

# GENERAL MOUNTING INSTRUCTIONS

## FLEXIBLE DUCTING

### INTRODUCTION

For installing and using several DEC products optimally some items have to be considered. In this chapter general and specific instructions for all relevant products will be described:

- A flexible ducts (general)
- B flexible ducts with insulation (specific)

### GENERAL MOUNTING INSTRUCTIONS FLEXIBLE DUCTS

To mount flexible ducts correctly, the next items should be considered. The items will be explained shortly and the drawings will illustrate how to mount the duct.

- A.1 mounting instructions (general)
- A.2 shortening of ducts
- A.3 making connections
- A.4 suspension points
- A.5 bending radius
- A.6 support
- A.7 connection to ducts and armatures
- A.8 static electricity
- A.9 situations in practice

#### A.1 Mounting instructions (general)

- The duct has to be stretched completely. A duct that has not been stretched completely causes a lot of pressure loss.
- Do not use more of the duct than necessary.
- Use about 1 - 1.5m of the duct for each connection piece. If more length will be needed (e.g. for acoustic ducts) the duct has to be fastened correctly with saddle brackets (see A.5 and A.7).
- During mounting take care that the duct will not be damaged (e.g. a co-ordination with respect to light armatures and ceiling constructions).
- Replace damaged ducts by new ones. Replace also damaged outer jackets of insulated ducts (in connection with loss of air and density of steam).

#### A.2 Shortening of ducts

- The duct has to be stretched completely
- Measure the correct length and mark it with a felt marker
- Cut the duct into two pieces over the entire diameter right in a winding.
- Cut the spiral

#### A.3 Making a connection

- Shorten the duct correctly.
- Push the duct 50mm beyond the connection piece.
- Seal the connection airtight with DEC aluminium tape. *(For Marine use we recommend to use always an ASB tape)*
- Fix the sealed duct with a nylon or metal clamp. *(For Marine use we recommend to use always metal clamps)*

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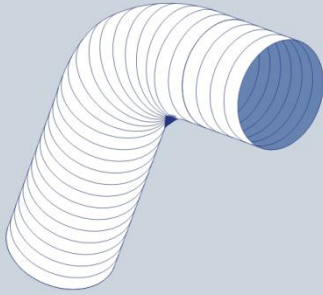
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### A.4 Suspension points

The maximal sagging of the duct, between two fastening points, should not exceed 50 mm/m (see fig 1). The distance between two suspension points varies from 1.5 up to 3m depending of the duct type. A flexible duct above a ceiling construction needs a 1m centre-to-centre distance support.

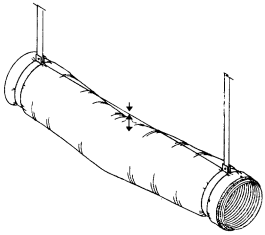
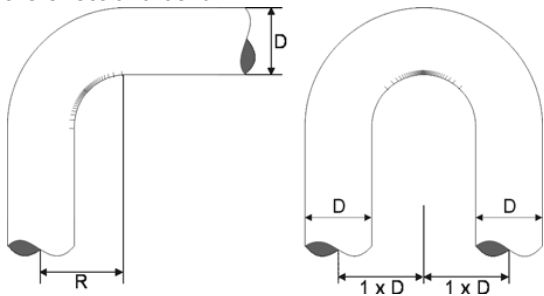


Fig. 1 Max. Sagging 50 mm/m

### A.5 Bending radius

The minimal bending radius of each product has been described on the product information page. The bending should be as large as possible. A minimal bending radius provides a greater pressure loss. The bending should be twice the diameter for minimizing the effect of a bend



### A.6 SUPPORT

A duct is, generally, very flexible and can be transformed easily. In case of transformation the inner diameter will decrease and the pressure loss will increase. Much attention should be paid to fastening the ducts, in case of using clips.

Use the correct clip diameter and make sure that the clips support the duct half of the diameter minimally (see fig. 2).

