

# **DRIEAZ<sup>®</sup>**

FIRST IN DRYING SOLUTIONS

## **OWNER'S MANUAL**

**SAFETY • WARRANTY • OPERATING INSTRUCTIONS  
MAINTENANCE • SPECIFICATIONS**



# **DRIFORCE**

**InterAir Drying System**

**PURCHASE DATE:** \_\_\_\_\_ **SERIAL NO:** \_\_\_\_\_

**DISTRIBUTOR:** \_\_\_\_\_

**THIS MANUAL CONTAINS IMPORTANT SAFETY WARNINGS ON PAGES 2 AND 3.  
PLEASE READ THESE AND SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.**

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## INTRODUCTION

The DriForce is an equipment system used in water damage restoration and restorative drying work. It is specifically designed for structural cavities like those between studs in walls, between joists in floors and ceilings, under and behind cabinets and other built-ins, above door and window headers, and many other areas that are difficult to access.

The system works because airflow across wet materials is a basic principle of drying. The DriForce will dry materials in either the injection mode (pushing dry air into wall cavities) or in the extraction mode (vacuuming moist air out of wall cavities) to maximize both drying speed and environmental considerations.

The DriForce blower has a stainless steel base and a double-wall polyethylene housing. It is connected to an Air Delivery System (ADS) made of flexible, crushproof polyethylene hose which is high-temperature resistant and cautioned-colored for visibility. The ADS is ended at any manifold by plugging it with a supplied end cap. The ADS attaches to manifolds with convenient slip-on hose cuffs. Up to 12 supply tubes are connected to each manifold, and lead to air nozzles that complete the air-delivery system.

The injection-molded plastic air nozzles have a tapered design to improve air delivery and create a tight seal. Fins on each side of the air nozzle allow

locking in place with a 90° turn, which is especially important when drying ceilings.

Three advantages of the DriForce are minimal damage, high coverage, and great versatility. The air nozzles create minimal damage because they need only small holes for installation, less than 1/4", making them easy to hide or repair. The system is high-coverage, providing everything you need to treat over 90 feet of 2x4 constructed wall. It is versatile because it can dry many combinations of walls, cabinets, ceilings, headers, etc., in either the injection or extraction mode.

While supplying the high volume and high pressure of air this technology demands, the DriForce uses less than 3 amps of standard 115-volt power. The blower unit itself weighs 14.5 pounds, about half the weight of a TurboDryer.

## SAFETY

### SAVE THESE WARNINGS

Dri-Eaz is concerned about the safety of everyone who uses or comes in contact with the DriForce. The DriForce is designed to be operated in compliance with the safety warnings and instructions provided in this manual.

Like other electrical devices, the DriForce can become dangerous if abused, damaged or misused. Failure to observe the following warnings can result in injury to persons, fire damage, or damage to the DriForce. To reduce the risk of electrical shock, fire, or personal injury, read and follow each of the warnings below before using the DriForce.

|   |
|---|
| <b>DANGER</b>   |
| Removal or alteration of the grounding plug, or use of an adapter that <u>defeats</u> the DriForce's electrical grounding, can create risk of serious personal injury or fire in the event of damage to or malfunction of this product. Do not use the DriForce for any reason if they cannot be properly grounded. If you are unsure whether a receptacle is grounded, test the outlet with a receptacle tester or consult an electrician. |

**Keep a Neat and Clean Installation.** Locate the ADS out of heavy traffic areas. This not only gives a professional appearance, it also reduces any possible hazard of tripping accidents or becoming entangled with the installation.

**Do Not Use to Extract Water.** The DriForce is used to move air, not water. Do not use the DriForce as a vacuum for extraction of water or debris.

**Keep the Blower Grounded:** Always operate the DriForce with the three pronged grounding plug and

a grounded electrical outlet. Never remove this three-pronged plug. Do not use an ungrounded extension cord or an ungrounded adapter. The grounding prong on the plug is an essential safety feature that helps reduce the risk of shock or fire in the event of an electrical hazard.

**Extension Cords:** Extension cords must be grounded and be able to deliver the appropriate voltage to the DriForce. An extension cord up to 25 feet in length must have 16 AWG wire or heavier. An extension cord up to 50 feet in length must have 14 AWG wire or heavier.

**Protect the Power Cord From Damage:** Never operate the DriForce with cut, nicked, abraded, frayed or otherwise damaged power cords or extension cords as this may lead to electrical or fire hazards. Never unplug the DriForce by pulling on the cord. Grasp the plug firmly and pull straight out. Take precautions not to use the cord in a way where damage may occur. Keep cords away from heated surfaces. Inspect cords before each use and replace cords that show signs of damage.

#### WARNING

To reduce the risk of fire or electric shock, do not use a DriForce with a solid-state speed control device.

**Keep Motor Dry:** Never allow water inside the DriForce motor. If the motor becomes wet for any reason, thoroughly dry it before use.

**Keep Children Away:** Do not allow children to play with or around the DriForce. Be sure the DriForce is inaccessible to children when unattended. Children can hurt themselves by playing with or around the DriForce. Secure all areas in which the unit is left unattended while running.

**Handle With Care:** Do not drop or throw the DriForce for any reason. Rough treatment can damage the motor, wiring or motor, creating a hazardous condition.

**Run on Stable Surface:** Always operate the DriForce on a stable flat surface such as the floor. Do not operate the unit from places where it can fall or be pulled down causing injury. Beware that the unit may vibrate or be pulled from smooth surfaces such as counter tops and cause an injury, fire or electrical hazard.

**Air Intakes Must Be Clear:** Operate the DriForce away from draperies and other materials that may come in contact with the air intakes. Do not allow any material to clog or block air intakes, as this may cause the unit to overheat and result in a fire or electrical hazard.

**Keep Foreign Matter Out:** Do not allow oil, grease, solvents or other matter (including sawdust and drywall dust) to be drawn into the air intakes of the DriForce. Never direct fogged or liquid chemicals of any kind into the air intakes of the unit.

#### CAUTION

Never operate the DriForce in pooled or standing water, as this may create a risk of serious injury from electrical shock.

**Keep Away From Heaters:** Do not use the unit circulating hot air by placing the intakes close to a heater. The housing could melt or the motor could overheat and cause a fire or electrical hazard.

**Don't Modify Unit:** Never modify the motor, wiring or casing of the DriForce for any reason. Modifications to the unit can lead to fire or electrical hazards.

**Share Owners Manual:** Be sure to include a copy of the DriForce Owners Manual whenever you loan, rent, or otherwise allow someone else to use your DriForce. They need the same safety information that you require for safe efficient operation. Make sure that all technicians and operators have read and understand the manual.

