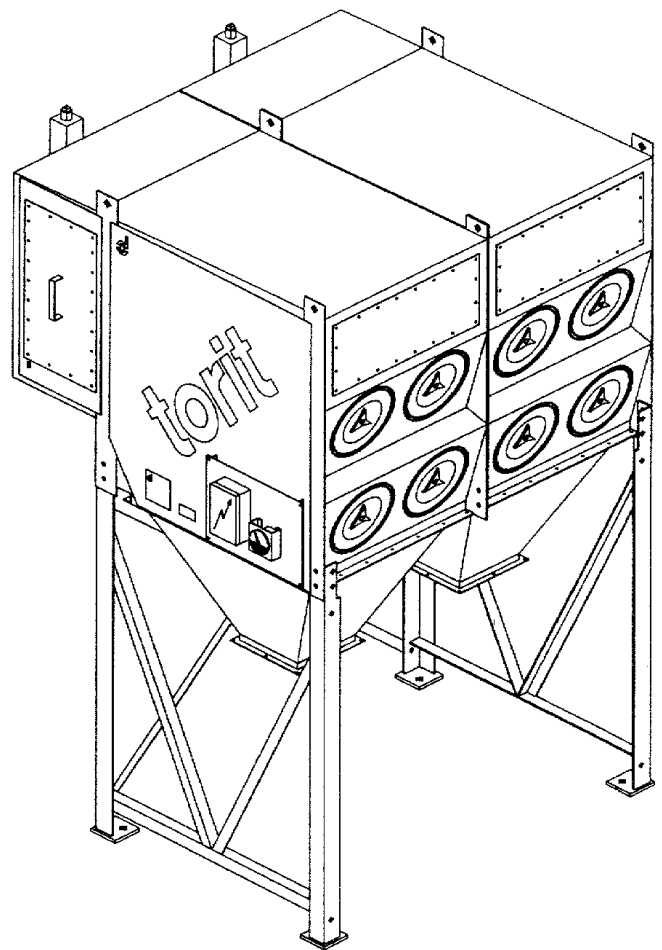
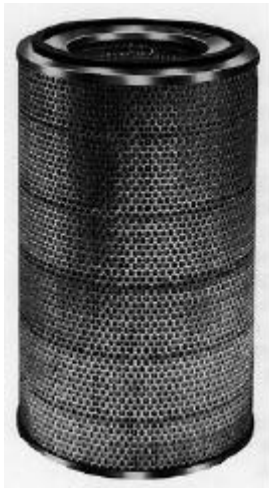


TORIT DCE INSTALLATION AND OPERATION MANUAL

FOR TORIT DCE FILTER CARTRIDGE SYSTEM DUST
COLLECTORS
TORIT DCE DOWNFLO® MODELS 2DF8 AND LARGER

Includes Service Instructions and Spare Parts List

With quick-change
Donaldson Torit DCE
Filterelements



Please read this manual prior to installation and/or setting-up.

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1. SAFETY RECOMMENDATIONS

This manual contains specific precautionary statements relative to worker safety in appropriate sections. To avoid dangerous situations we give you the following advises :

NOTE

Refers to special information on how to use the dust collector most efficiently.



IMPORTANT

refers to special information directed towards preventing damage.



CAUTION

refers to special information designed to prevent injury or extensive damage.

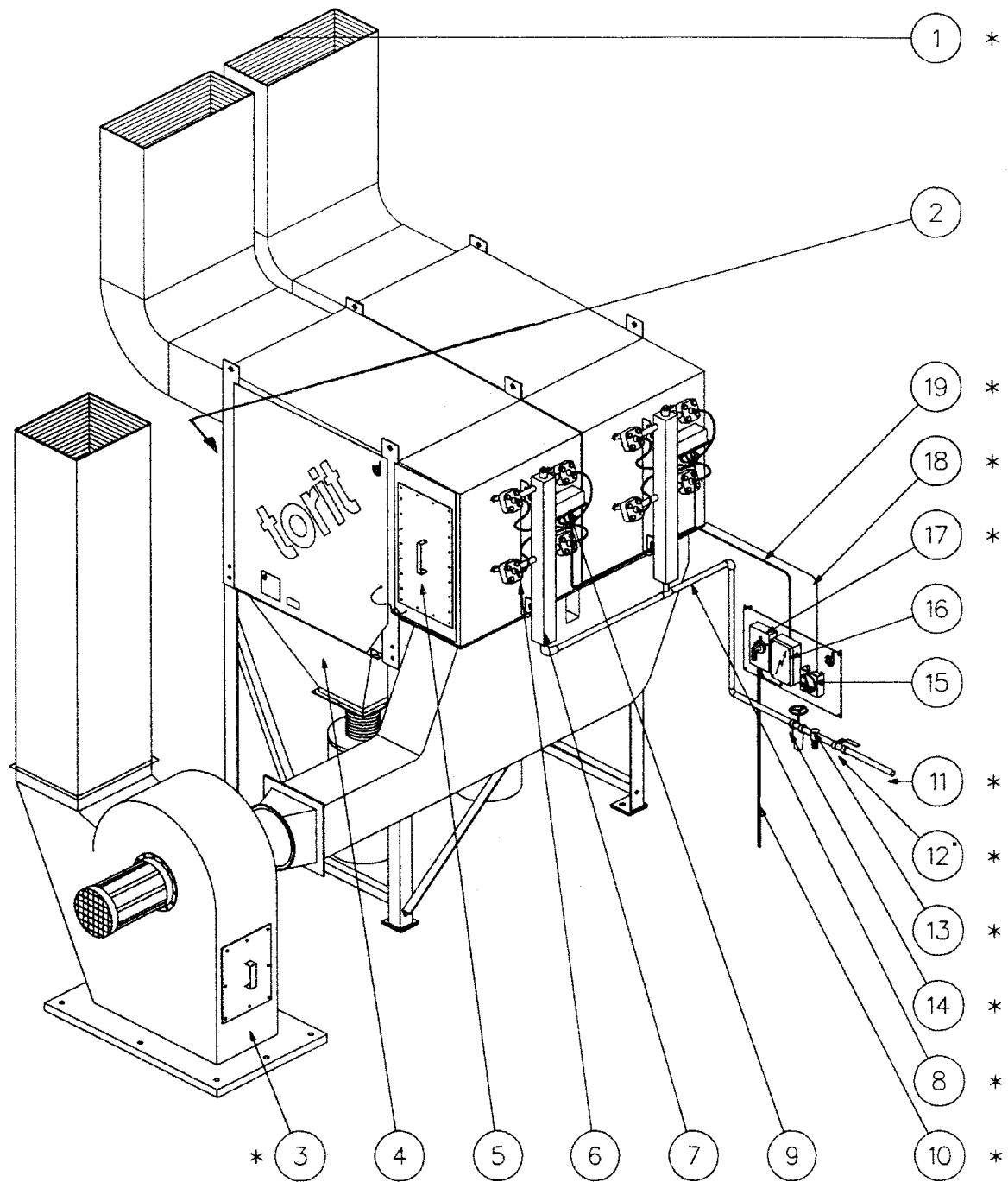


CAUTION

- a) The dust collector has been built in accordance with state-of-the-art standards and recognized safety rules. Nevertheless if not handled carefully, it may put people at risk, or also cause damages.
- b) The dust collector must only be used in technically perfect condition in accordance with its designated use and the instructions set out in the operation manual. Any functional disorders, especially those affecting the safety, should therefore be rectified immediately.
- c) Make sure to give proper training to operators before start-up.
- d) The dust collector is designed exclusively for use in accordance with the scope of delivery, drawing(s) and the specification sheet
- e) This dust collector is not designed for applications with combustible materials involving a potential dust explosion risk (e.g. buffing lint, paper, wood dust, aluminium and magnesium).
- f) It is not allowed to put lit cigarettes or any burning object into the hood or ducting of any dust collection system;
- g) Regular maintenance is important for a good performance of your dust collector.

A prudent user of Torit DCE equipment should consult and comply with all relevant Fire Codes and/or other appropriate codes when determining the location and operation of dust collector equipment.

A hand operated supply disconnecting device is necessary for each incoming electrical supply in accordance with EN 60204-1.
- h) To prevent accidents the access to the fan wheel must be impossible during operation. Refer to EN 294.
- i) Disconnect all power before servicing. All electrical work must be done by a qualified electrician according to local codes.
- j) All exposed conductive parts of the electrical equipment and the dust collector shall be connected to the protective bonding circuit (refer to EN 60204-1).
- k) Shut-off and bleed-off compressed air supply before doing any service work.
- l) The dust collector cannot be used in a potentially explosive atmosphere (according ATEX directive 94/9/EC), unless stated otherwise on the nameplate of the unit and scope of delivery.



