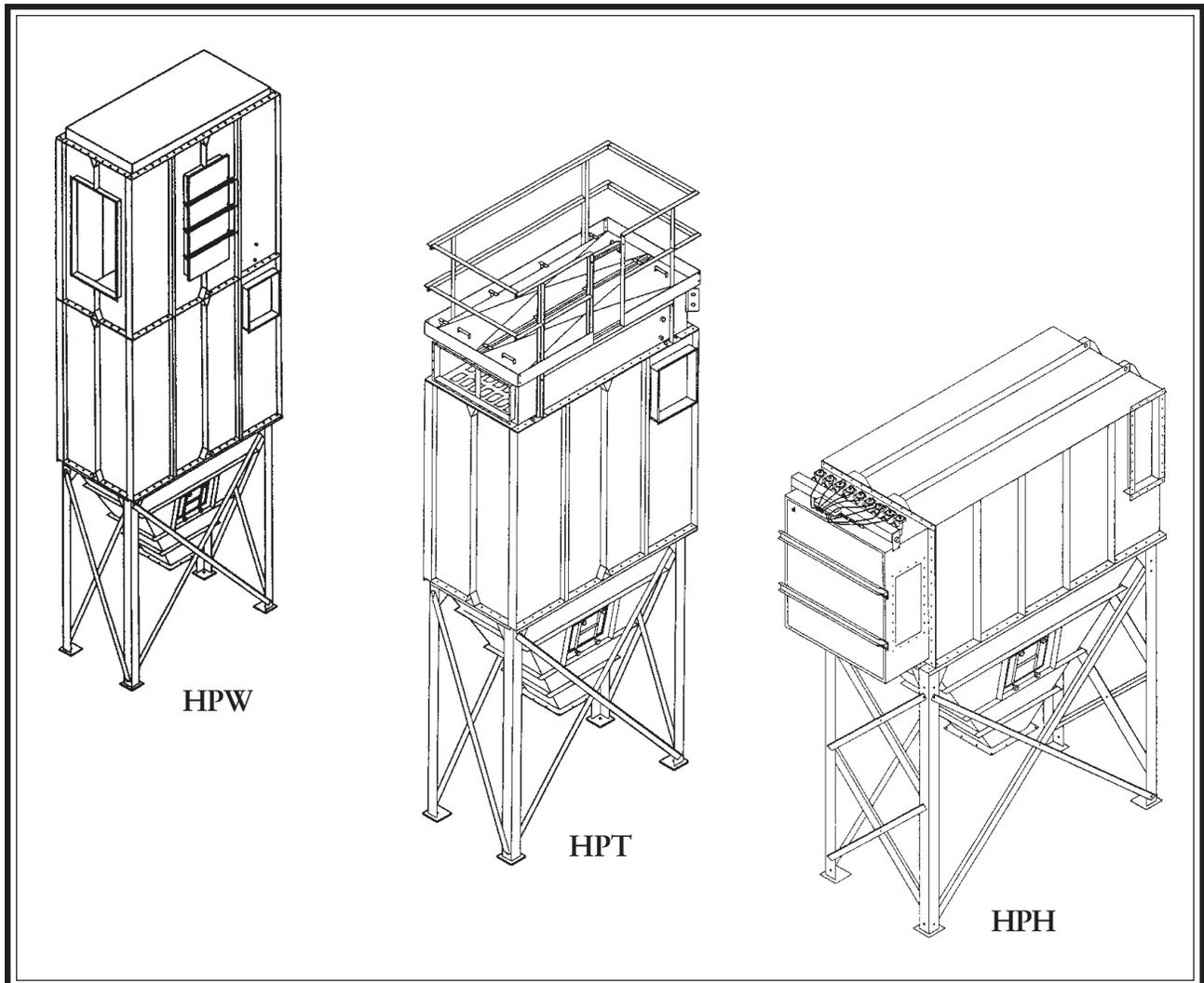


Torit® Installation and Operation Manual

Torit Dust Collector

Models HPW, HPT, and HPH

Includes Installation, Operation, and Service Instructions



IMPORTANT

This manual contains specific precautionary statements relative to worker safety in appropriate sections. Read this manual thoroughly and comply as directed. It is impossible to list all of the potential hazards of dust control equipment or systems. It is imperative that use of the equipment be discussed with a Torit representative. Personnel involved with the equipment or systems should be instructed to conduct themselves in a safe manner.

NOTE

Statements indicate precautions necessary to avoid potential equipment failure.

CAUTION

Statements indicate potential safety hazards.

CAUTION

APPLICATION OF DUST CONTROL EQUIPMENT:

- Special care must be exercised in the use of dust collection equipment when combustible material, such as buffing lint, paper, wood dust, aluminum, or magnesium dust are present. These materials may present a fire or explosion hazard. A prudent user of Torit equipment should consult and must comply with all National and Local Fire Codes and/or other appropriate codes when determining the location and operation of dust collection equipment.
- Under no conditions should anyone, including the machine operator, allow burning objects or lit cigarettes to enter the hood or ducting of any dust control system.
- Avoid mixing combustible materials with dust generated from grinding of ferrous metals due to the potential fire hazard caused by sparks being pulled into the dust collection equipment.
- When collection equipment is used to collect flammable or explosive dusts, as a minimum, the dust collection equipment should be located outside the building. Also, an installer of fire extinguishing equipment, familiar with the type of fire hazard and local fire codes, should be consulted for recommendations and installation of the proper fire extinguishing equipment. Torit equipment does NOT contain fire extinguishing equipment.
- Explosion relief vents are required on some applications. Consult with an insurance underwriter or a NFPA Manual to determine proper vent sizing requirements. Vents installed on dust collection equipment must relieve to the outside of the building to minimize chances of a secondary explosion. Consult the proper authority to determine proper method of venting the dust collection equipment. Torit equipment does NOT contain explosion relief vents, except on special order.
- To insure optimum collector performance, always use Torit-Built® replacement filters.

ATTENTION

Portions of your Torit baghouse, including the clean and dirty chambers of the baghouse, may be considered "OSHA Permit Required Confined Spaces." OSHA Regulations, found in the Code of Federal Regulations, 29 CFR Section 1910.146 control the entry of "confined spaces." Please refer to this regulation to determine if your use of the baghouse requires a permit program.

Methods of determining "acceptable entry conditions" vary depending upon the application and the type of dust collected. In some cases, a visual inspection of airborne dust in the baghouse may be sufficient. In other cases, chemical tests may be necessary to insure safe entry and occupancy.

Torit recommends that employers follow safe work practices during installation and use of all dust collection equipment. This includes following applicable OSHA regulations and any other applicable local, state, or federal laws. Copies of OSHA Regulations can be obtained from your local OSHA office or:

Superintendent of Documents
US Government Printing Office
Washington D.C. 20402 Phone: (202) 783-3238

As always, if you have any questions about your Torit dust collector, do not hesitate to contact your local sales representative or the Torit headquarters office.

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* Photohelic and Magnehelic are registered trademarks of Dwyer® Instruments, Inc.

Torit is the leading designer and manufacturer of air filtration systems for the control of industrial air pollution. Its systems are designed to help reduce occupational hazards, lengthen machine life, reduce in-plant maintenance requirements, and improve product quality.

Data Sheet

Customer Name	_____
Address	_____
Shipping Date	_____
Installation Date	_____
Model Number	_____
Serial Number	_____
Filter Medium	_____
Accessories	_____
Other	_____

1.0 Introduction

The Torit HPH, HPT, and HPW are used for the collection of airborne dust and particulate. As part of a manufacturing process, the HP collector series provides highly efficient, continuous, on-line dust collection.

Standard HP models are available in sizes ranging from 36 to 320 filter tubes. Other sizes are available as specials. The standard filter length is 8 feet. The HPH is a low profile horizontal filter removal collector; the HPT is a vertical filter removal collector; and the HPW is a vertical filter removal collector with a walk-in top section.

If, after reading this manual, you have further questions or are in need of technical or field support, contact your local Torit representative.

1.1 Operational Explanation

1.1.1 Normal Operation (See Figure 2)

During normal operation, dust-laden air enters the HP inlet section next to the filter tubes. The airflow must turn 90° to pass through the filter tube section. The energy loss from turning and the reduced velocity in the inlet section causes the heavier dust particles to drop directly into the hopper below. A standard inlet baffle helps evenly distribute the dust-laden air around the filter tubes. The dust is collected on the outside surface of each filter tube where it forms a cake that aids in filtering efficiency. Filtered (clean) air passes through each filter tube into the clean air plenum where it is discharged through the clean air outlet.

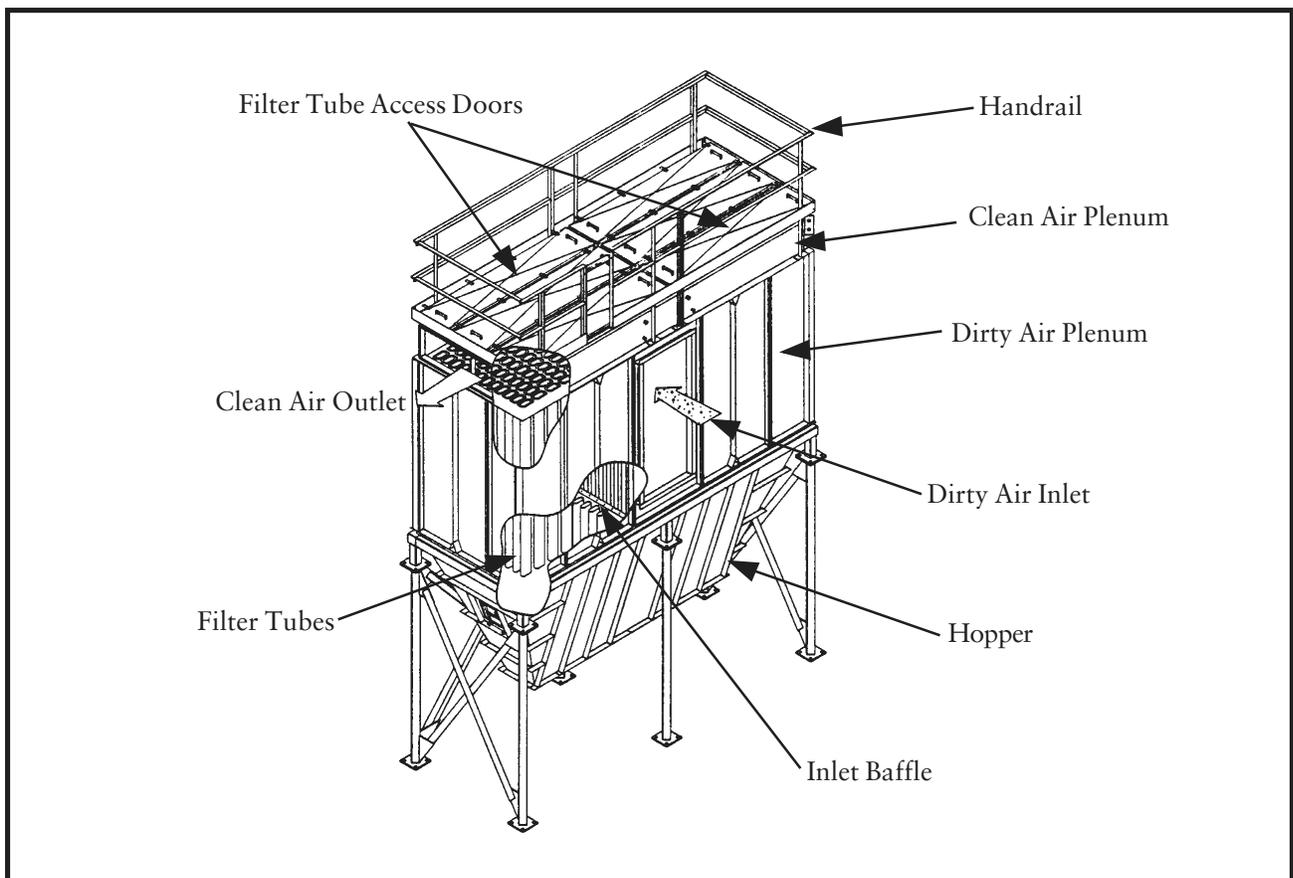


Figure 2
Operational Schematic (HPT Shown)

1.1.2 Filter Cleaning

Filter tubes are cleaned automatically and sequentially. Only one row of filter tubes is cleaned per pulse. During the filter tube cleaning purge, the solid-state timer energizes a solenoid valve. This action causes the corresponding diaphragm valve to send a pulse of compressed air out into the blowpipe. The blowpipe is equipped with two high pressure nozzles centered over each oval shaped filter tube. The high pressure pulse enters the inside of the filter tube forcing air through the filter. The collected contaminants are blown away from the outside surface of the filters. The dust falls into the hopper where it is discharged into drums, screw conveyor, or rotary valve.

