

Tunnel Installations Critical Jobs

LEReC (commissioning 2017 and 2018, operations 2019 and 2020)

- Install cathode system and remove cathode from gun
- Install Gun to Booster beam line with laser alignment
- Install laser systems
- Install DC gun test beam transport line to dump
- Install 2.1 GHz RF cavity system
- Install 704 MHz RF cavity system (late delivery – maintenance day)

CeC (commissioning 2017, experiment 2018, operations eRHIC)

- Prepare and install 5 cell SRF cavity
- Install ICT
- Install laser system
- Install and align cathode insertion system

Tunnel Installations

Dates: (not based on project management science)

- Cathode systems ready for bake 12/30
- GtB and booster section ready for bake 1/6
- Transport under vacuum 1/13
- CeC 5 cell in tunnel for installation 1/17

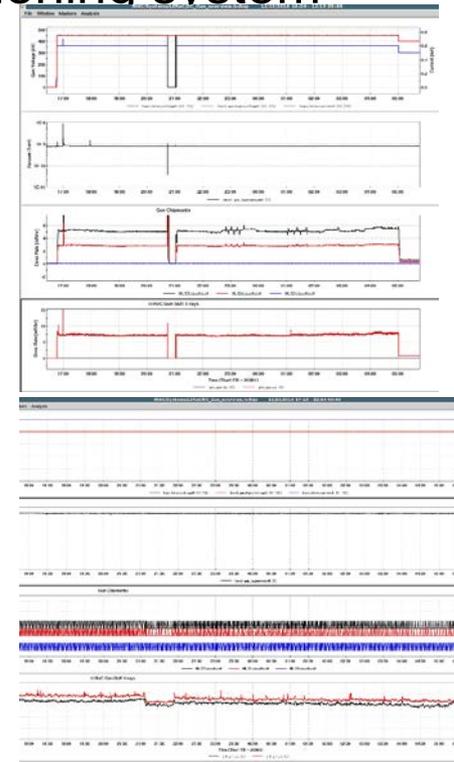
Meetings

- Cathode systems installation 9:30 today EAG
- Power panel location (clean room) 10:30 RHIC2:00
- LASER systems 11:00 today MCR
- Gun to Booster Line 1:15 today SCR
- Warm RF cavities yesterday

DC Gun Preparations

DC Gun conditioning complete: 10 days 450kV stable operation

- **Leak check – spray repair, condition NEGS**
- **Remove SF6**, cart, and tanks to clear *cold* area, recharge January 23.
- Replace relief valve, pressure/vacuum gauge, low pressure switch
- Replace processing/conditioning resistor? Current read back resistor?
- Move inverter rack, move instrumentation rack, **fix fan trip problem**
- Revise cable tray path, move water lines and power line off floor
- Leak check and regenerate NEG pumps, remove He conditioning system