- | | | |
|--------------------------------|---|---|
| 1. Air inlet duct | 9. Pilot valve box | 16. Controlbox |
| 2. Filterelement access covers | 10. Power supply | 17. Disconnect switch/fan set starter (incl. Overload protection) |
| 3. Fan set | 11. Compressed air line supply | 18. Tubing |
| 4. Hopper | 12. Air pressure valve | 19. Solenoid electrical connection |
| 5. Inspection cover | 13. Filter - oil/water separator | |
| 6. Diaphragm valve | 14. Compressed air regulator + pressure gauge | |
| 7. Manifold | 15. Magnehelic | |
| 8. Airline to manifolds | | |

*: not included with the **Torit DCE** Dust collector.

Figure 1 : Typical Installation View

2. INTRODUCTION

The Dust Collector is used for the collection of airborne dust and particulate. Whether in answer to the problem of air pollution, or as part of a manufacturing process, the Dust Collector provides highly efficient, continuous, on-line dust collection.

The Ultra-Web filter elements are the heart of the Dust collector. These filter elements help ensure that only clean air is returned to the plant environment.

Technical and field support are always available from your local Torit Representative and Distributors.

2.1 Operational Explanation

(see figure 2)

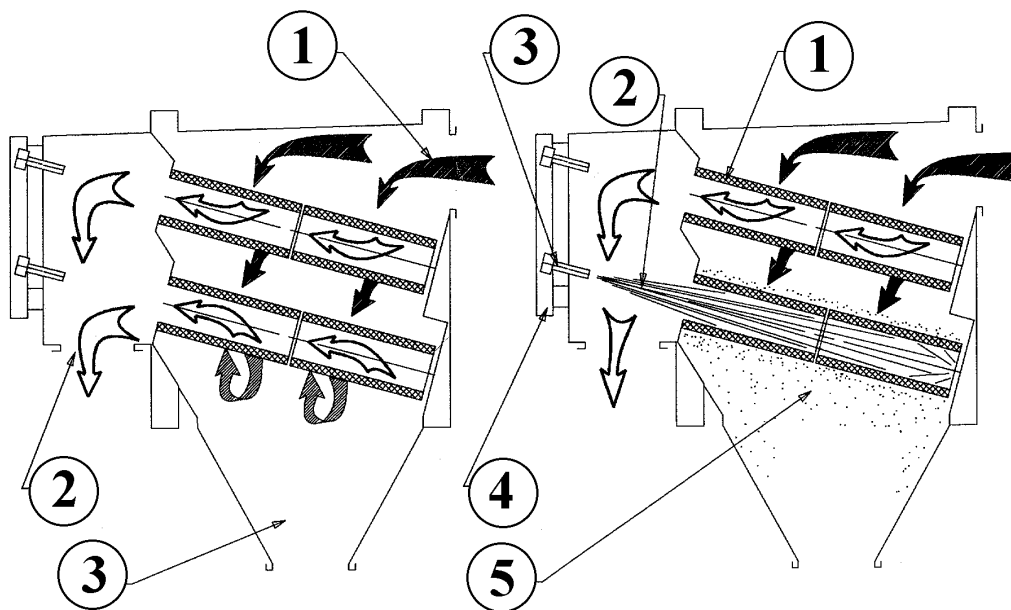
2.1.1 Normal Operation

During normal operation, contaminated air enters the Dust collector through the top inlet area and passes down and through the filter elements. Dust is collected on the outside surface of the filter elements. The clean, filtered air flows through the centre of the filter elements into the clean air plenum, where it exits through the clean air outlet.

2.1.2 Filter Cleaning

Filter elements are cleaned automatically and sequentially. "The result is that only one row (2 cartridges) may be off-line for cleaning at any given time.

During the filter cleaning purge, the solid state timer energises a solenoid valve, causing the corresponding diaphragm valve to send a pulse of compressed air through the filter (from the inside outward), removing the collected contaminants from the outside surfaces of the filter. The dust falls into the hopper and then into the dust storage container.



Normal operation

1. Dirty air inlet
2. Clean air outlet
3. Hopper

Filter element cleaning

1. Filter element
2. Air pulse
3. Diaphragm valve
4. Compressed air supply
5. Dust

Figure 2 : Operational Schematic

3. INSTALLATION

(see figure 1)

3.1 Inspection

The Dust Collector is normally shipped as a complete unit by truck and should be checked

for any damage that may have occurred during shipping. Any damage should be noted. Check the parts received against the packing list. If there is damage or parts missing, the carrier and your local Torit representative should be notified immediately.

3.2 Ship Loose Items

Items shipped loose with the Dust Collector may include :

- Hopper
- Legs and Crossbracing
- Dust Discharge System
- Transition Pieces
- Fan Set
- Silencer
- Hardware/Sealant
- Damper Pack
- Anti-abrasive Inlets
- Platforms
- Ladders
- Spare Parts

The controlbox and the magnehelic are normally premounted on the dust collector to prevent loss or damage during transportation.

3.3 Equipment/Tools Required

The following is a list of typical tools and equipment required to install and assemble a Downflo unit.

- Crane/Lift Truck
- Slings/Spreader Bars/Clevis Pins
- Drift Pins
- Clamps
- Screwdrivers
- Wrenches
- Drill and Drill Bits
- Pipe Sealant

3.4 Pre-Installation

(see figure 1)

The dust collector should be located with consideration for emptying hopper storage area, shortest runs of inlet and outlet duct work, electrical and compressed air connections and convenience of maintenance.

The Downflo dust collector is usually mounted on a reinforced concrete foundation.

However, mounting on another structure is also possible. When calculating for foundation or supporting structure, the weight of the dust collector plus the material being collected (hopper full of dust), and all auxiliary equipment must be considered together with snow, wind and other live loads. See the technical specification sheet and drawings for the dust collector weight and dimensions.



CAUTION

Location must be clear of all obstructions such as utility lines or roof overhang.

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 60 mm above foundation.

If you intend to secure the unit by using expansion bolt or equivalent process, the concrete floor will have to be prepared accordingly. (Anchor bolts can be delivered by Torit as an option, see scope of delivery).

3.5 Assembly of Standard Equipment

(see figure 1)



IMPORTANT

A crane is recommended for the unloading, assembly and installation of the dust collector.



CAUTION

Connect lifting sling to a minimum of 4 cabinet lifting lugs. Distribute loads equally. Connect lifting sling to double thickness cabinet lifting lugs when possible, use clevises, not hooks on lifting sling. Use spreader bars on lifting sling.

The dust collector must be anchored and the wind bracing supplied with the legs must be fixed onto the legs in both directions. (see outline unit)"

Before lifting unit off the truck remove all packing and strapping from the unit. Remove all miscellaneous parts (bolts, nuts, washers, gasket, etc...) which have been put inside the collector for shipment.

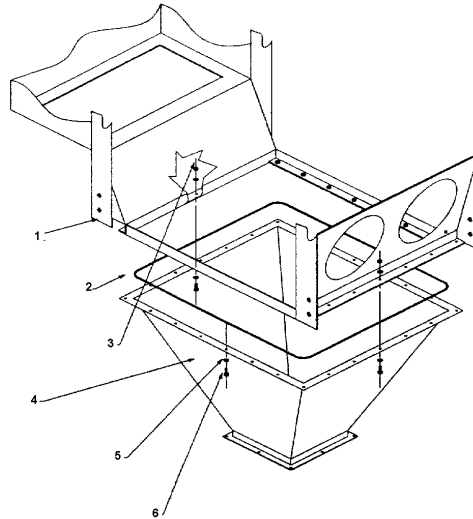
3.5.1 Hopper Installation

(see figure 'Hopper installation')

There are three styles of hoppers for your Downflo dust collector :
a single module wide which spans two portholes; a single module wide which spans three portholes; and a double module wide which spans four portholes.

Each of these styles transition to a single outlet opening 362 x 362 mm.

1. Stand the hopper(s) up on the discharge end (hopper outlet).
2. Apply the sealant to the top flange all around toward the inside edge of the bolt pattern.
3. Lift the collector from the truck. Position the collector over the hopper(s) and lower slowly.
4. A set of drift pins will be helpful in pre-locating the holes for assembly.
5. Lower the collector onto the hopper flange and assemble them together with M10 x 25 bolts, flat washers and nuts. Tighten all hardware securely.



- | | | |
|-------------------------|--------------------------|----------------------------|
| 1. Cabinet | 4. Hopper | 6. Screw M10x25 DIN933 tZn |
| 2. Gasket Neopren | 5. Washer M10 DIN125 tZn | 8.8 |
| 3. Nut M10 DIN934 tZn 8 | | |

Figure 3 : Hopper Installation

3.5.2 Leg Installation

(see figures 4,5 and 6)

For each type of unit, legs are available with 2 different standard length.

All the legs arrangements are shown in figure 5. The position of the legs and crossbracing for each collector size is shown.