2.0 Installation

2.1 Inspection

The collector is normally shipped with major components preassembled when possible. However, due to space restrictions and/or to minimize freight costs, some components may be shipped unassembled and nested. On most HPW/T models, the clean air plenum, dirty air plenum, and hopper/support weldment are unassembled.

On most HPH models, the clean air plenum is assembled to the dirty air plenum and the hopper and support are unassembled. Also, the blowpipes are unassembled to facilitate filter tube installation. In most cases, the filter tubes and frames are shipped separate (unassembled) for all models.

A packing list is enclosed with each dust collector. If there are any questions about completeness of a shipment or obvious damage to packaged parts, notify the carrier immediately. Also, damage to any section of the shipment should be noted on the carrier's Bill of Lading.

A crane is recommended for unloading, assembly, and installation of the dust collector. Before unloading major components, such as housing and hopper, check inside for smaller items that could be damaged if not removed first. Unload components in a location that allows for parts identification and assembly. The filter tubes should be stored in a dry, rodent-proof area until ready for installation.

2.2 Ship Loose Items

Items shipped loose with the HP dust collector may include:

- Hopper
- Legs and Cross Bracing
- 55-Gallon Drum Cover Pack
- Transition Pack
- Magnehelic Gage or Photohelic Gage
- Control Box
- Hardware/Sealant
- Explosion Vent
- Weather Cover
- Platforms
- Ladders
- Ladder Cages
- Air Locks
- Tubesheet
- Filter Tubes
- Filter Cages
- Blowpipes (HPH only)

2.3 Equipment/Tools Required

The following is a list of typical tools and equipment required to install and assemble an HP dust collector:

- Crane/Lift Truck
- Slings/Spreader Bars/Clevice Pins
- Drift Pins
- Clamps
- Screwdrivers
- Pipe Wrenches
- Socket Wrenches
- End Wrenches
- Large Crescent Wrench
- Drill and Drill Bits
- Pipe Sealant
- Extension Cords
- Trouble Light

NOTE

Wearing safety equipment such as helmets and glasses is recommended for all persons while working in or around the collector.

CAUTION

Use appropriate lifting equipment and adopt all the safety precautions needed for moving and handling the equipment.

2.4 Preinstallation (See Figure 1)

The HP dust collector is usually mounted on a reinforced concrete foundation. However, roof mounting is also possible. When calculating for foundation or roof mounting, the weight of both the dust collector, the material being collected, and all auxiliary equipment must be considered together with wind, seismic and other live loads. See the Specification Control Drawing for the dust collector weight.

CAUTION

- Location must be clear of all obstructions such as utility lines or roof overhang (see Specification Control Drawing).
- A crane must be used to move the collector into position.

To avoid delay, install foundation in the proper location. Pay particular attention to the anchor bolt location. Anchor bolts must extend at least 1-3/4" above foundation. The collector should be located with consideration for emptying hopper storage area, shortest runs of inlet and outlet ductwork, electrical and compressed air connections, and convenience of maintenance. In case of hazardous dust collection, consult with local authorities for the proper location of the dust collector.

2.5 Assembly of Standard Equipment (See Figure 1)

CAUTION

- A crane is recommended for the unloading, assembly, and installation of the dust collector.
- Connect lifting sling to a minimum of 4 lifting lugs. Distribute loads equally. Use clevises, not hooks, on lifting sling. Use spreader bars on lifting sling.

Remove all crating and strapping from the unit. Remove all miscellaneous parts (bolts, nuts, etc.) before lifting unit off of the truck. Check the parts received against the packing slips. If there are parts missing, the carrier and your local Torit Representative should be notified immediately.

NOTE

Each item to be attached to your collector is accompanied by a drawing that shows the attachment process. Refer to both the drawing and this manual when erecting your collector.

2.5.1 General Safety Precautions

1. Be certain that the crane has sufficient capacity to lift sections, sub-assemblies and complete units, if that applies. Check weights and dimensions of dust collector components on specification drawings furnished by Torit. Spreader bars are recommended between lifting cables; shallow cable angles should be avoided.
2. No person shall operate the crane or other erection equipment except those qualified by training and experience.
3. Do not install during gusty or heavy winds.
4. Note location of adjacent structures, power lines, traffic, unstable ground, and ground obstacles in the erection area.
5. Never swing loads over personnel.
6. Use conventional hand signals for crane operators.
7. Always consider electrical lines to be live (hot).
8. Provide an observer to assist crane operator for periods of impaired visibility.
9. Refer to applicable OSHA regulations and local rules in using cranes, forklifts, and other erection equipment.
10. Make liberal use of drift pins to align holes in section flanges during assembly.
11. Wear appropriate safety gear including hard hats and safety glasses.

2.5.2 Erection (Major Collector Components)

CAUTION

Do not disconnect crane until the lifted component is securely fastened in place.

The following general procedure is recommended for assembly:

NOTE

- If the dust collector is shipped preassembled, including support legs, it may be lifted directly from the truck onto the foundation.
- If the dust collector is shipped unassembled, see Specification Control Drawing for correct orientation and location of components.
- All flanged connections of components providing air seals, including clean air plenum, tube section, and hopper, must be sealed before assembly with sealant as shown in Figure 5, Sealing Details unless they are factory assembled.
- Use spreader bars for lifting sections of collector.
- Use drift pins to align holes during erection.
- Filter tubes and cages can be installed before or after collector is erected.

HPT/W Units Only - (Hopper & Legs)

1. The HPT/HPW hopper/leg arrangements come totally assembled.
2. Lift the hopper/leg assembly, using a crane, into position over the anchor bolts and lower down onto the anchor bolt pads. Fasten the legs to the anchor bolts with washers and nuts (provided by customer). Level the hopper at the top flange in all directions by placing solid steel shims under the leg pads. **Tighten** the nuts on the anchor bolts. Re-check level and adjust as required. Remove the crane from the hopper.
3. Apply 1/4" diameter sealant to the top flange all around toward the inside edge of the bolt pattern (see Figure 5, Sealing Details).

HPH Units Only - (Hopper & Legs)
(See Figures 3 and 4)

1. HPH units have unassembled leg sets. Locate and identify all legs, bracing, and hardware required for leg set. Organize the legs and bracing for assembly.
2. Lift the hopper using a crane and position over the four legs. Stand each leg up on its pad, one at a time, and position the hopper gusset holes to line up with the holes in the leg. Use a drift pin to assist in hole alignment. Fasten each leg using the proper bolts, washers, and nuts provided. **Do not tighten any hardware at this time. Do not disconnect the crane.**
3. Position the inside angle of the cross bracing and bolt in place using the proper bolts, washers, and nuts provided. **Do not tighten.**

Position the outside angle of the cross bracing and bolt in position. Where the two angles cross, bolt through each hole with a bolt, washers, and nut. Repeat this sequence on the opposite side of the hopper. **Do not tighten hardware.**

4. Lift the hopper leg assembly into position over the anchor bolts and lower down onto the anchor bolt pads. Fasten the legs to the anchor bolts with washers and nuts (provided by customer). Level the hopper at the top flange in all directions by placing solid steel shims under the leg pads. **Tighten all hardware** on the gussets, cross bracing, and anchor bolts. Re-check level and adjust as required. Remove the crane from the hopper.
5. Apply 1/4" diameter sealant to the top flange all around toward the inside edge of the bolt pattern (see Figure 5, Sealing Details).

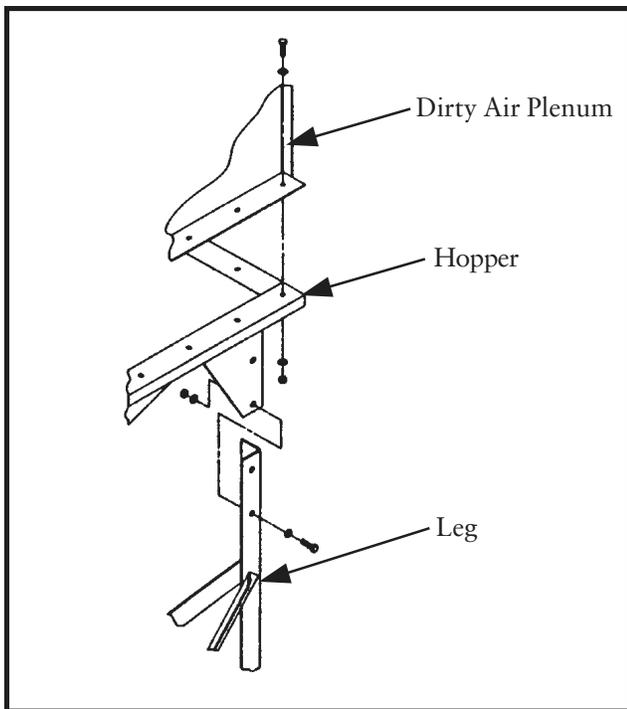


Figure 3
Hopper Joint and Leg Attachment
(HPH Only)

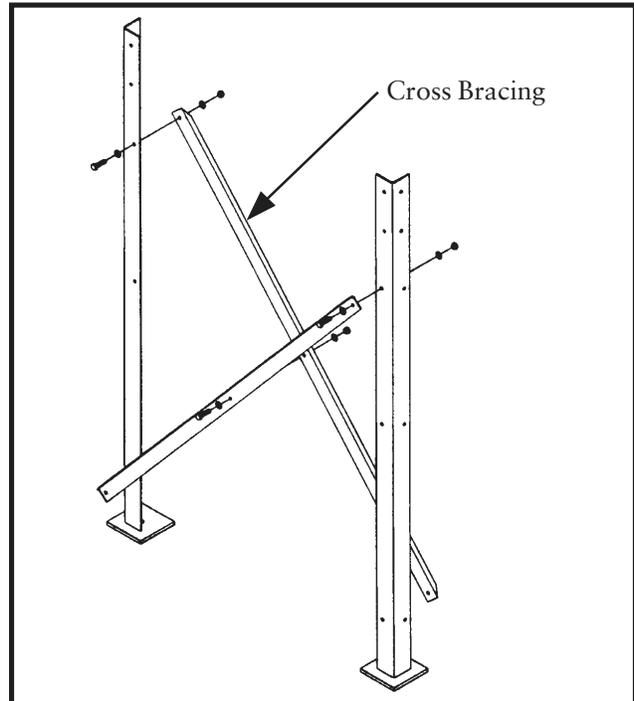


Figure 4
Leg Bracing
(HPH Only)

