

## 5 Exhaust silencer



### **WARNING**

Before the exhaust silencer is fitted to the pump, the pump must be secured as describe in the pump manual.



### **WARNING**

The exhaust silencer must be removed from the pump before the pump can be moved.



### **WARNING**

This exhaust silencer is designed for ATMOSPHERIC use only; do not pressurise.



### **WARNING**

Leak test the system after installation and seal any leaks found to prevent leakage of dangerous substances out of the system and leakage of air into the system.



### **WARNING**

Can cause muscle strain or back injury. Use lifting aids and proper lifting techniques when removing or replacing. Refer to Section 5.3 for weight information.



### **WARNING**

Hot surface.

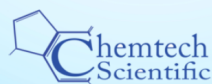
### **CAUTION**

The operating procedures detailed in the GXS System Instruction Manual - M588-00-880 must be adhered to, in particular Section 3 and 5.

### **CAUTION**

All pipe work that is connected to the exhaust silencer must be self supporting and must not create any misalignment or stress at the connection point to the exhaust silencer.

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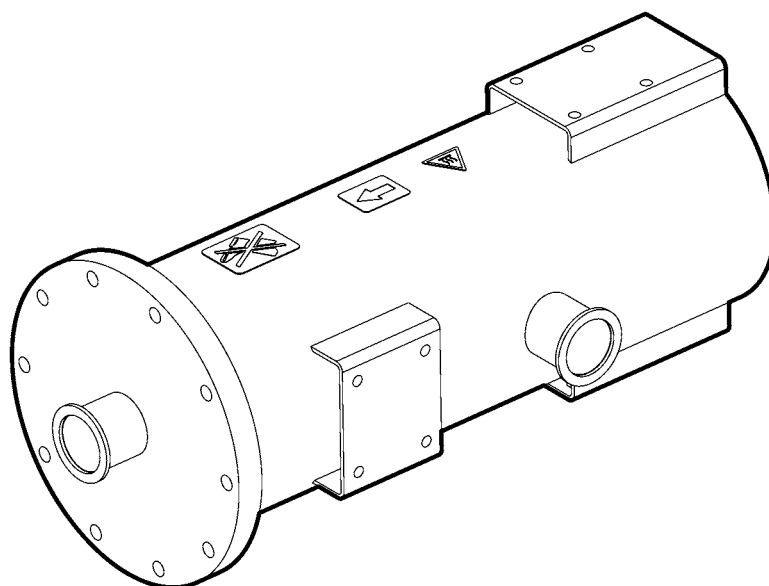


## 5.1 Description

There are two types of exhaust silencer that attenuate the noise from the GXS dry vacuum pumping systems.

Refer to [Figure 42](#). The first exhaust silencer type is manufactured in both painted carbon steel and stainless steel options (to suit applications) and is designed to hold a volume of liquid or particulates that maybe produced during your process. This exhaust silencer can be drained without disassembly; it is also possible to clean and remove any contaminates with minimal part removal.

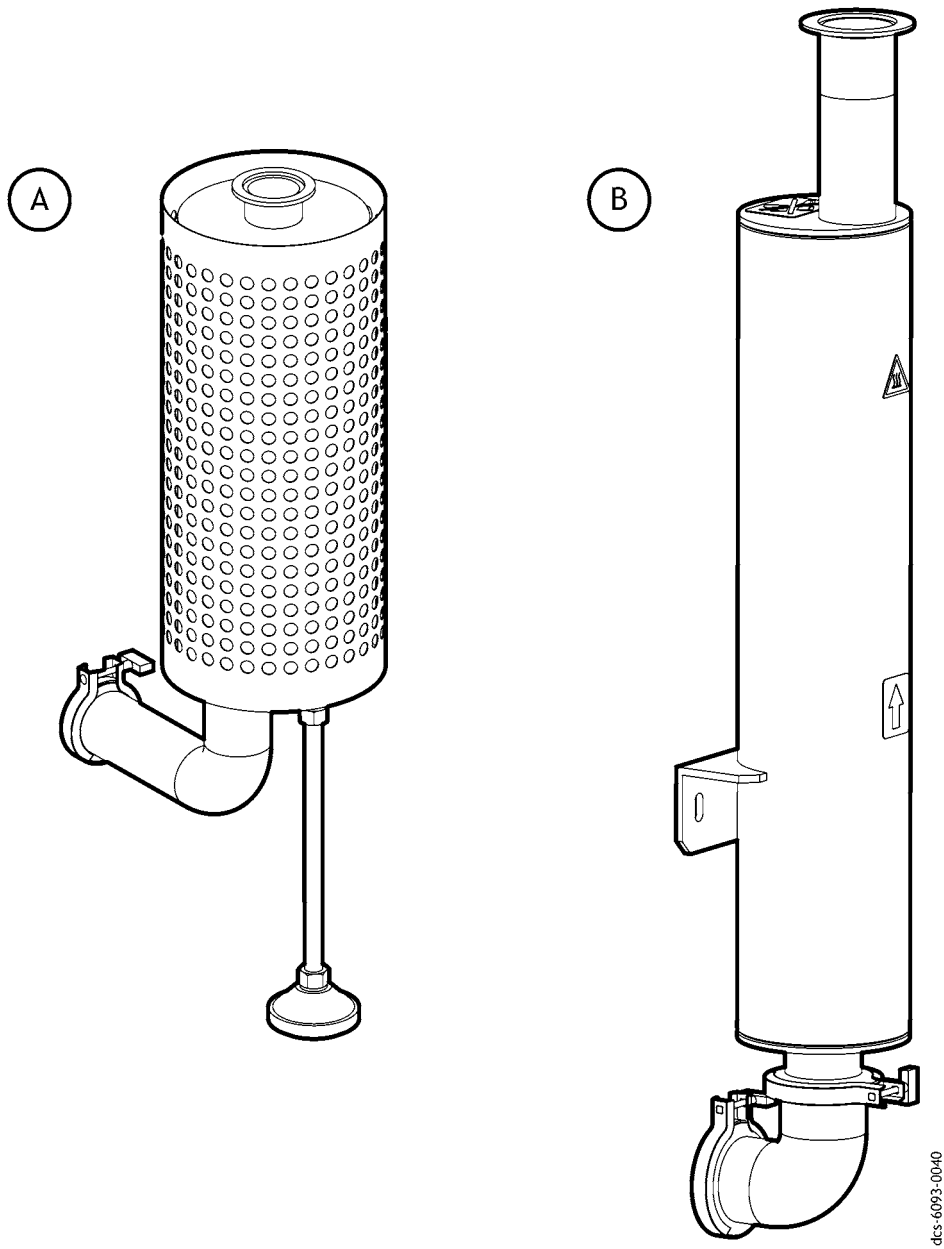
Figure 42 - Wet process exhaust silencer



dcx-6093-0039

Refer to [Figure 43](#). The second exhaust silencer type is mounted vertically. Manufactured in stainless steel only, this exhaust silencer is designed for clean and dry processes. Easy to disassemble from the GXS pumping system, it is simple to clean and remove any contaminates with minimal parts removal.

