



VTC- 16 HALT/HASS System Specifications



VTC-16 Chamber



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SYSTEM FEATURES

HALT/HASS Chamber: Up to 100 Grms with markedly improved Air Consumption/Grms. U.S. Patent Pending

This new and improved system is based on 15 years of continuous development and combines rapid thermal cycling of products under test with six-degree-of freedom (6DoF), singularly, or in combination.

HighRate™ Heating System: 3 phase solid-state Infitrol™ proportional control of open nichrome heater wire balanced system.

HighRate™ Liquid Nitrogen Cooling System: Direct atomization in control plenum, Infitrol™ proportional control and redundant solenoid safety valve.

- ▶ Optional Solid Rod Heaters for extended High Temperature testing

Adjustable Air Flow Plenum: For directing airflow to product. Total of sixteen (16) 3" dia. (75mm) ports. Eight (8) on each side of chamber for distributed airflow to product

Vibration Table and Vibrators:

- ▶ Vibration Table with ceramic surface thermally insulates table surface from vibration table base for improved temperature cycling and vibrator life.
- ▶ Vibration enhancing mounting standoffs for improved vibration energy transfer and air circulation under test specimen.
- ▶ LubeMist™ lubricated vibrators with adjustable ball valves, one for each pneumatic vibrator for low G-level performance using fewer vibrators. SoftStart™ designed vibrators minimize starting shock to products.
- ▶ Three (3) year unconditional warranty for Vibration Table and Vibrators.



SUMMARY FEATURES

CHAMBER FEATURES	Hanse
Pressurized plenum	X
Proportional heating , cooling, and vibration 4-20ma	X
SCR heater control fused and breaker isolated	X
Breakers on all 480v 3 phase lines	X
All instruments and related boards fused	X
Watch Dog circuit available on request	X
Front panel display	X
Programmable maintenance display optional	X
Interlocked safeties doors, fans, heat, cool, vibration	X
Balanced heater system	X
3 phase legs monitored for voltage and phase	X
Fans monitored for running	X
Heaters interlocked with fans	X
Timer to hold heat off until fans are on full	X
Electrical UL labeled and CSA components	X
Chamber vented by two 6" vent on top	X
Positive dry air purge kept in chamber	X
Four 11" x 23" Windows	X
Optional window on side	X
Halogen 120 VAC lights (3)	X
FM approved High limit on/off control limit user set able	X
Manual door latch standard	X
Galvanized External Liner	X
Oversized hinges for door stability	X
All terminals and wires clearly labeled	X
2# charcoal polyester port plugs: noise/thermal isolation	X
Full set of wiring schematics	X
Manuals that included manufacturers data sheets	X



VIBRATION FEATURES	Hanse
Range of vibration 0 to 100 g's (25-30°C).	X
Easy self starting vibrators	X
Self oiling vibrator system	X
High temp hose with bulk head	X
Easy removable hose [SAE flare]	X
Ball valve control on each vibrator	X
Harden piston for long life and low wear	X
Low air consumption vibrator	X
Vibrators work in -100 to +200 deg C environment	X
Normal shop air acceptable	X
Balanced vibrators for load size	X
Vibrators retrofit able to other systems	X
Three (3) size vibrators available	X
Precision air control regulators	X
Insulated vibration table	X
Stainless steel mounting insert 3/8-16	X
Full table surface no restrictions	X
Ceramic cover for insulation	X
Gasket around table from environmental compartment	X
3 year unconditional warranty on table & vibrators	X



1. PERFORMANCE

1.1. Temperature:

- 1.1.1. **Range:** -100° to +200° C
- 1.1.2. **Product Change Rate:** 70o C/min (-65° to +100° C with 50lb Aluminum Fin Coil Load).
- 1.1.3. **Stabilization:** $\pm 1^\circ$ C after stabilization. (Stabilization < 2 minutes).
- 1.1.4. **Cooling:** Liquid Nitrogen (LN2) direct injection.
- 1.1.5. **Heating:** 99 KW Nichrome wire heaters, SCR controlled.
- 1.1.6. **Thermocouples:** One (1) air, one (1) for specimen.

