A RECOMMENDED METHOD FOR INSTALLING AND REPLACING FILTERS IN BAG-IN/BAG-OUT ENCLOSURES

IMPORTANT WARNINGS READ FIRST

1. This document must be maintained permanently in a visible location on the access face of the Bag-In/Bag-Out Filter System. It SHALL NOT be stored inside the access door, but shall be kept in a location where it can be reviewed prior to accessing the system.
2. This document must be read thoroughly before opening any of the access doors to the Bag-In/Bag-Out Filter System.
3. See Page 2 for important comments on Safety.

American AirFilter

INTRODUCTION

The following instructions describe a general method for installing and replacing filters in Bag-In/Bag-Out enclosures. Various American Air Filter Bag-In/Bag-Out enclosure models have been offered over the years, some of which are current, and some of which have been discontinued. For instance, it may be useful to describe and contrast a few of these styles:

- A single door opening may be provided for both the prefilter and final filter together, or separate doors may be provided for each filter.
- Actuation of the filter locking mechanism may be from inside the bag by means of a lever operated mechanism, or from outside the bag by means of a screw operated mechanism.
- The filters to be removed may be prefilter(s), HEPA filter(s) or adsorber filter(s) only, or combinations of prefilter(s) and HEPA filter(s), or prefilter(s) and adsorber filter(s).
- The Bag-In/Bag-Out enclosure may be a single filter wide or multiple filters wide.

Regardless of the enclosure style that has been purchased, the general methodology for installing and replacing filters remains the same, and can be easily modified where necessary to accommodate variations in equipment.

The Bag-In/Bag-Out enclosure illustrated in these instructions is a one filter high by one filter wide unit containing a prefilter and a HEPA filter, both of which are accessed through a single door. The HEPA filter locking mechanism is lever actuated from inside the bag. Upon initial filter installation, a separate bag kit is required for each door opening. These are supplied with the equipment. A single bag may accommodate up to three 24 x 24 x 12 inch nominal HEPA filters; however, consideration should be given to handling of the contaminated filters within the bag after they have been removed from the enclosure. It may, in fact, be advisable to load less than three filters in each bag. No more than one adsorber filter should ever be loaded into a bag. This means that on wide units, multiple bag kits may be required for both filter removal and filter replacement.

As with all good maintenance practice, it is important that procedures be developed that take into account the specific equipment, application and installation involved and that personnel be given adequate training and opportunities for practice before actually working on the equipment. Before proceeding the user shall ensure that facilities are available for safe storage or disposal of the contaminated filters, that the replacement filters are available and stored within the vicinity of the enclosure and that an adequate supply of bag kits are available to complete removal and replacement of the filters. Replacement bag kits can be obtained through your local American Air Filter Equipment Sale Office. For the telephone number of that office, call the AAF Air Filtration Products Department, at (502) 637-0011.

It is advisable to keep a plentiful stock of bag kits on hand to avoid any possibility of being caught short.

SAFETY

By its very nature a Bag-In/Bag-Out filter system is intended to be used to clean air which contains hazardous contaminants in the form of particulates or gasses. Such systems must be treated with the utmost care and respect by all who come in contact with them. Before proceeding the owner/user/maintenance contractor MUST evaluate the nature of the contaminants contained within the Bag-In/Bag-Out enclosure and determine the hazard that these contaminants present to those who may come in contact with them. Depending upon the result of this evaluation additional safety measures may be advisable. Although it is highly reliable, the Bag-In/Bag-Out system is not foolproof. Accidents can happen. Bags may tear or be pulled away from the mounting ring exposing the area outside the enclosure to contamination from inside the enclosure. It is the responsibility of the owner/user/maintenance contractor to determine the extent and nature of any additional safety measure required; however, when necessary it is recommended that at least the following be considered:

- The certification of each Bag-In/Bag-Out filter system prior to operation by in-place testing to ensure that it meets the required limits on leakage and required filtration efficiency. It is recommended that such testing shall be repeated after each filter replacement operation.
- Installation of security provisions to ensure that access to Bag-In/Bag-Out filter systems is restricted to properly authorized fully trained individuals.
- Use of protective clothing by maintenance personnel together with adequate facilities for sterilization, safe removal and disposal of such clothing.
- The use of negative pressurization to prevent migration of contaminants into uncontaminated areas.
- Installation of alarms or other methods for detection of escaped contaminants.
- Development of procedures for controlling and cleaning up escaped contaminants.
- Preparation of evacuation and emergency response plans.
- Other measures may also be called for depending upon the application. This may include procedures such as the sterilization of the system by flooding it with a gaseous compound designed to render the enclosed contaminants harmless (E.G. flooding with a disinfectant where the system has been used to capture living organisms such as bacteria).

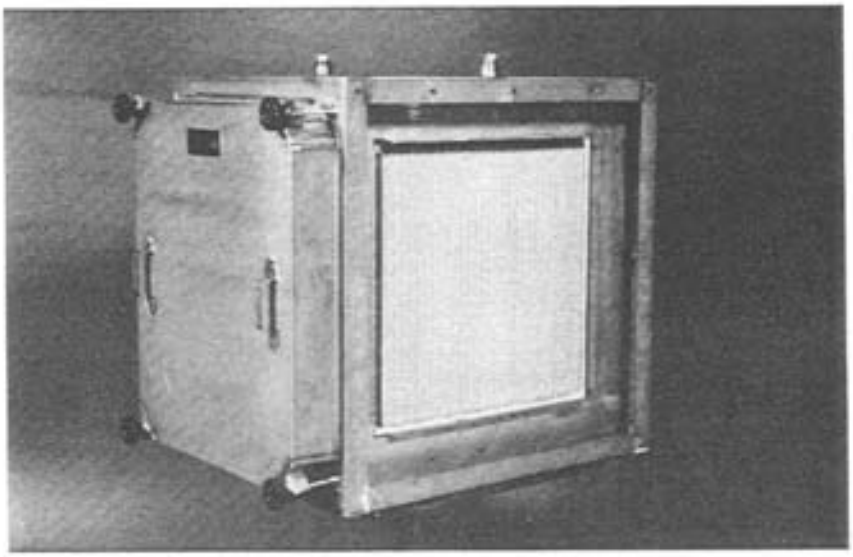
This document is not intended to specify, describe or detail the "additional safety measures" that should be implemented in any particular application. American Air Filter/SnyderGeneral accepts no responsibility for doing so. This is properly the responsibility of the system designer, the owner, the user and the maintenance contractor. The above list is offered by way of suggestion only and shall not be considered to be exhaustive or generally effective or applicable in all situations.