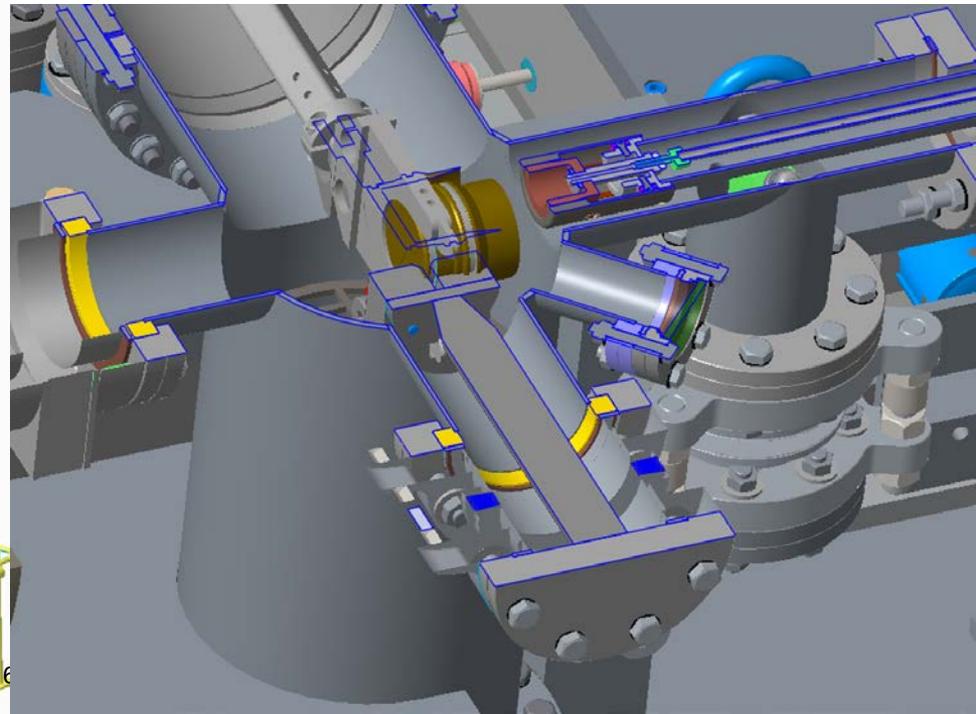
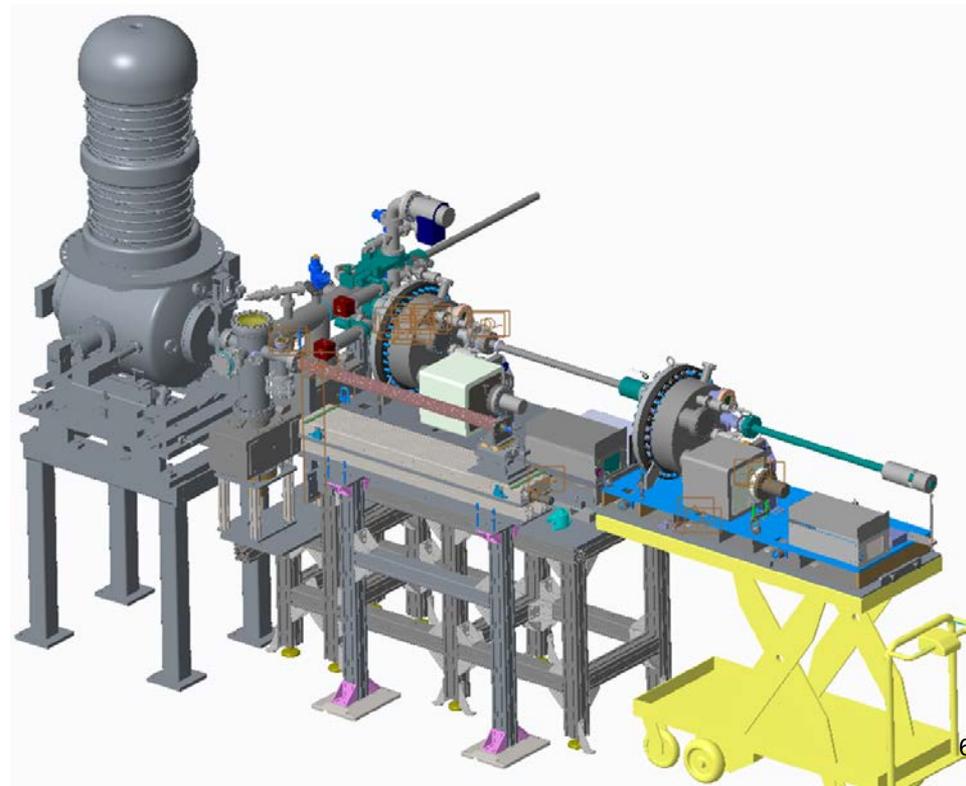
Area Construction

- Tunnel clean-up yesterday and today
- Work platform clean room filters ordered - delivery, not in time.
- Work platform assembly – temporary cleanroom installed for cathode installation.
- Portable filters ordered for beamline installation, due next week
- Cable tray installation DC gun crossing – temp to permanent
- cables pulling underway.
- Cable tray 1002B to 1002F (laser)
- Cable tray reroute for DC Gun Power supply
- CeC Beam dump move – Friday?



