

Roman Pot Insertion Instruction

As soon as the first run is started CALL MCR (X4662) for permission to operate the RPs.

If Roman Pots are moved without the permission it will cause BEAM DUMP.

On the right monitor on the top shelf you should see the Roman Pot operations window.

Before you get the permission from MCR you should see the red fields.

After you get permission by MCR calling back you will see green fields (See the next page.)

6/24/17

The screenshot displays two side-by-side control windows for Roman Pots. The left window is titled 'Roman Pot (on acclin21)' and shows data for pots W1U, W1D, W2U, and W2D. The right window shows data for pots E1U, E1D, E2U, and E2D. Both windows have a 'Permit Status' row with red text indicating 'enable' for all pots. Below the data tables are buttons for 'Insert', 'Home', 'Stop', 'Nudge In', and 'Nudge Out'. The left window has a 'Blue Ring' indicator and the right has a 'Yellow Ring' indicator. Below the buttons are two graphs showing 'dilatation level (nm)' over time, and a log window at the bottom showing a sequence of commands and status messages.

	W1U	W1D	W2U	W2D
Which Pot to Move?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Insert Target Position (mm):	40.0	-40.0	40.0	-40.0
Insert Target Position (step):	384860	385350	386838	385858
Current Position (step):	0	0	0	0
LVDT position (mm):	88.913	-88.917	88.916	-88.789
Fast Moving Fraction:	0.9	0.9	0.9	0.9
Nudge Step Size (steps):	200	200	250	230
Cur Motor Speed (steps/seo):	4000	4000	4000	4000
Enable Motion Control:	off	off	off	off
At Limit:	Retracted	Retracted	Retracted	Retracted
Motor Speed Vo (steps/seo):	5000	5000	5000	5000
Motor Speed Ve (steps/seo):	4000	4000	4000	4000
Single Rate Limit:	200000	200000	200000	200000
Single Rate PMT1:	1	1	1	1
Single Rate PMT2:	1	1	1	1
Permit Status:	enable	enable	enable	enable

	E1U	E1D	E2U	E2D
Which Pot to Move?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Insert Target Position (mm):	40.0	-40.0	40.0	-40.0
Insert Target Position (step):	393463	386600	385735	390027
Current Position (step):	0	0	0	0
LVDT position (mm):	89.700	-88.969	88.890	-89.204
Fast Moving Fraction:	1.0	0.9	0.9	0.9
Nudge Step Size (steps):	200	203	200	200
Cur Motor Speed (steps/seo):	5000	5000	5000	5000
Enable Motion Control:	off	off	off	off
At Limit:	Retracted	Retracted	Retracted	Retracted
Motor Speed Vo (steps/seo):	5000	5000	5000	5000
Motor Speed Ve (steps/seo):	4000	4000	4000	4000
Single Rate Limit:	200000	200000	200000	200000
Single Rate PMT1:	1	1	1	1
Single Rate PMT2:	1	1	1	1
Permit Status:	enable	enable	enable	enable

Log messages (left window):

```
Thu Feb 19 07:13:18 EST 2015: Move roman pot [W1D] to 385350
Thu Feb 19 07:13:18 EST 2015: Stopped one roman pot: SLOW
Thu Feb 19 07:13:18 EST 2015: Move roman pot [W1U] to 384860
Thu Feb 19 07:13:18 EST 2015: Stopped one roman pot: SLOW
Thu Feb 19 07:13:18 EST 2015: Move roman pot [W2U] to 386838
Thu Feb 19 07:13:31 EST 2015: Stopped all roman pots: INSERTDONE
Thu Feb 19 07:13:31 EST 2015: =====Insert done!
```

Log messages (right window):

```
Wed Feb 18 14:32:05 EST 2015: Move roman pot [E2D] to 390027
Wed Feb 18 14:32:05 EST 2015: Stopped one roman pot: SLOW
Wed Feb 18 14:32:05 EST 2015: Move roman pot [E1D] to 386600
Wed Feb 18 14:33:15 EST 2015: Stopped all roman pots: INSERTDONE
Wed Feb 18 14:33:15 EST 2015: =====Insert done!
Wed Feb 18 14:48:48 EST 2015: Started to pull home roman pots
Wed Feb 18 14:50:39 EST 2015: Stopped all roman pots: HOMEDONE
Wed Feb 18 14:50:39 EST 2015: =====Home Romanpot done!
```

Roman Pot Operations for Shift Crew

If you don't see the green lines you need kill Roman Pot process on the acnlin21 terminal window on the left monitor on the top shelf (see the last page) and restart the Roman Pot GUI.

There are several lines which show the status of the Roman Pots. Familiarize yourself with those lines.

The pictures in the middle of the ops window show position of the Roman Pots with respect to the beam center, for informational purposes only.