**Maintenance or Repair:** Do not attempt to disassemble or repair the DriForce if you are not qualified to do so. If the DriForce is not working as it should, return it to Dri-Eaz or an authorized dealer or distributor for servicing. Note: For information about authorized repair and maintenance call Dri-Eaz Products, Inc. at (360) 757-7776.

#### DANGER

Do not attempt to service or clean the DriForce while it is plugged into an electrical outlet or while the blower is operating as this may lead to risk of electrical shock or injury. It is dangerous for an unqualified individual to attempt to disassemble or repair the DriForce.

## 7-YEAR WARRANTY

**Arrival Inspection:** When your DriForce arrives, check immediately for signs of shipping damage. If you do notice any damage, report it to your supplier and the shipping company immediately. It is important to save the shipping carton for claim purposes.

**Carton Retention:** DriForce cartons are specially designed to help protect against shipping damage. Save the carton if at all possible. If your Unit ever needs repairs at a remote location, the unit should be packed and shipped in its original carton.

Please stop before proceeding and fill out the warranty card enclosed with the unit. Dri-Eaz Products,

Inc. can provide warranty service only to registered owners.

**7-Year Housing Warranty:** Dri-Eaz promises to repair or replace the polyethylene housing to correct defects in materials and workmanship for seven years.

**2-Year Comprehensive Warranty:** Dri-Eaz promises to the original purchaser to repair or replace any part of a DriForce that proves to be defective in workmanship or materials for a period of two years from the date of purchase.

**1-Year ALL COSTS Warranty:** During the first year, Dri-Eaz will cover all material, labor and shipping costs, to and from the service center. After one year, the customer is responsible for labor costs and shipping costs to and from the service center.

**Limitations:** This warranty shall not extend to any products showing effects of misuse, disassembly, alteration, lack of proper maintenance, corrosive chemicals, improper voltage, accident damage, unauthorized repairs, use of other than genuine parts and materials, fire, flood, normal wear or any other causes beyond Dri-Eaz Products' control. The warranty obligation extends only to the repairs or replacement of parts found, upon Dri-Eaz Products' examination, to be defective. The foregoing constitutes the entire warranty and no other warranty, liability, contingency or responsibility, direct, indirect, consequential or in any way connected with the sale or operation of products is expressed or implied. This warranty gives you specific legal rights. You may have additional rights under law, which vary from state to state.

**DANGER**

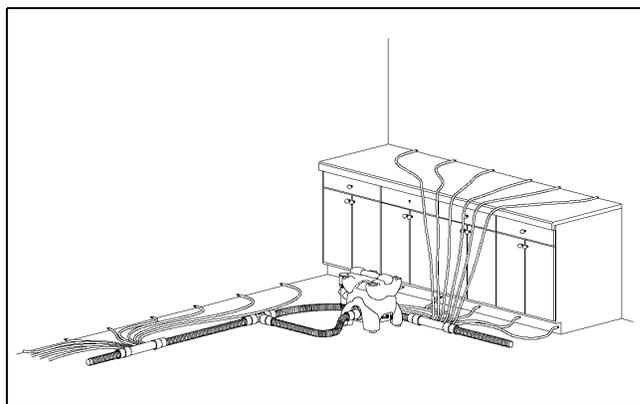
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**To receive warranty service:** You must write in or call for a Return Authorization. No parts will be accepted without the serial number of the equipment the part was taken out of and an authorization number, nor will any credit be given until the defective parts are received. Please direct questions on the warranty to an authorized distributor or Dri-Eaz at (360) 757-7776.

## PRINCIPLES OF DRYING

Moisture trapped in and behind building materials can result in extensive damage, and also can raise health and safety concerns such as respiratory illness associated with mold and mildew.

Whether excessive moisture is present or not, and where it is located, is best determined using professional moisture detection equipment such as penetrating and non-penetrating moisture meters, and thermo-hygrometers that measure the amount of moisture present in the air as water vapor. The use of marks or colored stick-on paper tabs can help monitor the job. Keeping moisture and humidity records can provide an accurate job history for the customer.



The DriForce will deliver air to structural cavities in walls, ceilings, under and above cabinets, and many other areas.

The science of drying structures depends on removing moisture that is potentially harmful. One basic principle is that airflow speeds up the rate of evaporation. Creating air movement in any problem areas will tend to speed evaporation and reduce the potential for problems. A second principle of drying is to dehumidify the air in the area being dried. A third is to add heat, as practical.

The DriForce employs all three of these drying principles. Air is pushed or pulled through air nozzles, either into or out of structural cavities. In both cases, air movement in the cavities speeds up the drying process. Dehumidification can be improved, when forcing air into cavities, by making sure that the air entering the DriForce is as dry as possible, usually by using a refrigerant or desiccant dehumidifier. Finally, heat generated by the DriForce blower motor enters the airflow through the ADS, increasing the temperature of the air it provides for drying.

# OPERATING INSTRUCTIONS

## Tools

Tools you will need are: pencil, tape measure, razor knife, drywall taping knife, small pry bar, nail puller, screw driver, a carpet awl for creating holes, and sometimes a drill with a 3/16" bit.

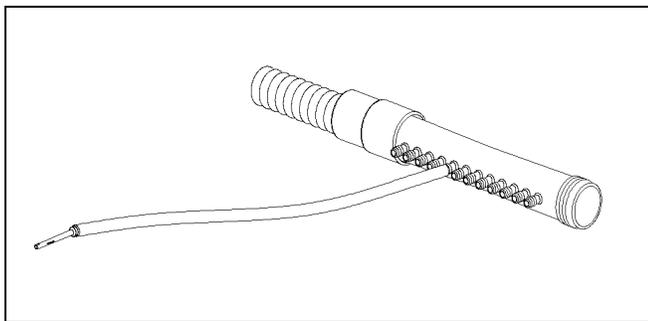
## Wall Preparation

In most cases of wet walls, remove baseboard or cove base. First, use a razor knife to score along the top of the base where it meets the wall, to reduce damage to the painted surfaces and make a professional re-installation easier. When prying base away from the wall, protect the wall surface by inserting a drywall knife between the pry bar and the wall. Pull remaining nails out of the wall, or through the back of the baseboard. Write a number on the wall and the corresponding base so you will know where to reapply it.

Starting 8 inches from an inside or outside corner of the wall, make a mark. This should be at about the center of a stud cavity. Now move the tape to that mark, and mark the wall every 16 inches. An electronic Stud Finder is a very helpful tool when doing this, and is available at most hardware and home centers. The goal is to provide at least one hole between each set of studs.

## Making Holes

Now make holes for air nozzles at each mark, usually just over the sill plate, which is a 2x4 laid flat on a wood or concrete subfloor. These holes should



ADS runs from the DriForce blower and attaches with a standard hose cuff to a manifold. Supply tubes run from the manifold to air nozzles that are inserted into a wall or other structural cavity.

be approximately 2 inches above the floor, but below the line indicating the top of the baseboard. The easiest way is to punch holes with a carpet awl. You can also use a drill with a 3/16" bit. A larger hole would be more time-consuming to patch, and would somewhat decrease efficiency by leaking air.