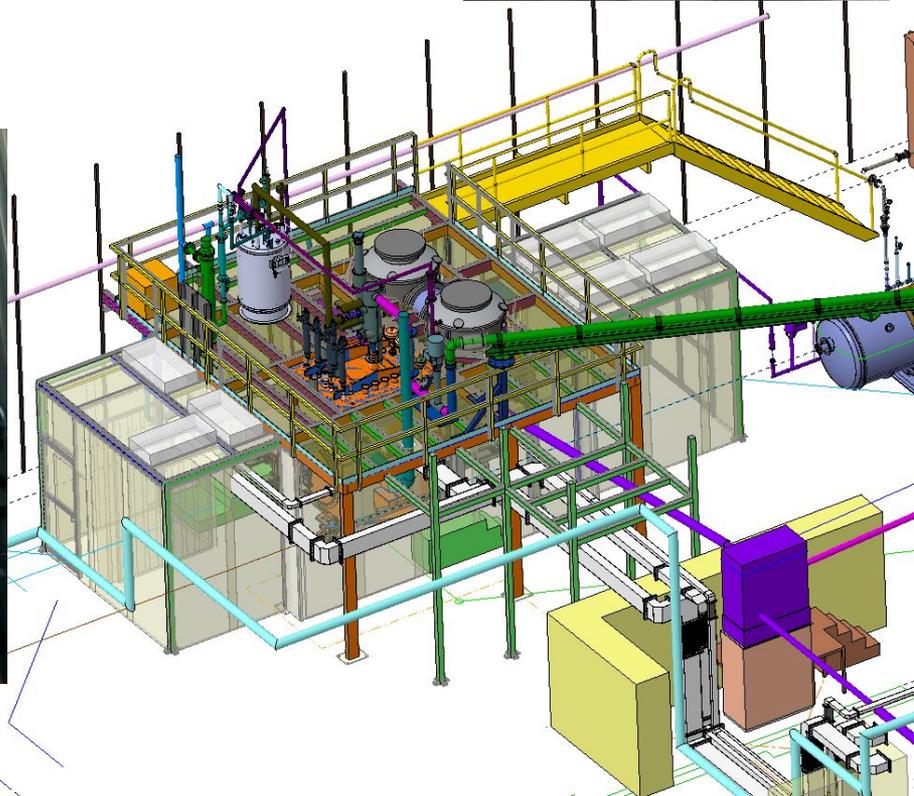
Cathode Systems

- Clean room installed: filters and lights operational
- Stand assembly complete, move to tunnel, survey, and install
- Gun cathode inserter – cleanroom assembly, survey under vacuum
- Assemble cathode inserter system in tunnel, bakeout
- Remove cathode from DC gun
- Assemble single cathode transport #1, bakeout, remove DC gun cathode puck
- Assemble single cathode transport #2, bakeout, pick-up 1st DC gun cathode puck