METHOD FOR INSTALLING AND REPLACING FILTERS

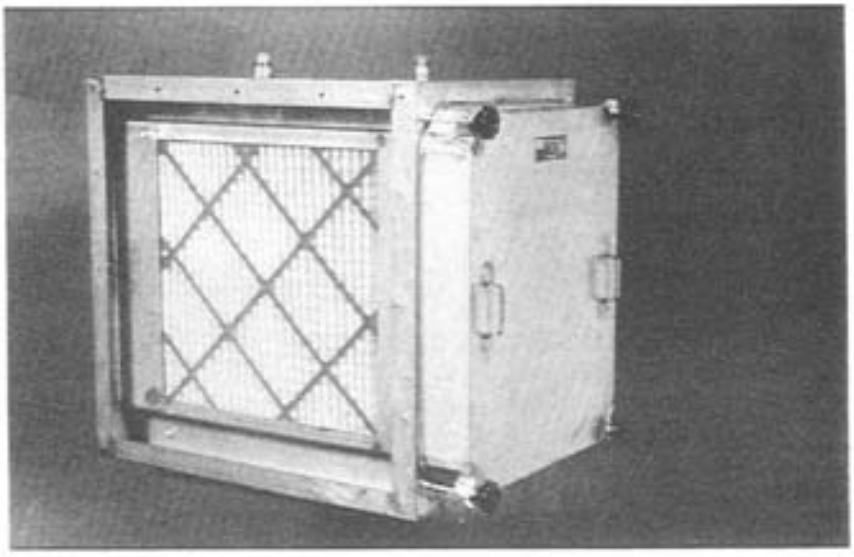
The following is a step-by-step procedure for replacing air filters in an operating Bag-In/Bag-Out air filter system. The procedure consists of a combination of photographs and commentary. The system shown starts out with the filters and bag already installed. On an initial filter installation (first installation only) the filters may be installed directly into the enclosure and the bag then installed on its supporting collar in the manner described herein.

It is recommended that at least two people be on hand to perform the operation of replacing filters.

Bag-In/Bag-Out filter enclosure with prefilter and final filter installed — View from downstream (air outlet) face showing final filter.



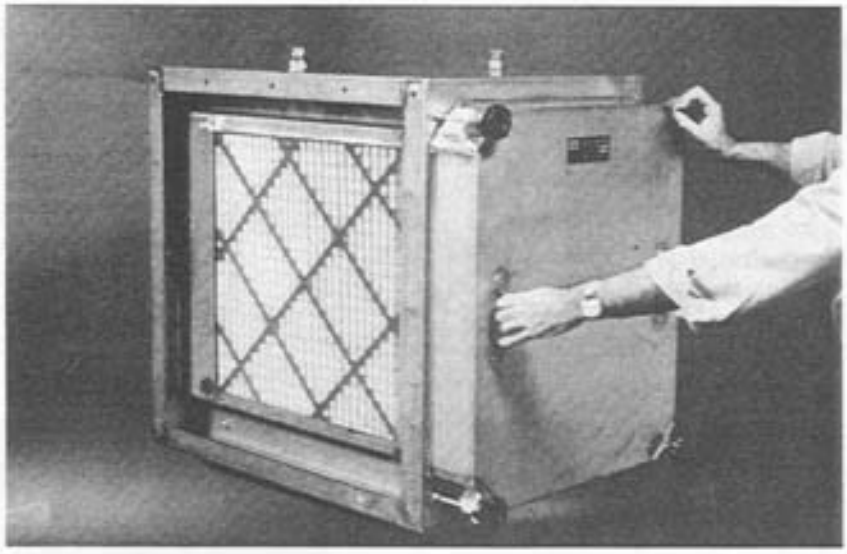
Bag-In/Bag-Out filter enclosure with prefilter and final filter installed — View from upstream (air inlet face) showing prefilter.



STEP 1
SHUT OFF THE AIRFLOW TO THE FILTER SYSTEM

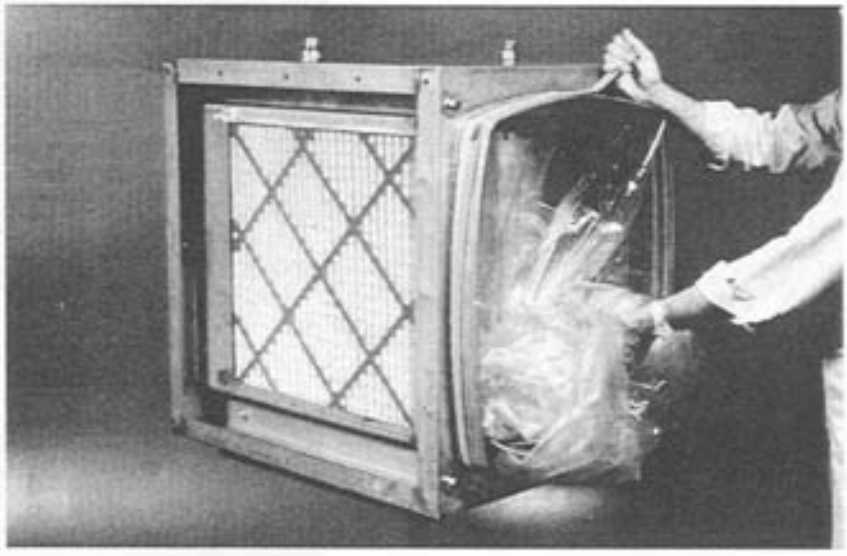
STEP 2

Open the enclosure access door carefully. The door shall be loosened by evenly relieving the sealing pressure exerted by the four (4) locking screws. This is done by turning them counter clockwise. Be careful to support the door by the handles while removing the locking screws. When the locking screws have been fully disengaged remove the door completely and set aside in a safe place. Ensure that the door gasket is protected at all times during this operation.



