

# 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 absolutely not use more of the duct length than necessary.
- Aim use maximum 1.5mtr 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 duct clamps (Suspension brackets [SB(R)] or suspension strap [PP/PZ], to avoid sagging (see A.4 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).
- Never uses damaged ducts. Replace also damaged outer jackets of insulated ducts (to avoid air leakage).

#### A.2 Shortening of ducts

- The duct has to be stretched completely
- Measure the correct length and mark it with a marker
- Cut the duct at the marked place into two pieces over the entire diameter right in one 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 PSB tape)*
- Fix the sealed duct with a DEC metal clamp [QIPØ]. *(For Marine use we recommend to use always metal clamps)*

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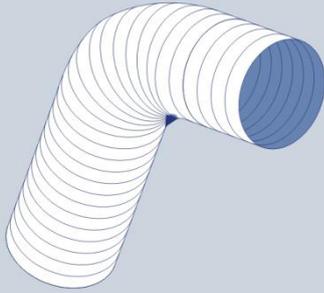
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## FLEXIBLE DUCTING

### 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.

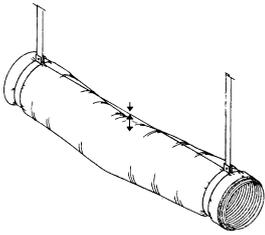
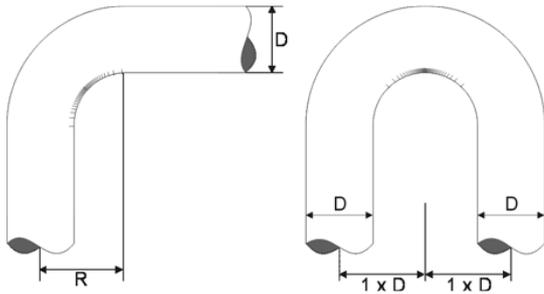


Fig. 1 Max. Sagging 50 mm/m

### 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 formed in a shape easily. In case of compressing the inner diameter will decrease and the pressure loss will increase. Much attention should be paid to fastening the stretched ducts, in case of using duct clamps [SB(R)]Ø or suspension strap [PP/PZ].

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

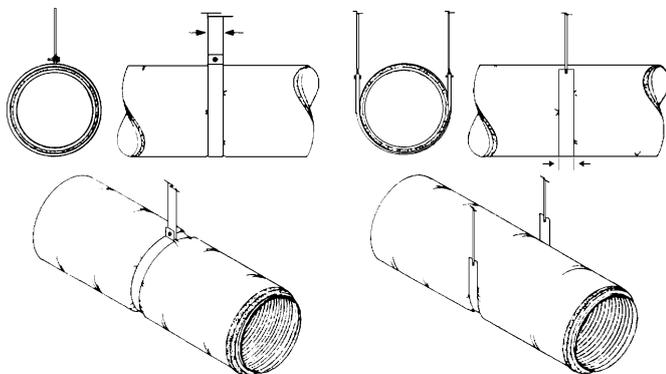


Fig. 2

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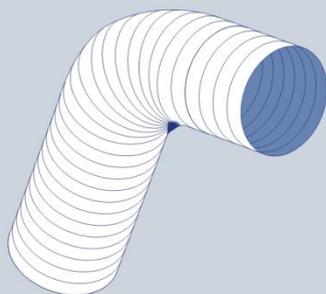
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## FLEXIBLE DUCTING

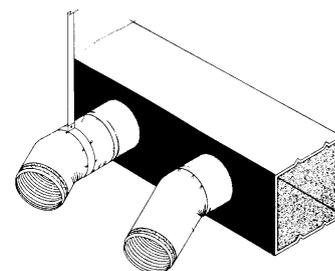
### A.7 Connections to canals and armatures

The connection of flexible ducts such to fittings, rigid duct work, plenum boxes should be performed very carefully. Because many ducts have been mounted with a bend, right after the connection to a duct work, fitting or plenum, a supporting clamp [SB(R)Ø]/suspension strap [PP/PZ] will be needed.

Fig. 3 The connection at the right side is too "sharp"

correct

Incorrect



Flexible ducts (from aluminium) can be damaged if the duct connection is too "sharp" (fig. 4) When the duct has to be connected to a plenum the connection should be as "direct" as possible. The instructions should be consulted. A bend close to an plenum will cause a too high pressure loss. It will also cause unnecessary noise.

Fig. 4 shows an example of "incorrect" duct connection. Fig. 5 shows a "correct" connection.

