MOOV

ULVAC

Performance check

Cluster Type Sputtering Equipment

SME-200J

ULVAC GmbH

Revision history& Test Results

						Tester
						Ulvac Germany
		Model	SME-200J	Date	2021/12/21	

Revision No.	Date of revision	Revision contents and reason	Approval	Check	Tester
01	2021/12/21	First edition	M.Odawara	S.Mori	Y.Lin

1 Vacuum performance

Ultimate pressure & Bild-up test result

					Tester
				Chamber name	Ulvac Germany
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment

《 Condition 》

Substrate	None	Target	Applicable	Stage temperature	Room temperature

《 Remarks 》

The value will be measured when no substrate is loaded and the vacuum chamber is clean and at the ambient temperature. Basically, this value will be obtained when no target is loaded in the sputtering chamber; however, it will also be acceptable if the satisfying value is obtained with the target loaded.

Module	Ultimate pressure	Build-up result	Judge
L/UL	4.4E-5 [Pa]	1.1E-7[Pa*m3/sec]	N/A
T0	2.5E-5 [Pa]	8.5E-7[Pa*m3/sec]	N/A
P2	1.1E-5 [Pa]	2.7E-7[Pa*m3/sec]	N/A
P3	2.4E-5 [Pa]	1.4E-7[Pa*m3/sec]	N/A
P4	4.7E-5 [Pa]	3.2E-6[Pa*m3/sec]	N/A
P5	6.5E-6 [Pa]	2.0E-7[Pa*m3/sec]	N/A
P6	8.9E-6 [Pa]	3.3E-7[Pa*m3/sec]	N/A

1 Vacuum performance

						Tester
				Chamber name	L/UL	Ulvac Germany
			Date			
		Model	SME-200J	Test day	2021/11/30	

Meausrement Terms	Specification	Test Result	Judgment

《 Condition 》

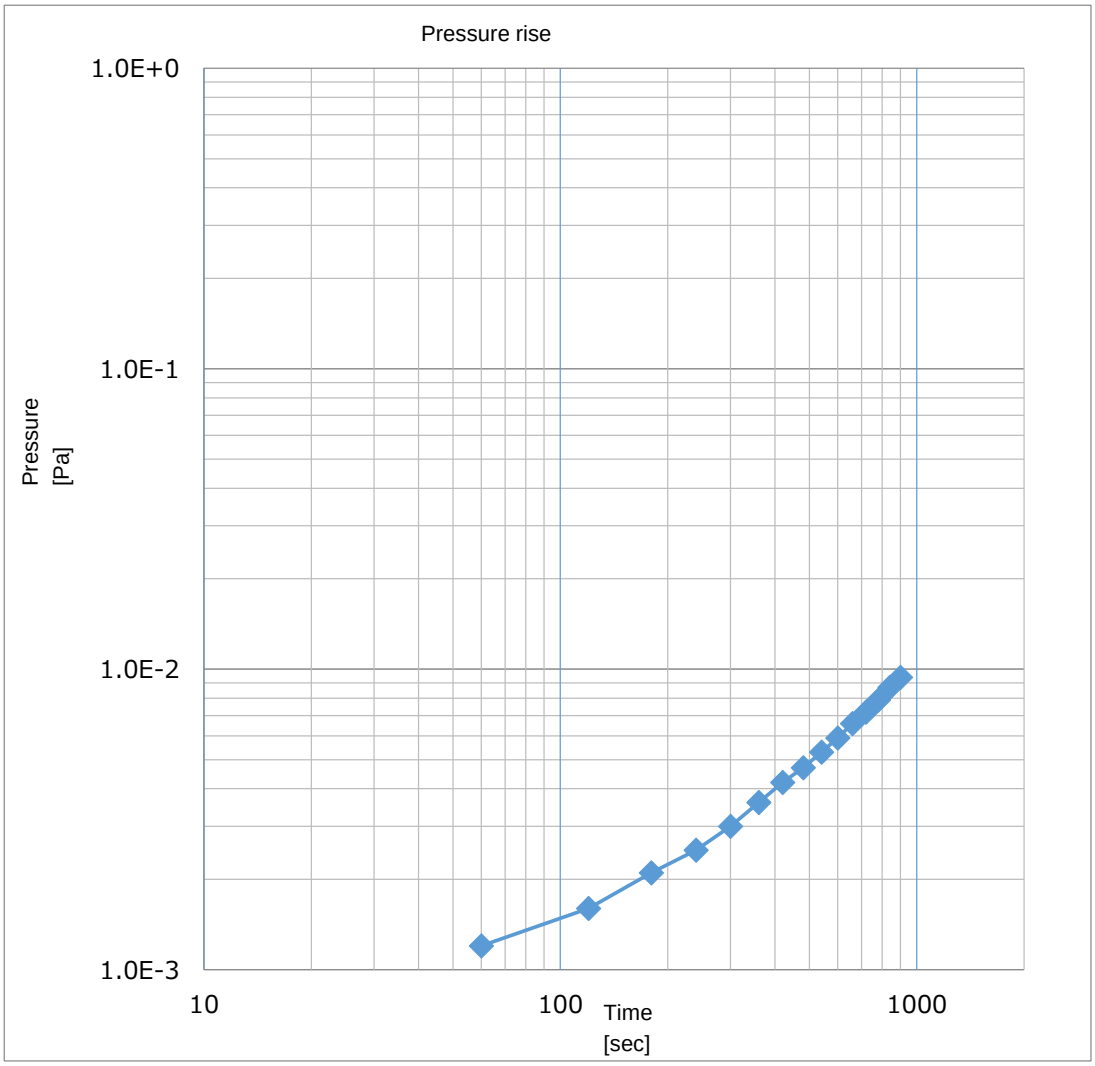
Chamber capacity [㎥]	0.011	Stage temperature [℃]	Room temperature		

《 Remarks 》

The value will be measured when no substrate is loaded and the vacuum chamber is clean and at the ambient temperature. Basically, this value will be obtained when no target is loaded in the sputtering chamber; however, it will also be acceptable if the satisfying value is obtained with the target loaded.

