TAMA NM2 vacuum tank air exposure

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We have a plan to construct a 300 m optical filter cavity in TAMA.

Among the two arm cavities we use NM2-EM2 tanks for this experiment.

As a preparation work, NM2 vacuum tank should be exposed to air.

In this document we describe the procedure.

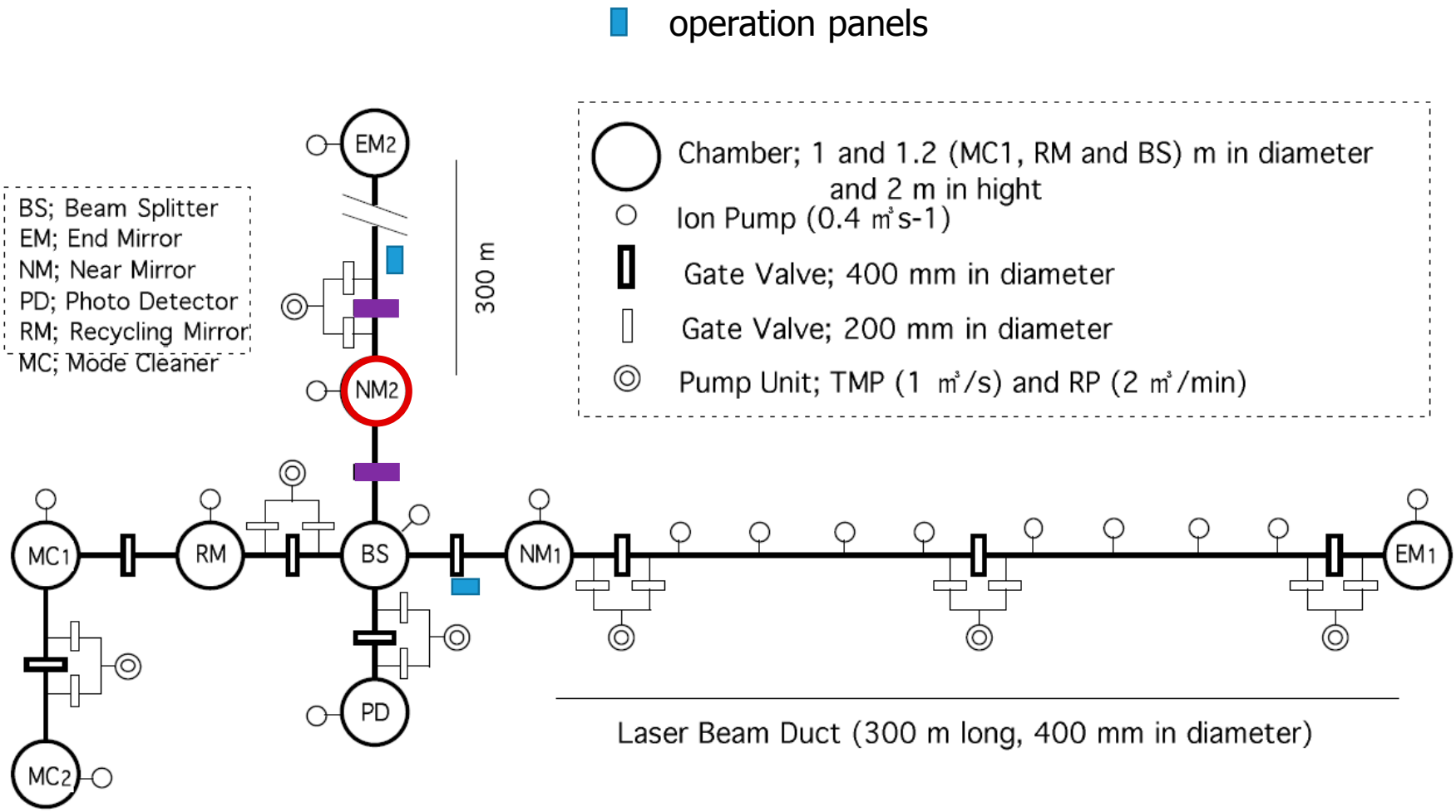


Figure 1: TAMA Vacuum System

1. Compressed air supply

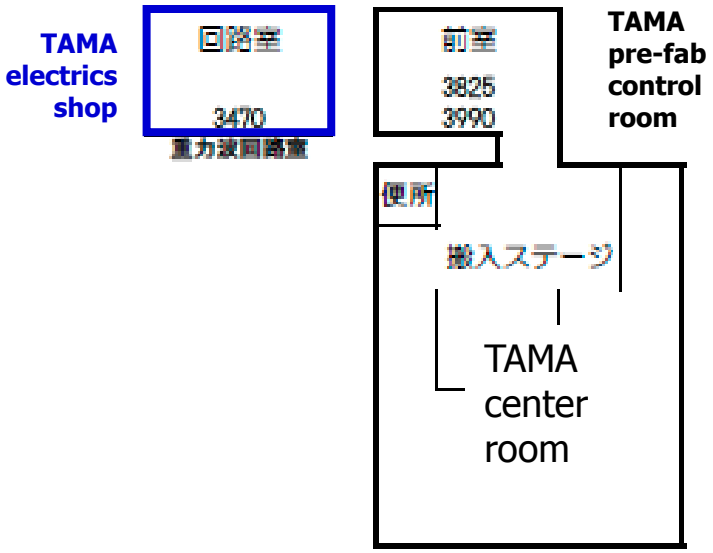
For gate valve operations, we need compressed air.

