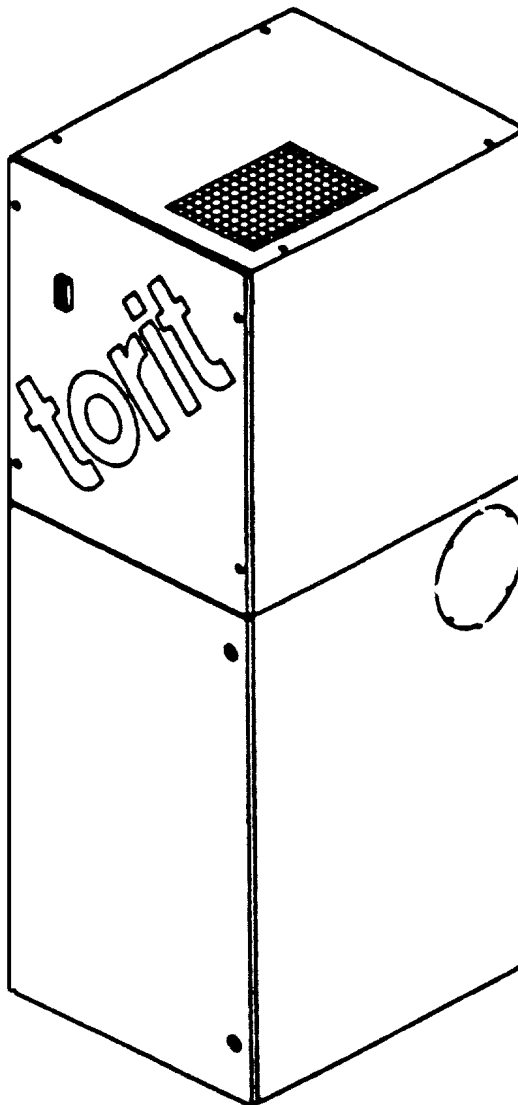


INSTALLATION AND OPERATION MANUAL

**Models VS-550, VS-1200, VS-1500
with or without hopper**

Includes Service Instructions and Spare Parts List



IMPORTANT

This manual contains specific precautionary statements relative to worker safety in appropriate sections.

Prior installation and/or setting-up read this manual thoroughly and comply as directed.

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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 machine most efficiently.



IMPORTANT

refers to special information directed towards preventing damage.



CAUTION

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



CAUTION

The machine has been built in accordance with state-of-the-art standards and recognized safety rules. Nevertheless, it may put people at risk. It may also cause damage to the machine and to other material property. The machine must only be used in technically perfect condition in accordance with its designated use and the instructions set out in the operating manual. The machine must be used only by safety-conscious persons who are fully aware of the risks involved in operating the machine. Any functional disorders, especially those affecting the safety of the machine, should therefore be rectified immediately.



CAUTION

The machine is designed exclusively for collection of in accordance with the specifications listed in the scope of delivery, outline and in the specification sheet attached. Using the machine for purposes other than those mentioned above such as

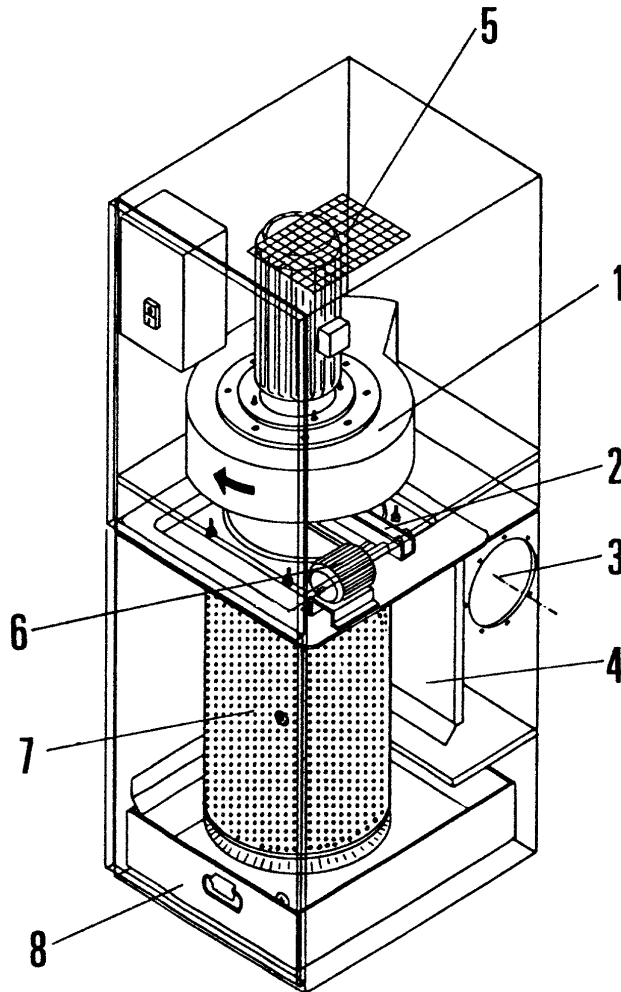
- mixing combustible materials, such as, buffing lint, paper, wood, dust, aluminium and magnesium, with dust generated from grinding ferrous metals due to the potential fire hazard caused by sparks in the ;
- putting lit cigarettes or any burning object into the hood or ducting of any dust control system;
- collecting agri foodstuff which will be reused afterwards; is considered contrary to its designated use. The manufacturer cannot be held liable for any damage resulting from such use. The risk of such misuse lies entirely with the user.

Operating the machine within the limits of its designated use also involves observing the instructions set out in the operating manual and complying with the inspection and maintenance directives.

A prudent user of equipment should consult and comply with all National and Local Fire Codes and/or other appropriate codes when determining the location and operation of equipment.

A hand operated supply disconnecting device shall be provided for each incoming electrical supply in accordance with EN 60204-1.

