795-92645_0116

Graymills
INDUSTRIAL PUMPS

Operation and Maintenance Instructions

Heavy Duty Coolant Tank/ Bed Filter/ Magnetic Separator

BFTS40	Bed Filter with 31-gallon pump/tank combination
MS40	Magnetic Separator for BFTS40
BFTS80	Bed Filter with 41-gallon pump/tank combination
MS80	Magnetic Separator for BFTS80
BFTS120	Bed Filter with 54-gallon pump/tank combination
MS120	Magnetic Separator for BFTS120
BFTS160	Bed Filter with 67-gallon pump/tank combination
MS160	Magnetic Separator for BFTS160

SAFETY WARNINGS

You will find various types of safety information on the following pages and on the labels attached to Graymills equipment. The following Safety Statements explain their meaning:

⚠ This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION **CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

CAUTION **CAUTION**, used without the safety alert symbol, indicates a situation the could result in damage to the equipment or components not related to personal injury.

⚠ CAUTION

Never work with equipment you feel may be unsafe. Contact your Supervisor immediately if you feel a piece of equipment is in an unsafe condition.

INTRODUCTION

The Graymills combined Coolant Tank, Bed Filter and (optional) Magnetic Separator are designed to keep your cutting, grinding, drilling and milling machinery operating at peak performance. By filtering out harmful contaminants, coolant life is greatly extended, saving both replacement and labor costs.

Coolant flows into the diffuser tray, which separates larger chips and milling by-products. The liquid then pours onto the filter bed where it is sieved by the filter media. As the contaminants accumulate and clog the filter media, the solution rises in the filter bed until the float switch is triggered. This starts the motor that moves the chain conveyor/filter media along, until it is replaced by clean material. The soiled filter media is moved to a sludge box.

The benefits are:

- Keeps the coolant clean. Reduces frequency of coolant replacement. Reduces operating costs.
- Keeps the workpiece surface cleaner.
- Grinding wheel does not need to be dressed as often. Increases productivity and grinding wheel life.

UNPACKING

Unpack and inspect unit carefully to verify that everything is intact and there are no obstructions in the chain mechanism or any other electrical or mechanical components. Do not run power to system at this time.

SAFETY INSTRUCTIONS

⚠WARNING

Read this before using your product.

- Read and follow all safety instructions supplied with chemical/coolant being used in your machine tool.
- To avoid damage to the unit, check power source for proper voltage and phase. Unit comes standard with a transformer capable of accepting either 230V or 460V, 3 phase power.
- As in all electrical circuits, it is highly recommended that an electric safety device such as a fusible disconnect or circuit breaker be installed in line before unit is connected.
- Do not use an extension cord to supply bed filter system.
- Check the rotation of the pump before starting operation. Rotation should be in a clockwise direction looking down on the motor (arrow on pump body indicates direction).
- Ensure that all fittings and connections are properly tightened.
- It is important that sensitive electronic equipment, be kept a safe distance from the Magnetic Separator, such as
  - personal electronic devices such as pacemakers
  - computers
  - magnetic media such as credit cards
- Turn off power to the unit before beginning maintenance on the Graymills Coolant Tank, Bed Filter, or Magnetic Separator.
- Make sure that pump is spinning freely. See "Maintenance" instructions.

SYSTEM COMPONENTS

A Pump
Used to deliver the coolant in the tank to the machine.

B Gear Reducing Motor
Moves the filter media along as necessary.

C Liquid Level Control and Filtration
Float switch mechanism detects the level of coolant collected in the filter valley. Switch operates the motor that moves the filter media along when level is too high.

D Diffuser Tray
Collects larger particles before the coolant is deposited on the filter media. Also helps spread deposits evenly, increasing media life.

E Filter Media
Collects the particles to filter the coolant. Standard roll is 150 yards, rated at 20 micron. Other micron ratings available; contact Graymills for details.

F Sludge Box
Used to accumulate spent filter media and prevent run off to floor.