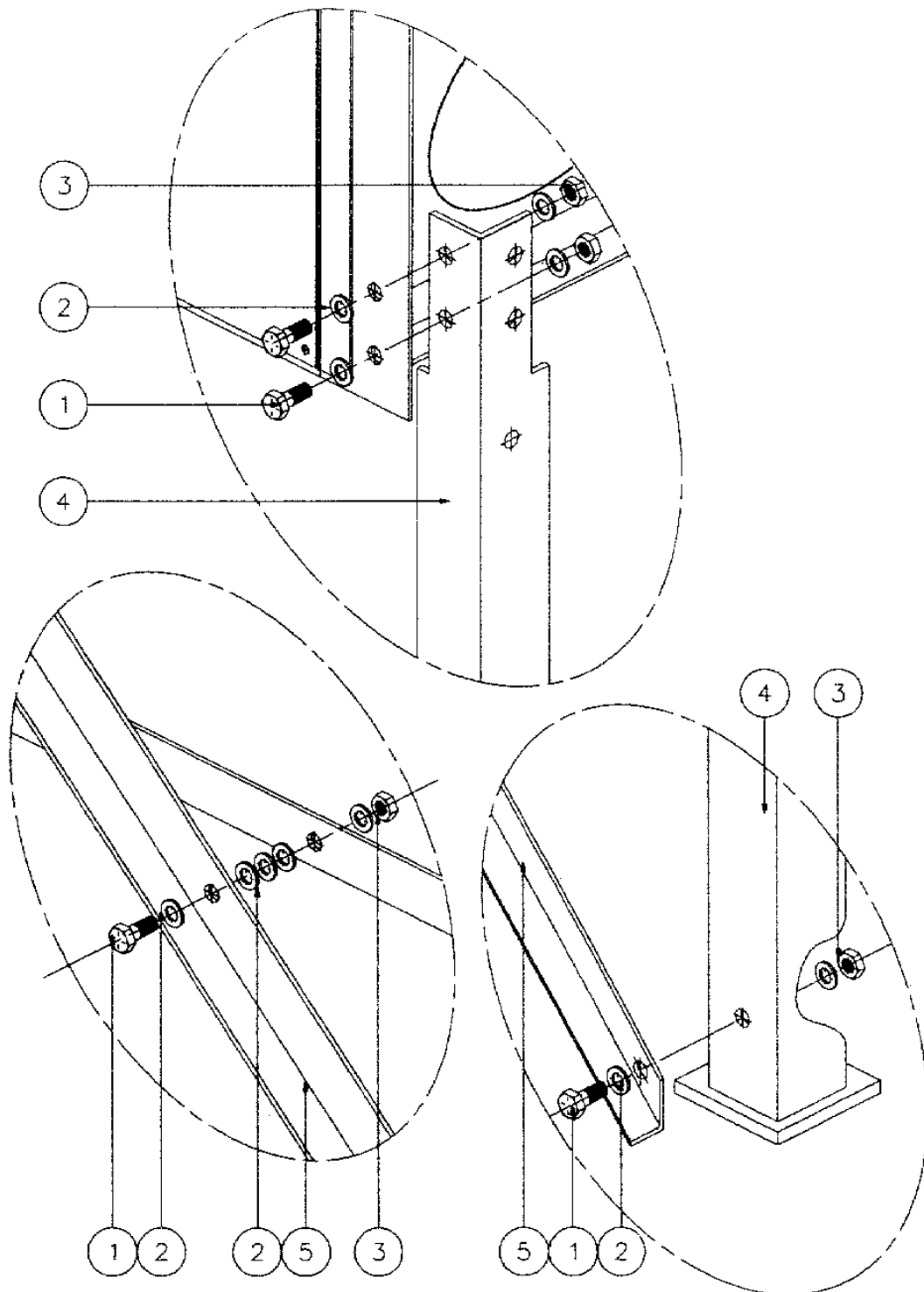
1. Stand the leg set up and position as shown in figures 4, 5 and 6.
2. Lift the entire collector (cabinet and hopper) assembly into position over the leg set and lower into position carefully.
3. Use a set of drift pins to align the holes in the collector and legs, and attach the legs with the M16 x 25 bolts, washers and nuts. **Do not tighten hardware at this time !**
4. Use a set of drift pins to align the holes in the crossbraces to the rear side of the leg set. Attach the crossbraces with M16 x 40 bolts, washers and nuts. **Do not tighten hardware at this time!**

5. Recheck the position of the legs sets and crossbracing against figure 4, 5 and 6 and the outline drawing..
6. Lift the assembled collector onto the foundation anchor bolts. fasten each leg pad to the anchor bolts with flat washers, lock washers and nuts (provided by others). **Do not tighten hardware at this time !** (Depending on the type of anchor bolts, anchor bolts can be mounted afterwards)
7. Level the collector while it is still being supported by the crane. Tighten all hardware on legs, crossbracing and foundation anchors.
8. Before disconnecting the crane, recheck all of the hardware to make sure it is securely tightened. After checking hardware, disconnect the collector from the crane. (refer back to figure 1 for Typical Installation).



CAUTION

Make certain all leg bolts are securely tightened.



- 1. Screw M16 x 30 tZn 8.8
- 2. Flat Washer M16 tZn

- 3. Nut M16 tZn 8
- 4. Leg

- 5. Bracing leg

Figure 4 : Leg Bolting Details

Modules with
1010 mm width

Module with
1457 mm width

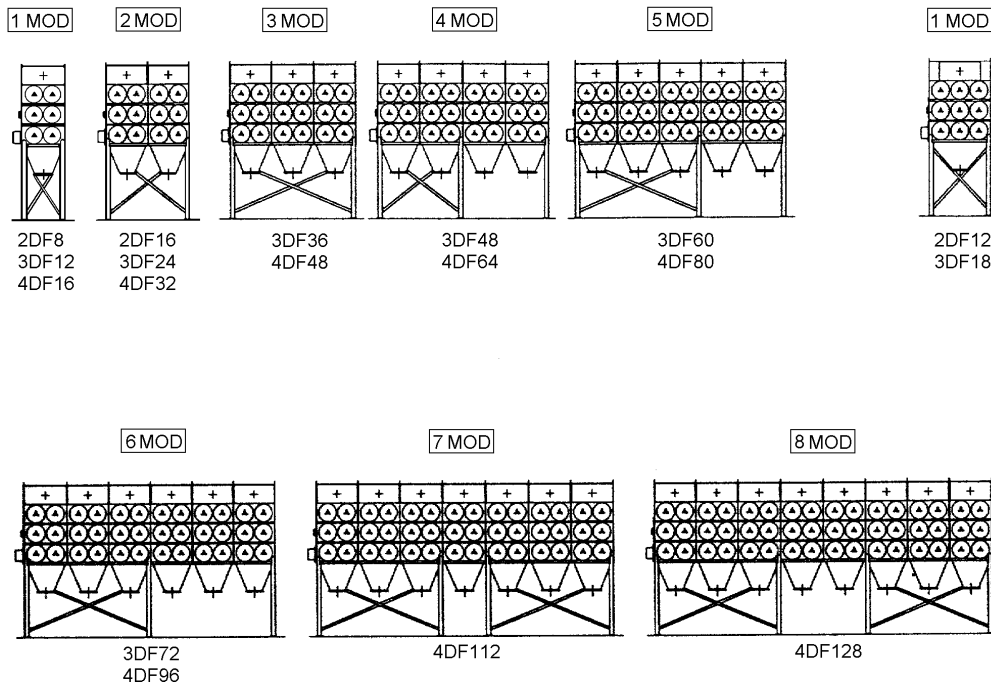
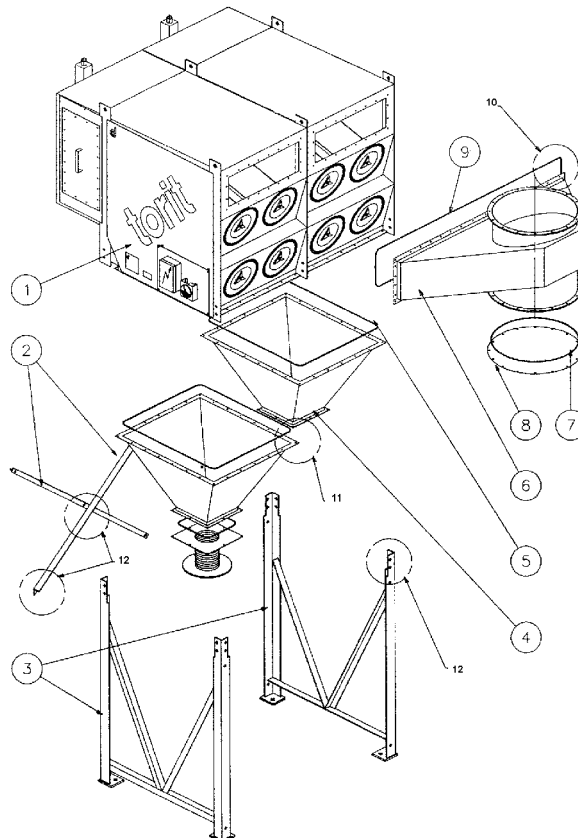


Figure 5 : Standard Leg Packs - Arrangement Front View



- | | | |
|------------------|-------------------------------------|-----------------------|
| 1. B-Section | 5. Hopper gasket | 9. * Inlet box gasket |
| 2. Cross bracing | 6. Anti-abrasive inlet box (option) | 10. See Fig. 9 |
| 3. Legs | 7. * Cover gasket | 11. See Fig. 3 |
| 4. Hopper | 8. * Cover | 12. See Fig. 4 |
- * only with anti-abrasive inlet box

Figure 6 : Parts Drawing

3.5.3 Magnehelic gauge

(if not factory installed)

The gauge should be mounted in a suitable place and in accordance with the instructions supplied with it. Special attention should be paid to the correct connection of the high and low pressure sides, the bottom connection is the high pressure side.

