

1. Pressurized gas system

- (1) Types of process : Please refer to the Gas Flow Chart
- (2) Main specified components:
 - ① Filter : TOSHIBA ; CERAMIC
 - ② Air operation valve : FUJIKIN ; Diaphragm type
 - ③ Mass Flow Controller : STEC ; SEC-7300 series
 - ④ Check valve
 - Process gas, purge N₂ : FUJIKIN ; Disc poppet type (Diaphragm type)
 - Vent line : FUJIKIN ; Spring type
 - ⑤ Hand valve : FUJIKIN ; Diaphragm type
 - ⑥ Regulator : VERIFLO ; SQ series
 - ⑦ Pressure transducer : NAGANO ; ZT series
- (3) Fitting : Gasket joint
(Air lines and vent lines shall be excepted)
*pure nickel type using
- (4) Piping material : SUMIKIN STAINLESS TUBE (EP)
(Air lines and vent lines shall be excepted)
- (5) Piping working method : bending type(90° ↓)
- (6) Welding method : Automatic-welding
- (7) Special Notes:
 - ① For shipping from our factory, the unit shall have N₂ gas sealed in.
 - ② A label identifying the gas name and flow direction shall be placed on all the gas inlet and vent valves, air valves, check valves, and like items.
 - ③ A gas inlet shall have a mating fitting.
 - ④ The joint sections of the gas inlet, outlet, vent, etc., shall all be housed inside the boxes.

2. Gas Exhaust System Related Items

(1) Major components

- ① Dry pump : 150 x 40 UERP 6M (Customer prepared)
- ② Main valve : Angle Valve (CKD H0T Type)
- ③ Vacuum gage : Baratron
- ④ Joint : gasket and NW method
- ⑤ Piping material : SUS 316 BA (stainless steel)

