **Warnings, Cautions** and **Notes** throughout this handbook and, where visible, on the product itself.

The following safety symbols may be used throughout the handbook and on the equipment itself.



Warning: Risk of Electrical Shock

Given when there is a risk of injury from electrical shock.



Warning

Given when there is a risk of injury to users.



Caution

Given when there is a risk of damage to the product.

Note

Clarification of an instruction or additional information.

Chapter 3 Installation

3.1 Installing the Galvo Motors

1) Using a 2.5 mm hex key, loosen the pinch bolts on the existing mount, and remove the motor/mirror assemblies. Leave the spacers fitted to the motors and retain the insulating film for later use. Take care not to touch the mirror surfaces.
2) Once removed, check that the thermal insulation film is undamaged. Damaged material should be discarded. Replacement film is supplied with the cage mount.

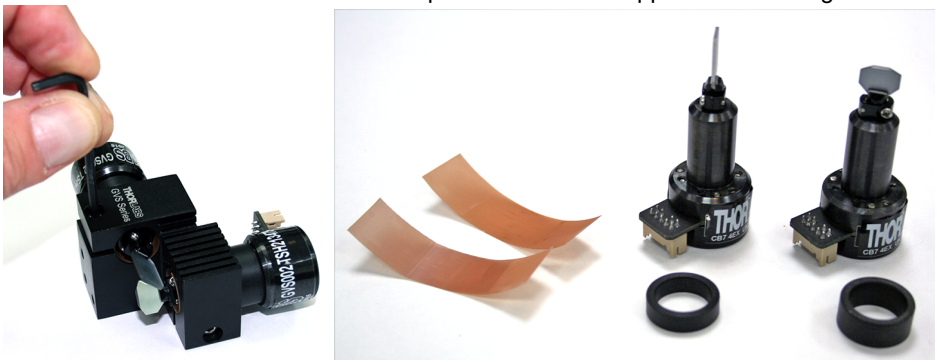


Fig. 3.1 Removing Motor/Mirror Assemblies

3) Using a 3 mm (1/8”) hex key, remove the blanking plugs from the body of the GCM102(/M) Cage Mount, to gain access to the motor clamp.
Using a 2mm (5/64”) hex key, loosen the clamp bolts.



Removing the blanking plugs

Loosening the motor clamp bolts

Fig. 3.2 Loosening the motor clamp bolts

4) Position the cage mount assembly as shown in Fig. 3.3 and using a 2 mm (5/64") hex key, remove the screws securing the small gasket cover. Remove the gasket cover, then remove the screws securing the large gasket cover.



Fig. 3.3 Removing the Gasket Covers

5) Position the cage mount assembly as shown in Fig. 3.4 and using a 2 mm (5/64") hex key, remove the remaining screws securing the large gasket cover, then remove the gasket cover.



Fig. 3.4 Removing the Gasket Covers

6) Position the cage mount as shown in Fig. 3.5, with the fixed side of the gasket to the left, and the part number markings on the right. Slide the narrow spacer underneath the gasket then pull the gasket over the spacer such that it pushes through the hole in the gasket, and the gasket fits tights around the sides of the spacer.