In cases of rubber cove base or elaborate baseboards, it may be best to drill above them, and carefully patch the small holes later.

When making holes into cavities like those in cabinets, headers, and ceilings, think ahead about reducing your repair later on. For example, when drying behind cove base, sometimes you may be able to peel down the cove base each 16 inches, just enough to insert the air nozzle. The small area were peeled can be re-glued, saving complete replacement of the molding.

## Steel Studs

Steel studs are common in commercial buildings. They are set in a channel that can hold large volumes of water. To access these areas, drill holes approximately 1/2 inch from the floor at a downward angle. Extract standing water with your extraction equipment before attempting to dry. Do NOT use the DriForce to try to extract standing water of any kind.

### CAUTION

The DriForce is used to move air, not water. Do not use the DriForce as a vacuum for extraction of debris or standing water of any kind.

## Odor and Mold Control

For problems from odors associated with mold and mildew, use a MicroMist to apply a properly diluted product such as Milgo or Milgo-SR to the inside of the wall. Used with any pump sprayer, the MicroMist wand slips into the same hole used for the air nozzle, and can be used to saturate approximately the bottom two feet of a wall cavity.

If you suspect that mold and mildew may be growing inside cavities, follow the mold remediation and antimicrobial safety precautions as outlined in the IICRC S500 Standard for Water Damage Restoration.

## DriForce Blower Setup

Set the DriForce blower in any convenient location, but out of traffic areas as much as possible, to minimize a trip-and-fall hazard from the blower and the ADS.

Use the muffler-filter when the DriForce in the air injection mode. This will reduce blower noise substantially, and also filter out large particles from being sucked through the blower. Place the muffler-filter on the air intake connector, and place the ADS on the air outlet connector.

When using the DriForce in the air extraction mode, it is recommended not to use the muffler-filter, but to use a HEPA Filter accessory. See "Extraction Drying."

For maximum efficiency, run a short length of ADS to a T Fitting, and then approximately equal lengths of ADS in opposite directions to wet areas being treated. Two shorter lengths of ADS running from each side of a T Fitting give better airflow than one long installation in a line.

Use a hose clamp on the outlet fitting of the DriForce, and another where the first ADS meets the first manifold.

Use at least two manifolds in the air injection mode for greatest efficiency. Notice the ventilation ports on the bottom of the stainless steel base of the DriForce blower. Covering up or clogging these ventilation ports can cause the blower to run at a higher temperature which will shorten its life. Keep loose rags, fabrics, dirt, or other debris from covering or clogging the ventilation ports.

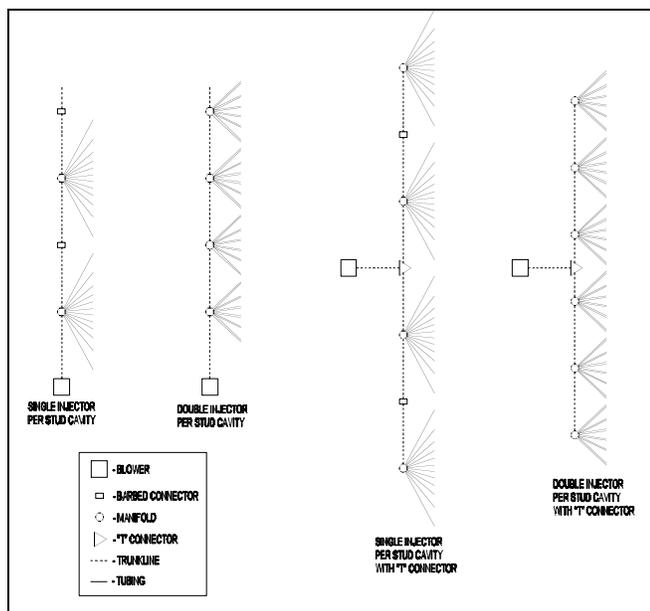


Diagram shows two inline ADS lines (left), and two double-ADS lines running from a T Fitting. It also shows tubing layouts for one or two air nozzles into each wall cavity.

### Laying Out Manifolds

Next, determine the number of manifolds needed for the job. The following procedure will give 25 to 30 air exchanges per hour in each cavity, which is effective for most situations. Use a formula of one manifold (12 air nozzles) for each 14 feet of interior or 2x4 framed wall. For 2x6 exterior framed walls, common walls in apartments and condos, double-sheeted fire walls, and dense or water-resistant covered walls, use a formula of one manifold (12 air nozzles) for each 7 feet of wall. Wainscoted, tile-covered, or multiple-thickness walls may benefit from using twice the number of air nozzles.

After determining the number and distance of manifolds, set up the ADS system. Pre-assembling the manifolds, tubing and air nozzles will save considerable setup time.

If possible, direct air from the blower through a short section of ADS to the T Fittings, then run the ADS from both sides of the T. This will enhance performance by balancing the airflow. You can also use the T Fittings to dry in several rooms at once.

### Laying Out Supply Tubes

Supply tube layouts will vary according to the job, especially when running air nozzles above wainscots or cabinets, into ceilings, etc.

The most versatile setup for most standard wall-drying jobs is as follows:

Set up FIVE manifolds with the following lengths of tubing:

| Quantity | Length   | Locations on Manifolds |
|----------|----------|------------------------|
| 2        | 7.5 feet | Outlets 1 and 12       |
| 2        | 6.5 feet | Outlets 2 and 11       |
| 2        | 5.5 feet | Outlets 3 and 10       |
| 2        | 4.5 feet | Outlets 4 and 9        |
| 2        | 2.5 feet | Outlets 5 and 8        |
| 2        | 1 foot   | Outlets 6 and 7        |

Set up the other THREE manifolds with the following lengths of tubing:

| Quantity | Length   | Locations on Manifolds  |
|----------|----------|-------------------------|
| 4        | 4 feet   | Outlets 1, 2, 11 and 12 |
| 4        | 3.5 feet | Outlets 3, 4, 10 and 11 |
| 4        | 1 foot   | Outlets 5, 6, 9 and 10  |

To each outlet on a manifold, attach a length of supply tubing, and insert an air nozzle in the other end of the tubing.

Seal off the last manifold on each run of ADS with a supplied endcap plug. Now place the air nozzles into the holes you have drilled or punched.

Although not necessary in most cases, it is sometimes helpful to awl-punch or drill a small vent hole placed just above the highest moisture point on the wall. This vent hole can speed up the drying process by supplying more dry air to affected materials. The small size of the hole often allows you to patch it with little difficulty.

