

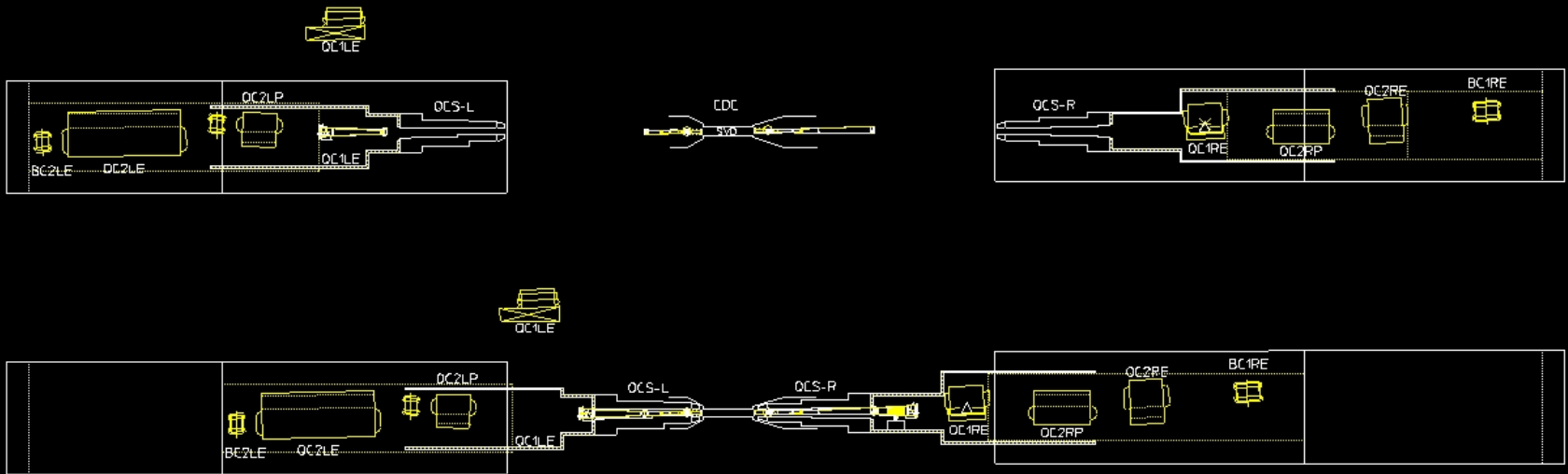
IP Region Assembly

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KEK

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KEKB



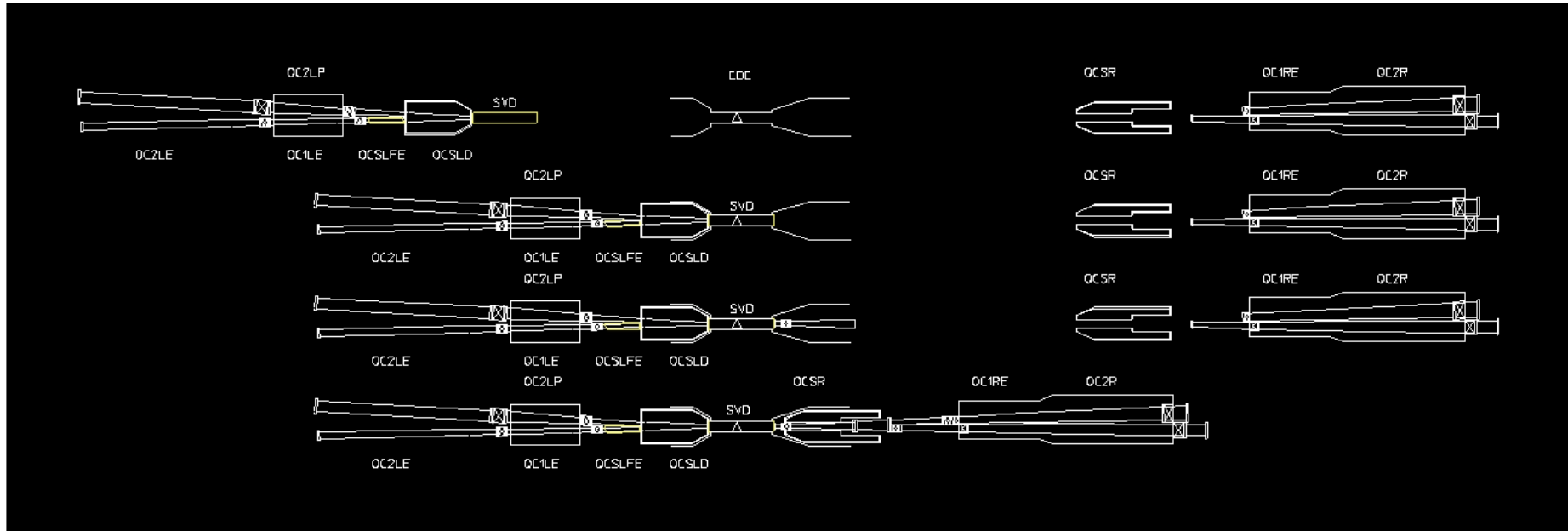
Condition: Vacuum chambers are separate from QCS cryostats.

Step 1: Connect the front half of QCSL chamber and QCSR chamber to IP chamber that is already set at the interaction point. (The end flange of QCSR chamber is temporally removed.)

Step 2: Move forward QCS cryostats.

Step 3: Connect the end half of QCSL chamber with a magic flange to the front half. Attach the end flange to QCSR chamber.

SuperKEKB high-current option



Condition: QCSLD cryostat and QCSL chamber forms a single body to ensure a thermal insulation space. Connecting flanges between QCSLD cryostat and IP chamber becomes inaccessible in CDC.

Step 1: Assemble IP chamber and SVD in the front face of QCSLD cryostat in the retreat position.

Step 2: Move forward QCSLD cryostat and SVD assembly.

Step 3: Connect QCSR chamber.

Step 4: Move forward QCSR cryostat.

SuperKEKB nano-beam option

Condition: In both QCSL and QCSR, their cryostat and the vacuum chamber (will) form a single body. Connecting flanges between both cryostats and IP chamber becomes inaccessible in CDC.

Off-site assembly will include both cryostats, IP chamber, SVD, and CDC. !!

OR

A sort of ‘automatic flange connecting system’ must be invented. ???

(If this is invented, IP chamber and SVD can be always set at the IP beforehand.)

Summary

Design of QCS cryostat	Solution to assemble
Both QCS cryostats are separate from vacuum chambers.	KEKB procedure.
In one QCS, the cryostat forms a single body with the vacuum chamber.	Assemble IP chamber and SVD in the front face of one QCS cryostat in the retreat position. OR Automatic flange connecting system.
In both QCS's, the cryostat forms a single body with the vacuum chamber.	Off-site assembly including both cryostats, IP chamber, SVD, and CDC. OR Automatic flange connecting system.