Laser Systems

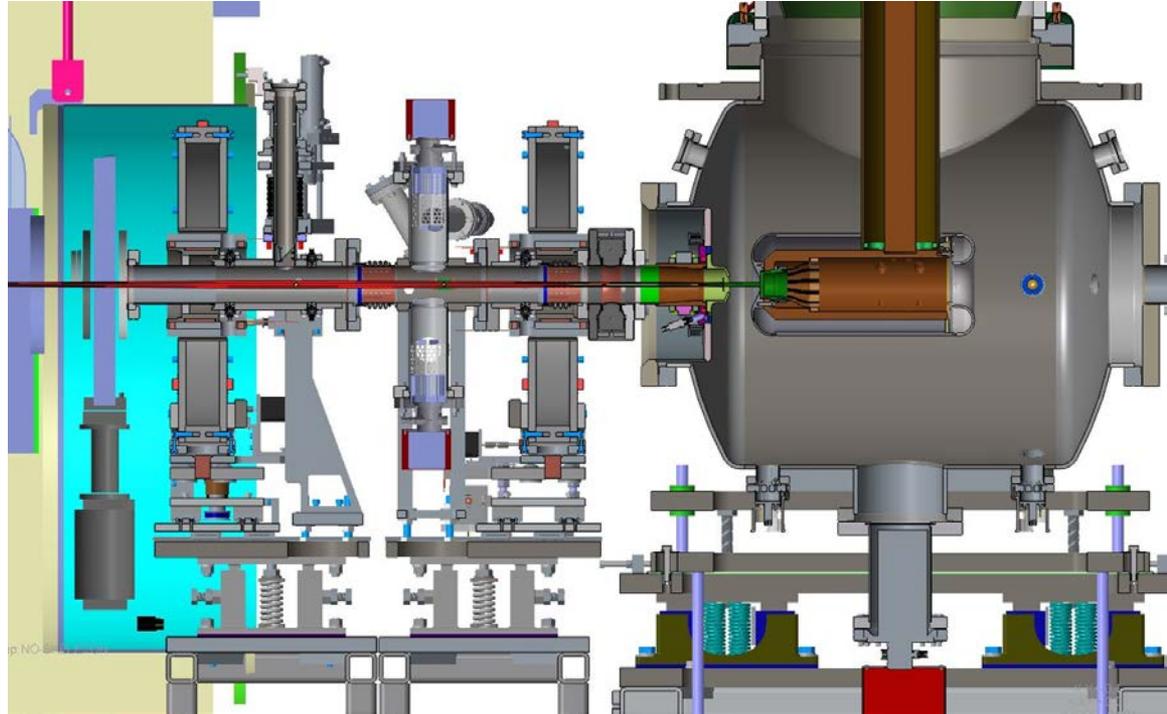
- Complete AC move, start laser install at 1002F
- Support outside laser transport line
- Relay table assembly
- Cross tunnel laser vacuum line (chambers ready)
- Gun table assembly (lights, side curtains, temporary clean room filters)



