

OAPI/M Insertion and Extraction S-AB-P-190 Rev A

Intent: This is an interim procedure used to insert or extract the OMEGA EP OAPI/M payload to or from its ‘docked and clamped’ position for any payload. Be aware that the insertion or extraction process can take up to 1 hour.

Note: (PLC) system states are identified in double quotes. (PLC) button and indicator labels are identified in capital letters.

Payload Insertion Procedure

Personnel requirements:

- An OMAN representative must be present at all times if the OAP is to be installed.
- BLO is required to operate the *oapm gui*

Material Required: Orange cones for securing the area

Prerequisite:

- If the payload is an optic, an OMAN ‘bright light inspection’ is required prior to insertion.
- Establish a secure area above and around the OAPI/M if an optic is being installed.

	Communicate with the BLO and determine if the OAPM ‘P&Q axes’ on the <i>oapm</i> gui are:	
1	<ul style="list-style-type: none">• in the ‘safe zone’ and• ‘permission’ is granted	<input type="checkbox"/>
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2	Refer to the PLC touch screen and ensure the system is in the “Extract/Install State”. If not, call Controls Engineering for assistance before proceeding. <ul style="list-style-type: none">• Ensure the CONNECT button is green; clear any errors.	<input type="checkbox"/>
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3	Check that the P-AXIS SAFE and Q-AXIS SAFE indicators are lit ‘green’. Check that the potentiometer values for Q-ACTUAL READING and P-ACTUAL READING are in the safe zone for insertion. If not, work with Controls Engineering to resolve any issues.	<input type="checkbox"/>
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4	If the TRANSPORT POSITION VALID indicator is lit ‘green’, proceed to step 5. If not, work with Controls Engineering to resolve any issues. (continues)	<input type="checkbox"/>

5	Set the ENTER EXTRACT/INSTALL button to '0' (home position).	<input type="checkbox"/>
	Press the EXTRACT/INSTALL button to start insertion. The button label will change to MOVING.	
6	Note: As the OAPI/M is inserting, monitor the clearances around the payload and the extension cables. There should be a minimum 1/16" clearance at all points. The move may be halted and restarted if required. <ul style="list-style-type: none">• If the clearance is less than 1/16" push the ABORT MOVES button.• If this fails to stop the move press e-stop button and resolve the conflict.	<input type="checkbox"/>
	Once insertion is complete the TRANSPORT POSITION should read '0'.	
7	Press the DISCONNECT button. Wait for the overhead red warning light to turn off. The system enters "Retracted Door Open State".	<input type="checkbox"/>
8	Remove and store the extension cables.	<input type="checkbox"/>
9	Disconnect the Workstand and roll it back.	<input type="checkbox"/>
10	Connect the control cables and close the access door. The area may be unsecured at this time.	<input type="checkbox"/>
11	Press CONNECT and clear any errors.	<input type="checkbox"/>
12	Press FIND HOME.	<input type="checkbox"/>
13	Press the GOTO RETRACTED STATE button. System enters the "Retracted Door Closed State".	<input type="checkbox"/>
14	Press the INSERT button.	<input type="checkbox"/>
15	Once insertion is complete, the TRANS NOT POS LIMIT indicator will change to TRANS POS LIMIT (yellow) and the System State will transition to "Clamp State".	<input type="checkbox"/>
16	Press CLAMP UP TO SWITCHES and wait for the #1 and #2 ENABLED AND EXTENDED icons from Clamps 1 & 2 to illuminate. (continues)	<input type="checkbox"/>

17	Press CLAMP LOCK and wait for #1 and #2 EXTENDED AND CLAMPED icons to turn green.	<input type="checkbox"/>
18	Press GOTO DOCKED and wait for the System State to indicate “Docked State”.	<input type="checkbox"/>
19	Press “Disconnect”.	<input type="checkbox"/>

(End of Procedure)

Payload Extraction Procedure:

Personnel requirements:

- An OMAN representative must be present at all times if the OAP is to be installed.
- BLO is required to operate the *oapm gui*

Material Required: Orange cones for securing the area.

Prerequisite:

- If the payload is an optic, an OMAN ‘bright light inspection’ is required after extraction.
- Establish a secure area above and around the OAPI/M if an optic is being installed.
- Confirm the OAPI/M is in the “DOCKED” state

At the OAPI/M touch screen press CONNECT.

1	Confirm with the BLO that the OAPM ‘P&Q axes’ on the <i>oapm gui</i> are: <ul style="list-style-type: none">• in the ‘safe zone’ and• ‘permission’ is granted	<input type="checkbox"/>
2	Press GOTO CLAMP STATE	<input type="checkbox"/>
3	Press UNCLAMP and be sure that CLAMP #1 and CLAMP #2 HOME indicators are lit ‘green’.	<input type="checkbox"/>
4	Press RETRACT. System state will change to “Retracted Door Closed State”.	<input type="checkbox"/>
5	Monitor the OAPI/M transport position till it reads 0.	<input type="checkbox"/>
6	Press DISCONNECT.	<input type="checkbox"/>
7	Verify that the target chamber is not at vacuum and open the access door. (continues)	<input type="checkbox"/>

8	Disconnect the festoon cables.	<input type="checkbox"/>
9	Install the workstand.	<input type="checkbox"/>
10	Install the extension cables.	<input type="checkbox"/>
11	Press CONNECT. System state will change to “Extract/Install State”.	<input type="checkbox"/>
12	Press ENTER EXTRACT/INSTALL and the desired value.	<input type="checkbox"/>
	Note: To perform a Payload change on the EP Backlighter the extracted position should be -50,000,000.	<input type="checkbox"/>
	Press the EXTRACT/INSTALL button to start extraction. The button label will change to MOVING.	
13	Note: As the OAPI/M is extracting, monitor the clearances around the payload and the extension cables. There should be a minimum 1/16” clearance at all points. The move may be halted and restarted if required. <ul style="list-style-type: none">• If the clearance is less than 1/16” push the ABORT MOVES button.• If this fails to stop the move press e-stop button and resolve the conflict.	<input type="checkbox"/>
14	Press DISCONNECT when extraction is complete.	<input type="checkbox"/>
15	When the OAPI/M is on the workstand ensure that it is covered. If there is an optic installed a bright light inspection shall be completed by an OMAN representative.	<input type="checkbox"/>

(End of Procedure)

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