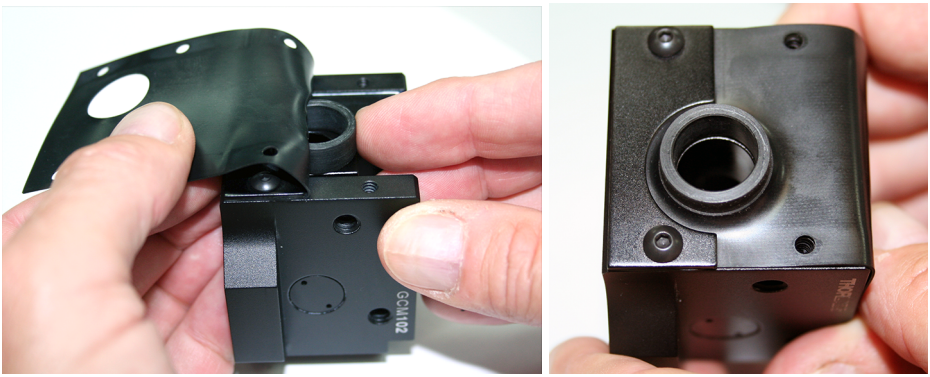


Fig. 3.5 Inserting the Narrow Spacer

7) Reposition the cage mount as shown in Fig 3.6, (part number markings on the top edge) and insert the wide spacer underneath the gasket. Pull the gasket over the spacer such that it pushes through the hole in the gasket, and the gasket fits tights around the sides of the spacer.



Fig. 3.6 Inserting the Wide Spacer

8) Roll up the thermal insulation film into a small tube shape and insert into the motor mounting holes as shown below. Ensure the film is pushed fully into the hole.

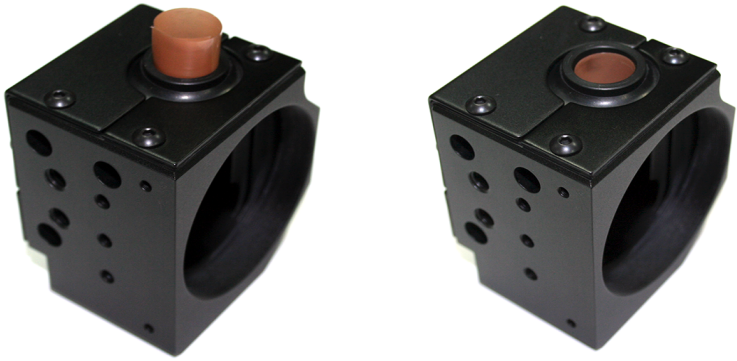


Fig. 3.7 Fitting the thermal insulation film

9) Place the cage adapter body on the worksurface as shown below, with the engraving on the left, and the large open face facing away and to the right.

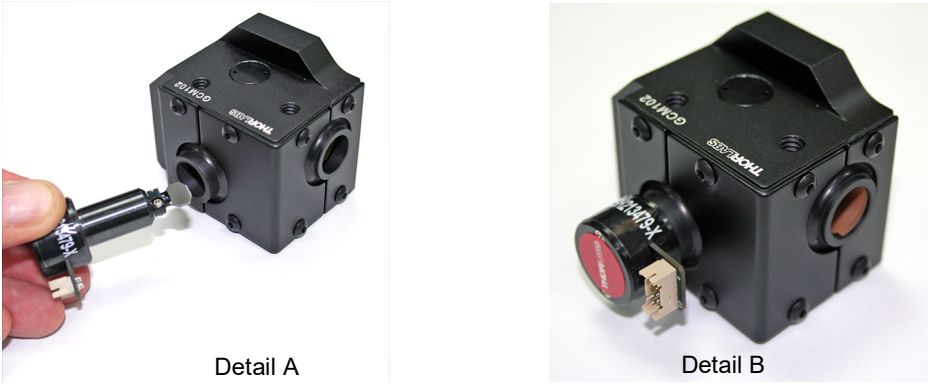


Fig. 3.8 Inserting the Motors

10) Identify the X-Axis motor assembly. This is the motor with the smallest mirror and the serial number label has a suffix '-X'.

11) Insert the motor into the lower mount on the left hand side - see Fig. 3.8 Detail A. **Caution. Ensure that the wide spacer and the thermal insulation detailed previously are fitted. The X-axis mirror will be misaligned without the wide spacer. The clamp pinch bolts will not tighten sufficiently without the thermal insulation material.**
Gently twist the motor body as it is pushed into the clamp, taking care not to damage the thermal insulation material.

