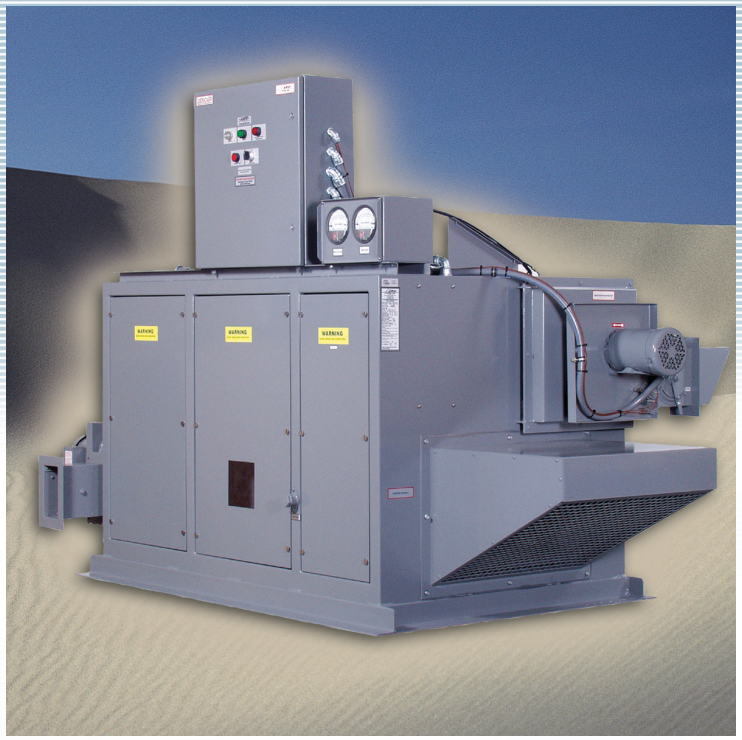
Engineering
Manual

DESICAiR®
750 to 12,000 Scfm

DESICAiR® Series-2000



Desiccant Dehumidifiers

Dry Desiccant Dehumidification Systems For Humidity Control

Stulz Air Technology Systems, Inc.

SATS The Natural Alternative

Stulz Air Technology Systems, Inc. (SATS)

Founded in 1947, STULZ acquired Air Technology Systems (ATS) in March 2001, naming the new company Stulz Air Technology Systems, Inc. (SATS). SATS is dedicated to providing innovative solutions for critical temperature and humidity control needs. SATS designs and manufactures specialized environmental control equipment for commercial, industrial and custom military applications. SATS serves a diverse marketplace - including telecommunications, information technology, medical, financial, educational, industrial process and government contracts - utilizing world-class "island" manufacturing processes in a modern, 150,000 ft^2 facility. The addition of SATS to the STULZ family of companies solidifies STULZ as a global leader in the precision air conditioning marketplace. SATS combines a global network of sales and service companies with an extensive factory engineering staff and highly flexible manufacturing resources dedicated to providing world-class quality, innovation and customer service.

ISO-9001 Quality Registered

SATS operates in an ISO-9001:2000 Registered Quality Management System. Each employee of *SATS* is committed to *satisfying our customer expectations with the highest level of consistent, measurable and continuous quality improvement.*

SATS DESICAiR®- DRY DESICCANT DEHUMIDIFICATION

SATS DESICAiR® dehumidifiers utilize a unique dry and stable desiccant. The desiccant is a synthesized silica gel that is permanently encapsulated in the rotor's molecular matrix. *DESICAiR®* dehumidifiers provide precise humidity and/or temperature control of either a room or a process air stream such as may be required for pharmaceutical air preparation, tabletting, panning, etc; air conveying of hygroscopic products; preparation, hardening and packaging of confectionery, chocolate, candy; plastic molding operations; electronics manufacturing, warehousing; archival storage of documents, films, artifacts or works of art; seed storage; investment casting operations; stand by readiness of military hardware; battery manufacturing; general manufacturing; water remediation and many other applications.

DESICAiR® dehumidifiers are available in sizes from **50 to 15,000 scfm** and with moisture removal capacities exceeding 500 lbs per hour.

DESICAiR® Series DEZ 1000 and Series DES 2000 dehumidifiers provide dry air for humidity control with many standard options.

DESICAiR® DHP Series systems combine desiccant dehumidification with cooling, heating, humidifying, filtration and many other custom features such as double wall construction. This series facilitates single source, stand alone environmental control.

Product Reliability

Each desiccant rotor is precision manufactured for long life and low maintenance requirements and driven by a positive grip synchronous drive belt. Each *DESICAiR®* dehumidifier must pass stringent quality assurance testing before leaving our factory. *SATS* offers the industry's only 5 year rotor protection warranty as a standard!

Typical applications include:

PROCESSES

- Plastic Injection Molding
- Pharmaceutical Tabletting/ Capsuling
- Electronics Manufacturing
- Candy Production
- Packaging Operations

ENVIRONMENTAL

- Warehouse & Storage Facilities
- Museums
- Document Archives
- Military Equipment Preservation
- Laboratories & Clean Rooms
- Pneumatic Conveying (Grain Elevators)
- Water Remediation

PERFECT FOR FLOOD DAMAGE RESTORATION!

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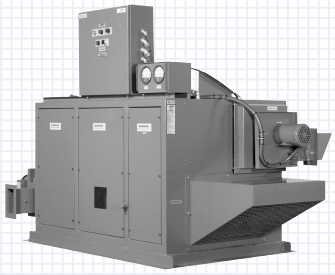
DESICAiR® FAMILY OF PRODUCTS

DH 50/100 Series

DRY 500 Series

DEZ 1000 Series

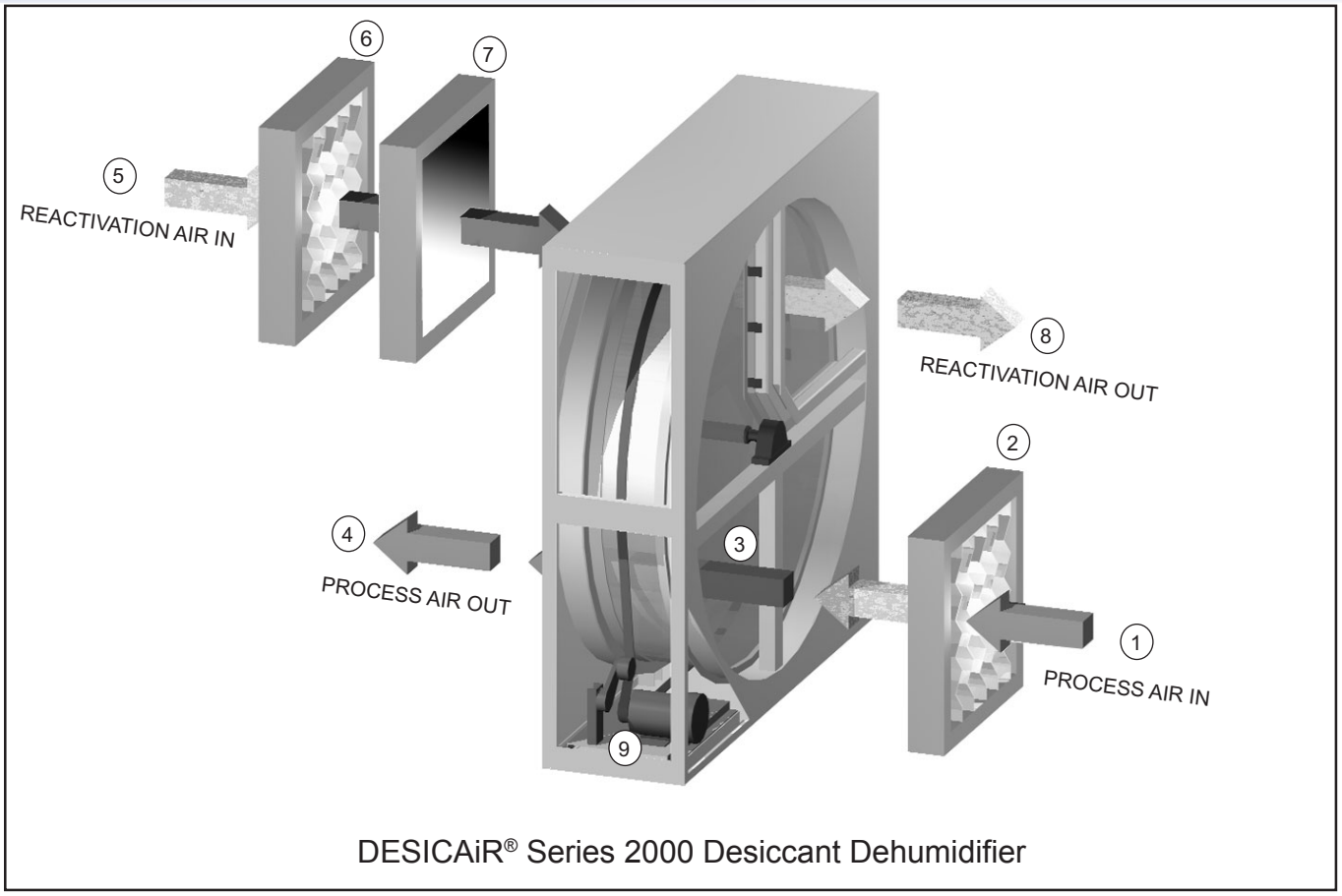


DES 2000 Series

DHS Series

DHP Series

Desiccant Dehumidification - How It Works



DESICAiR® Series 2000 Desiccant Dehumidifier

How it Works ...

Humid (process) air (1) is drawn into the dehumidifier through a filter (2) and a specially designed plenum. The air passes through the rotor (3) where moisture is adsorbed by the desiccant.

As moisture is adsorbed by the desiccant, heat is given off to the air stream. This heat gain causes the dry bulb temperature of the air stream to increase. The dehumidified air passes through a second plenum and is discharged (4) by the process air blower.

The reactivation air (5) is drawn through a filter (6), heated (7) and enters the rotor through the insulated plenum. Heating the air reduces the relative humidity of the reactivation air and increases its moisture holding capacity. The reactivation air also heats the desiccant, reducing its moisture holding capacity and delivers the necessary heat of vaporization to drive the moisture from the desiccant in vapor form. As this process continues, the reactivation air dry bulb temperature is reduced due to the conversion of moisture to vapor. The reactivation air passes through another plenum and is discharged (8) by the reactivation air blower.

The plenums are constructed to keep the process and reactivation air streams from mixing.

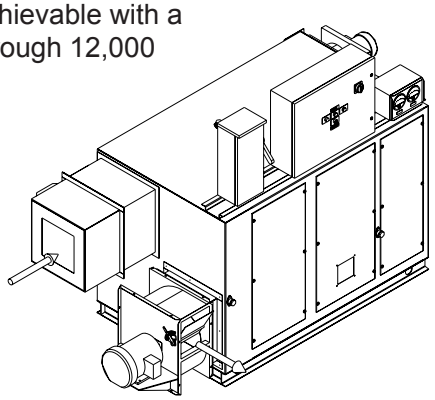
While the dehumidifier is operating, the rotor is continuously turned by the drive motor and belt (9). The moisture adsorbed from the process air stream is carried to the reactivation zone where the moisture is transferred to the reactivation air stream.

The air streams pass concurrently through the rotor in a counterflow air pattern. The process and reactivation air streams follow separate and isolated paths through the dehumidifier. They are prevented from mixing by four significant design features:

- Entering through isolated plenums.
- Solid rotor flute construction.
- Unique process to reactivation face seals.
- Double peripheral seals on each face.

SERIES 2000 Dehumidifiers

The Series 2000 models are industrial duty dry desiccant dehumidifiers. They dehumidify a space or process application to a humidity level chosen by the user without lowering the air temperature. Using desiccant air drying technology, humidity can be reduced to levels below that which is achievable with a refrigeration based dehumidification system. Capacity range is from 750 through 12,000 scfm.



The Series 2000 dehumidifiers even allow cold air streams to be dehumidified without further reducing the air temperature, so freezing and/or frosting of components is prevented. Air to be dehumidified is drawn into the unit, filtered, dehumidified and then supplied to the space or process to be conditioned. Each dehumidifier is complete with all the necessary blowers, controls, filters and drive components to assure the safe and automatic operation of the unit. Single point electrical power connection is provided.

SERIES 2000 Systems Offer Outstanding Advantages

Flexibility/Versatility

- Space or Process Conditioning

A range of options to meet your needs

- Electric, Gas or Steam Powered Reactivation
- Round or Square Duct Connections
- Status Indicator Lamps
- Remote Unit Starting/Monitoring

Range of Sizes

A range of flow capacities to meet your space or process conditioning requirements from 750 to 12,000 scfm.

Non-Proprietary Parts

All *Series 2000* systems incorporate non-proprietary components where possible. Most major HVAC, refrigeration or electrical distributors stock an exact model cross reference or an alternate to most factory provided components.

Code Conformance

UL LISTED c UL
ENCLOSED INDUSTRIAL CONTROL PANEL
No. BD - 000000

- Control enclosures are certified to UL508A Standards.
- Steam & Electric reactivation units may be Nationally Recognized Testing Laboratories (NRTL) certified to UL1995 Standards.
- Gas reactivation units are designed to Factory Mutual guidelines.

Comprehensive Warranty

All parts are warranted for two years from date of installation.
Note: Certain terms and conditions apply.

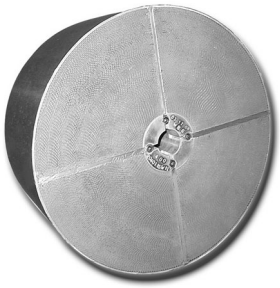
5-Year Rotor Warranty - The desiccant rotor is protected with an exclusive *SATS DESICAiR*® warranty for five (5) years against softening or collapse due to exposure to humid air.

Solid State Controls

Precision humidity management with unrivaled, user friendly controls that offer a wide range of functions and features. Capacity controls are used to meet a design control criteria or space condition. Do you need to maintain RH, condensation or dew point control? With ***SATS/DESICAiR***® you can specify the type and tolerance of control that you require for each demanding project.

Desiccant Rotor

The rotary style desiccant rotors utilized in *Series 2000* systems are manufactured using a unique, media (substrate) formulated for maximum performance with minimal maintenance.



SERIES 2000 Dehumidifiers - Outstanding Advantages

The high performance silica gel desiccant is non-corrosive and non-toxic. The rotor is equipped with a non-slip, synchronous, belt-drive system.
Series 2000 dehumidifiers utilize an 8" deep rotor to achieve the published performance data. For dew point requirements below those shown on the enclosed performance charts, please consult the factory.

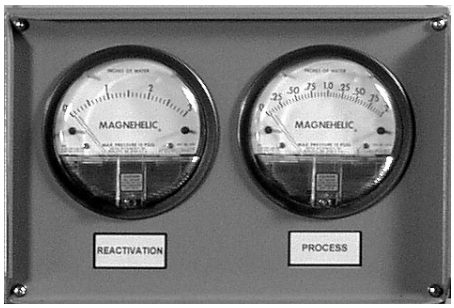
The desiccant is not adversely affected by exposure to air even at 100% relative humidity nor to idle or to prolonged storage in humid atmospheres. The dehumidification rotor is capable of sustained operation with either or both the process or the reactivation blower operating without reactivation heat applied. Such operation does not cause loss of desiccant or softening of the rotor.

The rotor is cleanable with either warm water, detergent or a solvent solution without damage or loss of desiccant. Performance is virtually unaffected. Degradation due to washing of the rotor is less than 3% over 10 years. This slight loss in performance is accounted for in the published performance data. Initially, measured performance of a dehumidifier is actually better than indicated by the published data due to SATS's conservative approach to applications engineering.

The desiccant rotor is backed by a standard exclusive warranty for five (5) years against softening or collapse due to exposure to humid air.

Pressure Indicating Gauges

Differential pressure indicating gauges are provided to indicate the pressure drops accross the rotor for air balancing.



Separate gauges are provided for process and reactivation air streams. The gauges are factory mounted on the cabinet and visible without requiring the removal of any panels or access covers. The gauges have a large face and dial and are suitable for either indoor or outdoor applications.

Air Seals

The process and reactivation sections are provided with air seals to prevent leakage and mixing of one air stream to the other.

The air seals are constructed of a two ply material with the contact surface made of a reinforced PTFE material. The PTFE is bonded to a flexible backer to allow for thermal expansion and contraction. The seals and rotor construction allow for independent adjustment and balancing of the process or reactivation air flow. Dual, double lipped, continuous high temperature silicone seals are utilized to seal the rotor periphery flange. Balloon or bulb type seals, which tend to split, are not used.

Blowers

A process air blower is provided and sized for the air requirements of standard Series 2000 units as listed in the performance table on page 5-1. The external static pressure (ESP) available for standard units is also shown in the Table. Smaller units utilize direct driven blowers. Larger units utilize belt driven blowers that include an adjustable pulley to allow for field adjustment. The process blower shaft is sealed to prevent moisture infiltration into the dehumidification system. The standard blower orientation is horizontal discharge. Up blast or other discharge orientations are available.

A reactivation blower is provided and sized for the air requirements of standard units. Series 2000 units utilize direct drive reactivation blowers as standard. The standard blower orientation is horizontal discharge. Up blast or other discharge orientations are available as factory options.

Motors

Industrial duty motors for either process or reactivation blowers are TEFC and suitable for either indoor or outdoor installation. Premium efficiency motors are also available.

Dampers

Manual air flow regulating dampers are provided as standard on all direct drive blowers. An external adjusting arm and positive locking mechanism is included. Air flow regulating dampers are available as a factory mounted option for belt driven blowers.

Rotor Drive

The rotor drive system is equipped with all the necessary components for continuous slip free operation. The drive system consists of a speed reducer, belt tensioner and a reinforced synchronous drive belt. Matching cleats are permanently mounted on the rotor.

Rotor rotation is continuous. This feature prevents humidity “spikes” caused by intermittent or indexing type machines. The rotation speed is predetermined and is selected to achieve maximum dehumidification effectiveness.

The rotor is shaft mounted and supported by ball bearings for long life and minimum maintenance. The ball bearings support the full weight of the rotor without inducing stress on the rotor’s outer wrapper or flutes.