Fig. 4

incorrect

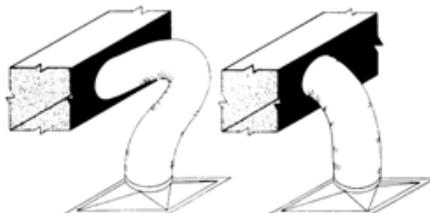
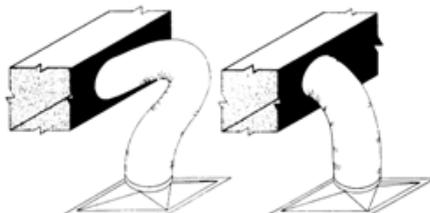


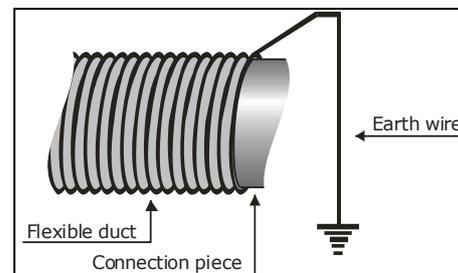
Fig. 5

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. By creating 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 desired. 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 degrade, if for example 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

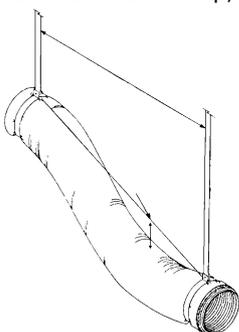
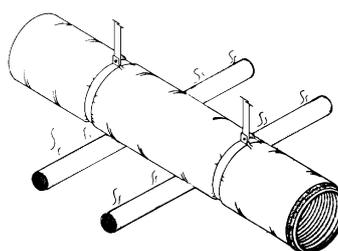


Fig 7



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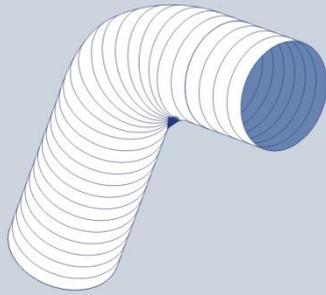
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# GENERAL MOUNTING INSTRUCTIONS

## FLEXIBLE DUCTING

### Flexible insulated ducts

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

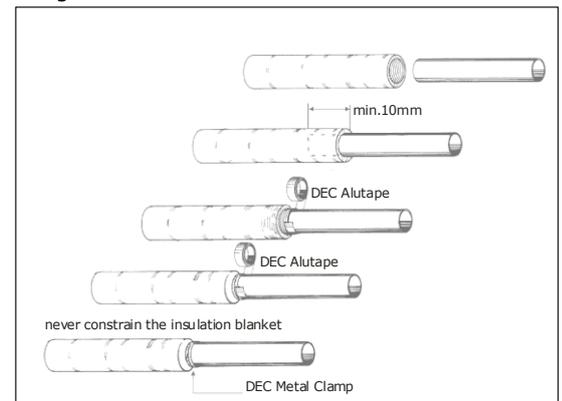
#### B.1 thermally insulated

DEC's product series has also insulated ducts, which have already been tape off [TRDØ, GLXØ or Connectdec variations] to avoid loss of time, waste.

For full length insulated flexible ducts, follow the next steps (see fig.9)

- Shorten the inner duct correctly
- Push the inner duct over the part to be connected 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
- Push the insulation blanket back over the taped inner duct
- Sleeve the outer jacket over the insulation blanket with underneath the taped inner core. Tape off the whole package with DEC ALUTAPE with at least two complete windings around the duct
- Take care that the end piece of the duct has been sealed air-tight as possible
- Attach over the tape off outer jacket/insulated blanket and inner duct a DEC metal clamps [QIPØ]. (For Marine use we recommend to use always DEC metal clamps [QIPØ])
- We always advice to use only DEC ALUTAPE or DEC's [PSB] [ASB] tape

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 several types of ducts within the assortment of this product group: sealed [TRDØ], [GLXØ], Connectdec and non-sealed ducts:

- 1/ Perforated innerducts enveloped by a polyester barrier to prevent that "very small" glass wool particulars penetrate the air system
- 2/ Perforated inner ducts enveloped by a PE barrier hose to prevent that "very small" glass wool particulars penetrate the air system
- 3/ Perforated inner ducts without a barrier, DEC NEVER recommend to use

#### 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 {taped off} end part.

During mounting two items must 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 1<sup>st</sup> tape and over the tape fixate the whole "packaging" with a metal clamp [QIPØ]

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

For all SONODEC-versions the air-tightness is important. The micro perforated inner duct will cause pressure loss, when not properly installed. The pressure loss increases and the coefficient of the desired attenuation worsens, when the complete insulated acoustical ducts is not been installed properly. An inferior tape will cause blooming and will cause untightens and interfering noises.

