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PURAFIL

SERVICE GUIDE

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DRUM SCRUBBER

INSTALLATION, OPERATION & MAINTENANCE
INSTRUCTIONS

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1.0 PRE-INSTALLATION INSTRUCTIONS

1.1 SAFETY CONSIDERATIONS

- Read this Service Manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment.
- This manual should be retained with the unit because it contains the information necessary for proper maintenance.
- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.

CAUTION:

- Installer should be a trained, experienced service person.
- Check the assembly and component weights to be sure that the rigging equipment can handle them safely.
- Be sure that the unit is balanced well in the transporting device.
- Always conduct a thorough check when the installation is complete.
- Never enter an enclosed blower cabinet or reach into a housing while fan is running.
- The motors in PURAFIL[®] equipment get very hot. This is normal and should not be regarded as a problem with the motor. However, take special care to avoid touching the hot areas.

1.2 RECEIVING INSTRUCTIONS

Systems are normally shipped assembled and with motors mounted. All units are attached securely to skids. It is recommended that units be left on their skids for protection and ease of handling while transporting. Straps, rigging, slings, or hooks attached to the skids may be used, with proper care. The units are well protected with triple wall board and are secured with metal bands. Forklifts may be used under the skids, but exercise caution to prevent damage.

Upon receiving systems from Purafil, Inc., note any shipping damage, obvious or hidden, to your carrier and on your Bill of Lading. All problems should be handled between the customer and carrier except for U.P.S. shipments, which require the customer to contact Purafil, Inc. for action.

- If the unit is to be stored before use, see Section 1.4 in this manual.
- If the unit is to be installed immediately, be sure to check Section 3.0 in this manual.
- To uncrate unit, cut metal bands and remove packaging.
- For positioning and special handling, see Section 3.1 in this manual.

1.3 INSPECTION

The condition of the unit upon its arrival is critical to its proper operation. Prior to start-up, inspect the unit carefully, according to the checklist below. Correct any inadequacies before start-up to prevent possible damage or inefficiency. Note, should there be any questions concerning the unit, refer to the numbers found on the unit identification plate, when contacting the PURAFIL® representative.

PRE-OPERATION CHECK LIST

YES	NO	CONDITION
___	___	1. Configuration and material are as specified on the sales order form
___	___	2. Measurements fit submittal requirements
___	___	3. Parts are all present
___	___	4. Latches hold securely and gaskets seal properly
___	___	5. Labels and serial numbers are present
___	___	6. Airflow direction is consistent with installation requirements (check labels attached to unit)

Note: Checking specific points is also imperative after the unit is started up. See section 3.4 in this manual for checklist.

1.4 STORAGE

The unit should be protected from the elements during storage, especially when storage time is extensive. While indoor storage is considered best, outdoor storage can be adequate when precautions are taken.

OUTDOOR STORAGE PRECAUTIONS

- Cover the equipment with a tarp. Intake and discharge openings must be well covered. (Use of black plastic as a cover may cause excessive condensation and rusting.)
- If there is the possibility of moisture collection, allow for proper drainage.
- Do not place heavy equipment on top of the unit.
- Store Purafil® media in a dry place with less than 95% relative humidity.

1.5 FOUNDATION AND CLEARANCES

FOUNDATIONS

Some units may require new or reinforced foundations, due to their weight. Always be sure to check that the existing foundation is adequate for the unit to be installed. Units to be used indoors require particular attention to strength of foundation. In some instances, a concrete base is best suited to the system. Concrete lessens the chance for vibration than if metal structures are used.

CLEARANCE

All units should be easily accessible for the required periodic maintenance. Do not block return and discharge grilles. Sufficient minimum clearances can be recommended by the local PURAFIL® representative.

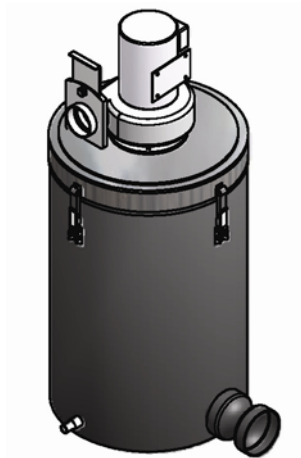
2.0 BASIC DESIGN OF THE DRUM FILTER

Designed to clean odorous air, the drum filter, coupled with the final particulate filter, contains an inlet pipe, blower, a media bed housed in a LDPE drum, and diffuser. Pre-engineered in a single unit, the drum filter is designed to exhaust recycled air. The drum filter is supplied with Odorcarb™ II and Odormix™ SP media. The drum filter has a quiet, low horsepower motor and low pressure drop.

