

# **About Pre-Separators**

Pre-Separators can be used in all applications where the extracted material is coarse or voluminous. These can be placed in the actual workplace for separate handling or recovery of the extracted material, or centrally.

Pre-Separators separate material from the air flow using the action of a cyclone or with inertial separation. Inertial separators are generally configured as containers with the inlet and outlet in the same wall of the container. When the air flow changes direction abruptly, separation occurs for the particles with higher relative mass.

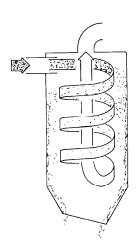
When pre-separation is used to accommodate higher material volumes it is also important to consider the type of material discharge to be used. Dustcontrol offers a range of different standard options including; screw compaction, airlocks or container collection.



- 1. Type of dust to be handled.
- 2. How the unit should be placed and how emptying will be performed.
- 3. Expected airflow.

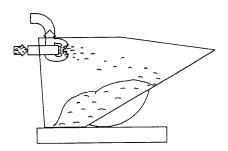
#### Pre-Separators should be used:

- for material recovery
- for material transportation
- to reduce the loading on the ducting system
- · to relieve loading on the central filter
- to reduce the risk of filter clogging
- · when fluids are to be separated



**Cyclone Principle** meaning that the inlet is mounted tangentially on the body and the air flow is thus forced against the inside of the cyclone.

This principle is very effective in separating particles down to 1/100 mm.



**Inertial Principle** meaning that the air stream flows into the container and abruptly changes course.

The oulet sits behind the inlet and the particles are thus thrown into the container.

# Cyclone Pre-Separators



Air flow (m³/h)	Select Pre-Separator
100–200	DCF 60, F 2500, DCF 2800
100–500	DCF Mobil
200-500	F 3500
500-700	F 8000
500-1000	F 11000
1000–4000	F 20000
2000-5000	F 30000
	100–200 100–500 200–500 500–700 500–1000 1000–4000



Discharge to	Volume	Equipment
Plastic bag	lesser	Discharge cone
Compacted in plastic bag	greater	Auger Compactor
Open Container, Conveyor	lesser	Foot Valves/Auto Foot Valve/
		Discharge Valves
	greater	Peristaltic Airlock
Small Container	lesser	With or without plastic bag
Tipping Container	greater	



# **Inertial Pre-Separators**



Material type	Air flow (m³/h)	Volume	Select Pre-Separator
Coarse and dense	250-2000	moderate	Tipping Container
	250-2000	large	Large Container

### **DCF Mobile**

The DCF Mobile is suitable for the separation of different types of coarse material, liquids and water. It is light and fitted with wheels, so it can be connected to the workplace directly, thereby reducing the loading on the ducting system and minimising the risk of blockage.

The DCF Mobile is the standard model of the mobile pre-separator. For emptying, the snap-on catches on the top cover are released and the material is shovelled or tipped out.

Part No	Туре
7010	DCF Mobile Standard
7074	DCF Mobile Plastic Bag
7073	DCF Mobile Liquid Separator
7009	DCF Mobile Water Separator
7097	DCF Mobile Cyclone

#### Mobile with Plastic bag / 7074



The DCF Mobile complete with plastic bag has the same fittings as the standard model plus plastic bags and a pressure compensating hose in order to obtain the same vacuum outside and inside the plastic bag. This pre-separator is suitable for use when handling materials which need to be collected in a sealed package.

#### Mobile with Liquid Separator/ 7073



The DCF Mobile Liquid Separator is fitted with an intermediate grill and drain cock. It is suitable for handling chips where cutting fluids and coolants are also collected.

#### Mobile with Cyclone / 7097



The DCF Mobile Cyclone has a high efficiency cyclone mounted on the top cover. Thanks to the small diameter of the cylinder in relation to its height and to the specially shaped inlet, this separator can separate even smaller and lighter materials such as asbestos fibres. The separated material then falls into the container which is fitted with a plastic bag for dust-free handling.

#### Mobile with Water Separator / 7009



The DCF Mobile Water Separator is fitted with Ø 50 mm drain cock. This is used where large amounts of water will be separated.