(2) Pressure control

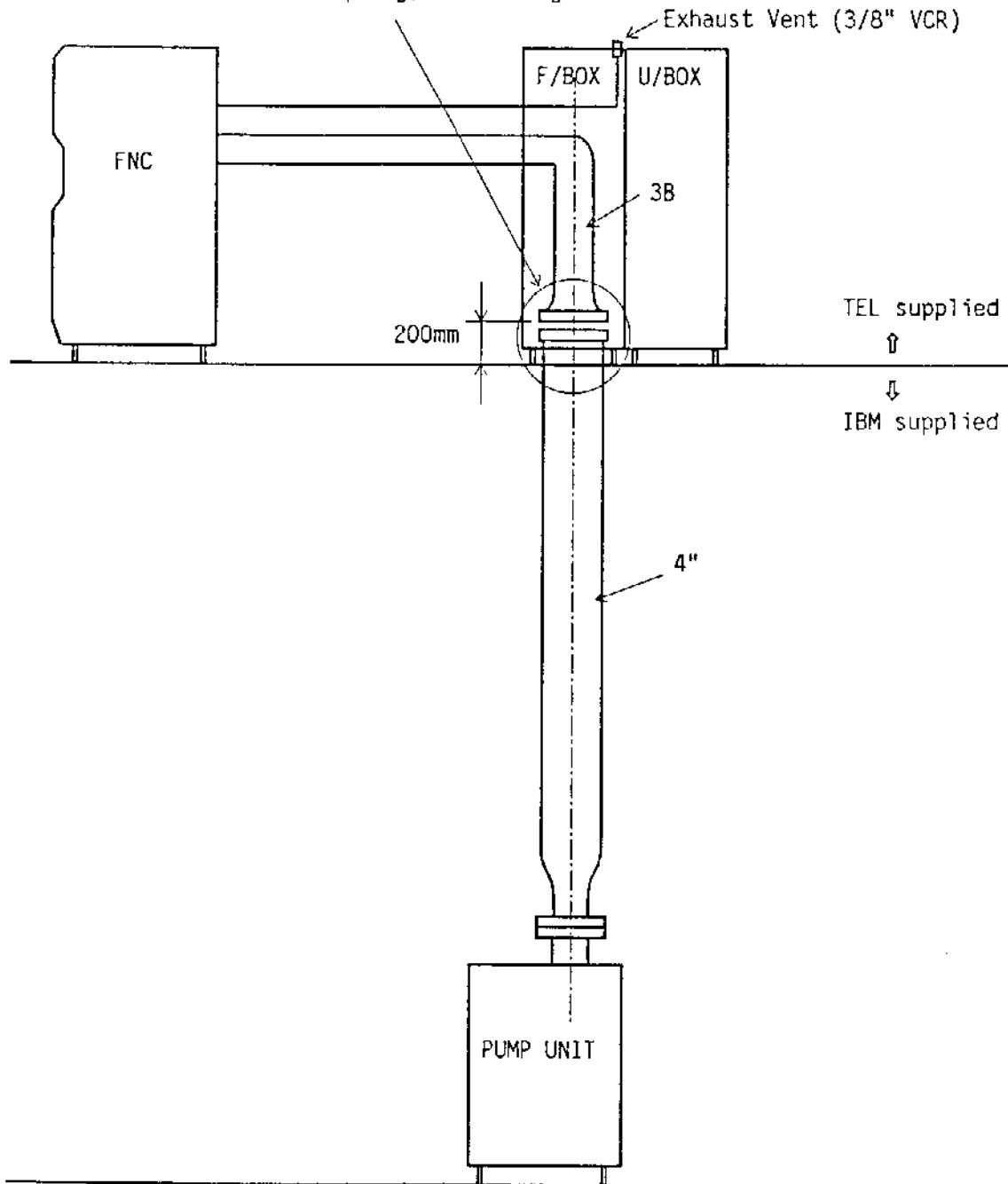
- ① The pressure will be controlled by the Conductance valve and Baratron sensor.
- ② Control method
 - VG1(0~10Torr) : Used to control pressure in the reactor tube.
 - VG2(0~1000Torr) : Used to control pressure in the reactor tube.
 - VG 3=5: Used to monitor pressure in the VG1. △
 - VG 4=6: GV Open I/L. △
 - VG 5=4: Pump monitor. △
 - VG 6=3: Metal sheet seal pressure monitor. △
 - VG7 : Used to monitor pressure in the reactor tube.
 - VG8 : Used to monitor pressure in the turbo molecular pump.
 - P.SW 1=2: Detection of atmospheric pressure recovery.(reactor) △
 - P.SW 2=1: Detection of atmospheric pressure recovery.(Metal sheet seal) △