1.2. Vibration:

- 1.2.1. **Tri-Axial:** Six-Degree-of-Freedom (6DoF) Vibration, non-coherent broadband vibration 10-10,000Hz, up to 100 GRMS, at 25° to 30°C with unloaded table. 90% of vibration energy in 5-4000Hz for maximum low energy in low frequency range.
- 1.2.2. **Table:** 48" x 48" (1219mm x 1219mm) with one hundred (121) 3/8-16 (M10) standoff mounting inserts.
- 1.2.3. **Accelerometers:** One (1) Model Dytran 3030B5, 500 GRMS Range with cable and three axes mounting block.
- 1.2.4. **Vibration Actuators:** Four (4) Large and Four (4) Medium pneumatically actuated. Table vibration, ± 1 GRMS within one (1) minute of settling.
- 1.2.5. **Maximum Load:** 500 lbs.(227 kg)

2. Chamber Construction

2.1. Interior:

- 2.1.1. **Upper Position:** 54"W x 54"D x 38"H (1372mm x 1372mm x 965mm)
- 2.1.2. **Lower Position:** 54"W x 54"D x 50"H (1372mm x 1372mm x 1270mm)
- 2.2. **Exterior:** 84"W x 67"D x 107"H (2134mm x 1702mm x 2718mm)
- 2.3. **Doors:** Two (2). Bi-Parting opening both front and back.
- 2.4. **Windows:** Four (4) Tempered Multi-pane 11" x 23" (279mm x 584mm). One (1) in each door.
- 2.5. **Light:** Three (3) lights
- 2.6. **Ports:** Three (3) 6" dia. (150mm) for customer use.
- 2.7. **Insulation:** Hanse's exclusive multilayer staggered insulation for superior thermal and noise insulation.
- 2.8. **Sound Level:** At 10 GRMS, nominally 68 dBA @ 1 meter.
- 2.9. **Weight:** 5,000 lbs (2,268 kg)



3. Instrumentation

- 3.1. Hanse View™ Programmable Temperature and Control:** Programmable temperature ramps. Closed loop cascade temperature control of product under test including RS232/422/485 serial interface. HALT step-stress templates included for easy HALT chamber programming.
- 3.2. Thermocouples:** One (1) for temperature control and one (1) for product response.
- 3.3. Programmable Vibration Control:** Programmable vibration ramps, GRMS level, and test duration all synchronized with the temperature controller.
- 3.4. Accelerometers:** One (1) accelerometer, cable and 3 axes mounting block provided. Four (4) channel GRMS meter capability to allow a total of four (4) accelerometers to be monitored simultaneously. Optional analysis package allows up to 12 accelerometers to be monitored.
- 3.5. Serial Ports:** RS232/485 MODBUS

4. Software

- 4.1. HanseView™:** For temperature and vibration programming and control.

5. Safety

- 5.1. Door Interlocks:** Door Interlocks shut off system operation.
- 5.2. Emergency Power Off (EPO):** EPO activation shuts off system operation
- 5.3. Over/Under Limit:** FM approved limit with stand-alone sensor placed in air.

6. Utilities

- 6.1. Electric:** 480V 3 Ph 150 FLA
- 6.2. Liquid Nitrogen:** 1" (25mm) Supply 40/50 psig
- 6.3. Compressed Air:** ¾" (19 mm) Supply 100 psig, 69 SCFM
- 6.4. Exhaust Ports:** Two (2) 6" (150mm) Dia. vented to outside.