3.6 Assembly of Optional Equipment

3.6.1 Fan Set

Depending of the size of the dust collector the fan set can be installed directly on the dust collector roof) or remote mounted. This is specified when placing the order.

On request eventual inter-connecting ductwork, throttle valves and silencer are available from Torit (see your local Torit representative).."



IMPORTANT

When installing your fan set :

- Use proper equipment and safety guidelines when lifting and installing.
- Rotate the fan wheel before and after installing into the fan housing to assure proper clearance.
- Use a sealant between each flange connections.
- Wiring of this motor to its source must be done by a qualified electrician and in accordance with the local rules e.g. VDE, IEC, etc...and EN60204-1.
- Check the rotation of the fan wheel (direction of the arrow).



CAUTION

Disconnect all power before servicing. To prevent accidents : the access to the fan wheel with finger or hand must be made impossible during operation. Refer to EN 294.

3.6.2 Ducts

The correct size of duct should be used to prevent loss of pressure and dust deposits occurring in the system. The ducting system should be kept as short as possible. Radius bends should be as large as possible (R minimum = 1 1/2 D).

All flanged connections should be sealed with a suitable compound.

→ NOTE

For the adjustment of the airflow a throttle valve is **ABSOLUTELY NECESSARY** in the clean air duct.

3.6.3 Dust Discharge System

→ NOTE

Dust cannot be stored into the hopper and downflow effect must be guaranteed. Therefore it is imperative to install an appropriate dust disposal system which must be airtight.

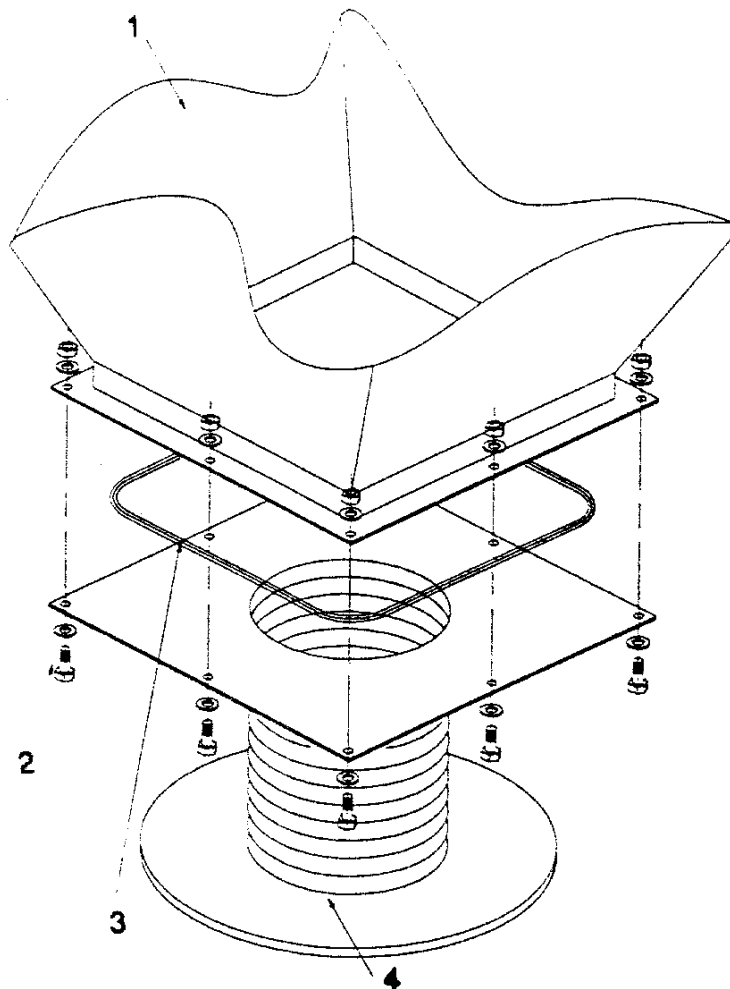
Torit proposes various types of dust discharge systems which are selected accordingly :

- Nature and type of dust
- Quantity of dust
- Storage and/or future use of the dust

The main types of dust discharge system proposed by are :

- Rubber trickle valve with leather clamp for dust bag quick fixation.
- Butterfly valve with dust bin (120 or 200 liters).
- Hook on dust bin.
- Rotary airlock
- Screw conveyor combined with rotary air lock or trickle valve.
- Dual valves with alternate operation.

Each of these accessories are delivered with the eventual transition piece and the bolts, nuts, washers and sealant to allow an easy installation below the hopper flange (see figure 'Dust outlet connection).



- | | |
|--------------------------|----------------------------------|
| 1. Hopper | 3. Gasket Neoprene |
| 2. Bolt/Washer/Nut - M10 | 4. Transition piece or accessory |

Figure 7 : Dust Outlet Connection

When using rotary airlock or screw pay attention to the following :

- A sealant must be fitted between all connecting flanges.
- Electrical connections shall 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.
- Check the direction of rotation (arrow).



CAUTION

- Disconnect all power before servicing.
- To prevent accidents the access to the rotor/screw or butterfly valve with actuator with finger or hand

must be made impossible during operation.

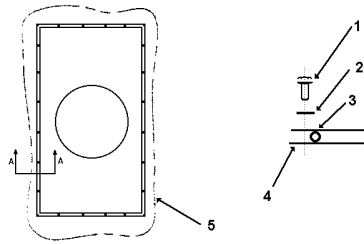
- See OIM of your dust discharge system.

3.6.4 Inlet/Outlet Transition Piece

(see figure 'Inlet/Outlet Transition Piece')

The inlet/outlet may eventually be fitted with a transition piece. For mounting these pieces:

1. Apply the sealant onto the inlet/outlet plate mounting surface.
2. Position the inlet/outlet plate onto the collector inlet mounting surface by aligning the holes and fasten securely in place using the M10 x 25 bolts, and flat washer that are supplied.



Section A-A

- | | | |
|---------------------|-----------------------|-----------------------|
| 1. M10 x 25 bolts | 3. Sealant | 5. Cabinet Roof (ref) |
| 2. M10 Flat washers | 4. Cabinet Roof (ref) | |

Figure 8 : Installation of Inlet/Outlet Transition Piece

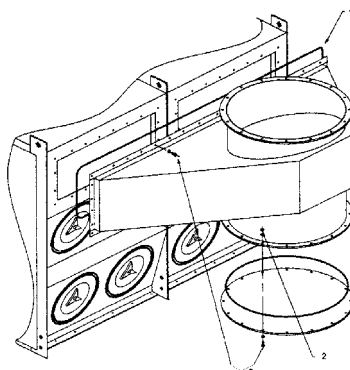
3.6.5 Abrasion Resistant Inlet Box Installation

(see figure 'Abrasion Resistant Inlet Box')

The abrasion resistant inlet is designed to be installed on the front of your Downflo collector just above the filter access covers.

Various models are available to fit different collector widths.

1. If closed, remove the cover plate from the front of the Downflo. Scrape off the excess sealant around the opening.
2. Apply sealant around the opening toward the inside edge of the bolt pattern.
3. Position the abrasion resistant inlet onto the collector and align the holes. Fasten securely in place using the M10 x 25 bolts and flat washers that are supplied.



- | | |
|--------------------------|--|
| 1. Gasket Neoprene | 3. Screw M10x25 DIN 933 tZn
8.8 + washer M10 DIN 126
tZn |
| 2. Nut M10 DIN 934 tZn 8 | |

Figure 9 : Installation of Abrasion Resistant Inlet Box

3.6.6 Platforms and Ladders

When installing platforms and ladders care must be given during the erection for a safe handling with a crane or a lift truck.