Ultimate pres.	
4.4E-5	[Pa]

Result	
Time [sec]	Pressure [Pa]
0	4.4E-5
60	1.2E-3
120	1.6E-3
180	2.1E-3
240	2.5E-3
300	3.0E-3
360	3.6E-3
420	4.2E-3
480	4.7E-3
540	5.3E-3
600	5.9E-3
660	6.6.E-03
720	7.2.E-03
780	7.9.E-03
840	8.7.E-03
900	9.4.E-03
-	
-	
-	
-	
-	
Leak rate	
1.1E-7	[Pam3/sec]



Pressure rise (Pt final -Pt0)×Chamber volume}／

Pt0 : Pressure of start

Pt final : Pressure of final

1 Vacuum performance

Tester	
Chamber name	Ulvac Germany
T0	

Customer					
Mfg.No.		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment

《 Condition 》

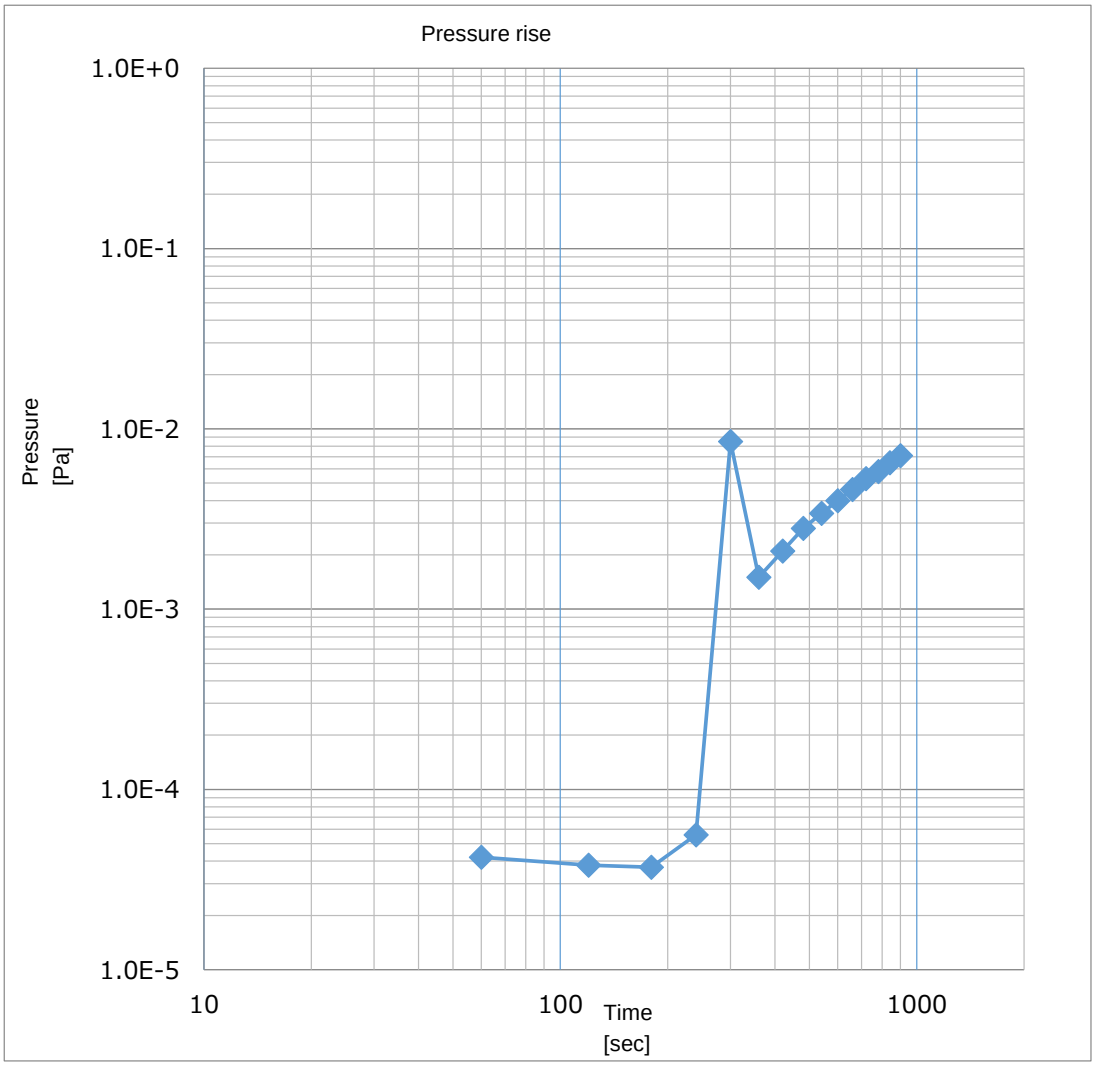
Chamber capacity [㎥]	0.090	Stage temperature [℃]	Room temperature		

《 Remarks 》

The value will be measured when no substrate is loaded and the vacuum chamber is clean and at the ambient temperature. Basically, this value will be obtained when no target is loaded in the sputtering chamber; however, it will also be acceptable if the satisfying value is obtained with the target loaded.

Ultimate pres.	
2.5E-5	[Pa]

Result	
Time [sec]	Pressure [Pa]
0	2.5E-5
60	4.2E-5
120	3.8E-5
180	3.7E-5
240	5.6E-5
300	8.5E-3
360	1.5E-3
420	2.1E-3
480	2.8E-3
540	3.4E-3
600	4.0E-3
660	4.6.E-03
720	5.3.E-03
780	5.8.E-03
840	6.5.E-03
900	7.1.E-03
-	
-	
-	
-	
-	
Leak rate	
8.5E-7	[Pam3/sec]



Pressure rise (Pt final -Pt0)×Chamber volume}／

Pt0 : Pressure of start

Pt final : Pressure of final

1 Vacuum performance

					Tester
				Chamber name	
				P2	Ulvac Germany
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment

《 Condition 》

Chamber capacity [㎥]	0.092	Stage temperature [℃]	Room temperature		

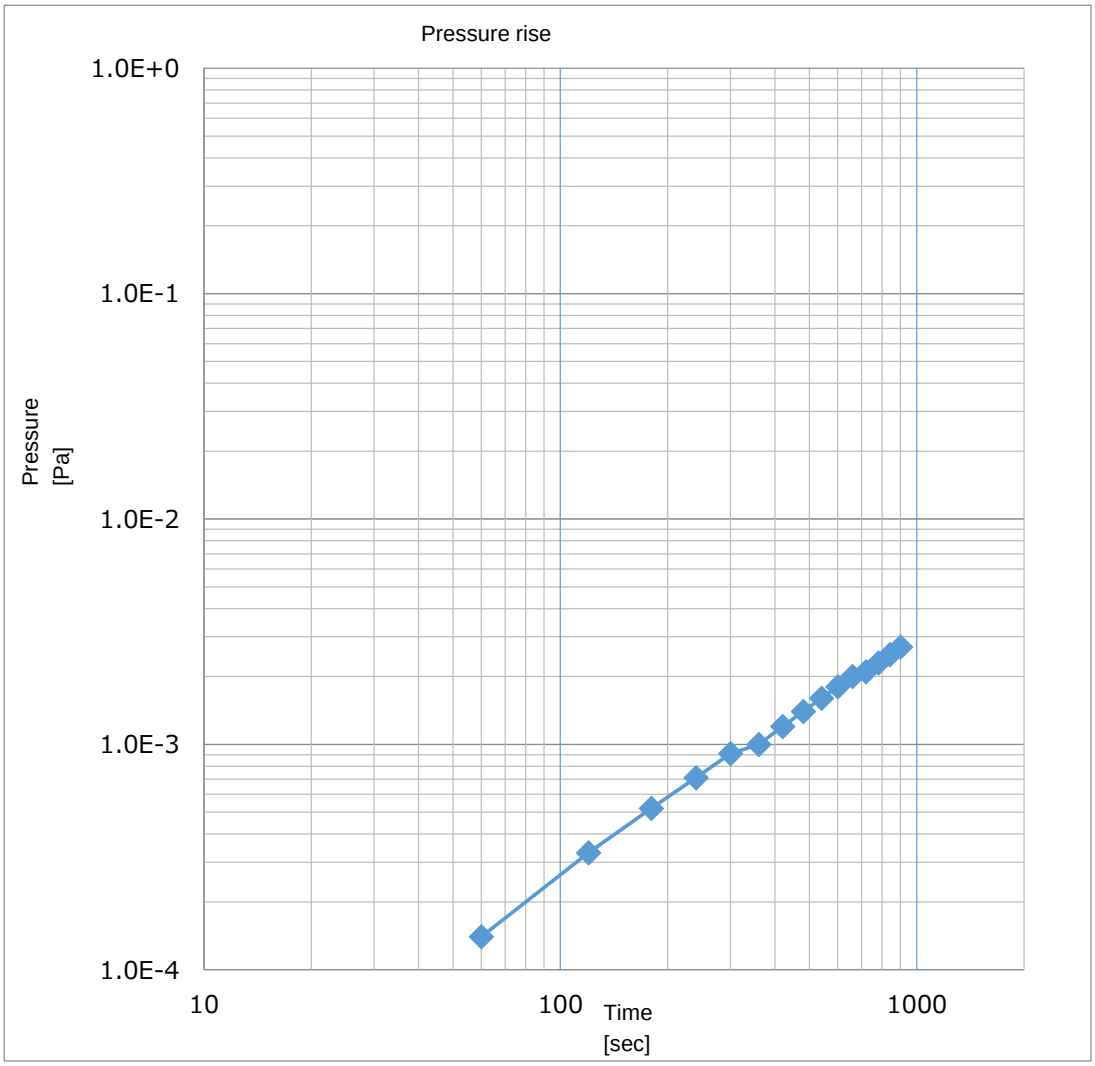
《 Remarks 》

The value will be measured when no substrate is loaded and the vacuum chamber is clean and at the ambient temperature. Basically, this value will be obtained when no target is loaded in the sputtering chamber; however, it will also be acceptable if the satisfying value is obtained with the target loaded.

Ultimate pres.	
1.1E-5	[Pa]

Result	
Time [sec]	Pressure [Pa]
0	1.1E-5
60	1.4E-4
120	3.3E-4
180	5.2E-4
240	7.1E-4
300	9.1E-4
360	1.0E-3
420	1.2E-3
480	1.4E-3
540	1.6E-3
600	1.8E-3
660	2.0.E-03
720	2.1.E-03
780	2.3.E-03
840	2.5.E-03
900	2.7.E-03
-	
-	
-	
-	
-	

Leak rate	
2.7E-7	[Pam3/sec]