The screenshot displays the Roman Pot GUI with the following components:

- Control Panels:** Buttons for 'Insert', 'Home', 'Stop', 'Nudge In', and 'Nudge Out' are present for each pot.
- Blue Ring Section:**
 - W1 and W2 Diagrams:** Schematic drawings of the pots with blue rings.
 - Graphs:** Plots of 'diation level [mrk]' vs 'time of day' for W1 and W2. W1 shows a high level of red data points, while W2 shows a low level of black data points.
- Yellow Ring Section:**
 - E1 and E2 Diagrams:** Schematic drawings of the pots with yellow rings.
 - Graphs:** Plots of 'diation level [mrk]' vs 'time of day' for E1 and E2. E1 shows a high level of black data points, while E2 shows a low level of red data points.
- Log Window:** A scrollable log at the bottom showing system messages such as 'Stopped one roman pot: SLOW' and 'Insert done!'.
- Tables:** Two tables at the top provide detailed position and motion control data for W1, W2, E1, and E2.

Green arrows on the right side of the image point to the 'LVDT' label and the 'Enable Motion Control' rows in both tables, which are highlighted in green in the original image.

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Roman Pot Operations for Shift Crew

There are three buttons on the control GUI to be clicked to get the desired action:

1. **Insert** – to move the roman Pots to desired position
2. **Stop** – to stop movement (if you see sustained rate spike during the movement, for example).
3. **Home** – if for any reason you need to take Roman Pots to the Home position.

Before the Beam Dump or before the Vernier scan click the **Home** button to bring Roman Pots to the home position.

Call expert on call if you have questions or if you are not able to proceed with RP insertion

See Shift Leader's call list

Roman Pot Insertion for Shift Crew

After getting the permission from MCR and seeing the fields turn green, in the top line type the desired distance for the roman pots to go to. The numbers are Positive for the upper Roman Pots and negative for the down Roman Pots. The sign matters and must be typed in.

NOTE: The Roman Pot insertion takes place as soon as possible after the data taking starts.

At all times during the insertion watch rates shown on the screen next to the control screens. They should not increase rapidly, only smoothly while insertion is in progress.

For each of the next steps the singles rates should stay **below 300 kHz** as long as they decay. They rise during the motion and flatten out once the motion stops.

Also note that DAQ needs to be data taking or initialized for the rates to be reliable, which is normally the case when insertion takes place. This is due to QT board features.

Call expert on call if you have questions or if you are not able to proceed with RP insertion

Roman Pot Operations for Shift Crew

Insertion is done in few steps:

1. Check the box under each RP label so that that RP is included in the motion. Normally all boxes need to be checked.
2. This step is done during the ZDC polarimetry and is to assure all is working OK and no RP runs out of control. Go to 50 and -50 (mm), by typing 50 and -50 in the second line from the top.
3. Hit the **Insert** button. Watch the rates and LVDT position line fifth line from the top.
4. **Wait 2 mins before proceeding with insertion of Roman Pots.**
5. Move the Roman Pots in Four steps and observe the rates making sure that they do not increase rapidly:
 - a) Go to 35 (-35) mm, type in the numbers and hit the Insert Button. Check the LVDT reading after Roman Pots reach their position, it should be within 0.5 mm of the requested position. Wait 2 mins observing the singles rates, they should flatten.
 - b) Go to 25 (-25) mm. observing the singles rates, they should flatten. **Wait 2 mins observing singles rates, they should flatten.**

If for any of the steps below the singles rate is bigger than 300 kHz in a given Roman Pot move that Roman Pot back by 1 mm.

- a) Go to 23 (-23) mm. observing the singles rates, they should flatten. **Wait 2 mins observing singles rates, they should flatten.**
- b) For **E1U, E1D, E2U, E2D, W1U, W1D** go to 21 (-21) mm. Wait 2 mins observing the singles rates, they should flatten.

You are done: Inform the shift leader that RPs are ready for data taking.