#### Accessories (Part No)

**4714** Collecting bag, 50 pcs for Pre-Separators 7074 and 7097

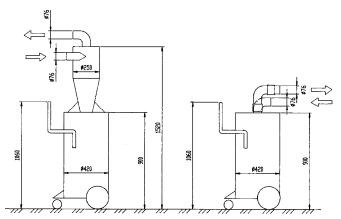


### DCF Mobile



Technical data	DCF Mobile
Container volume	95 l/25.1 gal (US)
Height	900 mm/35.4 in/1650 mm/65 in (with cyclone)
Container diameter	440 mm/17.3 in
Weight	30 kg/66 lb/35 kg/77 lb (with cyclone)
Inlet/Outlet	Ø 76 mm/3"
Air Flow	100–500 m³/h 59-294 cfm

#### **Dimensions**



### **DCF 60**

The DCF 60 Pre-Separator can handle large quantities of dust. Due to its large inlet the Pre-Separator is also well suited to separate coarse dirt. Perfect for wood floor grinding.

Part No 7069 DCF 60 with wheel set





#### **Technical data**

H x W x D (cm/inch)	106x38x38 /42"x15"x15"
Weight	10 kg /22 lbs
Inlet	Ø50 mm /2"
Container	60 I /16 US gal

### **DCF 2800**

The DCF 2800 Pre-Separator is often used in combination with the DC 2900 dust extractor to relieve the loading on the filter.

Part No 7372 DCF 2800





#### **Technical data**

H x W xD (cm/inch)	100x54x45 /39"x21"x18"
Weight	10 kg /22 <b>l</b> bs
Inlet/Outlet	Ø50 mm /2"
Cyclone diameter	Ø250 mm /10"
Collection	40 I /10 US gal



#### Supplied with (Part No)

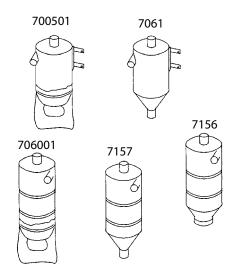
42702 Plastic bags

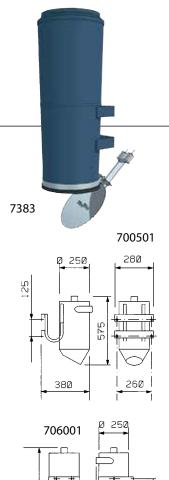
# F 2500, F 3500

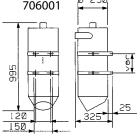
The F 2500 and F 3500 are wall mounted cyclone type pre-separators used directly at the work station to relieve loading on the tubing system/filter or for separation of recoverable material. These can also be used as central pre-separators in smaller systems with the DC 3800 and DC 11-Module respectively.

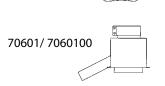
#### Description Part No 700501 F 2500 7061 F 2500, Fluid separator ø76 7379 F 2500 with Counter Balance Arrangement 706001 F 3500 7157 F 3500 Fluid separator ø76 7156 F 3500 with cone D=160 7383 F 3500 with Counter Balance Arrangement

#### **Dimensions, installation examples**



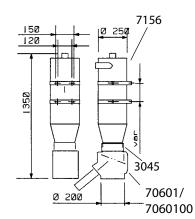


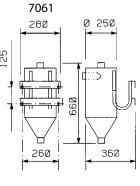


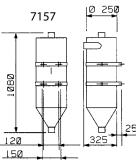


42384/42702

4314









Technical data	F 2500	F 3500
Weight, kg	5	13
In/outlet, mm	Ø 50	Ø 76
Air flow m³/h	100-200	200-500

#### Accessories (Part No)

42384 Plastic Bag, F 2500, antistatic
4314 Plastic Bag, F 3500, 50 pcs
42702 IntelliBag 10 pcs/roll
706701 Discharge Valve 160 mm - AC
70670100 Discharge Valve 160 mm - DC
Installed for discharge to an open container.
Controlled discharge can occur with this pneumatically actuated valve. Must be connected to a suitable control panel.
7128 Return Valve for Fluid Separator

### F 8000

The F 8000 is a high efficiency cyclone separator for the separation of fine and light dust, e.g. wood dust.

