

# CYCLONEDRY



## USER MANUAL



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# WELCOME

Hello and welcome to the PDX.GOLD family. We understand there are a lot of choices in the marketplace for botanical recovery systems, so we are delighted you have chosen to invest in us.

We designed the CycloneDry family of filter dryers with you in mind and sincerely hope you notice the difference in quality and safety standards that set us apart from our competitors. Our filter dryers are designed for use with any hydrocarbon extraction system of any size – from the smallest home-built systems to the largest commercially available systems. Our designs are simple, scalable and reliable. We designed them to last and want you to enjoy the benefits of their durability for years to come.

Sincerely,

PDX.GOLD



# PRECAUTIONS & SAFETY



## WARNING:

THE CYCLONE DRY IS DESIGNED FOR HIGH VOLUME RECOVERY AT PRESSURES BELOW 150PSI. IT HAS SAFETY PRESSURE VALVING TO LIMIT THE SYSTEM PRESSURE TO 150 PSI.

DEADHEADING YOUR PUMP FOR ANY SIGNIFICANT TIME AGAINST PRESSURES AT OR ABOVE 150PSI GENERATES EXCESSIVE HEAT AND WILL DAMAGE THE PUMP OVER TIME. ALWAYS ENSURE YOUR SOLVENT RECOVERY TANK HAS CAPACITY TO RECOVER THE SOLVENT IN THE SYSTEM. WE RECOMMEND A PRESSURE BELOW 135PSI AT STARTUP.

ADJUSTING OR ATTEMPTING TO ADJUST ANY SAFETY OR SYSTEM REGULATING HARDWARE IS DANGEROUS AND VOIDS ALL WARRANTIES.

CAUSES OF EXCESSIVE RECOVERY PRESSURE INCLUDE: ENTRAPPED ATMOSPHERE IN THE STORAGE VESSEL, INSUFFICIENT POST PUMP HEAT CONTROL (RESULTING IN A TANK TEMPERATURE & PRESSURE RISE).

HIGHER PRESSURE CAUSES THE EQUIPMENT TO WORK HARDER. ANY TIME YOU ENCOUNTER SIGNIFICANT MACHINE VIBRATION, TURN OFF THE SYSTEM IMMEDIATELY AND REMEDY THE CONDITION CREATING THE VIBRATION BEFORE PROCEEDING ANY FURTHER!

- ! Unit must be installed in a lab designed to accommodate explosive atmospheres.
- ! R600 / R600a / Propane must be handled in compliance with all federal, state and local safety and environmental requirements.

1. Do not use this filter system without reading this manual in its entirety.
2. Always perform the “Pre-Flight Check” outlined in the Operations section of this manual prior to using the recovery system.
3. Always confirm there is ample space in the recovery vessel prior to solvent recovery. Due to the relatively low density of these gases, internal float switches often do not work, so an electronic scale is recommended.
4. Do not attempt to overfill the recovery tank.
5. Always utilize proper ventilation with explosion proof fans and exhaust systems.
6. Do not allow liquid or gaseous solvent to come in contact with exposed skin, mucous membranes or eyes.

# SPECIFICATIONS

## *Specifications*

|                                     |                                    |
|-------------------------------------|------------------------------------|
| Maximum Pressure                    | 150 PSI                            |
| Maximum Vacuum                      | -30 inHg                           |
| Internal Volume – CycloneDry        | 311.6 in. <sup>3</sup>             |
| Internal Volume – CycloneDry MAX    | 467.4 in. <sup>3</sup>             |
| Internal Volume – CycloneDry MAX-XL | 623.2 in. <sup>3</sup>             |
| Replacement Cores                   | HX-48                              |
| Applicable Media                    | Butane, Propane, Propane / Blends. |

## *Plumbing Connections*

|        |  |
|--------|--|
| Input  | ½" JIC / ½" tube fitting (Swagelok compatible) |
| Output | ½" JIC / ½" tube fitting (Swagelok compatible) |

## *Physical Characteristics*

|                   |                         |
|-------------------|-------------------------|
| CycloneDry        | ~ Ø7.5" X 15.5" – 29lbs |
| CycloneDry MAX    | ~ Ø7.5" X 21.5" – 36lbs |
| CycloneDry MAX-XL | ~ Ø7.5" X 27.5" – 42lbs |



## *RECEIVING AND INSPECTING*

Do not proceed if there is any evident shipping damage. Stop at once and photograph the unit and packaging materials.