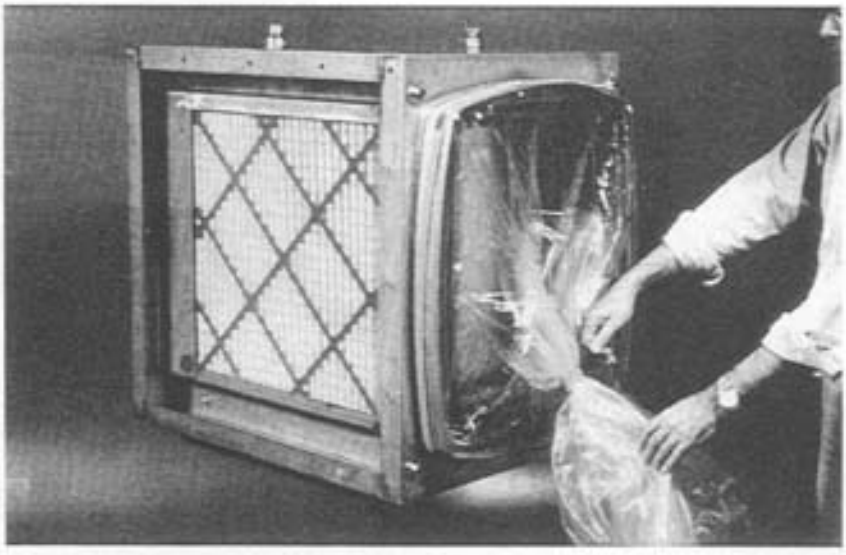
STEP 3

With the door removed the bag can be seen. It is secured to the housing collar by means of an elastic cord, which is formed into the opening of the bag, and a security strap which provides an additional factor of safety. Check to ensure that these are both firmly attached and then carefully unfurl the bag. A table or platform shall be provided at the level of the door opening to support the unfurled bag and the weight of the filters.



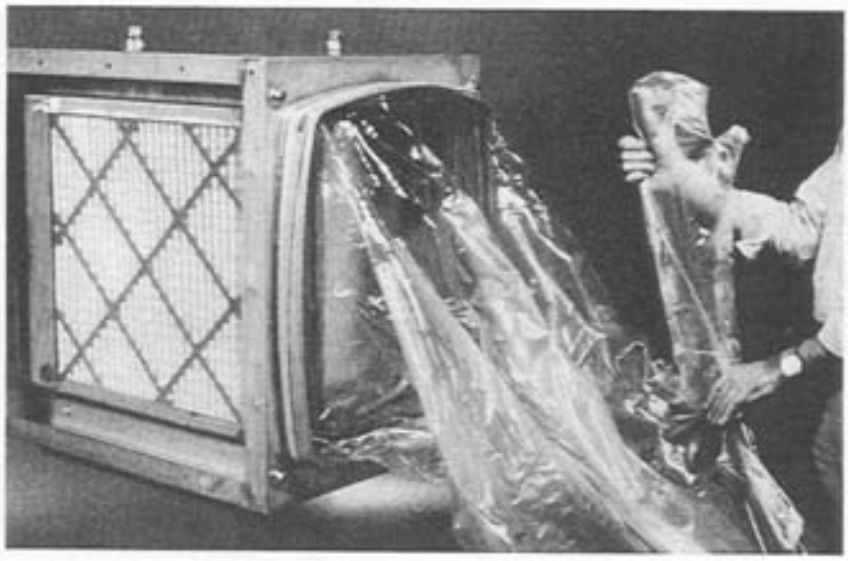
STEP 4

With the bag unfurled the cinching strap can be seen. It is used to ensure that the bag cannot be sucked into the enclosure. Remove the cinching strap.



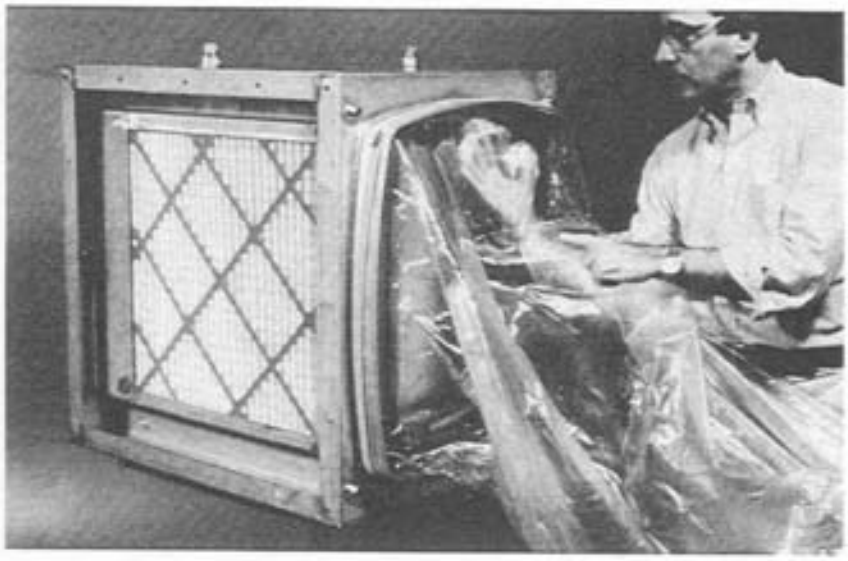
STEP 5

The bag includes a number of gloves which form an integral part of the bag. These are provided to facilitate manipulation of an internal filter clamping mechanism and handling of the filters. Locate the gloves.



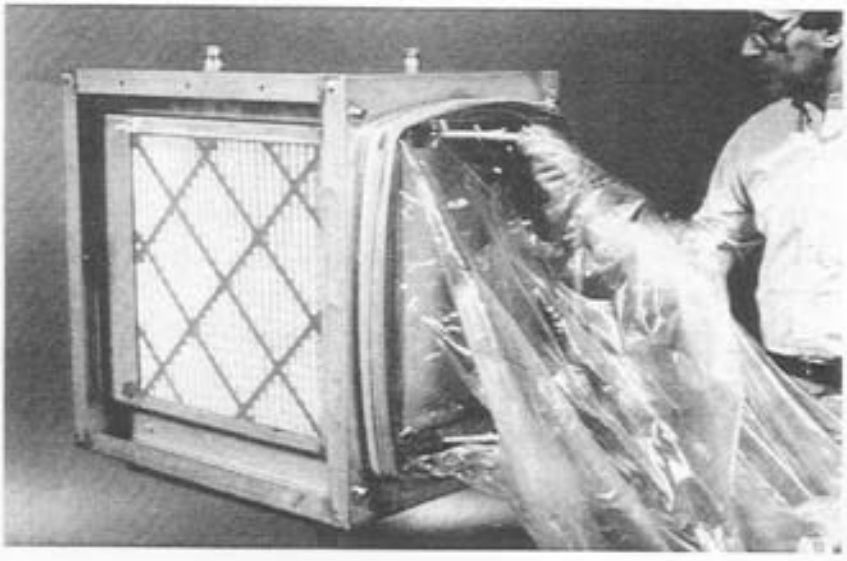
STEP 6

With a hand inserted in the glove locate the internal lever actuated filter clamping mechanism. On enclosure styles utilizing an external screw actuated clamping mechanism it will not be necessary to access the bag at this time.