It can be equipped with a 40407 Module Ring to create a larger storage capacity. For alternatives to part no 746100, see discharge options.

Separation can be improved by equipping the Pre-Separator with a vortex tube and by increasing the height with an extra body module.

### **(1)**

#### Accessories F 8000 (Part No)

3037 Bracket 500 mm (2 pcs required)

7290 Widening Chassis
7311 Vortex Tube
7344 F 8000 Cyclone
7345 F 8000 Body Module

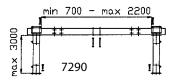
40407 Module Ring. Used in applications

with light dust, i.e. paper.

**7450** F 8000 Complete

**7461** Auto Foot Valve 470 mm, AC **746100** Auto Foot Valve 470 mm, DC







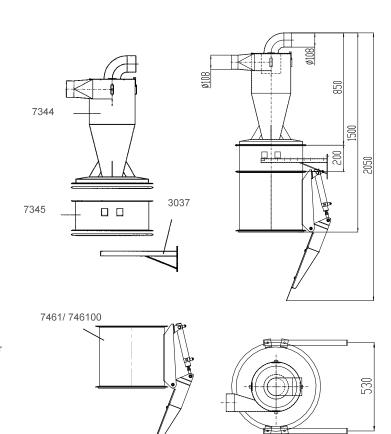
#### **Part No 7450**

F 8000 Complete is delivered with; 7344, 7345, 7461 and  $2 \times 3037$ 



Technical data	F 8000
Weight, kg	~ 15
Inlet, mm	Ø 108
Outlet, mm	Ø 108
Flow m <sup>3</sup> /h	500-700
Body, Ø mm	Ø 300

#### Dimensions, Installation examples F 8000



### F 11000

The F 11000 is a modular cyclone pre-separator that is very flexible and can be configured easily to an exact requirement. Discharge equipment options can be used alternatively to the discharge cone with plastic bag collection.

Separation can be improved by equipping the pre-separator with a vortex tube and by increasing the height with an extra body module.

Part No	Description
7177	F 11000 without Cone
4706	Discharge Cone for bag
42111	Collection Bag, 50 pcs, antistatic
4714	Collection Bag, 50 pcs
5024	Wall Bracket, complete





#### Accessories F 11000 (Part No)

**40407** Module Ring Used in applications with light dust, i.e. paper.

40655 Discharge Cone for container

**40656** Steel Container, 40 I **44077** Longopac Midi (1x25 m)

44078 Discharge Cone

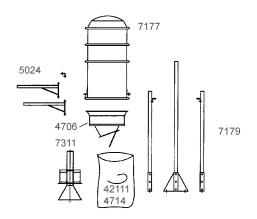
44079 Discharge Cone Longopac Midi

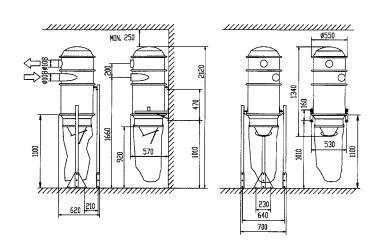
7179 Floor Stand, complete7290 Widening Chassis7311 Vortex Tube



Technical data	F 11000
Weight, kg	ca 45
Inlet, mm	Ø 108
Outlet, mm	Ø 108
Flow m <sup>3</sup> /h	500-1000
Body, Ø mm	Ø 477

#### Dimensions, Installation examples F 11000





### F 20000

The F 20000 is a modular cyclone separator for larger systems. The unit must be equipped with the appropriate inlet module and discharge arrangement, e.g.: discharge cone or alternative selection. See chapter 6.