12) Ensure that the narrow plastic spacer removed at item (1) is fitted to the remaining mounting hole, then insert the Y-axis motor into the upper mount on the right hand side- see Fig. 3.8 Detail B.
Caution. Ensure that the thermal insulation detailed at item (4) is fitted. The clamp pinch bolts will not tighten sufficiently without this material.
Gently twist the motor body as it is pushed into the clamp, taking care not to damage the thermal insulation material.

13) Ensure that the motors are pushed fully into the mounting holes, then turn the motors to be aligned as shown in Fig. 3.9. The left hand (X-Axis) motor connector should point to the right hand side. The right hand (Y-Axis) connector should point downwards. Check through the large open face that the mirror alignment is as shown below.

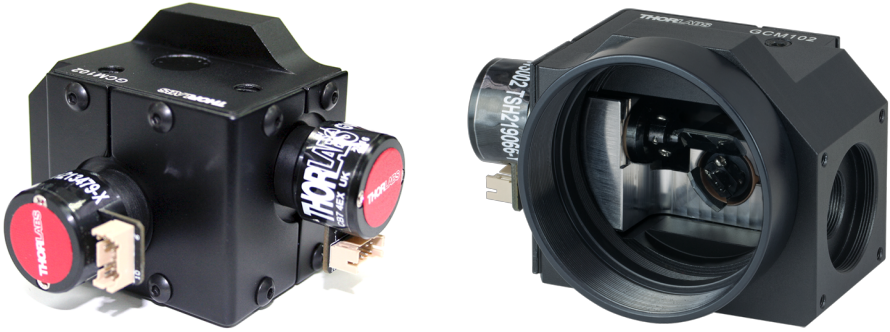


Fig. 3.9 Aligning the motors

14) Using a 2 mm (5/64”) hex key, tighten the pinch bolts on the clamps as shown below.

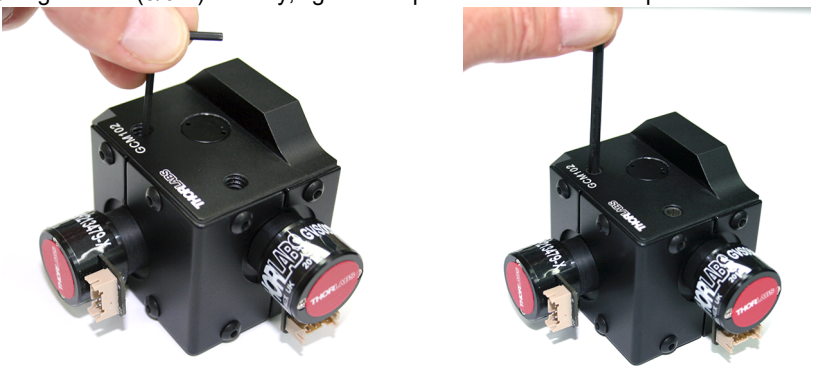


Fig. 3.10 Tightening the pinch bolts

15) Using a 3 mm (1/8”) hex key, refit the blanking plugs.

16) The system is now ready to be mounted into a cage system, however further adjustment of the motor positions may be necessary to fine tune the mirror alignment within the application.

3.2 Fitting the Optics and Adapters

A range optics can be fitted to the GCM102(/M) using various adapters as detailed below.

Optic	Thread	Scan Distance (mm)	Distance from start of SM2 thread (mm)	Adapter Required
LSM02	M25 x 0.75	16	3	GCMA1
LSM03	M25 x 0.75	19	6	GCMA1 (reverse fitted)
LSM04	M25 x 0.75	19	6	GCMA1 (reverse fitted)
LSM03-VIS	M25 x 0.75	29	16	SM2A33 and SM2L03
LSM05	SM2	75	62	SM2L20
CLS-SL	SM2	58	46	SM2L05 and SM2V05