Rotation failure detection is not required to protect the rotor and is not provided on standard units. However, it is available as a factory installed option.

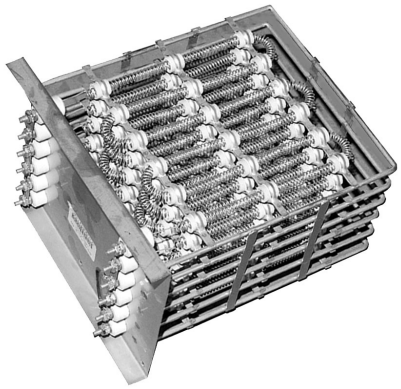
The speed reducer drive motor is housed within the cassette section of the dehumidifier cabinet and is not exposed to ambient conditions.

Reactivation Heater

Series 2000 units are available with electric, steam or gas fired reactivation heater sections. The reactivation heater section is mounted in an insulated housing to minimize heat loss and to prevent incidental contact with hot surfaces by operating or service personnel. This important conservation and safety feature is provided for all series 2000 units. Gas fired heaters are installed in stainless steel lined, double wall sections.

Electric Reactivation:

Controls for electric reactivation heaters include an air proving switch that is wired in the heater control circuit to prevent the heater from operating during loss of reactivation airflow.



Two high temperature safety cutouts are installed in the heater control circuit. One temperature sensor is located between the heater and the rotor inlet. The second temperature sensor is installed in the reactivation air discharge. In the event of an overheat occurrence, a fault light located on the operator’s panel is signaled. A manual reset device is provided in order to avoid attempted operation by automatic resetting devices during a fault condition.

Electric heaters are controlled by an adjustable solid state proportional control system designed to prevent overheating and to provide energy conservation by matching heat input to the required moisture removal rate. Electric reactivation heaters have three (3) levels

of control: air proving, high temperature overheat cut out and leaving reactivation temperature control. A reactivation cool down cycle removes residual heat from the system when the unit shuts down.

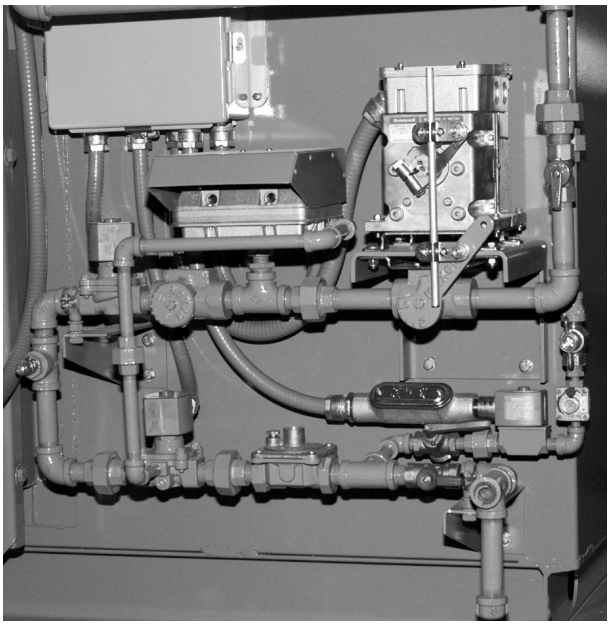
Steam Reactivation:
Steam heating coils are housed in an easily accessible insulated section to ensure maximum thermal transfer to the reactivation air stream and provide for personnel safety. This exclusive design feature complies with OSHA regulations concerning personnel safety protection from hot surfaces. Steam coils are the non freeze steam distributing type. Coil connections are stubbed out through the dehumidifier cabinet. Coil removal is provided through the front of the cabinet as part of the service access.

The “heated to” temperature is limited by the supply steam pressure. The reactivation leaving temperature is automatically controlled by a factory installed solid state controlled modulating damper. This standard control feature conserves steam consumption by matching energy input with the required moisture removal rate. When humidity loads are less than design conditions the controller modulates the damper toward the closed position. As this modulation occurs, less air passes over the steam coils causing less steam to be condensed. Since the steam coils do not “cool down” unless the steam supply is turned off, a cool down cycle is not required.

***Direct Fired Gas Reactivation*:**
Direct fired natural or LP gas reactivation heaters are available and include all the necessary controls to detect and monitor the gas flame. Controls include an air proving switch that is wired in the heater control circuit to prevent the heater from operating if the reactivation blower fails.

Two high temperature safety cutouts are installed in the heater control circuit. One temperature sensor is located between the heater and the rotor inlet. The second temperature sensor is installed in the reactivation air discharge. In the event of an overheat occurrence, a fault light located on the operator’s panel is signaled. A manual reset device is provided in order to avoid attempted operation by automatic resetting devices during a fault condition.

A control system regulates the reactivation leaving temperature. Energy saving automatic modulation of the gas supply is provided as standard. The gas fired heaters are mounted in double-wall sections with 300 series stainless steel liners.



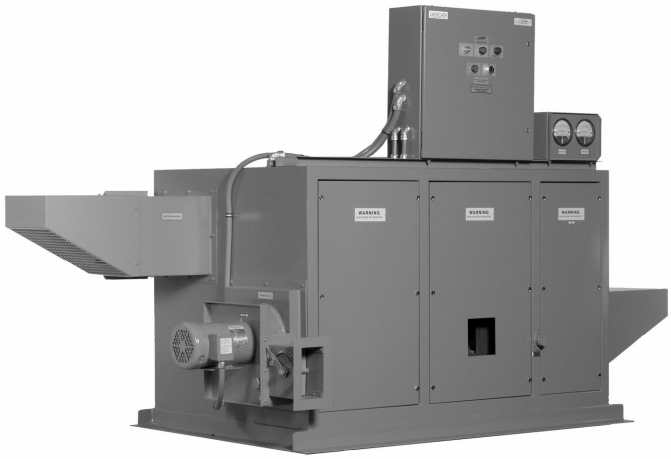
The gas train is designed to Factory Mutual guidelines. Compliance to local codes for venting and other requirements are the responsibility of the owner.

The pilot flame can be adjusted and set independent of the main flame. Separate gas pressure regulator valves are provided for the pilot and main gas line. A spark igniter system is used. Gas fired reactivation heaters have at least eight (8) levels of control and safety features: air proving, ignition control, flame detection, high gas pressure cutout, low gas pressure cutout, slow opening main gas supply valve, “heated to” high temperature limit and reactivation leaving temperature control. A reactivation cool down and purge cycle removes residual heat and the by products of combustion from the system when the unit shuts down. Indirect gas fired reactivation heaters are available as an option.

Cabinet Construction

The dehumidifier is constructed of high grade 5052 aluminum alloy for corrosion protection. Standard units have 1/8" thick single wall construction with rigid supports. The outer surface is coated with an industrial self etching “direct to metal” high quality low VOC epoxy coating. This coating system is designed for either indoor or outdoor exposure.

SERIES 2000 Dehumidifiers - Outstanding Advantages



Access panels are provided to allow for the service or replacement of all major components without disconnecting duct work or power supply connections. Full jam gaskets are standard to prevent moisture infiltration into the cabinet. Rapid turn stainless steel captive fasteners with combination hex and slotted heads are provided on the service access panels. An observation window is included to allow for the visual confirmation of rotor rotation without removal of a service panel.

Test ports are provided as standard. Ports are located to allow for the measurement of temperature or humidity both upstream and downstream of the desiccant rotor. A port is also provided to allow for the measurement of the reactivation “heated to” temperature. These convenient test ports allow for the confirmation of design conditions during startup and operating cycles.

Internal insulation is available as an option for applications when the inlet air temperature is below the ambient air dew point temperature to prevent condensation from forming on the cabinet. This option will also retard heat gain to a low temperature space should the dehumidifier be located within the controlled space.

Unit Configuration

Standard units are of the “left” hand configuration as shown in the preceding photo with the access panels on the left as you are facing the process air inlet. “Right” hand configurations are available.

Skid

The dehumidifier skid is designed to support the full operating weight of the unit and to allow for rigging, transportation and handling at the job site. Lifting points are provided as standard to assist in loading and placing the equipment at the job site.

Connections

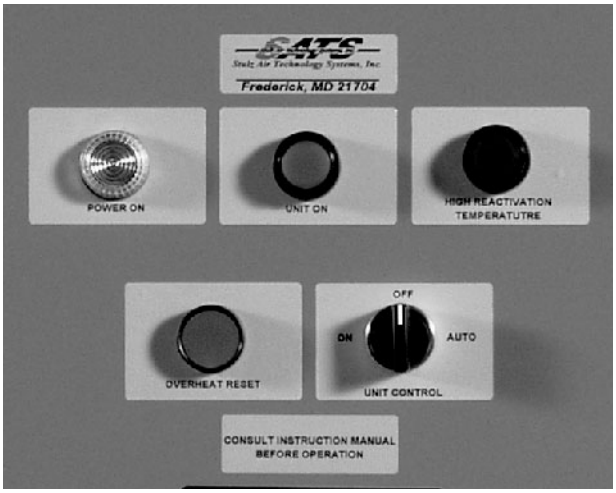
All air connections have flanges as standard. Flanges are left blank for match drilling in the field. Optional inlet and outlet designs include weather protected hooded intakes or hooded outlets.

Filters

Two inch thick, replaceable 30% pleated filters are provided as standard. The filters are track mounted for ease of service. Side access is provided for process and reactivation air filters. Filter differential pressure indicating gauges and “dirty filter” alarms are available as factory installed options.

Controls

An ON/OFF/AUTO selector switch is standard. The switch is panel mounted on a NEMA 4 electrical enclosure. The switch and indicating lights are rated for outdoor service. The control panel is listed UL508A.



ON: In the “ON” mode the dehumidifier operates continuously.

OFF: In the “OFF” position all motors, drives and heaters are de-energized. Upon shut down of the dehumidifier, the process blower and reactivation heater are de-energized. For electric and gas fired reactivated units, the rotor drive and reactivation blower continue to operate during a cool down cycle. This cool down cycle removes residual heat from the rotor and reactivation sector.

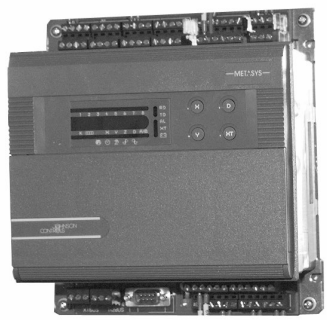
SERIES 2000 Dehumidifiers - Outstanding Advantages

Capacity Control Methods

SATS/DESICAiR® offers a wide selection of dehumidifier capacity controls. Dehumidifiers are selected and designed to meet maximum operating conditions for the humidity control project. Most of the time, the unit is operating at less than design conditions. If not controlled properly, too much energy would be consumed to meet performance requirements. Energy conservation controls ensure that enough reactivation energy is applied to meet the performance by modulating the reactivation heater.

D-Stat®: The dehumidifier responds to a control signal from a humidistat. In the "AUTO" mode the dehumidifier responds to a humidistat and remote start/stop signal. A wall mounted humidistat is available as an option for field mounting. Terminal connections are included in the electrical enclosure for connection of the humidistat. The D-Stat® control system cycles the dehumidifier On and Off. The unique SATS cascade control system regulates both the reactivation "heated to" temperature as well as the reactivation leaving temperature. The D-Stat® control system is recommended for dry goods storage, warehousing or where control tolerance is not critical.

D-Stat II®:
This control feature is similar to the D-Stat® control system. In addition to the D-Stat® option, the D-Stat II® control system operates the process blower continuously while the reactivation heater and blower are cycled On and Off in response to an optional humidistat. This feature provides for an uninterrupted supply of air to the space or process area. This is particularly important in systems where the humidity is just one of the controlled parameters. A wall mounted humidistat is available as an option for field mounting. Air volume for upstream or downstream heating or cooling processes are unaffected by the D-Stat II® control system. The D-Stat II® control system is recommended where the dehumidifier is part of an air handling system or where control tolerance is more critical.



C-Trol II®:
The dehumidifier responds to a control signal from a controller which compares a cold surface temperature to ambient dew point temperature to prevent condensation from forming on cold surfaces. In the "ON" mode reactivation energy is proportionally controlled to maintain the air dew point temperature below the cold surface temperature. All set points are adjustable.

The process air blower runs continuously in the "AUTO" mode to provide a circulating air current within the space. In the "AUTO" mode the dehumidifier responds to a remote start/stop signal. The C-Trol II® control system is recommended for water treatment plants, salt storage facilities or atriums to prevent dripping and damage caused by condensate.

Dew-Trac®:
The dehumidifier responds to a control signal from a dew point transmitter. In the "ON" mode the Dew-Trac® controller automatically regulates the reactivation heater to provide a constant process air leaving or space dew point temperature. In the "AUTO" mode the dehumidifier responds to a remote start/stop signal. The Dew-Trac® control feature may include an optional space mounted dew point sensor/ transmitter and adjustable set point microprocessor controller. The Dew-Trac® control system is recommended for applications where the controlled humidity level is below the capability of a relative humidity sensor or where the dew point control is more critical to the manufacturing or laboratory process than control based upon relative humidity.

H-Trac®:
The dehumidifier responds to a control signal from an optional unit mounted or space mounted relative humidity transmitter. In the "ON" mode the H-Trac® controller automatically regulates the reactivation heater to provide a constant relative humidity of either the process air or "space" condition. In the "AUTO" mode the dehumidifier responds to a remote start/stop signal. The H-Trac® control feature may include an optional adjustable set point microprocessor controller. With the H-Trac® control system, the dehumidifier runs continuously and maintains a constant relative humidity.

The C-Trol II®, Dew-Trac® and H-Trac® control system will continuously adjust the dehumidifier capacity in response to load changes within the controlled space. Load changes can occur due to changes in manufacturing rates, ventilation, product movement in, or out, of the "space" or manpower requirements, etc. The C-

SERIES 2000 Dehumidifiers - Outstanding Advantages

Trol II®, Dew-Trac® and H-Trac® control systems can be utilized for precise humidity control without the use of customary face and bypass damper sections. By eliminating the damper section, air instability, damper “leakage”, and actuator hysteresis are eliminated. Service intervals are extended as fewer mechanical components are required. Response to a change in load is rapid and initiates as quickly as the signal reaches the heater control system.

Wiring practices, branch circuit protection, motor starters and overload protection are provided in accordance with the latest edition of the National Electric Code.

Status indication lights are mounted on the electrical enclosure front panel. Lights to indicate: Power On, Unit On and a fault condition are standard. Unit On and fault lights include a “Press-To-Test” feature to check light bulb operation.

All wiring is run in flexible liquid tight conduit. All wires are individually numbered and harness bundles are neatly tie wrapped. A grounding lug is provided in the electrical enclosure.

A lockable non fused or fused disconnect is available as a factory installed option. When provided, the disconnect is mounted on the dehumidifier cabinet and power cable is factory wired between the power supply terminals located within the electrical enclosure and the disconnect.

An elapsed run time hour meter is provided as standard. The hour meter is mounted within the electrical enclosure.

Power Supply

Single point electrical power connection is provided. Series 2000 dehumidifiers are available to operate on power grids as shown on page 5-2. Other power requirements, such as for export markets for example, are available as an option. Please contact the factory for special requirements.

Warranty

SATS provides a limited warranty for 24 months from date of start up for mechanical and electrical components. Normal wear and tear is excluded. (Certain terms and conditions apply.) The desiccant rotor is covered by an exclusive 60 month warranty against softening or collapse even if exposed for prolonged periods to saturated air.

Start Up

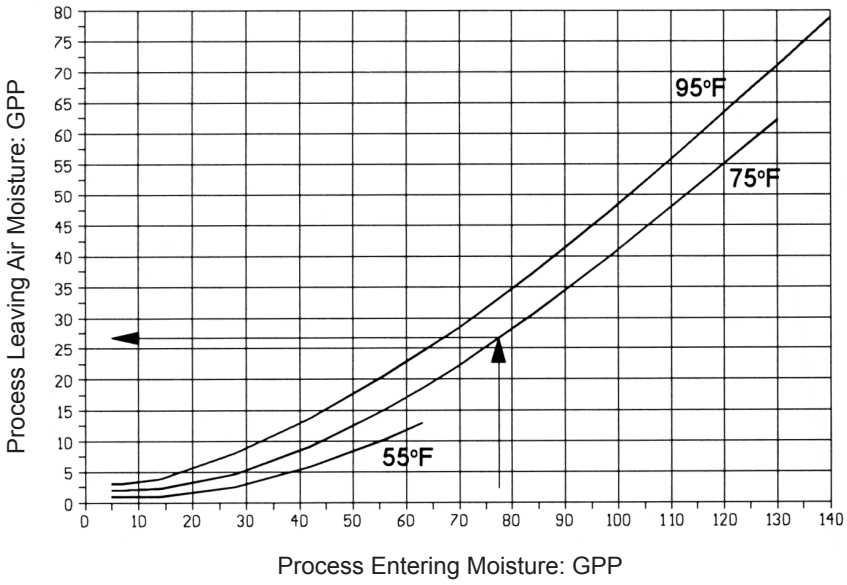
Start up kits including replacement fuses used in the primary, secondary and control circuits; indicating lamps used on the control panel; blower belts and filters are available.

Supervision of Start up activity or performance of Startup can be provided by the SATS Product Support Group or by a factory authorized contractor for all dehumidifiers.