Part No	Description
7185	F 20000 Complete
4706	Discharge Cone
4714	Collection Bag, 50 pcs
42111	Collection Bag, 50 pcs, antistatic
40655	Discharge Cone for container
40656	Steel Container, 40 I



#### Accessories F 20000 (Part No)

40007	Inlet wear plate
44077	Longopac Midi (1x25 m)
44078	Longopac Holder
44079	Discharge Cone Longopac Midi
7133	Inlet D = $160x1$
7134	Inlet D = $250x1$
7136	Inlet D = $76x3$
7137	Inlet D = 110x2
7138	Inlet D = 110x3
7141	Inlet D = 160x2
7142	Inlet D = $160x3$

7189 Vortex Tube Used in applications with light dust, e.g. paper, to increase separation efficiency of the separator.

7195 Widening Chassis For applications where material is to be discharged into a larger receiver such as a tipping container. "With legs >3000 mm a widening chassi should be ordered."

3004 Steel Tube 76 mm, galvanised. Ordered by the meter and delivered in 3 m lengths. Used when leg length required is greater than the 1400 mm legs delivered with the unit.

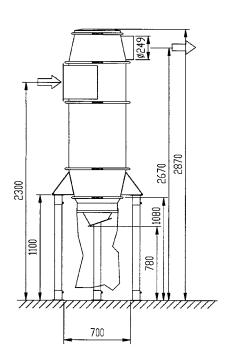


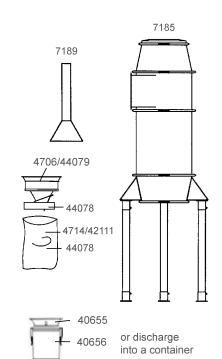
#### **Technical data**

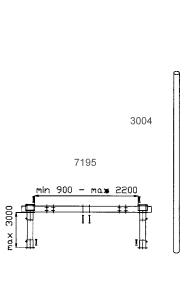
#### F 20000

Weight, kg	120
Inlet, mm	optional
Outlet, mm	Ø 250
Flow m <sup>3</sup> /h	1000-4000
Body, Ø mm	Ø 596

#### **Dimensions, Installation examples** F 20000







### F 30000

The F 30000 is a modular cyclone separator for large systems. The configuration of the separator is easily tailored to the specific application. The unit must be equipped with the appropriate inlet module and discharge arrangement, e.g.: discharge cone or alternative selection.

Part No	Description
7166	F 30000
4706	Discharge Cone
4714	Collection Bag, 50 pcs
42111	Collection Bag, 50 pcs, antistatic
40655	Discharge Cone for container
40656	Steel Container, 40 I





#### **Technical data**

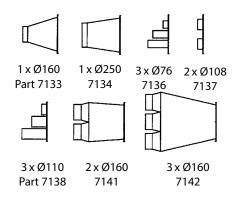
Weight, kg	ca 170
Inlet, mm	optional
Outlet, mm	Ø 250
Flow m <sup>3</sup> /h	2000-5000
Body, Ø mm	Ø 1045

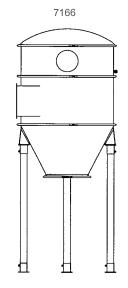


#### Accessories F 30000

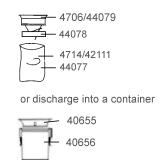
7133	Inlet D = $160x1$
7134	Inlet D = $250x1$
7136	Inlet D = $76x3$
7137	Inlet D = $110x2$
7138	Inlet D = $110x3$
7141	Inlet D = $160x2$
7142	Inlet D = $160x3$

#### Inlet modules for F 20000 and F 30000





#### Components F 30000





F 30000

More accessories for F 30000 on the following page

### F 30000



#### Accessories F 30000 (Part No)

3004 Steel Tube 76 mm, galvanised Ordered by the metre and delivered in 3 m lengths. Used when leg length required is greater than the 1400 mm legs delivered with the unit.

3294 Spiral tubing Ø 315 For connection to pressure relief module.

40007 Inlet Wear Plate. This is installed in the inlet module of the separator and increases the resistance to abrasion caused by incoming material in the gas flow.

