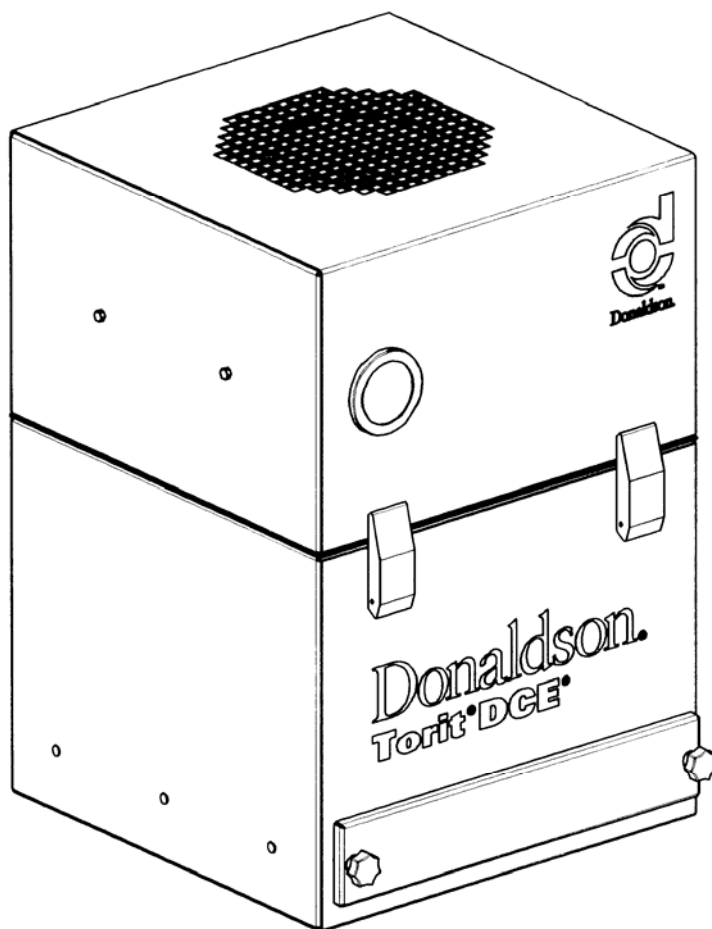


FOR TORIT® DRYFLO® MIST COLLECTOR TYPE DMC-MINI MMA



IMPORTANT

PLEASE READ THIS MANUAL CAREFULLY BEFORE INSTALLATION

**THIS MANUAL SHOULD BE READ IN CONJUNCTION WITH THE RESPECTIVE CONTROLLER
MANUAL AND CIRCUIT DRAWINGS SUPPLIED WITH THE DUST COLLECTOR**

EXPLANATION OF SYMBOLS USED



Refers to special information regarding the most efficient use.



Refers to special information directed towards preventing damage.



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



- 3 -

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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 advice:



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



Refers to special information directed towards preventing damage.



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



- The mist collector has been built in accordance with state-of-the-art standards and recognised safety rules. Nevertheless if not handled carefully, it may put people at risk, or also cause damages.
- The mist 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.
- Make sure to give proper training to operators before start-up.
The mist collector is designed exclusively for use in accordance with the scope of delivery, drawing(s) and the specification sheet.
- The mist collector is not designed for applications with combustible materials involving a potential explosion risk.
- Dryflo mist collectors can only be used for oils with an LEL >15g/m³.
- Oil mist is potentially flammable and Dryflo mist collectors are only suitable for working in ambient temperature conditions and handling fluids with a flash point >65°C.
- It is not allowed to put lit cigarettes or any burning object into the mist collection system.
- Regular maintenance is important for a good performance of your mist collector.
A prudent user of Donaldson equipment should consult and comply with all relevant Fire Codes and/or other appropriate codes when determining the location and operation of mist collector equipment.
A hand operated supply disconnecting device is necessary for each incoming electrical supply in accordance with EN 60204-1.
- To prevent accidents the access to the fan wheel must be impossible during operation. Refer to EN 294.
- Disconnect all power before servicing. All electrical work must be done by a qualified electrician according to local codes.
- All exposed conductive parts of the electrical equipment and the mist collector shall be connected to the protective bonding circuit (refer to EN 60204-1).
- Mist collectors do not contain fire extinguishing equipment. A manufacturer of fire extinguishing equipment, familiar with this type of fire hazard and local fire codes, should be consulted for recommendations and installation of the proper fire extinguishing equipment.