Performance Curves - 400 FPM Rotor Face Velocity

Moisture Removal Capacity

Moisture Removal Capacity
400 FPM Process Air Velocity

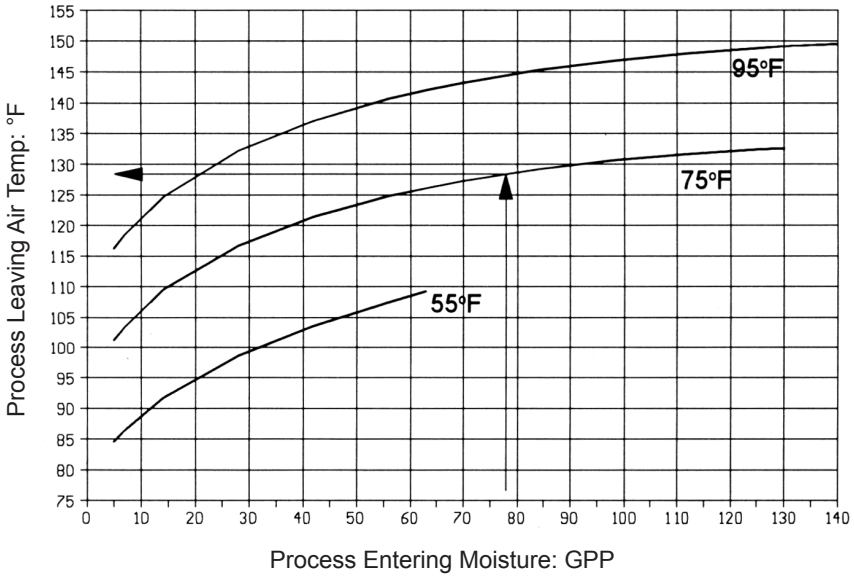


Grains Per Pound (GPP)

1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the Moisture Removal Capacity graph.
2. Move vertically in a straight line to intersect the curve closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Air Moisture". The value at this point represents the moisture/ humidity leaving the dehumidifier in grains per pound.

Process Leaving Temperature

Process Leaving Air Temperature
400 FPM Process Air Velocity



Degrees Fahrenheit (°F)

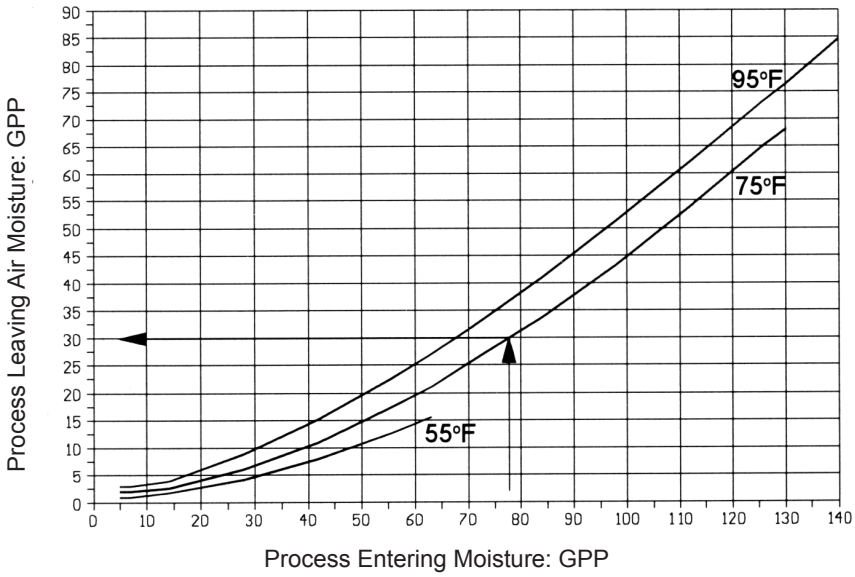
1. Find the correct process "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the Process Leaving Air Temperature graph.
2. Move vertically in a straight line to intersect the curve closest to the entering air temperature.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Air Temp." The value at this point represents the air temperature leaving the dehumidifier in °F.

Note:
Process leaving air temperatures as shown are at maximum values at standard full rated heater output. The actual leaving air temperature will be lower whenever the heater output is below full rated output. The condition will occur during heater modulation cycles due to partial loading of the dehumidifier.

Performance Curves - 600 FPM Rotor Face Velocity

Moisture Removal Capacity

Moisture Removal Capacity
600 FPM Process Air Velocity

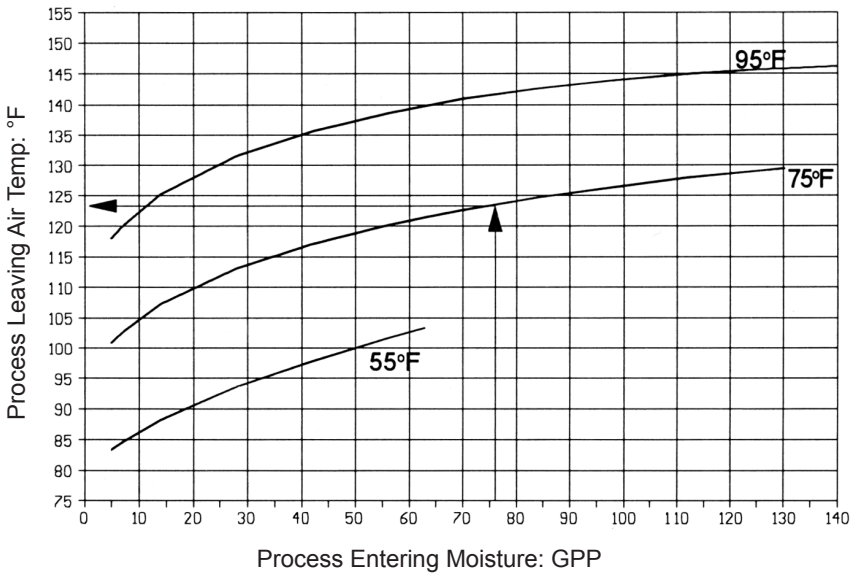


Grains Per Pound (GPP)

1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the Moisture Removal Capacity graph.
2. Move vertically in a straight line to intersect the curve closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Air Moisture". The value at this point represents the moisture/ humidity leaving the dehumidifier in grains per pound.

Process Leaving Temperature

Process Leaving Air Temperature
600 FPM Process Air Velocity



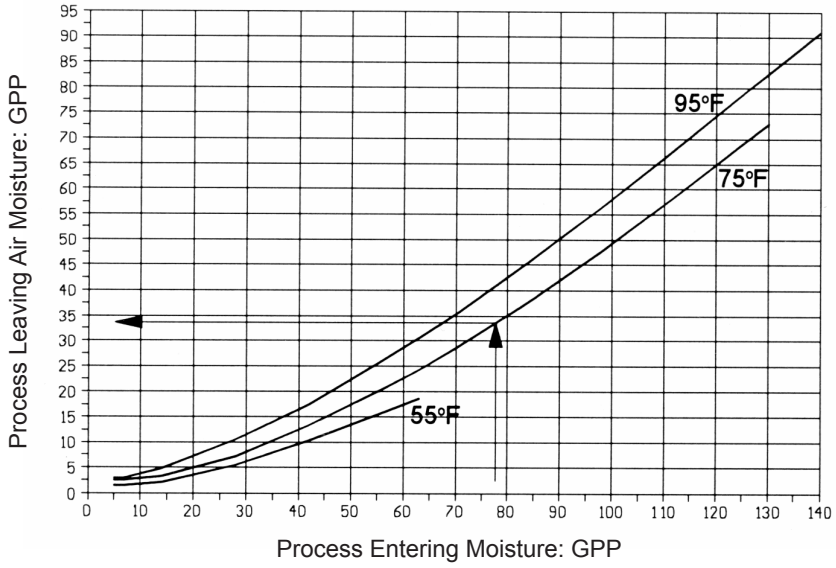
Degrees Fahrenheit (°F)

1. Find the correct process "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the Process Leaving Air Temperature graph.
2. Move vertically in a straight line to intersect the curve closest to the entering air temperature.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Air Temp." The value at this point represents the air temperature leaving the dehumidifier in °F.

Note:
Process leaving air temperatures as shown are at maximum values at standard full rated heater output. The actual leaving air temperature will be lower whenever the heater output is below full rated output. The condition will occur during heater modulation cycles due to partial loading of the dehumidifier.

Performance Curves - 800 FPM Rotor Face Velocity

Moisture Removal Capacity
800 FPM Process Air Velocity

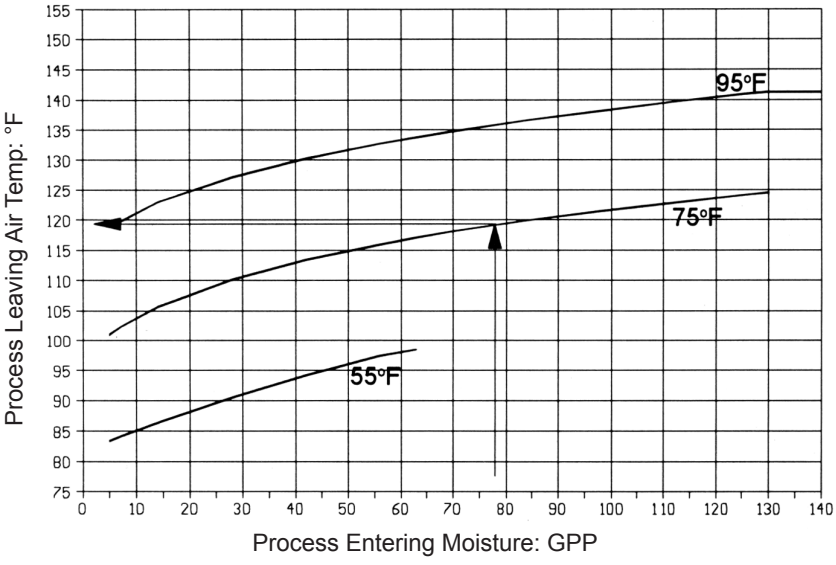


Moisture Removal Capacity

Grains Per Pound (GPP)

1. Find the correct "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the Moisture Removal Capacity graph.
2. Move vertically in a straight line to intersect the curve closest to the entering air temperature. Interpolate as required.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Air Moisture". The value at this point represents the moisture/ humidity leaving the dehumidifier in grains per pound.

Process Leaving Air Temperature
800 FPM Process Air Velocity



Process Leaving Temperature

Degrees Fahrenheit (°F)

1. Find the correct process "Process Entering Moisture" (humidity) value in grains per pound (GPP) on the x-axis of the Process Leaving Air Temperature graph.
2. Move vertically in a straight line to intersect the curve closest to the entering air temperature.
3. Move horizontally to the left and intersect the scale marked "Process Leaving Air Temp." The value at this point represents the air temperature leaving the dehumidifier in °F.

Note:
Process leaving air temperatures as shown are at maximum values at standard full rated heater output. The actual leaving air temperature will be lower whenever the heater output is below full rated output. The condition will occur during heater modulation cycles due to partial loading of the dehumidifier.

Model Nomenclature

SERIES 2000 MODEL NUMBERING SYSTEM

DES - XXX - XXX - X

- DES Standard Dehumidifier
- Nominal Scfm:
  - -750
  - -1150
  - -1500
  - -3750
  - -5500
  - -7250
  - -1200
  - -2250
  - -2750
  - -3000
  - -4250
  - -6000
  - -9000
- Rotor Diameter:
  - -55 cm
  - -77 cm
  - -106 cm
  - -122 cm
  - -152 cm
- Reactivation Heater:
  - -Electric
  - -Gas
  - -Steam

Selected Features - DES Series Dehumidifiers

"DES" Model	DES-750-55	-1150-55	-1500-55	-1500-77	-2250-77	-3000-77
Reactivation						
• Electric with Solid State Control	Standard	Standard	Standard	Standard	Standard	Standard
• Direct Natural Gas	Optional	Optional	Optional	Optional	Optional	Optional
• Direct Propane Gas	Opt	Opt	Opt	Opt	Opt	Opt
• Steam	Opt	Opt	Opt	Opt	Opt	Opt
Unit Configuration - Process Blower Orientation						
• Left Hand	Std	Std	Std	Std	Std	Std
• Right Hand	Opt	Opt	Opt	Opt	Opt	Opt
Cabinet Construction - 0.125" Thick All Aluminum Construction						
• Molecular Sieve Rotor	Opt	Opt	Opt	Opt	Opt	Opt
• Outdoor Rated (Nema 4 control enclosure)	Std	Std	Std	Std	Std	Std
• Single Wall Construction	Std	Std	Std	Std	Std	Std
• Rental/Portable	Opt	Opt	Opt	Opt	Opt	Opt
• 1/2" Insulation for 55°F inlet temperature	Opt	Opt	Opt	Opt	Opt	Opt
• 1" Insulation for 45°F inlet temperature	Opt	Opt	Opt	Opt	Opt	Opt
• Structural Rail Mounting	Std	Std	Std	Std	Std	Std
• Rental Skid With Structural Frame	Opt	Opt	Opt	Opt	Opt	Opt
• Extended Skid With Cover	Opt	Opt	Opt	Opt	Opt	Opt
Paint - Industrial/ Marine, High Gloss, Siloxane Epoxy						
• Industrial Gray	Std	Std	Std	Std	Std	Std
• Yellow	Opt	Opt	Opt	Opt	Opt	Opt
• Blue	Opt	Opt	Opt	Opt	Opt	Opt
• Desert Tan	Opt	Opt	Opt	Opt	Opt	Opt
• Forest Green	Opt	Opt	Opt	Opt	Opt	Opt
Filtration- Meets ASHRAE Standard 52.1-1992						
• Process Inlet- 30% Pleated	Std	Std	Std	Std	Std	Std
• Process Inlet- 30% Pleated w/ Gauge	Opt	Opt	Opt	Opt	Opt	Opt
• Reactivation Inlet 30% Pleated	Std	Std	Std	Std	Std	Std
• Reactivation Inlet 30% Pleated w/ Gauge	Opt	Opt	Opt	Opt	Opt	Opt
Gauges						
• Rotor Differential Pressure Indicating Gauges	Std	Std	Std	Std	Std	Std
• Run Time Hour Meter	Std	Std	Std	Std	Std	Std
Inlet/ Outlet Configurations						
Process Inlet						
• Flanged	Std	Std	Std	Std	Std	Std
• Weather Hood w/ Screen	Opt	Opt	Opt	Opt	Opt	Opt
• Round/Screened w/ Flex Duct Bead	Opt	Opt	Opt	Opt	Opt	Opt
• Round for Rigid Duct	Opt	Opt	Opt	Opt	Opt	Opt
• Rental- Round Flex w/ Screen	Opt	Opt	Opt	Opt	Opt	Opt
Process Outlet						
• Flanged	N/A	N/A	N/A	N/A	N/A	N/A
• Flanged w/ Damper	Std	Std	Std	Std	Std	Std
• Round/Screened w/ Flex Duct Bead, Damper	Opt	Opt	Opt	Opt	Opt	Opt
• Round for Rigid Duct, w/ Damper	Opt	Opt	Opt	Opt	Opt	Opt
• Rental- Round Flex w/ Screen	Opt	Opt	Opt	Opt	Opt	Opt
Reactivation Inlet						
• Flanged	Std	Std	Std	Std	Std	Std
• Weather Hood w/ Screen	Opt	Opt	Opt	Opt	Opt	Opt
• Round w/ Flex Duct Bead	Opt	Opt	Opt	Opt	Opt	Opt

Selected Features - DES Series Dehumidifiers

-2750-106	-4250-106	-5500-106	-3750-122	-5500-122	-7250-122	-6000-152	-9000-152	-12000-152
Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Std	Std	Std	Std	Std	Std	Std	Std	Std
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Std	Std	Std	Std	Std	Std	Std	Std	Std
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt

Selected Features (cont.) - DES Series Dehumidifiers

"DES" Model	*DES-750-55*	*-1150-55*	*-1500-55*	*-1500-77*	*-1500-77*	*-1500-77*
• Round for Rigid Duct	Opt	Opt	Opt	Opt	Opt	Opt
• Rental- Round Flex w/ Screen	Opt	Opt	Opt	Opt	Opt	Opt
Reactivation Outlet						
• Flanged w/ Damper	Std	Std	Std	Std	Std	Std
• Weather Hood w/Screen for Outdoor Installations	Opt	Opt	Opt	Opt	Opt	Opt
• Round/Screened w/ Flex Duct Bead, Damper	Opt	Opt	Opt	Opt	Opt	Opt
• Round for Rigid Duct w/Damper	Opt	Opt	Opt	Opt	Opt	Opt
• Rental- Round Flex w/ Screen	Opt	Opt	Opt	Opt	Opt	Opt
Power						
• 460/3/60	Std	Std	Std	Std	Std	Std
• 575/3/60	Opt	Opt	Opt	Opt	Opt	Opt
• 230/3/60	Opt	Opt	Opt	Opt	Opt	Opt
• 208/3/60	Opt	Opt	Opt	Opt	Opt	Opt
• 230/1/60 (N/A for Electric Reactivation)	Opt	Opt	Opt	Opt	Opt	Opt
• 208/1/60 (N/A for Electric Reactivation)	Opt	Opt	Opt	Opt	Opt	Opt
Disconnects						
• None	Std	Std	Std	Std	Std	Std
• Rotary, Non-fused	Opt	Opt	Opt	Opt	Opt	Opt
• Knife, Non-fused, NEMA-3R	Opt	Opt	Opt	Opt	Opt	Opt
• Knife, Fused, NEMA-3R	Opt	Opt	Opt	Opt	Opt	Opt
Safety						
• Overheat Protection (N/A for Steam Reactivation)	Std	Std	Std	Std	Std	Std
• Reactivation Air Proving (N/A for Steam Reactivation)	Std	Std	Std	Std	Std	Std
• Emergency Stop	Opt	Opt	Opt	Opt	Opt	Opt
• Voltage/Phase Monitor	Opt	Opt	Opt	Opt	Opt	Opt
Capacity Control Method						
• D-Stat	Std	Std	Std	Std	Std	Std
• D-Stat II	Opt	Opt	Opt	Opt	Opt	Opt
• H-Trac	Opt	Opt	Opt	Opt	Opt	Opt
• C-Trol II	Opt	Opt	Opt	Opt	Opt	Opt
• Dew-Trac	Opt	Opt	Opt	Opt	Opt	Opt
Control Sensor Provision						
• None - Customer Provided	Std	Std	Std	Std	Std	Std
• Field Mounted - Duct	Opt	Opt	Opt	Opt	Opt	Opt
• Field Mounted - Wall	Opt	Opt	Opt	Opt	Opt	Opt
Status Monitoring Indicator Lights						
• Power On (White)	Std	Std	Std	Std	Std	Std
• Unit On (Green)	Std	Std	Std	Std	Std	Std
• Motor Fault (Red) (Standard for Steam Reactivation)	Opt	Opt	Opt	Opt	Opt	Opt
• Rotor Rotation Fault (Red)	Opt	Opt	Opt	Opt	Opt	Opt
• High Reactivation Temp (Red)	Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**
• Air/Gas Fault (Red)	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**
• Burner Fault (Red)	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**
(1)Provided Only With Electric & Gas Reactivation Units; (2)Provided Only With Gas Reactivation Units						
Customer Interface Terminals						
• Process Blower Interlock Dry Contact	Std	Std	Std	Std	Std	Std
• Remote Start/Stop Contact	Opt	Opt	Opt	Opt	Opt	Opt
• Summary Fault Dry Contact	Opt	Opt	Opt	Opt	Opt	Opt
• Process/Reactivation Dirty Filters Dry Contact	Opt	Opt	Opt	Opt	Opt	Opt
• Process Air Proving Dry Contact	Opt	Opt	Opt	Opt	Opt	Opt
• Reactivation Air Proving Dry Contact	Opt	Opt	Opt	Opt	Opt	Opt

Selected Features (cont.) - DES Series Dehumidifiers

-2750-106	-4250-106	-5500-106	-3750-122	-5500-122	-7250-122	-6000-152	-9000-152	-12000-152
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
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Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**	Std**(1)**
Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**
Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**	Std**(2)**
Std	Std	Std	Std	Std	Std	Std	Std	Std
Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt
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Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt	Opt

Guide Specifications

QUALITY ASSURANCE
(ISO 9001 Registered)

SATS operates in an ISO 9001:2000 Registered Quality Management System. Each *SATS* employee is committed to satisfying his or her customer expectations with the highest level of consistent, measurable and continuous quality improvement.