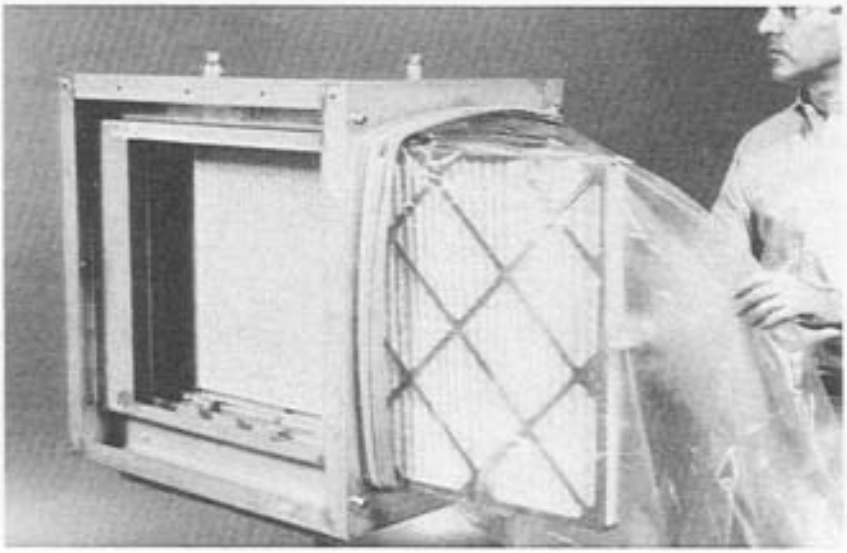
STEP 7

Actuate the lever arm to unclamp the filter on internally clamped enclosure styles. On externally clamped enclosure styles unclamp the filter by turning the clamping screw counter clockwise.



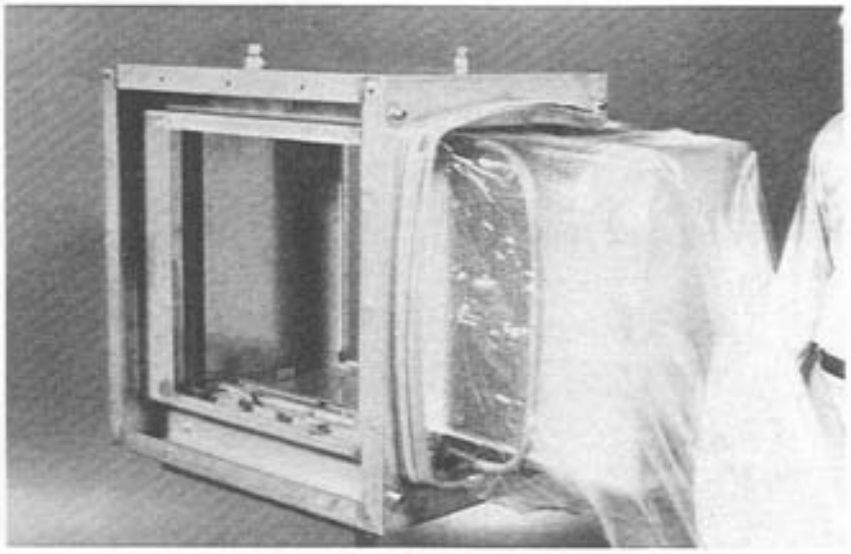
STEP 8

Withdraw the prefilter into the bag by sliding it along its mounting track. Some enclosure styles include filter removal rods to assist with filter removal on multiple filter wide enclosures. The filters are drawn towards the access door by pulling on the removal rod. Ensure that the bag/collar connection remains secure during this operation.



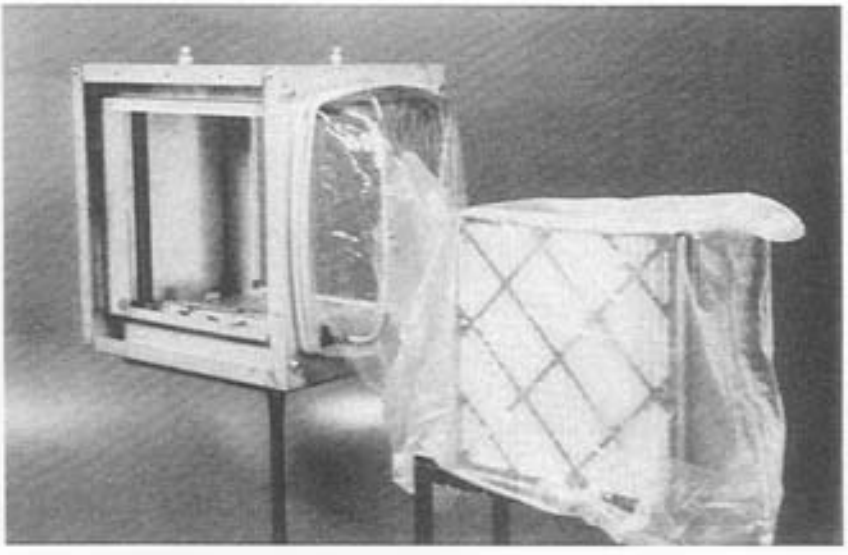
STEP 9

In a similar manner to that described in Step 8 withdraw the HEPA filter into the bag.