7. Installation

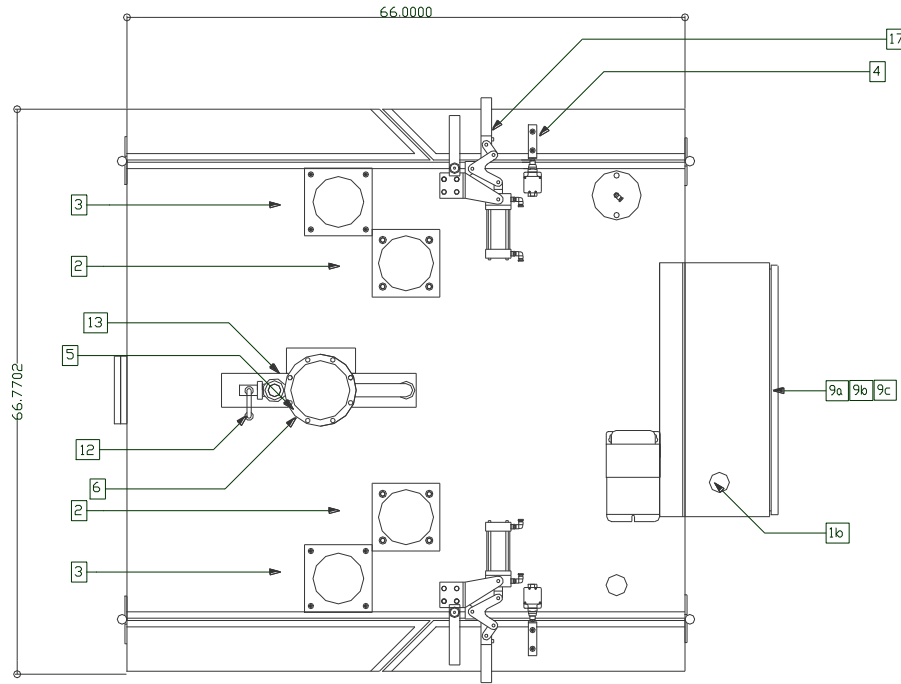
- 7.1.** The customer is responsible for unloading system and rigging into place.
- 7.2.** Utilities and services necessary for system operation, electrical, LN2, compressed air, exhausts, etc. shall be provided by customer and connected to the system.
- 7.3.** Any leasehold improvements or building alterations are the responsibility of the customer.



8. Options

- 8.1. Humidity:** Direct Injection, 10 to 85% RH from 25° to 65° C, Capacitance Sensor.
- 8.2. HanseView™ Vibration Analyzer:** Control/Analyzer/Data Logger with 4 Accelerometer channels.
 - 8.2.1. Additional Accelerometer Channels:** Additional four (4) Accelerometer channels up to a total of eight (12). Includes Current Source.
 - 8.2.2. Additional 14 thermocouples:** Total of 16 monitored (1 dedicated plenum air, 1 specimen). Data is integrated into HanseView™ Control or Analyzer.
- 8.3. Additional Accelerometer:** Model Dytran 3030B5, 500 GRMS Range with cable.
- 8.4. Additional Mounting Block:** Three axes.
- 8.5. Communication Ports:** IEEE 488 GPIB and optional Ethernet TCP/IP.
- 8.6. Vibration Fixtures:** Specially designed for HALT/HASS applications.
- 8.7. LN2 System:** Complete installation, piping and controls.
- 8.8. Stand-Alone:**
 - 8.8.1.** Temperature Cycling Chambers
 - 8.8.2.** Six- degree-of-vibration (6dof) Vibration Tables

Note: Specifications are subject to change without notice.



