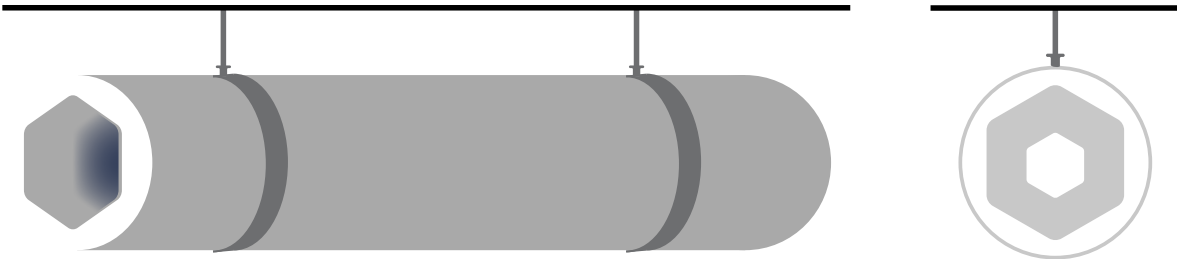


Climate Recovery Duct System Planning Guide – Build-in Solutions



The fact that CR Ducts can be installed both round and rectangular offers building solutions that have never before been possible at reasonable costs.

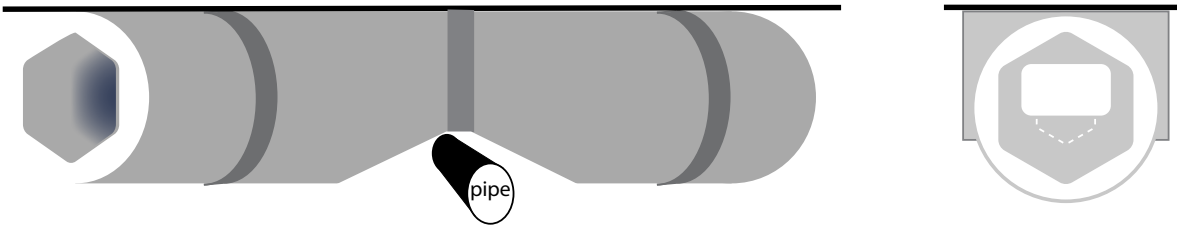
The most natural solution is to mount CR Ducts round and hang them in a standard way.



As CR Ducts don't vibrate or transfer vibrations, it is possible to place directly against the inner ceiling, secured with approved ventilation hanging straps.



Often it is a single obstacle that prevents the opportunity to install larger dimensions of ductwork. CR Ducts can be made rectangular with a CR Transformer to bypass these obstacles and utilize the available space with lower pressure drops and increased air volumes.



This mounting gives a localized pressure drop of 1 Pa.

Building solutions

If it is necessary to install CR Ducts rectangularly for a longer run, it is possible with the use of multiple CR Transformers on a single duct.



Rectangular pressure drop values must be used for this run
Branches will require CR Saddle Pieces

To illustrate the outcomes of different building solutions, we will calculate based on 1 Pa pressure drop per duct meter. The following air volumes and build-in heights can be utilized as assumptions (rough values).

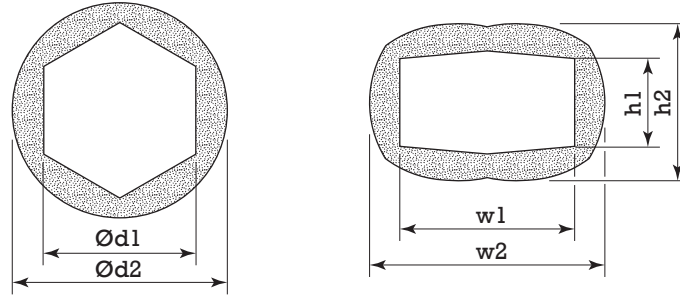
Climate Recovery Ducts (Images 1-4)		Ø125	Ø160	Ø200	Ø250	Ø315
Image 1	Air volume (l/s)	30	75	130	230	400
	Build-in height (mm)	245	280	320	370	435
Image 2	Air volume (l/s)	30	75	130	230	400
	Build-in height (mm)	195	230	270	320	385
Image 3	Air volume (l/s)	30	75	130	230	400
	Build-in height (mm)	135	166	175	221	225
Image 4	Air volume (l/s)	20	40	75	130	230
	Build-in height (mm)	135	166	175	221	225
Rund plåtkanal pendlad 50mm och isolerad 30mm	Air volume (l/s)	30	75	130	230	400
	Build-in height (mm)	205	240	280	330	395
Build-in height gained (mm)		70	74	105	109	170

For example:

170mm gained build-in height with matching air volume and pressure drop.

Up to 325 l/s air volume gained with same build-in height.

Building solutions



Round

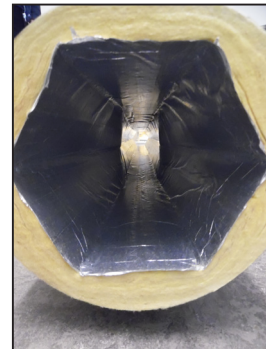
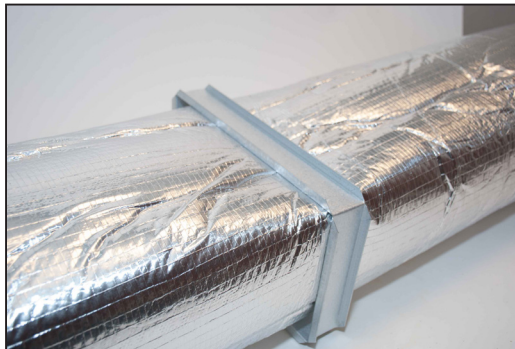
Ød1*	l	Ød2	kg/m
mm	mm	mm	
125	2.35	195	0.64
160	2.35	230	0.86
200	2.35	270	1.06
250	2.35	320	1.34
315	2.35	385	1.66

Rectangular

Ød1	w1	h1	w2	h2
mm	mm	mm	mm	mm
125	140	75	200	135
160	188	94	258	166
200	220	115	280	175
250	283	141	358	221
315	340	175	400	225

*Actual inner diameter \approx 10–20 mm larger than Ød1

We recommend use of CR Transformers to secure rectangular forms.



Building solutions

Conclusions

One way to utilize the unique building opportunities of CR Ducts is to increase air flow and choose another system solution. These solutions offer the ability to:

- Utilize a VAV system instead of chilled beams;
- Increase ceiling heights;
- Decrease the total pressure drops that the fan needs to recover.

Lowering pressure drops allows for decrease of the fan speed, reducing power requirements by a factor of 3, as seen in the below equation.

$$P/P_1 = [(n/n_1)]^3$$

For example, if the fan speed is reduced by 10%, the energy requirements are reduced by 27%; if fan speed is reduced by 20%, the energy requirements are reduced by nearly 50%.

It is possible to take full advantage of CR Ducts increased adaptability for project, life cycle, and environmental benefits without significantly increasing costs.

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