

Procedure for installing and removing ARGOS dichroic mount on the telescope

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Change Record

Issue	Date	Section/ Paragraph Affected	Reasons / Remarks	Name
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1 Scope

This document describes the procedure for removing the ARGOS dichroic mount from the storage stand, transporting to the telescope, and mounting on the bent Gregorian focal station of LUCI. The opposite procedure is also detailed.

2 Applicable documents

No.	Title	Number & Issue
AD 1	ARGOS DICHROIC MOUNT HANDLING INSTRUCTIONS	M13.11.12
AD 2		

3 Notes

This document describes the different procedures needed to handle, install and remove the dichroic mount at the telescope. Two long term configurations are foreseen for the dichroic mount:

- A. When operational the mount is installed on front of the LUCI rotator in the rotator gallery.
- B. When stored the mount is installed on the static stand, sealed by a dust cover and stored in the clean room

The installing procedure, detailed in section ??, starts in condition B and ends with dichroic mount in condition A. The removal procedure, detailed in section 7, has opposite conditions.

4 Authorized personnel

...

5 Required material

1. 4x M14 screws to fix the dichroic mount to the handling device
2. 3mm (M4) allen wrench
3. 12mm (M14) allen wrench
4. 14mm (M18) allen wrench
5. 110V power cord
6. 1 set of spare dichroic mount cables

6 Equipment description

1. Dichroic mount unit: depicted in Figure 1 it is composed by a common support structure for both the dichroic and fold mirror sliding mounts and by the 2 optic cells.
It interfaces with the Handling device through 4x M14 holes and with the Rotator gallery pads with 4x M18 captive screws.