CAUTION

Make certain all the bolts are securely tightened and the legs of the platform and ladder will be anchored to the foundations.

3.7 Compressed Air Connection

(see figure 1)



IMPORTANT

- Compressed air pressure must be between 6 and 7 bar.
- It is a requirement that adequate precaution is taken to avoid exceeding this pressure. Relief, safety valve is required if the connected supply can exceed this pressure. A label is also attached to each manifold indicating manifold design details.

- It is important that the compressed air supply be both oil and moisture free. Improper pressure or contamination in the compressed air that is used to clean filter elements will result in poor cleaning or cleaning valve failure and poor collector performance.
- The piping should be installed to provide a fall in the directions of the air flow to assist in the drainage. A blow-down cock should be provided at the lowest point of the installation.
- Purge compressed air lines to remove debris before connecting to the compressed air manifold on the Dust Collector.
- Connect the compressed air supply line to the compressed air connection at the bottom of the dust collector.
- Use thread-sealing tape or pipe sealant on all compressed air connections.
- A compressed air shut-off valve, a filter/water separator with automatic condensate drain, a pressure regulator with gage should be installed in the compressed air supply line. Locate these components for convenient service, in the immediate vicinity of the dust collector.
- When installing filter/regulator, pay attention to the direction of the flow (arrows).
- Filter may **NEVER** be filled with oil.
- Be sure that all compressed air components are adequately sized to meet the maximum system requirements of 45 Nliters per pulse at max 7 bar supply pressure (= design pressure).



CAUTION

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

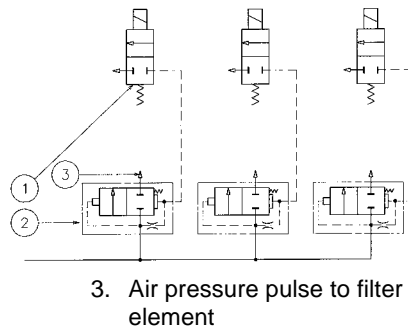


Figure 10 : Pneumtical Wiring Diagram

3.8 Electrical Connection



IMPORTANT

All electrical work must be done by a qualified electrician according to local codes.



CAUTION

Disconnect electrical power before servicing any electrical component. All exposed conductive parts of the electrical equipment and the machine shall be connected to the protective bonding circuit. (refer to EN 60204-1)

3.8.1 Solenoid Valves

Each Downflo dust collector comes equipped with 24 VDC/20 W solenoid valves that controls the pulse cleaning valves (diaphragm valve), which clean the filterelements.

The solenoid valves are installed per 4, 6, 8 or 9 in an enclosure (protection IP 65), which comes fully assembled and mounted close by the manifold at the rear of the collector.

In each enclosure all the common are prewired. The remaining terminal of each solenoid and the common must be connected electrically to the controlbox.

A wiring diagram (field electrical connection schedule) for each size of Downflo is supplied with the unit. We recommend the use of multiwire cable with a wire section of min 0.75 mm² and max 1.5 mm².



NOTE

If not wired properly, filter life and proper cleaning will be affected. Order of pulsing sequence diagram (field electrical connection schedule) will provide the best cleaning performances.

3.8.2 Controlbox



IMPORTANT

The controlbox is pre-mounted normally on the dust collector with the purpose of preventing damage or loss during the transportation.

We recommend that once the dust collector will be installed you remove the control panel from the dust collector and that according to the lay-out

of the premises you install it in a VIBRATION FREE location to be chosen for CONVENIENT ACCESS, BEST VISUAL ADVANTAGE, proximity of the dust collector and damage prevention.



CAUTION

All the instructions related to the controlbox are mentioned in separate manuals ref. IPC-OIM. (1A3119-8064) Make sure you refer to it.

4. PRE START-UP CHECK

(see figure 1)



CAUTION

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

5. START-UP

1. Turn on the compressed air supply to the Downflo dust collector compressed air manifold. Adjust to 6.5 bar of pressure with the compressed air regulator. Pressure of 6 to 7 bar is the most typical setting for satisfactory cleaning performance (See Operating Adjustments Section).
2. Turn on the hopper discharge system (where so equipped and is on a separate control). When a rotary airlock is fitted the direction of rotation must be checked (arrow). The hopper discharge system must always be operating while the dust collector is operating.

On hoppers with dust bin arrangements, make sure all the connections are airtight (see figure 7).



IMPORTANT

Make sure the hopper discharge opening is sealed off, (not open to atmosphere). Too much airflow can cause electrical failure of the fan motor or dramatically reduce the life of the filter elements.

3. Close the volume control damper valve 45 degrees or halfway.
4. Turn on the fan motor and check fan rotation. Refer to the rotation sticker on the fan housing. Proper fan rotation is extremely important. Even if the fan is

running in the wrong direction, it will deliver approximately 40 % of its rated air volume. Lock out all electrical input power and interchange any two wire leads (3 phase only) on the output side of the blower fan motor starter to reverse fan rotation.



CAUTION

Stand clear of blower fan exhaust area as debris can be exhausted and cause injury.

5. Adjust the fan for the proper system airflow that is desired by adjusting the volume control damper valve. Air volume can be measured with a pitot tube and a micro-manometer.



IMPORTANT

Too much airflow can cause electrical system failure and reduce dramatically the life of the filterelement.

6. With blower fan starter turned on, check operation of the solenoid valves. All the valves should open and close continuously with a factory set interval time of 10 seconds between each cleaning pulse.

If a ΔP monitoring module or similar remote control device is used as an internal control of the solid state timer, the valves will pulse only when the differential pressure reaches the high needle set point and will continue the pulse sequence, until the lowest pressure needle set point is reached (See Operating Adjustments Section).

6. OPERATING ADJUSTMENTS

Compressed air is recommended to be set at 6.5 bar. The printed circuit board is factory set to clean one row of elements every 10 seconds.

If the Downflo filterelements are operating at a higher than design ΔP (ΔP = Pressure drop across filterelements), it may be lowered by increasing the frequency of cleaning. The minimum off time (interval), between pulses is 3 seconds. Additional cleaning energy may be obtained by adjusting the pressure upward to a maximum of 7 bar.



CAUTION

Do not increase compressed air pressure beyond 7 bar as component damage may result.

→ NOTE

Do not increase or decrease the pulse width (ON TIME) on the printed circuit board. Longer or shorter pulse width (ON) times do not aid in cleaning of filterelements, they just waste compressed air and cause shortened filterelement life.

Pulse width "ON TIME" can be checked or adjusted by consulting your local Torit representative.

At a low operating ΔP (ΔP = Pressure drop across filterelements), you may want to raise to a higher pressure drop level by increasing the "OFF TIME" (interval) between pulses on the printed circuit board. This will greatly reduce your compressed air consumption. Another method would be to use the optional pressure drop monitoring module.

This monitoring module controls the timer board and allows a cleaning only when necessary. It allows to set a high point, a low point and an alarm. When pressure drop across the filters reaches the high point, the cleaning begins. The pulsing continues until the differential pressure return to the low point. If the alarm point is reached a led lights-up and an alarm contact is activated. This option will allow to save on compressed air usage as well as extending the life of the filterelements especially when the quantity of contaminant to be collected will be low.

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.



IMPORTANT

Check the fan motor amperage draw to the motor manufacturers nameplate amperage rating. Over amperage of manufacturer's recommended service of motor will cause damage.

6.1 Operating Check

Monitor exhaust. Exhaust should remain visually clean. If a leak develops, it will be first noticed as a visual puff of dust immediately after a cleaning pulse.

Monitor filterelement pressure drop.

Equilibrium pressure drop (stabilised ΔP) is generally 50 to 80 mm water gage on a magnehelic or Δp monitoring module for seasoned filters, but 20 to 120 mm water gage is considered normal.



IMPORTANT

At initial start-up with any new filterelements, close the volume control damper valve 45 degrees or halfway. Check the fan motor amperage draw.



CAUTION

Dust laden filters may be heavy and difficult to handle when removed through access door opening. Provide appropriate means of access to replace elements in safety in case no platform is installed.

7. SERVICE



CAUTION

Disconnect electrical power before servicing.
Shut-off and bleed compressed air supply before servicing any compressed air components.
No welding should be performed inside unit without fire protection.
Avoid contact or exposure to dust as much as possible during servicing or maintenance. Wear dust mask and protective gloves.

7.1 Filter Element Removal

(see figure 11)

1. When changing the filter elements, start at the top access ports of the units first so that the dust that falls down into the hopper area does not have open access ports below.
2. Remove access covers by unscrewing the knobs counter clockwise by hand. Set access covers aside.
3. Move the filters to break the gasket seals between the filter element and the element panel sealing surfaces. Rotate the element slowly 1/2 turn to dump any loose build up dust off of the top of the filterelement. Slide the filterelement along the suspension yoke, and out of the front of the collector access port.
4. Check for an accumulation of dust in the storage area. If cleaning is required, see Dust Removal Section.