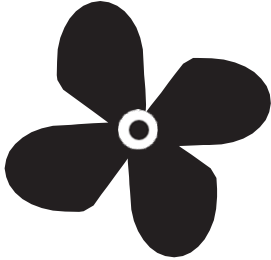
1. Remove the contents from the shipping container and perform a visual inspection. Verify no damage has occurred during shipment. If any damage is apparent, call PDX.GOLD Customer Service.
2. Assemble as shown on page 7.

# SYMBOLS & WARNINGS



As this equipment filters butane and propane, both flammable gases, this equipment should be kept in an explosion-proof lab that meets environmental, safety and other regulations.

Explosion Hazard: NO smoking, NO open flames, NO sparks



Do not use CycloneDry without proper ventilation.



Eye protection is strongly encouraged while using this equipment.

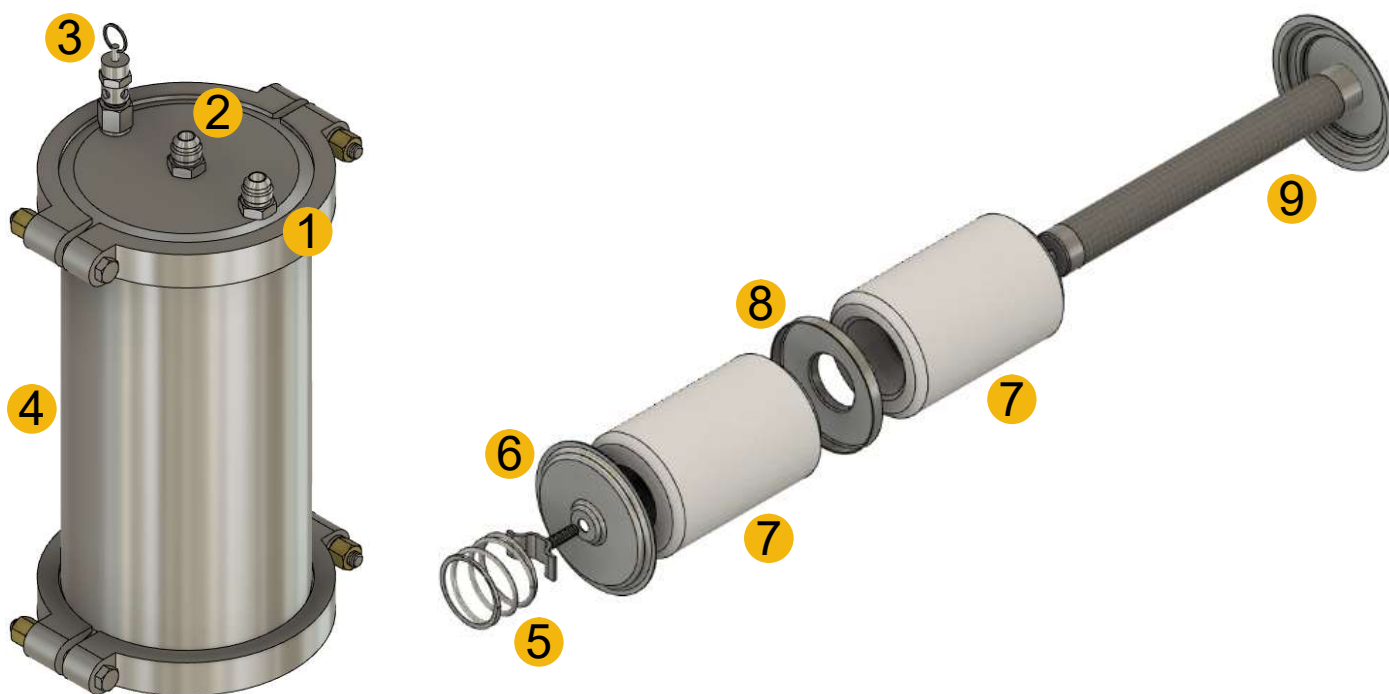


Protective clothing: Fire resistant coveralls or jumpsuit is highly recommended. Although working with a closed loop extractor drastically cuts down the risk of an explosive environment, we strongly suggest anyone operating a closed loop extractor wear fire resistant clothing due to the flammable nature of butane and propane.