- Dryflo mist collectors cannot be placed or operated in potentially explosive atmospheres as classified by the ATEX Directive 94/9/EC.
- The user of the dustcollector is responsible to dispose of any dust generated by the process, according to local regulations.
- Operation of the Dryflo mist collector fan should be interlocked with the oil mist generation process such that in the event of fan failure, oil mist generation must stop immediately to prevent the increase to unsafe concentration levels.

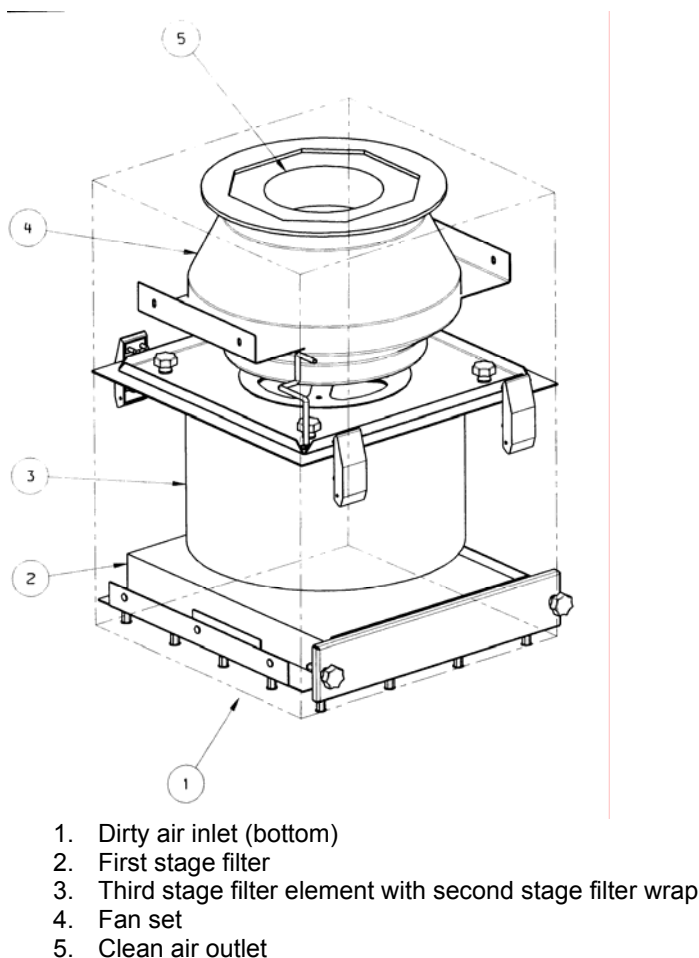


Figure 1: Typical Installation View

2. INTRODUCTION

2.1 Product information

The Dryflo mist collector is used for the collection of airborne mists. Whether in answer to the problem of air pollution, or as part of a manufacturing process, the mist collector provides highly efficient, continuous, on-line mist collection.

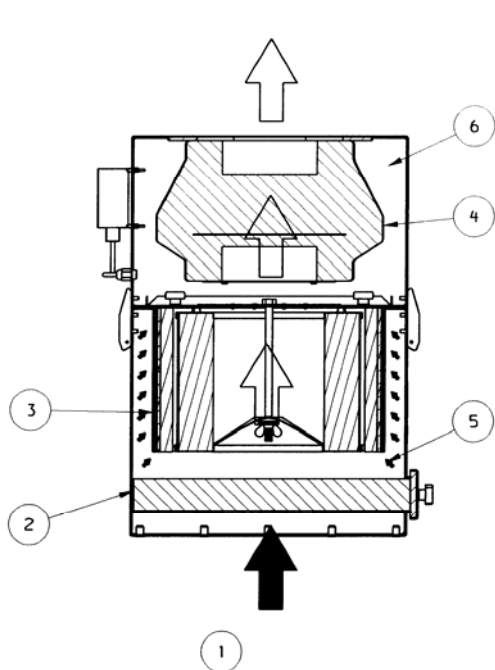
The Dryflo mist collector is designed to collect oil, water soluble and synthetic coolant mists from a variety of machining operations and other industrial processes. The unit will also collect a small amount of dust from machining operations.

The filter element is the heart of the mist collector. This filter element helps to ensure that only cleaned air is returned to the plant environment.

Technical and field support are available from your local Donaldson representative or distributors to answer your questions.

2.2 Function

During operation, contaminated air enters the Dryflo mist collector through the dirty air inlet, located on the bottom of the unit. The air then passes through the first stage filter which is designed to collect and coalesce large droplets and particles. After the first stage filter the air still contains smaller mist droplets. A second stage filter element wrap provides the next level of filtration. This standard filter element wrap is designed to collect and coalesce fine mist into larger droplets. The vertical orientation of the wrap promotes drainage of the droplets. The filter element wrap also collects particulate that may be in the air stream, extending the life of the third stage filter element. In the third and most efficient stage of filtration, the air passes through the filter element.