(4) Pump related items

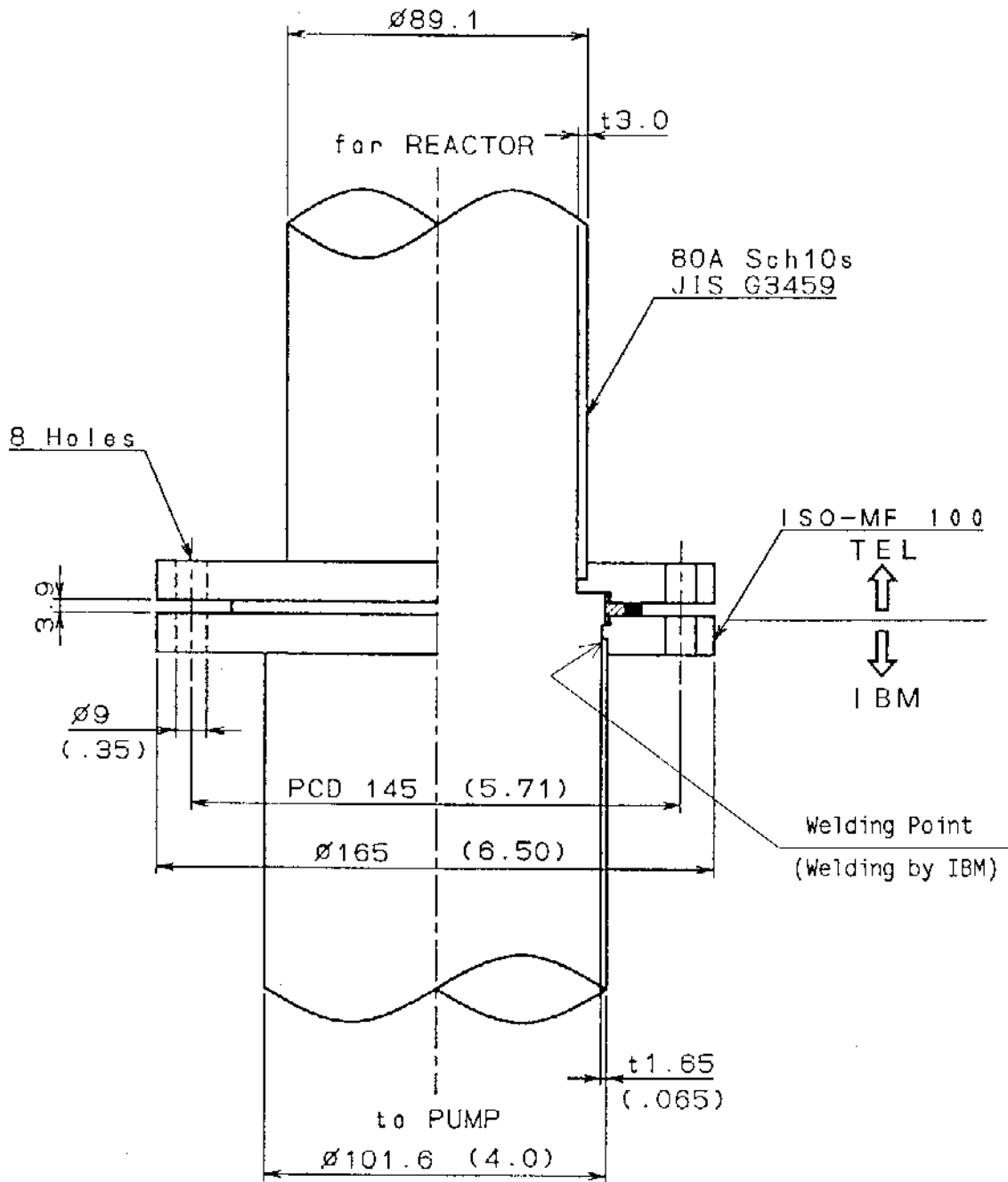
- ① The pump package are to be converted by FTP #1.
- ② The 4" piping and Vacuum vent line preparing and works from furnace floor to pump unit shall be done by customer side.
- ③ Pirani gauge shall be installed at the U/BOX.

o Delineation of Responsibility for construction

Our company will arrange the ISOMF-100 flange, coupling, and O-ring.



Schematic of ISO-MF 100 (Claw clamp type)



Note : Dimensions (inches)

MATERIAL : SUS316L

3. Manifold

- (1) Sealing method : end-face sealing (Metal sheet seal + evacuated)
- (2) Material : SUS 316L stainless steel
- (3) Gas port
 - ① Gas port : 3/8" VCR
 - ② Inner T/C port : 20 DIA Ultra Torr
- (4) Exhaust port : 4" DIA
- (5) Cooling method : water cooling
- (6) Special Notes
 - ① Installing and removing the manifold shall be possible by means of the Tube Cart and the Elevator. The structural design shall provide an easy means for positioning during installation.
 - ② Manifold is water cooled to prevent O-ring damage.

4. Utility box

- (1) External dimensions : 900mmW × 600mmD × 2800mmH
- (2) Items housed in the box
 - ① Gas system
 - ② Various circuit breakers, etc.
 - ③ Gas detector indicator(H₂)
 - ④ Model-120 phase
 - ⑤ TS-4000Z Main part
- (3) Basic Specification
 - ① The maintenance door will be provided with wire glass.
 - ② The manostor gage and manostor switch will be installed on the exhaust duct and will output the alarm signal to the TS-4000Z.
 - ③ Covers will be provided on the switches and controls of the 100/200VAC power supply panels circuit breakers.
 - ④ The cover should be installed at the various electrical unit.
 - ⑤ The door interlock is provided at front door.