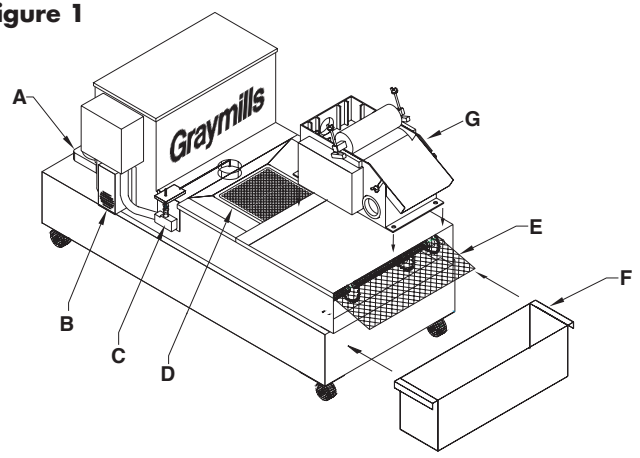
G (Optional) Magnetic Separator
Removes ferrous material from coolant before fluid enters bed filter or tank. Can be installed directly on bed filter for dual stage separation, or run independently with pumping system.

UNIT SET UP

CAUTION

1. Verify operating voltage and make any necessary changes to the connections to the transformer in the control box as well as the pump. The unit is a dual voltage system and the default setting should be 230V/3Ph. Follow the wiring schematics on the transformer and pump to check/change the power settings. Refer to Figures at bottom of page 3. All electrical connections should conform to national/local codes and be made by qualified personnel.
2. Position the unit in the area in which it will be operating.
3. Remove diffuser tray and lids from paper compartment and chain area.
4. Fill the tank cavity with coolant until level is approximately 1 to 2 inches below side wall of tank, being careful not to overfill.
5. Proceed to feed paper through the opening at the bottom of the paper compartment and onto the chain until the chain is completely covered. Extend filter media a few inches past the chain. Position the sludge collection box at the end of the tank and place end of filter paper over box so soiled media drops into box.
6. Replace lids and reinstall diffuser tray.
7. Pump and bed filter may be wired separately in the event there is a power feed from your machine tool to incorporate the pump operation into the main control. If not, you may run a water-tight conduit (customer supplied) from the pump to the main control box and bring your main power feed into it for a central connection. All electrical work must be according to applicable codes.
8. Make the necessary connections as shown in the wiring schematic, Figure 3. All electrical work must be according to applicable codes.
9. Complete any other necessary installations to finish the hook up. This includes attaching hoses and fittings (customer-supplied) from the pump discharge to the machine tool. The BFTS40 system has a 1/2" pump discharge; the BFTS80 and BFTS120 systems have a 3/4" pump discharge; the BFTS160 system has a 1" pump discharge. Do not reduce the outlet of the pump. Doing so will reduce the flow capacity of the pump. Also plumb the return lines so they are discharging directly onto the diffuser plate of the Bed Filter or intake of the Magnetic Separator.

Figure 1



10 Turn on system and monitor operation to make sure all connections are tight and fluid circulation is functioning. Watch as the coolant drains from the machine tool back into the collection tank. Make sure that it is flowing freely. Check rotation of pump. Rotation should be in a clockwise direction looking down on the motor (match arrow on pump body).

11 Make any final adjustments to float switch to ensure level of liquid in filter bed does not exceed height of chain on either side. To adjust the liquid level, turn the screw on the floating ball switch. To lower the level, turn clockwise. To raise the level, turn counter-clockwise.

OPTIONAL MAGNETIC SEPARATOR

With Bed Filter

1 Verify operating voltage and make any necessary changes to the connections located on the underside of the Magnetic Separator—the unit is a dual voltage system and the default setting should be 230V, 3Ph. Follow the wiring schematic (Figure 3) to check/change the power settings. All electrical connections should conform to national/local codes and be made by qualified personnel.

2 Remove solid cover plate from end of bed filter to expose frame rails.

3 Position the Magnetic Separator as shown in Figure 1. Make sure mounting feet are resting on the metal supports of the bed filter and the mounting holes are centered on those supports. The discharge chute should be pointing into the Sludge Box.

4 Use self tapping screws to fasten the Magnetic Separator to the support rails.

5 Plumb the outlet of the Magnetic Separator so that the flow is routed back into the center of the diffuser tray where it can be run through the filter media. Plug the outlet port that is not being used with the fitting provided.

6 Visually inspect scraper blade so it is just lightly touching the surface of the magnetic roller.

7 Complete the electrical connections and make final adjustments.

Without Bed Filter

1 Verify operating voltage and make any necessary changes to the connections located on the underside of the Magnetic Separator - the unit is a dual voltage system and the default setting should be 230V, 3Ph. Follow the wiring schematic (Figure 3) to check/ change the power settings. All electrical work must be according to applicable codes.