Figure 43 - Dry process exhaust silencer



- A. GXS160 and GXS250
- B. GXS450 and GXS750

## 5.2 Physical data

Figure 44 - M58808161 GXS exhaust silencer 100 ctrs assembly - carbon steel

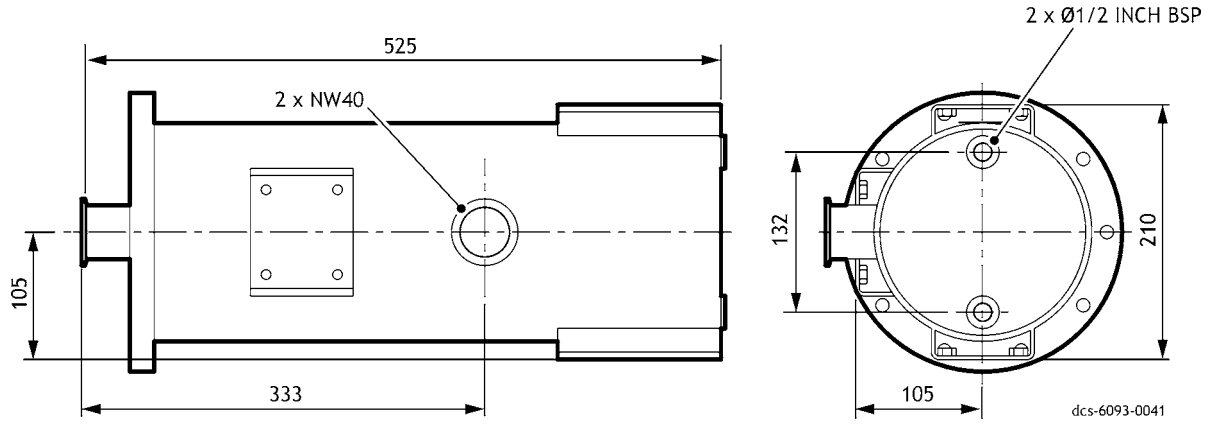


Figure 45 - M58808162 GXS exhaust silencer 100 ctrs assembly - stainless steel

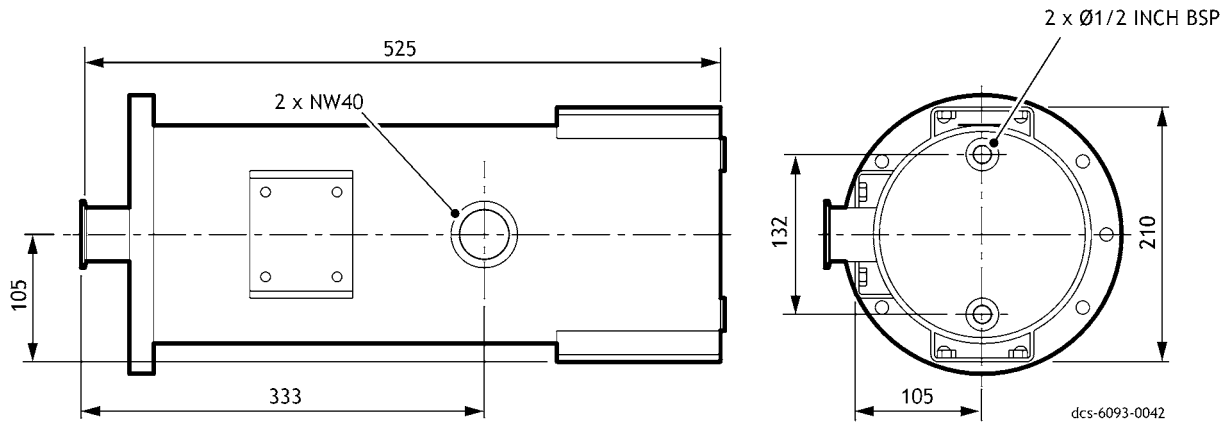


Figure 46 - M59838161 GXS exhaust silencer 150 ctrs assembly - carbon steel

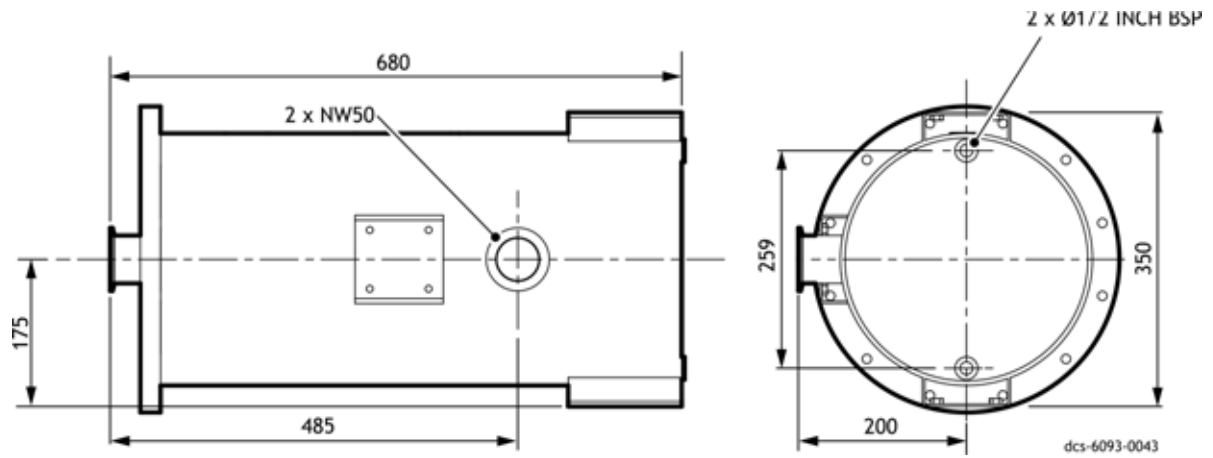
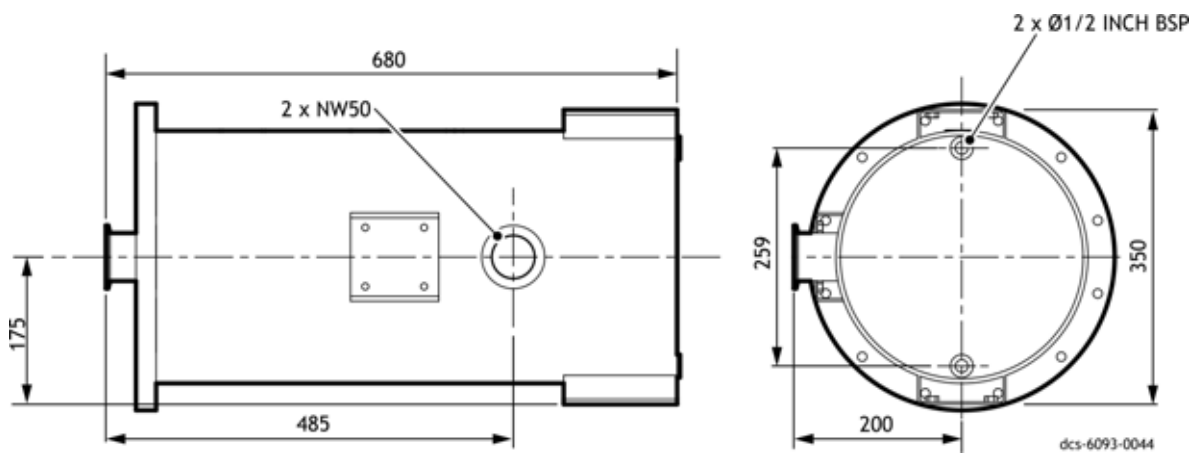


Figure 47 - M59838162 GXS exhaust silencer 150 ctrs assembly - stainless steel



# Exhaust silencer

Figure 48 - NKB530000 iF exhaust silencer - stainless steel

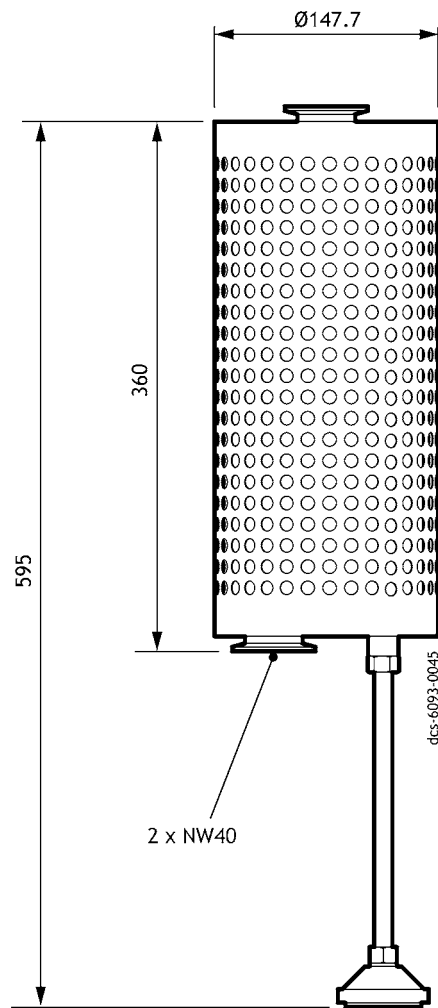
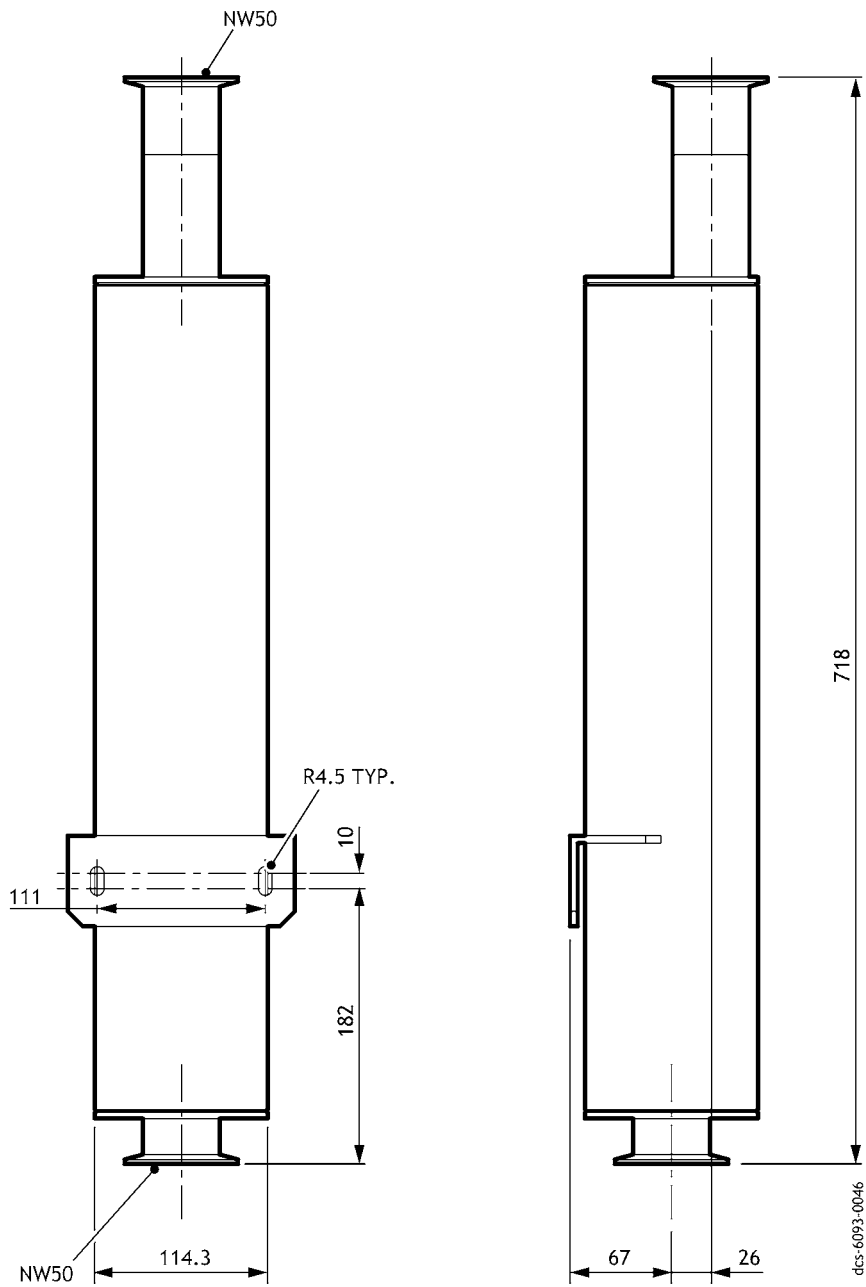


Figure 49 - NR5009000 iF400 exhaust silencer



### 5.3 Technical data

For technical data relating to the exhaust silencers, refer to [Section 6.3](#).

