Revision A April 1997 — First Printing

TCP™ 9600PTX Alliance

(A6) Facility Manual

Part Number 405-240202-005

Revision A
April 1997

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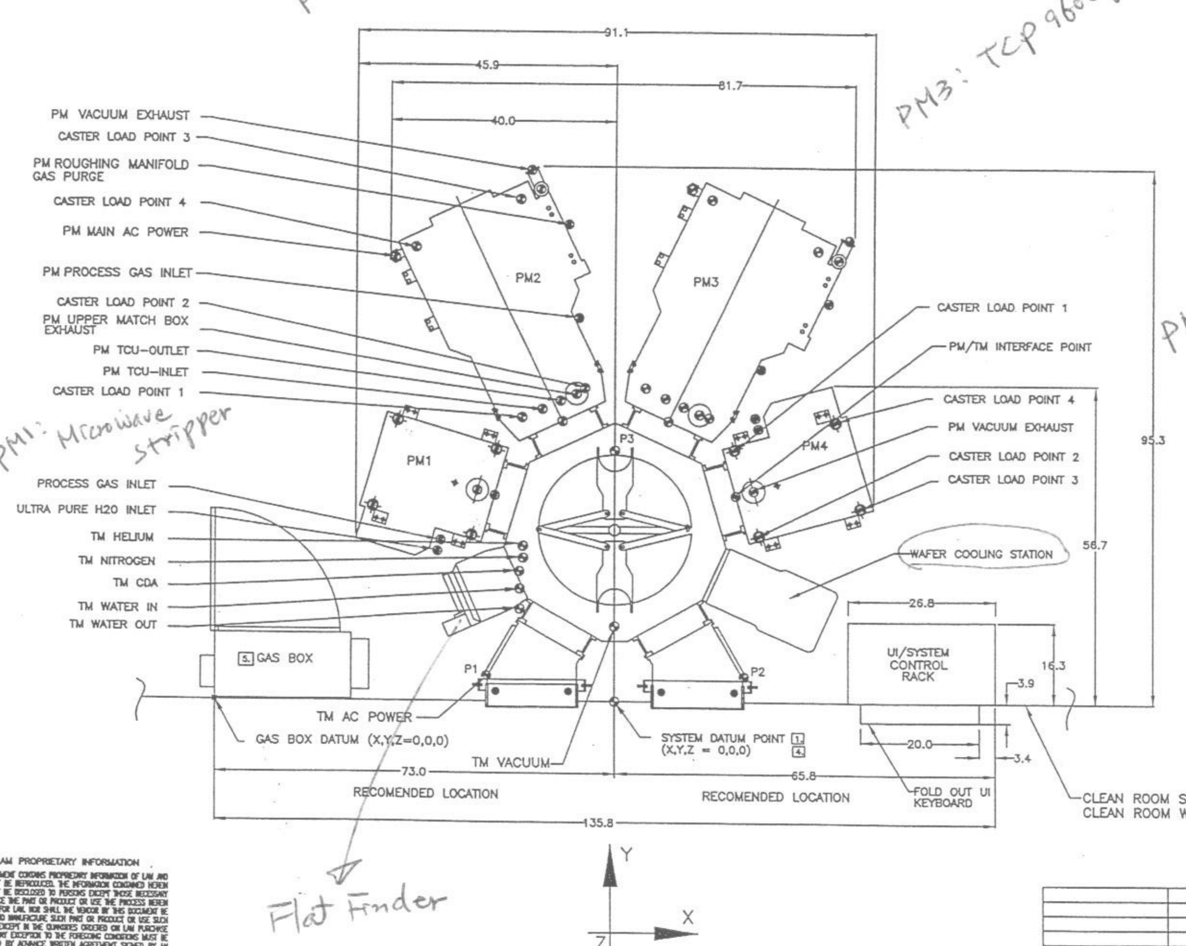
ZONE	REV	DESCRIPTION	INC BY	CHECK	APVD	DATE
	E1	ENGINEERING PROTOTYPE	CLF 9/25/96	DE	DE	9/27/96
	E2	UPDATED AND REVISED	MJF 10/3/96	DE	DE	10/4/96
	E3	UPDATED AND REVISED	MJF 11/7/96	DE	DE	11/8/96
	E4	ADDED PM/TM FEET & INTERFACE POINTS	MJF 2/26/97	DE	DE	2/26/97
	E5	UPDATED STRIPPER MODULES	MJF 4/1/97	TK	TK	4/1/97



NOTE:

