

ITEM	SERVICE	SET PRESSURE (PSIG)	ITEM	SERVICE
CP-1	MAIN FILL/WITHDRAWAL CONN		V-1	MAIN He FILL / WITHDRAWAL
CP-2	SMALL DEWAR FILL WITHDRAWAL CONN		V-2	SMALL DEWAR FILL / WITHDRAWAL
CP-3	MAIN He VENT		V-3	MAIN He VENT
CP-5	He SHIELD CONN (PRIMARY)		V-4	He RELIEF SWITCHING
CP-5A	He SHIELD CONN (BACK-UP)		V-8	ANNULAR SPACE EVACUATION (REAR)
CP-6	READ-OUT CONN (1/4" SIZE)		V-9	TANK VAC. THERMOCOUPLE SHUT-OFF
CP-7	READ-OUT CONN (3/8" SIZE)		V-10	THERMOCOUPLE PUMP OUT SHUT OFF
CV-3	He VENT GAS FROM SHIELD	1	V-14	He UPPER LIQUID LEVEL SHUT-OFF
CV-4	He VENT GAS FROM SHIELD	1	V-15	He GAUGE EQUALIZER
CV-5	FLOWMETER CHECK VALVE	.2	V-16	He LOWER LIQUID LEVEL SHUT-OFF
LLI-1	He LIQUID LEVEL INDICATOR		V-18	He PRESS GAUGE SHUT-OFF
P-1	He PRESSURE GAUGE		V-20	FILL / WITHDRAWAL BAYONET PURGE
PBC-1	PRESSURE BUILD-UP COIL		V-21	SMALL DEWAR FILL / WITH. BAYONET PURGE
PCV-1	He SHIELD RELIEF	165	V-22	MAIN He VENT BAYONET PURGE
PCV-5	TANK PRESSURE CONTROL VALVE	70	V-28	He VENT STACK DRAIN
RD-1	He VENT RELIEF DISC	233	V-30	BLOWDOWN
RD-2	He VENT RELIEF DISC	233	V-31	He SHIELD CONN SHUT-OFF
RD-4	ANNULAR SPACE RELIEF DISC	1.35	V-32	REMOTE READ-OUT SHUT-OFF
RV-1	He GAS RELIEF	175	V-33	VACUUM PROBE SHUT-OFF
RV-2	He GAS RELIEF	175	V-34	REMOTE READ-OUT SHUT-OFF
RV-4	He VENT RECOVERY, BAYONET RELIEF	225	V-35	AUX He SHIELD ISOLATION SHUT-OFF
RV-5	SMALL DEWAR FILL, BAYONET RELIEF	225	V-36	AUX He SHIELD REGULATOR
RV-6	MAIN FILL, BAYONET RELIEF	225	V-38	FLOWMETER ADJUSTMENT
RV-8	HELIUM SHIELD CONNECTION RELIEF	225	V-41	VACUUM PROBE SHUT-OFF
RV-20	PBC GAS CIRCUIT RELIEF	225	V-42	VACUUM PROBE SHUT-OFF
RV-21	PBC LIQUID CIRCUIT RELIEF	225	V-50	PBC VAPOR RETURN SHUT-OFF
S-1	SNUBBER		V-51	LIQUID TO PBC
S-2	SNUBBER		V-52	PCV-1 INLET SHUT-OFF
FM-1	FLOWMETER		VPR-1	LINE VACUUM PUMPOUT & RELIEF
			VPR-2	LINE VACUUM PUMPOUT & RELIEF
			VPR-3	LINE VACUUM PUMPOUT & RELIEF
			VP-1	VACUUM PROBE CONN
			VP-2	VACUUM PROBE CONN
			VP-3	VACUUM PROBE CONN
			VP-4	VACUUM PROBE CONN

- NOTES:
1. L.O. - LOCKED OPEN
  2. ARROWS INDICATE VALVE BODY ORIENTATION, NOT NECESSARILY FLOW.
  3. \*\* INDICATES LINE EITHER CONNECTS FROM CP-5A TO VENT STACK, OR FROM CP-5A TO FM-1, OR FM-1 TO VENT STACK, DEPENDING ON USAGE. PLUG CONNS. NOT IN USE.
  4. H- AT VAPORIZERS THIS SYMBOL INDICATES A FLANGE CONNECTION ONLY. ELSEWHERE IT INDICATES EITHER A FLANGED, OR UNION CONNECTION IS PERMISSIBLE.
  5. [Symbol] INDICATES EXTENDED STEM VALVE.
  6. \* DENOTES PLUGGED CONNECTION.