#### Situations in practice

In the SONODEC 25 a PE barrier hose has been inserted, to prevent not only diffusion of glass fibre particles from the insulation blanket into the system, but also prevent leakage. The barrier must be fixated to the connection piece with DEC ALU/PSB or ASB tape. When the system is under pressure the barrier will move if it has not been fixated properly.

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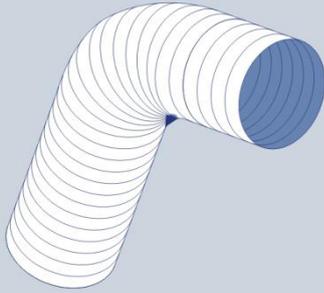
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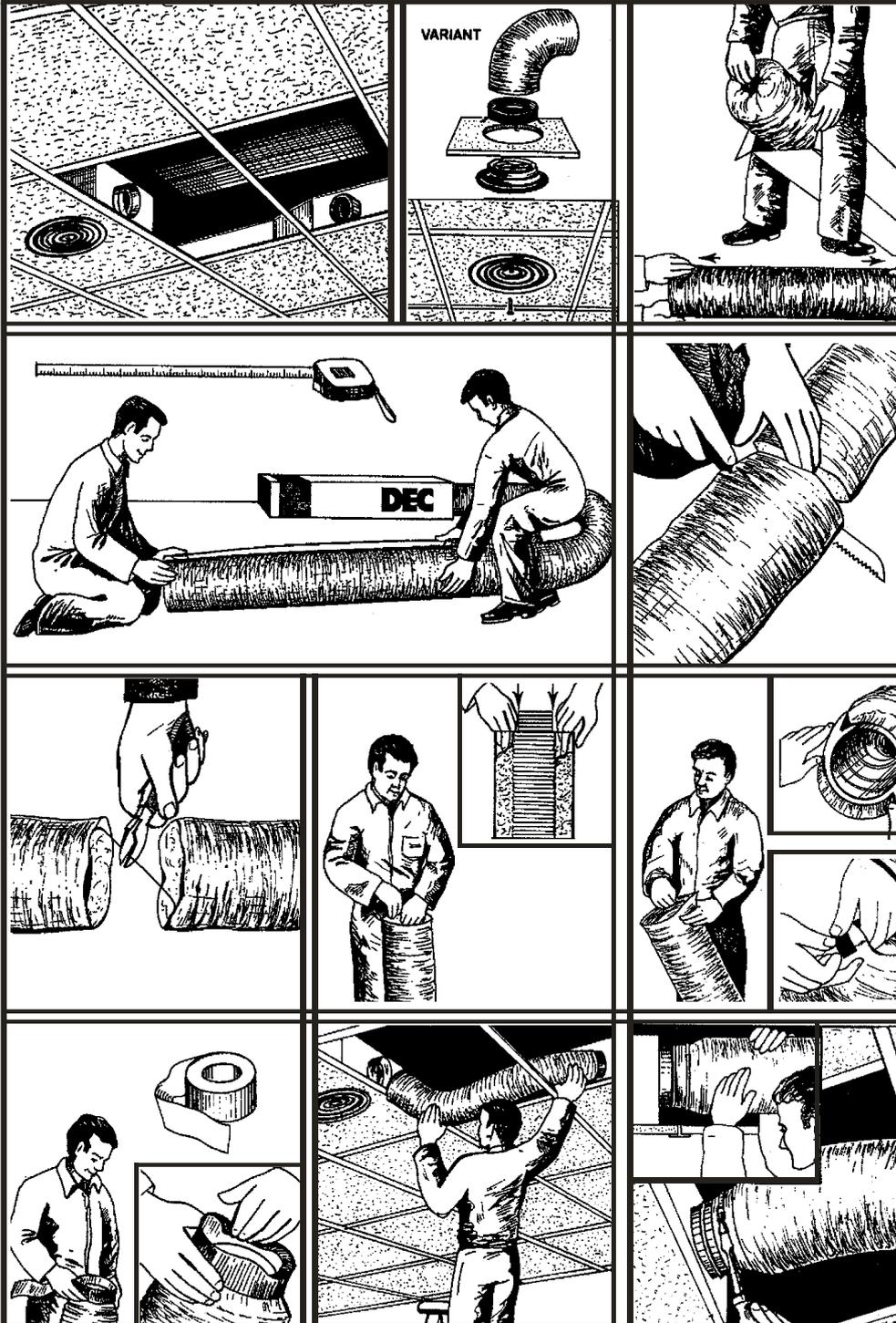




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FLEXIBLE DUCTING

## INSULATED ACOUSTICAL DUCTS WITH BARRIER



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