5. Facility box

- (1) External dimensions : 900 mmW × 600 mmD × 2800 mmH
- (2) Items housed in the box
 - ① Exhaust piping
 - ② APC controller
 - ③ ATM sensor
 - ④ Hard ware I/L unit
 - ⑤ Turbo molecular pump
- (3) Special Notes
 - ① The maintenance door will be provided with wire glass.
 - ② The manostor gage and manostor switch will be installed on the exhaust duct and will output the alarm signal to the TS-4000Z.
 - ③ The door interlock is provided at the front door.

6. Gas Detector Specifications

(1) General

Sense point	Sensor type	Purpose
Scavenger	Suction	Leak detect
Gas box	Diffusion	Leak detect
Facility box	Diffusion	Leak detect



(2) Notes

- ① The diffusion type sensor must be installed inside the cabinet (Not exhaust duct).
- ② The alarm signal should be sent to the external terminal.

No.	ITEM NO.	PARTS DESCRIPTION	MFG PARTS NO. OR TYPE	MFG	Q'TY	CONNECTOR	NOTES
1	HV1~15	DIAPHRAGM VALVE	FUDDFL-71-6.35-2-UP	FUJIKIN	15	UJR	
2	HV16	SWITCH BELLOW VALVE	FUBFL-71-9.52	FUJIKIN	1	UJR	
3	HV17	SWITCH BELLOW VALVE	FUBFL-71-6.35	FUJIKIN	1	UJR	
4	F1.8.9	FILTER	CEP-TM1S-VR-02P	TOSHIBA CERAMICS	3	VCR	
5	F2.4.6.12	FILTER	CEP-STM-2HS-VR-02P	TOSHIBA CERAMICS	4	VCR	
6	F3.5.7.10.11	FILTER	CEP-STM-HS-VR-02P	TOSHIBA CERAMICS	5	VCR	
7	PF1	PURIFIER	WPMV 200 SH	MILLIPORE	1	VCR	
8	PF2	PURIFIER	WPRV 200 SS	MILLIPORE	1	VCR	
9	PF3	PURIFIER	WPRV 200 SC	MILLIPORE	1	VCR	
10	RG1.2	REGULATOR	SO60-30-2P-FS-MM	VERIFLO	2	VCR	
11	RG3.4	REGULATOR	SQ140E-30-2P-FS-MM-EV	VERIFLO	2	VCR	
12	RG5	REGULATOR	R364-02ZF	KURODA	1	SWAGELOK	
13	V	AIR OPERATE VALVE	FPR-SD-71-6.35-2	FUJIKIN	23	UJR	V1~7, 12, 17, 22, 27, 28, 31~40 44
14	V-V	BLOCK VALVE	FBSDV-6.35-2B3-BGC	FUJIKIN	6	UJR	V8-9, 13-14, 18-19, 23-24, 29-30, 41-42
15	V	AIR OPERATE VALVE	FPR-SD-71-6.35	FUJIKIN	5	UJR	V9, 14, 19, 24, 30
16	V	BLOCK VALVE	FPR-SDT-71-6.35-3-DLH	FUJIKIN	8	UJR	V10, 11, 15, 16, 20, 21, 25, 26
17	V43	CYLINDER VALVE	152-0025K	MKS	1	NW25	
Parts List		Customer: IBM		Name: POLY/SiN/OX			
(1 / 5)		PO#: A2		DWG No. : 119220760213		Date: 1996.09.26. 2/6	
		Charge:		Recognition:			