# PRODUCT OVERVIEW

## Key Components

1. **INPUT** connection (from extractor)
2. **OUTPUT** connection (to pump)
3. 150psi relief valve
4. 6" Tri-Clamp / Spool Assembly
5. End spring & Wing Screw
6. Inlet Plate
7. HX-48 cores (2, 3 or 4 - depending on the CycloneDry model)
8. Core Spacer Plate
9. Outlet Plate Assembly
10. Large o-ring (not shown)



## Theory of Operation

This filter-dryer system processes solvent gas within a closed loop. The CycloneDry is installed in the solvent transfer line BEFORE the input to your recovery pump. Solvent from the extractor enters the CycloneDry through the Input connection and is redirected with internal plumbing in a swirling motion around the inside wall of the cylinder. This cyclonic action serves to cool and condense any water or organic matter on the wall so it can adhere to the wall and run down the sides for collection in the bottom of the cylinder. When used properly, the CycloneDry removes water vapor from the recovered solvent and prevents contamination of the recovery pump with extracted oils and / or organic matter. The internal components are all food grade and are comprised of aluminum, stainless steel and Viton and Buna-N elastomers.

# ASSEMBLY INSTRUCTIONS

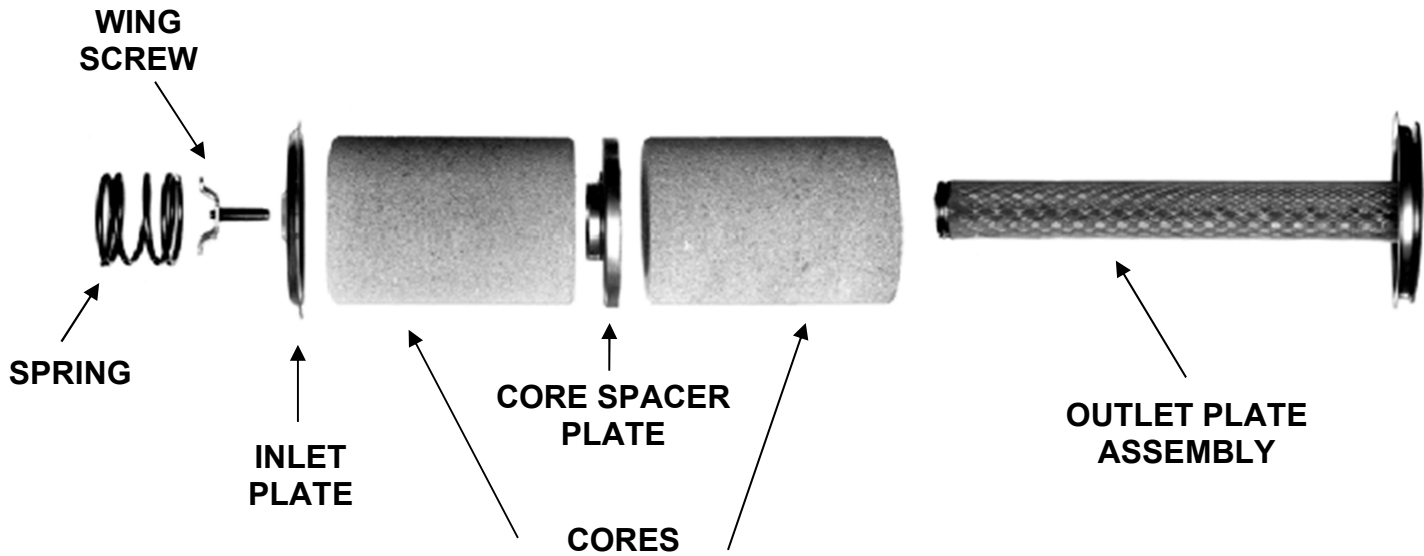
*Refer to images / item numbers on page 7*

Assemble the bottom portion of the 6" Tri-Clamp / Spool assembly. Place a buna-N gasket on the spool and seat a plain (no fittings) cap on the spool & seal. Attach the two Tri-Clamp halves and tighten securely. Turn the assembly over and set aside until the core assembly is ready for installation.