### 5.4 Installation

For exhaust silencer installation instructions, please refer to [Section 6](#).

## 5.5 Operation

The exhaust silencer is a passive device and therefore no operating procedures are required. Follow the points below to ensure you operate your exhaust silencer safely:

- Ensure the exhaust silencer is correctly fitted before you use your GXS dry pump.
- Do not touch the exhaust silencer when it is hot.
- Avoid contact between the exhaust silencer and combustible materials, plastics or electrical cables.
- Check the efficiency of your exhaust silencer regularly. A decrease in pump performance could indicate that the exhaust silencer is becoming blocked with deposits or condensate from your pump exhaust. Remove the silencer and drain it, or clean it as described in [Section 5.6](#).
- Check the inlet and outlet connections weekly to ensure that they are secure.

## 5.6 Maintenance

### 5.6.1 Safety information



#### **WARNING**

Obey the safety instruction given below and take note of appropriate precautions. If you do not you can cause injury to people and damage equipment.



#### **WARNING**

Personal protective equipment should be checked and used as specified by its supplier. If the exhaust silencer has been exposed to hazardous chemicals, the use of suitable protective gloves and clothing along with a respirator is recommended if contact with substances is anticipated.

- Isolate the dry pumping system and other components in the process system from the electrical supply so that they cannot be operated accidentally.
- Allow the exhaust silencer to cool to a safe temperature before starting any maintenance. Do not touch the exhaust silencer when it is hot.
- Take suitable precautions when you maintain the exhaust silencer especially if it has been contaminated with dangerous process materials.
- Replace the exhaust silencer if it becomes damaged or blocked.



## 5.6.2 Cleaning

The exhaust silencers should be cleaned and maintained in accordance with the procedures detailed in the OEM's Service Manuals as listed in Table 50.

Table 50 - Exhaust silencer OEM service manuals

Item Number	Description	OEM Service Manual
M58808161	GXS exhaust silencer 100 ctrs assembly - carbon steel	DischargeSlcrManualNW40US-0811
M58808162	GXS exhaust silencer 100 ctrs assembly - stainless steel	DischargeSlcrManualNW50US-0811
M59838161	GXS exhaust silencer 150 ctrs assembly - carbon steel	
M59838162	GXS exhaust silencer 150 ctrs assembly - stainless steel	

The exhaust silencers listed below are for clean applications only, and therefore cleaning is not required:

- NKB530000 IF Silencer stainless steel.
- NR5009000 IF400 Silencer.

*Note: If cleaning is attempted, be aware that any fluids used could get trapped within the chambers of the silencer, and ejected on start-up of the pumping system.*

## 5.6.3 Leak testing

After maintenance of the exhaust silencer and before the pumping system is used, it is important that the system is leak tested to prevent the possible leakage of hazardous substances.

## 5.7 Storage and disposal

### 5.7.1 Storage

If the exhaust silencer will not be used immediately:

1. Drain and clean the exhaust silencer.
2. Protect the flange face and place the exhaust silencer in a sealed polythene bag.
3. Store in a cool dry place.

### 5.7.2 Disposal

Dispose of the exhaust silencer in accordance with local and national safety and environmental requirements.

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## 6 Exhaust silencer mounting assembly

### 6.1 Description

This exhaust silencer is mounted horizontally and either bolted to the side of the pump when a side exiting exhaust is fitted (refer to Figure 50), or free standing at the rear of the pump when a rear exiting exhaust is fitted (refer to Figure 51).

Figure 50 - Side exiting exhaust mounting

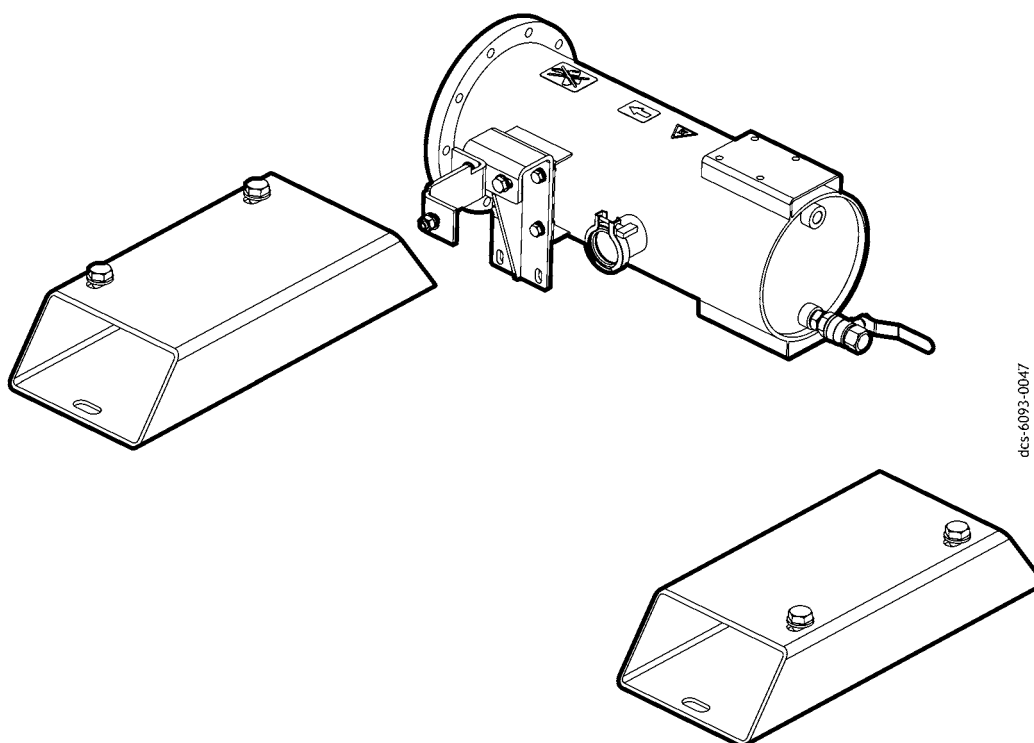
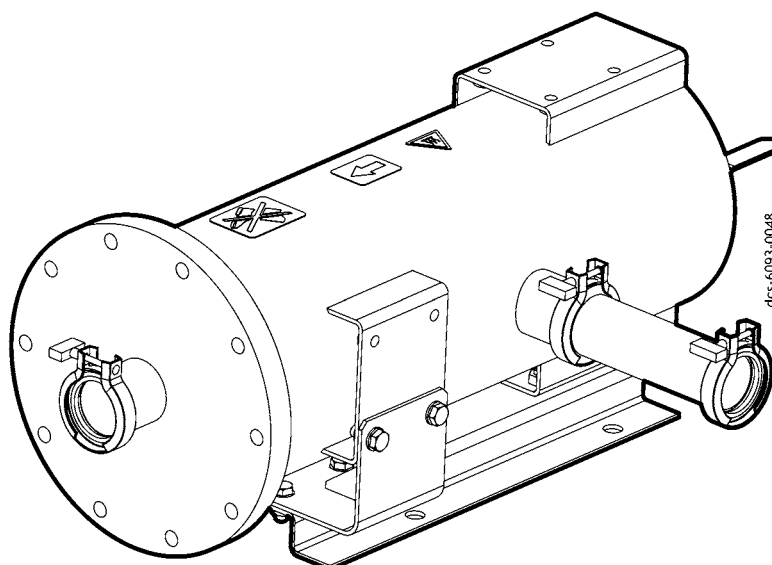
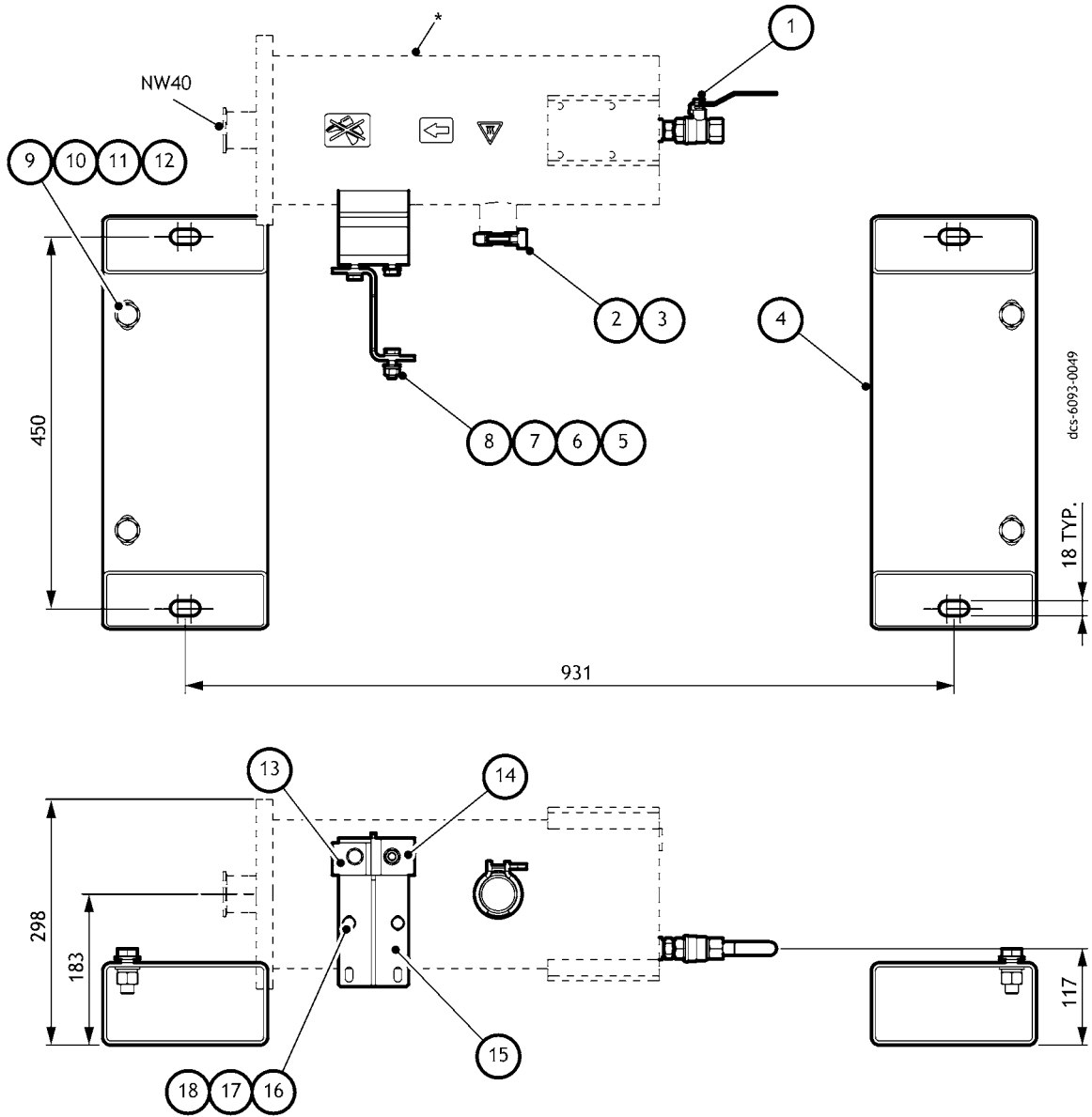