GENERAL GUIDE SPECIFICATIONS

General Description

The dehumidification system shall be a desiccant dehumidifier designed to provide precision humidity control to a space or process application. The dehumidifier and options selected shall be factory assembled, tested and shipped complete with all components as described here-in to maintain the specified humidity level within the intended space or to maintain the discharge outlet within the design load limits of this project. The dehumidifier shall include a high performance silica gel desiccant rotor, process air blower, reactivation air blower, reactivation heater, positive drive rotor drive system and all necessary controls for continuous and safe unattended operation.

The system cabinet shall be designed for outdoor installation and year round service. The system shall require only connection of ductwork, utilities, remote sensors and/or control signals.

At a process air flow rate of _____ SCFM, the system shall provide ___ lb/hr (___ Gr/lb) moisture removal at an entering air temperature condition of ___ °F DB / ___ °F WB, ___°F Dew Point (___ % RH). All system componets except the desiccant rotor shall have provisional warranty coverage for a period of 2 years after installation. The rotor shall be warranted for a period of 5 years against softening or collapse due to exposure to humid air.

The dehumidification system manufacturer shall be an ISO-9001 registered company. The system shall be a model *DES-_____ DESICAiR Series 2000* as manufactured by Stulz Air Technology Systems, Inc. (SATS) in Frederick, Maryland, USA.

Desiccant Dehumidification

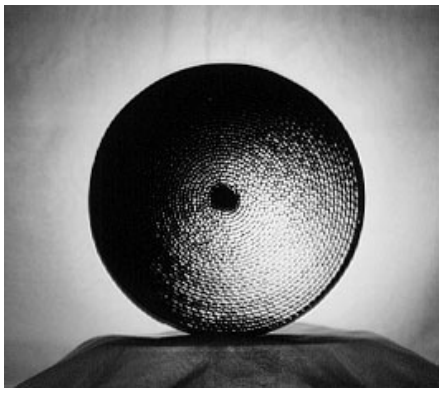
The dehumidifier shall be of the non-cycling type with dry non-granular, non-deliquescent, non-corrosive, non-toxic silica gel desiccant. The unit shall provide for continuous dehumidification with concurrent reactivation of the desiccant. The blower arrangement shall provide counter flow of the process and reactivation air streams.

The dehumidification process shall be by adsorption. Absorption type desiccants such as lithium chloride or other salt type sorption materials which require a change in state for the dehumidification process shall not be acceptable.

Desiccant Rotor

The desiccant rotor shall consist of a high temperature, corregated, synthetic fiber substrate media with a non-migrating, water selective silica gel desiccant uniformly and permanently encapsulated in the matrix structure of the media. The silica gel desiccant shall have uniform macro-pore openings.

The high performance silica gel desiccant shall remove water vapor from the passing airstream at the rate specified in the schedule. Nominal face velocity shall not exceed 800 fpm. The silica gel shall be bonded to the substrate in such a way that the entire rotor surface shall be active as a desiccant. The desiccant shall not be loose within the rotor. Rotors with granular or coated desiccants shall not be acceptable. Dehumidifiers requiring either “topping off” or re-impregnation of the desiccant shall not be acceptable.



The rotor shall be an extended surface contactor with a plurality of parallel flutes and have laminar air flow characteristics. The rotor shall be manufactured by winding continuous alternating layers of corrugated and flat sheets to form a strong fluted shaped rotor. The rotor shall be fabricated to include mechanical support of the media and shall have an external sheet metal wrapper to encase the media. The center hub shall be bored to accept a shaft for bearing support.

The desiccant rotor shall not be adversely affected by exposure to air even at 100% relative humidity or to prolonged storage or intermittent use in humid atmospheres for up to ten years. The desiccant dehumidification rotor shall be capable of sustained operation with

either the process or the reactivation blower operating without reactivation heat applied.

The rotor shall be able to be cleaned with either warm water or detergent wash without damage or loss of desiccant. The desiccant shall retain a minimum of 95% of its working capacity after ten washings per the manufacturers instructions.

The rotational speed shall be designed for the maximum dehumidification effectiveness per the manufacturer's performance data and to prevent wave front break through at design conditions.

Rotor Drive

The rotor drive system shall be provided with all the necessary components for continuous slip free operation. The rotational speed shall be designed for the maximum dehumidification effectiveness per the manufacturer's performance data and to prevent wave front break through at design conditions. The drive system shall consist of a fixed speed motor, speed reducer and a reinforced flexible drive belt and belt tensioner. The speed reducer shall have lifetime lubrication and not require field or periodical maintenance lubrication. Removal of the rotor shall not be required to replace the drive belt. A motor starter shall be provided and wired by the manufacturer.
The rotation shall be continuous. Intermittent operation or indexing shall not be permitted.
The rotor shall be shaft mounted and supported by ball bearings for long life and low maintenance. Ball bearings shall be sized to support the rotor at full saturated weight without inducing stress on the rotor's outer wrapper or flutes. The dehumidification rotor shall not be mounted on casters or rollers.

Rotor Pressure Drop

Gauges:
Pressure indication gauges shall be provided to indicate the pressure drop across the rotor. Separate gauges and static pressure tips shall be installed for process and reactivation air streams.

The gauges shall be externally mounted on the cabinet. The gauges shall be suitable for either indoor or outdoor service and have 4-1/2" face and analog dial. The scale shall be selected such that the design pressure indication is within the mid-range of the gauge. The gauges shall be Dwyer Magnehelics or approved equal. The manufacturer shall provide a Technical Data Sheet which shall state the expected pressure drop for each air stream. The Technical Data Sheet shall be included with the Operations & Maintenance manual provided with each unit.

Rotor Air Seals

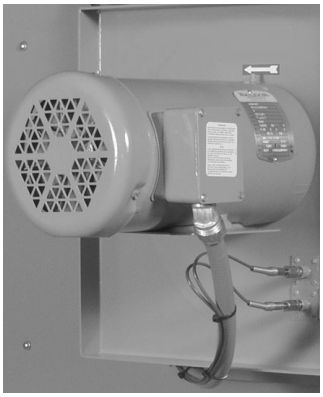
The process and reactivation sectors shall be provided with air seals to prevent cross leakage. The seals shall prevent leakage from one air stream to the other. The seals and rotor frame construction shall provide for independent adjustment of the process and reactivation air flow without regard of the air pressure difference between the process and reactivation air streams.

A dual lipped continuous high temperature seal shall be installed against a flange mounted on the periphery of the rotor to prevent air from by-passing the rotor. Seals shall be mounted on both the entering and leaving face of the rotor. Balloon or bulb type seals are not acceptable.

Seals shall be secured in such a way as to permit easy removal. Pop rivets which require excess maintenance time during replacement is not acceptable. Removal of the rotor shall not be required to adjust or replace seals.

Blowers/Motors

The process air blower shall be centrifugal type with a continuous welded housing, unless otherwise specified. The blower shall be sized for the air requirements per the schedule.



Process blowers for air volume less than 3000 cfm (550 mm & 770 mm rotor diameter) shall be direct drive types, unless otherwise specified. Shaft seals shall be provided to prevent moisture leakage into the dehumidified air stream.

Process blowers for air volumes greater than 3000 cfm (106 mm diameter rotors) shall be belt driven, unless otherwise specified. Belt driven blowers shall include a minimum of two drive belts. An adjustable sheave shall be provid-

ed for two belt drives and it shall be selected such that the operating rpm shall be at the mid-value of the adjustable range. Drives requiring 3 belts or more shall have fixed pitch sheaves. Belt driven blowers shall be mounted on vibration isolators. The process blower housing and shaft shall be sealed to prevent moisture infiltration into the dehumidification system. The blower motor shall be TEFC with a 1.15 service factor. A motor starter shall be included and wired at the factory.

The reactivation air blower shall be a direct drive centrifugal type with a welded housing. The blower shall be sized for the air requirements per the schedule. The external static pressure shall meet the requirements of the schedule. The blower motor shall be TEFC with a 1.15 service factor. A motor starter shall be included and wired at the factory.

Process Blower Motor:

The process blower/motor assembly shall be sized to provide _____ CFM @ _____ inches static pressure.

Reactivation Blower Motor:

The reactivation heater blower/motor assembly shall be sized to provide _____ CFM @ _____ inches static pressure.

Reactivation Heater

The reactivation heat source shall be electric (steam, natural (propane) direct fired gas) as specified on the schedule. The reactivation heat shall be of sufficient capacity to ensure the complete and continuous reactivation of the desiccant during summer or winter operation of the dehumidifier.

The reactivation heater shall be selected to satisfy the summer and winter performance requirements per the schedule and shall be completely factory assembled. The reactivation heater shall be housed in an insulated enclosure to minimize heat loss and to prevent incidental contact with hot surfaces by operating or service personnel.

Electric:

Electric heaters shall include a high temperature cut out. Overheat sensors shall measure the reactivation air temperature as it enters the rotor and as it leaves the rotor. A fault light located on the operator's panel shall be signaled in the event of an overheat occurrence. A manual reset shall be required in order to prevent attempted repeated operation by automatic resetting devices in a fault condition. The reset button shall be mounted on the electrical enclosure.

Electric heaters shall be staged not to exceed 48 amps per branch and circuit protection shall not be greater than 60 amps in accordance with the National Electric Code.

Electric heaters shall be open nichrome wire elements with a nominal watt density of less than 35 watt/in^2 of heater element cross sectional area. Heater elements shall be mounted in 304 stainless steel frames and have ceramic insulators. Heater wire running from the heater contactor to the heater terminal box shall be PTFE coated and shall be rated for 200 degree C service.

Electric heaters shall be controlled by an adjustable solid state proportional control system designed to prevent overheating and to provide energy conservation. A cool down purge shall be incorporated to operate the reactivation blower for a minimum of 5 minutes whenever the heater is de-energized by the controls.

A perforated diffuser plate shall be mounted between the reactivation inlet filter and the heater to prevent radiant heat from reaching components.

An air proving switch shall be installed in the reactivation air stream and connected in series with the reactivation heater to prevent the heater from energizing in the event of loss of air flow. The heater shall be interlocked with the process and reactivation blower motor starters to prevent energizing the heater in the event of blower motor failure.

Natural (Propane) Gas:

Direct fired natural (propane) gas reactivation heaters shall include all the necessary controls to detect, monitor and regulate the gas flame and reactivation temperature as required. Automatic modulation of the gas supply shall be included by the dehumidifier manufacturer.

Gas heaters shall include a high temperature cut out. Overheat sensors shall measure the reactivation air temperature as it enters the rotor and as it leaves the rotor. Controls shall include an air proving switch which is wired in the heater control circuit to prevent the heater from operating in the event of the reactivation air flow loss. The DES unit heater controller shall limit the reactivation temperature as well as regulate the reactivation outlet temperature. The pilot flame shall be adjusted and set independent of the main gas flame. Separate gas pressure regulator valves shall be provided for the pilot and main gas line. A spark igniter system and a listed flame safety relay shall be utilized. Both high gas and low gas pressure cut-outs

shall be provided.

The gas components and controls shall be in accordance with Factory Mutual guidelines. Compliance to local codes for venting or other installation regulations is the responsibility of the installing contractor.

Steam:
Steam heating coils shall be housed in an insulated enclosure to ensure maximum thermal transfer to the reactivation air stream and to comply with OSHA regulations concerning personnel safety protection from hot surfaces.

Steam heating coils shall be the non-freeze steam distributing type with 10" long 2.5" diameter NPT pipe connections brazed to copper headers, 0.049" thick copper tubes, 0.0075 aluminum fins with maximum 12 fins per inch, copper header, galvanized casing. Coils shall be pressured tested to 300 psig and rated for 150 psig maximum operating pressure. Face velocity shall not exceed 800 fpm.

Coil connections shall be stubbed out through the reactivation cabinet. Steam fittings and piping shall be provided by the installing contractor in accordance with the schedule.

The reactivation leaving temperature shall be automatically maintained at 120 - 130 degrees F by modulating the reactivation inlet damper to vary the reactivation air volume. The damper shall be a low leakage type with high temperature silicone edge seals, bronze bearings and a solid state controlled direct shaft mounted actuator.

Cabinet Construction

The DES unit cabinet shall be constructed of formed 0.125" thick 5052 grade aluminum for corrosion protection. The cabinet shall be of formed sections, welded, ground smooth and painted. Unit air leakage shall be less than 1% of design airflow rate measured at rated unit static pressure. The manufacturer shall provide plugged floor drains in each section of the process air side of the unit.

Access panels with full jam style gaskets shall be provided on at least one side of the cabinet in order to allow service and or replacement of all major internal components. 304 ss captive fasteners with a combination hex and slotted head shall be provided on all service panels. An observation window shall be provided to allow for the visual confirmation of rotor rotation without removal of the service panel.

Probe style test ports shall be provided as standard. Ports shall be located to allow for the measurement of temperature and humidity both upstream and downstream of the desiccant rotor. A single port shall be mounted to allow for air temperature measurement between the reactivation heater and rotor.

The cabinet shall be painted with an industrial/marine high gloss self priming weather resistant siloxane-epoxy protective coating with an adhesive strength of 2700 psi (on steel using ASTM D4541). The coating shall be formulated with very high solids and extremely low volatile organic compounds. The coating color shall be industrial gray and have a dry film thickness of 3 - 7 mils per coat. The coating shall have a USDA qualification for incidental food contact.

Skid

The dehumidifier shall include a skid adequate to support the full operating weight of the unit and to allow for rigging, transportation and handling at the job site as well as leveling at installation. Non-conducting galvanic isolation is required between dissimilar materials of the skid and cabinet.

Air Connections

Indoor Air Connections:

Flanged:
Air inlet and outlet connections shall be square or rectangular with interface flanges. Flanges are blank for match drilling in the field by the installing contractor.

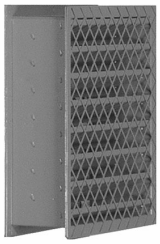
Round, Beaded:
As an option, round connections with circumference bead shall be factory installed for flexible ducts.

Guide Specifications

Round, No Bead:
As an option round, non-beaded connections shall be available for hard ducts.

Outdoor Air Connections:

Inlet/Outlet Hoods:
As an option, outdoor units shall include a protective weather hood with safety/bird screen for the reactivation inlet and the process make-up air inlet and a screened hood or louvers for the process air outlet.



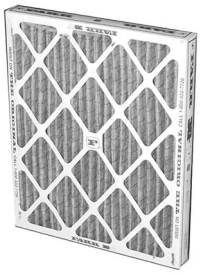
Dampers

Air flow regulating dampers shall be required for the process air stream and for the reactivation air stream. The dampers shall allow for the proper setting of the required airflow through the dehumidifier. Proper flow shall be determined by setting the static pressure drops across the desiccant rotor to a pre-determined value as shown on static pressure gauges. A Technical Data Sheet which includes the specified pressure drops for each air stream shall be included with the Installation Operation & Maintenance manual furnished with each unit

A manually adjustable balancing damper shall be available as an option on each blower outlet to allow for setting the air flow volume. Dampers shall be mounted on a steel shaft with a bronze bushing. An external locking arm with a positive locking mechanism shall be provided.

Filters

The process and reactivation air inlets shall have pleated disposable filters listed by UL as Class (1)(2). The filters shall be rated at an average of 25-30% efficiency per ASHRAE Standard 52.1-1992.



Controls

In the ON mode all components shall operate automatically and continuously. In the OFF position all motors, drives and heaters shall be de-energized. In the AUTO mode the unit responds to a remote start/stop control signal. Upon shut down of the dehumidifier, the process blower and reactivation heater shall be de-energized; for electric and gas-fired reactivated units, the rotor drive and reactivation blower shall continue to operate during a cool down cycle to remove residual heat from the rotor and reactivation sector.

The dehumidifier shall be controlled by (specify one of the following):

D-Stat®:
The dehumidifier shall respond to a control closure signal from a humidistat. The humidistat shall make/break a 115 VAC circuit. A wall mounted humidistat shall be available as an option from the manufacturer for installation by the contractor. Terminal connections shall be included in the electrical enclosure for connection of the humidistat. The D-Stat® control system shall cycle the dehumidifier, including the process blower, On and Off.

D-Stat II®:
The dehumidifier shall respond to a control closure signal from a humidistat. The humidistat shall make/break a 115 VAC circuit. A duct or wall mounted humidistat shall be available as an option from the manufacturer for installation by the contractor. Terminal connections shall be included in the electrical enclosure for connection of the humidistat. The D-Stat II® control system shall cycle the reactivation heater and blower On and Off in response to a humidistat while the dehumidifier process blower operates continuously.

C-Trol II®:
The C-Trol II® condensation control system shall automatically regulate the dehumidifier capacity to prevent condensation from forming on cold surfaces. The dehumidifier shall

respond to a control signal from a controller which compares a cold surface temperature to ambient dew point temperature to prevent condensation from forming on cold surfaces. A surface mounted temperature sensor shall be provided by the unit manufacturer as an option and field installed by the contractor.