### Standard Drying Procedure

Now you are ready to dry. Make sure you have undamaged electrical cords, plugs, extension cords if used, and circuits with 3 amps of available power. Turn on the power switch, and ensure that all the ADS, T Fittings, hose cuffs, manifolds, supply lines,

and air nozzles are properly installed with minimum air leakage.

Attach the ADS to the vacuum side of the DriForce blower unit. For the first portion of the job, it is recommended to use the system in the vacuum or extraction mode to remove the bulk of the humidity laden air from structural cavities. (See "Extraction Drying.") Run in the vacuum mode until the specific humidity in the affected area of the job reads the same or lower as the specific humidity in an unaffected area of the job.

After the humidity in the affected area of the job is the same or lower as that in an unaffected area, move the ADS from the vacuum to the pressure outlet of the DriForce and install the muffler-filter. You will now be forcing air at high pressure into the structural cavity, to finish the drying process.

### Extraction Drying

As explained above, drying by vacuuming air from structural cavities, setting up the DriForce in the extraction mode can speed drying times. Also, using the extraction mode ensures that wet and possibly contaminated air does not get forced into previous dry and unaffected areas.

When using the DriForce in the vacuum or extraction mode, do not exhaust the air into an occupied structure. Use vacuum hose to exhaust the air to the outdoors, completely outside the structure, or use a HEPA Filter Attachment that is available as an accessory. This will ensure that contaminants (including moisture, mold spores, mold mycotoxins and by-products) are not transferred from within structural cavities into an occupied area. Contaminants may create health concerns such as allergic reactions and illness.

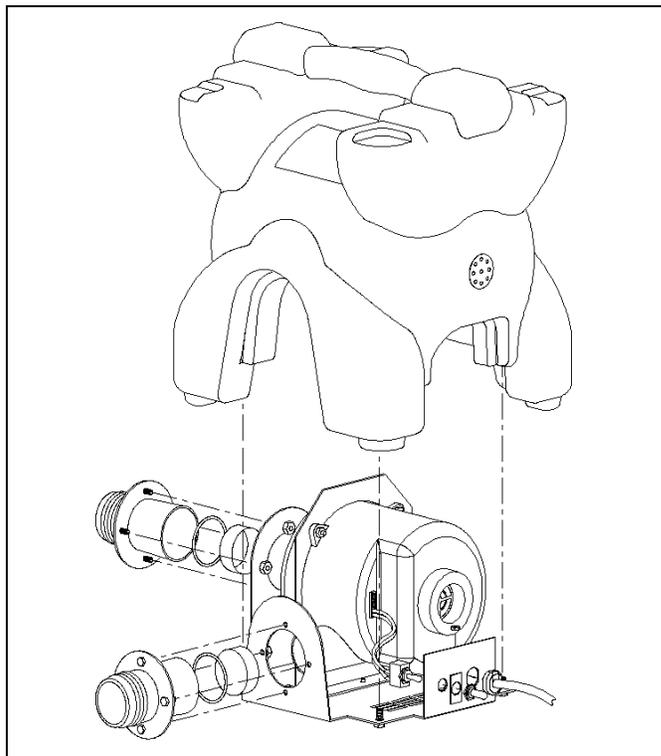
Do not use the muffler-filter that is supplied with the DriForce in the vacuum or extraction mode. This filter is not a HEPA-grade filter, and will not meet the requirement to ensure that possible contaminants are not exhausted into an occupied area. Use the muffler-filter only in the injection or blowing mode.

#### CAUTION

When using the DriForce in the vacuum or extraction mode, exhaust the air to the outdoors or use a HEPA filter attachment, to ensure that possible contaminants are not exhausted into an occupied area.

### Drying Ceilings and Cabinets

Drying ceilings is accomplished in much the same manner as walls, and can be done at the same time as wall drying. Remember that ceiling joists are usually a minimum of 2x6. This large size lumber and larger structural cavities will require more air nozzles.



For service or repair, remove four screws that hold the stainless steel base to the polyethylene housing.

Drying under and behind cabinets is often a challenge, as it is difficult to measure trapped moisture, and also difficult to access the areas with tubing and air nozzles. If your moisture measurements are unsure, it is better to assume that materials are wet. Wherever water flowed, make sure you provide flowing dry air. When necessary, remove, dry, and reset cabinets.

### Supplying Extra-Dry Air

To increase drying speed when forcing air into cavities, ensure that that air going into the DriForce blower is as dry as possible. One way is to position the output airflow from a dehumidifier near the DriForce air inlet.

Even better is to attach ducting to the air output from the dehumidifier and lay it near the DriForce. Attach a short piece of ADS to the air inlet of the DriForce, and slip the other end a foot or two up into the ducting from the dehumidifier. Do NOT tape up or completely seal such ducting. This would probably unbalance the airflow through the dehumidifier, and could even damage the dehumidifier.

The DriTec 150 (115-volt) desiccant dehumidifier design is nearly perfect for use with the DriForce. The airflow from the DriTec 150 is a close match to the airflow into the DriForce. The airflow from just one of the two process outlets from the DriTec 325 (230-volt) desiccant dehumidifier is also a close

match, and will work very well combined with the DriForce.

Super-dry air from a DriTec can be especially helpful to speed up a drying job, or to dry difficult materials like lath and plaster, double-sheeted or fire walls, insulated walls, and walls covered with vinyl wallpaper or impermeable paint.

After drying is complete, you must fill any holes you have created. Remember that your local fire code applies to outside walls and firewalls, and you must repair up to code. Special fireproof caulks and tapes are available that can be helpful.

### Operating Instructions Summary

The DriForce will help restore building materials in walls, ceilings, headers, cabinets, and other structural cavities to their pre-loss condition. The rapid high-volume air it delivers removes moisture that was trapped in the cavity. The DriForce will dry several difficult areas at once, such as cavities below cabinets, the walls behind the same cabinets, and the ceilings above these same cabinets or walls. The versatility of the DriForce InterAir Drying System, combined with TurboVents and Mini-TurboVents, TurboDryers, and DrizAir or DriTec dehumidifiers, all combine to form a dynamic drying team.

The DriForce InterAir Drying System from Dri-Eaz Products is versatile and easy to use. It will provide you with years of service, removing moisture from difficult-to-access areas on job after job. The DriForce will help you provide a superior restoration

service to your customers by returning the property to pre-loss conditions faster, and saving the insurance company unnecessary reconstruction costs.

|  |
|--|
| <b>DANGER</b>  |
| Do not attempt to service or clean the DriForce while it is plugged into an electrical outlet or while the blower is operating as this may lead to risk of electrical shock or injury. It is dangerous for an unqualified individual to attempt to disassemble or repair the DriForce. |

### MAINTENANCE

Proper maintenance will keep your DriForce InterAir Drying System in good condition for years to come.