1. Dirty air inlet
2. First stage filter
3. Third stage filter element with second stage filter element wrap
4. Fan set
5. Dirty air chamber
6. Clean air chamber

Figure 2: Operational schematic

As mist particles coalesce and form larger droplets, the droplets become large enough to run down the filter element. During operation, the droplets will drain on both the inside and outside of the filter element. The filtered air exits the filter element into the clean air chamber, where it exits through the clean air outlet and can be recirculated into the environment.

3. PRIOR TO INSTALLATION



You should ensure all persons carrying out work on the supplied equipment follow any relevant recognised standards or codes and are competent to do so. Areas requiring competent person include:

- Lifting and erection
- Electrical installation, inspection and maintenance

3.1 Location

The Dryflo mist collector should be located with consideration for:

- hopper drainage
- shortest runs of inlet and outlet ductwork
- radius bends on elbows as big as possible
- easy access to electrical connections
- convenience of maintenance



Consult the technical specification sheet and drawings for the mist collector weight and dimensions.

For calculating for foundation or supporting structure consider the following factors:

- the weight of the mist collector
- the material being collected
- all auxiliary equipment
- live loads

3.2 Required tools and equipment

- Crane/Fork lift
- Slings/ Clevis Pins and adequate lifting equipment
- Standard tools (e.g. screwdrivers, wrenches, etc.)
- Drill
- Pipe Sealant
- Level
- Reciprocating saw

3.3 Delivery and inspection



The mist collector is normally shipped by truck as a completely mounted mist collector and should be checked for any damage that may have occurred during shipping. Compare the parts received against the packing list. If there is damage or parts missing, notify the delivery company and your local Donaldson representative.

Parts shipped loose with the delivery (depending on your order):

- Inlet hopper with flex-duct pack
- Inlet collars
- Inlet hopper/impact separator pack
- Inlet bottom gasket pack
- Spare parts
- Hardware/Sealant

4. INSTALLATION

4.1 Unloading and transport to location



Before unloading remove all packing and strapping.



Chains or slings with an adequate safe working load must be used. Refer to the collector nameplate for weight of equipment supplied by Torit DCE. The chains must be long enough to ensure that the lifting angle between diagonal chains is not greater than 90°. When using a forklift the forks must be of a suitable length and adjusted to ensure a stable lift.

A crane or forklift is recommended for the unloading, transport and installation of the mist collector.



Connect lifting sling to the lifting eye bolts with clevis pins and distribute loads equally. Use spreader bar if necessary. If a forklift is used, fasten the unit securely to the forklift using straps that are tied around the unit and mast of the forklift.

4.2 Installation Tips

Enclosed machines: do not place the mist collector inlet directly above an opening (e.g. chip conveyor on CNC turning centre).

4.3 Installation and assembly

4.3.1 Ceiling Mounting

When ceiling mounting the Dryflo mist collector, you must first calculate the total mist collector weight including material being collected, ductwork and any auxiliary equipment that is attached to the unit.



300 mm clearance required above mist collector for exhaust air.
Level the unit before tightening any hardware.



Always use cable or chain that is rated for the appropriate weight of the mist collector and any auxiliary equipment that is attached to the unit.

4.3.2 Minihelic Gauge

The minihelic gauge is a standard feature on this Dryflo mist collector model. The gauge is factory mounted. This gage is a monitor for the second stage filter element wrap and the third stage filter element pressure drop ΔP .

4.3.3 Inlet bottom gasket pack

This option is for machines that have a large, flat, unobstructed top surface.

