

Component list of Module-C (20090519)

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Cryomodule-C

| Items | Sub-components | Sub-sub-components | Responsible Institute | No. of pcs | No. of spares | Remark |
|-----------------------------|---|--------------------|-----------------------|------------|---------------|--|
| Vacuum Vessel | | | INFN | 1 set | | Dwg No 3023.1001, 3023.1002 |
| | Vacuum cap | | INFN | 2 sets | | including connection bolts |
| | | O-ring | INFN | 2 | 2 | |
| | | Bolt/washer | INFN | | | |
| | Craw clamp for vessel end flange | | KEK | ? sets | | |
| | O-ring for vessel end-flange | | KEK | 2 | 2 | |
| Vessel movable support | | | INFN | 2 sets | | Dwg No 3023.1.004 |
| Support post (fixed type) | | | INFN | 1 set | | Dwg No 3023.2.001, including a set of bracket, assembled to the gas return pipe |
| Support post (movable type) | | | INFN | 1 set | | Dwg No 3023.2.001, including a set of bracket, assembled to the gas return pipe |
| Gas return pipe | | | INFN | 1 set | | Dwg No 3023.0.002, 3023.2.001 |
| | C-cramp (right side) | | INFN | 8 sets | | Dwg No. 3023.2.001 |
| | C-cramp (left side) | | INFN | 8 sets | | Dwg No. 3023.2.001 |
| | Invar rod | | INFN | 1 | | Dwg No. 3023.0.002, assembled to the gas return |
| | | mounting fixture | INFN | 10 sets | | |
| | Copper braids (between shields and posts) | | INFN | 8 | | |
| | MLI for GRP | | INFN | | | 5 layer-blanket, preassembled |
| Cool-down and warm-up pipe | | | INFN | 1 | | Dwg No. 3023.5.003 |
| | Metal seal for flange | | INFN | 4 | 4 | |
| | | Bolt | INFN | 24 | | M4-Cap |
| | Mounting fixture | | INFN | 4 sets | | |
| 5K forward pipe | | | INFN | 1 | | Dwg No. 3023.5.002, including support pieces to the shelf, pipe material=SUS, and assembled to the gas return pipe. The SUS pipe will be changed |
| 5K return pipe with fin | | | INFN | 1 | | Dwg No. 3023.3.001, welded to the upper 4.5K |

Cryomodule-C

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|-------------------------------------|-------------------------|-----------------|------|--------|--|
| 5K shield Al plates | | | INFN | 1 set | Dwg No. 3023.3.001 |
| | Upper Al plate | | INFN | 1 set | assembled to the gas return pipe |
| | Lower Al plate | | INFN | 1 set | |
| | | Bolt and nut | INFN | | |
| | MLI for 5K shield | | INFN | 1 set | 10-layer-blanket, preassembled |
| 80K forward pipe | | | INFN | 1 | Dwg No. 3023.5.001, including support pieces to the shelf, pipe material=SUS, and assembled to the gas return pipe. The SUS pipe will be changed |
| 80K return pipe with fin | | | INFN | 1 | Dwg No. 3023.4.001, welded to the upper 80K |
| 80K shield Al plates | | | INFN | 1 set | Dwg No. 3023.4.001 |
| | Upper Al plate | | INFN | 1 set | assembled to the gas return pipe |
| | Lower Al plate | | INFN | 1 set | |
| | | Bolt and nut | INFN | | |
| | MLI for 80K shield | | INFN | 1 set | 30-layer-blanket |
| Pipe for cables of tuner components | | | INFN | 1 set | Dwg No. 3023.5.002, assembled to the gas return pipe |
| Sensors | | | | | |
| | Cernox thermometer | | KEK | 18 | |
| | Carbon thermometer | | KEK | 24 | |
| | PtCo thermometer | | KEK | 33 | During assembly in Zanon, some of them are set |
| | Strain gauge | | KEK | 12 | During assembly in Zanon, they are set on the |
| | Thermometer/gauge cable | | KEK | | |
| | CC thermocouple | | KEK | 33 | During assembly in Zanon, some of them are set |
| | WPM | | KEK | 5 sets | including cables and connection pipes, sensors are set on the helium gas return pipe. |
| | | Connection pipe | KEK | | |
| Signal terminal port (feedthrough) | | | KEK | 2 sets | one is for thermometers, and the other is for WPMs. |
| Vacuum port flange | | | KEK | 1 set | |