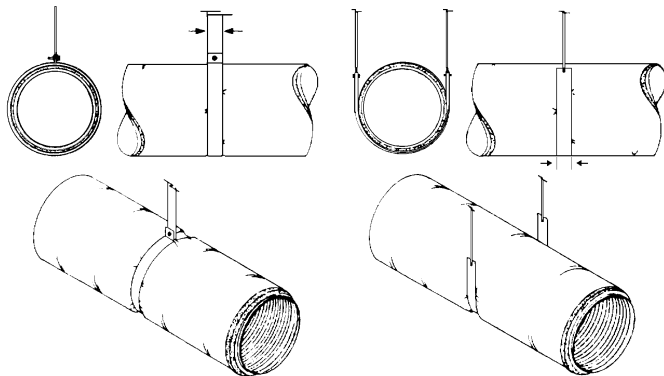


Fig. 2

#### LIABILITY:

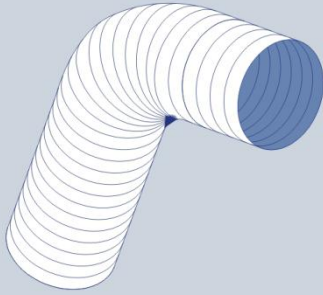
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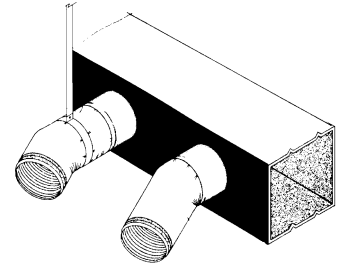
### A.7 Connections to canals and armatures

The connection of flexible ducts to canals and armatures should be performed very carefully. Because many ducts have been mounted with a bend, right after the connection to a canal or armature, a supporting clip will be needed.

Fig. 3 The right connection is too "sharp"

correct

Incorrect



Metal ducts can produce a crack if the canal connections are too "sharp" (fig. 4.3)

If the duct has to be connected to light- or air armatures the connection should be as "direct" as possible. The instructions should be consulted. Too many bends close to an armature will cause increasing of pressure loss. It will also cause unnecessary noise.

Fig. 4 shows an "incorrect" armature connection. Fig. 5 shows a "correct" connection.

Fig. 4

incorrect

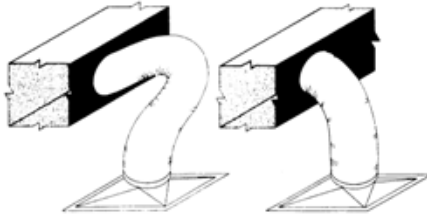
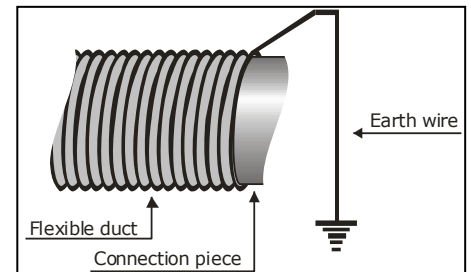


Fig. 5

correct

### A.8 Static electricity

Building up and discharging electricity can cause explosion risk. This could happen if air, with organic solvents, flows through a synthetic or a laminate duct with high speed. Making a connection between the spiral wire of the duct and an earth wire can minimize building up static electricity. For machine exhausting a connection can be made between the metal wire of the duct and the casing of the machine. The earthen of the machine and the connection between machine and duct, however, has to be controlled frequently. Especially if the exhaust system is in motion or the machine causes vibrations.



### A.9 Situations in practice

During mounting there are often situations where a longer flexible duct is recommended. An example is the bridging between the differences in height where no standard connection pieces can be used. Take care that there is no contact between the duct and other existing components with a high temperature. A duct provided with a PVC layer will quickly fall apart, if it is in contact with the tube of the central heating for a while. Even a central heating tube can increase the ageing process of such a duct.

The lifespan of ducts can rather be shortened if ducts with different metals (also from other ducts) will be in contact intensively. Rooms, which are warm and damp, could cause a quicker corrosion.