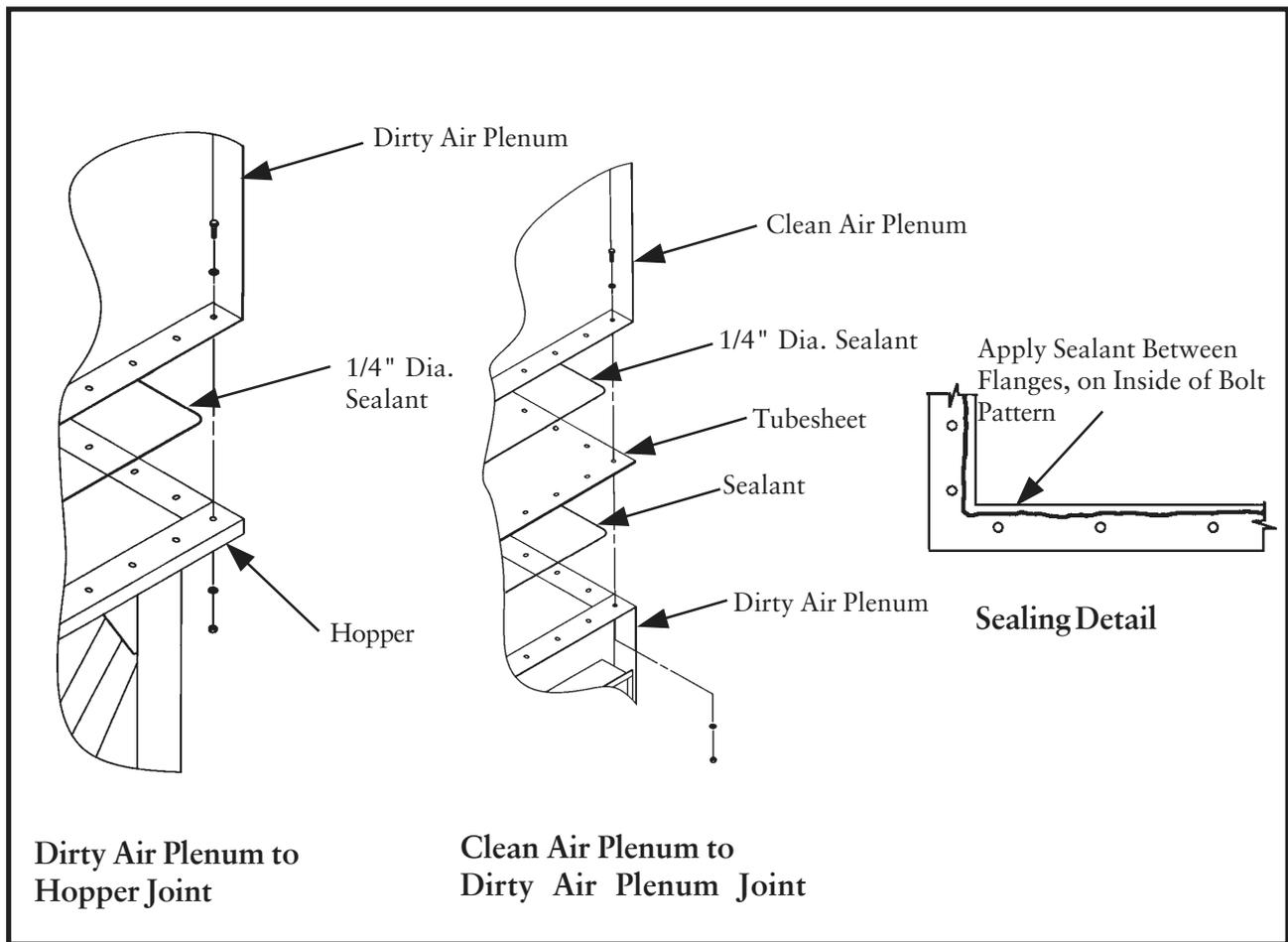


Figure 5
Sealing Details

2.5.3 Filter Tube Installation (See Figure 6)

Several filter medias are available to meet the filtration needs for many different types of dust. Contact your local Torit representative for assistance in choosing the correct media for your dust collection requirements.

The cages will arrive on site packaged in crates. The filters will arrive on site packaged in boxes. Choose a clean area for pre-assembly of the filters onto the cages.

Installing the filters before the filter section is raised will be easier and save time. Install the filter tubes as shown in Figure 6, Filter Tube Installation. Slip the filter tube over the filter tube frame until it touches the top flange of the

frame. Slide this filter assembly through the tubesheet. Align the two bolts with the threaded inserts in the tubesheet. Secure each filter tube and frame assembly with the Boltsafe™ hardware provided.

NOTE

- Use a speed wrench to tighten the screws. Do not use a power driver or impact nut driver. These may strip threads or shear screws.
- Only tighten screws until the top flange rests on the tubesheet, about 8-10 ft. lbs torque.

HPH Cabinet Assembly

If a platform or handrail is going to be attached to the collector, refer to Section 2.6.7, Platform and Handrails before continuing.

1. Using a crane, lift the assembly into position over the hopper. Using drift pins, align the holes in the cabinet-hopper flanges and lower the cabinet onto the hopper.
2. Fasten the flanges together using the bolts, washers, and nuts provided. Tighten all hardware.
3. Remove the crane from the collector.

HPT/HPW Cabinet Assembly

If a platform or handrail is going to be attached to the collector, refer to Section 2.6.7, Platform and Handrails before continuing.

1. Lift the filter section from the truck and lower down to a cleared assembly area. Remove the crane. Remove the lifting lugs.
2. Remove the bolts, washers, and nuts that hold the tubesheet in place.

NOTE

- **HPT Model Only** - In some instances it may be preferable to assemble the top railings to the clean air/dirty air plenum before hoisting it onto the hopper. If you choose to do so, take care not to damage the railings with the lifting sling or the spreader bars.
- When lowering the clean air plenum onto the filter section, be sure to locate the blowpipe air manifold over the blank end of the tubesheet.

CAUTION

Do not use railings for lifting any part of the collector.

3. Apply 1/4" diameter sealant all around toward the inside edge of the bolt pattern on top of the tubesheet (see Figure 5, Sealing Details).

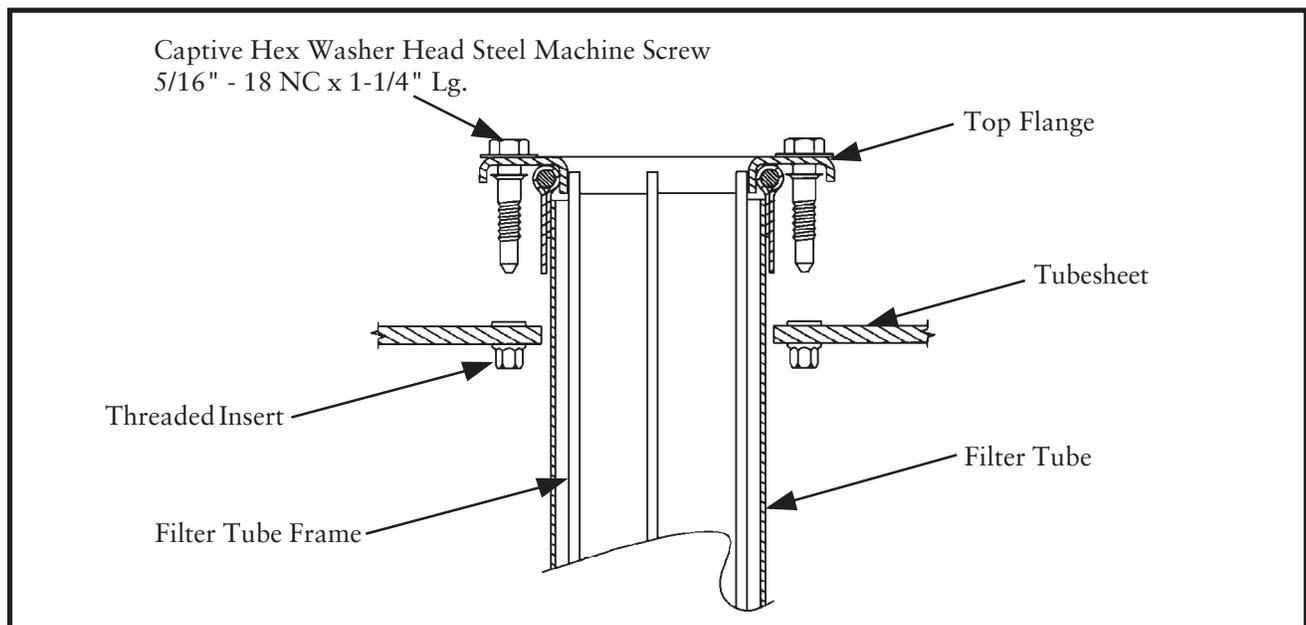


Figure 6
Filter Tube Installation

4. Using a crane, lift the clean air plenum into position over the filter section. Using drift pins, align the holes in the flanges of the filter and clean air sections and lower onto the filter section. Fasten the flanges together using the bolts, washers, and nuts provided. Tighten all hardware.
5. Lift the cabinet into position over the hopper. Using drift pins, align the holes in the cabinet-hopper flanges and lower the cabinet onto the hopper.
6. Fasten the flanges together using the bolts, washers, and nuts provided. Tighten all hardware.
7. Remove the crane from the collector.

2.6 Assembly of Optional Equipment

2.6.1 55-Gallon Drum Cover Pack With or Without Slide Gate (See Figures 7 and 8)

The 55-gallon drum attachments are designed to fit a 55-gallon drum that measures approximately 24" diameter x 33" tall. These drums are supplied by the customer. The flexible hose attachment allows for easy drum installation and removal. A pallet under the drum will allow heavier product to be removed by a lift truck. If a pallet is used, the length of hose or clearance under the unit may have to be modified by customer.