Outside the TAMA center room

there is a compressed air supply system.

You can find the system at TAMA electronics shop.

Figure 2: TAMA air compressor



1. Compressed air supply

1-1: Power distribution board in TAMA electronics shop

Before ignition of the air compressor, you should check the power distribution board in TAMA electronics shop.

TAMA center room

Figure 3 (a): Power distribution board in TAMA electronics shop

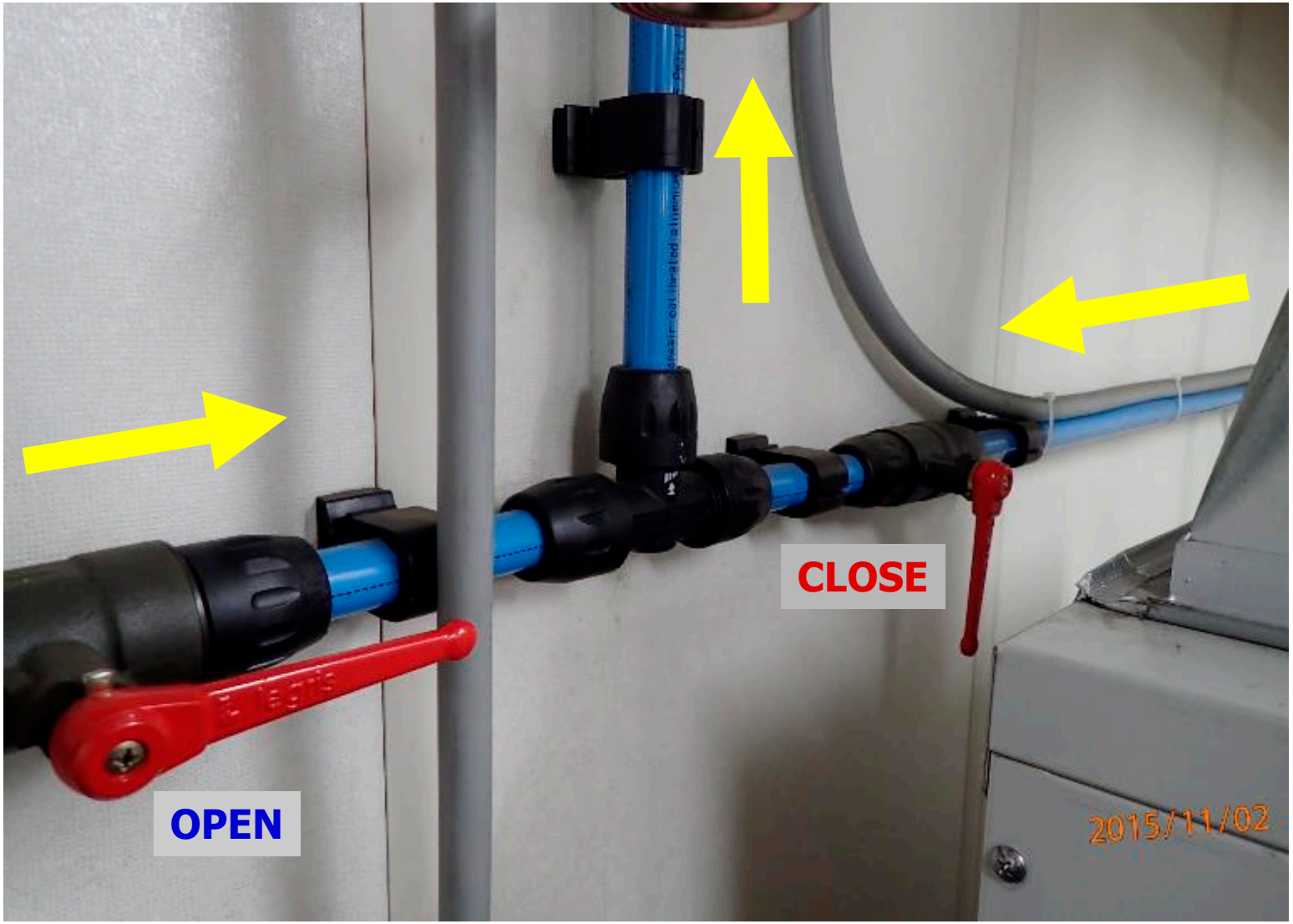
Figure 3 (b): Power distribution board in TAMA electronics shop