Space ambient dew point temperature shall be measured by a sensor/transmitter provided by the unit manufacturer as an option and field installed by the contractor. Reactivation energy shall be proportionally controlled to maintain the air dew point temperature 6 degrees below the cold surface temperature. When the ambient dew point temperature is below the cold surface temperature by more than 12 degrees the controller shall de-energize the reactivation heater and blower in sequence. A rise of the dew point temperature to within 10 degrees of the water temperature energizes the heater. All set points shall be adjustable. The process air blower runs continuously in the AUTO mode to provide a circulating air current within the space.

H-Trac®:
The dehumidifier shall respond to a control signal from a proportional relative humidity controller to modulate the dehumidifier capacity. The H-Trac® controller shall automatically regulate the reactivation heater to provide a constant relative humidity of either the process air or "space" condition. The H-Trac® control shall include a factory mounted or space mounted relative humidity sensor/transmitter. The controller shall proportionally regulate the reactivation heater to maintain the set point value within +/- 2% RH. Face and by-pass dampers shall not be used for capacity modulation.

Dew-Trac®:
The dehumidifier shall respond to a control signal from a dew point controller to modulate the dehumidifier capacity. The Dew-Trac® controller shall automatically regulate the reactivation heater to provide a constant dew point temperature of either the process air or space condition. The Dew-Trac® control shall include a factory provided dew point sensor/transmitter. The controller shall proportionally regulate the reactivation heater to maintain the set point value within +/- 2% degrees Fahrenheit. Face and by-pass dampers shall not be used for capacity modulation.

Electrical Components& Wiring Practice

Wiring practices, branch circuit protection, motor starters and overload protection shall be in accordance with the National Electric Code. IEC style motor contactors equipped with motor circuit controllers, and auxiliary contacts shall be provided.

Status indication lights shall be mounted on the control enclosure front panel. Lights shall indicate: Power On, Unit On and Fault as a minimum.

All controls shall be mounted in a NEMA 4 UL listed electrical control enclosure and shall be UL or CSA listed or recognized. A ground lug connection shall be provided in the electrical enclosure. Control panel is UL 508 listed

All wiring shall be run in flexible liquid tight conduit. Wires shall be numbered at both ends. The wire harness shall be neatly arranged and tie wrapped.

Option: A knife type non-fused lockable service disconnect shall be provided and mounted on the dehumidifier cabinet adjacent to the electrical enclosure.

The disconnect shall be factory wired to the power supply terminals located within the electrical enclosure. The disconnect enclosure shall be rated NEMA 3R.

Elapsed run time hour meter shall be mounted in the electrical enclosure.

Power Supply

The service provided by the owner shall be:

208/3/60
230/3/60
460/3/60

Warranty

The dehumidifier shall include a conditional, limited parts warranty for 24 months from the date of shipment for mechanical and electrical components when a completed start-up form, provided by the manufacturer, is returned by the owner. The warranty shall include repair or replacement of parts which may be defective in either material or workmanship.

The desiccant rotor shall be covered by a 60 month limited warranty against softening or collapse due to exposure to even 100% humid air. The rotor warranty shall be included at no additional expense and shall commence from the date of shipment.

NOMINAL PERFORMANCE RATINGS

MODEL NO.	Process Air				Reactivation Air		
	Face Vel. FPM	Air Qty. Scfm	Motor Hp	ESP In. w.g.	Air Qty. Scfm	Motor Hp	ESP In. w.g.
DES-750-55-( )	400	750	1.5	2.0	250	0.5	0.5
DES-1150-55-( )	600	1,150	3.0	2.0	383	1.5	0.7
DES-1550-55-( )	800	1,500	2.0	1.0	500	1.5	0.5
DES-1500-77-( )	400	1,500	2.0	1.8	500	1.5	1.4
DES-2250-77-( )	600	2,250	3.0	3.0	750	1.5	0.5
DES-3000-77-( )	800	3,000	5.0	1.2	1,000	3.0	0.8
DES-2750-106-( )	400	2,750	3.0	2.2	916	3.0	3.0
DES-4250-106-( )	600	4,250	5.0	2.0	1,416	3.0	2.2
DES-5500-106-( )	800	5,500	7.5	2.1	1,833	3.0	2.8
DES-3750-122-( )	400	3,750	5.0	2.5	1,250	3.0	3.0
DES-5500-122-( )	600	5,500	7.5	2.5	1,833	3.0	3.0
DES-7250-122( )	800	7,250	10.0	2.0	2,416	3.0	0.8
DES-6000-152-( )	400	6,000	7.5	2.0	2,000	3.0	3.0
DES-9000-152-( )	600	9,000	10.0	1.6	3,000	5.0	3.0
DES-12000-152-( )	800	12,000	15.0	1.2	4,000	7.5	0.8

Note: The above Horsepower and External Static Pressure (ESP) are ratings for standard systems. For alternate air quantity or ESP requirements please contact your Sales Representative or call the factory.

For units less than 750 Scfm, please refer to either the Series 500 or the Series 1000 Brochure.

For systems with custom features such as pre and/or postcooling or heating, face and bypass damper section, special filtration, etc. please refer to the DHP Series Brochure.

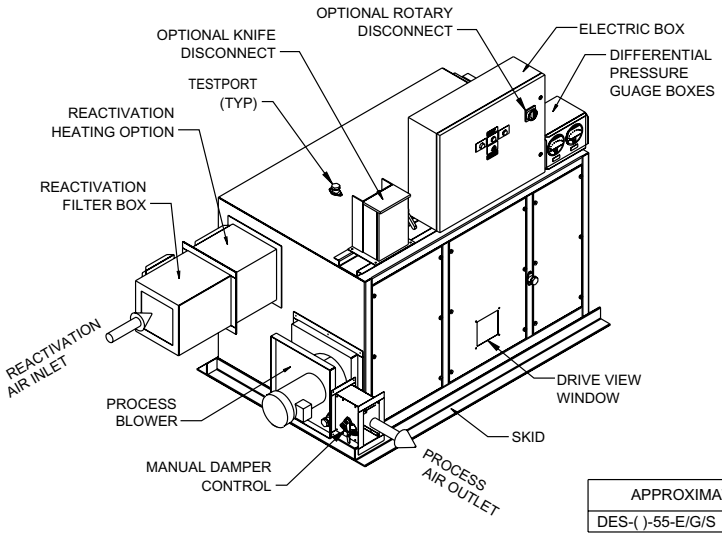
ELECTRICAL DATA

Model	Heater	460/3/60	230/3/60	208/3/60
	kW	FLA	FLA	FLA
DES-750-55-E	15	22.3	44.6	49.3
DES-750-55-S	-	3.4	6.9	7.6
DES-750-55-G	-	4.2	8.4	9.3
DES-1150-55-E	22	33.7	67.3	74.5
DES-1150-55-S	-	6.0	12.1	13.3
DES-1150-55-G	-	6.8	13.6	15.0
DES-1500-55-E	30	42.9	85.8	94.9
DES-1500-55-S	-	5.2	10.5	11.6
DES-1500-55-G	-	6.0	12.0	13.2
DES-1500-77-E	30	42.9	85.8	94.9
DES-1500-77-S	-	5.2	10.5	11.6
DES-1500-77-G	-	6.0	12.0	13.2
DES-2250-77-E	44	61.3	122.6	135.6
DES-2250-77-S	-	6.0	12.1	13.3
DES-2250-77-G	-	6.8	13.6	15.0
DES-3000-77-E	60	85.3	170.6	188.7
DES-3000-77-S	-	9.9	19.9	22.0
DES-3000-77-G	-	10.7	21.4	23.6
DES-2750-106-E	60	83.7	167.4	185.1
DES-2750-106-S	-	8.3	16.6	18.3
DES-2750-106-G	-	9.0	18.1	20.0
DES-4250-106-E	80	111.4	222.8	246.4
DES-4250-106-S	-	10.9	21.8	24.1
DES-4250-106-G	-	11.6	23.3	25.8
DES-5500-106-E	110	152.6	N/A	N/A
DES-5500-106-S	-	14.4	28.8	31.8
DES-5500-106-G	-	15.1	30.3	33.5
DES-3750-122-E	80	111.4	222.8	246.4
DES-3750-122-S	-	10.9	21.8	24.1
DES-3750-122-G	-	11.6	23.3	25.8
DES-5500-122-E	110	152.6	N/A	N/A
DES-5500-122-S	-	14.4	28.8	31.8
DES-5500-122-G	-	15.1	30.3	33.5
DES-7250-122-E	150	206.2	N/A	N/A
DES-7250-122-S	-	17.7	35.4	39.1
DES-7250-122-G	-	18.4	36.9	40.8
DES-6000-152-E	120	164.9	N/A	N/A
DES-6000-152-S	-	14.1	28.3	31.2
DES-6000-152-G	-	14.9	29.8	32.9
DES-9000-152-E	180	246.3	N/A	N/A
DES-9000-152-S	-	20.1	40.2	44.4
DES-9000-152-G	-	20.8	41.7	46.1
DES-12000-152-E	230	317.3	N/A	N/A
DES-12000-152-S	-	28.3	56.6	62.6
DES-12000-152-G	-	29.0	58.1	64.2

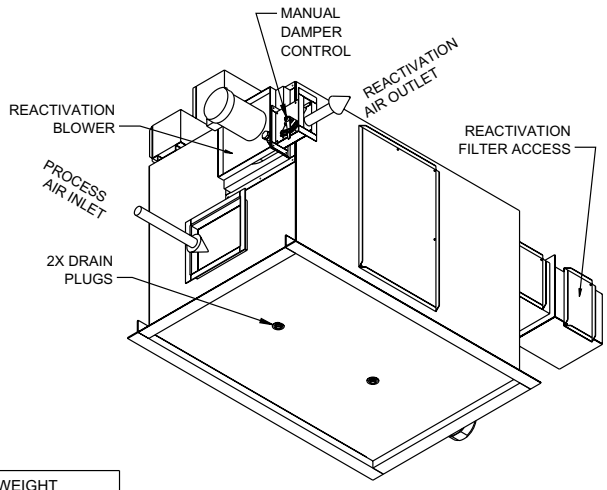
*__Note__: Heaters are shown at their maximum rating. The heaters may not operate at their maximum capacity under normal operating conditions. Please contact the factory for actual heater power ratings or for gas therms or steam consumption specific to an application.

Dimensional Data - DES-( )-55-E/G/S

TYPICAL CONFIGURATION - Standard Left Hand Orientation

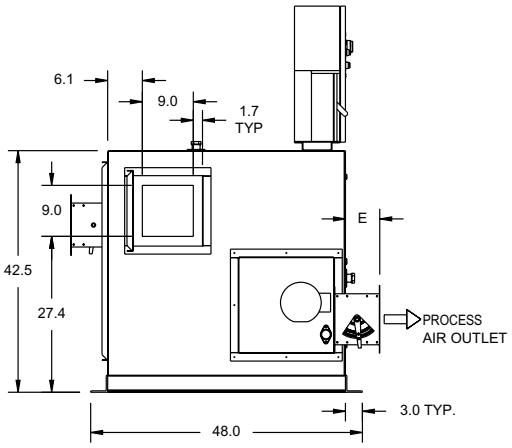


LEFT/FRONT/TOP

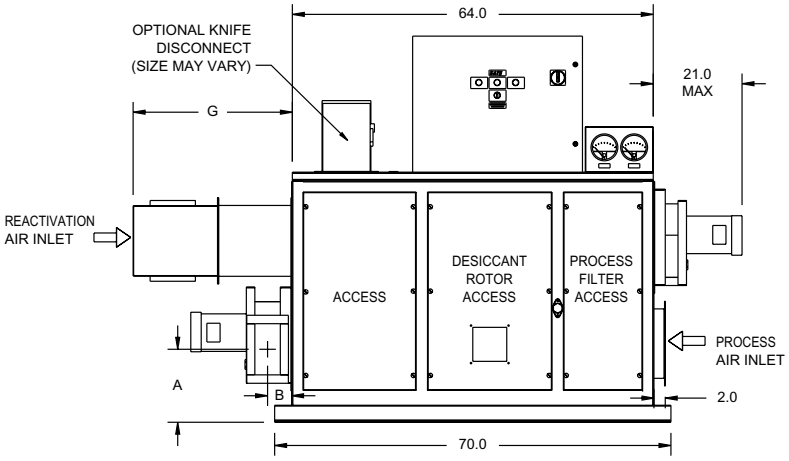


RIGHT/REAR/BOTTOM

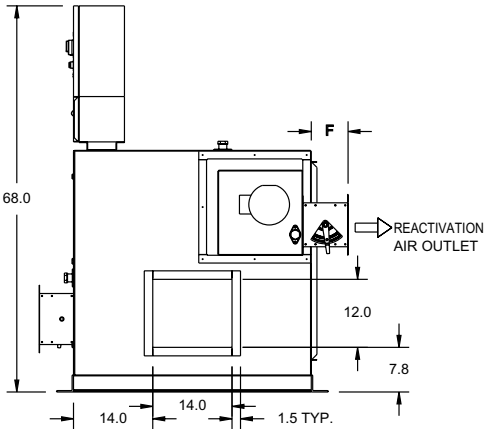
APPROXIMATE UNIT WEIGHT	
DES-( )-55-E/G/S	850 lbs.



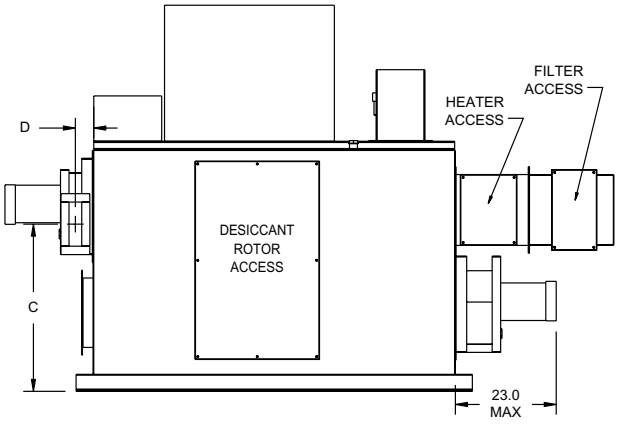
LEFT SIDE



FRONT



RIGHT SIDE



REAR

UNIT DIMENSIONS	A	B	C	D	E	F
DES-750-55	12.2	4.0	29.4	4.6	6.1	6.6
DES-1150-55	12.8	4.1	29.4	5.5	6.1	6.6
DES-1500-55	18.1	5.1	29.4	5.5	8.6	6.6

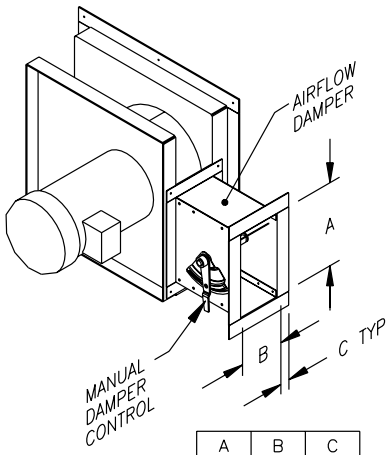
REACTIVATION	G
ELECTRIC	15.0
STEAM	28.0
GAS	28.0

ALL DIMENSIONS ARE IN INCHES
DIMENSIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

Dimensional Data - DES-( )-55-E/G/S

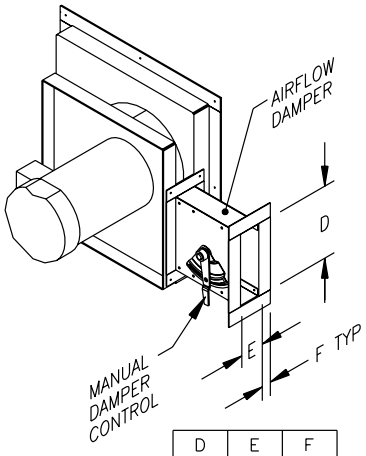
STANDARD OUTLETS

PROCESS OUTLET FLANGE



	A	B	C
DES-750-55	7.63	4.00	1.50
DES-1150-55	8.88	4.25	1.50
DES-1500-55	13.44	6.19	1.50

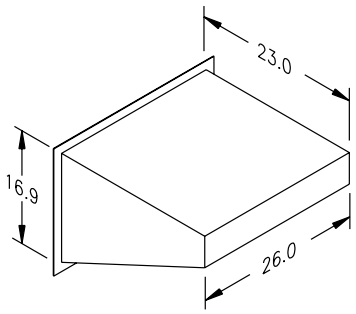
REACTIVATION OUTLET FLANGE



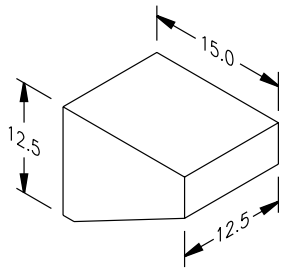
	D	E	F
DES-750-55	7.63	2.25	1.50
DES-1150-55	7.63	4.00	1.50
DES-1500-55	7.63	4.00	1.50

INLET & OUTLET OPTIONS

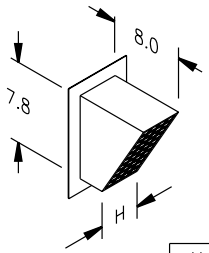
PROCESS INLET HOOD w/SCREEN



REACTIVATION INLET HOOD w/SCREEN



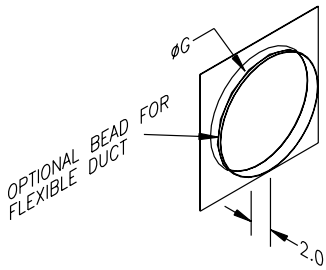
REACTIVATION OUTLET HOOD w/SCREEN



	H
DES-750-55	2.38
DES-1150-55	4.13
DES-1500-55	4.13

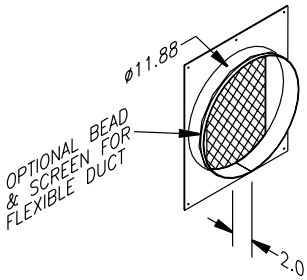
NOTE: FOR DIMENSIONAL PURPOSES, IT SHOULD BE ASSUMED THAT ALL OPTIONAL OUTLETS ARE CENTERED OVER STANDARD DUCT CONNECTIONS.