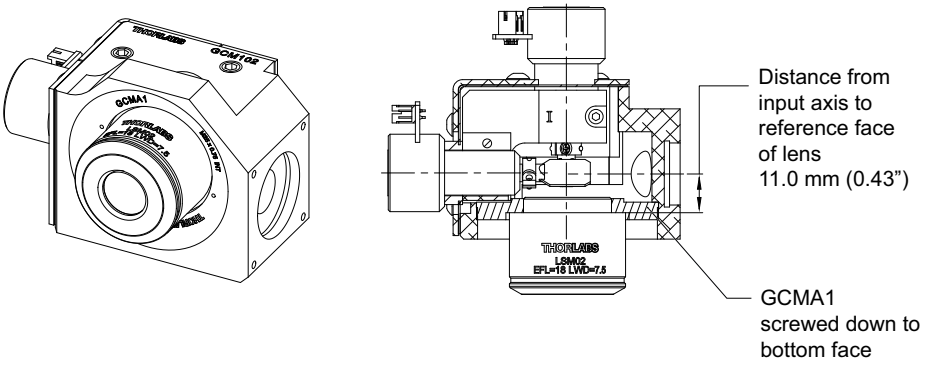


Fig. 3.11 Fitting the LSM02

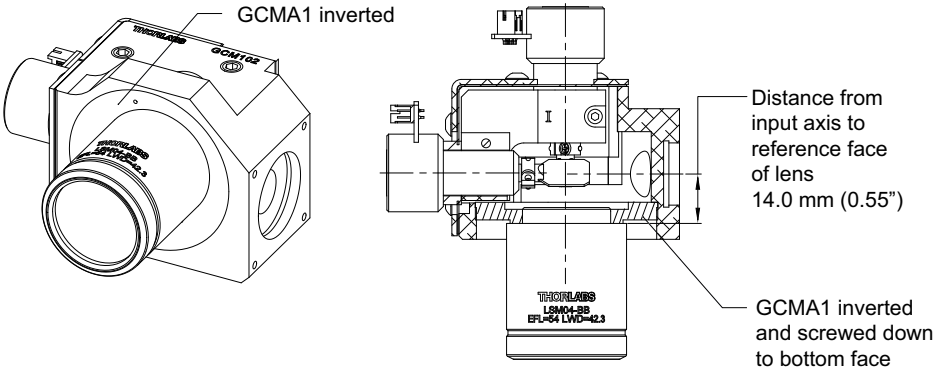


Fig. 3.12 Fitting the LSM03 and LSM04

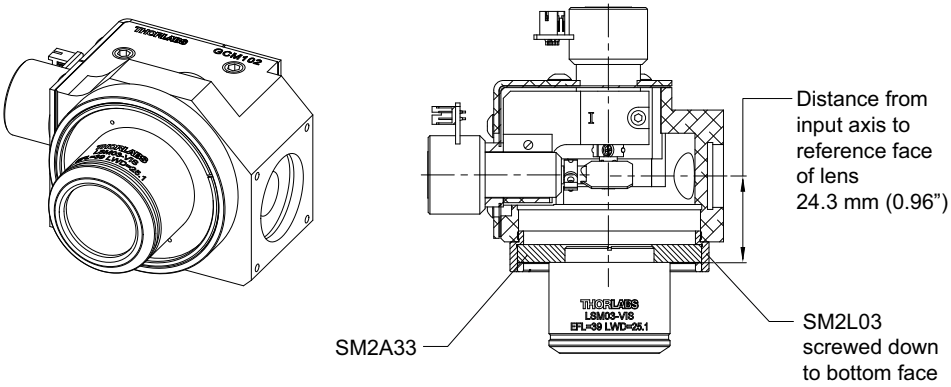