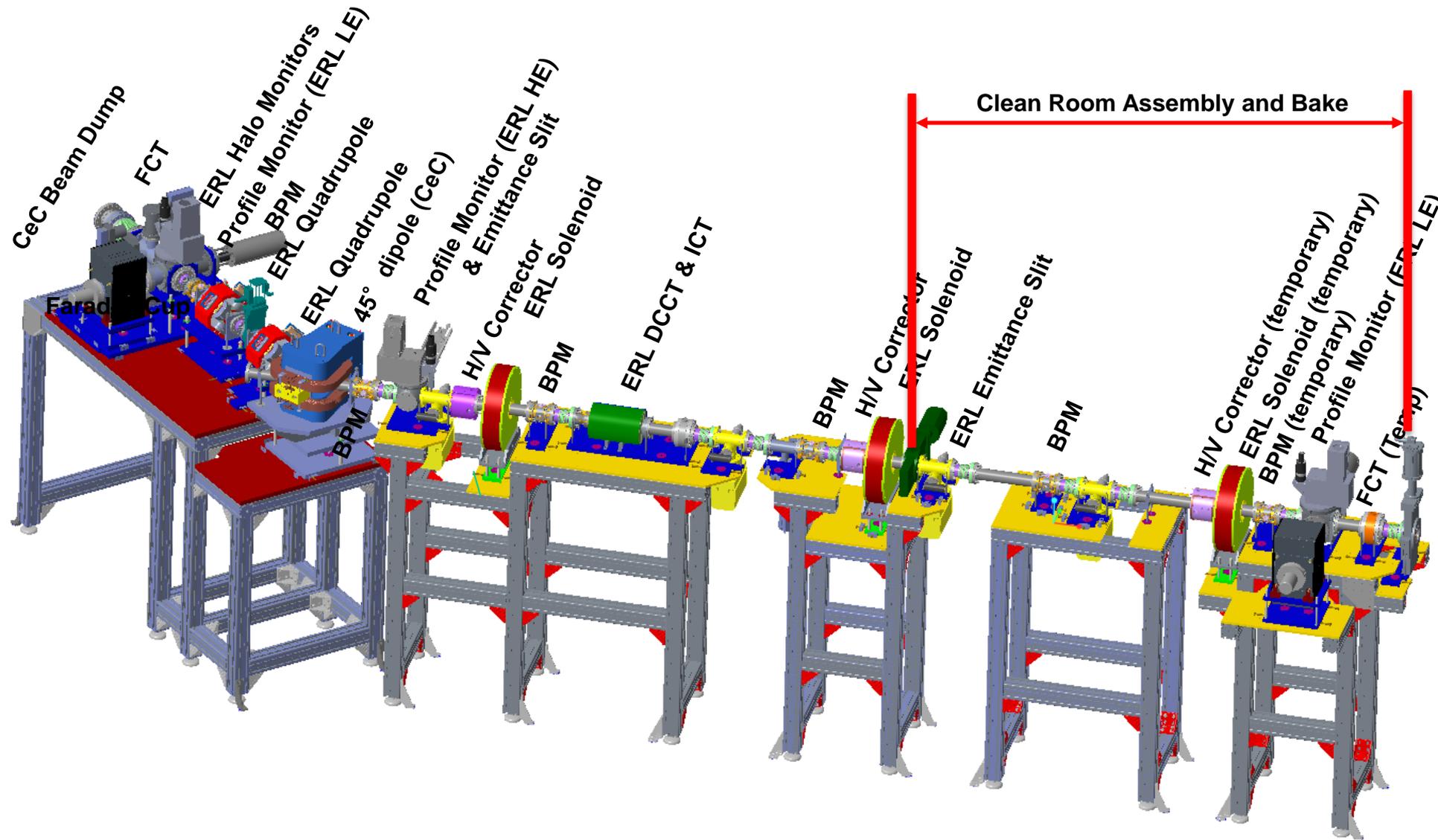
Gun to Booster Cavity Beam Line

- Solenoids measured, Correctors being measured
- Solenoid positioning drives assembled, being tested
- Stands complete, vacuum chambers being baked and prepped
- BPM buttons in hand
- Mirror assemblies, need mirrors
- Profile monitor, need YAG crystal holder assembly

Next Step: Move stands to tunnel, survey, redhead, move to 919B for beamline assembly.



DC Gun Test Transport Line



Transport Line Sector 1

- Vacuum equipment in hand: bellows, ion pump tees, ion pumps and gauges, controllers – awaiting cable tray.
- Fast Current Transformer – delivery date? Test, clean room prep.
- Profile monitor 1 complete – need clean room prep.
- BPM's complete – two need clean room prep.
- Solenoid magnets on stands in tunnel
- H&V correctors, magnetic measurement, 1 + 2 for GtB need clean room prep.
- Emittance slit assembly, status, chamber in house?
- ICT and DCCT need base supports & UHV prep.
- Profile monitor 2 status, need ferrites, final assembly



Transport Line LE Beam Dump Sector

- Stand assembled in 919B, being surveyed, move Friday
- 45 magnet and quads mounted on stand
- BPM's complete
- H&V correctors, magnetic measurement
- Profile Monitor 3 complete - ready for installation?
- Halo monitor, chamber complete, ERL drives – ready for installation?
- Fast Current Transformer – status, delivery date?
- Large bellows – ready for installation?
- Ceramic break received – cleaned and ready for installation



RF Cavities

- 2.1 GHz PA delivered, transformers moved into place.
- 2.1 GHz cavity assembled
- Waveguide and coax being installed
- 704 MHz delivery January