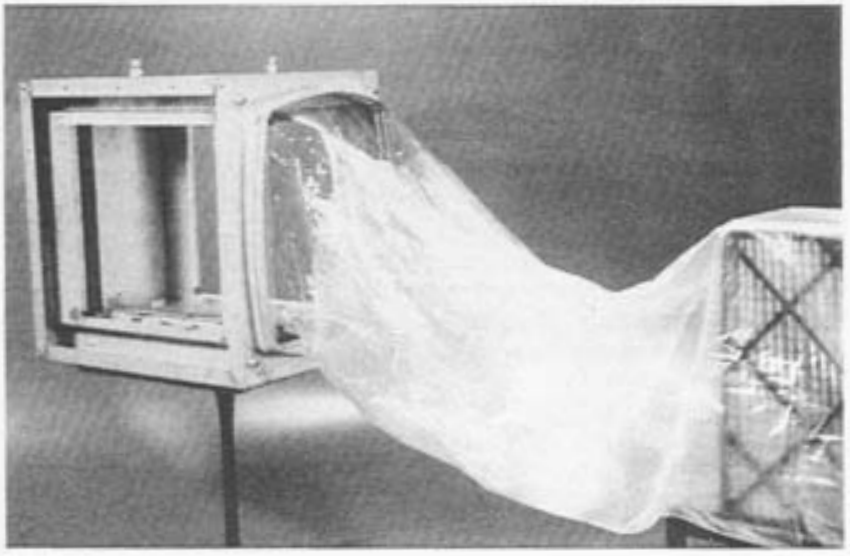
STEP 10

Both filters have now been safely removed from the enclosure and deposited in the end of the bag.



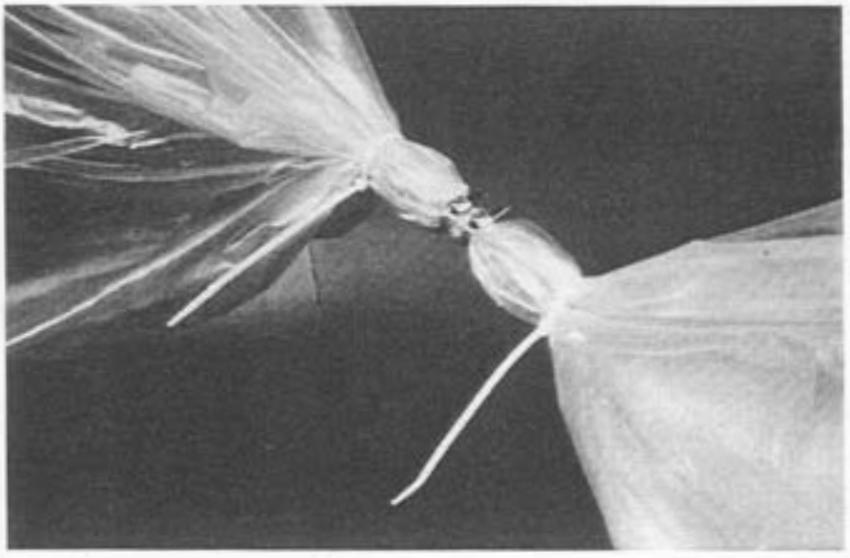
STEP 11

In preparation for sealing the bag move the filters away from the door opening to extend the bag. As always, ensure that the integrity of the bag/collar connection is maintained.



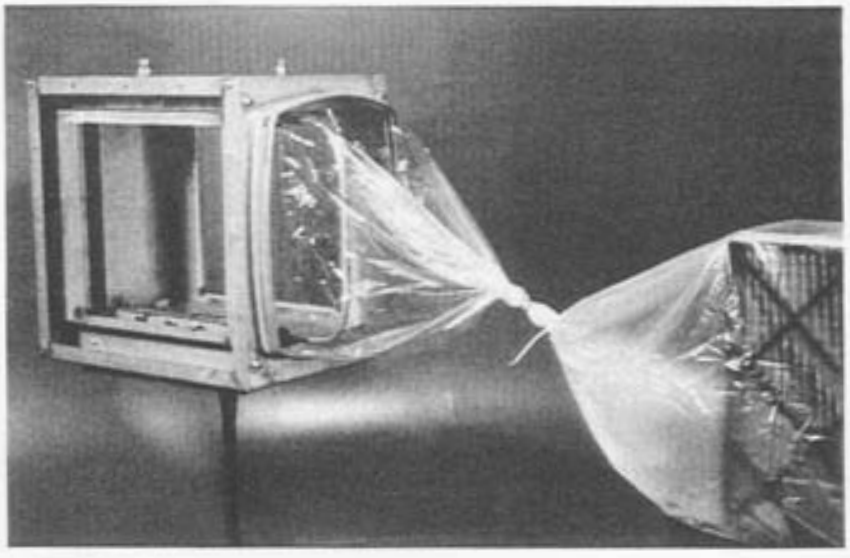
STEP 12

A number of methods for sealing the bag are commonly utilized. These range from heat sealing the bag to crimping the bag using hose clamps or tape. The method indicated here uses hose clamps. Plastic ties are used to gather a 12 inch section of the bag as close as possible to the enclosure. Two hose clamps are then installed at the center of this gathered section. The clamps should be separated by approximately one quarter of an inch.



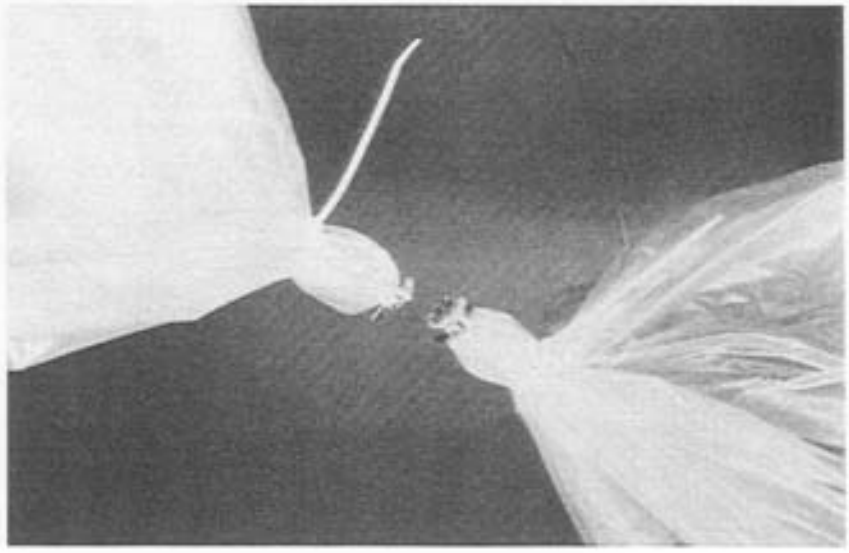
STEP 13

Tighten the clamps.



