

FIRST
IN CLEAN
AIR

PURAFIL

SERVICE GUIDE

4

MOLE™

MANHOLE SCRUBBER

INSTALLATION, OPERATION & MAINTENANCE
INSTRUCTIONS

TABLE OF CONTENTS

1.0 PRE-INSTALLATION INSTRUCTIONS

- 1.1 SAFETY CONSIDERATIONS
- 1.2 RECEIVING INSTRUCTIONS
- 1.3 INSPECTION
- 1.4 STORAGE
- 1.5 FOUNDATIONS AND CLEARANCES

2.0 OPERATIONAL CONCEPTS AND DETAILS

- 2.1 MOLE™ MANHOLE SCRUBBER APPLICATION
- 2.2 BASIC DESIGN OF THE MOLE™ MANHOLE SCRUBBER

3.0 INSTALLATION

- 3.1 POSITIONING THE UNIT
- 3.2 MEDIA BANK FILLING INSTRUCTIONS (INITIAL START-UP)
- 3.3 MEDIA BANK FILLING INSTRUCTION (MEDIA REPLACEMENT)
- 3.4 POST-START INSPECTION/CHECK

4.0 MAINTENANCE

- 4.1 REPLACEMENT PARTS AND MATERIALS
- 4.2 MEDIA REPLACEMENT
- 4.3 SPECIAL PRECAUTIONS
- 4.4 PURAFIL® STAIN REMOVAL

5.0 WARRANTY

6.0 SAMPLING RECORD

LIST OF FIGURES

FIGURE 1: BASIC DESIGN OF MOLE™ MANHOLE SCRUBBER

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 MOLE™ manhole scrubber because it contains the information necessary for proper maintenance.

Verify that all nuts, bolts, and welds are secure to ensure the equipment is in safe working condition.

CAUTION:

Installer should be a trained, experienced service person.

Check the assembly and component weight to be sure that the rigging equipment can handle them safely.

Be sure that the manhole scrubber is well secured in the transporting device.

Always conduct a thorough check when the installation is complete.

1.2 RECEIVING INSTRUCTIONS

MOLE™ manhole scrubber systems are normally shipped empty and already assembled, ready for mounting and installation. All manhole scrubbers are securely attached to skids. It is recommended that the manhole scrubber be left on the skid for protection and ease of handling while transporting. Straps, rigging, slings, or hooks attached to the skids may be used with proper care. 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 MOLE™ manhole scrubber is to be stored before use, see Section 1.4 in this manual for storage instructions. If the MOLE™ manhole scrubber is to be installed immediately, be sure to check section 3.0 in this manual for installation instructions. To uncrate the MOLE™ manhole scrubber, cut the metals bands and remove the packaging. For positioning and special handling, see Section 3.1 in this manual.

1.3 INSPECTION

The condition of the MOLE™ manhole scrubber upon its arrival is critical to its proper operation. Prior to start-up, inspect the scrubber 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 scrubber, refer to the numbers found on the scrubber identification plate when contacting the PURAFIL® representative.

PRE-OPERATION CHECK LIST

YES	NO	CONDITION
___	___	1. Check the configuration and material with the sales order form
___	___	2. Measurements fit submittal requirements
___	___	3. Parts include MediaSAKS™
___	___	4. Ring gasket around lip seals properly
___	___	5. Labels and serials numbers are present
___	___	6. PVC drain-pipe is free of clogs or obstruction

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

1.4 STORAGE

The MOLE™ manhole scrubber and media should be protected from the elements during storage, especially when storage time is extensive. Indoor storage is considered best, however outdoor storage may be adequate if 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 manhole scrubber. Store PURAFIL® media in a dry place with less than 95% relative humidity.

1.5 FOUNDATION AND CLEARANCES FOUNDATIONS

The MOLE™ manhole scrubber is designed to fit inside a manhole opening based upon measurements of that manhole opening as supplied to Purafil, Inc. Always be sure to check that the existing foundation inside the manhole is adequate for the scrubber to be installed.

CLEARANCE

The MOLE™ manhole scrubber should be easily accessible under the manhole cover for the required periodic maintenance. Sufficient minimum clearances can be recommended by the local PURAFIL® representative.