2 Remove the intake trough and plumbing from the small tank lid.

3 Positioning the Magnetic Separator on the tank is not critical and optimal location is at the discretion of the operator. We recommend that the discharge chute hangs over the side of the tank directing refuse directly into the plastic tray provided with the magnetic separator.

4 Use self tapping screws to fasten the Magnetic Separator to the tank lid.

5 Plumb the outlet of the Magnetic Separator so that the flow is routed back into the tank. Plug the outlet port that is not being used with the fitting provided.

6 Complete the electrical connections and make final adjustments to suit your application.

MAINTENANCE

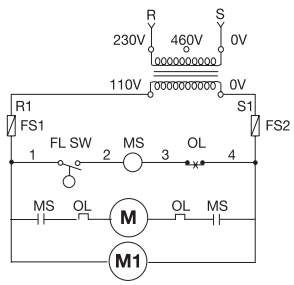
WARNING

Be sure power to the unit is shut off before performing maintenance on your machinery.

- For continued service, have an extra roll of filter media available.
- Replace the used filter media before you reach the end of the roll to avoid letting the uncleaned coolant flow directly into the tank.
- If necessary, remove bottom cap and impeller, clean volute cavity to remove obstructions. Replace impeller and bottom cap.
- Check and clean the diffuser tray (D, page 2) frequently to keep coolant flowing into the bed filter.
- Be sure to dispose of the drained sludge from the sludge collection box before it is full.
- Dispose of used media according to all federal, state and local regulations.
- If you are using a Magnetic Separator, check it frequently and dispose of metal debris. Check the scraper to be sure it is cleaning the roller. Scraper should make only light contact with the surface of the roller. Use wing nuts to make adjustments, loosening to decrease pressure on the scraper. Clean sludge from the scraper and roller so that it does not harden and cause a malfunction. Clean away metal chips as necessary.
- If the Magnetic Separator will not be used for an extended period of time, loosen the wing nuts to decrease pressure of the scraper on the roller. This will extend roller life.
- Empty and clean the unit as necessary. Check the diffuser tray, chain and tank. Wipe out all debris with a rag.
- To prolong finish quality, wipe off the exterior of the machinery with a clean, damp cloth as needed.

Figure 2 Wiring diagram for Bed Filter

BFTS40, 80, 120



BFTS160

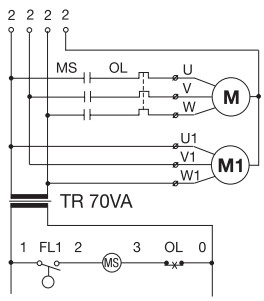


Figure 3
Wiring diagram for Magnetic Separator (inside unit)

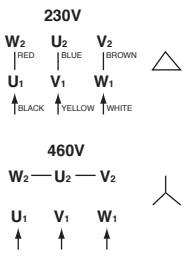
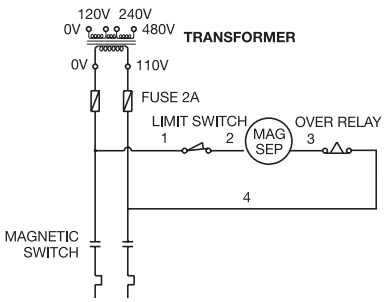
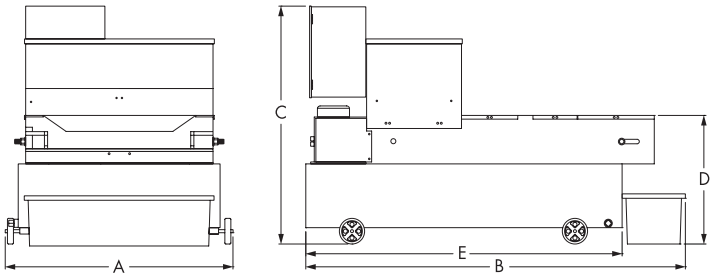