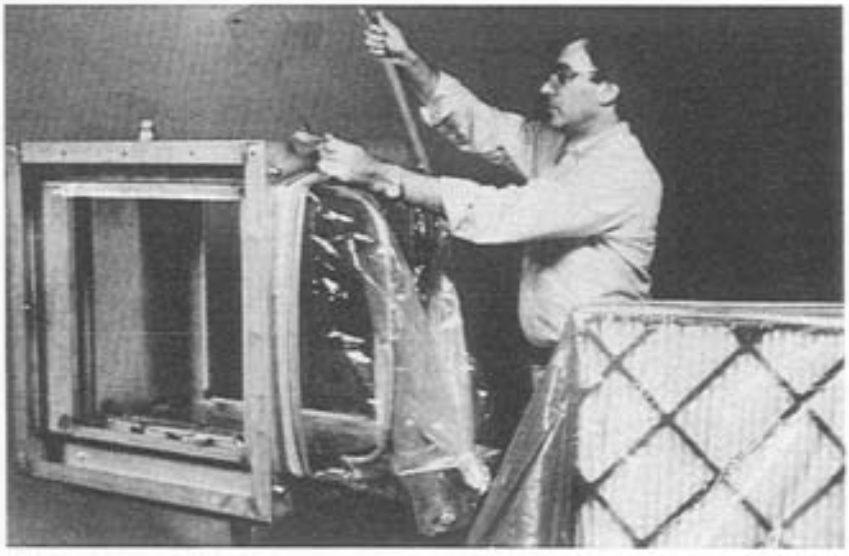
STEP 14

Using shears, cut the bag between the hose clamps. An alternate method is to use tape instead of hose clamps. The bag would be taped in three (3) places simulating the ties and clamps. Care should be taken to ensure that the bag is very tightly taped. The center tape is then cut to separate the portion of the bag with the filters from the portion attached to the enclosure bag mounting collar (this portion is known as the bag stub).



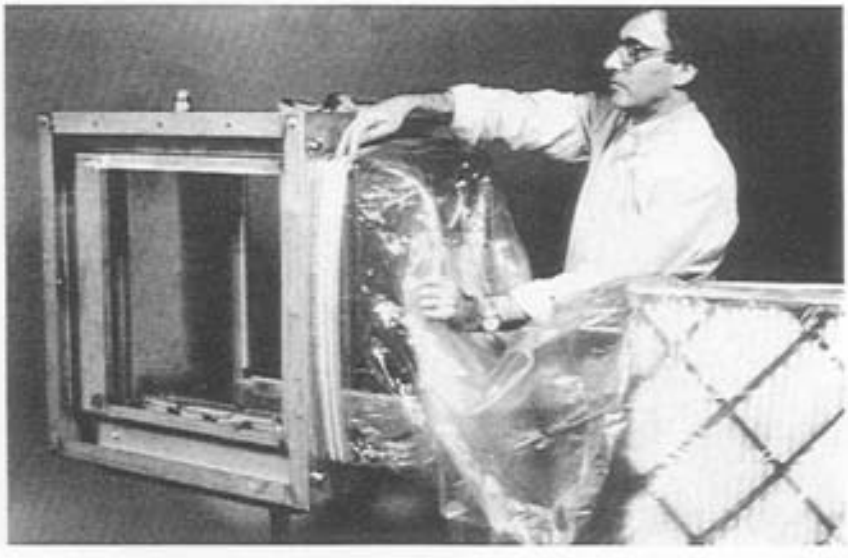
STEP 15

Remove the used filters sealed in the bag from the immediate vicinity and carefully remove the security strap from the bag stub on the enclosure.



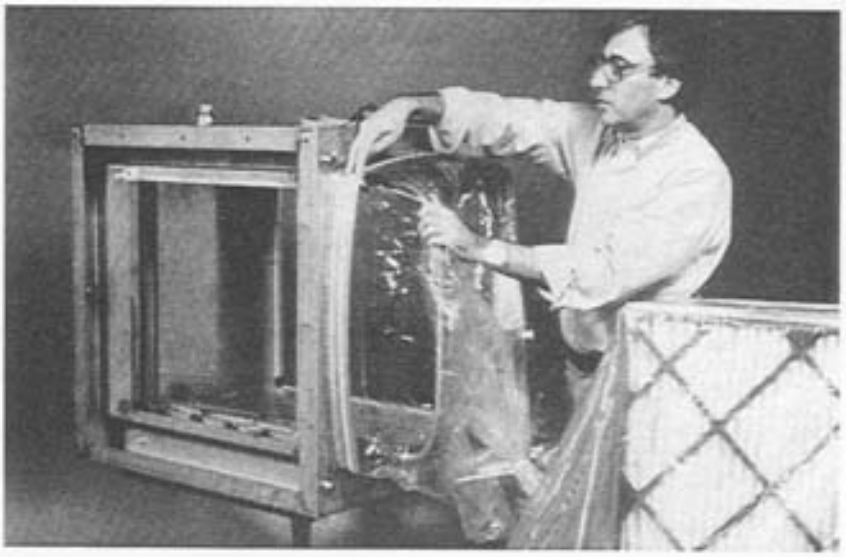
STEP 16

There are two (2) circumferential grooves or lips in the bag-In/Bag-Out enclosure collar. These grooves accommodate the elastic cord in the mouth of the bag. The elastic cord will be located in the groove closest to the enclosure. Gently, while exercising extreme care, move the bag stub away from the enclosure so that the elastic cord is located in the outer groove.



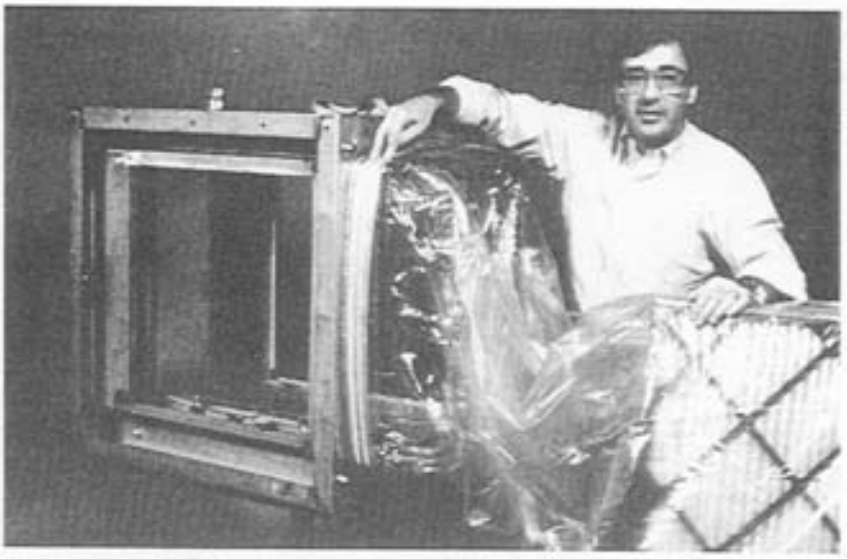
STEP 17

Insert the replacement filters into a new bag and, with the old bag stub still in place, install the elastic cord of the new bag onto the vacated inner groove of the Bag-In/Bag-Out enclosure collar.



