



- BELLOWS
- MANUAL VALVE
- PNEUMATIC VALVE
- PCV (PRESSURE CONTROL VALVE)
- RD (RUPTURE DISK)
- PSV (PRESSURE SAFETY VALVE)
- A/S AIR SUPPLY
- REDUCER
- HOSE

- 1 SEE PROCESS PIPING SPECIFICATION (INTERNAL TO VENT PIPE) PNNL-MCL-SP-5012-01 Rev A
- 2 SEE PROCESS PIPING SPECIFICATION PNNL-MCL-SP-5013-01 Rev A
- 3 SEE MINICLEAN VENT PIPE PIPING SPECIFICATION PNNL-MCL-SP-5014-01 Rev A
- 4 SEE CRYOCOOLER HE PIPING SPECIFICATION PNNL-MCL-SP-5011 Rev 1
- 5 SEE EMERGENCY VENT PIPE (STAINLESS STEEL PORTION) PIPING SPECIFICATION SLDO-UGL-PS-2310 Rev 8
- 6 DESIGN AND OPERATING CONDITIONS MCL-IV4001
 - VOLUME: 2429 LITRES
 - OPERATING PRESSURE: 19 PSIA
 - DESIGN PRESSURE: 62 PSIG
 - OPERATING TEMPERATURE: 87 K (-303 °F)
 - DESIGN TEMPERATURE (MINIMUM METAL): -411 °F (27 K)
- 7 DESIGN AND OPERATING CONDITIONS MCL-OV4002
 - VOLUME: 10073 LITERS
 - OPERATING PRESSURE (INTERNAL): UHV TO 12 PSIG
 - OPERATING PRESSURE (EXTERNAL HYDROSTATIC): 0 PSIG TO 5.9 PSIG
 - DESIGN PRESSURE: 12 PSIG INTERNAL, 24.4 PSIG EXTERNAL
 - OPERATING TEMPERATURE: AMBIENT ROOM TEMPERATURE
 - DESIGN TEMPERATURE: -320 °F (78 K)

- NOTES:**
3. PUMPING TO TURBO OR BACKING AND SAMPLING
 4. AIR FILLED TUBE
 5. VACUUM FILLED TUBE
 6. 3" LINES
 7. GAS CALIBRATION SOURCE
 8. WATER FILLED TUBE
 10. TO EXHAUST DUCT MANIFOLD
 11. INTEGRAL SV TO SCROLL PUMP INSTALLATION
 12. AIR FILLED TUBES OFF NOZZLES J, K, L, M, & N CONTAINING HV SIGNAL CABLES CONNECTED TO BULKHEAD CONNECTORS AT NOZZLE
 13. ALL VENTING LOCATIONS IN SYSTEM PLUMBED TO COMMON OXYGEN MONITORED AREA
 14. OV VERTICAL MOVEMENT DESIGN RANGE = 2.85"
 15. OV CENTERLINE DEPTH (SHIELD TANK AND IV FULL) = 8"-10", BOTTOM FLANGE DEPTH = 13"-3.3", TOP DEPTH = 4"-7.2"
 16. STATIC LINE PRESSURE: 220 psig @ 25 °C COMPRESSOR PRESSURE RELIEF SET AT 420 psig COLD HEAD PRESSURE RELIEF SET AT 425 psig

17. HELIUM OPERATING PRESSURE: STATIC: 245-255 psig @ 21 to 27 °C SUPPLY: NOMINAL OPERATION: 270-290 psig AT OPERATING TEMPERATURE.
18. 8" CHECKALL CHECK VALVE (STYLE HVFD), 5 PSIG CRACKING PRESSURE
19. 8" CHECKALL CHECK VALVE (STYLE HVFD), 13 PSIG CRACKING PRESSURE
20. TO BE LOCKED OPEN FOR NORMAL OPERATIONS
21. CONTINUOUS DOWNWARD SLOPE FROM CONDENSER OUTLET TO OV VACUUM SPACE PROCESS TUBE ENTRY POINT.
22. DRAWING RENUMBERED. PREVIOUSLY SLDO-MCL-4002-01 AND SLDO-MCL-3002-01

REV	DESCRIPTION	DATE	MATERIAL	FINISH
1A	ADD PIPING SPECIFICATION REFERENCES	2014-12-10		
1	RELEASED FOR PRODUCTION	2014-10-20		
0D	MODIFY NOTE 19: PSV4509 RETURNED TO 8" SIZE AND 13 PSIG CRACKING PRESSURE	2014-10-20		
0C	ADD NOTES 18 & 19. PSV4509 CHANGED TO 8" SIZE AND 13 PSIG CRACKING PRESSURE	2014-10-16		
0B	FOR DISCUSSION, DELETE NOTE 18 AND ALL REFERENCES, INCLUDING THE EMERGENCY VENT TE-8	2014-09-22		
0A	FOR DISCUSSION, RD4531 CHANGED TO 80 PSIG, LABELLED V4420 AND PCV4634	2014-09-05		
0	RELEASED FOR PRODUCTION	2014-08-22		
1B	INCORPORATE STEVEN LINDEN'S MARKUPS OF FEB 22 & 26. UPDATE NOTE 14, ADD VENT LINE, VERTICAL BELLOWS, PIPING SPECIFICATION 5	2016-02-26		

PRELIMINARY

DO NOT SCALE