1. Z=0 IS THE FLOOR LEVEL. THE WAFER TRANSPORT PLANE IS 43.3 INCHES ABOVE THE FLOOR.
2. SEE FACILITY DRAWINGS FOR DETAILS:
   PM-1,4 STRIPPER MODULE 253-460812-001
   PM-2,3 9600 PROCESS MODULE 253-300066-600
3. SEE DWG 253-404026-001 FOR TRANSPORT MODULE CONNECTION DETAILS.
4. SEE TABLE 1 (SHEET 2) FOR SYSTEM FACILITY CONNECTION COORDINATES.
5. INTEGRATED GAS BOX IN STANDARED LOCATION SHOWN. GAS BOX SUPPLY CONECTIONS MAY BE FROM TOP OR BOTTOM OF BOX. SEE TABLE 2 (SHEET 2) FOR GAS BOX CONNECTION COORDINATES FOR INTEGRATED GAS BOX IN STANDRD LOCATION. COORDINATES ARE RELATIVE TO GAS BOX DATUM

DOC. CONTROL RELEASED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACTIONS ± — DECIMALS .XX± — .XXX± — ANGLES ± —
MACHINED SURFACES
DEBURR & BREAK SHARP EDGES
MATERIAL
FINISH
INTERPRET DRAWING PER ANSI Y14.5M DIMENSIONS IN [ ] IN MILLIMETERS

NEXT ASSY	MODEL
APPLICATION	

DRAWN M.FLYNN 2/26/96
CHECKED 4/97
DESIGN 4/97
APPROVED
MFG ENGR
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING

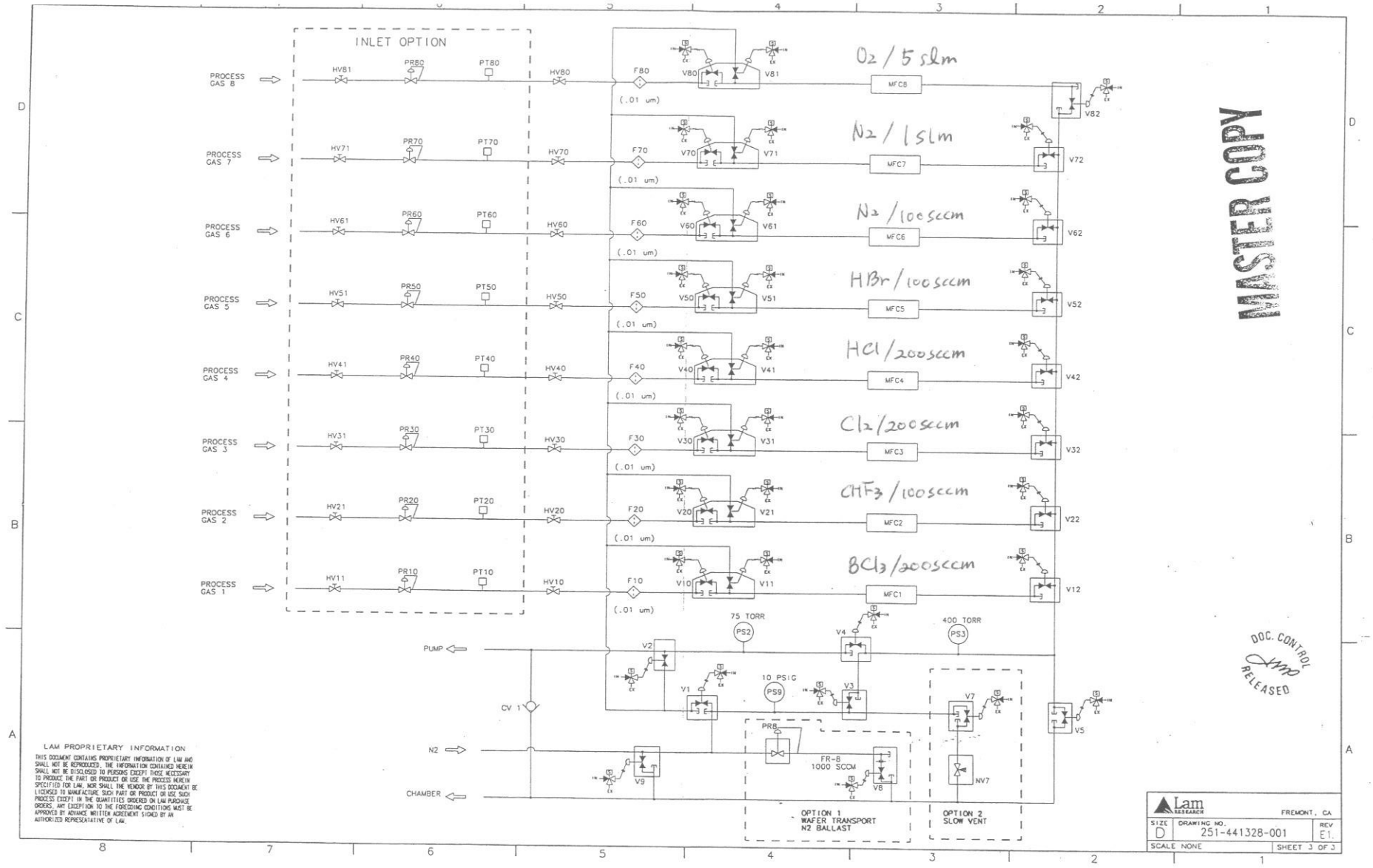
Lam RESEARCH

TITLE
ALLIANCE FACILITIES CONNECTIONS
9600-A6 PROCESS MODULES

FAC,9600 PM ALLI, CON.