Call expert on call if you are not able to proceed with RP insertion

Roman Pot Operations Before and After Polarization Measurement

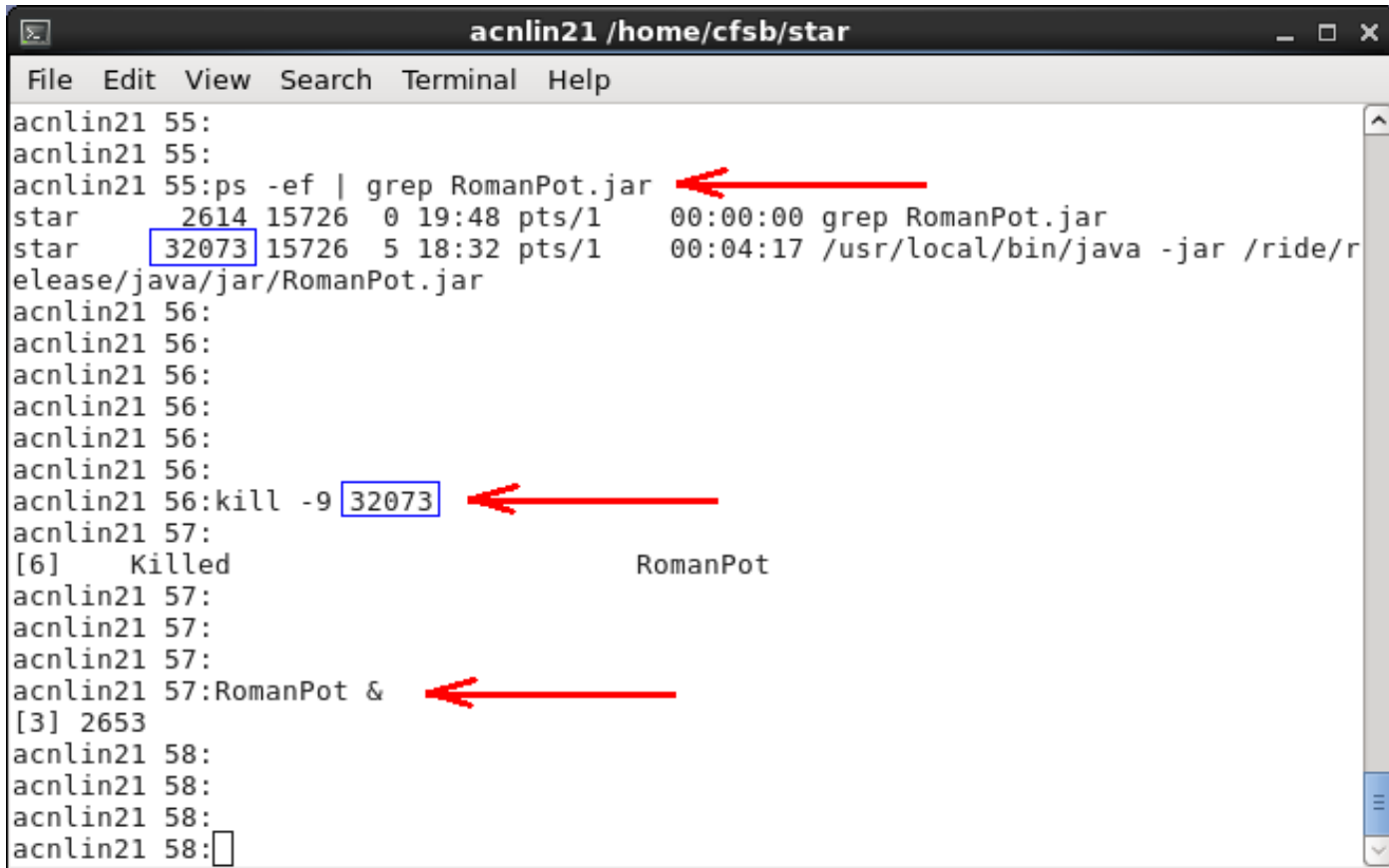
1. Before the polarization measurement or vernier scan and before there is a call from MCR. Prepare the Roman Pots to be retracted to ± 40 mm.
2. When MCR calls hit the Insert button to retract RPs, this should take less than a minute. Immediately inform the Shift leader when RPs are at ± 40 mm.
3. During the polarization measurement type in the values to start moving RPs back to the data taking position. All should be at ± 25 mm.
4. When MCR calls that polarization measurement is done use the Insert button to move RPs to the preset distance in #3 above. Observe the rates.
5. If there is no spike move all RPs to ± 23 mm, observe the rates.
6. If there is no spike move W1D, W1U, E1U, E1D, E2U, E2D to ± 21 mm (all except W2U, W2D), observe the rates.

You are done: Inform the shift leader that RPs are ready for data taking.

Call expert on call if you are not able to proceed with RP insertion

Killing and Restating Roman Pot Process

Execute the following commands



```
acnlin21 /home/cfsb/star
File Edit View Search Terminal Help
acnlin21 55:
acnlin21 55:
acnlin21 55:ps -ef | grep RomanPot.jar
star      2614 15726  0 19:48 pts/1    00:00:00 grep RomanPot.jar
star      32073 15726  5 18:32 pts/1    00:04:17 /usr/local/bin/java -jar /ride/r
elease/java/jar/RomanPot.jar
acnlin21 56:
acnlin21 56:
acnlin21 56:
acnlin21 56:
acnlin21 56:
acnlin21 56:
acnlin21 56:kill -9 32073
acnlin21 57:
[6]      Killed                               RomanPot
acnlin21 57:
acnlin21 57:
acnlin21 57:
acnlin21 57:RomanPot &
[3] 2653
acnlin21 58:
acnlin21 58:
acnlin21 58:
acnlin21 58:█
```

The terminal window shows the following sequence of events:

- The user runs `ps -ef | grep RomanPot.jar` to find the process ID 32073.
- The user runs `kill -9 32073` to terminate the process.
- The terminal displays `[6] Killed RomanPot`.
- The user runs `RomanPot &` to restart the process.
- The terminal displays `[3] 2653`.

Sample plot of singles rate changes during Roman Pot insertion for Blue Ring RPs