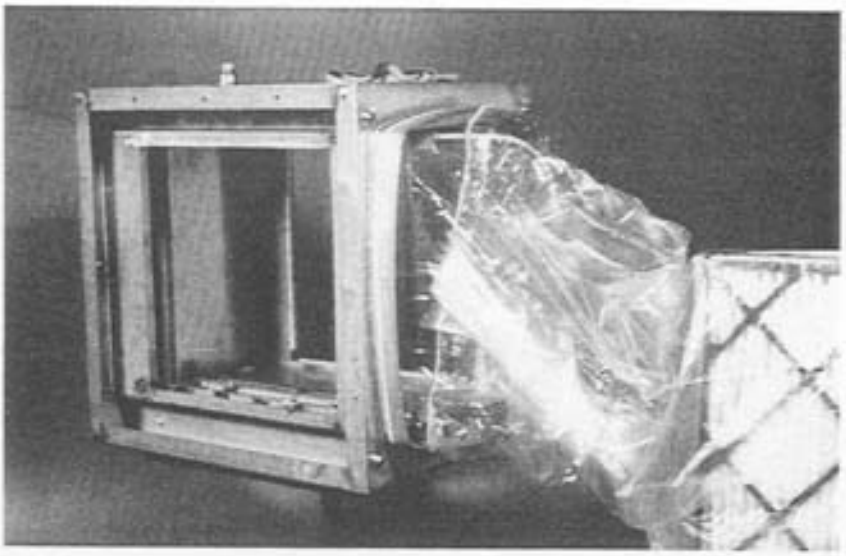
STEP 18

The old bag stub is now located safely inside the new bag.



STEP 19

Using the glove in the new bag carefully remove the old bag stub from the outer groove of the Bag-In/Bag-Out enclosure collar. For convenience the old bag stub may be stored out of the way inside one of the new bag gloves.

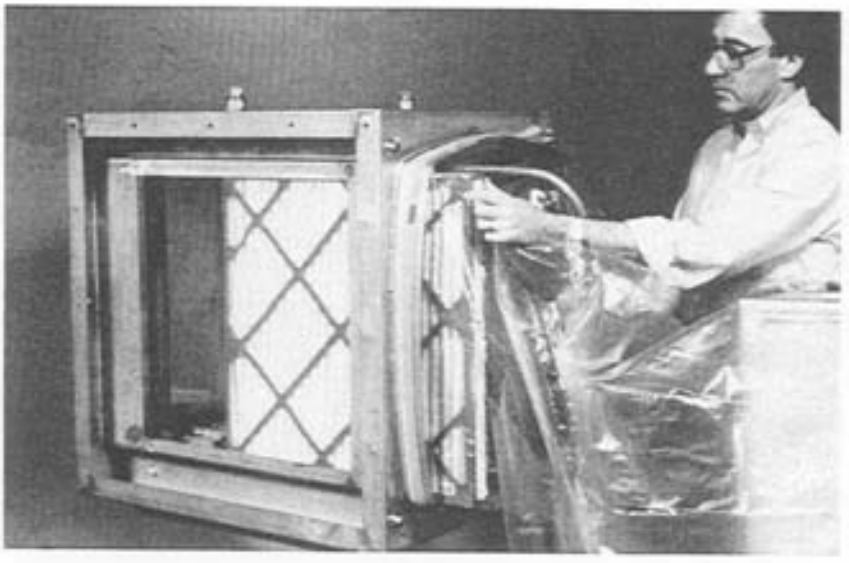


STEP 20

Replace the security strap on the new bag and tighten it down firmly. The new filters may now be installed.

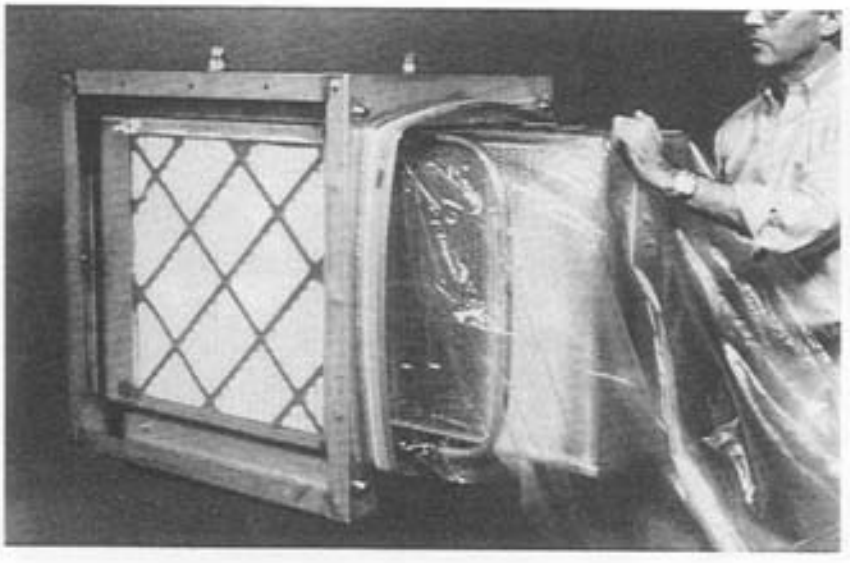
STEP 21

Install the prefilter.