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. Fan
- 2. Shaker mechanism
- 3. Dirty air inlet
- 4. Inlet baffle

- 5. Clean air outlet
- 6. Shaker motor
- 7. Filter element
- 8. Dust drawer

Figure 1 : Phantom View of Typical VS Dust Collector

2. INTRODUCTION

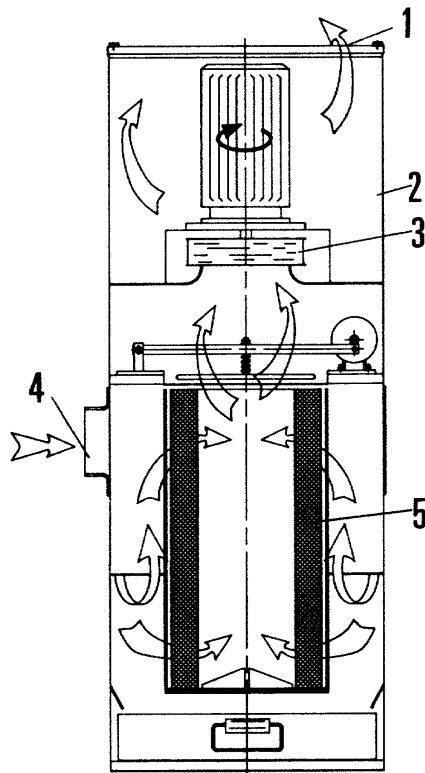
Torit DCE VS dust collectors provide high efficiency, intermittent duty air cleaning by means of an exclusive Torit DCE filter cartridge. The filter element is cleaned automatically each time the unit is shut off.

All models are acoustically lined inside the blower chamber of the cabinet.

3. OPERATIONAL EXPLANATION (SEE FIGURE OPERATIONAL SCHEMATICS)

3.1 Normal operation

Dust enters through the cabinet inlet and first passes through the built in preseparator which forces most collected dust to drop in the handy pull-out drawer. On the outside of the filter a tight mesh screen catches fibrous dust, while fine particles pass through the screen. Remaining dust is collected on the outside surfaces of the pleated filter cartridges. Clean air flows up through the center of the filter cartridge into the blower, through the silencer section of the cabinet, and exits through the top clean air outlet.



- | | | |
|---------------------|--------------------|-------------------|
| 1. Clean air outlet | 3. Fan "On" | 5. Filter element |
| 2. Silencer section | 4. Dirty air inlet | |

Figure 2 : Operational Schematic - Normal Operation

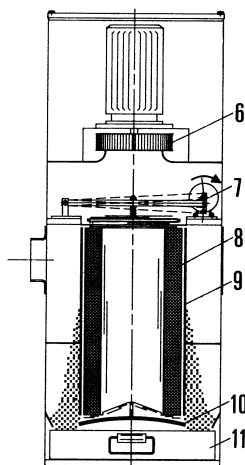
3.2 Filter cleaning

➔ NOTE

VS collectors are intermittent duty. Cleaning is done only after the fan is shut-off and a 30 sec fan run down is completed. Power to collector controls must remain on to operate cleaning mechanism.

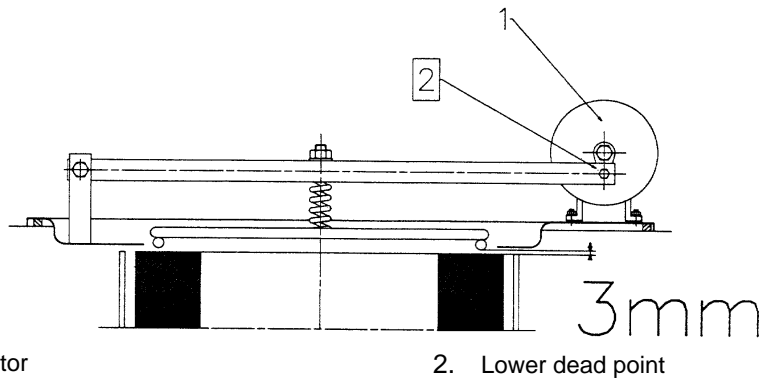
Filter cartridge cleaning is performed by high frequency vibration. After the 30 sec fan run down, the vibrator motor starts and runs for a preset time (30 sec adjustable from 0 to 60 sec), shaking dust from the filter.

A diaphragm at the bottom of the filter opens after the fan is shut off, allowing fine dust particles collected on the filter media to escape. The dust falls down into the dust pan or optional hopper for disposal.



- | | | |
|------------------------|-------------------------|-----------------------------|
| 6. Fan "Off" | 8. Pleated filter media | 10. Filter diaphragm "Open" |
| 7. Vibrator motor "On" | 9. Fine mesh screen | 11. Dust pan |

Figure 3 : Operational Schematic - Filter Cleaning



1. Vibra Shake motor

2. Lower dead point

Figure 4 : Shaker Ring Adjustment



IMPORTANT

At the low dead point of the channel there must be a free space of 3 mm (preset by Torit DCE before delivery).

4. INSPECTION

The VS collector is normally shipped by common carrier and should be checked for any damage that may have occurred during route. Any damage should be noted and the carrier notified immediately.

5. HANDLING



CAUTION

The collectors have high centers of gravity. Careful handling is required to avoid overturning during movement.

6. INSTALLATION

6.1 Foundation

No special foundation (other than a solid level surface) is necessary.

The weight of the dust collector and all auxiliary equipment must be considered when planning for the foundation.

The 10 mm anchor bolts must extend 45 mm above foundation.

The collector should be located with consideration for emptying hopper, shortest run for location of duct work, electrical connections and maintenance. In the case of hazardous dust, consult with local authorities for location of unit.

6.2 Ductwork



NOTE

If unit is operated with more than maximum permissible inlet area (specified by your sales representative), the fan motor may become overloaded or dust may settle out due to low carrying velocities.

1. When installing ductwork, use the shortest possible runs, 2 diameter radius elbows, and maximum 30° branch entries. Avoid the use of "T" connection. Connect piping joints with sheet metal screws, rivets or solder. Finish each joint with a single wrap of duct tape.
2. Ductwork must be properly sized for velocities recommended for the material being conveyed.

6.3 Control box

6.3.1 Function

The function of the controller is to control the filter and the vibration cleaning.

For the electrical schematics, please see figures 1 and 1 in this paragraph.

The filter function is switched on with the "ON" button (S1).

When the "OFF" button (S2) is pressed, the fan is switched off. After the fan has come to full stop, about 30 seconds, the vibration cleaning is started.

The control cycle ends with the end of the filter cleaning, and the filter remains off until it is switched on again with the "ON" button.