Fig 6

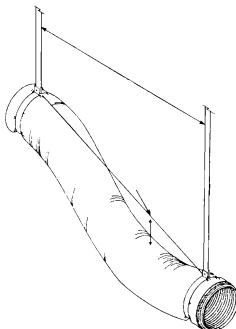
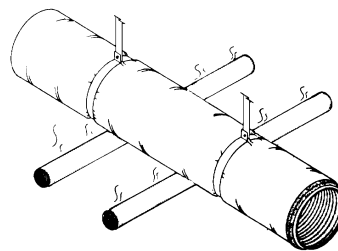


Fig 7



#### LIABILITY:

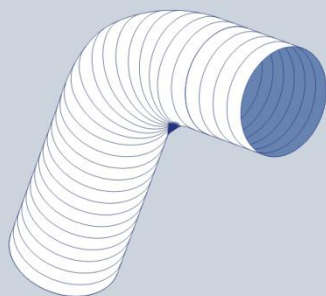
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# GENERAL MOUNTING INSTRUCTIONS

## FLEXIBLE DUCTING

### Flexible insulated ducts

For insulated flexible ducts there are more points to consider. These points are mainly concentrated on the processing of the duct. For various applications a difference has been made between thermally and acoustically insulated ducts

#### B.1 thermally insulated

DEC's product series has no ducts, which have already been sealed. But this is possible on request. Ducts which have not been sealed have a maximal output, if the items below have been considered (see fig.9)

- Shorten the duct correctly
- Push the duct over the connection piece 50 mm minimally
- Push back the insulation blanket
- Seal the connection piece of the inner duct with DEC aluminium tape (ALUTAPE) at least two windings around the duct
- Take away the insulation blanket
- Attach the outer jacket with ALUTAPE to the inner duct, at least two complete windings around the duct
- Take care that the end piece of the duct has been sealed air-tight
- Attach outer jacket and inner duct together with nylon or metal clamps.  
(For Marine use we recommend to use always metal clamps)

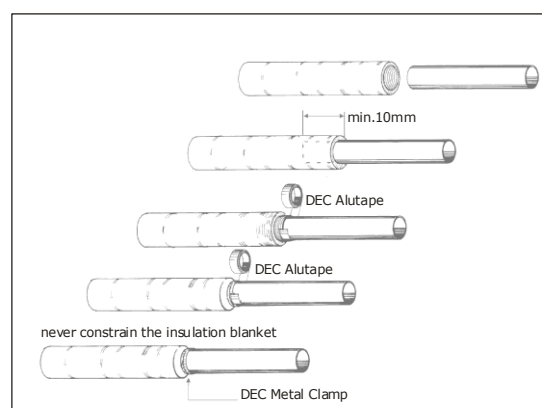


Fig. 9

#### Mistakes in practice

A mistake which has been made often is the fixing of the insulation blanket with a clamp, without sealing with tape. There is no guarantee that this way of working is effective, because the sealing is not airtight.

#### B.2A Acoustically insulated ducts

DEC has two types of ducts within the assortment of this product group: sealed and non-sealed ducts:

- 1/ Perforated ducts enveloped by a polyester barrier to prevent that "very small" glass wool particulars penetrate the air system
- 2/ Perforated ducts without a polyester barrier

#### IMPORTANT

DEC's barrier provides a closed system. That is why the acoustic duct, if installed properly, can be used as a thermal application as well. This is in contrast with many other competing products.

Sealed ducts like SONODEC TRD and SONODEC GLX have already been provided with a sealed end part.

During mounting two items have to be considered:

- The duct has to be pushed around the attachment point for 50 cm minimally. For an optimal sound attenuation push the duct around the attachment point completely
- Fasten the "taped" duct firmly with a clamp

Non-sealed ducts have to be prepared the same way as the thermally insulated ducts (see fig. 9). The polyester barrier, however, should be fastened with a tape together with the micro perforated inner duct. Now follow the same steps, which have been described.

For the SONODEC 25 and the SONODEC 250 the air-tightness is more important. The micro perforation causes a lot of pressure to the outer jacket. The pressure loss increases and the coefficient of the desired attenuation decreases, because the ducts have not been sealed completely. A bad sealing can also cause untightness and interfering noises.

#### Situations in practice

In the SONODEC 25 a polyester layer has been inserted, to prevent diffusion of glass fibre particles from the insulation blanket into the system. The barrier has to be attached to the connection piece with DEC aluminium tape. When the system is under pressure the barrier could move if it has not been fixed properly.