Figure 51 - Rear exiting exhaust mounting



## 6.2 Physical data

Figure 52 - M58808009 horizontal silencer mount - 100 ctr

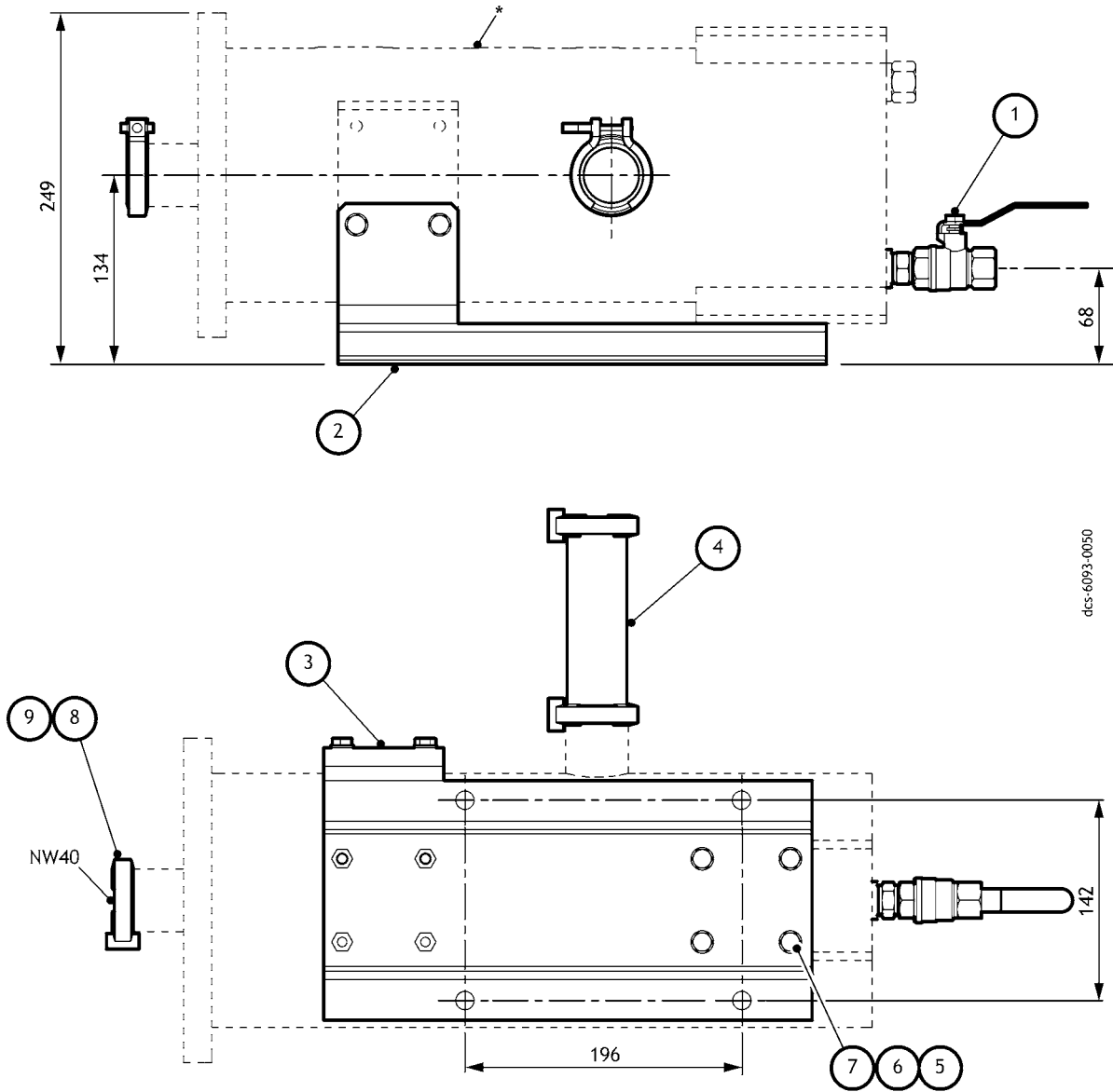


\* Silencer supplied separately.

Table 51 - M58808009 horizontal silencer mount - 100 ctr check list

Item	Qty	Description	Check
1	1	Drain valve assembly	<input type="checkbox"/>
2	1	NW32/40 clamping ring	<input type="checkbox"/>
3	1	NW40 trapped O-ring - Viton 9830 / PTFE	<input type="checkbox"/>
4	2	GXS raised support - 100 ctr	<input type="checkbox"/>
5	3	M10 spring washer - nickel plated mild steel	<input type="checkbox"/>
7	3	M10 full nut - nickel plated mild steel	<input type="checkbox"/>
8	2	M10 x 30 hex head screw - nickel plated mild steel	<input type="checkbox"/>
9	4	M16 spring washer - nickel plated mild steel	<input type="checkbox"/>
10	8	M16 washer normal - nickel plated mild steel	<input type="checkbox"/>
11	4	M16 full nut - nickel plated mild steel	<input type="checkbox"/>
12	4	M16 x 45 hex head screw - nickel plated mild steel	<input type="checkbox"/>
13	1	M10 x 35 hex head screw - nickel plated mild steel	<input type="checkbox"/>
14	1	Silencer brace - 100 ctr	<input type="checkbox"/>
15	1	Silencer mounting - 100 ctr	<input type="checkbox"/>
16	4	M8 x 25 hex head screw - nickel plated mild steel	<input type="checkbox"/>
16	6	M10 washer normal - nickel plated mild steel	<input type="checkbox"/>
17	4	M8 washer normal - nickel plated mild steel	<input type="checkbox"/>
18	4	M8 spring washer - nickel plated mild steel	<input type="checkbox"/>