SIZE D | DRAWING NO. 253-480216-006 | REV E5
SCALE | SHEET 1 OF 2

CAD SOFTWARE: ACAD
FILE NAME: 253-480216-006

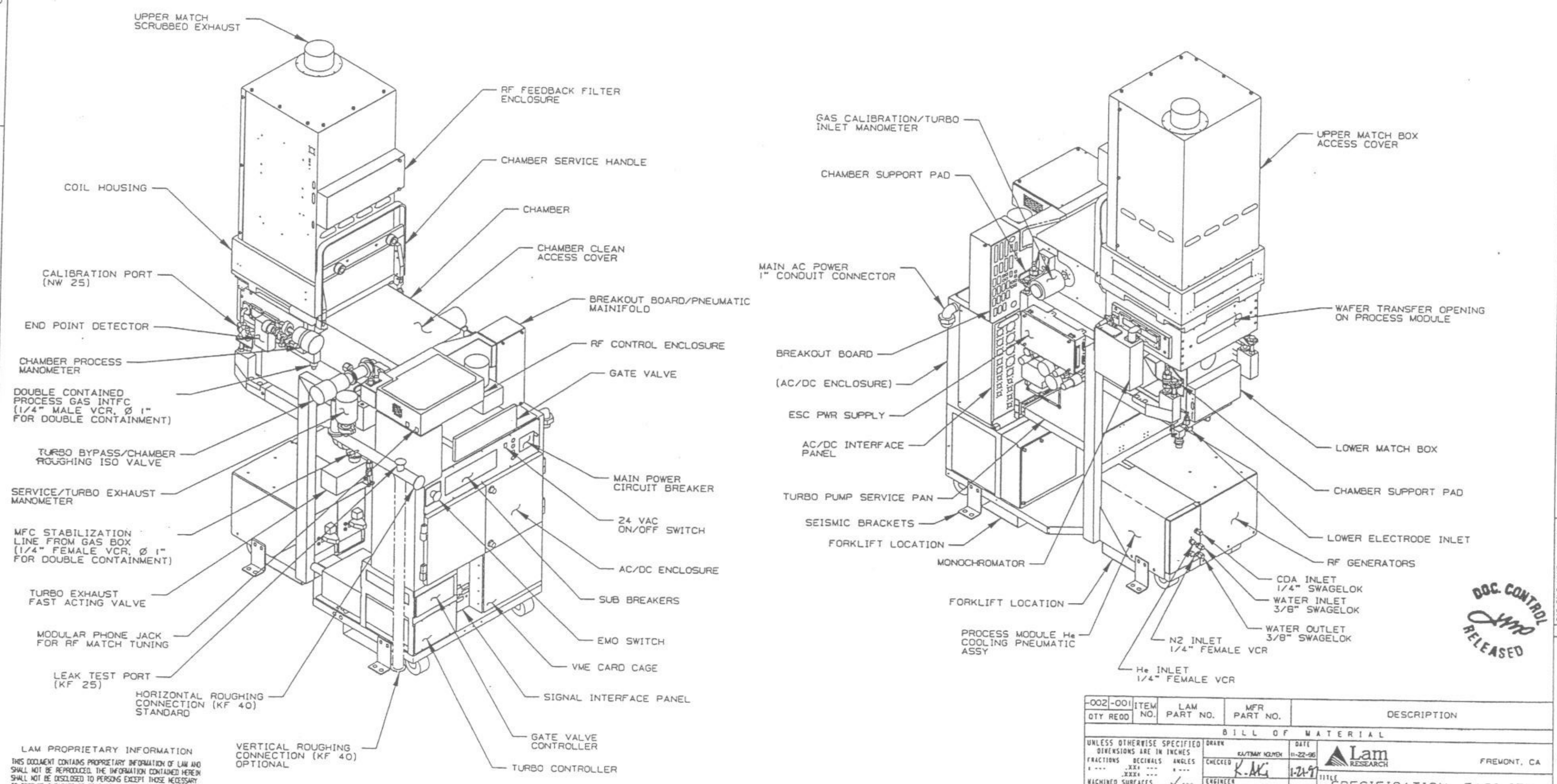


USER COPY

DOC. CONTROL RELEASED

Lam RESEARCH		FREMONT, CA	
SIZE D	DRAWING NO. 251-441328-001		REV E1
SCALE NONE		SHEET 3 OF 3	

SIMILAR TO:						
REVISIONS						
ZONE	REV	DESCRIPTION	INC BY	CHECK	APVD	DATE
	E1	ENGINEERING PROTOTYPE	KA/TTN 11-22-96			1/21/97