TOP VIEW

Top View

Keynotes

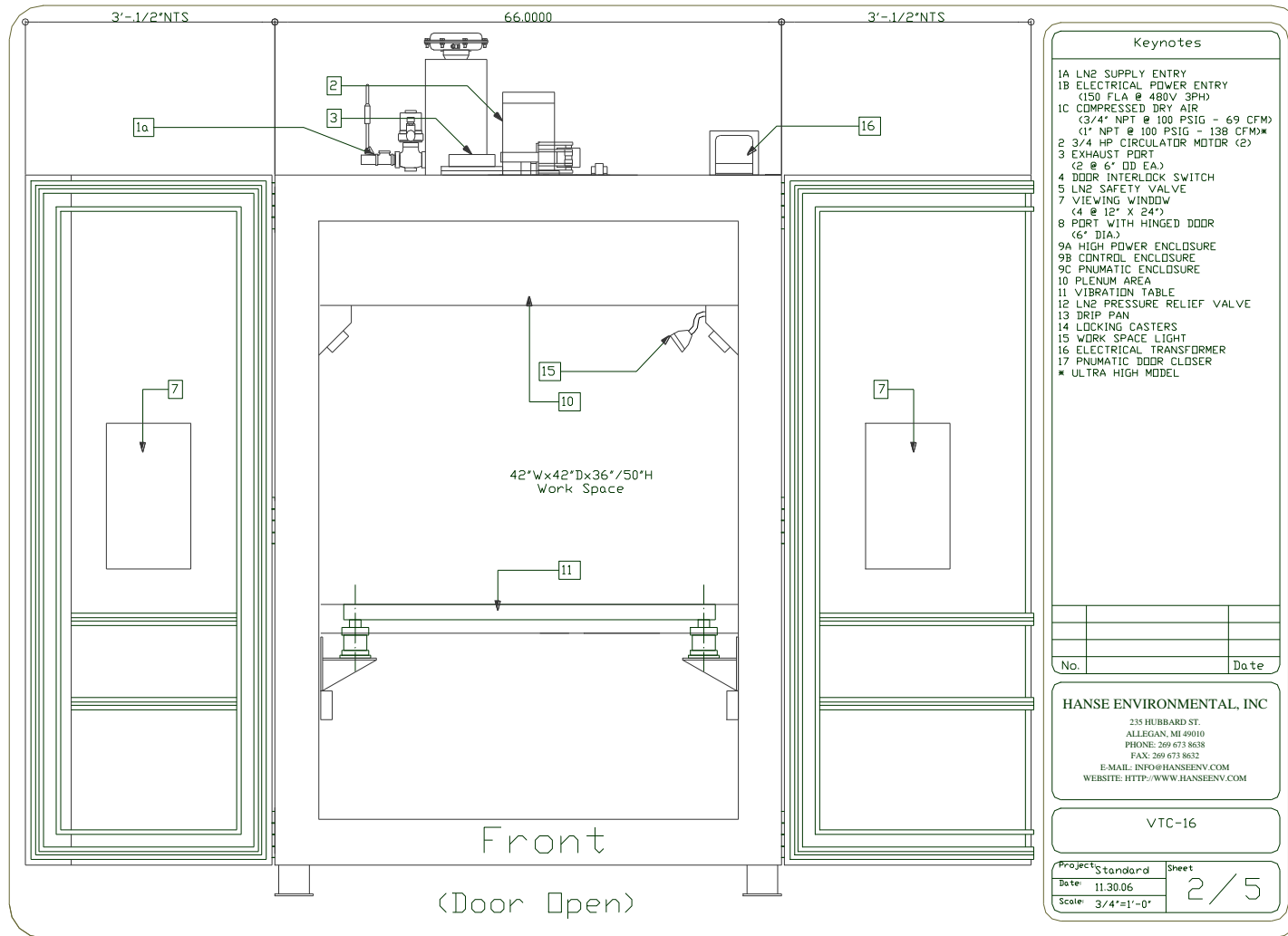
- 1A LN2 SUPPLY ENTRY
- 1B ELECTRICAL POWER ENTRY
(150 FLA @ 480V 3PH)
- 1C COMPRESSED DRY AIR
(3/4" NPT @ 100 PSIG - 69 CFM)
(1" NPT @ 100 PSIG - 13B CFM)*
- 2 3/4 HP CIRCULATOR MOTOR (2)
- 3 EXHAUST PORT
(2 @ 6" OD EA.)
- 4 DOOR INTERLOCK SWITCH
- 5 LN2 SAFETY VALVE
- 7 VIEWING WINDOW
(4 @ 12" X 24")
- 8 PORT WITH HINGED DOOR
(6" DIA.)
- 9A HIGH POWER ENCLOSURE
- 9B CONTROL ENCLOSURE
- 9C PNUMATIC ENCLOSURE
- 10 PLENUM AREA
- 11 VIBRATION TABLE
- 12 LN2 PRESSURE RELIEF VALVE
- 13 DRIP PAN
- 14 LOCKING CASTERS
- 15 WORK SPACE LIGHT
- 16 ELECTRICAL TRANSFORMER
- 17 PNUMATIC DOOR CLOSER
- * ULTRA HIGH MODEL