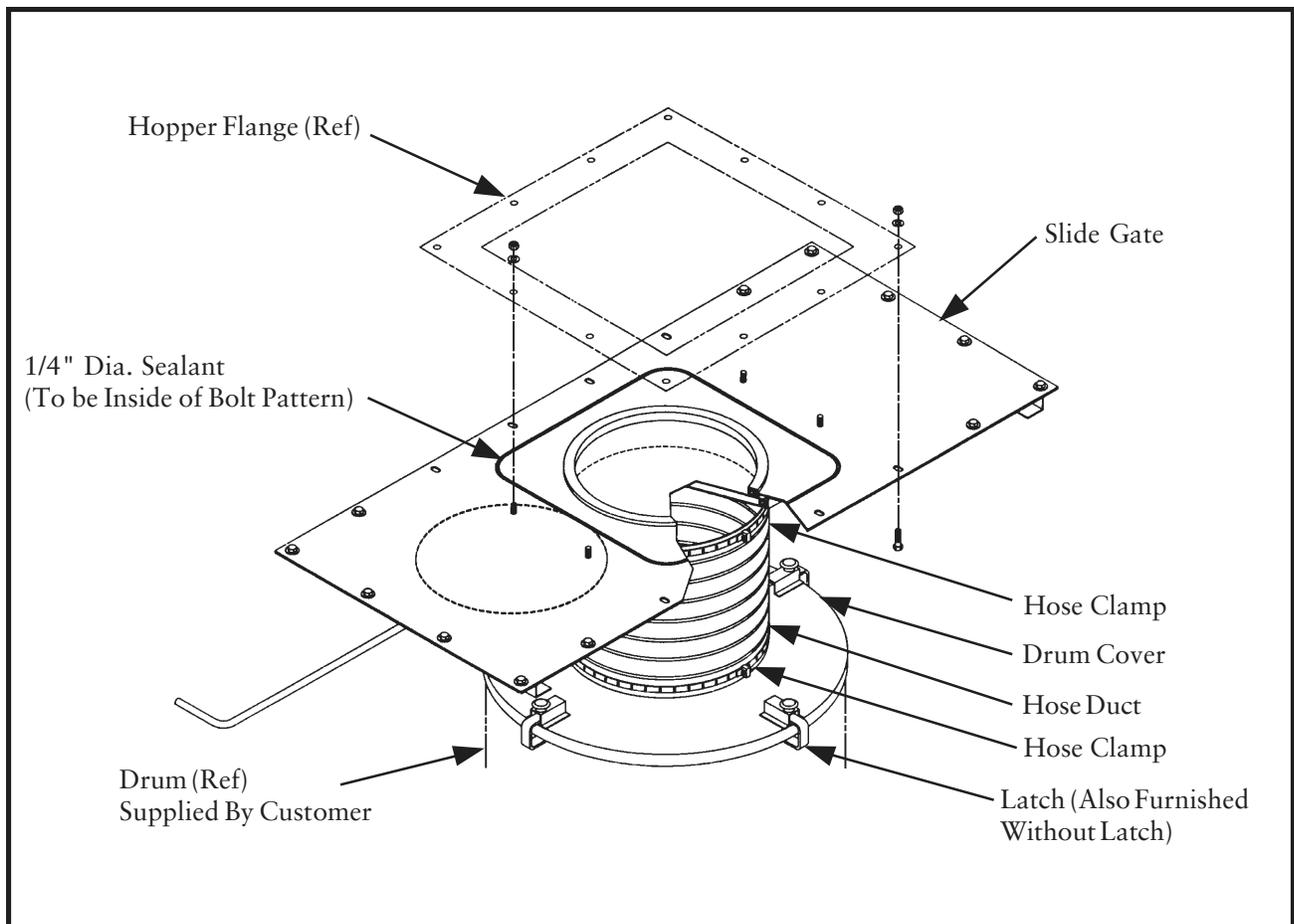


Figure 7
Hose Drum Cover Pack with Gate

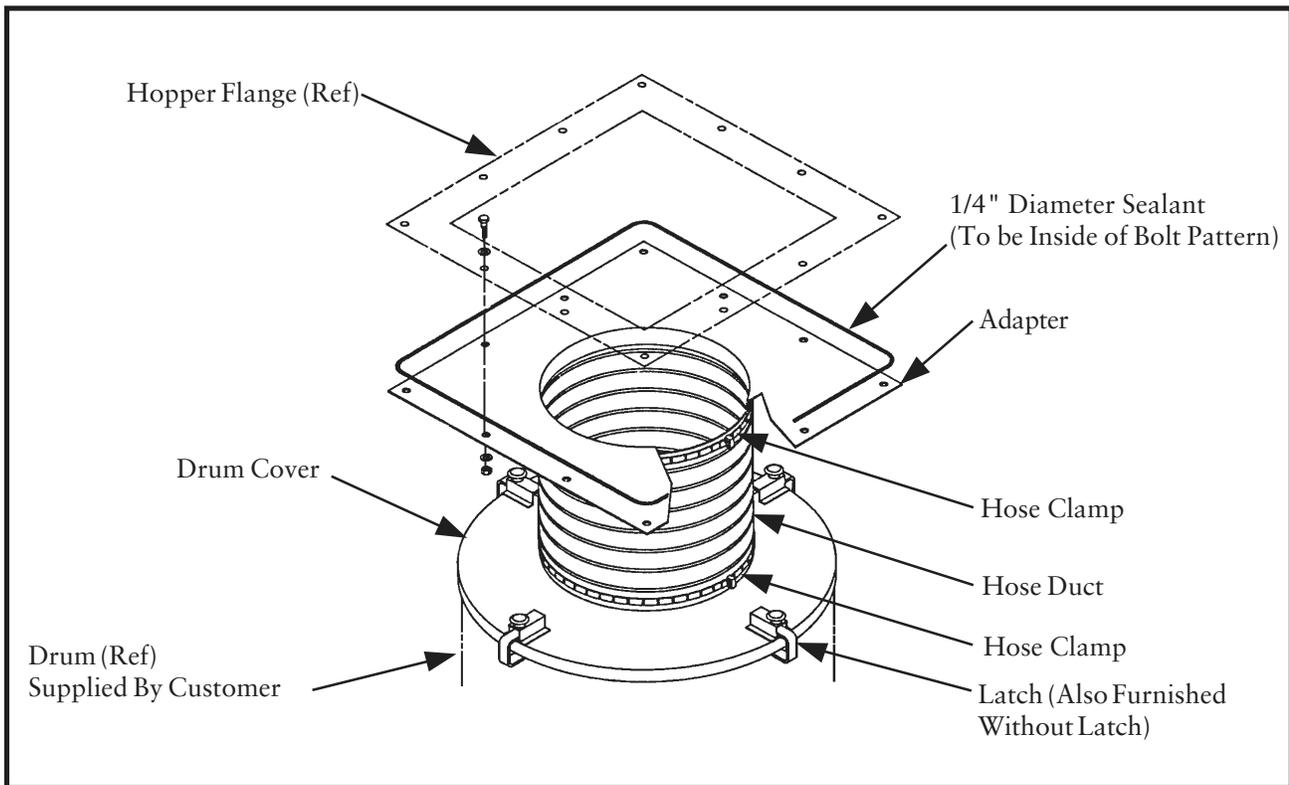


Figure 8
Hose Drum Cover Pack without Gate

1. Apply 1/4" diameter sealant between the hopper flange and the slide gate as shown in Figure 7, Hose Drum Cover Pack with Gate or between the hopper flange and the adapter as shown in Figure 8, Hose Drum Cover Pack without Gate.
2. Fasten the drum cover pack and slide gate to the hopper flange using 3/8" bolts, washers, and nuts as shown in Figure 7, Hose Drum Cover Pack with Gate. Fasten the adapter to hopper flange, as shown in Figure 8, Hose Drum Cover Pack without Gate, if the slide gate is not included.
3. Attach the drum cover to 55-gallon drum as shown in both illustrations. If the latches are included, use them to hold the cover to drum as shown.

2.6.2 Transition Pack (See Figure 9)

Do not use a transition pack on a single opening trough outlet hopper.

The transition is designed specifically as a connection between the bottom of the hopper and the AN valves built by Torit. There are four sizes available 18" to 8", 18" to 10", 18" to 12", and 18" to 16". These transitions are all 7" tall flange to flange.

1. Apply 1/4" diameter sealant between the hopper flange and the transition as shown in Figure 9, Transition Pack, Transition, and Airlock.
2. Fasten the transition to the hopper flange using 3/8" bolts, washers, and nuts as shown in Figure 9, Transition Pack, Transition, and Airlock.

2.6.3 Transition and Airlock (See Figure 9)

Do not use a transition and airlock on a single opening trough outlet hopper.

The transition and airlock are designed to fit the standard opening on the bottom of the HP series. The sizes available are the 8", 10", 12", and 16". Sizes are based on product loading and determined at the time of order.

1. Apply 1/4" diameter sealant between the hopper flange and transition as shown.
2. Fasten the transition to the hopper flange using 3/8" bolts, washers, and nuts as shown.
3. Determine the proper position required for the rotary airlock. Allow for clearance,

electrical connections, and future maintenance of the rotary airlock.

4. Apply the sealant supplied with the rotary airlock to the top flange.
5. Fasten the rotary airlock to the transition flange using 3/8" bolts, washers, and nuts as shown.
6. Electrical connections should be made by a qualified electrician. Refer to the motor nameplate for specifications of voltage, amperage, cycle, and proper wiring sequence. Follow all local codes for wiring.

CAUTION

Disconnect all power to the rotary airlock before servicing. Never allow any objects to be placed in any opening of the rotary airlock during operation.

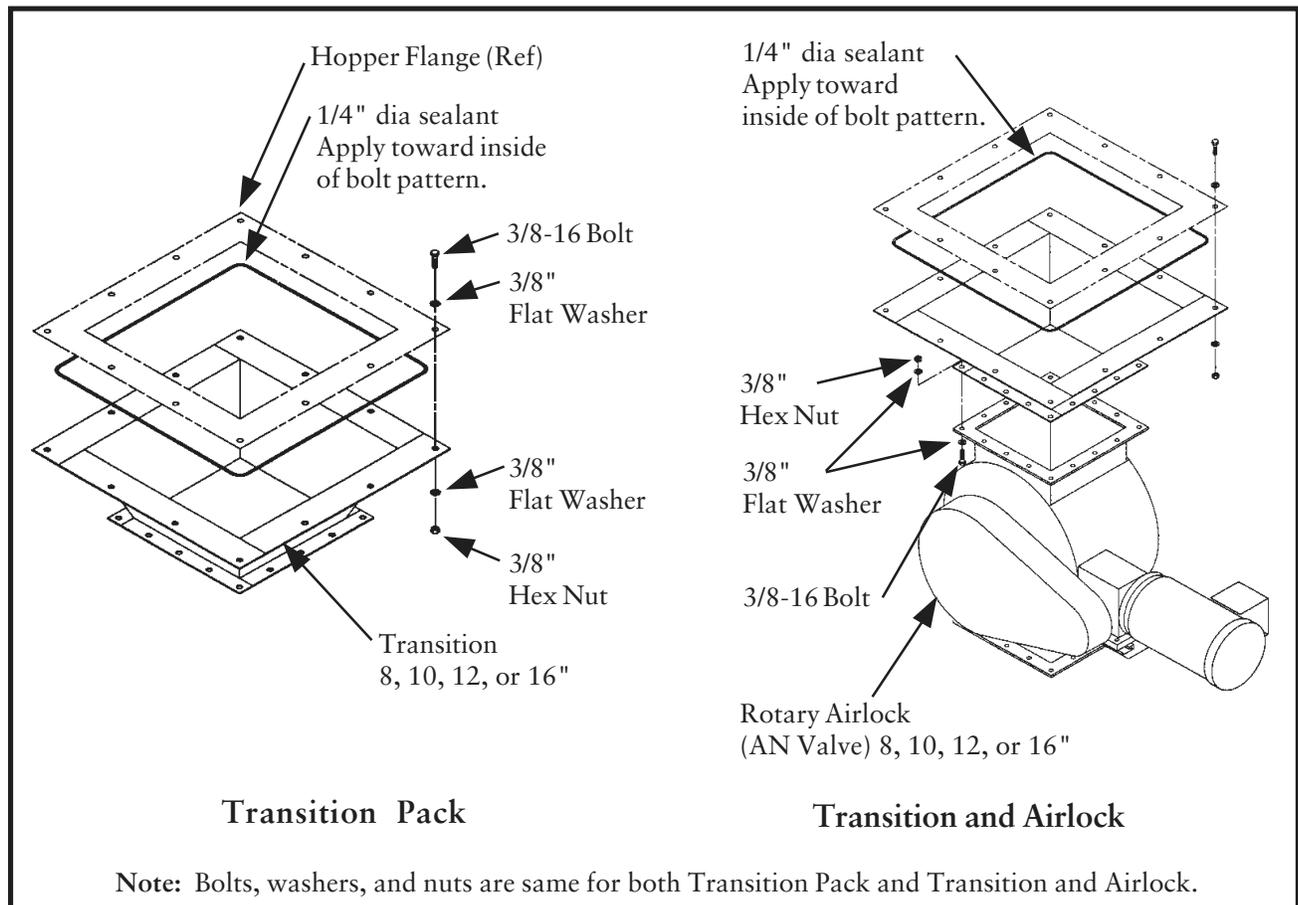


Figure 9
Transition Pack, Transition, and Airlock

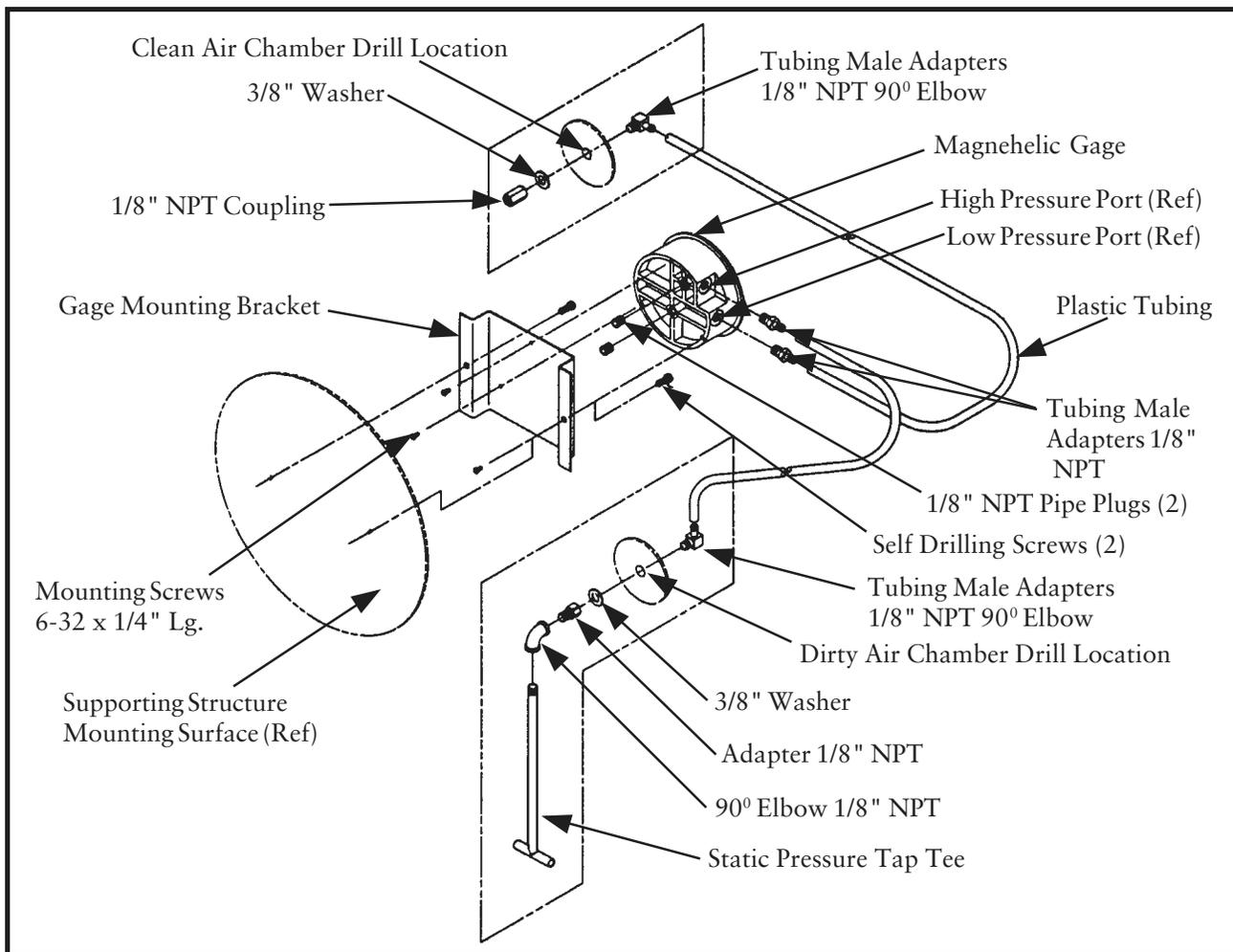


Figure 10
Installation of Magnehelic Gage

2.6.4 Magnehelic Gage (See Figure 10)

The Magnehelic gage is a standard feature on the HP series collector. The pressure taps for this gage are factory installed.