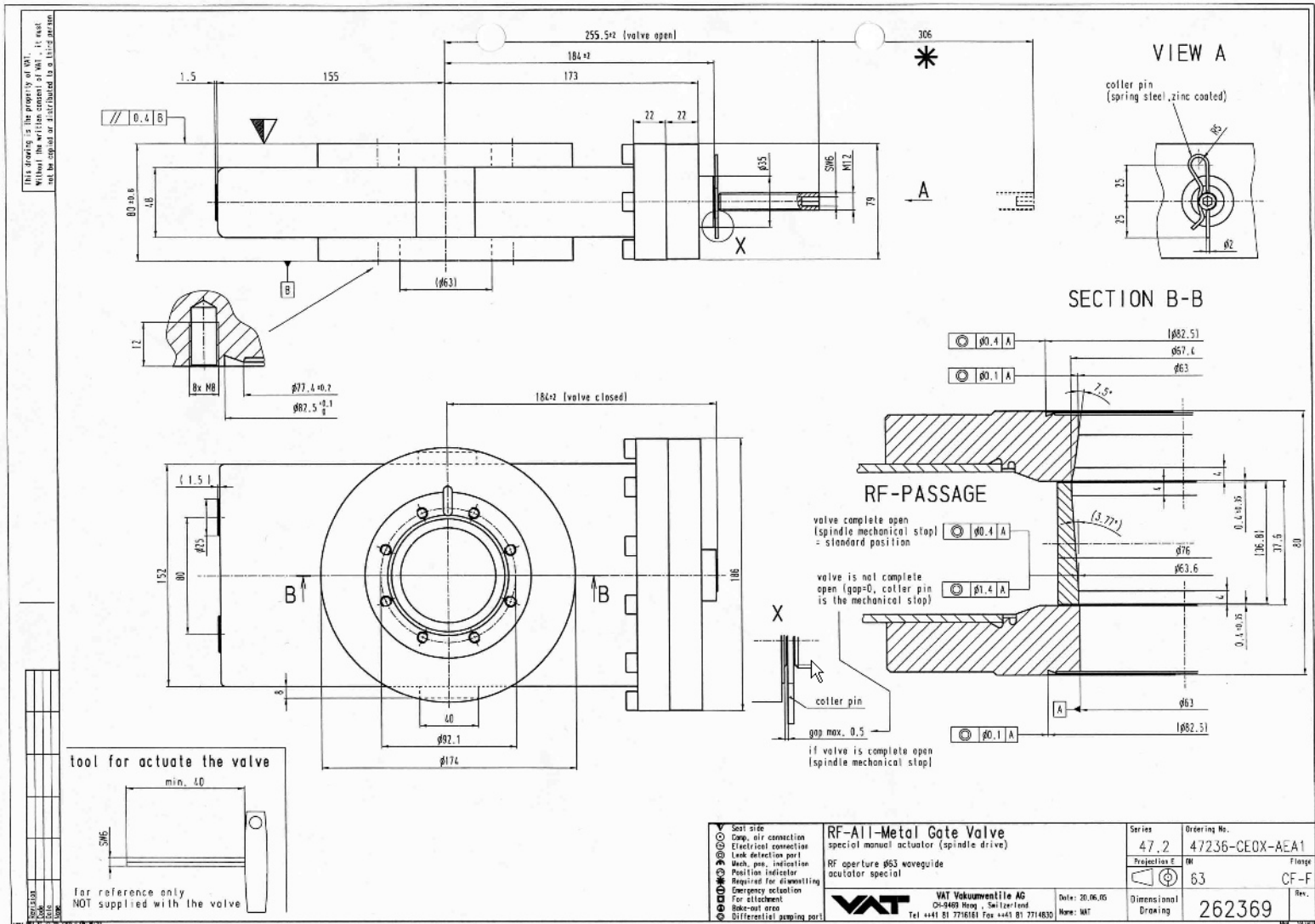
FNAL Cavity

| Items | Sub-components | Sub-sub-comp | Responsible Institute | No. of pcs | No. of spares | Remark |
|-------------------------------------|------------------------------------|--------------|-----------------------|------------|---------------|--|
| Cavity-jacket | Main body | | FNAL | 2 sets | | |
| | 2K Lhe supply pipe and bellow | | FNAL | 2 sets | | 2K Lhe supply pipe is welded to jacket after vertical test |
| | SI | | FNAL | 2 sets | | |
| Tuner (Blade) | Main components | | FNAL/INFN | 2 sets | | |
| | | Bolt and nut | FNAL/INFN | | | |
| | Cable (motor, piezo) | | FNAL | 2 sets | | control system |
| Input coupler | Sensor for the tuner position | | FNAL | | | |
| | Main components | | FNAL | 2 | | including assembling bolts and nuts |
| | Diagnostic cable | | FNAL | 2 | | |
| | Thermal intercept | | FNAL | 2 sets | | |
| HOM coupler | | Bolt and nut | FNAL | | | |
| | Main component | | FNAL | 4 | | |
| | RF cable | | FNAL | 4 | | |
| | Monitor coupler | | FNAL | 2 | | |
| RF cable, monitor cable feedthrough | Monitor cable | | FNAL | 2 | | |
| | | | FNAL | 2 | | |
| Gate valve | | | FNAL | 2 | | |
| | | | KEK | 1 set | | At one end in the string, the gate valve is required. |