40655 Discharge Cone for container

40656 Steel Container

**42111** Collection Bag, 50 pcs, antistatic

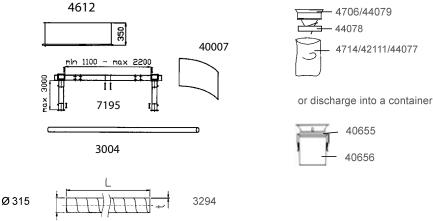
**44077** Longopac Midi (1x25 m)

44078 Longopac Holder

44079 Discharge Cone Longopac Midi

4612 Body Module Increases the height of the cyclone and can increase separation efficiency

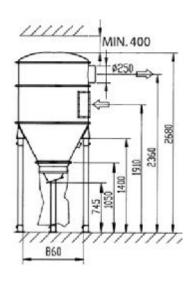
for some materials.



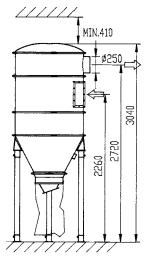
4706 Discharge Cone 4714 Collection Bag, 50 pcs

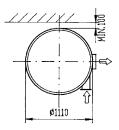
7195 Widening Chassis For applications where material is to be discharged into a larger receiver such as a tipping container. For leg lengths greater than 1400 mm, order part no 3004 steel tube.

#### **Dimensions, Installation examples F 30000**



F 30000 with part no 4706 Discharge Cone





F 30000 with part no 4706 Discharge Cone and 4612 Body Module

# Discharge Arrangements Suitable for

### F 8000, F 11000, F 20000, F 30000, S 11000, S 32000, S 34000, S 46000



#### Accessories S 11000, S 32000, S 34000 (Part No)

**706801** Reduction Cone 400/160 mm **706701** Discharge Valve 160 mm - AC

**70670100** Discharge Valve 160 mm - DC This automatically controlled, pneumatically actuated valve can discharge collected material from the separator when the system is at rest. It is used for discharge into an open container or conveyor. The material must have good flow characteristics.

**7131** Counter Balance for Discharge Cone (Part No 4706)

The rubber flap on the discharge cone is replaced with the counter balance flap. This unit will close when the system is under operation. When the system is at rest, collected material will be discharged into an open container. **Note**: only for use with suitable materials.

7370 Discharge Valve 250 mm- AC737000 Discharge Valve 250 mm- DC7341 Discharge Valve 400 mm - AC

**734100** Discharge Valve 400 mm - DC This automatically controlled, pneumatically actuated valve can discharge collected material from the separator when the system is at rest. It is used for discharge into an open container or conveyor. The material must have good flow characteristics.

7461 Auto Foot Valve 470 mm - AC

**746100** Auto Foot Valve 470 mm - DC This is an automatically controlled, pneumatically actuated foot valve that opens when the system is at rest. It is used for the discharge of materials into an open container and should be used only with materials that will flow.

**7462 Counter Balance Foot Valve 470 mm.** This arrangement replaces the standard cone and functions by closing

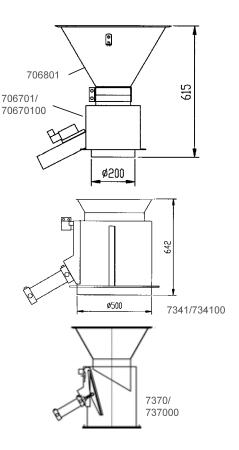
automatically when the system is in operation and releasing collected material when the system is at rest. **Note**: only for use with suitable material.

741401 Manually actuated Intermediate Assembly In applications where the collected material receiving container is placed under system vacuum, this intermediate part is required to facilitate the easy removal of the waste container. It has a telescopic mating flange that is raised and lowered onto the container flange with two opposing eccentric locking mechanisms.

743200 Pneumatically actuated Intermediate Assembly
The identical telescopic function and application to part no 741401 but actuated pneumatically rather than manually. The pneumatic cylinders can be controlled manually with a part no 8040 or with an automated control.

Part no 743200 does not include the actuator, this must be determined during the control design and ordered separately.

#### **Discharge Valves**





#### **Optional configurations**

In certain applications, automatic discharge during operation can be achieved by using a peristaltic airlock. Collected material can be discharged into a Big Bag.

'

# Continuous Discharge Arrangements Suitable for

F 8000, F 11000, F 20000, F 30000, S 11000, S 32000, S 34000, S 46000

### Peristaltic Airlock for Discharge of Dust from Filter Cyclone and Pre-Separator

Continuous discharge of material during operation can be achieved by installing two valves in series with an intermediate receiver. The material must be of such a nature that it flows easily.