1. After unpacking the Magnehelic parts, choose a convenient accessible location on or near the unit for mounting the gage.
2. Prior to mounting, plug the pressure ports on the back of the Magnehelic gage using the two 1/8" NPT pipe plugs supplied with the gage. Install the two 1/8" NPT male adapters supplied with the gage into the openings on the side of the gage marked high and low pressure. Mount the gage to the mounting bracket with three,

#6-32 x 1/4" long screws (supplied with the gage) as shown in Figure 10, Installation of Magnehelic Gage.

3. Locate the Magnehelic gage and mounting bracket assembly for the best visual advantage. The plastic tubing will determine the maximum distance away from the collector that the mounting bracket and gage can be located (35 feet of tubing is supplied). Remember that the tubing will have to be cut and that one piece may be longer than the other. If more tubing is required, please contact your local Torit representative. Once the mounting bracket assembly position is determined, mount this assembly to the supporting structure using the two self-drilling screws.

4. Connect the tubing to the high pressure and low pressure port fittings located on the Magnehelic gage. The high pressure port tubing is attached to the pressure fitting mounted in the dirty air chamber (filter section). The low pressure port is attached to the fitting in the clean air chamber (see Figure 10, Installation of Magnehelic Gage).
5. Zero and maintain the Magnehelic gage per operating and maintenance instructions provided by the manufacturer of the Magnehelic gage.

2.6.5 Photohelic Gage (See Figures 11, 12, and 13)

The Photohelic gage is an optional feature on the HP series collector. The pressure taps for this gage are factory installed.

1. After unpacking the Photohelic parts, choose a convenient accessible location on or near the unit for mounting the gage.
2. Mount the gage to the panel with mounting ring, retaining ring, and four #6-32 x 1-1/4" long screws. Before tightening the screws, assemble the two 1/8" NPT x 1/4" O.D. male tube adapters supplied with the gage into the openings on the side of the gage marked high or low pressure. Align the gage so that the two 1/8" NPT male tube adapters and the 2.375" hole diameter in the

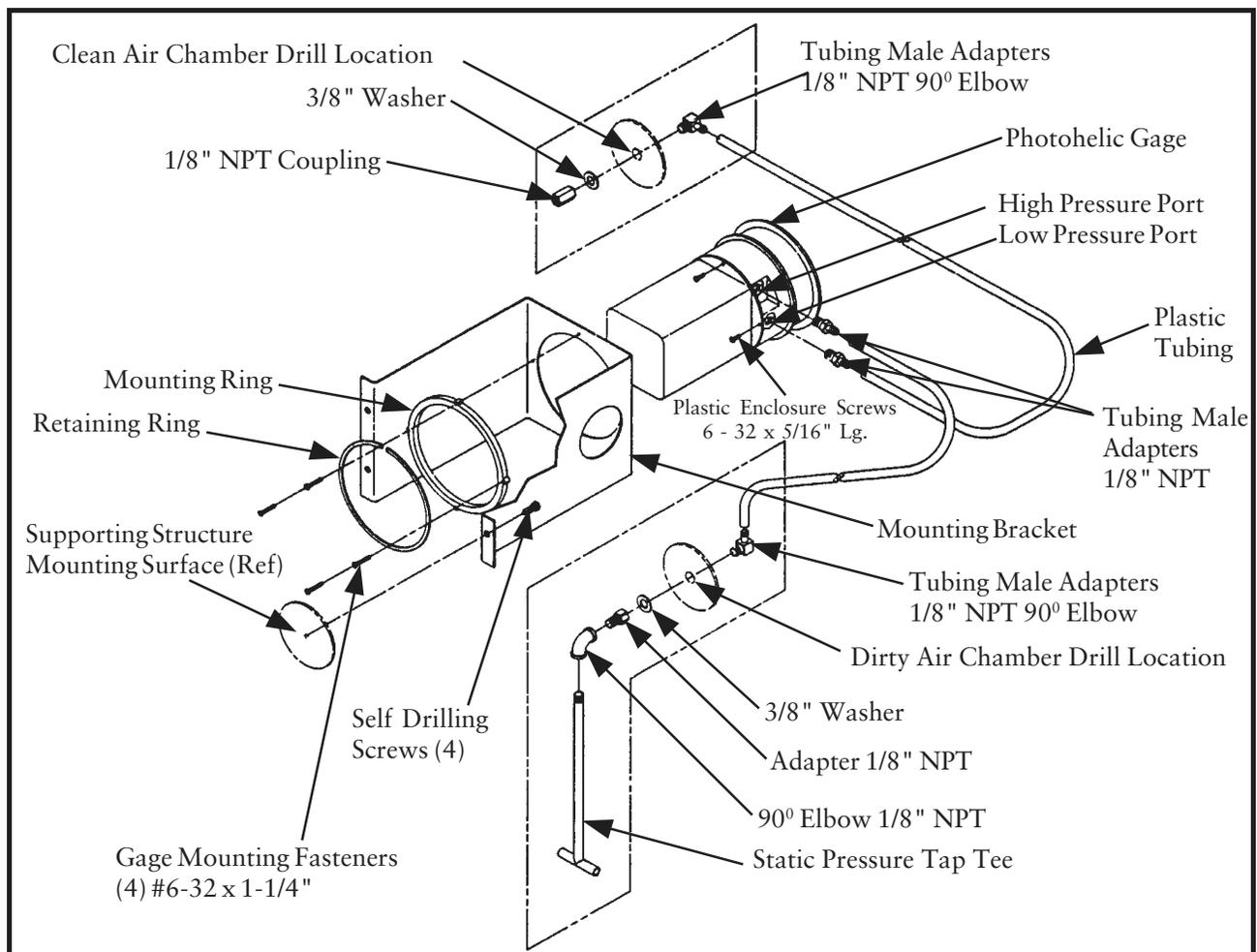


Figure 11
Installation of Photohelic Gage

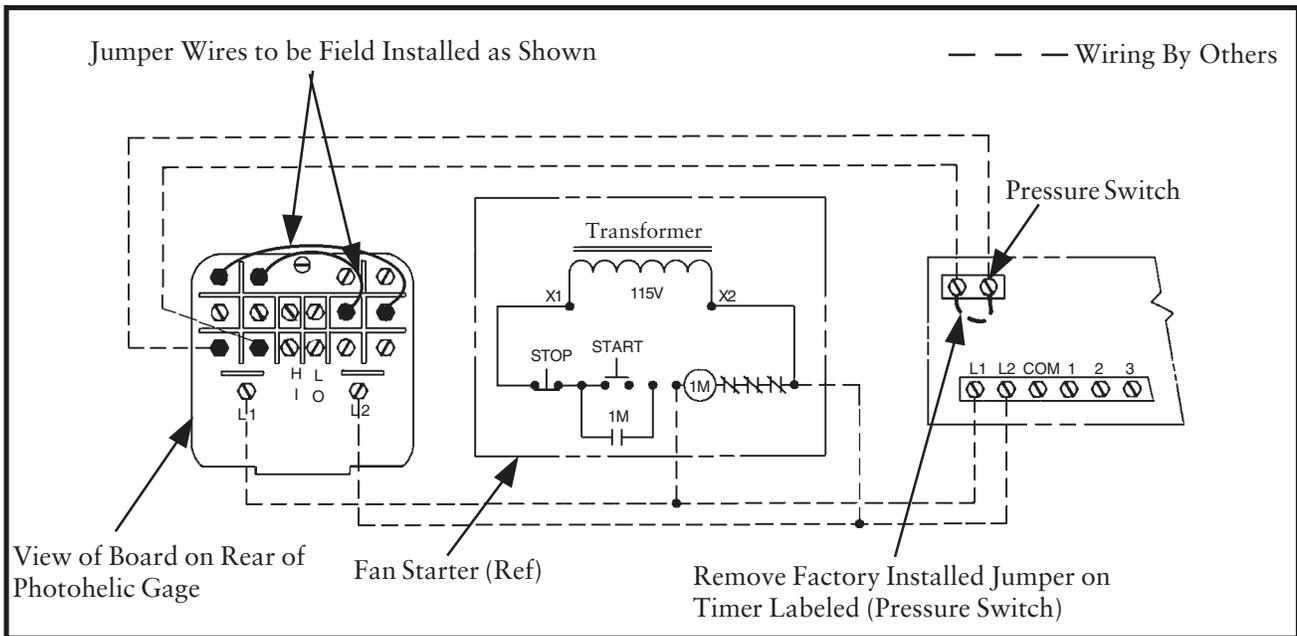


Figure 12
Photohelic Gage Wiring Diagram

3. Remove the four #6 - 32 x 5/16" long screws and plastic enclosure on back of the Photohelic gage and set aside. Add the two jumper wires—supplied by customer—and wire the gage as shown in Figure 11, Photohelic Wiring Diagram, using 3/4" conduit opening. Reassemble plastic enclosure and fasten securely using the #6 - 32 x 5/16" long screws previously removed.
4. Locate the Photohelic gage and mounting bracket assembly for the best visual advantage. The plastic tubing will determine the maximum distance away from the collector that the mounting bracket and gage can be located (35 feet of tubing is supplied). Remember that the tubing will have to be cut and that one piece may be longer than the other. If more tubing is required, please contact your local Torit representative. Once the mounting bracket assembly position is determined, mount this assembly to the supporting structure using the two self-drilling screws.

5. Connect the tubing to the high pressure and low pressure port fittings located on the Photohelic gage. The high pressure port tubing is attached to the pressure fitting mounted in the dirty air chamber.

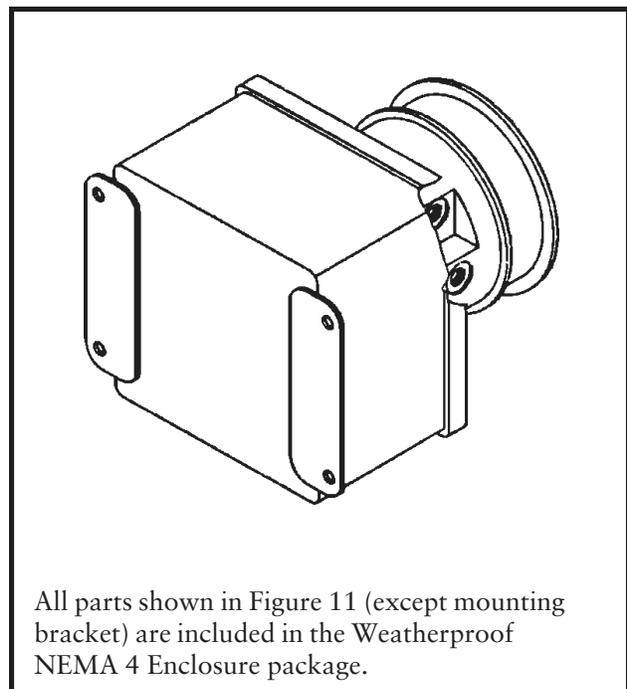


Figure 13
Weatherproof NEMA 4 Enclosure

6. Zero and maintain Photohelic gage per operating and maintenance instructions provided by the manufacturer of the Photohelic gage.
7. Refer to Figure 12, Photohelic Gage Wiring Diagram for the proper wiring of the Photohelic gage.
8. The Photohelic gage weatherproof pack comes assembled in a NEMA 4 enclosure. All of the hookups are identical to the Photohelic gage pack. Follow all of the directions as stated in Steps 1 through 7.

