

# Graymills

## Heavy Duty Coolant Tank / Bed Filter / Magnetic Separator

- BFCT40** Bed Filter with 35-gallon pump/tank combination
- MS40** Magnetic Separator for BFCT40
- BFCT80** Bed Filter with 90-gallon pump/tank combination
- MS80** Magnetic Separator for BFCT80



## Operation and Maintenance Instructions

### WARNINGS/CAUTIONS

**Do not install or operate until you have read all warnings and instructions and understand the operation.**

- Turn off power to the unit before beginning maintenance on the Graymills Coolant Tank, Bed Filter, or Magnetic Separator.
- 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.
- Make sure that pump is spinning freely. See Maintenance instructions.
- Check the rotation of the pump before starting operation. Rotation should be in a clockwise direction looking down on the motor (match arrow on pump body).
- Ensure that all fittings and connections are properly tightened.
- It is important that sensitive electronic equipment, such as:
  - personal electronic devices such as pacemakers
  - computers
  - magnetic media such as credit cardsbe kept a safe distance from the Magnetic Separator when it is in operation.

**Never work with equipment you feel may be unsafe. Contact your Supervisor immediately.**

## SYSTEM FEATURES

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 with 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.

## 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

Float switch mechanism controls the level of coolant collected in the filter valley. Switch operates the motor

that moves the filter media along.

### 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 rated at 20 micron. Other micron ratings available; contact Graymills for details. 150 yard rolls.

### F Sludge Box

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

### G (Optional) Magnetic Separator

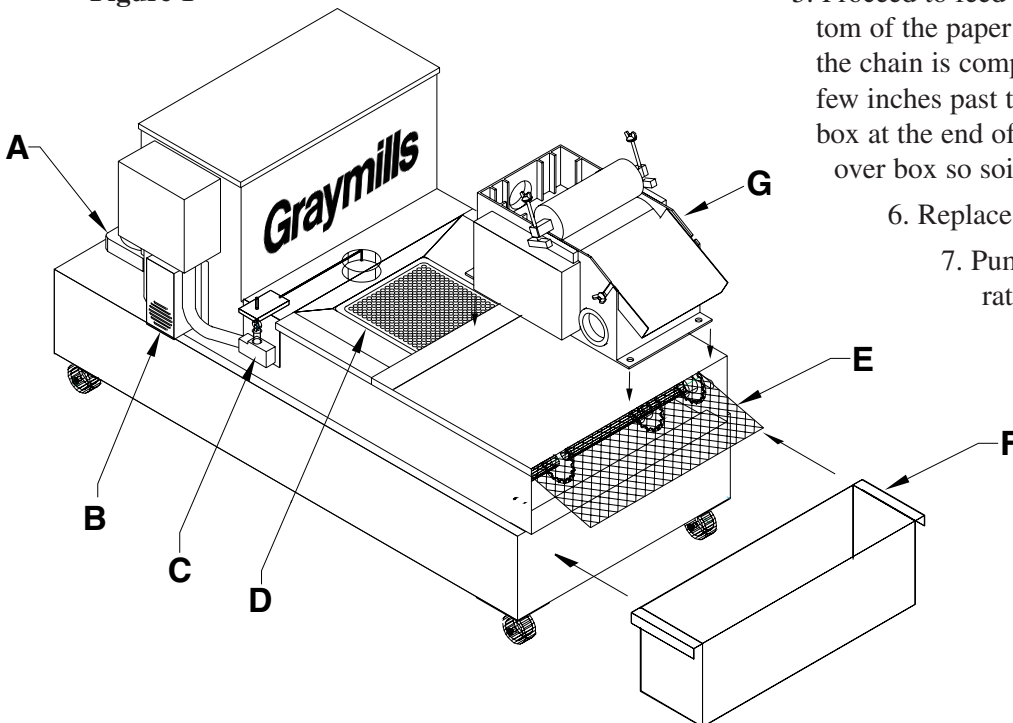
Removes ferrous material from coolant before straining for other debris. Can be installed directly on bed filter for dual stage separation, or run independently with pumping system.