2.0 OPERATIONAL CONCEPTS AND DETAILS

2.1 MOLE™ MANHOLE SCRUBBER APPLICATION

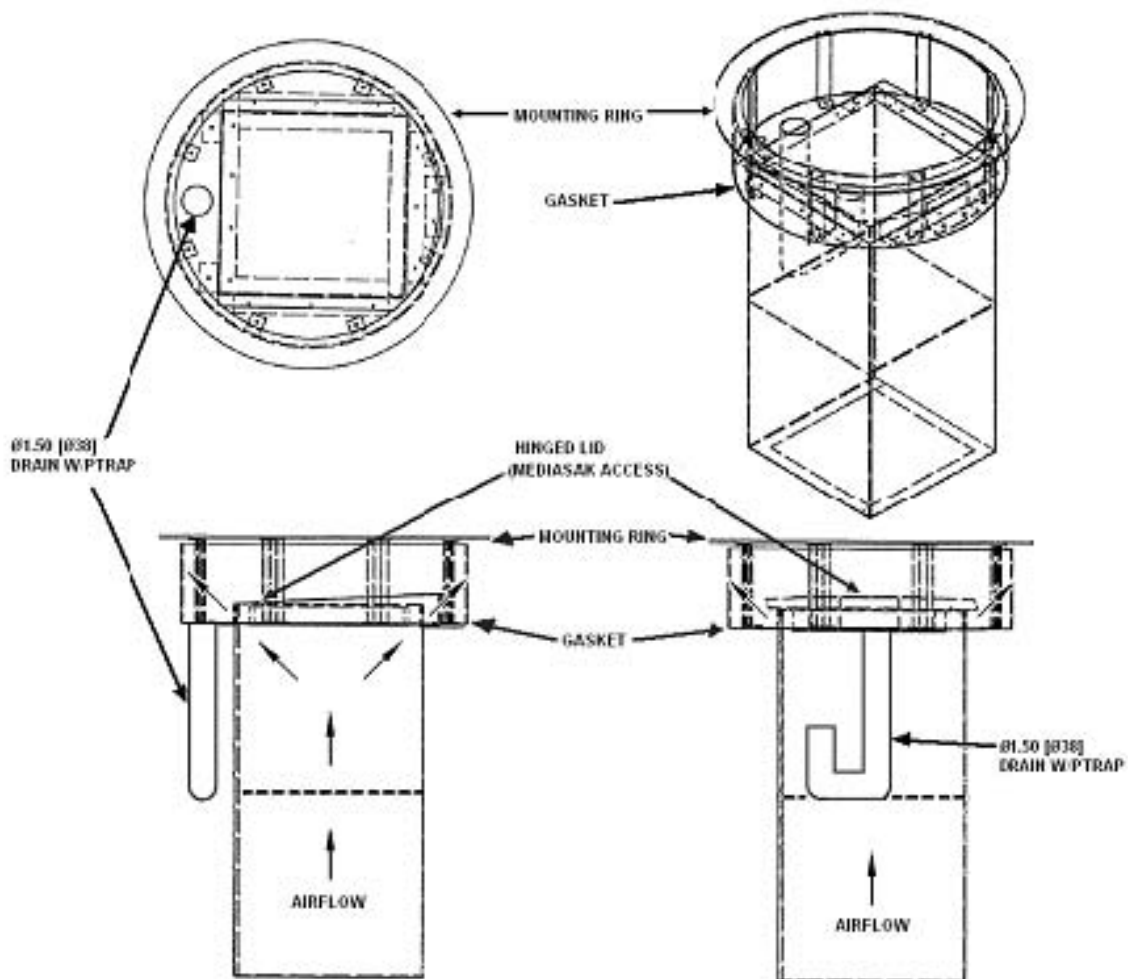
Designed to clean odorous air, the manhole scrubber contains a square inlet duct, that houses a media bed made up of two MediaSAKS™ containing PURAFIL® Odormix™ SP media. The MediaSAKS™ are held in place by a stainless steel screen at the bottom of the inlet duct. Engineered as a single scrubber, the MOLE is designed to exhaust effluent air from a sewer manhole. The MOLE has an PVC drain pipe to with a 180° up-turn to keep liquid away from the media bed and to prevent gas bypass.