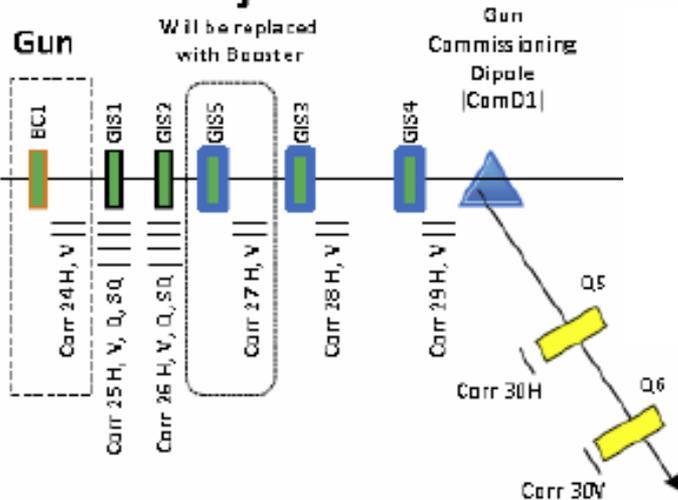


Gun Injection Section

1. 1 p.s. Kaiser High Voltage ps for gun
2. 1 p.s. High Voltage Anode Bias ps. Will go in tunnel. Cornell specs ~1kV and 30uA. Purchase Spellman 1kV 10 mA, 5L1PN10/FGLL/SIC/LR.
3. 1 p.s. (BC1). $I_{op}=4.2A$, $I_{max}=6A$ 1000ppm. Using ERL BiRa 20V, 6A 1000ppm p.s.
4. 6 p.s.'s (Carr 24H,V, 25H,V, 26H,V), $I_{op}=0.6A$ 100ppm New CAEN EZ Driver 12V 1A 100ppm p.s. bipolar.
5. 10 p.s.'s (Carr 25Q, SQ & Carr 26Q, SQ & 27H,V-29H,V). New GM Correctors. Use ERL BiRa 20V 2A 1000ppm.
6. 2 p.s.'s (GIS1-GIS2) using New GM Sol's. $I_{max}=8A$ @ 100ppm. Use ERL SHIM 15V 10A 100ppm (limit 100W) ps's
7. 2 p.s.'s (GIS3-GIS4) ERL Sol. $I_{max}=5A$ @1000ppm Use ERL SHIM 15V 10A 100ppm (limit 100W) ps's.
8. 1 p.s. (GIS5) ERL Sol. $I_{op}=8.4A$, $I_{max}=10A$ @1000ppm Use ERL SHIM 15V 10A 100ppm p.s.
9. 1 p.s. (ComD1) CeC 45° dipole. $I_{op}=20A$ 1000ppm required. Use New GEN 30-25 1000ppm ps
10. 2 p.s.'s. (Q5 & Q6) $I_{op}=0.6A$ & $0.4A$. Use 2 ERL 20V 2A 1000ppm BiRa's.
11. 2 p.s.'s (Carr 30H,V) $I_{op}=0.55A$. Use 2 ERL 20V 2A 1000ppm BiRa's.

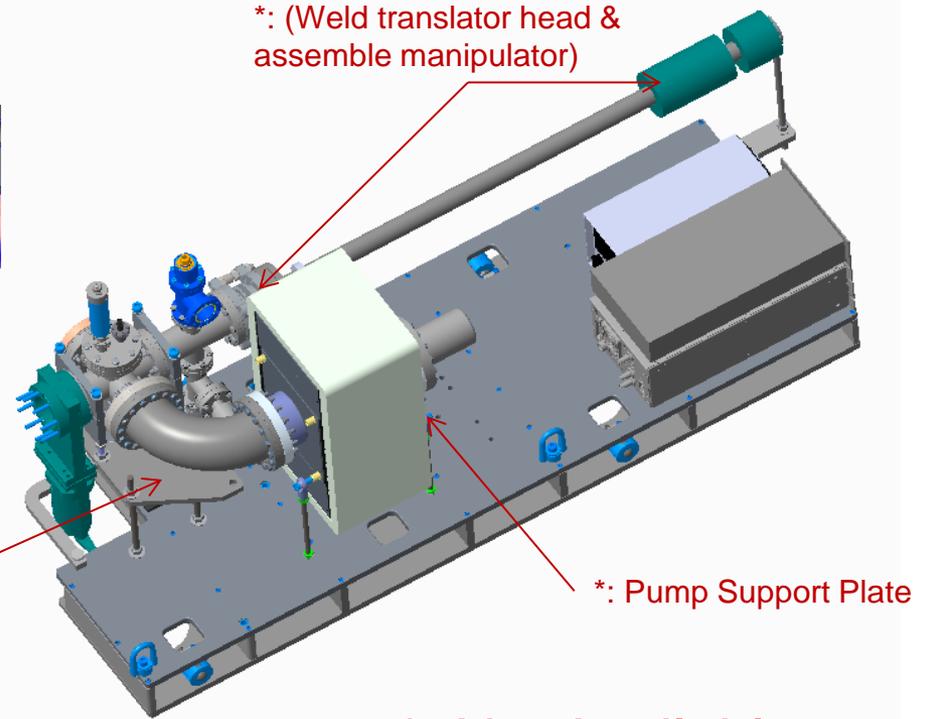
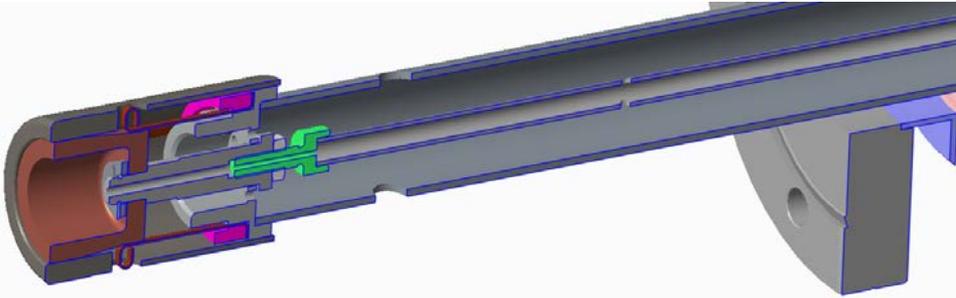