No. _____ Date _____

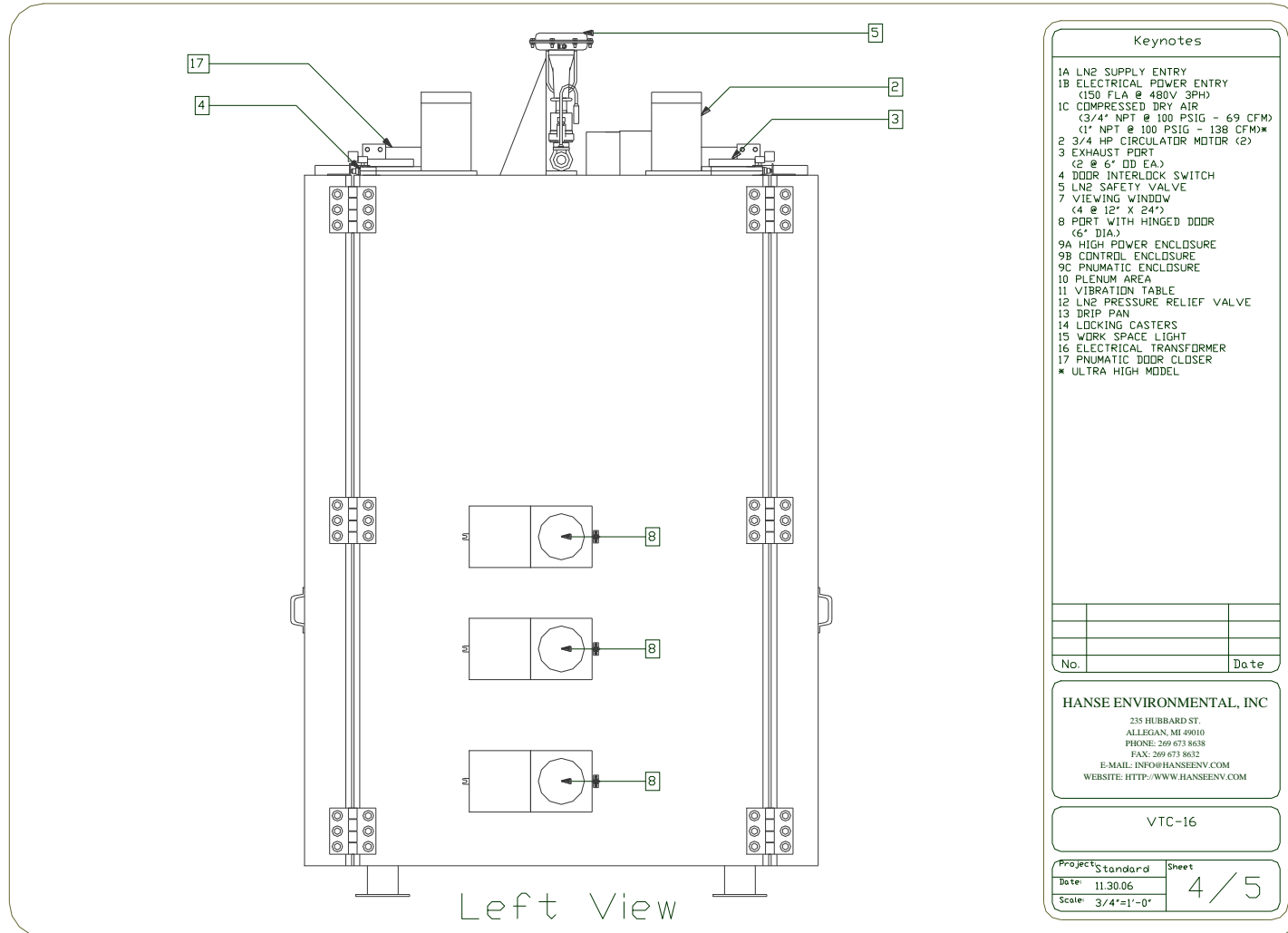
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Project	Standard	Sheet
Date	11.30.06	1 / 5
Scale	3/4"=1'-0"	