DOC. CONTROL RELEASED

CAD FILE NAME: ANVIL 34-253-300066-600-re1

LAM PROPRIETARY INFORMATION

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF LAM AND SHALL NOT BE REPRODUCED. THE INFORMATION CONTAINED HEREIN SHALL NOT BE DISCLOSED TO PERSONS EXCEPT THOSE NECESSARY TO PRODUCE THE PART OR PRODUCT OR USE THE PROCESS HEREIN SPECIFIED FOR LAM, NOR SHALL THE VENDOR BY THIS DOCUMENT BE LICENSED TO MANUFACTURE SUCH PART OR PRODUCT OR USE SUCH PROCESS EXCEPT IN THE QUANTITIES ORDERED ON LAM PURCHASE ORDERS. ANY EXCEPTION TO THE FOREGOING CONDITIONS MUST BE APPROVED BY ADVANCE WRITTEN AGREEMENT SIGNED BY AN AUTHORIZED REPRESENTATIVE OF LAM.

-002	-001	ITEM NO.	LAM PART NO.	MFR PART NO.	DESCRIPTION
QTY REQD					

BILL OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACTIONS ± ---   DECIMALS .XX± --- .XXX± ---   ANGLES ± ---
MACHINED SURFACES ✓---
DEBURR & BREAK SHARP EDGES
MATERIAL ......
FINISH ......

DRAWN	KA/TTNAM NGUYEN 11-22-96
CHECKED	K. AK 1-21-97
ENGINEER	
APPROVED	1/4/97
MFG ENGR	

THIRD ANGLE PROJECTION

Lam RESEARCH — FREMONT, CA

TITLE SPECIFICATION, FACILITY, 9600XX PM, A6

ABBREVIATED TITLE (30 CHAR. MAX) SPEC.FACIL,9600XX PM,A6

SIZE	DRAWING NO.	REV
D	253-300066-600	E1
SCALE NONE		SHEET 1 OF 5

DO NOT SCALE DRAWING

NEXT ASSY	MODEL
APPLICATION	

PROCESS MODULE FACILITIES

CHART #1 BREAKOUT BOX CABLE CONNECTIONS TO EXTERNAL COMPONENTS
DESCRIPTION
GASBOX INTERLOCK CABLE

CHART #2 POWER CONTROL ASSY CABLE CONNECTIONS TO EXTERNAL COMPONENTS
DESCRIPTION
GASBOX DC POWER CABLE
(ROUGHING) PUMP EMO CABLE
TCU EMO/REM ENABLE CABLE
SYSTEM EMO INTFC CABLE (GOES TO EMO HUB ON TM)

CHART #3 MAIN VME ENCLOSURE CABLE CONNECTIONS TO EXTERNAL COMPONENTS
DESCRIPTION
LONWORKS (GASBOX) COMMUNICATION CABLE
PM/TM INTERLOCK CABLE
(ROUGHING) PUMP INTERFACE CABLE
TCU INTERFACE CABLE
SERIAL COMMUNICATION CABLES TO OFF BOARD COMPONENTS (OPTIONAL)

CHART #4 GAS BOX TO PM PLUMBING

DESCRIPTION	GAS LINE FITTING	DBL. CONTAIMENT FITTING *
PROCESS GAS DELIVERY LINE	1/4 MVCR	1.0" OD TUBE (FOR CONNECTION OF 1.0" ID CORRUGATED HOSE W/HOSE CLAMP)
MFC STABILIZATION LINE	1/4 MVCR	1.0" OD TUBE (FOR CONNECTION OF 1.0" ID CORRUGATED HOSE W/HOSE CLAMP)

* FACILITIES ARE AVAILABLE FROM THE TRANSPORT MODULE IF THE "TM FACILITIES DISTRIBUTION MANIFOLD" OPTION IS ORDERED BY THE CUSTOMER. IF NOT ORDERED, CUSTOMER TO PROVIDE "MULTI-DROP" FACILITIES.

TABLE 1 ENVIRONMENT

DESCRIPTION	TEMPERATURE °C	±	HUMIDITY %	VIBRATION SENSITIVE	VIBRATION EMISSION
PROCESS MODULE	25	5	<50	SLIGHT	NO

TABLE 2 THERMAL OUTPUT

DESCRIPTION	(BTU/hr) CARRIED BY WATER	CARRIED BY EXHAUST	DISPERSED TO ENVIRONMENT	TOTAL OUTPUT
PROCESS MODULE	9K	8K	20K	37.4K

TABLE 3 PROCESS COOLING WATER FLOW SPECIFICATIONS

DESCRIPTION	FLOW GPM	FLOW L/MIN	FITTING SIZE	PRESSURE PSI	PRESSURE MAX	TEMP	TEMP
PROCESS MODULE	2.5-4.0	9.5-15	3/8" COMPRESSION	40 (MIN)	100	5-35°C	TM OR CUSTOMER

TABLE 4 HOUSE N2/CDA

DESCRIPTION	PRESSURE PSI	±	FITTING SIZE	FITTING TYPE	SOURCE *	USAGE	FLOW (LPM)	FILTER (µ)
PROCESS MODULE	90	5	3/8"	COMPRESSION	TM OR CUSTOMER	INTER-MITTENT	3 (MAX)	.05