Fig. 3.13 Fitting the LSM03-VIS

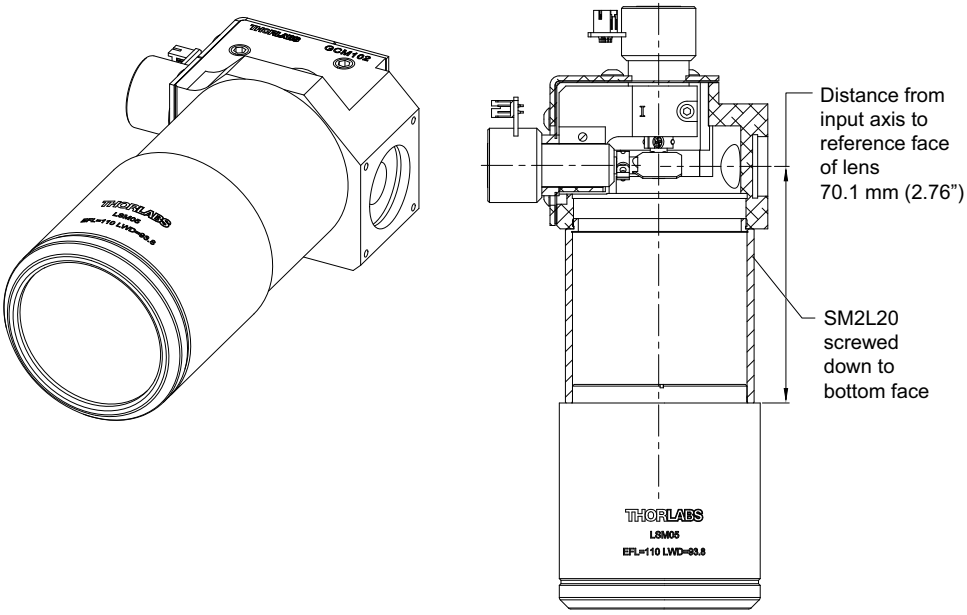


Fig. 3.14 Fitting the LSM05

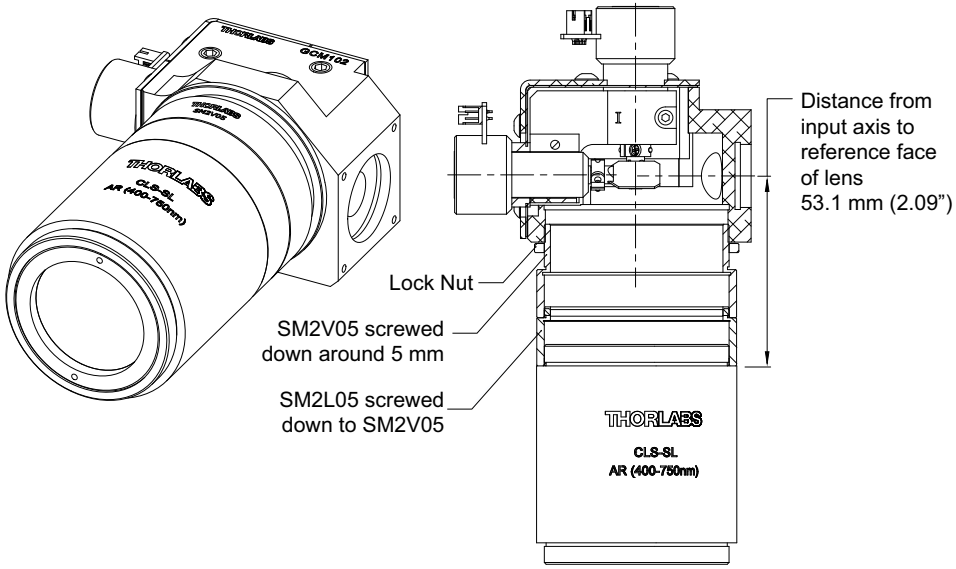
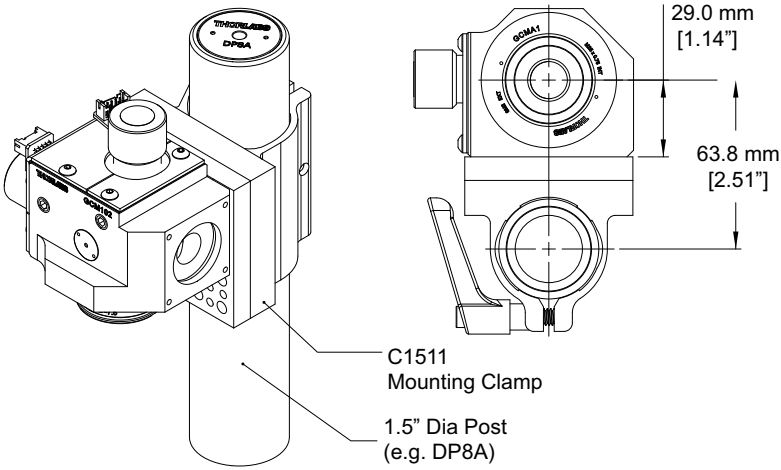