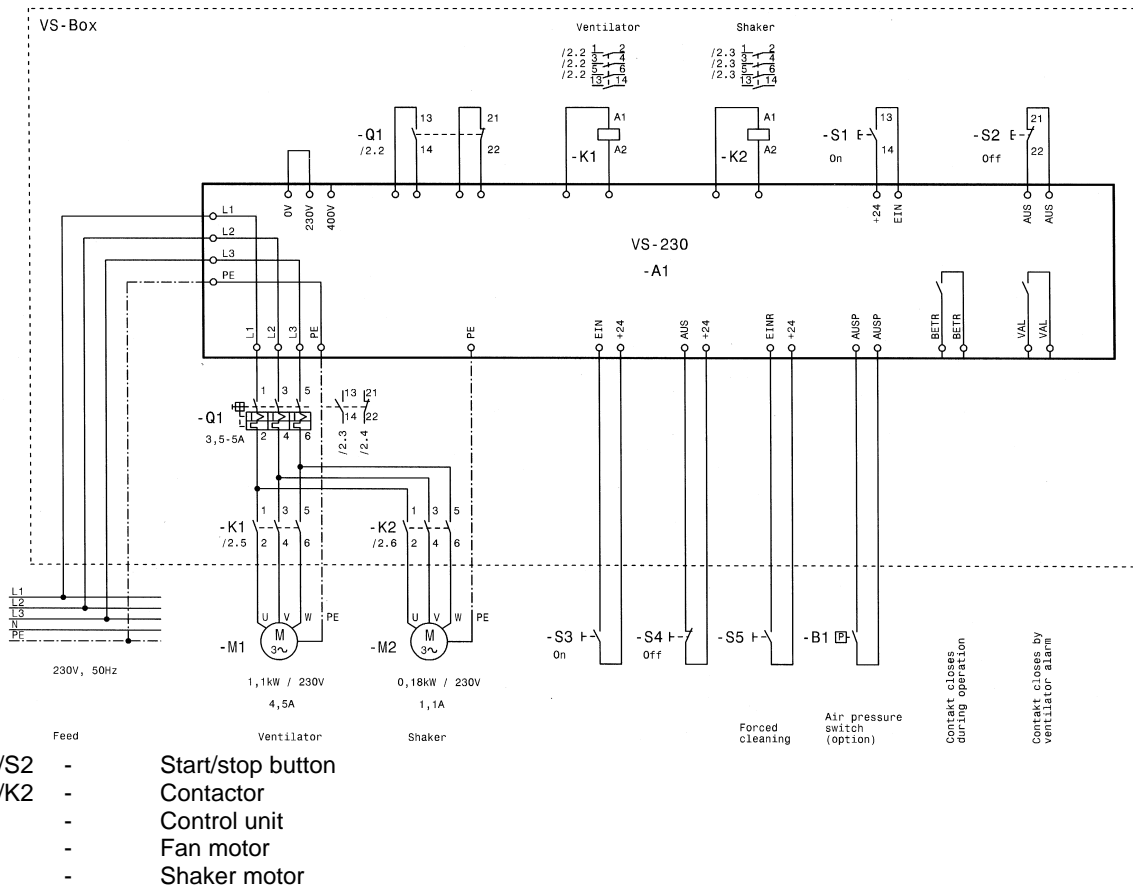


Figure 5 : Wiring Diagram 3 x 230 V + Pe

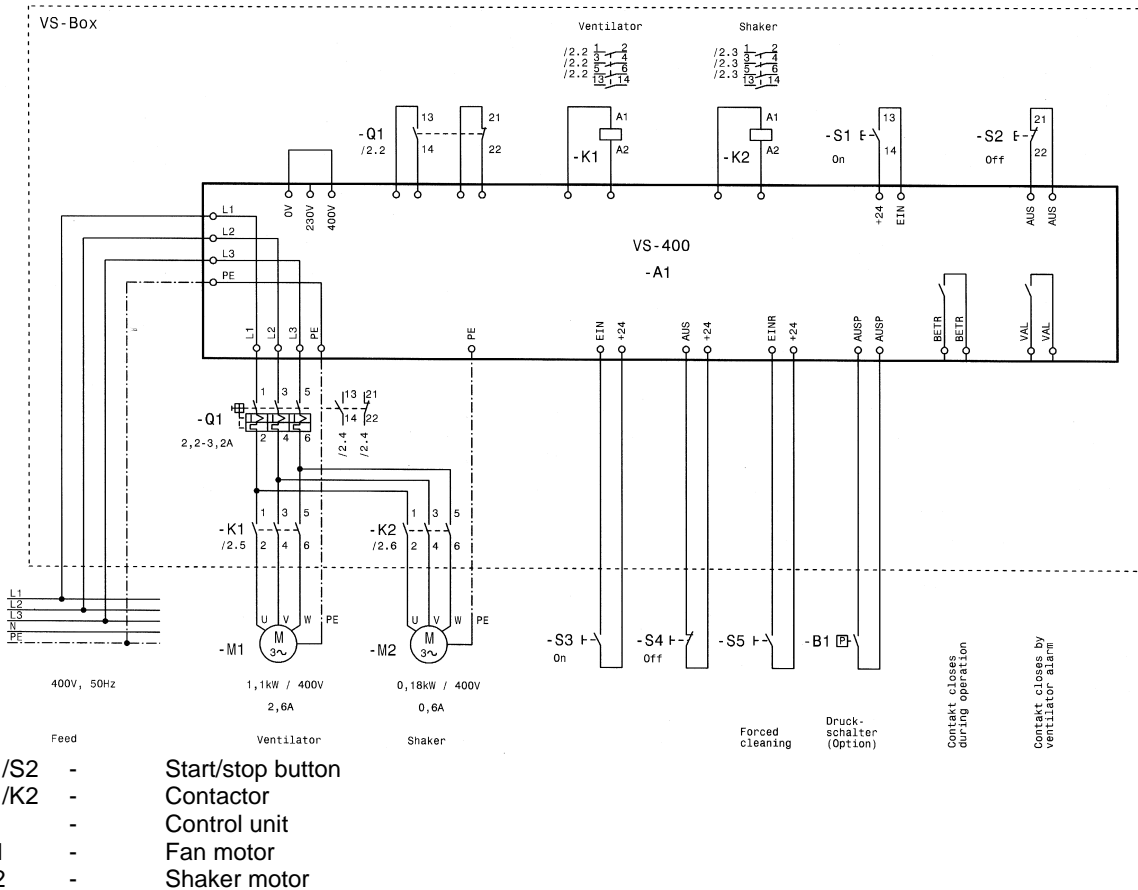


Figure 6 : Wiring Diagram 3 x 400 V + Pe



NOTE

The unit is equipped with a plug EN 60309-2, 16 A.