Figure 4: Two air compressors

For operation just push the green button of either compressor.

Figure 5: Compressed air switcher

Behind the compressor there is switch system of the air compressors.



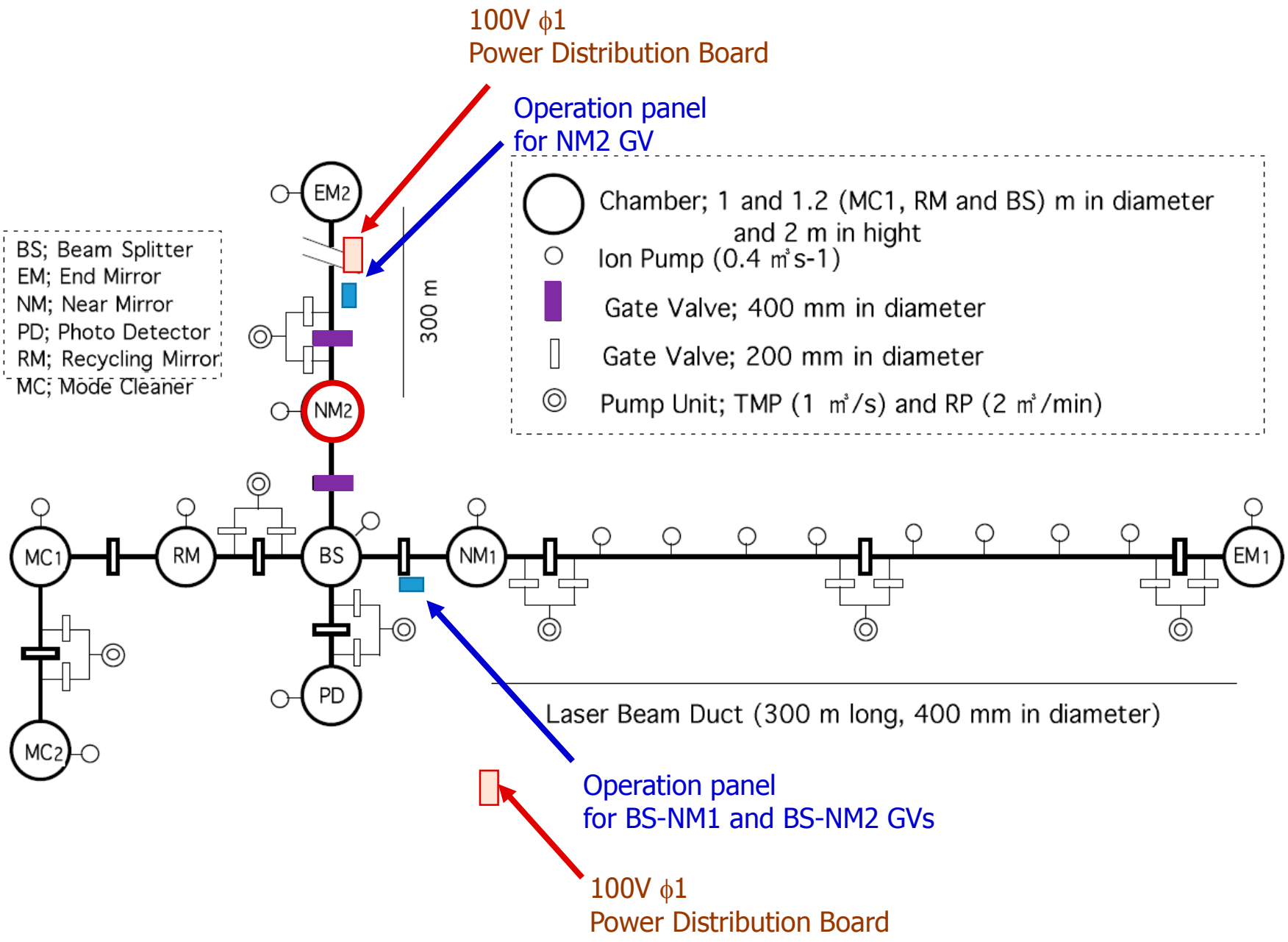

100V ϕ1
Power Distribution Board
Operation panel
for NM2 GV
BS; Beam Splitter
EM; End Mirror
NM; Near Mirror
PD; Photo Detector
RM; Recycling Mirror
MC; Mode Cleaner
Chamber; 1 and 1.2 (MC1, RM and BS) m in diameter
and 2 m in hight
Ion Pump (0.4 ㎥s-1)
Gate Valve; 400 mm in diameter
Gate Valve; 200 mm in diameter
Pump Unit; TMP (1 ㎥/s) and RP (2 ㎥/min)
300 m
EM2
NM2
MC1
RM
BS
NM1
EM1
MC2
PD
Laser Beam Duct (300 m long, 400 mm in diameter)
Operation panel
for BS-NM1 and BS-NM2 GVs
100V ϕ1
Power Distribution Board