The drum filter includes the following components:

1. INLET PIPING/DIFFUSER – Air enters through a 4" (100 CFM model), 8" (300, 500 CFM models), or 10" (1,000 CFM models) Fernco fitting prior to entering the drum.
 - MEDIA BED – (100 CFM model) consists of 3 ft³ (cubic feet) of Odorcarb™ II media and 2 ft³ of Odormix™ SP media. Each cubic foot of media is contained in a MediaSAK for easy handling and disposal.
 - (300 CFM model) comes complete 7 ft³ (cubic feet) of Odorcarb™ II media (315 lbs) and 3 ft³ (cubic feet) of Odormix™ SP media (120 lbs.).
 - (500 CFM model) comes complete with 13 ft³ (cubic feet) of Odorcarb™ II media (585 lbs.) and 4 ft³ (cubic feet) of Odormix™ SP media (160 lbs.).
 - (1,000 CFM model) comes complete with 29 ft³ (cubic feet) of Odorcarb™ II media (1395 lbs.) and 10 ft³ (cubic feet) of Odormix™ SP media (400 lbs.).
2. BLOWER – the air is then propelled further by the blower assembly which includes a mill and chemical duty motor and direct drive blower, assuring even, quiet airflow.
3. FINAL FILTER (DS-300, DS-500, and DS-1000) – any remaining contaminants, such as media dust and airborne contaminants are removed in this final stage by a polymedia filter.

FIGURE 1: BASIC DESIGN



3.0 INSTALLATION

After the entire pre-operative inspection is finished (Section 1.3), complete the following sequence for installation:

- (1) Remove the unit from the skid and position it in the designated operation location.

- (2) Plug in the electrical connections.
- (3) Start the unit.
- (4) Perform post-start inspection check. (See Section 3.5)

3.1 POSITIONING THE UNIT

The standard unit can simply be transported by lift to its pre-designed operation location (if in close proximity to the skid), according to facility safety requirements.

3.2 MEDIA FILLING INSTRUCTIONS (FOR INITIAL START-UP)

Proper filling, installation, and maintenance of the chemical filtration media is critical to the unit's efficient operation. The drums are designed specifically for media manufactured by Purafil, Inc. and allows the system to perform at maximum efficiency, through proper shape and bed depth. Drum filters are pre-filled with media at the factory.

3.3 MEDIA FILLING INSTRUCTIONS (FOR MEDIA REPLACEMENT)

Once media analysis (300, 500, 1,000 CFM models only) has determined that it is time for a replacement supply of media, replace the media according to the instructions below.

For 100 CFM Model:

- Media replacement is accomplished by removing the motor/blower lid assembly. Disconnect power supply.
- Remove MediaSAKs (5).
- Install new MediaSAKs (5).
- Install motor/blower lid assembly.
- See Section 4.3 for disposal precaution.

For 300, 500, 1,000 CFM Model:

- Remove motor/blower lid assembly. Disconnect power supply.
- Remove Polymedia (blue) filter.
- Remove layer of Odormix™ SP media.
- Remove layer of Odorcarb™ II media.
- Remove Polymedia (blue) filter.
- Clean unit as much as possible by washing packing material with water

- Install new Polymedia (blue) filter.
- Install new Odorcarb II media.
- Install new Odormix SP media.
- Install new Polymedia (blue) filter.
- Install motor/blower lid assembly.
- Connect power supply.
- See Section 4.3 for disposal precaution.

3.4 POST-START INSPECTION/CHECK

Before initial start-up of system, contact your local PURAFIL[®] representative. Their name and phone number is attached to your system. Operate all DS models at the lowest airflow required to maintain a negative pressure and maximize media life.

YES	NO	CONDITION
_____	_____	1. Joints, seals, and gaskets do not leak.
_____	_____	2. Particulate filters have been installed.

4.0 MAINTENANCE

4.1 REPLACEMENT PARTS AND MATERIALS

While Purafil, Inc. products are built for durability, some parts of the PURAFIL[®] unit will require replacement during the normal lifetime of the equipment. Replacement items may be ordered from your local PURAFIL[®] representative or from Purafil, Inc.

Consumables: In order to maintain proper performance levels, particulate filters and PURAFIL[®] media must be replaced periodically, as they have a finite life (See Media Sampling Procedure Service Guide).

Moving Parts: Bearings, motors, etc. are all subject to gradual deterioration and/or sudden breakdown.

4.2 MEDIA REPLACEMENT

Need for Sampling (300, 500, 1,000 CFM models only)

PURAFIL[®] engineered dry-chemical media has a finite life. Our media contains special active ingredients that react with odors and gaseous pollutants to remove them from the airstream. Once the active ingredients are spent, it is time to replace the media in your system. PURAFIL[®] offers a variety of ways to

test its media. The drum scrubber's primary media, Odorcarb II, contains Media Life Indicator Pellets (patent-pending) which offer a visual indication of the remaining life by changing from blue to white once the media is spent. This visual test indicates that it is time to periodically secure media samples. Purafil, Inc. will provide regular laboratory analysis of such samples to establish life cycles.

NOTE: Color change of media does not indicate level of remaining life. A media sample is required to determine the actual remaining life.

Since every installation varies due to the type and quantity level of the contaminant, each operator must develop a sample schedule best suited to their system. However, until a schedule can be established, we recommend that a sample is taken from each vertical media bank and sent for analysis, so that a replacement date can be projected with a recommended sampling schedule.