After the cleaning cycle there are two possibilities to restart the unit. Either you have purchased the automatic restart option, or the manual restart option.

6.3.2 Optional pressure switch

When there is a too high ΔP over the filter, the pressure switch contact closes. The unit is automatically switched off. When the fan has come to a full-stop, the cleaning cycle starts.

With the automatic restart option (see figure 7), the filter restarts automatically after the cleaning cycle has ended.

Using the manual restart option (see figure 8), the filter is restarted by depressing the restart button (S2).

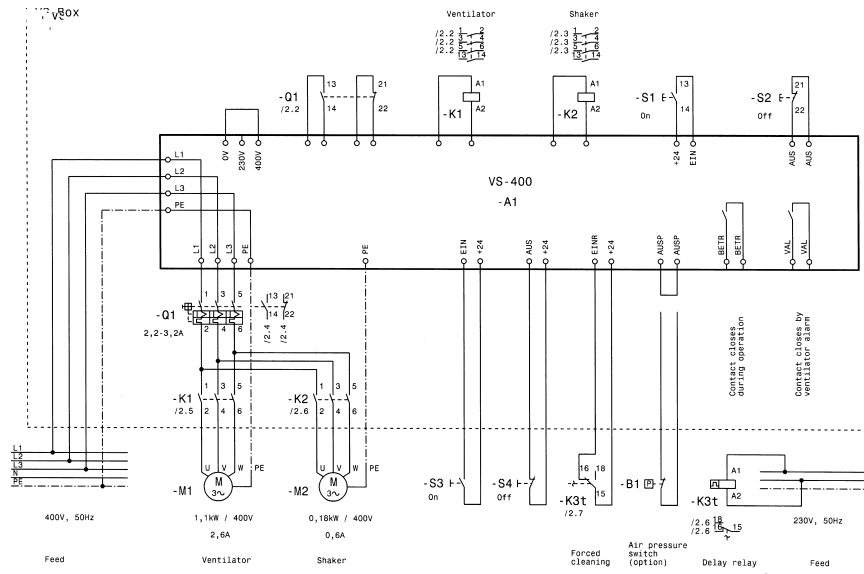


Figure 7 : Pressure switch with automatic restart

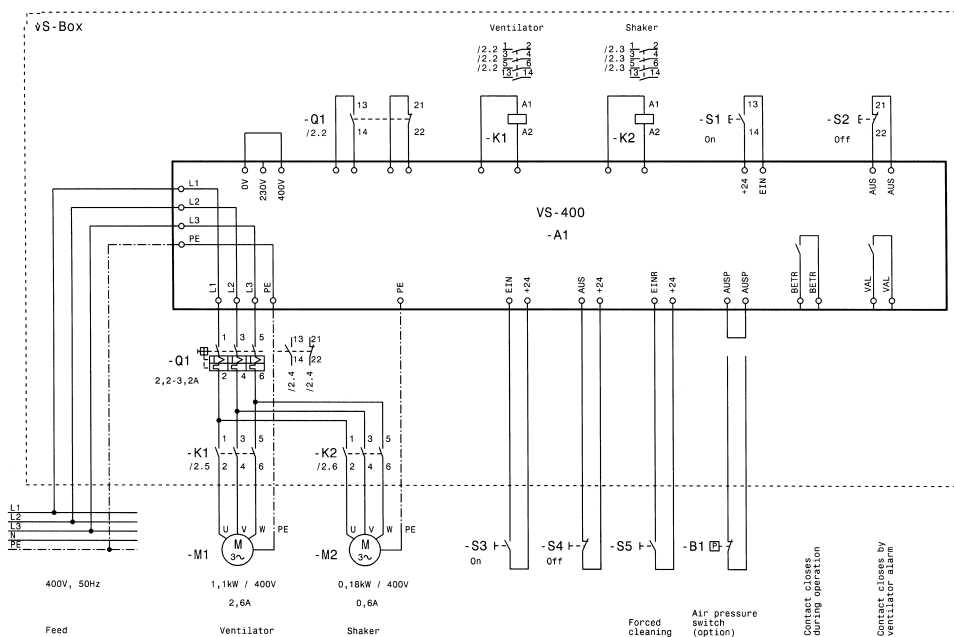


Figure 8 : Pressure switch with manual restart

6.3.3 Optional time relays

There is also the possibility to use a time relays to initiate the cleaning cycle. The time interval can be changed with the time relays on the inside of the controlbox.

Just like with the pressure switch option, there are two possibilities to restart the unit after the cleaning cycle.

Either you have purchased the automatic restart option, or the manual restart option.

With the automatic restart option (see figure 9), the filter restarts automatically after the cleaning cycle has ended.

Using the manual restart option, the filter is restarted by depressing the restart button (S2).