Check both the inlet and outlet of the DriForce unit for obstructions or debris after each use.

Inspect the muffler filter, and clean as needed by vacuuming or washing. You can further clean the filter by washing with Dri-Eaz brand Milgo or Milgo-SR, at dilution rates shown on their labels.

Check manifolds, tubing, air nozzles and other ADS components, and replace if needed.

Shine the DriForce housing and other components with a vinyl cleaner, like the one you use on the dashboard of a car.

Service parts, plus other maintenance and warranty information, are available from the Dri-Eaz Service Department. Telephone (360) 757-7776, extension 238, or fax (360) 757-6784.

### SPECIFICATIONS

|                                      |   |  |
|--------------------------------------|---|--|
| Dimensions (Height – Length – Depth) | 14 x 14 x 12 inches   | 35 x 35 x 30   |
| Total System Airflow (maximum)       | 100 cfm (cubic feet per minute)<br>6,000 cubic feet per hour  | 2.3 cmm (cubic meters per minute)<br>170 cubic meters per hour       |
| Static Pressure (maximum)            | 60 inches (water lift)  | 152 cm (water lift)  |
| Weight (DriForce Blower only)        | 14.5 lbs.   | 6.3 kg   |
| Air Nozzle Hole Size                 | Less than <u>  </u> inch  | Less than 6 mm   |
| ADS Air Delivery System              | 13 sections, 7 feet each (91 feet total)<br>1.5-inch “magnum” crush-proof   | 13 sections, 2 meters each (28 total)<br>3.8 cm “magnum” crush-proof |
| Flexible Tubing                      | 400 feet of 3/8” ID   | 122 meters of 0.375 mm ID  |
| Power Draw (115 Volts)               | 4.8 amps (maximum)<br>3.0 amps (average application)  |  |
| Carrying-Storage System              | 2 “suitcase” duffel bags with handle and wheels   |  |
| Drying Modes                         | Either Positive or Negative Pressure  |  |
| Parts                                | 100 air nozzles, 8 manifolds (12 outlets each), 4 manifold endcaps, 4 coupler fittings, 2 hose clamps, 2 T Fittings, 13 hose assemblies with cuffs, 25 tube extender connections, 1 muffler |  |
| Warranty                             | 7 Year (Housing) – 2 Years (Comprehensive) – 3 Years (All Costs Incl. Shipping)   |  |
| Safety Listings                      | UL, C-UL  |  |

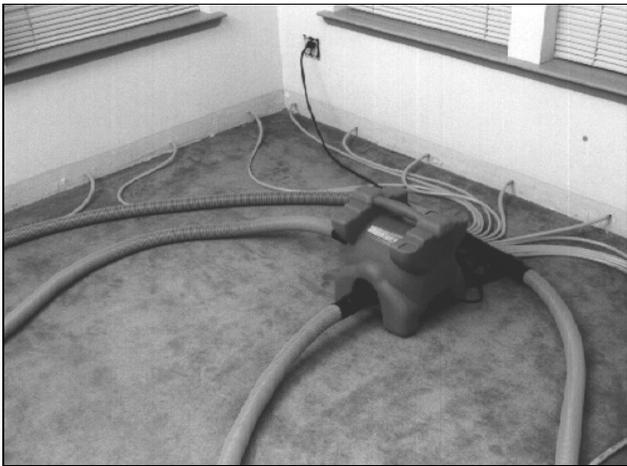
# DRI-EAZ

## DRIFORCE USER'S GUIDE

Congratulations on your selection of a DriForce InterAir Drying System from Dri-Eaz Products Inc.

It is our goal to offer you the best high performance drying system available.

We invite your written appraisal and suggestions for improvements.



The DriForce is designed to speed the drying time of structural cavities – the internal spaces created by various construction methods that sometimes trap unwanted moisture. By pulling moist air out of such spaces, or pushing warm and dry air into them, the DriForce system helps dry structural materials with savings in time and money.

**This guide contains important operating information.  
Please read before using the machine, and save for future reference.**

**PURCHASE DATE:** \_\_\_\_\_ **SERIAL NO.:** \_\_\_\_\_

**DEALER:** \_\_\_\_\_



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## **INTRODUCTION**

The DriForce is an equipment system used in water damage restoration and restorative drying work. It is specifically designed for structural cavities like those between studs in walls, under and behind cabinets and other built-ins, between joists in floors and ceilings, above door and window headers, and many other areas that are difficult to access.

The system works because airflow across wet materials is a basic principle of drying. The DriForce will dry materials in either the injection mode (pushing dry air into wall cavities) or in the extraction mode (vacuuming moist air out of wall cavities) to maximize both drying speed and environmental considerations.

The DriForce blower has a stainless steel base and a double-wall polyethylene housing. It is connected to an Air Delivery System (ADS) made of flexible, crushproof polyethylene hose which is high-temperature resistant and caution-colored for visibility. The ADS is ended at any manifold by plugging it with a supplied end cap. The ADS attaches to manifolds with convenient slip-on hose cuffs. Up to 12 supply tubes are connected to each manifold, and lead to air nozzles that complete the air-delivery system.

The injection-moulded plastic air nozzles have a tapered design to improve air delivery and create a tight seal. Fins on each side of the air nozzle allow locking in place with a quarter turn, which is especially important when drying ceilings.

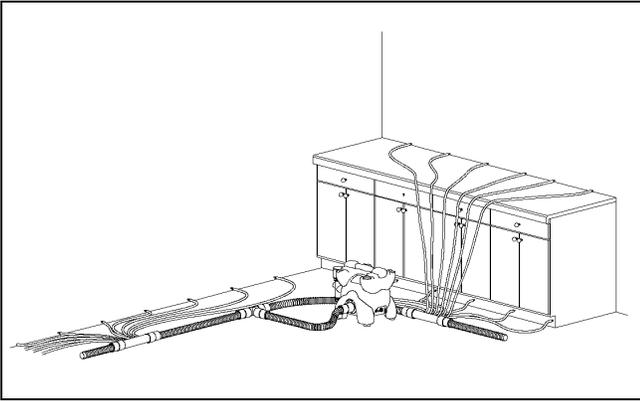
Three advantages of the DriForce are minimal damage, high coverage, and great versatility. The air nozzles create minimal damage because they need only small holes for installation, less than 5 mm, making them easy to hide or repair. The system is high-coverage, providing everything you need to treat over 28 meters of stud-constructed wall. It is versatile because it can dry many combinations of walls, cabinets, ceilings, headers, etc., in either the injection or extraction mode.

While supplying the high volume and high pressure of air this technology demands, the DriForce uses quite a small draw of electrical power (less than 5 amps maximum, and less during normal operation). The blower unit itself is easy to carry because of its light weight, about half that of a TurboDryer.