Front Door Open



Left View

Left View

Keynotes

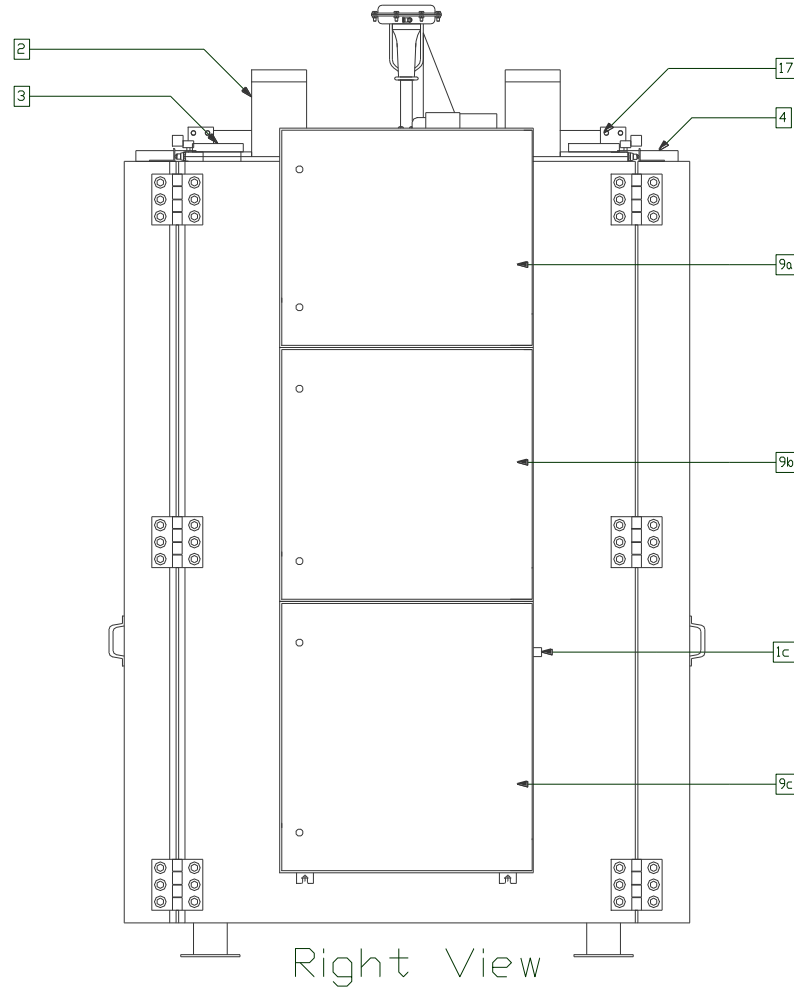
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- 1C COMPRESSED DRY AIR
(3/4" NPT @ 100 PSIG - 69 CFM)
- 1' NPT @ 100 PSIG - 138 CFM*
- 2 3/4 HP CIRCULATOR MOTOR (2)
- 3 EXHAUST PORT
(2 @ 6" OD EA.)
- 4 DOOR INTERLOCK SWITCH
- 5 LN2 SAFETY VALVE
- 7 VIEWING WINDOW
(4 @ 12" X 24")
- 8 PORT WITH HINGED DOOR
(6" DIA.)
- 9A HIGH POWER ENCLOSURE
- 9B CONTROL ENCLOSURE
- 9C PNEUMATIC ENCLOSURE
- 10 PLENUM AREA
- 11 VIBRATION TABLE
- 12 LN2 PRESSURE RELIEF VALVE
- 13 DRIP PAN
- 14 LOCKING CASTERS
- 15 WORK SPACE LIGHT
- 16 ELECTRICAL TRANSFORMER
- 17 PNEUMATIC DOOR CLOSER
* ULTRA HIGH MODEL

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Project Standard	Sheet
Date: 11.30.06	4 / 5
Scale: 3/4"=1'-0"	



Right View

Keynotes

- 1A LN2 SUPPLY ENTRY
- 1B ELECTRICAL POWER ENTRY (150 FLA @ 480V 3PH)
- 1C COMPRESSED DRY AIR (3/4" NPT @ 100 PSIG - 69 CFM) (1" NPT @ 100 PSIG - 138 CFM)*
- 2 3/4 HP CIRCULATOR MOTDR (2)
- 3 EXHAUST PORT (2 @ 6" DD EA)
- 4 DOOR INTERLOCK SWITCH
- 5 LN2 SAFETY VALVE
- 7 VIEWING WINDOW (4 @ 12" X 24")
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- 9A HIGH POWER ENCLOSURE
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