| | Valve support | | KEK | 1 set | | |
| | | C-cramp | KEK | 2 sets | | |
| | | Metal seal | KEK | 2 sets | 2 sets | DN63CF |
| Magnetic shield | | Bolt | KEK | 16 | | MB × 12 |
| | For cavity-jacket | | FNAL | 2 sets | | |
| | Between FNAL cavities | | FNAL | 1 set | | |
| | Between FNAL cavity and gate valve | | FNAL | 1 set | | |
| | Between FNAL and DESY cavities | | FNAL | 1 set | | |
| | | Bolt and nut | FNAL | | | for assembling magnetic shield |
| Connection beam pipe and bellow | Between FNAL cavities | | FNAL | 1 set | | |
| | | Metal seal | FNAL | 2 | 4 | Al hexagon seal for connecting flanges |
| | | Bolt and nut | FNAL | | | |
| | Between FNAL cavity and gate valve | | FNAL/KEK | 1 set | | including Al hexagon seal |
| | | Metal seal | FNAL/KEK | 1/1 | 2/2 | Al hexagon seal/DN63CF |
| | | Bolt and nut | FNAL/KEK | | | |
| Beam pipe between gate valve and | Between FNAL and DESY cavities | | FNAL | 1 set | | |
| | | | KEK | 1 set | | |

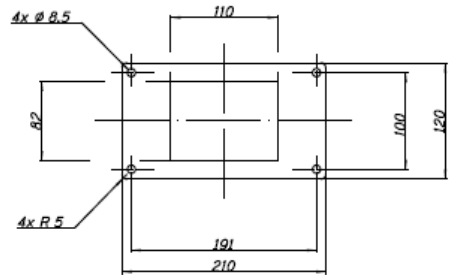
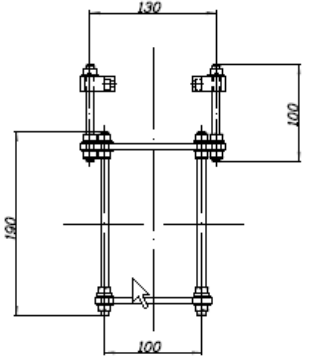
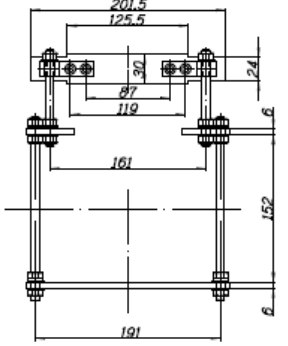
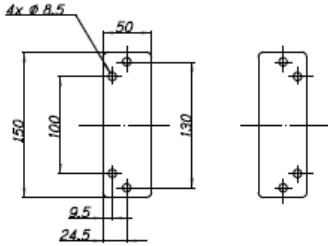
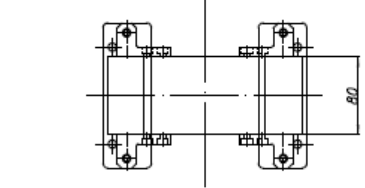
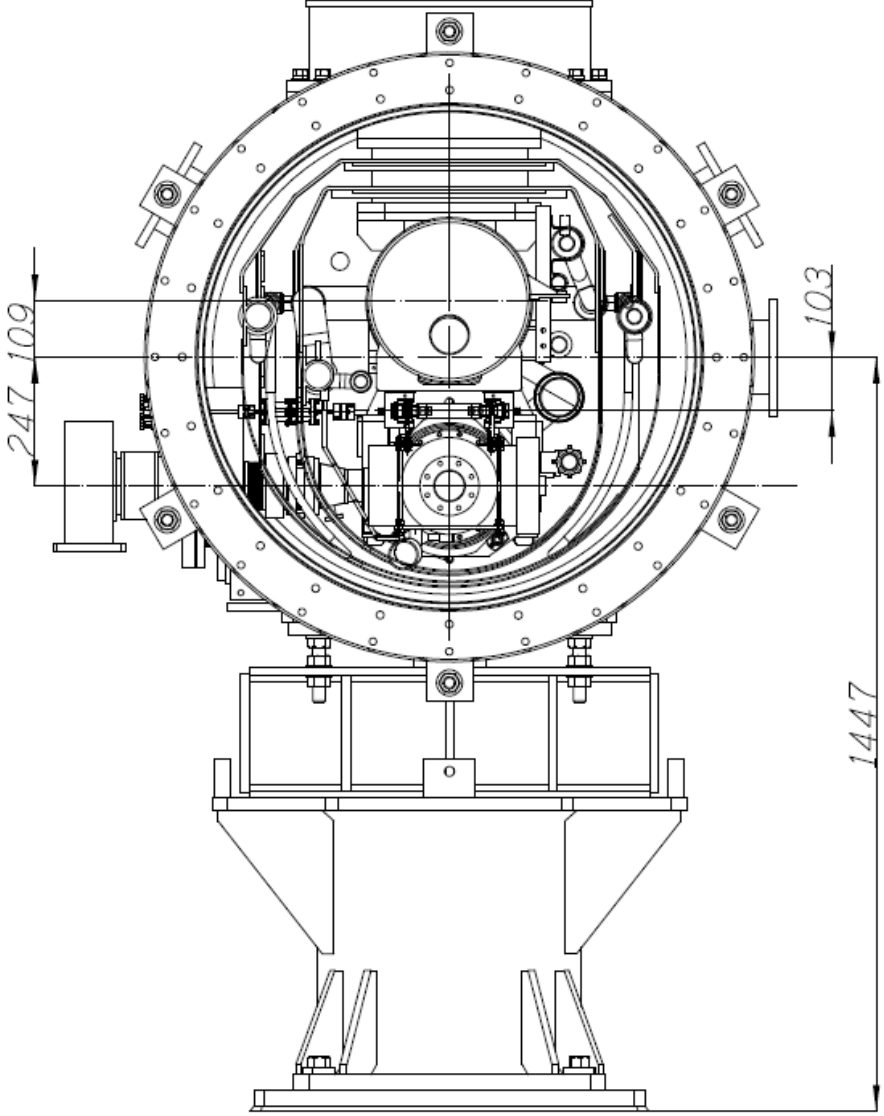
DESY Cavity

