17 – Magnet - Cooling at 2K

**Sensors and actuators used:**

- Pressure: PT660, PT661, PT584

- Valve: FV581, FV582, FV584, FV554, FV555, FV556

- Control valve: CV581, CV582

- Level: LT682, LT683

- Cryostat-2K: Boolean

|  |  |
| --- | --- |
| **The user chooses:** | **Initial conditions:** |
| - Level: LT683mini | - Magnet insert selected  - Sequences from 1 to 3 stopped  - Sequences 15 and 16 stopped  - Sequence 8 in operation |
| - Pressure: PT660setpoint, PT584setpoint |
| - Control valve: CV581%opening |

LT683 < LT683mini & Yes & **FV551 closed**

LT683 >= LT683mini &Yes & **FV551 closed**

PT660 close to PT660setpoint

Stop 2 K

newPT660setpoint < oldPT660setpoint

Start Cooling Magnet & (S15 &S16) stopped

The HX683 is not filled,

“Do you want continue?”

No

Yes

Stop

No

Pumping HX683

CV582 opening step by step Cryostat-2K = true

FV582 opened, **FV555 opened**

HX683 pressure

regulated

CV582 regulated

PT660=PT660setpoint OR

PT661=PT660setpoint

Cryostat-2K = true

FV582 opened, **FV555 opened**

FV582 opened, **FV555 opened**

Isolating 2K circuit

CV581 closing with slope

**FV555 opened**

2K circuit closed

FV554 closed & FV555 open

CV581 opened

FV581 & FV584 closed

Close Switch Valves « Cryostat 4K circuit »

Cryostat-2K = true

Open FV582, **FV555 opened**

Pumps ok (user command)

CV581 closed

Starting pumps

Waiting,

**FV555 opened**, CV581 opened

Prepare the 2K pump

**Close FV554, Open FV555**

CV581 opened

You are starting the 2K pumping. The HNOSS valve **FV551** must be closed.

“Do you want continue?”

“Do you want continue?”

Cryostat connected to the recovery helium circuit

Open CV581

**Start S18**

Pumps stopped

PT660 > 1020 mbar

FV582 closed

FV556 closed

Stop pumping system and filling

Close FV582,

Cryostat-2K = true,

CV582 fully open

**FV555 opened**

Pressure control

CV582 opened

Cryostat-2K = true

Cryostat connected at the recovery He circuit

Open Switch Valves « Cryostat 4K circuit »

Cryostat-2K = false

Open CV581

Close CV582

« 2K pumps stopped ? »

Pump line at atmospheric pressure

**Close FV555**

**Open FV556**

Stop filling line

**Close FV556**

CV581 opened

PT584 ≥ PT584setpoint

Start