Pressure rise (Pt final -Pt0)×Chamber volume}／

Pt0 : Pressure of start

Pt final : Pressure of final

1 Vacuum performance

Tester	
Chamber name	Ulvac Germany
P3	

		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment

《 Condition 》

Chamber capacity [㎥]	0.040	Stage temperature [℃]	Room temperature		

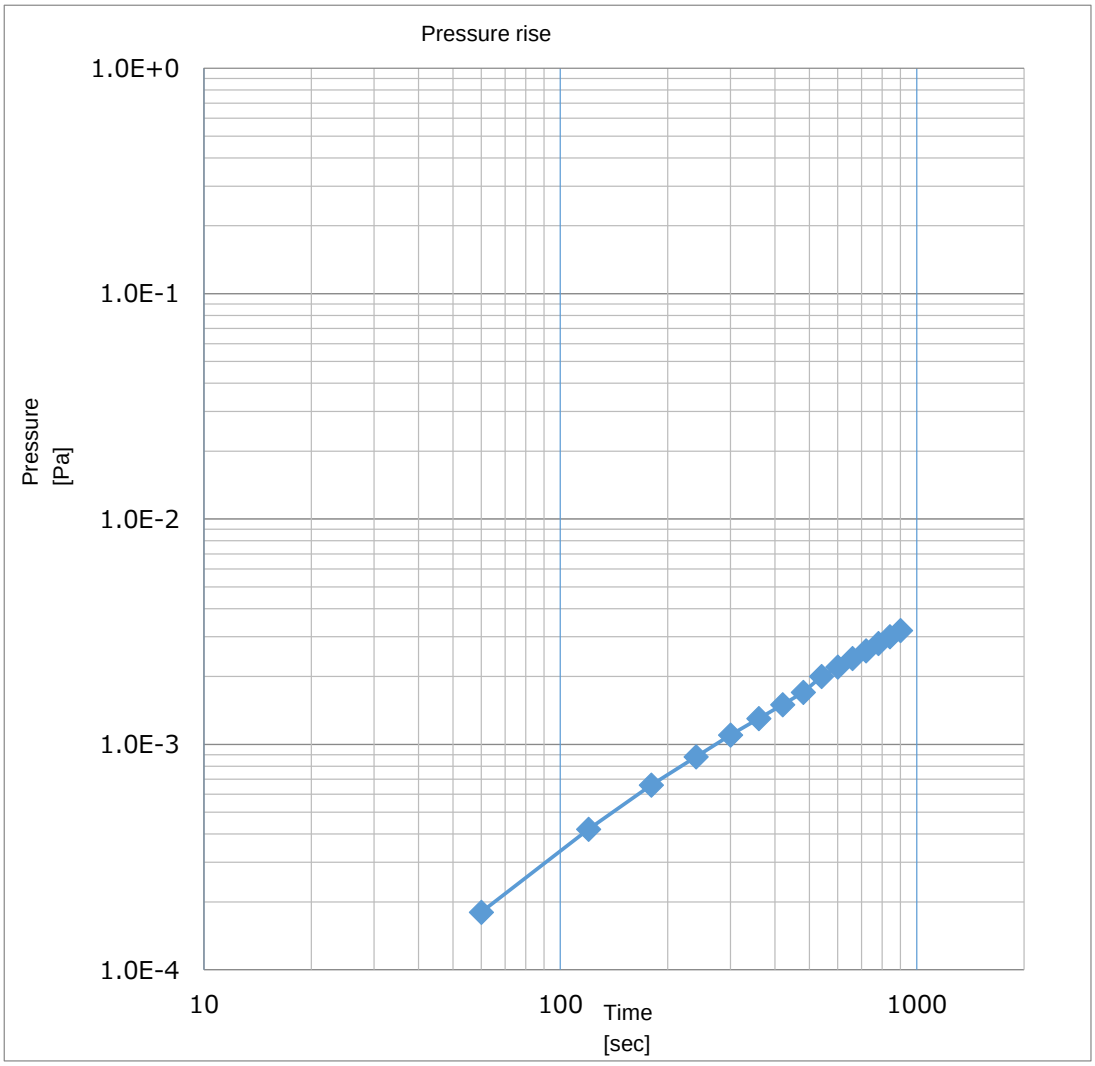
《 Remarks 》

The value will be measured when no substrate is loaded and the vacuum chamber is clean and at the ambient temperature. Basically, this value will be obtained when no target is loaded in the sputtering chamber; however, it will also be acceptable if the satisfying value is obtained with the target loaded.

Ultimate pres.	
2.4E-5	[Pa]

Result	
Time [sec]	Pressure [Pa]
0	2.4E-5
60	1.8E-4
120	4.2E-4
180	6.6E-4
240	8.8E-4
300	1.1E-3
360	1.3E-3
420	1.5E-3
480	1.7E-3
540	2.0E-3
600	2.2E-3
660	2.4.E-03
720	2.6.E-03
780	2.8.E-03
840	3.0.E-03
900	3.2.E-03
-	
-	
-	
-	
-	

Leak rate	
1.4E-7	[Pam3/sec]



Pressure rise (Pt final -Pt0)×Chamber volume}／

Pt0 : Pressure of start

Pt final : Pressure of final

1 Vacuum performance

					Tester
				Chamber name	
				P4	Ulvac Germany
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment

《 Condition 》

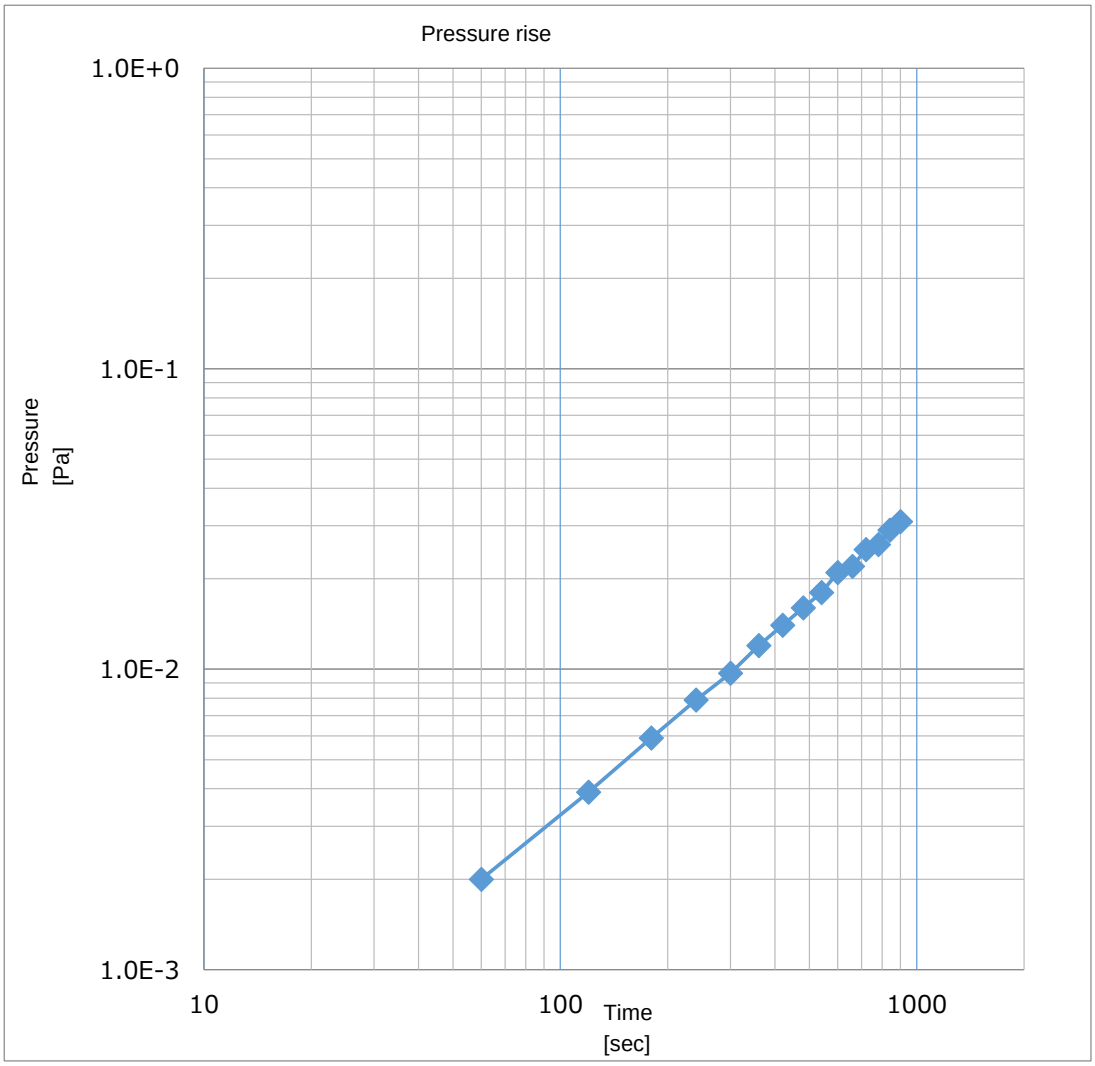
Chamber capacity [㎥]	0.092	Stage temperature [℃]	Room temperature		