LETTER	DESCRIPTION	BY	APP'D	DATE
E	REVISED PER ECR 3278	RPS	[Signature]	10/15/99
D	REVISED PER ECR #1479	JAH	SRV	15NOV94
REVISIONS				

TOLERANCES UNLESS OTHERWISE SPECIFIED		T.F. KOONS DRAFTSMAN	12APR93 DATE
DECIMALS	XX ± .010 XXX ± .005	W.C. STEVENS CHECKED	12APR93 DATE
FRACTIONS	± 1/32"	SUBHASH VAIDYA ENGINEER	13APR93 DATE
ANGLES	± 1°	T. JOSEPH APPROVED	13APR93 DATE
63 ON ALL MACHINED SURFACES REMOVE ALL BURRS		04-0-2552 04-0-2570 PROJ. FIRST USED ON	

**GARDNER CRYOGENICS**

BETHLEHEM, PA. U.S.A.

**FLOW DIAGRAM**

1,500 3,000 & 4,500 GALLON LHe  
PORTABLE DEWAR & CUSTOMER STATION

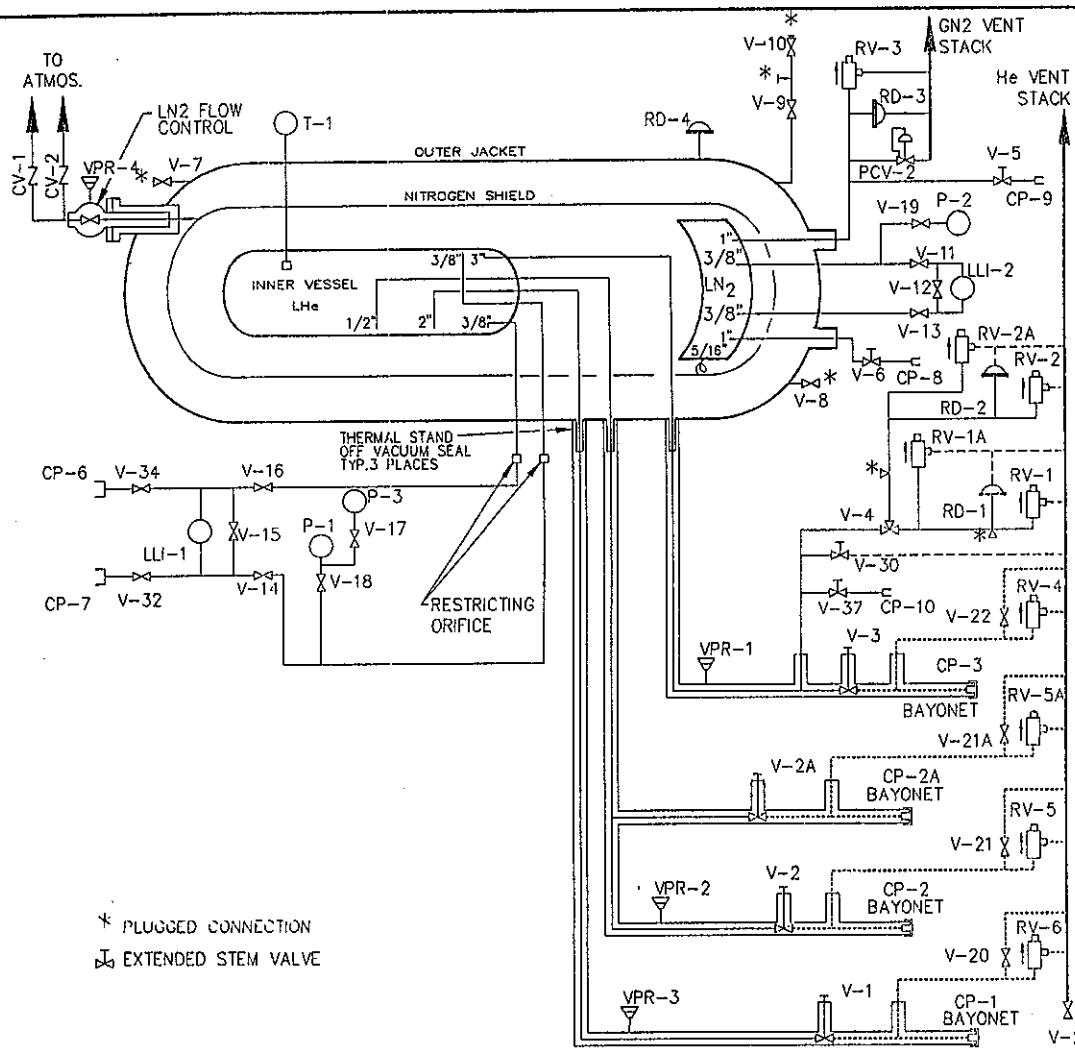
10

REVISION DWG. NO.  
**E 3393F**

SCALE NONE  
WEIGHT -

REF DWG

JUL 03 2007



ITEM	SERVICE	SET PRESS.	ITEM	SERVICE	SET PRESS.
CP-1	MAIN He FILL AND WITHDRAWAL		V-9	TANK VAC. THERMOCOUPLE SHUT-OFF	
CP-2	SMALL DEWAR FILL AND WITHDRAWAL		V-10	THERMOCOUPLE PUMP OUT SHUT-OFF	
CP-2A	SMALL DEWAR FILL AND WITHDRAWAL		V-11	N2 UPPER LIQUID LEVEL SHUT-OFF	
CP-3	MAIN He VENT		V-12	N2 GAUGE EQUALIZER	
CP-6	READ-OUT CONN. 1/4" SIZE		V-13	He LOWER LIQUID LEVEL SHUT-OFF	
CP-7	READ OUT CONN. 3/8" SIZE		V-14	He UPPER LIQUID LEVEL SHUT-OFF	
CP-8	LN2 FILL CONNECTION		V-15	He GAUGE EQUALIZER	
CP-9	N2 GAS VENT CONNECTION		V-16	He LOWER LIQUID LEVEL SHUT-OFF	
CP-10	PRESSURIZATION CONNECTION		V-17	He PRESS. GAUGE SHUT-OFF (FRONT)	
CV-1	N2 VENT GAS FROM SHIELD	.5PSIG	V-18	He PRESS. GAUGE SHUT-OFF (REAR)	
CV-2	N2 VENT GAS FROM SHIELD	1 PSIG	V-19	N2 PRESSURE GAUGE SHUT-OFF	
LLI-1	HELIUM LIQUID LEVEL INDICATOR		V-20	FILL AND WITHDRAWAL BAYONET PURGE	
LLI-2	NITROGEN LIQUID LEVEL INDICATOR		V-21	SMALL DEWAR FILL & WITH. BAY. PURGE	
P-1	HELIUM PRESSURE GAUGE (REAR)		V-22	MAIN He VENT BAYONET PURGE	
P-2	NITROGEN PRESSURE GAUGE				