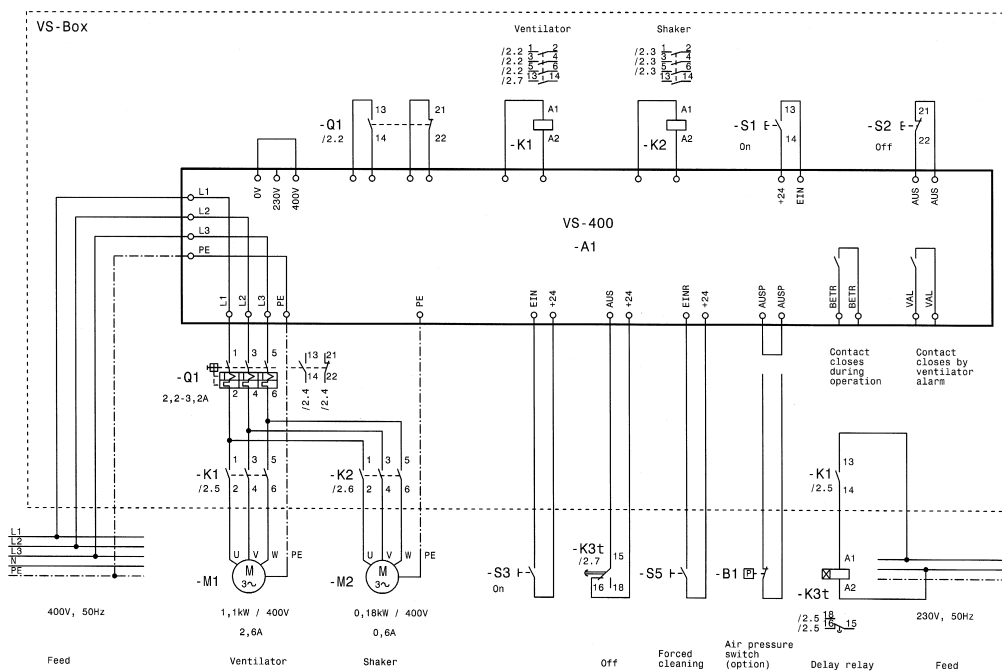


Figure 9 : Time relay with automatic restart

6.3.4 Remote control

There is also the possibility to use a remote control with a 5 m cable. Underneath you find the wiring diagram for connection to the controlbox.

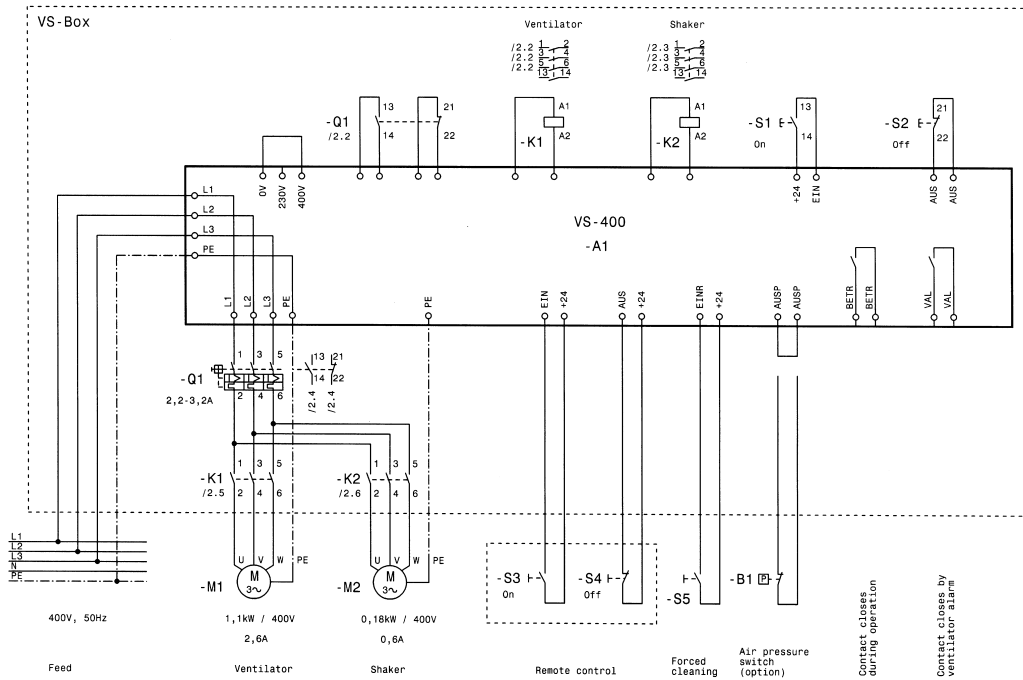
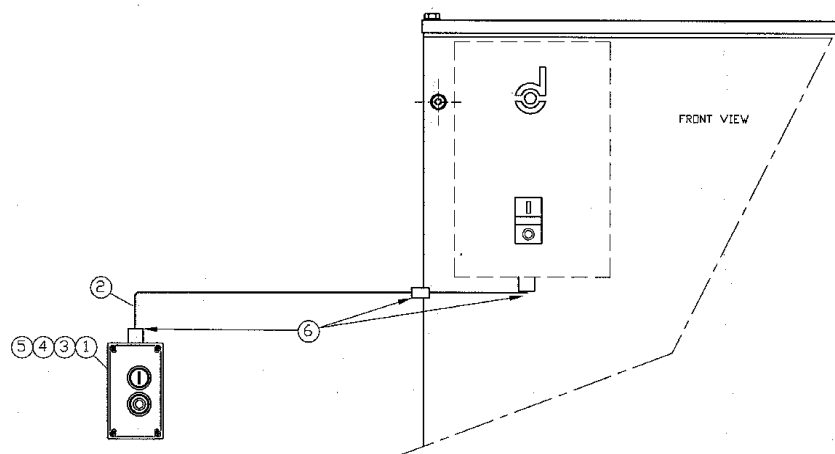


Figure 10: Wiring diagram remote control

Installation

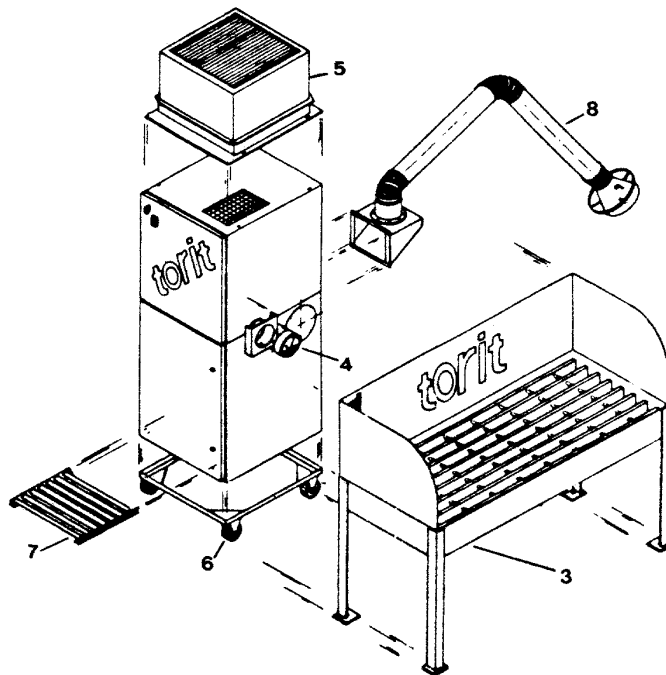
- Drill a dia 21.5 hole in the unit (see Figure 'Installation remote controlbox')
- Mount the PG 13.5 cable gland in this hole
- Mount a PG 13.5 cable gland in the controlbox and the remote controlbox
- Connect the controlbox in the unit with the remote control box (see figure 'Wiring diagram remote control')
- Use screws, washers and nuts M4 for fixing the remote controlbox.