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No	ITEM NO.	PARTS DESCRIPTION	MFG PARTS NO. OR TYPE	MFG	QTY	CONNECTOR	NOTES
18	V45, 1 V1.6	AIR OPERATE VALVE	FPR-71-9.52	FUJIKIN	3	UJR	:
19	V46	AIR OPERATE VALVE	FPR-71-9.52-2-BR	FUJIKIN	1	UJR	
20	1 V2~5	AIR OPERATE VALVE	FPR-71-9.52-PA	FUJIKIN	4	UJR	
21	1 V7	AIR OPERATE VALVE	FP-71-6.35-PA	FUJIKIN	1	UJR	
22	LV1	AIR OPERATE VALVE	FP-71-6.35-2-BR	FUJIKIN	1	UJR	
23	LV2	AIR OPERATE VALVE	FPR-71-6.35-2-BR	FUJIKIN	1	UJR	
24	SV	AIR OPERATE VALVE	FPR-71-6.35-PA	FUJIKIN	1	UJR	
25	VV, V4T	AIR OPERATE VALVE	FPR-71-9.52-2-BR-PA	FUJIKIN	2	UJR	
26	CV1.2.4~6	CHECK VALVE	FUCL-715-6.35-0.023-UP	FUJIKIN	5	UJR	
27	CV3	CHECK VALVE	FUCL-715-6.35-0.023-CR-UP	FUJIKIN	1	UJR	
28	CV7	CHECK VALVE	FUCL-715-6.35-0.023-TF-UP	FUJIKIN	1	UJR	
29	CV8.10-12.14	CHECK VALVE	FUCL-715-6.35-0.023	FUJIKIN	5	UJR	
30	CV9	CHECK VALVE	FUCL-715-6.35-0.023-CR	FUJIKIN	1	UJR	
31	CV13	CHECK VALVE	FUCL-715-9.52-0.023	FUJIKIN	1	UJR	
32	FMI	FLOW METER	P-800ST-2LNS-N ₂ -1.8L-4V-R	TOKYO KEISO	1	VCR	
33	VGI	CAPACITANCE MANOMETER	621C11TBFH	MKS	1	VCR	
34	VG2	CAPACITANCE MANOMETER	621C13TBFH	MKS	1	VCR	
Parts List		Customer: IBM		Name: POLY/SIN/OX			
(2/5)		Charge:		DWG No. : 119220760213		Date: 1996.09.26. 3/5	

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No.	ITEM NO.	PARTS DESCRIPTION	MFG PARTS NO. OR TYPE	MFG	QTY	CONNECTOR	NOTES
35	VG 3.4	PIRANI GAUGE	GP-1020/WP-01	ULVAC	1	---	(TORR INDICATION)
36	VG 5.6	PIRANI GAUGE	GP-1000/WPB-10-034	ULVAC	2	ICF φ34	(TORR INDICATION)
37	VG 7.8	IONIC GAUGE	MIG-430/MG-2	ANELVA	2	ICF φ34	(TORR INDICATION)
38	PT 1~17	PRESSURE TRANSMITTER	ZT15-1G6/GC97 (-15~45PSI)	HAGANO KEIKI	17	VCR	(PSI INDICATION)
39	NV 1	NEEDLE VALVE	FUBFN-71M-6.35	FUJIKIN	1	UJR	
40	NV 2	NEEDLE VALVE	SS-4BMG-VCR	MUPRO	1	VCR	
41	BV 1	BALL VALVE	FUBV-915-6.35	FUJIKIN	1	FIMELOK	
42	P.SW 1,2	PRESSURE SWITCH	223B 12377-SPPRESS 0463	MKS	2	VCR	
43	P.SW 3	PRESSURE SWITCH	ISE4E-01-27L	SPC	1	SWAGELOK	
44	MFC 1	MASS FLOW CONTROLLER	SEC-7350MC-4CR-UC N ₂ 20SLM	STEC	1	VCR	
45	MFC 2,5,10	MASS FLOW CONTROLLER	SEC-7340MC-4CR-UC N ₂ 5SLM	STEC	3	VCR	
46	MFC 3	MASS FLOW CONTROLLER	SEC-7350MC-4CR-UC Ar 10SLM	STEC	1	VCR	
47	MFC 4	MASS FLOW CONTROLLER	SEC-7340MC-4CR-UC H ₂ 10SLM	STEC	1	VCR	
48	MFC 6	MASS FLOW CONTROLLER	SEC-7330MC-4CR-UC NH ₃ 2SLM	STEC	1	VCR	
49	MFC 7	MASS FLOW CONTROLLER	SEC-7330MC-4CR-UC SiH ₄ 500SCCM	STEC	1	VCR	
50	MFC 8	MASS FLOW CONTROLLER	SEC-7330MC-4CR-UC SiH ₄ 5SCCM	STEC	1	VCR	
51	MFC 9	MASS FLOW CONTROLLER	SEC-7330MC-4CR-UC SiH ₂ Cl ₂ 200SCCM	STEC	1	VCR	
Parts List		PO# : A2 =	Customer : IBM	Name : POLY/SIN/OX			
(3/5)		No. :	Charge :	DWG No. : 119220760213		Date : 1986.09.26.	4/6