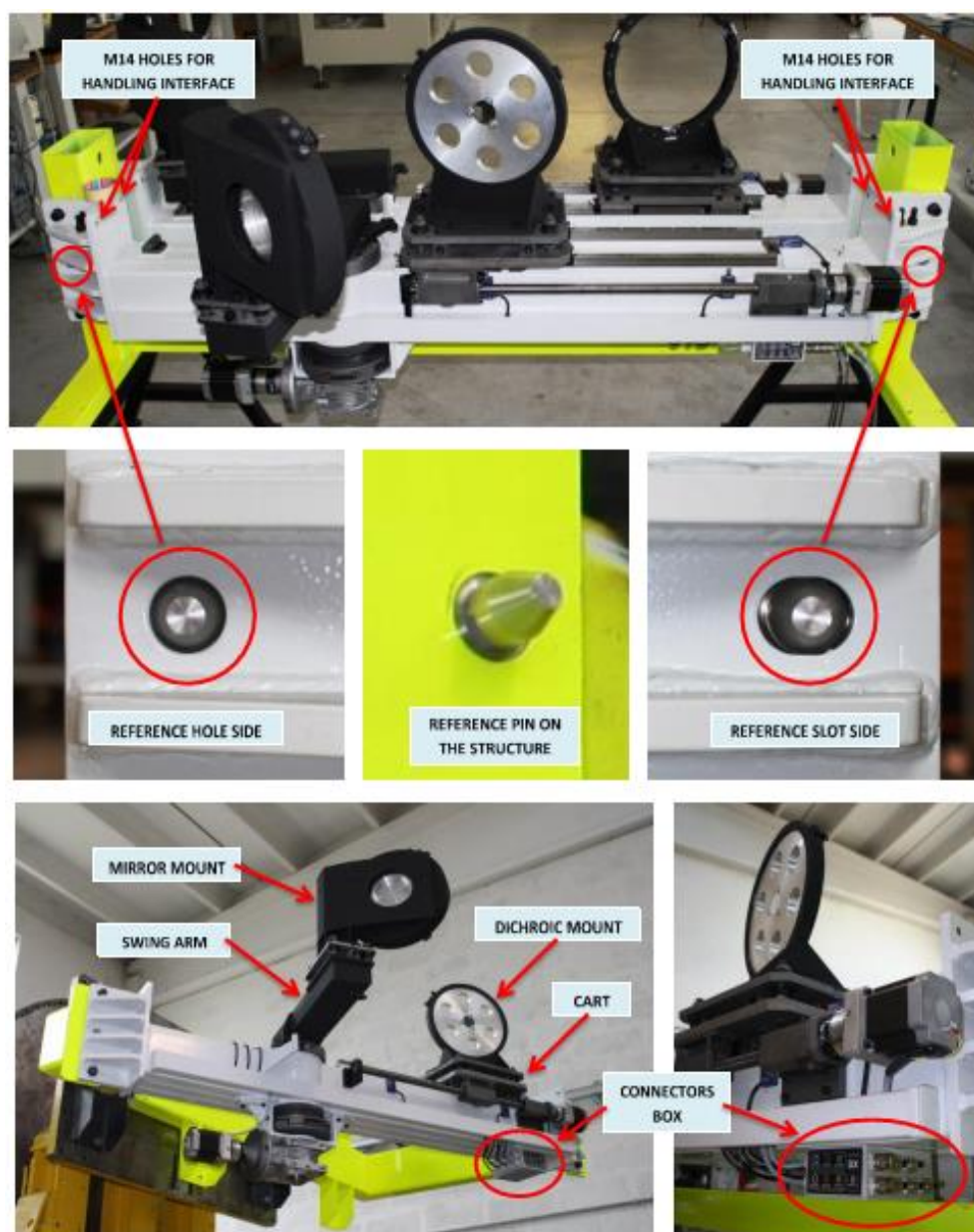


Figure 1. Image of the ARGOS dichroic mount unit and its interfaces to the Handling device and the Rotator gallery pads.

2. The handling device: a custom made tool necessary to lift the Dichroic mount unit (see Figure 2). Its interface with the dichroic mount are 4x M14 pass-through holes, it must be hanged to the crane using the red ring at the end of the 2 chains. The 2 chains are already been calibrated on the dichroic mount weight distribution.