TABLE 5 PROCESS N2

DESCRIPTION	PRESSURE PSI	±	FITTING SIZE	FITTING TYPE	SOURCE *	USAGE	FLOW	FILTER (µ)
TURBOMOLECULAR PUMP PURGE & FORELINE BALLAST	10	2	1/4"	VCR (MALE)	TM OR CUSTOMER	CONT	1000 SCCM	.05

TABLE 6 SYSTEM EXHAUST REQUIREMENTS

DESCRIPTION	DRAW (CFM)	H2O IN	SYSTEM	HAZARD	DUCT SIZE IN	DUCT SIZE CM	FLANGE TYPE	OIL CONTENT	REMOVABLE CONNECTION
UPPER MATCH BOX	75*	.2	SCRUBBER	POSSIBLE	4.0	10.2	TUBE	NO	YES

TABLE 7 POWER REQUIREMENTS

DESCRIPTION	VOLTS (AC)	Hz	PHASE	WIRE	TYPE	TYPE	CONDUIT REQUIRED
MAIN POWER	208 +10% -15%	50/60	3	5	WYE	50	1" FLEX

*SINGLE POWER INPUT FOR SYSTEM. REQUIRES AN 8-FOOT EARTH GROUND COPPER-CLAD ROD.

TABLE 8 HELIUM

DESCRIPTION	PRESSURE PSI	±	FITTING SIZE	FITTING TYPE	FLOW	SOURCE	USAGE
WAFER COOLING	30	5	1/4"	VCR (MALE)	50 SCCM MAX	TM OR CUSTOMER	INTER-MITTENT

TABE 16 CASTER LOADING

DESCRIPTION	
POINT 'A'	250 LBS.
POINT 'B'	300 LBS.

TABLE 17 PHYSICAL DIMENSIONS

DESCRIPTION	WIDTH IN	WIDTH CM	MAX DEPTH IN	MAX DEPTH CM	MAX HEIGHT IN	MAX HEIGHT CM	WEIGHT LBS	WEIGHT KG
9600 PRCS MDL	32	81.3	44.6	113.3	78.1	198.4	1012	460

OFF BOARD FACILITIES TO SUPPORT BACKING PUMP AND CHILLER

TABLE 9 ENVIRONMENT

DESCRIPTION	TEMP	HUMIDITY	VIBRATION SENSITIVITY	EMISSION
CHILLER (EDWARDS 40/80)	10-27°C	NON-CONDENSING	NONE	SLIGHT
ROUGHING PUMP (ODP 80)	10-32°C	NON-CONDENSING	NONE	YES

TABLE 10 THERMAL OUTPUT (BTU/HR)

DESCRIPTION	WATER	EXHAUST	ENVIRONMENT	TOTAL
CHILLER (EDWARDS 40/80)	12.5K	N/A	2.5K	15K
ROUGHING PUMP (ODP 80)	6K	3K	7K	16K

TABLE 11 PROCESS COOLING WATER FLOW SPECIFICATION

DESCRIPTION	FLOW	PRESSURE	MAX PRESSURE	FILTRATION	CONNECTION
CHILLER (EDWARDS 40/80)	3-6 GPM (11.5-23 LPM)	40 PSI (MIN)	100 PSI	<200µ	1/2" ID TURBO BARB OF 1/2" TUBE COMPRESSON FTG
ROUGHING PUMP (ODP 80)	5-.6 GPM (2 LPM)	40 PSI (MIN)	100 PSI	<200µ	3/8" TUBE QUICK DISCONNECT (3/8" BSP FEMALE)

TABLE 12 HOUSE N2

DESCRIPTION	FLOW	PRESSURE	FILTRATION	CONNECTION
ROUGHING PUMP (ODP 80)	1.25 CFM (35-40 LPM)	40-90 PSI	<30 µ	1/4" TUBE COMPRESSION FTG (MULTIPLE LOCATION ON THE PUMP)

TABLE 13 SCRUBBED EXHAUST REQUIREMENTS FOR BACKING PUMP

DESCRIPTION	FLOW	CONNECTION	EXHAUST HAZARDS
ROUGHING PUMP (ODP 80)	40 CFM BURST (ON PUMP DOWN) 500 SCCM AVG	NW40	TOXIC, CORROSIVE, CONDENSABLE

TABLE 14 ELECTRICAL POWER REQUIRMENTS

DESCRIPTION	POWER	HOOKUP CONNECTION
CHILLER (EDWARDS 40/80)	208 +10% -15% VAC 30 50/60 HZ 30 AMP	FITTED WITH 10' POWER CORD WITH 5 PIN TWIST LOCK (L21-30 P) PLUG
ROUGHING PUMP (ODP 80)	208 +10% -15% VAC 30 50/60 HZ 20 AMP	TERMINAL BLOCK