Technical data	Ø 160	Ø 250	Ø 400		
Volume of receiver	12 l/3.17 gal	110 l/29 gal	190 I/50 gal		
Air Consumption/cycle (5 bar/2.5 psi)	5 I/1.3 gal	15 I/3.96 gal	60 I/15.85 gal		
Solenoids 24 V DC	2 pcs	4 pcs	4 pcs		
Service interval	1 year	1 year	1 year		

(Single shift operation)



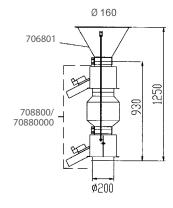
#### Accessories (Part No)

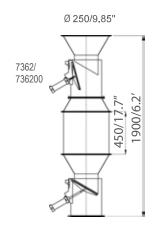
40407	Storage Module, V=140 I
706801	Reduction Cone, 400/160 mm
708800	Peristaltic Airlock, 160 mm - AC
7342	Peristaltic Airlock, 400 mm - AC
734200	Peristaltic Airlock, 400 mm - DC
7362	Peristaltic Airlock, 250 mm - AC

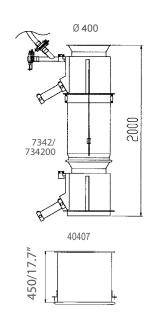
**736200** Peristaltic Airlock, 250 mm - DC
This airlock consists of two 400 mm discharge valves and auto shutter valves for pressure compensation of the valves. The airlock is delivered complete with a control solenoid block. The lower discharge valve must be guyed and unweighted to the chassis or legs.

**70880000** Peristaltic Airlock, 160 mm - DC The Peristaltic Airlock 160 mm is delivered complete with solenoid valves for actuation. A separate control must be selected.

#### **Dimensions, Installation examples**



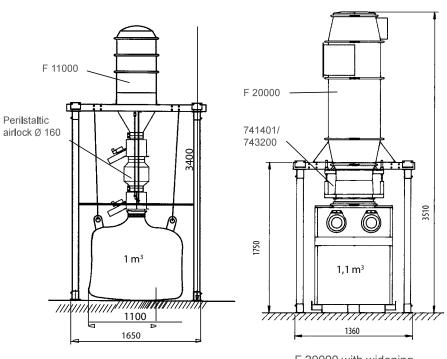




# Continuous Discharge Arrangements Suitable for

F 8000, F 11000, F 20000, F 30000, S 11000, S 32000, S 34000, S 46000

#### **Dimensions, Installation examples**



F 20000 with widening chassis and discharge into a 1.1 m<sup>3</sup> container.

### **Auger Compactor**

This arrangement is used for material that can be compacted, e.g. paper dust and strips. Collected material is compacted and discharged into a plastic collection bag. The drive motor control should be configured to reverse for several seconds to clear occasional clogs.

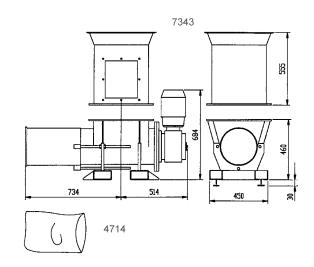
Part No	Description
4714	Collection Bag, 50 pcs
7343	Auger Compactor Connection
7065	Auger Compactor



#### **Technical data**

Flange, outer mm	500x500
Inner mm	425x425
Weight	218 kg
Capacity	2-5 m <sup>3</sup> /h
Motor power	2.2 kW
Voltage	230/400V
Max Op. pressure	40 kPa
Service interval	1500 h

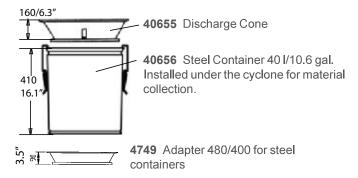
(1st service 300 h)

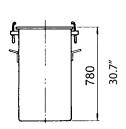


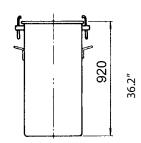
### **Small Containers**

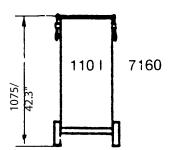
The steel collection containers are mounted directly under the cyclone by using part no 4749 Adapter. Consider always the weight of the collected material and plan emptying of the container at suitable intervals.