Gun Injection



Magnets polarity check and recorded
Magnet for maximum PS current test.

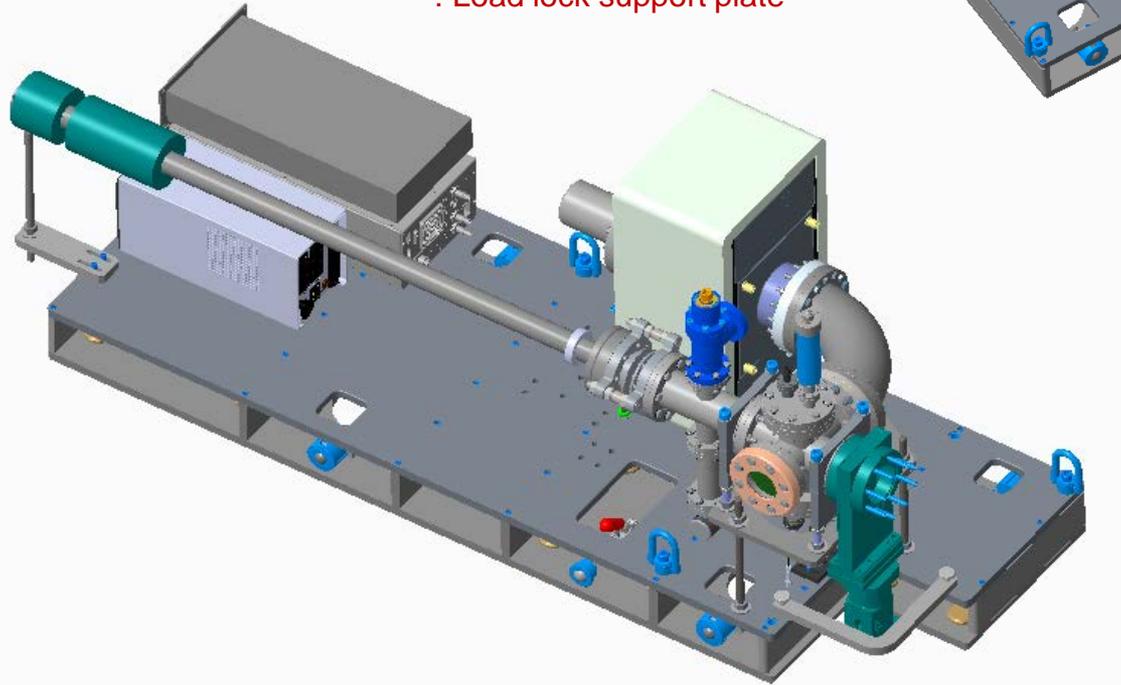
Single Carrier Suitcase Assembly



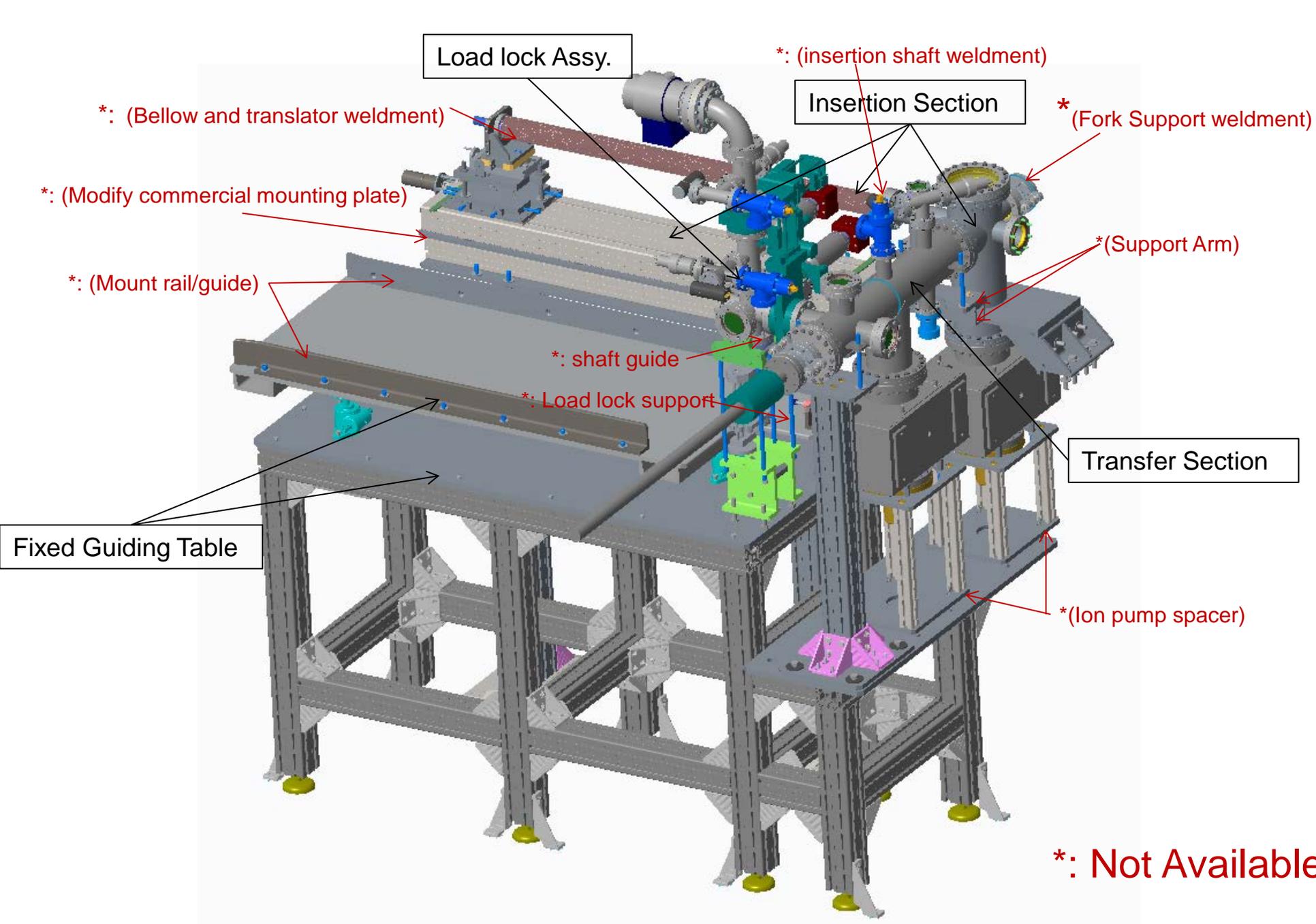
*: (Weld translator head & assemble manipulator)

*: Load lock support plate

*: Pump Support Plate



*: Not Available



Load lock Assy.

*(insertion shaft weldment)

Insertion Section

*(Fork Support weldment)

*(Bellow and translator weldment)

*(Modify commercial mounting plate)

*(Support Arm)

*(Mount rail/guide)

*: shaft guide

*: Load lock support

Transfer Section

Fixed Guiding Table

*(lon pump spacer)

*: Not Available