PROCESS & REACTIVATION INLET ROUND DUCT ADAPTER

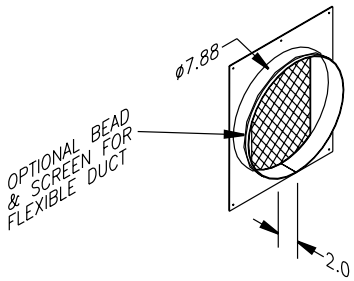


	G
PROCESS INLET	11.88
REACTIVATION INLET	7.88

PROCESS OUTLET ROUND DUCT ADAPTER

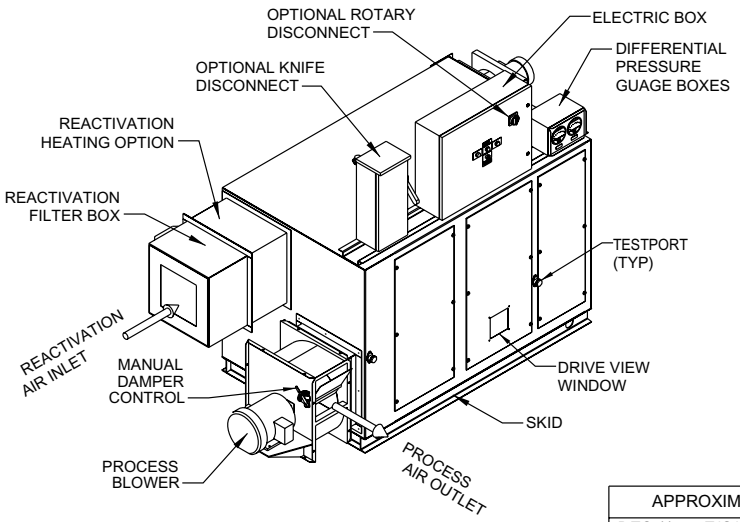


REACTIVATION OUTLET ROUND DUCT ADAPTER

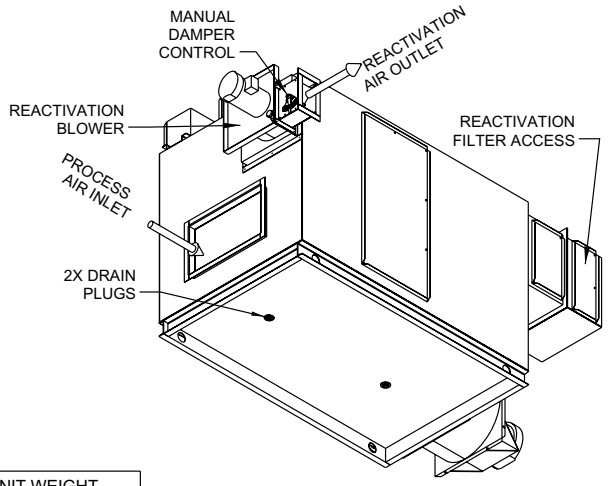


Dimensional Data - DES-( )-77-E/G/S

TYPICAL CONFIGURATION - Standard Left Hand Orientation

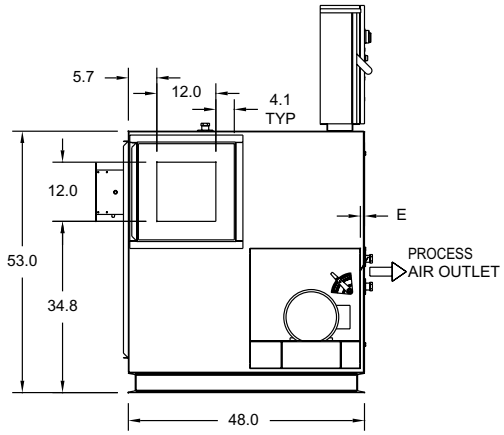


LEFT/FRONT/TOP

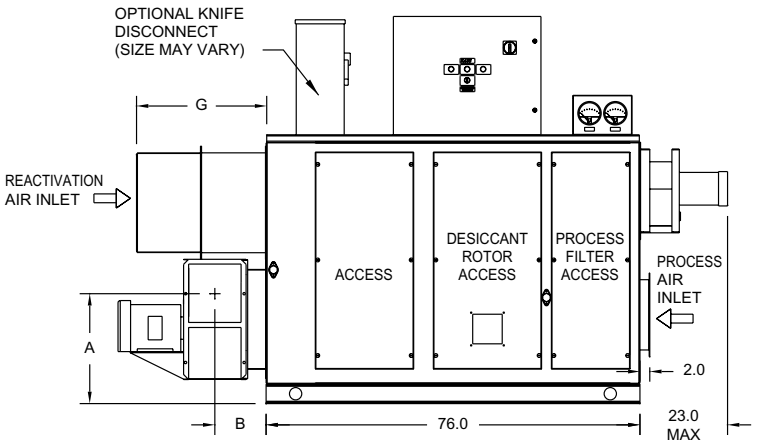


RIGHT/REAR/BOTTOM

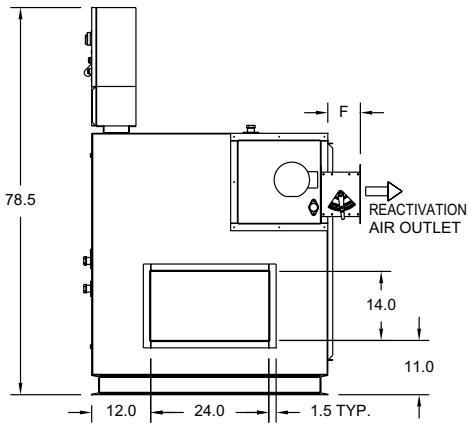
APPROXIMATE UNIT WEIGHT	
DES-( )-77-E/G/S	1,290 lbs.



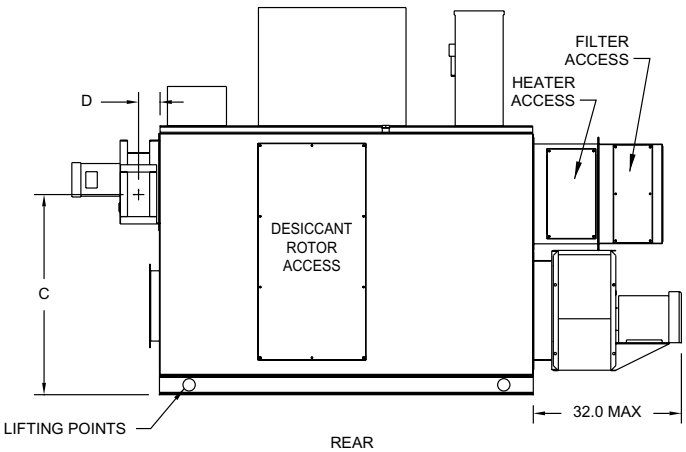
LEFT SIDE



FRONT



RIGHT SIDE



REAR

UNIT DIMENSIONS	A	B	C	D	E	F
DES-1500-77	19.7	5.1	39.9	5.5	*	6.6
DES-2250-77	22.2	10.5	39.9	5.5	1.7	6.6
DES-3000-77	22.2	10.5	40.5	5.6	1.7	6.6

* THIS BLOWER OUTLET EXTENDS 6.1" BEYOND CABINET.

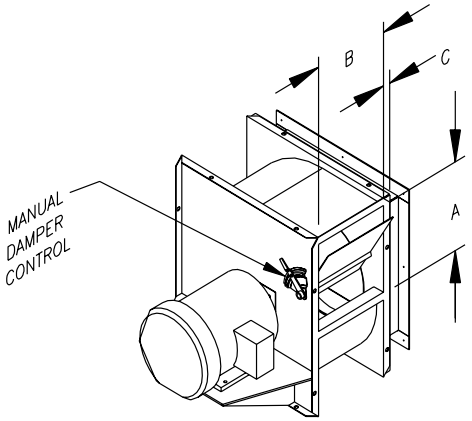
REACTIVATION	G
ELECTRIC	13.1
STEAM	26.1
GAS	26.1

ALL DIMENSIONS ARE IN INCHES
DIMENSIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

Dimensional Data - DES-( )-77-E/G/S

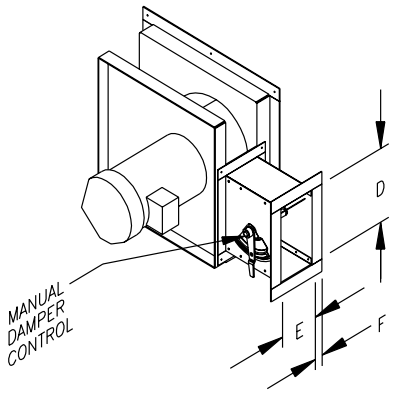
STANDARD OUTLETS

PROCESS OUTLET FLANGE



	A	B	C
DES-1500-77	13.44	6.19	1.50
DES-2250-77	12.00	10.69	1.00
DES-3000-77	12.00	10.69	1.00

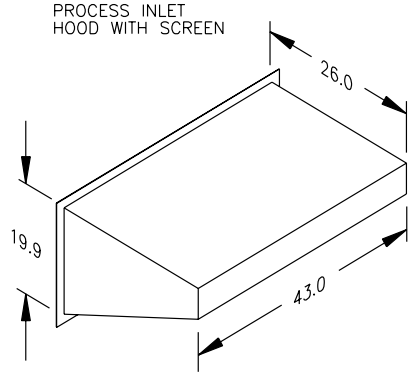
REACTIVATION OUTLET FLANGE



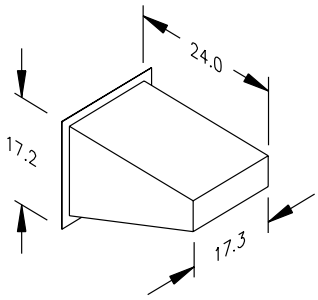
	D	E	F
DES-1500-77	7.63	4.00	1.50
DES-2250-77	7.63	4.00	1.50
DES-3000-77	8.88	4.25	1.50

INLET & OUTLET OPTIONS

PROCESS INLET HOOD WITH SCREEN

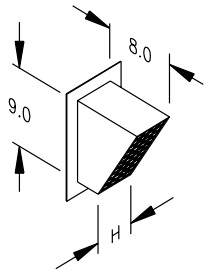


REACTIVATION INLET HOOD WITH SCREEN



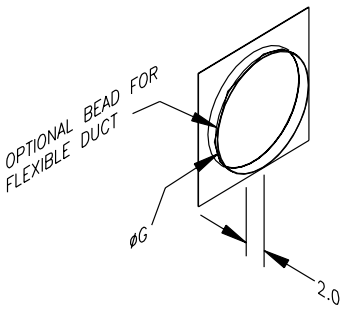
NOTE:
FOR DIMENSIONAL PURPOSES, IT SHOULD BE ASSUMED THAT ALL OPTIONAL OUTLETS ARE CENTERED OVER STANDARD DUCT CONNECTIONS.

REACTIVATION OUTLET HOOD WITH SCREEN



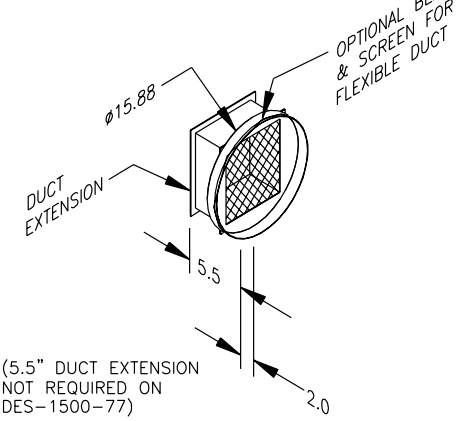
	H
DES-1500-77	4.13
DES-2250-77	4.13
DES-3000-77	4.38

PROCESS & REACTIVATION INLET ROUND DUCT ADAPTER



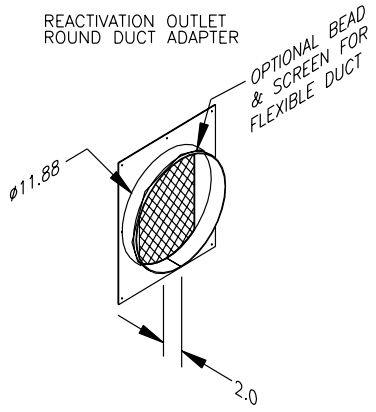
	G
PROCESS INLET	15.88
REACTIVATION INLET	11.88

PROCESS OUTLET ROUND DUCT ADAPTER



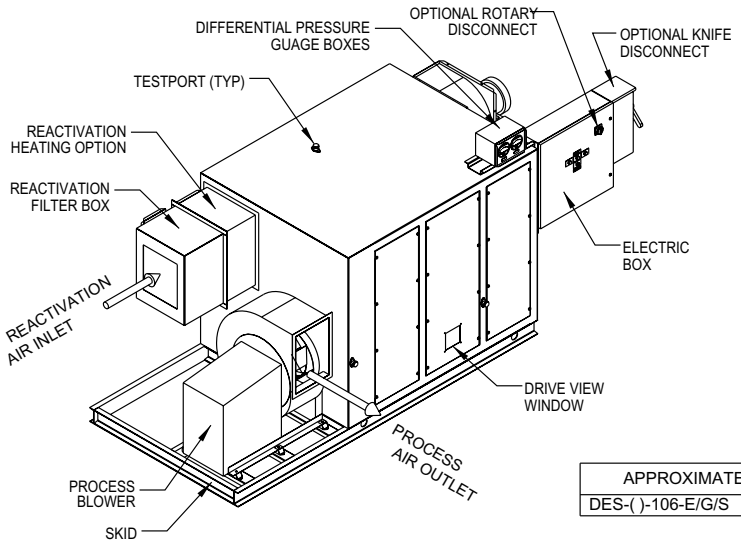
(5.5" DUCT EXTENSION NOT REQUIRED ON DES-1500-77)

REACTIVATION OUTLET ROUND DUCT ADAPTER

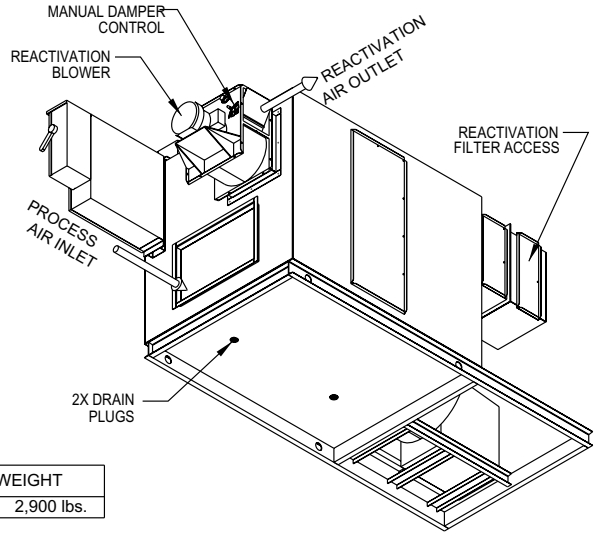


Dimensional Data - DES-( )-106-E/G/S

TYPICAL CONFIGURATION - Standard Left Hand Orientation

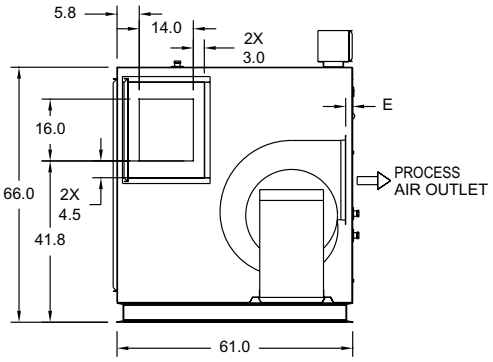


LEFT/FRONT/TOP

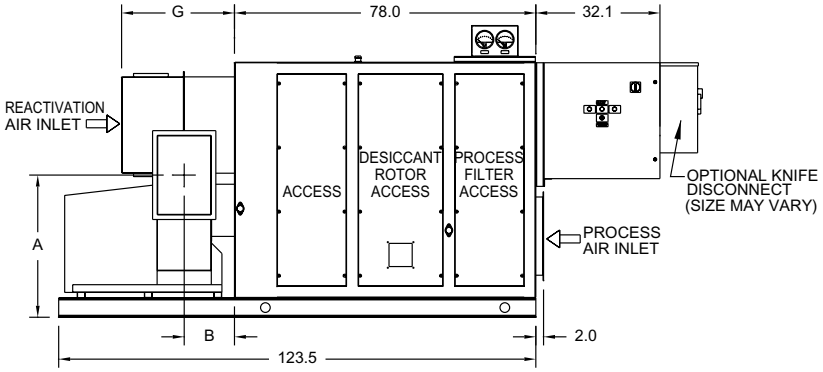


RIGHT/REAR/BOTTOM

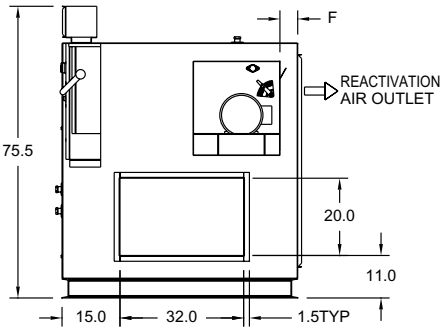
APPROXIMATE UNIT WEIGHT	
DES-( )-106-E/G/S	2,900 lbs.