| Items | Sub-components | Sub-sub-comp | Responsible Institute | No. of pcs | No. of spares | Remark |
|--|------------------------------------|--------------|-----------------------|------------|---------------|---|
| Cavity-jacket | Main body | | DESY | 2 sets | | 2K Lhe supply pipe welded to jacket |
| | 2K Lhe supply pipe and bellow | | DESY | 2 sets | | |
| | SI | | DESY | 2 sets | | |
| Tuner (Saclay) | Main components | | DESY | 2 sets | | control system |
| | | Bolt and nut | DESY | | | |
| | Cable (motor, piezo) | | DESY | 2 sets | | |
| | Sensor for the tuner position | | DESY | 2 sets | | |
| Input coupler | Main components | | DESY | 2 | | including assembling bolts and nuts |
| | Diagnostic cable | | DESY | 2 | | |
| | Thermal intercept | | DESY | 2 sets | | |
| | | Bolt and nut | DESY | | | |
| HOM coupler | Main component | | DESY | 4 | | |
| | RF cable | | DESY | 4 | | |
| | Monitor coupler | | DESY | 2 | | |
| | Monitor cable | | DESY | 2 | | |
| RF cable, monitor cable feedthrough | | | DESY | 2 | | |
| Gate valve | | | KEK | 1 set | | At one end in the string, the gate valve is required. |
| | Valve support | | KEK | 1 set | | |
| | | C-cramp | KEK | 2 sets | | |
| | | Metal seal | KEK | 2 sets | 2 sets | |
| | | Bolt | KEK | 16 | | |
| Magnetic shield | For cavity-jacket | | DESY | 2 sets | | DN63CF M8×12 |
| | Between DESY cavities | | DESY | 1 set | | |
| | Between DESY cavity and G.V. | | DESY | 1 set | | |
| | | Bolt and nut | DESY | | | |
| Connection beam pipe and bellow | Between DESY cavities | | DESY | 1 set | | for assembling magnetic shield strips |
| | | Metal seal | DESY | 2 | 4 | |
| | | Bolt and nut | DESY | | | |
| | Between DESY cavity and gate valve | | DESY/KEK | 1 set | | |
| | | Metal seal | DESY/KEK | 1/1 | 2/2 | |
| | | Bolt and nut | DESY/KEK | | | |
| Beam pipe between gate valve and module end flange | | | KEK | 1 set | | |