P-3	HELIUM PRESSURE GAUGE (FRONT)				
PCV-2	NITROGEN PRESSURE CONTROL VALVE	4 PSIG	V-28	He VENT STACK DRAIN	
RV-1	HELIUM GAS RELIEF	64 PSIG	V-30	MANUAL BLOWDOWN VENT	
RV-1A	HELIUM GAS RELIEF VALVE	63 PSIG	V-32	REMOTE READ-OUT	
RV-2	HELIUM GAS RELIEF	64 PSIG	V-34	REMOTE READ-OUT	
RV-2A	HELIUM GAS RELIEF VALVE	63 PSIG			
RV-3	NITROGEN GAS RELIEF	6 PSIG	V-37	PRESSURIZATION	
RV-4	He VENT RECOVERY BAYONET RELIEF	100PSIG	VPR-1	LINE VACUUM PUMP OUT & RELIEF	15 PSIG
RV-5	SMALL DEWAR FILL BAYONET RELIEF	100PSIG	VPR-2	LINE VACUUM PUMP OUT & RELIEF	15 PSIG
RV-5A	SMALL DEWAR FILL BAYONET RELIEF	100PSIG	VPR-3	LINE VACUUM PUMP OUT & RELIEF	15 PSIG
RV-6	MAIN FILL BAYONET RELIEF	100PSIG	VPR-4	LINE VACUUM PUMP OUT & RELIEF	15 PSIG
RD-1	HELIUM VENT SAFETY RELIEF DISC	95 PSIG	T-1	TEMPERATURE INDICATOR	
RD-2	HELIUM VENT SAFETY RELIEF DISC	95 PSIG			
RD-3	NITROGEN GAS SAFETY RELIEF DISC	25 PSIG			
RD-4	ANNULAR SPACE RELIEF DISC	.25PSIG			
V-1	MAIN HELIUM FILL AND WITHDRAWAL				
V-2	SMALL DEWAR FILL AND WITHDRAWAL				
V-2A	SMALL DEWAR FILL AND WITHDRAWAL				
V-3	MAIN HELIUM VENT				
V-4	HELIUM RELIEF SELECTOR				
V-5	NITROGEN GAS VENT				
V-6	LIQUID NITROGEN FILL				
V-7	ANNULAR SPACE EVACUATION (FRONT)				
V-8	ANNULAR SPACE EVACUATION (REAR)				

\* PLUGGED CONNECTION  
 ⚡ EXTENDED STEM VALVE

J. BARKER	DATE
DRAFTSMAN	15AUG95
SUBHASH VAIDYA	30NOV95
CHECKED	
SUBHASH VAIDYA	30NOV95
ENGINEER	
R. SALLASH	30NOV95
APPROVED	
04-5-2592 PROJ. FIRST USED ON	

**GARDNER CRYOGENICS**  
 A DEPARTMENT OF AIR PRODUCTS AND CHEMICALS, INC.  
 BETHLEHEM, PA. U.S.A.

FLOW DIAGRAM  
 11,000 GALLON LHE TANK, 64 PSIG

SCALE NONE  
 WEIGHT ~

REVISION A  
 DWG. NO. 3438F

A	SEE ECR #1828	JRB	BY	APP'D	DATE
LETTER	DESCRIPTION				
REVISIONS					