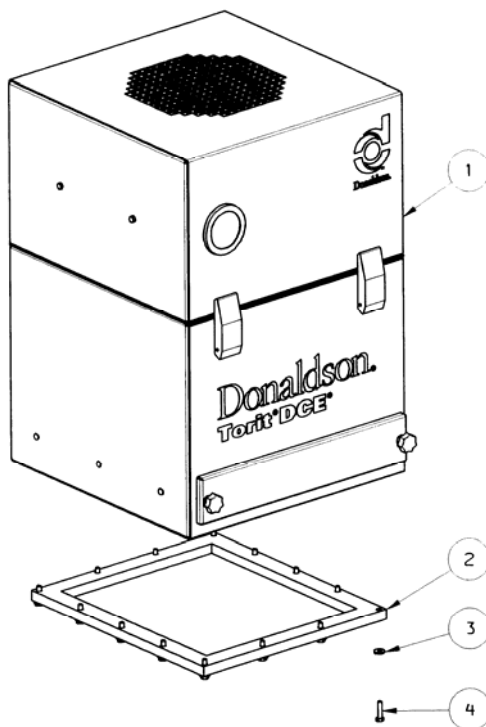


- Level the unit before tightening any hardware.
- Remove the inlet mounting template from the literature package.
- Raise the unit to the required height and position on top of the enclosure.
- When the unit is in place, remove the top-section, tubesheet and filter element. Also remove the first stage filter through the front access panel.
- Looking down, trace the bottom inlet opening and hole pattern onto the machine.
- Remove the unit and align the inlet mounting template with the cut-out. Secure it and match drill the hole pattern using a 8 mm diameter bit.
- Apply the gasket with the adhesive coated side down to the newly cut hole pattern on the machine.
- Align the bottom of the unit with the gasket and fasten the unit to the machine using bolts, washers and nuts.



Do not overcompress gasket (not more than 50%).

The bolts must be started from the inside of the machine tool.



1. Mist collector
2. Gasket
3. Washer
4. Bolt

Figure 3 : Inlet bottom gasket pack

4.3.4 Inlet hopper with flex duct pack

This option is available for mist collectors which are mounted off the machine.



Level the unit before tightening any hardware.

Raise the unit to a height of approximately 1.5 m.

Align the hole pattern of the flex-duct collar with the bottom flange of the hopper and fasten with bolts, washers and nuts.



Do not overcompress gasket (not more than 50 %)

Align the top flange of the hopper with the hole pattern on the bottom of the mist collector and fasten it with the bolts and washers supplied.



Do not overcompress gasket (not more than 50 %)

Fasten the flex-duct to the flex-duct collar using the clamp supplied.

Position the inlet collar and trace the inlet opening and hole pattern onto the machine.

Remove the unit and cut out the inlet hole. Drill the hole pattern using a 4 mm diameter bit.

Apply silicone sealant to the newly cut hole pattern on the machine. Align the inlet collar with the opening and fasten the mist collector to the machine using bolts, washers and nuts.

Connect the flex-duct using the clamp supplied.