Figure 53 - M58808151 rear silencer horizontal mount - 100 ctr

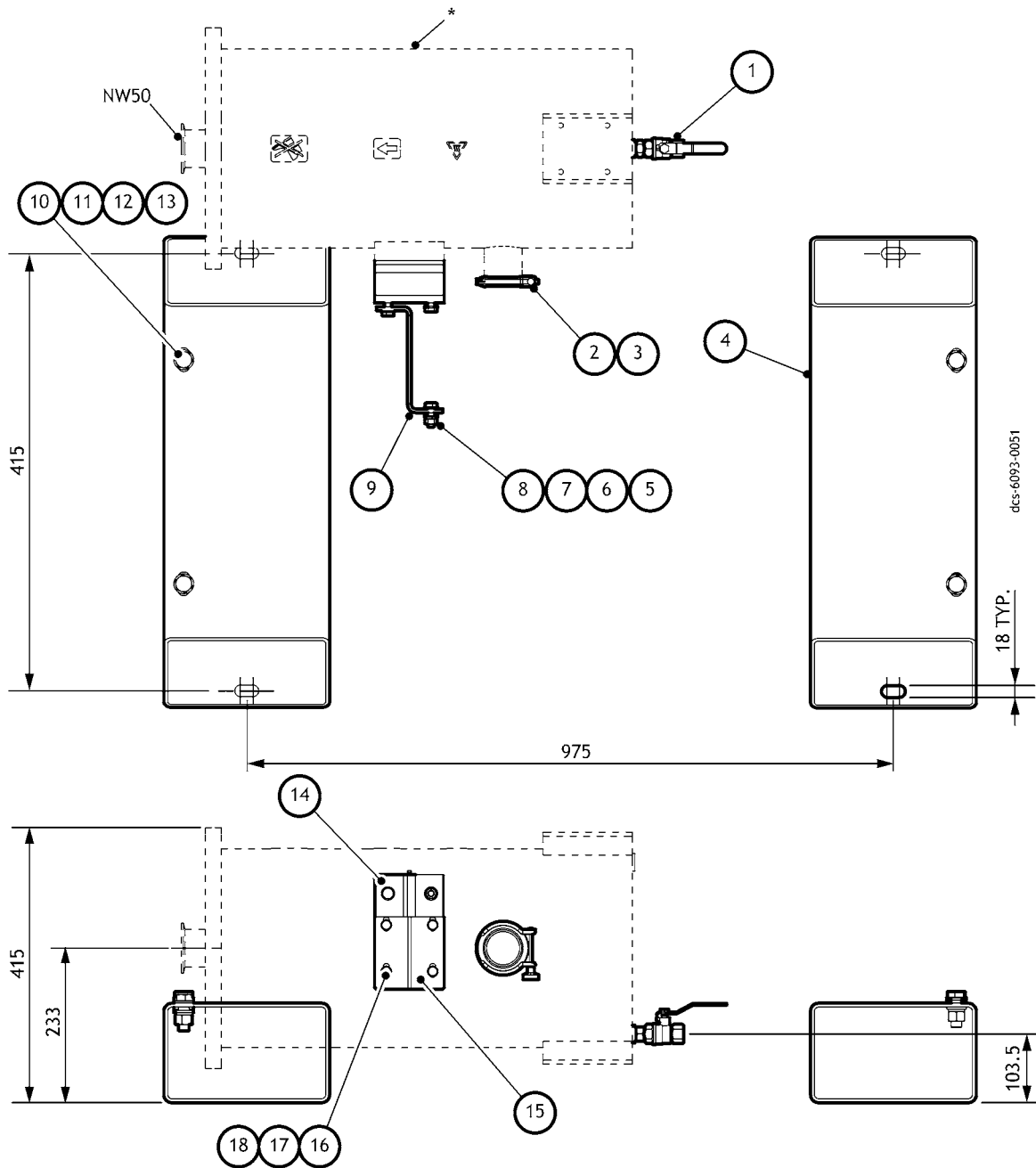


\* Silencer supplied separately.

Table 52 - M58808151 rear silencer horizontal mount - 100 ctr check list

Item	QTY	Description	Check
1	1	Drain valve assembly	<input type="checkbox"/>
2	1	Silencer support - horizontal rear 100 ctr	<input type="checkbox"/>
3	1	Silencer support side bracket - horizontal rear 100 ctr	<input type="checkbox"/>
4	1	NW40 full nipple - stainless steel	<input type="checkbox"/>
5	4	M8 spring washer - stainless steel	<input type="checkbox"/>
6	8	M8 washer normal - stainless steel	<input type="checkbox"/>
7	8	M8 x 20 hex head screw - stainless steel	<input type="checkbox"/>
8	3	NW32/40 clamping ring	<input type="checkbox"/>
9	3	NW40 trapped O-ring - Viton 9830 / PTFE	<input type="checkbox"/>

Figure 54 - M59838009 horizontal silencer mount - 150 ctr



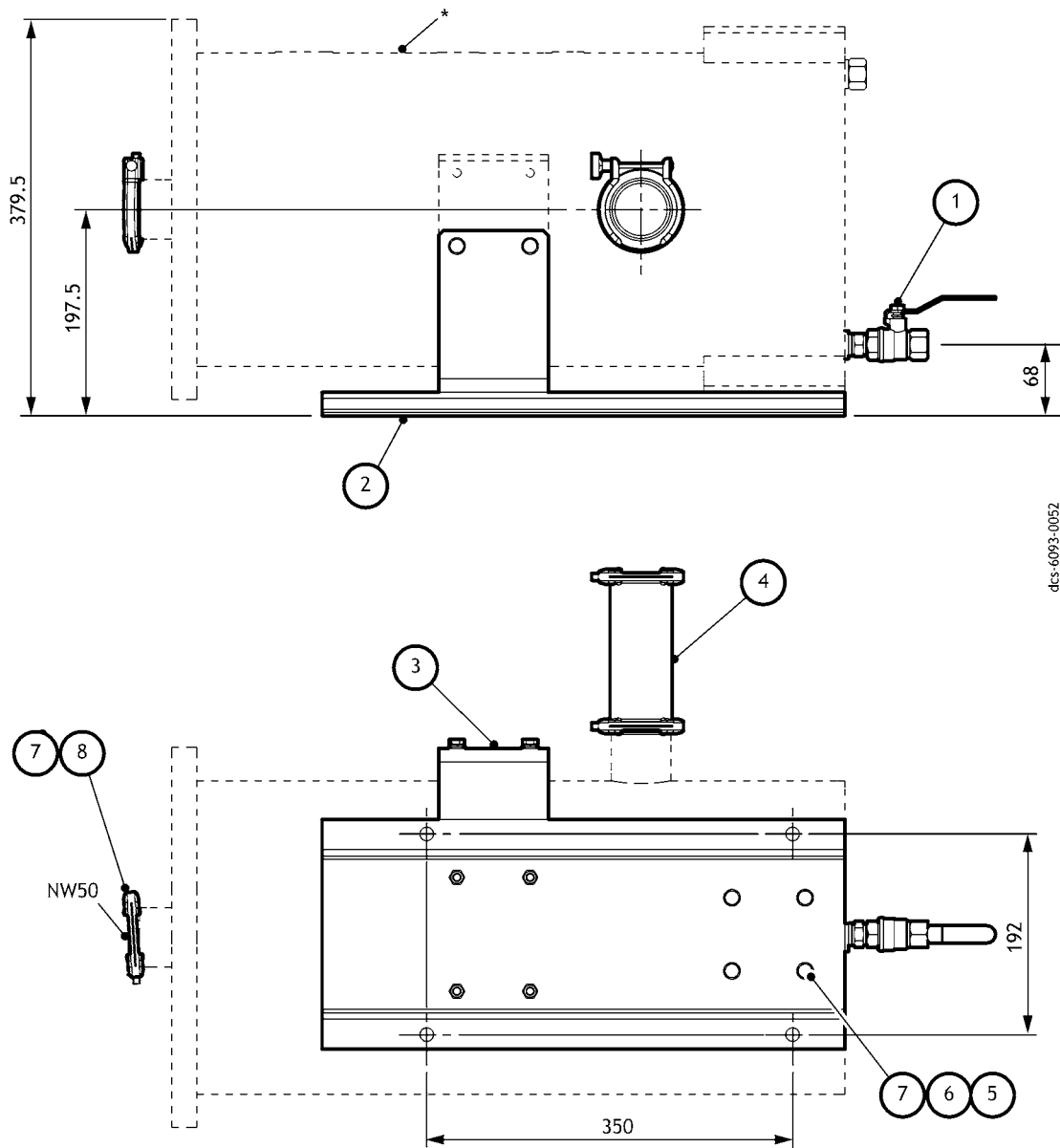
\* Silencer supplied separately.

Table 53 - M59838009 horizontal silencer mount - 150 ctr check list

Item	QTY	Description	Check
1	1	Drain valve assembly	<input type="checkbox"/>
2	1	NW50 clamping ring	<input type="checkbox"/>
3	1	NW50 trapped O-ring - Viton / stainless steel	<input type="checkbox"/>
4	2	GXS raised support - 150 ctr	<input type="checkbox"/>
5	3	M10 spring washer - nickel plated mild steel	<input type="checkbox"/>
6	6	M10 washer normal - nickel plated mild steel	<input type="checkbox"/>
7	3	M10 nut full - nickel plated mild steel	<input type="checkbox"/>
8	2	M10 x 30 hex head screw - nickel plated mild steel	<input type="checkbox"/>
9	1	Silencer brace - 150 ctr	<input type="checkbox"/>
10	4	M16 spring washer - nickel plated mild steel	<input type="checkbox"/>
11	8	M16 washer normal - nickel plated mild steel	<input type="checkbox"/>
12	4	M16 full nut - nickel plated mild steel	<input type="checkbox"/>
13	4	M16 x 45 hex head screw - nickel plated mild steel	<input type="checkbox"/>
14	1	M10 x 35 hex head screw - nickel plated mild steel	<input type="checkbox"/>
15	1	Silencer mounting - 150 ctr	<input type="checkbox"/>
16	4	M8 x 25 hex head screw - nickel plated mild steel	<input type="checkbox"/>
17	4	M8 washer normal - nickel plated mild steel	<input type="checkbox"/>
18	4	M8 spring washer - nickel plated mild steel	<input type="checkbox"/>



Figure 55 - M59808151 rear silencer horizontal mount - 150 ctr



\* Silencer supplied separately.