## **PRINCIPLES OF DRYING**

Moisture trapped in and behind building materials can result in extensive damage, and also can raise health and safety concerns such as respiratory illness associated with mould and mildew.

Whether excessive moisture is present or not, and where it is located, should be determined by using professional moisture-detection equipment such as penetrating and non-penetrating moisture meters, and thermo-hygrometers that measure the amount of moisture present in the air as water vapour. Keeping moisture and humidity records is essential to provide an accurate job history for the customer.



The DriForce will deliver air to structural cavities in walls, ceilings, under and above cabinets, and many other areas.

The science of drying structures depends on removing moisture that is potentially harmful. One basic principle is that airflow speeds up the rate of evaporation. Creating air movement in any problem areas will tend to speed evaporation and reduce the potential for problems. (This is especially true when air is held stagnant within structural cavities.) A second principle of drying is to dehumidify the air in the area being dried. A third is to add heat, as practical.

The DriForce employs all three of these drying principles. Air is pushed or pulled through air nozzles, either into or out of structural cavities. In both cases, air movement in the cavities speeds up the drying process. Dehumidification can be improved, when forcing air into cavities,

by making sure that the air entering the DriForce is as dry as possible, usually by using a refrigerant or desiccant dehumidifier. Finally, heat generated by the DriForce blower motor enters the airflow through the ADS, increasing the temperature of the air it provides for drying.

## **OPERATING INSTRUCTIONS**

### **Tools**

Tools you will need are: pencil, tape measure, razor knife, drywall taping knife, small pry bar, nail puller, screw driver, a carpet awl for creating holes, and sometimes a drill with a 4 to 5 mm bit.

### **Wall Preparation**

In most cases of wet walls, remove skirting board or cove moulding. First, use a razor knife to score along the top of the skirting board or cove moulding where it meets the wall, to reduce damage to painted surfaces and make a professional re-installation easier. When prying skirting board away from the wall, protect the wall surface by inserting a drywall knife between the pry bar and the wall. Pull remaining nails out of the wall, or through the back of the skirting board. Write a number on the wall and the corresponding board so you will know where to reapply it.

Starting from an inside or outside corner of the wall, make a mark at about the center of a stud cavity. Now move a tape measure to that mark, and mark the wall at each stud cavity center. An electronic Stud Finder is a very helpful tool when doing this, and is available at most hardware and home centers. The goal is to provide at least one hole into each structural cavity. Larger cavities, and those with more soaking, will benefit from one or more additional holes.

### **Making Holes**

Now make holes for air nozzles at each mark, usually just over the sill plate, but below the line indicating the top of the skirting board. The easiest way is to punch holes with a carpet awl. You can also use a drill with a 4 to 5 mm bit. A larger hole would be more time-consuming to patch, and would somewhat decrease efficiency by leaking air.

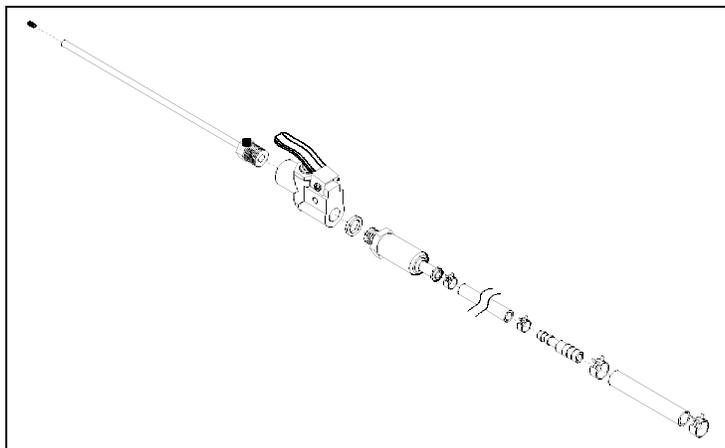
In cases of rubber cove moulding or elaborate skirting boards, it may be best to drill above them, and

When making holes into cavities like those in cabinets, headers, and ceilings, think ahead about reducing your repair later on. For example, when drying behind cove moulding, sometimes you may be able to peel down the cove moulding at the center of each stud cavity, just enough to insert the air nozzle. The small area were peeled can be re-glued, saving complete replacement of the moulding.

## Steel Studs

Steel studs are common in commercial buildings. They are set in a channel that can hold large volumes of water. To access these areas, open holes in the plaster board to inspect, and if needed extract the water using a thin wand from a wet-dry vacuum or your extraction equipment. Do this before attempting to dry with a DriForce. Do NOT use the DriForce to try to extract standing water of any kind.

## Odor and Mould Control



The MicroMist wand uses the same holes made for the DriForce air nozzles to spray Milgo or Milgo-SR directly into a structural cavity. The MicroMist is an available accessory for the DriForce.

For problems from odors associated with mould and mildew, use a MicroMist to apply a properly diluted product such as Milgo or Milgo-SR to the inside of the wall. Used with any pump sprayer, the MicroMist wand slips into the same hole used for the air nozzle, and can be used to saturate approximately the bottom two feet of a wall cavity.

If you suspect that mould and mildew may be growing inside cavities, follow professional mould remediation and antimicrobial safety precautions, such as those outlined in the IICRC S500 Standard for Water Damage Restoration.

## DriForce Blower Setup

Set the DriForce blower in any convenient location, but out of traffic areas as much as possible, to minimize a trip-and-fall hazard from the blower and the ADS.

Use the muffler-filter when the DriForce in the air injection mode. This will reduce blower noise substantially, and also filter out large particles from being sucked through the blower. Place the muffler-filter on the air intake connector, and place the ADS on the air outlet connector.

When using the DriForce in the air extraction mode, it is recommended not to use the muffler-filter, but to use a HEPA Filter accessory. See "Extraction Drying."

For maximum efficiency, run a short length of ADS to a T, and then approximately equal lengths of ADS in opposite directions to wet areas being treated. Two shorter lengths of ADS running from each side of a T give better airflow than one long installation in a line.

Use at least two manifolds in the air injection mode for greatest efficiency. Notice the ventilation ports on the bottom of the stainless steel base of the DriForce blower. Covering up or clogging these ventilation ports can cause the blower to run at a higher temperature which will shorten its life. Keep loose rags, fabrics, dirt, or other debris from covering or clogging the ventilation ports.

## Laying Out Manifolds

Next, determine the number of manifolds needed for the job. The following procedure will give 25 to 30 air exchanges per hour in each cavity, which is effective for most situations. Use a formula of one manifold (12 air nozzles) for each 4 meters of interior or stud-framed wall. For exterior framed walls, common walls in apartments and condos, double-sheeted fire walls, and dense or water-resistant covered walls, use a formula of one manifold (12 air nozzles) for each 2 meters of wall. Wainscoted, tile-

After determining the number and distance of manifolds, set up the ADS system. Pre-assembling the manifolds, tubing and air nozzles will save considerable setup time.

