



VTC- 9 HALT/HASS System Specifications



VTC-9 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 twelve (12) 3" dia. (75mm) ports. Six (6) 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:** 70° C/min (-65° to +100° C with 50lb Aluminum Fin Coil Load).

1.1.3. **Stabilization:** ± 1° 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:** 36" x 36" (914mm x 914mm) with one hundred (64) 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 Five (5) Medium pneumatically actuated. Table vibration, ± 1 Grms within one (1) minute of settling.

1.2.5. **Maximum Load:** 700 lbs.(317 kg)

2. Chamber Construction

2.1. Interior:

2.1.1. **Upper Position:** 42"W x 42"D x 38"H (1067mm x 1067mm x 965mm)

2.1.2. **Lower Position:** 42"W x 42"D x 50"H (1067mm x 1067mm x 1270mm)

2.2. **Exterior:** 72"W x 55"D x 107"H (1829mm x 1397mm x 2718mm)

2.3. **Doors:** Two (2). Bi-Parting opening both front and back.

2.4. **Windows:** Four (4) Tempered Multipane 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:** 4,000 lbs (1,814 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:** 3/4" (19 mm) Supply 100 psig, 74 SCFM
- 6.4. Exhaust Ports:** Two (2) 6" (150mm) Dia. vented to outside.

7. Installation

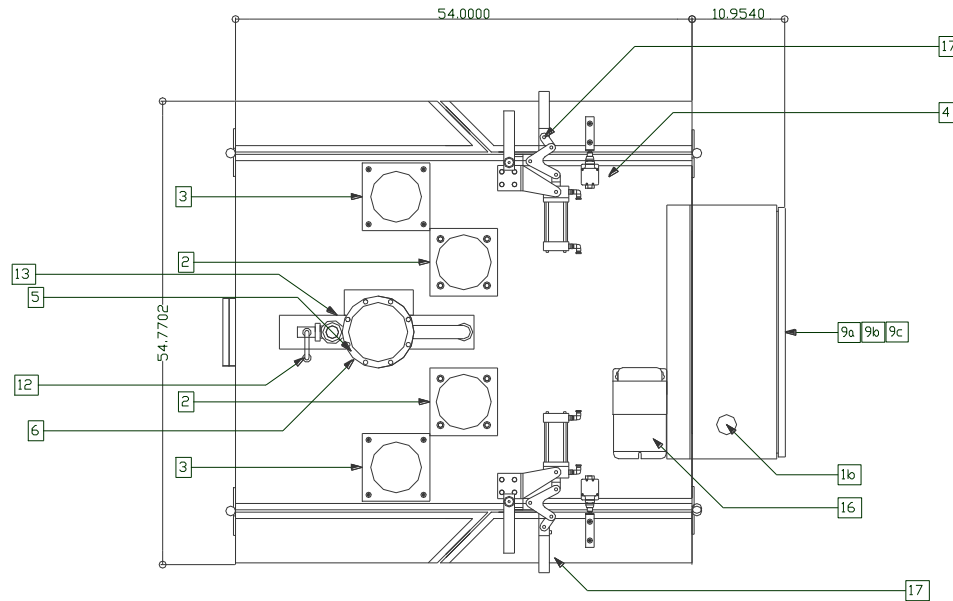
- 7.1.** The customer is responsible for unloading system and rigging into place.
- 7.2.** Utilities and services necessary for system operation, electrical, LN2, compressed air, exhausts, etc. shall be provided by customer and connected to the system.
- 7.3.** Any leasehold improvements or building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

Keynotes

- 1A LN2 SUPPLY ENTRY
- 1B ELECTRICAL POWER ENTRY
(150 FLA @ 480V 3PH)
- 1C COMPRESSED DRY AIR
(3/4" NPT @ 100 PSIG - 74 CFM)
- 2 3/4 HP CIRCULATOR MOTOR (2)
- 3 EXHAUST PORT
(2 @ 6" OD EA)
- 4 DDR INTERLOCK SWITCH
- 5 LN2 SAFETY VALVE
- 7 VIEWING WINDOW
(4 @ 12" X 24")
- 8 PORT WITH HINGED DDR
(6" DIA)
- 9A HIGH POWER ENCLOSURE
- 9B CONTRL 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 DDR CLOSER