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No.	ITEM NO.	PARTS DESCRIPTION	MFG PARTS NO. OR TYPE	MFG	Q'TY	CONNECTOR	NOTES
52	MFC11	MASS FLOW CONTROLLER	SEC-7340MO-4CR-UC C I F, 5SLM	STEC	1	VCR	
53	MFC12	MASS FLOW CONTROLLER	SEC-7340MC-4CR-UC O, 10SLM	STEC	1	VCR	
54	MFC13	MASS FLOW CONTROLLER	SEC-7340MC-4CR-UC N ₂ O 5SLM	STEC	1	VCR	
55	MFC14	MASS FLOW CONTROLLER	SEC-7330MC-4CR-UC N ₂ O 300SCCM	STEC	1	VCR	
56	MV	CYLINDER VALVE	VYX-0137	CKD	1	NW80	APC TYPE
57	GV	GATE VALVE	10844-CE24	YAT	1	ICF φ203	
58	FV	CYLINDER VALVE	152-0040K	MKS	1	NW40	
59	O F I	ORIFICE	UJR-F-6.35-0.5-UP	FUJIKIN	1	UJR	
60	T. M. P	TURBO MOLECULAR PUMP	ET600WS	EBARA	1	—	CUSTOMER SUPPLY
61	—	COLD TRAP	HTO18-WSK	EBARA	1	ICF φ203	CUSTOMER SUPPLY
62	—	COMPRESSOR UNIT	HA3.1E	EBARA	1	—	CUSTOMER SUPPLY
63	MBP/DP	DRY PUMP UNIT	150x40UERP6M	EBARA	1	—	CUSTOMER SUPPLY
54	NPV1~3	AIR OPERATE VALVE	FPR-91-9.52	FUJIKIN	3	FINELOK	
65	NPV4,5	AIR OPERATE VALVE	FPR-91-6.35	FUJIKIN	2	FINELOK	
66	BV21	BALL VALVE	FUBV-915-12.7	FUJIKIN	1	FINELOK	
67	FM21	FLOW METER	P-500-1LPO-N ₂ -200L-6S	TOKYO KEISO	1	SWAGelok	
68	FM22	FLOW METER	P-500-1LPO-N ₂ -100L-6S	TOKYO KEISO	1	SWAGelok	
Parts List		PO# : A2	Customer : IBM	Name :	POLY/SIN/OX		
(4 / 5)		No. :	Charge :	Recognition :	DrG No. : 119220760213	Date : 1995.09.26.	5 / 6

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No.	ITEM NO.	PARTS DESCRIPTION	MFG PARTS NO. OR TYPE	MFG	Q'TY	CONNECTOR	NOTES
69	F M23.24	FLOW METER	P-800ST-2LNS-N ₁ -60L-4S	TOKYO KEISO	2	SWAGELCK	1
70	F 21~23	FILTER	WGGB-36W-S1	MILLIPORE	3	SWAGELCK	
71	F 24.25	FILTER	WGGB-06W-S1	MILLIPORE	2	SWAGELCK	
72	R G21.22	REGULATOR	SQ420E-100-2P-6T-5422	VERIFLO	2	SWAGELCK	
73	M F C21	MASS FLOW CONTROLLER	SEC-623RO-6CR N: 200SLM	STEC	1	VCR	
74	P G21.22	PURESSURE GAUGE	GW16-6K3 0-7K-100PSI	NAGANO KEIKI	2	1/4NPT	
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84							
85							
Parts List		Customer: IBM		Name: POLY/SIN/OX			
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