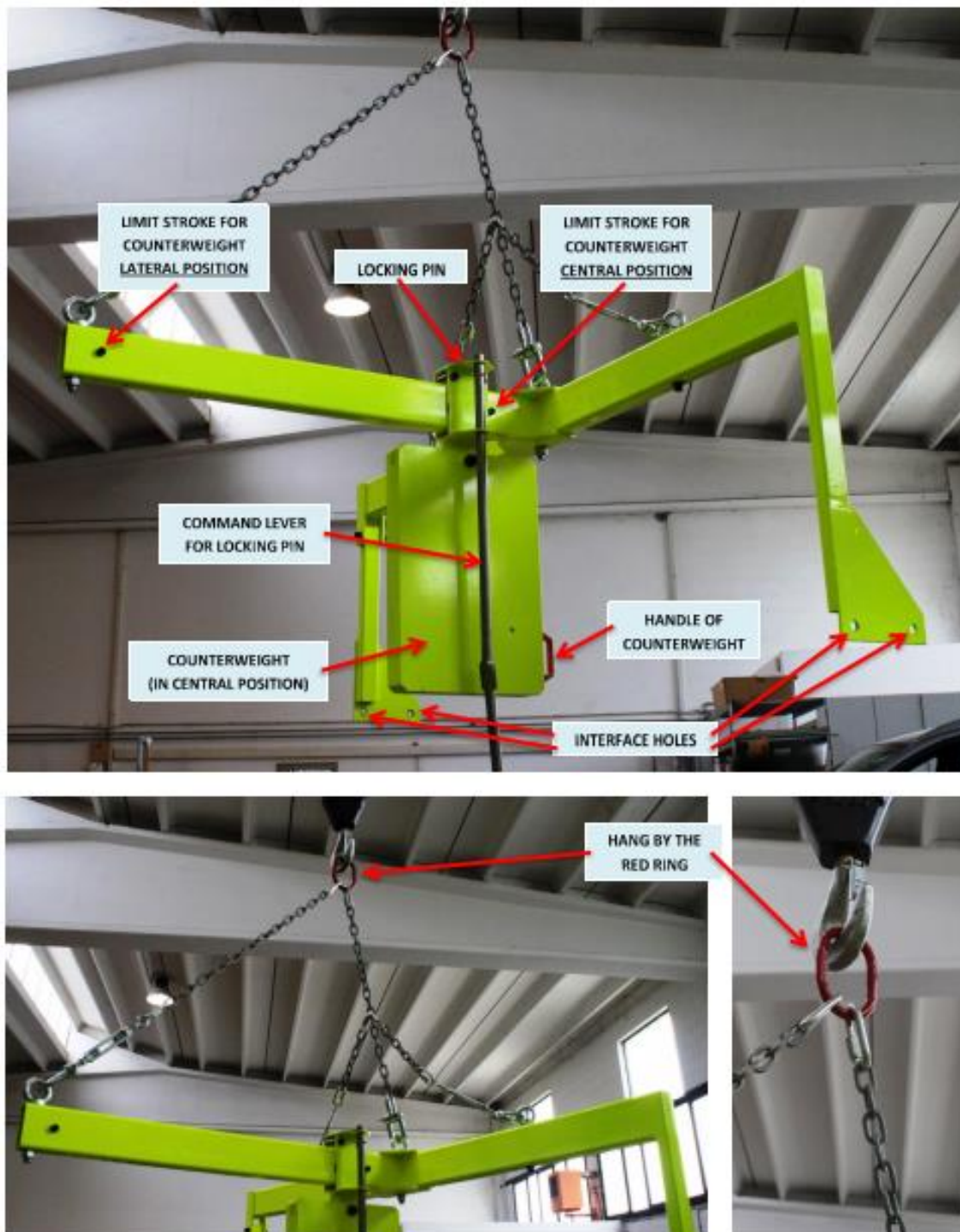


Figure 2. Image of the Handling device, its interface with the dichroic mount and crane.

3. Storage stand: it is a carriage designed to hold the 2 dichroic mounts in the storage facility. A plastic cover is provided to keep dust of the instruments. Interfaces with the 2 dichroic mounts are 4 pads identical to the ones installed on the Rotator gallery.



Figure 3. Image of the storage stand with the 2 dichroic mounts mounted on it and the dust cover.

4. Optic covers: there are 2x stainless steel covers for the dichroic and 2x for the fold mirror. They must be mounted on the optics before handle the mount itself. Figure 4 shows how to install the cover on the dichroic cell. The fastening screws are captive and can be tightened through a 3mm allen wrench. Fold mirror is treated accordingly.