《 Remarks 》

The value will be measured when no substrate is loaded and the vacuum chamber is clean and at the ambient temperature. Basically, this value will be obtained when no target is loaded in the sputtering chamber; however, it will also be acceptable if the satisfying value is obtained with the target loaded.

Ultimate pres.	
4.7E-5	[Pa]

Result	
Time [sec]	Pressure [Pa]
0	4.7E-5
60	2.0E-3
120	3.9E-3
180	5.9E-3
240	7.9E-3
300	9.7E-3
360	1.2E-2
420	1.4E-2
480	1.6E-2
540	1.8E-2
600	2.1E-2
660	2.2.E-02
720	2.5.E-02
780	2.6.E-02
840	2.9.E-02
900	3.1.E-02
-	
-	
-	
-	
-	
Leak rate	
3.2E-6	[Pam3/sec]



Pressure rise (Pt final -Pt0)×Chamber volume}／

Pt0 : Pressure of start

Pt final : Pressure of final

1 Vacuum performance

					Tester
				Chamber name	
				P5	Ulvac Germany
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment

《 Condition 》

Chamber capacity [㎥]	0.040	Stage temperature [℃]	Room temperature		

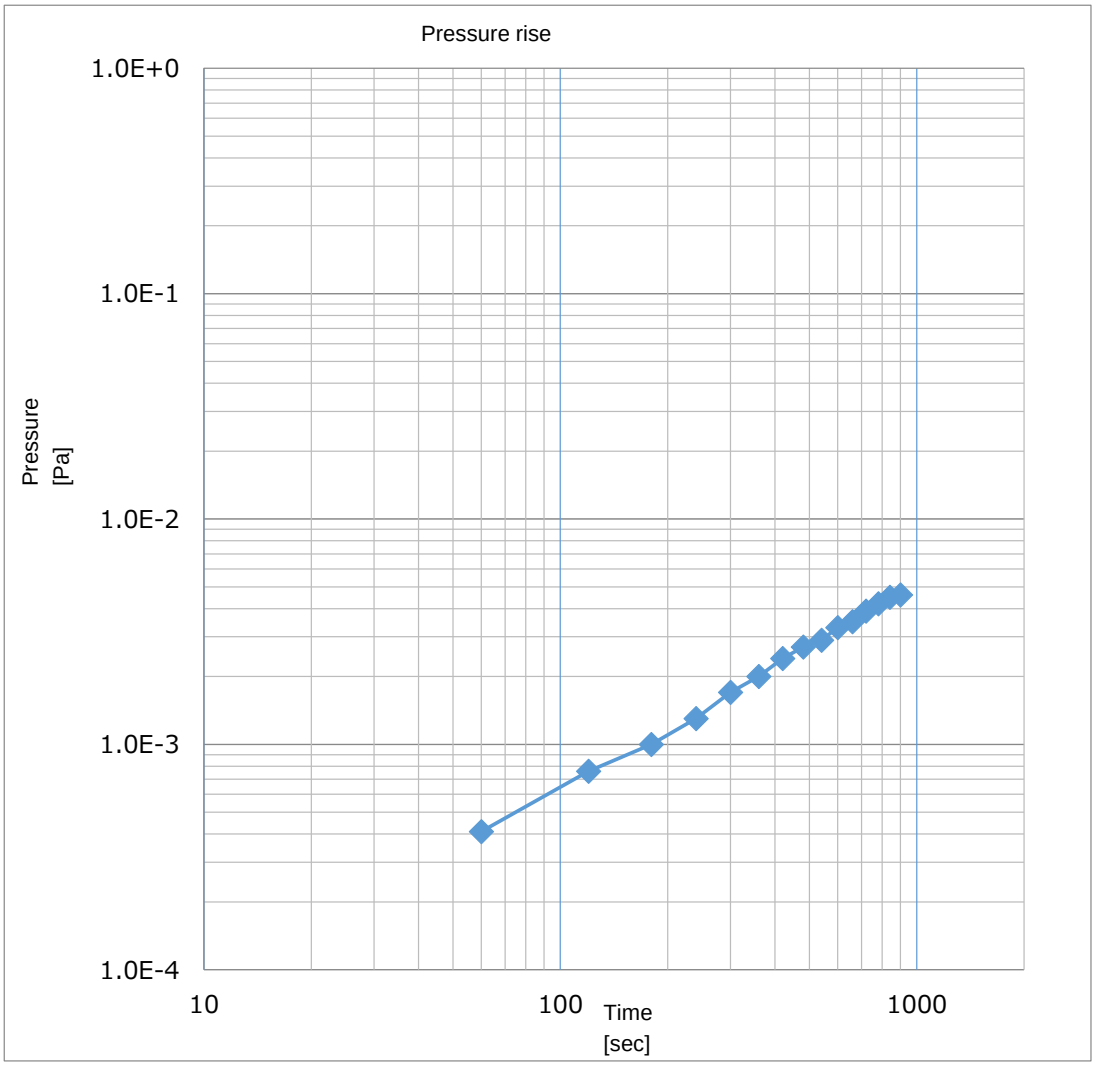
《 Remarks 》

The value will be measured when no substrate is loaded and the vacuum chamber is clean and at the ambient temperature. Basically, this value will be obtained when no target is loaded in the sputtering chamber; however, it will also be acceptable if the satisfying value is obtained with the target loaded.

