

Brookhaven National Laboratory/ LIGHT SOURCES DIRECTORATE			
Subject:	VACUUM PROCEDURES FOR BEAMLINE U-12IR		
Number:	LS-OPS-0124	Revision:	B
		Effective:	02/22/2010
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*Approval signatures on file with master copy.

The following procedures must be followed when bleeding up different sections and when returning these sections to operation (refer to Beamline Layout Drawing):

I. UHV SECTION 1 (SECTION BETWEEN VALVE V1 AND VALVE V2)

A. Bleed-Up

Only one valve (V1) is available for isolating this section from the ring. Therefore, this section can only be vented with the approval of the NSLS Vacuum Group and no beam can be in the machine (e.g. maintenance).

1. Notify the Coordinator (Beeper 5824).
2. Fully extract Mirrors M1/M2 from Valve V1, and confirm that the mirrors are out.
3. Close Valve V1 by either direct operation of the screw-switch on the valve actuator (inside the ring) or by the beamline valve control panel. **This step restricted to G.L. Carr, or by his direct authority.**
4. Coordinator places Yellow Tag on Valve V1.
5. Turn off G-P ion gauge G1 and ion pump P1 (120 l/s).
6. Connect turbo station with Nitrogen gas bleed up accessory to one of the two pump-out ports (Varian right angle valve). Evacuate pumping line to required pressure. While Vacuum Group monitors ring pressure, slowly bleed in Nitrogen gas. Close bleed valve if ring pressure begins to rise. Otherwise, continue until atmospheric pressure is reached.

If possible, monitor the downstream pressure on Gauge G2 to ensure that Valve V2 is not leaking. Keep dry Nitrogen flowing into Section 1 while at atmosphere.

B. Return to Operation

1. Using turbo station connected as for venting (see step 6 above), evacuate Section 1. Bake as necessary to achieve required vacuum of 2.0×10^{-9} Torr or lower.
2. Turn on G-P ion gauge G1 and ion pump P1 (120 l/s).
3. Notify the Coordinator (Beeper 5824), notify the NSLS Vacuum Group for approval that beamline meets vacuum requirements (RGA scan typically required).*
4. Open Valve V1. Insert Mirrors M1/M2 into position. **This step restricted to G.L. Carr, or by his direct authority.**
5. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes Yellow Tag from Valve V1.
6. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a Yellow Tag on the valve.**

AUTHORIZED PERSONNEL FOR SECTION 1

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II UHV SECTION 2 (SECTION BETWEEN VALVE V2 AND DIAMOND WINDOW)

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Fully extract Mirrors M1/M2 from Valve V1, and confirm that the mirrors are out.
3. Connect turbo station with Nitrogen gas bleed up accessory to one of the two pumps out ports (Varian right angle valve). Evacuate pumping line to required pressure.
4. Close Valve V1 by either direct operation of the screw-switch on the valve actuator (inside the ring) or by the beamline valve control panel. **This step restricted to G. L. Carr, or by his direct authority.**
5. Close Valve V2 (via screw control on valve actuator).
6. Coordinator places Yellow Tags on Valve V1 and Valve V2.
7. Turn off G-P ion gauge head G2, ion pump P2 (60 l/s) and any other accessories.
8. Disable fast valve in the "open" position, then disconnect power to fast valve sensor G3 (mini ion pump). Coordinator Yellow Tags fast valve sensor power stating re-enabling of sensor required for return to operations.
9. Slowly bleed up with boil-off Nitrogen gas while Coordinator monitors pressure in UHV Section 1.

B. Return to Operation

1. Using turbo station connected as for venting (see step 3 above), evacuate Section 2. Bake as necessary to achieve required vacuum of 2.0×10^{-9} Torr or less.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Turn on G-P ion gauge head G2, ion pump P2 (60 l/s) and any other accessories.
5. Open Valve V2 provided pressure $< 2.0 \times 10^{-9}$ Torr downstream of the valve.
6. Perform RGA scan.*
7. Open Valve V1. Insert Mirrors M1/M2 into position. **This step restricted to G.L. Carr, or by his direct authority.**
8. Repower the fast valve sensor and re-enable the fast valve in the "open" position.
9. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes Yellow Tags from Valve V1, Valve V2 and the Fast Valve sensor power.
10. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a Yellow Tag on the valve.**

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III. SECTION DOWNSTREAM OF DIAMOND WINDOW (ROUGH VACUUM)

The rough vacuum beamline section is always isolated from the storage ring by a permanent window. Therefore, no approvals from the Vacuum Group or Operations Coordinator is necessary for these procedures.

Specific instructions and authorized personnel for this section is available at the beamline.

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