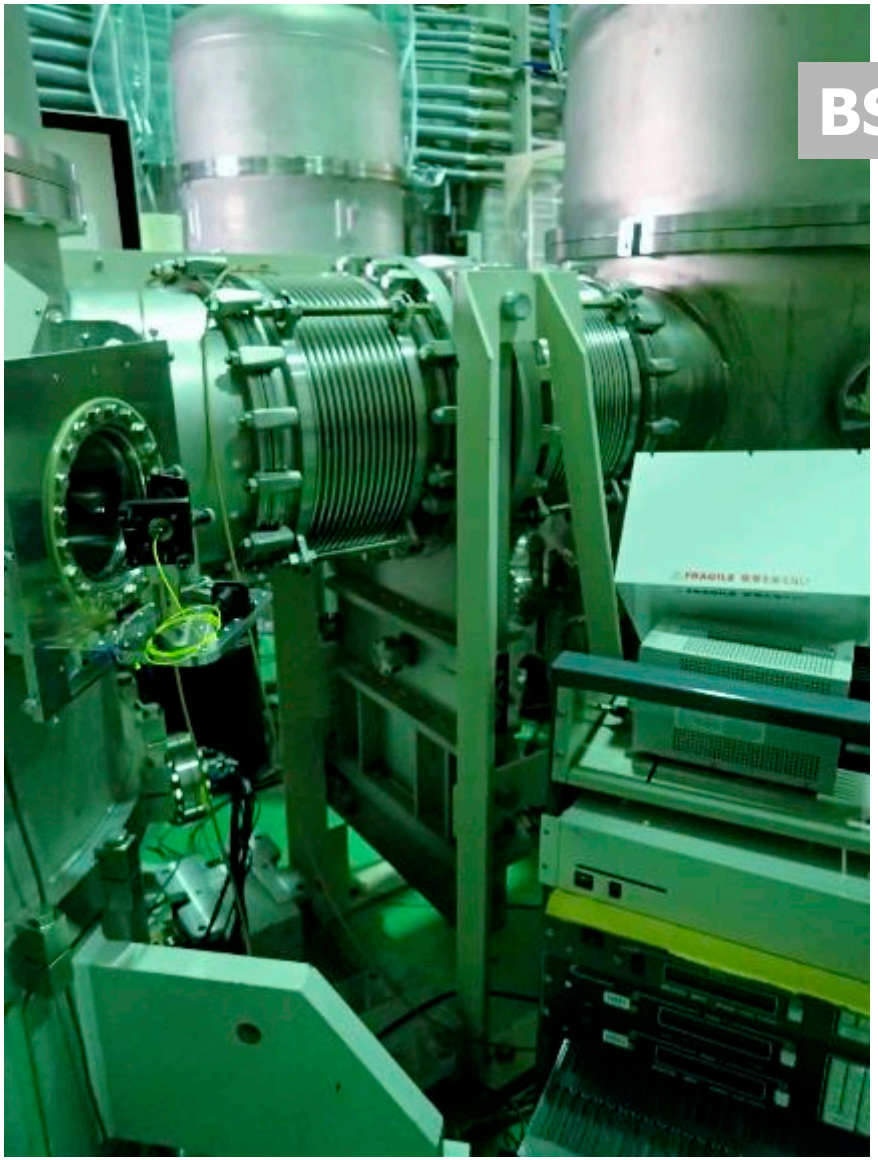
Figure 6: NM2 Gate Valve

Figure 7: Power distribution board for NM2 Gate Valve

Figure 8: Operation panel for NM2 Gate Valve

Figure 9: BS-NM2 Gate Valve

NM2 tank

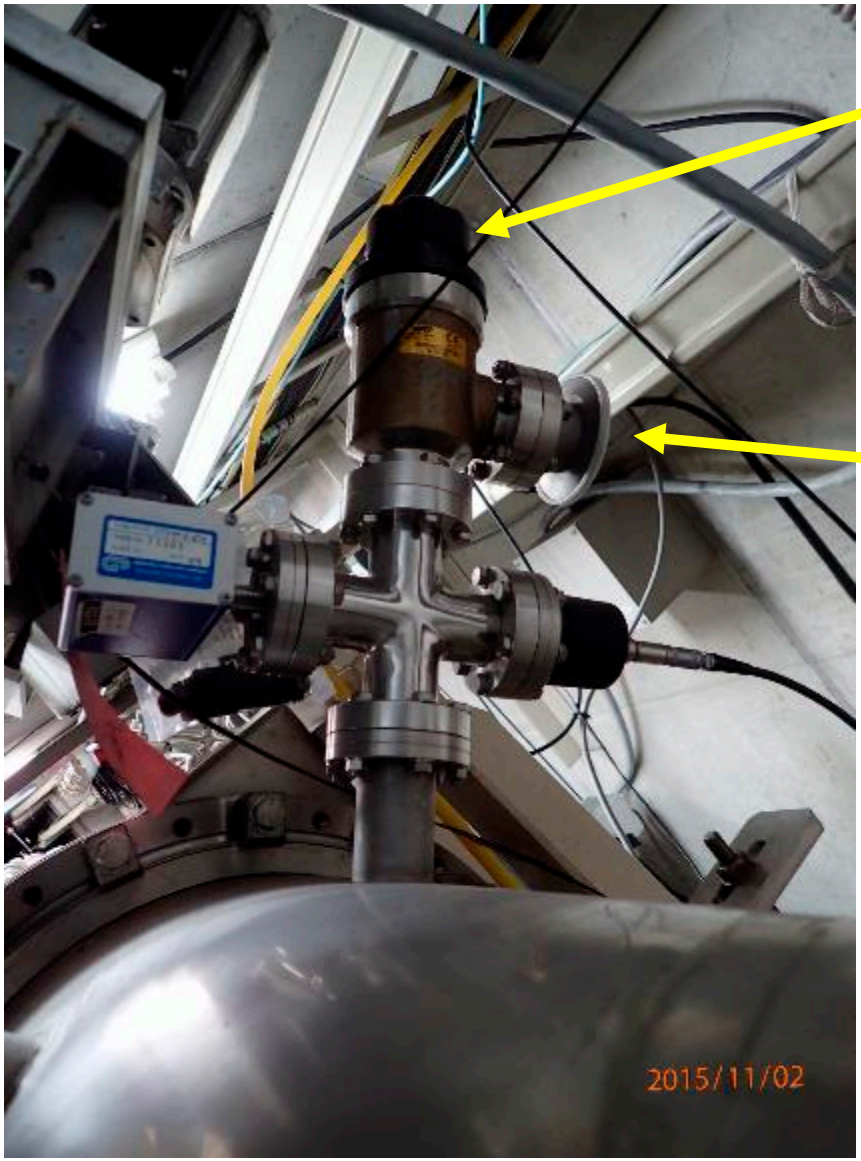


BS tank

Figure 10: 100V ϕ1 Power distribution board for BS-NM2 gate valve

Figure 11: Operation panel for BS-NM1 and BS-NM2 Gate Valves

Figure 10: Leak port near the NM2 GV



Needle valve
for slowly exposure to the air

Leak port
Dry air is supplied via this port.

[ACTION ITEM]

Takahashi-san told me that

BS-NM2 gate valve has a trouble of air leakage.

We should repair it.