Ultimate pres.	
6.5E-6	[Pa]

Result	
Time [sec]	Pressure [Pa]
0	6.5E-6
60	4.1E-4
120	7.6E-4
180	1.0E-3
240	1.3E-3
300	1.7E-3
360	2.0E-3
420	2.4E-3
480	2.7E-3
540	2.9E-3
600	3.3E-3
660	3.5.E-03
720	3.9.E-03
780	4.2.E-03
840	4.5.E-03
900	4.6.E-03
-	
-	
-	
-	
-	

Leak rate	
2.0E-7	[Pam3/sec]



Pressure rise (Pt final -Pt0)×Chamber volume}／

Pt0 : Pressure of start

Pt final : Pressure of final

1 Vacuum performance

					Tester
				Chamber name	
				P6	Ulvac Germany
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment

《 Condition 》

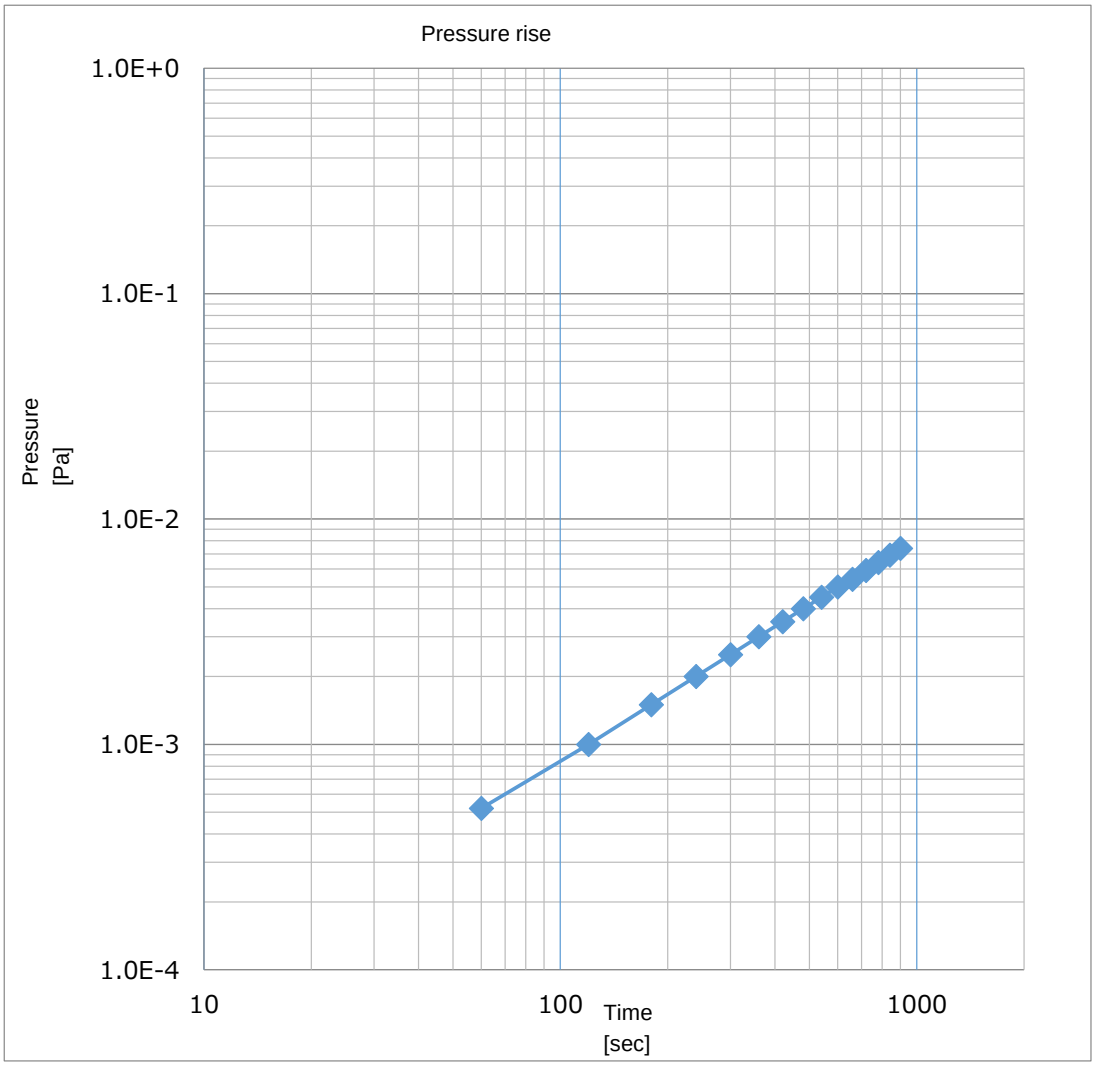
Chamber capacity [㎥]	0.040	Stage temperature [℃]	Room temperature		

《 Remarks 》

The value will be measured when no substrate is loaded and the vacuum chamber is clean and at the ambient temperature. Basically, this value will be obtained when no target is loaded in the sputtering chamber; however, it will also be acceptable if the satisfying value is obtained with the target loaded.