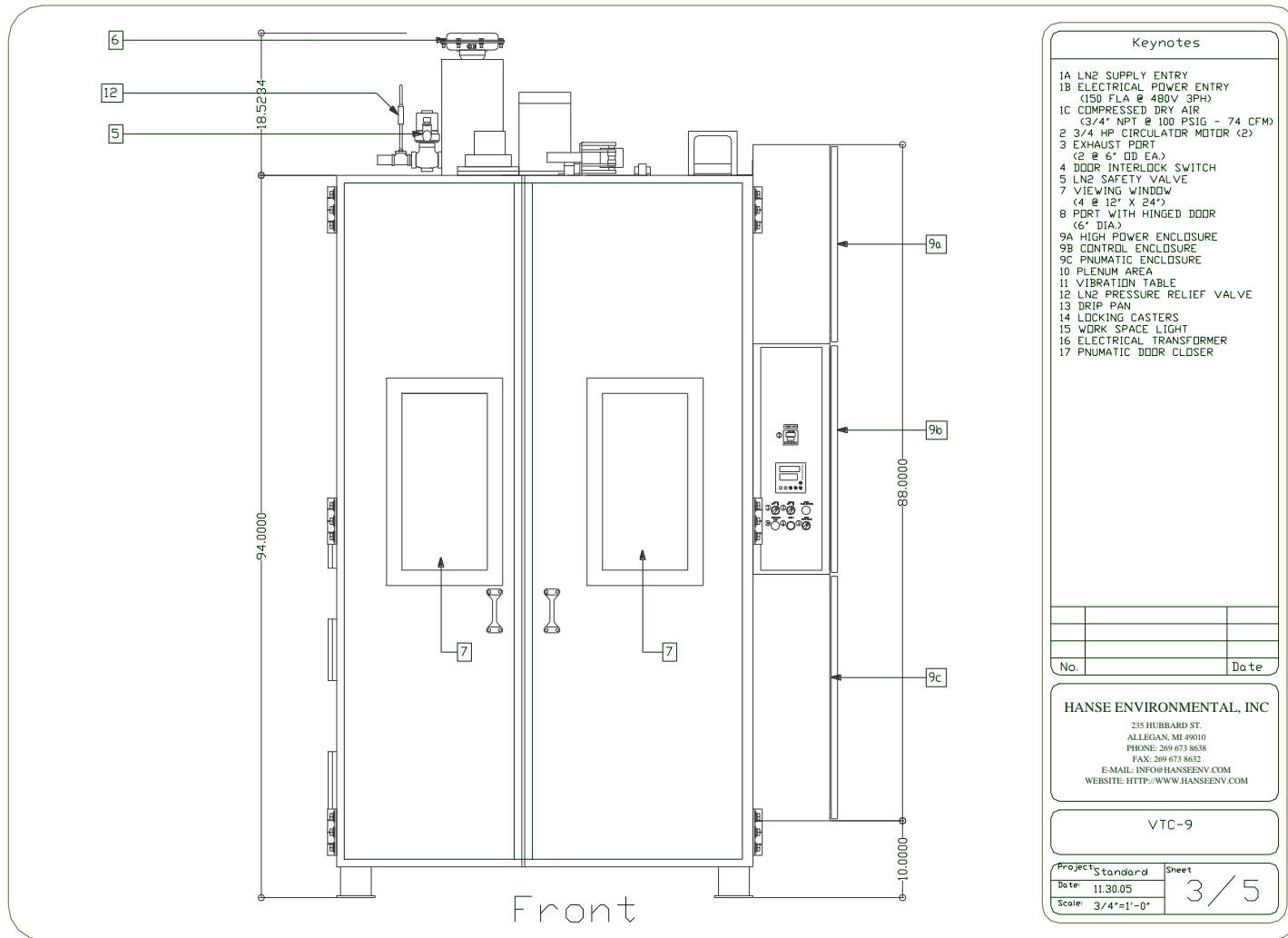
No.	Date

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

Top View



Front

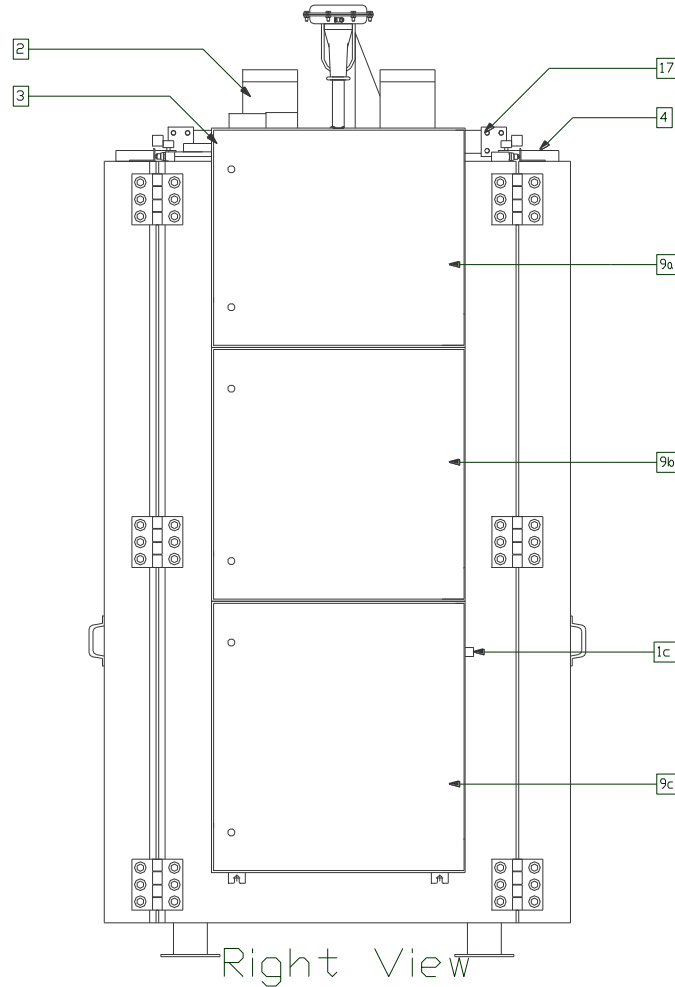
Front View

- Keynotes
- 1A LNG SUPPLY ENTRY
 - 1B ELECTRICAL POWER ENTRY (150 FLA @ 480V 3PH)
 - 1C COMPRESSED DRY AIR (3/4" NPT @ 100 PSIG - 74 CFM)
 - 2 3/4 HP CIRCULATOR MOTOR (2)
 - 3 EXHAUST PORT (2 @ 6" OD EA.)
 - 4 DDDR INTERLOCK SWITCH
 - 5 LNG SAFETY VALVE
 - 7 VIEWING WINDOW (4 @ 12" X 24")
 - 8 PORT WITH HINGED DDDR (6" DIA.)
 - 9A HIGH POWER ENCLOSURE
 - 9B CONTROL ENCLOSURE
 - 9C PNEUMATIC ENCLOSURE
 - 10 PLENUM AREA
 - 11 VIBRATION TABLE
 - 12 LNG PRESSURE RELIEF VALVE
 - 13 DRIP PAN
 - 14 LOCKING CASTERS
 - 15 WORK SPACE LIGHT
 - 16 ELECTRICAL TRANSFORMER
 - 17 PNEUMATIC DDDR CLOSER
- | | |
|-----|------|
| | |
| | |
| | |
| No. | Date |

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Project	Standard	Sheet
Date: 11.30.05		3 / 5
Scale: 3/4"=1'-0"		



Right View

Right View

Keynotes

- 1A LN2 SUPPLY ENTRY
- 1B ELECTRICAL POWER ENTRY
(150 FLA @ 480V 3PH)
- 1C COMPRESSED DRY AIR
(3/4" NPT @ 100 PSIG - 74 CFM)
- 2 3/4 HP CIRCULATOR MOTOR (2)
- 3 EXHAUST PORT
(2 @ 6" DD 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

No.	Date
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