IMPORTANT

Do not drop or rap the element on the floor or any other hard surface. Damage to the filterelement will occur, resulting in leakage.

It is necessary to clean the dust off of the element support panel all around the opening and off each filter end cap and the access cover to ensure a positive seal of the filter gasket.

7.2 Filter Element Installation

(see figure 11)



IMPORTANT

The filterelement gasket end on all the filters must be inserted first, facing inward toward the clean air section or leakage will occur.
Access cover knobs must be securely tightened. Lack of compression of the filter gaskets can cause leakage.

1. Slide the new Torit filterelements onto each suspension yoke.
2. Wipe of access cover gaskets and re-install the access covers by turning the knob clockwise onto the suspension yoke threads. Tighten securely by hand.
3. The Downflo is now ready to start up. Lock on electrical power, and turn on the compressed air supply before starting.

7.3 Dust Removal



IMPORTANT

Do not let the dust storage area drum overflow. It can cause poor collector performance and create an extensive clean up due to overflow of dust when removing the container(s).

1. Turn off the dust collector and empty as necessary to keep the dust in the hopper to a minimum. If the dust bin is used, empty the drum when 2/3 full.
2. If the hopper has a gate attachment or butterfly valve, close the gate before servicing the dust bin. Remove and empty the bin.
Reinstall the bin and open the gate. The collector fan does not have to be shut-off if this procedure is followed.

7.4 Original Equipment Filterelement

(See Replacement Parts List)

The genuine Torit filterelement is the only replacement filter that will provide the high level of performance that you expect from your investment in the Torit Downflo dust collector.

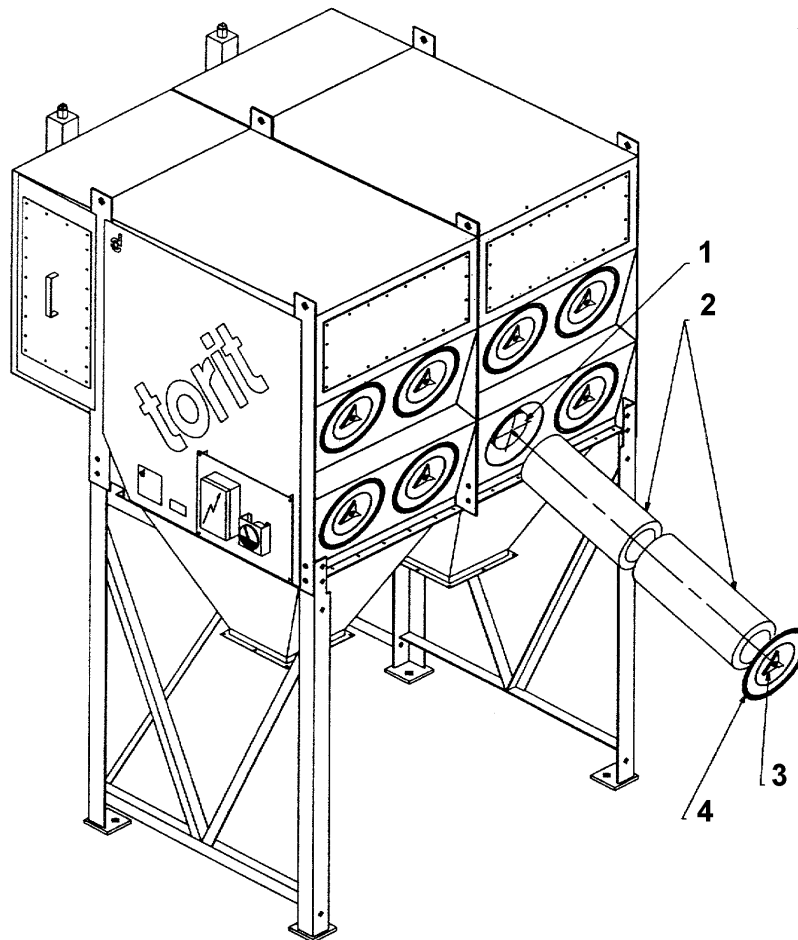
7.5 Compressed Air Components



CAUTION

Shut off and bleed of the compressed air before performing any service work.

1. Periodically check the compressed air components and service them by installing new compressed air filters and draining any moisture off by following manufacturers instructions.
2. Check the Downflo compressed air manifold for contamination, oil and/or water. Clean or drain if necessary.
3. With the compressed air supply turned on, check the cleaning valves, solenoid valves, and tubing for any leakage. Replace any components that are leaking compressed air (Reference the Replacement List).




1. Yoke
2. Filter elements
3. Knob
4. Access cover

Figure 11 : Filter Element Replacement

8. MAINTENANCE SCHEDULE FOR CARTRIDGE DUST COLLECTORS

Nr.	Checkpoint	Type of control	Measures	Day	Weeks			
					2	4	8	26
1.	Differential pressure gauge or/and delta P module	Visual check of the delta P across the filter elements When delta P exceeds 15 mbar and remains above this value after "Down time pulsing".	Check filter elements Replace filter elements	X				
2.	Filter elements	Emission : Dust carry over in clean air plenum. Check for clogging wear or damage	Replace filter elements		X			
		Preventive replacement of the filter elements is recommended after 2 years of operation (unless otherwise specified in the scope of delivery)	Replace filter elements					
3.	a) Cleaning mechanism of the filter elements	Check in the controlbox the setting of the both potentiometers (pulse time 100 milliseconds, interval time 10 seconds)	Interval time normally to be set at 10 seconds. Pulse time 100 milliseconds		X			
		If cleaning of the cartridges is insufficient (delta P too high) correct interval time.	Shorten interval time till ± 3 seconds		X			
	b) Solenoid valves	Check if valve works properly.	Replace if necessary		X			
		Check if compressed air continuously escapes from solenoid valve	Remove obstructions or replace complete solenoid		X			
	c) Diaphragm valves	Check if compressed air continuously escapes through the outlet. Look if compressed air pressure increases between two pulses (manometer fitted on air manifold).	If air escapes or there is a permanent pressure loss the diaphragm(s) are damaged and/or untight. Replace. Be sure that diaphragm is replaced properly.			X		
3.	c) Diaphragm valves	Checking of the diaphragms (if they are working)	Noise of escaping air is produced					X
4.	Air pressure supply	Check if oil and/or water is in the reservoir. Important : Compressed air must be dry and clean at working temperature	Clean oil/water separator. Switch off and bleed compressed air prior servicing. Check compressor.			X		
		Check compressed air pressure. Must be 6-7 bar. In between pulses it must reach this value again.	Set air pressure at min. 6 bar.					X
5.	Dust evacuation system	Check if slide gate valves (if fitted) under the dust hopper(s) are " opened ".	If close "OPEN".	X				
		Check content of dustbin(s).	If 3/4 full, empty.	X				
		Dust evacuation system has to be checked regularly on functioning and tightness.	Repair if necessary.	X				
6.	Fan set	Excessive noise	Remedy at once					X
7.	Connecting ducts	Check functioning. Check for tightness.	Repair if necessary					X
8.	Dust collector unit	Visual check of doors	Replace seals if necessary			X		
		Check for damages	Repair if necessary			X		
		Check performance	Make adjustments and/or repair if necessary	X				
9.	Leg structure and platform	Check integrity, strength, corrosion of the structure + platform	Repair or replace if necessary					X

9. TROUBLE SHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	REMEDY
<p>A. Fan and motor does not start</p>	<p>1. Wiring</p> <ul style="list-style-type: none"> a. Proper wire size not used for motor. b. Not wired correctly. c. Unit not wired for available voltage. d. Input circuit down. e. Electrical supply circuit down. 	<p>Rewire per local and national codes for proper wire size.</p> <p>Check and correct internal motor wiring for proper connections for your voltage. (reference Motor Manufacturer Wiring Diagram on motor).</p> <p>Correct wiring for proper input voltage.</p> <p>Check input to motor circuits for voltage on all leads.</p> <p>Check the electrical supply circuit for proper output voltage or fuse, circuit breaker fault. Replace if necessary.</p>
<p>B. Fan and motor starts, but does not keep running.</p>	<p>1. Starter kicks out.</p> <ul style="list-style-type: none"> a. Incorrect overload protection is installed. b. Collector access covers are off or not closed tight. c. Hopper discharge open to atmosphere. d. Fan damper control not adjusted properly. e. Electrical circuit fuses. 	<p>Check for proper motor overload protection. Reset or replace if needed for proper value.</p> <p>Tighten access cover(s) by hand securely (see Figure 10 and Filter Installation Section 6.2 located in this manual).</p> <p>Install slide gate, drum cover arrangement, or other accessories to hopper discharge. See Dust Discharge System and Operating Adjustments Section.</p> <p>Check airflow in ducting for proper requirements. Adjust the damper control until the proper airflow is achieved and the fan motor amperage draw is within manufacturer motor ratings.</p> <p>Check that the supply circuit has sufficient power to run all equipment.</p>
<p>C. Excessive noise/vibration of the fan unit</p> <p> CAUTION If this happens it should be rectified at once.</p>	<p>1. Fan wheel out of balance due to :</p> <ul style="list-style-type: none"> a. Dust deposit on the blades b. Worn blades. <p>2. Worn bearings.</p>	<p>Clean the blades</p> <p>Replace the fan wheel</p> <p>Replace the bearings.</p>
<p>D. Dust emission out of clean air outlet</p>	<p>1. Filterelements installed improperly.</p> <p>2. Filterelement damage, dents in the end caps, gasket damage or holes in pleated media.</p> <p>3. Access cover(s) are loose.</p>	<p>Check that gaskets on the filterelement(s) are facing into the cabinet first (see Figure 11 and Filter-element Installation Section 6.2 located in this manual).</p> <p>Replace the filterelements. Use only genuine Torit DCE filterelements (see Ordering Information at the back of this manual). See Figure 11 and install as in the filterelement Installation Section 6.2 located in this manual.</p> <p>Tighten access cover knob(s) securely (see Figure 11 and Filter Installation Section 6.2 located in this manual).</p>