Ultimate pres.	
8.9E-6	[Pa]

Result	
Time [sec]	Pressure [Pa]
0	8.9E-6
60	5.2E-4
120	1.0E-3
180	1.5E-3
240	2.0E-3
300	2.5E-3
360	3.0E-3
420	3.5E-3
480	4.0E-3
540	4.5E-3
600	5.0E-3
660	5.4.E-03
720	5.9.E-03
780	6.4.E-03
840	6.9.E-03
900	7.4.E-03
-	
-	
-	
-	
-	
Leak rate	
3.3E-7	[Pam3/sec]



Pressure rise (Pt final -Pt0)×Chamber volume}／

Pt0 : Pressure of start

Pt final : Pressure of final

1 Vacuum performance

P-Q measurement

				Tester	
				Chamber name	Ulvac Germany
				P2	
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment
Data indicating relationship between Ar flow rate and DG pressure.	reference data	-	-

《 Condition 》

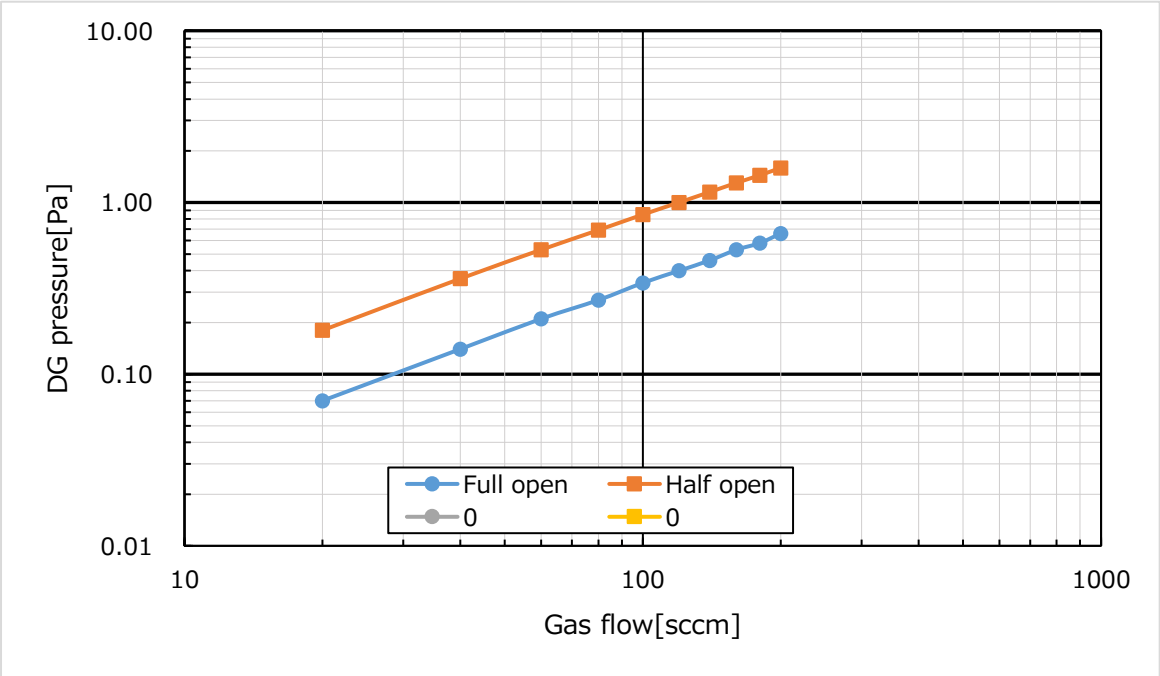
Chamber capacity [㎥]	0.092				

《 Remarks 》

B.G. pressure :1.3E-5[Pa]

MEC No	MFC21		MFC22	
Gas	Ar		GasX	
Flow	Main valve (2 position)			
[sccm]	Act sccm	Full open	Act sccm	Full open
20	20	0.1	20	0.1
40	40	0.2	40	0.2
60	60	0.3	60	0.3
80	80	0.4	80	0.4
100	100	0.4	100	0.5

MEC No	MFC23		APC	
Gas	O2		Ar 20sccm	
Flow	Main valve (2 position)			
[sccm]	Act sccm	Full open	APC Pos	DG Press
10	9.9	0.1	20	0.3
20	19.9	0.1	40	0.2
30	29.9	0.1	60	0.1
40	39.9	0.2	80	0.1
50	49.9	0.2	100	0.1



1 Vacuum performance

P-Q measurement

				Chamber name	Tester
				P3	Ulvac Germany
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment
Data indicating relationship between Ar flow rate and DG pressure.	reference data	-	-

《 Condition 》

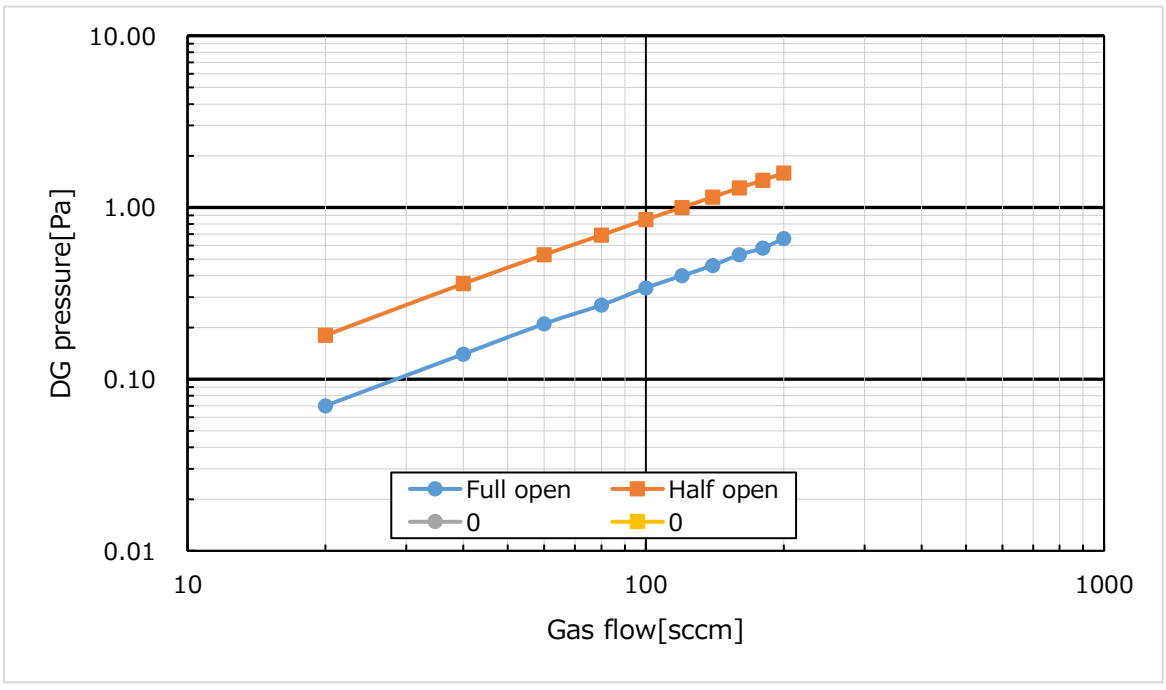
Chamber capacity [m³]	0.040				

《 Remarks 》

B.G. pressure :8.4E-5[Pa]