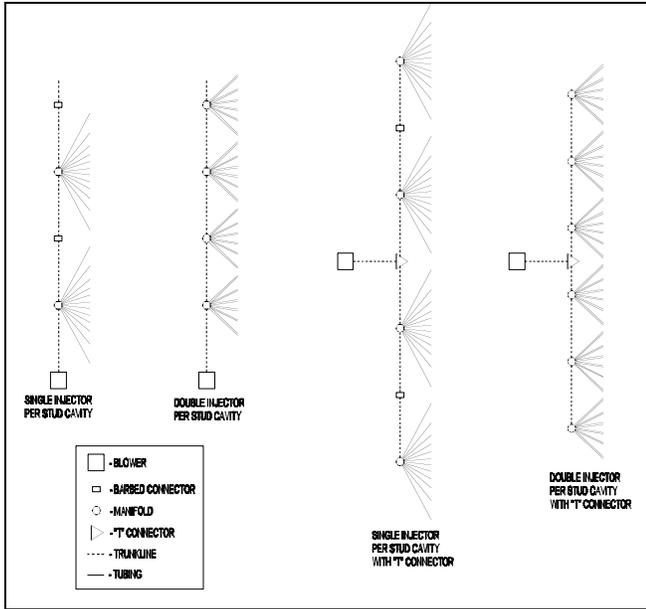


Diagram shows two inline ADS lines (left), and two double-ADS lines running from a T connector. It also shows tubing layouts for one or two air nozzles into each wall cavity.

If possible, direct air from the blower through a short section of ADS to the T-connectors, then run the ADS from both sides of the T. This will enhance performance by balancing the airflow. You can also use the T-connectors to dry in several rooms at once.

Set up FIVE manifolds with the following lengths of tubing:

| Quantity | Length | Locations on Manifolds |
|----------|--------|------------------------|
| 2        | 250 cm | Outlets 1 and 12       |
| 2        | 200 cm | Outlets 2 and 11       |
| 2        | 150 cm | Outlets 3 and 10       |
| 2        | 100 cm | Outlets 4 and 9        |
| 2        | 70 cm  | Outlets 5 and 8        |
| 2        | 30 cm  | Outlets 6 and 7        |

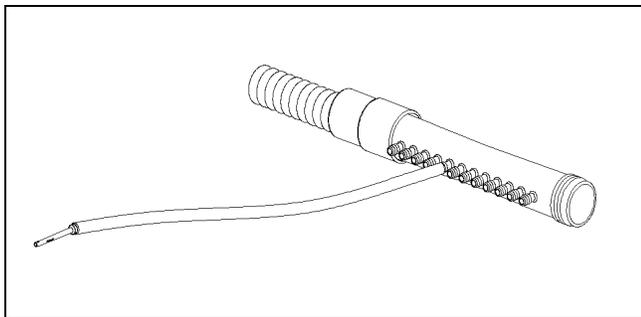
Set up the other THREE manifolds with the following lengths of tubing:

| Quantity | Length | Locations on Manifolds  |
|----------|--------|-------------------------|
| 4        | 125 cm | Outlets 1, 2, 11 and 12 |
| 4        | 100 cm | Outlets 3, 4, 10 and 11 |
| 4        | 30 cm  | Outlets 5, 6, 9 and 10  |

## Laying Out Supply Tubes

Supply tube layouts will vary according to the job, especially when running air nozzles above wainscots or cabinets, into ceilings, etc.

The most versatile setup for most standard wall-drying jobs is as follows:



ADS runs from a DriForce blower and attaches with a standard hose cuff to a manifold. Thence, supply tubes run to air nozzles inserted into structural cavities.

To each outlet on a manifold, attach a length of supply tubing, and insert an air nozzle in the other end of the tubing.

Seal off the last manifold on each run of ADS with a supplied endcap plug. Now place the air nozzles into the holes you have drilled or punched.

Although not necessary in most cases, it is sometimes helpful to awl-punch or drill a small vent hole placed just above the highest moisture point on the wall. This vent hole can speed up the drying process by supplying more dry air to affected materials. The small size of the hole often allows you to patch it with little difficulty.

## Standard Drying Procedure

Now you are ready to dry. Make sure you have undamaged electrical cords, plugs, extension cords if used, and circuits with 5 amps of available 230v power. Turn on the power switch, and ensure that all the ADS, Ts, hose cuffs, manifolds, supply lines, and air nozzles are properly installed with minimum air leakage.

Attach the ADS to the vacuum side of the DriForce blower unit. For the first portion of the job, it is recommended to use the system in the vacuum or extraction mode to remove the bulk of the humidity before air from structural cavities. (See "Extraction Drying") Run in the vacuum mode until the specific

humidity in the affected area of the job reads the same or lower as the specific humidity in an unaffected area of the job. Do not judge drying progress by relative humidity; use specific humidity readings of grains per pound of dry air (GPP).

After the humidity in the affected area of the job is the same or lower as that in an unaffected area, move the ADS from the vacuum to the pressure outlet of the DriForce and install the muffler-filter. You will now be forcing air at high pressure into the structural cavity, to finish the drying process.

## Extraction Drying

As explained above, drying by vacuuming air from structural cavities, setting up the DriForce in the extraction mode can speed drying times. Also, using the extraction mode ensures that wet and possibly contaminated air does not get forced into previous dry and unaffected areas.

When using the DriForce in the vacuum or extraction mode, do not exhaust the air into an occupied structure. Use vacuum hose to exhaust the air to the outdoors, completely outside the structure, or use a HEPA Filter Attachment that is available as an accessory. This will ensure that contaminants (including moisture, mould spores, mould endotoxins and by-products) are not transferred from within structural cavities into an occupied area. Contaminants may create health concerns such as allergic reactions and illness.

Do not use the muffler-filter that is supplied with the DriForce in the vacuum or extraction mode. This filter is not a HEPA-grade filter, and will not meet the requirement to ensure that possible contaminants are not exhausted into an occupied area. Use the muffler-filter only in the injection or blowing mode.

### CAUTION

**When using the DriForce in the vacuum or extraction mode, exhaust the air to the outdoors, or pass the airflow through a HEPA filter accessory, to ensure that possible contaminants are not exhausted into an occupied area.**

## Drying Ceilings and Cabinets

Drying ceilings is accomplished in much the same manner as walls, and can be done at the same time as wall drying. Remember that ceiling structural cavities are usually larger than those in walls, and require more air nozzles.

Drying under and behind cabinets is often a challenge, as it is difficult to measure trapped moisture, and also difficult to access the areas with tubing and air nozzles. If your moisture measurements are unsure, it is better to assume that materials are wet. Wherever water flowed, make sure you provide flowing dry air. When necessary, remove, dry, and reset cabinets.