1. Collect the components needed to assemble the core assembly as shown on page 7.
2. If using new cores, remove the HX-48 cores (item 7) from their OEM packaging.
3. Set the Outlet Plate Assembly (item 9) on a work surface with the screened post directed up.
4. Note the cores have different sized openings at the ends. Install the first core by sliding it onto the screened post of the Outlet Plate Assembly (item 9) – LARGE opening first.
5. Install a Core Spacer Plate (item 8) over the screened post of the Outlet Plate Assembly (item 9) – SMALL opening first.
6. Install the next core by sliding it onto the screened post of the Outlet Plate Assembly (item 9) – LARGE opening first. Repeat steps 6 and 7 once more for a CycloneDry MAX and twice more for a CycloneDry MAX-XL
7. Rest the Inlet Plate (item 6) on the end of the core / plate stack with the “pointed hat” facing UP.
8. Align the hole in the Inlet Plate with the threaded hole in the screened post of the Outlet Plate Assembly. Install the Wing Screw (item 5) and tighten VERY LOOSELY onto the Inlet Plate.
9. Before tightening further, inspect the core stack and center the cores onto the Outlet Plate Assembly. If the cores will not move, loosen the Wing Screw to reduce the clamping force – center first core on the Outlet Plate Assembly flange, adjusting the adjacent core(s) as you work up to the Inlet Plate.
10. Center the Inlet Plate on the final core and retighten the Wing Screw. The Wing Screw should be tight enough to prevent movement / vibration between the core assembly components – DO NOT OVERTIGHTEN: IT MAY DAMAGE OR CRUSH THE CORES.
11. Place the End Spring (item 5) inside on the bottom center of the Tri-Clamp / Spool assembly. Insert the core assembly (Wing Screw end first) into the Tri-Clamp / Spool assembly, taking care to fit the Wing Screw through the center of the End Spring so the spring fully seats against Inlet Plate.
12. Place the large o-ring on the Core Assembly. Place a buna-N gasket on the Tri-Clamp / Spool assembly and the cap on the spool & seal.
13. Align the center tube on the Cap Assembly with the center hole in the top of the Core Assembly. Press down on the Cap Assembly, compressing the End Spring until the Cap Assembly mates with the Tri-Clamp / Spool Assembly. While continuing to press down and hold the assembly in place and aligned, install the Hinged Clamp and hand tighten securely.
14. NOTE: The INPUT connection (from the extractor) is located on the side of the cap and the OUTPUT connection (to the recovery pump) is in the **center** of the cap.



# OPERATIONAL NOTES



**Pressure Control System:** The CycloneDry is rated to accommodate 150 PSI internal pressure. If the pressure in the system exceeds 150 PSI, the pressure relief valve will activate and release high pressure gas to the containment room and limit system pressure to 150psi.

The CycloneDry has infinite processing capabilities based on its ability to connect additional CycloneDry units to adapt to any application. Simply daisy-chain any number of CycloneDrys to your recovery system (via connecting hoses) to keep up with your level of processing.

## ***Filter Core Recharging***

During normal use, the filter cores may become saturated with moisture and lose effectiveness. It is important to maintain a log of core weight to determine when the cores are saturated and need to be re-conditioned or replaced. Cores can be re-conditioned in a vacuum oven per the instructions below. When the post-bake out weight of the cores do not change, the cores have become too saturated and it is time to discard them and replace them with new units.

## ***Recharging Instructions***

1. Remove the core assembly from the filter dryer by following the assembly instructions included with your Cyclone Dry.
2. Weigh the core assembly and record the data on the log sheet.
3. Place the core assembly into a vacuum oven.
4. Bake under vacuum at 250°F for two hours.
5. Weigh the core assembly and record the data on the log sheet.
6. Subtract the post-processing weight from the pre-processing weight to determine net moisture loss.

We recommend operators swap out their internals / core sets on a regular basis (daily / weekly) and recondition a second set so they never get near the saturation point.

# FILTER DRYER

## Filter Replacement

1. Use a clean, soft cloth and alcohol to clean the inside of the filter dryer of all moisture and residue.
2. Disassemble the core assembly and discard the old cores. Fit together the core assembly per the instructions included with your CycloneDry.
3. Use the log sheet included in this manual, record the weight of the core assembly.
4. Install the core assembly into the cylinder, replace the lid and clamp in place.