- | | | |
|----------------------|-------------------------|--------------------|
| 1. Remote controlbox | 3. Screw M4x20 DIN84 | 5. Nut M4 DIN 934 |
| 2. Electrical cable | 4. Washer DIN 6798-A4.3 | 6. Cable gland M20 |

Figure 11 : Installation remote controlbox

6.4 Options installation



3. Downdraft table

4. Filter pressure drop indicator

5. Absolute afterfilter

6. Castors

7. Anti reentrainment baffle

8. Flexible arm pack

Figure 12 : Options

6.4.1 Downdraft table

Installation

Remove one of the three dirty air inlet covers and replace it with the inlet collar supplied with the unit. Connect the unit and the table with a flexible and make the

assembly with clamps. Make sure the assembly is airtight.

Overall dimensions of the table :

Length: 1700 mm

Width: 800 mm

Height: 1400 mm

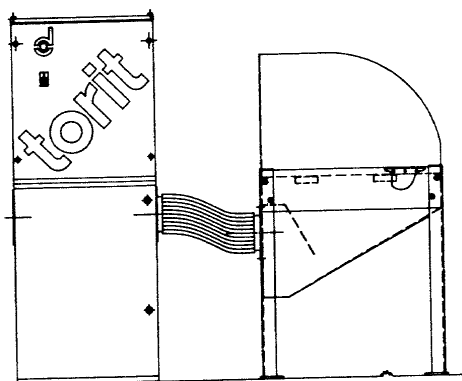


Figure 13: Downdraft Table Installation

6.4.2 Filter pressure drop indicator

Installation

1. Mount the indicator on its support with the collar.

2. Position of the indicator : on one of the lateral sides. Height : at the level of the shaker motor.
3. Bore 2 holes in the unit for the pressure intakes. These have to be located as near as possible to the indicator.

Intake A : dirty air side, between the baffle and the cartridge.

Intake B : clean air side, between the cartridge and the fan.

4. Fix the 2 pressure intakes to the VS.
5. Connect the pressure intakes to the pressure indicator with the flexibles.

Hole A : connection "high" on the indicator.

Hole B : connection "low" on the indicator. Make sure that the assembly is airtight.

6. Fixation of the indicator : bore 4 holes 6 mm diameter. Put the indicator on the VS with the 4 supplied bolts.

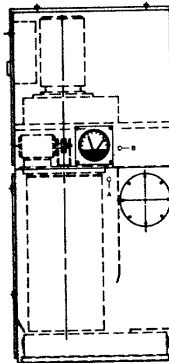
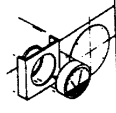


Figure 14: Filter Pressure Drop Indicator Installation

6.4.3 Absolute after filter

Installation

- Remove the 4 bolts of the top cover.
- Remove the top cover.

- Apply sealant (e.g. silicon) on the contact surface between the VS and the after filter.
- Mount the after filter on the VS using the same 4 bolts.

Precaution : Minimum clearance above clean air outlet : 300 mm.



Figure 15: Absolute After Filter Installation

6.4.4 Castors

Installation

- 2 x 10 mm holes have been prebored in the castors frame. The holes are positioned in front of rivets fixed at the bottom plate of the VS.

- Lay the VS-unit on its side.
- Bore the 2 concerned rivets with a 10 mm drill.
- Assemble the castors frame and VS using the 2 M8 supplied bolts. Make sure the two turning castors are on the front face of the VS and the two fixed ones on the back side.

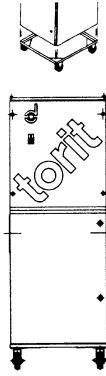


Figure 16: Castors Installation

6.4.5 Anti reentrainment baffle

Installation

- Put the reentrainment baffle on the right place as shown on the detail.

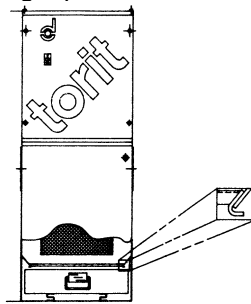


Figure 17 : Anti-Reentrainment Baffle Installation

6.4.6 Flexible Arm Pack - Extraction Arm

Installation of the inlet box

- Remove one of the three dirty air inlet covers located on the sides of the units.
- Bore 10 holes dia 8 mm in the VS panels aligned on those of the inlet box (item 1).

- Place the "L" reinforcement profile (item 2) horizontally inside the unit and assemble box-unit-profile with the bolt kit (item 3-4-5).

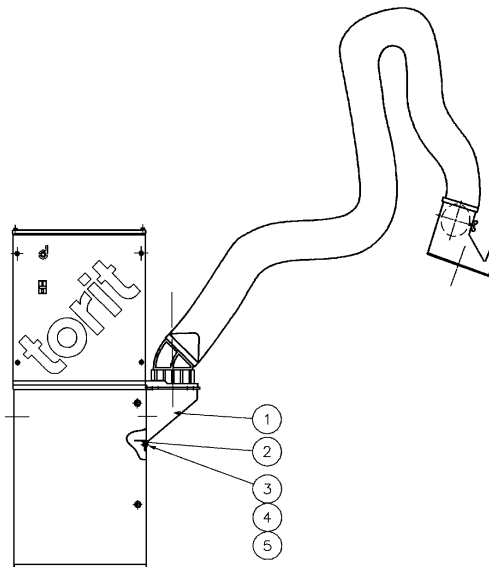


Figure 18 : Extraction Arm Installation

7. OPERATION



CAUTION

Check air exhaust outlet at top of collector to be sure it is not blocked or material not stored over the exhaust opening.



NOTE

Each time that the unit is connected to the electrical network and if the fan has not been started after 30 sec the VS will perform a shake cycle.

1. Start fan motor and check fan for proper rotation as indicated by arrow on fan housing. Rotation may be determined by looking down at the top of the motor. Proper rotation is extremely important. Even if the fan is running in the wrong direction, it will deliver approximately 40 % of its rated air volume. If rotation is incorrect, reverse 2 phases on the connection L1, L2, L3.
2. Turn unit on for your operation.
3. When airflow becomes low, turn unit off for cleaning operation.