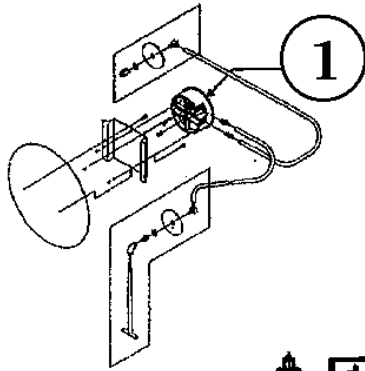
TROUBLE	POSSIBLE CAUSE	REMEDY
<p>E. Insufficient airflow</p>	<ol style="list-style-type: none"> 1. Fan rotation backwards. 2. Collector openings not tight or closed. 3. Fan exhaust area is restricted. 4. Filterelements plugged with particulate. <ol style="list-style-type: none"> a. Filterelements need to be replaced. b. Lack of compressed air. c. Pulse cleaning not energized (pulse red led does not light up). d. Dust storage area is too full or plugged. 5. Pulse valves (diaphragm vanves) are not functioning. <ol style="list-style-type: none"> a. Pulse valves are leaking compressed air. b. Pulse control printed circuit board has failed. c. Pulse control timer board is out of adjustment. 	<p>Check fan rotation. Refer to rotation sticker on fan housing (see Start-Up Section 4 located in this manual).</p> <p>Check access covers, that they are in place and tightened securely (see Figure 11 and Filterelement Installation Section 6.2 located in this manual). Also check hopper discharge area that openings are closed off and that the optional hopper attachments are installed.</p> <p>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.</p> <p>Remove and replace using only genuine Torit DCE filterelements (see Figure 11 Filter Element Replacement and Replacement Parts List).</p> <p>Check compressed air supply for 6 bar minimum. See Figure 1. Increase pressure as described in Operating Adjustments Section 5 in this manual.</p> <p>Refer to the trouble shooting guide from the Controlbox Operating Manual (partnumber 262-3078-UK or 262-3080-UK or 262-3082-UK). Check wiring of solenoid valves (see Electrical Connection Section 2.8 and Field Electrical Connection Schedule).</p> <p>Clean out dust storage area as described in the Dust Removal Section 6.3 in this manual and reference Figure 11 and the Filterelement Sections 6.1 and 6.2.</p> <p>Lock out all electrical power to the Downflo 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>Refer to Controlbox Section 2.8.2 in this manual and to the Operating Manual of the Controlbox (partnumber 262-3078-UK or 262-3080-UK or 262-3082-UK).</p> <p>Refer to Operation Adjustments Section 5 in this manual and to the Operating Manual of the Controlbox (partnumber 262-3078-UK or 262-3080-UK or 262-3082-UK).</p>

10. PARTS ORDERING INFORMATION

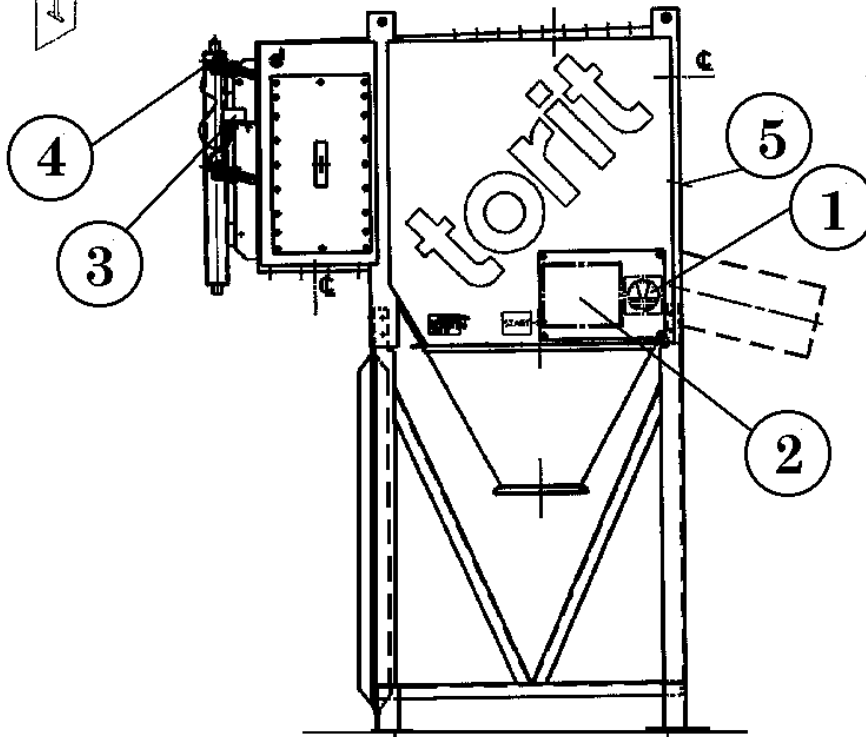
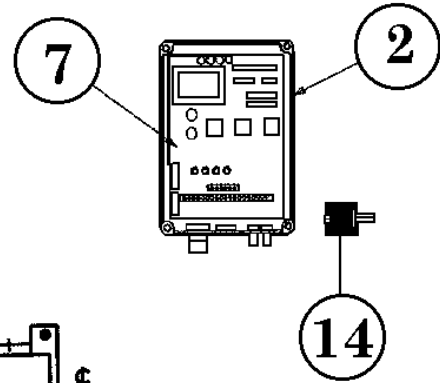
Item Nr.	Partnr.	Description	Model
8	262-2034	Knob for cover - Backelite 3 lobe type	Std DF
8	262-2060	Reinforced knob for cover/galvanized steel wing nut type	DF type -R and -EX
9	262-2116	Gasket washer	All
10	262-2117	Clip for handknob	All
11	262-2142	Porthole cover std	Std DF
11	264-7994	Reinforced porthole cover	DF type -R and -EX
12	262-2065	Cover gasket inside	All
13	262-2063	Cover gasket outside	All
4	AD1000000	Power pulse valve 1"	All
	AD1000003	Repair kit for power pulse valve 1"	
	262-0137	Diaphragm valve 1" with compressed coupling	
	262-0097	Repair kit for diaphragm valve 1"	
	AD1000002	Diaphragm valve 1" with compressed coupling	high temperature
7	1A31599361	IPC Controlbox	See wiring diagram of your DF model and OIM Controlbox
7	1A31599362	IPC Delta P Controlbox	
3	AD1000213	Enclosure with 4 solenoid valves (24 VDC) IP 65	
3	AD1000214	Enclosure with 6 solenoid valves (24VDC) IP 65	
3	AD1000215	Enclosure 8 solenoid valves (24 VDC) IP 65	
3	AD1000216	Enclosure 9 solenoid valves (24 VDC) IP 65	
17	AD1000122	Solenoid kit for coils	All
17	AD1000123	Coil only for pilot valve box	All
1	262-2015	Magnehelic	All
14	262-2115	Vibrator silencer for controlbox	
6	262-5001	Torit DCE filterelement UW DF style	All
6	262-5001C	Torit DCE filterelement UW DF style Conductive	All
6	262-5015	Torit DCE filterelement UW FR	All
6	262-5015C	Torit DCE filterelement UW FR Conductive	All
6	262-5006	Torit DCE filterelement Cellulex	All
6	262-5006C	Torit DCE filterelement Cellulex Conductive	All
6	262-5021	Torit DCE filterelement UT	All
6	262-5059	Torit DCE filterelement Fibra Web	All
6		Special filterelement	All

"+": recommended parts to be held in stock by the user of the equipment.