## Supplying Extra-Dry Air

To increase drying speed when forcing air into cavities, ensure that that air going into the DriForce blower is as dry as possible. One way is to position the output airflow from a dehumidifier near the DriForce air inlet.

Even better is to attach ducting to the air output from the dehumidifier and position it near the DriForce. Attach a short piece of ADS to the air inlet of the DriForce, and slip the other end a foot or two up into the ducting from the dehumidifier. Do NOT tape up or completely seal such ducting. This would probably unbalance the airflow through the dehumidifier, and could even damage the dehumidifier.

The DriTec 150 desiccant dehumidifier design is nearly perfect for use with the DriForce. The airflow from the DriTec 150 is a close match to the airflow into the DriForce. The airflow from just one of the two process outlets from the DriTec 325 desiccant dehumidifier is also a close match, and will work very well combined with the DriForce.

Super-dry air from a DriTec can be especially helpful to speed up a drying job, or to dry difficult materials like lath and plaster, double-sheeted or fire walls, insulated walls, and walls covered with vinyl wall-paper or impermeable paint.

After drying is complete, you must fill any holes you have created. Remember that your local fire code applies to outside walls and firewalls, and you must repair up to code. Special fireproof caulks and tapes are available that can be helpful.

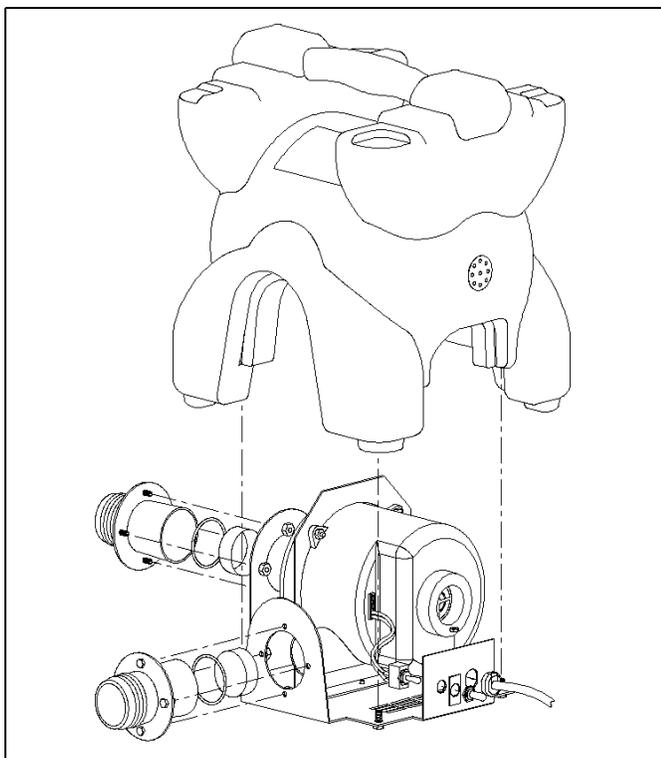
## Operating Instructions Summary

The DriForce will help restore building materials in walls, ceilings, headers, cabinets, and other structural cavities to their pre-loss condition. The rapid high-volume air it delivers removes moisture that was trapped in the cavity. The DriForce will dry several difficult areas at once, such as cavities below cabinets, the walls behind the same cabinets, and the ceilings above these same cabinets or walls. The versatility of the DriForce InterAir Drying System, combined with TurboVents and Mini-TurboVents, TurboDryers, and DrizAir or DriTec dehumidifiers, all combine to form a dynamic drying team.

The DriForce InterAir Drying System from Dri-Eaz Products is versatile and easy to use. It will provide you with years of service, removing moisture from difficult-to-access areas on job after job. The DriForce will help you provide a superior restoration service to your customers by returning the property to pre-loss conditions faster, and saving the insurance company unnecessary reconstruction costs.

### DANGER

**Do not attempt to service or clean the DriForce while it is plugged into an electrical outlet or while the blower is operating as this may lead to risk of electrical shock or injury. It is dangerous for an unqualified individual to attempt to disassemble or repair the DriForce.**



For service or repair, remove four screws that hold the stainless steel base to the polyethylene housing.

## MAINTENANCE

Proper maintenance will keep your DriForce InterAir Drying System in good condition for years to come.

Check both the inlet and outlet of the DriForce unit for obstructions or debris after each use.

Inspect the muffler filter, and clean as needed by vacuuming or washing. You can further clean the filter by washing with Dri-Eaz brand Milgo or Milgo-SR, at dilution rates shown on their labels.

Check manifolds, tubing, air nozzles and other ADS components, and replace if needed.

Shine the DriForce housing and other components with a vinyl cleaner, like the one you use on the dashboard of a car.

Service parts, plus other maintenance and warranty information, are available from the Dri-Eaz Service Department. Telephone (360) 757-7776, extension 238, or fax (360) 757-6784.

## **SPECIFICATIONS**

|   |  |  |
|---|--|--|
| Dimensions<br>(Height – Length – Depth) | 35 x 35 x 30 cm  | 14 x 14 x 12 inches  |
| Total System Airflow<br>(maximum)       | 2.3 cmm (cubic meters per minute)<br>170 cubic meters per hour   | 100 cfm (cubic feet per minute)<br>6,000 cubic feet per hour                 |
| Static Pressure (maximum)               | 152 cm (water lift)  | 60 inches (water lift)   |
| Weight (DriForce Blower only)           | 6.3 kg   | 14.5 lbs.  |
| Air Nozzle Hole Size                    | Less than 6 mm   | Less than <u>  </u> inch   |
| ADS Air Delivery System                 | 13 sections, 2 meters each<br>(28 total)<br>3.8 cm “magnum” crush-proof  | 13 sections, 7 feet each<br>(91 feet total)<br>1.5-inch “magnum” crush-proof |
| Flexible Tubing                         | 122 meters of 0.375 mm ID  | 400 feet of 3/8” ID  |
| Power Draw                              | 5 amps at 230 volts, 50 hz   |  |
| Carrying-Storage System                 | 2 “suitcase” duffle bags with handle and wheels  |  |
| Drying Modes                            | Either Positive or Negative Pressure   |  |
| Parts                                   | 100 air nozzles, 8 manifolds (12 outlets each), 4 manifold endcaps,<br>4 coupler fittings, 2 T fittings, 28 hose cuffs, 25 tube extender connections,<br>1 muffler |  |
| Estimated Capital Cost                  | Less than \$18 US per foot of linear drying  |  |
| Warranty                                | 90 Days (All Costs Including Carriage)<br>1 Year (All Parts and Return Carriage)   |  |
| Safety Listings                         | CE   |  |