

DRI-EAZ[®]

FIRST IN DRYING SOLUTIONS

OWNER'S MANUAL

SAFETY • OPERATING INSTRUCTIONS
MAINTENANCE • SPECIFICATIONS



DRIFORCE

InterAir Drying System
Model F219

PURCHASE DATE: _____ **SERIAL NO:** _____

DISTRIBUTOR: _____

**THIS MANUAL CONTAINS IMPORTANT SAFETY WARNINGS.
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 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-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 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 ¼", making them easy to hide or repair. The system is high-coverage, providing everything you need to treat over 90 feet of 2 × 4 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.

DANGER

Removal or alteration of the grounding plug, or use of an adapter that defeats 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 it 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 or wiring, 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 intake 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 for circulating hot air. Avoid placing the unit to a source of warm air. 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 at 800-932-3030.

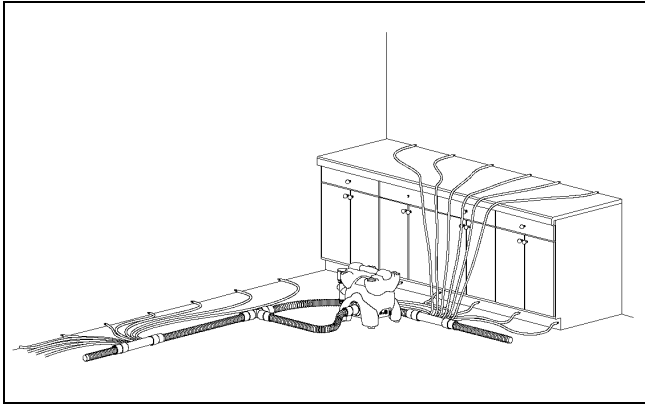
DANGER

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.

PRINCIPLES OF DRYING

Moisture trapped in and behind building materials can result in extensive damage and can raise health and safety concerns 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 thermohygrometers 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 your firm and for the customer.



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

Successfully drying a structure requires the removal of excessive moisture. One basic principle is that airflow speeds up the rate of evaporation. Creating air movement in any problem areas will tend to support 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 low grain 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 $\frac{3}{16}$ " 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 wall plate, which is a 2×4 laid flat on a wood or concrete subfloor. These holes should 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 $\frac{3}{16}$ " bit. A larger hole would be more time-consuming to patch, and would somewhat decrease efficiency by leaking air.

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

When making holes into cavities in cabinets, headers, and ceilings, think ahead about reducing your repair later on. For example, when drying behind rubber wainscoting or cove base, you may be able to peel down the covering 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 $\frac{1}{2}$ 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

Do not use the DriForce to extract debris or standing water of any kind.

Odor and Mold Control

If you suspect that mold and mildew may be growing inside cavities, follow the appropriate industry mold remediation safety standards.

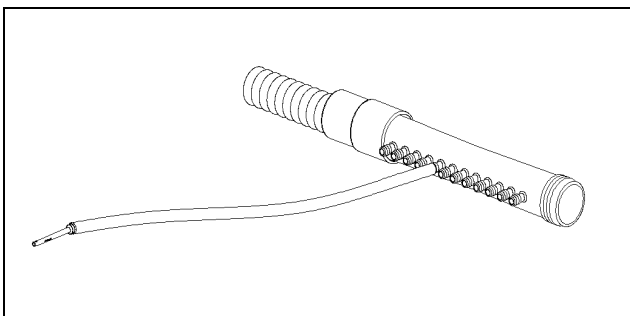
DriForce Blower Setup

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,” p. 6.

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



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.

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.

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 2 x 4 framed wall. For 2 x 6 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

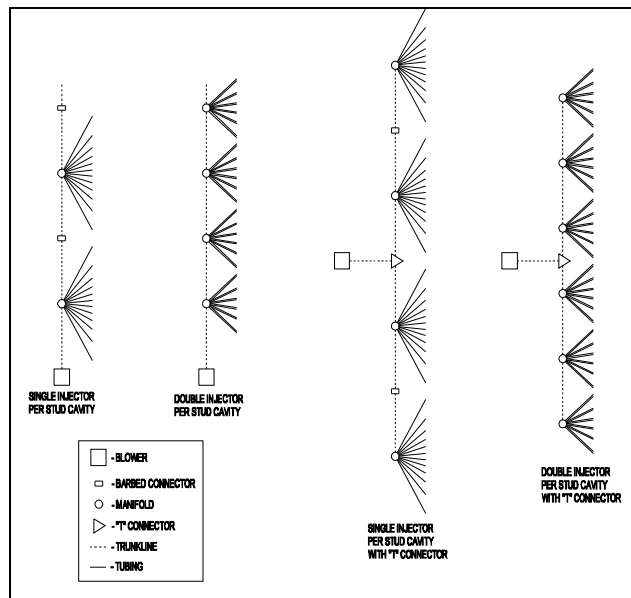


Diagram shows two inline ADS lines (left), and two double-ADS lines running from a T-fitting. It also shows tubing layouts for one or two air nozzles into each wall cavity.

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:

1. Set up 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, 9 and 10 |
| 4 | 1 foot | Outlets 5, 6, 7 and 8 |

2. Set up the remaining 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 |

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,” below.) 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 moist 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. This will ensure that contaminants (including moisture, mold spores, mold mycotoxins and byproducts) 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 2 × 6. Larger lumber and larger structural cavities will 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 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 could unbalance the airflow through the dehumidifier and possibly damage the dehumidifier.

Super-dry air from a desiccant dehumidifier 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 high-pressure air it delivers helps to rapidly remove moisture that was trapped in the cavity. The DriForce will dry several difficult areas at once, such as cavities below and behind cabinets and in 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 dehumidifiers, will create a highly effective drying system.

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 building owner or insurance company unnecessary reconstruction costs.

SPECIFICATIONS

| | | |
|----------------------------------|---|---|
| Model | DriForce InterAir Drying System, F219 | |
| Dimensions (H × L × D) | 14 × 14 × 12 in. | 35 × 35 × 30 cm |
| Total system airflow (maximum) | 100 CFM (cubic feet per minute) 6,000 cubic feet per hour | 2.3 m ³ /min. 170 m ³ /hour |
| Working static pressure | 38 in. (water lift) | 97 cm (water lift) |
| Weight (DriForce base unit only) | 14.5 lbs. | 6.3 kg |
| Air nozzle hole size | Less than ¼ in. | Less than 6 mm |
| ADS (Air Delivery System) | 13 sections, 7 ft. each (91 ft. total) 1.5-inch "magnum" crush-proof | 13 sections, 2 m each (28 m total) 3.8 cm "magnum" crush-proof |
| Flexible tubing | 400 feet of ⅜" ID | 122 meters of 0.375 mm ID |
| Power draw (115 volts) | 4.8 amps (maximum) 3.0 amps (average use) | |
| 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, 4 coupler fittings, 2 hose clamps, 2 T-fittings, 13 hose assemblies with cuffs, 25 tube extender connections, 1 muffler | |
| Safety listings | UL, C-UL | |

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.

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-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 and protectant such as MicroGuard Equipment Cleaner and MicroGuard Equipment Protectant, available from your Dri-Eaz distributor.

Service parts, plus other maintenance and warranty information, are available from the Dri-Eaz Service Department. Call 800-932-3030, or fax 360-757-9536.