Table 54 - M59808151 rear silencer horizontal mount - 150 ctr check list

Item	QTY	Description	Check
1	1	Drain valve assembly	<input type="checkbox"/>
2	1	Silencer support - horizontal rear 150 ctr	<input type="checkbox"/>
3	1	Silencer support side bracket - horizontal rear 150 ctr	<input type="checkbox"/>
4	1	NW50 full nipple - stainless steel	<input type="checkbox"/>
5	7	M8 spring washer - stainless steel	<input type="checkbox"/>
6	8	M8 washer normal - stainless steel	<input type="checkbox"/>
7	8	M8 x 20 hex head screw - stainless steel	<input type="checkbox"/>

Table 54 - M59808151 rear silencer horizontal mount - 150 ctr check list (continued)

Item	QTY	Description	Check
8	3	NW50 clamping ring	<input type="checkbox"/>
9	3	NW50 trapped O-ring - Viton / stainless steel	<input type="checkbox"/>

Figure 56 - M58808069 vertical silencer assembly - 100 ctr

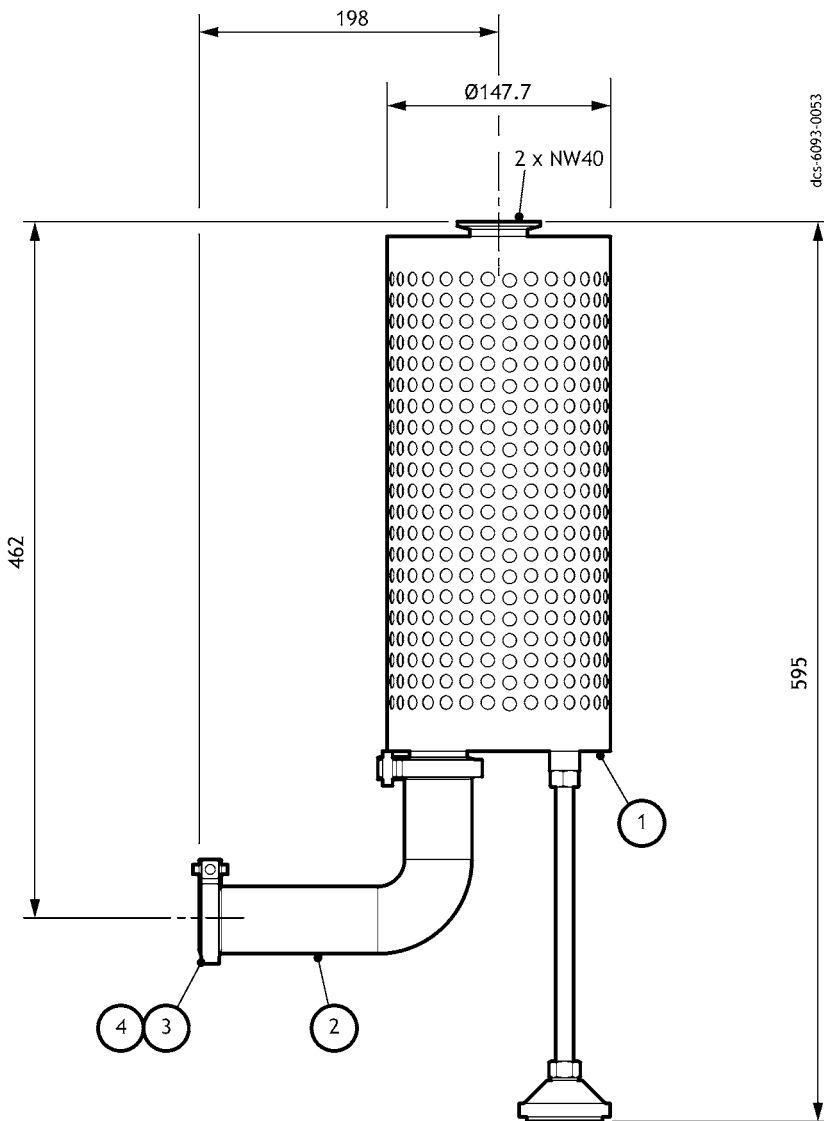


Table 55 - M58808069 vertical silencer assembly - 100 ctr check list

Item	QTY	Description	Check
1	1	iF silencer	<input type="checkbox"/>
2	1	NW40 elbow 149 x 98	<input type="checkbox"/>
3	2	NW40 trapped O-ring - Viton 9830 / PTFE	<input type="checkbox"/>
4	2	NW32/40 clamping ring	<input type="checkbox"/>

Figure 57 - M59838163 vertical silencer assembly - 150 ctr

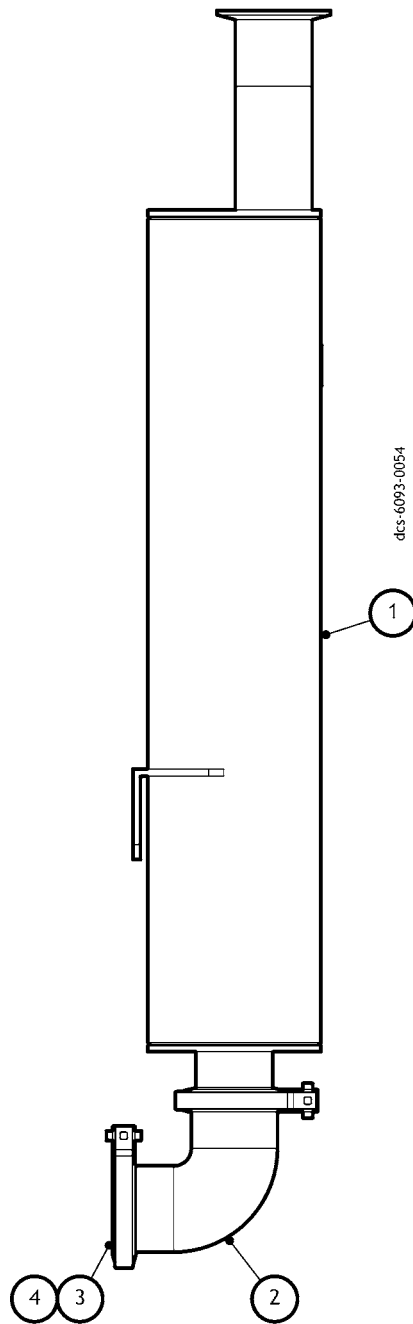


Table 56 - M59838163 vertical silencer assembly - 150 ctr check list

Item	QTY	Description	Check
1	1	iF400 silencer	<input type="checkbox"/>
2	1	NW50 elbow	<input type="checkbox"/>
3	2	NW50 trapped O-ring - Viton 9830 / PTFE	<input type="checkbox"/>
4	2	NW50 clamping ring	<input type="checkbox"/>

## 6.3 Technical data

Table 57 - Silencer mounting technical data

Description	Part Number	Carbon Steel Silencer	Stainless Steel Silencer	Inlet and outlet	Flow Rate (Roughing) m <sup>3</sup> /hr	Attenuation (at Ultimate Pressure)	Pressure Test To
Horizontal silencer mounting - 100 ctr	M58808009	M58808019	M58808031	NW40	150	>10 dB typical	10 barG
Rear silencer horizontal mounting - 100 ctr	M58808151	M58808019	M58808031	NW40	150	>10 dB typical	10 barG
Horizontal silencer mounting - 150 ctr	M59838009	M59808019	M59808031	NW50	420	>10 dB typical	10 barG
Rear silencer horizontal mounting - 150 ctr	M59808151	M59808019	M59808031	NW50	420	>10 dB typical	10 barG

## 6.4 Installation

### 6.4.1 Unpack and inspect

Remove all the packaging materials and check the silencer mounting components for signs of damage.

If the silencer mounting components are damaged, notify your supplier and the carrier in writing within three days; state the Item number of the silencer mounting together with your order number and your supplier's invoice number. Do not use the silencer mounting if it is damaged.

Check that your package contains the items listed in the [Table 51 to 55](#). If any of these items are missing, notify your supplier in writing within three days.

If the silencer mounting is not to be used immediately, store as described in [Section 6.5](#).

### 6.4.2 Installation of horizontal silencer mounting assy

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#### *CAUTION*

When fitting the exhaust silencer, ensure that the arrow on the exhaust Silencer body points in the direction of the gas flow; away from the pump exhaust outlet.

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The horizontal silencer is designed to be bolted to the side rail of the pump as shown in [Figure 58](#). The necessary clearance is achieved by the pump being mounted on raised supports. The raised supports should be attached to the pump feet using the fasteners provided. The silencer brace should be bolted in position on the inside of the pump side rail adjacent to the exhaust outlet as shown in [Figure 59](#):

1. Fix the silencer mounting to the outside of the pump side rail using the same fixing holes as the silencer brace (refer to [Figure 58](#) and [Figure 59](#)). This provides a solid base for the mounting of the silencer. Do NOT fully tighten the fasteners. This allows for fine adjustment.
2. Using suitable lifting equipment and techniques, mount the silencer to the bracket as shown in [Figure 58](#). Align the inlet flange on the exhaust silencer with the exhaust outlet flange on the dry pump.
3. Bolt the silencer to the support bracket using the fasteners provided. Do NOT fully tighten the fasteners. This allows for fine adjustment.
4. Fit the trapped O-ring between the two flange connections and carefully draw the flanges together using the clamp provided until secured in position. Attention should be given to the alignment of this connection to ensure an efficient seal.
5. Tighten all bolts to the recommended torque.