Note: installation of part no 7160 requires lengthened legs on the F 20000 and F 30000.











**7066** Steel Container 90 I/23.8 gal.

7159 Steel Container 110 I/29 gal, with Collection Bag. 7368 Steel Container, 75 I, with Collection Bag.

**7160** Steel Container 110 I / 29 gal. Portable with Collection Bag.

**7368** Steel Container, 75 I. Portable with Collection Bag.

**4714** Collection Bag, 50 pcs for part no 7159, 7160 and 7368. **42111** Collection Bag, 50 pcs, antistatic for part no 7159, 7160 and 7368.



**Small Container** 



#### Accessories Small Containers (Part No)

40655 Discharge Cone for container

40656 Steel Container

**42111** Collection Bag, 50 pcs, antistatic for part no 7159, 7160 and 7368

4714 Collection Bag, 50 pcs

for part no 7159, 7160 and 7368

**7066** Steel Container 90 I/23.8 gal.

7159 Steel Container 110 I/29 gal with Collection Bag

160 Steel Container 110 I /29 gal. Portable with Collection Bag

7368 Steel Container, 75 I

7433 Adapter 442/11000 Module

# **Tipping Containers** 0,6 m<sup>3</sup>, 1,1 m<sup>3</sup>, 2,5 m<sup>3</sup>

Tipping containers are sealed to the cyclone bottom cone with an intermediate connection and adapter. Material is continuously collected in the container. A widening chassis must be used to install the cyclone to accommodate the width of the container.

Tipping containers can be used as inertial separators by equipping the container with a divider plate and installing inlet/outlet connections on the container's rear wall. Inertial separation is particularly suited to the separation of larger quantities of coarse material.

The divider baffle, 7439, is installed internally in the container between the inlet and outlet. The containers are tip-dump style and should be handled with a forklift truck. These containers can be equipped with casters.

Part No	Capacity
7196	0.6 m³/0.78 yd³
7197	1.1 m <sup>3</sup> /1.44 yd <sup>3</sup>
7198	2.5 m <sup>3</sup> /3.27 yd <sup>3</sup>
7439	Divider Baffle





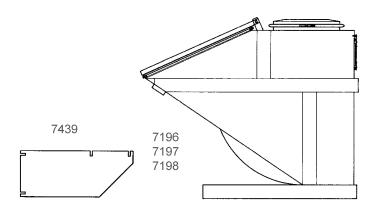
#### Accessories Large Containers (Part No)

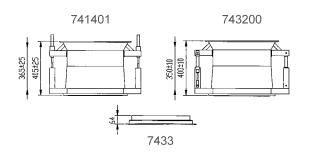
743200 Automatic Intermediate Connection Secured automatically in the down position by two pneumatic cylinders when the container is present. Can be controlled with a manual pneumatic valve, part no 8040 or by an optional automatic control.

#### 7433 Adapter 442/11000 Module

**741401 Manual Intermediate Connection**Secured with two eccentric locks that are locked down when the container is present.







# **Tipping Containers** 0,6 m<sup>3</sup>, 1,1 m<sup>3</sup>, 2,5 m<sup>3</sup>



Technical data	m³/yd³ (Collection volume)	m³/yd³ (Filling volume)	kg (Volume)	kPa (Max-neg pressure)	Α	В	С	E	F	G	Н	J	K	L
7196	0.6/0.78	0,3/0.39	240	40	100	1076	X160	300	730	935	1180	200	1250	1590
7197	1.1/1.44	0,6/0.78	350	40	100	1096	X160	300	730	1050	1295	200	1550	1800
7198	2.5/3.27	1,3/1.7	570	40	100	1276	X160	300	730	1225	1470	200	1550	2180



# Accessories for Tipping Containers (Part No)

7448 Cyclone Top

To increase separation efficiency, a cyclone top can be installed on the tipping container. The container then functions as a cyclone separator with a large storage volume for collected material. Suitable air-flows are between 400–800 m<sup>3</sup>/h.