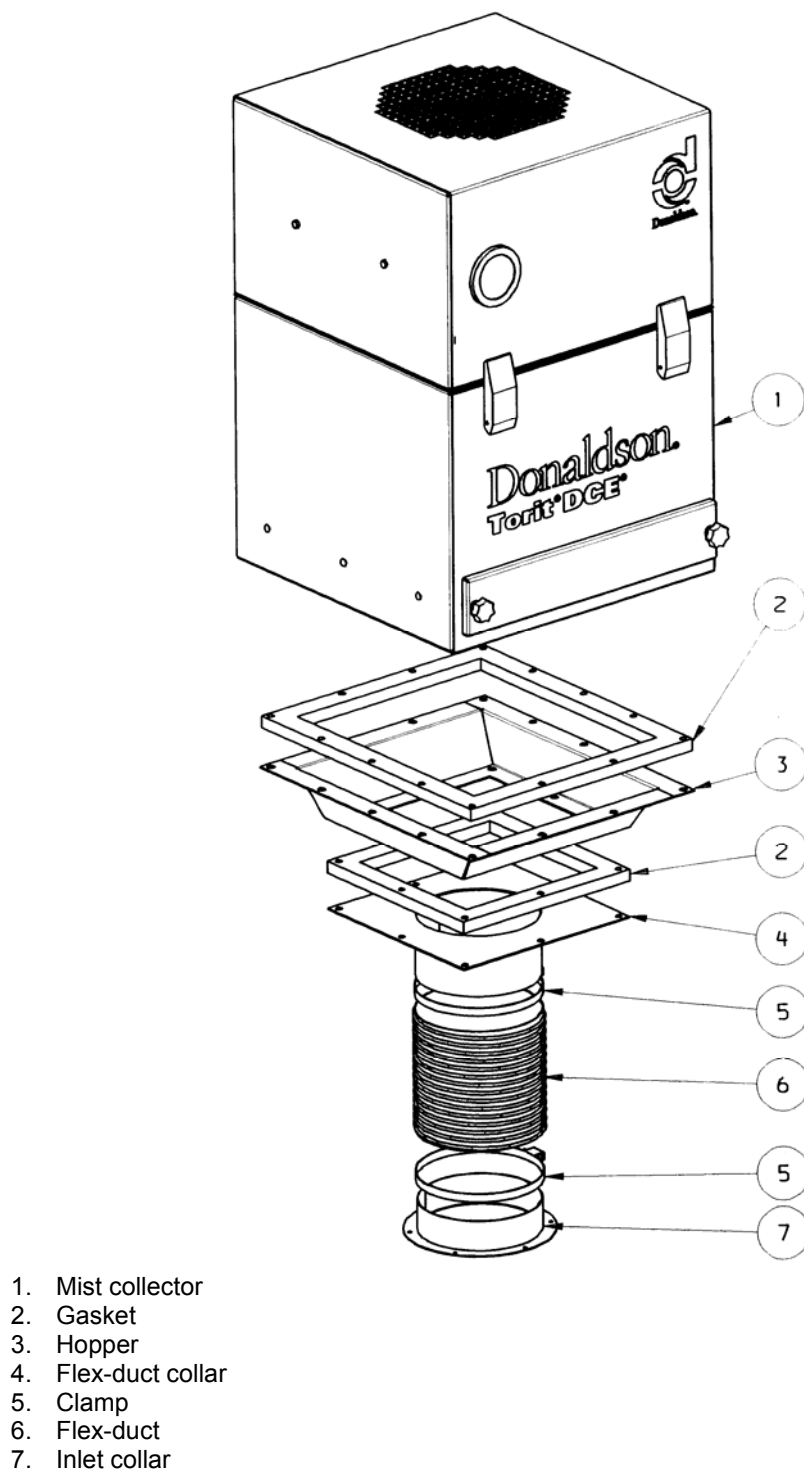


Figure 4 : Inlet hopper with flex duct pack

4.3.5 Inlet hopper / Impact separator

This option is used on processes that generate a large number of particles. It must be positioned on a stand or mounted from the ceiling.



Level the unit before tightening any hardware.

Raise the unit to a height of approximately 1.5 m.

Align the hole pattern of the impact separator with the bottom flange of the hopper and fasten with bolts, washers and nuts.



Do not overcompress gasket (not more than 50 %)

Align the top flange of the hopper with the hole pattern on the bottom of the mist collector and fasten it with the bolts and washers supplied.

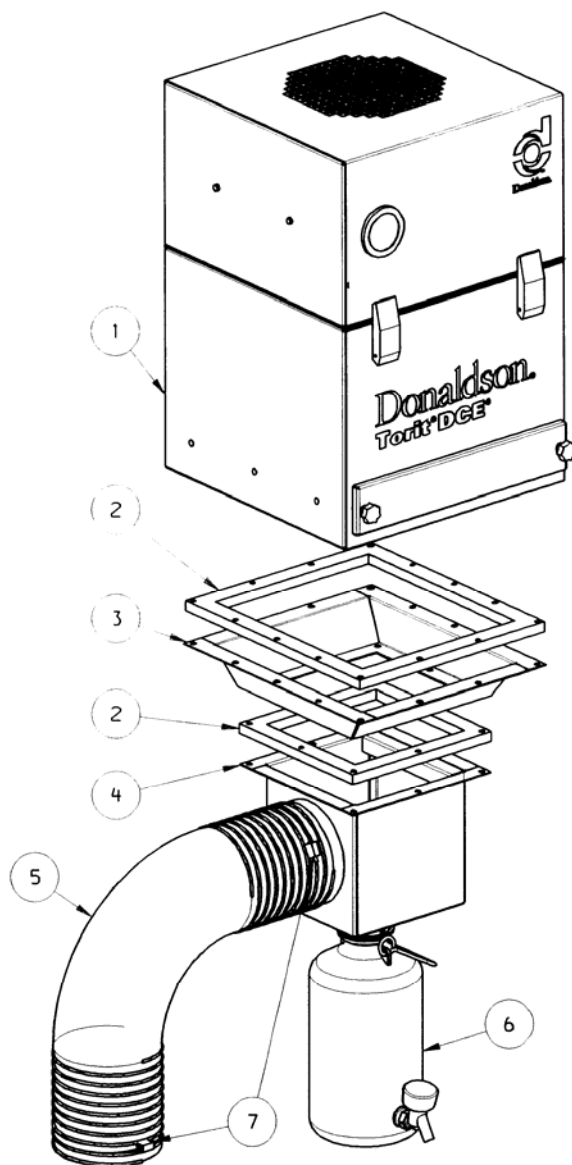


Do not overcompress gasket (not more than 50 %)

Fasten the flex-duct to the side inlet of the impact separator using the clamp.

Fasten the other end of the flex duct to either an angular nozzle, inlet collar or fitting (not included).

Fasten the collection bottle to the drain as described in the section "Collection bottle".