Media Life Analysis (MLA) is a complimentary Purafil, Inc. service. MLA Sample Kits are available through Purafil, Inc. If analysis reveals that it is time to replace the media, order the appropriate pounds of media required per module used in the unit. See Media Sampling Service Guide for instructions on how to take a media sample from your unit.

5.0 SPECIAL PRECAUTIONS

Disposal

PURAFIL[®] media is a non-toxic, non-flammable substance. Filtration of contaminants through PURAFIL[®] media causes molecular changes to occur, and the resulting product is usually not harmful to the environment. Although special precautions are generally not required when disposing of spent media, government regulations may require specific disposal procedures if the resulting product could be harmful to the environment. Large quantities of PURAFIL[®] media should not be disposed of in dumpster-like equipment because the weight of the media could cause difficulties in handling the dumpster.

Independent laboratory analysis for Environmental Protection Agency toxicity characteristics may be required if the contaminants eliminated from your environment include heavy metals and pesticides.

Inhalation

A well-ventilated work area is suggested for changing the PURAFIL[®] media, as dusting occurs in fresh media due to handling abrasion. Workers should avoid direct inhalation of considerable PURAFIL[®] dust, as it induces sneezing. In closed, unventilated spaces, dust masks such as the 3-M No. 8500 are suggested.

Water

Avoid exposing the PURAFIL® media to water or precipitation, as this dissolves permanganate content. Storage of media should be in a dry place with less than 95% relative humidity. Exposure of permanganate solution to the skin causes brown staining which is temporary and not harmful. This staining can be removed by washing in a diluted solution of water and sodium bisulfite.

Eye Contact

If dust is exposed to the eyes or delicate membrane, flush thoroughly with water and seek treatment by a physician. Follow normal procedures for exposure to abrasive dust.

6.0 PURAFIL® STAIN REMOVAL PROCEDURE

The following stain removal procedure is stated here as information only, and neither Purafil, Inc., any of its subsidiaries, nor any agent or employee of Purafil, Inc. make any warranty or other representation regarding the efficacy or safety of this procedure. The stain removal could cause further damage to the garment or to the item from which one may attempt to remove the stain.

If the dust from PURAFIL® Odoroxidant™ SP* media comes in contact with organic material, there are two possible stain problems:

1. Manganese dioxide (MnO_2) which is insoluble, characterized by a medium brown color, and is found in expended PURAFIL® media, can usually be removed by normal washing.
2. New (unused) PURAFIL® Odoroxidant™ SP* media contains sodium permanganate ($NaMnO_4$) which is a strong oxidant and will react with and discolor any organic material with which it comes in contact. These stains, which will be brownish black in color, may be removed using a solution of sodium bisulfite in water, after the garment has been removed from the person.

However, if the fiber has been damaged by the permanganate, removal of the stain may make the damage more apparent.

CAUTION: This procedure should start with a very weak solution, gradually increasing the strength until the stain is removed. Use of too strong a solution could conceivably cause additional fabric damage.

NOTE: Sodium bisulfite gives off sulfur dioxide (SO_2) gas; therefore, it must be used in a well-ventilated area.

**PURAFIL® Odormix™ SP media is a 50/50 water-wastewater blend of Odorkol™ media and Odoroxidant™ SP media.*

7.0 WARRANTY

PURAFIL® warrants hardware equipment manufactured by PURAFIL® to be free from defects in material and workmanship under normal use and service for twelve (12) months from startup date or eighteen (18) months from shipment date. PURAFIL'S obligation under this warranty shall be limited to replacing any parts thereof which shall be demonstrated to have been defective. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

PURAFIL MAKES NO WARRANTIES AS TO MERCHANTABILITY OR AS TO THE FITNESS OF THE MERCHANDISE FOR ANY PARTICULAR USE AND SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF SUCH MERCHANDISE OR FOR CONSEQUENTIAL DAMAGES. No person, firm or corporation is authorized to assume for PURAFIL® any other liability in connection with the sale of these goods. Equipment, parts and material manufactured by others and incorporated in PURAFIL® equipment are warranted by PURAFIL® ONLY TO THE EXTENT OF THE ORIGINAL MANUFACTURERS LIABILITY TO PURAFIL.

8.0 TROUBLESHOOTING

	SYMPTOM	PROBLEM	CHECKS/REMEDY
Media Bank	Airflow too low	Filters loaded	Replace filters

9.0 MEDIA SAMPLE RECORD

Sampling Record/Schedule					

Represented By:

Important Notice

The information contained in this bulletin reflects the results of various testing and analytical procedures believed by PURAFIL, INC. (a USA corporation) to be useful indicators of the relative performance of air filtration systems and media. It is intended for use by persons having appropriate scientific and technical knowledge and experience, at their own risk. This bulletin does not in any way constitute a representation, warranty, promise, or guarantee by PURAFIL, INC. of the installed performance of PURAFIL® media.