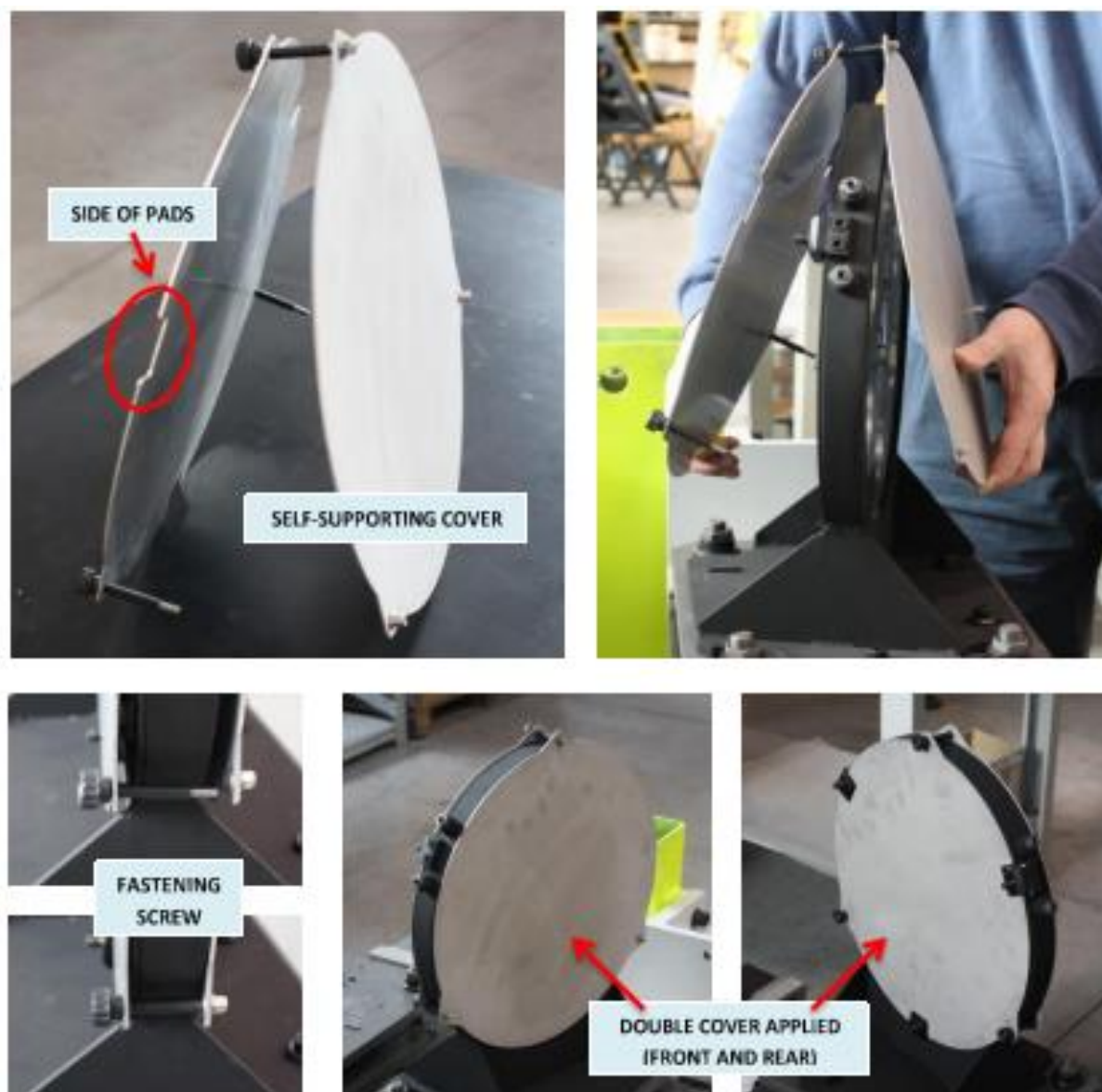


Figure 4. Installation of the dichroic cover.

5. Rotator gallery interface pads: each side of the telescope is provided with 2x black pads, highlighted in Figure 5 where the dichroic mount is bolted to. The interface with the dichroic mount are 4x M18 captive screws fixed to the mount itself. 2x pins allow a precise placement of the mount when removed and reinstalled.