1. Mist collector
2. Gasket
3. Hopper
4. Impact separator
5. Flex duct
6. Collection bottle
7. Clamp

Figure 5 : Inlet hopper /impact separator

4.3.6 Collection bottle (only for use with the inlet hopper/impact separator)

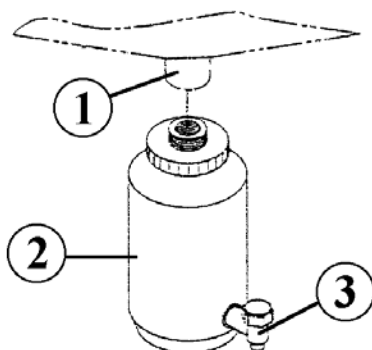
The collection bottle can be installed during stand installation or after the unit has been installed in its operating position. This collection bottle can hold up to 3.7 litres of collected liquid.



The collection bottle is intended for applications in which relatively small amounts of oil is collected.

This drain requires manual operation and must be periodically emptied. The collection bottle is semi-clear so that an operator easily can see when it requires emptying.

The collection bottle faucet should only be opened when the Dryflo mist collector is turned off. If the faucet is open when the fan is on, air will be drawn through the faucet and the bottle will not drain properly.
Make certain the faucet is closed when the mist collector is turned on and in operation.



1. Impact separator drain (Ref)
2. Collection bottle
3. Faucet

Figure 6 : Collection Bottle Installation

4.4 Junction box

The DMC-MINI MMA is completely prewired according the customers supply voltage.

4.5 Electrical connections



Amperage and voltage information is shown on the nameplate ratings of the fan motor. Over amperage of the motor will cause damage.
Connect the main power to the junction box according the wiring diagram included in the junction box.

5. START-UP CHECK LIST



Follow all steps before first start-up and when the mist collector is not been used for a long period.
For daily use follow steps 1, 2, 3, 4 and 5.

1. Check that the outlet of the fan is free of debris before starting.



Too much airflow can cause electrical failure of the fan motor or dramatically reduce the life of the filter elements.

2. Be sure that the inlet ducting is properly installed and duct joints are sealed.
3. Make certain the filter element is properly installed.
4. Check all four draw latches are secured.
5. Connect the mist collector to the main power.

6. OPERATION SCHEDULE

To ensure a good performance of your mist collector, follow the check points below according to the time table.

No.	Checkpoint	Type of control	Recommended action	Day	Weeks			
					2	4	8	26
1	Fan set	Excessive noise	See trouble shooting guide chapter 8	X				
2	Clean air chamber	Emission: oil mist emission over in clean air chamber	See trouble shooting guide chapter 8		X			
3	Exhaust	Leakage at the exhaust	Check third stage filter element for positive gasket seals				X	
4	Minihelic gauge	Minihelic gauge is pointing to 2" W.G.	See trouble shooting guide chapter 8	X				
5	Connecting ducts	Check for leakage	Repair if necessary				X	
6	Mist collector	Check damage, strength and corrosion	Repair or replace if necessary					X
7	Filter element	Preventive replacement of all filter elements (see chapter 7.4)	Unless otherwise specified in the scope of delivery every 2 years .					

7. SERVICE



Disconnect and lock out electrical power before servicing.
No welding should be performed inside without fire protection.
Avoid contact or exposure to collected liquids during servicing.

7.1 Inlet hopper/Impact separator

For applications where both liquid and particulate are collected, it may become necessary to clean the hopper and impact separator (if supplied).

Access the hopper and impact separator by removing the top section of the unit (undo the four draw latches) (see photo 1).

Also remove the tube sheet and filter element by unscrewing the four wing nuts and undoing the air tube (see photo 2).

Remove the first stage filter by opening the bottom panel and sliding it out (see photo 3).

Clean the hopper and impact separator by scraping the particulate out.



Be careful to keep the particulate out of the drain.

7.2 Collection Bottle

If the collection bottle requires cleaning, remove it from the impact separator drain. Clean the collection bottle and faucet and re-install (see figure 'Collection Bottle Installation').



Only remove the collection bottle when the mist collector is turned off.

7.3 Change of filter elements

7.3.1 First Stage Filter

This is a permanent filter, which is designed to last the life of the Dryflo mist collector. This filter may need to be periodically cleaned.

Access the first stage filter through the small access panel on the front of the unit (see photo 3). First undo both knobs, and remove it out of the unit by sliding it out. The first stage filter can be cleaned by shaking it over a waste container to dislodge particulate. If further cleaning is required, wash or soak, rinse and dry the first stage filter.

An optional polypropylene first stage filter is available for applications involving heavy liquid loading. For heavy particle loading applications a thin screen can be chosen as first stage filter.



Because of temperature limitations of the polypropylene filter, high temperature cleaning methods such as steam cleaning should not be used.

Do not operate the mist collector without the first stage filter installed. Significant reduction in third stage filter element life may result.