TABLE 15 BACKING PUMP & PUMPLINE SPECIFICATIOS

DESCRIPTION	PUMPING SPEED REQUIRED @ PM (OUTLET OF TURBO)	PUMPLINE CONDUCTANCE- PM TO ROUGHING PUMP
ODP 80 BACKING PUMP	20 CFM @ 1 TORR	≥ 50 CFM @ 1 TORR

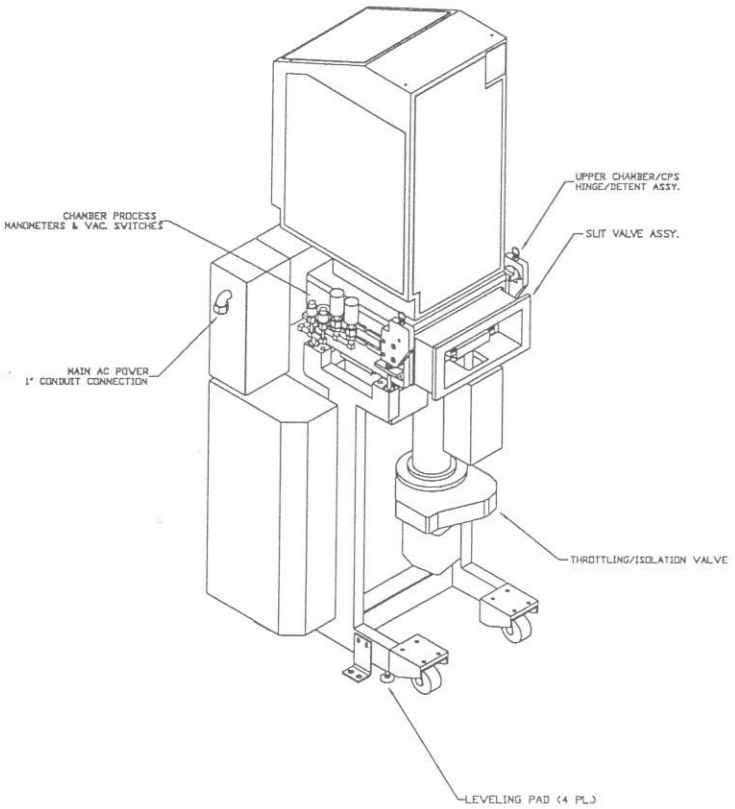
DOC. CONTROL RELEASED

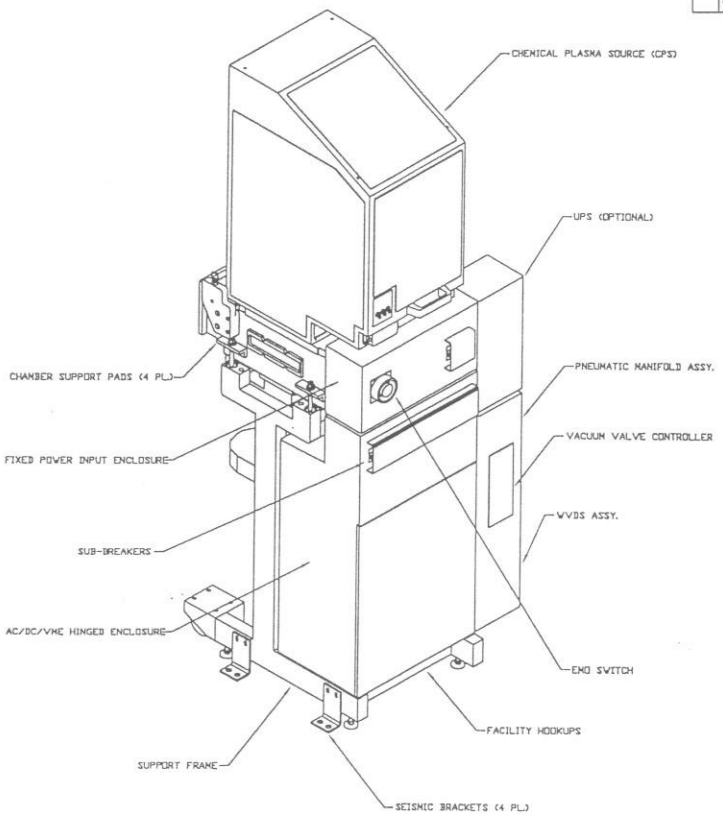
CAD FILE NAME: ANVIL 34-253-300066-600-rel