2.2 BASIC DESIGN OF THE MOLE™ MANHOLE SCRUBBER

The MOLE manhole scrubber includes the following components:

- SQUARE INLET DUCT - Air enters through a SS screen straight into the media section
- MEDIA BED – consists of two 40 lbs MediaSAKS™ that contain PURAFIL® Odormix™ SP media

FIGURE 1: BASIC DESIGN OF MOLE MANHOLE SCRUBBER



3.0 INSTALLATION

After the entire pre-operative inspection is completed (Section 1.3), follow this next sequence for installation:

- (1) Remove the scrubber from the skid and position it in the designated operation location.
- (2) Perform post-start inspection check (Section 3.5).

Note: Before initial start-up of system, contact your local PURAFIL[®] representative.

3.1 POSITIONING THE MANHOLE SCRUBBER

The manhole scrubber can simply be transported by lift, hand truck, dolly, or by hand to its pre-designed operation location, according to facility safety requirements.

For ease of handling and installation, position the MOLE[™] manhole scrubber in the manhole before installing the MediaSAKS[™].

3.2 MEDIA FILLING INSTRUCTIONS (FOR INITIAL START-UP)

The MOLE[™] manhole scrubber is specifically designed for media manufactured by Purafil, Inc. Proper filling, installation, and maintenance of the media are critical for efficient operation. The PURAFIL[®] Media allows the system to perform at maximum efficiency, through proper shape and bed depth. MediaSAKS[™] should be inserted only after the MOLE[™] manhole scrubber has been installed in the manhole.

Install the media by opening the lid at the top of the MOLE and inserting the MediaSAKS[™] into the rectangular duct media section. It is necessary to push the edges of the MediaSAKS[™] into the corners of the duct after inserting them to prevent odors from bypassing the scrubber media. Take care to do this with both MediaSAKS[™]. Also, the top of the upper MediaSAKS[™] should be level to ensure a uniform distribution of media through the duct.

3.3 MEDIA FILLING INSTRUCTIONS (FOR MEDIA REPLACEMENT)

Media replacement is accomplished by opening the lid at the top of the MOLE[™] manhole scrubber, removing both MediaSAKS[™] and replacing them with two new MediaSAKS[™].

3.4 POST-START INSPECTION/CHECK

Before initial start-up of system, contact your local PURAFIL[®] representative.

YES	NO	CONDITION
_____	_____	1. Joints, seals, welds, and gaskets do not leak
_____	_____	2. Purafil [®] MediaSAKS [™] installed in MOLE unit

4.0 MAINTENANCE

4.1 REPLACEMENT PARTS AND MATERIALS

While Purafil's products are built for durability, some parts of the scrubber 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 PURAFIL[®] media must be replaced periodically, as it has a finite life.

4.2 MEDIA REPLACEMENT

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. After start-up, your local PURAFIL[®] representative will work with the owner 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.

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.

Samples from the MOLE[™] manhole scrubber can be taken only by first opening the lid at the top of the unit, removing the MediaSAKS[™] from the MOLE[™] manhole scrubber and cutting a small hole in the top of the MediaSAK[™] netting in order to remove a sample of the media. For the most comprehensive results, samples should be retrieved from both the top and bottom MediaSAK[™]. After removing a sample of media from the MediaSAK[™]:

1. Place the sample contents in the plastic sample bag from the media sample kit provided by you PURAFIL[®] representative.
2. Seal tightly and label the laboratory bag. Use the same label name on the Transmittal Sheet.
3. Place a label on the unit to show that a sample was taken from it.
4. Fill out the PURAFIL[®] Sample Transmittal and send it with the samples to the local representative, or send it to the Purafil, Inc. laboratory. A replacement sampling kit will be mailed to you.

A sampling record sheet is included with this manual. Record the following data, and file all related reports with the record sheet:

1. Date that the sample is taken and mailed
2. Results of life analysis as reported by the Purafil Laboratory

After the PURAFIL[®] laboratory has analyzed a sample, a Certificate of Analysis will be sent to you detailing the approximate percentage of total life consumed. A projected replacement date will be given for each MOLE[™] manhole scrubber if installation and sampling dates are provided.

The projected replacement dates may be used in updating budget requirements as well as a guide in ordering replacement material. However, since contaminant load is rarely constant, avoid relying too heavily on projected replacement dates.

By maintaining records of the life expenditures of each filter bank, the media banks with the greatest percentage of life expended can be replaced before others that have less life expended.

4.3 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.

4.4 PURAFIL[®] STAIN REMOVAL

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 (MnO₂), 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 (NaMnO₄), 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 permanganate has damaged the fiber, 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 (SO₂) 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.*