7.3.2 Second Stage Filter Element Wrap

To determine if the second stage filter element wrap needs replacement, install a clean filter element wrap, restart the mist collector and check the magnehelic gauge. How to remove the filter element is explained in chapter 7.2.3. If the gauge is pointing below 2" W.G., the third stage filter element will not require replacement and can continue operation with the clean filter element wrap. If the gauge still reads 2" W.G. with the clean filter element wrap, the filter element will need to be replaced.

For easiest maintenance, the second stage filter element wrap and third stage filter element can be changed at the same time. The second stage filter element wrap can be replaced using the hook and loop seam to open the wrap.



Do not operate the mist collector without the second stage filter element wrap installed.

Significant reduction in third stage filter element life may result.

Wear gloves when handling filter element and filter element wrap.

Due to accessibility, it may sometimes be easier to replace the filter element wrap by removing the filter element from the tube sheet.

7.3.3 Third Stage Filter Element



- The genuine Torit filter element is the only replacement filter that will provide the high level of performance that you expect from your investment in the Dryflo Mist collector.
- Do not drop the new filter element on the floor or any other hard surface. Damage to the filter element will occur.
- For easiest maintenance, the second stage filter wrap and third stage filter element can be changed at the same time.
- Undo the four draw latches at the side of the body and lift the top section from the bottom section (photo 1).
- Remove the tube sheet and filter element by unscrewing the four wing nuts and undoing the air tube (photo 2).

- The complete filter element can be removed from the tubesheet by undoing the large wingnut at the bottom of the filter (photo 4).
- Install the new filter element with a new filter element wrap in the unit by placing the new filter element on the tubesheet with the gasket up. Make sure the element is placed centrally on the tube sheet.
- Redo the wingnut on the element and re-install the tube sheet in the bottom section. Don't forget to reattach the air tube.
- Place the top section on the bottom section of the unit and re-do all four draw latches on the sides of the filter body.



Photo 1



Photo 2



Photo 3



Photo 4

8. TROUBLE SHOOTING GUIDE



Disconnect all power supply before services.

TROUBLE	POSSIBLE CAUSE	REMEDY
A. Fan does not start	1. Not wired correctly.	Check and correct internal motor wiring for proper connections for your voltage (see Wiring Diagram)
	2. Proper wire size not used for motor	Rewire per national and local electric codes for proper wire size.
B. Fan set starts, but does not keep running	1. Incorrect overload protection is installed	Check for proper motor overload protection. Reset or replace if needed for proper value.
	2. Electrical circuit fuses	Check if the supply circuit has sufficient power to run all equipment
E. Excessive noise/vibration of the fan	1. Deposit on the blades	Clean the blades
 If this happens it should be rectified at once		
	2. Worn blades	The fan wheel has to be replaced
	3. Worn bearings	The bearings have to be replaced
D. Oil mist emission	1. Filter element installed improperly	Check that the gasket on the filter element is firmly pressed to the fan plate and that the filter element is correctly installed.
	2. Filter element damage, dents in the end caps, gasket damage or holes in pleated media	Replace the filter element. (see chapter 7.3)
	3. Front panel not airtight	Tighten panel wingnuts securely and check sealing
E. Insufficient airflow	1. Fan wheel rotating wrong way	Check fan rotation.
	2. Openings not properly sealed	Check that front panel is closed and tightened securely
	3. Outlet is restricted	Check outlet for blockage. Remove material or debris that is blocking the outlet.
	4. Plugged first stage filter.	Remove and clean or replace. (see chapter 7.3.1)
	5. Plugged second stage filter element wrap and/or third stage filter element.	Filter element wrap and/or filter element needs to be replaced. (see chapter 7.3.2 and 7.3.3)
F. Insufficient hopper discharge.	1. Plugged collection bottle.	Remove and clean collection bottle and bottle faucet. (see chapter 7.2)
G. Liquid leaking from collector.	1. Plugged or full collection bottle.	Drain, remove and clean collection bottle and bottle faucet (see chapter 7.2).
H. Minihelic gauge is pointing to 2" W.G.	1. Plugged third stage filter element and/or second stage filter element wrap	Replace third stage filter element and/or second stage filter element wrap (see chapter 7.3.2 and 7.3.3).
I. Insufficient airflow and minihelic gage is in the green	1. Plugged first stage filter and/or inlet ducting	Clean first stage filter (see chapter 7.3.1) and inlet ducting