Figure 58 - Horizontal silencer mounting

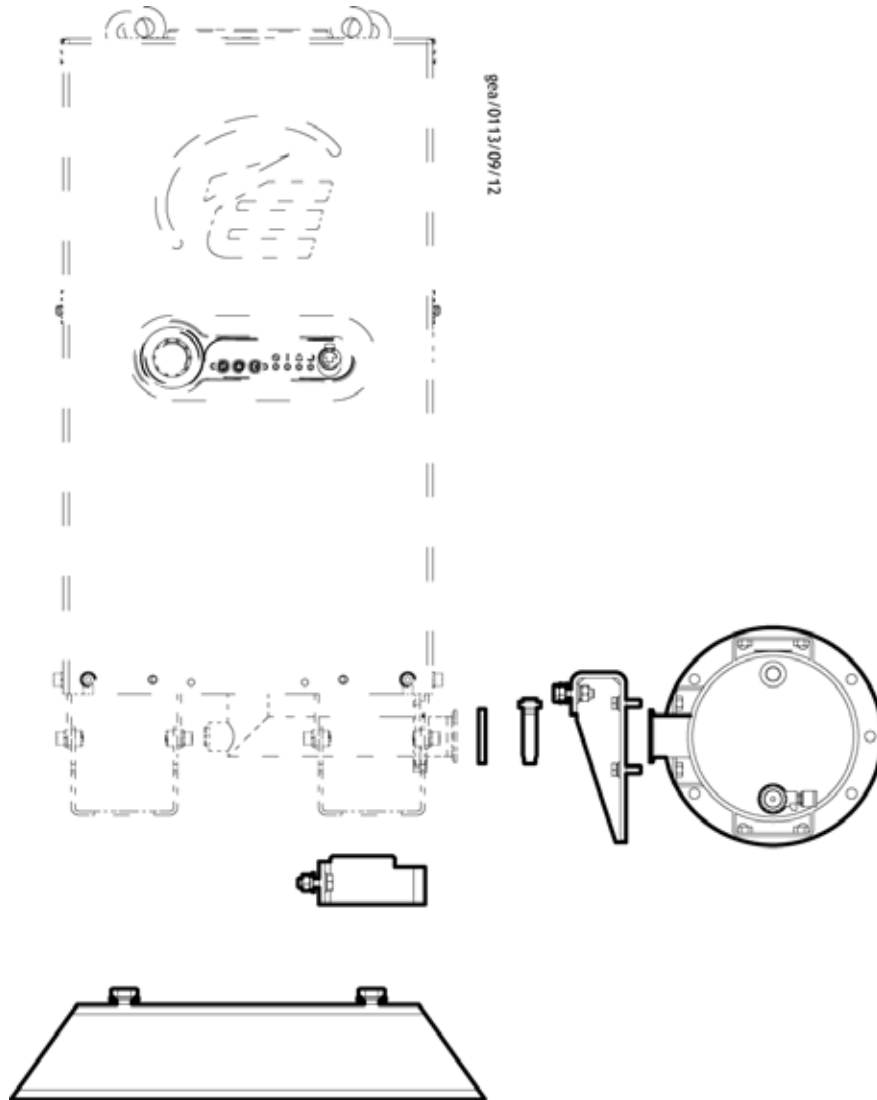
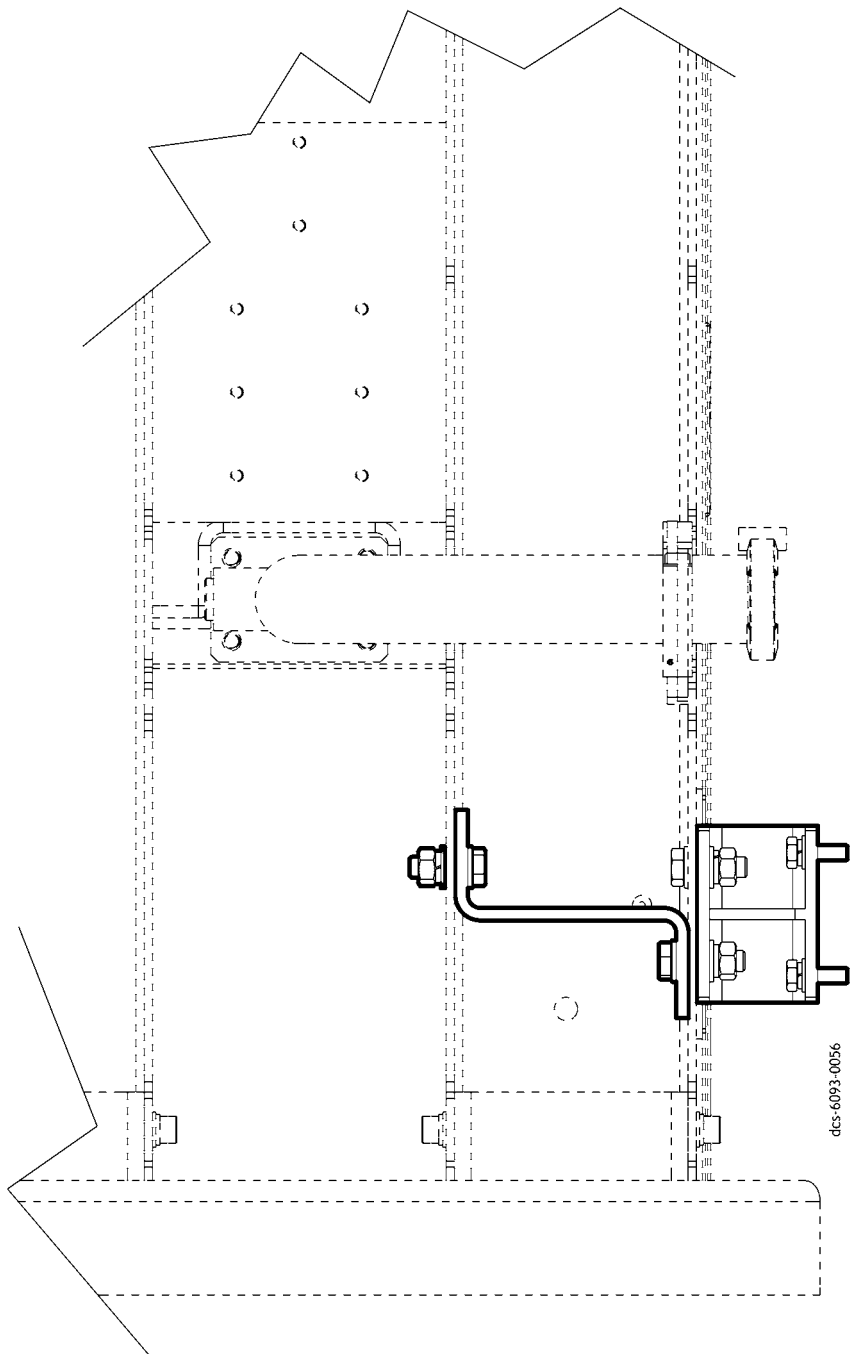


Figure 59 - Silencer brace fitment



*Note:* Viewed from underneath the pump to show mounting bracket positions for exhaust silencer.

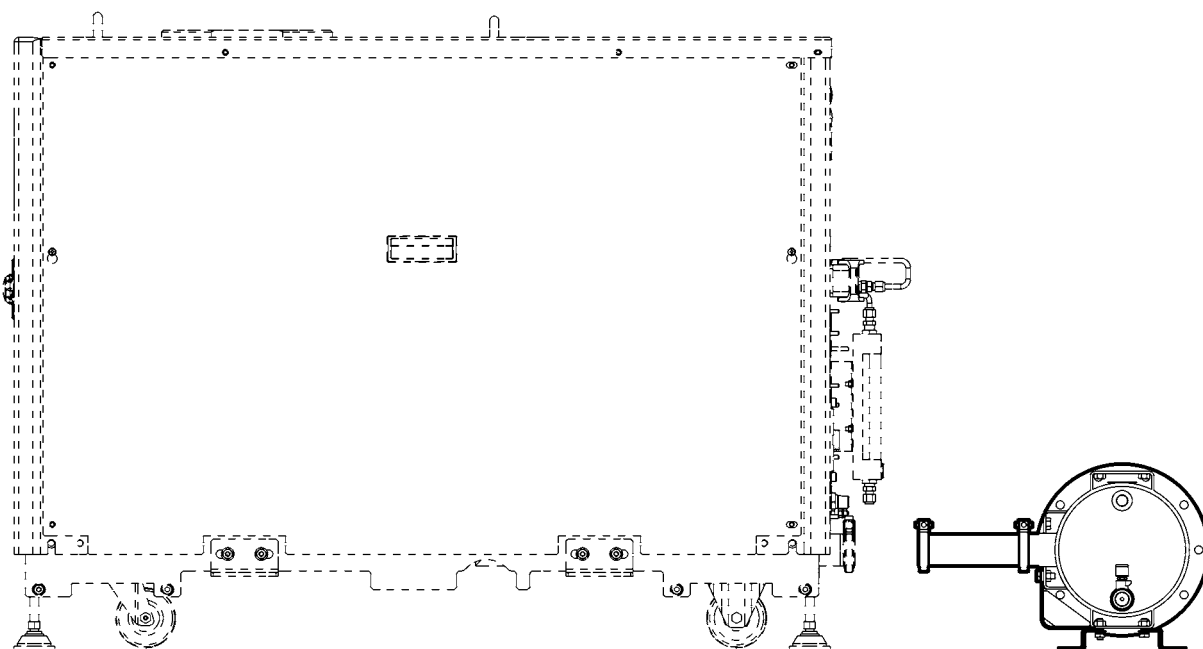
### 6.4.3 Installation of rear silencer mounting assy

**CAUTION**

When fitting the exhaust silencer, ensure that the arrow on the exhaust Silencer body points in the direction of the gas flow; away from the pump exhaust outlet.