8. CLEANING OPERATION

- Turn power off.
- 30 sec delay for fan run down
- 30 sec cleaning operation
- No time delay for start-up
- If start-up is initiated during cleaning operation, the shaker motor will shut-off

9. ROUTINE MAINTENANCE

9.1 Floor Models (without hopper)

Empty collector dust drawer periodically or whenever it becomes 2/3 full. Also remove any dust that has settled to the bottom of dust compartment.

9.2 Hopper Models

Hopper is not for dust storage - empty periodically as necessary to avoid dust deposit in the hopper. Empty 27 l drum when 2/3 full.

To remove the dust bin : push the two handles of the flexible connection between the hopper and the bin.

To put back the dust bin : pull the two handles. Make sure the assembly is airtight.

9.3 Filter Element

If the fine mesh screen on filter becomes plugged with fibrous material, it can be removed and cleaned (see Service - Filter replacement for filter removal). To remove screen, simply pull apart at seam (screen is held together at seam with Velcro). Reinstall screen by butting it up against the upper end and cap of filter. Stretch screen tight before sealing Velcro. Screen must be stretched tight when installed or it may slide off when shaking. The screen must be located all the way to top end cap allowing holes/gaps on perforated liner material to be covered.

10. SERVICE



CAUTION

Disconnect all electrical power to collector before performing any service work.

10.1 Filter replacement

1. Disconnect electrical power
2. Open the bottom hinged door with screw driver
3. Remove the 4 knobs supporting filter (knobs remain attached to support ring)



IMPORTANT

Be careful that filter does not drop when knobs are removed as filter may be heavy due to dust collected on it.

4. Remove filter support ring and filter
5. Check gasket surface on shaker panel for dust and clean as necessary before installing new filter
6. Install new filter to shaker panel using filter supporting knobs. Tighten knobs securely by hand.



NOTE

New filter is supplied with diaphragm valve attached.

7. Inspect door gasket on cabinet and repair or replace as necessary to ensure an airtight seal
8. Shut the door with a screw driver

Collector is now ready for start-up. Turn on electrical power to resume operation.



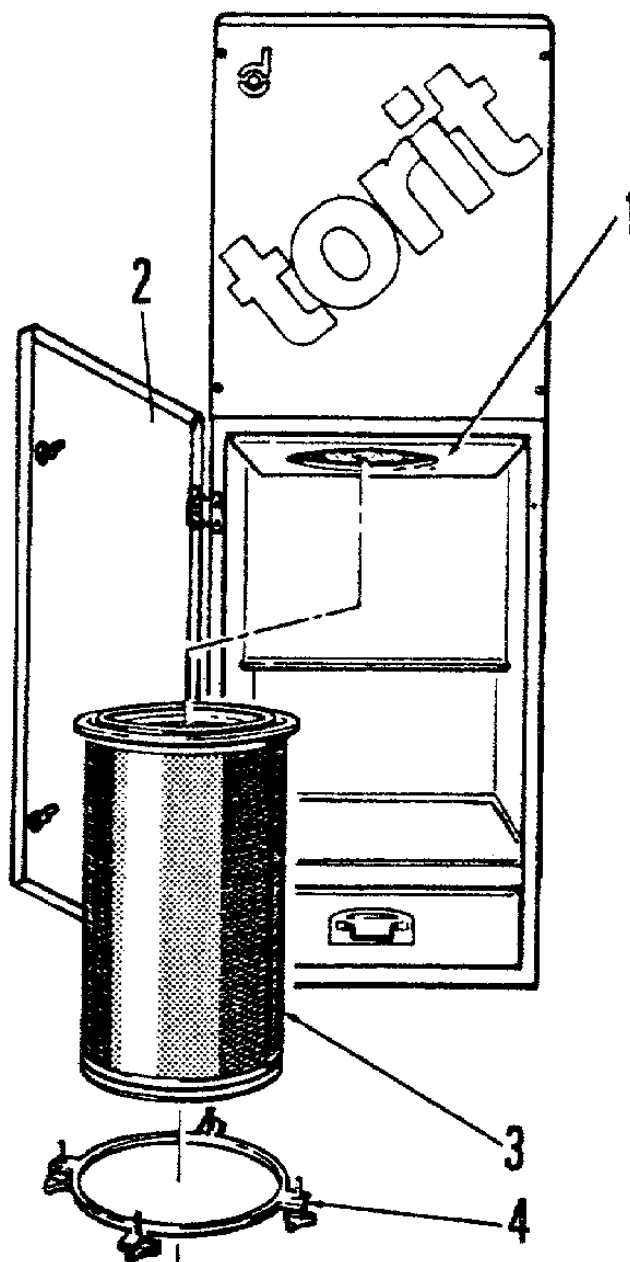
IMPORTANT

Position the 2 U-profiles in the correct position.



NOTE

A slight bleed-through on any new filter is normal and will quickly disappear as filter "seasons". If bleed-through persists, contact your Torit DCE representative.



1. Shaker panel (gasket surface)
2. Lower door
3. Filter element
4. Filter support ring with knobs

Figure 19 : Filter Element Replacement

11. TROUBLE SHOOTING

TROUBLE	POSSIBLE CAUSE	REMEDY
1. Blower fan and fan motor do not start	Wiring	<ul style="list-style-type: none"> • Check voltage of the VS • Check the wiring on wiring diagram for L1, L2, L3, N, PE • Check voltage with a multimeter L1/L2 = 380 V (415V) L1/L3 = 380 V (415V) L3/N = 220 V (240V) • Rewire properly
2. Blower fan and motor starts and does not keep running or runs hot	Fan motor overload	<ul style="list-style-type: none"> • Check you installed fuses • Check whether the F_0 (wiring diagram) is not deactivated. If yes, eliminate cause of overload, reset the thermal protection F_0 • Check for low voltage. A 10 % variation is permissible. • Check for loose connections in the line connections. This may cause single phasing. Motor hum or growling is an indicator of this condition. • Check for large air leak in the VS system or if available in the hopper pack.
3. Vibrator does not work	Overload	<ul style="list-style-type: none"> • Check for low line voltage. A 10 % variation is permissible. • Check for loose connections in the line connections. This may cause single phasing. Motor hum or growling is an indicator of this condition. • Check thermal protection F_{01}, if necessary, reset it • Check the 3 mm free space between shaker and filter end cap.
4. Insufficient air hoods	Ventilator	<ul style="list-style-type: none"> • Do not accept air movement as an indication of proper fan rotation. A fan that is running backward may deliver 40 % of its rated capacity.
	Leakage	<ul style="list-style-type: none"> • Check for leakage in ductwork and in unit
	Unbalance network	<ul style="list-style-type: none"> • Check for unbalanced airflow between hoods. Add a damper valve at the hood branch where the airflow is excessive.
	Duct work filter	<ul style="list-style-type: none"> • Check for obstruction in the duct work • Check the filter to make sure it is not plugged. • Check screen on filter to make sure it does not extend below the lower filter end cap • Operate cleaning sequence to insure that the shaking mechanism operates
	Exhaust	<ul style="list-style-type: none"> • Check the exhaust to make sure there are no restrictions
	Hood	<ul style="list-style-type: none"> • Check ducts and hoods for improper sizing
	Vibrator	<ul style="list-style-type: none"> • Check the 3 mm free space between the shaker ring and filter end cap