MEC No	MFC31		MFC33	
Gas	Ar		GasX	
Flow	Main valve (2 position)			
[sccm]	Act sccm	Full open	Act sccm	
20	20	0.1	20	0.1
40	40	0.2	40	0.1
60	60	0.3	60	0.1
80	80	0.3	80	0.1
100	100	0.4	100	0.1

MEC No	MFC32		APC	
Gas	O2		Ar 20sccm	
Flow	Main valve (2 position)			
[sccm]	Act sccm	Full open	APC Pos	DG Press
2	2	0.1	20	0.4
4	4	0.1	40	0.2
6	6	0.2	60	0.1
8	8	0.2	80	0.1
10	10	0.2	100	0.1



1 Vacuum performance

P-Q measurement

				Tester	
				Chamber name	Ulvac Germany
				P5	
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment
Data indicating relationship between Ar flow rate and DG pressure.	reference data	-	-

《 Condition 》

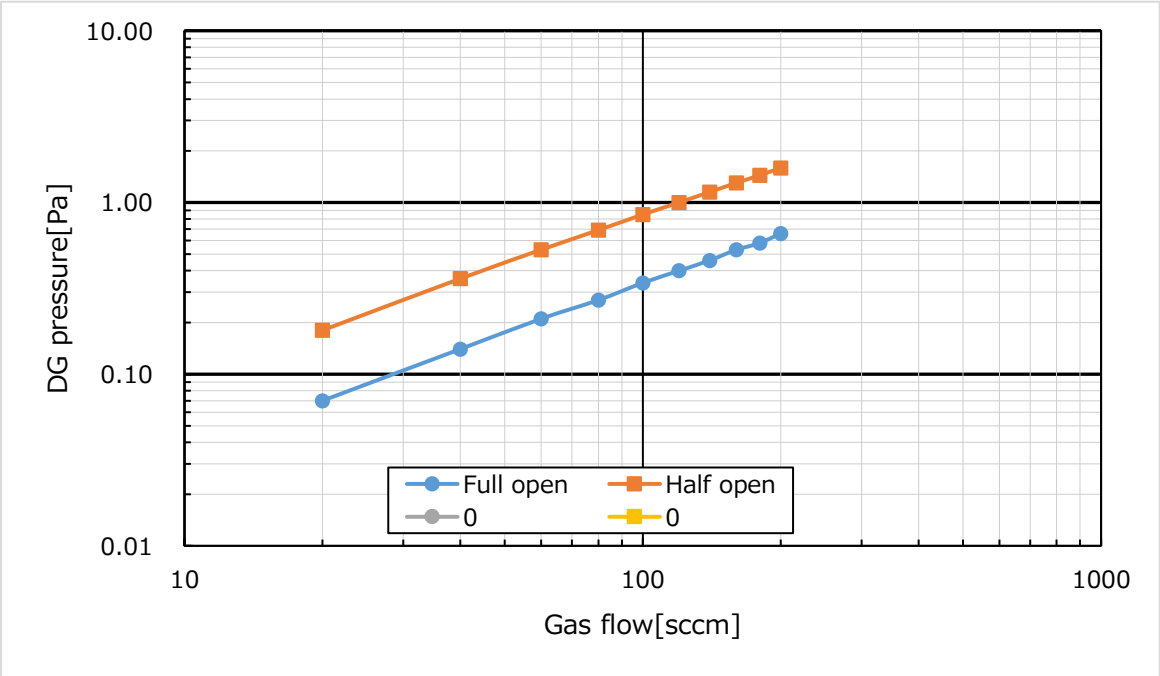
Chamber capacity [m³]	0.040				

《 Remarks 》

B.G. pressure :8.4E-5[Pa]

MEC No	MFC51		MFC53	
Gas	Ar		GasX	
Flow	Main valve (2 position)			
[sccm]	Act sccm	Full open	Act sccm	
20	20	0.2	20	0.1
40	40	0.2	40	0.1
60	60	0.3	60	0.1
80	80	0.3	80	0.1
100	100	0.4	100	0.1

MEC No	MFC52		APC	
Gas	O2		Ar 20sccm	
Flow	Main valve (2 position)			
[sccm]	Act sccm	Full open	APC Pos	DG Press
2	2	0.2	20	0.4
4	4	0.3	40	0.2
6	6	0.3	60	0.2
8	8	0.4	80	0.2
10	10	0.4	100	0.2



1 Vacuum performance

P-Q measurement

				Tester	
				Chamber name	Ulvac Germany
				P6	
		Model	SME-200J	Test day	2021/11/30

Meausrement Terms	Specification	Test Result	Judgment
Data indicating relationship between Ar flow rate and DG pressure.	reference data	-	-

《 Condition 》

Chamber capacity [m³]	0.040				

《 Remarks 》

B.G. pressure :8.4E-5[Pa]

MEC No	MFC61		MFC63	
Gas	Ar		GasX	
Flow	Main valve (2 position)			
[sccm]	Act sccm	Full open	Act sccm	Full open
20	20	0.1	20	0
40	40	0.2	40	0
60	60	0.2	60	0
80	80	0.3	80	0.1
100	100	0.3	100	0.1

MEC No	MFC62		APC	
Gas	O2		Ar 20sccm	
Flow	Main valve (2 position)			
[sccm]	Act sccm	Full open	APC %	DG Press
2	2	0.1	20	0.3
4	4	0.2	40	0.1
6	6	0.3	60	0.1
8	8	0.3	80	0.1
10	10	0.4	100	0.1