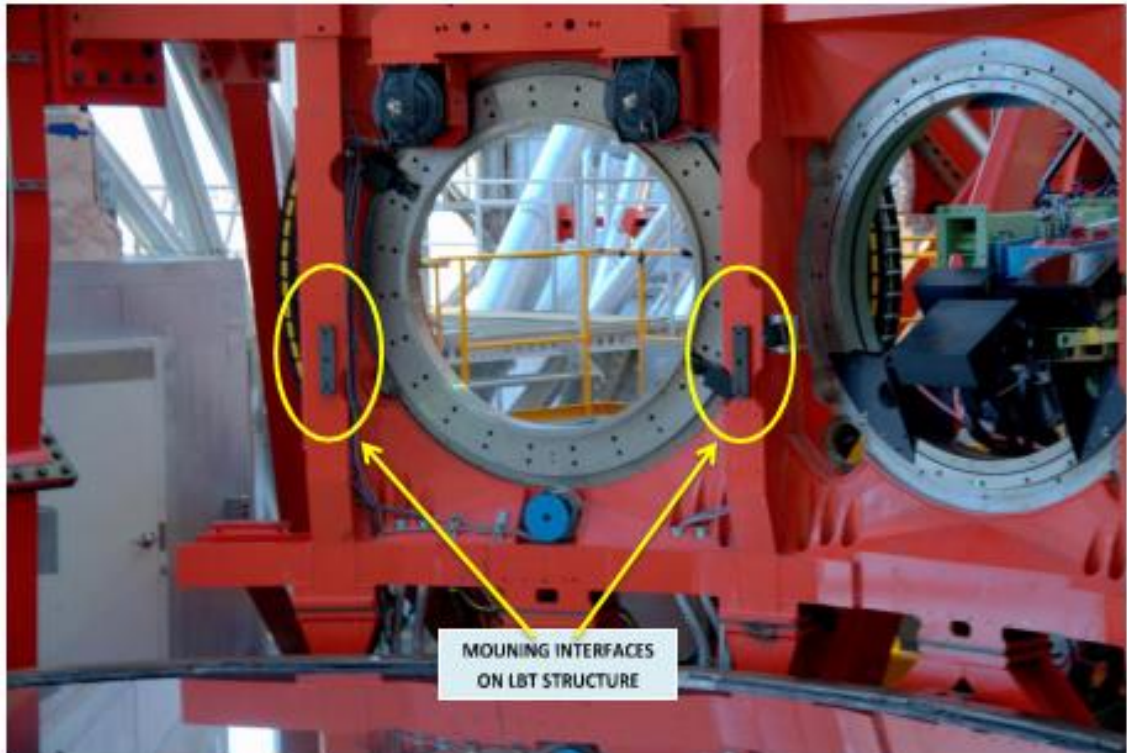


Figure 5. Picture of the rotator gallery pads installed on the SX side.

6. Dichroic controller: this is a standard rack unit hosting 2 X-mind RTA controllers to displace the dichroic and fold mirror mounts between their operational and parked positions, defined by hard end stops and provided with limit switches.
- During installation and removal procedures the dichroic controller is operated in manual control acting on the levers on its front panel. LEDs give feedback of the mounts deployment status.
- The controller input is a 110V power line, the output are the set of dichroic cables that must be connected to the connectors box below the dichroic mount.