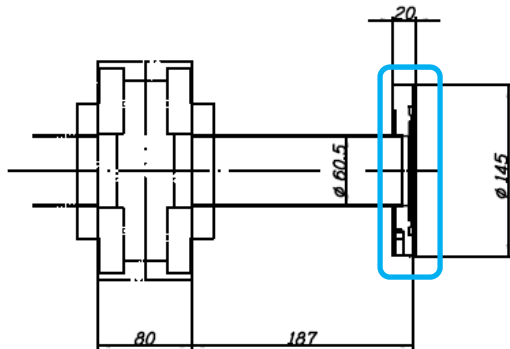
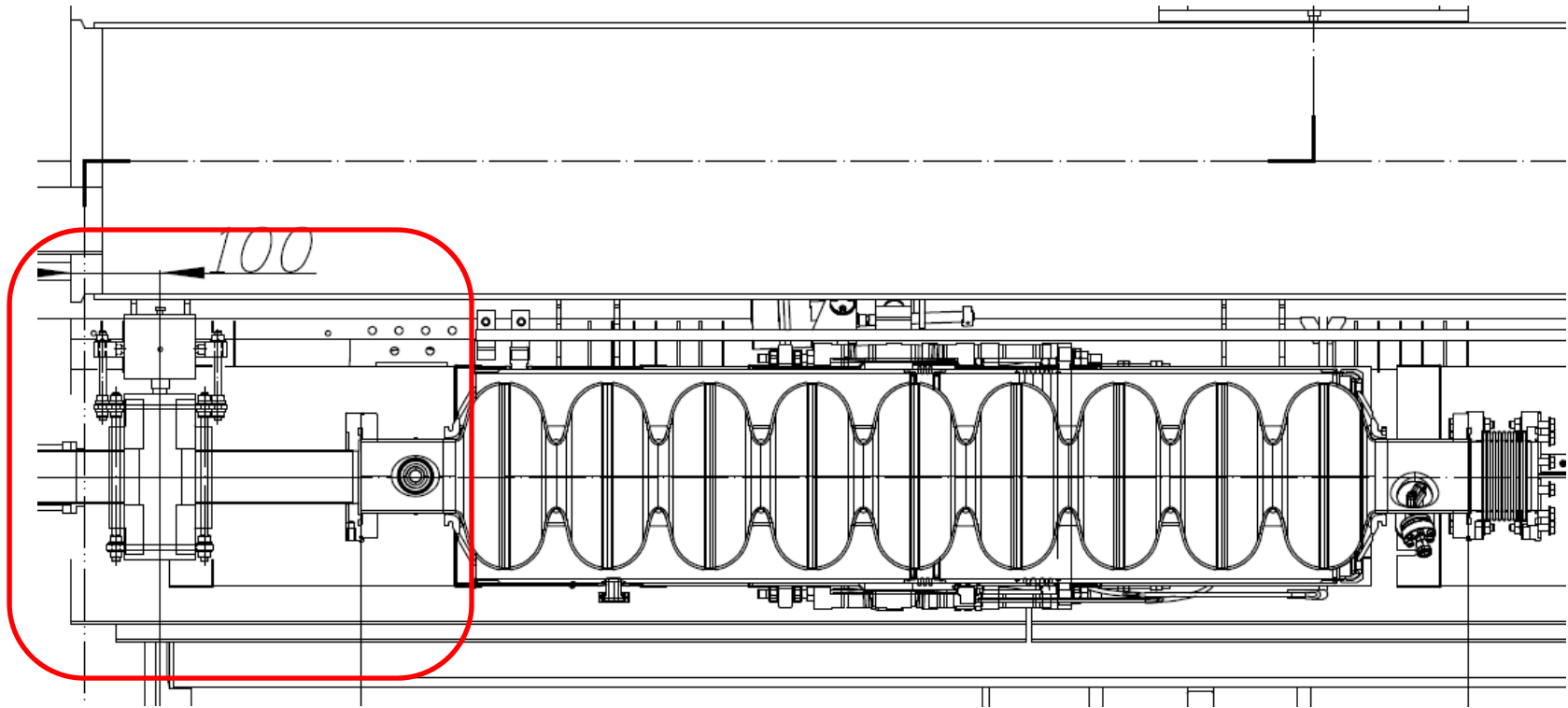
KEK g ate Valve



Gate valve support



Gate valve connection pipe



- 1) FNAL sending the cavity-flange to KEK
- 2) KEK preparing the pipe and the valve-flange, and welding the components.