Fig. 3.15 Fitting the CLS-SL

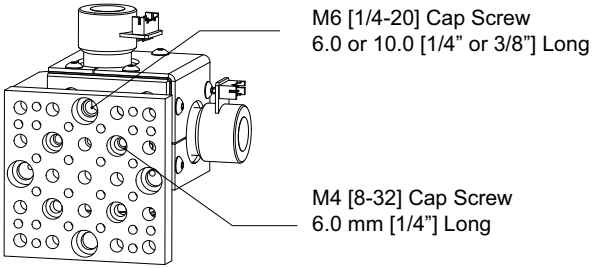
3.3 Using the Cage Mount with Other Equipment

The GCM102(/M) can be used in conjunction with various posts, rails and accessories available from Thorlabs as follows.

3.3.1 Mounting to a 1.5” Diameter Post



Mounting Option 1



Mounting Option 2

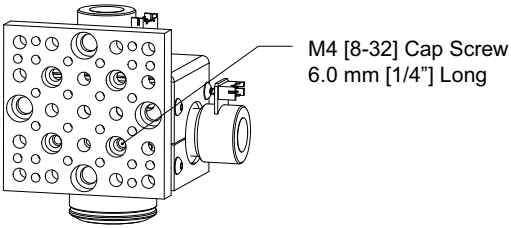


Fig. 3.16 Mounting the GCM102 to a 1.5” Diameter Post