### Filter Dryer Filter Core Record

|                   |  |
|-------------------|--|
| Installation Date |  |
| Initial Weight    |  |

| DATE | FILTER WEIGHT | MOISTURE WEIGHT | RECHARGE?<br>YES/NO |
|------|---------------|-----------------|---------------------|
|      |               |                 |                     |
|      |               |                 |                     |
|      |               |                 |                     |
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|                                |  |
|--------------------------------|--|
| FILTER WEIGHT AT DECOMMISSION: |  |
|--------------------------------|--|

# INSTALLATION



The CycloneDry does not have any manually adjustable settings. Use valves and control hardware on the extractor to regulate the flow of gas through the CycloneDry.

## *Connecting the CycloneDry to the Extractor*

1. Follow all instructions in this manual closely.
2. Follow all instructions associated with your closed loop extractor closely.
3. Close the solvent input and output valves on the extractor.
4. Using a ½" hose with the appropriate end fitting, connect the OUTPUT of the extractor to the INPUT of the CycloneDry. When viewing the end of the CycloneDry, the input connection is located on the perimeter / outside edge of the cap.
5. Using a ½" hose with the appropriate end fitting, connect the OUTPUT of the CycloneDry to the INPUT of the Solvent Transfer And Recovery pump. When viewing the end of the CycloneDry, the output connection is located center of the cap.
6. Verify all fittings and connections between your extractor, CycloneDry and recovery pump have been tightened appropriately.
7. The unit is ready for operation

# CERTIFICATION

CycloneDry is certified by the third party engineering group, 3PCertz. 3PCertz specializes in certifying cannabis extraction equipment and the rooms in which they reside.

PDX.GOLD and 3PCertz offer certification for 34 states and the District of Columbia in the United States. If your location is not listed, give us a call and we can review getting your location added to our certification list!

## *Certified States*

Arizona  
Arkansas  
California  
Colorado  
Washington D.C.  
Florida  
Idaho  
Illinois  
Kansas  
Kentucky  
Louisiana  
Massachusetts

Maryland  
Maine  
Michigan  
Minnesota  
Missouri  
Montana  
North Carolina  
North Dakota  
Nebraska  
New Mexico  
Nevada  
New York

Ohio  
Oklahoma  
Oregon  
Pennsylvania  
South Dakota  
Texas  
Utah  
Vermont  
Washington  
Wyoming

## *Certification Report Number*

180043



# WARRANTY

**LIMITED USA AND CANADA WARRANTY POLICY** – PDX.GOLD warrants products sold against defects in material or workmanship as follows: PDX.GOLD, at its option, unless otherwise agreed, will replace or repair any defective product unit or defective part of the product unit at no charge, provided that:

1. The warranty claim is made in writing within the period of time specified in the catalog or in information enclosed with the product packaging (6 months); and
2. The proof of purchase by bill of sale or receipted invoice is submitted concurrently with the claim and shows that the product is within the applicable warranty period to Customer Service of PDX.GOLD; and
3. The purchaser complies with Procedures for Returns listed under the General Terms and Conditions contained herein; and
4. The purchaser complies with all the manufacturer's requirements. The warranty is in force from the date of shipment from PDX.GOLD's manufacturing facility. The warranty period begins on the day the customer receives the product, but not later than 90 days after the date of shipment from PDX.GOLD's manufacturing facility. PDX.GOLD reserves the right, at its discretion, to fulfill warranty claim with refurbished or reconditioned parts or units.

This warranty shall not apply to:

- a) Defects or damages resulting from (1) misuse of the product, (2) use of the product in other than its normal and customary manner, (3) accident or neglect, (4) improper testing, operation, maintenance, service, repair, installation, or storage, (5) unauthorized alteration or modification, (6) damage determined to be the result of freight or shipping after the product has left the factory; or
- b) Normal tear and wear of the product, its components, or parts; or
- c) Post-expiration dated material

## Other limitations

This warranty is the exclusive remedy of the purchaser, and PDX.GOLD disclaims all other warranties, whether expressed, implied or statutory, including without limitation, warranties of merchantability and fitness for particular purpose. No employee, agent, or representative of PDX.GOLD is authorized to bind PDX.GOLD to any other warranty. In no event shall PDX.GOLD be liable for incidental or consequential damages.

All expressed and implied warranties, including the implied warranty of merchantability and the implied warranty of fitness for a particular purpose, are expressly disclaimed and shall not apply to any products sold or services rendered hereunder. PDX.GOLD shall not be liable for consequential, incidental, special, or other direct or indirect damages resulting from economic loss or property damage sustained by you or any end user from use of the products sold or services rendered hereunder.