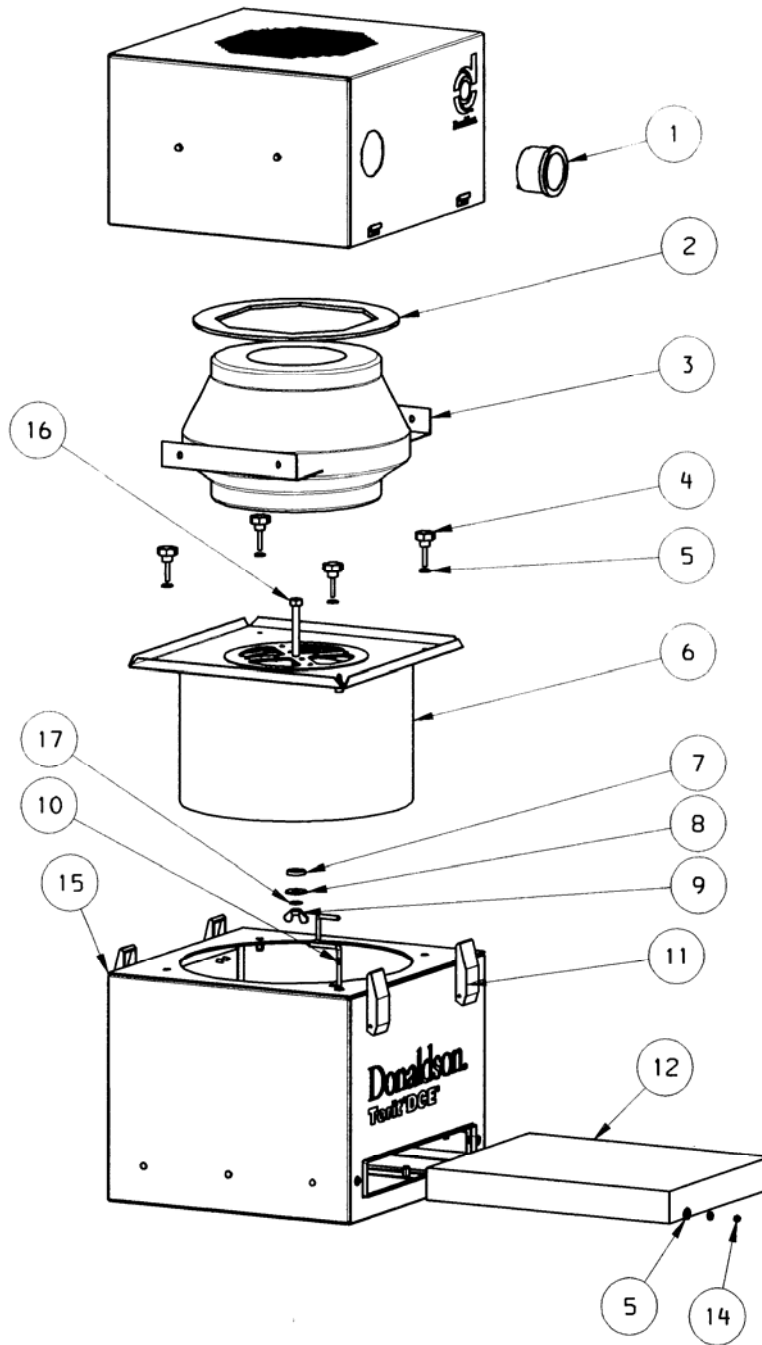


Figure 7: Replacement parts

9. SPARE PARTS

Item	Part number	Description
1	8PP-58390-04	Minihelic gauge
2	727-0592	Motor gasket
3	727-0600	Fan set assembly (including brackets and junction box)
4	727-0601	Thumbscrew M6 x 30
5	727-0610	Rubber-backed washer
6	262-5138	Third stage filter element + second stage filter element wrap
-	262-2469	Second stage filter element wrap
7	1A-2189-3017	Rubber sealing washer
8	1A-2117-6425	Washer filter element
9	1A-2199-6330	Wingnut filter element
10	728-0224	Flexible tubing
11	727-0594	Latch assembly
12	262-2465	First stage filter - wire mesh
-	262-2466	First stage filter - polypropylene
-	262-2464	First stage filter - thin screen
13	727-0604	Gasket kit front panel
14	1A-2543-3853	Thumbscrew spacer.
15	727-0593	Gasket body
16	727-0591	Filter element rod
17	1A-2117-7215	Shake-proof washer M10 for filter element.
-	728-0025	Inlet bottom gasket pack
-	728-0027	Inlet hopper + flex duct pack (for ceiling mounting)



In order to maintain the original collector specification and to ensure the same level of safety, only genuine spare parts should be fitted.



When ordering parts, give model number and serial number of mist collector, description and quantity of parts desired.