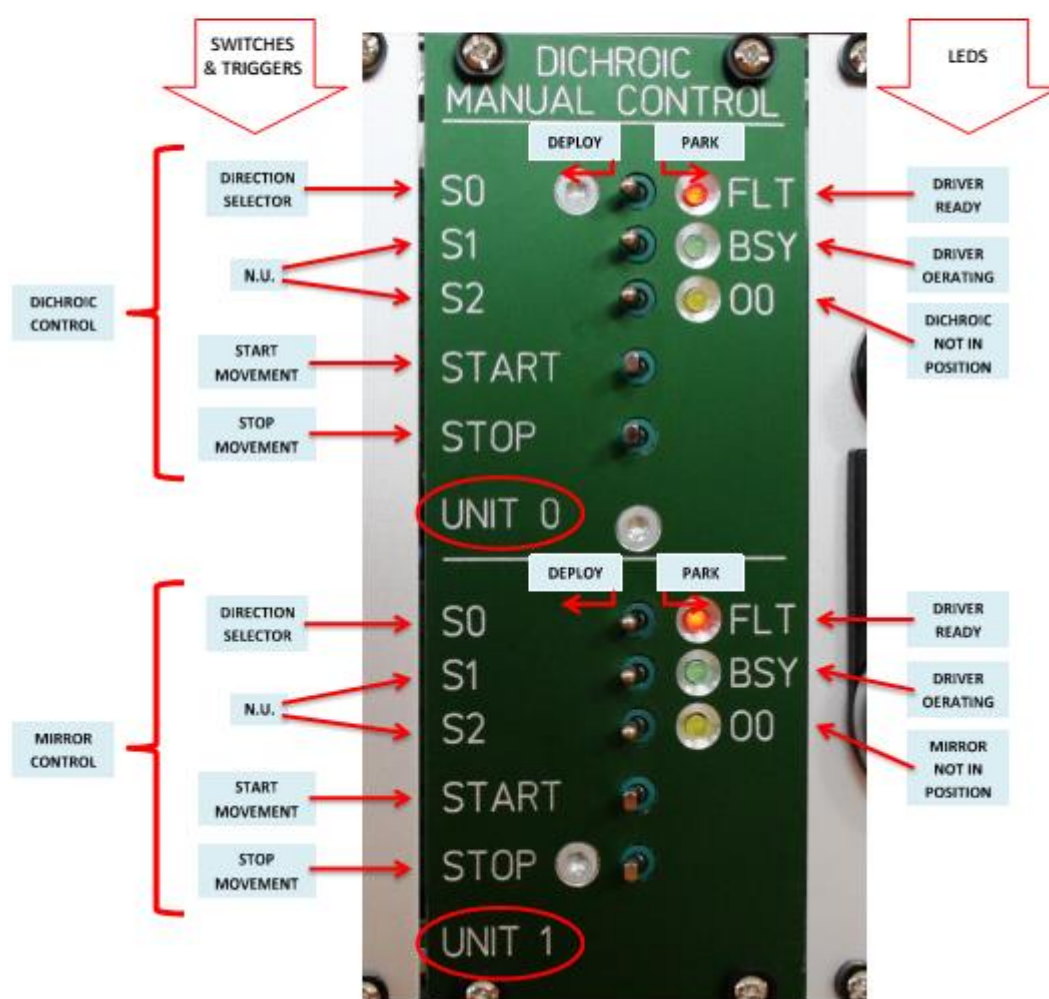

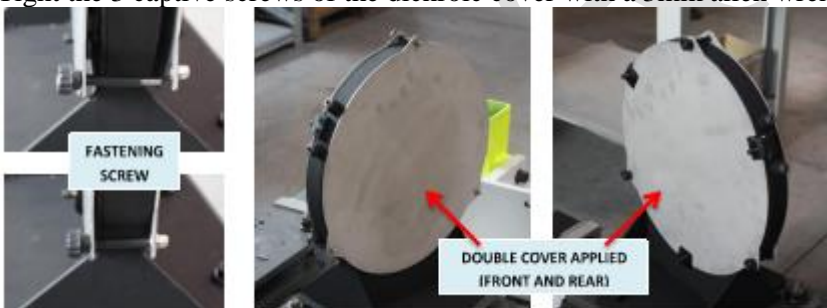







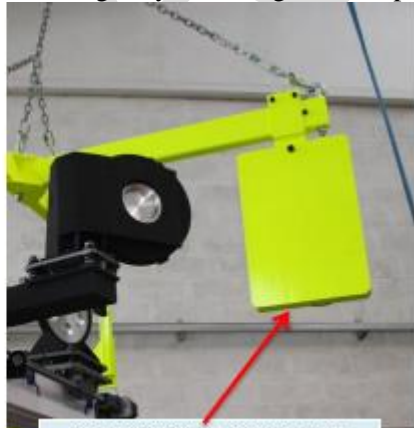
Figure 6. Image of the dichroic controller rack unit and detail of the manual control panel. Different levers and LEDs functionalities are highlighted.



7 Removal of the ARGOS dichroic mount unit ☐ DX ☐ SX

#	Procedure	By	Time
1.	 <p>POINT THE TELESCOPE TO ZENITH BEFORE OPERATING ON ARGOS DICHROIC MOUNT</p>		
2.	Install platform above M1		
3.	Verify that LUCI cal unit is in parked position		
4.	Rotate the building to 120° and open the hatch for access from the chamber to the high bay		
5.	Bring the storage stand on the high bay area and brake the wheels		
6.	Take the spare set of dichroic mount cables from the ARGOS spare cabinet and bring them to the high bay, close the storage stand		
7.	Bring a 110V power cord to the high bay, close to the storage stand		
8.	Apply the steel cover to the dichroic optic		
9.	<p>Tight the 3 captive screws of the dichroic cover with a 3mm allen wrench</p> 		
10.	Apply the steel cover to the fold mirror optic		
11.	<p>Tight the 3 captive screws of the fold mirror cover with a 3mm allen wrench</p> 		
12.	In the dichroic controller manual control panel move lever S0 unit 0 to right		
13.	Push start trigger on unit 0, BSY LED turns on		
14.	Wait that dichroic cart reaches parked position and BSY LED turns off on the panel		
15.	Move lever S0 unit 1 to left		