## SET UP AND INSTALLATION

### Coolant Tank and Bed Filter

1. 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.
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

Figure 1



as shown in the wiring schematic, Figure 2. 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 35-gallon BFCT40 system has a 3/8" pump discharge; the 90-gallon BFCT80 system has a 1/2" 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.
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 work must be according to applicable codes.
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

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

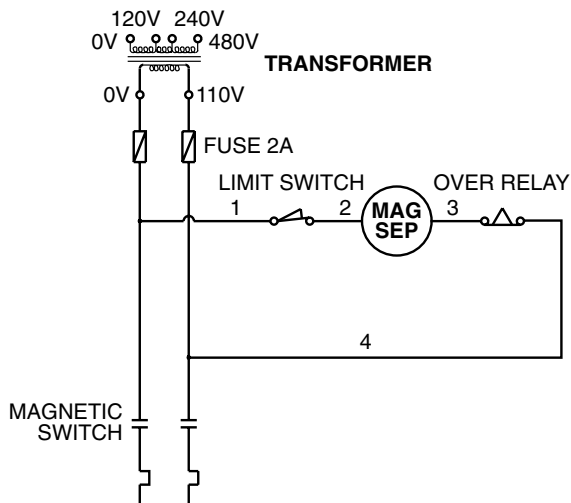
- For continued service, have an extra roll of filter media available.
- Replace the used filter media before you reach the end of the roll to avoid letting the uncleaned coolant flow directly into the tank.
- Make sure that pump is spinning freely. Hold shaft and spin to check. If necessary, remove bottom cap and impeller, clean volute cavity to remove obstructions. Replace impeller and bottom cap.
- Periodically check and wipe clean the baffling screen that is inside of coolant tank below the pump compartment.
- Check and clean the diffuser tray (D) 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 dif-fuser 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.

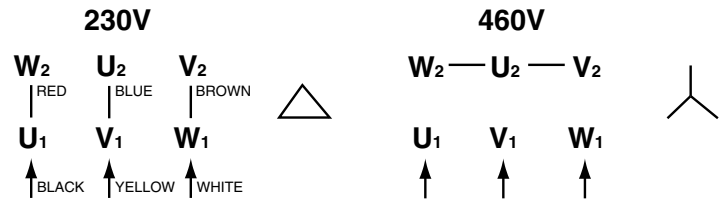
**Figure 2**

Wiring diagram for Full System



**Figure 3**

Wiring diagram for Magnetic Separator



## REPLACEMENT ITEMS

Part Number	Description
785-09818	25W Gear Motor for BF40/MS40
785-09819	10X Reducing Gear for BF40/MS40
785-09820	90X Reducing Gear for BF40/MS40
785-90040	40W Gear Motor for BF80/MS80
785-90041	10X Reducing Gear for BF80/MS80
785-90042	90X Reducing Gear for BF80/MS80
785-90521	Replacement Motor for MS40
785-90522	Replacement Motor of MS80
785-09821	Float Switch (BFCT40 and BFCT80)
IMV08	Pump for BFCT40
IMV25	Pump for BFCT80
785-09905	Replacement Mesh Chain for BF40
785-90406	Replacement Mesh Chain for BF80
785-90421	Repair Clips for Chain
742-90152	20 micron Filter Paper, 150 yd roll

## WARRANTY

**Graymills Corporation** warrants that the equipment manufactured and delivered, 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 assume any liability for equipment selection, adaptation, or installation.

Warranty does not apply to damages or defects caused by shipping, operator carelessness, misuse, improper application or installation, abnormal use, use of add-on parts or equipment which damages or impairs the proper function of the unit, and modifications made to the unit. Warranty does not apply to expendable parts needing replacement periodically due to normal wear and tear.

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 material or product.

THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, WHETHER ORAL, WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. **GRAYMILLS CORPORATION** MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. ALL IMPLIED WARRANTIES OF

MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE AFORESTATED OBLIGATION ARE HEREBY DISCLAIMED BY **GRAYMILLS CORPORATION** AND EXCLUDED FROM THIS SALE. **Graymills** warranty obligations and Buyer remedies (except to title), are solely and exclusively stated herein. In no case will **Graymills** be liable for consequential damages, loss of production, or any other loss incurred due to interruption of service.

**Graymills'** obligation under this Warranty shall be limited to:

- Repairing or replacing (at **Graymills** sole discretion) any non-conforming or defective component within one year from the date of shipment from **Graymills**.
- Repairing or replacing (at **Graymills** sole discretion), components supplied by, 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.

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

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