3.3.2 Mounting to 66 mm Rail Components

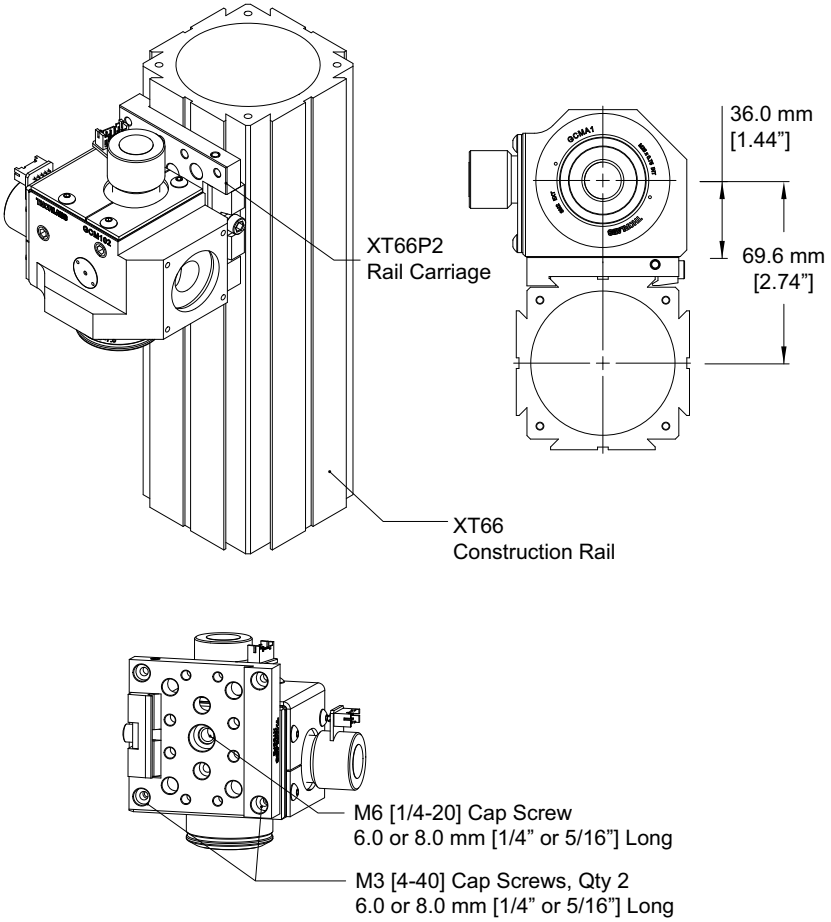


Fig. 3.17 Mounting the GCM102 to an XT66 Construction Rail

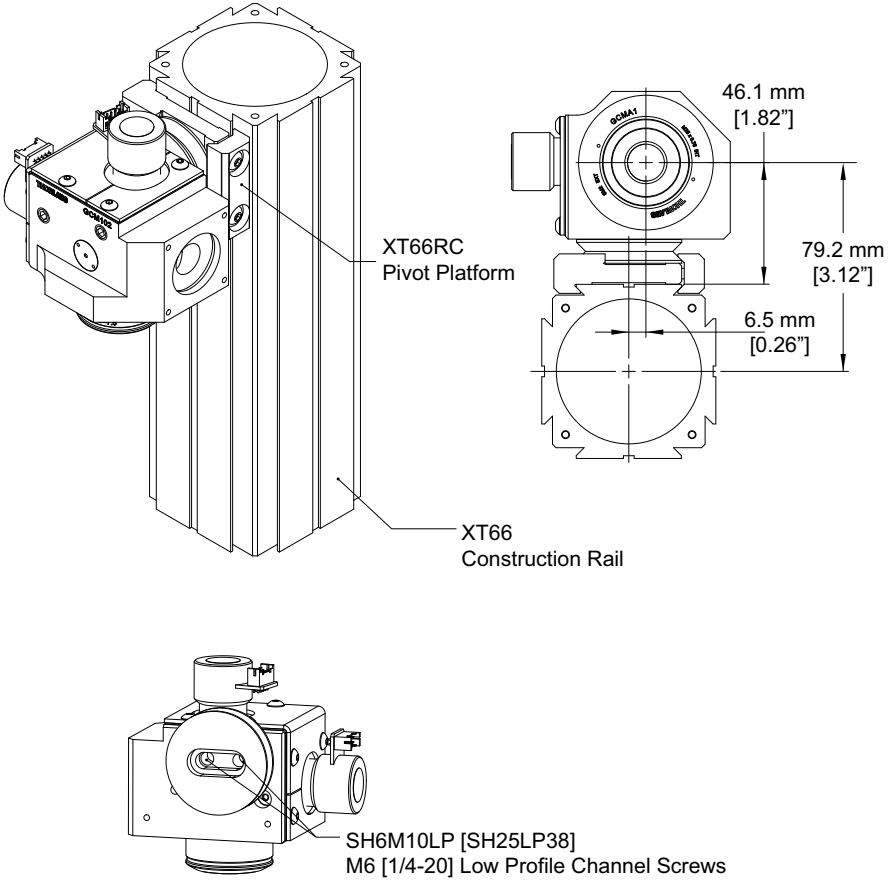


Fig. 3.18 Mounting the GCM102 to an XT66RC Pivot Platform

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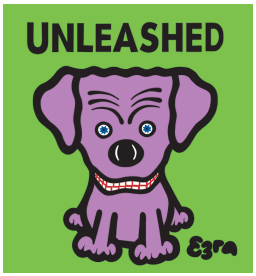
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