Lam RESEARCH FREMONT, CA

SIZE	DRAWING NO.	REV
D	253-300066-600	E1
SCALE NONE		SHEET 5 OF 5

REVISIONS					
REV.	DESCRIPTION	INC BY	CHECK	APVD	DATE
E1	ENGINEERING PROTOTYPE	DEO 3/24/97	DC 3/24/97	DC	3/24/97
E2	ADDED SHTS. SHOWING ISOMETRIC & ORTHOGONAL VIEWS	DEO 4/1/97	DC 4/2/97	DC	4/1/97
E3	CHG. Y-DIR. DATUM PLANE IN SHT. 3 FROM FLOOR LEVEL TO WAFER TRANSFER PLANE	DEO 4/1/97	DC 4/1/97	DC	4/1/97
E4	CHG. ULTRAPURE CONN. TO PARKER FASTLTITE FILTERS IN TABLES 12 & 13 WERE '<200' 'WATER OUT' IN TABLE 11 WAS 0.33 PSIA	DEO 4/1/97	DC	DC	5/4/97
	UNITS FOR MIN. DIFF. PRESS. IN TABLE 11 WAS 'PSIA'; UNITS FOR MIN. DIFF. PRESS. IN TABLE 13 WAS 'PSI'				





-002	-001	ITEM	LAM P/N	MFG P/N	DESCRIPTION
QTY REQD			PART NO.		BILL OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±
MACHINED SURFACES DEBURR & BREAK SHARP EDGES ✓
MATERIAL
FINISH
INTERPRET DIMENSIONS PER ANSI Y14.5 DIMENSIONS ARE IN INCHES [mm]
THIRD ANGLE PROJECTION

		DATE
DRAWN	D. OLMO	3/24/97
CHECKED	DCHEW	3/24/97
ENGINEER	DCHEW	3/24/97
APPROVED	DCHEW	3/24/97
MFG ENGR		

DO NOT SCALE THIS DRAWING

Lam RESEARCH FREMONT, CA

TITLE: SPECIFICATION, FACILITY METAL STRIPPER, A6

ABBREVIATED TITLE (NO CHAR. MAX): SPEC,FACIL,MTL STRIP, A6

SIZE	DRAWING NO.	REV
D	253-460812-001	E4

SCALE: NONE SHEET: 1 OF 4

REVISIONS					
REV.	DESCRIPTION	INC BY	CHECK	APVD	DATE
	SEE SHT 1				

SYSTEM SPECIFIC INFORMATION

IF SHOULD BE UNDERSTOOD THAT THE DIMENSIONS INDICATED ARE MAXIMUM. THEY MAY GO BEYOND THE ACTUAL FRAME OR CHASSIS AS TO INCLUDE ANY PROJECTIONS (E.G. KNOBS, SWITCHES, WATER FITTINGS, LATCHES, ETC.) THERE SHOULD BE NO FRACTIONS, GIVEN. ANY FRACTION SHOULD BE ROUNDED UP TO A WHOLE VALUE. TO ELIMINATE CONFLICTS FROM ONE DOCUMENT TO ANOTHER, ENGLISH TO METRIC CONVERSIONS SHOULD USE A STANDARD PRECISION (ROUNDING).

TABLE 1 PHYSICAL DIMENSIONS

DESCRIPTION	WIDTH MAX.		DEPTH MAX		HEIGHT MAX		WEIGHT MAX	
	IN	CM.	IN	CM.	IN	CM.	LBS.	KG
MW STRIPPER	23.5"	59.7	22.6"	57.4	77.5"	197	~1000	~455

TABLE 2 ENVIRONMENT

DESCRIPTION	TEMPERATURE		HUMIDITY	VIBRATION	
	°C	+/-	%	SENSITIVE	EMISSION
MW STRIPPER	25	5	<50	YES	SLIGHT

TABLE 3 THERMAL OUTPUT

DESCRIPTION	WIDTH MAX. (BTU/HR)			
	CARRIED BY WATER	CARRIED BY EXHAUST	DISPERSED TO ENVIRONMENT	TOTAL OUTPUT
MW STRIPPER	4,865	OPT.*	4,385 *	9,250

TABLE 4 POWER REQUIREMENTS

DESCRIPTION	VOLTS AC	Hz	PHASE	WIRE	WIRE	LOAD		CONDUIT SIZE
						IDLE	MAX	
MW STRIPPER	208 ±10%	60	3	5	WYE	–	50	1"

TABLE 5 VACUUM REQUIREMENTS

DESCRIPTION	PRESSURE	FLOW	FLOW	OUTLET
	MIN (TORR)	MAX (SCFM)	AVG. (SCFM)	CONNECTOR
MW STRIPPER	1	0.18	0.14	ISO100

* THE STRIPPER PLASMA SOURCE HEAT EXHAUST CAN BE CONNECTED TO A SCRUBBED EXHAUST SYSTEM IF NECESSARY.

NON-PROCESS GAS

NON-PROCESS GAS IS THE DESIGNATED TERM FOR ALL FACILITY GAS TYPES (E.G. N2/NITROGEN, CLEAN DRY AIR/CDA, AND He/HELIUM) THAT ARE NOT ASSOCIATED WITH THE PROCESS.