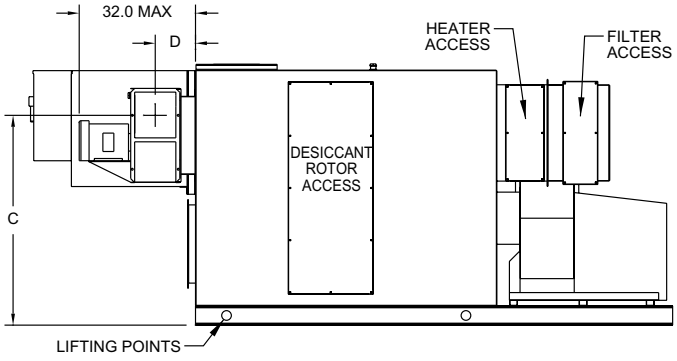
LEFT SIDE



FRONT



RIGHT SIDE



REAR

UNIT DIMENSIONS	A	B	C	D	E	F
DES-2750-106	31.4	11.7	54.2	10.5	3.8	4.6
DES-4250-106	36.9	12.9	54.2	10.5	1.8	4.6
DES-5500-106	36.9	12.9	54.2	10.5	1.8	4.6

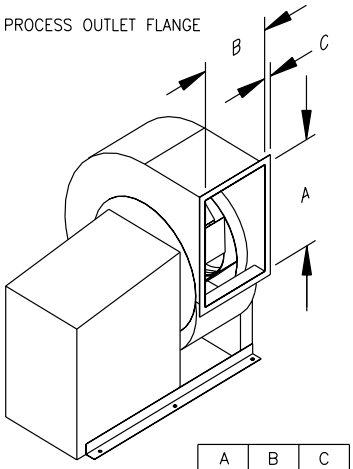
REACTIVATION	G
ELECTRIC	16.1
STEAM	29.1
GAS	29.1

ALL DIMENSIONS ARE IN INCHES
DIMENSIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

Dimensional Data - DES-( )-106-E/G/S

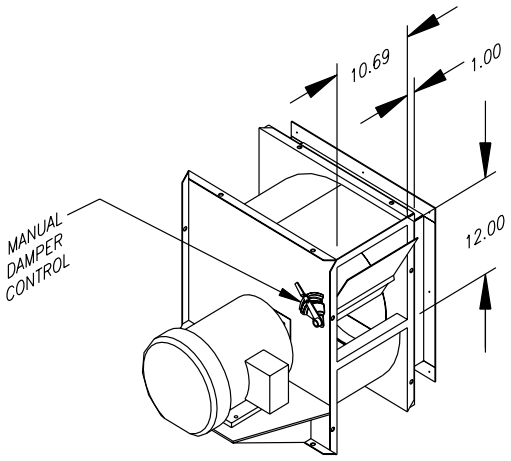
STANDARD OUTLETS

PROCESS OUTLET FLANGE



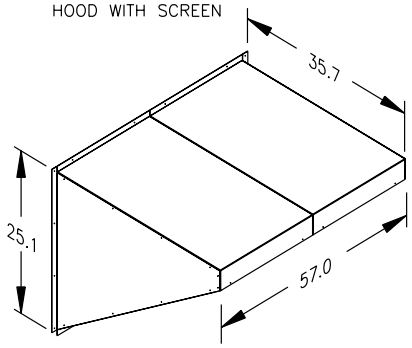
	A	B	C
DES-2750-106	16.88	11.38	1.00
DES-4250-106	20.50	13.88	1.25
DES-5500-106	20.50	13.88	1.25

REACTIVATION OUTLET FLANGE

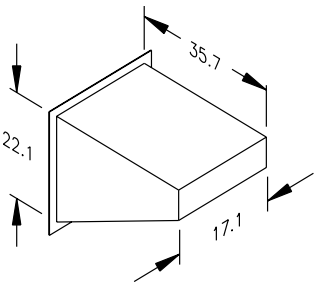


INLET & OUTLET OPTIONS

PROCESS INLET HOOD WITH SCREEN

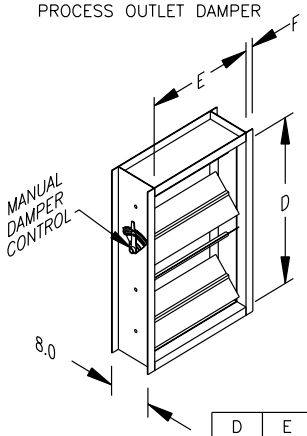


REACTIVATION INLET HOOD WITH SCREEN



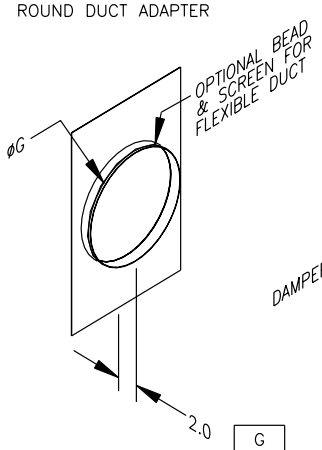
NOTE:
FOR DIMENSIONAL PURPOSES, IT SHOULD BE ASSUMED THAT ALL OPTIONAL OUTLETS ARE CENTERED OVER STANDARD DUCT CONNECTIONS.

PROCESS OUTLET DAMPER



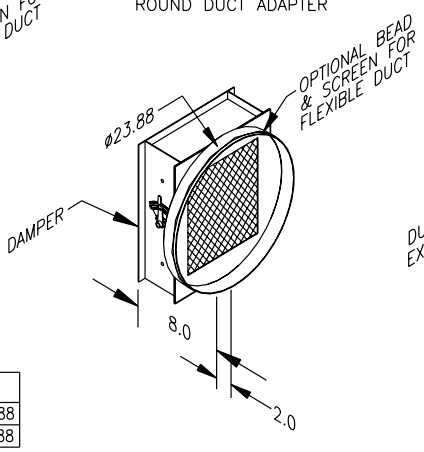
	D	E	F
DES-2750-106	16.75	10.75	1.50
DES-4250-106	20.75	13.75	1.50
DES-5500-106	20.75	13.75	1.50

PROCESS & REACTIVATION INLET ROUND DUCT ADAPTER

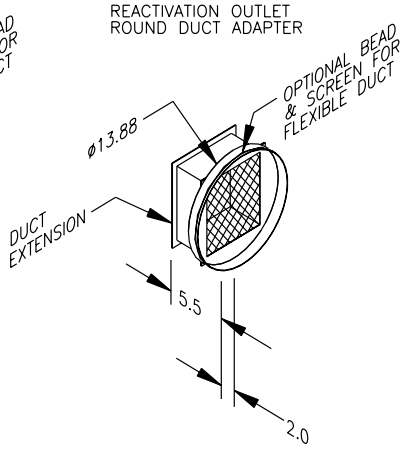


	G
PROCESS	23.88
REACTIVATION	13.88

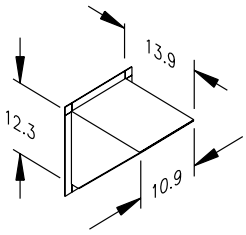
PROCESS OUTLET ROUND DUCT ADAPTER



REACTIVATION OUTLET ROUND DUCT ADAPTER

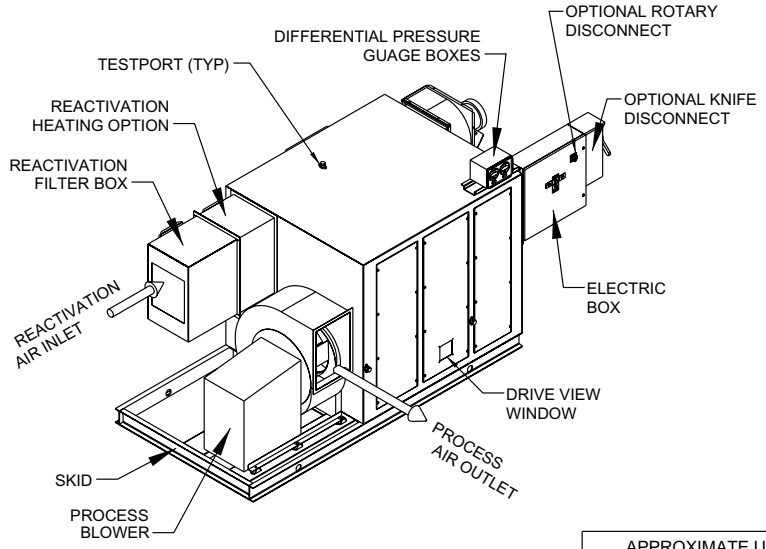


REACTIVATION OUTLET HOOD WITH SCREEN

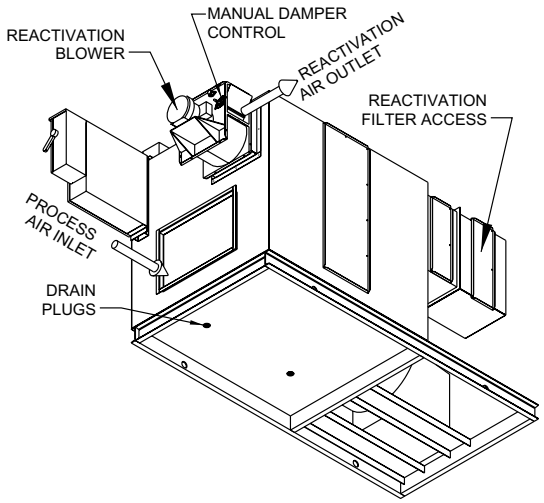


Dimensional Data - DES-( )-122-E/G/S

TYPICAL CONFIGURATION - Standard Left Hand Orientation

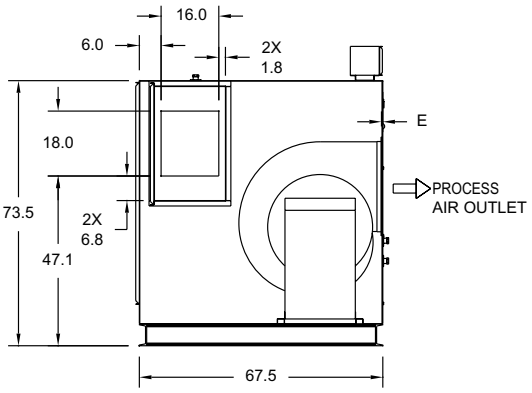


LEFT/FRONT/TOP

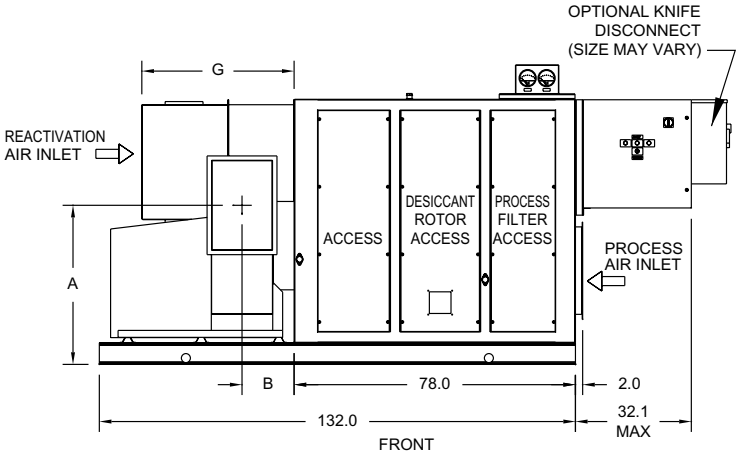


RIGHT/REAR/BOTTOM

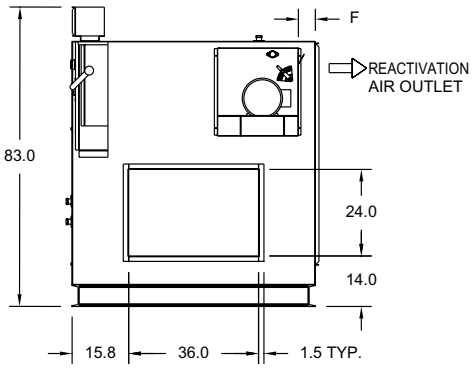
APPROXIMATE UNIT WEIGHT	
DES-( )-122-E/G/S	3,650 lbs.



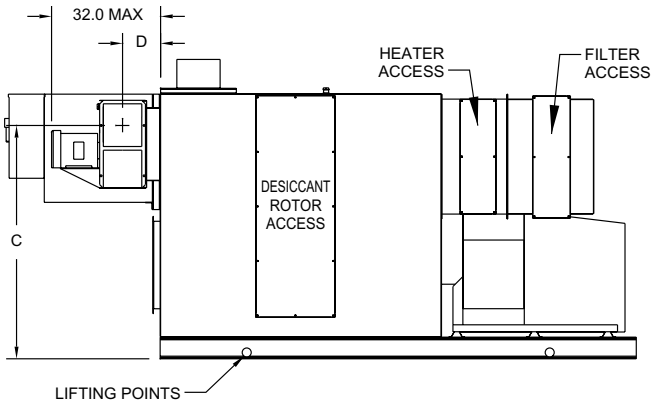
LEFT SIDE



FRONT



RIGHT SIDE



REAR

UNIT DIMENSIONS	A	B	C	D	E	F
DES-3750-122	37.9	12.9	65.0	10.5	3.4	4.5
DES-5500-122	37.9	12.9	65.0	10.5	3.4	4.5
DES-7250-122	44.2	14.4	65.0	10.5	0.4	4.5

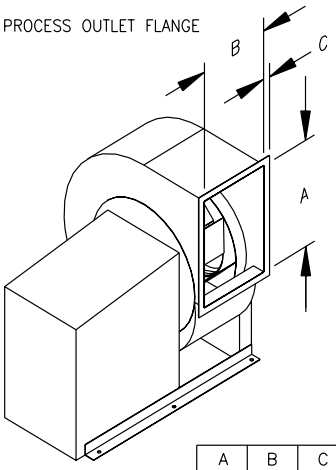
REACTIVATION	G
ELECTRIC	24.1
STEAM	42.1
GAS	42.1

ALL DIMENSIONS ARE IN INCHES
DIMENSIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

Dimensional Data - DES-( )-122-E/G/S

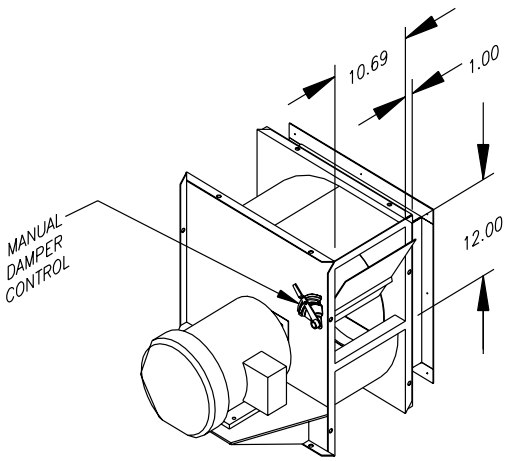
STANDARD OUTLETS

PROCESS OUTLET FLANGE



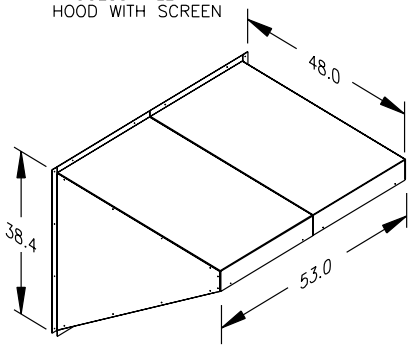
	A	B	C
DES-3750-122	20.50	13.88	1.25
DES-5500-122	20.50	13.88	1.25
DES-7250-122	24.63	16.63	1.25

REACTIVATION OUTLET FLANGE

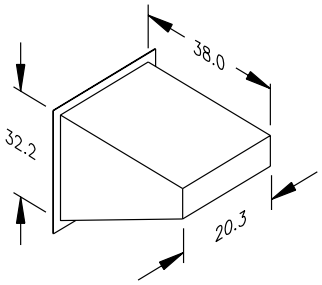


INLET & OUTLET OPTIONS

PROCESS INLET HOOD WITH SCREEN

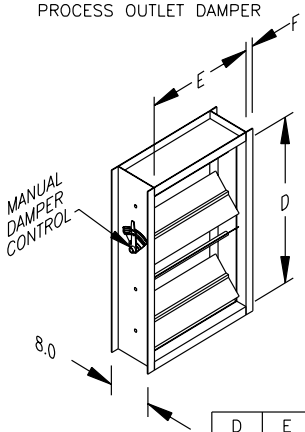


REACTIVATION INLET HOOD WITH SCREEN



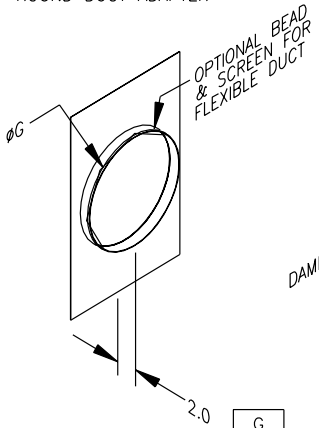
NOTE:
FOR DIMENSIONAL PURPOSES, IT SHOULD BE ASSUMED THAT ALL OPTIONAL OUTLETS ARE CENTERED OVER STANDARD DUCT CONNECTIONS.