Refer to Figure 60. The rear silencer is designed to be fixed to the floor at the rear of the dry pump, using suitable fasteners (not supplied). The built-in jacking feet on the pump can be used to align the pump exhaust flange with the exhaust silencer inlet flange. The exhaust silencer is connected using a full nipple, trapped O-rings and clamping rings.

Figure 60 - Installation of the rear silencer



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### 6.4.4 Installation of vertical silencer assy

#### CAUTION

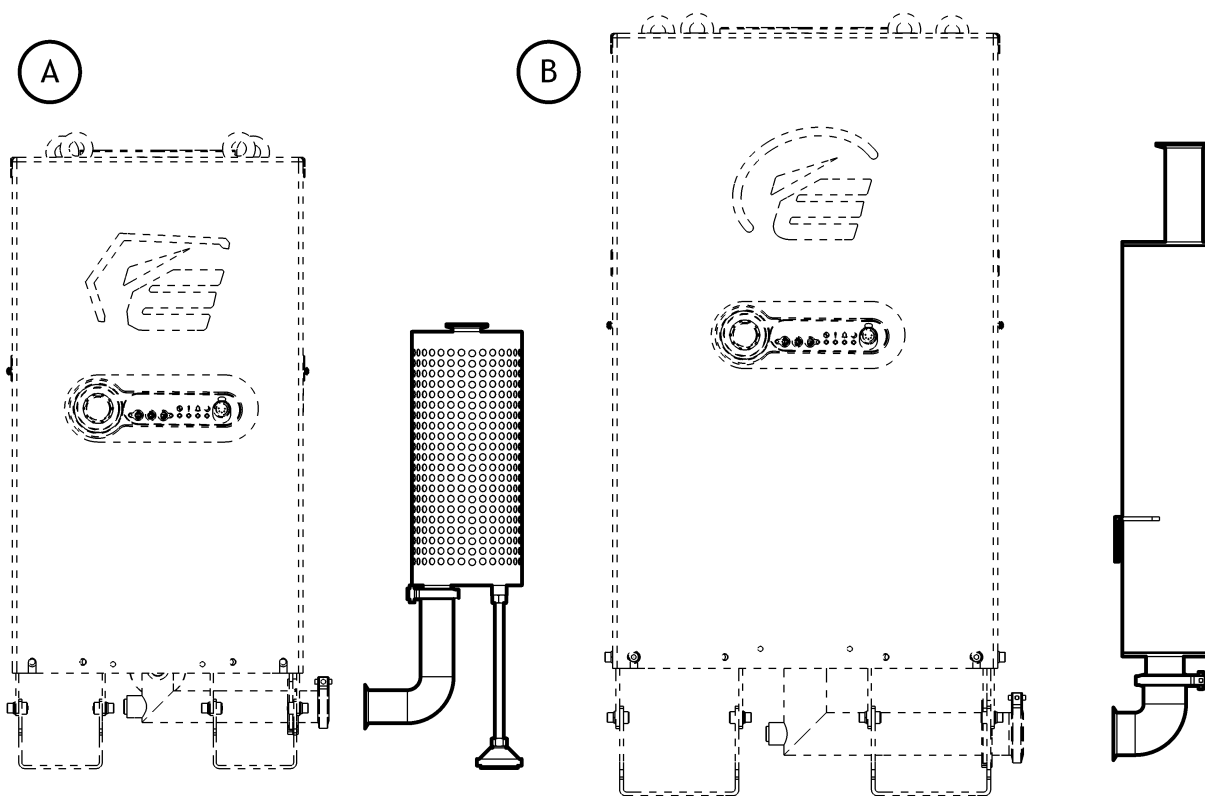
When fitting the exhaust silencer, ensure that the arrow on the exhaust Silencer body points in the direction of the gas flow; away from the pump exhaust outlet.

These exhaust silencers can be rear mounted as shown in Figure 60 and side mounted as shown in Figure 61.

The silencers are connected directly to the pumps exhaust using a trapped O-ring and clamp.

**Note:** The orientation of the elbow and the support leg lengths differ depending on use. The short leg is used for assembly with side exhaust pumps and the long leg is used for assembly with rear exhaust pumps. This facilitates the use of the support foot (refer to Figure 60 and Figure 61).

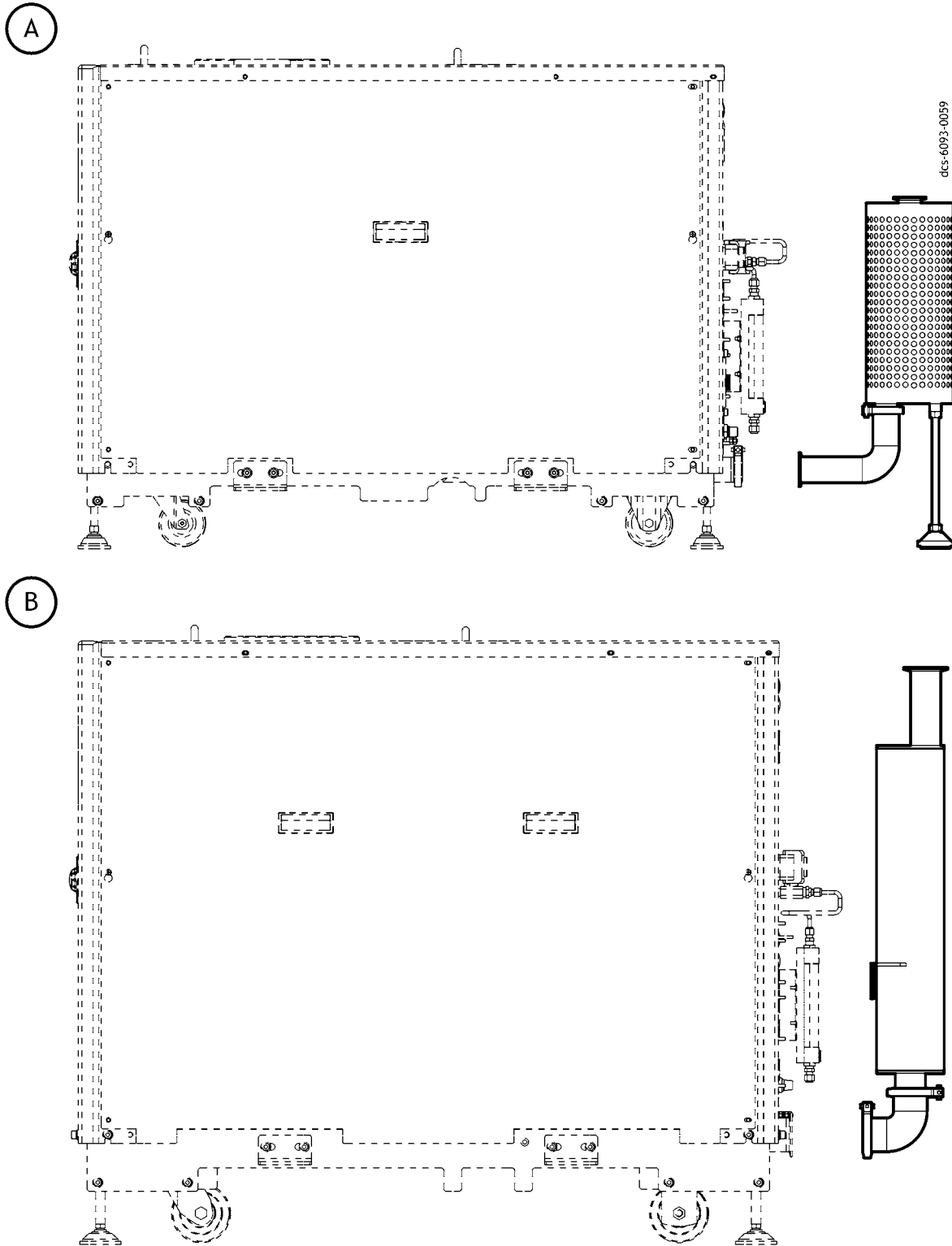
Figure 61 - Installation of the vertical silencer - side mounted



- A. 100 ctr pumps
- B. 150 ctr pumps

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Figure 62 - Installation of the vertical silencer - rear mounted



- A. 100 ctr pumps
- B. 150 ctr pumps

## 6.5 Storage and disposal

### 6.5.1 Storage

If the exhaust silencer mounting assembly will not be used immediately:

1. Clean the exhaust silencer mounting assembly.
2. Protect individual items and place in a sealed polythene bag.
3. Store in a cool dry place.

### 6.5.2 Disposal

Dispose of the exhaust silencer mounting assembly in accordance with all local and national safety and environmental requirements.