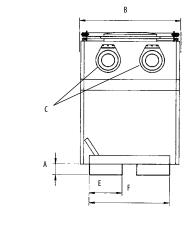
**7404** Caster Set (4 pcs), max. 1600 kg

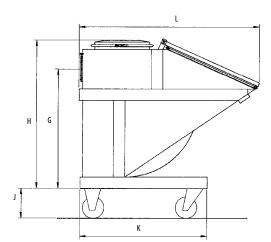
**7422** Caster Set (4 pcs), max. 2200 kg

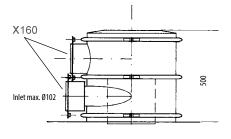
**7434** Container Guide Rails These rails should be anchored to the floor using sleeve or wedge anchors (20 required).

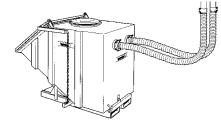
7436 Hose Nipple, 76/X1607437 Hose Nipple, 102/X1607438 Hose Nipple, 152/X160

Accessories; bottom screen, drain cock and level sensing available by special order.















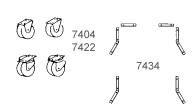
7438



When the container is configured as an inertial separator, two hoses are connected to the rear wall of the container. Material is separated with inertial action as air entering the container changes direction abruptly.



Airflow, m <sup>3</sup> /h	Hose, Ø mm	Type, m <sup>3</sup>				
250-500	76	0.6; 1.1; 2.5				
400-900	102	1.1; 2.5				
900-2000	152	2.5				



### **Large Containers**

By installing inlet/outlet connections on larger containers (4-20 m³) an efficient inertial separator is built. Separation and containment of extracted waste directly in a closed container is a desirable handling method for a variety of reasons. Among these is that the system remains closed and that the handling of the waste can be done both rationally and economically.

These containers can also be used as discharge arrangements for cyclones – direct connection from the separator mounted over the container.

A vacuum waste container is an integral part of the extraction system and must be designed for the negative pressure.

Different regions and waste handlers will have different handling systems, the illustrations below show several different prevalent variations.

The exact type and dimensions of that type are often determined in cooperation with the contracted waste handler. Dustcontrol can build your bespoke container.

# The following factors will have a bearing on the selection of container type:

- 1) Tipping cost.
- 2) Tipping in a poser truck or removal.
- 3) Distance to tipping site.
- 4) Density and weight of the separated material.
- 5) Permits required for dumping of collected material (degree of hazard classification).
- 6) Time for removal of container and the need for two containers.
- 7) Physical placement of the container, is it accessible for the handling truck?



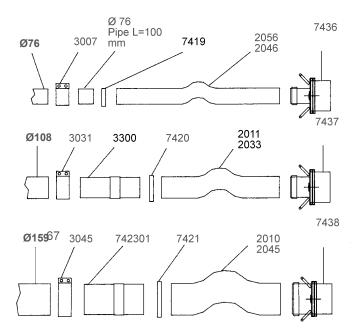
Lugger Lift



Roll Off Container

# Accessories for Large Containers (Part No)

2010	Suction Hose 152, std
2011	Suction Hose 102, std
2033	Suction Hose 102 extra
	abrasion resistant
2045	Suction Hose 152 extra
	abrasion resistant
2046	Suction Hose 76 extra
	abrasion resistant
2056	Suction Hose 76 PU
3007	Joint Ø 76
3031	Joint Ø 108
3045	Joint Ø 160
3300	Pipe fitting 108/102
7404	Wheel Set, 4 wheels
7419	HD Hose Clamp 76
7420	HD Hose Clamp 102
7421	HD Hose Clamp 160
7422	Wheel Set 2,5 m <sup>3</sup>
742301	Pipe fitting 160/152
7436	Hose fitting 76/X160
7437	Hose fitting 102/X160
7438	Hose fitting 152/X160
7448	Cyclone Top



Optional accessories: Bottom grate, drain valve, tip sensor and level sensor, can be specially ordered.