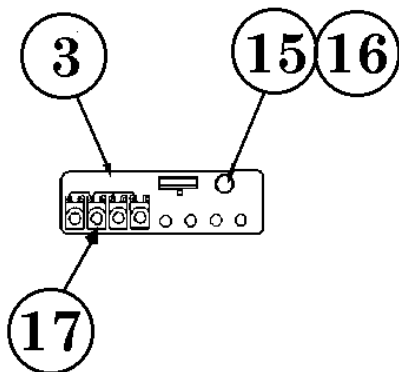
Item 1



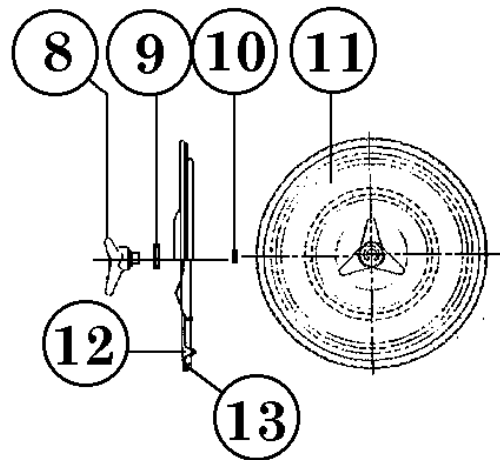
Item 2



Item 3



Item 5



10.1 Diaphragm valve

The dust collector can be fitted with 2 different diaphragm valves.

10.1.1 Diaphragm valve type AD1000000 (power pulse)

VALVE DISASSEMBLY

Disassemble in an orderly fashion. Pay careful attention to exploded views provided for identification of parts.

1. Remove the clipping from the valve body to remove the bonnet. Use a crewdriver on 3 places at the bonnet, start removing the clipping on the inlet side. Then remove the piston/diaphragm assembly.
2. Remove pipes if necessary and in that case remove the pipe O-rings from the body with a suitable device.
3. All parts are now accessible for cleaning or replacement.

VALVE REASSEMBLY

Reassemble in reverse order of disassembly paying careful attention to exploded views provided for identification and placement of parts.

➔ Note

Lubricate all gaskets/O-rings with high quality silicone grease.

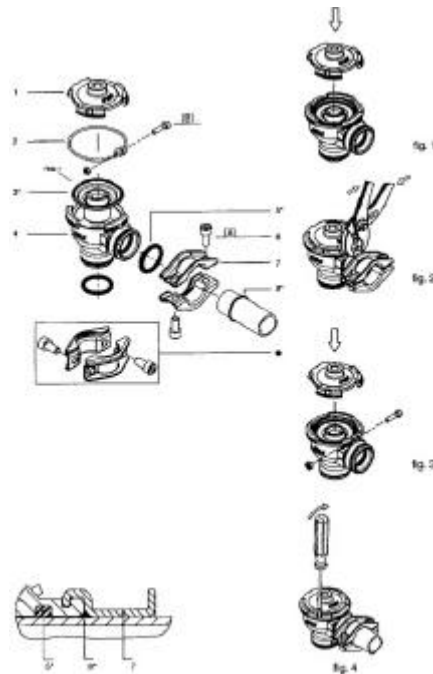
1. Replace piston/diaphragm-assembly.



CAUTION:

Locate bleedhole in piston/diaphragm opposite to the valve inlet for the best performance.

2. Replace the clipping on the body, with the open end towards the inlet side of the body. The legs of the clipping should point outwards from the valve, and that they should be evenly spaced from the stop in the groove.
3. Replace the bonnet by pressing it firmly against the piston/diaphragm. Use pliers to press the ends of the clipping together.
4. Replace pipe O-rings, then slip the clamp O-rings over the inlet pipe. Replace the valve on the pipe and move the clamp O-ring over the pipe against the valve body. Replace the clamps and torque the clamp screws according to torque chart (16 Nm \pm 2Nm). The clamp O-ring is necessary to fixate the valve in place.
5. After maintenance, operate the valve a few times to be sure of proper operation.



1. Bonnet, remote pilot
2. Clipping
3. Piston/diaphragm assembly

4. Valve body
5. O-ring (pipe) (*)
6. Screw (2x)

7. Clamp (2x)
8. O-ring (clamp) (*)

(*) Parts included in the power pulse repair kit

Figure 12 : Diaphragm valve type AD1000000 (power pulse)

10.1.2 Diaphragm valve (type 262-0137)

Valve disassembly and reassembly



CAUTION

Depressurize valve before making repairs.

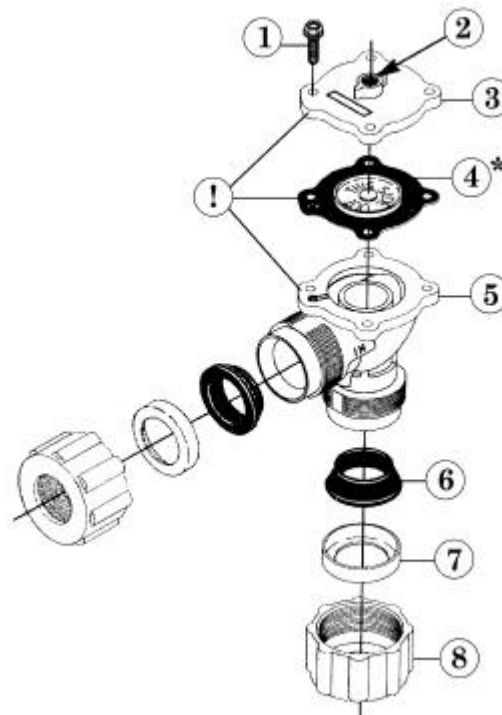


CAUTION

To avoid damage to the valve body, DO NOT OVERTIGHTEN PIPE CONNECTIONS. If Teflon tape, paste, spray or similar lubricant is used, use extra care due to reduced friction.

Depressurize valve. Proceed in the following manner:

1. Remove bonnet bolts and valve bonnet.
2. Diaphragm assembly is now accessible for cleaning or replacement. Replace diaphragm assembly if worn or damaged.
3. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for placement of diaphragm assembly.
4. When replacing diaphragm assembly be sure marking **"THIS SIDE OUT"** on diaphragm assembly faces valve bonnet and that bleed hole in diaphragm assembly is in alignment with cavity in valve body and bonnet. The external contours of the diaphragm, body and bonnet must all be in alignment.
5. Replace bonnet bolts and tighten in a criss-cross manner. Torque bonnet bolts (4) $7 \pm$ Newton meters.
6. After maintenance operate the valve a few times to be sure of proper opening and closing.



- | | | |
|---|--|--------------------------|
| 1. Bonnet screw | 4. Diaphragm assembly (*)
(Marking 'THIS SIDE OUT'
must face valve bonnet) | 6. Gasket (2) (see note) |
| 2. 1/8" NPT connection to
remote pilot valve | | 7. Retainer (2) |
| 3. Valve bonnet | 5. Valve body | 8. Retaining nut (2) |

! Bleed hole in diaphragm assembly must be in alignment with cavity in valve body and valve bonnet

(*) Indicates parts supplied in ASCO rebuild kits

NOTE: Beveled edge of gasket faces valve body

Figure 13 : Diaphragm Valve (type 262-0137)

11. CONTACT ADDRESSES

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Torit-DCE Products
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e-mail : IFSG-europe@emea.donaldson.com

12. CE DECLARATION

UK

EC DECLARATION OF CONFORMITY (Machinery directives 98/37/EEC)

Manufacturer : **Donaldson® Europe B.V.B.A.**
Interleuvenlaan 1 - B-3001 Leuven, Belgium

Description of the machinery : **Dust Collector**

Brand : **Donaldson® Torit DCE**

Type : **Downflo**

Description : see attached scope of delivery

The undersigned, authorized by Donaldson Europe BVBA, certifies that the machine described above, provided that it is installed, maintained and used in accordance with the instructions for use and the codes of practice, meets the essential safety and health requirements of the "machinery" Directive and the following stipulations and standards :

- Machinery directives 98/37/EEC
- Low voltage directive 73/23/EEC
- EN 60204-1 (ed. Oct. 92) safety of machinery. Electrical equipment of machines - General requirements
- Pressure equipment directive (97/23/EC)
- Electromagnetic compatibility Directive 89/336/EEC

And the essential principles of the following standards

- EN292-1/-2 (ed. Sept 91) Safety of Machinery
- EN294 (ed. Jan.93) Safety of Machinery - Safety distances to prevent danger zones being reached by upper limbs.

IMPORTANT ! Read the Operation and Instruction Manual before using this machine. If you require additional copies contact your local Donaldson Torit DCE representative.

The machinery must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the above mentioned directives.



Signature :
Name : Jos Dottermans
Position : Director Torit DCE Europe

Date : 25 May 2004