2.6.6 Level Indicator

The level indicator is factory installed when ordered with the collector. The indicator is located in the hopper side wall and extends inward.

The level indicator may be used to start the rotary valve or screw conveyor to evacuate dust from the hopper on light dust load applications. However, for normal to heavy dust loads, it is recommended to interlock the dust removal equipment, such as the rotary valve or screw conveyor, with the dust collector fan to allow continuous dust removal from the hopper.

Consequently, the level indicator is normally used to sense a plugged hopper condition due to excessive dust loads or malfunctioning dust removal equipment. All electrical connections are to be made by a qualified electrician according to local codes. Wiring is supplied by customer.

2.6.7 Platform and Handrails

The platform is offered on the HPH and HPW collectors. Mounting brackets have been supplied which are used to attach the platform to the collector. Before lifting the collector onto the hopper, the platform should be installed. A crane or fork lift may be used to lift and position the platform during assembly. An assembly drawing has been sent with the platform which calls out the proper size and location of hardware to be used.

HPH & HPW Platform

1. Position the platform for mounting and align the holes in the brackets and platform with drift pins. Fasten the platform to the collector using the bolts, washers, and nuts supplied.
2. After the platform has been attached to the collector and all hardware has been tightened, the collector may be lifted onto the hopper-leg assembly.

CAUTION

Do not lift the collector using any portion of the platform to bear weight.

HPT Handrail

A handrail is offered on the HPT collectors. After the clean air plenum has been assembled to the filter section, install the handrails before lifting the collector onto the hopper. The handrails will have to be lifted into place using a crane or fork lift. An assembly drawing is included with the handrails which calls out the proper size and location of hardware to be used.

1. Position the handrails for mounting. Remove any bolts, washers, and nuts from the flange where the railing pads will be attached. Align the holes in the pads and flanges and fasten the handrails using the bolts, washers, and nuts supplied.
2. After the handrail has been attached to the collector and all hardware has been tightened, the collector may be lifted onto the hopper-leg assembly.

CAUTION

Do not lift the collector using any portion of the handrail.

2.6.8 Ladder/Cage

The ladders offered with the HP collectors may be knocked down for shipping. All brackets and hardware to assemble the ladder, cage, and braces to the collector are supplied. A crane is required to lift the ladder assembly into position and attach to the platform or handrail. An assembly drawing is included with the ladder/cage which calls out the proper size and location of hardware to be used.

1. Preassemble the ladder or ladder with cage when the parts are lying on the ground. Use the bolts, washers, and nuts called out on the assembly drawing.
2. After the ladder or ladder with cage have been assembled, attach the crane lifting slings to the top four ladder rungs so the weight of the assembly can be distributed evenly.
3. Lift the assembly into position, align all holes, and attach the ladder to the collector. Position all braces and attach them between the ladder and the collector.
4. Recheck all hardware for tightness. Remove the lifting slings.

2.6.9 Light Pack (HPW Only)

The light pack is offered for use in the walk-in section of the HPW collector. The weatherproof light switch is located outside of the collector. The light is located inside the clean air plenum and is attached to a bracket located in the ceiling of the plenum. All hardware used to attach the light and switch is included. The wiring, conduit, and electrical connectors are supplied by the customer. All wiring must comply with local codes and must be done by a qualified electrician.

2.6.10 Blower Fan Mounting Instructions (HPH Only) (5, 7-1/2, 10, and 15 HP) (See Figure 14)

The 5 through 15 HP power packs are designed to fit on the side of your HPH collector. This is specified when placing the order. Larger, remote mounted power packs are available.

NOTE

When installing your blower:

- Use proper equipment and safety guidelines when lifting and installing.
- Rotate the fan wheel before and after installing into the blower housing to assure proper clearance.
- Wiring of this motor must be done by a qualified electrician.
- Rotation of the fan wheel is clockwise when viewed from the top.
- If you experience difficulty when installing your blower, contact your local Torit representative.

CAUTION

The collector must be anchor-bolted in place before the blower assembly is attached.

General Instructions

1. Attach the motor to the motor mounting plate with four bolts and internal tooth lockwashers.
2. Loosen the two (2) set screws in the fan wheel and slip them onto the motor shaft with the key in the motor shaft lined up with

the slot in the fan wheel. Adjust for .125" clearance between the fan wheel and the motor mounting plate bolts and tighten the set screws.

3. Set the transition down on its rectangular plate side. Apply 1/4" diameter sealant all around toward the inside edge of the bolt pattern.

NOTE

Torque: 5/16" - 18 bolts to 10 lbs./ft.
3/8" - 16 bolts to 19 lbs./ft.
1/2" - 13 bolts to 40 lbs./ft.

4. Set the blower housing onto the round flange of the transition and align all holes. The direction of the exhaust may be pointed in 45° increments. This should be determined before bolting. Fasten the blower housing and transition together using the bolts, washers, and nuts supplied.
5. Apply 1/4" diameter sealant all around toward the inside edge of the bolt pattern on the top of the blower housing.
6. Lift the motor wheel assembly into position over the housing and lower. Determine the proper location for the electrical junction box on the side of the motor. Align the holes in the motor mounting plate and blower housing and fasten together using the bolts and washers supplied.
7. Lift the entire transition blower assembly, using a crane or a forklift, into position. Align the holes in the plate and collector, and fasten together using the bolts and washers supplied.
8. Recheck all hardware for tightness. Disconnect crane or forklift.

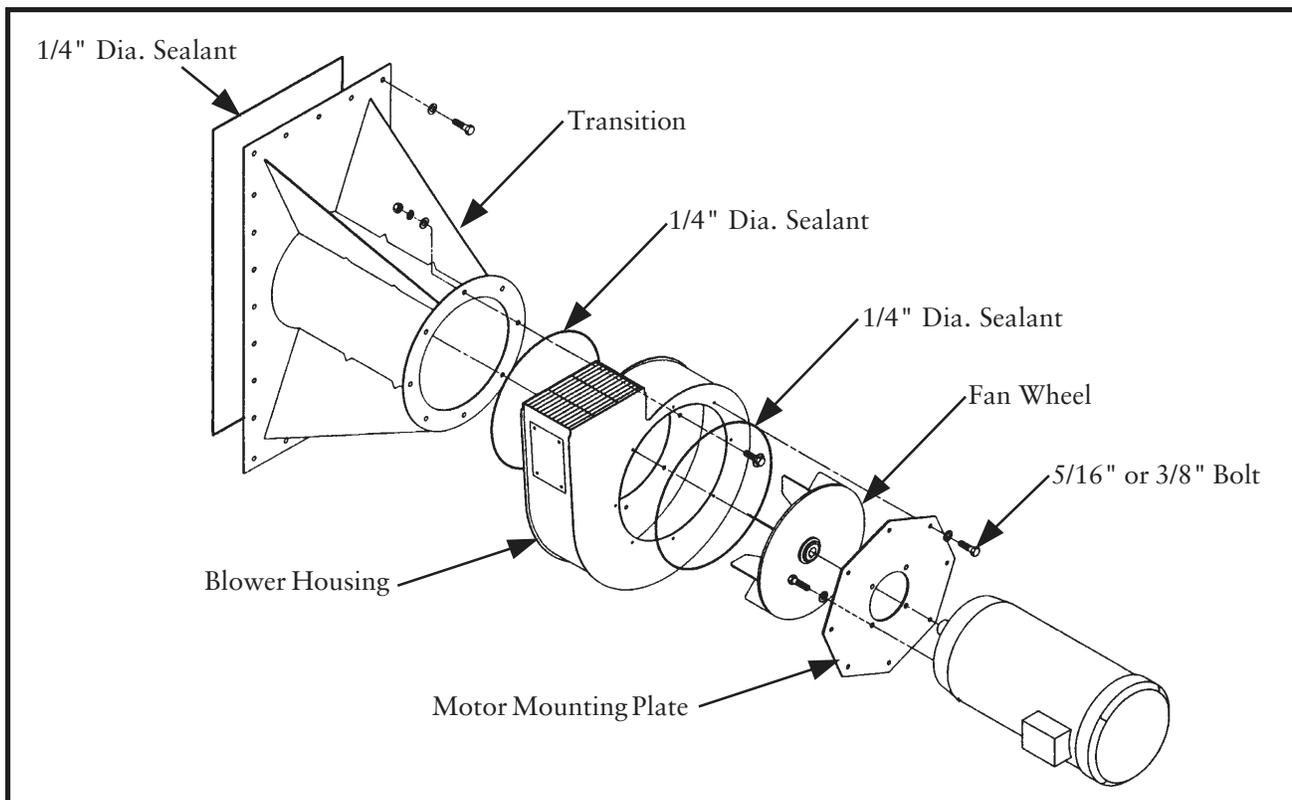


Figure 14
Blower Transition Assembly (HPH Only)

2.6.11 Damper Pack (See Figure 15)

The damper pack is offered for all Torit power packs. The damper fastens to the exhaust side of the power pack and is used to adjust the blower air volume. By limiting the flow through the damper, the motor is protected from over horsepower conditions. In addition, the filter bags are not exposed to greater-than-designed velocities (air-to-media ratio). When the filter bags are clean, the damper should be adjusted to provide the designed airflow. When the filters become coated with dust, the damper may need to be adjusted to maintain designed airflow.

1. The damper comes with self drilling screws. Use a drill with a hex socket to propel the self-drilling screw.
2. Align the damper onto the edge of the blower housing. The damper has predrilled holes which should be used as pilot holes to locate the self-drilling screws. Attach the damper to the housing.
3. Adjust the damper by loosening the wingnut on the lever. When the lever is in position, retighten the wingnut.