TABLE 6 HELIUM

DESCRIPTION	FLOW (SCCM)	PRESSURE (PSI)	FITTING SIZE TYPE	SOURCE	USAGE	FILTER (MICRON)
N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7 NITROGEN

DESCRIPTION	FLOW (SLM)	PRESSURE (PSI)	FITTING SIZE TYPE	SOURCE	USAGE	FILTER (MICRON)
PUMP BALLAST WVDS PURGE	84	50 ±5	1/4"VCR	HOUSE	PULSED	.05

TABLE 8 CLEAN DRY AIR (CDA)

DESCRIPTION	FLOW (SLM)	PRESSURE (PSI)	FITTING SIZE TYPE	SOURCE	USAGE	FILTER (MICRON)
PNEUMATIC SYSTEM	10 ±4	90 ±5	3/8" SWAGELOK	HOUSE	CONT.	30

TABLE 9 PROCESS GASES (FROM GASBOX)

GAS#	CHEM. SYM.	PURITY (%)	FLOW RATE (SCCM)	REG. PRESS. (PSI)	SENS. TO LEAK	FILTER SIZE (MICRON)	FITTING (FEMALE)	FILTER (MICRON)
1	O2	99.998	5000	20±5	YES	≤.01	1/4 VCR	.05
2	N2	99.998	1000	20±5	YES	≤.01	1/4 VCR	.05

TABLE 10 SYSTEM SCRUBBER EXHAUST REQUIREMENTS (.OPT)

DESCRIPTION	FLOW (CFM)	H2O (IN)	SYSTEM	HAZARD	DUCT SIZE		REMOVABLE	OIL CONTENT
					IN.	CM.		
MW-STRIPPER	N/A	0.2	SCRUB-BED	YES	4	10.2	YES	NO

TABLE 11 WATER/COOLANT FLOW SPECIFICATIONS

DESCRIPTION	FLOW			MAX. PRESS. PSIG	MIN. DIFF.PRESS. PSID	TEMPERATURE		
	GPM	L/MIN	±			°C	+	–
WATER IN	0.5	1.9	5%	100	N/A	21	5	5
WATER OUT	0.5	1.9	5%	VARIES	35	21	5	5

TABLE 12 WATER/COOLANT INTERFACE HARDWARE REQUIREMENTS

DESCRIPTION	FITTING		LINE		FILTER (MICRON)
	SIZE	TYPE	SIZE	TYPE	
WATER IN	3/8"	SWAGELOK	3/8"	NYLON HOSE	100
WATER OUT	3/8"	SWAGELOK	3/8"	NYLON HOSE	N/A

TABLE 13 ULTRAPURE WATER FLOW SPECIFICATIONS

DESCRIPTION	FLOW			MAX. PRESS. PSI	MIN. DIFF.PRESS. PSID	TEMPERATURE		
	GPM	L/MIN	±			°C	+	–
WATER IN	.01	.030	5%	30	N/A	21	5	5
WATER OUT	.01	.030	5%	VARIES	.35	21	5	5

TABLE 14 ULTRAPURE WATER INTERFACE HARDWARE REQUIREMENTS

DESCRIPTION	FITTING		LINE		FILTER (MICRON)
	SIZE	TYPE	SIZE	TYPE	
WATER IN	1/4"	PARKER FAST&TITE	1/4"	TEFLON HOSE	100
WATER OUT	1/4"	PARKER FAST&TITE	1/4"	TEFLON HOSE	N/A

TABLE 15 FLOOR LOADING

DESCRIPTION	
FRONT LEVELERS (2)	~300LBS/EA.
REAR LEVELERS (2)	~200LBS/EA

CHART #1 POWER CONT. ASSY CABLE CONNECTIONS TO EXT. COMP.
GASBOX DC POWER CABLE
PUMP EMO CABLE
SYSTEM EMO INTFC CABLE (TO EMO HUB ON TM)
UPS 120VAC CABLE (OPTIONAL)
RPM 208VAC, 3PH. CABLE

CHART #2 MAIN VME ENCLOSURE CABLE CONNECTIONS TO EXT. COMP.
GASBOX INTERLOCK CABLE
LONWORKS (GASBOX) COMM. CABLE
PM/TM INTERLOCK CABLE
PUMP INTERFACE CABLE
ETHERNET COAX CABLE
SERIAL COMM. CABLES TO OFF BOARD COMPONENTS (OPTIONAL)

-002	-001	ITEM	LAM P/N	MFG P/N	DESCRIPTION
QTY REQD			PART NO.		BILL OF MATERIAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±
MACHINED SUFACES ✓
DEBURR & BREAK SHARP EDGES
MATERIAL
FINISH
INTERPRET DIMENSIONS PER ANSI Y14.5
DIMENSIONS ARE IN INCHES [mm]
THIRD ANGLE PROJECTION

DRAWN | DATE
CHECKED
ENGINEER
APPROVED
MFG ENGR

DO NOT SCALE THIS DRAWING

Lam RESEARCH FREMONT, CA

TITLE: SPECIFICATION, FACILITY METAL STRIPPER, A6

ABBREVIATED TITLE (30 CHAR. MAX): SPEC,FACIL,MTL STRIP, A6

SIZE: D | DRAWING NO.: 253-460812-001 | REV: E4

SCALE: | SHEET: 4 OF 4