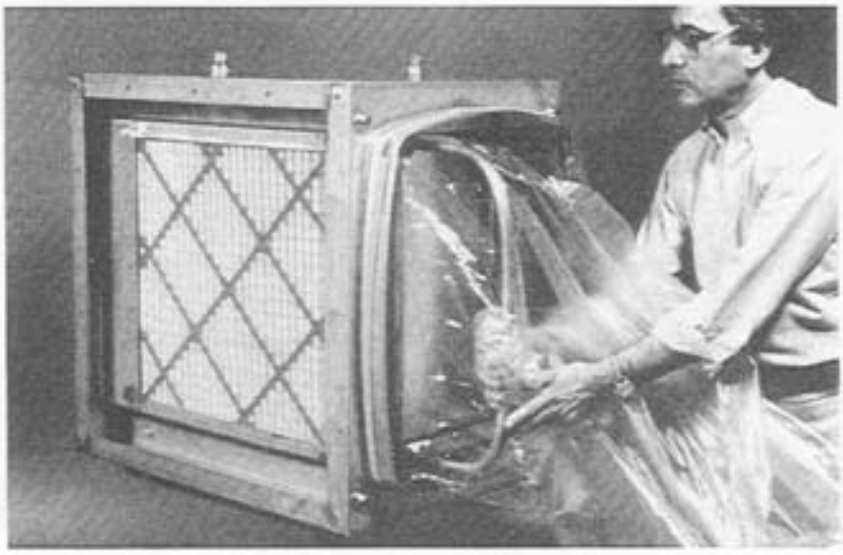
STEP 22

Install the HEPA filter ensuring that it is inserted all the way into the housing.



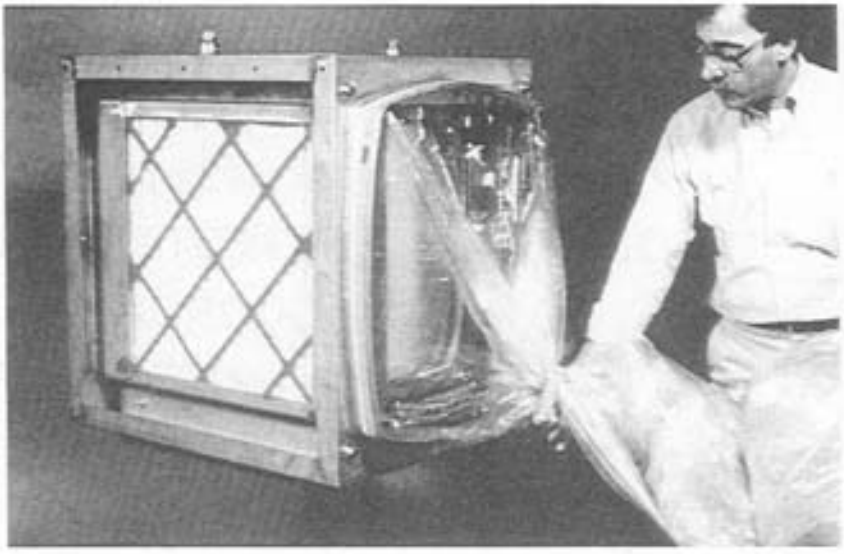
STEP 23

Clamp the HEPA filter into position. This will be the reverse of the operation described in Steps 6 and 7.



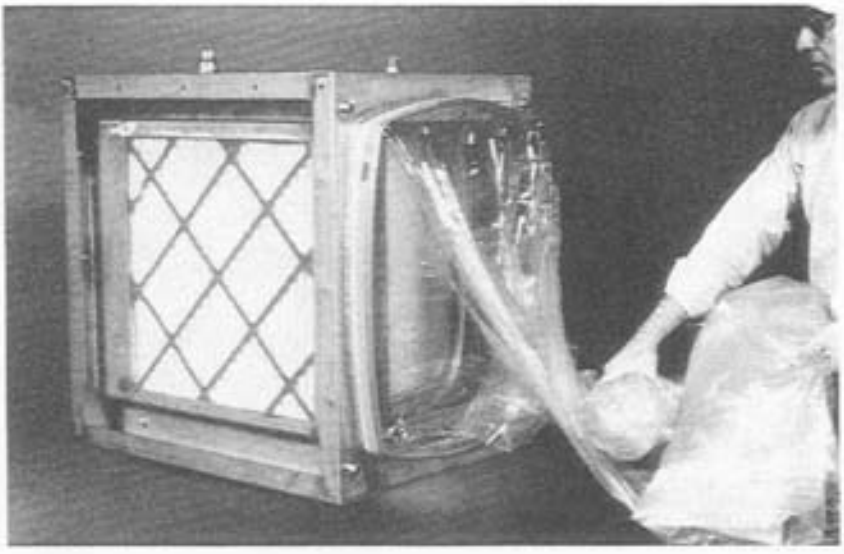
STEP 24

Install the cinching strap on the bag close to the enclosure.



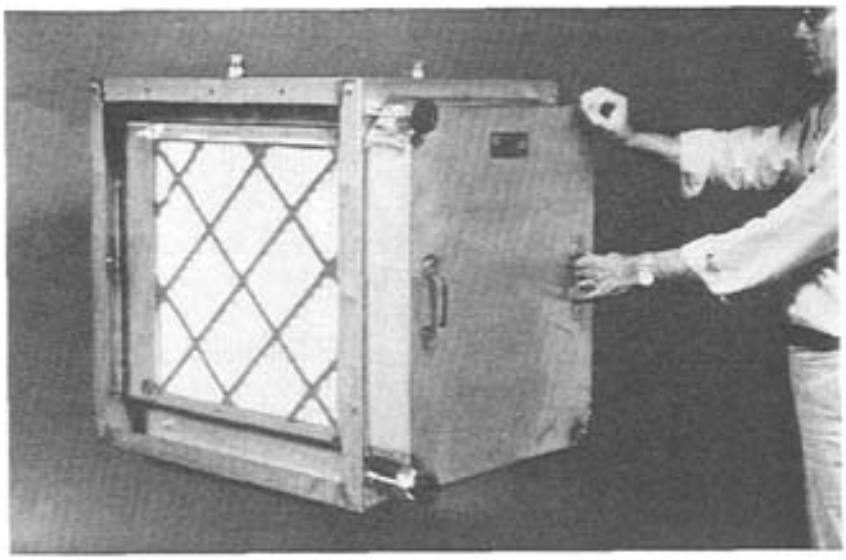
STEP 25

Fold the bag neatly so that it will not interfere with the closing and sealing of the enclosure door. The folded bag will be stored within the cavity of the door when the door is reattached to the enclosure (see Step 26).



STEP 26

Examine the door gasket to ensure that it is in an acceptable condition. If it is not, replace it. Position the door in place on the enclosure and attach it to the enclosure using the four (4) locking screws. Tighten the locking screws evenly and in sequence until the door is properly sealed in place.



THE FILTER SYSTEM IS NOW READY FOR QUALIFICATION TESTING AND/OR START-UP IN ACCORDANCE WITH THE OWNER'S/USER'S PROCEDURES.

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