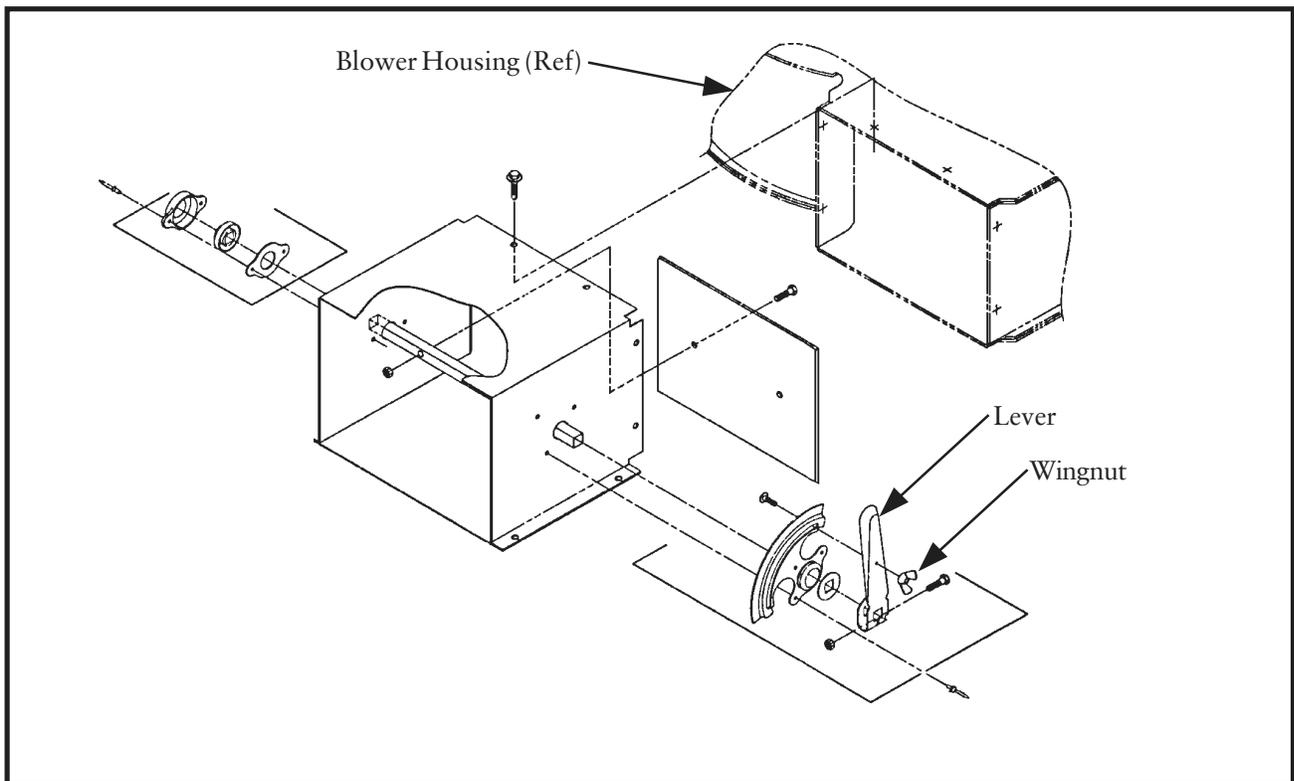


Figure 15
Damper Assembly

2.7 Electrical Installation (See Figure 16)

CAUTION

- All electrical work must be done by a qualified electrician according to local codes.
- Do not mount solid-state control timer box on dust collector. Mechanical vibration can damage collector controls.

Mount the proper size motor starter with low voltage control circuit for blower motor in a convenient location.

Mount the solid-state control timer box either near the starter or at a location convenient for accessibility and maintenance.

Using wiring diagram supplied with control timer, make proper connections to blower motor starter, solid-state control timer, and solenoid valves. All electrical apparatus should be properly sized for the required voltage. See Figure 16, Solid-State Timer Wiring Diagram and Figure 1, Typical Installation.

If a Photohelic or similar remote control device is used to control the solid-state timer, the valves will pulse only when the differential pressure reaches the high set point and will continue the pulse sequence until the low pressure set point is reached (see Figure 11, Installation of Photohelic Gage and Figure 12, Photohelic Gage Wiring Diagram).

2.7.1 Electrical Operation

Each HP dust collector comes equipped with 115-VAC solenoid valves that control the pulse cleaning valves.

Three different types of solenoid enclosures are offered on the HP: the NEMA 4 with 3D2 solenoids, the NEMA 7 with 5D2 solenoids, or the NEMA 9 with 5D2 solenoids. The NEMA 4 enclosure is weatherproof. The NEMA 7 and 9 enclosures are explosion proof. NEMA 7 is only available as a special order. These enclosures come fully assembled and are mounted near the manifold.

The solenoids must be connected electrically to the solid-state control timer. A wiring diagram for each size of HP is supplied with the unit. Filter life and proper cleaning will be affected if the wiring is incorrect.

2.7.2 Solid-State Control Timer Specifications (See Figure 16)

CAUTION

Solid-state control timer requires a low voltage (105 to 135 VAC) control circuit in the fan starter, supplied by customer.

Components: Standard HP dust collectors are equipped with 115 volt AC solenoid valves rated at 19.7 watts each and a solid-state electronic 115 VAC/ 50-60 Hz/1 ph control timer.

The timer is factory adjusted at 100 milliseconds (1/10 second) pulse time and a 10 second duration (elapsed time) between pulses.

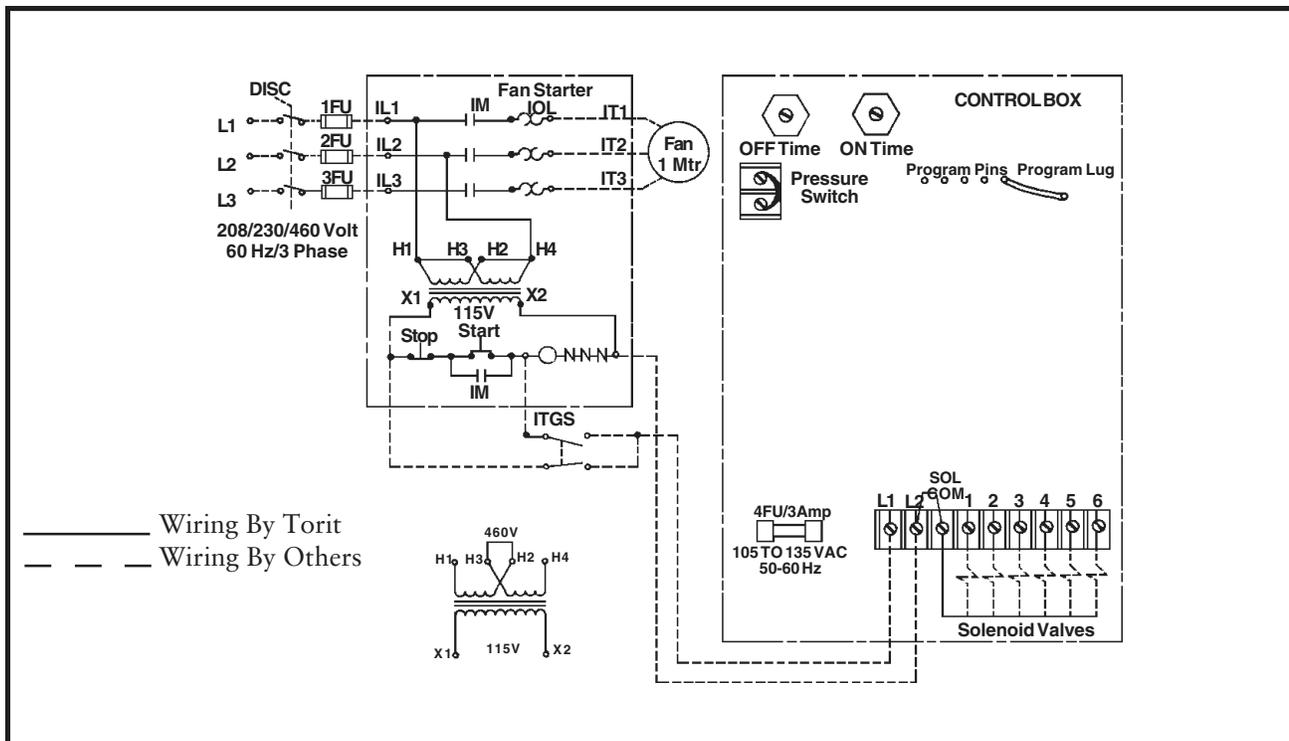


Figure 16
Solid-State Control Timer Wiring Diagram

Input power to the solid-state control timer is applied to the L1 and L2 terminals on the timer control circuit board, which is in parallel with the low voltage (115/60/1) coil of the blower fan magnetic starter (see Figure 16, Solid-State Control Timer Wiring Diagram). Upon fan start-up, power is supplied to the control timer and the preset OFF time is initiated. At the end of the OFF time, the control timer will energize a corresponding solenoid valve to provide the ON time cleaning pulse for one row of filter tubes and then steps to the next row.

This cycle is continuous unless an auxiliary control such as the Photohelic pressure switch or a 1TGS toggle switch is used to control the timer (see Figure 16, Solid-State Control Timer Wiring Diagram). When all of the available outputs are not required, program the control timer for fewer outputs. Reset the program pin selection wire on the solid-state control timer to the correct number of solenoid valves being used (see Figure 16, Solid-State Control Timer Wiring Diagram). The 1TGS is an optional switch, supplied by customer, which provides a manual method of starting the timer cleaning sequence, independent of blower operation. Consult your local Torit representative before using this method.

In grounded systems, neutral to control box must be connected to L2.

Input Operating Voltage: 105-135 VAC/50-60 Hz/1 Ph

Output Type: Solid-state switch rated at 200 VA maximum load per output.

Pulse Width (On Time): Factory set at 100 milliseconds (1/10 second).

CAUTION

Do not adjust ON time unless the proper test equipment is used. Too much or too little ON time can cause shortened filter tube life. Consult with your local Torit representative.

Off Time: Adjustable - 1.5 to 30 seconds, factory set at 10 seconds.

Operating Temperature Range: -400 F to +1500 F.

Transient Voltage Protection: 30 Joule Varistor.

Solenoid Valves: 115 VAC at 19.7 watts each.

2.8 Installation — Compressed Air Supply (See Figures 1 and 17)

NOTE

- It is important that the compressed air supply be both oil and moisture free. Contamination in the compressed air that is used to clean filter tubes will result in poor cleaning, cleaning valve failure, and/or poor collector performance.
- Purge compressed air lines to remove debris before connecting to the compressed air manifold on the HP dust collector.

CAUTION

Shut off and bleed compressed air supply before doing any work.

Remove the plastic pipe plug from the end of the dust collector compressed air manifold and connect the compressed air supply line. Use thread-sealing tape or pipe sealant on all compressed air connections. The compressed air shut-off valve, bleed type regulator with gage, filter and automatic condensate valve (not supplied by Torit) should be installed in the compressed air supply line. Locate these components for convenient service, start-up and shut down of the HP dust collector.

Be sure that all compressed air components are adequately sized to meet the maximum system requirements of 1.1 scf per pulse at 90 psig supply pressure.

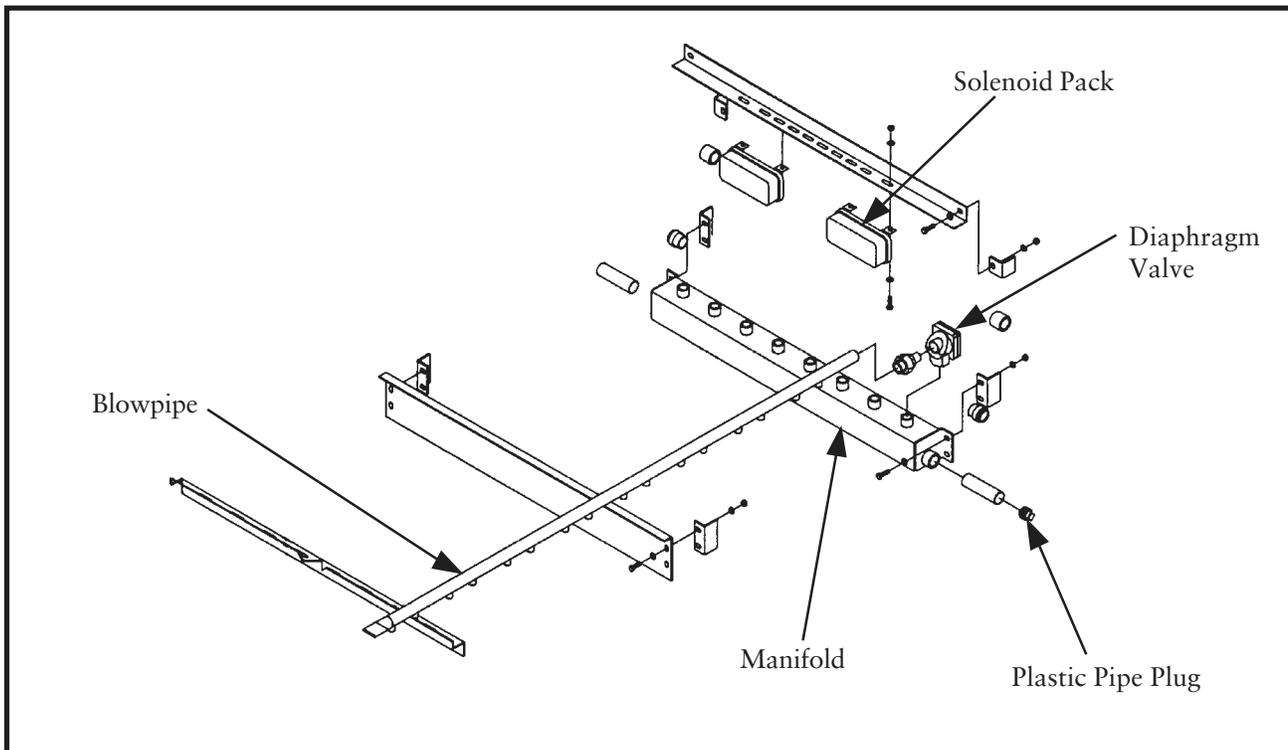


Figure 17
Compressed Air Manifold (HPT/W Shown)

3.0 Prestart-Up Check (See Figure 1)

CAUTION

Check to be sure the blower fan exhaust is free of debris before starting.