IMPORTANT

Make sure power on L1, L2, L3 remains when fan is disengaged. If all power is disconnected from unit, the shaker mechanism will not operate.

12. PARTS ORDERING INFO

Ref nr.	Part number	Recommended spares	Spare quantity	Description
41	262-2097	*	1	Screen element wrapper (VS550)
	262-2098	*	1	Screen element wrapper (VS1200)
	262-2099	*	1	Screen element wrapper (VS1500)
40	262-2094	*	1	Filter element length 25.7 cm
	262-2095	*	1	Filter element length 51.1 cm
	262-2096	*	1	Filter element length 66.3 cm
28	262-2082		1	Shaker motor link, nylon
19	262-2159		1	Channel shaker
26	262-2166		1	Shoulder bolt
25	262-2088		1	Cotter pin, stainless steel
23	262-2089		2	Spring shaker
28	AD1000004		1	Link bearing, eccentric assy

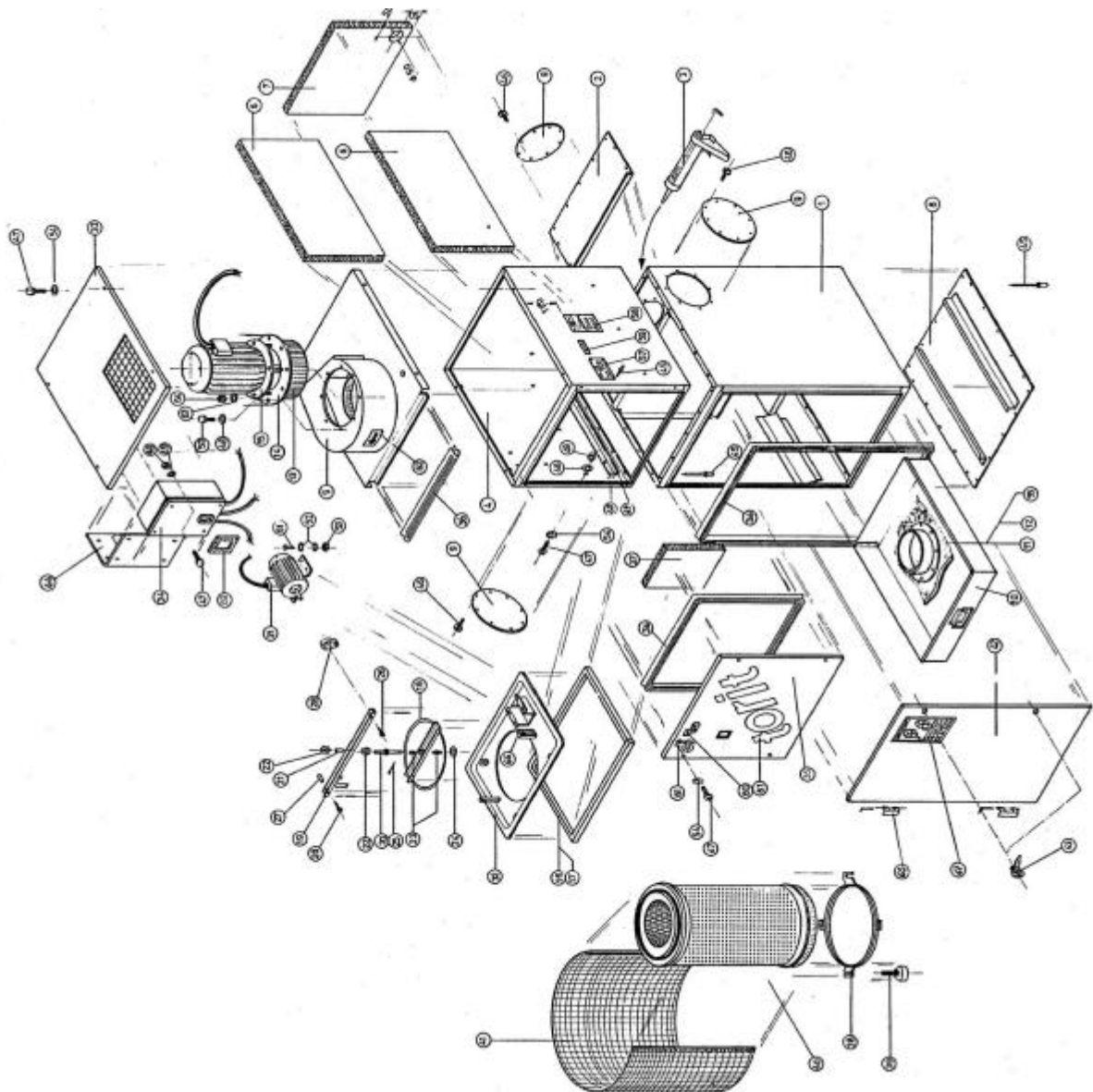


Figure 20 : Parts Drawing

13. CONTACT ADDRESSES

Donaldson Europe B.V.B.A.
Torit-DCE Products
Interleuvenlaan 1
B - 3001 Leuven (Heverlee)
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Tel.(sales) : +32 (0)16 383 970
Fax : +32 (0)16 383 938

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DK-2970
Horsholm
Denmark
Tel. : +45 45 57 00 77
Fax : +45 45 57 00 44

e-mail : ifsg-europe@emea.donaldson.com

14. 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 : **VS**

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 : 28 May 2004