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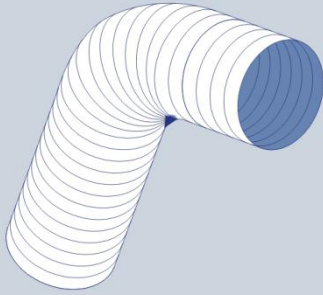
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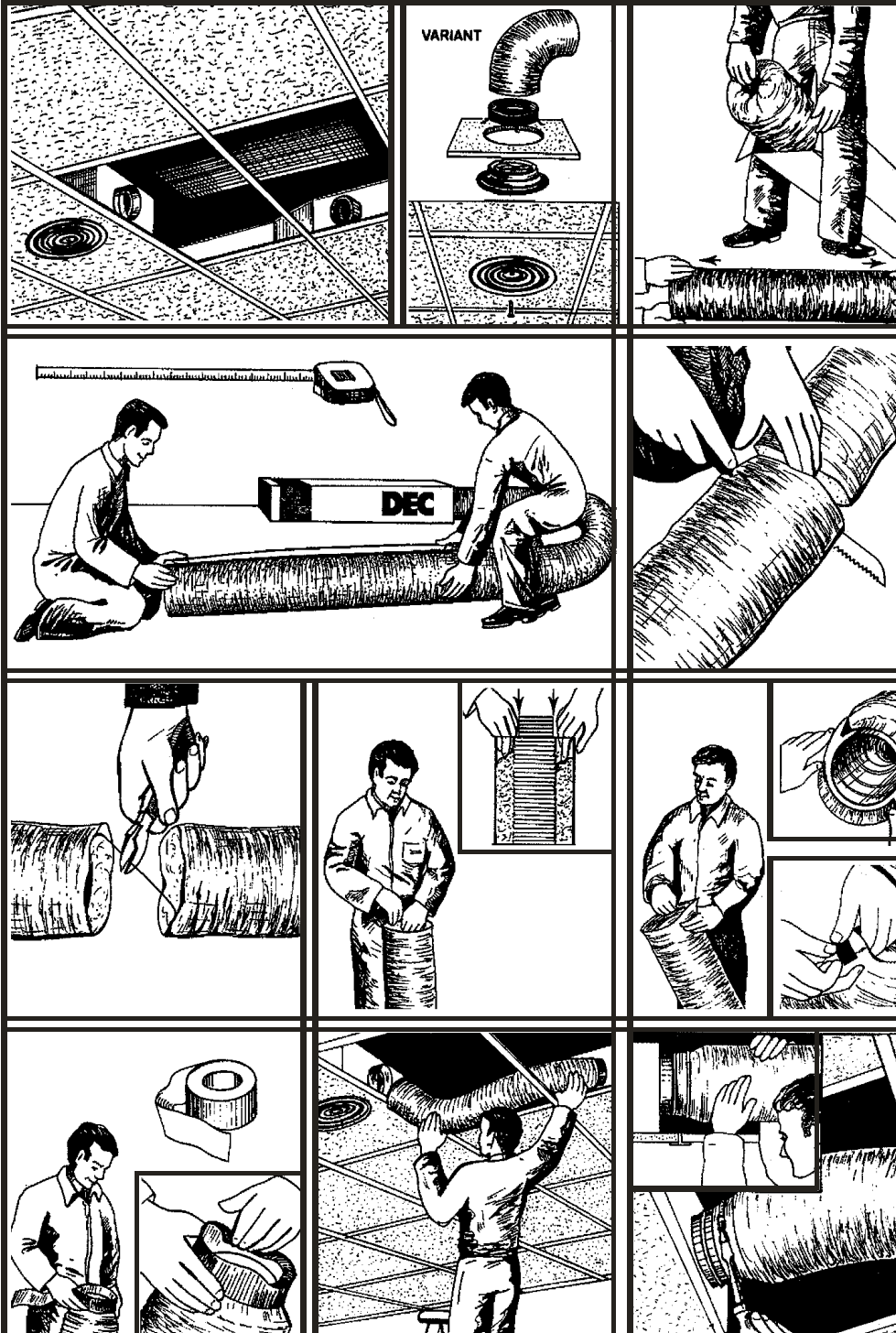
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## DUCTS WITH BARRIER



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