Figure 4
Wiring diagram for full system



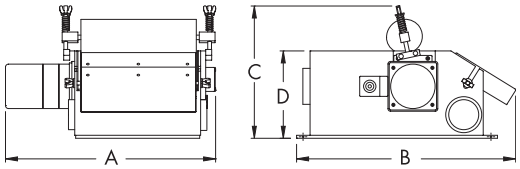


SPECIFICATIONS — BED FILTER

MODEL	FILTRATION CAPACITY	TANK CAPACITY	VOLTAGE	HP	FILTER PAPER	MAX FLOW	PUMP OUTLET	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)
BFTS40	10 GPM	31 Gal	230, 460V/3Ph	1/10	19½" W	10 GPM	1/2"	26⅞	47¼	26	15¾	39⅜
BFTS80	20 GPM	41 Gal	230, 460V/3Ph	1/4	19½" W	20 GPM	3/4"	26⅞	59	26	15¾	51⅛
BFTS120	30 GPM	54 Gal	230, 460V/3Ph	1/2	28" W	30 GPM	3/4"	36¼	59	29⅛	15¾	51⅛
BFTS160	40 GPM	67 Gal	230, 460V/3Ph	3/4	28" W	40 GPM	1"	36¼	71	29⅛	15¾	63

SPECIFICATIONS — MAGNETIC SEPARATOR

MODEL	VOLTAGE	INLET/ OUTLET	A (in.)	B (in.)	C (in.)	D (in.)
MS40	230, 460V/3Ph	2" / 2"	13⅝	18¼	11⅞	8
MS80	230, 460V/3Ph	2" / 2½"	17½	18¼	11	7¼
MS120	230, 460V/3Ph	3" / 3"	18⅝	19	12⅜	8⅝
MS160	230, 460V/3Ph	3" / 3"	22	19	12⅜	8⅝



REPLACEMENT ITEMS

Part Number	*Description*
785-90521	25W Gear Motor for BFST40/80,
785-90522	40W Gear Motor for BFST120,
785-92808	40W Gear Motor for BFST160,
785-90041	10X Reducing Gear for BFST40/80, MS40/80
785-90042	90X Reducing Gear for BFST40/80, MS40/80
785-09821	Float Switch, all models
742-90152	20 micron Filter Paper, 19.5" wide,150 yd roll
742-92694	20 micron Filter Paper, 28" wide,150 yd roll

Part Number	*Description*
IMV08-F	Pump for BFTS40
IMV25-F	Pump for BFTS80
IMV50-F	Pump for BFTS120
IMV75-F	Pump for BFTS160
785-09905	Replacement Mesh Chain for BFST40
785-90406	Replacement Mesh Chain for BFST80
785-92806	Replacement Mesh Chain for BFST120
785-92807	Replacement Mesh Chain for BFST160

WARRANTY

Graymills Corporation warrants that the equipment manufactured and delivered hereunder, when properly installed and maintained, shall be free from defects in workmanship and will function as quoted in the published specification. **Graymills** does not warrant process performance nor does Graymills assume liability for equipment selection, adaption or installation.

This warranty does not apply to damages or defects caused by operator carelessness, misuse, abuse, improper application, or abnormal use; the use of add-on parts or equipment which damages or impairs the proper function of the unit and modifications made by Buyer.

Graymills' obligation under this Warranty shall be limited to:

- Replacing or repairing (at **Graymills'** sole discretion) any non-conforming or defective parts manufactured by **Graymills** within one year from the date of shipment to customer.
- Replacing or repairing (at **Graymills'** sole discretion) thermoplastic parts cleaner tanks or lids that have cracked or split under normal use within five (5) years from date of shipment.
- Replacing or repairing components supplied but not manufactured by **Graymills** to the extent of the warranty given by the original manufacturer.

Buyer must give **Graymills** prompt notice of any defect or failure and satisfactory proof thereof.

This warranty does not apply to expendable parts which need periodic replacement due to normal wear.

This warranty does not apply to rusting of mild steel components or tanks in product used with aqueous (water based) fluids.

A new warranty period shall not be established for repaired or replaced materials or products. Such items shall remain under warranty for only the remainder of the warranty period of the original materials or products.

If you believe you have a warranty claim, contact **Graymills** at 773-248-6825 for a Return Merchandise Authorization number. Any returned material must have its RMA number on the outside of the package and be shipped prepaid or the shipment will be refused. **Graymills** will promptly examine the material and determine if it is defective and within the warranty period.

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES WHETHER ORAL, WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY SHALL NOT APPLY. **Graymills'** warranty obligations and Buyer's remedies thereunder (except as to title) are solely and exclusively as stated herein. In no case will **Graymills** be liable for consequential damages, loss of production or any other loss incurred because of interruption of service.

Graymills
INDUSTRIAL PUMPS
3705 N Lincoln Avenue Chicago, IL 60613
773-248-6825 fax 773-477-8673
info@graymills.com www.graymills.com