PROCESS OUTLET DAMPER



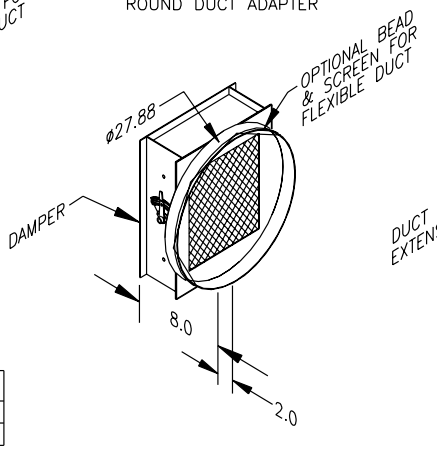
	D	E	F
DES-3750-122	20.75	13.75	1.50
DES-5500-122	20.75	13.75	1.50
DES-7250-122	24.75	16.75	1.50

PROCESS & REACTIVATION INLET ROUND DUCT ADAPTER

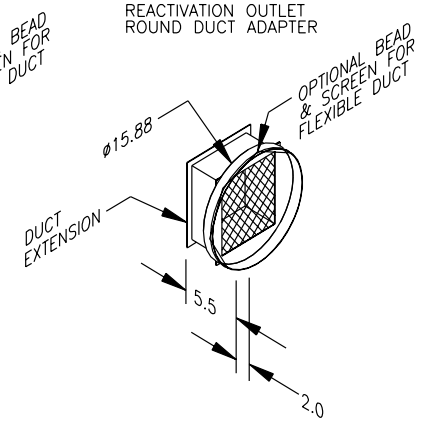


	G
PROCESS	27.88
REACTIVATION	15.88

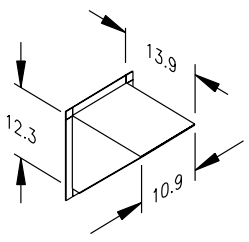
PROCESS OUTLET ROUND DUCT ADAPTER



REACTIVATION OUTLET ROUND DUCT ADAPTER

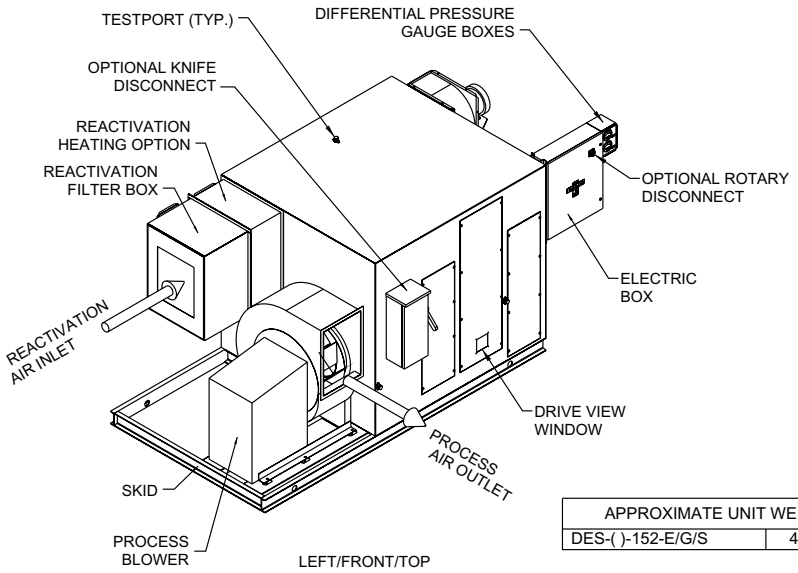


REACTIVATION OUTLET HOOD WITH SCREEN



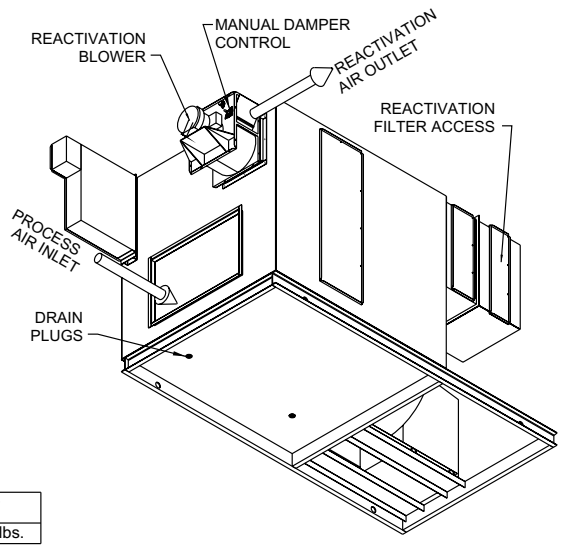
Dimensional Data - DES-( )-152-E/G/S

TYPICAL CONFIGURATION - Standard Left Hand Orientation

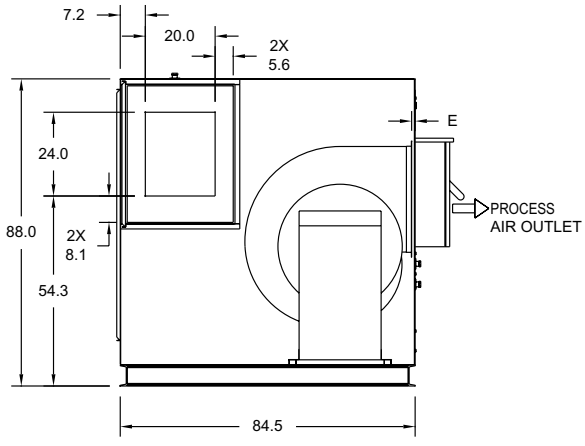


LEFT/FRONT/TOP

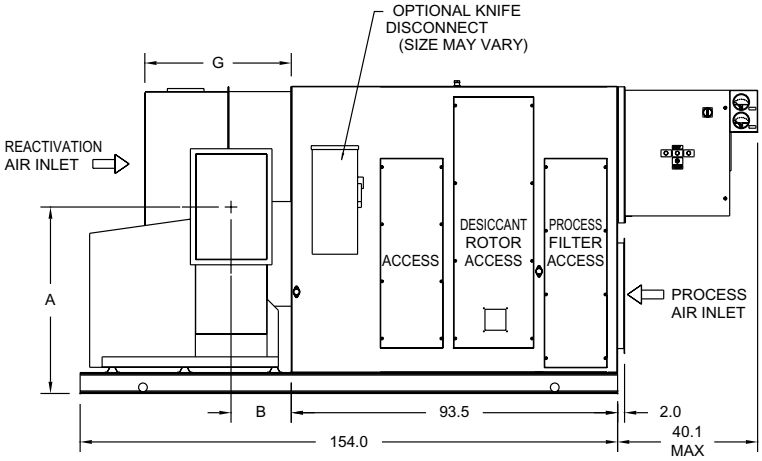
APPROXIMATE UNIT WEIGHT	
DES-( )-152-E/G/S	4,400 lbs.



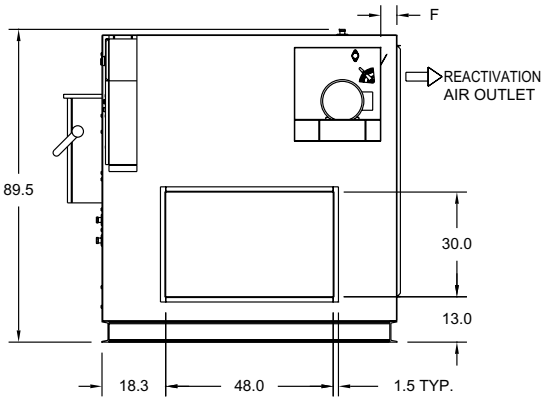
RIGHT/REAR/BOTTOM



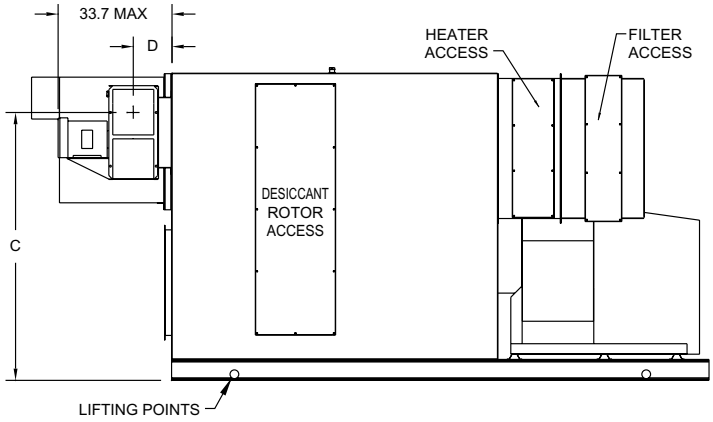
LEFT SIDE



FRONT



RIGHT SIDE



REAR

UNIT DIMENSIONS	A	B	C	D	E	F
DES-6000-152	37.9	12.9	75.4	10.5	6.0	6.6
DES-9000-152	47.9	16.3	75.9	11.0	1.0	5.5
DES-12000-152	53.4	17.2	75.9	11.0	*	5.5

* THIS BLOWER OUTLET EXTENDS 0.5" BEYOND CABINET.

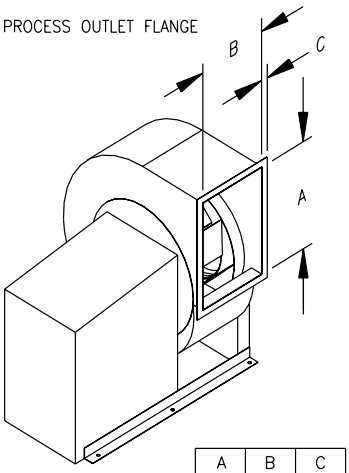
REACTIVATION	G
ELECTRIC	24.1
STEAM	42.1
GAS	42.1

ALL DIMENSIONS ARE IN INCHES
DIMENSIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

Dimensional Data - DES-( )-152-E/G/S

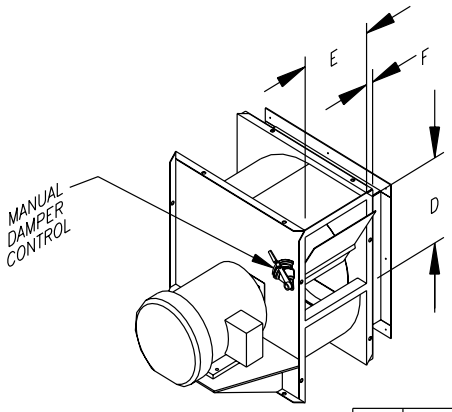
STANDARD OUTLETS

PROCESS OUTLET FLANGE



	A	B	C
DES-6000-152	20.50	13.88	1.25
DES-9000-152	27.13	19.13	1.50
DES-12000-152	30.25	20.13	1.50

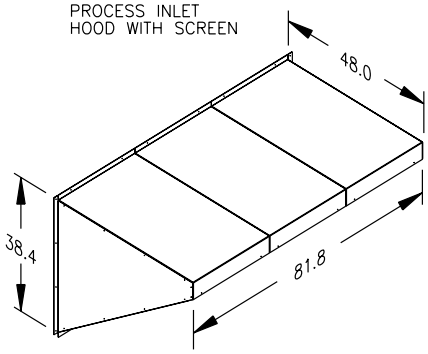
REACTIVATION OUTLET FLANGE



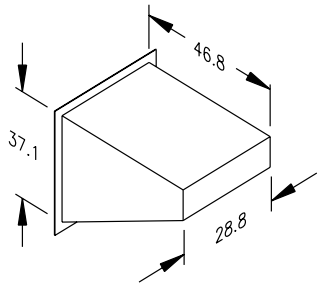
	D	E	F
DES-6000-152	12.00	10.69	1.00
DES-9000-152	13.25	11.75	1.06
DES-12000-152	13.25	11.75	1.06

INLET & OUTLET OPTIONS

PROCESS INLET HOOD WITH SCREEN

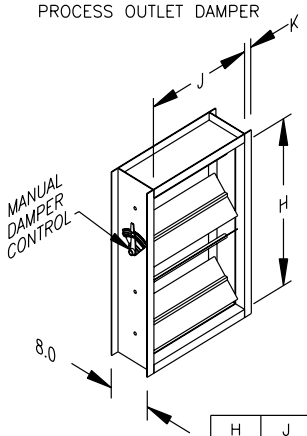


REACTIVATION INLET HOOD WITH SCREEN



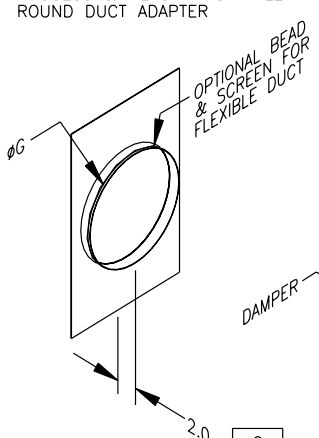
NOTE:
FOR DIMENSIONAL PURPOSES, IT SHOULD BE ASSUMED THAT ALL OPTIONAL OUTLETS ARE CENTERED OVER STANDARD DUCT CONNECTIONS.

PROCESS OUTLET DAMPER



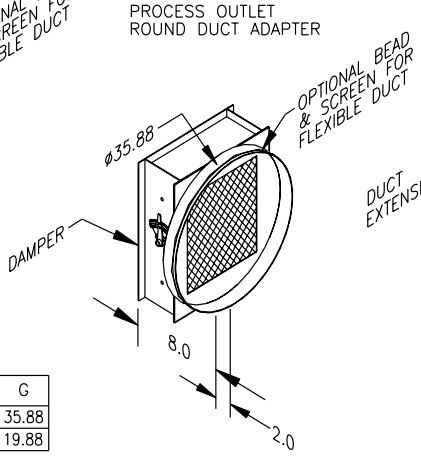
	H	J	K
DES-6000-152	20.75	13.75	1.50
DES-9000-152	26.75	18.75	1.50
DES-12000-152	29.75	19.75	1.50

PROCESS & REACTIVATION INLET ROUND DUCT ADAPTER

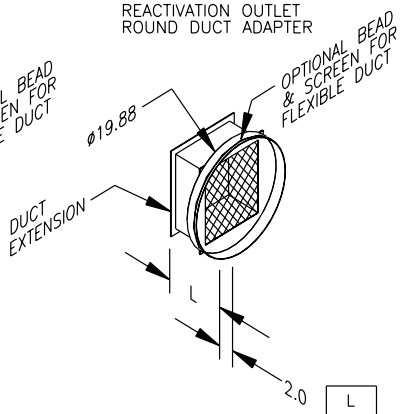


	G
PROCESS	35.88
REACTIVATION	19.88

PROCESS OUTLET ROUND DUCT ADAPTER

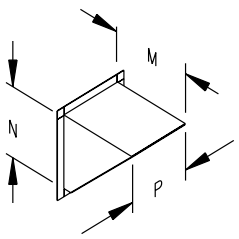


REACTIVATION OUTLET ROUND DUCT ADAPTER



	L
DES-6000-152	7.6
DES-9000-152	6.5
DES-12000-152	6.5

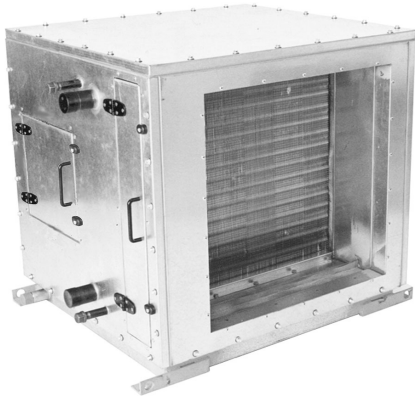
REACTIVATION OUTLET HOOD WITH SCREEN



	M	N	P
DES-6000-152	13.75	12.25	10.94
DES-9000-152	15.13	13.50	12.00
DES-12000-152	15.13	13.50	12.00

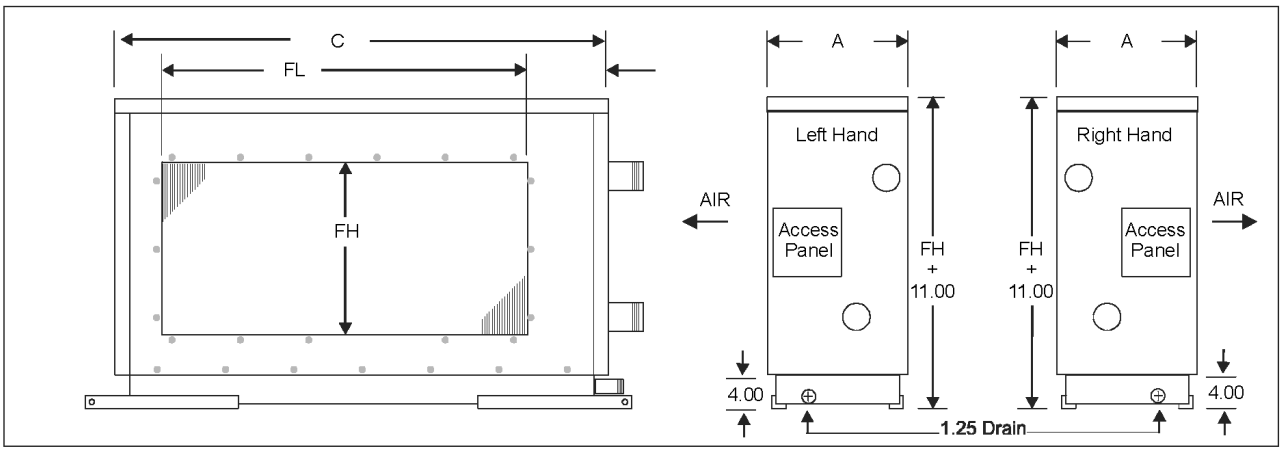
Duct Mounted Acessories

SATS offers duct mounted accessories for further conditioning the process air. Some applications may require control of temperature conditions as well as relative humidity levels. Duct mounted accessories are matched to the customer's requirements for temperature conditioning the supply air and then integrated with the dehumidification system. Duct mounted accessories may be controlled by the DESICAiR® dehumidifier controller or by an external control system.



A Modular Auxiliary Removable Coil (MARC) unit can be furnished in the return air stream or the process air stream as needed for your application. A MARC cased coil unit holds cooling coils and/or heating coils for pre or post cooling/heating the process air. It replaces coil sections in existing air handlers and is well suited for applications in tight spaces or where modular construction is required.

MARC unit cabinets may be constructed with either 16 gauge galvanized steel or 304 stainless steel. Double wall construction is available as an option. A convenient access panel is provided for easy coil removal. The coils are constructed using a variety of optional materials making them suitable for any application. Tubing is provided in copper, cupronickel, stainless steel, carbon steel or admiralty brass depending on the needs of the application. A stainless steel drain pan is included for the collection of condensation. Contact your SATS DESICAiR® sales representative for information on including this option with your dehumidification system.



STANDARD MATERIALS OF CONSTRUCTION	
Cabinet	0.058" Galvanized Steel
Base	0.138" Galvanized Steel
Drain Pan	0.060" Stainless Steel
Drain	Sch. 40 Stainless Steel
Insulation	0.75" x 1.50" Density
Lifting Lugs	0.25" x 1.50" x 2.00" Angle Iron

OPTIONAL FEATURES
Casing Material - 16 Gauge Galv. or 304 St. Steel
Cabinet - Single or Double Wall Construction
Internal Filter Rack w/ hinged access door
Split Back Panel For Coil Removal
External Vent & Extended Drain

Notes

NOTES

Globally close to you.

Stulz-ATS, located in Frederick, MD USA, is part of The STULZ Group with headquarters in Hamburg, Germany and production facilities world wide. Our network of manufacturer's representatives and sales partners span the globe, providing innovative solutions to your unique environmental control needs.

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www.stulz.com

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