			
16.	Push start trigger on unit 1, BSY LED turns on		
17.	Wait that fold mirror arm reaches work position and BSY LED turns off on the panel		
18.	Turn off dichroic controller power		
19.	Remove the dichroic controller unit from the rack		
20.	Unplug all the cables and optical fibers from the controller back panel		
21.	Bring the controller unit down to the high bay, put it close to the storage stand		
22.	Disconnect all 7 cables from the dichroic mount connector box, above the dichroic mount		

			
23.	Hang the handling device on the crane by the red ring		
24.	Put the counterweight of the handling device in the central position		
25.	Check that locking pin is inside the hole		
			
26.	Move the handling device slowly towards the dichroic mount		

			
27.	Match the 4x M14 holes in the handling tools with the dichroic mount pass through holes		
28.	Fix the dichroic mount to the handling device with 4x M14 screws		
29.	Tighten the 4x M14 screws with a 12mm allen wrench		
30.	<p>Move the counterweight of the handling device in the external position: lift the locking pin and gently push the counterweight by the orange handle position.</p> <div data-bbox="279 1198 678 1668">  <p>COUNTERWEIGHT IN CENTRAL POSITION (WHEN MOVING WITHOUT THE INSTRUMENT)</p> </div> <div data-bbox="694 1198 1109 1668">  <p>COUNTERWEIGHT IN LATERAL POSITION (WHEN MOVING WITH THE INSTRUMENT)</p> </div>		
31.	Check that the locking pin to falls in his hole securing the counterweight position		
32.	Slowly release the 4x M18 allen screws with a 14mm allen wrench		
33.	Check that the M18 screws remain joined to the dichroic mount		
34.	Slowly move the dichroic mount toward the storage stand		
35.	Remove the plastic dust cover from the storage stand		
36.	Match the dichroic mount in the reference pins on the storage stand		
37.	Fasten the 4x M18 screws with a 14mm allen wrench		
38.	Move the counterweight of the handling device in the central position: lift the locking pin and gently pull the Counterweight by the orange handle, once reached the limit stroke let the locking pin to fall in his hole securing the position		

	 <p>COUNTERWEIGHT IN LATERAL POSITION (WHEN MOVING WITH THE INSTRUMENT)</p>	 <p>COUNTERWEIGHT IN CENTRAL POSITION (WHEN MOVING WITHOUT THE INSTRUMENT)</p>		
39.	Gently remove the 4x M14 allen screws to free the Handling Device			
40.	Slowly push the handling device from the dichroic mount on the storage stand			
41.	Connect all the 7 cables of the spare set to the dichroic mount connector box			
42.	Connect the 7 cables to the dichroic controller back panel			
43.	Connect the 110V power cord to the dichroic controller			
44.	Turn on the dichroic controller			
45.	Move lever S0 unit 1 toward right			
46.	Push start trigger on unit 1, BSY LED turns on			
47.	Wait that fold mirror arm reaches parked position and BSY LED turns off on the panel			
48.	Turn off dichroic controller			
49.	Unplug all the cables from dichroic controller back panel			
50.	Unplug all the 7 cables from dichroic mount connector box			
51.	Install the plastic dust cover on the service stand			
52.	Reinstall the dichroic controller in the LGSW rack, connecting all the cables and optical fibers on the back panel			
53.	Turn on the dichroic controller			
54.	Unbrake the storage stand wheels			
55.	Pull service stand on the elevator			
56.	Bring the set of spare cables, the 110V power cord and storage stand in clean room			
57.	Bring the handling device in the clean room			
58.	Park the storage stand somewhere in clean room and tight the wheel brakes			
59.	Store the set of spare cables in the ARGOS spare cabinet			
60.	Remove platform from M1			

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