4.0 Start-Up

1. Turn on the compressed air supply to the HP dust collector compressed air manifold. Adjust to 90 psig of pressure with the compressed air regulator. Pressure of 90 to 100 psig is the most typical setting for satisfactory cleaning performance (see Section 5.0, Routine Maintenance). The lower the compressed air setting, the lower the pulse valve air consumption.
2. Turn on the hopper discharge system where equipped and if on a separate control. The hopper discharge system must always be operating while the dust collector is operating. On hoppers with drum arrangements, make sure all the connections are airtight (see Figure 7, Hose Drum Cover Pack with Gate, Figure 8, Hose Drum Cover Pack without Gate, and Figure 9, Transition Pack, Transition, and Airlock).

NOTE

- Make sure the hopper discharge opening is sealed off.
- Too much airflow to the blower fan will cause electrical failure.

3. Turn on the blower fan. Check fan rotation by looking down from the top of the blower fan motor, referencing the rotation direction sticker on the blower fan housing. Rotation should be clockwise.

CAUTION

Stand clear of the blower fan exhaust area when the blower is running. Debris can be exhausted and cause injury.

4. Adjust the blower fan for the desired airflow by adjusting the volume control damper on the blower fan exhaust discharge if applicable.

5.0 Routine Maintenance

The recommended setting for compressed air is 90 psig. The control timer is factory set to clean one row of filter tubes every 10 seconds.

If the HP filter tubes are operating at a higher than design pressure drop*, it may be lowered by increasing the frequency of cleaning. The minimum OFF time, or elapsed time, between pulses is three seconds. Additional cleaning energy may be obtained by adjusting the pressure upward to a maximum of 100 psig. Pulse ON time can be checked or adjusted by consulting your local Torit representative.

NOTE

- Do not increase compressed air pressure beyond 100 psig. Component damage may result.
- Do not increase or decrease the pulse ON time on the solid state control timer. Longer or shorter pulse ON times do not aid in cleaning filter elements. They waste compressed air and cause shortened filter tube life.

*Pressure drop across filter elements in "wg.

At a low operating pressure drop, you may want to raise to a higher pressure drop level. Increase the OFF time between pulses on the solid-state control timer. This will reduce compressed air consumption. However, the Photohelic gage, an optional pressure switch control, is the pressured, more dependable method. This controls the solid-state control timer to only pulse at the desired high and low pressure drop setpoint and continues until the low setpoint is reached, at which point the pulse cycle stops. Using the Photohelic gage can save additional compressed air, especially when the HP is not collecting contaminants.

Blower fan adjustments can be made by testing the duct system flow rate and adjusting the volume control damper to the desired system flow rate.

NOTE

Check the blower fan motor amperage draw against motor manufacturer's nameplate amperage rating. Amperage over manufacturer's recommended rating of motor will cause damage.

5.1 Operating Checks

Monitor exhaust after the filters have been exposed to dust and maintained a dust cake. Exhaust should be visibly clean. If a leak develops, it will be first noticed as a visual puff of dust immediately after a cleaning pulse.

Monitor filter tube pressure drop. Equilibrium pressure drop (stabilized Delta P) is generally 3-4 "wg on a Magnehelic or Photohelic for seasoned filters, but 1 to 6 "wg is considered normal.

NOTE

At initial start-up with any new filter tubes, the fan motor may overload because of airflow higher than design level. If this happens, partially close a volume control damper and check blower fan amperage draw.

6.0 Service

CAUTION

- Disconnect electrical power before servicing any electrical components.
- Shut off and bleed compressed air before servicing any compressed air components.
- No welding should be performed either on or inside the unit.

6.1 Dust Removal (55-Gallon Drum Only)

NOTE

Do not let the dust storage containers overflow. It can cause poor collector performance and create an extensive clean up due to overflow of dust when removing the container(s). In addition, it can cause dust to accumulate in the collector hopper. This should NEVER happen.

1. Turn off the dust collector and empty as necessary. Empty the 55-gallon drum when 2/3 full.
2. If the hopper has a gate attachment, close the gate before servicing the drum. Remove and empty the drum and open the gate. The collector fan does not have to be shut off if this procedure is followed.

6.2 Compressed Air Components

CAUTION

Compressed air can be dangerous. Before attempting service, shut off plant air supply to dust collector and depressurize air manifold. Disconnect and lock out electric power to dust collector, fan, and rotary valve. Do not operate the dust collector with the inspections or access doors removed.

The HP dust collector is relatively maintenance-free. The following items should be checked weekly:

1. Pressure Drop—ranging from 1 - 6 "wg.
2. Air Pressure—90-100 psig at air manifold.

Check the following items every three-to-four months:

1. Check the condition of the clean air section for dust. There should be no dust accumulations on the tubesheet. If dust is present, check the surrounding filter tubes for rips or loose seals. Shining a light down the center of the tube will usually reveal any dust leaking through the tube.
2. Proper operation of solenoid and diaphragm valves.
3. Check seals on the door and adjust or replace as necessary.

7.0 TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	REMEDY
A. Blower fan and motor do not start.	<ol style="list-style-type: none"> 1. Wiring. <ol style="list-style-type: none"> a. Proper wire size not used for motor. b. Not wired correctly. c. Power circuit down. d. Motor starter circuit down. 	<ol style="list-style-type: none"> 1a. Rewire per local and national codes for proper wire size. 1b. Check and correct internal motor wiring for proper connections for your voltage (reference Motor Manufacturer Wiring Diagram on motor). 1c. Check for voltage on all leads. 1d. Check the electrical supply circuit for proper output voltage, fuse, circuit breaker, and leads to motor.
B. Blower fan and motor start, but do not keep running.	<ol style="list-style-type: none"> 1. Starter kicks out. <ol style="list-style-type: none"> a. Incorrect starter heater elements are installed. b. Collector access doors are off or not closed tight. c. Hopper discharge open to atmosphere. 	<ol style="list-style-type: none"> 1a. Check for proper motor starter heater elements. Replace with proper value heater elements if needed. 1b. Tighten access door(s) by hand securely. 1c. Install slide gate, drum cover arrangement, or other accessories to hopper discharge. See Section 2.6, Assembly of Optional Equipment.

7.0 TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	REMEDY
<p>B. Blower fan and motor start, but do not keep running (contd).</p>	<p>1. Starter kicks out (contd).</p> <p>d. Blower fan damper control not adjusted properly.</p> <p>e. Electrical circuit overload.</p>	<p>1d. Check airflow in ducting for proper requirements. Adjust the damper control until the proper airflow is achieved and the blower fan motor amperage draw is within manufacturer motor ratings.</p> <p>1e. Check that the supply circuit has sufficient power to run all equipment.</p>
<p>C. Dust discharge out of clean air outlet.</p>	<p>1. Filter tubes installed improperly.</p> <p>2. Filter tube damage, tears, or holes in the fabric.</p>	<p>1. Check that all filter tubes are secured and bolts are tight (see Section 2.5.2, Filter Tube Installation and Figure 6, Filter Tube Installation).</p> <p>2. Replace the filter tubes. Use only Torit filter tubes (see Section 2.5.2, Filter Tube Installation, Figure 6, Filter Tube Installation and reference Replacement Parts List).</p>

7.0 TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	REMEDY
D. Insufficient airflow.	<ol style="list-style-type: none"> 1. Fan rotation backwards. 2. Collector openings not tight or closed. 3. Fan exhaust area is restricted. 	<ol style="list-style-type: none"> 1. Check fan rotation. The fan rotation should be clockwise, looking down at the top of the blower fan motor (see Section 4.0, Start-Up and Figure 14, Blower Transition Assembly). 2. Check access doors, that they are in place and tightened securely. Also check hopper discharge area that openings are closed off and that the optional hopper attachments are installed (see Section 4.0, Start-Up, Figure 7, Hose Drum Cover pack with Gate, Figure 8, Hose Drum Cover Pack without Gate, and Figure 9, Transition Pack, Transition, and Airlock). 3. Check fan exhaust area for blockage. Remove material or debris that is blocking the fan exhaust area or adjust damper flow control on fan exhaust area.

7.0 TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	REMEDY
D. Insufficient air flow (contd).	<p>4. Filter tubes plugged with particulate.</p> <p>a. Filter tubes need to be replaced.</p> <p>b. Lack of compressed air.</p> <p>c. Pulse cleaning not energized.</p> <p>d. Dust storage area is too full or plugged.</p>	<p>4a. Remove and replace using only Torit filter tubes (see Figure 6, Filter Tube Installation and Replacement Parts List).</p> <p>4b. Check compressed air supply for 90 psig minimum (see Figure 1, Typical Installation). Increase pressure as described in Section 5.0, Routine Maintenance.</p> <p>4c. Check supply voltage to the timer board with a volt ohm meter. Check the fuse on the timer board. If the fuse is blown, replace it with one of equal value (see Section 2.7.2, solid-State Control Timer Specification and Figure 16, Solid-State Timer Wiring Diagram).</p> <p>4d. Clean out dust storage area as described in Section 6.1, Dust Removal.</p>

7.0 TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	REMEDY
D. Insufficient airflow (contd).	<p>5. Pulse valves are not functioning.</p> <p style="padding-left: 20px;">a. Pulse valves are leaking compressed air.</p> <p style="padding-left: 20px;">b. Pulse control solid-state control timer board has failed.</p> <p style="padding-left: 20px;">c. Pulse control timer board is out of adjustment.</p>	<p>5a. Lock out all electrical power to the HP and bleed off the compressed air supply. Check for debris, valve wear or diaphragm failure by removing the diaphragm cover on the pulse valves. Also check for solenoid leakage and/or damage. If pulse valves or solenoid valves and solenoid tubing are damaged, replace part(s) (refer to Replacement Parts List).</p> <p>5b. Check supply voltage to the timer board with a volt ohm meter. Check the fuse on the timer board. If the fuse is blown, replace it with one of equal value. If the fuse and input power to the control board is okay, but there is not any output voltage to the solenoid pulse control valves, replace the pulse control timer board (reference Section 2.7.2, Solid-State Control Timer Specifications, Figure 16 Solid-State Control Timer Wiring Diagram, and Replacement Parts List).</p> <p>5c. Refer to the Section 2.7.2, Solid-State Control Timer Specifications, and Figure 16, Solid-State Timer Wiring Diagram.</p>

Notes

The Torit® Warranty

Donaldson Company, Inc. warrants to the original purchaser that for a period of ten (10) years from the date of shipment, the product described herein shall be free from defects in materials and workmanship if properly installed, maintained and operated under normal conditions. Donaldson Company makes no warranty against damage due to corrosion, abrasion, normal wear and tear, modification or misapplication and makes no warranty whatsoever as to any goods manufactured or supplied by others. After Donaldson Company has been given adequate opportunity to remedy any defects in material or workmanship, Donaldson Company retains the option to accept the return of the product, with return freight paid by the purchaser, and to refund the purchase price for the product after confirming the product is returned undamaged and in usable condition. Such a refund will be the full extent of Donaldson Company's liability and Donaldson Company shall not be liable for any other costs, expenses or damages whether direct, indirect, consequential or otherwise. The terms of this warranty may be modified only by a special warranty document signed by a Director, General Manager or Vice President of Donaldson Company. Failure to use genuine Donaldson replacement parts will cancel this warranty. THERE EXIST NO OTHER REPRESENTATIONS, WARRANTIES OR GUARANTEES EXCEPT AS STATED IN THIS PARAGRAPH AND ALL OTHER WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHETHER EXPRESS OR IMPLIED ARE HEREBY EXPRESSLY EXCLUDED AND DISCLAIMED.

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